EFFECTS OF DENSITY AND VISCOSITY ON CONTAMINANT TRANSPORT OF LNAPLS AND DNAPLS IN AN AQUIFER SYSTEM

By

SARA WAKELAM-SAYLER

Bachelor of Science

Purdue University

West Lafayette, IN

1981

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF SCIENCE
December, 1995

EFFECTS OF DENSITY AND VISCOSITY ON CONTAMINANT

TRANSPORT OF LNAPLS AND DNAPLS

IN AN AQUIFER SYSTEM

Thesis Approved:

Thesis Advisor

Dean of the Graduate College

ACKNOWLEDGMENTS

I would like to express my appreciation to my advisor and committee chair Dr. Avdhesh K. Tyagi for his constructive guidance, encouragement and patience throughout my course of study. I would also like to extend my appreciation to my other committee members, Dr. William Clarkson and Dr. Greg Wilber, for their guidance and review of this thesis. I am also grateful to the remaining faculty, staff, and students of the Department of Civil and Environmental Engineering who have made my experience at Oklahoma State University both a positive and learning experience.

I will always be grateful to my husband, families, and friends who showed their pride and support by convincing me to continue on past the first semester and for being there from beginning to end.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

NOMENCLATURE

C_r	Aquifer Compressibility
g	Gravitational Constant
k	Intrinsic Permeability
k_{ra}	Relative Permeability of Air
k_{rn}	Relative Permeability of NAPL (Non-wetting Fluid)
k_{rna}	Relative Permeability of NAPL (in an Air/NAPL System) As a Function of S_a
k^*_{rnw}	Relative Permeability of NAPL at Residual Saturation of Water (In Water/NAPL System)
k_{rw}	Relative Permeability of Water (Wetting Fluid)
k_{rnw}	Relative Permeability of the NAPL System as a Function of S_w
P	Interstitial Fluid Pressure
p^o	Reference Pressure
p_a	Interstitial Air Pressure
p_w	Interstitial Water (Wetting Fluid) Pressure
p_{can}	Capillary Pressure Between Air and NAPL (Non-wetting Fluid)
p_{caw}	Capillary Pressure Between Air and Water (Wetting Fluid)
p_{cnw}	Capillary Pressure Between the NAPL (Non-wetting Fluid) and Water (Wetting Fluid)
q_a	Air Mass Accumulation (Source/Sink) Term

q_n	NAPL (Non-Wetting Fluid) Mass Accumulation (Source/Sink) Term
q_w	Water (Wetting Fluid) Mass Accumulation (Source/Sink) Term
t	Time
A	Cross-sectional Area Perpendicular to Flow Direction
D	Depth
K	Hydraulic Conductivity
L	Length Increment in Flow Direction
M_n	Mass Per Unit Volume of NAPL
M_w	Mass Per Unit Volume of Water
S_a	Interstitial Air Saturation
S_n	Interstitial NAPL (Non-wetting Fluid) Saturation
S_{nwr}	Irreducible or Residual NAPL (Non-wetting Fluid) Saturation
S_w	Interstitial Water (Wetting Fluid) Saturation
S_{wi}	Residual or Irreducible Water (Wetting Fluid) Saturation
T_n	Transmissibility of NAPL
T_{ng}	Transmissibility of NAPL Under Gravitational Influence
T_w	Transmissibility of Water
T_{wg}	Transmissibility of Water Under Gravitational Influence
V_b	Grid Block Volume
ϕ	Media Porosity
ϕo	Media Porosity at Reference Pressure Po

μ_a Dynamic Viscosity of Air

μ_n Dynamic Viscosity of NAPL (Non-wetting Fluid)

μ_w Dynamic Viscosity of Water (Wetting Fluid)

ρ_a Fluid Density of Air Phase

ρ_n Fluid Density of NAPL (Non-wetting) Phase

ρ_w Fluid Density of Water

Δ Difference Operator for Finite-Difference Approximation

∇ Differential Operator

Introduction

Contamination due to non-aqueous phase liquids (NAPL) has emerged lately as a major environmental problem. An estimated 1.8 million underground storage tanks are in use in the United States. EPA estimates that 280,000 tanks are leaking, of which more than 20% are discharging their contents directly into the groundwater [*El-Kadi, 1992*]. In protecting the groundwater aquifer, the first line of defense is the vadose (or unsaturated) zone (Figure 1). The ability to estimate the time of travel through the vadose zone can help ensure that enough time is available to respond to, and hopefully, alleviate the NAPL entering the aquifer. Organic chemicals, once leaked into the subsurface, migrate towards the groundwater, contaminating both the saturated and unsaturated zones. In the subsurface, the NAPL is primarily distributed in two ways: 1) the immobile phase which is the contaminant portion retained in the pore spaces and, 2) the mobile phase, which is the contaminant portion mostly spreading over the water table (for LNAPL) or flowing down through the aquifer system (for DNAPL) (Figure 2). Once in the groundwater system, estimates of contaminant plume migration over time are necessary in order to design an efficient and effective remediation program. Groundwater modelling serves as a quick and efficient tool in setting up the appropriate remediation program.

The Simultaneous Water, Air, and Nonaqueous Phase Flow (SWANFLOW) model was used for this study. The purpose of this study is three-fold: 1) How do variations in chemical densities and viscosities affect contaminant plume migration and configuration in

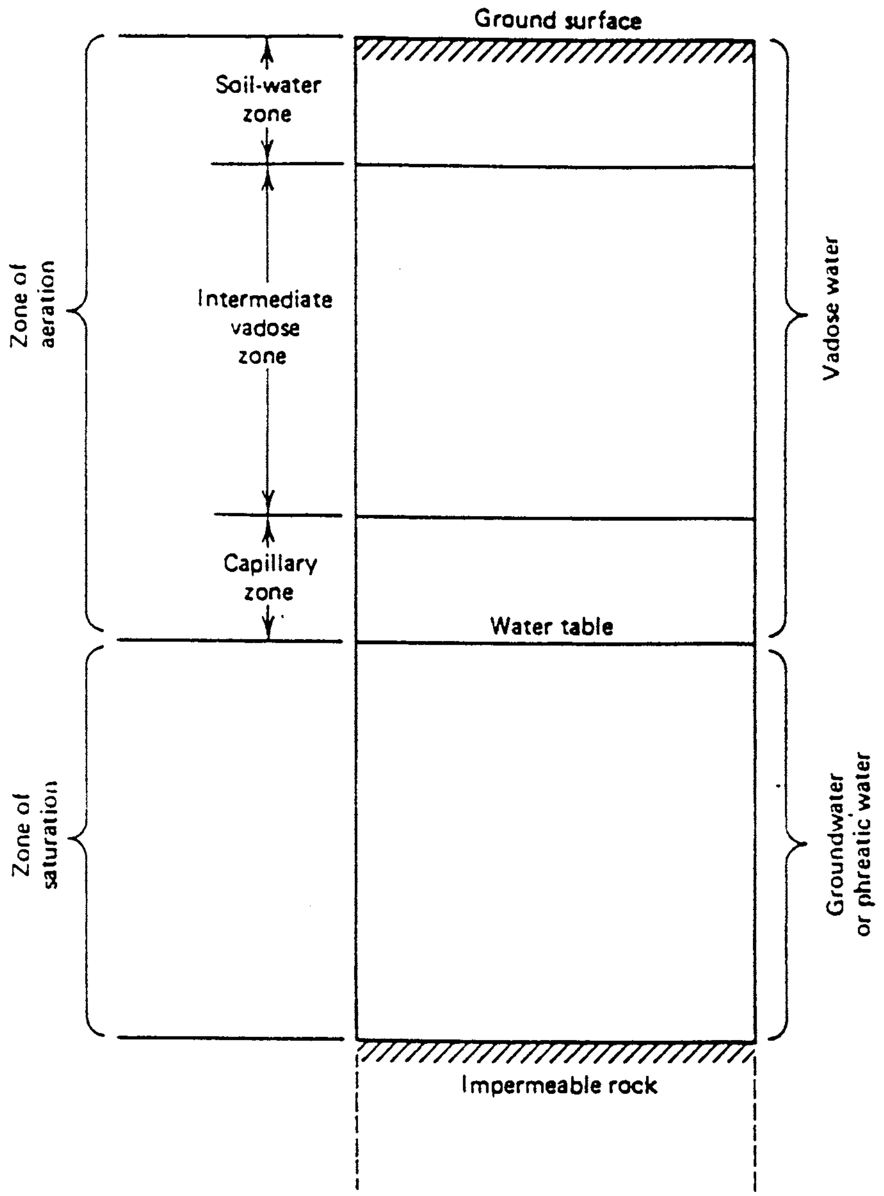
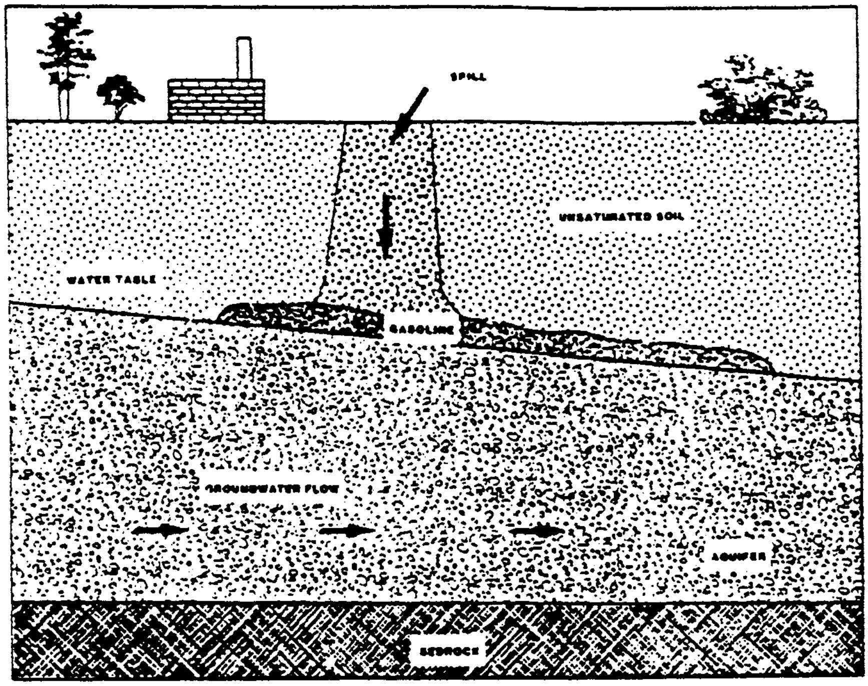


Figure 1. Divisions of subsurface water [*from Todd, 2nd edition*].



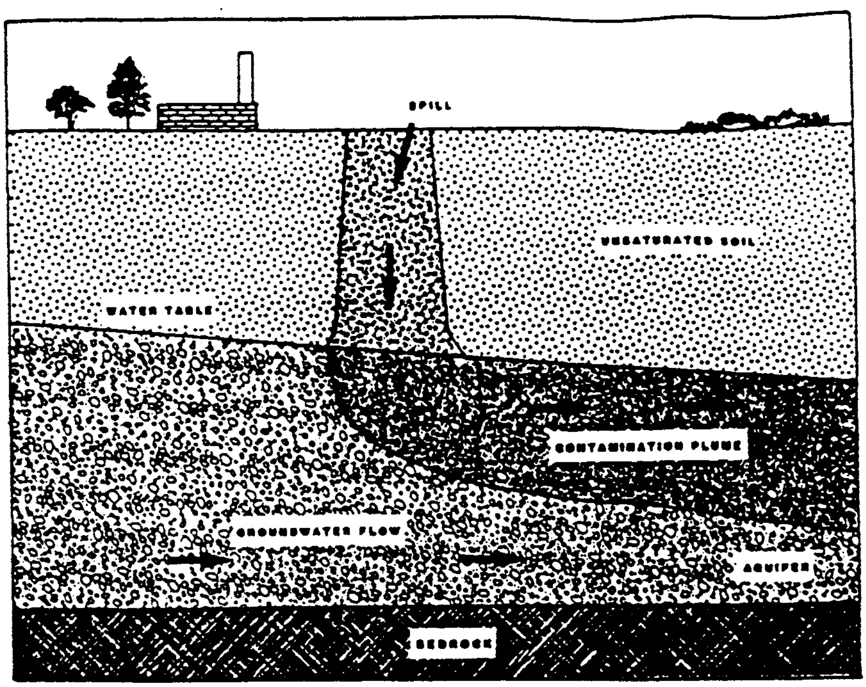


Figure 2. Migration pattern for organic liquid less dense than water (top) and more dense than water (bottom) .

both the saturated and unsaturated zones, 2) How much density and viscosity variation is needed to result in appreciable changes in plume migration, and 3) Do these variations affect the timing of the plume migration?

Initial studies have been carried out by Balthazor, [*1994*]. The purpose of those initial studies was to determine what effect changes in viscosity and density would have on contaminant travel in both the saturated and unsaturated zones. The study was broader in nature and it was determined that for LNAPL contaminants, an increase in viscosity would result in a decrease in horizontal infiltration and an increase in vertical infiltration. If viscosity is decreased, the opposite holds true. For DNAPL chemicals, a viscosity increase results in increased horizontal and decreased vertical infiltration. For all NAPLs simulated in the previous studies, a density increase resulted in a decreased horizontal migration rate and an increase in vertical infiltration rates.

This study; however, not only tests the previous results on different chemicals, but also attempts to carry the previous work a few steps further. It examines how small of a viscosity change, given similar densities, is necessary to affect contaminant transport. This study also determines how viscosity changes affect the timing of when the major movement will occur, whether it be from years one to three, three to five, or five to ten. Answers to these questions can help optimize the placement and depth of monitor and/or cleanup wells given the viscosity and density range of the chemicals involved in a contaminant spill.

Scope of Related Research

Over the last few decades, much attention has been given to multiphase flow in the subsurface. Much of the early research was begun by petroleum engineers attempting to simulate and recover residual oil remaining in the subsurface. Initial models [*Buckley and Leverett, 1942*] were used to solve two-phase (oil/gas) flow with interphase mass transfer for a one-dimensional gas drive. Simplified numerical models of one- and two-dimensional flow and transport with interphase mass transfer were later developed by Price and Donohue [*1967*], Van-Quy et al. [*1972*], and others. In more recent years, these models were adapted for use in modelling subsurface migration of contaminant plumes. The three-phase (crude oil/ water/natural gas) movement modelled in the petroleum industry was adapted to the multi-phase (NAPL/ water/air) problems faced by the environmental industry. The following paragraphs outline a brief discussion of some of the numerical models that have been developed for use in simulating contaminant transport in the subsurface.

The first recognition of NAPL movement in groundwater as a two-phase flow phenomenon is attributed to Van Dam [*1967*]. Van Dam presented the first detailed analysis of hydrocarbon pollution of groundwater as a two-phase problem. He examined the stages of contaminant infiltration and incorporated a capillary pressure term in his expression for fluid potential.

Many three-phase, finite difference flow models [*Lujan ,1985; Faust, 1985; Faust et al., 1989; Kuppusamy et al., 1987*] as well as two-phase, finite-element models [*Huyakorn and Pinder, 1978; Osborne and Sykes, 1986*] have been developed which incorporate the concept of capillarity into the immiscible NAPL transport scheme, but do not consider interphase mass transfer (neither solubilization nor vaporization) of NAPL components, and either do not include a gas phase or they assume an immobile gas phase at uniform atmospheric pressure. The following is a brief discussion of the more recent two- and three-phase numerical models:

Osborne and Sykes [*1986*] developed the Waterloo Simulator for Two-phase Immiscible Flow (WSTIF) model to simulate contaminant travel in the saturated zone. This model allows for a two-dimensional system containing two immiscible fluids (water and NAPL) with no mass transfer of NAPL components between them. While incorporating a non-hysteretic capillary pressure-water saturation expression, and a relative permeability-water saturation constitutive relationship, this numerical model is based on a generalized method of weighted residuals in conjunction with the finite-element method to solve the two coupled second-order, nonlinear, immiscible transport equations. The model assumes an incompressible porous media and incompressible fluids. In order to verify the theoretical and computational accuracy of the WSTIF model, results of a simulation by this model were compared with those of a one-dimensional (vertical) finite difference, two-phase flow simulator (FDIM), developed by Arthur D. Little [*1983*]. Very close agreement between the models was evident when comparing NAPL saturation profiles predicted by both models at t=1350 days.

Faust [*1985*] presented the Simultaneous Water, Air, and NAPL phase Flow (SWANFLOW) model. SWANFLOW is a mathematical model in which three-dimensional, three-phase flow can be simulated. SWANFLOW does not consider inter-phase mass transfer. This mathematical model is based on a simplification of the conventional three-phase flow equations. The simplifications result from assuming that the pressure gradients in the air are negligible and that the air pressure is at atmospheric pressure. The use of these assumptions eliminates the need to analyze the air-phase flow equation of the three-phase (air/water/NAPL) system. The flow model uses a finite-difference method in three-dimensions and can be solved for both saturated and unsaturated conditions. Constitutive relationships employed by the model include relative permeability-saturation, pressure-saturation, and porosity-fluid pressure expressions. Model input data include NAPL density and viscosity as well as two-phase relative permeabilities for both air/NAPL and water/NAPL phases. In 1989, Faust, et al, presented an updated two-dimensional version of SWANFLOW based on the three-dimensional version of Faust [*1985*]. Since three-dimensional simulations can require substantial computer effort, a numerical method which takes advantage of more recent vector and parallel processing computer techniques was developed. In order to verify the accuracy of the model, two test problems were conducted. The first, a linear waterflood of a petroleum reservoir was modelled. Comparisons to an analytical solution for the linear waterflood, obtained from Buckley and Leverett [*1942*], as well as different computer simulations using a one-dimension, finite-difference model [*Mercer and Faust, 1976*] showed good agreement between results from both of the models as well as the analytical solution. The second test problem provides a check on the capability of the numerical model to simulate two-dimensional conditions. Similar results were obtained when SWANFLOW results were compared with two different saturated-unsaturated flow codes, UNSAT2 [*Neuman et al., 1974*] and SATURN [*Huyakorn, et al., 1983*].

One of the first, and most comprehensive, multiphase flow and transport models was presented by Abriola and Pinder [*1985*]. This one-dimensional, finite difference model included an organic phase composed of one volatile and one nonvolatile organic component, and also accounted for inter-phase mass transfer. Input parameters to this model include three-phase relative permeabilities, saturation-pressure relations, partition coefficients, and NAPL densities and viscosities. This approach enables one to determine both fluid saturations and pollutant concentrations in each phase as functions of space and time in a heterogeneous porous medium. Forsyth [*1988*] presented a two-dimensional multiphase flow and transport model similar to that of Abriola and Pinder, [*1985*], with the exception that the organic phase was composed of a single component.

A finite-element model was developed by Kuppusamy, et al., [*1987*] for multiphase flow through a porous medium involving three immiscible fluids (air/water/NAPL). Like SWANFLOW, it simulates contaminant transport under both saturated and unsaturated conditions. A variation on the solution method is employed for the finite-element formulation corresponding to the coupled differential equations governing flow in a three-phase porous medium system with constant air phase pressure. Constitutive relationships for fluid conductivities and saturations as functions of fluid pressures, which are derived by Parker [*1987*], and which may be calibrated from two-phase laboratory measurements, are employed in the finite-element program.

Kaluarachi and Parker [*1990*], presented a two-dimensional finite element multi-component flow and transport model for the vadose zone, which also presented simulations for flow and transport of a two-component oil phase. It is similar to other numerical models which do not consider inter-phase mass transfer (e.g. SWANFLOW), however, it utilizes a Galerkin weighted residual approach and an upstream weighting technique to predict the simultaneous flow of water and oil in the three-phase system and also uses a Picard nonlinear iteration scheme (as opposed to the Newton-Raphson iteration used in SWANFLOW) to solve the finite-difference equations.

Most recently, Sleep and Sykes [*1993*] and Adenekan et al. [*1993*], have presented the most comprehensive multi-phase simulations in which interphase partitioning as well as transport of multiple components can be modelled. The Sleep and Sykes [*1993*] model simulates three-phase, three-dimensional contaminant transport along with inter-phase partitioning and transport of an arbitrary number of organic and inorganic components. It assumes isothermal subsurface conditions. Phase densities are functions of pressure and phase composition, and viscosities are functions of phase composition. This model includes several numerical options, ranging from fully implicit with first-order upstream weighting to implicit in pressure, explicit in saturations and concentrations with third-order upstream weighting. This model is verified to the extent possible with analytical solutions for simplified cases of multiphase flow and transport.

The most comprehensive, and computer intensive, transport model to date is the Multiphase Multicomponent Nonisothermal Organics Transport Simulator (M^2NOTS) developed by Adenekan et al [*1993*]. It accounts for flow of all three fluid phases in response to viscous, gravity, and capillary forces, and can be used to model transport in one-, two-, and three-dimensions with an arbitrary geometry. M^2NOTS is fully compositional, therefore the NAPL phase may consist of any number of user-specified chemical components, and each component is allowed to partition into all other phases present. The partitioning of a component among the phases is calculated from the assumption of local equilibrium. Mechanisms of interphase mass transfer include evaporation and condensation of NAPL components and water, dissolution of NAPL into the water phase, and Henry's law partitioning of chemical components between the water and gas phases. Adsorption of NAPL components onto the soil grains is also included. Unlike the Sleep and Sykes [*1993*] model, M^2NOTS is non-isothermal, therefore heat transport may occur by advection of the fluid phases and conduction. Heat exchange due to multi-component diffusion is also accounted for. In developing the model, six main assumptions have been made: 1) The Darcy equation adequately describes multiphase fluid flow in porous media, 2) The phases are in local chemical and thermal equilibrium (e.g. the fluids and the rock mineral in any small volume element are at the same temperature), 3) Molecular diffusion in the water phase and the NAPL phase is described by constant effective diffusion coefficients [e.g. the molecular diffusion coefficients of gas components are assumed to be equal to their respective binary diffusion coefficients in air]. 4) Energy changes [as reflected by temperature in the energy equation] caused by acceleration and viscous dissipation are negligible, 5) Adsorption of organic compounds on the rock obeys a linear isotherm, and 6) No chemical reactions take place.

The SWANFLOW model was selected since, given the purpose of this study (the effects of density and viscosity changes on contaminant transport in both the saturated and unsaturated zones), it presented sufficiently accurate results in the most straight forward and least computer intensive manner using a manageable amount of reliable input data

Multi-Phase Flow

The permeability of a porous medium to either a wetting or a non-wetting fluid is a function of saturation. For a fluid to flow through a porous medium to an appreciable degree, the fluid saturation must be above residual. Therefore, only the amount of fluid above residual is mobile to normal forces found in groundwater systems. As the non-aqueous phase liquid penetrates the ground surface, it encounters soil above the capillary fringe (Figure 3). Except for the uppermost layer which dries out due to evaporation, this soil usually contains water near residual saturation.

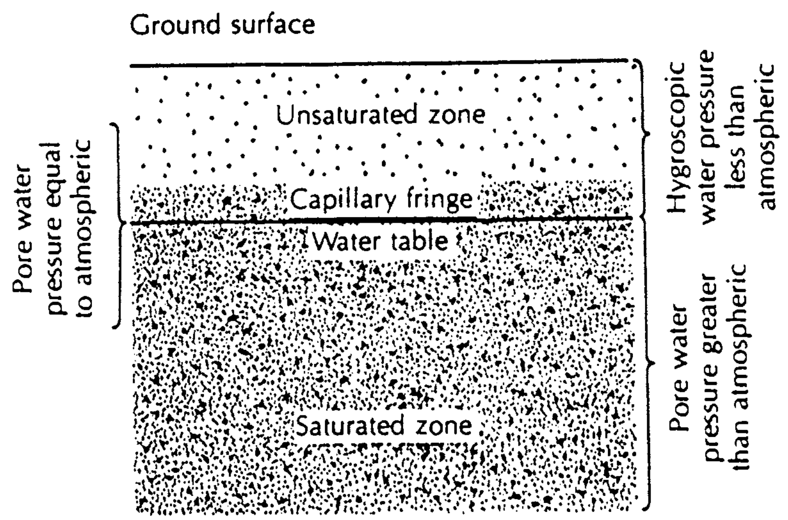


Figure 3. Distribution of fluid pressures in the ground water [*from Todd, 2nd edition*].

In the air/NAPL/water system of the vadose zone, NAPL is the wetting phase with respect to air on the surface of the water enveloping the soil grains, and water is the wetting fluid with respect to NAPL on the soil grain surfaces (Figure 4). Because water is present, the NAPL pressure must be larger than the entry capillary pressure of the NAPL into water before the NAPL will flow. Entry capillary pressure is defined as the value of capillary pressure at which the water saturation decreases rapidly. Since water is the wetting fluid between the water and NAPL, the NAPL will not displace the water from the surface of the soil grain. As the amount of NAPL surpasses residual, however, it will percolate downward under the influence of gravity displacing air and water in the pores. The slug of NAPL continues downward and air re-enters most of the pores behind it, except for the pores which remain filled or partly filled with NAPL that constitutes residual saturation (Figure 5). Some lateral migration of the mobile NAPL will also occur due to capillary forces. As the NAPL migrates, the quantity of mobile NAPL decreases due to the residual oil left behind. If the amount of NAPL spilled is small, all of the mobile NAPL will eventually become exhausted and the NAPL will percolate no further. The column of NAPL is immobile and never reaches the capillary fringe unless it is displaced by water from a surface source. However, if the quantity of NAPL spilled per unit surface area is large, mobile NAPL will reach the capillary fringe above the water table. Depending on the nature of the spill and the thickness of the capillary fringe, a mound of NAPL will develop and spread laterally. If the capillary fringe is thick, this mound will form within and above the fringe. If the fringe is thin, the NAPL/water interface around the center of the mound will be below the original water-table line. The NAPL continues to spread out until it is at residual saturation at every location. If there is a groundwater gradient, the NAPL mound will be carried downstream until it reaches residual and can travel no further [*Hochmuth and Sunada, 1985*]. Because most NAPL's are soluble in water, the NAPL will slowly dissolve and

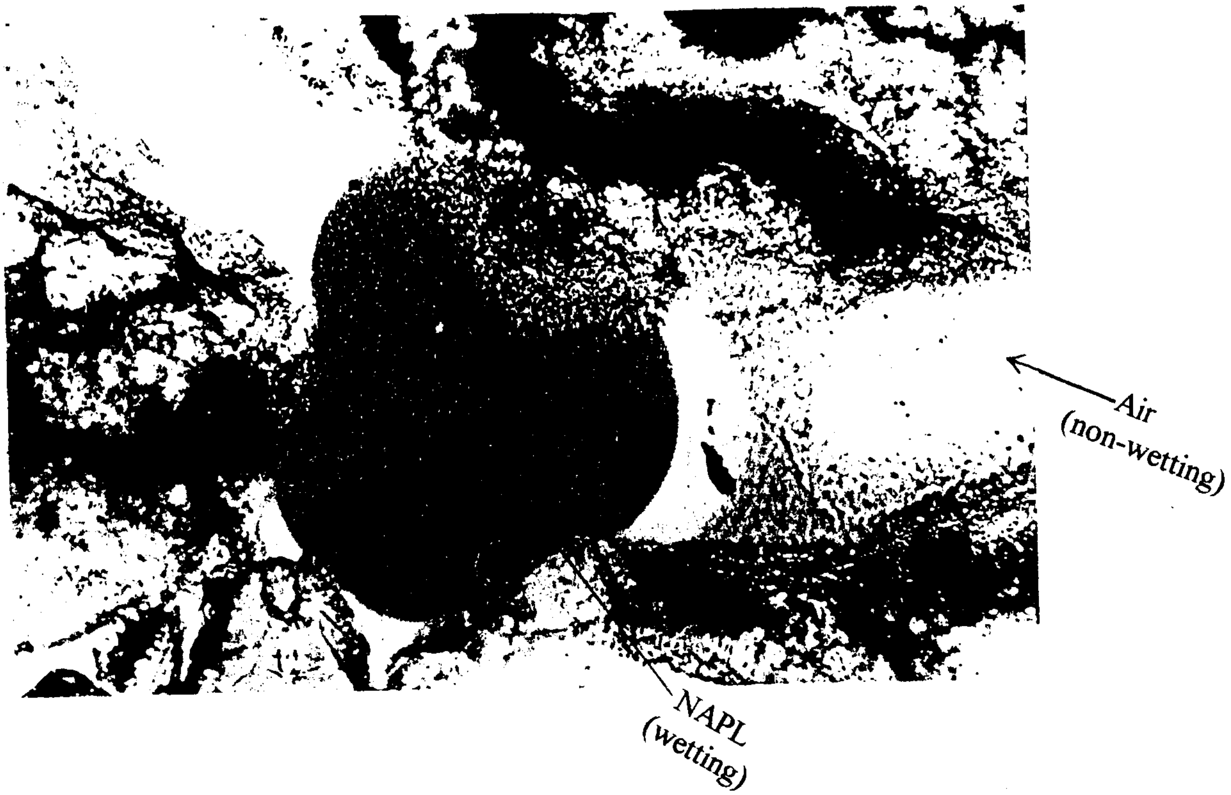


Figure 4. Simulation of NAPL as the wetting phase with respect to air (top) and water as the wetting phase with respect to NAPL (bottom) [*from Wilson, 1990*].

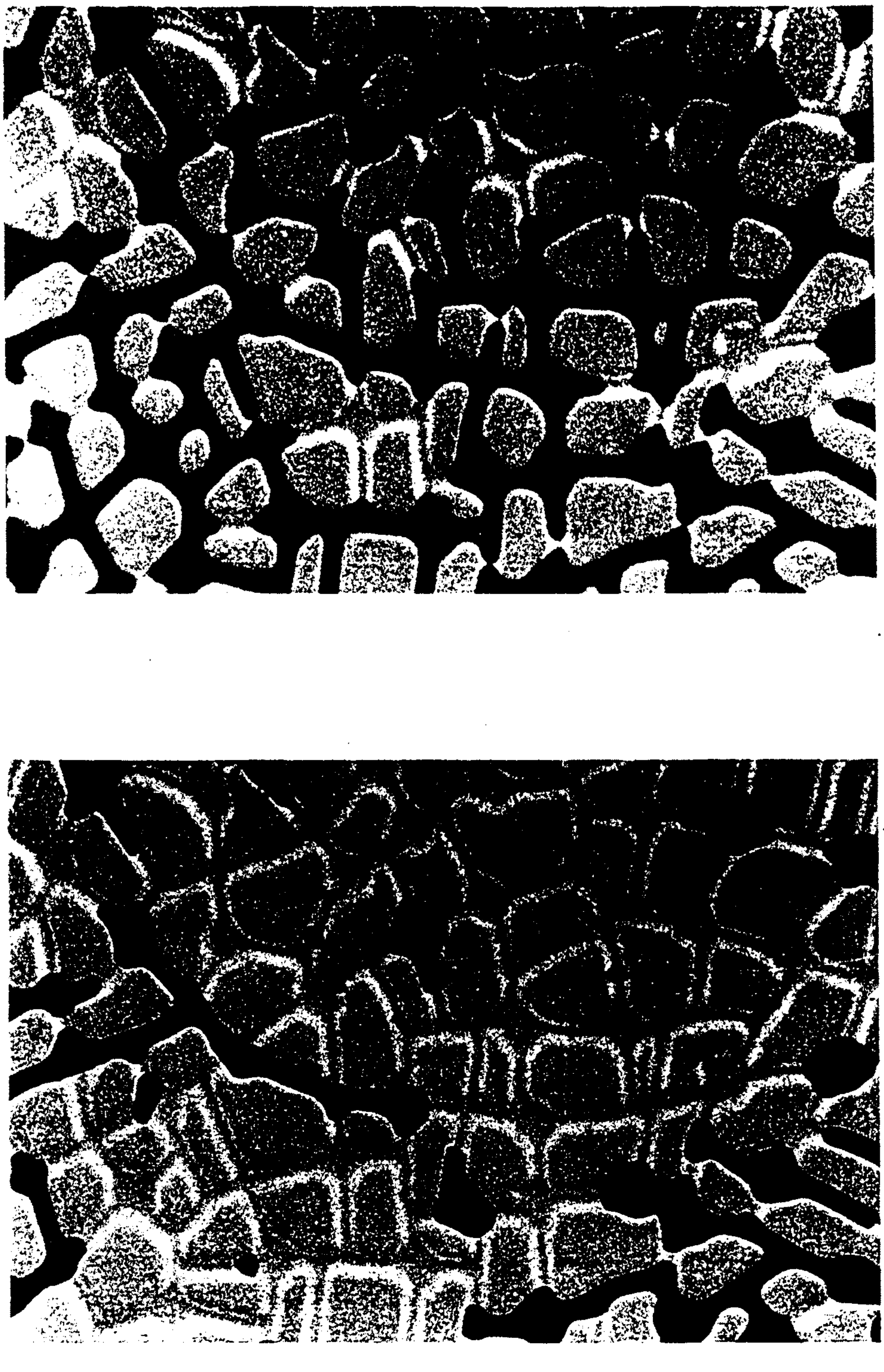


Figure 5. Simulation showing above residual NAPL saturation (top) and at residual NAPL saturation (bottom) [*from Wilson, 1990*].

Figure 5. Simulation showing above residual NAPL saturation (top) and at residual NAPL saturation (bottom) [*from Wilson, 1990*].

be transported with the ground water. This study, however, does not address this aspect of the contaminant problem.

Model Description

As previously mentioned, the model used for this simulation is the Simultaneous Water, Air, and Nonaqueous Phase Flow (SWANFLOW) [*Faust, 1985*]. This is a three-dimensional finite difference model which can be used to simulate the migration of both water and NAPL under both saturated and un-saturated conditions. The ability to model the saturated zone in conjunction with the unsaturated zone enables the modeler to pinpoint more accurately contaminant transport in the subsurface.

Governing Equations

The mathematical model presented here is based on a simplification of the conventional three-phase flow equations:

	(Darcy Velocity Term)	(source/sink)	(accumulation term)	
Water Flow Eqn.	$\nabla[k\rho_w k_{rw}/\mu_w(\nabla P_w - \rho_w g\nabla D)]$	$+\ q_w'$	$= \partial(\phi\rho_w S_w)/\partial t$	(1)
NAPL Flow Eqn.	$\nabla[k\rho_n k_{rn}/\mu_n(\nabla P_n - \rho_n g\nabla D)]$	$+\ q_n'$	$= \partial(\phi\rho_n S_n)/\partial t$	(2)
Air Flow Eqn.	$\nabla[k\rho_a k_{ra}/\mu_a(\nabla P_a - \rho_a g\nabla D)]$	$+\ q_a'$	$= \partial(\phi\rho_a S_a)/\partial t$	(3)

In the above equations, $\boldsymbol{k}$ is the intrinsic permeability tensor [L^2] (the principal directions of the tensor are assumed to be aligned with the coordinate system), $\boldsymbol{\rho}$ is the density [M/L^3], $\boldsymbol{k_r}$ is relative permeability [dimensionless], $\boldsymbol{\mu}$ is dynamic viscosity [M/LT], $\boldsymbol{P}$ is the fluid pressure [M/LT^2] $\boldsymbol{g}$ is the gravitational acceleration [L/T^2], $\boldsymbol{D}$ is the depth [L], $\boldsymbol{q'}$ is the mass source/sink term [M/T], $\boldsymbol{\phi}$ is porosity [dimensionless], $\boldsymbol{S}$ is the volumetric saturation [dimensionless], ∇ is the differential operator [L], and t is time [T]. For a general case, the above equations include 16 dependent variables and 13 independent relationships. The 13 independent relationships can be generalized into five. The five constitutive relationships are:

- Porosity is a function of pressure (1 relationship)
- Relative permeabilities are functions of saturations (3 relationships)
- The sum of volumetric saturations is 1 (1 relationship)

$$S_n + S_w + S_a = 1 \quad (4)$$

- Capillary pressures (P_a-P_n) and (P_n-P_w) are a function of saturation (2 relations)
- Densities and viscosities are functions of phase pressures (6 relationships)

For applications related to immiscible flow in the vadose and shallow groundwater zones, the three phase flow equations can be simplified. If it is assumed that the air-phase pressure is equal to atmospheric pressure, the need for equation 3 is eliminated. It can also be assumed that, for shallow groundwater systems, densities and viscosities are independent of pressure. Substituting equation 4 as well as the capillary pressure equations (P_a - P_n) and (P_n - P_w) into equations (1) and (2) gives the final partial differential equations in terms of P_n and S_w:

$$\nabla[k\rho_w k_{rw}/\mu_w(\nabla P_n - \rho_w g \nabla D)] - \nabla[k\rho_w k_{rw}/\mu_w \nabla P_{cnw}] + q'_w = \partial(\phi \rho_w S_w)/\partial t \quad (5)$$

$$\nabla[k\rho_n k_{rn}/\mu_n(\nabla P_n - \rho_n g \nabla D)] + q'_n = \partial[\phi \rho_n(1 - S_w - S_a)]/\partial t \quad (6)$$

where the capillary pressure, P_{cnw} is defined as the difference between the pressure in the nonaqueous phase and the pressure in water. Five more equations must be added to equations 5 and 6:

$$k_{rw} = f_1(S_w) \quad (7)$$

$$k_{rn} = f_2(S_w, S_a) \quad (8)$$

$$p_{cnw} = f_3(S_w) \quad (9)$$

$$S_a = f_4(P_n) \quad (10)$$

$$\phi = f_5(P_n) \quad (11)$$

The functional dependence of the relative permeabilities (equations 7 and 8) is based on three-phase relative permeabilities experiments [*Corey et al, 1956*]. Although the relationship defined by equation 8 is rarely available, estimating three-phase relative permeabilities using two-phase relative permeability data is performed. The functional dependence of capillary pressures in equations 9 and 10 is also based on assumptions that the capillary pressure between the NAPL and water is dependent on the water saturation and that the capillary pressure between the NAPL is dependent on the air saturation. The rock porosity is related to pressure by the aquifer compressibility (LT^2/M). The expression commonly used for aquifer linear compressibility is:

$$\phi = \phi[1 + c_r(P-P^o)] \quad (13)$$

in which ϕ is the porosity at the reference pressure P^o. Normally, the significance of aquifer compressibility is low, however, for transient analysis of immiscible flow in a confined aquifer, compressibility can become important.

In order to complete the mathematical description, expressions for the source terms, boundary conditions, and initial conditions must be addressed. For recharge and injection, the source terms are fairly specific. For volatilization and evaporation, the terms become more complex functions of other dependent variables. In the case of removals, the total mass removed (or pumped) can be specified, but the fractions of water and NAPL are determined on the basis of relative mobilities. The total mass removal can be defined as:

$$q_T^{prod} = q_w^{prod} + q_n^{prod} \qquad (14)$$

where a negative rate implies pumping. For pumping, the ratio of water and NAPL removed is:

$$q_w^{prod} = {}_{w}q_r^{prod} \qquad (15)$$

$$q_n^{prod} = (1-\alpha_w) q_T^{prod} \qquad (16)$$

where

$$\alpha_w = k_{rw}/[k_{rw} + k_{rn}(\rho_n \mu_w / \rho_w \mu_n)] \qquad (17)$$

Boundary conditions such as specified flux, specified fluid potentials, and fluid flux must be specified as well as initial conditions such as NAPL pressures and water saturations.

In order to solve governing equations 5 and 6, they can be represented in the following implicit finite-difference form:

$$\Delta(T_w^{t+\Delta t} \Delta P^{t+\Delta t}) - \Delta(T_{wg}^{t+\Delta t} \Delta D) - \Delta(T_w^{t+\Delta t} \Delta P_{cnw}^{t+\Delta t}) + q_w^{t+\Delta t} = V_b/\Delta t(M_w^{t+\Delta t} - M_w) \qquad (18)$$

$$\Delta(T_n^{t+\Delta t} \Delta P^{t+\Delta t}) - \Delta(T_{ng}^{t+\Delta t} \Delta D) + q_n^{t+\Delta t} = V_b/\Delta t(M_n^{t+\Delta t} - M_n^t) \qquad (19)$$

where $q_w^{t+\Delta t}$ and $q_n^{t+\Delta t}$ are accumulation terms for the water and NAPL phase respectively. The transmissibility terms are defined by:

$T_w = (kA/l)\rho_w k_{rw}/\mu_w$ $\qquad$ $T_{wg} = (kA/l)P^2_{wg}k_{rw}/\mu_w$

$T_n = (kA/l)\rho_n k_{rn}/\mu_n$ $\qquad$ $T_{ng} = (kA/l)P^2_{ng}k_{rn}/\mu_n$

and the mass terms are defined as:

$M_w = \rho_w \phi S_w$ $\qquad$ $M_n = \rho_n \phi (1-S_w-S_a)$

where V_b, A, and l are the grid block volume, cross-sectional area perpendicular to the flow direction, and the length increment in the flow direction respectively.

Solution Methods

Equations 18 and 19 are non-linear in the transmissibility, accumulation, capillary pressure, and source terms. The non-linear terms are treated implicitly in order to minimize stability restrictions. In order to treat these terms implicitly, they must be evaluated at the t + Δt time level. This yields a system of nonlinear equations for 2 unknown grid blocks at each time step. Since each grid block is connected to a maximum of four adjacent blocks, each equation has a maximum of five unknown grid block values for both pressure and saturation. This set of non-linear equations is linearized using a residual formulation with Newton-Raphson iteration. Equations 18 and 19 can be represented in vector form as:

$$R(X) = 0 \qquad (20)$$

where $\boldsymbol{R}$ is the vector of non-linear difference (equations 18 and 19) written for each grid block, and $\boldsymbol{X}$ is the vector of unknown pressure and saturation values at each grid block.

In order to apply the Newton-Raphson iteration, a Taylor series must be expanded about an assumed solution. This leads to a linearized matrix equation:

$R(X)^m / X[\ X] = -R(X)^m$ where ***m*** is the iteration level and:

$X = X^{m+1} - X^m$

For the first iteration in each time step, the values of p_n and S_w at the previous time level are used as the initial solution. Convergence is checked by calculating mass balance errors for each fluid and comparing them to specified criteria.

Inherent in any subsurface modelling algorithms are assumptions and limitations.

The major assumptions include the following [*Faust et al, 1985*]:

- The pressure in the air phase is constant and equal to atmospheric pressure.
- Both water and NAPL viscosities and densities are pressure independent.
- Relative permeability of water is a function of water saturation.
- Relative permeability of NAPL is a function of air and water saturations.
- Capillary pressure is a function of water saturation.
- Air saturation is a function of NAPL pressure.
- Flow is in what is the equivalent of a porous media.
- Darcy's equation for multiphase flow is valid.
- Intrinsic permeability is a function of space.
- There is no inter-phase mass transfer (ie; the NAPL is truly immiscible in water and does not volatilize).

The major limitations include [*Faust et al, 1985*]:

- The model cannot treat highly pressurized systems in which the viscosity and density of the three phases are a function of pressure.
- Fractured systems can only be modelled with SWANFLOW if the grid block size is much greater than the individual fractures so that a porous media equivalent can be assumed.
- The movement of the air phase cannot be modelled.
- Transport of dissolved NAPL is not treated.

Estimation Method for Relative Permeability, Capillary Pressure, and Saturation

A substantial obstacle to modelling multiphase flow has been the difficulty in determining constitutive relationships for three-phase flow. For numerical codes to accurately predict fluid flow behavior when two or more immiscible fluid phases are present, relationships among fluid pressures, saturations and relative permeabilities must be known. Several models for estimating these relationships exist, with those by van Genuchten, [*1980*] and the Brooks-Corey model [*Brooks and Corey, 1966*] being two of the most widely used models. To simulate flow in the vadose zone, it is necessary to use three-phase (in this case air/NAPL/water) permeability relationships to account for the presence of air. Unlike the three-phase data, two-phase data from air/NAPL and water/NAPL phase experiments are usually either readily available, or easily obtained experimentally. This two-phase data can then be combined to form three-phase relative permeabilities. The method for estimating three-phase data (needed to complete equations 7-11 above) used in the SWANFLOW code was proposed by Stone, [*1973*]. In this approach, $k_{rw}(S_w)$ is obtained from water/NAPL data, $k_{ra}(S_a)$ is obtained from the air/NAPL data, and finally, the relative permeability of the NAPL in the three-phase system is determined from:

$$k_{rn} = k_{rnw}{}^{*}[(k_{rnw}/k_{rnw}{}^{*} + k_{rw})(k_{rna}/k_{rnw}{}^{*} + k_{ra}) - (k_{rw} + k_{ra})]$$

where $k_{rnw}{}^{*}$ is the relative permeability of the nonaqueous phase at the residual saturation of water in the water/NAPL phase system, k_{rnw} is the relative permeability of the nonaqueous phase in the water/NAPL system (this is a function of water saturation (S_w), and k_{rna} is the relative permeability of the nonaqueous phase in the air/NAPL phase system (this is a function of air saturation (S_a). Because relative permeabilities of air and nonaqueous phase liquids are normally determined relative to the permeability at residual water saturation, the form of this equation assures that the general equation reduces to the appropriate two-phase equations when air is absent (as is the case in the saturated zone) or when water is at residual saturation. The residual saturation of water is the saturation at which water becomes immobile [*Faust, 1989*].

Capillary effects may play an important role in the retention and movement of nonaqueous phase liquids in the near subsurface [*Ferrand, et al, 1990*]. The functional dependence of capillary pressures in equations 9 and 10 is also based on the assumption that the capillary pressure between the NAPL/water phase is dependent on the water saturation and that the capillary pressure between the air/NAPL phase is dependent on the air saturation. The capillary pressure function for the air/NAPL phase can be obtained from: $p_a - p_n = p_{can}(S_a)$. However, since the air pressure (p_a) is assumed to be atmospheric pressure, the air saturation (S_a) can be directly related to NAPL pressure (p_n) [*Faust, 1989*].

Model Input Data

These simulations demonstrate the impact of an undetected point-source leak of nonaqueous phase liquid on a surficial aquitard (Figure 6). The hydrogeologic setting for these simulations involves an undetected surface leak of a nonaqueous phase liquid onto an aquitard [*Huyakorn, 1983*]. The aquitard is homogeneous and extends a constant depth of 4.75 meters below ground surface. The saturated zone is located at a depth of 1.50 meters below ground surface resulting in both saturated and unsaturated conditions within the aquitard. A capillary zone influence is not included so that a sharp boundary is assumed to exist between the saturated and unsaturated zones. Research conducted by El Kadi [*1992*] concluded that the simplification of using of a sharp interface approach is useful in estimating depth of infiltration. Although it was found less accurate for shallow water tables, an order of magnitude of the travel time can be obtained. The aquifer, which provides drinking water, lies directly below the aquitard so that any NAPL penetrating through this aquitard will likely contaminate the drinking water supply.

The aquitard porosity is related to interstitial fluid pressure and aquifer compressibility by means of the following expression:

$$\phi = \phi^{o} [1 + C_r (P-P^{o})]$$

where ϕ^o is the media porosity at the reference pressure, P^o, and C_r is the aquifer compressibility.

The reference porosity of the aquitard is 0.3 at the reference pressure of 0.0 N/m^2, which occurs at the water table, and the aquifer compressibility is 1.0E-15 m^2/N. Intrinsic permeability (*k*) is 10^{-12} m^2 and is equivalent for the *x*, *y*, and z directions, and remains

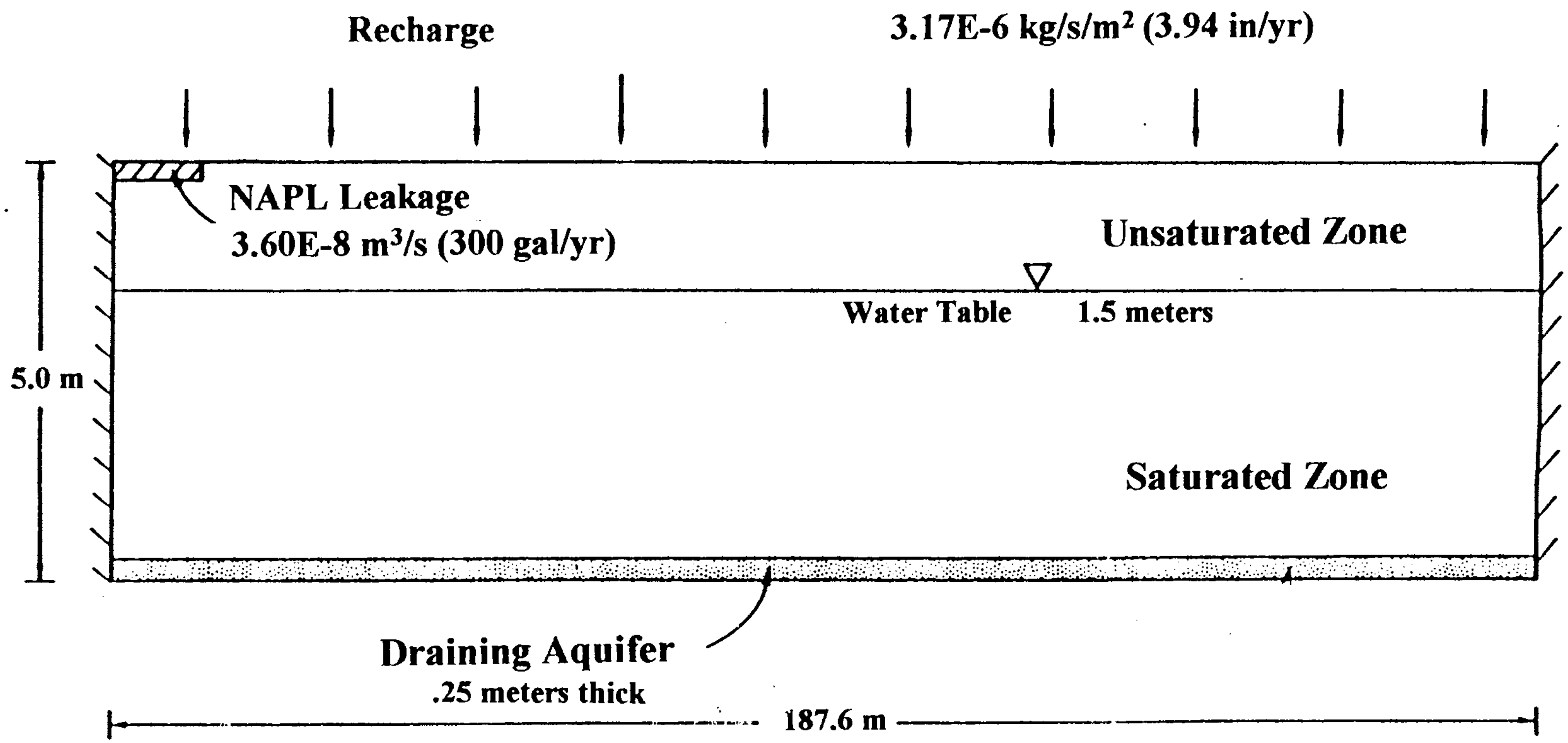


Figure 6. Schematic diagram showing the subsurface cross-section simulated and the boundary conditions. (*from Faust, 1985*)

constant throughout both the aquifer and aquitard. The table below shows a summary of the hydrogeologic parameters used for these simulations.

TABLE 1. Hydrogeologic Parameters

Media Properties	**Values**
Aquitard Thickness	4.75 meters
Aquifer Thickness	0.25 meters
Water Table Depth	-1.50 meters
Reference Porosity (0^{o})	0.30 (unitless)
Reference Pressure (p^{o})	0.00 newton/meter^2
Intrinsic Permeability (k)	1.00E-12 meter^2
Hydraulic Conductivity (K)	0.84 meter/day
Media Compressibility (C_r)	1.00E-15 meter^2/newton

Initial Conditions

The natural recharge rate, NAPL source rate, initial water saturations, and initial interstitial NAPL pressures are the assumed initial conditions prior to contaminant leakage. The natural recharge rate resulting from rainfall within the study area is 3.94 in/yr (3.17E-6 kg/s-m^2) [*Huyakorn, 1983*]. The NAPL is introduced into the system as continuous source at grid block 1,1 at a rate of 300 gal/yr (3.60E-8 m^3/s). The SWANFLOW code requires that the NAPL source term be input as spill mass/unit time (kg/s) which is a function of spill volume and NAPL density. Initial water saturations as well as initial insterstitial NAPL pressures are tabularized below.

TABLE 2. Initial Conditions

Depth *(meters)*	S_w *(decimal %)*	P_n *(N/m^2)*
0.125	0.850	-14,700
0.375	0.870	-12,250
0.625	0.900	-9,800
0.875	0.925	-7,350
1.125	0.950	-4,900
1.375	0.975	-2,450
1.625	1.0	0.0
1.875	1.0	2,450
2.125	1.0	4,900
2.625	1.0	9,800
2.875	1.0	12,250
3.125	1.0	14,700
3.375	1.0	17,150
3.625	1.0	19,600
3.875	1.0	22,000
4.125	1.0	24,500
4.375	1.0	26,950
4.625	1.0	29,400
4.875	1.0	31,850

The initial volumetric water saturations are based on a yearly average soil moisture profile of the contamination site which was originally described by Huyakorn [*1983*]. The saturation profile listed above is assumed to be a steady-state condition which is dependent on natural recharge in the spill site. The volume of water entering the system through natural recharge is equivalent to the volume lost through the base of the aquifer system. Within the vadose zone, the water saturations uniformly increase with depth at a rate of 7.5% per meter, and range in value from approximately 84% at the surface to a maximum of 100% at the water table. Below the water table, within the saturated zone, the initial volumetric water saturations are constant at 100%.

The capillary pressure and relative permeability data (from *Guswa, 1985*) is listed below in Table 3.

Table 3. Capillary Pressures and Relative Permeability Data

		Two-Phase Relative Permeabilities	
Capillary Pressure	**Water Saturation**	**Water**	**NAPL**
(N/m^2)	*(decimal %)*		
103425.0	-0.10	0.00	1.00
103425.0	0.00	0.00	1.00
103425.0	0.10	0.00	0.82
103425.0	0.20	0.00	0.68
27580.0	0.30	0.04	0.55
10343.0	0.40	0.10	0.43
7585.0	0.50	0.18	0.31
7447.0	0.60	0.30	0.20
7309.0	0.70	0.44	0.12
7171.0	0.80	0.60	0.05
7033.0	0.90	0.80	0.00
6895.0	1.00	1.00	0.00
6895.0	1.10	1.00	0.00

Table 3 (cont.)

Capillary Pressure	**Air Saturation**	Two-Phase Relative Permeabilities **NAPL**	**Air**
(N/m^2)	*(decimal %)*		
-98000.0	1.00	-0.32	1.00
0.0	0.00	0.68	0.00

Discretization Data

The two-dimensional finite-difference grid extends 187.60 meters from the source in a positive *x*-direction and 5.00 meters vertically downward (negative) in the *z*-direction, discretizing the cross section into 160 blocks. The *x*-coordinate is divided into eight unequal columns which increase in size by a factor of 1.9 in the positive *x*-direction. Although only the positive *x*-direction is represented in the finite-difference grid, SWANFLOW assumes a symmetrical grid, therefore, negative *x* values are implied and presumed equivalent to the simulated positive *x* values. The *z*-coordinate is equally divided into 20 layers, each being 0.25 meters in thickness (Figure 7). The simulations are considered quasi three-dimensional given a *y*-direction that is defined by a single slice having a width of one meter. Although the third dimension, (*y*-direction) is not fully represented by the finite-difference grid, SWANFLOW calculates fluid movement as though the third dimension were included. Fluids are free to enter and exit the grid. NAPL and water mass balances are calculated at each time step as a check for proper fluid distributions. Time steps within SWANFLOW are regulated by the maximum allowable saturation change which can occur during each time step. These maximum

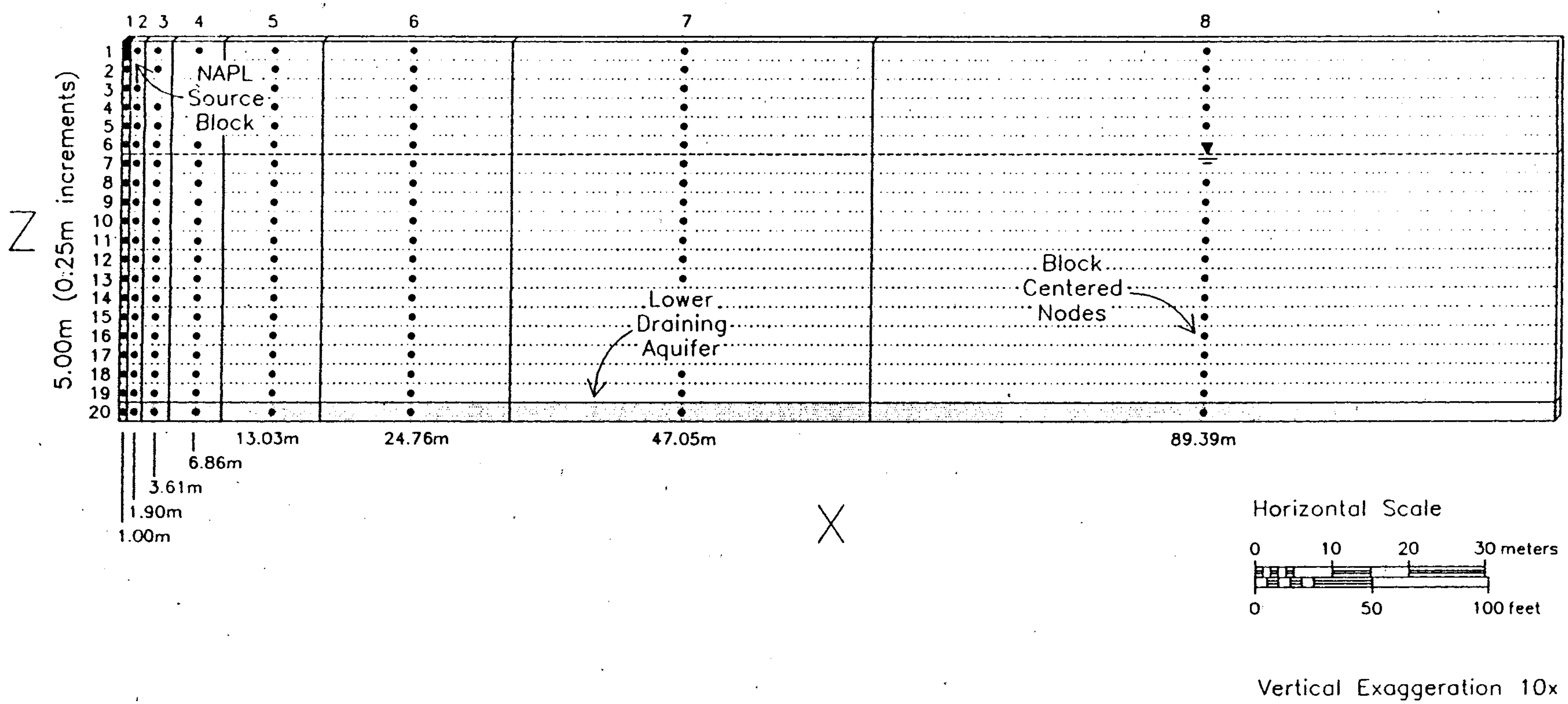


Figure 7. Finite-difference grid showing locations of the NAPL source block, the lower, draining aquifer, and the block-centered grid nodes. (*from: Balthazor, 1994*)

saturation change values range from 7.5-10% and are dependent on the NAPL being simulated [*Balthazor, 1994*].

Non-Aqueous Phase Liquid Transport

Once a NAPL is released into the ground surface, there three major forces controlling organic liquid behavior: 1) capillary forces 2) viscous forces, and 3) gravity or buoyancy forces. Capillarity is the result of cohesive forces within each fluid phase and the adhesive forces between the solid phase and each of the fluids (Figure 8). The capillary force is proportional to the interfacial tension at the fluid-fluid interface and the strength of the wetting fluid (as defined by Hochmuth and Sunada [*1985*], the wetting fluid is that which is more strongly absorbed on the solid surfaces and displaces the other fluid from the absorbed film) to the solid surface, and inversely proportional to the pore size. Viscous, or dynamic forces are proportional to the permeability and to the pressure gradient, while buoyancy is a gravitational force proportional to the density difference between the fluids (Figure 9). For multiple fluid phases in an aquifer, at typical aquifer flow rates, capillary forces often dominate over viscous and buoyancy forces. The dominance of capillarity explains the capillary trapping of organic liquid in a water wet porous media previously saturated with water (Figure 10). The trapped organic liquid remains behind as small, immobilized, disconnected pockets of liquid, sometimes called "blobs" or "ganglia", no longer connected to the main body of organic liquid (Figure 11). This "ganglia" is usually referred to as the residual organic liquid (or NAPL) saturation [*Conrad et al., 1992*]. The residual saturation can also be described as the value of saturation at which large increases in capillary pressure produces only a negligible change in saturation [*Hochmuth and Sunada, 1985*].

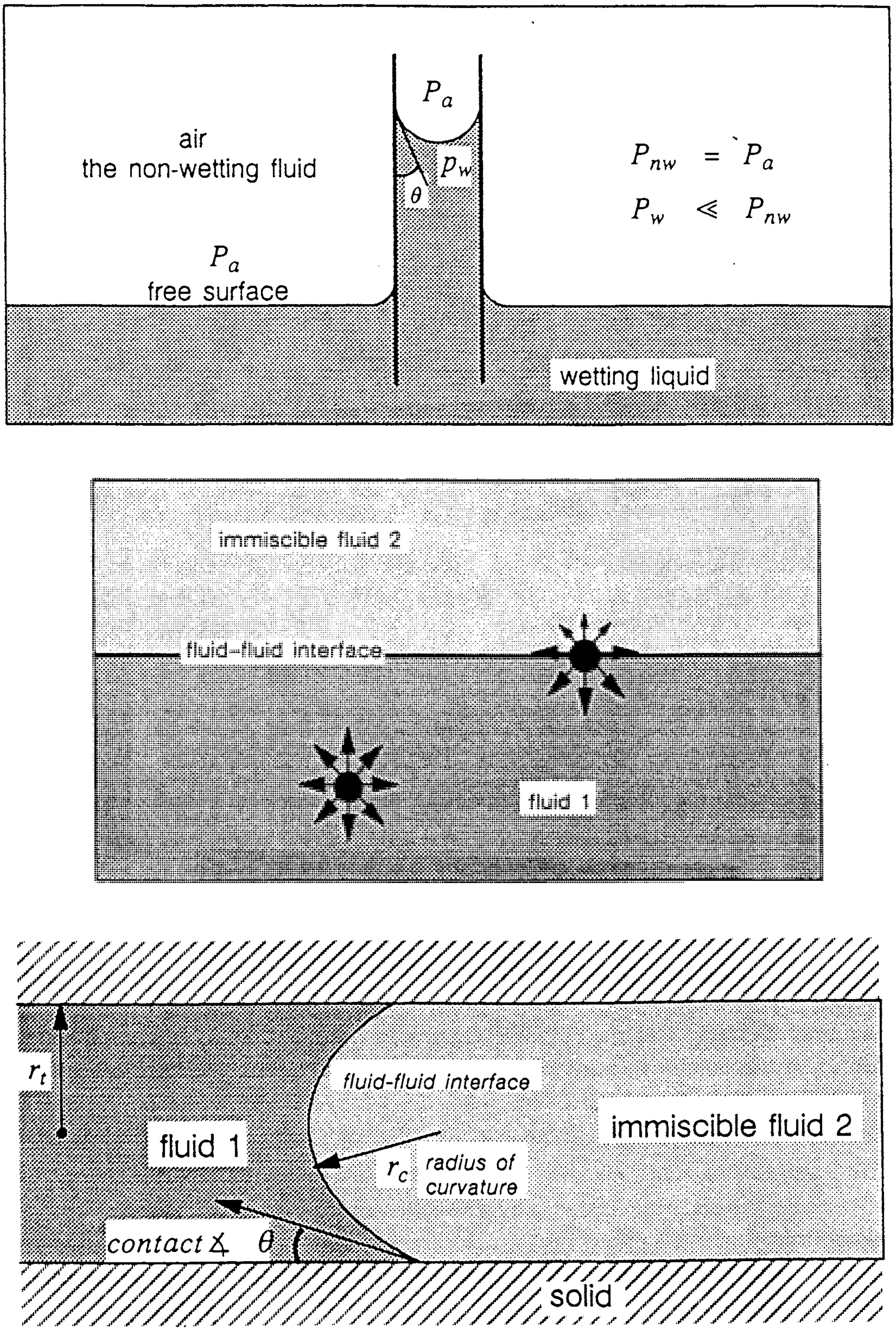


Figure 8. Simulation of capillary (top), buoyancy (middle), and viscous (bottom) forces acting on an organic liquid [*from Wilson, 1990*].

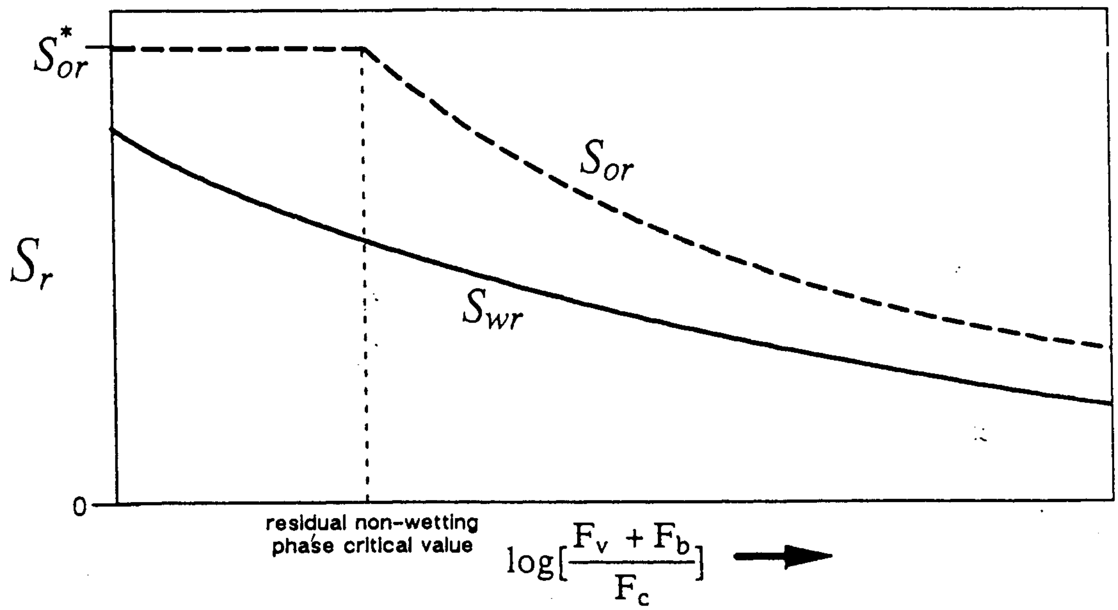


Figure 9. Conceptual plot of residual saturation for a wetting fluid and non-wetting fluid, as a function of the ratio of the sum of viscous and buoyancy forces, to capillary forces [*from Wilson, 1990*].

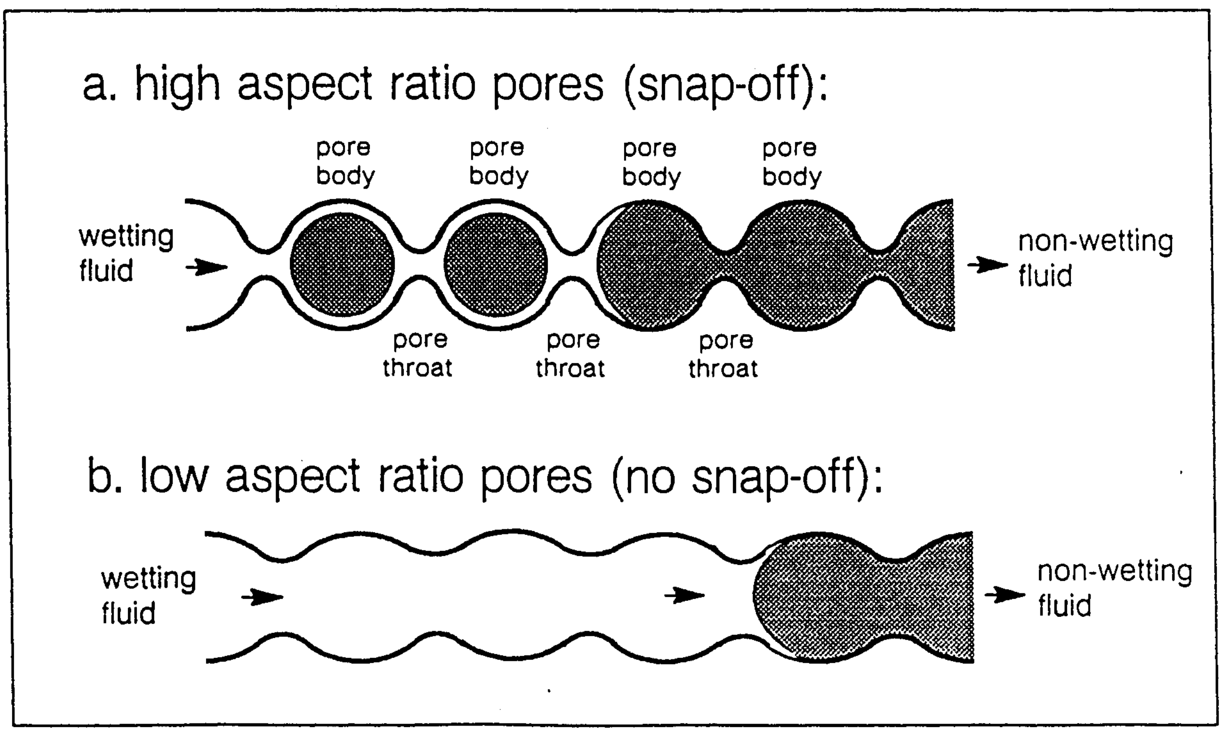


Figure 10. Simulation of capillary trapping of organic liquid [*from Wilson, 1990*].

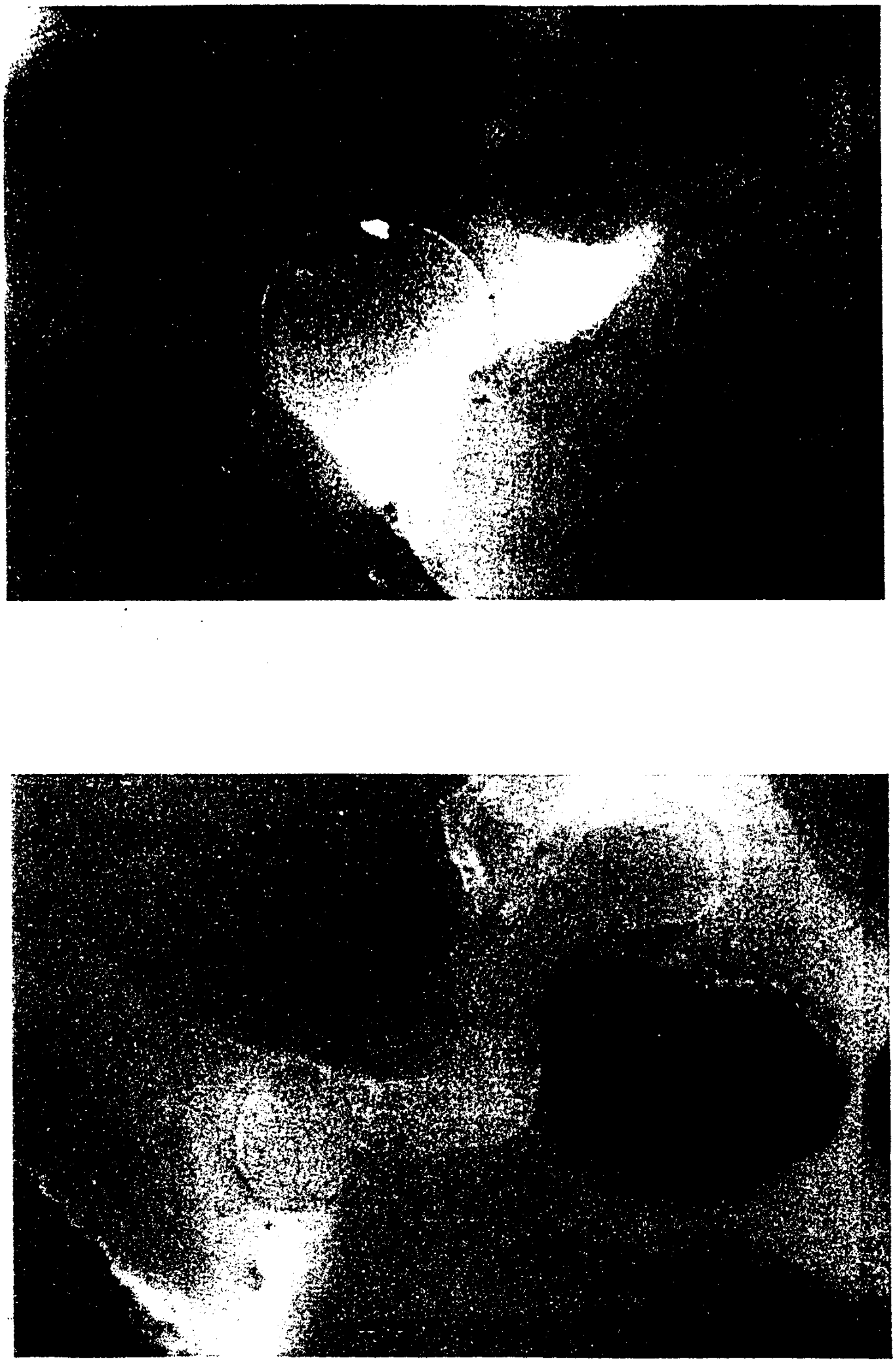


Figure 11. Example of trapped organic liquid "blob" (top) and "ganglia" (bottom) [*from Wilson, 1990*].

A release of organic liquid at the ground surface will eventually reach the water-saturated zone at the top of the capillary fringe if the water table is shallow or if the volume of released organic liquid is large enough. An organic liquid less dense than water (LNAPL), initially penetrates into the saturated zone, mounds, and then begins to spread laterally. Later, if the source is cut off, the LNAPL continues to redistribute laterally, the mound decays, water re-imbibes upward, and capillary-trapped organics are left behind within the saturated zone. During this redistribution, laterally moving organic liquid can also be trapped within the capillary fringe.

If the organic liquid is more dense than water (DNAPL), gravitational forces cause it to continue to move downward into the saturated zone once the entry pressure is exceeded [*Schwille, 1988*]. Again, the entry pressure is described as the value of the capillary pressure at which the water saturation decreases rapidly. The slug of organic liquid leaves behind a trail of capillary-trapped residual NAPL saturation as it makes its way downward toward the bottom of the aquifer, and then laterally along that barrier.

Simulation Results

Since, as previously stated, the goal of this study is to determine what effect density and viscosity variations of non-aqueous phase liquids (both light and dense) might have on their transport through both the vadose and saturated zones, model simulation results are evaluated for both the minimum and maximum NAPL saturation contours at times of one, three, five, and ten years. Plume migration distances for all chemicals simulated are tabularized in Tables 5 and 6. In many cases, the maximum residual saturation values for each year (as listed in tabular form within each simulated chemical result discussion) is higher than the highest contour plotted in the simulation result diagrams. This is a result of contouring interval limitations, as well as computer contouring software limitations. In most cases, in order to get a contour at the maximum saturations listed in the tables, a higher frequency contour interval would be necessary, which in turn would inhibit the legibility of the diagrams. Also, the highest maximum saturation cells (usually at year ten) listed, represent one input data point in the contouring program, and therefore could not be contoured by the computer. As indicated, the SWANFLOW code does not consider dissolution or volatilization, and therefore, provides a conservative estimate of the extent of NAPL migration. For a highly volatile NAPL (e.g. the BTEX chemicals), contaminants which migrate to a position at or near the ground surface, will likely vaporize and enter the atmosphere. This volatilization will effectively reduce saturation levels, and therefore, transport distances. Also, relatively soluble chemicals, such as 1,1-dibromoethane, would sustain a loss of mass as the NAPL dissolves and disperses into the surrounding groundwater.

In a three-phase system, as the NAPL migrates down, water (in the saturated zone) and air (in the vadose zone) are being displaced by the infiltrating NAPL. This is implied by a decrease in their saturations with respect to an increase in NAPL saturation over time (Appendix C and D). Although water is being added to the system as natural recharge, this same amount is exiting through the base of the finite difference grid, creating a steady-state condition.

The reader is reminded that at the start of the simulation, only water and air are present in the system. At time t=0, NAPL infiltration was simulated as resulting from a slow, continuous leak on the ground surface. The NAPL enters the system at the upper left corner of the grid (coordinates 0,0) (Figure 7). For all chemicals, simulations representing 1, 3, 5, and 10 years are illustrated in this study. Six chemicals having densities lighter than water (LNAPL) and seven chemicals with densities greater than water (DNAPL) were simulated (Table 4).

Table 4. NAPL Density and Viscosity Data

NAPL	SWANFLOW Units Density (kg/m3)	SWANFLOW Units Viscosity (kg/m-s)	Standard Groundwater Units Specific Gravity (gm/cm3)	Standard Groundwater Units Viscosity (cp)
LNAPL				
p-Xylene	861	6.440E-04	0.861	0.644
Toluene	862	5.520E-04	0.862	0.552
m-Xylene	864	6.170E-04	0.864	0.617
Ethylbenzene	867	6.780E-04	0.867	0.678
Benzene	876	6.010E-04	0.876	0.601
o-Xylene	880	8.090E-04	0.880	0.809
DNAPL				
p-Cresol	1014	5.670E-03	1.014	5.670
m-Cresol	1038	2.467E-02	1.038	24.670
Nitrobenzene	1203	1.634E-03	1.203	1.634
1,1-Dichloroethene	1220	3.600E-04	1.220	0.360
Tetrachloroethene	1631	1.932E-03	1.631	1.932
1,2-Dibromoethane	2169	0.00149	2.169	1.49
Mercury	13545	1.552E-03	13.545	1.552

* From Mercer, et al, 1990

LNAPL Results

For the LNAPL chemicals simulated, densities and viscosities varied little. The LNAPL chemicals simulated are: benzene, toluene, ethylbenzene, and xylene (including all three isomers) all of which are constituents of petroleum products. Petroleum spills are some of the most common, and undetected, causes of groundwater contamination worldwide [*Corapcioglu and Baehr, 1987*]. These chemicals, which have a density range of 861 - 880 kg/m^3 and viscosity range from 5.52E-4 - 8.09E-4 kg/m-s (Table 4), were modeled not only to examine their subsurface transport behavior over time, but also to determine what effect, if any, small density and viscosity variations will have on chemical transport.

In all cases where the simulated chemical is less dense than water, the contaminant plume showed a much larger lateral migration as compared to vertical migration. For all LNAPLs modelled in this study, none penetrated the water table until close to year three. For the following discussions of the graphical data, only the zero contour (referred to in these discussions as the maximum lateral migration distance) will be discussed since the maximum saturation contours (0.40 contour) do not exhibit drastic spatial variations.. Reference to Table 5 will help illustrate how the maximum residual saturation contour (0.4 contour line) compares for all LNAPLs. Overall maximum saturations refer to the highest saturation percentage of all cells over the entire grid area. Year one overall maximum residual saturation for all LNAPLs (overall maximum residual saturation tables for each year simulated are included in the simulated chemical discussions) were very consistent with a range from 41.48% (for toluene) to 41.92% (for o-xylene). Years three and five overall maximum residual saturations fluctuated somewhat with a year three fluctuation of 44.54% (for toluene) to 47.06% (for p-xylene) and a year five fluctuation of 46.79% (for toluene) to 49.12% (for ethylbenzene). Year ten overall maximum saturations only ranged from 50.27% (for Benzene) to 51.35% (for m-xylene). As will be shown in the following discussions, since most of the LNAPLs simulated in this study possess similar densities, changes in viscosity will exert the most effect on chemical transport behavior. Also, since viscosity changes mainly effect the lateral transport for LNAPLs, the main focus of the following discussions will be on lateral changes in distance exhibited by variations in viscosity.

p-Xylene

p-Xylene falls in the middle viscosity (0.644E-3 kg/m-s) range and has the lowest density (861 kg/m^3) of all of the LNAPL chemicals. The following table shows the value and location of the maximum NAPL saturation throughout the entire grid area. Over the ten years, the maximum saturation ranges from 41 - 50%. The greatest increase in the maximum saturation (5.28%) as well as depth of penetration (0.5 meters), can be seen from year one to year three. Almost no increase (0.13%) is seen from years three to five, indicating a stable saturation profile for those years. From year five to ten, an increase of 3.11% is seen. Highest overall maximum saturation of 50.30% occurs after ten years at a lateral distance of 1 meter and depth of -1.75 meters.

Year	Maximum Saturation (%)	X (meters)	Z (meters)
1	41.78	1.0	-0.75
3	47.06	1.0	-1.25
5	47.19	1.0	-1.25
10	50.30	1.0	-1.75

Figure 12 shows the SWANFLOW graphical simulation results for p-xylene after one and three years. After one year, the p-xylene has reached a maximum lateral distance of 23.0 meters and maximum depth of -1.3 meters. Also, after year one, the p-xylene has not yet reached the saturated zone (-1.5 meters). Residual saturations for air, water and NAPL listed in the LNAPL output data (Appendix C) indicate that at this time, all three phases, air, water, and NAPL are present in the vadose zone, while only water and some air is present in the saturated zone. At three years, the chemical has spread to 46.0 meters laterally and -1.7 meters in depth. After three years, the saturated zone has been breached and the contaminant plume is just beginning to "pancake" or spread laterally on top of the water table. Figure 13 shows the contaminant transport and configuration at years five

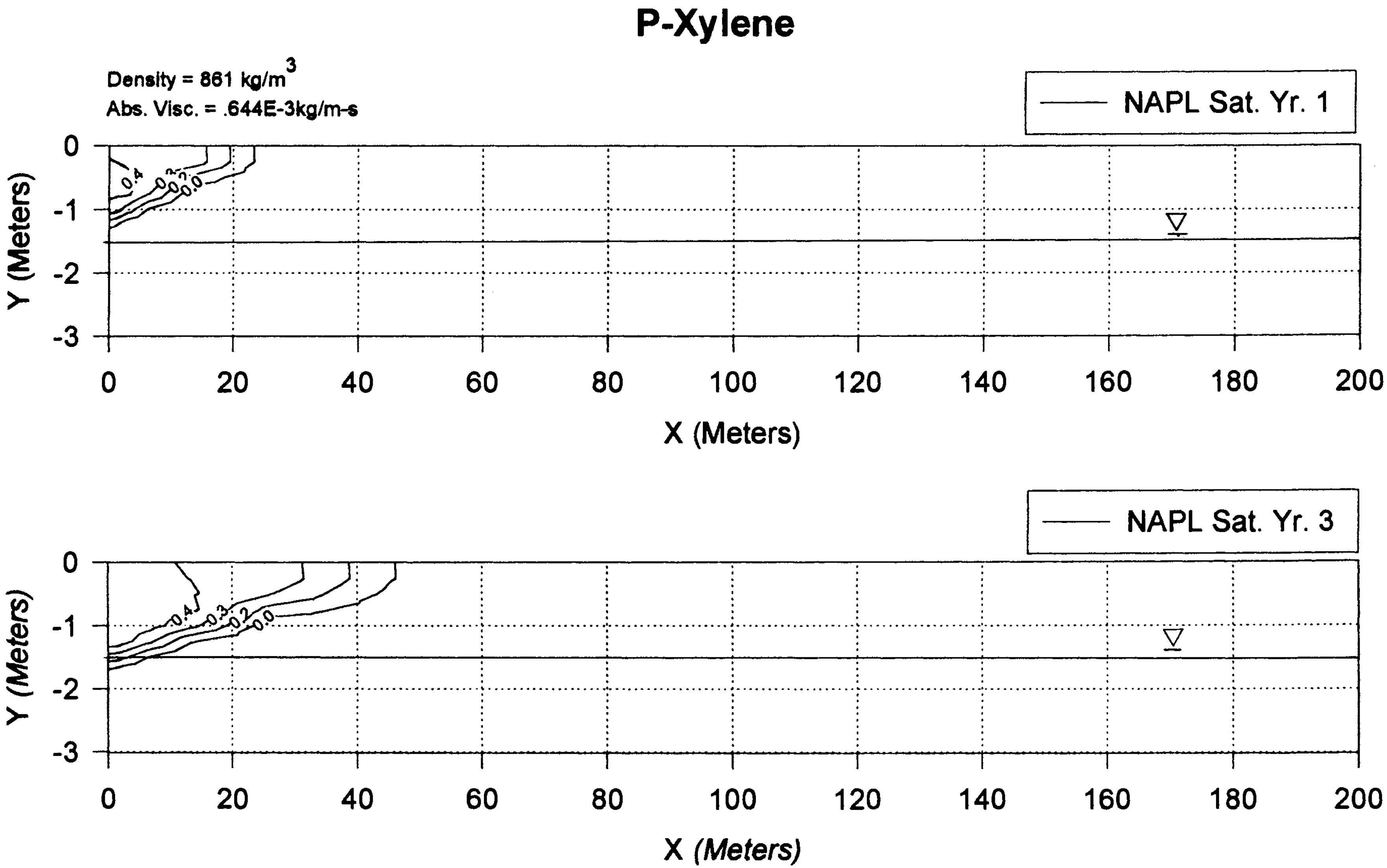


Figure 12. Infiltration of P-Xylene at one and three years.

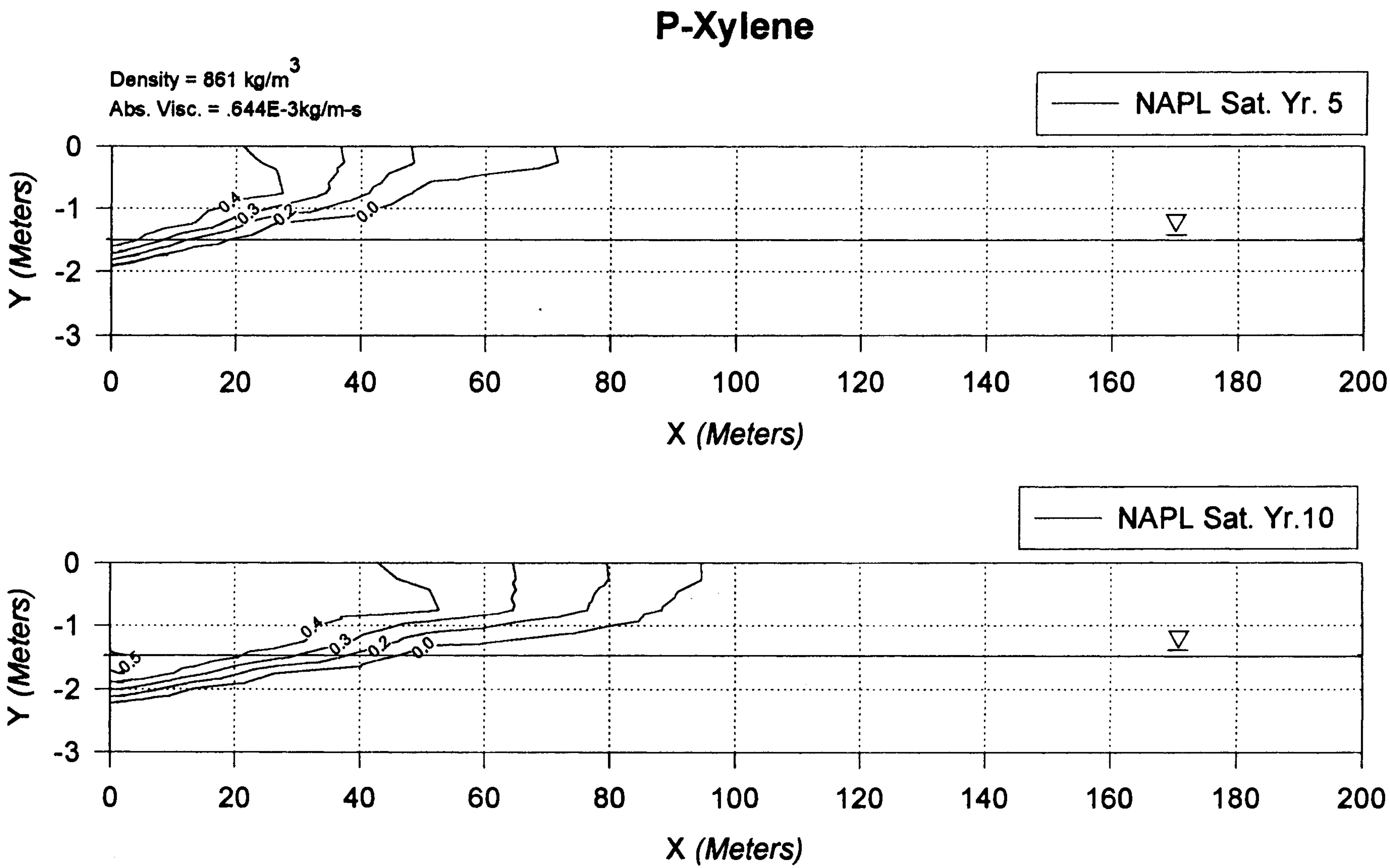


Figure 13. Infiltration of P-Xylene at five and ten years.

and ten respectively. At $t = 5$, the maximum lateral distance is 72.0 meters and maximum depth is -2.0 meters. The pancake effect continues and the top of the water table is beginning to be depressed. By year ten, the residual saturations are over 50% and the contaminant lens is 'floating' on the water table. The maximum lateral and depth penetration is about 86.0 and -2.25 meters respectively. As expected, as the NAPL saturations increase over time, the water saturations decrease. This can be seen by comparing residual saturation values for air, water and NAPL listed in the LNAPL output data (Appendix C). The air saturations remain fairly constant, however, the largest displacement of air occurs from years one to three. This is expected since it is during this time that the NAPL remains largely in the vadose zone.

Toluene

Toluene is next in order of increasing density. Density and viscosity for toluene are 862 kg/m^3 and 5.52E-4 kg/m-s respectively. These values represent the lowest in viscosity and, effectively, the lowest in density. Toluene represents the lower end member of the LNAPL chemicals.

As shown below, unlike p-xylene, the residual NAPL saturations for toluene show the maximum increase of 3.70% being from years five (46.79%) to ten (50.49%). Overall maximum saturation occurs after ten years at a lateral distance of 13.37 meters and depth of -1.50 meters from the source. Toluene exhibits the maximum lateral distance travelled for the maximum saturation This is attributed to the fact that toluene not only has one of the lower densities but also the lowest viscosity. As will be shown throughout the simulation results, for similar densities, the lower viscosity permits greater lateral transport in the vadose zone.

Year	Maximum Saturation (%)	X (meters)	Z (meters)
1	41.48	1	-0.75
3	44.54	1	-1.00
5	46.79	1	-1.25
10	50.49	13.37	-1.50

Quantitative analysis of toluene residual saturation contours for years one and three (Figure 14) show nearly a one to one correspondence to that of p-xylene. At year one, the maximum lateral distance and depth are 24.0 and -1.3 meters respectively. At this time, the toluene has not reached the water table. At three years, the contaminant has spread to 47.0 meters laterally and -1.7 meters depth. Pancaking is just beginning at this time, and the chemical has infiltrated the water table. Figure 15 shows toluene saturation at t=5 and t=10 years. At five years, maximum lateral and depth penetrated are 76.0 and -1.9 meters respectively. Pancaking continues and the water table is being depressed (Appendix C). Also, at five years, the toluene contours deviate somewhat from those of p-xylene. As can be seen from the year five diagrams for p-xylene and toluene, as well as referencing Table 5, the toluene has travelled an added 4.0 meters laterally while maintaining the same depth of penetration as the p-xylene. At ten years, the deviation from p-xylene is smaller, with the lateral distance being 98.0 meters (3.0 meters more than p-xylene) and depth of -2.2 meters (the same as p-xylene). Since the density of toluene and p-xylene are virtually the same, 862 and 861 kg/m^3 respectively, it is apparent that the viscosity differences, 5.52E-4 and 6.44E-4 kg/m-s respectively, are responsible for the greater lateral distance for the toluene.

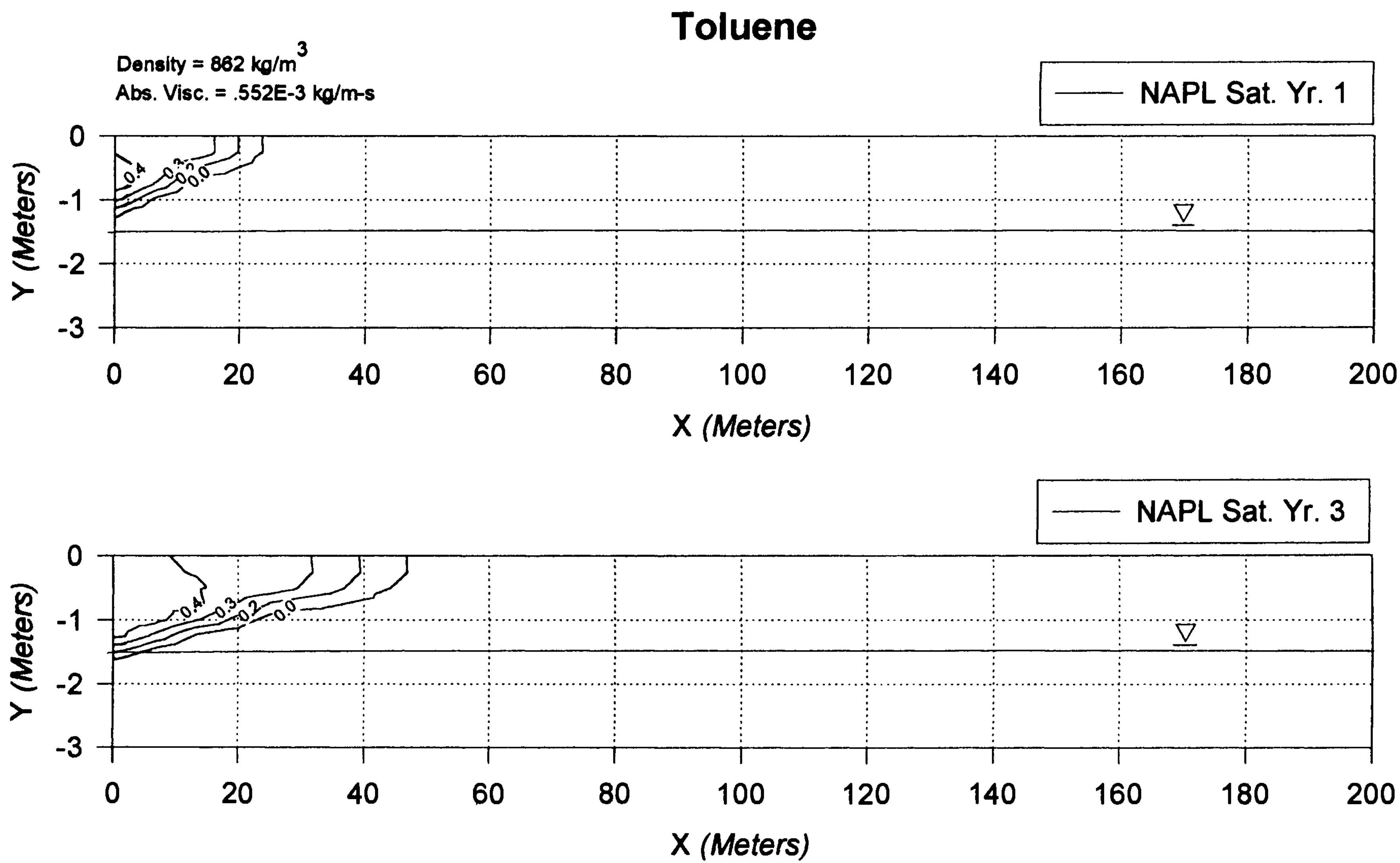


Figure 14. Infiltration of toluene at years one and three.

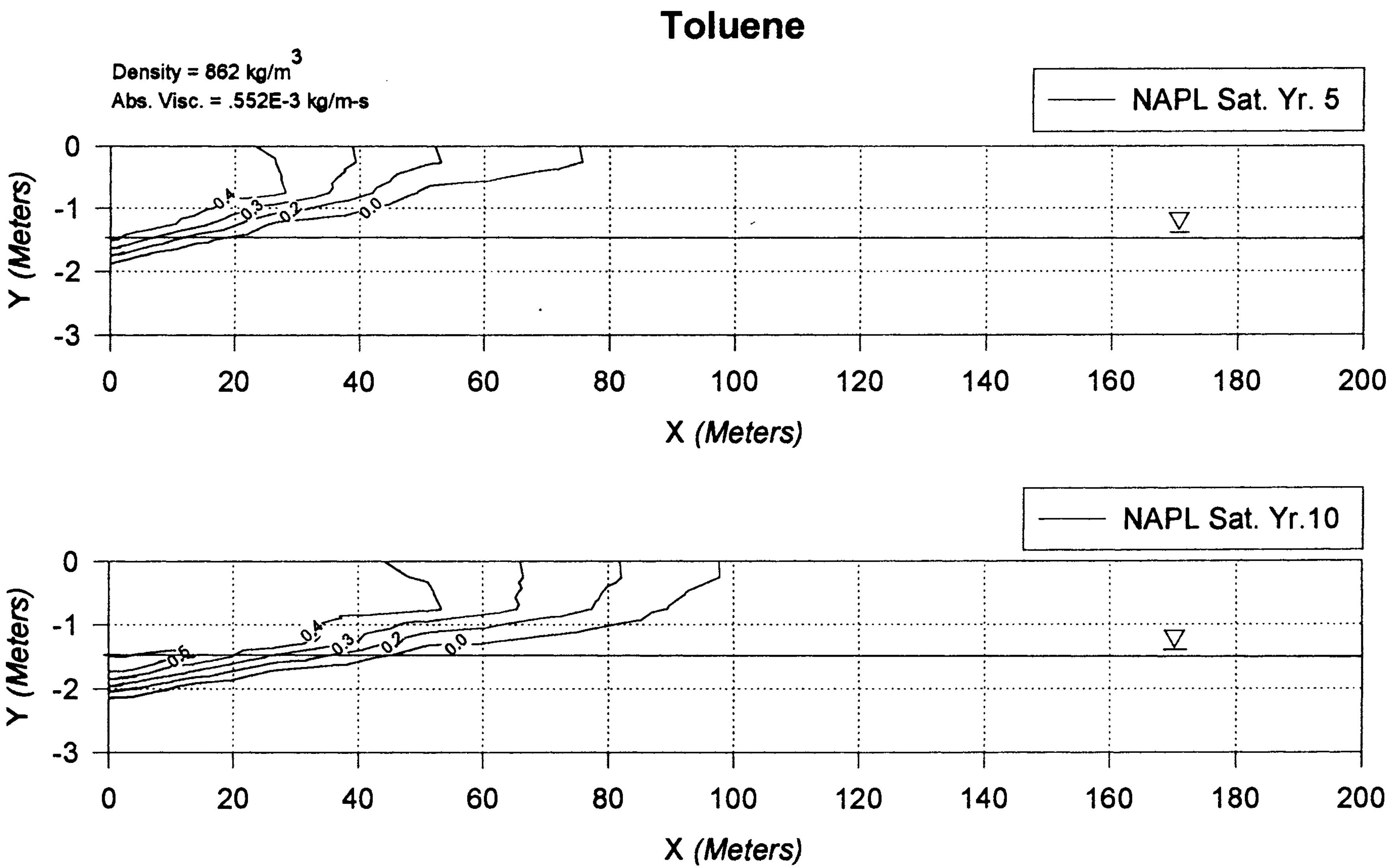


Figure 15. Infiltration of toluene at years five and ten.

m-Xylene

m-Xylene is another isomer of xylene. It has a similar density (864 kg/m³) as that of both toluene and p-xylene, however, its viscosity (6.17E-4 kg/m-s) falls between that of toluene and p-xylene.

As seen below, the maximum NAPL saturations for m-xylene range from 41.71% to 51.35%. Overall NAPL maximum saturation of 51.35% occurs at year ten at a lateral distance of 2.9 meters and depth of -1.75 meters. The overall maximum saturation percentage is virtually the same as that of toluene, but the location is 1.9 meters greater than that of p-xylene (same density, higher viscosity) and 10.47 meters less than the maximum saturation lateral distance as toluene (same density, lower viscosity). Again, this is evidence of the effect of even slightly differing viscosities.

Year	Maximum Saturation	X	Z
	(%)	*(meters)*	*(meters)*
1	41.71	1	-0.75
3	44.78	1	-1.00
5	47.07	1	-1.25
10	51.35	2.9	-1.75

Graphical analysis of m-xylene shows that in year one (Figure 16), the maximum lateral distance of the zero contour is 23.0 meters and maximum depth is -1.25 meters. As with the previous chemicals, the water table has not been breached by year one. Year one comparisons with toluene show a greater horizontal distance travelled by the lower viscosity toluene for the same depths and nearly a one to one correspondence with the slightly higher viscosity p-xylene. In year three (Figure 16), the contaminant plume has reached 46.0 meters laterally and -1.7 meters depth. Again, a nearly one to one

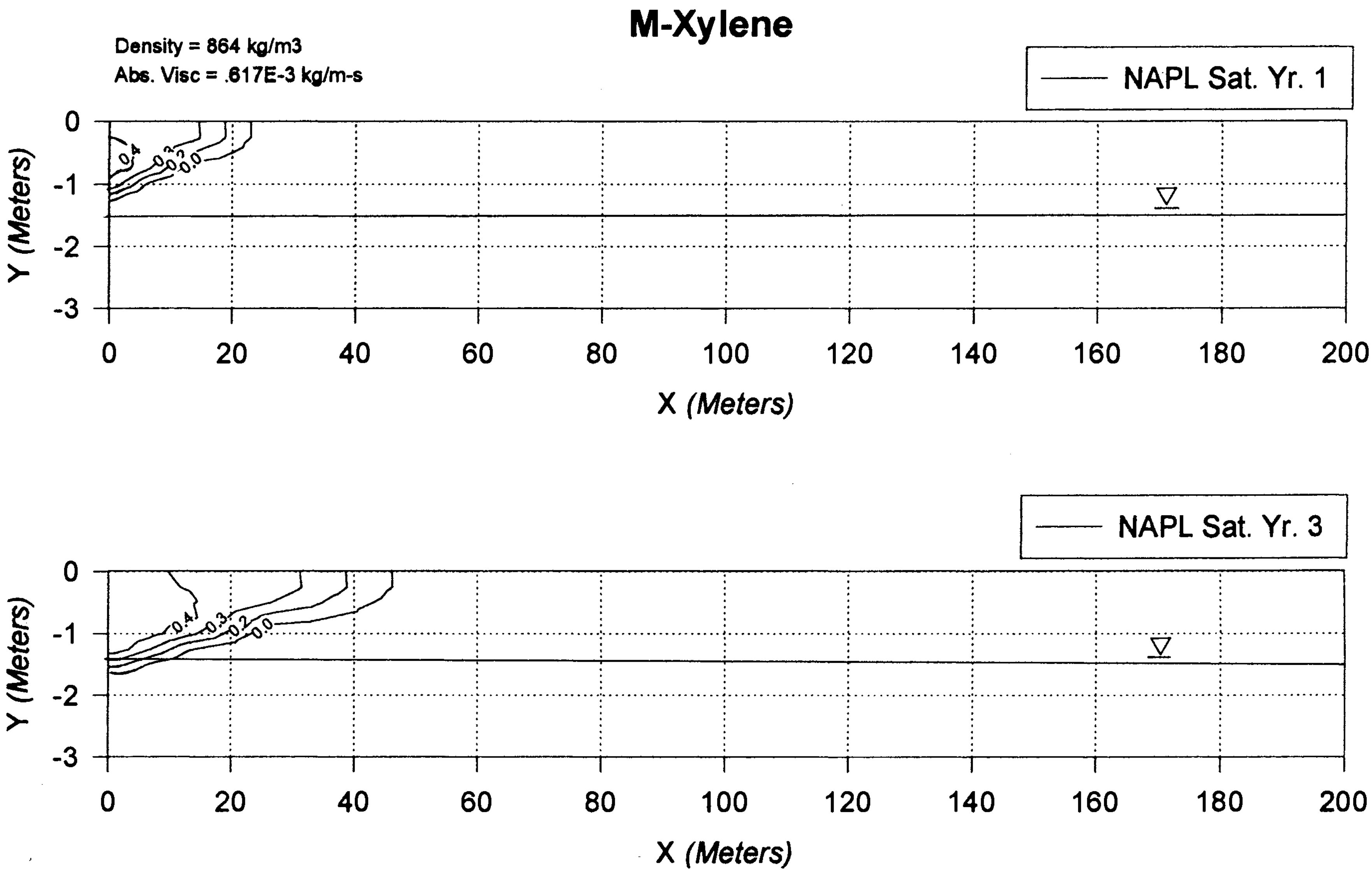


Figure 16. Infiltration of m-Xylene at one and three years.

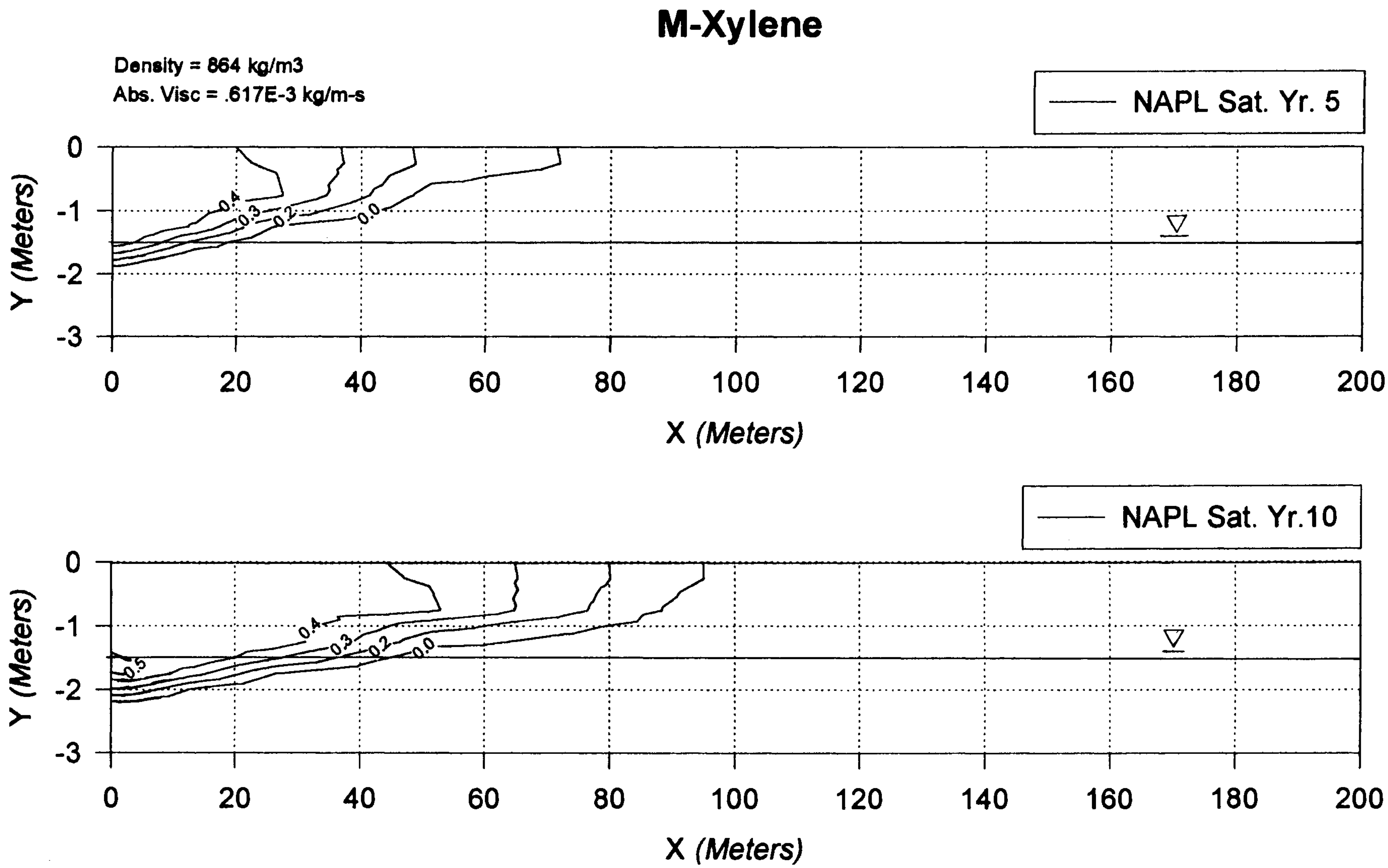


Figure 17. Infiltration of m-Xylene at five and ten years.

correspondence exists in year three between p-xylene and m-xylene, and also for toluene. NAPL saturation contours for years five and ten (Figure 17) show highly corresponding contours for m- and p-xylene, though in year five, toluene shows higher lateral distances, for the same depth values, than m-xylene. By year ten, NAPL saturation contours increase both laterally and in depth. Maximum lateral distance and depth for year five and ten are 72.0 meters, -2.0 meters and 95.0 meters, -2.2 meters respectively.

Ethylbenzene

Ethylbenzene falls about midway in density (867 kg/m^3) and on the high end for viscosity (6.78E-4 kg/m-s) as compared to the other selected LNAPLs..

The table below shows that the maximum saturation for ethylbenzene is nearly identical to that of p-xylene (density of 861 kg/m^3, viscosity of 6.44E-4 kg/m-s). For both chemicals, the maximum saturation of close to 50.40% occurs at a lateral distance of 1.0 meter and a depth of -1.75 meters. The maximum saturation values corresponds well with all of the chemicals. However, the lateral distance is less than that of toluene and m-xylene.

Year	Maximum Saturation (%)	X (meters)	Z (meters)
1	41.70	1	-0.75
3	46.08	1	-1.25
5	49.12	1	-1.50
10	50.43	1	-1.75

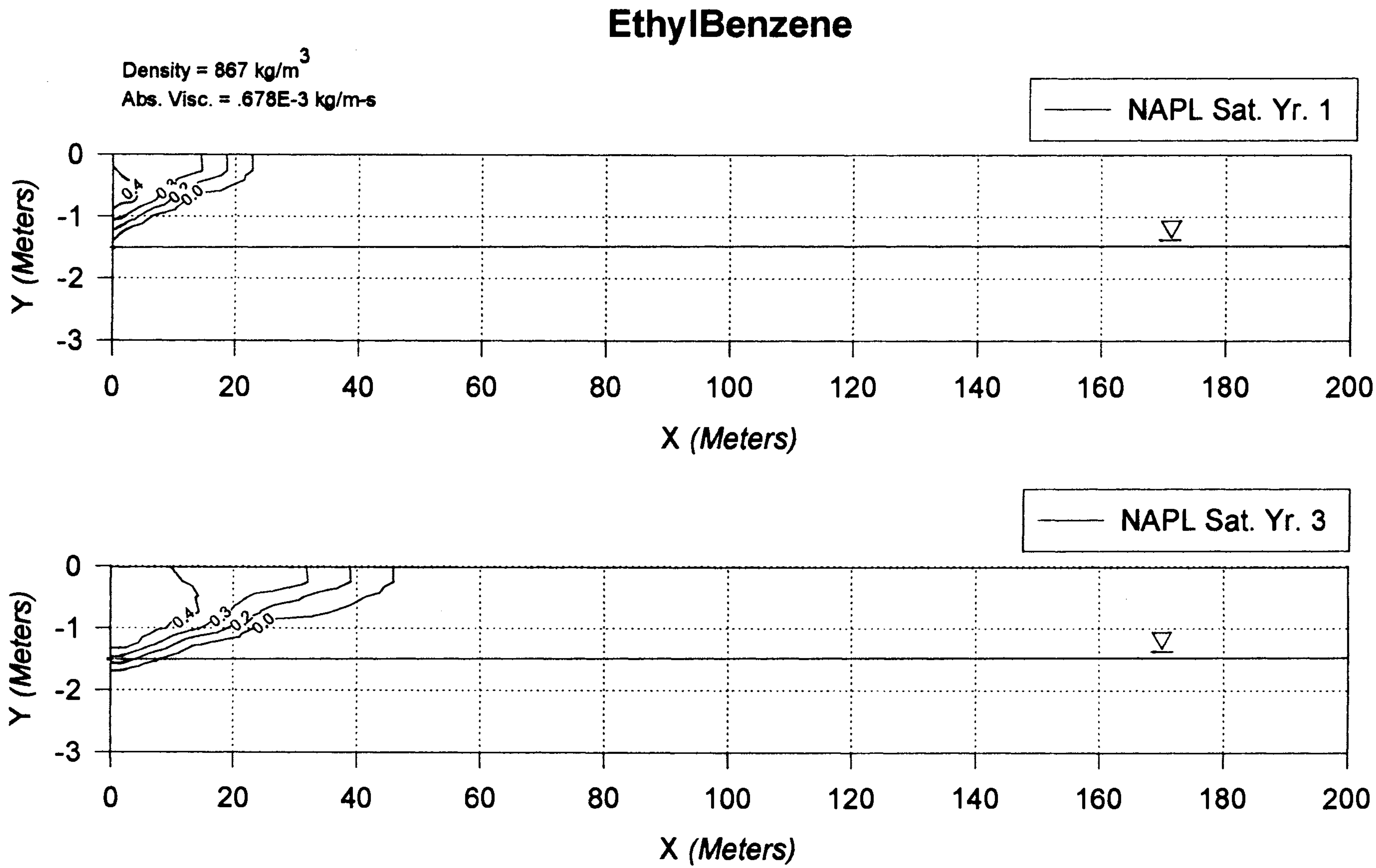


Figure 18. Infiltration of ethylbenzene at one and three years.

Ethylbenzene

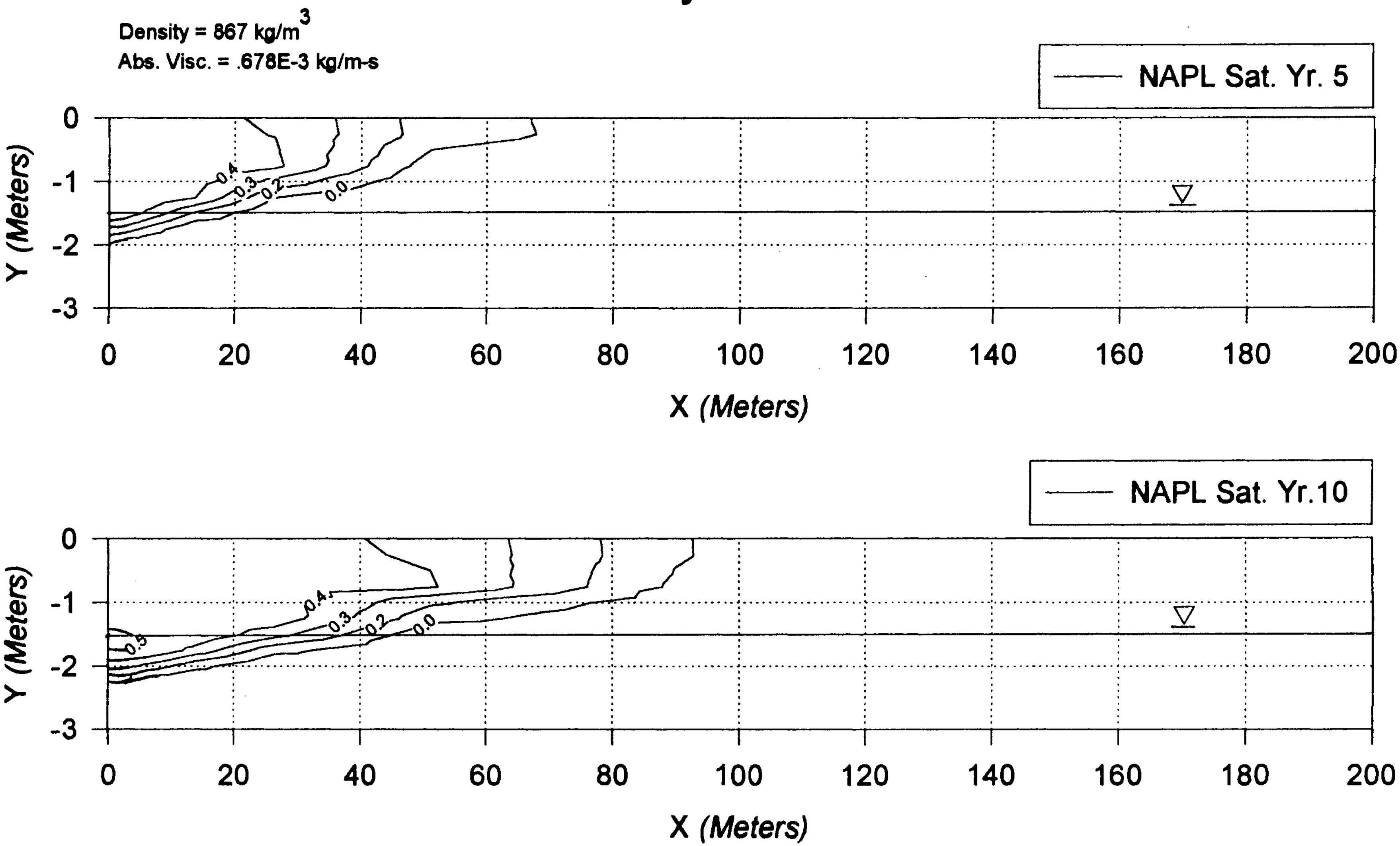


Figure 19. Infiltration of ethylbenzene at five and ten years.

Graphically, year one contours for ethylbenzene (Figure 18) overlay those of p- and m-xylene. Maximum lateral distance and depth for ethylbenzene are 23.0 meters and -1.3 meters respectively. These horizontal distances are consistent with m- and p-xylene travel distances, but are slightly less than that of toluene (24.0 meters), which possesses a lower viscosity. The maximum lateral distance at year three for ethylbenzene is 46.0 meters with a depth of penetration at -1.75 meters. By year five (Figure 19), the ethylbenzene contours truly illustrate the effects of the higher viscosity value. Maximum five year horizontal and vertical distances for ethylbenzene are 68.0 meters and -2.0 meters respectively. The lateral distance in year five represents an anomalous decrease (4.0 meters versus 2.0 meters for years one, three and ten) in migration distance as compared to that of p-xylene which possesses the next lower viscosity value (6.44E-4 kg/m-s). This indicates that, not only do viscosity changes have an affect on NAPL migration, but may also have an effect on the timing of when the maximum migration occurs. At year ten (Figure 19), maximum lateral and vertical migration are 93.0 meters and -2.3 meters respectively. This lateral value falls back on the trend of a lateral migration decrease with viscosity increase. These results show that for LNAPL movement, small variations in viscosity play a more important role than the slight density variations in contaminant transport in the subsurface.

Benzene

Benzene represents one of the higher densities (876 kg/m^3) and one of the lower viscosities (6.01E-4 kg/m-s) of the six chemicals.

As seen in the table below, maximum saturations and locations very closely mimic those of p-xylene (viscosity = 6.44E-4 kg/m-s, density = 861 kg/m^3) and fairly closely mimic all of the chemicals. Maximum residual saturation occurs at ten years at a horizontal distance of 1.0 meter and depth of -1.75 meters.

Year	Maximum Saturation (%)	X (meters)	Z (meters)
1	41.45	1	-0.75
3	45.66	1	-1.25
5	46.99	1	-1.25
10	50.27	1	-1.75

Years one and three (Figure 20) graphical comparisons show strong correspondence with all LNAPL chemicals previously discussed. The benzene at year one shows a slightly smaller lateral migration distance (23.0 meters) and a slightly deeper extent of infiltration (-1.35 meters) than that of toluene. This is expected, since toluene possesses a slightly lower density (862 kg/m^3) and viscosity (5.52E-4 kg/m-s). Year three results (Figure 20) follow the same expected pattern. The lateral distance (46.0 meters) and depth (-1.75 meters) are the same for that of ethylbenzene which has a slightly lower density, but a slightly higher viscosity. Years five and ten (Figure 21) exhibit the expected pattern for an increase in viscosity. Lateral and vertical migration distances are 68.0 meters and -2.0 meters respectively at five years, and 93.0 meters and -2.3 meters at ten years. These lateral distances are smaller than those of the other previously mentioned chemicals with the exception of m- and p-xylene. These two chemicals exhibit a greater horizontal travel distance, but have higher viscosities. However, because benzene possesses a higher density than either m- or p-xylene, gravitational forces exert a greater effect than viscous forces on benzene transport.

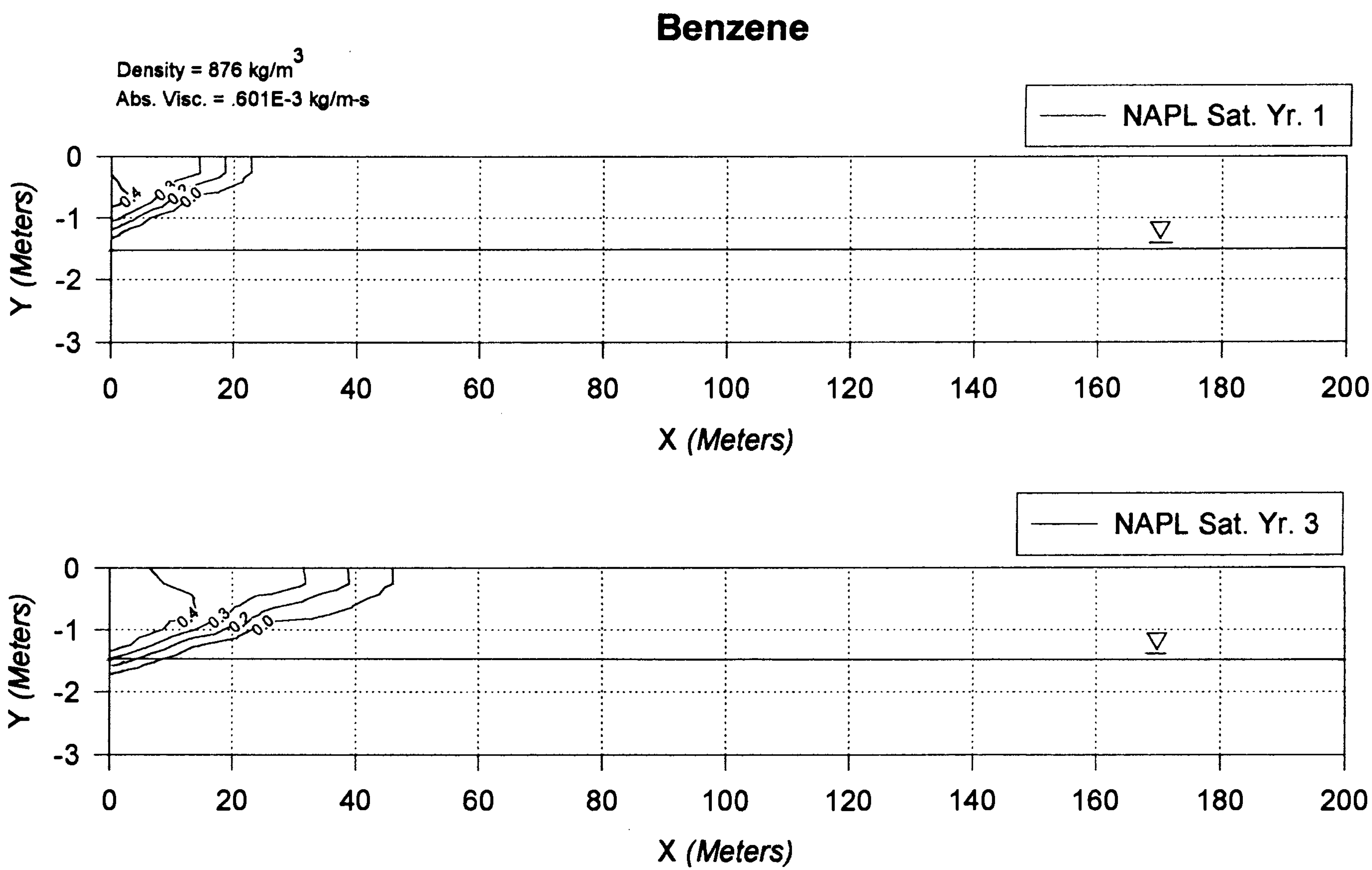


Figure 20. Infiltration of benzene at years one and three.

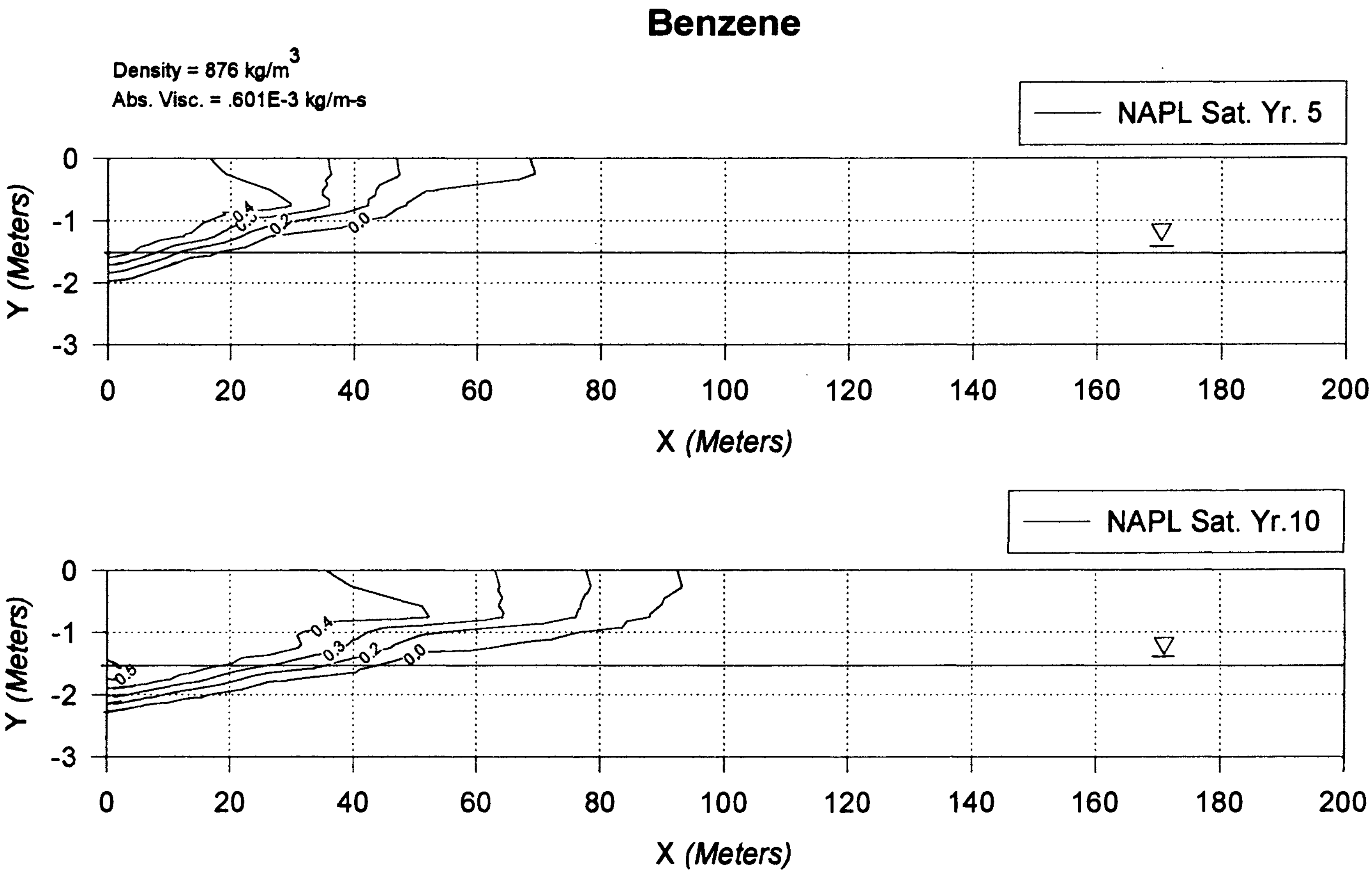


Figure 21. Infiltration of benzene at years five and ten.

o-Xylene

o-Xylene represents the high end member of the LNAPLs in that it possesses both the highest density (880 kg/m^3) and viscosity (8.09E-4 kg/m-s).

The maximum saturation profile of o-xylene (shown below) closely resembles that of ethylbenzene which possesses a similar density, but lower viscosity. Maximum residual saturations for years one, three, five and ten vary from nearly 42% to nearly 51%. The highest maximum residual NAPL saturation of 50.96% occurs at ten years at a distance from the source of 1.0 meter laterally and -1.75 meters vertically. The greatest increase in maximum saturation of 4.58% occurs from year one to year three with a depth increase of 0.5 meters.

Year	Maximum Saturation *(%)*	X *(meters)*	Z *(meters)*
1	41.92	1	-0.75
3	46.50	1	-1.25
5	48.83	1	-1.50
10	50.96	1	-1.75

Graphical analysis of Figure 22 shows that for years one and five, o-xylene has the smallest lateral and vertical migration distance of all LNAPLs simulated. Maximum lateral and vertical distance travelled for year one are 21.0 meters and -1.4 meters respectively. Because o-xylene possesses a higher viscosity and density, not only is the lateral distance less (2.0 meters less than that of ethylbenzene which has the closest, but a lower viscosity of 6.78E-4 kg/m-s), but the vertical distance is greater (1.0 meter greater). By year three, the contaminant has spread to a lateral distance of 44.0 meters and a depth of -1.9 meters. As with ethylbenzene, at year five (Figure 23), the higher viscosity value has an

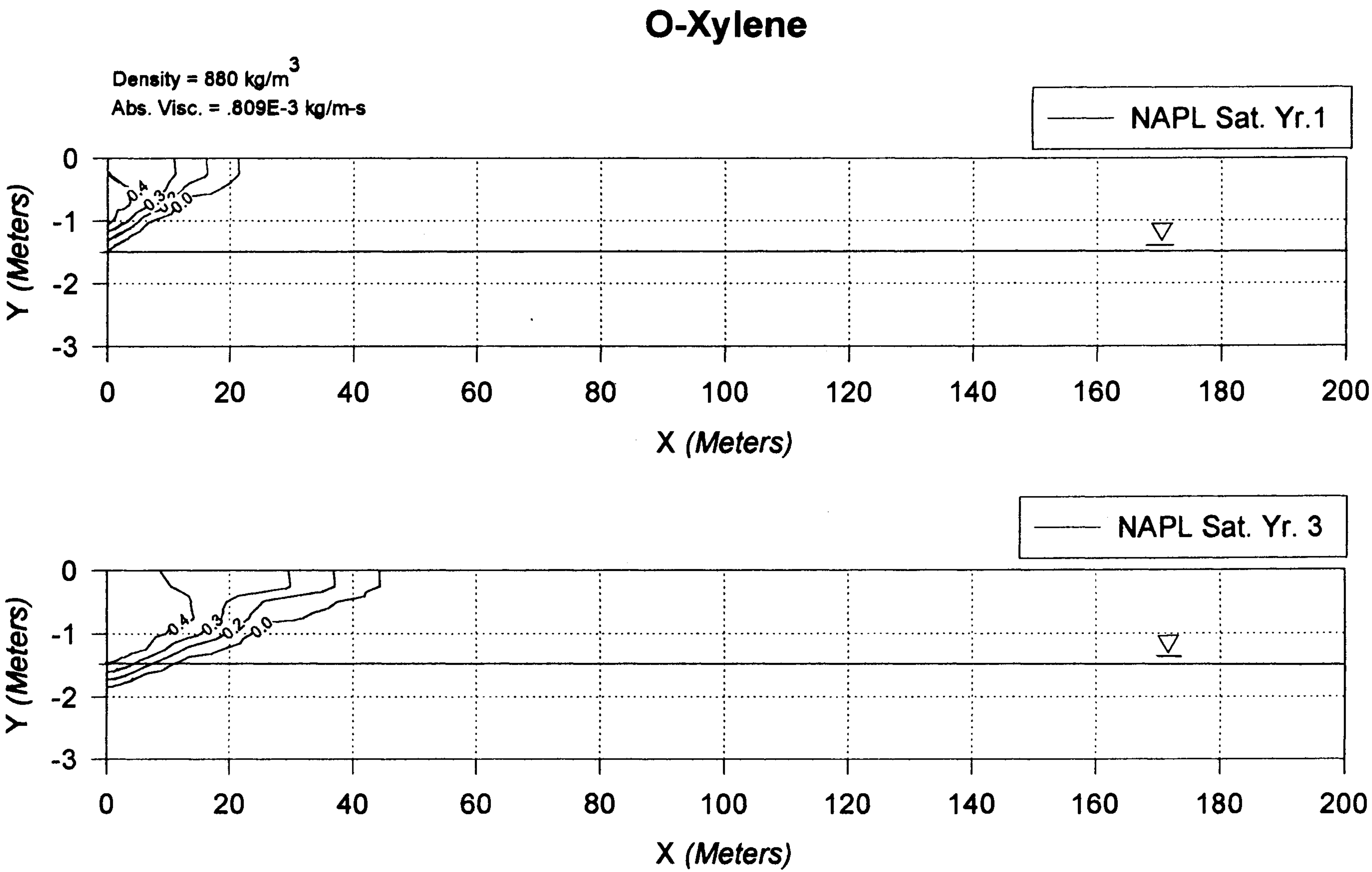


Figure 22. Infiltration of o-Xylene at years one and three.

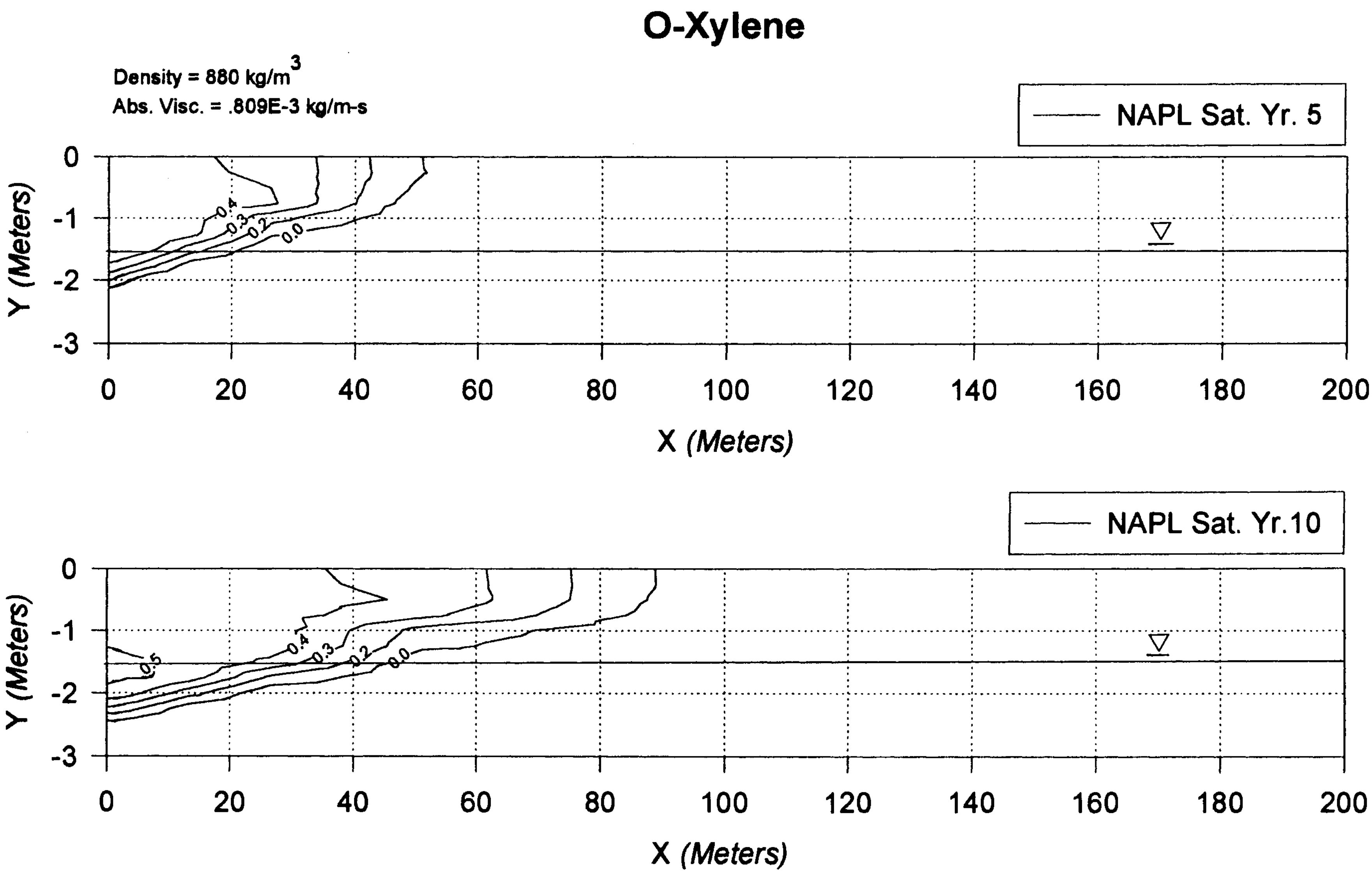


Figure 23. Infiltration of o-Xylene at years five and ten.

appreciable affect on lateral transport distance. Maximum lateral distance in year five is 52.0 meters. This anomalous value represents a lateral migration decrease of 16.0 meters from that of ethylbenzene which has the nearest viscosity value of 6.78E-4 kg/m-s. The viscosity difference between ethylbenzene and o-xylene also represents the largest viscosity variation between all chemicals simulated. As with ethylbenzene, this may indicate that along with the lateral migration difference, viscosity differences may also play a role in the timing of the lateral migration. Year ten lateral migration distances (Figure 23) begin to fall back into the general trend of lateral distance migration values. Maximum lateral migration is 89.0 meters (-2.5 meters vertical migration) which represents a 4.0 meter decrease from that of ethylbenzene. This 4.0 meter value is still anomalous to the year one and three lateral distance decreases from ethylbenzene (2.0 meters for both years) but is still much closer than year five decreases.

DNAPL Results

The DNAPL chemicals simulated are p-cresol, m-cresol (these two isomers of cresol were selected because of their similar densities and widely varied viscosities), nitrobenzene, dichloroethene, tetrachloroethene, dibromoethane, and mercury. Densities range from 1014 - 13,545 kg/m^3 and viscosities range from 0.36E-3 to 24.67E-3 kg/m-s (Table 3). These chemicals were selected because of their wide variations in density and viscosity, and also because they are common constituents of groundwater contamination.

In all cases simulated, DNAPL movement into and through the saturated zone is due to densities greater than water. At densities greater than water, gravity is the major driving force for DNAPL migration patterns. These migration patterns consistently exhibit a much larger and faster vertical migration into and through the saturated zone as compared to horizontal migration. All DNAPL chemicals simulated breached the water table well before year one and all, with the exception of mercury, have penetrated the lower draining aquifer by this time. Although not simulated, given the vertically dominated infiltration pattern of the dense nonaqueous phase liquids, it is likely that a majority of the contaminant introduced into the subsurface will eventually pass through the aquitard and into the lower draining aquifer. Because of the variations in density and viscosity, residual NAPL saturations also varied appreciably and therefore, different contour intervals were necessary. Where possible, a small contour interval of 0.05 was used. However, in the case of the lower density values of p- and m-cresol (1014 and 1038 kg/m^3 respectively), where a larger lateral migration occurs, a contour interval of 0.1 was used. Table 6 shows the spatial data for DNAPL migration at one, three, five, and ten years. Different values for the maximum contour were necessary due to density and viscosity variations; however, the value of the maximum contour is still indicative of NAPL migration in the subsurface. For Table 6, the minimum contour line of 0.05 for m-and p-cresol is interpolated. Unlike the LNAPL chemical simulations, where, due to density and viscosity similarities, the maximum residual NAPL saturation contour (0.40 contour) did not exhibit drastic spatial variations, the DNAPL chemicals maximum residual saturation contours (0.15, 0.16, 0.40, and 0.50) are where the effects of viscosity variations are most pronounced. Therefore, for the DNAPL chemicals, more focus will be directed to the maximum saturation contour.

p-Cresol

p-Cresol represents the lowest density (1014 kg/m^3) and middle range viscosity (5.67E-3 kg/m-s) of all the chemicals simulated. An isomer of cresol, which is a petroleum by-product, p-cresol has a similar density to m-cresol, but the viscosity is significantly lower than m-cresol. As shown below, maximum saturations for p-cresol range from 43.29 to 47.52% at a consistent depth of -1.5 meters. This indicates that at year one, p-cresol comprises 43% of the media pore spaces with water and air comprising the remaining pore spaces above the water table and DNAPL and water below the water table. The increase in the maximum reported DNAPL saturation to 47.52% at year ten indicates that the water in the pore spaces is increasingly being replaced by DNAPL.

Year	Maximum Saturation (%)	X (meters)	Z (meters)
1	43.29	1	-1.00
3	46.62	1	-1.50
5	47.32	1	-1.50
10	47.52	1	-1.50

Analysis of residual saturation contours for years one and three (Figure 24) show that even at a density just slightly higher than water, p-cresol migration is heavily effected by gravity forces. Instead of forming a lens on top of the water table, it travels in a mainly vertical direction. Table 6 shows that the maximum lateral distance at year one of the 0.05 (5%) contour is approximately 4.75 meters at a depth of -3.40 meters. The year one maximum contour of 0.40 (40%) extends to 1.25 meters laterally and -1.8 meters vertically. By year three, the maximum saturation contour has spread to 2.0 meters laterally and -2.80 meters in depth. By years five and ten (Figure 25), the 0.40 contour has moved out to 2.25 meters laterally for both five and ten years, and -2.90 and -3.00 meters respectively in depth. Graphical analysis of the 0.40 contour for years three, five and ten show that once the plume front reaches the base of the aquitard (-4.75 meters),

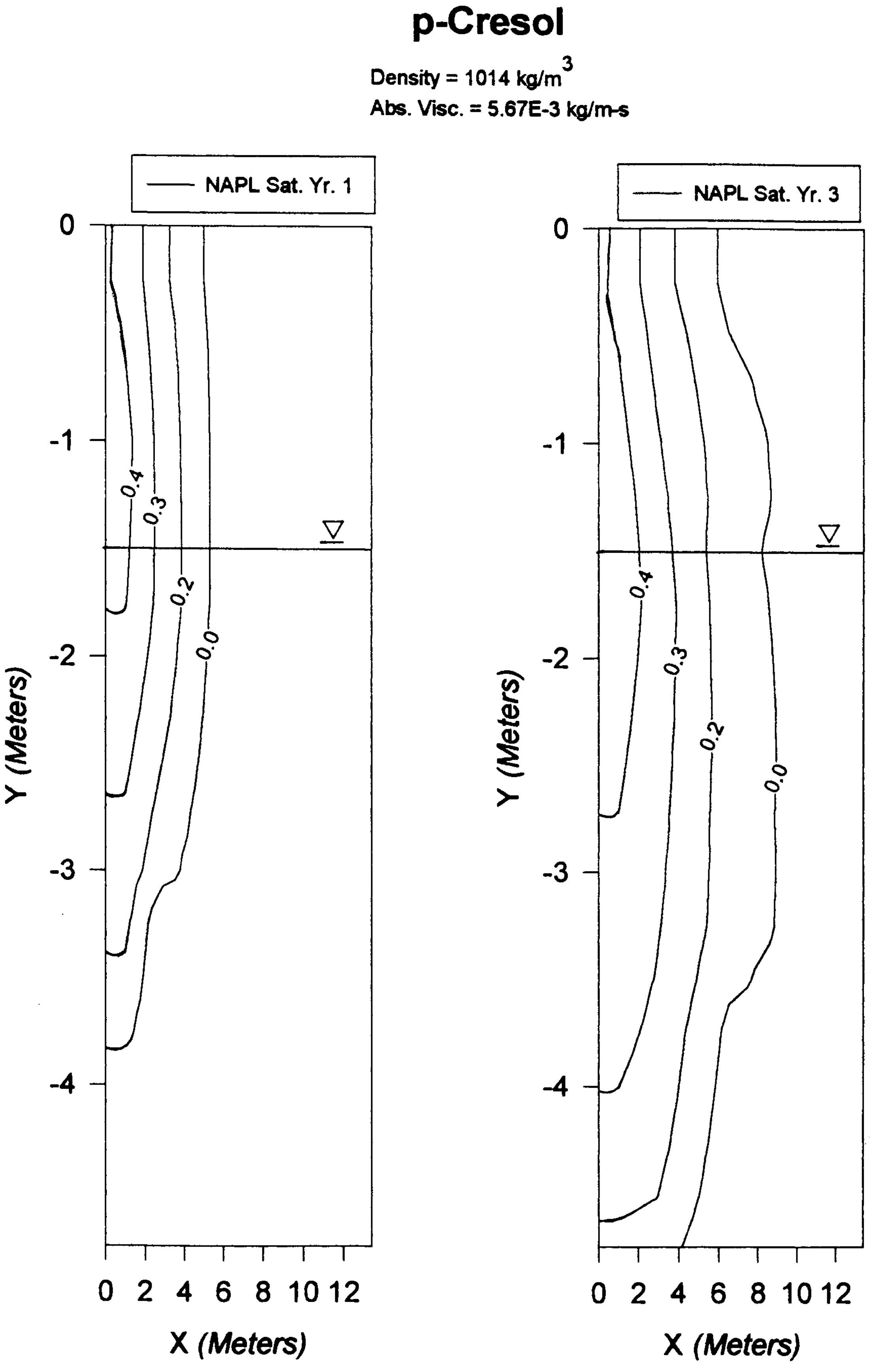


Figure 24. Infiltration of p-Cresol at years one and three.

vertical migration of the higher residual saturation of the plume core nearly stops and lateral migration dominates.

m-Cresol

m-Cresol represents a low density, high viscosity chemical. It possesses a similar density (1038 kg/m^3) to that of p-cresol, but a much higher viscosity value (24.67E-3 kg/m-s) than that of p-cresol. The viscosity difference effects the maximum saturation values. As seen below, the maximum NAPL saturations range from 50.67 to 52.04% at a consistent depth of -1.75 meters. The saturations for m-cresol are fairly constant, indicating that a relatively uniform saturation profile has been established at a depth below the water table. Comparing these values to those of p-cresol, indicates that given similar density values, the higher viscosity chemical will replace a greater percentage of water with DNAPL at a similar depth.

Year	Maximum Saturation *(%)*	X *(meters)*	Z *(meters)*
1	50.67	1	-1.75
3	51.75	1	-1.75
5	51.97	1	-1.75
10	52.04	1	-1.75

Figures 26 and 27 show the minimum contour line of 0.05 (5%) ranges from 5.0 meters laterally and -3.25 meters vertically for year one and 10.25 meters laterally and the base of the aquitard vertically for year ten. The maximum contour line for m-cresol residual saturation is 0.50 (or 50%) which is 10% greater than that of the lower viscosity p-cresol.

m-Cresol

Density = 1038 kg/m^3
Abs. Visc. = 24.67E-3 kg/m-s

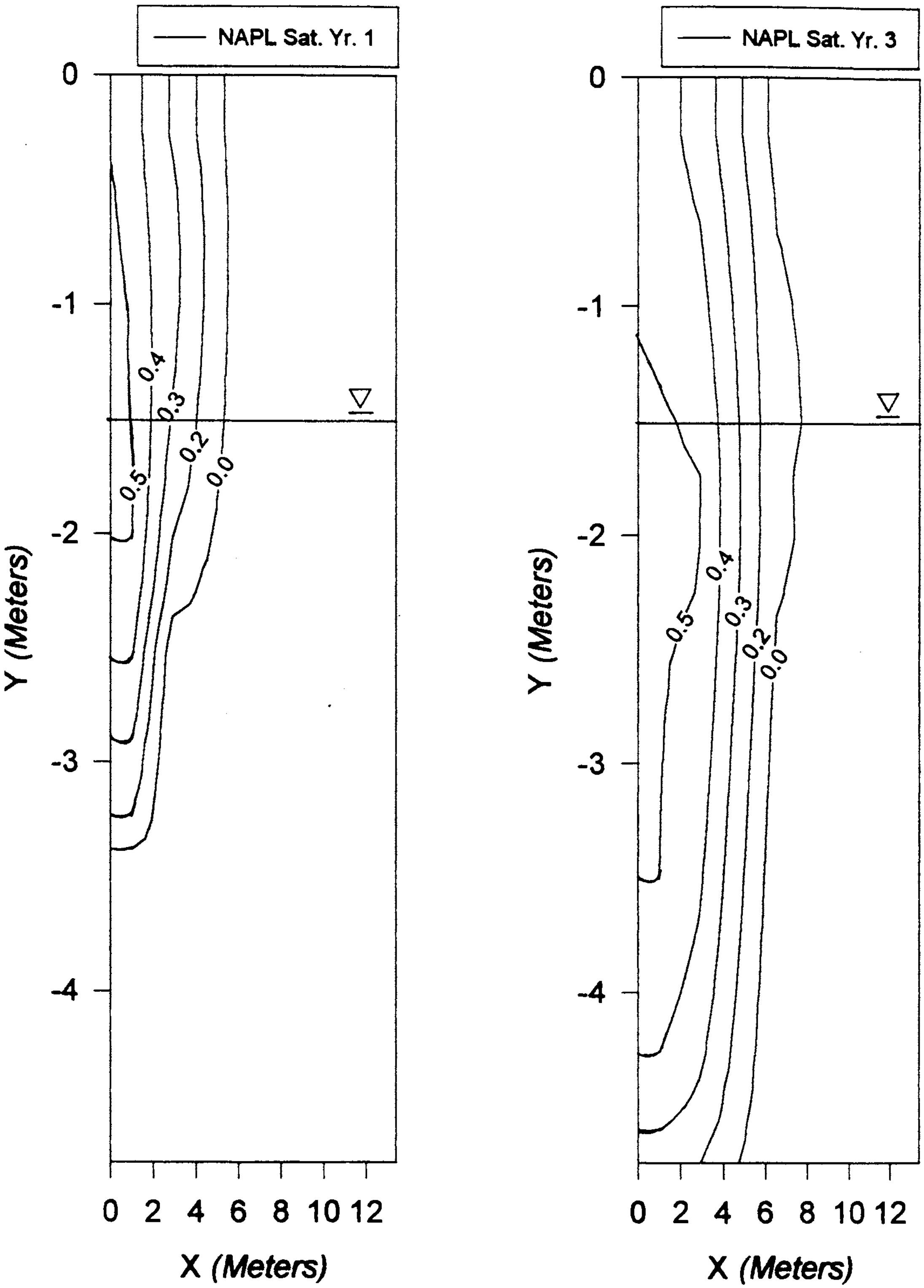


Figure 26. Infiltration of m-Cresol at years one and three.

m-Cresol

Density = 1038 kg/m^3
Abs. Visc. = 24.67E-3 kg/m-s

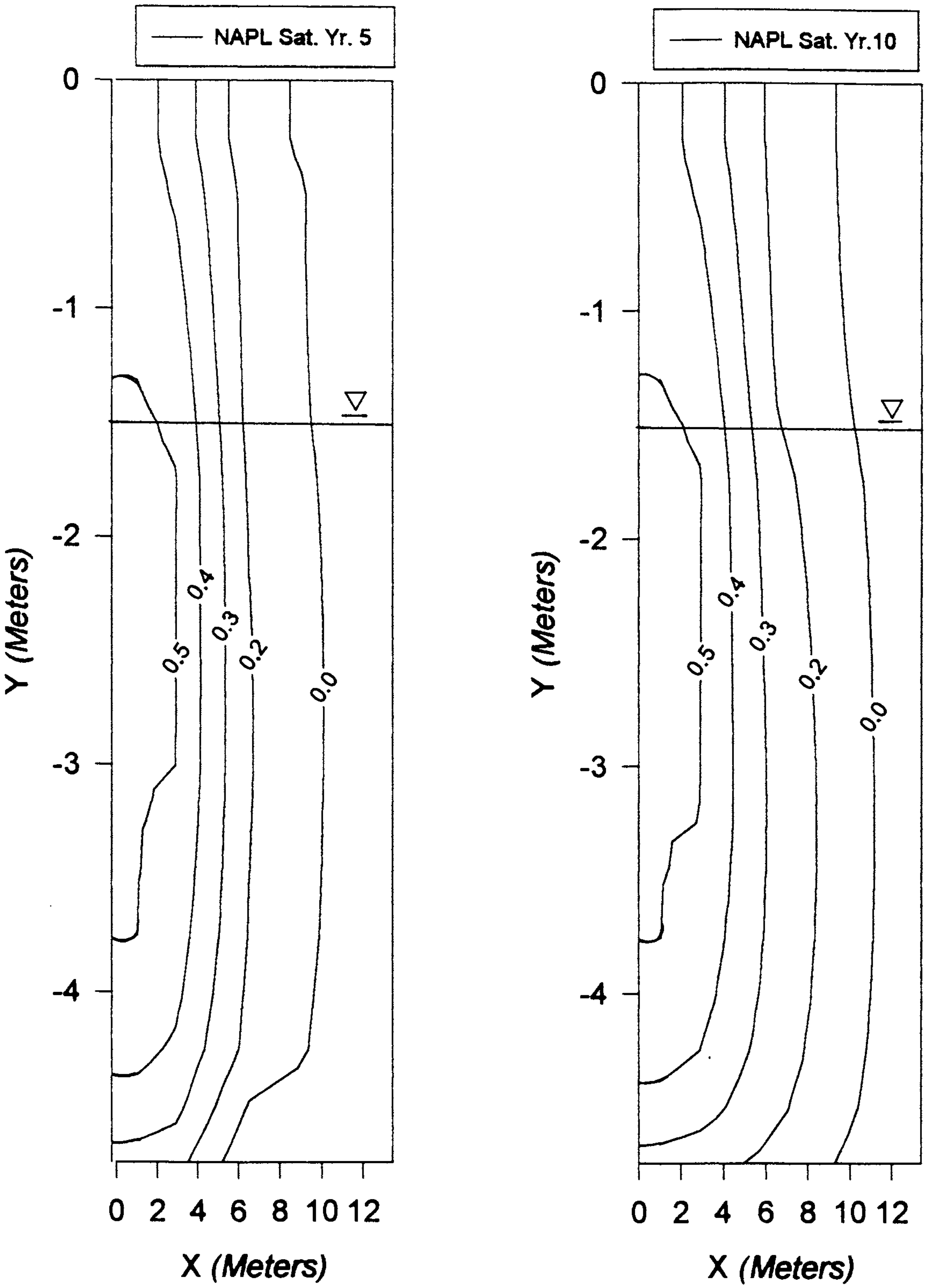


Figure 27. Infiltration of m-Cresol at years five and ten.

Also shown in Figure 26, maximum lateral migration at year one is 1.0 meter and depth penetrated is -2.0 meters. By year three, the contaminant has spread to 3.0 meters and a depth of -3.5 meters. Years five and ten (Figure 27) show that the 0.5 contour of m-cresol has not spread laterally, but has increased to a depth of -3.75 meters. Comparisons with the similar density and lower viscosity p-cresol (discussed previously) show that an increase in viscosity, increases the lateral distance a DNAPL will travel.

Nitrobenzene

Nitrobenzene, which is designated a priority pollutant by the EPA, represents one of the middle density (1203 kg/m^3) and viscosity (1.634E-3 kg/m-s) chemicals. The major source of nitrobenzene release into the environment is as waste water effluent and the EPA estimates a release of eight million pounds annually [*Ambient Water Quality Criteria for Nitrobenzene, WEPA 440/5-80-061*]. Maximum residual NAPL saturations, as seen below, show a nearly consistent saturation of 18.40% at a lateral distance of 1.0 meter and a vertical distance of -0.25 meters from the source. The consistent saturations indicate a relatively constant saturation profile for nitrobenzene just below the source. The lower maximum saturation value exhibited by nitrobenzene, as compared to the maximum saturations for m- and p-cresol (ranges of 43-57% and 50.67-52.04% over all years simulated for p- and m-cresol respectively), indicate that much less nitrobenzene remains in the media pore spaces over the ten years simulated. This illustrates the affect of higher density values. Micromodel studies conducted by Wilson, et al. [*1990*] found that greater densities mean a greater buoyancy (negative) force, which enables the higher density NAPLs to drain more efficiently from the media pore throats and, in many cases, completely by-pass portions of the pore space.

Year	Maximum Saturation	X	Z
	(%)	*(meters)*	*(meters)*
1	18.39	1	-0.25
3	18.40	1	-0.25
5	18.41	1	-0.25
10	18.41	1	-0.25

Graphical analysis for nitrobenzene (Figure 28), shows that by year one, the nitrobenzene has penetrated the total length of the aquitard. This differs from the lower density p- and m-cresol, both of which took approximately three years to infiltrate through the total aquitard thickness. The higher density of nitrobenzene, as compared to the lower density m- and p-cresol, causes the nitrobenzene to be more greatly effected by gravity, thus causing the greater vertical, as compared to lateral, infiltration. Table 6 shows that at year one, the maximum lateral distance (0.05 contour line) travelled is 4.25 meters. By years three, five, and ten, lateral migration has increased only one meter from that of year one. Figures 28 and 29 show that for all years simulated, a fairly consistent travel pattern is established for all years. Once the chemical has infiltrated the length of the aquitard, vertical migration of the higher residual saturation plume core nearly ceases while lateral migration continues. This is exhibited by the maximum contour line of 0.15 (15%). At year one (Figure 28), the 15% contour has a maximum lateral distance of 1.50 meters and a maximum depth of -1.5 meters. By year three, the maximum lateral distance has spread to 2.50 meters but still shows the maximum depth of -1.5 meters. Years five and ten (Figure 29) both show another lateral spread to a maximum distance of 3.25 meters at the same vertical distance of -1.50 meters. Residual saturation contours for years five and ten virtually overlay each other which may indicate that, for higher density chemicals, after an initial plume surge, lateral migration becomes less a factor in contaminant travel.

Nitrobenzene

Density = 1203.3 kg/m^3

Abs. Visc. = 1.634E-3 kg/m-s

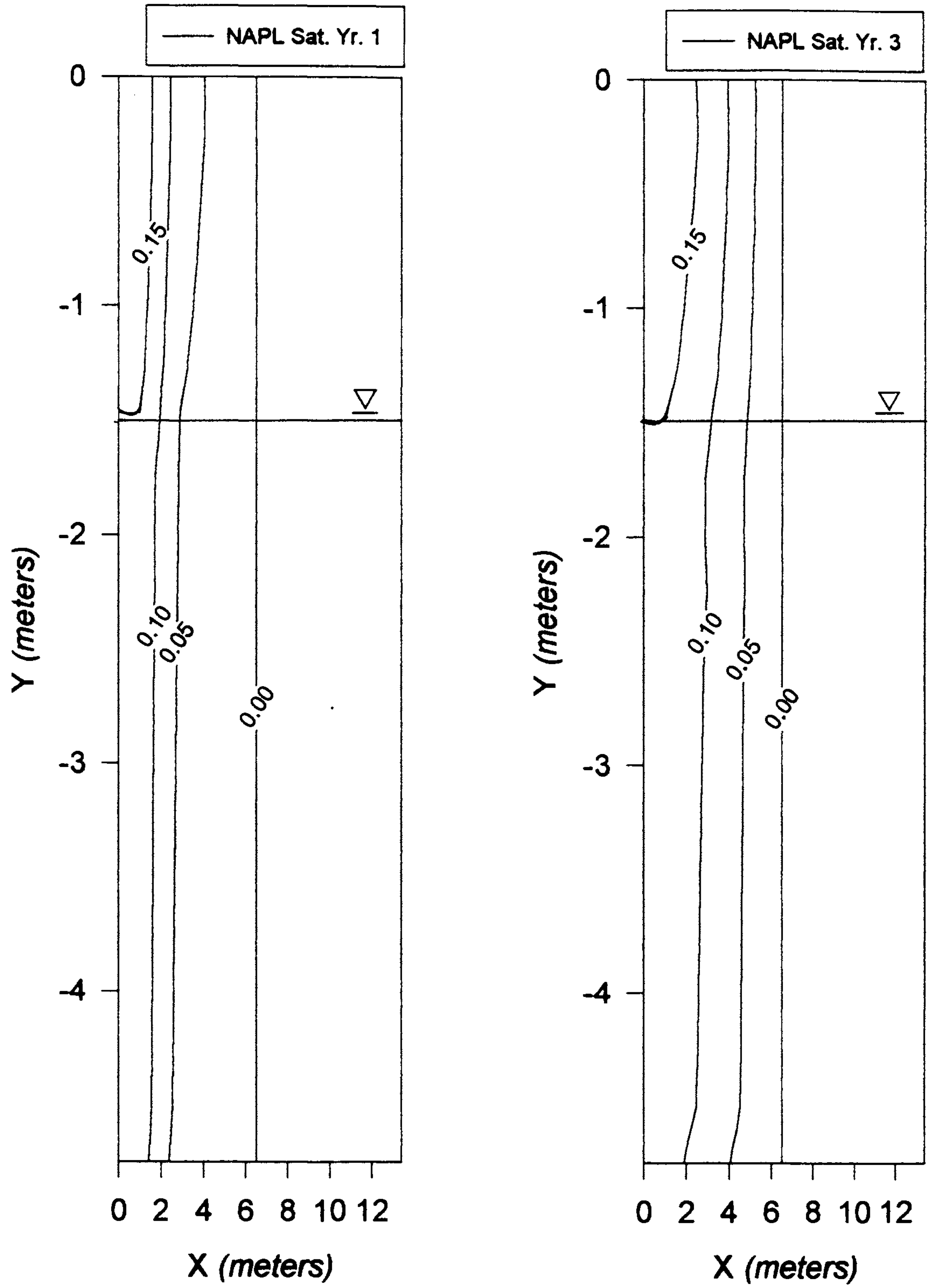


Figure 28. Infiltration of nitrobenzene at years one and three.

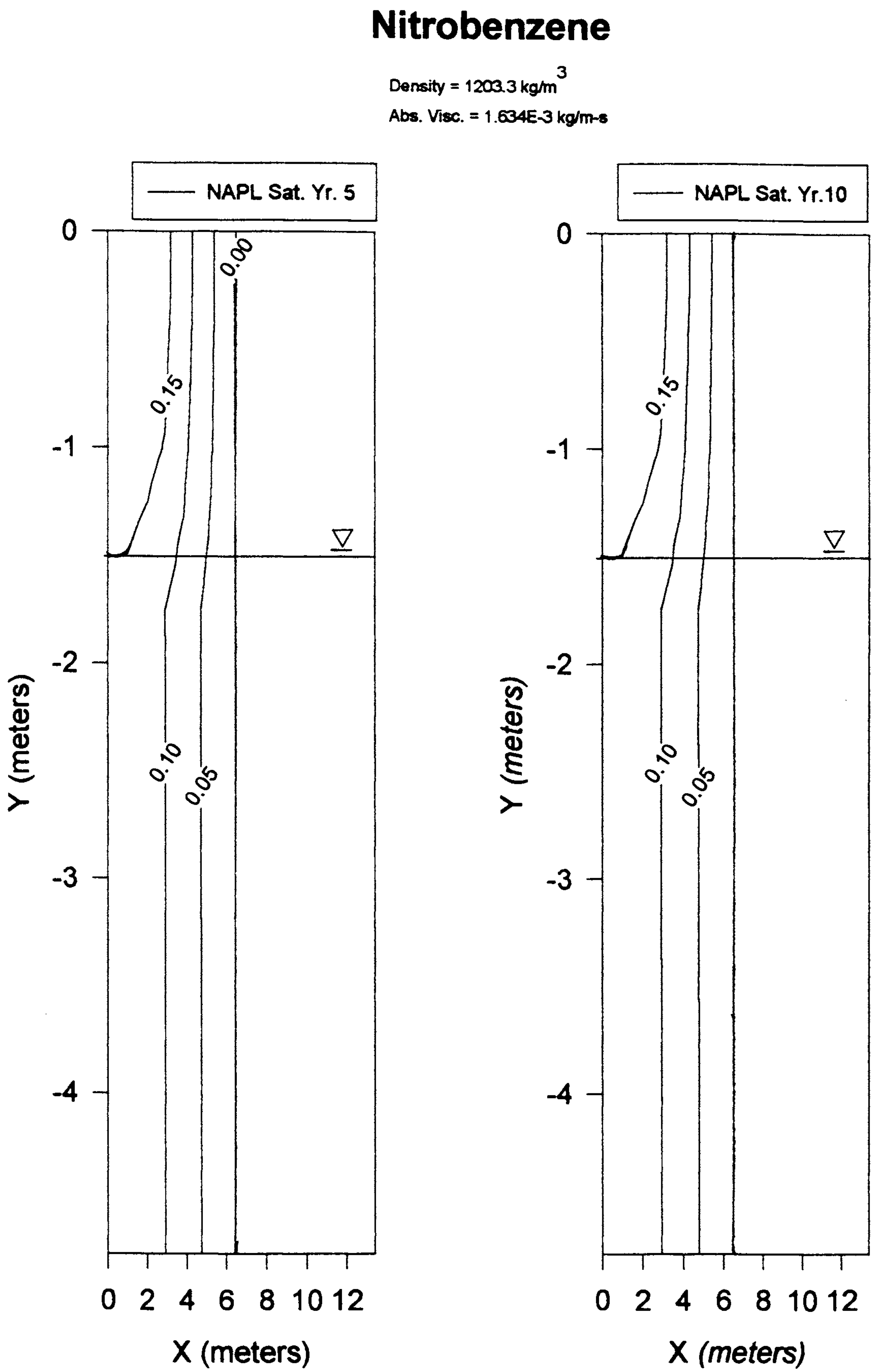


Figure 29. Infiltration of nitrobenzene at years five and ten.

1,1-Dichloroethene

This chemical possesses a middle range density of 1220 kg/m^3 and a very low viscosity 0.36E-3 kg/m-s. It is used in making flexible plastics such as SARAN wrap, and plastic packaging [*U.S. Dept. of Health & Human Services, 1993*].

The maximum saturations for 1,1-dichloroethene (shown below) at years one, three, five, and ten show a nearly constant saturation of 16.80% at a distance of 1.0 meters laterally, and -0.25 meters vertically from the source. This saturation percentage and location from the source is very consistent with nitrobenzene, which has a similar density, but an appreciably lower viscosity. This indicates that viscosity variations may not affect the maximum saturation percentage value and its location from the spill source.

Year	Maximum Saturation *(%)*	X *(meters)*	Z *(meters)*
1	16.79	1	-0.25
3	16.80	1	-0.25
5	16.80	1	-0.25
10	16.80	1	-0.25

Table 6 and Figure 30 show that 1,1-dichloroethene has penetrated the saturated zone well before year one. Later migration of the 15% contour line spreads from 3.75 meters at year one to 5.00 meters at year five (Figure 31). As with nitrobenzene (discussed above), very little lateral migration is detected from years three, five, and ten. Maximum lateral migration of the 0.05 (5%) contour at year ten is 5.50 meters (Figure 31). The maximum contour line of 0.15 (15%) at year one reaches 1.25 meters laterally and -1.12 meters vertically. Year three shows the 15% contour has spread to 1.90 meters laterally, but still maintains a depth of -1.12 meters. Years five and ten (Figure 31) show lateral

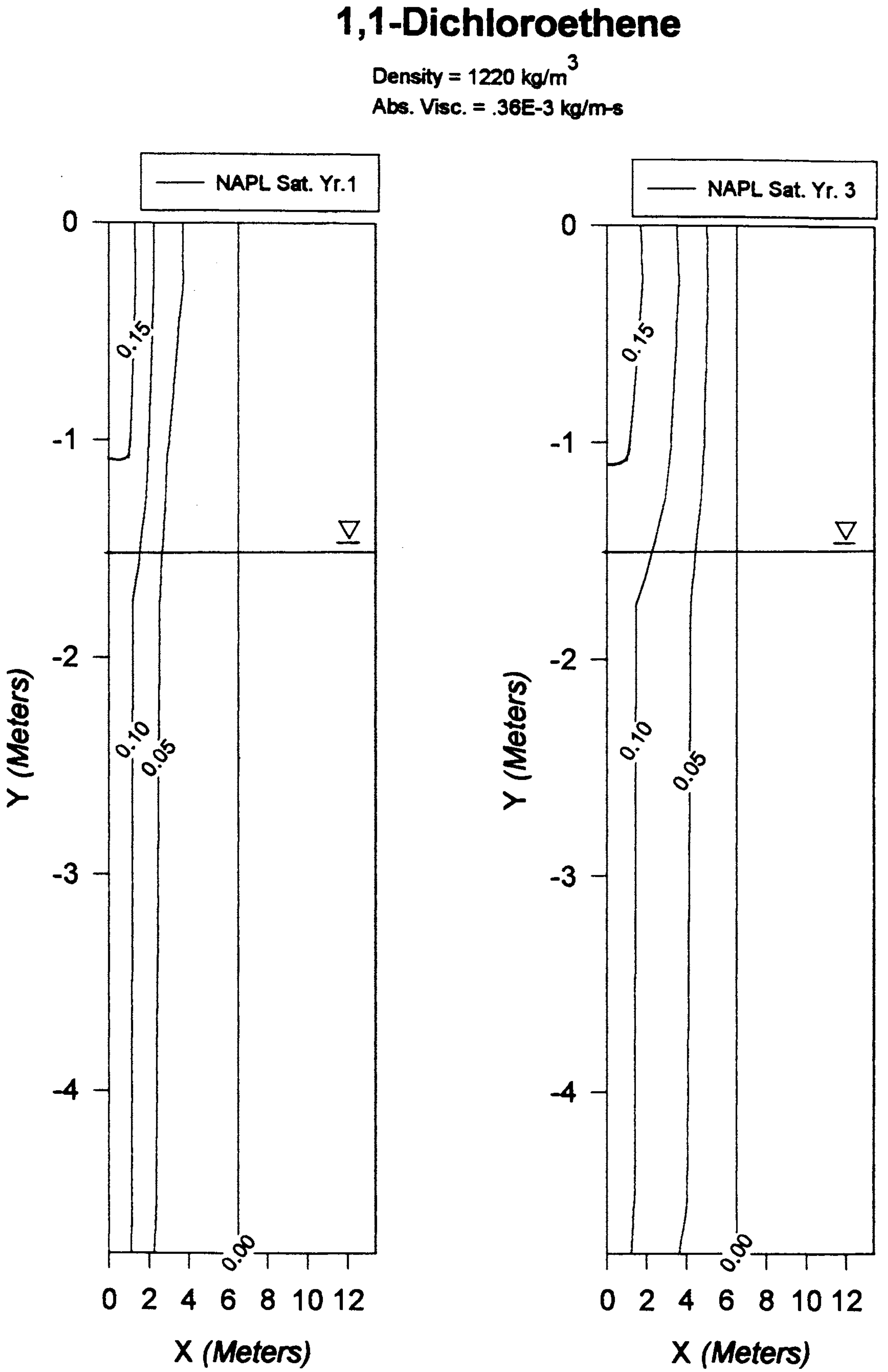


Figure 30. Infiltration of 1,1-dichloroethene at years one and three.

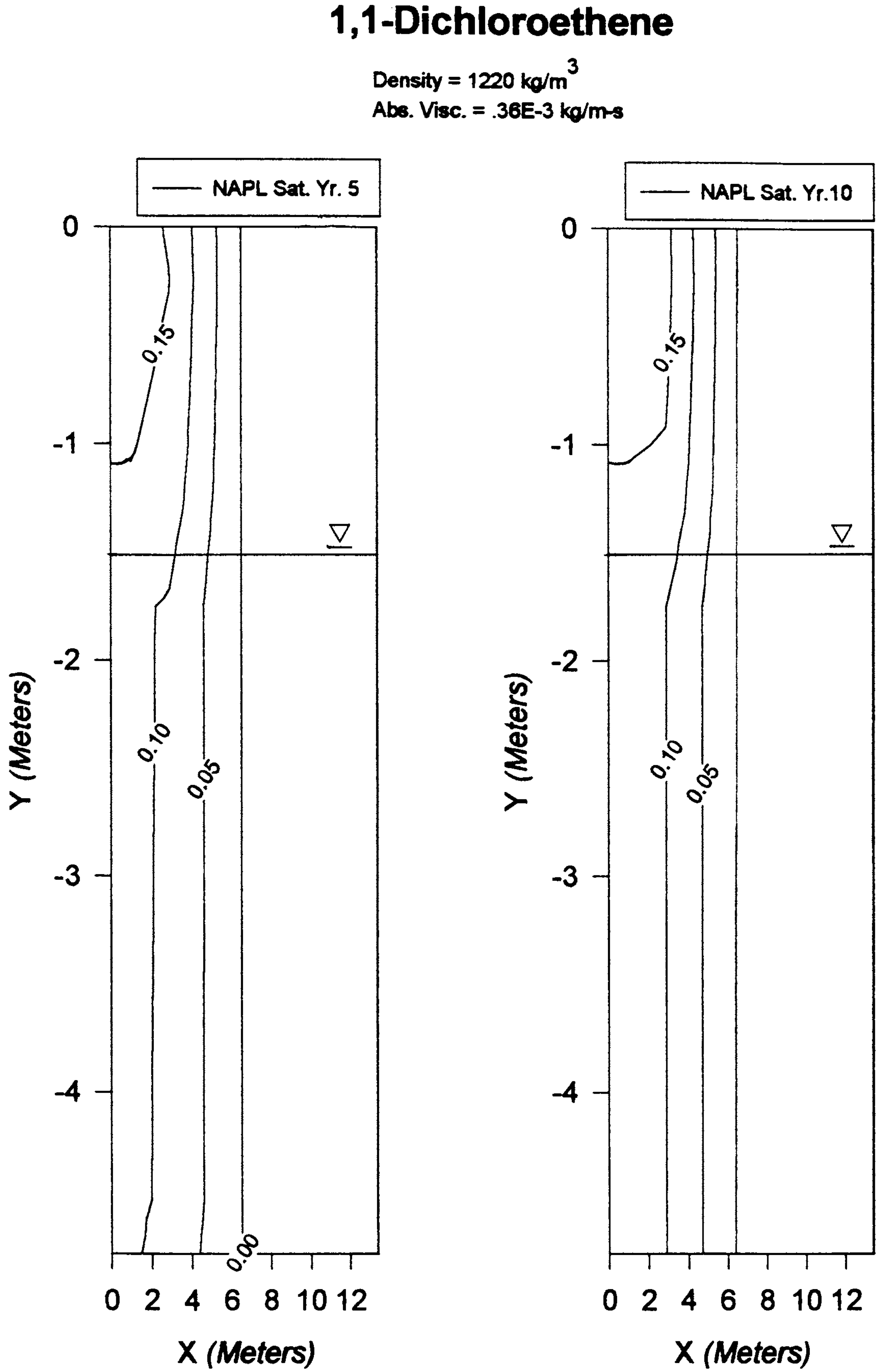


Figure 31. Infiltration of 1,1-dichloroethene at years five and ten.

migrations of 3.00 and 3.25 meters respectively, still with a vertical depth of -1.12 meters. A graphical comparison to nitrobenzene, which has a comparable density but a higher viscosity, shows that at years one, three, and five, the lower viscosity 1,1-dichloroethene contours exhibit greater depth migration and slightly decreased lateral migration. By year ten, however, contour lines for both virtually overlay each other; however, the lower viscosity 1,1-dichloroethene exhibits a lower infiltration depth for the 15% contour. Again, this may indicate that, for higher density chemicals, after a certain amount of time, plume migration stabilizes laterally and may continue vertically into the lower draining aquifer.

Tetrachloroethene (PERC)

PERC represents a fairly high density (1631 kg/m^3), low viscosity (1.932E-3 kg/m-s) chemical. The maximum residual NAPL saturation for all years simulated (seen below) is a constant 16.99%. Again, this shows that a uniform saturation profile has been attained at a lateral distance of 1.0 meter and a vertical distance of -0.25 meters below the source.

Year	Maximum Saturation *(%)*	X *(meters)*	Z *(meters)*
1	16.99	1	-0.25
3	16.99	1	-0.25
5	16.99	1	-0.25
10	16.99	1	-0.25

Figures 32 and 33 show the residual saturation contours for the simulation at one, three, five, and ten years. Again, as with the previous higher density chemicals, the water table (-1.5 meters depth) has been breached well before year one and the complete aquitard

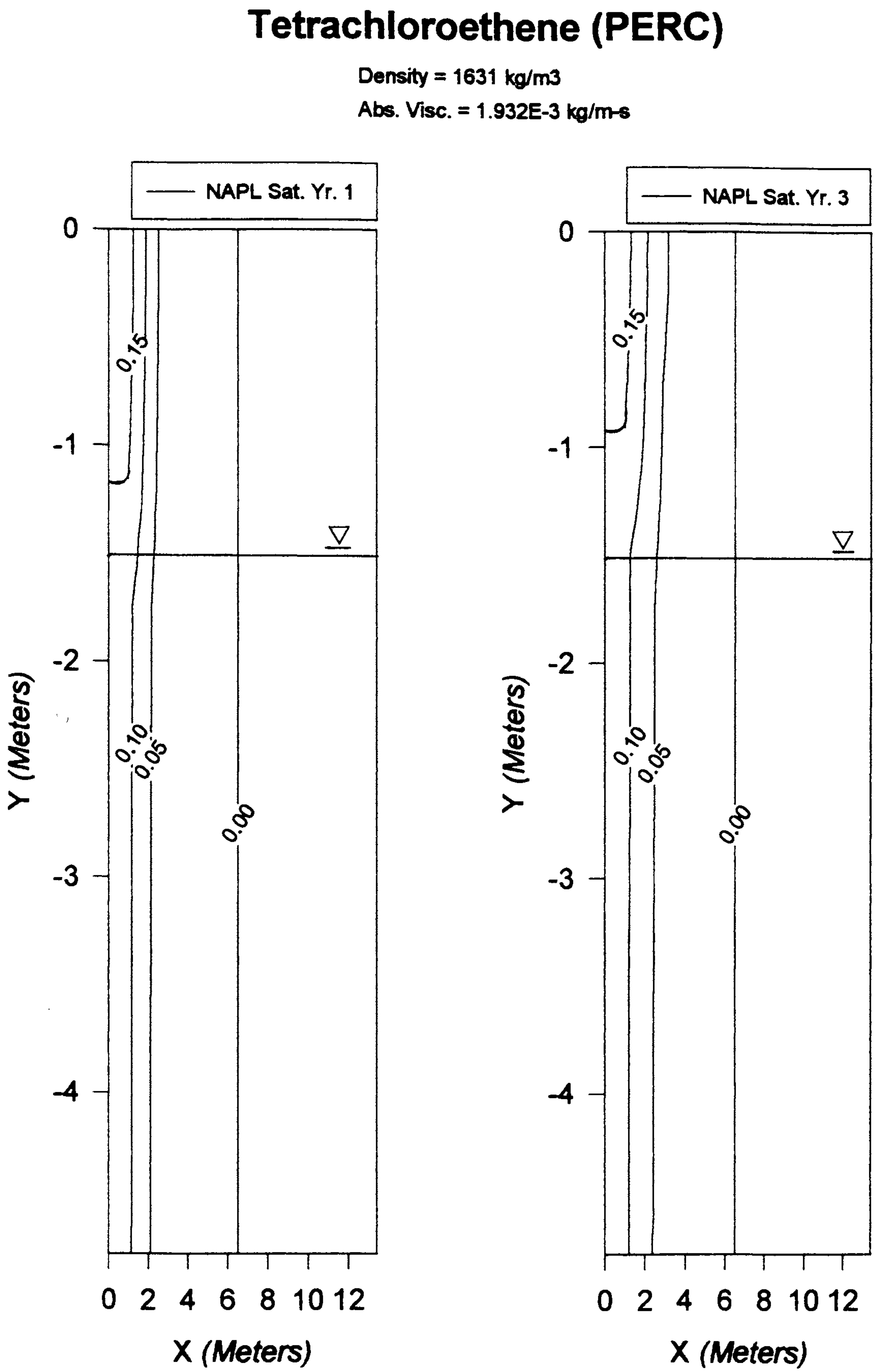


Figure 32. Infiltration of tetrachloroethene (PERC) at years one and three.

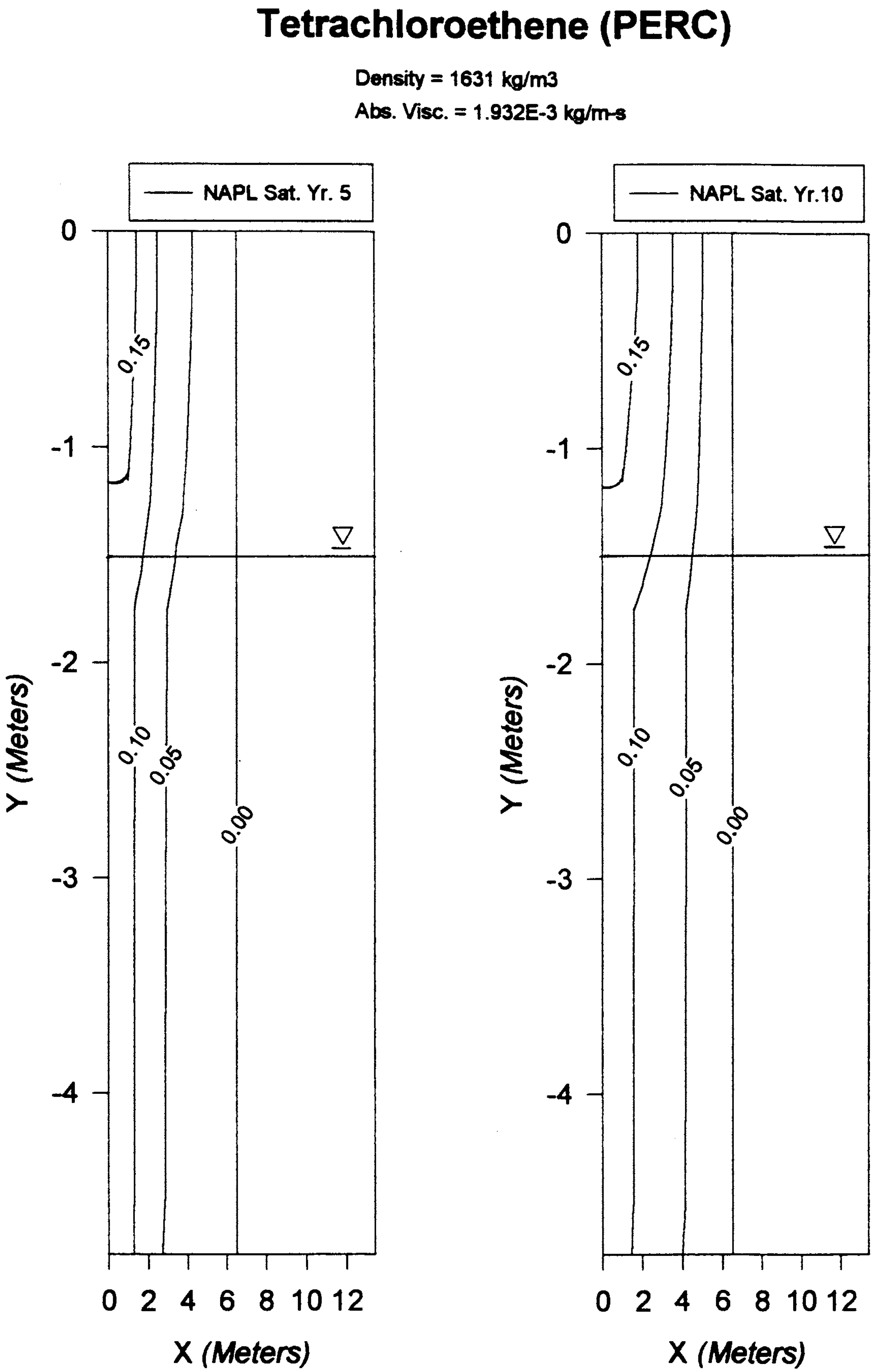


Figure 33. Infiltration of tetrachloroethene (PERC) at years five and ten.

thickness has been penetrated. The 0.05 (5%) contour exhibits a continual and gradual increase in lateral distance from the source. At year one, the 5% contour is 3.25 meters laterally from the source, while after year ten, the 5% contour has spread to 4.25 meters laterally. As with both nitrobenzene and 1,1-dichloroethene, the 5% contour shows virtually no spreading from year five to year ten. For PERC, the maximum residual saturation contour is 0.16 (16%). This contour exhibits no lateral spreading from years one, three, and five, and only a very gradual lateral movement of 0.25 meters from year five to year ten. At years one and ten, the 16% contour is at 1.00 and 1.25 meters respectively. This is indicative of a high density, moderate viscosity chemical, where, due to gravitational forces, the media pore throats are not fully infiltrated. The chemical reaches an equilibrium maximum residual saturation followed by a gradual lateral spread of the plume front, until it too, reaches an equilibrium. Because of the higher density of PERC, it is expected that it will eventually infiltrate the aquifer below the aquitard and contaminant the drinking water supply.

1,2-Dibromoethane (EDB)

EDB is another example of a high density (2169 kg/m^3), low viscosity (1.49E-3 kg/m-s) chemical. EDB is a soil fumigant and was used mainly to control insects in orange groves. Because of its heavy soil application, serious groundwater contamination has become a problem [*Katz, 1993*].

The maximum saturation profile, listed below, over years one, three, five, and ten is very similar to that of the lower density (1631 kg/m^3) and similar viscosity (1.932E-3 kg/m-s) PERC (discussed previously). The maximum residual saturation reported for all years is 16.58% at 1.0 meter lateral and -0.25 meter vertical distance from the source.

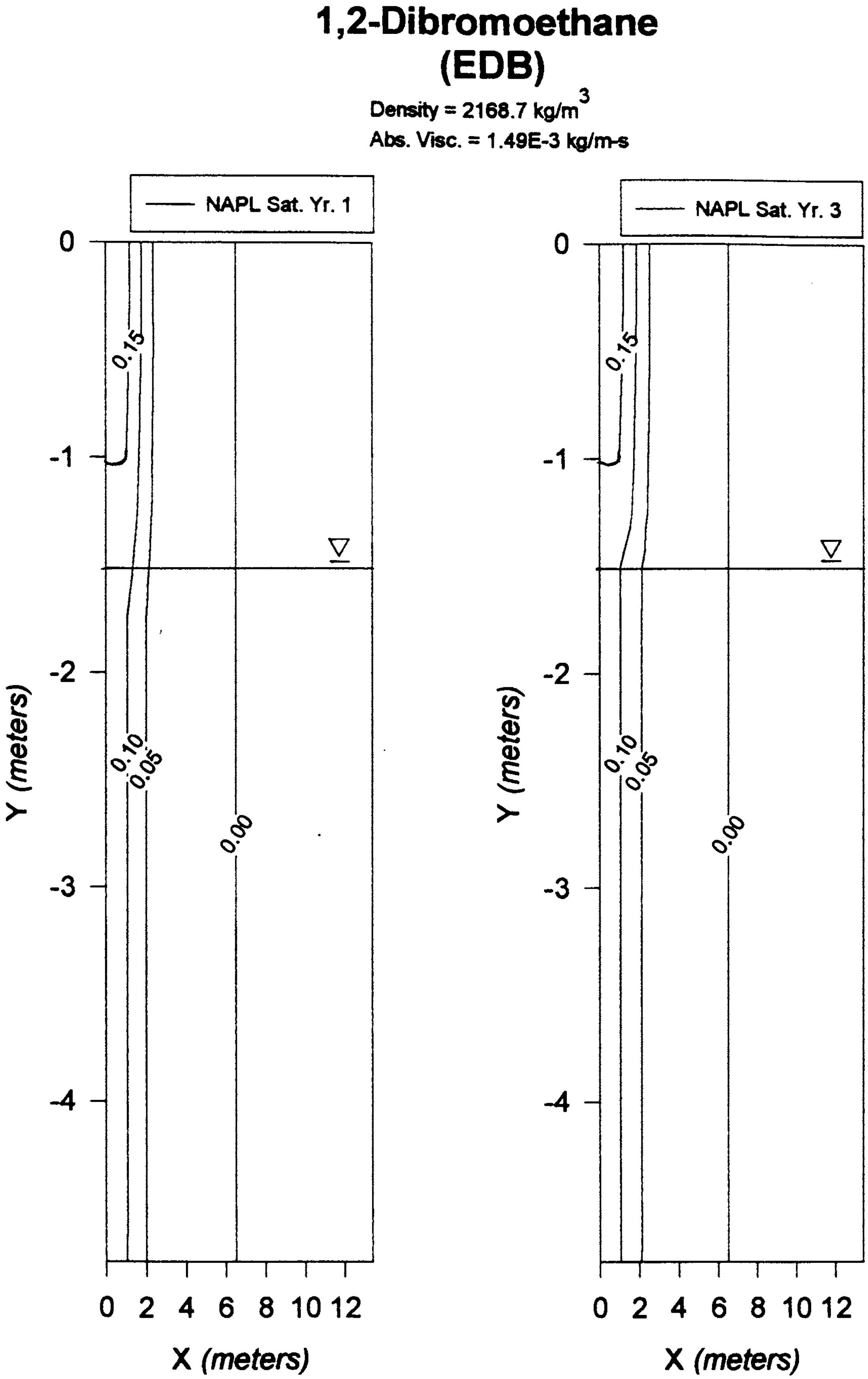


Figure 34. Infiltration of 1,2-dibromoethane (EDB) at years one and three.

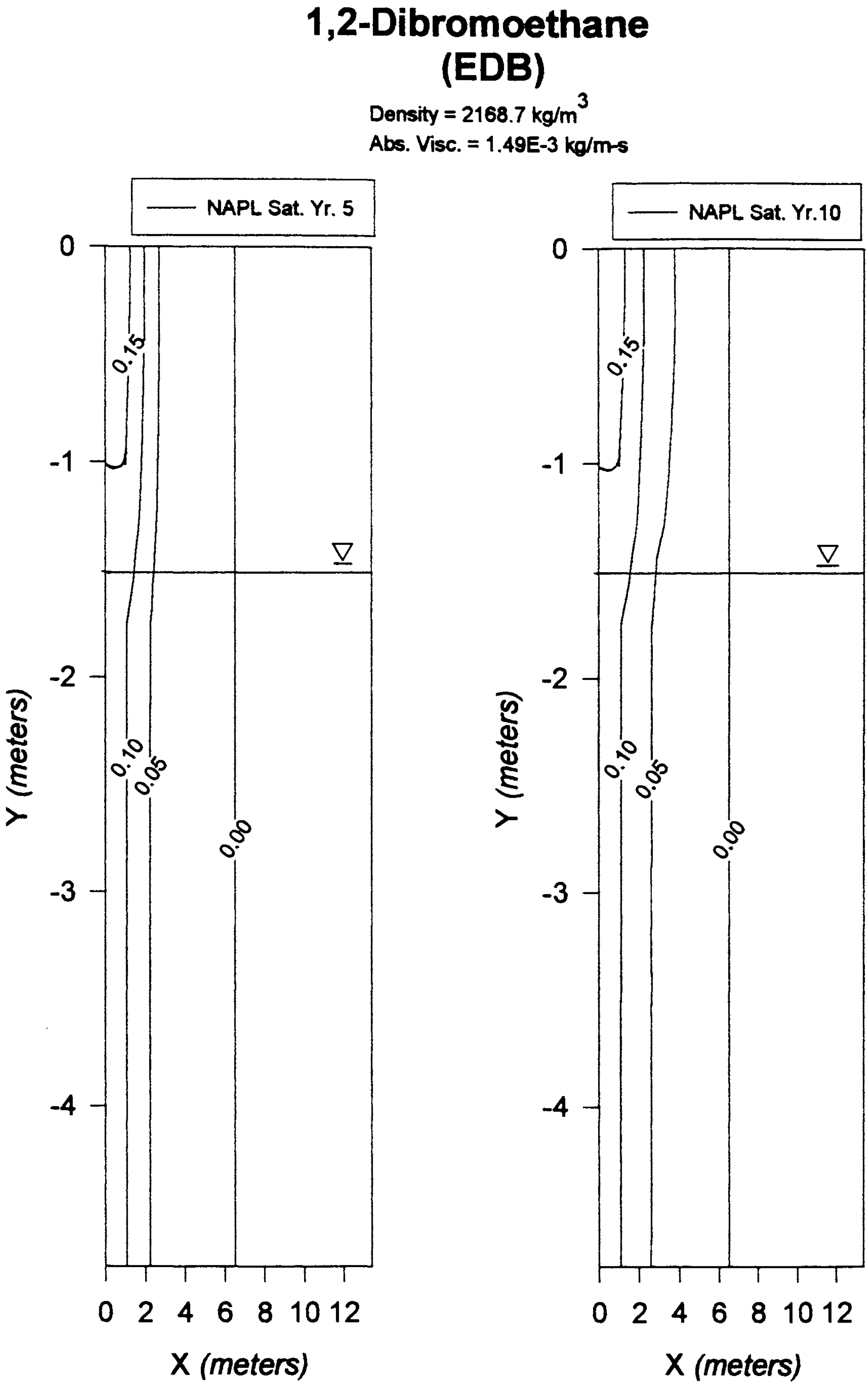


Figure 35. Infiltration of 1,2-dibromoethane (EDB) at years five and ten.

Year	Maximum Saturation	X	Y
	(%)	*(meters)*	*(meters)*
1	16.58	1	-0.25
3	16.58	1	-0.25
5	16.58	1	-0.25
10	16.58	1	-0.25

Figure 34 shows the residual saturation contours for years one and three. The 0.05 (5%) contour shows no lateral spread from years one to three. Again, the water table has been breached well before year one. The lateral position of the 5% contour for both year one and three is 2.5 meters. By years five and ten (Figure 35) the 5% contour has spread laterally to 2.75 and 4.00 meters respectively. A different pattern is seen for the maximum contour of 0.16 (16%). For all years (one, three, five, and ten) no lateral or vertical spreading of the 16% contour is seen. An equilibrium residual saturation is set for the highest residual of 16% while the lower percentage contours (or plume front) are spreading laterally in order to attain an equilibrium. Again, with this high density and low viscosity, the contaminant largely migrates in a vertical direction. With these contaminant characteristics, it is likely that EDB will eventually infiltrate below the aquitard and into the lower draining aquifer.

Mercury

Mercury represents the highest density (13,545 kg/m^3) of all chemicals simulated. This heavy metal possesses one of the lower viscosities of 1.552E-3 kg/m-s. This chemical element poses a serious environmental threat because it remains in the soil (sorbs to soil) for long times. It has many uses and occurs in nature, but toxic levels are most likely to occur through landfill leachates and septage [*Metcalf & Eddy, 1972*] and spills by facilities either manufacturing elemental mercury or using processes involving mercury compounds [*U.S. Dept. of Health & Human Services, 1993*].

The maximum saturation (listed below) ia a consistent 16.40% for all simulation years reported, and follows the same trend as the previously discussed high density, moderate or low viscosity chemicals (nitrobenzene, 1,1dichloroethene, PERC, and EDB). The 1.0 meter lateral and -0.25 meter vertical position of this maximum saturation value also is consistent with the other high density chemicals.

Year	Maximum Saturation *(%)*	X *(meters)*	Z *(meters)*
1	16.40	1	-0.25
3	16.40	1	-0.25
5	16.40	1	-0.25
10	16.40	1	-0.25

Unlike the previously discussed high density chemicals, mercury has just arrived at the water table depth of -1.5 meters after year one. Figure 36 shows the saturation contours at years one and three. At year one, the 0.05 (5%) contour is located 2.25 meters laterally and -1.50 meters vertically from the source. Throughout all of the years simulated, the lateral position of the 5% contour remains unchanged, however, the vertical migration of the 5% contour has infiltrated the entire thickness of the aquitard at year three. The position of the highest residual saturation contour, 0.15 (15%), remains a constant 1.00 meter laterally and -1.00 meters vertically. The fact that this very high density chemical does not fully penetrate the entire aquitard thickness by year one is very anomalous. A literature search found no other attempts to mathematically model mercury It is not known if this is a reliable simulation, or if the limits of SWANFLOW model have been tested by the very high density and relatively low viscosity values.

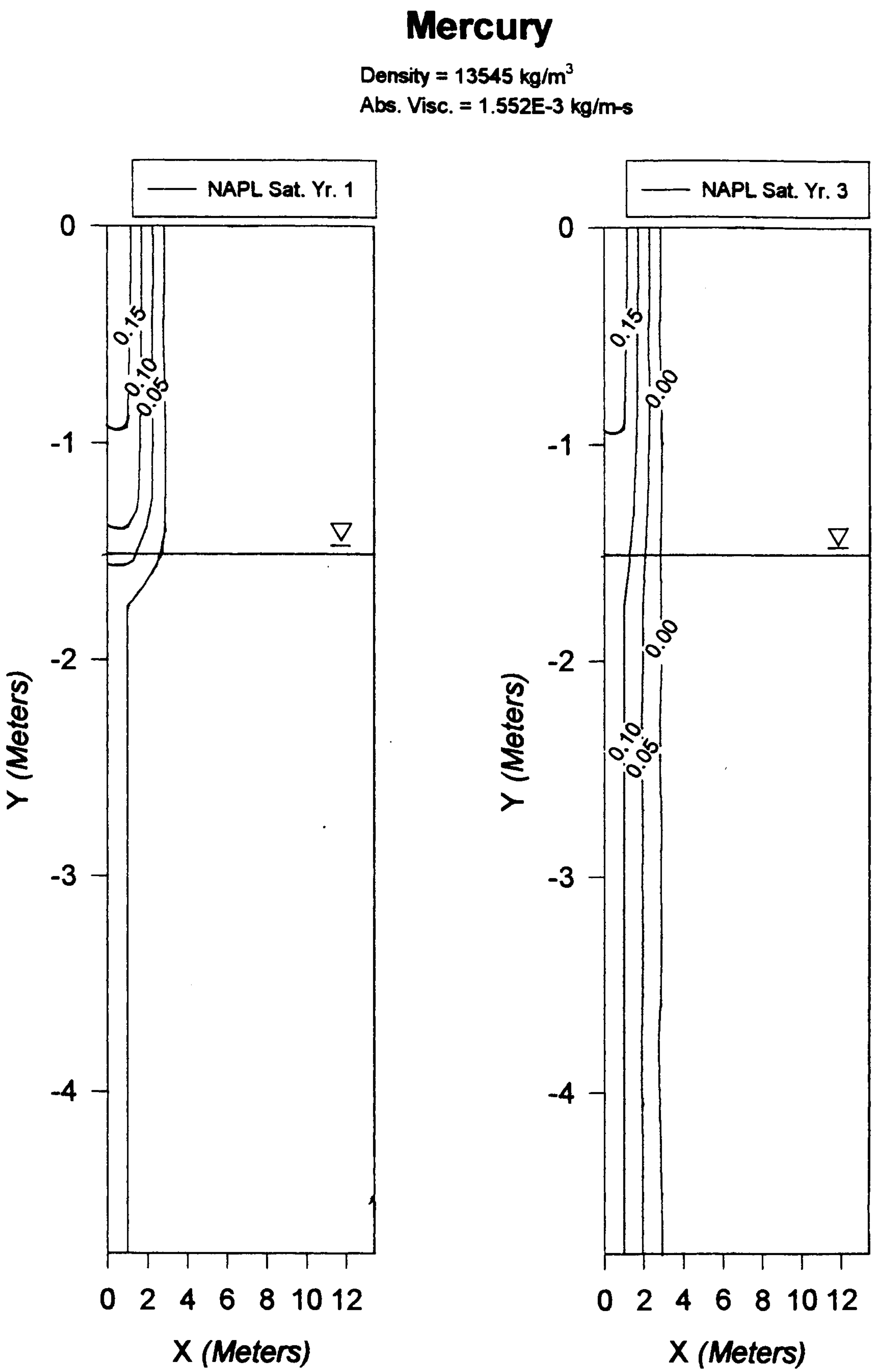


Figure 36. Infiltration of mercury at years one and three.

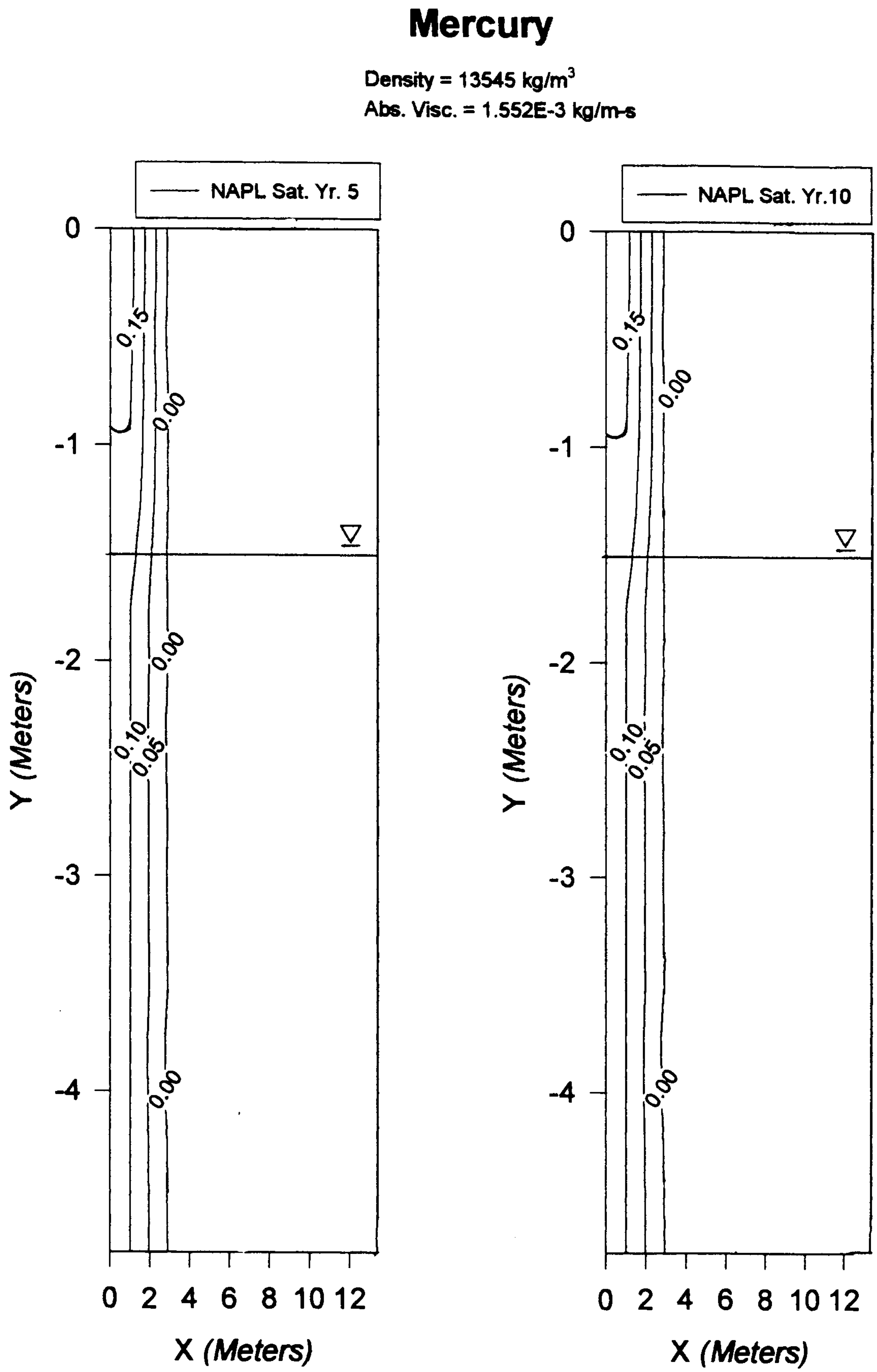


Figure 37. Infiltration of mercury at years five and ten.

Discussion Summary

Light Non-Aqueous Phase Liquid (LNAPL)

The results of this study support the findings of Balthazor, *[1994]*. Those findings showed that, for an LNAPL, as the viscosity increases, the lateral migration of the contaminant decreases while the vertical migration increases. For this study, however, the LNAPL chemical densities were quite similar, while the viscosities were more varied, which enabled a more detailed study of viscosity effects alone.

For ease in comparison, Table 5 in this study, exhibits in tabular form the graphical results of the minimum (zero contour) and maximum (0.4 contour) residual NAPL saturations for the light non-aqueous phase liquids. By comparing and contrasting the lateral and vertical plume migration distances travelled for the different LNAPL chemicals listed in this table, it can be seen that viscosity differences play an important role in the migration of non-aqueous contaminant travel.

Throughout this study, the fact that an increase in viscosity will decrease lateral and increase vertical migration, is not only indicated graphically, but also analytically, in that, for the chemicals having similar densities and lower viscosities (e.g. toluene and m-xylene), the grid cell containing the maximum NAPL residual saturation is located farther out laterally and closer to the surface than the other, higher viscosity chemicals. It appears that an appreciable density increase can also affect this (e.g. benzene has a lower viscosity than m-xylene but has a slightly higher density and therefore, the highest residual saturation cells all remain at closer to the the source). Density values for the chemicals simulated only ranged from 861 - 880 kg/m^3, however, a slight increase in vertical migration could be attributed to increasing densities, given comparable viscosities. The effect of an increased density could, however, be masked by an increase in viscosity. Benzene exhibits the fact that viscosity is not the only influence on contaminant transport.

Table 5

SWANFLOW Results
LNAPL Data

0.0 Contour Line

Chemical	Density (kg/m3)	Abs. Visc. (kg/m-s)	Max. X (m) (Year 1)	Max. Y (m) (Year 1)	Max. X (m) (Year 3)	Max. Y (m) (Year 3)	Max. X (m) (Year 5)	Max. Y (m) (Year 5)	Max. X (m) (Year 10)	Max. Y (m) (Year 10)
p-Xylene	861	6.44E-04	23	-1.3	46	-1.7	72	-2	95	-2.2
Toluene	862	5.52E-04	24	-1.3	47	-1.7	76	-1.9	98	-2.2
m-Xylene	864	6.17E-04	23	-1.25	46	-1.7	72	-2	95	-2.2
Ethylbenzene	867	6.78E-04	23	-1.3	40	-1.6	68	-2	93	-2.3
Benzene	876	6.01E-04	23	-1.35	46	-1.75	70	-2.1	93.5	-2.3
o-Xylene	880	8.09E-04	21	-1.4	44	-1.9	52	-2.15	89	-2.5

0.4 Contour Line

Chemical	Density (kg/m3)	Abs. Visc. (kg/m-s)	Max. X (m) (Year 1)	Max. Y (m) (Year 1)	Max. X (m) (Year 3)	Max. Y (m) (Year 3)	Max. X (m) (Year 5)	Max. Y (m) (Year 5)	Max. X (m) (Year 10)	Max. Y (m) (Year 10)
p-Xylene	861	6.44E-04	4	-0.85	15	-1.3	27	-1.6	53	-1.9
Toluene	862	5.52E-04	4	-0.9	15	-1.3	28	-1.5	53.5	-1.85
m-Xylene	864	6.17E-04	4	-0.8	15	-1.35	27	-1.6	53	-1.9
Ethylbenzene	867	7.68E-04	3.5	-0.85	13.5	-1.1	27.5	-1.6	52.5	-1.95
Benzene	876	6.01E-04	2	-0.85	14.5	-1.35	30	-1.6	52	-1.9
o-Xylene	880	8.09E-04	3.5	-1.05	14.5	-1.45	27.5	-1.75	45	-2.1

Table 5 shows a smaller horizontal and slightly higher vertical travel distance for benzene than for m- and p-xylene, which have higher viscosities but lower densities. Because of the higher density, gravitational forces cause benzene to travel a more vertical path, thereby making the viscous forces less effective.

The results also show that even a slight variation in density and viscosity (such as with the LNAPLs simulated) can have an affect on contaminant transport in the subsurface.

The pattern of increasing viscosity causing smaller lateral migrations really begins to emerge at years five and ten (Table 5). It is at these times that even the slightest changes in viscosity are evidenced by a decrease in lateral migration, and viscosity variations have more prevalent results than slight density variations. Years one and three follow the pattern in a more general way. At these times, it appears that a greater viscosity variation is needed in order to affect lateral migration distances. Also at years one and three, vertical migrations seem to be more related to density variations than to viscosity variation.

Not only do variations in density and viscosity affect how far a contaminant will migrate, but they also affect the timing of when the contaminant will migrate. As seen in Table 5, with the exception of o-xylene (21 meters), year one lateral migration distances for all chemicals simulated were similar (about 23 meters). By year three, ethylbenzene (middle range density, high viscosity) has continued to travel a much shorter distance (40 meters) than the other chemicals (44-47 meters). At year five, lateral migration for ethylbenzene has nearly caught up with the other chemicals, but the lateral distance that o-xylene (highest density and viscosity) has travelled (52 meters) is much shorter than the other chemicals (68-76 meters). By year ten, toluene (lowest viscosity) has travelled farther (98 meters) than all other chemicals simulated (89-95 meters) while o-xylene has travelled the least distance (89 meters). This may be explained by the fact that ethylbenzene and o-xylene possess the highest viscosity values (6.78E-4 and 8.09E-4 kg/m-s respectively) of all LNAPL chemicals simulated. Ethylbenzene, with a viscosity value closer to those of most other LNAPL chemicals simulated, showed a lateral travel distance (68 meters) closer to those of the other LNAPLs than o-xylene which possesses a somewhat higher viscosity value and showed quite an anomalous lateral distance at five years (52 meters). Toluene also shows an anomalously high lateral migration distance at years five (76 meters) and ten (98 meters). The viscosity value for toluene is somewhat lower than all other chemicals simulated. This resulted in toluene showing a lateral migration increase of 6 meters for year five and 4.5 meters for year ten over the nearest viscosity value of 6.01E-4 kg/m-s (for benzene).

Table 5 also shows that an increase in density also increases the maximum depth the LNAPL will reach. For year one, the vertical depths are similar for all chemicals simulated. By year three, however, the highest density o-xylene has travelled further vertically (-1.9 meters) than the lower density chemicals, even benzene (-1.75 meters) which has a density very close to that of o-xylene. o-Xylene is still travelling further vertically at year five (-2.15 meters), and this distance becomes more pronounced by year ten (-2.5 meters).

Dense Non-Aqueous Phase Liquid (DNAPL)

Again, the results of this study support Balthazor, [*1994*] findings that for dense non-aqueous phase liquids, as viscosity increases, lateral migration also increases, while vertical migration decreases. When simulating a greater number of chemicals possessing more similar densities and viscosities, however, more detailed results are brought to light. The densities and viscosities of the chemicals selected for this study enabled a more detailed study of, not only density and viscosity effects on contaminant travel, but on viscosity effects alone (given two chemicals with similar densities such as m- and p-cresol).

Table 6

SWANFLOW Results
DNAPL Data

Minimum Contour Line

Chemical	Density (kg/m3)	Abs. Visc. (kg/m-s)	Contour	Max. X (m) (Year 1)	Max. Y (m) (Year 1)	Max. X (m) (Year 3)	Max. Y (m) (Year 3)	Max. X (m) (Year 5)	Max. Y (m) (Year 5)	Max. X (m) (Year 10)	Max. Y (m) (Year 10)
p-Cresol	1014	5.670E-03	0.05	4.75	-3.75	8.00	'	8.75	'	10.00	'
m-Cresol	1038	2.467E-02	0.05	5.00	-3.35	7.25	'	9.00	'	10.25	'
Nitrobenzene	1203	1.634E-03	0.05	4.25	'	5.50	'	5.50	'	5.50	'
Dichloroethene	1220	3.600E-04	0.05	3.75	'	5.00	'	5.50	'	5.50	'
Tetrachloroethene	1631	1.932E-03	0.05	3.25	'	3.25	'	4.25	'	4.25	'
Dibromoethane	2169	1.490E-03	0.05	2.50	'	2.50	'	2.75	'	4.00	'
Mercury	13545	1.552E-03	0.05	2.25	-1.50	2.25	'	2.25	'	2.25	'

Maximum Contour Line

p-Cresol	1014	5.670E-03	0.40	1.25	-1.80	2.00	-2.80	2.25	-2.90	2.25	-3.00
m-Cresol	1038	2.467E-02	0.50	1.00	-2.00	3.00	-3.50	3.00	-3.75	3.00	-3.75
Nitrobenzene	1203	1.634E-03	0.15	1.50	-1.50	2.50	-1.50	3.25	-1.50	3.25	-1.50
1,1-Dichloroethen	1220	3.600E-04	0.15	1.25	-1.12	1.90	-1.12	3.00	-1.12	3.25	-1.12
Tetrachloroethene	1631	1.932E-03	0.16	1.00	-0.75	1.00	-0.75	1.00	-0.75	1.25	-0.75
1,2-Dibromoethan	2169	1.490E-03	0.15	1.00	-1.00	1.00	-1.00	1.25	-1.00	1.25	-1.00
Mercury	13545	1.552E-03	0.15	1.00	-1.00	1.00	-1.00	1.00	-1.00	1.00	-1.00

NOTE: ' denotes infiltration into saturated zon (ie > -4.75 meters)

Since the DNAPL chemicals resulted in such highly vertical travel (due to gravitational forces), the discussion referring to the contaminant plume front will be aimed toward lateral migration distances. For the maximum residual saturation contour (contaminant plume core) discussion, the vertical migrations will be included as well as the lateral migrations. For the following discussions on the timing of DNAPL migration, the reader is referred to Table 6.

In contrast to the LNAPL results, for the case of DNAPL chemicals, an increase in viscosity generally results in an increase, over time, of lateral migration of the plume front (top half of Table 6) and, in the case of the plume core, or, the highest residual saturation contours (bottom half of Table 6), a decrease in vertical migration over time. In the case of two chemicals possessing similar densities, such as m- and p- cresol, the higher viscosity m-cresol shows a larger lateral migration distance than the lower viscosity p-cresol. The higher viscosity chemical also exhibits a higher maximum residual saturation contour (0.4 for the lower viscosity p-cresol and 0.5 for m-cresol) for years one, three, five, and ten.

Although not as evident as the LNAPLs, for the DNAPLs also, density and viscosity variations affected the timing of the plume migration. Table 6 illustrates the DNAPL lateral migration changes for years one, three, five, and ten for both the 0.05 contour and for the maximum residual contour found in the bottom half of Table 6 (due to contouring limitations, the maximum residual contours vary for each chemical). For the DNAPLs simulated, the highest residual saturation contours (the plume core) would stabilize, usually by year three, at which time only the plume front (0.05 contour) continued to migrate laterally. Stabilization refers to the point at which the NAPL build-up in the pore spaces ceases and therefore, little or no lateral plume migration appears to occur in the contour diagrams from one year to the next. The timing of this stabilization, whether it be year one, three, or five, depended on the chemical density. The higher the density, the sooner stabilization occurred. The highest density and moderate viscosity chemicals, such as tetrachloroethene, 1,2-dibromoethane, and mercury stabilized at year one, while the lower density, relatively high viscosity chemicals (p-cresol and m-cresol) stabilized at year three. The middle range density and lower viscosity chemicals (nitrobenzene and 1,1dichloroethene) did not stabilize until year five. This indicates that density plays a more important role in chemical migration than just creating a high tendency for vertical migration. Density, in combination with viscosity, also affects the lateral plume migration.

Based on the results of these simulations, it is possible to help optimize a remediation strategy (e.g. monitor well locations) which takes into account the densities and viscosities of the chemical constituents within a contaminant plume, as well as the time since the onset of the leak. The results of these simulations show that dense, low viscosity contaminants present the greatest danger in terms of migration potential. They will travel deeper and faster, and are more difficult to remediate. Conversely, LNAPL contaminants, having higher viscosities will be the slowest moving and will remain largely in the shallower vadose zone, thus making these chemicals easier to remediate.

This study also indicates that the length of time a NAPL has been leaking can also affect remediation strategies. Given two LNAPLs having similar densities, the higher viscosity chemical will result in the lowest increase in lateral migration distance in years three and five (such as ethylbenzene and o-xylene). On the other hand, for two LNAPL chemicals having similar densities, the lower viscosity chemical will have its maximum lateral migration from years five and ten.

For DNAPLs, the higher the density and viscosity, the sooner the plume front will cease lateral migration (by year one in this study). A low density, high viscosity chemical will attain stabilization at year three, while middle range density and viscosity chemicals continue lateral migrations until year five.

Conclusions

LNAPLs

1. For an LNAPL, as the viscosity increases, the lateral migration of the contaminant decreases while the vertical migration increases.

2. The effects of a slight increase in density may be masked by a viscosity increase.

3. The simulation results show that even slight variations in density and viscosity can affect contaminant transport in the porous media.

4. Not only do variations in density and viscosity affect how far a contaminant will migrate, but they also affect the timing of when the contaminant will migrate. For two LNAPL chemicals having similar densities, the higher viscosity chemical exhibits a maximum lateral migration from years five to ten. This is in contrast to similar density, lower viscosity chemicals which exhibit maximum lateral migrations from years three to five.

DNAPLs

5. In the case of DNAPLs, an increase in viscosity generally results in an increase, over time, of lateral migration and, as indicated by the highest residual saturation contours, a decrease in vertical migration over time.

6. Chemical densities much greater than that of water did not exhibit a large effect on vertical migration for this simulation; they simply migrated very quickly to the base of the water table. For two chemicals possessing similar densities which are very close to that of water, the higher viscosity chemical still resulted in increased lateral and decreased vertical migration of the plume front.

7. For DNAPLs also, density and viscosity variations effect the timing of the plume migration. The higher the density, the sooner stabilization of the highest residual saturation contour would occur. The highest density and moderate viscosity chemicals would stabilize at year one, while the lower density, relatively high viscosity chemicals stabilized at year three. Middle range density and low viscosity chemicals didn't stabilize until year five.

REFERENCES

Abriola, L.M., and G.F. Pinder, A Multiphase Approach to the Modelling of Porous Media Contamination by Organic Compounds, 1, Equation Development, Water Resources Research, 21(1), 11-18, 1985a.

Abriola, L.M., and G.F. Pinder, A Multiphase Approach to the Modelling of Porous Media Contamination by Organic Compounds, 2, Numerical Simulation, Water Resources Research, 21(1), 19-26, 1985b.

Adenekan, A.E., T.W. Patzek, and K. Pruess, Modeling of Multiphase Transport of Multicomponent Organic Contaminants and Heat in the Subsurface; Numerical Model Formulation, Water Resources Research, 29(11), 3727-3740, 1993.

Baehr, A.L., and M.Y. Corapcioglu, A Compositional Multiphase Model for Groundwater Contamination by Petroleum Products, 2, Numerical Solution, Water Resources Research, 23(1), 201-214, 1987.

Balthazor, D.A., An Examination of Density and Viscosity Dependent Infiltration of Immiscible Nonaqueous Phase Liquids Using the Numerical Model "SWANFLOW", Masters Thesis, Oklahoma State University, 1994.

Barry, L.L., Barry, D.A., et al, Mass Transfer in Soils With Local Stratification of Hydraulic Conductivity, Water Resources Research, 30(11), 2891-2900, 1994.

Brooks, P.M., and A.T. Corey, Hydraulic Properties of Porous Media, Hydrology Pater 3, University of Colorado, Fort Collins, Colorado, 1966.

Burmaster, D.E., and R.H. Harris, Groundwater Contamination: An Emerging Threat, Technology Review, 84(7), 50-52, 1982.

Coats, K.H., Reservoir Simulation: State of the Art, Journal of Petroleum Technology, 34(8), 1633-1642, 1982.

Conrad, S.H., J.L. Wilson, W.R. Mason, and W.J. Peplinski, Visualization of Residual Organic Liquid Trapped in Aquifers, Water Resources Research, 28(2), 467-478, 1992.

Corapcioglu, M.Y., and A.L. Baehr, A Compositional Multiphase Model for Groundwater Contamination by Petroleum Products, 1, Theoretical Considerations, Water Resources Research, 23(1), 191-200, 1987.

Corapcioglu, M.Y., and M.A. Hossain, Ground-water Contamination by High-Density Immiscible Slugs in Gravity-Driven Gravel Aquifers, Ground Water, 28(3), 403-412, 1990.

Corey, A.T., Mechanics of Immiscible Fluids in Porous Media, Water Resources Publications, Littleton, Colorado, 1986.

Corey, A.T., C.H. Rathjens, J.H. Henderson, and M.J. Wyllie, Three-phase Relative Permeability, American Institute of Mining, Metallurgical, and Petroleum Engineers Transactions, Petroleum Branch, 207, 349-351, 1956.

Demond, A.H., and P.V. Roberts, Estimation of Two-phase Relative Permeability Relationships for Organic Liquid Contaminants, Water Resources Research, 29(4), 1081-1090, 1993.

El-Kadi, A.I., Applicability of Sharp-Interface Models for NAPL Transport: 1. Infiltration, Ground Water, 30(6), 849-856, 1992.

El-Kadi, A.I., Applicability of Sharp-Interface Models for NAPL Transport: 2. Spreading of an LNAPL, Ground Water, 30(6), 1992.

Faust, C.R., Transport of Immiscible Fluids Within and Below the Unsaturated Zone, A Numerical Model, Water Resources Research, 21(4), 587-596, 1985.

Faust, C.R., J.H. Guswa, and J.W. Mercer, Simulation of Three-dimensional Flow of Immiscible Fluids Within and Below the Unsaturated Zone, Water Resources Research, 25(12), 2449-2464, 1989.

Faust, C.R., J.O. Rumbaugh, SWANFLOW: Simultaneous Water, Air, and Nonaqueous Phase Flow, Version 1.0, International Ground Water Modeling Center, Institute for Ground-Water Research and Education, Colorado School of Mines, Golden, Colorado, 1985.

Ferrand, L.A., P.D. Milly, G.F. Pinder, and R.P. Turrin, A Comparison of Capillary Pressure-Saturation Relations for Drainage in Two- and Three-fluid Porous Media, Advances in Water Resources, 13(2), 54-63, 1990.

Fetter, C.W., Contaminant Hydrology, Macmillan Publishing Company, New York, 1993.

Forsyth, P.A., Simulation of Nonaqueous Phase Groundwater Contamination, Advances in Water Resources, 11, 74-83, 1988.

Green, D.W., J. Dabiri, C.F. Weinaug, and R. Prill, Numerical Modeling of Unsaturated Groundwater Flow and Comparison of the Model to a Field Experiment, Water Resources Research, 6(3), 862-874, 1970.

Guswa, J.H., Application of Multi-Phase Flow Theory at a Chemical Waste Landfill, Niagara Falls, New York, Proceedings of the Second International Conference on Groundwater Quality Research, pp. 108-111, National Center for Ground Water Research, Oklahoma State University, Stillwater, Oklahoma, 1985.

Hochmuth, D.P., and D.K. Sunada, Groundwater Model of Two Phase Immiscible Flow in Course Material, Ground Water, 23(5), 617-626, 1985.

Howard, P.H., Fate and Exposure Data for Organic Chemicals, Vols. I-IV, Lewis Publishers, 1990.

Huyakorn, P.S., S.D. Thomas, J.W. Mercer, and B.H. Lester, SATURN: A Finite Element Model for Simulating Saturated-Unsaturated Flow and Radionuclide Transport, report prepared for Electric Power Research Institute, Geotrans, Inc., Sterling, Virginia, 1983.

Kaluarachchi, J.J., J.C. Parker, An Efficient Finite Element Method for Modeling Multiphase Flow, Water Resources Research, 25(1), 43-54, 1989.

Kia, S.F., J.C. Smith, Distribution of Light Organic Contaminants in the Groundwater Table Vicinity, Water Resources Research, 28(10), 2075-2086, 1994.

Kuepper, B.H., E.O. Frind, Two-Phase Flow in Heterogeneous Porous Media 2. Model Application, Water Resources Research, 27(6), 1059-1070, 1991.

Kuppusamy, T., J. Sheng, J.C. Parker, and R.J. Lenhard, Finite Element Analysis of Multiphase Immiscible Flow Through Soils, Water Resources Research, 23(4), 625-631, 1987.

Lange's Handbook of Chemistry, 1992.

Lenhard, R.J., Measurement and Modeling of Three-phase Saturation-Pressure Hysteresis, Journal of Contaminant Hydrology, 9, 243-269, 1992.

Lenhard, R.J., J.C. Parker, A Model for Hysteretic Constitutive Relations Governing Multiphase Flow, 2, Permeability-Saturation Relations, Water Resources Research, 23(12), 2197-2206, 1987.

Lenhard, R.J., J.C. Parker, J.J. Kaluarachchi, Comparing Simulated and Experimental Hysteretic Two-phase Transient Fluid Flow Phenomena, Water Resources Research, 27(8), 2113-2124, 1991.

Leverett, M.C., W.B. Lewis, Steady Flow of Gas-Oil-Water Mixtures Through Unconsolidated Sands, American Institute of Mining and Metallurgical Engineers Transactions, 142, 107-116, 1941.

Mercer, J.W., D.C. Skipp, D. Giffin, Basics of Pump-and-Treat Ground-Water Remediation Technology, Research Report EPA/600/8-90/003, U.S. Environmental Protection Agency, Ada, Oklahoma, 1990.

Tchobanoglous, G., F.L. Burton, Wastewater Engineering, Treatment, Disposal, Reuse, Third Edition, McGraw-Hill Publishing Company, New York, 1991.

Osborne, M., J. Sykes, Numerical Modeling of Immiscible Organic Transport at the Hyde Park Landfill, Water Resources Research, 22(1), 25-33, 1986.

Parker, J.C., R.J. Lenhard, A Model for Hysteretic Constitutive Relations Governing Multiphase Flow, 1, Saturation-Pressure Relations, Water Resources Research, 23(12), 2187-2196, 1987.

Parker, J.C., R.J. Lenhard, T. Kuppusamy, A Parametric Model for Constitutive Properties Governing Multiphase Flow in Porous Media, Water Resources Research, 23(4), 618-624, 1987.

Peaceman, D.W., Fundamentals of Numerical Reservoir Simulation, Elsevier Scientific Publishing Company, New York, 1977.

Pinder, G.F., L.M. Abriola, On the Simulation of Nonaqueous Phase Organic Compounds in the Subsurface, Water Resources Research, 22(9), 109S-119S, 1986.

Quintard, M., S. Whitaker, Convection, Dispersion, and Interfacial Transport of Contaminants: Homogeneous Porous Media, Advances in Water Resources, 17, 221-239, 1994.

Schwille, F., Dense Chlorinated Solvents in Porous and Fracture Media, Model Experiments, Lewis Publishers, Chelsea, Michigan, 1988.

Sleep, B.E., J.F. Sykes, Compositional Simulation of Groundwater Contamination by Organic Compounds, 1, Model Development and Verification, Water Resources Research, 29(6), 1697-1708, 1993.

Sleep, B.E., J.F. Sykes, Compositional Simulation of Groundwater Contamination by Organic Compounds, 2, Model Applications, Water Resources Research, 29(6), 1709-1718, 1993.

Soll, W.E., M.A. Celia, J.L. Wilson, Micromodel Studies of Three-Fluid Porous Media Systems: Pore Scale Processes Relating to Capillary Pressure-Saturation Relationships, Water Resources Research, 29(9), 2963-2974, 1993.

Stone, H.L., Estimation of Three-Phase Relative Permeability and Residual Oil Data, The Journal of Canadian Petroleum Technology, 12, 53-61, 1973.

Todd, D.K., Groundwater Hydrology, Second Edition, John Wiley & Sons, New York, 1980.

U.S. Environmental Protection Agency, Ambient Water Quality Criteria for Nitrobenzene, WEPA 440/5-80-061, 1980.

U.S. Environmental Protection Agency, Processes, Coefficients, and Models for Simulating Toxic Organics and Heavy Metals in Surface Waters, EPA/600/3-87/015, prepared for Environmental Research Lab, Athens, Georgia, 1987.

U.S. Department of Health & Human Services, Toxicological Profile for Mercury, 1993.

U.S. Department of Health & Human Services, Toxicological Profile for 1,2-Dichloroethene, 1992.

Van Dam, J., The Migration of Hydrocarbons in a Water Bearing Stratum, The Joint Problems of the Oil and Water Industries, Elsevier Scientific Publishing Company, New York, 1967.

Van Genuchten, M., A Closed-form equation for Predicting the Hydraulic Conductivity of Unsaturated Soils, Soil Science Society of America Journal, 44, 892-898, 1980.

Wilson, J.L., S.H. Conrad, et al, Laboratory Investigation of Residual Liquid Organics from Spills, Leaks, and the Disposal of Hazardous Wastes in Groundwater, Research Report EPA/600/6-90/004, U.S. Environmental Protection Agency, Ada, Oklahoma, 1990.

APPENDIX A

SWANFLOW
LNAPL Input Files

*Note: Because of the similarity of input files, only the first page is included. Reference the sample input data set for complete input file.

Sample Input Data Set and Card Descriptions

1. *Title*
   2-D Unsaturated-Saturated Infiltration of NAPL
2. *Date*
   16 April 1995
3. *Run Identifier*
   RUN1
4. *X, Z, Y, Number of Newton-Raphson Iterations, Bandwidth, Total Time Steps, Steps Between Printing Output, Print potentials, Number of SSOR Iterations, Coordinate System*
   8 20 1 4 0 100 100 0 0 1 0

5-1. *Balance Error, Initial Time, Water Density, NAPL Density, Water Viscosity, NAPL Viscosity*
0.02000 0. 1000.00 1014.00 1.000E-3 5.607E-3

5-2. *Gravitational Acceleration in Z-Direction, Gravitational Acceleration in X-Direction, SSOR Relaxation Factor, SSOR Convergence Tolerance*
-9.80 0.00000 1.00 0.100E-04

6-1. *Number of Capillary Pressure-Relative Permeability Tables*
1

6-2a. *Number of Entries in Table*
13

6-2b. *Capillary Pressure, Water Saturation, Relative Permeability for Water Phase, Relative Permeability for NAPL Phase*

103425.0	-0.10	0.00000	1.00000
103425.0	0.00	0.00000	1.00000
103425.0	0.10	0.00000	0.82000
103425.0	0.20	0.00000	0.68000
27580.0	0.30	0.04000	0.55000
10343.0	0.40	0.10000	0.43000
7585.0	0.50	0.18000	0.31000
7447.0	0.60	0.30000	0.20000
7309.0	0.70	0.44000	0.12000
7171.0	0.80	0.60000	0.05000
7033.0	0.90	0.80000	0.00000
6895.0	1.00	1.00000	0.00000
6895.0	1.10	1.00000	0.00000

6-2c. *Number of Entries in Table, Relative Permeability of NAPL at Residual Water Saturation*
2 0.680

6-2d. *Capillary Pressure Between NAPL and Air, Air Saturation, Relative Permeability of NAPL Phase, Relative Permeability of Air Phase*

-98000.0	1.00	-0.3200	1.000
0.0	0.00	0.6800	0.000

7-1. *Number of Permeability Classes*
1

7-2. *Permeability in X-, Z-, Y-Directions*
0.100E-11 0.100E-11 0.100E-11

8-1. *Number of Porosity Classes*
1

8-2. *Reference Porosity, Aquifer Compressibility, Reference Pressure*
0.300 1.0E-15 0.0

9a. *Grid Spacing in X-Direction*
1.000 1.900 3.610 6.859 13.032 24.761 47.046 89.387

9b. *Grid Spacing in Z-Direction*
0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250
0.250 0.250 0.250 0.250 0.250 0.250 0.250 0.250
0.250 0.250 0.250 0.250

9c.- *Grid Spacing in Y-Direction*
1.000

10-1. *Number of Property Combination Sets*
1

10-2. *Capillary Pressure-Relative Permeability Class Number, Permeability Class Number, Porosity Class Number*
1 1 1

11. *Number of Active Grid Blocks Per Slice*
152

12. ***Grid Block Number***

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56
57	58	59	60	61	62	63	64
65	66	67	68	69	70	71	72
73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88
89	90	91	92	93	94	95	96
97	98	99	100	101	102	103	104
105	106	107	108	109	110	111	112
113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128
129	130	131	132	133	134	135	136
137	138	139	140	141	142	143	144
145	146	147	148	149	150	151	152
-1	-1	-1	-1	-1	-1	-1	-1

14-1. ***Initial Conditions-(either Uniform or Non-Uniform)***

1

14-3. ***Initial NAPL Pressure in Each of the Numbered Grid Blocks***

-14700.00	-14700.00	-14700.00	-14700.00	-14700.00	-14700.00	-14700.00	-14700.00
-12250.00	-12250.00	-12250.00	-12250.00	-12250.00	-12250.00	-12250.00	-12250.00
-9800.00	-9800.00	-9800.00	-9800.00	-9800.00	-9800.00	-9800.00	-9800.00
-7350.00	-7350.00	-7350.00	-7350.00	-7350.00	-7350.00	-7350.00	-7350.00
-4900.00	-4900.00	-4900.00	-4900.00	-4900.00	-4900.00	-4900.00	-4900.00
-2450.00	-2450.00	-2450.00	-2450.00	-2450.00	-2450.00	-2450.00	-2450.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2450.00	2450.00	2450.00	2450.00	2450.00	2450.00	2450.00	2450.00
4900.00	4900.00	4900.00	4900.00	4900.00	4900.00	4900.00	4900.00
7350.00	7350.00	7350.00	7350.00	7350.00	7350.00	7350.00	7350.00
9800.00	9800.00	9800.00	9800.00	9800.00	9800.00	9800.00	9800.00
12250.00	12250.00	12250.00	12250.00	12250.00	12250.00	12250.00	12250.00
14700.00	14700.00	14700.00	14700.00	14700.00	14700.00	14700.00	14700.00
17150.00	17150.00	17150.00	17150.00	17150.00	17150.00	17150.00	17150.00
19600.00	19600.00	19600.00	19600.00	19600.00	19600.00	19600.00	19600.00
22050.00	22050.00	22050.00	22050.00	22050.00	22050.00	22050.00	22050.00
24500.00	24500.00	24500.00	24500.00	24500.00	24500.00	24500.00	24500.00
26950.00	26950.00	26950.00	26950.00	26950.00	26950.00	26950.00	26950.00
29400.00	29400.00	29400.00	29400.00	29400.00	29400.00	29400.00	29400.00
31850.00	31850.00	31850.00	31850.00	31850.00	31850.00	31850.00	31850.00

14-4. ***Initial Water Saturation in each of the Numbered Grid Blocks****

0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
0.8750	0.8750	0.8750	0.8750	0.8750	0.8750	0.8750	0.8750
0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
0.9250	0.9250	0.9250	0.9250	0.9250	0.9250	0.9250	0.9250
0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750	0.9750
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

15.# ***Initial Time Step, Minimum Time Step, Maximum Saturation Change Per Time Step, Time Step Multiplier, Time to Read New Recurrent Data, Number of Source/Sink Blocks, Source/Sink Change***

1000000 10000 0.10000 1.500 3.1536E07 8 1

16-1.# ***Column Number (i), Slice Number (j), Total Mass Source Rate, Mass Fraction of Water in Source Term***
1 1 2.9459E-5 0.1206
16-2.# ***Layers Over Which Source/Sink is Applied***
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
2 1 6.0249E-6 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
3 1 1.1447E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
4 1 2.1750E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
5 1 4.1325E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
6 1 7.8517E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
7 1 1.4918E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
8 1 2.8344E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
15. # ***Initial Time Step, Minimum Time Step, Maximum Saturation Change Per Time Step, Time Step Multiplier, Time to Read New Recurrent Data, Number Source/Sink Blocks, Source/Sink Change***
1000000 10000 0.10000 1.500 9.4608E07 8 1
16-1. # ***Column Number (i), Slice Number (j), Total Mass Source Rate, Mass Fraction of Water in Source Term***
1 1 1 2.9459E-5 0.1206
16-2.# ***Layers Over Which Source/Sink is Applied***
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
2 1 6.0249E-6 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
3 1 1.1447E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
4 1 2.1750E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
5 1 4.1325E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
6 1 7.8517E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
7 1 1.4918E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
8 1 2.8344E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
15. # ***Initial Time Step, Minimum Time Step, Maximum Saturation Change Per Time Step, Time Step Multiplier, Time to Read New Recurrent Data, Number Source/Sink Blocks, Source/Sink Change***
1000000 10000 0.10000 1.500 1.5768E08 8 1
16-1. # ***Column Number (i), Slice Number (j), Total Mass Source Rate, Mass Fraction of Water in Source Term***
1 1 2.9459E-5 0.1206

These cards must be repeated for each time to read new recurrent data.

16-2.# ***Layers Over Which Source/Sink is Applied***
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
2 1 6.0249E-6 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0

3 1 1.1447E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
4 1 2.1750E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
5 1 4.1325E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
6 1 7.8517E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
7 1 1.4918E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
8 1 2.8344E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0

15. # Initial Time Step, Minimum Time Step, Maximum Saturation Change Per Time Step, Time Step Multiplier, Time to Read New Recurrent Data, Number Source/Sink Blocks, Source/Sink Change
1000000 10000 0.10000 1.500 3.1536E08 8 1

16-1. # Column Number (i), Slice Number (j), Total Mass Source Rate, Mass Fraction of Water in Source Term
1 1 2.9459E-5 0.1206

16-2. # Layers Over Which Source/Sink is Applied
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
2 1 6.0249E-6 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
3 1 1.1447E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
4 1 2.1750E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
5 1 4.1325E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
6 1 7.8517E-5 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
7 1 1.4918E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0
8 1 2.8344E-4 1.0000
1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
0 0 0 0

15. Zeroes to the End of Simulation
0. 0. 0.00000 0.000 0.000 0 0

These cards must be repeated for each time to read new recurrent data.

```
2-D Unsaturated-Saturated Infiltration of p-Xylene
29 January 1995
RUN1
 8  20  1  4  0 100 100  0  0  1  0
 0.02000    0.  1000.00  861.00 1.000E-3 0.644E-3
  -9.80  0.00000    1.00 0.100E-04
 1
 13
103425.0   -0.10  0.00000   1.00000
103425.0    0.00  0.00000   1.00000
103425.0    0.10  0.00000   0.82000
103425.0    0.20  0.00000   0.68000
 27580.0    0.30  0.04000   0.55000
 10343.0    0.40  0.10000   0.43000
  7585.0    0.50  0.18000   0.31000
  7447.0    0.60  0.30000   0.20000
  7309.0    0.70  0.44000   0.12000
   7171.0    0.80  0.60000   0.05000
  7033.0    0.90  0.80000   0.00000
  6895.0    1.00  1.00000   0.00000
  6895.0    1.10  1.00000   0.00000
 2   0.680
-98000.0    1.00  -0.3200   1.000
   0.0    0.00   0.6800   0.000
 1
0.100E-11 0.100E-11 0.100E-11
 1
  0.300 1.0E-15      0.0
  1.000     1.900     3.610     6.859    13.032    24.761    47.046    89.387
  0.250     0.250     0.250     0.250     0.250     0.250     0.250     0.250
  0.250     0.250     0.250     0.250     0.250     0.250     0.250     0.250
  0.250     0.250     0.250     0.250
  1.000
 1
 1  1  1
 152
  1    2    3   4    5    6   7    8
  9   10   11  12   13   14  15   16
 17   18   19  20   21   22  23   24
 25  26  27  28   29  30  31   32
 33  34  35  36   37  38  39   40
 41   42  43   44   45  46  47  48
 49  50  51   52   53   54  55   56
 57  58  59   60   61  62  63   64
 65  66  67   68   69  70  71   72
 73  74  75   76   77  78  79  80
 81  82   83   84   85  86  87  88
 89  90  91   92   93  94  95   96
 97  98  99  100  101  102  103  104
105  106  107  108  109  110  111   112
113   114  115   116  117  118  119   120
121  122  123  124  125  126  127  128
129  130  131  132  133  134  135  136
137  138  139  140  141  142  143  144
145  146  147  148  149  150  151  152
 -1  -1  -1  -1  -1  -1  -1  -1
 1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00  -14700.00  -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00  -12250.00 -12250.00  -12250.00
 -9800.00   -9800.00  -9800.00   -9800.00  -9800.00    -9800.00  -9800.00    -9800.00
 -7350.00   -7350.00  -7350.00   -7350.00  -7350.00    -7350.00  -7350.00    -7350.00
 -4900.00   -4900.00  -4900.00   -4900.00  -4900.00    -4900.00  -4900.00    -4900.00
 -2450.00   -2450.00  -2450.00   -2450.00  -2450.00    -2450.00  -2450.00    -2450.00
      0.00          0.00          0.00          0.00          0.00           0.00          0.00           0.00
 2450.00     2450.00    2450.00     2450.00   2450.00     2450.00   2450.00      2450.00
 4900.00     4900.00    4900.00     4900.00   4900.00     4900.00   4900.00      4900.00
 7350.00     7350.00    7350.00     7350.00   7350.00     7350.00   7350.00      7350.00
 9800.00     9800.00    9800.00     9800.00   9800.00     9800.00   9800.00      9800.00
 12250.00    12250.00   12250.00   12250.00  12250.00  12250.00  12250.00    12250.00
 14700.00    14700.00   14700.00   14700.00  14700.00  14700.00  14700.00    14700.00
 17150.00    1 7150.00    17150.00    17150.00  17150.00    17150.00  17150.00    17150.00
 19600.00    19600.00   19600.00   19600.00  19600.00  19600.00   19600.00   19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00   31850.00  31850.00  31850.00  31850.00   31850.00  31850.00   31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **Toluene**
29 January 1995
RUN1

```
  8  20   1   4   0 100 100   0   0   1   0
 0.02000      0.  1000.00  862.00 1.000E-3 0.552E-3
  -9.80  0.00000      1.00 0.100E-04
  1
 13
103425.0    -0.10  0.00000  1.00000
103425.0     0.00  0.00000  1.00000
103425.0     0.10  0.00000  0.82000
103425.0     0.20  0.00000  0.68000
27580.0      0.30  0.04000  0.55000
10343.0      0.40  0.10000  0.43000
 7585.0      0.50  0.18000  0.31000
 7447.0      0.60  0.30000  0.20000
 7309.0      0.70  0.44000  0.12000
   7171.0    0.80  0.60000  0.05000
 7033.0      0.90  0.80000  0.00000
 6895.0      1.00  1.00000  0.00000
 6895.0      1.10  1.00000  0.00000
  2    0.680
-98000.0     1.00  -0.3200    1.000
   0.0     0.00   0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15       0.0
   1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
  0.250   0.250   0.250   0.250   0.250   0.250   0.250   0.250
  0.250   0.250   0.250   0.250   0.250   0.250   0.250   0.250
  0.250   0.250   0.250   0.250
  1.000
  1
  1   1   1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00  2450.00  2450.00  2450.00  2450.00  2450.00  2450.00  2450.00
  4900.00  4900.00  4900.00  4900.00  4900.00  4900.00  4900.00  4900.00
  7350.00  7350.00  7350.00  7350.00  7350.00  7350.00  7350.00  7350.00
  9800.00  9800.00  9800.00  9800.00  9800.00  9800.00  9800.00  9800.00
 12250.00 12250.00 12250.00 12250.00 12250.00 12250.00 12250.00 12250.00
 14700.00 14700.00 14700.00 14700.00 14700.00 14700.00 14700.00 14700.00
 17150.00 17150.00 17150.00 17150.00 17150.00 17150.00 17150.00 17150.00
 19600.00 19600.00 19600.00 19600.00 19600.00 19600.00 19600.00 19600.00
 22050.00 22050.00 22050.00 22050.00 22050.00 22050.00 22050.00 22050.00
 24500.00 24500.00 24500.00 24500.00 24500.00 24500.00 24500.00 24500.00
 26950.00 26950.00 26950.00 26950.00 26950.00 26950.00 26950.00 26950.00
 29400.00 29400.00 29400.00 29400.00 29400.00 29400.00 29400.00 29400.00
 31850.00 31850.00 31850.00 31850.00 31850.00 31850.00 31850.00 31850.00
  0.8500   0.8500   0.8500   0.8500   0.8500   0.8500   0.8500   0.8500
```

2-D Unsaturated-Saturated Infiltration of **m-Xylene**
29 January 1995

```
RUN1
  8  20   1   4   0  100  100   0   0   1   0
 0.02000     0.  1000.00  864.00  1.000E-3  0.617E-3
  -9.80  0.00000      1.00 0.100E-04
  1
 13
103425.0   -0.10  0.00000  1.00000
103425.0    0.00  0.00000  1.00000
103425.0    0.10  0.00000  0.82000
103425.0    0.20  0.00000  0.68000
 27580.0    0.30  0.04000  0.55000
 10343.0    0.40  0.10000  0.43000
  7585.0    0.50  0.18000  0.31000
  7447.0    0.60  0.30000  0.20000
  7309.0    0.70  0.44000  0.12000
  7171.0    0.80  0.60000  0.05000
  7033.0    0.90  0.80000  0.00000
  6895.0    1.00  1.00000  0.00000
  6895.0    1.10  1.00000  0.00000
  2   0.680
-98000.0    1.00  -0.3200    1.000
    0.0    0.00  0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
   0.300 1.0E-15      0.0
   1.000   1.900   3.610   6.859  13.032  24.761  47.046  89.387
   0.250   0.250   0.250   0.250   0.250   0.250   0.250   0.250
   0.250   0.250   0.250   0.250   0.250   0.250   0.250   0.250
   0.250   0.250   0.250   0.250
   1.000
  1
  1   1   1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **Ethylbenzene**

```
29 January 1995
RUN1
  8  20   1   4   0 100 100   0   0   1   0
  0.02000      0.  1000.00  867.00 1.000E-3 0.678E-3
   -9.80  0.00000      1.00 0.100E-04
   1
  13
 103425.0    -0.10  0.00000  1.00000
 103425.0     0.00  0.00000  1.00000
 103425.0     0.10  0.00000  0.82000
 103425.0     0.20  0.00000  0.68000
  27580.0     0.30  0.04000  0.55000
  10343.0     0.40  0.10000  0.43000
   7585.0     0.50  0.18000  0.31000
   7447.0     0.60  0.30000  0.20000
   7309.0     0.70  0.44000  0.12000
   7171.0     0.80  0.60000  0.05000
   7033.0     0.90  0.80000  0.00000
   6895.0     1.00  1.00000  0.00000
   6895.0     1.10  1.00000  0.00000
   2   0.680
 -98000.0     1.00  -0.3200    1.000
     0.0     0.00   0.6800    0.000
   1
 0.100E-11 0.100E-11 0.100E-11
   1
   0.300 1.0E-15      0.0
    1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
    0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
    0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
    0.250    0.250    0.250    0.250
    1.000
   1
   1   1   1
  152
   1   2   3   4   5   6   7   8
   9  10  11  12  13  14  15  16
  17  18  19  20  21  22  23  24
  25  26  27  28  29  30  31  32
  33  34  35  36  37  38  39  40
  41  42  43  44  45  46  47  48
  49  50  51  52  53  54  55  56
  57  58  59  60  61  62  63  64
  65  66  67  68  69  70  71  72
  73  74  75  76  77  78  79  80
  81  82  83  84  85  86  87  88
  89  90  91  92  93  94  95  96
  97  98  99 100 101 102 103 104
 105 106 107 108 109 110 111 112
 113 114 115 116 117 118 119 120
 121 122 123 124 125 126 127 128
 129 130 131 132 133 134 135 136
 137 138 139 140 141 142 143 144
 145 146 147 148 149 150 151 152
  -1  -1  -1  -1  -1  -1  -1  -1
   1
 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **Benzene**
25 January 1995
RUN1

```
 8  20  1  4  0 100 100  0  0  1  0
 0.02000    0.  1000.00  876.00 1.000E-3 6.010E-4
  -9.80  0.00000    1.00 0.100E-04
 1
 13
 103425.0  -0.10  0.00000  1.00000
 103425.0   0.00  0.00000  1.00000
 103425.0   0.10  0.00000  0.82000
 103425.0   0.20  0.00000  0.68000
 27580.0   0.30  0.04000  0.55000
 10343.0   0.40  0.10000  0.43000
  7585.0   0.50  0.18000  0.31000
  7447.0   0.60  0.30000  0.20000
  7309.0   0.70  0.44000  0.12000
  7171.0   0.80  0.60000  0.05000
  7033.0   0.90  0.80000  0.00000
  6895.0   1.00  1.00000  0.00000
  6895.0   1.10  1.00000  0.00000
 2  0.680
 -98000.0   1.00  -0.3200   1.000
   0.0   0.00  0.6800   0.000
 1
 0.100E-11 0.100E-11 0.100E-11
 1
  0.300 1.0E-15    0.0
  1.000   1.900   3.610   6.859   13.032   24.761   47.046   89.387
  0.250   0.250   0.250   0.250   0.250   0.250   0.250   0.250
  0.250   0.250   0.250   0.250   0.250   0.250   0.250   0.250
  0.250   0.250   0.250   0.250
  1.000
 1
 1  1  1
 152
 1  2  3  4  5  6  7  8
 9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99  100  101  102  103  104
 105  106  107  108  109  110  111  112
 113  114  115  116  117  118  119  120
 121  122  123  124  125  126  127  128
 129  130  131  132  133  134  135  136
 137  138  139  140  141  142  143  144
 145  146  147  148  149  150  151  152
 -1  -1  -1  -1  -1  -1  -1  -1
 1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00 -9800.00 -9800.00 -9800.00 -9800.00 -9800.00 -9800.00 -9800.00
 -7350.00 -7350.00 -7350.00 -7350.00 -7350.00 -7350.00 -7350.00 -7350.00
 -4900.00 -4900.00 -4900.00 -4900.00 -4900.00 -4900.00 -4900.00 -4900.00
 -2450.00 -2450.00 -2450.00 -2450.00 -2450.00 -2450.00 -2450.00 -2450.00
      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00  2450.00  2450.00  2450.00  2450.00  2450.00  2450.00  2450.00
  4900.00  4900.00  4900.00  4900.00  4900.00  4900.00  4900.00  4900.00
  7350.00  7350.00  7350.00  7350.00  7350.00  7350.00  7350.00  7350.00
  9800.00  9800.00  9800.00  9800.00  9800.00  9800.00  9800.00  9800.00
 12250.00 12250.00 12250.00 12250.00 12250.00 12250.00 12250.00 12250.00
 14700.00 14700.00 14700.00 14700.00 14700.00 14700.00 14700.00 14700.00
 17150.00 17150.00 17150.00 17150.00 17150.00 17150.00 17150.00 17150.00
 19600.00 19600.00 19600.00 19600.00 19600.00 19600.00 19600.00 19600.00
 22050.00 22050.00 22050.00 22050.00 22050.00 22050.00 22050.00 22050.00
 24500.00 24500.00 24500.00 24500.00 24500.00 24500.00 24500.00 24500.00
 26950.00 26950.00 26950.00 26950.00 26950.00 26950.00 26950.00 26950.00
 29400.00 29400.00 29400.00 29400.00 29400.00 29400.00 29400.00 29400.00
 31850.00 31850.00 31850.00 31850.00 31850.00 31850.00 31850.00 31850.00
  0.8500   0.8500   0.8500   0.8500   0.8500   0.8500   0.8500   0.8500
```

2-D Unsaturated-Saturated Infiltration of o-Xylene
29 January 1995
RUN1

```
  8  20   1   4   0 100 100   0   0   1   0
 0.02000      0.  1000.00  880.00 1.000E-3 0.809E-3
  -9.80  0.00000    1.00 0.100E-04
  1
 13
 103425.0   -0.10  0.00000  1.00000
 103425.0    0.00  0.00000  1.00000
 103425.0    0.10  0.00000  0.82000
 103425.0    0.20  0.00000  0.68000
  27580.0    0.30  0.04000  0.55000
  10343.0    0.40  0.10000  0.43000
   7585.0    0.50  0.18000  0.31000
   7447.0    0.60  0.30000  0.20000
   7309.0    0.70  0.44000  0.12000
   7171.0    0.80  0.60000  0.05000
   7033.0    0.90  0.80000  0.00000
   6895.0    1.00  1.00000  0.00000
   6895.0    1.10  1.00000  0.00000
  2   0.680
 -98000.0    1.00  -0.3200    1.000
    0.0    0.00   0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
   0.300 1.0E-15      0.0
   1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250
   1.000
  1
  1   1   1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

APPENDIX B

SWANFLOW
DNAPL Input Files

*Note: Because of the similarity of input files, only the first page is included. Reference the sample input data set for complete input file.

2-D Unsaturated-Saturated Infiltration of **p-Cresol**

```
16 April 1995
RUN1
  8  20  1   4   0 100 100   0   0   1   0
  0.02000      0.  1000.00  1014.00 1.000E-3 5.607E-3
  -9.80  0.00000     1.00 0.100E-04
  1
  13
 103425.0    -0.10  0.00000  1.00000
 103425.0     0.00  0.00000  1.00000
 103425.0     0.10  0.00000  0.82000
 103425.0     0.20  0.00000  0.68000
  27580.0     0.30  0.04000  0.55000
  10343.0     0.40  0.10000  0.43000
   7585.0     0.50  0.18000  0.31000
   7447.0     0.60  0.30000  0.20000
   7309.0     0.70  0.44000  0.12000
   7171.0     0.80  0.60000  0.05000
   7033.0     0.90  0.80000  0.00000
   6895.0     1.00  1.00000  0.00000
   6895.0     1.10  1.00000  0.00000
  2   0.680
 -98000.0     1.00  -0.3200    1.000
    0.0     0.00   0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15     0.0
   1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250
   1.000
  1
  1   1   1
  152
   1   2   3   4   5   6   7   8
   9  10  11  12  13  14  15  16
  17  18  19  20  21  22  23  24
  25  26  27  28  29  30  31  32
  33  34  35  36  37  38  39  40
  41  42  43  44  45  46  47  48
  49  50  51  52  53  54  55  56
  57  58  59  60  61  62  63  64
  65  66  67  68  69  70  71  72
  73  74  75  76  77  78  79  80
  81  82  83  84  85  86  87  88
  89  90  91  92  93  94  95  96
  97  98  99 100 101 102 103 104
 105 106 107 108 109 110 111 112
 113 114 115 116 117 118 119 120
 121 122 123 124 125 126 127 128
 129 130 131 132 133 134 135 136
 137 138 139 140 141 142 143 144
 145 146 147 148 149 150 151 152
  -1  -1  -1  -1  -1  -1  -1  -1
   1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

```
2-D Unsaturated-Saturated Infiltration of m-Cresol
16 April 1995
RUN1
  8  20   1   4   0 100 100   0   0   1   0
 0.02000       0.  1000.00  1038.00  1.000E-3  24.67E-3
  -9.80  0.00000      1.00 0.100E-04
  1
  13
 103425.0    -0.10  0.00000  1.00000
 103425.0     0.00  0.00000  1.00000
 103425.0     0.10  0.00000  0.82000
 103425.0     0.20  0.00000  0.68000
 27580.0      0.30  0.04000  0.55000
 10343.0      0.40  0.10000  0.43000
  7585.0      0.50  0.18000  0.31000
  7447.0      0.60  0.30000  0.20000
  7309.0      0.70  0.44000  0.12000
  7171.0      0.80  0.60000  0.05000
  7033.0      0.90  0.80000  0.00000
  6895.0      1.00  1.00000  0.00000
  6895.0      1.10  1.00000  0.00000
  2    0.680
 -98000.0     1.00   -0.3200    1.000
    0.0     0.00   0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15      0.0
  1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250
  1.000
  1
  1   1   1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **Nitrobenzene**

```
16 May 1995
RUN1
  8  20  1  4  0 100 100  0  0  1  0
 0.02000      0.  1000.00  1203.30  1.000E-3  1.634E-3
  -9.80  0.00000     1.00 0.100E-04
  1
  13
103425.0   -0.10  0.00000  1.00000
103425.0    0.00  0.00000  1.00000
103425.0    0.10  0.00000  0.82000
103425.0    0.20  0.00000  0.68000
 27580.0    0.30  0.04000  0.55000
 10343.0    0.40  0.10000  0.43000
  7585.0    0.50  0.18000  0.31000
  7447.0    0.60  0.30000  0.20000
  7309.0    0.70  0.44000  0.12000
  7171.0    0.80  0.60000  0.05000
  7033.0    0.90  0.80000  0.00000
  6895.0    1.00  1.00000  0.00000
  6895.0    1.10  1.00000  0.00000
  2   0.680
-98000.0    1.00  -0.3200    1.000
   0.0    0.00  0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15     0.0
  1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250
  1.000
  1
  1  1  1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **Dichloroethene**
10 April 1995

```
RUN1
  8  20   1   4   0 100 100   0   0   1   0
 0.02000     0.  1000.00  1220.00 1.000E-3  .360E-3
  -9.80  0.00000     1.00 0.100E-04
  1
  13
 103425.0    -0.10  0.00000  1.00000
 103425.0     0.00  0.00000  1.00000
 103425.0     0.10  0.00000  0.82000
 103425.0     0.20  0.00000  0.68000
  27580.0     0.30  0.04000  0.55000
  10343.0     0.40  0.10000  0.43000
   7585.0     0.50  0.18000  0.31000
   7447.0     0.60  0.30000  0.20000
   7309.0     0.70  0.44000  0.12000
   7171.0     0.80  0.60000  0.05000
   7033.0     0.90  0.80000  0.00000
   6895.0     1.00  1.00000  0.00000
   6895.0     1.10  1.00000  0.00000
  2   0.680
 -98000.0     1.00  -0.3200    1.000
     0.0      0.00   0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15      0.0
   1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250
   1.000
  1
  1   1   1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

```
2-D Unsaturated-Saturated Infiltration of PERC
10 April 1995
RUN1
  8  20   1   4   0 100 100   0   0   1   0
  0.02000     0.  1000.00  1631.00 1.000E-3 1.932E-3
   -9.80  0.00000     1.00 0.100E-04
  1
 13
103425.0    -0.10  0.00000  1.00000
103425.0     0.00  0.00000  1.00000
103425.0     0.10  0.00000  0.82000
103425.0     0.20  0.00000  0.68000
 27580.0     0.30  0.04000  0.55000
 10343.0     0.40  0.10000  0.43000
  7585.0     0.50  0.18000  0.31000
  7447.0     0.60  0.30000  0.20000
  7309.0     0.70  0.44000  0.12000
  7171.0     0.80  0.60000  0.05000
  7033.0     0.90  0.80000  0.00000
  6895.0     1.00  1.00000  0.00000
  6895.0     1.10  1.00000  0.00000
  2    0.680
-98000.0     1.00   -0.3200    1.000
     0.0     0.00    0.6800    0.000
  1
0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15      0.0
   1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
   0.250    0.250    0.250    0.250
   1.000
  1
  1   1   1
152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **1,2-Dibromoethane**

```
16 May 1995
RUN1
  8  20   1   4   0 100 100   0   0   1   0
 0.02000      0.  1000.00  2168.70  1.000E-3  1.490E-3
  -9.80  0.00000      1.00 0.100E-04
  1
 13
 103425.0    -0.10   0.00000   1.00000
 103425.0     0.00   0.00000   1.00000
 103425.0     0.10   0.00000   0.82000
 103425.0     0.20   0.00000   0.68000
  27580.0     0.30   0.04000   0.55000
  10343.0     0.40   0.10000   0.43000
   7585.0     0.50   0.18000   0.31000
   7447.0     0.60   0.30000   0.20000
   7309.0     0.70   0.44000   0.12000
   7171.0     0.80   0.60000   0.05000
   7033.0     0.90   0.80000   0.00000
   6895.0     1.00   1.00000   0.00000
   6895.0     1.10   1.00000   0.00000
  2   0.680
 -98000.0    1.00  -0.3200    1.000
     0.0     0.00   0.6800    0.000
  1
 0.100E-11 0.100E-11 0.100E-11
  1
  0.300 1.0E-15      0.0
  1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250
  1.000
  1
  1   1   1
 152
  1   2   3   4   5   6   7   8
  9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
  1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
      0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
   0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

2-D Unsaturated-Saturated Infiltration of **Mercury**

16 April 1995

```
RUN1
 8 20  1  4  0 100 100  0  0  1  0
 0.02000     0.  1000.00 13545.00 1.000E-3 1.552E-3
  -9.80  0.00000     1.00 0.100E-04
 1
 13
 103425.0   -0.10  0.00000  1.00000
 103425.0    0.00  0.00000  1.00000
 103425.0    0.10  0.00000  0.82000
 103425.0    0.20  0.00000  0.68000
  27580.0    0.30  0.04000  0.55000
  10343.0    0.40  0.10000  0.43000
   7585.0    0.50  0.18000  0.31000
   7447.0    0.60  0.30000  0.20000
   7309.0    0.70  0.44000  0.12000
   7171.0    0.80  0.60000  0.05000
   7033.0    0.90  0.80000  0.00000
   6895.0    1.00  1.00000  0.00000
   6895.0    1.10  1.00000  0.00000
 2   0.680
-98000.0     1.00  -0.3200    1.000
    0.0    0.00  0.6800   0.000
 1
0.100E-11 0.100E-11 0.100E-11
 1
  0.300 1.0E-15      0.0
  1.000    1.900    3.610    6.859   13.032   24.761   47.046   89.387
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250    0.250    0.250    0.250    0.250
  0.250    0.250    0.250    0.250
  1.000
 1
 1  1  1
152
 1  2  3  4  5  6  7  8
 9  10  11  12  13  14  15  16
 17  18  19  20  21  22  23  24
 25  26  27  28  29  30  31  32
 33  34  35  36  37  38  39  40
 41  42  43  44  45  46  47  48
 49  50  51  52  53  54  55  56
 57  58  59  60  61  62  63  64
 65  66  67  68  69  70  71  72
 73  74  75  76  77  78  79  80
 81  82  83  84  85  86  87  88
 89  90  91  92  93  94  95  96
 97  98  99 100 101 102 103 104
105 106 107 108 109 110 111 112
113 114 115 116 117 118 119 120
121 122 123 124 125 126 127 128
129 130 131 132 133 134 135 136
137 138 139 140 141 142 143 144
145 146 147 148 149 150 151 152
 -1  -1  -1  -1  -1  -1  -1  -1
 1
-14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00 -14700.00
-12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00 -12250.00
 -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00  -9800.00
 -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00  -7350.00
 -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00  -4900.00
 -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00  -2450.00
     0.00      0.00      0.00      0.00      0.00      0.00      0.00      0.00
  2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00   2450.00
  4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00   4900.00
  7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00   7350.00
  9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00   9800.00
 12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00  12250.00
 14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00  14700.00
 17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00  17150.00
 19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00  19600.00
 22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00  22050.00
 24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00  24500.00
 26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00  26950.00
 29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00  29400.00
 31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00  31850.00
  0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500    0.8500
```

APPENDIX C

SWANFLOW
LNAPL Output Files

*Note: Because of the length of output files,
only those pages containing one, three,
five, and ten year output data are included.

RUN NAME .... 2-D Unsaturated-Saturated Infiltration of **p-Xylene**
DATE .... 29 January 1995 RUN NO RUN1

NUMBER OF BLOCKS IN THE X-DIRECTION (COLUMNS): 8
NUMBER OF BLOCKS IN THE Z-DIRECTION (LAYERS): 20
NUMBER OF BLOCKS IN THE Y-DIRECTION (SLICES): 1
MAXIMUM NUMBER OF NEWTON-RAPHSON ITERATIONS: 4
ESTIMATED BANDWIDTH: 0
MAXIMUM NUMBER OF TIME STEPS: 100
NUMBER OF TIME STEPS BETWEEN PRINTING OUTPUT: 100
MAXIMUM NUMBER OF SSOR ITERATIONS: 1

BALANCE ERROR (%) FOR CONTROL OF NEWTON-RAPHSON ITERATION: 0.200000E-01
INITIAL TIME (SECONDS): 0.000000
DENSITY OF WATER: 1000.00
DENSITY OF NONAQUEOUS FLUID: 861.000
DYNAMIC VISCOSITY OF WATER: 0.100000E-02
DYNAMIC VISCOSITY OF NONAQUEOUS FLUID: 0.644000E-03
GRAVITATIONAL ACCELERATION (Z-DIRECTION): -9.80000
GRAVITATIONAL ACCELERATION (X-DIRECTION): 0.000000
SSOR CONVERGENCE TOLERANCE: 0.100000E-04
SSOR RELAXATION FACTOR: 1.00000

NUMBER OF PC VS KR TABLES: 1

DATA SET: 1

PC	SW	KRW	KRN
103425.000	-0.100	0.00000	1.00000
103425.000	0.000	0.00000	1.00000
103425.000	0.100	0.00000	0.82000
103425.000	0.200	0.00000	0.68000
27580.000	0.300	0.04000	0.55000
10343.000	0.400	0.10000	0.43000
7585.000	0.500	0.18000	0.31000
7447.000	0.600	0.30000	0.20000
7309.000	0.700	0.44000	0.12000
7171.000	0.800	0.60000	0.05000
7033.000	0.900	0.80000	0.00000
6895.000	1.000	1.00000	0.00000
6895.000	1.100	1.00000	0.00000

DATA SET: 1 PNWSWR: 0.680

PCAN	SAIR	PRNA	PRA
-98000.000	1.000	-0.32000	1.00000
0.000	0.000	0.68000	0.00000

1 PERMEABILITY SETS

SET 1 0.10000E-11 0.10000E-11 0.10000E-11

1 POROSITY SETS

SET 1 0.30000 0.10000E-14 0.00000

DX

1 1.00 2 1.90 3 3.61 4 6.86 5 13.0 6 24.8 7 47.0 8 89.4

DZ

1 0.250 2 0.250 3 0.250 4 0.250 5 0.250 6 0.250 7 0.250 8 0.250
9 0.250 10 0.250 11 0.250 12 0.250 13 0.250 14 0.250 15 0.250 16 0.250
17 0.250 18 0.250 19 0.250 20 0.250

DY

1 1.00

1 PROPERTY COMBINATION SETS

SET 1 1 1 1

NUMBER OF ACTIVE BLOCKS

SLICE 1 152

GRID BLOCK NUMBERS

ROW 1 1 2 3 4 5 6 7 8
ROW 2 9 10 11 12 13 14 15 16
ROW 3 17 18 19 20 21 22 23 24
ROW 4 25 26 27 28 29 30 31 32
ROW 5 33 34 35 36 37 38 39 40
ROW 6 41 42 43 44 45 46 47 48
ROW 7 49 50 51 52 53 54 55 56
ROW 8 57 58 59 60 61 62 63 64
ROW 9 65 66 67 68 69 70 71 72
ROW 10 73 74 75 76 77 78 79 80
ROW 11 81 82 83 84 85 86 87 88
ROW 12 89 90 91 92 93 94 95 96
ROW 13 97 98 99100101102103104
ROW 14 105106107108109110111112
ROW 15 113114115116117118119120
ROW 16 121122123124125126127128
ROW 17 129130131132133134135136
ROW 18 137138139140141142143144
ROW 19 145146147148149150151152
ROW 20 -1 -1 -1 -1 -1 -1 -1 -1

ALL GRID BLOCKS IN SAME PROPERTY CLASS

INITIAL NAPL PRESSURES

-14700.	-14700.	-14700.	-14700.	-14700.	-14700.	-14700.	-14700.
-12250.	-12250.	-12250.	-12250.	-12250.	-12250.	-12250.	-12250.
-9800.0	-9800.0	-9800.0	-9800.0	-9800.0	-9800.0	-9800.0	-9800.0
-7350.0	-7350.0	-7350.0	-7350.0	-7350.0	-7350.0	-7350.0	-7350.0
-4900.0	-4900.0	-4900.0	-4900.0	-4900.0	-4900.0	-4900.0	-4900.0
-2450.0	-2450.0	-2450.0	-2450.0	-2450.0	-2450.0	-2450.0	-2450.0
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
2450.0	2450.0	2450.0	2450.0	2450.0	2450.0	2450.0	2450.0
4900.0	4900.0	4900.0	4900.0	4900.0	4900.0	4900.0	4900.0
7350.0	7350.0	7350.0	7350.0	7350.0	7350.0	7350.0	7350.0
9800.0	9800.0	9800.0	9800.0	9800.0	9800.0	9800.0	9800.0
12250.	12250.	12250.	12250.	12250.	12250.	12250.	12250.
14700.	14700.	14700.	14700.	14700.	14700.	14700.	14700.
17150.	17150.	17150.	17150.	17150.	17150.	17150.	17150.
19600.	19600.	19600.	19600.	19600.	19600.	19600.	19600.
22050.	22050.	22050.	22050.	22050.	22050.	22050.	22050.
24500.	24500.	24500.	24500.	24500.	24500.	24500.	24500.
26950.	26950.	26950.	26950.	26950.	26950.	26950.	26950.
29400.	29400.	29400.	29400.	29400.	29400.	29400.	29400.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

INITIAL WATER SATURATIONS

0.85000	0.85000	0.85000	0.85000	0.85000	0.85000	0.85000	0.85000
0.87500	0.87500	0.87500	0.87500	0.87500	0.87500	0.87500	0.87500
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.92500	0.92500	0.92500	0.92500	0.92500	0.92500	0.92500	0.92500
0.95000	0.95000	0.95000	0.95000	0.95000	0.95000	0.95000	0.95000
0.97500	0.97500	0.97500	0.97500	0.97500	0.97500	0.97500	0.97500
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.10000E+07	10000.	0.10000	1.5000	0.31536E+08	8	1

```
I J  QT        QSW       IQ
1  1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2  1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3  1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4  1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5  1 0.41325E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6  1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7  1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8  1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW = 0.90165E-05   CPMN = 0.00000E+00
I= 2  J= 1  K= 20    CPMW = 0.15182E-04   CPMN = 0.00000E+00
I= 3  J= 1  K= 20    CPMW = 0.18442E-04   CPMN = 0.00000E+00
I= 4  J= 1  K= 20    CPMW = 0.20875E-04   CPMN = 0.00000E+00
I= 5  J= 1  K= 20    CPMW = 0.33913E-04   CPMN = 0.00000E+00
I= 6  J= 1  K= 20    CPMW = 0.63743E-04   CPMN = 0.00000E+00
I= 7  J= 1  K= 20    CPMW = 0.12109E-03   CPMN = 0.00000E+00
I= 8  J= 1  K= 20    CPMW = 0.23006E-03   CPMN = 0.00000E+00

        WATER BALANCE       NAPL BALANCE

CONSTANT PRES    -512.32         0.00000
SOURCE/SINKS     595.24          25.906
STORAGE       -82.917         -25.906
PER CENT ERROR  -0.42943E-09      -0.85862E-10

   STEP NUMBER  1         SIMULATION TIME IN SECONDS 0.100E+07
   ***************                  IN MINUTES 0.167E+05
                         IN HOURS   278.
                         IN DAYS   11.6
                         IN YEARS  0.317E-01
..............................................................................

AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW = 0.94164E-05   CPMN = 0.00000E+00
I= 2  J= 1  K= 20    CPMW = 0.16293E-04   CPMN = 0.00000E+00
I= 3  J= 1  K= 20    CPMW = 0.20898E-04   CPMN = 0.00000E+00
I= 4  J= 1  K= 20    CPMW = 0.24935E-04   CPMN = 0.00000E+00
I= 5  J= 1  K= 20    CPMW = 0.41210E-04   CPMN = 0.00000E+00
I= 6  J= 1  K= 20    CPMW = 0.77546E-04   CPMN = 0.00000E+00
I= 7  J= 1  K= 20    CPMW = 0.14731E-03   CPMN = 0.00000E+00
I= 8  J= 1  K= 20    CPMW = 0.27988E-03   CPMN = 0.00000E+00

        WATER BALANCE       NAPL BALANCE

CONSTANT PRES    -157.21         0.00000
SOURCE/SINKS     151.54          6.5955
STORAGE        5.6657         -6.5955
PER CENT ERROR   0.61728E-09      -0.10558E-10

   STEP NUMBER  2         SIMULATION TIME IN SECONDS 0.125E+07
   ***************                  IN MINUTES 0.209E+05
                         IN HOURS   348.
                         IN DAYS   14.5
                         IN YEARS  0.398E-01
..............................................................................

AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW = 0.91105E-05   CPMN = 0.00000E+00
I= 2  J= 1  K= 20    CPMW = 0.16176E-04   CPMN = 0.00000E+00
I= 3  J= 1  K= 20    CPMW = 0.21274E-04   CPMN = 0.00000E+00
I= 4  J= 1  K= 20    CPMW = 0.25336E-04   CPMN = 0.00000E+00
I= 5  J= 1  K= 20    CPMW = 0.41723E-04   CPMN = 0.00000E+00
I= 6  J= 1  K= 20    CPMW = 0.78485E-04   CPMN = 0.00000E+00
I= 7  J= 1  K= 20    CPMW = 0.14909E-03   CPMN = 0.00000E+00
I= 8  J= 1  K= 20    CPMW = 0.28327E-03   CPMN = 0.00000E+00

        WATER BALANCE       NAPL BALANCE

CONSTANT PRES    -228.69         0.00000
SOURCE/SINKS     217.99          9.4874
STORAGE       10.706          -9.4874
PER CENT ERROR   0.26267E-08      -0.14230E-11
```

STEP NUMBER 17 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13068.	-13207.	-13455.	-13973.	-14453.	-14480.	-14480.	-14480.
-10973.	-11098.	-11346.	-11834.	-12064.	-12065.	-12065.	-12065.
-8873.1	-8988.3	-9236.6	-9598.9	-9648.7	-9650.2	-9650.2	-9650.2
-6767.7	-6880.9	-7120.9	-7227.1	-7233.8	-7235.1	-7235.2	-7235.2
-4696.5	-4810.3	-4813.5	-4812.6	-4818.8	-4820.1	-4820.1	-4820.1
-2403.2	-2396.5	-2398.8	-2398.1	-2403.8	-2405.0	-2405.0	-2405.0
12.688	17.824	16.112	16.738	11.431	10.327	10.306	10.306
2462.2	2466.2	2464.9	2465.4	2460.6	2459.5	2459.5	2459.5
4911.6	4914.6	4913.7	4914.1	4909.7	4908.7	4908.7	4908.7
7360.8	7363.1	7362.4	7362.8	7358.8	7357.9	7357.9	7357.9
9809.9	9811.7	9811.2	9811.5	9807.9	9807.2	9807.1	9807.1
12259.	12260.	12260.	12260.	12257.	12256.	12256.	12256.
14708.	14709.	14709.	14709.	14706.	14706.	14706.	14706.
17157.	17158.	17157.	17158.	17155.	17155.	17155.	17155.
19606.	19606.	19606.	19606.	19604.	19604.	19604.	19604.
22055.	22055.	22055.	22055.	22054.	22053.	22053.	22053.
24503.	24504.	24504.	24504.	24503.	24502.	24502.	24502.
26952.	26953.	26952.	26953.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.46620	0.46875	0.48040	0.49615	0.83387	0.85225	0.85225	0.85225
0.47898	0.48082	0.49261	0.71698	0.87686	0.87689	0.87689	0.87689
0.49168	0.49200	0.60835	0.87092	0.90154	0.90153	0.90153	0.90153
0.58719	0.67946	0.84875	0.92625	0.92619	0.92617	0.92617	0.92617
0.86192	0.95091	0.95088	0.95089	0.95083	0.95082	0.95082	0.95082
0.97548	0.97555	0.97552	0.97553	0.97547	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13335	0.13477	0.13730	0.14258	0.14748	0.14775	0.14775	0.14775
0.11197	0.11324	0.11577	0.12075	0.12310	0.12311	0.12311	0.12311
0.90542E-01	0.91717E-01	0.94251E-01	0.97948E-01	0.98457E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.69058E-01	0.70214E-01	0.72662E-01	0.73746E-01	0.73814E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47924E-01	0.49085E-01	0.49118E-01	0.49109E-01	0.49172E-01	0.49185E-01	0.49185E-01	0.49185E-01

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS


  SLICE   1


0.40046  0.39649  0.38230  0.36127  0.18653E-01 0.55511E-16-0.55511E-16-0.27756E-16
0.40905  0.40594  0.39162  0.16227  0.41741E-04 0.55511E-16-0.69389E-16 0.55511E-16
0.41778  0.41628  0.29740  0.31132E-01 0.55511E-16 0.41633E-16 0.13878E-16 0.97145E-16
0.34376  0.25033  0.78583E-01-0.12490E-15-0.33307E-15-0.69389E-16 0.97145E-16-0.12490E-15
0.90159E-01 0.30531E-15 0.13878E-16-0.69389E-17 0.11796E-15-0.27756E-15-0.76328E-16-0.97145E-16
-0.55511E-16 0.72858E-16 0.16653E-15 0.48572E-16 0.18388E-15 0.14919E-15 0.10755E-15 0.21511E-15
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
................................................................................

   RECURRENT DATA

    DELT      DTMIN      SWMAX     CFAC      TCHG       NS  NRR
   0.10000E+07  10000.   0.10000   1.5000   0.94608E+08  8  1


   I  J   QT        QSW        IQ
   1  1 0.29459E-04 0.12060      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   2  1 0.60249E-05 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   3  1 0.11447E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   4  1 0.21750E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   5  1 0.41325E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   6  1 0.78517E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   7  1 0.14918E-03 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   8  1 0.28344E-03 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0

................................................................................

   AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
   I=  1  J=  1  K= 20     CPMW = 0.50694E-05   CPMN = 0.00000E+00
   I=  2  J=  1  K= 20     CPMW = 0.96564E-05   CPMN = 0.00000E+00
   I=  3  J=  1  K= 20     CPMW = 0.18142E-04   CPMN = 0.00000E+00
   I=  4  J=  1  K= 20     CPMW = 0.32325E-04   CPMN = 0.00000E+00
   I=  5  J=  1  K= 20     CPMW = 0.47412E-04   CPMN = 0.00000E+00
   I=  6  J=  1  K= 20     CPMW = 0.78771E-04   CPMN = 0.00000E+00
   I=  7  J=  1  K= 20     CPMW = 0.14918E-03   CPMN = 0.00000E+00
   I=  8  J=  1  K= 20     CPMW = 0.28344E-03   CPMN = 0.00000E+00

              WATER BALANCE      NAPL BALANCE

   CONSTANT PRES    -936.00          0.00000
   SOURCE/SINKS    892.85           38.859
   STORAGE        43.142          -38.859
   PER CENT ERROR   0.18051E-08      -0.29256E-11
```

STEP NUMBER 28 SIMULATION TIME IN SECONDS 0.946E+08
**************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12572.	-12671.	-12818.	-13110.	-13755.	-14434.	-14480.	-14480.
-10477.	-10562.	-10709.	-11000.	-11651.	-12060.	-12065.	-12065.
-8378.8	-8453.3	-8599.1	-8890.9	-9433.9	-9649.5	-9650.2	-9650.2
-6276.8	-6344.4	-6489.7	-6781.8	-7191.0	-7234.6	-7235.2	-7235.2
-4171.7	-4235.4	-4380.3	-4672.0	-4815.9	-4819.5	-4820.1	-4820.1
-2066.9	-2125.5	-2278.4	-2401.8	-2401.1	-2404.5	-2405.0	-2405.0
42.996	12.737	12.834	13.279	13.967	10.804	10.308	10.306
2462.0	2461.8	2461.9	2462.3	2462.9	2460.0	2459.5	2459.5
4911.0	4910.8	4910.9	4911.2	4911.8	4909.1	4908.7	4908.7
7360.0	7359.8	7359.9	7360.2	7360.7	7358.3	7357.9	7357.9
9809.0	9808.9	9808.9	9809.2	9809.7	9807.5	9807.1	9807.1
12258.	12258.	12258.	12258.	12259.	12257.	12256.	12256.
14707.	14707.	14707.	14707.	14708.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17156.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19605.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.44939	0.45280	0.45753	0.46721	0.49087	0.81991	0.85225	0.85225
0.46204	0.46497	0.46968	0.47938	0.58310	0.87351	0.87689	0.87689
0.47458	0.47716	0.48185	0.49165	0.74899	0.90153	0.90153	0.90153
0.48701	0.48936	0.49404	0.60181	0.89758	0.92618	0.92617	0.92617
0.48680	0.53144	0.63553	0.84625	0.95086	0.95082	0.95082	0.95082
0.73320	0.77524	0.88586	0.97549	0.97550	0.97546	0.97546	0.97546
0.97833	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12829	0.12930	0.13080	0.13377	0.14036	0.14729	0.14775	0.14775
0.10691	0.10778	0.10927	0.11225	0.11889	0.12306	0.12311	0.12311
0.85498E-01	0.86258E-01	0.87746E-01	0.90724E-01	0.96265E-01	0.98464E-01	0.98471E-01	0.98471E-01
0.64049E-01	0.64739E-01	0.66221E-01	0.69202E-01	0.73377E-01	0.73822E-01	0.73828E-01	0.73828E-01
0.42568E-01	0.43219E-01	0.44697E-01	0.47673E-01	0.49142E-01	0.49179E-01	0.49185E-01	0.49185E-01
0.21091E-01	0.21688E-01	0.23249E-01	0.24508E-01	0.24501E-01	0.24535E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.42232  0.41790  0.41168  0.39902  0.36877  0.32798E-01-0.83267E-16-0.13878E-15
0.43104  0.42725  0.42105  0.40837  0.29801  0.34339E-02 0.12490E-15-0.11102E-15
0.43992  0.43658  0.43040  0.41763  0.15474  0.29988E-05-0.15266E-15 0.69389E-16
0.44894  0.44590  0.43974  0.32899  0.29047E-01-0.11102E-15 0.15266E-15-0.12490E-15
0.47063  0.42535  0.31978  0.10608  0.10408E-15-0.27062E-15-0.55511E-16-0.27756E-16
0.24571  0.20307  0.90888E-01 0.13184E-15-0.13878E-16 0.52042E-16 0.90206E-16 0.14225E-15
0.21675E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
..................................................................................


   RECURRENT DATA

    DELT      DTMIN     SWMAX    CFAC     TCHG      NS  NRR
   0.10000E+07  10000.   0.10000   1.5000   0.15768E+09  8  1


   I  J  QT          QSW        IQ
   1  1 0.29459E-04 0.12060       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   2  1 0.60249E-05  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   3  1 0.11447E-04  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   4  1 0.21750E-04  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   5  1 0.41325E-04  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   6  1 0.78517E-04  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   7  1 0.14918E-03  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   8  1 0.28344E-03  1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

..................................................................................

   AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
   I=  1  J=  1  K= 20    CPMW = 0.40184E-05   CPMN = 0.00000E+00
   I=  2  J=  1  K= 20    CPMW = 0.75643E-05   CPMN = 0.00000E+00
   I=  3  J=  1  K= 20    CPMW = 0.14542E-04   CPMN = 0.00000E+00
   I=  4  J=  1  K= 20    CPMW = 0.27377E-04   CPMN = 0.00000E+00
   I=  5  J=  1  K= 20    CPMW = 0.55375E-04   CPMN = 0.00000E+00
   I=  6  J=  1  K= 20    CPMW = 0.82931E-04   CPMN = 0.00000E+00
   I=  7  J=  1  K= 20    CPMW = 0.14923E-03   CPMN = 0.00000E+00
   I=  8  J=  1  K= 20    CPMW = 0.28344E-03   CPMN = 0.00000E+00

              WATER BALANCE        NAPL BALANCE

   CONSTANT PRES    -936.72          0.00000
   SOURCE/SINKS      892.85          38.859
   STORAGE           43.865         -38.859
   PER CENT ERROR  -0.12491E-08     -0.44798E-11
```

STEP NUMBER 37
****

SIMULATION TIME IN SECONDS 0.158E+09
IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04

IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12273.	-12360.	-12480.	-12716.	-13172.	-14237.	-14480.	-14480.
-10178.	-10251.	-10371.	-10606.	-11063.	-11908.	-12065.	-12065.
-8079.1	-8142.5	-8261.2	-8497.1	-8953.6	-9570.9	-9650.2	-9650.2
-5977.5	-6033.9	-6151.8	-6387.7	-6844.4	-7227.0	-7235.2	-7235.2
-3873.3	-3925.1	-4042.4	-4278.3	-4691.8	-4818.3	-4820.1	-4820.1
-1766.8	-1816.1	-1933.0	-2170.4	-2401.4	-2403.3	-2405.0	-2405.0
341.88	293.59	168.29	12.924	12.546	11.912	10.316	10.306
2461.1	2461.1	2461.5	2461.3	2461.6	2461.0	2459.5	2459.5
4910.2	4910.2	4910.5	4910.3	4910.6	4910.1	4908.7	4908.7
7359.3	7359.2	7359.6	7359.4	7359.6	7359.2	7357.9	7357.9
9808.3	9808.3	9808.6	9808.5	9808.7	9808.2	9807.1	9807.1
12257.	12257.	12258.	12258.	12258.	12257.	12256.	12256.
14706.	14706.	14707.	14707.	14707.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17156.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19605.	19605.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.43865	0.44164	0.44541	0.45420	0.46998	0.67860	0.85222	0.85225
0.45127	0.45379	0.45755	0.46635	0.48215	0.76532	0.87689	0.87689
0.46379	0.46598	0.46970	0.47851	0.49435	0.84581	0.90153	0.90153
0.47622	0.47818	0.48186	0.49069	0.64623	0.92169	0.92617	0.92617
0.48858	0.49038	0.49405	0.56186	0.85991	0.95083	0.95082	0.95082
0.51726	0.55195	0.63663	0.80732	0.97464	0.97548	0.97546	0.97546
0.76156	0.79631	0.88731	0.99949	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12524	0.12612	0.12735	0.12975	0.13441	0.14527	0.14775	0.14775
0.10386	0.10460	0.10582	0.10823	0.11289	0.12151	0.12311	0.12311
0.82440E-01	0.83087E-01	0.84298E-01	0.86705E-01	0.91363E-01	0.97663E-01	0.98471E-01	0.98471E-01
0.60995E-01	0.61570E-01	0.62774E-01	0.65180E-01	0.69841E-01	0.73744E-01	0.73828E-01	0.73828E-01
0.39524E-01	0.40052E-01	0.41249E-01	0.43656E-01	0.47875E-01	0.49166E-01	0.49185E-01	0.49185E-01
0.18028E-01	0.18532E-01	0.19725E-01	0.22147E-01	0.24505E-01	0.24523E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.43611  0.43224  0.42724  0.41605  0.39561  0.17613  0.25349E-04-0.19429E-15
0.44487  0.44160  0.43663  0.42543  0.40496  0.11316  0.12490E-15 0.55511E-16
0.45377  0.45094  0.44600  0.43478  0.41429  0.56528E-01-0.12490E-15-0.69389E-16
0.46278  0.46025  0.45537  0.44413  0.28393  0.45677E-02 0.18041E-15-0.69389E-16
0.47190  0.46956  0.46470  0.39448  0.92216E-01-0.22204E-15-0.69389E-17 0.13184E-15
0.46471  0.42952  0.34364  0.17053  0.85161E-03 0.52042E-16-0.45103E-16 0.17347E-16
0.23844  0.20369  0.11269  0.50649E-03 0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

....

RECURRENT DATA

```
DELT        DTMIN    SWMAX    CFAC    TCHG        NS NRR
0.10000E+07 10000.   0.10000  1.5000  0.31536E+09 8  1
```

```
I J QT          QSW       IQ
1 1 0.29459E-04 0.12060   1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

....

```
AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I= 1 J= 1 K= 20   CPMW = 0.37518E-05   CPMN = 0.00000E+00
I= 2 J= 1 K= 20   CPMW = 0.71341E-05   CPMN = 0.00000E+00
I= 3 J= 1 K= 20   CPMW = 0.13736E-04   CPMN = 0.00000E+00
I= 4 J= 1 K= 20   CPMW = 0.26055E-04   CPMN = 0.00000E+00
I= 5 J= 1 K= 20   CPMW = 0.49796E-04   CPMN = 0.00000E+00
I= 6 J= 1 K= 20   CPMW = 0.91228E-04   CPMN = 0.00000E+00
I= 7 J= 1 K= 20   CPMW = 0.14937E-03   CPMN = 0.00000E+00
I= 8 J= 1 K= 20   CPMW = 0.28344E-03   CPMN = 0.00000E+00
```

```
                  WATER BALANCE      NAPL BALANCE

CONSTANT PRES     -936.76            0.00000
SOURCE/SINKS      892.85             38.859
STORAGE           43.903             -38.859
PER CENT ERROR    -0.12846E-08       0.12068E-11
```

STEP NUMBER 51 SIMULATION TIME IN SECONDS 0.315E+09
****
IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-11827.	-11901.	-11997.	-12175.	-12505.	-13210.	-14375.	-14480.
-9730.7	-9792.2	-9887.2	-10066.	-10395.	-11101.	-12008.	-12065.
-7631.6	-7683.6	-7777.8	-7956.3	-8285.9	-8991.3	-9626.8	-9650.2
-5530.2	-5575.0	-5668.4	-5846.9	-6176.5	-6882.3	-7232.9	-7235.2
-3426.8	-3466.2	-3559.0	-3737.5	-4067.1	-4638.0	-4819.6	-4820.1
-1321.6	-1357.3	-1449.6	-1628.1	-1958.0	-2376.0	-2404.5	-2405.0
785.24	751.97	659.85	481.11	151.04	11.927	10.784	10.306
2893.4	2861.2	2769.3	2590.5	2460.5	2461.0	2460.0	2459.5
5003.5	4961.4	4909.4	4910.1	4909.6	4910.1	4909.1	4908.7
7358.9	7359.1	7358.6	7359.2	7358.7	7359.2	7358.3	7357.9
9808.0	9808.2	9807.7	9808.3	9807.9	9808.3	9807.5	9807.1
12257.	12257.	12257.	12257.	12257.	12257.	12257.	12256.
14706.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17155.	17155.	17155.	17156.	17155.	17156.	17155.	17155.
19604.	19605.	19604.	19605.	19604.	19605.	19604.	19604.
22054.	22054.	22053.	22054.	22053.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.42244	0.42494	0.42868	0.43501	0.44651	0.47202	0.77713	0.85225
0.43501	0.43706	0.44079	0.44714	0.45865	0.48419	0.83605	0.87689
0.44750	0.44920	0.45293	0.45928	0.47081	0.49636	0.88513	0.90153
0.45993	0.46134	0.46508	0.47143	0.48299	0.67304	0.92494	0.92617
0.47231	0.47349	0.47725	0.48360	0.49518	0.82051	0.95082	0.95082
0.48465	0.48564	0.48943	0.49578	0.65347	0.95572	0.97546	0.97546
0.49696	0.49767	0.53233	0.66106	0.89893	1.0000	1.0000	1.0000
0.68683	0.71090	0.77651	0.90638	1.0000	1.0000	1.0000	1.0000
0.93217	0.96290	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12068	0.12144	0.12242	0.12424	0.12760	0.13480	0.14669	0.14775
0.99292E-01	0.99920E-01	0.10089	0.10271	0.10607	0.11327	0.12253	0.12311
0.77874E-01	0.78404E-01	0.79366E-01	0.81187E-01	0.84550E-01	0.91748E-01	0.98233E-01	0.98471E-01
0.56431E-01	0.56887E-01	0.57841E-01	0.59662E-01	0.63026E-01	0.70227E-01	0.73805E-01	0.73828E-01
0.34967E-01	0.35370E-01	0.36316E-01	0.38138E-01	0.41501E-01	0.47326E-01	0.49179E-01	0.49185E-01
0.13485E-01	0.13850E-01	0.14792E-01	0.16614E-01	0.19980E-01	0.24244E-01	0.24536E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.45688	0.45362	0.44891	0.44075	0.42589	0.39318	0.76187E-01	-0.36082E-15
0.46570	0.46302	0.45832	0.45015	0.43528	0.40254	0.41424E-01	0.16653E-15
0.47463	0.47240	0.46771	0.45954	0.44464	0.41189	0.16640E-01	-0.55511E-16
0.48364	0.48177	0.47708	0.46891	0.45399	0.25674	0.12532E-02	-0.24980E-15
0.49272	0.49114	0.48644	0.47826	0.46331	0.13217	-0.12490E-15	0.00000
0.50187	0.50051	0.49578	0.48761	0.32655	0.20039E-01	-0.14919E-15	-0.62450E-16
0.50304	0.50233	0.46767	0.33894	0.10107	0.00000	0.00000	0.00000
0.31317	0.28910	0.22349	0.93624E-01	0.00000	0.00000	0.00000	0.00000
0.67831E-01	0.37097E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

Toluene

STEP NUMBER 17 SIMULATION TIME IN SECONDS 0.315E+08
**************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.

IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13133.	-13256.	-13476.	-13963.	-14443.	-14480.	-14480.	-14480.
-11034.	-11145.	-11364.	-11802.	-12063.	-12065.	-12065.	-12065.
-8929.9	-9032.6	-9252.7	-9604.7	-9648.4	-9650.1	-9650.2	-9650.2
-6821.1	-6923.5	-7146.6	-7227.1	-7233.5	-7235.1	-7235.2	-7235.2
-4721.0	-4813.0	-4814.0	-4812.6	-4818.6	-4820.1	-4820.1	-4820.1
-2401.0	-2398.6	-2399.3	-2398.1	-2403.6	-2405.0	-2405.0	-2405.0
14.271	16.140	15.635	16.749	11.663	10.331	10.306	10.306
2463.4	2464.8	2464.4	2465.4	2460.8	2459.5	2459.5	2459.5
4912.4	4913.5	4913.3	4914.1	4909.9	4908.7	4908.7	4908.7
7361.4	7362.2	7362.1	7362.8	7359.0	7357.9	7357.9	7357.9
9810.3	9810.9	9810.9	9811.5	9808.1	9807.2	9807.1	9807.1
12259.	12260.	12260.	12260.	12257.	12256.	12256.	12256.
14708.	14708.	14708.	14709.	14706.	14706.	14706.	14706.
17157.	17157.	17157.	17158.	17155.	17155.	17155.	17155.
19606.	19606.	19606.	19606.	19605.	19604.	19604.	19604.
22055.	22055.	22055.	22055.	22054.	22053.	22053.	22053.
24503.	24504.	24504.	24504.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26953.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.46911	0.47245	0.48160	0.49089	0.82714	0.85225	0.85225	0.85225
0.48168	0.48448	0.49370	0.69427	0.87675	0.87689	0.87689	0.87689
0.49412	0.49622	0.61999	0.87513	0.90155	0.90153	0.90153	0.90153
0.62984	0.70725	0.86691	0.92625	0.92619	0.92617	0.92617	0.92617
0.88198	0.95089	0.95088	0.95089	0.95083	0.95082	0.95082	0.95082
0.97550	0.97552	0.97552	0.97553	0.97547	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13401	0.13527	0.13751	0.14248	0.14738	0.14775	0.14775	0.14775
0.11259	0.11372	0.11596	0.12043	0.12309	0.12311	0.12311	0.12311
0.91121E-01	0.92169E-01	0.94416E-01	0.98007E-01	0.98453E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.69603E-01	0.70648E-01	0.72924E-01	0.73746E-01	0.73812E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.48174E-01	0.49112E-01	0.49123E-01	0.49108E-01	0.49169E-01	0.49184E-01	0.49185E-01	0.49185E-01
0.24500E-01	0.24476E-01	0.24483E-01	0.24470E-01	0.24526E-01	0.24540E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.39688  0.39228  0.38088  0.36663  0.25480E-01 0.55511E-16-0.27756E-15 0.24980E-15
0.40573  0.40180  0.39033  0.18530  0.15870E-03-0.55511E-16 0.55511E-16 0.41633E-16
0.41476  0.41161  0.28560  0.26865E-01-0.55511E-16 0.83267E-16 0.11102E-15-0.13878E-16
0.30056  0.22210  0.60168E-01 0.41633E-16-0.29143E-15-0.83267E-16-0.27756E-16 0.27756E-16
0.69844E-01 0.55511E-16-0.41633E-16-0.41633E-16-0.41633E-16 0.97145E-16 0.18735E-15-0.41633E-16
-0.79797E-16 0.10408E-16 0.65919E-16 0.17347E-15-0.19082E-15 0.90206E-16 0.72858E-16-0.27756E-16
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    RECURRENT DATA

   DELT      DTMIN     SWMAX    CFAC      TCHG      NS NRR
  0.10000E+07 10000.  0.10000   1.5000  0.94608E+08  8  1


  I  J  QT         QSW        IQ
  1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K=  20    CPMW =  0.48165E-05   CPMN =  0.00000E+00
 I=  2  J=  1  K=  20    CPMW =  0.91974E-05   CPMN =  0.00000E+00
 I=  3  J=  1  K=  20    CPMW =  0.17823E-04   CPMN =  0.00000E+00
 I=  4  J=  1  K=  20    CPMW =  0.33082E-04   CPMN =  0.00000E+00
 I=  5  J=  1  K=  20    CPMW =  0.47878E-04   CPMN =  0.00000E+00
 I=  6  J=  1  K=  20    CPMW =  0.78790E-04   CPMN =  0.00000E+00
 I=  7  J=  1  K=  20    CPMW =  0.14918E-03   CPMN =  0.00000E+00
 I=  8  J=  1  K=  20    CPMW =  0.28344E-03   CPMN =  0.00000E+00

           WATER BALANCE        NAPL BALANCE

 CONSTANT PRES     -936.31          0.00000
 SOURCE/SINKS      892.85          38.859
 STORAGE          43.459        -38.859
 PER CENT ERROR  -0.65849E-09       -0.36936E-11
```

Toluene

STEP NUMBER 28
****

SIMULATION TIME IN SECONDS 0.946E+08
IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04

IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12661.	-12749.	-12887.	-13149.	-13701.	-14420.	-14480.	-14480.
-10562.	-10638.	-10775.	-11037.	-11594.	-12055.	-12065.	-12065.
-8458.9	-8526.5	-8663.3	-8926.4	-9417.6	-9649.3	-9650.2	-9650.2
-6353.1	-6415.0	-6551.6	-6816.3	-7198.1	-7234.4	-7235.2	-7235.2
-4244.5	-4303.2	-4440.0	-4706.0	-4816.4	-4819.4	-4820.1	-4820.1
-2133.7	-2188.7	-2337.5	-2402.1	-2401.6	-2404.3	-2405.0	-2405.0
13.258	12.657	12.498	12.996	13.530	10.939	10.309	10.306
2462.2	2461.7	2461.5	2462.0	2462.5	2460.1	2459.5	2459.5
4911.1	4910.7	4910.6	4911.0	4911.4	4909.3	4908.7	4908.7
7360.1	7359.8	7359.6	7360.0	7360.4	7358.4	7357.9	7357.9
9809.0	9808.8	9808.7	9809.0	9809.4	9807.6	9807.1	9807.1
12258.	12258.	12258.	12258.	12258.	12257.	12256.	12256.
14707.	14707.	14707.	14707.	14707.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17156.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19605.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.45254	0.45560	0.46036	0.46899	0.48709	0.80935	0.85225	0.85225
0.46504	0.46768	0.47244	0.48114	0.54206	0.87040	0.87689	0.87689
0.47743	0.47976	0.48454	0.49344	0.73672	0.90152	0.90153	0.90153
0.48973	0.49186	0.49666	0.62545	0.90231	0.92618	0.92617	0.92617
0.53872	0.58032	0.67817	0.87062	0.95085	0.95082	0.95082	0.95082
0.78177	0.82087	0.92837	0.97549	0.97549	0.97547	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12919	0.13010	0.13150	0.13417	0.13981	0.14714	0.14775	0.14775
0.10777	0.10855	0.10995	0.11263	0.11830	0.12301	0.12311	0.12311
0.86315E-01	0.87005E-01	0.88401E-01	0.91086E-01	0.96098E-01	0.98462E-01	0.98471E-01	0.98471E-01
0.64828E-01	0.65459E-01	0.66853E-01	0.69554E-01	0.73450E-01	0.73820E-01	0.73828E-01	0.73828E-01
0.43311E-01	0.43910E-01	0.45307E-01	0.48021E-01	0.49147E-01	0.49177E-01	0.49185E-01	0.49185E-01
0.21772E-01	0.22334E-01	0.23853E-01	0.24511E-01	0.24506E-01	0.24534E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.41826  0.41430  0.40814  0.39684  0.37310  0.43510E-01-0.22204E-15 0.13878E-15
0.42719  0.42377  0.41761  0.40624  0.33964  0.65863E-02 0.13878E-16-0.69389E-16
0.43625  0.43323  0.42706  0.41547  0.16718  0.14620E-04 0.41633E-16 0.55511E-16
0.44544  0.44268  0.43649  0.30500  0.24236E-01-0.18041E-15-0.13878E-16 0.12490E-15
0.41797  0.37577  0.27653  0.81358E-01-0.17347E-15 0.28449E-15 0.30531E-15-0.13184E-15
0.19646  0.15679  0.47777E-01 0.18041E-15-0.40939E-15 0.19776E-15 0.15266E-15 0.93675E-16
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000

   RECURRENT DATA

   DELT     DTMIN     SWMAX    CFAC     TCHG       NS  NRR
 0.10000E+07 10000.  0.10000   1.5000  0.15768E+09  8   1


  I  J  QT        QSW        IQ
  1  1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K= 20     CPMW = 0.39772E-05   CPMN = 0.00000E+00
 I=  2  J=  1  K= 20     CPMW = 0.75490E-05   CPMN = 0.00000E+00
 I=  3  J=  1  K= 20     CPMW = 0.14494E-04   CPMN = 0.00000E+00
 I=  4  J=  1  K= 20     CPMW = 0.27535E-04   CPMN = 0.00000E+00
 I=  5  J=  1  K= 20     CPMW = 0.53765E-04   CPMN = 0.00000E+00
 I=  6  J=  1  K= 20     CPMW = 0.84450E-04   CPMN = 0.00000E+00
 I=  7  J=  1  K= 20     CPMW = 0.14925E-03   CPMN = 0.00000E+00
 I=  8  J=  1  K= 20     CPMW = 0.28344E-03   CPMN = 0.00000E+00

           WATER BALANCE       NAPL BALANCE

 CONSTANT PRES    -936.69          0.00000
 SOURCE/SINKS       892.85          38.859
 STORAGE        43.838          -38.859
 PER CENT ERROR   0.10777E-08       -0.31633E-11
```

Toluene

STEP NUMBER 36 SIMULATION TIME IN SECONDS 0.158E+09
**************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04

IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12384.	-12463.	-12576.	-12786.	-13208.	-14194.	-14480.	-14480.
-10284.	-10351.	-10464.	-10674.	-11096.	-11880.	-12065.	-12065.
-8181.3	-8240.2	-8352.1	-8561.9	-8984.5	-9552.1	-9650.2	-9650.2
-6075.7	-6129.0	-6240.2	-6450.0	-6881.7	-7227.9	-7235.2	-7235.2
-3967.8	-4017.6	-4128.4	-4338.1	-4703.9	-4818.5	-4820.1	-4820.1
-1857.7	-1906.1	-2016.6	-2218.7	-2401.4	-2403.5	-2405.0	-2405.0
263.51	221.94	105.37	11.146	13.634	11.736	10.313	10.306
2460.1	2461.3	2461.4	2460.3	2462.6	2460.8	2459.5	2459.5
4909.4	4910.3	4910.5	4909.5	4911.5	4909.9	4908.7	4908.7
7358.6	7359.3	7359.5	7358.6	7360.5	7359.0	7357.9	7357.9
9807.8	9808.4	9808.5	9807.8	9809.4	9808.1	9807.1	9807.1
12257.	12257.	12258.	12257.	12258.	12257.	12256.	12256.
14706.	14706.	14707.	14706.	14707.	14706.	14706.	14706.
17155.	17156.	17156.	17155.	17156.	17155.	17155.	17155.
19604.	19605.	19605.	19604.	19605.	19605.	19604.	19604.
22054.	22054.	22054.	22053.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.44215	0.44461	0.44824	0.45601	0.46399	0.64762	0.85225	0.85225
0.45462	0.45667	0.46029	0.46807	0.47605	0.74466	0.87689	0.87689
0.46702	0.46875	0.47235	0.48016	0.48638	0.83202	0.90153	0.90153
0.47936	0.48085	0.48442	0.49227	0.67404	0.92222	0.92617	0.92617
0.49164	0.49295	0.49634	0.60361	0.86962	0.95083	0.95082	0.95082
0.57874	0.61745	0.69644	0.84137	0.97550	0.97547	0.97546	0.97546
0.81686	0.84856	0.93270	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12636	0.12717	0.12832	0.13047	0.13478	0.14483	0.14775	0.14775
0.10494	0.10563	0.10677	0.10892	0.11323	0.12122	0.12311	0.12311
0.83482E-01	0.84084E-01	0.85225E-01	0.87367E-01	0.91678E-01	0.97470E-01	0.98471E-01	0.98471E-01
0.61997E-01	0.62541E-01	0.63676E-01	0.65817E-01	0.70222E-01	0.73754E-01	0.73828E-01	0.73828E-01
0.40488E-01	0.40996E-01	0.42126E-01	0.44266E-01	0.47999E-01	0.49168E-01	0.49185E-01	0.49185E-01
0.18956E-01	0.19450E-01	0.20578E-01	0.22640E-01	0.24504E-01	0.24525E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.43149  0.42822  0.42343  0.41353  0.40123  0.20754  -0.22204E-15 0.27756E-16
0.44044  0.43770  0.43293  0.42301  0.41072  0.13412   0.83267E-16 0.41633E-16
0.44950  0.44716  0.44242  0.43247  0.42194  0.70510E-01 0.18041E-15 0.27756E-16
0.45864  0.45661  0.45191  0.44191  0.25574  0.40255E-02 0.41633E-16 0.41633E-16
0.46787  0.46605  0.46153  0.35213  0.82383E-01 0.44409E-15 0.36082E-15-0.12490E-15
0.40230  0.36310  0.28299  0.13599  -0.42327E-15 0.16306E-15 0.24980E-15 0.20470E-15
0.18314  0.15144  0.67302E-01 0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000

    RECURRENT DATA

  DELT     DTMIN     SWMAX    CFAC     TCHG       NS NRR
 0.10000E+07 10000.   0.10000   1.5000   0.31536E+09  8  1


  I  J   QT        QSW       IQ
  1  1 0.29459E-04 0.12060       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

 AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K=  20     CPMW =  0.36733E-05    CPMN =  0.00000E+00
 I=  2  J=  1  K=  20     CPMW =  0.70396E-05    CPMN =  0.00000E+00
 I=  3  J=  1  K=  20     CPMW =  0.13547E-04    CPMN =  0.00000E+00
 I=  4  J=  1  K=  20     CPMW =  0.25608E-04    CPMN =  0.00000E+00
 I=  5  J=  1  K=  20     CPMW =  0.48754E-04    CPMN =  0.00000E+00
 I=  6  J=  1  K=  20     CPMW =  0.91721E-04    CPMN =  0.00000E+00
 I=  7  J=  1  K=  20     CPMW =  0.14947E-03    CPMN =  0.00000E+00
 I=  8  J=  1  K=  20     CPMW =  0.28344E-03    CPMN =  0.00000E+00

          WATER BALANCE         NAPL BALANCE

 CONSTANT PRES     -603.47            0.00000
 SOURCE/SINKS       576.34             25.084
 STORAGE             27.125           -25.084
 PER CENT ERROR    0.28629E-08       -0.62035E-11
```

Toluene

STEP NUMBER 50 ****************

SIMULATION TIME IN SECONDS 0.315E+09
IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-11953.	-12019.	-12106.	-12271.	-12584.	-13204.	-14347.	-14480.
-9852.4	-9907.8	-9993.8	-10159.	-10472.	-11092.	-11988.	-12065.
-7749.5	-7796.6	-7881.9	-8047.3	-8359.8	-8980.6	-9613.2	-9650.2
-5644.4	-5685.4	-5770.0	-5935.4	-6247.9	-6870.3	-7231.5	-7235.2
-3537.4	-3574.2	-3658.1	-3823.5	-4136.0	-4632.3	-4819.6	-4820.1
-1428.8	-1462.8	-1546.2	-1711.6	-2024.9	-2380.5	-2404.5	-2405.0
681.31	648.84	565.81	400.38	107.11	12.115	10.766	10.306
2793.1	2759.9	2673.6	2486.8	2460.7	2461.2	2459.9	2459.5
4909.6	4909.6	4909.5	4909.6	4909.8	4910.3	4909.1	4908.7
7358.7	7358.7	7358.7	7358.8	7358.9	7359.3	7358.3	7357.9
9807.9	9807.8	9807.8	9807.9	9808.0	9808.4	9807.5	9807.1
12257.	12257.	12257.	12257.	12257.	12257.	12257.	12256.
14706.	14706.	14706.	14706.	14706.	14707.	14706.	14706.
17155.	17155.	17155.	17155.	17155.	17156.	17155.	17155.
19604.	19604.	19604.	19604.	19604.	19605.	19604.	19604.
22053.	22053.	22053.	22054.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.42725	0.42955	0.43262	0.43855	0.44972	0.46794	0.75670	0.85225
0.43967	0.44160	0.44465	0.45059	0.46178	0.48001	0.82151	0.87689
0.45201	0.45366	0.45669	0.46264	0.47384	0.49165	0.87522	0.90153
0.46430	0.46574	0.46875	0.47471	0.48592	0.66447	0.92392	0.92617
0.47654	0.47783	0.48082	0.48679	0.46029	0.81658	0.95082	0.95082
0.48873	0.48993	0.49290	0.47759	0.70183	0.95919	0.97546	0.97546
0.51744	0.54047	0.59977	0.71882	0.93085	1.0000	1.0000	1.0000
0.75953	0.78346	0.84577	0.98097	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12197	0.12264	0.12353	0.12521	0.12840	0.13474	0.14640	0.14775
0.10053	0.10110	0.10198	0.10366	0.10685	0.11319	0.12232	0.12311
0.79076E-01	0.79557E-01	0.80428E-01	0.82115E-01	0.85304E-01	0.91639E-01	0.98094E-01	0.98471E-01
0.57596E-01	0.58015E-01	0.58878E-01	0.60565E-01	0.63754E-01	0.70105E-01	0.73791E-01	0.73828E-01
0.36096E-01	0.36471E-01	0.37328E-01	0.39015E-01	0.42204E-01	0.47269E-01	0.49179E-01	0.49185E-01
0.14580E-01	0.14926E-01	0.15777E-01	0.17466E-01	0.20663E-01	0.24291E-01	0.24536E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.45079	0.44780	0.44385	0.43623	0.42187	0.39732	0.96904E-01	0.11102E-15
0.45980	0.45731	0.45337	0.44575	0.43137	0.40680	0.56170E-01	0.38858E-15
0.46891	0.46678	0.46288	0.45524	0.44085	0.41671	0.26687E-01	0.97145E-16
0.47810	0.47624	0.47237	0.46472	0.45032	0.26542	0.22940E-02	-0.13878E-16
0.48737	0.48570	0.48185	0.47419	0.49751	0.13615	0.18735E-15	-0.27756E-16
0.49669	0.49515	0.49132	0.50494	0.27751	0.16522E-01	0.47878E-15	0.24980E-15
0.48256	0.45953	0.40023	0.28118	0.69148E-01	0.00000	0.00000	0.00000
0.24047	0.21654	0.15423	0.19028E-01	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

....

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

m-Xylene

STEP NUMBER 18 SIMULATION TIME IN SECONDS 0.315E+08
**************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13096.	-13230.	-13466.	-14013.	-14455.	-14480.	-14480.	-14480.
-10993.	-11113.	-11349.	-11788.	-12064.	-12065.	-12065.	-12065.
-8885.2	-8996.4	-9231.6	-9597.7	-9648.9	-9650.2	-9650.2	-9650.2
-6772.2	-6881.1	-7137.8	-7226.6	-7234.0	-7235.1	-7235.2	-7235.2
-4692.6	-4811.7	-4813.5	-4812.2	-4819.0	-4820.1	-4820.1	-4820.1
-2402.9	-2397.7	-2398.8	-2397.7	-2403.9	-2405.0	-2405.0	-2405.0
12.851	16.874	16.128	17.148	11.324	10.325	10.306	10.306
2462.3	2465.4	2464.9	2465.8	2460.5	2459.5	2459.5	2459.5
4911.5	4913.9	4913.7	4914.5	4909.6	4908.7	4908.7	4908.7
7360.7	7362.5	7362.4	7363.1	7358.7	7357.9	7357.9	7357.9
9809.8	9811.2	9811.2	9811.8	9807.9	9807.1	9807.1	9807.1
12259.	12260.	12260.	12260.	12257.	12256.	12256.	12256.
14708.	14709.	14709.	14709.	14706.	14706.	14706.	14706.
17157.	17157.	17157.	17158.	17155.	17155.	17155.	17155.
19606.	19606.	19606.	19607.	19604.	19604.	19604.	19604.
22055.	22055.	22055.	22055.	22054.	22053.	22053.	22053.
24503.	24504.	24504.	24504.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26953.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.46741	0.47018	0.48116	0.52504	0.83550	0.85225	0.85225	0.85225
0.47988	0.48200	0.49307	0.68461	0.87690	0.87689	0.87689	0.87689
0.49226	0.49318	0.60519	0.87049	0.90154	0.90153	0.90153	0.90153
0.59147	0.67818	0.86101	0.92626	0.92618	0.92617	0.92617	0.92617
0.85957	0.95090	0.95088	0.95090	0.95083	0.95082	0.95082	0.95082
0.97548	0.97553	0.97552	0.97553	0.97547	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13363	0.13500	0.13740	0.14299	0.14750	0.14775	0.14775	0.14775
0.11218	0.11340	0.11580	0.12029	0.12310	0.12311	0.12311	0.12311
0.90665E-01	0.91800E-01	0.94200E-01	0.97936E-01	0.98458E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.69104E-01	0.70215E-01	0.72835E-01	0.73740E-01	0.73816E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47884E-01	0.49099E-01	0.49117E-01	0.49104E-01	0.49173E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.24519E-01	0.24466E-01	0.24478E-01	0.24466E-01	0.24530E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


     NAPL SATURATIONS

  SLICE    1

0.39896   0.39482   0.38143   0.33197   0.17000E-01-0.83267E-16 0.83267E-16 0.55511E-16
0.40794   0.40460   0.39112   0.19510   0.97145E-16-0.13878E-16 0.16653E-15 0.11102E-15
0.41707   0.41502   0.30061   0.31576E-01 0.55511E-16-0.30531E-15 0.27756E-16-0.19429E-15
0.33943   0.25160   0.66160E-01-0.11102E-15 0.41633E-16-0.16653E-15 0.00000   0.18041E-15
0.92542E-01 0.55511E-16 0.14572E-15 0.19429E-15 0.69389E-17-0.41633E-16 0.11796E-15 0.19429E-15
0.11449E-15-0.24980E-15 0.15613E-15-0.24286E-16 0.14572E-15 0.16653E-15-0.11449E-15 0.19082E-15
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


     RECURRENT DATA

   DELT     DTMIN     SWMAX    CFAC     TCHG      NS  NRR
  0.10000E+07  10000.   0.10000   1.5000   0.94608E+08   8   1


   I  J   QT        QSW        IQ
   1  1 0.29459E-04 0.12060      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   2  1 0.60249E-05  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   3  1 0.11447E-04  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   4  1 0.21750E-04  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   5  1 0.41325E-04  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   6  1 0.78517E-04  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   7  1 0.14918E-03  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   8  1 0.28344E-03  1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0


  AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
  I =  1  J =  1  K =  20     CPMW =  0.48190E-05    CPMN =  0.00000E+00
  I =  2  J =  1  K =  20     CPMW =  0.92327E-05    CPMN =  0.00000E+00
  I =  3  J =  1  K =  20     CPMW =  0.17749E-04    CPMN =  0.00000E+00
  I =  4  J =  1  K =  20     CPMW =  0.34794E-04    CPMN =  0.00000E+00
  I =  5  J =  1  K =  20     CPMW =  0.46770E-04    CPMN =  0.00000E+00
  I =  6  J =  1  K =  20     CPMW =  0.78740E-04    CPMN =  0.00000E+00
  I =  7  J =  1  K =  20     CPMW =  0.14918E-03    CPMN =  0.00000E+00
  I =  8  J =  1  K =  20     CPMW =  0.28344E-03    CPMN =  0.00000E+00

             WATER BALANCE        NAPL BALANCE

  CONSTANT PRES    -937.09            0.00000
  SOURCE/SINKS     892.85            38.859
  STORAGE          44.237           -38.859
  PER CENT ERROR   0.21614E-08        -0.36753E-11
```

m-Xylene

STEP NUMBER 29 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12621.	-12716.	-12859.	-13141.	-13760.	-14434.	-14480.	-14480.
-10518.	-10600.	-10742.	-11024.	-11647.	-12059.	-12065.	-12065.
-8411.6	-8483.5	-8625.5	-8907.7	-9430.9	-9649.5	-9650.2	-9650.2
-6301.8	-6367.3	-6508.8	-6791.4	-7192.3	-7234.5	-7235.2	-7235.2
-4189.1	-4250.9	-4392.1	-4674.5	-4816.0	-4819.5	-4820.1	-4820.1
-2077.0	-2134.2	-2277.7	-2401.9	-2401.2	-2404.4	-2405.0	-2405.0
39.314	12.811	12.756	13.192	13.902	10.825	10.308	10.306
2462.2	2461.8	2461.8	2462.2	2462.8	2460.0	2459.5	2459.5
4911.2	4910.9	4910.8	4911.2	4911.8	4909.2	4908.7	4908.7
7360.1	7359.9	7359.8	7360.1	7360.7	7358.3	7357.9	7357.9
9809.1	9808.9	9808.9	9809.1	9809.6	9807.5	9807.1	9807.1
12258.	12258.	12258.	12258.	12259.	12257.	12256.	12256.
14707.	14707.	14707.	14707.	14707.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17156.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19605.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.45114	0.45445	0.45917	0.46866	0.49091	0.81947	0.85225	0.85225
0.46351	0.46635	0.47106	0.48057	0.57980	0.87304	0.87689	0.87689
0.47576	0.47827	0.48297	0.49258	0.74675	0.90153	0.90153	0.90153
0.48791	0.49020	0.49490	0.60852	0.89844	0.92618	0.92617	0.92617
0.49938	0.54268	0.64392	0.84799	0.95086	0.95082	0.95082	0.95082
0.74070	0.78165	0.88531	0.97549	0.97550	0.97546	0.97546	0.97546
0.98116	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12878	0.12976	0.13121	0.13409	0.14040	0.14728	0.14775	0.14775
0.10733	0.10816	0.10961	0.11249	0.11884	0.12305	0.12311	0.12311
0.85833E-01	0.86567E-01	0.88015E-01	0.90895E-01	0.96234E-01	0.98464E-01	0.98471E-01	0.98471E-01
0.64305E-01	0.64973E-01	0.66416E-01	0.69300E-01	0.73391E-01	0.73822E-01	0.73828E-01	0.73828E-01
0.42746E-01	0.43376E-01	0.44817E-01	0.47699E-01	0.49142E-01	0.49179E-01	0.49185E-01	0.49185E-01
0.21194E-01	0.21778E-01	0.23242E-01	0.24509E-01	0.24502E-01	0.24535E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.42008  0.41580  0.40962  0.39725  0.36869   0.33247E-01 0.11102E-15 0.27756E-16
0.42916  0.42549  0.41932  0.40693  0.30136   0.39110E-02 0.12490E-15 0.83267E-16
0.43840  0.43517  0.42902  0.41652  0.15702   0.10411E-04 0.27756E-16-0.19429E-15
0.44778  0.44483  0.43868  0.32218  0.28167E-01-0.97145E-16 0.83267E-16 0.23592E-15
0.45787  0.41394  0.31126  0.10431  -0.27756E-16-0.18041E-15 0.22204E-15 0.26368E-15
0.23810  0.19657  0.91452E-01 0.38164E-16 0.29837E-15 0.11449E-15-0.30184E-15 0.12490E-15
0.18838E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    RECURRENT DATA

     DELT     DTMIN    SWMAX   CFAC    TCHG        NS NRR
    0.10000E+07 10000.  0.10000  1.5000  0.15768E+09  8  1


    I  J  QT         QSW       IQ
    1  1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    2  1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    3  1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    4  1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    5  1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    6  1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    7  1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    8  1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


   AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
   I=  1  J=  1  K= 20    CPMW= 0.40750E-05   CPMN= 0.00000E+00
   I=  2  J=  1  K= 20    CPMW= 0.76559E-05   CPMN= 0.00000E+00
   I=  3  J=  1  K= 20    CPMW= 0.14435E-04   CPMN= 0.00000E+00
   I=  4  J=  1  K= 20    CPMW= 0.27390E-04   CPMN= 0.00000E+00
   I=  5  J=  1  K= 20    CPMW= 0.55039E-04   CPMN= 0.00000E+00
   I=  6  J=  1  K= 20    CPMW= 0.83128E-04   CPMN= 0.00000E+00
   I=  7  J=  1  K= 20    CPMW= 0.14924E-03   CPMN= 0.00000E+00
   I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
              WATER BALANCE        NAPL BALANCE

   CONSTANT PRES    -936.60          0.00000
   SOURCE/SINKS      892.85          38.859
   STORAGE          43.741          -38.859
   PER CENT ERROR  -0.49188E-09     -0.26330E-11
```

m-Xylene

STEP NUMBER 38 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12331.	-12415.	-12530.	-12758.	-13199.	-14232.	-14480.	-14480.
-10228.	-10299.	-10414.	-10642.	-11083.	-11904.	-12065.	-12065.
-8121.3	-8182.6	-8297.0	-8524.9	-8966.2	-9568.3	-9650.2	-9650.2
-6012.0	-6066.7	-6180.3	-6408.2	-6850.0	-7227.2	-7235.2	-7235.2
-3900.2	-3950.6	-4063.7	-4291.5	-4693.6	-4818.2	-4820.1	-4820.1
-1786.1	-1834.2	-1947.1	-2175.4	-2402.2	-2403.3	-2405.0	-2405.0
329.95	282.43	170.31	12.553	12.437	11.926	10.316	10.306
2461.4	2461.3	2461.2	2461.2	2461.5	2461.0	2459.5	2459.5
4910.4	4910.4	4910.3	4910.3	4910.5	4910.1	4908.7	4908.7
7359.5	7359.4	7359.3	7359.4	7359.6	7359.2	7357.9	7357.9
9808.5	9808.5	9808.4	9808.4	9808.6	9808.3	9807.1	9807.1
12258.	12258.	12257.	12258.	12258.	12257.	12256.	12256.
14707.	14707.	14707.	14707.	14707.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17156.	17156.	17155.	17155.
19605.	19605.	19605.	19605.	19605.	19605.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.44074	0.44364	0.44738	0.45579	0.47107	0.67573	0.85223	0.85225
0.45308	0.45553	0.45926	0.46768	0.48298	0.76248	0.87689	0.87689
0.46532	0.46745	0.47116	0.47959	0.49494	0.84395	0.90153	0.90153
0.47748	0.47938	0.48308	0.49151	0.65012	0.92190	0.92617	0.92617
0.48956	0.49132	0.49502	0.57131	0.86110	0.95083	0.95082	0.95082
0.53129	0.56531	0.64641	0.81096	0.97513	0.97548	0.97546	0.97546
0.77040	0.80465	0.88559	0.99973	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12583	0.12668	0.12786	0.13019	0.13469	0.14523	0.14775	0.14775
0.10436	0.10509	0.10626	0.10859	0.11309	0.12147	0.12311	0.12311
0.82870E-01	0.83496E-01	0.84663E-01	0.86989E-01	0.91492E-01	0.97636E-01	0.98471E-01	0.98471E-01
0.61346E-01	0.61905E-01	0.63064E-01	0.65390E-01	0.69898E-01	0.73747E-01	0.73828E-01	0.73828E-01
0.39798E-01	0.40312E-01	0.41466E-01	0.43791E-01	0.47893E-01	0.49166E-01	0.49185E-01	0.49185E-01
0.18225E-01	0.18717E-01	0.19868E-01	0.22198E-01	0.24513E-01	0.24523E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.43343  0.42967  0.42475  0.41402  0.39424  0.17904  0.14964E-04 0.11102E-15
0.44255  0.43938  0.43447  0.42373  0.40393  0.11605  0.41633E-16 0.15266E-15
0.45181  0.44905  0.44418  0.43342  0.41356  0.58416E-01 0.29143E-15-0.13878E-16
0.46118  0.45871  0.45386  0.44310  0.27998  0.43493E-02 0.15266E-15 0.30531E-15
0.47065  0.46837  0.46352  0.38490  0.91005E-01-0.40939E-15 0.16653E-15 0.21511E-15
0.45049  0.41597  0.33372  0.16684  0.35773E-03 0.62450E-16-0.19429E-15 0.23245E-15
0.22960  0.19535  0.11441  0.26589E-03 0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   RECURRENT DATA

   DELT      DTMIN     SWMAX    CFAC      TCHG      NS NRR
 0.10000E+07 10000.   0.10000   1.5000  0.31536E+09  8  1


 I  J  QT        QSW       IQ
 1  1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 2  1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 3  1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 4  1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 5  1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 6  1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 7  1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 8  1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20    CPMW=  0.37999E-05    CPMN=  0.00000E+00
I=  2  J=  1  K= 20    CPMW=  0.71983E-05    CPMN=  0.00000E+00
I=  3  J=  1  K= 20    CPMW=  0.13552E-04    CPMN=  0.00000E+00
I=  4  J=  1  K= 20    CPMW=  0.26019E-04    CPMN=  0.00000E+00
I=  5  J=  1  K= 20    CPMW=  0.49681E-04    CPMN=  0.00000E+00
I=  6  J=  1  K= 20    CPMW=  0.91318E-04    CPMN=  0.00000E+00
I=  7  J=  1  K= 20    CPMW=  0.14938E-03    CPMN=  0.00000E+00
I=  8  J=  1  K= 20    CPMW=  0.28344E-03    CPMN=  0.00000E+00

          WATER BALANCE       NAPL BALANCE

CONSTANT PRES    -936.58          0.00000
SOURCE/SINKS     892.85          38.859
STORAGE          43.721         -38.859
PER CENT ERROR   0.88644E-09       -0.10240E-11
```

m-Xylene

STEP NUMBER 51 **SIMULATION TIME IN SECONDS 0.315E+09**
****
IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-11899.	-11972.	-12062.	-12232.	-12564.	-13248.	-14372.	-14480.
-9795.4	-9855.7	-9945.5	-10115.	-10447.	-11131.	-12004.	-12065.
-7688.6	-7739.7	-7828.7	-7998.7	-8330.1	-9014.3	-9626.7	-9650.2
-5579.4	-5623.9	-5711.9	-5881.9	-6213.3	-6900.1	-7233.2	-7235.2
-3468.2	-3508.0	-3595.1	-3765.1	-4096.4	-4632.5	-4819.7	-4820.1
-1355.1	-1392.0	-1478.3	-1648.3	-1979.6	-2376.5	-2404.6	-2405.0
759.57	724.28	638.52	468.55	149.42	12.023	10.701	10.306
2875.7	2840.8	2755.4	2573.1	2461.1	2461.1	2459.9	2459.5
4970.0	4960.4	4909.4	4909.2	4910.2	4910.2	4909.1	4908.7
7359.8	7358.9	7358.6	7358.3	7359.3	7359.2	7358.2	7357.9
9808.7	9808.0	9807.7	9807.5	9808.4	9808.3	9807.4	9807.1
12258.	12257.	12257.	12257.	12257.	12257.	12257.	12256.
14707.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17156.	17155.	17155.	17155.	17156.	17156.	17155.	17155.
19605.	19604.	19604.	19604.	19605.	19605.	19604.	19604.
22054.	22054.	22053.	22053.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.42481	0.42772	0.43105	0.43690	0.44580	0.46975	0.77464	0.85225
0.43708	0.43959	0.44291	0.44877	0.45767	0.48164	0.83343	0.87689
0.44925	0.45149	0.45477	0.46064	0.46954	0.49369	0.88497	0.90153
0.46133	0.46342	0.46666	0.47254	0.48143	0.68597	0.92514	0.92617
0.47334	0.47537	0.47856	0.48444	0.49259	0.81662	0.95082	0.95082
0.48527	0.48734	0.49047	0.49636	0.66966	0.95616	0.97546	0.97546
0.49697	0.48651	0.54762	0.66927	0.90063	1.0000	1.0000	1.0000
0.70126	0.72501	0.78655	0.91812	1.0000	1.0000	1.0000	1.0000
0.95725	0.96328	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12142	0.12216	0.12308	0.12482	0.12820	0.13518	0.14665	0.14775
0.99953E-01	0.10057	0.10148	0.10322	0.10660	0.11358	0.12249	0.12311
0.78455E-01	0.78977E-01	0.79884E-01	0.81619E-01	0.85001E-01	0.91982E-01	0.98232E-01	0.98471E-01
0.56933E-01	0.57387E-01	0.58285E-01	0.60019E-01	0.63401E-01	0.70409E-01	0.73809E-01	0.73828E-01
0.35390E-01	0.35796E-01	0.36685E-01	0.38419E-01	0.41800E-01	0.47270E-01	0.49180E-01	0.49185E-01
0.13828E-01	0.14204E-01	0.15085E-01	0.16819E-01	0.20200E-01	0.24250E-01	0.24536E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.45376	0.45012	0.44586	0.43828	0.42600	0.39507	0.78710E-01	0.13878E-15
0.46297	0.45984	0.45561	0.44802	0.43573	0.40478	0.44076E-01	0.97145E-16
0.47230	0.46953	0.46534	0.45774	0.44546	0.41433	0.16801E-01	-0.13878E-16
0.48174	0.47919	0.47506	0.46744	0.45517	0.24362	0.10532E-02	0.36082E-15
0.49127	0.48883	0.48476	0.47714	0.46561	0.13611	0.20817E-16	0.25674E-15
0.50091	0.49846	0.49445	0.48682	0.31014	0.19590E-01	-0.21511E-15	0.40593E-15
0.50303	0.51349	0.45238	0.33073	0.99368E-01	0.00000	0.00000	0.00000
0.29874	0.27499	0.21345	0.81880E-01	0.00000	0.00000	0.00000	0.00000
0.42752E-01	0.36717E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

Ethylbenzene

STEP NUMBER 17 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13099.	-13243.	-13467.	-14016.	-14466.	-14480.	-14480.	-14480.
-10991.	-11119.	-11344.	-11810.	-12064.	-12065.	-12065.	-12065.
-8877.7	-8996.5	-9223.5	-9603.7	-9649.0	-9650.2	-9650.2	-9650.2
-6758.7	-6874.0	-7102.3	-7227.4	-7234.0	-7235.1	-7235.2	-7235.2
-4649.6	-4770.5	-4813.1	-4812.9	-4819.0	-4820.1	-4820.1	-4820.1
-2397.7	-2397.9	-2398.5	-2398.4	-2404.0	-2405.0	-2405.0	-2405.0
17.107	16.963	16.444	16.485	11.252	10.323	10.306	10.306
2465.8	2465.6	2465.2	2465.2	2460.4	2459.5	2459.5	2459.5
4914.4	4914.3	4913.9	4913.9	4909.5	4908.7	4908.7	4908.7
7363.1	7363.0	7362.7	7362.6	7358.7	7357.9	7357.9	7357.9
9811.8	9811.7	9811.4	9811.4	9807.8	9807.1	9807.1	9807.1
12260.	12260.	12260.	12260.	12257.	12256.	12256.	12256.
14709.	14709.	14709.	14709.	14706.	14706.	14706.	14706.
17158.	17158.	17158.	17158.	17155.	17155.	17155.	17155.
19607.	19606.	19606.	19606.	19604.	19604.	19604.	19604.
22055.	22055.	22055.	22055.	22053.	22053.	22053.	22053.
24504.	24504.	24504.	24504.	24503.	24502.	24502.	24502.
26953.	26953.	26953.	26953.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.46820	0.47321	0.48001	0.52873	0.84321	0.85225	0.85225	0.85225
0.48041	0.48490	0.49198	0.69967	0.87685	0.87689	0.87689	0.87689
0.49243	0.49665	0.59873	0.87407	0.90154	0.90153	0.90153	0.90153
0.58584	0.66910	0.83572	0.92625	0.92618	0.92617	0.92617	0.92617
0.83336	0.92057	0.95089	0.95089	0.95083	0.95082	0.95082	0.95082
0.97553	0.97553	0.97553	0.97553	0.97547	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13367	0.13513	0.13742	0.14302	0.14761	0.14775	0.14775	0.14775
0.11216	0.11346	0.11576	0.12051	0.12310	0.12311	0.12311	0.12311
0.90589E-01	0.91801E-01	0.94117E-01	0.97997E-01	0.98459E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.68967E-01	0.70142E-01	0.72472E-01	0.73749E-01	0.73817E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47445E-01	0.48679E-01	0.49113E-01	0.49112E-01	0.49174E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.24467E-01	0.24468E-01	0.24474E-01	0.24473E-01	0.24531E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.39813  0.39167  0.38257  0.32825  0.91755E-02-0.27756E-16 0.00000  0.00000
0.40744  0.40164  0.39226  0.17982  0.51170E-04-0.83267E-16-0.41633E-16-0.83267E-16
0.41698  0.41155  0.30715  0.27936E-01 0.27756E-16 0.15266E-15-0.97145E-16 0.26368E-15
0.34520  0.26076  0.91807E-01-0.13878E-15 0.13878E-15-0.27756E-16-0.11102E-15-0.83267E-16
0.11920  0.30746E-01 0.27756E-16 0.62450E-16 0.18735E-15 0.12490E-15 0.12490E-15-0.22898E-15
0.97145E-16 0.93675E-16-0.19082E-15-0.13531E-15 0.65919E-16 0.10408E-15 0.20817E-16 0.31225E-16
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000

   RECURRENT DATA

    DELT      DTMIN    SWMAX    CFAC     TCHG       NS NRR
  0.10000E+07 10000.   0.10000  1.5000  0.94608E+08  8  1


  I J  QT          QSW       IQ
  1  1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
 I= 1  J= 1  K= 20    CPMW= 0.50812E-05   CPMN= 0.00000E+00
 I= 2  J= 1  K= 20    CPMW= 0.95995E-05   CPMN= 0.00000E+00
 I= 3  J= 1  K= 20    CPMW= 0.17654E-04   CPMN= 0.00000E+00
 I= 4  J= 1  K= 20    CPMW= 0.34683E-04   CPMN= 0.00000E+00
 I= 5  J= 1  K= 20    CPMW= 0.46207E-04   CPMN= 0.00000E+00
 I= 6  J= 1  K= 20    CPMW= 0.78716E-04   CPMN= 0.00000E+00
 I= 7  J= 1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
 I= 8  J= 1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

          WATER BALANCE        NAPL BALANCE

 CONSTANT PRES    -936.84          0.00000
 SOURCE/SINKS      892.85          38.859
 STORAGE          43.989          -38.859
 PER CENT ERROR  -0.79460E-09       -0.24319E-11
```

Ethylbenzene

STEP NUMBER 28 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12597.	-12701.	-12854.	-13153.	-13830.	-14446.	-14480.	-14480.
-10488.	-10577.	-10730.	-11029.	-11717.	-12064.	-12065.	-12065.
-8374.8	-8453.7	-8605.7	-8904.4	-9430.1	-9650.2	-9650.2	-9650.2
-6258.2	-6330.4	-6481.5	-6780.2	-7188.5	-7235.2	-7235.2	-7235.2
-4138.3	-4206.8	-4357.3	-4653.9	-4814.5	-4820.1	-4820.1	-4820.1
-2015.6	-2084.3	-2230.8	-2402.5	-2399.8	-2405.0	-2405.0	-2405.0
79.415	39.391	12.758	12.700	15.121	10.285	10.305	10.306
2462.6	2461.7	2461.8	2461.7	2463.9	2459.5	2459.5	2459.5
4911.5	4910.8	4910.8	4910.8	4912.8	4908.7	4908.7	4908.7
7360.4	7359.8	7359.8	7359.8	7361.6	7357.9	7357.9	7357.9
9809.3	9808.9	9808.8	9808.8	9810.4	9807.1	9807.1	9807.1
12258.	12258.	12258.	12258.	12259.	12256.	12256.	12256.
14707.	14707.	14707.	14707.	14708.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17157.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19606.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22055.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.44952	0.45379	0.45930	0.46894	0.47801	0.82744	0.85225	0.85225
0.46164	0.46544	0.47092	0.48058	0.63114	0.87595	0.87689	0.87689
0.47360	0.47711	0.48256	0.49226	0.74741	0.90153	0.90153	0.90153
0.48541	0.48881	0.49421	0.60021	0.89683	0.92617	0.92617	0.92617
0.49694	0.51066	0.61879	0.83264	0.95087	0.95081	0.95082	0.95082
0.69733	0.74531	0.85140	0.97549	0.97551	0.97546	0.97546	0.97546
0.95255	0.98060	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12854	0.12960	0.13116	0.13421	0.14112	0.14741	0.14775	0.14775
0.10702	0.10793	0.10949	0.11254	0.11956	0.12310	0.12311	0.12311
0.85457E-01	0.86263E-01	0.87813E-01	0.90861E-01	0.96225E-01	0.98472E-01	0.98471E-01	0.98471E-01
0.63859E-01	0.64596E-01	0.66138E-01	0.69186E-01	0.73352E-01	0.73829E-01	0.73828E-01	0.73828E-01
0.42227E-01	0.42927E-01	0.44462E-01	0.47488E-01	0.49128E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.20568E-01	0.21269E-01	0.22763E-01	0.24515E-01	0.24488E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.42194  0.41661  0.40953  0.39685  0.38087  0.25151E-01 0.00000  -0.13878E-15
0.43134  0.42663  0.41959  0.40688  0.24930  0.94930E-03-0.34694E-15-0.29143E-15
0.44095  0.43662  0.42963  0.41688  0.15637  0.20817E-15 0.83267E-16 0.34694E-15
0.45073  0.44659  0.43965  0.33060  0.29814E-01-0.69389E-16-0.69389E-16 0.12490E-15
0.46083  0.44642  0.33675  0.11987  0.39552E-15 0.15266E-15 0.11796E-15-0.36776E-15
0.28210  0.23343  0.12584  -0.33307E-15-0.65919E-16-0.31225E-16 0.24980E-15 0.45103E-16
0.47455E-01 0.19398E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   RECURRENT DATA

    DELT      DTMIN     SWMAX    CFAC     TCHG        NS  NRR
  0.10000E+07 10000.    0.10000   1.5000   0.15768E+09  8   1


  I  J  QT         QSW        IQ
  1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K= 20    CPMW= 0.41577E-05   CPMN= 0.00000E+00
 I=  2  J=  1  K= 20    CPMW= 0.77672E-05   CPMN= 0.00000E+00
 I=  3  J=  1  K= 20    CPMW= 0.14440E-04   CPMN= 0.00000E+00
 I=  4  J=  1  K= 20    CPMW= 0.27516E-04   CPMN= 0.00000E+00
 I=  5  J=  1  K= 20    CPMW= 0.55848E-04   CPMN= 0.00000E+00
 I=  6  J=  1  K= 20    CPMW= 0.81664E-04   CPMN= 0.00000E+00
 I=  7  J=  1  K= 20    CPMW= 0.14922E-03   CPMN= 0.00000E+00
 I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

           WATER BALANCE       NAPL BALANCE

 CONSTANT PRES    -762.97          0.00000
 SOURCE/SINKS      727.75           31.673
 STORAGE         35.228          -31.673
 PER CENT ERROR  0.21800E-08        0.33650E-13
```

Ethylbenzene

STEP NUMBER 37   **SIMULATION TIME IN SECONDS 0.158E+09**
*******************   **IN MINUTES 0.263E+07**
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12307.	-12397.	-12520.	-12760.	-13234.	-14268.	-14480.	-14480.
-10198.	-10273.	-10396.	-10636.	-11110.	-11930.	-12065.	-12065.
-8085.1	-8149.7	-8271.5	-8511.9	-8985.9	-9583.1	-9650.2	-9650.2
-5969.4	-6026.4	-6147.3	-6387.7	-6865.8	-7228.1	-7235.2	-7235.2
-3851.0	-3903.0	-4023.1	-4263.6	-4677.6	-4818.9	-4820.1	-4820.1
-1730.3	-1779.2	-1898.9	-2143.1	-2397.1	-2403.9	-2405.0	-2405.0
392.79	344.14	220.44	19.146	13.939	11.380	10.311	10.306
2520.5	2460.7	2461.7	2460.7	2462.9	2460.5	2459.5	2459.5
4910.1	4909.8	4910.7	4909.8	4911.8	4909.6	4908.7	4908.7
7359.1	7359.0	7359.7	7359.0	7360.7	7358.8	7357.9	7357.9
9808.2	9808.1	9808.7	9808.1	9809.6	9807.9	9807.1	9807.1
12257.	12257.	12258.	12257.	12259.	12257.	12256.	12256.
14706.	14706.	14707.	14706.	14707.	14706.	14706.	14706.
17155.	17155.	17156.	17155.	17156.	17155.	17155.	17155.
19605.	19605.	19605.	19604.	19605.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.43988	0.44295	0.44677	0.45577	0.46731	0.70077	0.85225	0.85225
0.45200	0.45458	0.45837	0.46739	0.47892	0.78028	0.87689	0.87689
0.46402	0.46623	0.46998	0.47903	0.48946	0.85411	0.90153	0.90153
0.47594	0.47790	0.48160	0.49068	0.66300	0.92200	0.92617	0.92617
0.48778	0.48958	0.49323	0.55065	0.85088	0.95083	0.95082	0.95082
0.49113	0.52516	0.61241	0.78708	0.97262	0.97547	0.97546	0.97546
0.72467	0.75944	0.84979	0.99454	1.0000	1.0000	1.0000	1.0000
0.95692	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12558	0.12650	0.12775	0.13021	0.13504	0.14559	0.14775	0.14775
0.10406	0.10483	0.10608	0.10853	0.11337	0.12173	0.12311	0.12311
0.82501E-01	0.83161E-01	0.84403E-01	0.86856E-01	0.91693E-01	0.97787E-01	0.98471E-01	0.98471E-01
0.60912E-01	0.61494E-01	0.62728E-01	0.65181E-01	0.70060E-01	0.73756E-01	0.73828E-01	0.73828E-01
0.39296E-01	0.39826E-01	0.41052E-01	0.43506E-01	0.47731E-01	0.49172E-01	0.49185E-01	0.49185E-01
0.17656E-01	0.18156E-01	0.19377E-01	0.21868E-01	0.24461E-01	0.24529E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.43454  0.43055  0.42548  0.41403  0.39765  0.15363  -0.27756E-16-0.24980E-15
0.44394  0.44059  0.43555  0.42408  0.40771  0.97989E-01-0.41633E-15-0.33307E-15
0.45348  0.45061  0.44562  0.43412  0.41884  0.48105E-01 0.83267E-16 0.41633E-15
0.46315  0.46061  0.45567  0.44414  0.26694  0.42472E-02 0.55511E-16 0.18041E-15
0.47292  0.47060  0.46572  0.40584  0.10139  0.76328E-16 0.31225E-15-0.40939E-15
0.49121  0.45668  0.36821  0.19106  0.29175E-02-0.14919E-15 0.15613E-15-0.45103E-16
0.27533  0.24056  0.15021  0.54601E-02 0.00000  0.00000  0.00000  0.00000
0.43077E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT        DTMIN    SWMAX    CFAC    TCHG        NS NRR
0.10000E+07  10000.   0.10000  1.5000  0.31536E+09  8  1
```

```
I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060   1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW = 0.37823E-05   CPMN = 0.00000E+00
I= 2  J= 1  K= 20    CPMW = 0.71818E-05   CPMN = 0.00000E+00
I= 3  J= 1  K= 20    CPMW = 0.13658E-04   CPMN = 0.00000E+00
I= 4  J= 1  K= 20    CPMW = 0.26205E-04   CPMN = 0.00000E+00
I= 5  J= 1  K= 20    CPMW = 0.50246E-04   CPMN = 0.00000E+00
I= 6  J= 1  K= 20    CPMW = 0.90075E-04   CPMN = 0.00000E+00
I= 7  J= 1  K= 20    CPMW = 0.14932E-03   CPMN = 0.00000E+00
I= 8  J= 1  K= 20    CPMW = 0.28344E-03   CPMN = 0.00000E+00
```

```
                   WATER BALANCE      NAPL BALANCE

CONSTANT PRES     -935.86             0.00000
SOURCE/SINKS       892.85             38.859
STORAGE            43.004            -38.859
PER CENT ERROR    -0.41355E-09       -0.80454E-12
```

Ethylbenzene

STEP NUMBER 51 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-11871.	-11948.	-12046.	-12218.	-12555.	-13290.	-14394.	-14480.
-9761.4	-9824.1	-9922.0	-10094.	-10431.	-11165.	-12020.	-12065.
-7648.6	-7700.9	-7798.0	-7969.8	-8308.8	-9038.7	-9632.4	-9650.2
-5533.3	-5577.7	-5674.1	-5845.9	-6187.3	-6941.9	-7233.9	-7235.2
-3416.1	-3454.4	-3550.3	-3722.0	-4066.9	-4641.9	-4819.7	-4820.1
-1297.2	-1330.9	-1426.6	-1598.3	-1948.9	-2376.8	-2404.6	-2405.0
823.02	792.86	696.96	524.83	187.48	8.4884	10.701	10.306
2944.4	2917.1	2816.7	2649.6	2457.0	2457.8	2459.9	2459.5
5055.1	5049.7	4922.6	4908.8	4906.4	4907.2	4909.1	4908.7
7361.6	7358.5	7360.2	7358.0	7355.9	7356.5	7358.2	7357.9
9810.2	9807.9	9809.2	9807.2	9805.3	9805.9	9807.4	9807.1
12259.	12257.	12258.	12256.	12255.	12255.	12257.	12256.
14708.	14706.	14707.	14706.	14704.	14705.	14706.	14706.
17156.	17155.	17156.	17155.	17154.	17154.	17155.	17155.
19605.	19605.	19605.	19604.	19603.	19603.	19604.	19604.
22054.	22054.	22054.	22053.	22052.	22053.	22053.	22053.
24503.	24503.	24503.	24502.	24502.	24502.	24502.	24502.
26952.	26952.	26952.	26952.	26951.	26951.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.42419	0.42688	0.43035	0.43633	0.44699	0.47454	0.79094	0.85225
0.43626	0.43849	0.44194	0.44793	0.45872	0.48609	0.84448	0.87689
0.44824	0.45012	0.45355	0.45957	0.47059	0.49751	0.88904	0.90153
0.46017	0.46177	0.46517	0.47123	0.48261	0.71259	0.92558	0.92617
0.47204	0.47344	0.47681	0.48291	0.49481	0.82038	0.95082	0.95082
0.48387	0.48511	0.48847	0.49463	0.64414	0.95364	0.97546	0.97546
0.49567	0.49679	0.50294	0.62855	0.86979	1.0000	1.0000	1.0000
0.64892	0.66921	0.74065	0.86256	0.99999	1.0000	1.0000	1.0000
0.89734	0.89827	0.99180	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12114	0.12191	0.12292	0.12467	0.12811	0.13561	0.14688	0.14775
0.99606E-01	0.10025	0.10124	0.10300	0.10644	0.11393	0.12265	0.12311
0.78047E-01	0.78581E-01	0.79572E-01	0.81325E-01	0.84784E-01	0.92231E-01	0.98290E-01	0.98471E-01
0.56462E-01	0.56916E-01	0.57899E-01	0.59652E-01	0.63135E-01	0.70836E-01	0.73815E-01	0.73828E-01
0.34858E-01	0.35249E-01	0.36228E-01	0.37980E-01	0.41499E-01	0.47367E-01	0.49180E-01	0.49185E-01
0.13237E-01	0.13581E-01	0.14558E-01	0.16309E-01	0.19887E-01	0.24253E-01	0.24536E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.45467	0.45120	0.44673	0.43900	0.42490	0.38985	0.62177E-01	-0.13878E-15
0.46414	0.46127	0.45682	0.44907	0.43484	0.39999	0.32871E-01	-0.23592E-15
0.47371	0.47130	0.46688	0.45911	0.44463	0.41026	0.12668E-01	0.48572E-15
0.48337	0.48131	0.47693	0.46912	0.45426	0.21658	0.60438E-03	0.15266E-15
0.49310	0.49132	0.48696	0.47911	0.46369	0.13225	0.52042E-15	-0.31919E-15
0.50289	0.50131	0.49697	0.48906	0.33597	0.22111E-01	0.17347E-15	0.38164E-16
0.50433	0.50321	0.49706	0.37145	0.13021	0.18782E-05	0.00000	0.00000
0.35108	0.33079	0.25935	0.13744	0.90428E-05	0.00000	0.00000	0.00000
0.10266	0.10173	0.81955E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

Benzene

STEP NUMBER 17 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13200.	-13323.	-13534.	-14022.	-14460.	-14480.	-14480.	-14480.
-11068.	-11177.	-11388.	-11817.	-12064.	-12065.	-12065.	-12065.
-8931.4	-9031.4	-9242.3	-9599.5	-9648.9	-9650.2	-9650.2	-9650.2
-6790.3	-6896.5	-7103.3	-7227.2	-7234.0	-7235.1	-7235.2	-7235.2
-4650.3	-4764.5	-4813.5	-4812.7	-4819.0	-4820.1	-4820.1	-4820.1
-2398.0	-2399.5	-2398.9	-2398.2	-2403.9	-2405.0	-2405.0	-2405.0
16.704	15.576	16.066	16.661	11.303	10.324	10.306	10.306
2465.3	2464.4	2464.8	2465.4	2460.4	2459.5	2459.5	2459.5
4914.0	4913.3	4913.6	4914.1	4909.6	4908.7	4908.7	4908.7
7362.6	7362.1	7362.4	7362.8	7358.7	7357.9	7357.9	7357.9
9811.3	9810.9	9811.1	9811.5	9807.8	9807.1	9807.1	9807.1
12260.	12260.	12260.	12260.	12257.	12256.	12256.	12256.
14709.	14709.	14709.	14709.	14706.	14706.	14706.	14706.
17157.	17157.	17157.	17158.	17155.	17155.	17155.	17155.
19606.	19606.	19606.	19606.	19604.	19604.	19604.	19604.
22055.	22055.	22055.	22055.	22053.	22053.	22053.	22053.
24504.	24504.	24504.	24504.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26953.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.47185	0.47614	0.48346	0.53191	0.83893	0.85225	0.85225	0.85225
0.48321	0.48698	0.49436	0.70472	0.87686	0.87689	0.87689	0.87689
0.49440	0.49777	0.61330	0.87129	0.90154	0.90153	0.90153	0.90153
0.61017	0.68336	0.83617	0.92625	0.92618	0.92617	0.92617	0.92617
0.83388	0.91483	0.95088	0.95089	0.95083	0.95082	0.95082	0.95082
0.97553	0.97552	0.97552	0.97553	0.97547	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13469	0.13595	0.13810	0.14308	0.14755	0.14775	0.14775	0.14775
0.11294	0.11405	0.11620	0.12058	0.12310	0.12311	0.12311	0.12311
0.91137E-01	0.92157E-01	0.94309E-01	0.97955E-01	0.98458E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.69288E-01	0.70373E-01	0.72483E-01	0.73747E-01	0.73816E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47452E-01	0.48617E-01	0.49117E-01	0.49110E-01	0.49173E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.24470E-01	0.24485E-01	0.24478E-01	0.24471E-01	0.24530E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


  NAPL SATURATIONS

 SLICE   1

0.39346  0.38791  0.37845  0.32502  0.13513E-01  0.00000  0.19429E-15  0.00000
0.40385  0.39896  0.38944  0.17469  0.44872E-04-0.12490E-15 0.13878E-16 0.55511E-16
0.41446  0.41007  0.29239  0.30751E-01-0.97145E-16 0.41633E-16 0.11102E-15-0.19429E-15
0.32054  0.24627  0.91346E-01 0.41633E-16-0.55511E-16-0.15266E-15 0.11102E-15 0.97145E-16
0.11867  0.36552E-01 0.34694E-15 0.69389E-16-0.83267E-16 0.24286E-15 0.16653E-15 0.20817E-16
0.34694E-17 0.27756E-16 0.34694E-17 0.21164E-15-0.93675E-16 0.16306E-15 0.13878E-15 0.76328E-16
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000

  RECURRENT DATA

  DELT     DTMIN    SWMAX    CFAC    TCHG       NS NRR
 0.10000E+07 10000.  0.10000  1.5000  0.94608E+08  8  1


  I  J  QT        QSW       IQ
  1  1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

 AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K= 20    CPMW = 0.50128E-05   CPMN = 0.00000E+00
 I=  2  J=  1  K= 20    CPMW = 0.95001E-05   CPMN = 0.00000E+00
 I=  3  J=  1  K= 20    CPMW = 0.17652E-04   CPMN = 0.00000E+00
 I=  4  J=  1  K= 20    CPMW = 0.34440E-04   CPMN = 0.00000E+00
 I=  5  J=  1  K= 20    CPMW = 0.46330E-04   CPMN = 0.00000E+00
 I=  6  J=  1  K= 20    CPMW = 0.78721E-04   CPMN = 0.00000E+00
 I=  7  J=  1  K= 20    CPMW = 0.14918E-03   CPMN = 0.00000E+00
 I=  8  J=  1  K= 20    CPMW = 0.28344E-03   CPMN = 0.00000E+00

          WATER BALANCE        NAPL BALANCE

 CONSTANT PRES   -936.42          0.00000
 SOURCE/SINKS     892.85          38.859
 STORAGE          43.562         -38.859
 PER CENT ERROR   0.17387E-08    -0.22125E-11
```

Benzene

STEP NUMBER 28 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12741.	-12834.	-12972.	-13246.	-13841.	-14440.	-14480.	-14480.
-10608.	-10688.	-10826.	-11099.	-11704.	-12063.	-12065.	-12065.
-8472.4	-8542.8	-8679.3	-8953.3	-9426.2	-9650.0	-9650.2	-9650.2
-6333.1	-6397.3	-6533.2	-6807.3	-7191.8	-7235.0	-7235.2	-7235.2
-4190.9	-4251.5	-4387.0	-4661.3	-4815.2	-4819.9	-4820.1	-4820.1
-2045.6	-2107.2	-2238.8	-2402.4	-2400.5	-2404.8	-2405.0	-2405.0
95.283	38.220	12.777	12.767	14.545	10.460	10.306	10.306
2462.0	2462.2	2461.8	2461.8	2463.4	2459.7	2459.5	2459.5
4911.0	4911.1	4910.8	4910.8	4912.3	4908.9	4908.7	4908.7
7360.0	7360.1	7359.8	7359.8	7361.2	7358.1	7357.9	7357.9
9809.0	9809.1	9808.9	9808.9	9810.1	9807.2	9807.1	9807.1
12258.	12258.	12258.	12258.	12259.	12256.	12256.	12256.
14707.	14707.	14707.	14707.	14708.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17157.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19606.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.45549	0.45874	0.46344	0.47307	0.48306	0.82381	0.85225	0.85225
0.46679	0.46958	0.47426	0.48392	0.62099	0.87523	0.87689	0.87689
0.47797	0.48044	0.48510	0.49479	0.74405	0.90153	0.90153	0.90153
0.48905	0.49130	0.49596	0.61959	0.89873	0.92617	0.92617	0.92617
0.50067	0.54345	0.64031	0.83805	0.95087	0.95082	0.95082	0.95082
0.71800	0.76240	0.85721	0.97549	0.97551	0.97546	0.97546	0.97546
0.94048	0.98191	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13001	0.13096	0.13236	0.13516	0.14124	0.14735	0.14775	0.14775
0.10825	0.10906	0.11046	0.11326	0.11942	0.12309	0.12311	0.12311
0.86453E-01	0.87171E-01	0.88565E-01	0.91360E-01	0.96186E-01	0.98469E-01	0.98471E-01	0.98471E-01
0.64624E-01	0.65278E-01	0.66665E-01	0.69462E-01	0.73386E-01	0.73826E-01	0.73828E-01	0.73828E-01
0.42764E-01	0.43383E-01	0.44765E-01	0.47564E-01	0.49135E-01	0.49183E-01	0.49185E-01	0.49185E-01
0.20874E-01	0.21502E-01	0.22845E-01	0.24514E-01	0.24495E-01	0.24539E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.41451  0.41030  0.40420  0.39177  0.37570  0.28838E-01 0.13878E-15 0.16653E-15
0.42496  0.42135  0.41527  0.40282  0.25958  0.16776E-02-0.69389E-16-0.83267E-16
0.43557  0.43239  0.42633  0.41385  0.15977  0.69389E-16 0.00000  -0.16653E-15
0.44633  0.44342  0.43738  0.31095  0.27882E-01-0.27756E-15 0.19429E-15-0.13878E-15
0.45657  0.41317  0.31492  0.11438  -0.20817E-15 0.20817E-15 0.13184E-15-0.69389E-17
0.26113  0.21610  0.11994  0.29143E-15-0.62450E-16 0.12490E-15 0.27756E-16 0.24980E-15
0.59524E-01 0.18094E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT       DTMIN    SWMAX    CFAC    TCHG         NS NRR
0.10000E+07 10000.   0.10000  1.5000  0.15768E+09  8  1


I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060   1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20    CPMW= 0.40948E-05   CPMN= 0.00000E+00
I=  2  J=  1  K= 20    CPMW= 0.77515E-05   CPMN= 0.00000E+00
I=  3  J=  1  K= 20    CPMW= 0.14406E-04   CPMN= 0.00000E+00
I=  4  J=  1  K= 20    CPMW= 0.27750E-04   CPMN= 0.00000E+00
I=  5  J=  1  K= 20    CPMW= 0.55024E-04   CPMN= 0.00000E+00
I=  6  J=  1  K= 20    CPMW= 0.82182E-04   CPMN= 0.00000E+00
I=  7  J=  1  K= 20    CPMW= 0.14922E-03   CPMN= 0.00000E+00
I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

           WATER BALANCE       NAPL BALANCE

CONSTANT PRES    -935.81          0.00000
SOURCE/SINKS      892.85          38.859
STORAGE           42.954         -38.859
PER CENT ERROR   0.10295E-08     -0.35290E-11
```

Benzene

STEP NUMBER 36 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12468.	-12550.	-12663.	-12875.	-13317.	-14258.	-14480.	-14480.
-10336.	-10404.	-10517.	-10729.	-11171.	-11921.	-12065.	-12065.
-8199.6	-8258.7	-8371.0	-8582.7	-9024.4	-9580.3	-9650.2	-9650.2
-6060.8	-6113.2	-6224.8	-6436.5	-6901.0	-7227.4	-7235.2	-7235.2
-3919.6	-3967.5	-4078.5	-4290.1	-4685.1	-4818.3	-4820.1	-4820.1
-1776.2	-1821.6	-1932.5	-2189.0	-2399.1	-2403.4	-2405.0	-2405.0
369.15	324.87	220.52	12.054	12.700	11.837	10.314	10.306
2458.9	2458.6	2463.6	2461.1	2461.7	2460.9	2459.5	2459.5
4908.2	4908.1	4912.3	4910.2	4910.7	4910.0	4908.7	4908.7
7357.5	7357.5	7361.1	7359.3	7359.8	7359.1	7357.9	7357.9
9806.7	9806.8	9809.9	9808.4	9808.8	9808.2	9807.1	9807.1
12256.	12256.	12259.	12257.	12258.	12257.	12256.	12256.
14705.	14705.	14708.	14707.	14707.	14706.	14706.	14706.
17155.	17155.	17157.	17156.	17156.	17155.	17155.	17155.
19604.	19604.	19605.	19605.	19605.	19605.	19604.	19604.
22053.	22053.	22054.	22054.	22054.	22054.	22053.	22053.
24502.	24502.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.44548	0.44809	0.44986	0.45921	0.47513	0.69367	0.85225	0.85225
0.45677	0.45894	0.46065	0.47003	0.48596	0.77439	0.87689	0.87689
0.46796	0.46982	0.47143	0.48087	0.45457	0.85248	0.90153	0.90153
0.47907	0.48074	0.48220	0.49171	0.68713	0.92192	0.92617	0.92617
0.49011	0.49168	0.49242	0.57010	0.85522	0.95083	0.95082	0.95082
0.52168	0.55296	0.63834	0.82060	0.97310	0.97548	0.97546	0.97546
0.74001	0.77155	0.85125	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12723	0.12806	0.12922	0.13138	0.13589	0.14549	0.14775	0.14775
0.10547	0.10617	0.10732	0.10948	0.11399	0.12164	0.12311	0.12311
0.83669E-01	0.84272E-01	0.85418E-01	0.87579E-01	0.92086E-01	0.97758E-01	0.98471E-01	0.98471E-01
0.61845E-01	0.62380E-01	0.63518E-01	0.65678E-01	0.70418E-01	0.73749E-01	0.73828E-01	0.73828E-01
0.39996E-01	0.40485E-01	0.41618E-01	0.43777E-01	0.47807E-01	0.49167E-01	0.49185E-01	0.49185E-01
0.18125E-01	0.18588E-01	0.19719E-01	0.22336E-01	0.24481E-01	0.24524E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.42729  0.42385  0.42092  0.40941  0.38899  0.16085  0.11102E-15 0.19429E-15
0.43777  0.43490  0.43204  0.42049  0.40005  0.10396  -0.69389E-16-0.15266E-15
0.44838  0.44590  0.44316  0.43155  0.45335  0.49762E-01 0.97145E-16-0.69389E-16
0.45909  0.45688  0.45429  0.44261  0.24246  0.43333E-02 0.18041E-15-0.18041E-15
0.46990  0.46783  0.46596  0.38612  0.96972E-01 0.15959E-15 0.00000  -0.34694E-16
0.46020  0.42845  0.34194  0.15707  0.24239E-02 0.10061E-15 0.10755E-15 0.32613E-15
0.25999  0.22845  0.14875  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT       DTMIN    SWMAX    CFAC    TCHG        NS NRR
0.10000E+07 10000.   0.10000  1.5000  0.31536E+09 8  1


I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW= 0.38961E-05   CPMN= 0.00000E+00
I= 2  J= 1  K= 20    CPMW= 0.71227E-05   CPMN= 0.00000E+00
I= 3  J= 1  K= 20    CPMW= 0.12809E-04   CPMN= 0.00000E+00
I= 4  J= 1  K= 20    CPMW= 0.26556E-04   CPMN= 0.00000E+00
I= 5  J= 1  K= 20    CPMW= 0.51775E-04   CPMN= 0.00000E+00
I= 6  J= 1  K= 20    CPMW= 0.88505E-04   CPMN= 0.00000E+00
I= 7  J= 1  K= 20    CPMW= 0.14930E-03   CPMN= 0.00000E+00
I= 8  J= 1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

          WATER BALANCE      NAPL BALANCE

CONSTANT PRES   -754.09          0.00000
SOURCE/SINKS     720.02          31.337
STORAGE        34.073          -31.337
PER CENT ERROR  -0.10645E-08       0.67909E-11
```

Benzene

STEP NUMBER 50 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-12060.	-12131.	-12222.	-12380.	-12700.	-13378.	-14389.	-14480.
-9927.0	-9985.7	-10076.	-10234.	-10554.	-11232.	-12011.	-12065.
-7790.7	-7840.3	-7929.7	-8088.1	-8407.5	-9086.1	-9630.7	-9650.2
-5652.1	-5694.9	-5783.6	-5942.0	-6261.2	-6940.1	-7233.7	-7235.2
-3511.4	-3549.4	-3637.6	-3795.8	-4115.0	-4639.3	-4819.6	-4820.1
-1369.0	-1403.7	-1491.6	-1649.7	-1968.7	-2371.4	-2404.5	-2405.0
774.96	742.27	654.28	496.34	178.46	12.114	10.731	10.306
2920.3	2888.3	2799.2	2641.3	2461.0	2461.1	2459.9	2459.5
5062.1	5032.8	4944.1	4909.5	4909.7	4910.2	4909.1	4908.7
7358.4	7359.0	7359.3	7358.6	7358.8	7359.3	7358.3	7357.9
9807.6	9808.0	9808.4	9807.7	9807.9	9808.3	9807.4	9807.1
12257.	12257.	12257.	12257.	12257.	12257.	12257.	12256.
14706.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17155.	17155.	17156.	17155.	17155.	17156.	17155.	17155.
19604.	19604.	19605.	19604.	19604.	19605.	19604.	19604.
22053.	22054.	22054.	22053.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.43095	0.43337	0.43683	0.44230	0.45382	0.47819	0.78720	0.85225
0.44217	0.44417	0.44762	0.45311	0.46464	0.48903	0.83845	0.87689
0.45332	0.45499	0.45844	0.46393	0.47546	0.49805	0.88784	0.90153
0.46440	0.46582	0.46927	0.47476	0.48629	0.71486	0.92547	0.92617
0.47543	0.47665	0.48011	0.48561	0.49713	0.82156	0.95082	0.95082
0.48641	0.48747	0.49097	0.49647	0.66136	0.95250	0.97546	0.97546
0.49735	0.49824	0.53676	0.64959	0.87920	0.99995	1.0000	1.0000
0.66735	0.69126	0.75543	0.86906	0.99974	1.0000	1.0000	1.0000
0.88933	0.91109	0.97549	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12307	0.12379	0.12471	0.12633	0.12959	0.13651	0.14683	0.14775
0.10130	0.10189	0.10281	0.10443	0.10769	0.11461	0.12256	0.12311
0.79497E-01	0.80003E-01	0.80915E-01	0.82532E-01	0.85790E-01	0.92715E-01	0.98272E-01	0.98471E-01
0.57674E-01	0.58111E-01	0.59017E-01	0.60632E-01	0.63890E-01	0.70817E-01	0.73813E-01	0.73828E-01
0.35831E-01	0.36218E-01	0.37119E-01	0.38733E-01	0.41989E-01	0.47339E-01	0.49180E-01	0.49185E-01
0.13970E-01	0.14324E-01	0.15221E-01	0.16834E-01	0.20089E-01	0.24198E-01	0.24536E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.44599	0.44284	0.43846	0.43137	0.41659	0.38530	0.65970E-01	-0.27756E-16
0.45653	0.45393	0.44956	0.44246	0.42767	0.39636	0.38988E-01	0.13878E-16
0.46718	0.46501	0.46065	0.45354	0.43875	0.40924	0.13887E-01	-0.27756E-16
0.47793	0.47607	0.47172	0.46461	0.44982	0.21432	0.71206E-03	-0.23592E-15
0.48874	0.48713	0.48277	0.47566	0.46088	0.13110	0.24286E-15	-0.76328E-16
0.49962	0.49820	0.49381	0.48670	0.31855	0.23300E-01	0.21511E-15	0.24286E-16
0.50265	0.50176	0.46324	0.35041	0.12080	0.45261E-04	0.00000	0.00000
0.33265	0.30874	0.24457	0.13094	0.26154E-03	0.00000	0.00000	0.00000
0.11067	0.88908E-01	0.24510E-01	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

o-Xylene

STEP NUMBER 17 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13110.	-13265.	-13518.	-14123.	-14476.	-14480.	-14480.	-14480.
-10973.	-11109.	-11361.	-11843.	-12065.	-12065.	-12065.	-12065.
-8830.4	-8954.0	-9206.1	-9605.6	-9649.6	-9650.2	-9650.2	-9650.2
-6681.6	-6798.4	-7068.2	-7228.5	-7234.6	-7235.2	-7235.2	-7235.2
-4527.7	-4653.3	-4807.0	-4813.9	-4819.6	-4820.1	-4820.1	-4820.1
-2401.1	-2401.1	-2393.2	-2399.2	-2404.5	-2405.0	-2405.0	-2405.0
14.036	14.224	21.143	15.785	10.798	10.315	10.306	10.306
2463.0	2463.3	2469.3	2464.6	2460.0	2459.5	2459.5	2459.5
4912.0	4912.4	4917.5	4913.4	4909.2	4908.7	4908.7	4908.7
7361.0	7361.4	7365.8	7362.2	7358.3	7357.9	7357.9	7357.9
9810.0	9810.4	9814.1	9811.0	9807.5	9807.1	9807.1	9807.1
12259.	12259.	12262.	12260.	12257.	12256.	12256.	12256.
14708.	14708.	14711.	14709.	14706.	14706.	14706.	14706.
17157.	17157.	17159.	17157.	17155.	17155.	17155.	17155.
19606.	19606.	19608.	19606.	19604.	19604.	19604.	19604.
22055.	22055.	22056.	22055.	22053.	22053.	22053.	22053.
24503.	24504.	24505.	24504.	24503.	24502.	24502.	24502.
26952.	26952.	26953.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29402.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.46853	0.47351	0.47501	0.60118	0.85006	0.85225	0.85225	0.85225
0.47971	0.48409	0.48233	0.72224	0.87689	0.87689	0.87689	0.87689
0.49069	0.49478	0.59415	0.87460	0.90153	0.90153	0.90153	0.90153
0.53048	0.61333	0.81632	0.92624	0.92618	0.92617	0.92617	0.92617
0.74253	0.83295	0.95095	0.95088	0.95082	0.95082	0.95082	0.95082
0.97550	0.97550	0.97558	0.97552	0.97546	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13378	0.13536	0.13794	0.14411	0.14772	0.14775	0.14775	0.14775
0.11197	0.11336	0.11593	0.12085	0.12311	0.12311	0.12311	0.12311
0.90106E-01	0.91367E-01	0.93940E-01	0.98017E-01	0.98465E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.68180E-01	0.69372E-01	0.72125E-01	0.73760E-01	0.73822E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.46201E-01	0.47482E-01	0.49051E-01	0.49121E-01	0.49179E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.24501E-01	0.24501E-01	0.24420E-01	0.24481E-01	0.24536E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

```
 SLICE   1

0.39769  0.39114  0.38706  0.25471  0.22203E-02-0.83267E-16 0.55511E-16-0.19429E-15
0.40831  0.40255  0.40174  0.15691  0.69389E-16-0.18041E-15-0.13878E-16 0.00000
0.41920  0.41385  0.31191  0.27379E-01 0.55511E-16 0.12490E-15-0.19429E-15 0.12490E-15
0.40134  0.31730  0.11155  0.41633E-16-0.13878E-16 0.13878E-16-0.24980E-15-0.11102E-15
0.21127  0.11957  -0.16653E-15 0.25674E-15 0.62450E-16-0.13878E-16 0.11102E-15-0.62450E-16
0.15613E-15-0.17347E-16-0.25327E-15 0.12490E-15 0.23245E-15-0.20470E-15-0.31225E-16 0.69389E-16
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT      DTMIN     SWMAX    CFAC     TCHG        NS NRR
0.10000E+07 10000.   0.10000   1.5000   0.94608E+08  8  1


I  J  QT          QSW        IQ
1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2  1 0.60249E-05  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3  1 0.11447E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4  1 0.21750E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5  1 0.41325E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6  1 0.78517E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7  1 0.14918E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8  1 0.28344E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20     CPMW=  0.50885E-05   CPMN=  0.00000E+00
I=  2  J=  1  K= 20     CPMW=  0.96453E-05   CPMN=  0.00000E+00
I=  3  J=  1  K= 20     CPMW=  0.18674E-04   CPMN=  0.00000E+00
I=  4  J=  1  K= 20     CPMW=  0.35309E-04   CPMN=  0.00000E+00
I=  5  J=  1  K= 20     CPMW=  0.44097E-04   CPMN=  0.00000E+00
I=  6  J=  1  K= 20     CPMW=  0.78622E-04   CPMN=  0.00000E+00
I=  7  J=  1  K= 20     CPMW=  0.14918E-03   CPMN=  0.00000E+00
I=  8  J=  1  K= 20     CPMW=  0.28344E-03   CPMN=  0.00000E+00

            WATER BALANCE        NAPL BALANCE

CONSTANT PRES    -936.09          0.00000
SOURCE/SINKS     892.85          38.859
STORAGE          43.231         -38.859
PER CENT ERROR   0.27350E-09       -0.76797E-12
```

o-Xylene

STEP NUMBER 27 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12614.	-12730.	-12898.	-13231.	-13998.	-14470.	-14480.	-14480.
-10477.	-10575.	-10742.	-11075.	-11815.	-12064.	-12065.	-12065.
-8334.5	-8419.9	-8586.0	-8919.0	-9469.9	-9649.9	-9650.2	-9650.2
-6188.1	-6264.8	-6429.9	-6763.0	-7188.7	-7234.9	-7235.2	-7235.2
-4038.2	-4109.3	-4273.9	-4586.3	-4815.9	-4819.9	-4820.1	-4820.1
-1885.0	-1953.6	-2122.7	-2386.9	-2401.1	-2404.8	-2405.0	-2405.0
254.52	193.79	13.934	13.536	13.978	10.502	10.307	10.306
2460.4	2462.3	2462.8	2462.5	2462.9	2459.7	2459.5	2459.5
4909.7	4911.2	4911.8	4911.5	4911.8	4908.9	4908.7	4908.7
7359.0	7360.1	7360.7	7360.4	7360.7	7358.1	7357.9	7357.9
9808.2	9809.1	9809.6	9809.4	9809.7	9807.3	9807.1	9807.1
12257.	12258.	12259.	12258.	12259.	12256.	12256.	12256.
14706.	14707.	14707.	14707.	14708.	14706.	14706.	14706.
17156.	17156.	17156.	17156.	17156.	17155.	17155.	17155.
19605.	19605.	19605.	19605.	19605.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24502.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.45009	0.45374	0.45945	0.47243	0.51023	0.84542	0.85225	0.85225
0.46121	0.46422	0.46991	0.48290	0.70047	0.87661	0.87689	0.87689
0.47219	0.47470	0.48037	0.49339	0.77495	0.90153	0.90153	0.90153
0.48307	0.48519	0.49085	0.58874	0.89592	0.92617	0.92617	0.92617
0.49385	0.49553	0.56071	0.78457	0.95086	0.95082	0.95082	0.95082
0.60001	0.65210	0.77435	0.96487	0.97550	0.97546	0.97546	0.97546
0.82377	0.86955	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12872	0.12990	0.13161	0.13501	0.14284	0.14766	0.14775	0.14775
0.10691	0.10791	0.10961	0.11301	0.12056	0.12311	0.12311	0.12311
0.85045E-01	0.85918E-01	0.87612E-01	0.91011E-01	0.96632E-01	0.98469E-01	0.98471E-01	0.98471E-01
0.63144E-01	0.63926E-01	0.65612E-01	0.69010E-01	0.73354E-01	0.73826E-01	0.73828E-01	0.73828E-01
0.41206E-01	0.41932E-01	0.43611E-01	0.46799E-01	0.49142E-01	0.49183E-01	0.49185E-01	0.49185E-01
0.19235E-01	0.19935E-01	0.21660E-01	0.24356E-01	0.24501E-01	0.24539E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.42120  0.41635  0.40894  0.39256  0.34694  0.69280E-02-0.13878E-15-0.19429E-15
0.43189  0.42787  0.42048  0.40408  0.17897  0.27924E-03-0.97145E-16-0.83267E-16
0.44276  0.43938  0.43201  0.41560  0.12841  0.18041E-15-0.29143E-15 0.13878E-16
0.45379  0.45088  0.44354  0.34225  0.30723E-01 0.12490E-15-0.83267E-16-0.29143E-15
0.46495  0.46254  0.39568  0.16863  0.16653E-15-0.20123E-15-0.69389E-16-0.22898E-15
0.38075  0.32796  0.20399  0.10775E-01 0.28796E-15-0.93675E-16 0.69389E-17 0.13184E-15
0.17623  0.13045  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT        DTMIN   SWMAX    CFAC    TCHG         NS NRR
0.10000E+07 10000.  0.10000  1.5000  0.15768E+09  8  1
```

```
I J  QT          QSW     IQ
1 1 0.29459E-04 0.12060   1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW = 0.39534E-05   CPMN = 0.00000E+00
I= 2  J= 1  K= 20    CPMW = 0.75679E-05   CPMN = 0.00000E+00
I= 3  J= 1  K= 20    CPMW = 0.15021E-04   CPMN = 0.00000E+00
I= 4  J= 1  K= 20    CPMW = 0.28108E-04   CPMN = 0.00000E+00
I= 5  J= 1  K= 20    CPMW = 0.56175E-04   CPMN = 0.00000E+00
I= 6  J= 1  K= 20    CPMW = 0.80557E-04   CPMN = 0.00000E+00
I= 7  J= 1  K= 20    CPMW = 0.14920E-03   CPMN = 0.00000E+00
I= 8  J= 1  K= 20    CPMW = 0.28344E-03   CPMN = 0.00000E+00
```

```
            WATER BALANCE       NAPL BALANCE

CONSTANT PRES    -685.21           0.00000
SOURCE/SINKS      653.59           28.446
STORAGE           31.612          -28.446
PER CENT ERROR   0.57564E-10      -0.64320E-11
```

o-Xylene

STEP NUMBER 36 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12345.	-12449.	-12587.	-12852.	-13384.	-14340.	-14480.	-14480.
-10207.	-10293.	-10431.	-10696.	-11228.	-11971.	-12065.	-12065.
-8064.8	-8138.3	-8275.4	-8539.8	-9073.0	-9614.4	-9650.2	-9650.2
-5918.9	-5983.3	-6119.4	-6383.8	-6907.4	-7231.7	-7235.2	-7235.2
-3770.0	-3828.2	-3963.4	-4227.7	-4660.4	-4819.0	-4820.1	-4820.1
-1618.4	-1672.7	-1807.5	-2067.2	-2385.2	-2403.9	-2405.0	-2405.0
535.60	483.16	350.54	82.958	13.625	11.298	10.311	10.306
2690.9	2621.3	2468.2	2461.5	2462.6	2460.4	2459.5	2459.5
4908.8	4911.4	4910.1	4910.6	4911.5	4909.6	4908.7	4908.7
7358.2	7360.2	7359.2	7359.6	7360.5	7358.7	7357.9	7357.9
9807.6	9809.1	9808.3	9808.7	9809.4	9807.8	9807.1	9807.1
12257.	12258.	12257.	12258.	12258.	12257.	12256.	12256.
14706.	14707.	14706.	14707.	14707.	14706.	14706.	14706.
17155.	17156.	17156.	17156.	17156.	17155.	17155.	17155.
19604.	19605.	19605.	19605.	19605.	19604.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22053.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.44077	0.44403	0.44972	0.45920	0.47490	0.75270	0.85225	0.85225
0.45185	0.45449	0.46018	0.46967	0.48555	0.81001	0.87689	0.87689
0.46282	0.46494	0.47066	0.48015	0.49008	0.87661	0.90153	0.90153
0.47369	0.47539	0.48114	0.49064	0.69266	0.92457	0.92617	0.92617
0.48449	0.48582	0.49165	0.52602	0.83822	0.95083	0.95082	0.95082
0.49523	0.49604	0.54594	0.73306	0.96372	0.97547	0.97546	0.97546
0.61961	0.66164	0.75512	0.94901	1.0000	1.0000	1.0000	1.0000
0.83237	0.88529	0.99476	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12597	0.12703	0.12844	0.13114	0.13657	0.14633	0.14775	0.14775
0.10415	0.10503	0.10644	0.10914	0.11457	0.12215	0.12311	0.12311
0.82294E-01	0.83044E-01	0.84443E-01	0.87141E-01	0.92581E-01	0.98106E-01	0.98471E-01	0.98471E-01
0.60397E-01	0.61054E-01	0.62443E-01	0.65140E-01	0.70483E-01	0.73793E-01	0.73828E-01	0.73828E-01
0.38469E-01	0.39063E-01	0.40443E-01	0.43140E-01	0.47556E-01	0.49173E-01	0.49185E-01	0.49185E-01
0.16515E-01	0.17068E-01	0.18444E-01	0.21094E-01	0.24339E-01	0.24530E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.43326  0.42894  0.42184  0.40966  0.38853  0.10097  -0.55511E-16 0.00000
0.44399  0.44048  0.43338  0.42119  0.39988  0.67832E-01-0.19429E-15-0.24980E-15
0.45489  0.45201  0.44490  0.43271  0.41733  0.25285E-01-0.26368E-15-0.11102E-15
0.46591  0.46355  0.45641  0.44422  0.23686  0.16330E-02-0.15266E-15-0.29143E-15
0.47704  0.47512  0.46791  0.43084  0.11423  -0.41633E-16-0.12490E-15-0.21511E-15
0.48826  0.48689  0.43562  0.24585  0.11937E-01-0.62450E-16 0.55511E-16 0.25327E-15
0.38039  0.33836  0.24488  0.50988E-01 0.00000  0.00000  0.00000  0.00000
0.16763  0.11471  0.52395E-02 0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT        DTMIN   SWMAX    CFAC    TCHG        NS NRR
0.10000E+07  10000.  0.10000  1.5000  0.31536E+09  8  1
```

```
I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060   1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20    CPMW= 0.36772E-05   CPMN= 0.00000E+00
I=  2  J=  1  K= 20    CPMW= 0.71463E-05   CPMN= 0.00000E+00
I=  3  J=  1  K= 20    CPMW= 0.14173E-04   CPMN= 0.00000E+00
I=  4  J=  1  K= 20    CPMW= 0.26753E-04   CPMN= 0.00000E+00
I=  5  J=  1  K= 20    CPMW= 0.51535E-04   CPMN= 0.00000E+00
I=  6  J=  1  K= 20    CPMW= 0.87241E-04   CPMN= 0.00000E+00
I=  7  J=  1  K= 20    CPMW= 0.14929E-03   CPMN= 0.00000E+00
I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
```

```
                     WATER BALANCE     NAPL BALANCE

CONSTANT PRES        -781.12           0.00000
SOURCE/SINKS          746.00           32.468
STORAGE               35.111          -32.468
PER CENT ERROR        0.11887E-08     -0.26918E-11
```

o-Xylene

STEP NUMBER 49 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-11905.	-11994.	-12099.	-12295.	-12670.	-13509.	-14437.	-14480.
-9765.5	-9838.8	-9942.6	-10140.	-10514.	-11353.	-12044.	-12065.
-7622.7	-7684.0	-7786.6	-7983.5	-8357.8	-9197.5	-9646.8	-9650.2
-5477.0	-5529.4	-5630.7	-5827.6	-6202.0	-7012.8	-7234.6	-7235.2
-3328.7	-3374.7	-3474.7	-3671.6	-4046.1	-4651.1	-4819.8	-4820.1
-1178.3	-1219.9	-1318.7	-1515.7	-1890.4	-2363.0	-2404.7	-2405.0
973.96	935.19	837.31	640.29	266.16	14.334	10.551	10.306
3127.9	3090.6	2993.4	2796.0	2492.4	2461.2	2459.7	2459.5
5283.3	5244.9	5149.4	4951.7	4909.9	4910.3	4908.9	4908.7
7440.7	7399.3	7358.7	7359.0	7359.0	7359.4	7358.1	7357.9
9808.0	9808.4	9807.9	9808.1	9808.1	9808.4	9807.3	9807.1
12257.	12257.	12257.	12257.	12257.	12257.	12256.	12256.
14706.	14706.	14706.	14706.	14706.	14707.	14706.	14706.
17155.	17156.	17155.	17155.	17155.	17156.	17155.	17155.
19605.	19605.	19604.	19604.	19604.	19605.	19604.	19604.
22054.	22054.	22054.	22054.	22054.	22054.	22053.	22053.
24503.	24503.	24503.	24503.	24503.	24503.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.42567	0.42878	0.43250	0.43951	0.45244	0.48265	0.82123	0.85225
0.43668	0.43924	0.44293	0.44995	0.46291	0.49314	0.86187	0.87689
0.44758	0.44972	0.45338	0.46041	0.47339	0.57765	0.89936	0.90153
0.45839	0.46022	0.46384	0.47088	0.48389	0.76745	0.92599	0.92617
0.46912	0.47073	0.47431	0.48136	0.49441	0.83022	0.95082	0.95082
0.47979	0.48125	0.48479	0.49185	0.60511	0.94658	0.97546	0.97546
0.49041	0.49176	0.49528	0.54682	0.81597	0.99845	1.0000	1.0000
0.51942	0.54628	0.61534	0.75760	0.97713	1.0000	1.0000	1.0000
0.73002	0.75799	0.82653	0.96971	1.0000	1.0000	1.0000	1.0000
0.94077	0.97108	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12148	0.12239	0.12345	0.12546	0.12928	0.13785	0.14731	0.14775
0.99648E-01	0.10040	0.10146	0.10346	0.10728	0.11585	0.12290	0.12311
0.77783E-01	0.78408E-01	0.79455E-01	0.81465E-01	0.85284E-01	0.93852E-01	0.98437E-01	0.98471E-01
0.55887E-01	0.56423E-01	0.57456E-01	0.59465E-01	0.63285E-01	0.71559E-01	0.73823E-01	0.73828E-01
0.33967E-01	0.34436E-01	0.35456E-01	0.37465E-01	0.41287E-01	0.47460E-01	0.49182E-01	0.49185E-01
0.12024E-01	0.12448E-01	0.13456E-01	0.15466E-01	0.19290E-01	0.24113E-01	0.24538E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.45285	0.44883	0.44404	0.43503	0.41827	0.37950	0.31456E-01	0.00000
0.46367	0.46037	0.45561	0.44658	0.42981	0.39101	0.15233E-01	-0.34694E-15
0.47464	0.47187	0.46716	0.45813	0.44133	0.32849	0.22029E-02	0.16653E-15
0.48573	0.48336	0.47871	0.46966	0.45283	0.16099	0.18352E-03	-0.31919E-15
0.49691	0.49483	0.49023	0.48118	0.46430	0.12232	-0.69389E-17	-0.41633E-16
0.50818	0.50631	0.50175	0.49269	0.37560	0.29304E-01	-0.45103E-16	0.24286E-15
0.50959	0.50824	0.50472	0.45318	0.18403	0.15536E-02	0.00000	0.00000
0.48058	0.45372	0.38466	0.24240	0.22873E-01	0.00000	0.00000	0.00000
0.26998	0.24201	0.17347	0.30289E-01	0.00000	0.00000	0.00000	0.00000
0.59230E-01	0.28918E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

APPENDIX D

SWANFLOW
DNAPL Output Files

*Note: Because of the length of output files,
only those pages containing one, three,
five, and ten year output data are included.

p-Cresol

STEP NUMBER 27 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-13669.	-14158.	-14455.	-14479.	-14480.	-14480.	-14480.	-14480.
-11343.	-11717.	-12033.	-12064.	-12065.	-12065.	-12065.	-12065.
-8989.5	-9286.9	-9615.7	-9648.9	-9650.1	-9650.2	-9650.2	-9650.2
-6613.2	-6863.0	-7201.0	-7234.0	-7235.1	-7235.2	-7235.2	-7235.2
-4218.8	-4443.5	-4787.7	-4818.9	-4820.0	-4820.1	-4820.1	-4820.1
-1818.4	-2026.1	-2374.4	-2403.9	-2404.9	-2405.0	-2405.0	-2405.0
586.50	393.11	39.172	11.412	10.373	10.307	10.306	10.306
2994.3	2815.9	2480.4	2460.6	2459.6	2459.5	2459.5	2459.5
5402.5	5233.1	4923.0	4909.7	4908.8	4908.7	4908.7	4908.7
7810.2	7642.7	7367.2	7358.9	7358.0	7357.9	7357.9	7357.9
10216.	10043.	9813.3	9808.0	9807.2	9807.1	9807.1	9807.1
12621.	12449.	12261.	12257.	12256.	12256.	12256.	12256.
15021.	14741.	14709.	14706.	14706.	14706.	14706.	14706.
17414.	17172.	17158.	17155.	17155.	17155.	17155.	17155.
19788.	19611.	19607.	19604.	19604.	19604.	19604.	19604.
22098.	22058.	22055.	22054.	22053.	22053.	22053.	22053.
24506.	24506.	24504.	24503.	24502.	24502.	24502.	24502.
26954.	26954.	26953.	26952.	26952.	26952.	26952.	26952.
29402.	29402.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.48943	0.63596	0.83952	0.85226	0.85225	0.85225	0.85225	0.85225
0.49377	0.64083	0.85920	0.87690	0.87689	0.87689	0.87689	0.87689
0.49711	0.65356	0.88194	0.90154	0.90153	0.90153	0.90153	0.90153
0.49964	0.67094	0.90662	0.92618	0.92617	0.92617	0.92617	0.92617
0.53150	0.69164	0.93240	0.95083	0.95082	0.95082	0.95082	0.95082
0.56536	0.71387	0.95810	0.97547	0.97546	0.97546	0.97546	0.97546
0.59618	0.73483	0.98369	1.0000	1.0000	1.0000	1.0000	1.0000
0.62501	0.75322	0.98917	1.0000	1.0000	1.0000	1.0000	1.0000
0.65365	0.77562	0.99374	1.0000	1.0000	1.0000	1.0000	1.0000
0.68267	0.80345	0.99703	1.0000	1.0000	1.0000	1.0000	1.0000
0.71280	0.83812	0.99900	1.0000	1.0000	1.0000	1.0000	1.0000
0.74434	0.86849	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.77844	0.98051	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.81828	0.99316	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87157	0.99944	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.97158	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13948	0.14447	0.14750	0.14774	0.14775	0.14775	0.14775	0.14775
0.11575	0.11956	0.12279	0.12310	0.12311	0.12311	0.12311	0.12311
0.91730E-01	0.94764E-01	0.98120E-01	0.98459E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.67482E-01	0.70030E-01	0.73479E-01	0.73816E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.43049E-01	0.45342E-01	0.48855E-01	0.49173E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.18555E-01	0.20675E-01	0.24228E-01	0.24529E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


   NAPL SATURATIONS

 SLICE   1

0.37109   0.21957   0.12987E-01 0.27756E-16 0.16653E-15 0.13878E-15-0.27756E-16 0.11102E-15
0.39048   0.23961   0.18015E-01 0.69389E-16-0.97145E-16 0.30531E-15 0.83267E-16 0.26368E-15
0.41116   0.25168   0.19945E-01 0.19429E-15 0.23592E-15-0.11102E-15 0.55511E-16-0.22204E-15
0.43288   0.25903   0.19901E-01-0.69389E-16-0.83267E-16-0.97145E-16-0.41633E-16-0.18041E-15
0.42546   0.26302   0.18741E-01 0.31919E-15 0.19429E-15 0.62450E-16-0.15959E-15-0.17347E-15
0.41609   0.26545   0.17674E-01 0.18735E-15 0.18388E-15 0.24286E-16 0.38511E-15-0.42674E-15
0.40382   0.26517   0.16314E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.37499   0.24678   0.10826E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.34635   0.22438   0.62550E-02 0.00000   0.00000   0.00000   0.00000   0.00000
0.31733   0.19655   0.29684E-02 0.00000   0.00000   0.00000   0.00000   0.00000
0.28720   0.16188   0.10041E-02 0.00000   0.00000   0.00000   0.00000   0.00000
0.25566   0.13151   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.22156   0.19493E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.18172   0.68363E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.12843   0.55574E-03 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.28417E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000

   RECURRENT DATA

    DELT     DTMIN     SWMAX    CFAC     TCHG      NS NRR
  0.10000E+07 10000.   0.10000  1.5000  0.94608E+08  8  1


   I  J  QT       QSW      IQ
   1  1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   2  1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   3  1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   4  1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   5  1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   6  1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   7  1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   8  1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

  AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
  I=  1  J=  1  K= 20     CPMW= 0.84362E-05   CPMN= 0.00000E+00
  I=  2  J=  1  K= 20     CPMW= 0.15279E-04   CPMN= 0.00000E+00
  I=  3  J=  1  K= 20     CPMW= 0.19580E-04   CPMN= 0.00000E+00
  I=  4  J=  1  K= 20     CPMW= 0.24613E-04   CPMN= 0.00000E+00
  I=  5  J=  1  K= 20     CPMW= 0.41659E-04   CPMN= 0.00000E+00
  I=  6  J=  1  K= 20     CPMW= 0.78529E-04   CPMN= 0.00000E+00
  I=  7  J=  1  K= 20     CPMW= 0.14918E-03   CPMN= 0.00000E+00
  I=  8  J=  1  K= 20     CPMW= 0.28344E-03   CPMN= 0.00000E+00

            WATER BALANCE        NAPL BALANCE

  CONSTANT PRES    -931.07          0.00000
  SOURCE/SINKS      892.85          38.859
  STORAGE          38.219          -38.859
  PER CENT ERROR   0.12211E-08      -0.34376E-11
```

p-Cresol

STEP NUMBER 39 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-13623.	-14127.	-14371.	-14479.	-14480.	-14480.	-14480.	-14480.
-11295.	-11675.	-11916.	-12064.	-12065.	-12065.	-12065.	-12065.
-8939.2	-9232.7	-9471.9	-9648.7	-9650.1	-9650.2	-9650.2	-9650.2
-6560.8	-6794.0	-7033.5	-7233.8	-7235.1	-7235.2	-7235.2	-7235.2
-4164.7	-4357.0	-4612.1	-4818.6	-4820.0	-4820.1	-4820.1	-4820.1
-1753.9	-1919.8	-2215.5	-2403.1	-2404.9	-2405.0	-2405.0	-2405.0
665.04	519.27	214.42	13.601	10.384	10.307	10.306	10.306
3088.8	2960.2	2672.1	2463.2	2459.6	2459.5	2459.5	2459.5
5513.9	5399.3	5126.7	4912.8	4908.8	4908.7	4908.7	4908.7
7939.4	7836.8	7577.2	7361.4	7358.0	7357.9	7357.9	7357.9
10365.	10273.	10023.	9809.9	9807.2	9807.1	9807.1	9807.1
12789.	12707.	12473.	12259.	12256.	12256.	12256.	12256.
15213.	15139.	14919.	14707.	14706.	14706.	14706.	14706.
17636.	17568.	17325.	17155.	17155.	17155.	17155.	17155.
20056.	19994.	19714.	19605.	19604.	19604.	19604.	19604.
22471.	22416.	22141.	22054.	22053.	22053.	22053.	22053.
24878.	24832.	24567.	24503.	24502.	24502.	24502.	24502.
27271.	27235.	26991.	26952.	26952.	26952.	26952.	26952.
29631.	29607.	29414.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.48774	0.61259	0.78155	0.85226	0.85225	0.85225	0.85225	0.85225
0.49199	0.60947	0.77677	0.87690	0.87689	0.87689	0.87689	0.87689
0.49523	0.61289	0.78010	0.90154	0.90153	0.90153	0.90153	0.90153
0.49769	0.61930	0.78740	0.92619	0.92617	0.92617	0.92617	0.92617
0.49950	0.62689	0.80701	0.95074	0.95082	0.95082	0.95082	0.95082
0.51594	0.63449	0.84468	0.97502	0.97546	0.97546	0.97546	0.97546
0.53615	0.64079	0.85825	0.99854	1.0000	1.0000	1.0000	1.0000
0.55312	0.64579	0.85177	0.99820	1.0000	1.0000	1.0000	1.0000
0.56940	0.65212	0.84742	0.99791	1.0000	1.0000	1.0000	1.0000
0.58540	0.65966	0.84611	0.99823	1.0000	1.0000	1.0000	1.0000
0.60162	0.66842	0.84797	0.99872	1.0000	1.0000	1.0000	1.0000
0.61859	0.67846	0.84684	0.99893	1.0000	1.0000	1.0000	1.0000
0.63605	0.69004	0.84898	0.99917	1.0000	1.0000	1.0000	1.0000
0.65460	0.70367	0.87988	1.0000	1.0000	1.0000	1.0000	1.0000
0.67513	0.71975	0.92278	1.0000	1.0000	1.0000	1.0000	1.0000
0.69902	0.73872	0.93800	1.0000	1.0000	1.0000	1.0000	1.0000
0.72890	0.76240	0.95442	1.0000	1.0000	1.0000	1.0000	1.0000
0.76888	0.79503	0.97238	1.0000	1.0000	1.0000	1.0000	1.0000
0.83320	0.85074	0.99076	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13902	0.14416	0.14664	0.14774	0.14775	0.14775	0.14775	0.14775
0.11526	0.11914	0.12159	0.12310	0.12311	0.12311	0.12311	0.12311
0.91216E-01	0.94211E-01	0.96652E-01	0.98457E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.66947E-01	0.69327E-01	0.71770E-01	0.73814E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.42497E-01	0.44459E-01	0.47062E-01	0.49170E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.17897E-01	0.19590E-01	0.22608E-01	0.24521E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.37324  0.24326  0.71803E-01-0.11102E-15 0.83267E-16 0.55511E-16-0.22204E-15 0.16653E-15
0.39275  0.27139  0.10164   -0.97145E-16-0.19429E-15 0.56899E-15-0.11102E-15 0.31919E-15
0.41355  0.29289  0.12325    0.27756E-15 0.22204E-15-0.13878E-16 0.97145E-16-0.29143E-15
0.43536  0.31138  0.14083    0.11102E-15 0.41633E-16-0.13878E-16-0.12490E-15-0.12490E-15
0.45800  0.32865  0.14593    0.91187E-04 0.24286E-15 0.17347E-15-0.15959E-15-0.18735E-15
0.46616  0.34592  0.13271    0.45814E-03 0.21858E-15-0.90206E-16 0.54123E-15-0.50654E-15
0.46385  0.35921  0.14175    0.14586E-02 0.00000   0.00000   0.00000   0.00000
0.44688  0.35421  0.14823    0.18016E-02 0.00000   0.00000   0.00000   0.00000
0.43060  0.34788  0.15258    0.20928E-02 0.00000   0.00000   0.00000   0.00000
0.41460  0.34034  0.15389    0.17710E-02 0.00000   0.00000   0.00000   0.00000
0.39838  0.33158  0.15203    0.12784E-02 0.00000   0.00000   0.00000   0.00000
0.38141  0.32154  0.15316    0.10744E-02 0.00000   0.00000   0.00000   0.00000
0.36395  0.30996  0.15102    0.83212E-03 0.00000   0.00000   0.00000   0.00000
0.34540  0.29633  0.12012    0.00000   0.00000   0.00000   0.00000   0.00000
0.32487  0.28025  0.77216E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.30098  0.26128  0.62000E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.27110  0.23760  0.45581E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.23112  0.20497  0.27620E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.16680  0.14926  0.92350E-02 0.00000   0.00000   0.00000   0.00000   0.00000
0.00000  0.00000  0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


   RECURRENT DATA

   DELT     DTMIN    SWMAX    CFAC     TCHG       NS NRR
  0.10000E+07 10000.  0.10000  1.5000  0.15768E+09  8  1


   I  J  QT          QSW       IQ
   1  1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   2  1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   3  1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   4  1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   5  1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   6  1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   7  1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   8  1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


  AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
  I=  1  J=  1  K= 20    CPMW= 0.29156E-05   CPMN= 0.64567E-05
  I=  2  J=  1  K= 20    CPMW= 0.63498E-05   CPMN= 0.82727E-05
  I=  3  J=  1  K= 20    CPMW= 0.19248E-04   CPMN= 0.00000E+00
  I=  4  J=  1  K= 20    CPMW= 0.24880E-04   CPMN= 0.00000E+00
  I=  5  J=  1  K= 20    CPMW= 0.41695E-04   CPMN= 0.00000E+00
  I=  6  J=  1  K= 20    CPMW= 0.78530E-04   CPMN= 0.00000E+00
  I=  7  J=  1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
  I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
              WATER BALANCE        NAPL BALANCE

  CONSTANT PRES    -885.34          -21.511
  SOURCE/SINKS      869.28           37.833
  STORAGE          16.067          -16.323
  PER CENT ERROR   0.27135E-03       -0.21717E-02
```

p-Cresol

STEP NUMBER 48 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-13615.	-14119.	-14300.	-14478.	-14480.	-14480.	-14480.	-14480.
-11287.	-11666.	-11835.	-12064.	-12065.	-12065.	-12065.	-12065.
-8930.3	-9221.5	-9426.0	-9648.3	-9650.1	-9650.2	-9650.2	-9650.2
-6551.8	-6781.6	-7014.7	-7232.6	-7235.1	-7235.2	-7235.2	-7235.2
-4155.7	-4343.0	-4600.6	-4816.4	-4820.0	-4820.1	-4820.1	-4820.1
-1745.2	-1904.0	-2178.4	-2397.9	-2404.9	-2405.0	-2405.0	-2405.0
675.00	536.62	267.20	25.273	10.387	10.307	10.306	10.306
3099.9	2978.8	2725.1	2476.3	2459.6	2459.5	2459.5	2459.5
5526.0	5419.2	5180.4	4926.9	4908.8	4908.7	4908.7	4908.7
7952.7	7857.9	7633.3	7376.2	7358.0	7357.9	7357.9	7357.9
10379.	10295.	10084.	9824.9	9807.2	9807.1	9807.1	9807.1
12805.	12730.	12533.	12273.	12256.	12256.	12256.	12256.
15229.	15163.	14979.	14722.	14706.	14706.	14706.	14706.
17652.	17594.	17423.	17168.	17155.	17155.	17155.	17155.
20071.	20020.	19865.	19616.	19604.	19604.	19604.	19604.
22486.	22441.	22303.	22063.	22053.	22053.	22053.	22053.
24891.	24854.	24736.	24510.	24502.	24502.	24502.	24502.
27282.	27254.	27161.	26956.	26952.	26952.	26952.	26952.
29639.	29620.	29567.	29402.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.48742	0.60612	0.72960	0.85226	0.85225	0.85225	0.85225	0.85225
0.49165	0.60175	0.71775	0.87683	0.87689	0.87689	0.87689	0.87689
0.49488	0.60416	0.74598	0.90122	0.90153	0.90153	0.90153	0.90153
0.49733	0.60958	0.77287	0.92536	0.92617	0.92617	0.92617	0.92617
0.49915	0.61606	0.79783	0.94917	0.95082	0.95082	0.95082	0.95082
0.50901	0.62233	0.81694	0.97132	0.97546	0.97546	0.97546	0.97546
0.52827	0.62744	0.81917	0.99014	1.0000	1.0000	1.0000	1.0000
0.54440	0.63151	0.81246	0.98875	1.0000	1.0000	1.0000	1.0000
0.55984	0.63692	0.80768	0.98773	1.0000	1.0000	1.0000	1.0000
0.57501	0.64359	0.80459	0.98759	1.0000	1.0000	1.0000	1.0000
0.59037	0.65153	0.80308	0.98791	1.0000	1.0000	1.0000	1.0000
0.60652	0.66084	0.80309	0.98825	1.0000	1.0000	1.0000	1.0000
0.62383	0.67177	0.80465	0.98896	1.0000	1.0000	1.0000	1.0000
0.64247	0.68474	0.80788	0.99061	1.0000	1.0000	1.0000	1.0000
0.66336	0.70050	0.81305	0.99184	1.0000	1.0000	1.0000	1.0000
0.68796	0.72032	0.82066	0.99327	1.0000	1.0000	1.0000	1.0000
0.71888	0.74586	0.83180	0.99485	1.0000	1.0000	1.0000	1.0000
0.76087	0.78157	0.84895	0.99681	1.0000	1.0000	1.0000	1.0000
0.82777	0.84151	0.88016	0.99914	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13893	0.14407	0.14592	0.14774	0.14775	0.14775	0.14775	0.14775
0.11517	0.11904	0.12077	0.12310	0.12311	0.12311	0.12311	0.12311
0.91126E-01	0.94097E-01	0.96183E-01	0.98452E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.66855E-01	0.69200E-01	0.71578E-01	0.73802E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.42405E-01	0.44316E-01	0.46945E-01	0.49147E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.17808E-01	0.19429E-01	0.22228E-01	0.24468E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.37365  0.24981  0.12448  0.27756E-16 0.55511E-16 0.55511E-16-0.30531E-15 0.33307E-15
0.39318  0.27921  0.16148  0.76087E-04-0.83267E-16 0.47184E-15-0.41633E-16 0.34694E-15
0.41399  0.30174  0.15783  0.32372E-03 0.31919E-15 0.00000    0.83267E-16-0.22204E-15
0.43581  0.32122  0.15555  0.83452E-03 0.83267E-16-0.13878E-16-0.22204E-15-0.12490E-15
0.45845  0.33962  0.15523  0.16857E-02 0.23592E-15 0.24286E-15-0.29143E-15-0.76328E-16
0.47319  0.35824  0.16084  0.42136E-02 0.15613E-15 0.10408E-15 0.59328E-15-0.40593E-15
0.47173  0.37256  0.18083  0.98628E-02 0.00000    0.00000    0.00000    0.00000
0.45560  0.36849  0.18754  0.11248E-01 0.00000    0.00000    0.00000    0.00000
0.44016  0.36308  0.19232  0.12273E-01 0.00000    0.00000    0.00000    0.00000
0.42499  0.35641  0.19541  0.12413E-01 0.00000    0.00000    0.00000    0.00000
0.40963  0.34847  0.19692  0.12092E-01 0.00000    0.00000    0.00000    0.00000
0.39348  0.33916  0.19691  0.11748E-01 0.00000    0.00000    0.00000    0.00000
0.37617  0.32823  0.19535  0.11040E-01 0.00000    0.00000    0.00000    0.00000
0.35753  0.31526  0.19212  0.93912E-02 0.00000    0.00000    0.00000    0.00000
0.33664  0.29950  0.18695  0.81591E-02 0.00000    0.00000    0.00000    0.00000
0.31204  0.27968  0.17934  0.67335E-02 0.00000    0.00000    0.00000    0.00000
0.28112  0.25414  0.16820  0.51523E-02 0.00000    0.00000    0.00000    0.00000
0.23913  0.21843  0.15105  0.31850E-02 0.00000    0.00000    0.00000    0.00000
0.17223  0.15849  0.11984  0.86076E-03 0.00000    0.00000    0.00000    0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT        DTMIN    SWMAX    CFAC    TCHG         NS NRR
0.10000E+07  10000.   0.10000  1.5000  0.31536E+09  8  1
```

```
I J QT           QSW       IQ
1 1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW= 0.25340E-05   CPMN= 0.71381E-05
I= 2  J= 1  K= 20    CPMW= 0.53886E-05   CPMN= 0.10231E-04
I= 3  J= 1  K= 20    CPMW= 0.12774E-04   CPMN= 0.52733E-05
I= 4  J= 1  K= 20    CPMW= 0.24879E-04   CPMN= 0.00000E+00
I= 5  J= 1  K= 20    CPMW= 0.41722E-04   CPMN= 0.00000E+00
I= 6  J= 1  K= 20    CPMW= 0.78531E-04   CPMN= 0.00000E+00
I= 7  J= 1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
I= 8  J= 1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
```

```
                WATER BALANCE        NAPL BALANCE

CONSTANT PRES    -897.67              -33.963
SOURCE/SINKS      892.85               38.859
STORAGE           4.8163              -4.8965
PER CENT ERROR    0.13647E-02         -0.32780E-02
```

p-Cresol

STEP NUMBER 58 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-13613.	-14116.	-14245.	-14478.	-14480.	-14480.	-14480.	-14480.
-11284.	-11663.	-11834.	-12061.	-12065.	-12065.	-12065.	-12065.
-8927.7	-9218.3	-9423.3	-9644.6	-9650.1	-9650.2	-9650.2	-9650.2
-6549.2	-6777.9	-7010.9	-7226.7	-7235.1	-7235.2	-7235.2	-7235.2
-4153.1	-4338.9	-4593.4	-4806.2	-4820.0	-4820.1	-4820.1	-4820.1
-1742.7	-1899.4	-2163.2	-2377.0	-2404.9	-2405.0	-2405.0	-2405.0
677.83	541.67	285.03	64.041	10.410	10.308	10.306	10.306
3103.0	2984.1	2742.9	2518.7	2459.6	2459.5	2459.5	2459.5
5529.4	5424.8	5198.0	4972.3	4908.8	4908.7	4908.7	4908.7
7956.3	7863.7	7651.0	7423.9	7358.0	7357.9	7357.9	7357.9
10383.	10301.	10102.	9873.8	9807.2	9807.1	9807.1	9807.1
12809.	12736.	12551.	12323.	12256.	12256.	12256.	12256.
15233.	15169.	14998.	14770.	14706.	14706.	14706.	14706.
17656.	17599.	17443.	17215.	17155.	17155.	17155.	17155.
20075.	20026.	19884.	19658.	19604.	19604.	19604.	19604.
22489.	22447.	22320.	22100.	22053.	22053.	22053.	22053.
24895.	24859.	24751.	24540.	24502.	24502.	24502.	24502.
27285.	27257.	27173.	26977.	26952.	26952.	26952.	26952.
29640.	29622.	29573.	29409.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.48732	0.60395	0.68975	0.85196	0.85225	0.85225	0.85225	0.85225
0.49155	0.59948	0.71647	0.87575	0.87689	0.87689	0.87689	0.87689
0.49478	0.60162	0.74372	0.89900	0.90153	0.90153	0.90153	0.90153
0.49723	0.60674	0.76982	0.92147	0.92617	0.92617	0.92617	0.92617
0.49904	0.61286	0.79230	0.94220	0.95082	0.95082	0.95082	0.95082
0.50701	0.61875	0.80564	0.95660	0.97546	0.97546	0.97546	0.97546
0.52602	0.62354	0.80595	0.96241	1.0000	1.0000	1.0000	1.0000
0.54194	0.62738	0.79927	0.95839	1.0000	1.0000	1.0000	1.0000
0.55719	0.63261	0.79462	0.95512	1.0000	1.0000	1.0000	1.0000
0.57218	0.63912	0.79138	0.95330	1.0000	1.0000	1.0000	1.0000
0.58736	0.64695	0.78956	0.95264	1.0000	1.0000	1.0000	1.0000
0.60333	0.65622	0.78919	0.95280	1.0000	1.0000	1.0000	1.0000
0.62066	0.66716	0.79039	0.95415	1.0000	1.0000	1.0000	1.0000
0.63938	0.68022	0.79343	0.95728	1.0000	1.0000	1.0000	1.0000
0.66042	0.69616	0.79880	0.96119	1.0000	1.0000	1.0000	1.0000
0.68523	0.71627	0.80750	0.96615	1.0000	1.0000	1.0000	1.0000
0.71645	0.74235	0.82043	0.97266	1.0000	1.0000	1.0000	1.0000
0.75894	0.77879	0.84027	0.98156	1.0000	1.0000	1.0000	1.0000
0.82647	0.83964	0.87565	0.99408	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.13891	0.14404	0.14536	0.14773	0.14775	0.14775	0.14775	0.14775
0.11515	0.11901	0.12075	0.12308	0.12311	0.12311	0.12311	0.12311
0.91099E-01	0.94064E-01	0.96156E-01	0.98415E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.66829E-01	0.69163E-01	0.71540E-01	0.73742E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.42378E-01	0.44274E-01	0.46871E-01	0.49043E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.17782E-01	0.19382E-01	0.22074E-01	0.24256E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.37377	0.25200	0.16489	0.30606E-03	0.83267E-16	-0.13878E-15	-0.19429E-15	0.24980E-15	
0.39331	0.28151	0.16277	0.11703E-02	-0.69389E-16	0.45797E-15	0.69389E-16	0.34694E-15	
0.41412	0.30432	0.16012	0.25859E-02	0.38858E-15	-0.69389E-16	-0.27756E-16	-0.24980E-15	
0.43594	0.32410	0.15864	0.47862E-02	0.27756E-16	-0.15266E-15	-0.27756E-15	-0.11102E-15	
0.45858	0.34287	0.16083	0.87604E-02	0.44409E-15	0.38858E-15	-0.31919E-15	-0.22204E-15	
0.47520	0.36187	0.17228	0.19142E-01	0.26368E-15	0.90206E-16	0.55164E-15	-0.45103E-15	
0.47398	0.37646	0.19405	0.37590E-01	0.00000	0.00000	0.00000	0.00000	
0.45806	0.37262	0.20073	0.41613E-01	0.00000	0.00000	0.00000	0.00000	
0.44281	0.36739	0.20538	0.44877E-01	0.00000	0.00000	0.00000	0.00000	
0.42782	0.36088	0.20862	0.46695E-01	0.00000	0.00000	0.00000	0.00000	
0.41264	0.35305	0.21044	0.47362E-01	0.00000	0.00000	0.00000	0.00000	
0.39667	0.34378	0.21081	0.47198E-01	0.00000	0.00000	0.00000	0.00000	
0.37934	0.33284	0.20961	0.45852E-01	0.00000	0.00000	0.00000	0.00000	
0.36062	0.31978	0.20657	0.42722E-01	0.00000	0.00000	0.00000	0.00000	
0.33958	0.30384	0.20120	0.38814E-01	0.00000	0.00000	0.00000	0.00000	
0.31477	0.28373	0.19250	0.33853E-01	0.00000	0.00000	0.00000	0.00000	
0.28355	0.25765	0.17957	0.27342E-01	0.00000	0.00000	0.00000	0.00000	
0.24106	0.22121	0.15973	0.18443E-01	0.00000	0.00000	0.00000	0.00000	
0.17353	0.16036	0.12435	0.59197E-02	0.00000	0.00000	0.00000	0.00000	
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

m-Cresol

STEP NUMBER 28 SIMULATION TIME IN SECONDS 0.315E+08
**************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-12246.	-14057.	-14463.	-14479.	-14480.	-14480.	-14480.	-14480.
-10191.	-11600.	-12046.	-12064.	-12065.	-12065.	-12065.	-12065.
-8070.8	-9170.7	-9631.7	-9649.0	-9650.1	-9650.2	-9650.2	-9650.2
-5893.7	-6761.0	-7219.2	-7234.1	-7235.1	-7235.2	-7235.2	-7235.2
-3667.9	-4369.4	-4807.1	-4819.0	-4820.0	-4820.1	-4820.1	-4820.1
-1399.9	-1988.7	-2394.7	-2404.0	-2404.9	-2405.0	-2405.0	-2405.0
905.02	383.69	18.497	11.316	10.367	10.307	10.306	10.306
3236.3	2758.4	2465.7	2460.5	2459.6	2459.5	2459.5	2459.5
5582.0	5122.5	4913.8	4909.6	4908.8	4908.7	4908.7	4908.7
7945.0	7433.3	7362.7	7358.8	7358.0	7357.9	7357.9	7357.9
10297.	9845.9	9811.5	9807.9	9807.2	9807.1	9807.1	9807.1
12642.	12275.	12260.	12257.	12256.	12256.	12256.	12256.
14985.	14715.	14709.	14706.	14706.	14706.	14706.	14706.
17177.	17162.	17158.	17155.	17155.	17155.	17155.	17155.
19611.	19610.	19607.	19604.	19604.	19604.	19604.	19604.
22058.	22058.	22055.	22054.	22053.	22053.	22053.	22053.
24506.	24506.	24504.	24503.	24502.	24502.	24502.	24502.
26954.	26954.	26953.	26952.	26952.	26952.	26952.	26952.
29402.	29402.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.43821	0.56907	0.84493	0.85226	0.85225	0.85225	0.85225	0.85225
0.45232	0.56207	0.86776	0.87690	0.87689	0.87689	0.87689	0.87689
0.46407	0.57460	0.89288	0.90154	0.90153	0.90153	0.90153	0.90153
0.47379	0.60149	0.91923	0.92618	0.92617	0.92617	0.92617	0.92617
0.48176	0.64151	0.94586	0.95083	0.95082	0.95082	0.95082	0.95082
0.48822	0.68957	0.97232	0.97547	0.97546	0.97546	0.97546	0.97546
0.49335	0.74370	0.99818	1.0000	1.0000	1.0000	1.0000	1.0000
0.49755	0.79619	0.99941	1.0000	1.0000	1.0000	1.0000	1.0000
0.52534	0.85626	0.99998	1.0000	1.0000	1.0000	1.0000	1.0000
0.58618	0.95508	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.65473	0.98045	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.72911	0.99382	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.80469	0.99982	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.98992	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12496	0.14344	0.14758	0.14774	0.14775	0.14775	0.14775	0.14775
0.10399	0.11837	0.12292	0.12310	0.12311	0.12311	0.12311	0.12311
0.82355E-01	0.93579E-01	0.98283E-01	0.98460E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.60140E-01	0.68990E-01	0.73665E-01	0.73817E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.37428E-01	0.44586E-01	0.49052E-01	0.49174E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.14285E-01	0.20293E-01	0.24436E-01	0.24530E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.43684  0.28750  0.74920E-02-0.55511E-16 0.83267E-16 0.27756E-16 0.27756E-16-0.13878E-15
0.44369  0.31956  0.93274E-02-0.12490E-15 0.29143E-15-0.36082E-15-0.83267E-16 0.43021E-15
0.45358  0.33182  0.88351E-02-0.27756E-15 0.69389E-16-0.55511E-16-0.13878E-16-0.41633E-16
0.46607  0.32952  0.71071E-02 0.15266E-15-0.49960E-15 0.13878E-15-0.18041E-15-0.41633E-16
0.48081  0.31391  0.50907E-02 0.34694E-15 0.00000  -0.13184E-15-0.15959E-15 0.00000
0.49750  0.29014  0.32441E-02 0.11449E-15-0.45103E-16-0.16306E-15-0.69389E-17 0.24286E-16
0.50665  0.25630  0.18152E-02 0.00000  0.00000  0.00000  0.00000  0.00000
0.50245  0.20381  0.59071E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.47466  0.14374  0.17217E-04 0.00000  0.00000  0.00000  0.00000  0.00000
0.41382  0.44923E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.34527  0.19550E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.27089  0.61842E-02 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.19531  0.17577E-03 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10079E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   RECURRENT DATA

    DELT     DTMIN     SWMAX    CFAC     TCHG      NS NRR
  0.10000E+07 10000.   0.10000   1.5000   0.94608E+08  8  1


   I  J  QT        QSW       IQ
   1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   2  1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   3  1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   4  1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   5  1 0.41325E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   6  1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   7  1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
   8  1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


  AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
  I=  1  J=  1  K= 20     CPMW= 0.84388E-05   CPMN= 0.00000E+00
  I=  2  J=  1  K= 20     CPMW= 0.15346E-04   CPMN= 0.00000E+00
  I=  3  J=  1  K= 20     CPMW= 0.19113E-04   CPMN= 0.00000E+00
  I=  4  J=  1  K= 20     CPMW= 0.24388E-04   CPMN= 0.00000E+00
  I=  5  J=  1  K= 20     CPMW= 0.41632E-04   CPMN= 0.00000E+00
  I=  6  J=  1  K= 20     CPMW= 0.78528E-04   CPMN= 0.00000E+00
  I=  7  J=  1  K= 20     CPMW= 0.14918E-03   CPMN= 0.00000E+00
  I=  8  J=  1  K= 20     CPMW= 0.28344E-03   CPMN= 0.00000E+00

           WATER BALANCE        NAPL BALANCE

  CONSTANT PRES    -930.10           0.00000
  SOURCE/SINKS      892.85          38.859
  STORAGE          37.242          -38.859
  PER CENT ERROR  -0.21842E-08        -0.33644E-11
```

m-Cresol

STEP NUMBER 45 SIMULATION TIME IN SECONDS 0.946E+08
**************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-12064.	-13910.	-14376.	-14479.	-14480.	-14480.	-14480.	-14480.
-9990.1	-11424.	-11931.	-12064.	-12065.	-12065.	-12065.	-12065.
-7848.9	-8968.8	-9498.1	-9648.7	-9650.1	-9650.2	-9650.2	-9650.2
-5650.0	-6530.5	-7072.0	-7233.8	-7235.1	-7235.2	-7235.2	-7235.2
-3401.9	-4100.2	-4649.9	-4818.7	-4820.0	-4820.1	-4820.1	-4820.1
-1112.3	-1672.4	-2231.9	-2403.7	-2404.9	-2405.0	-2405.0	-2405.0
1212.6	756.48	174.96	11.637	10.384	10.307	10.306	10.306
3560.4	3186.7	2625.0	2460.8	2459.6	2459.5	2459.5	2459.5
5921.8	5614.9	5061.6	4909.9	4908.8	4908.7	4908.7	4908.7
8294.6	8044.0	7491.5	7359.0	7358.0	7357.9	7357.9	7357.9
10677.	10471.	9916.3	9808.1	9807.2	9807.1	9807.1	9807.1
13066.	12895.	12348.	12257.	12256.	12256.	12256.	12256.
15462.	15317.	14780.	14706.	14706.	14706.	14706.	14706.
17863.	17736.	17214.	17155.	17155.	17155.	17155.	17155.
20269.	20149.	19649.	19605.	19604.	19604.	19604.	19604.
22671.	22555.	22086.	22054.	22053.	22053.	22053.	22053.
25061.	24953.	24524.	24503.	24502.	24502.	24502.	24502.
27424.	27335.	26964.	26952.	26952.	26952.	26952.	26952.
29737.	29680.	29405.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.43202	0.49858	0.78560	0.85226	0.85225	0.85225	0.85225	0.85225
0.44543	0.49712	0.78813	0.87690	0.87689	0.87689	0.87689	0.87689
0.45641	0.49680	0.79933	0.90154	0.90153	0.90153	0.90153	0.90153
0.46533	0.49709	0.81554	0.92619	0.92617	0.92617	0.92617	0.92617
0.47248	0.49767	0.83468	0.95083	0.95082	0.95082	0.95082	0.95082
0.47813	0.49835	0.85672	0.97547	0.97546	0.97546	0.97546	0.97546
0.48252	0.49900	0.88694	0.99996	1.0000	1.0000	1.0000	1.0000
0.48607	0.49962	0.88587	0.99997	1.0000	1.0000	1.0000	1.0000
0.48914	0.50146	0.89459	0.99999	1.0000	1.0000	1.0000	1.0000
0.49180	0.51441	0.90805	1.0000	1.0000	1.0000	1.0000	1.0000
0.49414	0.52910	0.92522	1.0000	1.0000	1.0000	1.0000	1.0000
0.49622	0.54550	0.93760	1.0000	1.0000	1.0000	1.0000	1.0000
0.49807	0.56385	0.94932	1.0000	1.0000	1.0000	1.0000	1.0000
0.49974	0.58478	0.96009	1.0000	1.0000	1.0000	1.0000	1.0000
0.52258	0.60962	0.96970	1.0000	1.0000	1.0000	1.0000	1.0000
0.55533	0.63957	0.97820	1.0000	1.0000	1.0000	1.0000	1.0000
0.59728	0.67564	0.98567	1.0000	1.0000	1.0000	1.0000	1.0000
0.65861	0.72353	0.99208	1.0000	1.0000	1.0000	1.0000	1.0000
0.75664	0.79864	0.99750	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12310	0.14194	0.14670	0.14774	0.14775	0.14775	0.14775	0.14775
0.10194	0.11657	0.12175	0.12310	0.12311	0.12311	0.12311	0.12311
0.80091E-01	0.91519E-01	0.96920E-01	0.98456E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.57653E-01	0.66638E-01	0.72163E-01	0.73814E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.34714E-01	0.41839E-01	0.47448E-01	0.49171E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.11350E-01	0.17065E-01	0.22774E-01	0.24527E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.44488  0.35949  0.67705E-01 0.00000   0.19429E-15 0.00000   0.27756E-16-0.16653E-15
0.45263  0.38631  0.90127E-01-0.29143E-15 0.15266E-15-0.27756E-15-0.41633E-16 0.31919E-15
0.46350  0.41168  0.10375   -0.27756E-15 0.24980E-15-0.36082E-15-0.69389E-16 0.55511E-16
0.47702  0.43627  0.11229   -0.13878E-15-0.34694E-15 0.13878E-15-0.83267E-16-0.13878E-15
0.49281  0.46049  0.11788    0.41633E-15-0.16653E-15-0.18735E-15-0.43021E-15 0.00000
0.51052  0.48458  0.12051    0.31976E-05-0.17347E-16-0.14572E-15 0.93675E-16 0.10408E-15
0.51748  0.50100  0.11306    0.35271E-04 0.00000   0.00000   0.00000   0.00000
0.51393  0.50038  0.11413    0.28546E-04 0.00000   0.00000   0.00000   0.00000
0.51086  0.49854  0.10541    0.10156E-04 0.00000   0.00000   0.00000   0.00000
0.50820  0.48559  0.91948E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.50586  0.47090  0.74775E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.50378  0.45450  0.62396E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.50193  0.43615  0.50681E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.50026  0.41522  0.39907E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.47742  0.39038  0.30302E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.44467  0.36043  0.21797E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.40272  0.32436  0.14327E-01 0.00000   0.00000   0.00000   0.00000   0.00000
0.34139  0.27647  0.79161E-02 0.00000   0.00000   0.00000   0.00000   0.00000
0.24336  0.20136  0.24970E-02 0.00000   0.00000   0.00000   0.00000   0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    RECURRENT DATA

  DELT    DTMIN    SWMAX   CFAC    TCHG      NS NRR
 0.10000E+07 10000.  0.10000  1.5000  0.15768E+09  8  1


 I  J  QT        QSW       IQ
 1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 2  1 0.60249E-05 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 3  1 0.11447E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 4  1 0.21750E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 5  1 0.41325E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 6  1 0.78517E-04 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 7  1 0.14918E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 8  1 0.28344E-03 1.0000       1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20     CPMW= 0.28329E-05   CPMN= 0.59170E-05
I=  2  J=  1  K= 20     CPMW= 0.72774E-05   CPMN= 0.64683E-05
I=  3  J=  1  K= 20     CPMW= 0.20287E-04   CPMN= 0.00000E+00
I=  4  J=  1  K= 20     CPMW= 0.24968E-04   CPMN= 0.00000E+00
I=  5  J=  1  K= 20     CPMW= 0.41704E-04   CPMN= 0.00000E+00
I=  6  J=  1  K= 20     CPMW= 0.78530E-04   CPMN= 0.00000E+00
I=  7  J=  1  K= 20     CPMW= 0.14918E-03   CPMN= 0.00000E+00
I=  8  J=  1  K= 20     CPMW= 0.28344E-03   CPMN= 0.00000E+00

          WATER BALANCE       NAPL BALANCE

CONSTANT PRES   -912.33          -18.578
SOURCE/SINKS     892.85           38.859
STORAGE         19.472           -20.288
PER CENT ERROR   0.12065E-01     -0.33789E-01
```

m-Cresol

STEP NUMBER 53   **SIMULATION TIME IN SECONDS 0.158E+09**
********************   **IN MINUTES 0.263E+07**
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-12019.	-13845.	-14274.	-14478.	-14480.	-14480.	-14480.	-14480.
-9941.3	-11358.	-11826.	-12063.	-12065.	-12065.	-12065.	-12065.
-7796.9	-8902.8	-9412.3	-9648.4	-9650.1	-9650.2	-9650.2	-9650.2
-5595.5	-6463.8	-6995.3	-7233.1	-7235.1	-7235.2	-7235.2	-7235.2
-3345.5	-4032.9	-4577.1	-4817.8	-4820.0	-4820.1	-4820.1	-4820.1
-1054.7	-1604.4	-2155.2	-2402.2	-2404.9	-2405.0	-2405.0	-2405.0
1270.7	825.04	281.01	14.151	10.391	10.307	10.306	10.306
3618.2	3255.3	2740.6	2463.6	2459.6	2459.5	2459.5	2459.5
5978.8	5682.8	5196.5	4912.9	4908.8	4908.7	4908.7	4908.7
8350.1	8108.9	7649.3	7362.0	7358.0	7357.9	7357.9	7357.9
10730.	10534.	10100.	9811.0	9807.2	9807.1	9807.1	9807.1
13117.	12960.	12547.	12260.	12256.	12256.	12256.	12256.
15510.	15388.	14993.	14709.	14706.	14706.	14706.	14706.
17906.	17812.	17437.	17158.	17155.	17155.	17155.	17155.
20306.	20230.	19878.	19606.	19604.	19604.	19604.	19604.
22708.	22641.	22308.	22054.	22053.	22053.	22053.	22053.
25097.	25037.	24740.	24503.	24502.	24502.	24502.	24502.
27458.	27408.	27083.	26952.	26952.	26952.	26952.	26952.
29760.	29727.	29429.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.43030	0.49614	0.71385	0.85226	0.85225	0.85225	0.85225	0.85225
0.44357	0.49466	0.71358	0.87685	0.87689	0.87689	0.87689	0.87689
0.45444	0.49431	0.73880	0.90137	0.90153	0.90153	0.90153	0.90153
0.46326	0.49456	0.76153	0.92582	0.92617	0.92617	0.92617	0.92617
0.47034	0.49511	0.78336	0.95023	0.95082	0.95082	0.95082	0.95082
0.47595	0.49576	0.80266	0.97449	0.97546	0.97546	0.97546	0.97546
0.48032	0.49637	0.81157	0.99823	1.0000	1.0000	1.0000	1.0000
0.48389	0.49696	0.80357	0.99798	1.0000	1.0000	1.0000	1.0000
0.48700	0.49765	0.79819	0.99787	1.0000	1.0000	1.0000	1.0000
0.48972	0.49840	0.79506	0.99787	1.0000	1.0000	1.0000	1.0000
0.49213	0.49917	0.79371	0.99796	1.0000	1.0000	1.0000	1.0000
0.49430	0.49993	0.79411	0.99812	1.0000	1.0000	1.0000	1.0000
0.49627	0.51264	0.79613	0.99833	1.0000	1.0000	1.0000	1.0000
0.49809	0.52932	0.79942	0.99851	1.0000	1.0000	1.0000	1.0000
0.49980	0.54995	0.80467	0.99879	1.0000	1.0000	1.0000	1.0000
0.52856	0.57674	0.81804	0.99942	1.0000	1.0000	1.0000	1.0000
0.57084	0.61412	0.82984	0.99975	1.0000	1.0000	1.0000	1.0000
0.63374	0.67041	0.90595	1.0000	1.0000	1.0000	1.0000	1.0000
0.74014	0.76354	0.97972	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12264	0.14127	0.14566	0.14774	0.14775	0.14775	0.14775	0.14775
0.10144	0.11590	0.12067	0.12310	0.12311	0.12311	0.12311	0.12311
0.79561E-01	0.90844E-01	0.96044E-01	0.98453E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.57097E-01	0.65958E-01	0.71381E-01	0.73807E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.34138E-01	0.41152E-01	0.46705E-01	0.49161E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.10762E-01	0.16372E-01	0.21992E-01	0.24512E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.44706	0.36259	0.14049	0.55511E-16	0.13878E-15	0.11102E-15	0.83267E-16	-0.13878E-15
0.45499	0.38944	0.16575	0.49738E-04	0.36082E-15	-0.34694E-15	0.19429E-15	0.27756E-15
0.46600	0.41485	0.16516	0.17310E-03	0.23592E-15	-0.31919E-15	0.00000	-0.13878E-15
0.47964	0.43948	0.16709	0.37045E-03	-0.36082E-15	0.23592E-15	-0.83267E-16	-0.19429E-15
0.49552	0.46373	0.16994	0.61348E-03	-0.14572E-15	-0.19429E-15	-0.49960E-15	0.27756E-16
0.51329	0.48787	0.17535	0.99542E-03	0.45103E-16	-0.13878E-15	0.41633E-16	0.15266E-15
0.51968	0.50363	0.18843	0.17742E-02	0.00000	0.00000	0.00000	0.00000
0.51611	0.50304	0.19643	0.20171E-02	0.00000	0.00000	0.00000	0.00000
0.51300	0.50235	0.20181	0.21291E-02	0.00000	0.00000	0.00000	0.00000
0.51028	0.50160	0.20494	0.21332E-02	0.00000	0.00000	0.00000	0.00000
0.50787	0.50083	0.20629	0.20429E-02	0.00000	0.00000	0.00000	0.00000
0.50570	0.50007	0.20589	0.18816E-02	0.00000	0.00000	0.00000	0.00000
0.50373	0.48736	0.20387	0.16668E-02	0.00000	0.00000	0.00000	0.00000
0.50191	0.47068	0.20058	0.14931E-02	0.00000	0.00000	0.00000	0.00000
0.50020	0.45005	0.19533	0.12114E-02	0.00000	0.00000	0.00000	0.00000
0.47144	0.42326	0.18196	0.57684E-03	0.00000	0.00000	0.00000	0.00000
0.42916	0.38588	0.17016	0.24636E-03	0.00000	0.00000	0.00000	0.00000
0.36626	0.32959	0.94051E-01	0.00000	0.00000	0.00000	0.00000	0.00000
0.25986	0.23646	0.20279E-01	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.10000E+07	10000.	0.10000	1.5000	0.31536E+09	8	1

I	J	QT	QSW	IQ																			
1	1	0.29459E-04	0.12060	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0.60249E-05	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0.11447E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0.21750E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0.41325E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	0.78517E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0.14918E-03	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	0.28344E-03	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AT SSOR ITERATION 1 ERROR MAX IS 0.10000E+01
I = 1 J = 1 K = 20 CPMW = 0.21936E-05 CPMN = 0.70099E-05
I = 2 J = 1 K = 20 CPMW = 0.47212E-05 CPMN = 0.10183E-04
I = 3 J = 1 K = 20 CPMW = 0.18644E-04 CPMN = 0.00000E+00
I = 4 J = 1 K = 20 CPMW = 0.25170E-04 CPMN = 0.00000E+00
I = 5 J = 1 K = 20 CPMW = 0.41736E-04 CPMN = 0.00000E+00
I = 6 J = 1 K = 20 CPMW = 0.78531E-04 CPMN = 0.00000E+00
I = 7 J = 1 K = 20 CPMW = 0.14918E-03 CPMN = 0.00000E+00
I = 8 J = 1 K = 20 CPMW = 0.28344E-03 CPMN = 0.00000E+00

	WATER BALANCE	NAPL BALANCE
CONSTANT PRES	-570.94	-16.262
SOURCE/SINKS	563.02	24.504
STORAGE	7.9260	-8.2418
PER CENT ERROR	-0.49854E-03	-0.16714E-03

m-Cresol

STEP NUMBER 64 **SIMULATION TIME IN SECONDS 0.315E+09**
******************** **IN MINUTES 0.526E+07**
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-12004.	-13824.	-14236.	-14478.	-14480.	-14480.	-14480.	-14480.
-9925.3	-11337.	-11817.	-12062.	-12065.	-12065.	-12065.	-12065.
-7779.9	-8881.3	-9398.2	-9645.3	-9650.1	-9650.2	-9650.2	-9650.2
-5577.6	-6441.8	-6976.8	-7228.5	-7235.1	-7235.2	-7235.2	-7235.2
-3327.1	-4010.3	-4550.5	-4811.0	-4820.0	-4820.1	-4820.1	-4820.1
-1035.9	-1581.2	-2114.7	-2391.9	-2404.9	-2405.0	-2405.0	-2405.0
1289.6	848.70	335.88	30.290	10.401	10.307	10.306	10.306
3636.9	3279.0	2800.0	2482.2	2459.6	2459.5	2459.5	2459.5
5997.0	5706.2	5261.5	4933.6	4908.8	4908.7	4908.7	4908.7
8367.6	8131.6	7720.5	7384.4	7358.0	7357.9	7357.9	7357.9
10747.	10556.	10177.	9834.7	9807.2	9807.1	9807.1	9807.1
13132.	12980.	12631.	12284.	12256.	12256.	12256.	12256.
15523.	15405.	15082.	14734.	14706.	14706.	14706.	14706.
17918.	17829.	17530.	17182.	17155.	17155.	17155.	17155.
20316.	20249.	19973.	19630.	19604.	19604.	19604.	19604.
22715.	22660.	22411.	22076.	22053.	22053.	22053.	22053.
25104.	25056.	24840.	24521.	24502.	24502.	24502.	24502.
27465.	27423.	27254.	26964.	26952.	26952.	26952.	26952.
29764.	29738.	29629.	29406.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.42975	0.49538	0.68595	0.85180	0.85225	0.85225	0.85225	0.85225
0.44298	0.49389	0.70710	0.87568	0.87689	0.87689	0.87689	0.87689
0.45382	0.49352	0.72838	0.89932	0.90153	0.90153	0.90153	0.90153
0.46261	0.49376	0.74787	0.92265	0.92617	0.92617	0.92617	0.92617
0.46967	0.49429	0.76388	0.94550	0.95082	0.95082	0.95082	0.95082
0.47526	0.49491	0.77302	0.96720	0.97546	0.97546	0.97546	0.97546
0.47963	0.49551	0.77155	0.98669	1.0000	1.0000	1.0000	1.0000
0.48321	0.49609	0.76020	0.98467	1.0000	1.0000	1.0000	1.0000
0.48633	0.49680	0.75076	0.98303	1.0000	1.0000	1.0000	1.0000
0.48908	0.49757	0.74311	0.98177	1.0000	1.0000	1.0000	1.0000
0.49153	0.49838	0.73721	0.98090	1.0000	1.0000	1.0000	1.0000
0.49374	0.49920	0.73312	0.98044	1.0000	1.0000	1.0000	1.0000
0.49576	0.50038	0.73105	0.98040	1.0000	1.0000	1.0000	1.0000
0.49765	0.51625	0.73143	0.98080	1.0000	1.0000	1.0000	1.0000
0.49944	0.53640	0.73488	0.98187	1.0000	1.0000	1.0000	1.0000
0.52311	0.56298	0.74250	0.98400	1.0000	1.0000	1.0000	1.0000
0.56562	0.60035	0.75650	0.98685	1.0000	1.0000	1.0000	1.0000
0.62898	0.65883	0.78190	0.99111	1.0000	1.0000	1.0000	1.0000
0.73704	0.75584	0.83480	0.99654	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.12249	0.14106	0.14526	0.14773	0.14775	0.14775	0.14775	0.14775
0.10128	0.11569	0.12058	0.12308	0.12311	0.12311	0.12311	0.12311
0.79387E-01	0.90626E-01	0.95900E-01	0.98421E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.56914E-01	0.65733E-01	0.71192E-01	0.73760E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.33950E-01	0.40921E-01	0.46434E-01	0.49092E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.10570E-01	0.16135E-01	0.21578E-01	0.24407E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.44776	0.36356	0.16878	0.47018E-03	-0.27756E-16	0.55511E-16	0.16653E-15	-0.13878E-15
0.45574	0.39042	0.17232	0.12389E-02	0.40246E-15	-0.27756E-15	0.41633E-16	0.27756E-15
0.46680	0.41585	0.17572	0.22605E-02	0.23592E-15	-0.27756E-15	0.55511E-16	-0.41633E-16
0.48048	0.44051	0.18093	0.35874E-02	-0.40246E-15	0.13878E-15	-0.19429E-15	-0.83267E-16
0.49638	0.46479	0.18969	0.54103E-02	-0.12490E-15	-0.22204E-15	-0.45797E-15	0.16653E-15
0.51417	0.48896	0.20540	0.83882E-02	-0.62450E-16	-0.16306E-15	0.48572E-16	0.25327E-15
0.52037	0.50449	0.22845	0.13313E-01	0.00000	0.00000	0.00000	0.00000
0.51679	0.50391	0.23980	0.15334E-01	0.00000	0.00000	0.00000	0.00000
0.51367	0.50320	0.24924	0.16973E-01	0.00000	0.00000	0.00000	0.00000
0.51092	0.50243	0.25689	0.18230E-01	0.00000	0.00000	0.00000	0.00000
0.50847	0.50162	0.26279	0.19096E-01	0.00000	0.00000	0.00000	0.00000
0.50626	0.50080	0.26688	0.19564E-01	0.00000	0.00000	0.00000	0.00000
0.50424	0.49962	0.26895	0.19596E-01	0.00000	0.00000	0.00000	0.00000
0.50235	0.48375	0.26857	0.19201E-01	0.00000	0.00000	0.00000	0.00000
0.50056	0.46360	0.26512	0.18135E-01	0.00000	0.00000	0.00000	0.00000
0.47689	0.43702	0.25750	0.16000E-01	0.00000	0.00000	0.00000	0.00000
0.43438	0.39965	0.24350	0.13151E-01	0.00000	0.00000	0.00000	0.00000
0.37102	0.34117	0.21810	0.88941E-02	0.00000	0.00000	0.00000	0.00000
0.26296	0.24416	0.16520	0.34578E-02	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

Nitrobenzene

STEP NUMBER 38 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-14223.	-14375.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11812.	-11967.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9405.4	-9558.0	-9648.7	-9649.9	-9650.2	-9650.2	-9650.2	-9650.2
-6999.4	-7148.9	-7233.8	-7234.9	-7235.2	-7235.2	-7235.2	-7235.2
-4594.2	-4740.9	-4818.7	-4819.9	-4820.1	-4820.1	-4820.1	-4820.1
-2199.8	-2334.9	-2403.7	-2404.8	-2405.0	-2405.0	-2405.0	-2405.0
196.58	78.380	11.579	10.533	10.320	10.306	10.306	10.306
2645.1	2525.4	2460.7	2459.7	2459.5	2459.5	2459.5	2459.5
5093.6	4972.8	4909.9	4908.9	4908.7	4908.7	4908.7	4908.7
7542.0	7419.8	7359.0	7358.1	7357.9	7357.9	7357.9	7357.9
9990.5	9867.2	9808.1	9807.3	9807.1	9807.1	9807.1	9807.1
12439.	12314.	12257.	12257.	12256.	12256.	12256.	12256.
14888.	14762.	14706.	14706.	14706.	14706.	14706.	14706.
17336.	17209.	17155.	17155.	17155.	17155.	17155.	17155.
19784.	19656.	19605.	19604.	19604.	19604.	19604.	19604.
22233.	22103.	22054.	22053.	22053.	22053.	22053.	22053.
24681.	24550.	24503.	24502.	24502.	24502.	24502.	24502.
27129.	26997.	26952.	26952.	26952.	26952.	26952.	26952.
29569.	29433.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.67102	0.78001	0.85226	0.85225	0.85225	0.85225	0.85225	0.85225
0.69804	0.80895	0.87690	0.87689	0.87689	0.87689	0.87689	0.87689
0.72810	0.83790	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.75878	0.86665	0.92619	0.92617	0.92617	0.92617	0.92617	0.92617
0.79020	0.89620	0.95083	0.95082	0.95082	0.95082	0.95082	0.95082
0.82954	0.92724	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.86752	0.95311	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86786	0.95455	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86820	0.95572	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86854	0.95715	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86888	0.95830	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86922	0.95971	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86956	0.96083	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86990	0.96222	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87023	0.96332	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87058	0.96470	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87095	0.96581	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87176	0.96784	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87864	0.97656	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14513	0.14669	0.14774	0.14775	0.14775	0.14775	0.14775	0.14775
0.12053	0.12211	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.95974E-01	0.97530E-01	0.98456E-01	0.98469E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71422E-01	0.72948E-01	0.73814E-01	0.73826E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.46880E-01	0.48377E-01	0.49171E-01	0.49182E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22447E-01	0.23825E-01	0.24527E-01	0.24538E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.18385	0.73304E-01	-0.13878E-15	-0.55511E-16	0.13878E-15	0.33307E-15	-0.19429E-15	-0.33307E-15
0.18143	0.68944E-01	-0.97145E-16	-0.83267E-16	0.26368E-15	-0.18041E-15	0.41633E-16	-0.27756E-16
0.17593	0.64569E-01	0.13878E-15	0.23592E-15	0.83267E-16	0.27756E-16	-0.22204E-15	-0.37470E-15
0.16980	0.60399E-01	0.41633E-16	-0.13878E-15	-0.13878E-15	0.41633E-16	0.24980E-15	-0.13878E-15
0.16292	0.55420E-01	0.22204E-15	0.21511E-15	0.41633E-16	0.83267E-16	0.21511E-15	0.22204E-15
0.14801	0.48931E-01	-0.23939E-15	0.48572E-16	0.55511E-16	-0.11449E-15	-0.97145E-16	0.69389E-16
0.13248	0.46893E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13214	0.45450E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13180	0.44277E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13146	0.42848E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13112	0.41698E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13078	0.40292E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13044	0.39174E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13010	0.37781E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.12977	0.36680E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.12942	0.35298E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.12905	0.34186E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.12824	0.32162E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.12136	0.23445E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.10000E+07	10000.	0.10000	1.5000	0.94608E+08	8	1

I	J	QT	QSW	IQ
1	1	0.29459E-04	0.12060	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2	1	0.60249E-05	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3	1	0.11447E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4	1	0.21750E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5	1	0.41325E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6	1	0.78517E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7	1	0.14918E-03	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8	1	0.28344E-03	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

AT SSOR ITERATION 1 ERROR MAX IS 0.10000E+01

I = 1 J = 1 K = 20 CPMW = 0.32276E-05 CPMN = 0.21067E-04
I = 2 J = 1 K = 20 CPMW = 0.79967E-05 CPMN = 0.00000E+00
I = 3 J = 1 K = 20 CPMW = 0.13147E-04 CPMN = 0.00000E+00
I = 4 J = 1 K = 20 CPMW = 0.22335E-04 CPMN = 0.00000E+00
I = 5 J = 1 K = 20 CPMW = 0.41393E-04 CPMN = 0.00000E+00
I = 6 J = 1 K = 20 CPMW = 0.78519E-04 CPMN = 0.00000E+00
I = 7 J = 1 K = 20 CPMW = 0.14918E-03 CPMN = 0.00000E+00
I = 8 J = 1 K = 20 CPMW = 0.28344E-03 CPMN = 0.00000E+00

	WATER BALANCE	NAPL BALANCE
CONSTANT PRES	-898.86	-31.601
SOURCE/SINKS	892.85	38.859
STORAGE	6.0029	-7.2588
PER CENT ERROR	0.22584E-02	-0.36667E-03

Nitrobenzene

STEP NUMBER 46 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-14223.	-14282.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11812.	-11873.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9405.0	-9465.7	-9649.0	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-6998.8	-7059.0	-7234.0	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4593.5	-4654.0	-4819.0	-4819.9	-4820.1	-4820.1	-4820.1	-4820.1
-2198.5	-2254.8	-2404.0	-2404.8	-2405.0	-2405.0	-2405.0	-2405.0
198.44	151.15	11.314	10.486	10.317	10.306	10.306	10.306
2647.2	2600.2	2460.5	2459.7	2459.5	2459.5	2459.5	2459.5
5096.0	5051.3	4909.6	4908.9	4908.7	4908.7	4908.7	4908.7
7544.7	7496.5	7358.8	7358.1	7357.9	7357.9	7357.9	7357.9
9993.5	9944.5	9807.9	9807.3	9807.1	9807.1	9807.1	9807.1
12442.	12392.	12257.	12256.	12256.	12256.	12256.	12256.
14891.	14840.	14706.	14706.	14706.	14706.	14706.	14706.
17340.	17288.	17155.	17155.	17155.	17155.	17155.	17155.
19789.	19736.	19604.	19604.	19604.	19604.	19604.	19604.
22237.	22184.	22054.	22053.	22053.	22053.	22053.	22053.
24686.	24631.	24503.	24502.	24502.	24502.	24502.	24502.
27134.	27077.	26952.	26952.	26952.	26952.	26952.	26952.
29572.	29503.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.67087	0.71248	0.85226	0.85225	0.85225	0.85225	0.85225	0.85225
0.69774	0.74095	0.87690	0.87689	0.87689	0.87689	0.87689	0.87689
0.72761	0.77099	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.75814	0.80128	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.78941	0.83293	0.95083	0.95082	0.95082	0.95082	0.95082	0.95082
0.82829	0.86885	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.86590	0.89998	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86604	0.89998	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86617	0.89842	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86632	0.90114	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86646	0.90192	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86661	0.90280	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86676	0.90358	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86691	0.90447	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86707	0.90526	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86723	0.90617	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86744	0.90705	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.86821	0.90917	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.87593	0.92645	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14513	0.14573	0.14774	0.14775	0.14775	0.14775	0.14775	0.14775
0.12053	0.12115	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.95969E-01	0.96589E-01	0.98459E-01	0.98469E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71416E-01	0.72031E-01	0.73817E-01	0.73826E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.46872E-01	0.47490E-01	0.49174E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22433E-01	0.23008E-01	0.24530E-01	0.24539E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.18400   0.14179   -0.22204E-15-0.13878E-15 0.16653E-15 0.36082E-15-0.27756E-15-0.33307E-15
0.18174   0.13789   -0.55511E-16-0.11102E-15 0.13878E-16-0.13878E-15 0.41633E-16-0.69389E-16
0.17642   0.13242    0.13878E-15 0.34694E-15 0.13878E-16-0.13878E-16-0.23592E-15-0.37470E-15
0.17045   0.12669    0.11102E-15-0.20817E-15-0.23592E-15-0.13878E-16 0.55511E-15-0.26368E-15
0.16371   0.11958    0.16653E-15 0.19429E-15 0.69389E-17 0.00000    0.17347E-15 0.20817E-15
0.14928   0.10814   -0.20470E-15 0.13878E-16 0.19082E-15-0.18388E-15-0.34694E-15 0.90206E-16
0.13410   0.10002   -0.24718E-06 0.00000    0.00000    0.00000    0.00000    0.00000
0.13396   0.10002    0.42366E-05 0.00000    0.00000    0.00000    0.00000    0.00000
0.13383   0.10158    0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13368   0.98861E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13354   0.98084E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13339   0.97201E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13324   0.96420E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13309   0.95526E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13293   0.94738E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13277   0.93827E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13256   0.92948E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.13179   0.90828E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.12407   0.73554E-01 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


    RECURRENT DATA

     DELT      DTMIN     SWMAX    CFAC      TCHG      NS  NRR
    0.10000E+07 10000.   0.10000   1.5000   0.15768E+09  8   1


    I  J   QT         QSW        IQ
    1  1 0.29459E-04 0.12060          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    2  1 0.60249E-05  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    3  1 0.11447E-04  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    4  1 0.21750E-04  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    5  1 0.41325E-04  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    6  1 0.78517E-04  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    7  1 0.14918E-03  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
    8  1 0.28344E-03  1.0000          1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0


   AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
   I=  1  J=  1  K= 20     CPMW= 0.30183E-05    CPMN= 0.23809E-04
   I=  2  J=  1  K= 20     CPMW= 0.64857E-05    CPMN= 0.00000E+00
   I=  3  J=  1  K= 20     CPMW= 0.12741E-04    CPMN= 0.00000E+00
   I=  4  J=  1  K= 20     CPMW= 0.22210E-04    CPMN= 0.00000E+00
   I=  5  J=  1  K= 20     CPMW= 0.41379E-04    CPMN= 0.00000E+00
   I=  6  J=  1  K= 20     CPMW= 0.78519E-04    CPMN= 0.00000E+00
   I=  7  J=  1  K= 20     CPMW= 0.14918E-03    CPMN= 0.00000E+00
   I=  8  J=  1  K= 20     CPMW= 0.28344E-03    CPMN= 0.00000E+00
              WATER BALANCE       NAPL BALANCE

   CONSTANT PRES    -895.46           -35.713
   SOURCE/SINKS      892.85            38.859
   STORAGE        2.6034           -3.1464
   PER CENT ERROR   0.61686E-03        -0.20373E-03
```

Nitrobenzene

STEP NUMBER 54 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-14223.	-14252.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11813.	-11844.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9405.6	-9436.9	-9649.3	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-6999.4	-7030.5	-7234.3	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4594.0	-4629.7	-4819.2	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2198.8	-2240.4	-2404.2	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
198.23	150.69	11.227	10.431	10.314	10.306	10.306	10.306
2647.0	2599.8	2460.5	2459.6	2459.5	2459.5	2459.5	2459.5
5095.8	5049.0	4909.7	4908.8	4908.7	4908.7	4908.7	4908.7
7544.6	7498.1	7359.0	7358.0	7357.9	7357.9	7357.9	7357.9
9993.5	9947.3	9808.2	9807.2	9807.1	9807.1	9807.1	9807.1
12442.	12396.	12257.	12256.	12256.	12256.	12256.	12256.
14891.	14846.	14707.	14706.	14706.	14706.	14706.	14706.
17340.	17295.	17156.	17155.	17155.	17155.	17155.	17155.
19789.	19744.	19605.	19604.	19604.	19604.	19604.	19604.
22238.	22193.	22054.	22053.	22053.	22053.	22053.	22053.
24687.	24642.	24504.	24502.	24502.	24502.	24502.	24502.
27135.	27091.	26953.	26952.	26952.	26952.	26952.	26952.
29573.	29540.	29402.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.67081	0.69062	0.85224	0.85225	0.85225	0.85225	0.85225	0.85225
0.69763	0.71929	0.87686	0.87689	0.87689	0.87689	0.87689	0.87689
0.72744	0.74940	0.90149	0.90153	0.90153	0.90153	0.90153	0.90153
0.75791	0.77989	0.92612	0.92617	0.92617	0.92617	0.92617	0.92617
0.78915	0.81457	0.95075	0.95082	0.95082	0.95082	0.95082	0.95082
0.82789	0.85768	0.97539	0.97546	0.97546	0.97546	0.97546	0.97546
0.86547	0.89958	0.99984	1.0000	1.0000	1.0000	1.0000	1.0000
0.86560	0.89951	0.99977	1.0000	1.0000	1.0000	1.0000	1.0000
0.86574	0.89944	0.99971	1.0000	1.0000	1.0000	1.0000	1.0000
0.86588	0.89938	0.99964	1.0000	1.0000	1.0000	1.0000	1.0000
0.86601	0.89931	0.99959	1.0000	1.0000	1.0000	1.0000	1.0000
0.86614	0.89924	0.99966	1.0000	1.0000	1.0000	1.0000	1.0000
0.86628	0.89918	0.99948	1.0000	1.0000	1.0000	1.0000	1.0000
0.86641	0.89911	0.99944	1.0000	1.0000	1.0000	1.0000	1.0000
0.86654	0.89905	0.99939	1.0000	1.0000	1.0000	1.0000	1.0000
0.86667	0.89899	0.99934	1.0000	1.0000	1.0000	1.0000	1.0000
0.86685	0.89893	0.99930	1.0000	1.0000	1.0000	1.0000	1.0000
0.86760	0.89887	0.99926	1.0000	1.0000	1.0000	1.0000	1.0000
0.87543	0.89909	0.99944	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14514	0.14543	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12054	0.12085	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.95976E-01	0.96295E-01	0.98462E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71422E-01	0.71740E-01	0.73819E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.46877E-01	0.47242E-01	0.49176E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22436E-01	0.22861E-01	0.24532E-01	0.24539E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.18405  0.16395  0.14480E-04 0.00000   0.27756E-16 0.38858E-15-0.27756E-15-0.27756E-15
0.18183  0.15985  0.30902E-04-0.13878E-15 0.83267E-16 0.55511E-16-0.69389E-16-0.12490E-15
0.17658  0.15430  0.45970E-04 0.33307E-15 0.69389E-16-0.41633E-16-0.33307E-15-0.45797E-15
0.17066  0.14837  0.58793E-04-0.19429E-15-0.29143E-15-0.97145E-16 0.38858E-15-0.23592E-15
0.16397  0.13819  0.74935E-04 0.28449E-15 0.97145E-16 0.83267E-16 0.13878E-15 0.24980E-15
0.14967  0.11946  0.80372E-04-0.13878E-16 0.79797E-16-0.30184E-15-0.41980E-15 0.17347E-15
0.13453  0.10042  0.16332E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13440  0.10049  0.23265E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13426  0.10056  0.29497E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13412  0.10062  0.35585E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13399  0.10069  0.41265E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13386  0.10076  0.34116E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13372  0.10082  0.52473E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13359  0.10089  0.55949E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13346  0.10095  0.60846E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13333  0.10101  0.65520E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13315  0.10107  0.69960E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.13240  0.10113  0.73760E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.12457  0.10091  0.55799E-03 0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    RECURRENT DATA

    DELT      DTMIN    SWMAX    CFAC     TCHG      NS NRR
  0.10000E+07 10000.   0.10000   1.5000   0.31536E+09  8  1


  I  J  QT         QSW       IQ
  1  1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04 1.0600      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


  AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
  I=  1  J=  1  K= 20    CPMW= 0.27691E-05   CPMN= 0.24276E-04
  I=  2  J=  1  K= 20    CPMW= 0.55810E-05   CPMN= 0.16221E-05
  I=  3  J=  1  K= 20    CPMW= 0.12319E-04   CPMN= 0.00000E+00
  I=  4  J=  1  K= 20    CPMW= 0.22073E-04   CPMN= 0.00000E+00
  I=  5  J=  1  K= 20    CPMW= 0.41363E-04   CPMN= 0.00000E+00
  I=  6  J=  1  K= 20    CPMW= 0.78518E-04   CPMN= 0.00000E+00
  I=  7  J=  1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
  I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
            WATER BALANCE       NAPL BALANCE

  CONSTANT PRES    -892.87           -38.847
  SOURCE/SINKS      892.85            38.859
  STORAGE         0.10123E-01      -0.12721E-01
  PER CENT ERROR  -0.28750E-02         -0.81245E-04
```

Nitrobenzene

STEP NUMBER 64 **SIMULATION TIME IN SECONDS 0.315E+09**
****
IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-14223.	-14252.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11812.	-11844.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9405.6	-9436.9	-9648.7	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-6999.3	-7030.5	-7233.5	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4593.9	-4629.7	-4818.4	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2198.7	-2240.4	-2403.2	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
198.27	150.66	12.379	10.437	10.314	10.306	10.306	10.306
2647.1	2599.8	2461.9	2459.6	2459.5	2459.5	2459.5	2459.5
5095.8	5049.0	4911.3	4908.8	4908.7	4908.7	4908.7	4908.7
7544.7	7498.1	7360.8	7358.0	7357.9	7357.9	7357.9	7357.9
9993.5	9947.3	9810.2	9807.2	9807.1	9807.1	9807.1	9807.1
12442.	12396.	12259.	12256.	12256.	12256.	12256.	12256.
14891.	14846.	14709.	14706.	14706.	14706.	14706.	14706.
17340.	17295.	17158.	17155.	17155.	17155.	17155.	17155.
19789.	19744.	19608.	19604.	19604.	19604.	19604.	19604.
22238.	22193.	22057.	22053.	22053.	22053.	22053.	22053.
24687.	24642.	24507.	24502.	24502.	24502.	24502.	24502.
27135.	27091.	26956.	26952.	26952.	26952.	26952.	26952.
29573.	29540.	29404.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.67081	0.69062	0.85210	0.85225	0.85225	0.85225	0.85225	0.85225
0.69763	0.71930	0.87658	0.87689	0.87689	0.87689	0.87689	0.87689
0.72744	0.74942	0.90108	0.90153	0.90153	0.90153	0.90153	0.90153
0.75791	0.77991	0.92560	0.92617	0.92617	0.92617	0.92617	0.92617
0.78915	0.81462	0.95013	0.95082	0.95082	0.95082	0.95082	0.95082
0.82789	0.85773	0.97472	0.97546	0.97546	0.97546	0.97546	0.97546
0.86547	0.89964	0.99903	1.0000	1.0000	1.0000	1.0000	1.0000
0.86561	0.89957	0.99880	1.0000	1.0000	1.0000	1.0000	1.0000
0.86574	0.89950	0.99858	1.0000	1.0000	1.0000	1.0000	1.0000
0.86588	0.89943	0.99836	1.0000	1.0000	1.0000	1.0000	1.0000
0.86601	0.89936	0.99815	1.0000	1.0000	1.0000	1.0000	1.0000
0.86615	0.89929	0.99807	1.0000	1.0000	1.0000	1.0000	1.0000
0.86628	0.89922	0.99774	1.0000	1.0000	1.0000	1.0000	1.0000
0.86641	0.89915	0.99756	1.0000	1.0000	1.0000	1.0000	1.0000
0.86654	0.89909	0.99737	1.0000	1.0000	1.0000	1.0000	1.0000
0.86667	0.89902	0.99718	1.0000	1.0000	1.0000	1.0000	1.0000
0.86685	0.89896	0.99700	1.0000	1.0000	1.0000	1.0000	1.0000
0.86761	0.89890	0.99683	1.0000	1.0000	1.0000	1.0000	1.0000
0.87543	0.89911	0.99748	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14514	0.14543	0.14774	0.14775	0.14775	0.14775	0.14775	0.14775
0.12054	0.12085	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.95975E-01	0.96295E-01	0.98456E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71421E-01	0.71739E-01	0.73812E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.46877E-01	0.47242E-01	0.49167E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22436E-01	0.22861E-01	0.24522E-01	0.24539E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.18405	0.16395	0.15930E-03	0.00000	-0.27756E-16	0.44409E-15	-0.16653E-15	-0.27756E-15
0.18183	0.15984	0.32027E-03	-0.18041E-15	0.12490E-15	0.55511E-16	-0.55511E-16	-0.13878E-16
0.17658	0.15429	0.46733E-03	0.30531E-15	0.13878E-16	-0.13878E-16	-0.27756E-15	-0.44409E-15
0.17066	0.14835	0.59273E-03	-0.19429E-15	-0.41633E-15	-0.18041E-15	0.52736E-15	-0.13878E-15
0.16397	0.13813	0.69816E-03	0.21511E-15	0.11102E-15	-0.62450E-16	0.19429E-15	0.34001E-15
0.14967	0.11941	0.75871E-03	-0.76328E-16	0.58981E-16	-0.41980E-15	-0.24980E-15	0.24286E-15
0.13453	0.10036	0.97241E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.13439	0.10043	0.12026E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13426	0.10050	0.14230E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13412	0.10057	0.16392E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13399	0.10064	0.18487E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13385	0.10071	0.19292E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13372	0.10078	0.22583E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13359	0.10085	0.24386E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13346	0.10091	0.26304E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13333	0.10098	0.28177E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13315	0.10104	0.30000E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.13239	0.10110	0.31664E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.12457	0.10089	0.25201E-02	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

1,1-Dichloroethene

STEP NUMBER 36 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-14245.	-14388.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11837.	-11981.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9429.9	-9571.4	-9649.0	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-7023.7	-7161.7	-7234.0	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4621.2	-4753.8	-4819.0	-4819.9	-4820.1	-4820.1	-4820.1	-4820.1
-2231.9	-2348.6	-2403.9	-2404.8	-2405.0	-2405.0	-2405.0	-2405.0
160.17	63.079	11.345	10.491	10.317	10.306	10.306	10.306
2609.1	2510.8	2460.5	2459.7	2459.5	2459.5	2459.5	2459.5
5058.0	4958.7	4909.6	4908.9	4908.7	4908.7	4908.7	4908.7
7507.0	7407.1	7358.8	7358.1	7357.9	7357.9	7357.9	7357.9
9955.9	9854.9	9807.9	9807.3	9807.1	9807.1	9807.1	9807.1
12405.	12303.	12257.	12256.	12256.	12256.	12256.	12256.
14854.	14751.	14706.	14706.	14706.	14706.	14706.	14706.
17303.	17199.	17155.	17155.	17155.	17155.	17155.	17155.
19752.	19647.	19604.	19604.	19604.	19604.	19604.	19604.
22201.	22095.	22054.	22053.	22053.	22053.	22053.	22053.
24649.	24543.	24503.	24502.	24502.	24502.	24502.	24502.
27098.	26990.	26952.	26952.	26952.	26952.	26952.	26952.
29546.	29431.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68670	0.78866	0.85226	0.85225	0.85225	0.85225	0.85225	0.85225
0.71500	0.81857	0.87690	0.87689	0.87689	0.87689	0.87689	0.87689
0.74516	0.84704	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77573	0.87538	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80914	0.90500	0.95083	0.95082	0.95082	0.95082	0.95082	0.95082
0.85221	0.93669	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89338	0.96371	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89344	0.96464	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89349	0.96546	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89354	0.96593	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89359	0.96686	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89364	0.96768	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89369	0.96808	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89375	0.96904	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89380	0.96985	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89385	0.97032	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89390	0.97123	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89398	0.97223	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89527	0.97804	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14536	0.14682	0.14774	0.14775	0.14775	0.14775	0.14775	0.14775
0.12078	0.12225	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.96224E-01	0.97667E-01	0.98459E-01	0.98469E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71670E-01	0.73079E-01	0.73817E-01	0.73826E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47155E-01	0.48508E-01	0.49173E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22775E-01	0.23965E-01	0.24530E-01	0.24539E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.16794   0.64524E-01-0.24980E-15 0.36082E-15 0.16653E-15-0.47184E-15 0.36082E-15-0.13878E-15
0.16422   0.59177E-01 0.19429E-15-0.27756E-15-0.31919E-15-0.18041E-15 0.40246E-15-0.12490E-15
0.15861   0.55291E-01 0.16653E-15-0.37470E-15 0.13878E-16 0.15266E-15 0.12490E-15-0.20817E-15
0.15260   0.51538E-01-0.27756E-16 0.13878E-16-0.37470E-15-0.69389E-16-0.24980E-15 0.00000
0.14371   0.46495E-01 0.13878E-15 0.11102E-15 0.00000   -0.55511E-16 0.48572E-16-0.10408E-15
0.12501   0.39347E-01-0.24980E-15-0.17347E-16 0.35041E-15 0.19082E-15 0.24980E-15 0.90206E-16
0.10662   0.36292E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10656   0.35358E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10651   0.34543E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10646   0.34071E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10641   0.33137E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10636   0.32320E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10631   0.31924E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10625   0.30964E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10620   0.30151E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10615   0.29681E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10610   0.28775E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10602   0.27766E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10473   0.21960E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
```

RECURRENT DATA

```
 DELT        DTMIN    SWMAX     CFAC     TCHG         NS NRR
0.10000E+07 10000.   0.10000   1.5000   0.94608E+08   8  1

I J  QT          QSW       IQ
1 1 0.29459E-04 0.12060    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20    CPMW= 0.32185E-05   CPMN= 0.22042E-04
I=  2  J=  1  K= 20    CPMW= 0.75931E-05   CPMN= 0.00000E+00
I=  3  J=  1  K= 20    CPMW= 0.12829E-04   CPMN= 0.00000E+00
I=  4  J=  1  K= 20    CPMW= 0.22227E-04   CPMN= 0.00000E+00
I=  5  J=  1  K= 20    CPMW= 0.41381E-04   CPMN= 0.00000E+00
I=  6  J=  1  K= 20    CPMW= 0.78519E-04   CPMN= 0.00000E+00
I=  7  J=  1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

              WATER BALANCE       NAPL BALANCE

CONSTANT PRES   -897.58           -33.064
SOURCE/SINKS     892.85            38.859
STORAGE         4.7259            -5.7959
PER CENT ERROR  0.18789E-02       -0.60197E-04
```

1,1-Dichloroethene

STEP NUMBER 44 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-14246.	-14305.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11837.	-11897.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9430.0	-9490.1	-9649.2	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-7023.8	-7083.1	-7234.2	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4621.2	-4679.6	-4819.2	-4819.9	-4820.1	-4820.1	-4820.1	-4820.1
-2231.9	-2283.4	-2404.1	-2404.8	-2405.0	-2405.0	-2405.0	-2405.0
160.21	120.90	11.139	10.455	10.315	10.306	10.306	10.306
2609.2	2569.2	2460.3	2459.7	2459.5	2459.5	2459.5	2459.5
5058.2	5017.6	4909.5	4908.9	4908.7	4908.7	4908.7	4908.7
7507.1	7466.2	7358.6	7358.1	7357.9	7357.9	7357.9	7357.9
9956.1	9914.5	9807.8	9807.2	9807.1	9807.1	9807.1	9807.1
12405.	12363.	12257.	12256.	12256.	12256.	12256.	12256.
14854.	14811.	14706.	14706.	14706.	14706.	14706.	14706.
17303.	17260.	17155.	17155.	17155.	17155.	17155.	17155.
19752.	19708.	19604.	19604.	19604.	19604.	19604.	19604.
22201.	22157.	22053.	22053.	22053.	22053.	22053.	22053.
24650.	24605.	24503.	24502.	24502.	24502.	24502.	24502.
27099.	27053.	26952.	26952.	26952.	26952.	26952.	26952.
29546.	29488.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68667	0.72869	0.85226	0.85225	0.85225	0.85225	0.85225	0.85225
0.71494	0.75822	0.87690	0.87689	0.87689	0.87689	0.87689	0.87689
0.74508	0.78805	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77562	0.81820	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80896	0.85095	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85201	0.88910	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89312	0.92147	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89314	0.92200	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89317	0.92247	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89319	0.92282	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89321	0.92335	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89323	0.92384	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89326	0.92415	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89328	0.92471	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89330	0.92520	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89333	0.92556	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89335	0.92609	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89340	0.92678	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89480	0.93662	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14536	0.14597	0.14774	0.14775	0.14775	0.14775	0.14775	0.14775
0.12078	0.12140	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.96225E-01	0.96838E-01	0.98461E-01	0.98469E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71671E-01	0.72277E-01	0.73819E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47155E-01	0.47751E-01	0.49176E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22775E-01	0.23300E-01	0.24532E-01	0.24539E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.16797  0.12534  -0.16653E-15 0.38858E-15 0.19429E-15-0.55511E-15 0.27756E-15-0.24980E-15
0.16428  0.12038   0.24980E-15-0.55511E-16-0.27756E-16-0.26368E-15 0.34694E-15-0.31919E-15
0.15869  0.11511   0.69389E-16-0.65226E-15-0.41633E-16 0.83267E-16 0.83267E-16-0.36082E-15
0.15271  0.10953  -0.13878E-15 0.55511E-16-0.41633E-15-0.97145E-16-0.12490E-15-0.69389E-16
0.14388  0.10130   0.24980E-15-0.48572E-16-0.11102E-15 0.69389E-16 0.97145E-16-0.20123E-15
0.12522  0.87602E-01-0.37123E-15 0.83267E-16 0.18388E-15 0.18388E-15 0.24980E-15-0.69389E-17
0.10688  0.78529E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10686  0.78005E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10683  0.77526E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10681  0.77184E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10679  0.76652E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10677  0.76163E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10674  0.75846E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10672  0.75294E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10670  0.74799E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10667  0.74445E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10665  0.73906E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10660  0.73221E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10520  0.63382E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT      DTMIN    SWMAX    CFAC     TCHG        NS NRR
0.10000E+07 10000.  0.10000  1.5000  0.15768E+09  8  1
```

```
I J  QT          QSW       IQ
1 1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I=  1  J=  1  K= 20    CPMW= 0.30638E-05   CPMN= 0.24189E-04
I=  2  J=  1  K= 20    CPMW= 0.64153E-05   CPMN= 0.00000E+00
I=  3  J=  1  K= 20    CPMW= 0.12517E-04   CPMN= 0.00000E+00
I=  4  J=  1  K= 20    CPMW= 0.22132E-04   CPMN= 0.00000E+00
I=  5  J=  1  K= 20    CPMW= 0.41370E-04   CPMN= 0.00000E+00
I=  6  J=  1  K= 20    CPMW= 0.78519E-04   CPMN= 0.00000E+00
I=  7  J=  1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
```

```
          WATER BALANCE     NAPL BALANCE

CONSTANT PRES    -894.96         -36.283
SOURCE/SINKS      892.85          38.859
STORAGE           2.1007         -2.5760
PER CENT ERROR    0.11431E-02    -0.31569E-04
```

1,1-Dichloroethene

STEP NUMBER 52 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-14246.	-14270.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11837.	-11862.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9430.1	-9455.4	-9649.3	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-7023.9	-7049.0	-7234.3	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4621.3	-4646.6	-4819.3	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2232.0	-2254.3	-2404.2	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
160.20	144.59	11.043	10.438	10.314	10.306	10.306	10.306
2609.2	2593.3	2460.2	2459.6	2459.5	2459.5	2459.5	2459.5
5058.2	5042.0	4909.4	4908.8	4908.7	4908.7	4908.7	4908.7
7507.2	7490.8	7358.5	7358.0	7357.9	7357.9	7357.9	7357.9
9956.2	9939.5	9807.7	9807.2	9807.1	9807.1	9807.1	9807.1
12405.	12388.	12257.	12256.	12256.	12256.	12256.	12256.
14854.	14837.	14706.	14706.	14706.	14706.	14706.	14706.
17303.	17286.	17155.	17155.	17155.	17155.	17155.	17155.
19752.	19735.	19604.	19604.	19604.	19604.	19604.	19604.
22201.	22183.	22053.	22053.	22053.	22053.	22053.	22053.
24650.	24632.	24503.	24502.	24502.	24502.	24502.	24502.
27099.	27081.	26952.	26952.	26952.	26952.	26952.	26952.
29546.	29518.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68666	0.70365	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71492	0.73267	0.87690	0.87689	0.87689	0.87689	0.87689	0.87689
0.74504	0.76283	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77557	0.79341	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80889	0.82690	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85192	0.86784	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89301	0.90412	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89302	0.90437	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89302	0.90460	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89303	0.90478	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89304	0.90503	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89305	0.90526	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89306	0.90543	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89307	0.90569	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89308	0.90592	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89309	0.90610	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89310	0.90635	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89314	0.90672	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89458	0.91487	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14536	0.14562	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12078	0.12104	0.12310	0.12311	0.12311	0.12311	0.12311	0.12311
0.96226E-01	0.96484E-01	0.98462E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71672E-01	0.71929E-01	0.73820E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47156E-01	0.47414E-01	0.49177E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22775E-01	0.23003E-01	0.24533E-01	0.24539E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.16798  0.15074  -0.22204E-15 0.47184E-15 0.19429E-15-0.61062E-15 0.22204E-15-0.27756E-15
0.16430  0.14628   0.20817E-15-0.41633E-16 0.13878E-15-0.36082E-15 0.19429E-15-0.23592E-15
0.15873  0.14069   0.00000   -0.68001E-15-0.55511E-16 0.13878E-16 0.00000   -0.34694E-15
0.15276  0.13467  -0.20817E-15 0.41633E-16-0.34694E-15-0.23592E-15-0.22204E-15-0.26368E-15
0.14396  0.12569   0.36082E-15-0.24286E-15-0.18735E-15 0.13184E-15 0.34694E-16-0.24286E-15
0.12531  0.10916  -0.26715E-15 0.93675E-16 0.36429E-15 0.20817E-15 0.37470E-15-0.11102E-15
0.10699  0.95878E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10698  0.95628E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10698  0.95397E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10697  0.95221E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10696  0.94970E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10695  0.94737E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10694  0.94572E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10693  0.94314E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10692  0.94078E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10691  0.93899E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10690  0.93645E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10686  0.93280E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10542  0.85127E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT        DTMIN    SWMAX    CFAC    TCHG        NS NRR
0.10000E+07 10000.   0.10000   1.5000  0.31536E+09  8  1


I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20    CPMW= 0.29886E-05   CPMN= 0.25180E-04
I= 2  J= 1  K= 20    CPMW= 0.58750E-05   CPMN= 0.00000E+00
I= 3  J= 1  K= 20    CPMW= 0.12374E-04   CPMN= 0.00000E+00
I= 4  J= 1  K= 20    CPMW= 0.22088E-04   CPMN= 0.00000E+00
I= 5  J= 1  K= 20    CPMW= 0.41365E-04   CPMN= 0.00000E+00
I= 6  J= 1  K= 20    CPMW= 0.78518E-04   CPMN= 0.00000E+00
I= 7  J= 1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
I= 8  J= 1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00
          WATER BALANCE        NAPL BALANCE

CONSTANT PRES    -893.74         -37.770
SOURCE/SINKS      892.85          38.859
STORAGE         0.88844        -1.0895
PER CENT ERROR   0.54777E-03       -0.14384E-04
```

1,1-Dichloroethene

STEP NUMBER 62 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-14246.	-14253.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11837.	-11844.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9430.3	-9437.2	-9649.4	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-7024.0	-7030.8	-7234.4	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4621.5	-4630.2	-4819.3	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2232.1	-2240.9	-2404.3	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
160.05	150.01	11.050	10.421	10.313	10.306	10.306	10.306
2609.1	2599.1	2460.3	2459.6	2459.5	2459.5	2459.5	2459.5
5058.1	5048.1	4909.5	4908.8	4908.7	4908.7	4908.7	4908.7
7507.1	7497.2	7358.6	7358.0	7357.9	7357.9	7357.9	7357.9
9956.1	9946.3	9807.8	9807.2	9807.1	9807.1	9807.1	9807.1
12405.	12395.	12257.	12256.	12256.	12256.	12256.	12256.
14854.	14844.	14706.	14706.	14706.	14706.	14706.	14706.
17303.	17294.	17155.	17155.	17155.	17155.	17155.	17155.
19752.	19743.	19605.	19604.	19604.	19604.	19604.	19604.
22201.	22192.	22054.	22053.	22053.	22053.	22053.	22053.
24650.	24641.	24503.	24502.	24502.	24502.	24502.	24502.
27099.	27090.	26952.	26952.	26952.	26952.	26952.	26952.
29547.	29539.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68665	0.69064	0.85224	0.85225	0.85225	0.85225	0.85225	0.85225
0.71490	0.71935	0.87688	0.87689	0.87689	0.87689	0.87689	0.87689
0.74502	0.74950	0.90151	0.90153	0.90153	0.90153	0.90153	0.90153
0.77555	0.78001	0.92614	0.92617	0.92617	0.92617	0.92617	0.92617
0.80884	0.81480	0.95078	0.95082	0.95082	0.95082	0.95082	0.95082
0.85187	0.85796	0.97542	0.97546	0.97546	0.97546	0.97546	0.97546
0.89295	0.89998	0.99993	1.0000	1.0000	1.0000	1.0000	1.0000
0.89296	0.89998	0.99990	1.0000	1.0000	1.0000	1.0000	1.0000
0.89296	0.89998	0.99988	1.0000	1.0000	1.0000	1.0000	1.0000
0.89297	0.89997	0.99986	1.0000	1.0000	1.0000	1.0000	1.0000
0.89297	0.89997	0.99983	1.0000	1.0000	1.0000	1.0000	1.0000
0.89298	0.89997	0.99981	1.0000	1.0000	1.0000	1.0000	1.0000
0.89298	0.89997	0.99979	1.0000	1.0000	1.0000	1.0000	1.0000
0.89299	0.89996	0.99977	1.0000	1.0000	1.0000	1.0000	1.0000
0.89299	0.89996	0.99975	1.0000	1.0000	1.0000	1.0000	1.0000
0.89300	0.89996	0.99973	1.0000	1.0000	1.0000	1.0000	1.0000
0.89301	0.89995	0.99971	1.0000	1.0000	1.0000	1.0000	1.0000
0.89304	0.89995	0.99969	1.0000	1.0000	1.0000	1.0000	1.0000
0.89450	0.89996	0.99975	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14537	0.14543	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12078	0.12086	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96228E-01	0.96298E-01	0.98463E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71674E-01	0.71743E-01	0.73820E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47158E-01	0.47247E-01	0.49177E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22777E-01	0.22867E-01	0.24533E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.16798	0.16393	0.98040E-05	0.61062E-15	0.13878E-15	-0.63838E-15	0.22204E-15	-0.27756E-15
0.16431	0.15979	0.19714E-04	-0.41633E-16	0.19429E-15	-0.19429E-15	0.31919E-15	-0.23592E-15
0.15875	0.15421	0.28360E-04	-0.59674E-15	0.16653E-15	-0.19429E-15	-0.13878E-16	-0.31919E-15
0.15278	0.14824	0.35340E-04	0.13878E-16	-0.27756E-15	-0.37470E-15	-0.30531E-15	-0.20817E-15
0.14400	0.13795	0.44048E-04	-0.30531E-15	-0.33307E-15	0.90206E-16	0.14572E-15	-0.35388E-15
0.12536	0.11917	0.50992E-04	-0.65919E-16	0.34348E-15	-0.13184E-15	0.23592E-15	-0.18041E-15
0.10705	0.10002	0.73214E-04	0.00000	0.00000	0.00000	0.00000	0.00000
0.10704	0.10002	0.97235E-04	0.00000	0.00000	0.00000	0.00000	0.00000
0.10704	0.10002	0.12044E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10703	0.10003	0.14328E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10703	0.10003	0.16563E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10702	0.10003	0.18751E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10702	0.10003	0.20900E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10701	0.10004	0.23003E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10701	0.10004	0.25063E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10700	0.10004	0.27086E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10699	0.10005	0.29064E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10696	0.10005	0.30966E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.10550	0.10004	0.24593E-03	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

Tetrachloroethene

STEP NUMBER 35 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-14244.	-14450.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11835.	-12037.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9428.3	-9624.1	-9649.5	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7021.9	-7211.0	-7234.5	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4618.2	-4798.1	-4819.5	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2228.8	-2385.8	-2404.4	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
163.14	27.210	10.872	10.407	10.312	10.306	10.306	10.306
2612.2	2476.1	2460.0	2459.6	2459.5	2459.5	2459.5	2459.5
5061.2	4924.9	4909.2	4908.8	4908.7	4908.7	4908.7	4908.7
7510.2	7373.4	7358.4	7358.0	7357.9	7357.9	7357.9	7357.9
9959.2	9822.3	9807.6	9807.2	9807.1	9807.1	9807.1	9807.1
12408.	12271.	12257.	12256.	12256.	12256.	12256.	12256.
14857.	14720.	14706.	14706.	14706.	14706.	14706.	14706.
17306.	17169.	17155.	17155.	17155.	17155.	17155.	17155.
19755.	19617.	19604.	19604.	19604.	19604.	19604.	19604.
22204.	22066.	22053.	22053.	22053.	22053.	22053.	22053.
24653.	24515.	24503.	24502.	24502.	24502.	24502.	24502.
27102.	26964.	26952.	26952.	26952.	26952.	26952.	26952.
29550.	29411.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68480	0.83228	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71286	0.85814	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74300	0.88399	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77352	0.90990	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80606	0.93607	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.84908	0.96263	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89042	0.98878	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89045	0.98890	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89049	0.98915	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89052	0.98961	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89056	0.98972	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89060	0.98994	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89063	0.99038	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89067	0.99051	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89070	0.99073	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89074	0.99121	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89078	0.99131	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89082	0.99153	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89165	0.99253	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14535	0.14745	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12076	0.12283	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96207E-01	0.98205E-01	0.98465E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71652E-01	0.73581E-01	0.73822E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47124E-01	0.48960E-01	0.49179E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22743E-01	0.24345E-01	0.24535E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.16985	0.20270E-01	0.27756E-16	0.27756E-16	-0.55511E-16	-0.11102E-15	0.55511E-16	0.27756E-16
0.16638	0.19034E-01	-0.20817E-15	0.20817E-15	0.69389E-16	0.16653E-15	0.40246E-15	0.31919E-15
0.16080	0.17807E-01	-0.13878E-16	0.27756E-16	-0.83267E-16	0.27756E-16	0.23592E-15	-0.97145E-16
0.15483	0.16517E-01	0.43021E-15	0.23592E-15	-0.97145E-16	-0.69389E-16	-0.29143E-15	0.41633E-16
0.14681	0.14974E-01	0.35388E-15	0.00000	0.20817E-15	0.10408E-15	0.13184E-15	0.27756E-16
0.12817	0.13021E-01	0.21164E-15	-0.22898E-15	-0.17347E-16	-0.14225E-15	-0.90206E-16	0.36082E-15
0.10958	0.11223E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10955	0.11099E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10951	0.10851E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10948	0.10392E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10944	0.10276E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10940	0.10064E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10937	0.96205E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10933	0.94902E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10930	0.92661E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10926	0.87915E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10922	0.86916E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10918	0.84653E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10835	0.74693E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.10000E+07	10000.	0.10000	1.5000	0.94608E+08	8	1

I	J	QT	QSW	IQ																			
1	1	0.29459E-04	0.12060	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	1	0.60249E-05	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	1	0.11447E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	0.21750E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	1	0.41325E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	1	0.78517E-04	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	1	0.14918E-03	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	1	0.28344E-03	1.0000	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AT SSOR ITERATION 1 ERROR MAX IS 0.10000E+01

I = 1 J = 1 K = 20 CPMW = 0.28578E-05 CPMN = 0.23925E-04
I = 2 J = 1 K = 20 CPMW = 0.68880E-05 CPMN = 0.00000E+00
I = 3 J = 1 K = 20 CPMW = 0.12194E-04 CPMN = 0.00000E+00
I = 4 J = 1 K = 20 CPMW = 0.22012E-04 CPMN = 0.00000E+00
I = 5 J = 1 K = 20 CPMW = 0.41355E-04 CPMN = 0.00000E+00
I = 6 J = 1 K = 20 CPMW = 0.78518E-04 CPMN = 0.00000E+00
I = 7 J = 1 K = 20 CPMW = 0.14918E-03 CPMN = 0.00000E+00
I = 8 J = 1 K = 20 CPMW = 0.28344E-03 CPMN = 0.00000E+00

	WATER BALANCE	NAPL BALANCE
CONSTANT PRES	-894.67	-35.888
SOURCE/SINKS	892.85	38.859
STORAGE	1.8118	-2.9713
PER CENT ERROR	0.61261E-04	-0.18878E-05

Tetrachloroethene

STEP NUMBER 43 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-14244.	-14404.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11835.	-11992.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9428.1	-9580.5	-9649.5	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7021.7	-7169.2	-7234.5	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4618.0	-4758.8	-4819.5	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2228.6	-2351.6	-2404.4	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
163.34	58.036	10.900	10.412	10.312	10.306	10.306	10.306
2612.4	2506.9	2460.1	2459.6	2459.5	2459.5	2459.5	2459.5
5061.4	4955.6	4909.2	4908.8	4908.7	4908.7	4908.7	4908.7
7510.4	7404.1	7358.4	7358.0	7357.9	7357.9	7357.9	7357.9
9959.4	9853.0	9807.6	9807.2	9807.1	9807.1	9807.1	9807.1
12408.	12302.	12257.	12256.	12256.	12256.	12256.	12256.
14858.	14750.	14706.	14706.	14706.	14706.	14706.	14706.
17307.	17199.	17155.	17155.	17155.	17155.	17155.	17155.
19756.	19648.	19604.	19604.	19604.	19604.	19604.	19604.
22205.	22096.	22053.	22053.	22053.	22053.	22053.	22053.
24654.	24545.	24503.	24502.	24502.	24502.	24502.	24502.
27103.	26994.	26952.	26952.	26952.	26952.	26952.	26952.
29551.	29439.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68479	0.79896	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71284	0.82560	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74297	0.85262	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77349	0.87977	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80601	0.90770	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.84903	0.93793	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89034	0.96650	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89037	0.96667	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89040	0.96694	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89043	0.96737	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89046	0.96753	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89048	0.96777	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89051	0.96819	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89054	0.96836	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89057	0.96861	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89060	0.96905	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89063	0.96920	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89066	0.96946	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89150	0.97217	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14535	0.14698	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12076	0.12237	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96205E-01	0.97760E-01	0.98464E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71650E-01	0.73155E-01	0.73821E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47122E-01	0.48559E-01	0.49178E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22741E-01	0.23996E-01	0.24534E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.16986   0.54058E-01 0.13878E-15-0.27756E-16 0.27756E-16 0.27756E-16 0.83267E-16 0.83267E-16
0.16640   0.52028E-01-0.30531E-15 0.34694E-15 0.27756E-16 0.18041E-15 0.43021E-15 0.34694E-15
0.16082   0.49619E-01 0.83267E-16-0.27756E-16-0.13878E-15 0.69389E-16 0.12490E-15-0.69389E-16
0.15486   0.47074E-01 0.45797E-15 0.44409E-15-0.69389E-16-0.16653E-15-0.45797E-15 0.69389E-16
0.14686   0.43736E-01 0.54123E-15-0.14572E-15 0.29143E-15 0.15266E-15 0.90206E-16 0.48572E-16
0.12823   0.38077E-01 0.26021E-15-0.28449E-15-0.86736E-16-0.76328E-16-0.34694E-16 0.36082E-15
0.10966   0.33501E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10963   0.33329E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10960   0.33062E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10957   0.32631E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10954   0.32468E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10952   0.32230E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10949   0.31812E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10946   0.31638E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10943   0.31392E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10940   0.30950E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10937   0.30800E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10934   0.30537E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10850   0.27832E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
```

RECURRENT DATA

```
 DELT       DTMIN    SWMAX    CFAC     TCHG         NS NRR
0.10000E+07 10000.   0.10000  1.5000   0.15768E+09  8  1


I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
I= 1  J= 1  K= 20     CPMW= 0.28689E-05   CPMN= 0.24347E-04
I= 2  J= 1  K= 20     CPMW= 0.65827E-05   CPMN= 0.00000E+00
I= 3  J= 1  K= 20     CPMW= 0.12216E-04   CPMN= 0.00000E+00
I= 4  J= 1  K= 20     CPMW= 0.22024E-04   CPMN= 0.00000E+00
I= 5  J= 1  K= 20     CPMW= 0.41357E-04   CPMN= 0.00000E+00
I= 6  J= 1  K= 20     CPMW= 0.78518E-04   CPMN= 0.00000E+00
I= 7  J= 1  K= 20     CPMW= 0.14918E-03   CPMN= 0.00000E+00
I= 8  J= 1  K= 20     CPMW= 0.28344E-03   CPMN= 0.00000E+00

            WATER BALANCE        NAPL BALANCE

CONSTANT PRES     -894.28          -36.521
SOURCE/SINKS       892.85           38.859
STORAGE            1.4258          -2.3383
PER CENT ERROR   0.54973E-04      -0.15883E-05
```

Tetrachloroethene

STEP NUMBER 51 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-14244.	-14368.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11835.	-11957.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9427.9	-9546.5	-9649.5	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7021.5	-7136.5	-7234.5	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4617.8	-4727.9	-4819.4	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2228.4	-2324.6	-2404.4	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
163.51	82.057	10.921	10.416	10.313	10.306	10.306	10.306
2612.5	2530.9	2460.1	2459.6	2459.5	2459.5	2459.5	2459.5
5061.5	4979.6	4909.3	4908.8	4908.7	4908.7	4908.7	4908.7
7510.6	7428.2	7358.4	7358.0	7357.9	7357.9	7357.9	7357.9
9959.6	9877.0	9807.6	9807.2	9807.1	9807.1	9807.1	9807.1
12409.	12326.	12257.	12256.	12256.	12256.	12256.	12256.
14858.	14774.	14706.	14706.	14706.	14706.	14706.	14706.
17307.	17223.	17155.	17155.	17155.	17155.	17155.	17155.
19756.	19672.	19604.	19604.	19604.	19604.	19604.	19604.
22205.	22121.	22053.	22053.	22053.	22053.	22053.	22053.
24654.	24569.	24503.	24502.	24502.	24502.	24502.	24502.
27103.	27018.	26952.	26952.	26952.	26952.	26952.	26952.
29551.	29462.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68479	0.77310	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71283	0.80027	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74296	0.82813	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77347	0.85619	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80598	0.88541	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.84898	0.91847	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89029	0.94914	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89031	0.94932	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89033	0.94958	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89035	0.94996	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89037	0.95014	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89040	0.95037	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89042	0.95074	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89044	0.95092	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89046	0.95116	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89049	0.95155	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89051	0.95171	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89054	0.95197	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89139	0.95567	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14534	0.14661	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12076	0.12201	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96203E-01	0.97413E-01	0.98464E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71648E-01	0.72821E-01	0.73821E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47120E-01	0.48244E-01	0.49178E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22739E-01	0.23721E-01	0.24534E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

NAPL SATURATIONS

SLICE 1

```
0.16986  0.80287E-01 0.27756E-15-0.11102E-15 0.24980E-15 0.24980E-15-0.55511E-16 0.11102E-15
0.16641  0.77720E-01-0.27756E-15 0.27756E-15-0.97145E-16 0.29143E-15 0.44409E-15 0.38858E-15
0.16084  0.74454E-01 0.13878E-16 0.00000  -0.55511E-16-0.13878E-16-0.11102E-15-0.41633E-16
0.15488  0.70993E-01 0.43021E-15 0.51348E-15-0.18041E-15-0.22204E-15-0.52736E-15 0.83267E-16
0.14690  0.66350E-01 0.47878E-15-0.34694E-16 0.29837E-15 0.97145E-16 0.15959E-15 0.62450E-16
0.12828  0.57806E-01 0.39899E-15-0.36082E-15-0.15959E-15-0.20817E-16-0.10061E-15 0.35735E-15
0.10971  0.50858E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10969  0.50676E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10967  0.50420E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10965  0.50038E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10963  0.49864E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10960  0.49632E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10958  0.49261E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10956  0.49079E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10954  0.48841E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10951  0.48452E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10949  0.48289E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10946  0.48027E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.10861  0.44332E-01 0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
```

RECURRENT DATA

```
 DELT       DTMIN    SWMAX    CFAC    TCHG        NS NRR
0.10000E+07 10000.   0.10000  1.5000  0.31536E+09  8  1
```

```
I J  QT          QSW      IQ
1 1 0.29459E-04 0.12060   1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 1 0.60249E-05 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 1 0.11447E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 1 0.21750E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 1 0.41325E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 1 0.78517E-04 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 1 0.14918E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 1 0.28344E-03 1.0000    1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

```
AT SSOR ITERATION  1   ERROR MAX IS 0.10000E+01
I= 1 J= 1 K= 20   CPMW= 0.28790E-05   CPMN= 0.24684E-04
I= 2 J= 1 K= 20   CPMW= 0.63391E-05   CPMN= 0.00000E+00
I= 3 J= 1 K= 20   CPMW= 0.12234E-04   CPMN= 0.00000E+00
I= 4 J= 1 K= 20   CPMW= 0.22033E-04   CPMN= 0.00000E+00
I= 5 J= 1 K= 20   CPMW= 0.41358E-04   CPMN= 0.00000E+00
I= 6 J= 1 K= 20   CPMW= 0.78518E-04   CPMN= 0.00000E+00
I= 7 J= 1 K= 20   CPMW= 0.14918E-03   CPMN= 0.00000E+00
I= 8 J= 1 K= 20   CPMW= 0.28344E-03   CPMN= 0.00000E+00
```

```
              WATER BALANCE      NAPL BALANCE

CONSTANT PRES   -893.97           -37.026
SOURCE/SINKS     892.85            38.859
STORAGE          1.1177           -1.8329
PER CENT ERROR   0.36518E-04      -0.12750E-05
```

Tetrachloroethene

STEP NUMBER 61 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-14243.	-14310.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11834.	-11900.	-12064.	-12065.	-12065.	-12065.	-12065.	-12065.
-9427.6	-9492.1	-9649.4	-9650.0	-9650.2	-9650.2	-9650.2	-9650.2
-7021.3	-7083.9	-7234.4	-7235.0	-7235.2	-7235.2	-7235.2	-7235.2
-4617.5	-4678.0	-4819.4	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2228.1	-2281.0	-2404.3	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
163.80	120.21	10.954	10.422	10.313	10.306	10.306	10.306
2612.8	2569.1	2460.1	2459.6	2459.5	2459.5	2459.5	2459.5
5061.8	5017.9	4909.3	4908.8	4908.7	4908.7	4908.7	4908.7
7510.8	7466.6	7358.5	7358.0	7357.9	7357.9	7357.9	7357.9
9959.9	9915.5	9807.6	9807.2	9807.1	9807.1	9807.1	9807.1
12409.	12364.	12257.	12256.	12256.	12256.	12256.	12256.
14858.	14813.	14706.	14706.	14706.	14706.	14706.	14706.
17307.	17262.	17155.	17155.	17155.	17155.	17155.	17155.
19756.	19711.	19604.	19604.	19604.	19604.	19604.	19604.
22205.	22160.	22053.	22053.	22053.	22053.	22053.	22053.
24654.	24608.	24503.	24502.	24502.	24502.	24502.	24502.
27103.	27057.	26952.	26952.	26952.	26952.	26952.	26952.
29551.	29500.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68479	0.73208	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71282	0.75992	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74293	0.78899	0.90154	0.90153	0.90153	0.90153	0.90153	0.90153
0.77343	0.81835	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.80592	0.84940	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.84891	0.88700	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546
0.89019	0.92158	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89020	0.92173	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89022	0.92192	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89023	0.92217	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89024	0.92231	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89025	0.92248	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89027	0.92272	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89028	0.92286	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89029	0.92304	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89030	0.92329	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89031	0.92342	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89033	0.92362	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89119	0.92788	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14534	0.14602	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12076	0.12143	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96200E-01	0.96858E-01	0.98463E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71645E-01	0.72285E-01	0.73821E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47117E-01	0.47735E-01	0.49178E-01	0.49183E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22736E-01	0.23276E-01	0.24534E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.16987	0.12189	0.41633E-15	-0.27756E-16	0.27756E-15	0.24980E-15	-0.83267E-16	0.22204E-15
0.16643	0.11865	-0.43021E-15	0.31919E-15	-0.11102E-15	0.29143E-15	0.49960E-15	0.49960E-15
0.16087	0.11415	-0.27756E-16	-0.97145E-16	-0.97145E-16	0.13878E-16	-0.69389E-16	0.69389E-16
0.15492	0.10937	0.45797E-15	0.55511E-15	-0.12490E-15	-0.30531E-15	-0.56899E-15	0.18041E-15
0.14697	0.10287	0.44409E-15	-0.22204E-15	0.24980E-15	0.10408E-15	0.21511E-15	0.14572E-15
0.12836	0.89725E-01	0.41286E-15	-0.20470E-15	-0.23245E-15	0.20817E-16	-0.13531E-15	0.42327E-15
0.10981	0.78418E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10980	0.78269E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10978	0.78083E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10977	0.77831E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10976	0.77691E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10975	0.77522E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10973	0.77278E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10972	0.77136E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10971	0.76964E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10970	0.76711E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10969	0.76580E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10967	0.76379E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10881	0.72122E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

1,2-Dibromoethane

STEP NUMBER 34 **SIMULATION TIME IN SECONDS 0.315E+08**
******************** **IN MINUTES 0.526E+06**
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-14250.	-14471.	-14480.	-14480.	-14480.	-14480.	-14480.	-14480.
-11842.	-12053.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9434.9	-9638.9	-9649.7	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7028.5	-7225.5	-7234.7	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4626.8	-4810.7	-4819.7	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2237.5	-2397.7	-2404.6	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
153.69	16.884	10.695	10.375	10.310	10.306	10.306	10.306
2602.8	2466.2	2459.9	2459.6	2459.5	2459.5	2459.5	2459.5
5051.9	4914.4	4909.1	4908.8	4908.7	4908.7	4908.7	4908.7
7501.0	7363.8	7358.2	7358.0	7357.9	7357.9	7357.9	7357.9
9950.1	9813.1	9807.4	9807.2	9807.1	9807.1	9807.1	9807.1
12399.	12261.	12257.	12256.	12256.	12256.	12256.	12256.
14848.	14711.	14706.	14706.	14706.	14706.	14706.	14706.
17297.	17160.	17155.	17155.	17155.	17155.	17155.	17155.
19747.	19608.	19604.	19604.	19604.	19604.	19604.	19604.
22196.	22058.	22053.	22053.	22053.	22053.	22053.	22053.
24645.	24507.	24502.	24502.	24502.	24502.	24502.	24502.
27094.	26956.	26952.	26952.	26952.	26952.	26952.	26952.
29543.	29405.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68878	0.84642	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71728	0.86909	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74742	0.89428	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77793	0.92004	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.81198	0.94479	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85510	0.97093	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89695	0.99593	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.99577	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.99651	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.99631	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89698	0.99613	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89698	0.99683	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89699	0.99665	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89700	0.99649	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89700	0.99724	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89701	0.99704	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89702	0.99686	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89702	0.99697	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89717	0.99723	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14541	0.14766	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12083	0.12299	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96275E-01	0.98356E-01	0.98467E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71720E-01	0.73729E-01	0.73824E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47213E-01	0.49088E-01	0.49180E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22832E-01	0.24466E-01	0.24537E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.16581	0.59212E-02	0.24980E-15	0.55511E-16	-0.16653E-15	0.16653E-15	0.19429E-15	0.38858E-15
0.16189	0.79181E-02	0.38858E-15	-0.29143E-15	-0.18041E-15	-0.20817E-15	-0.69389E-16	0.13878E-15
0.15631	0.73593E-02	0.00000	-0.55511E-16	-0.13878E-16	-0.31919E-15	0.13878E-15	-0.13878E-16
0.15035	0.62346E-02	-0.27756E-16	-0.18041E-15	0.22204E-15	-0.12490E-15	-0.13878E-16	-0.27756E-16
0.14080	0.61175E-02	-0.24286E-15	-0.20123E-15	0.21511E-15	0.29143E-15	0.48572E-16	0.38164E-15
0.12207	0.46040E-02	0.53429E-15	0.14225E-15	0.97145E-16	-0.22204E-15	0.34694E-16	0.23592E-15
0.10305	0.40668E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10304	0.42317E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10303	0.34900E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10303	0.36905E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10302	0.38679E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10302	0.31693E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10301	0.33458E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10300	0.35075E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10300	0.27576E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10299	0.29568E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10298	0.31420E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10298	0.30310E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10283	0.27718E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.10000E+07	10000.	0.10000	1.5000	0.94608E+08	8	1

I	J	QT	QSW	IQ
1	1	0.29459E-04	0.12060	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2	1	0.60249E-05	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3	1	0.11447E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4	1	0.21750E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5	1	0.41325E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6	1	0.78517E-04	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7	1	0.14918E-03	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8	1	0.28344E-03	1.0000	1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

AT SSOR ITERATION 1 ERROR MAX IS 0.10000E+01

I= 1 J= 1 K= 20 CPMW= 0.27797E-05 CPMN= 0.24789E-04
I= 2 J= 1 K= 20 CPMW= 0.66026E-05 CPMN= 0.00000E+00
I= 3 J= 1 K= 20 CPMW= 0.11953E-04 CPMN= 0.00000E+00
I= 4 J= 1 K= 20 CPMW= 0.21930E-04 CPMN= 0.00000E+00
I= 5 J= 1 K= 20 CPMW= 0.41346E-04 CPMN= 0.00000E+00
I= 6 J= 1 K= 20 CPMW= 0.78518E-04 CPMN= 0.00000E+00
I= 7 J= 1 K= 20 CPMW= 0.14918E-03 CPMN= 0.00000E+00
I= 8 J= 1 K= 20 CPMW= 0.28344E-03 CPMN= 0.00000E+00

	WATER BALANCE	NAPL BALANCE
CONSTANT PRES	-893.62	-37.184
SOURCE/SINKS	892.85	38.859
STORAGE	0.76827	-1.6756
PER CENT ERROR	-0.43430E-04	-0.44031E-07

1,2-Dibromoethane

STEP NUMBER 42 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-14250.	-14448.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11841.	-12032.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9434.8	-9618.5	-9649.7	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7028.4	-7205.9	-7234.7	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4626.8	-4792.5	-4819.7	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2237.4	-2381.9	-2404.6	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
153.77	30.800	10.722	10.380	10.310	10.306	10.306	10.306
2602.8	2480.1	2459.9	2459.6	2459.5	2459.5	2459.5	2459.5
5051.9	4928.3	4909.1	4908.8	4908.7	4908.7	4908.7	4908.7
7501.0	7377.6	7358.3	7358.0	7357.9	7357.9	7357.9	7357.9
9950.1	9827.0	9807.4	9807.2	9807.1	9807.1	9807.1	9807.1
12399.	12275.	12257.	12256.	12256.	12256.	12256.	12256.
14848.	14725.	14706.	14706.	14706.	14706.	14706.	14706.
17297.	17174.	17155.	17155.	17155.	17155.	17155.	17155.
19747.	19622.	19604.	19604.	19604.	19604.	19604.	19604.
22196.	22071.	22053.	22053.	22053.	22053.	22053.	22053.
24645.	24521.	24502.	24502.	24502.	24502.	24502.	24502.
27094.	26970.	26952.	26952.	26952.	26952.	26952.	26952.
29543.	29418.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68878	0.83046	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71728	0.85383	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74742	0.87959	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77793	0.90591	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.81198	0.93169	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85509	0.95953	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89695	0.98590	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89695	0.98577	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.98646	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.98630	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.98616	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89698	0.98681	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89698	0.98667	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89699	0.98654	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89699	0.98724	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89700	0.98708	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89700	0.98693	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89701	0.98705	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89716	0.98776	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14541	0.14743	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12083	0.12277	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96274E-01	0.98148E-01	0.98466E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71719E-01	0.73529E-01	0.73823E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47212E-01	0.48903E-01	0.49180E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22831E-01	0.24305E-01	0.24536E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

  SLICE   1

0.16581   0.22105E-01 0.24980E-15 0.19429E-15-0.19429E-15 0.83267E-16 0.30531E-15 0.52736E-15
0.16189   0.23401E-01 0.20817E-15-0.36082E-15-0.24980E-15-0.33307E-15-0.27756E-16 0.15266E-15
0.15631   0.22259E-01 0.13878E-15-0.69389E-16 0.13878E-16-0.43021E-15 0.55511E-16 0.00000
0.15035   0.20565E-01 0.55511E-16-0.13878E-15 0.26368E-15-0.27756E-16 0.41633E-16 0.83267E-16
0.14081   0.19408E-01-0.15959E-15-0.12490E-15 0.34001E-15 0.27062E-15 0.76328E-16 0.37470E-15
0.12208   0.16168E-01 0.55858E-15 0.72858E-16 0.48572E-16-0.31225E-15-0.31225E-16 0.32613E-15
0.10305   0.14104E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10305   0.14231E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10304   0.13543E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10304   0.13702E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10303   0.13841E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10302   0.13193E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10302   0.13331E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10301   0.13457E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10301   0.12762E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10300   0.12922E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10300   0.13069E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10299   0.12950E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10284   0.12244E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


   RECURRENT DATA

   DELT     DTMIN     SWMAX    CFAC     TCHG      NS NRR
 0.10000E+07 10000.   0.10000   1.5000   0.15768E+09  8  1


 I  J  QT        QSW       IQ
 1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 2  1 0.60249E-05  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 3  1 0.11447E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 4  1 0.21750E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 5  1 0.41325E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 6  1 0.78517E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 7  1 0.14918E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
 8  1 0.28344E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K=  20    CPMW=  0.27932E-05   CPMN=  0.24898E-04
 I=  2  J=  1  K=  20    CPMW=  0.64957E-05   CPMN=  0.00000E+00
 I=  3  J=  1  K=  20    CPMW=  0.11983E-04   CPMN=  0.00000E+00
 I=  4  J=  1  K=  20    CPMW=  0.21942E-04   CPMN=  0.00000E+00
 I=  5  J=  1  K=  20    CPMW=  0.41347E-04   CPMN=  0.00000E+00
 I=  6  J=  1  K=  20    CPMW=  0.78518E-04   CPMN=  0.00000E+00
 I=  7  J=  1  K=  20    CPMW=  0.14918E-03   CPMN=  0.00000E+00
 I=  8  J=  1  K=  20    CPMW=  0.28344E-03   CPMN=  0.00000E+00
            WATER BALANCE        NAPL BALANCE

 CONSTANT PRES    -893.55          -37.347
 SOURCE/SINKS     892.85          38.859
 STORAGE        0.69335          -1.5122
 PER CENT ERROR   -0.42437E-04        -0.40894E-07
```

1,2-Dibromoethane

STEP NUMBER 50 SIMULATION TIME IN SECONDS 0.158E+09
**************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-14250.	-14428.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11841.	-12013.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9434.7	-9600.0	-9649.7	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7028.3	-7188.2	-7234.7	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4626.7	-4776.1	-4819.6	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2237.4	-2367.6	-2404.5	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
153.84	43.331	10.746	10.385	10.311	10.306	10.306	10.306
2602.9	2492.6	2459.9	2459.6	2459.5	2459.5	2459.5	2459.5
5052.0	4940.8	4909.1	4908.8	4908.7	4908.7	4908.7	4908.7
7501.1	7390.1	7358.3	7358.0	7357.9	7357.9	7357.9	7357.9
9950.2	9839.4	9807.5	9807.2	9807.1	9807.1	9807.1	9807.1
12399.	12288.	12257.	12256.	12256.	12256.	12256.	12256.
14848.	14737.	14706.	14706.	14706.	14706.	14706.	14706.
17297.	17186.	17155.	17155.	17155.	17155.	17155.	17155.
19747.	19634.	19604.	19604.	19604.	19604.	19604.	19604.
22196.	22084.	22053.	22053.	22053.	22053.	22053.	22053.
24645.	24533.	24502.	24502.	24502.	24502.	24502.	24502.
27094.	26982.	26952.	26952.	26952.	26952.	26952.	26952.
29543.	29430.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68878	0.81611	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71728	0.84008	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74741	0.86635	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77793	0.89316	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.81198	0.91986	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85509	0.94923	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89694	0.97686	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89695	0.97676	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89695	0.97740	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.97727	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.97716	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.97776	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.97766	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89698	0.97756	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89698	0.97820	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89699	0.97807	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89699	0.97796	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89700	0.97808	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89714	0.97915	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14541	0.14723	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12083	0.12258	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96273E-01	0.97960E-01	0.98466E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71718E-01	0.73349E-01	0.73823E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47211E-01	0.48735E-01	0.49180E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22830E-01	0.24159E-01	0.24536E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


   NAPL SATURATIONS

 SLICE   1

0.16581   0.36664E-01 0.27756E-15-0.27756E-16-0.16653E-15 0.19429E-15 0.36082E-15 0.61062E-15
0.16189   0.37342E-01 0.26368E-15-0.27756E-15-0.36082E-15-0.29143E-15-0.13878E-16 0.12490E-15
0.15631   0.35686E-01 0.24980E-15-0.13878E-15-0.20817E-15-0.49960E-15-0.27756E-16 0.83267E-16
0.15035   0.33490E-01 0.11102E-15-0.11102E-15 0.13878E-15-0.27756E-16 0.22204E-15 0.15266E-15
0.14081   0.31406E-01-0.11102E-15-0.11796E-15 0.38858E-15 0.29143E-15 0.48572E-16 0.40939E-15
0.12208   0.26612E-01 0.62103E-15 0.31225E-16 0.10755E-15-0.35388E-15 0.17347E-16 0.35735E-15
0.10306   0.23142E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10305   0.23238E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10305   0.22601E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10304   0.22727E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10304   0.22835E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10303   0.22235E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10303   0.22343E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10302   0.22440E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10302   0.21799E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10301   0.21926E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10301   0.22043E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10300   0.21919E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10286   0.20854E-01 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


   RECURRENT DATA

    DELT      DTMIN     SWMAX    CFAC     TCHG       NS NRR
   0.10000E+07 10000.   0.10000   1.5000   0.31536E+09  8  1


   I  J  QT        QSW       IQ
   1  1 0.29459E-04 0.12060      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   2  1 0.60249E-05 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   3  1 0.11447E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   4  1 0.21750E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   5  1 0.41325E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   6  1 0.78517E-04 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   7  1 0.14918E-03 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
   8  1 0.28344E-03 1.0000      1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0


  AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
  I =  1  J =  1  K = 20     CPMW = 0.28060E-05    CPMN = 0.24997E-04
  I =  2  J =  1  K = 20     CPMW = 0.63987E-05    CPMN = 0.00000E+00
  I =  3  J =  1  K = 20     CPMW = 0.12010E-04    CPMN = 0.00000E+00
  I =  4  J =  1  K = 20     CPMW = 0.21953E-04    CPMN = 0.00000E+00
  I =  5  J =  1  K = 20     CPMW = 0.41349E-04    CPMN = 0.00000E+00
  I =  6  J =  1  K = 20     CPMW = 0.78518E-04    CPMN = 0.00000E+00
  I =  7  J =  1  K = 20     CPMW = 0.14918E-03    CPMN = 0.00000E+00
  I =  8  J =  1  K = 20     CPMW = 0.28344E-03    CPMN = 0.00000E+00

             WATER BALANCE        NAPL BALANCE

  CONSTANT PRES    -893.48            -37.495
  SOURCE/SINKS      892.85            38.859
  STORAGE       0.62545         -1.3641
  PER CENT ERROR  -0.40836E-04        -0.37470E-07
```

1,2-Dibromoethane

STEP NUMBER 60 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-14250.	-14387.	-14479.	-14480.	-14480.	-14480.	-14480.	-14480.
-11841.	-11973.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9434.5	-9562.1	-9649.6	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7028.1	-7151.6	-7234.6	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4626.5	-4742.1	-4819.6	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2237.2	-2338.1	-2404.5	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
154.00	69.115	10.795	10.394	10.311	10.306	10.306	10.306
2603.1	2518.3	2460.0	2459.6	2459.5	2459.5	2459.5	2459.5
5052.1	4966.7	4909.2	4908.8	4908.7	4908.7	4908.7	4908.7
7501.2	7415.9	7358.3	7358.0	7357.9	7357.9	7357.9	7357.9
9950.3	9865.1	9807.5	9807.2	9807.1	9807.1	9807.1	9807.1
12399.	12314.	12257.	12256.	12256.	12256.	12256.	12256.
14848.	14763.	14706.	14706.	14706.	14706.	14706.	14706.
17298.	17212.	17155.	17155.	17155.	17155.	17155.	17155.
19747.	19660.	19604.	19604.	19604.	19604.	19604.	19604.
22196.	22109.	22053.	22053.	22053.	22053.	22053.	22053.
24645.	24559.	24503.	24502.	24502.	24502.	24502.	24502.
27094.	27008.	26952.	26952.	26952.	26952.	26952.	26952.
29543.	29454.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.68878	0.78660	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71728	0.81178	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74741	0.83907	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77793	0.86686	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.81197	0.89540	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85508	0.92792	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89693	0.95827	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89693	0.95822	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89694	0.95874	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89694	0.95867	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89695	0.95862	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89695	0.95911	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89695	0.95905	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.95900	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89696	0.95952	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.95945	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.95939	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89697	0.95951	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89712	0.96115	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14541	0.14681	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12083	0.12217	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96270E-01	0.97572E-01	0.98465E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71716E-01	0.72976E-01	0.73823E-01	0.73827E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47209E-01	0.48389E-01	0.49179E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22829E-01	0.23858E-01	0.24536E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.16581	0.66593E-01	0.22204E-15	-0.27756E-16	-0.13878E-15	0.11102E-15	0.38858E-15	0.66613E-15
0.16189	0.66042E-01	0.22204E-15	-0.33307E-15	-0.23592E-15	-0.37470E-15	0.27756E-16	0.18041E-15
0.15632	0.63360E-01	0.29143E-15	-0.11102E-15	-0.41633E-16	-0.41633E-15	-0.97145E-16	0.11102E-15
0.15036	0.60164E-01	0.97145E-16	-0.15266E-15	0.97145E-16	0.12490E-15	0.19429E-15	0.16653E-15
0.14082	0.56213E-01	-0.48572E-16	-0.48572E-16	0.50654E-15	0.29143E-15	0.15266E-15	0.42327E-15
0.12209	0.48221E-01	0.51001E-15	0.23592E-15	0.13878E-16	-0.36776E-15	0.10408E-16	0.33654E-15
0.10307	0.41734E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10307	0.41777E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10306	0.41259E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10306	0.41327E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10305	0.41382E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10305	0.40893E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10305	0.40949E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10304	0.40998E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10304	0.40477E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10303	0.40550E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10303	0.40614E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10303	0.40492E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10288	0.38852E-01	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

Mercury

STEP NUMBER 12 SIMULATION TIME IN SECONDS 0.315E+08
*************** IN MINUTES 0.526E+06
IN HOURS 0.876E+04
IN DAYS 365.
IN YEARS 0.999

NAPL PRESSURES

SLICE 1

-14258.	-14487.	-14480.	-14480.	-14480.	-14480.	-14480.	-14480.
-11849.	-12078.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9443.0	-9650.9	-9649.8	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7037.1	-7234.8	-7234.8	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4630.7	-4820.2	-4819.8	-4820.0	-4820.1	-4820.1	-4820.1	-4820.1
-2310.0	-2404.2	-2404.7	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
14.831	11.306	10.635	10.366	10.310	10.306	10.306	10.306
2463.3	2460.6	2459.8	2459.6	2459.5	2459.5	2459.5	2459.5
4912.0	4909.8	4909.0	4908.8	4908.7	4908.7	4908.7	4908.7
7360.7	7359.0	7358.2	7358.0	7357.9	7357.9	7357.9	7357.9
9809.5	9808.1	9807.4	9807.2	9807.1	9807.1	9807.1	9807.1
12258.	12257.	12257.	12256.	12256.	12256.	12256.	12256.
14707.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17156.	17155.	17155.	17155.	17155.	17155.	17155.	17155.
19605.	19605.	19604.	19604.	19604.	19604.	19604.	19604.
22054.	22054.	22053.	22053.	22053.	22053.	22053.	22053.
24503.	24503.	24502.	24502.	24502.	24502.	24502.	24502.
26952.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29401.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.69056	0.85745	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71926	0.88625	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74939	0.90230	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77991	0.92621	0.92618	0.92617	0.92617	0.92617	0.92617	0.92617
0.81002	0.95134	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.91067	0.97547	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14549	0.14783	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12091	0.12324	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96357E-01	0.98478E-01	0.98468E-01	0.98470E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71807E-01	0.73824E-01	0.73825E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47252E-01	0.49186E-01	0.49181E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.23571E-01	0.24532E-01	0.24537E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


     NAPL SATURATIONS

   SLICE   1

0.16396   -0.52754E-02 0.27756E-16-0.27756E-16 0.16653E-15 0.27756E-15-0.27756E-16-0.13878E-15
0.15983   -0.94898E-02-0.15266E-15 0.55511E-16 0.69389E-16 0.97145E-16-0.69389E-16-0.18041E-15
0.15425   -0.78322E-03-0.13878E-16 0.41633E-16 0.13878E-15 0.19429E-15 0.41633E-16-0.11102E-15
0.14829   -0.34114E-04-0.18041E-15 0.97145E-16-0.16653E-15 0.13878E-16 0.18041E-15-0.13878E-16
0.14272   -0.52428E-03 0.11102E-15-0.83267E-16 0.26368E-15 0.55511E-16 0.11102E-15 0.48572E-16
0.65763E-01-0.20123E-15 0.90206E-16-0.58981E-16 0.19429E-15 0.19082E-15-0.10061E-15 0.23592E-15
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


     RECURRENT DATA

   DELT      DTMIN     SWMAX    CFAC     TCHG       NS NRR
  0.10000E+07 10000.   0.10000  1.5000   0.94608E+08  8  1


  I  J  QT          QSW        IQ
  1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03  1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
 I =  1  J =  1  K = 20    CPMW =  0.36932E-05   CPMN =  0.00000E+00
 I =  2  J =  1  K = 20    CPMW =  0.68175E-05   CPMN =  0.00000E+00
 I =  3  J =  1  K = 20    CPMW =  0.12116E-04   CPMN =  0.00000E+00
 I =  4  J =  1  K = 20    CPMW =  0.21984E-04   CPMN =  0.00000E+00
 I =  5  J =  1  K = 20    CPMW =  0.41352E-04   CPMN =  0.00000E+00
 I =  6  J =  1  K = 20    CPMW =  0.78518E-04   CPMN =  0.00000E+00
 I =  7  J =  1  K = 20    CPMW =  0.14918E-03   CPMN =  0.00000E+00
 I =  8  J =  1  K = 20    CPMW =  0.28344E-03   CPMN =  0.00000E+00

           WATER BALANCE        NAPL BALANCE

 CONSTANT PRES    -895.65          0.00000
 SOURCE/SINKS      892.85          38.859
 STORAGE         2.7961         -38.859
 PER CENT ERROR  -0.95799E-08       -0.67545E-10
```

Mercury

STEP NUMBER 35 SIMULATION TIME IN SECONDS 0.946E+08
*************** IN MINUTES 0.158E+07
IN HOURS 0.263E+05
IN DAYS 0.109E+04
IN YEARS 3.00

NAPL PRESSURES

SLICE 1

-14253.	-14486.	-14480.	-14480.	-14480.	-14480.	-14480.	-14480.
-11845.	-12077.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9438.1	-9650.0	-9649.9	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7031.7	-7234.1	-7234.9	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4631.0	-4819.7	-4819.8	-4820.1	-4820.1	-4820.1	-4820.1	-4820.1
-2241.7	-2408.9	-2404.7	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
149.27	10.974	10.573	10.353	10.309	10.306	10.306	10.306
2598.4	2460.3	2459.8	2459.6	2459.5	2459.5	2459.5	2459.5
5047.5	4909.3	4909.0	4908.8	4908.7	4908.7	4908.7	4908.7
7496.6	7358.4	7358.1	7358.0	7357.9	7357.9	7357.9	7357.9
9945.8	9807.6	9807.3	9807.2	9807.1	9807.1	9807.1	9807.1
12395.	12257.	12257.	12256.	12256.	12256.	12256.	12256.
14844.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17293.	17155.	17155.	17155.	17155.	17155.	17155.	17155.
19742.	19604.	19604.	19604.	19604.	19604.	19604.	19604.
22191.	22053.	22053.	22053.	22053.	22053.	22053.	22053.
24641.	24503.	24502.	24502.	24502.	24502.	24502.	24502.
27090.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29539.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.69060	0.85718	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71931	0.88598	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74946	0.90206	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77997	0.92598	0.92617	0.92617	0.92617	0.92617	0.92617	0.92617
0.81475	0.95112	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85791	0.97884	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89995	1.0017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99989	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0049	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0043	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0008	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0025	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0012	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99992	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0078	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0067	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0017	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99996	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99997	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14544	0.14781	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12087	0.12323	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96307E-01	0.98469E-01	0.98468E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71752E-01	0.73817E-01	0.73825E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47255E-01	0.49181E-01	0.49182E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22875E-01	0.24581E-01	0.24538E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.16396  -0.49993E-02 0.27756E-16 0.19429E-15 0.83267E-16 0.55511E-16-0.13878E-15-0.22204E-15
0.15982  -0.92146E-02-0.31919E-15 0.00000    0.13878E-16-0.13878E-16 0.00000   -0.34694E-15
0.15424  -0.53186E-03 0.27756E-16 0.13878E-15 0.33307E-15 0.18041E-15 0.45797E-15-0.36082E-15
0.14827   0.20584E-03-0.12490E-15 0.19429E-15-0.69389E-16 0.83267E-16 0.26368E-15-0.20817E-15
0.13799  -0.30069E-03 0.31225E-15 0.69389E-17 0.38164E-15 0.41633E-16 0.25674E-15-0.97145E-16
0.11922  -0.34206E-02 0.12143E-15 0.79797E-16 0.28449E-15 0.44062E-15-0.11102E-15 0.16653E-15
0.10005  -0.17193E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005   0.11480E-03 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.49094E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.43211E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.84304E-03 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.24732E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.11882E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005   0.80847E-04 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.77846E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.66716E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005  -0.17141E-02 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005   0.43101E-04 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.10005   0.32742E-04 0.00000    0.00000    0.00000    0.00000    0.00000    0.00000
0.00000   0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    RECURRENT DATA

   DELT      DTMIN     SWMAX    CFAC      TCHG      NS NRR
 0.10000E+07 10000.   0.10000   1.5000   0.15768E+09  8  1


  I  J   QT        QSW       IQ
  1  1 0.29459E-04 0.12060      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  2  1 0.60249E-05  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  3  1 0.11447E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  4  1 0.21750E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  5  1 0.41325E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  6  1 0.78517E-04  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  7  1 0.14918E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
  8  1 0.28344E-03  1.0000     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


 AT SSOR ITERATION   1    ERROR MAX IS 0.10000E+01
 I=  1  J=  1  K= 20    CPMW= 0.27173E-05   CPMN= 0.25796E-04
 I=  2  J=  1  K= 20    CPMW= 0.63911E-05   CPMN= 0.00000E+00
 I=  3  J=  1  K= 20    CPMW= 0.11787E-04   CPMN= 0.00000E+00
 I=  4  J=  1  K= 20    CPMW= 0.21873E-04   CPMN= 0.00000E+00
 I=  5  J=  1  K= 20    CPMW= 0.41339E-04   CPMN= 0.00000E+00
 I=  6  J=  1  K= 20    CPMW= 0.78518E-04   CPMN= 0.00000E+00
 I=  7  J=  1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
 I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

           WATER BALANCE        NAPL BALANCE

 CONSTANT PRES    -892.87          -38.695
 SOURCE/SINKS      892.85           38.859
 STORAGE        0.12086E-01       -0.16464
 PER CENT ERROR  -0.67961E-05        -0.59194E-08
```

Mercury

STEP NUMBER 43 SIMULATION TIME IN SECONDS 0.158E+09
*************** IN MINUTES 0.263E+07
IN HOURS 0.438E+05
IN DAYS 0.182E+04
IN YEARS 5.00

NAPL PRESSURES

SLICE 1

-14253.	-14485.	-14480.	-14480.	-14480.	-14480.	-14480.	-14480.
-11845.	-12076.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9438.1	-9649.7	-9649.9	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7031.7	-7233.7	-7234.9	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4631.0	-4819.4	-4819.8	-4820.1	-4820.1	-4820.1	-4820.1	-4820.1
-2241.7	-2408.7	-2404.7	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
149.27	10.974	10.573	10.354	10.309	10.306	10.306	10.306
2598.4	2460.5	2459.8	2459.6	2459.5	2459.5	2459.5	2459.5
5047.5	4909.3	4909.0	4908.8	4908.7	4908.7	4908.7	4908.7
7496.6	7358.4	7358.1	7358.0	7357.9	7357.9	7357.9	7357.9
9945.8	9807.6	9807.3	9807.2	9807.1	9807.1	9807.1	9807.1
12395.	12257.	12257.	12256.	12256.	12256.	12256.	12256.
14844.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17293.	17155.	17155.	17155.	17155.	17155.	17155.	17155.
19742.	19604.	19604.	19604.	19604.	19604.	19604.	19604.
22191.	22053.	22053.	22053.	22053.	22053.	22053.	22053.
24641.	24503.	24502.	24502.	24502.	24502.	24502.	24502.
27090.	26952.	26952.	26952.	26952.	26952.	26952.	26952.
29539.	29401.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.69060	0.85691	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71931	0.88571	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74946	0.90182	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77997	0.92574	0.92617	0.92617	0.92617	0.92617	0.92617	0.92617
0.81475	0.95090	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85791	0.97864	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89995	1.0016	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99972	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0047	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0042	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0007	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0023	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0010	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99976	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0076	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0065	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0016	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99979	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99980	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14544	0.14781	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12087	0.12323	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96307E-01	0.98466E-01	0.98468E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71752E-01	0.73814E-01	0.73825E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47255E-01	0.49178E-01	0.49182E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22875E-01	0.24578E-01	0.24538E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

```
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000
0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000  0.00000


    NAPL SATURATIONS

  SLICE   1

0.16396  -0.47239E-02 0.27756E-16 0.19429E-15 0.22204E-15 0.16653E-15-0.36082E-15-0.22204E-15
0.15982  -0.89401E-02-0.30531E-15 0.13878E-15 0.12490E-15-0.97145E-16-0.12490E-15-0.33307E-15
0.15424  -0.28110E-03 0.13878E-15 0.97145E-16 0.29143E-15 0.13878E-16 0.40246E-15-0.36082E-15
0.14827   0.44519E-03-0.69389E-16 0.15266E-15 0.13878E-16 0.55511E-16 0.12490E-15-0.20817E-15
0.13799  -0.77587E-04 0.20817E-15 0.62450E-16 0.41633E-15 0.48572E-16 0.39552E-15-0.97145E-16
0.11922  -0.32230E-02-0.38164E-16 0.58981E-16 0.51348E-15 0.37123E-15-0.76328E-16 0.17000E-15
0.10005  -0.15554E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005   0.27825E-03 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.47456E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.41575E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.67945E-03 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.23097E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.10247E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005   0.24400E-03 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.76212E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.65082E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005  -0.15508E-02 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005   0.20614E-03 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.10005   0.19503E-03 0.00000   0.00000   0.00000   0.00000   0.00000   0.00000
0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000   0.00000


    RECURRENT DATA

     DELT      DTMIN     SWMAX    CFAC     TCHG      NS NRR
    0.10000E+07 10000.   0.10000  1.5000  0.31536E+09  8  1


    I  J  QT       QSW      IQ
    1  1 0.29459E-04 0.12060     1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    2  1 0.60249E-05 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    3  1 0.11447E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    4  1 0.21750E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    5  1 0.41325E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    6  1 0.78517E-04 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    7  1 0.14918E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
    8  1 0.28344E-03 1.0000      1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0


   AT SSOR ITERATION  1    ERROR MAX IS 0.10000E+01
   I=  1  J=  1  K= 20    CPMW= 0.27175E-05   CPMN= 0.25797E-04
   I=  2  J=  1  K= 20    CPMW= 0.63904E-05   CPMN= 0.00000E+00
   I=  3  J=  1  K= 20    CPMW= 0.11787E-04   CPMN= 0.00000E+00
   I=  4  J=  1  K= 20    CPMW= 0.21873E-04   CPMN= 0.00000E+00
   I=  5  J=  1  K= 20    CPMW= 0.41339E-04   CPMN= 0.00000E+00
   I=  6  J=  1  K= 20    CPMW= 0.78518E-04   CPMN= 0.00000E+00
   I=  7  J=  1  K= 20    CPMW= 0.14918E-03   CPMN= 0.00000E+00
   I=  8  J=  1  K= 20    CPMW= 0.28344E-03   CPMN= 0.00000E+00

            WATER BALANCE        NAPL BALANCE

   CONSTANT PRES    -892.87          -38.695
   SOURCE/SINKS     892.85           38.859
   STORAGE       0.12074E-01       -0.16448
   PER CENT ERROR  -0.82816E-05         -0.85294E-08
```

Mercury

STEP NUMBER 53 SIMULATION TIME IN SECONDS 0.315E+09
*************** IN MINUTES 0.526E+07
IN HOURS 0.876E+05
IN DAYS 0.365E+04
IN YEARS 9.99

NAPL PRESSURES

SLICE 1

-14253.	-14485.	-14480.	-14480.	-14480.	-14480.	-14480.	-14480.
-11845.	-12075.	-12065.	-12065.	-12065.	-12065.	-12065.	-12065.
-9438.1	-9648.8	-9649.9	-9650.1	-9650.2	-9650.2	-9650.2	-9650.2
-7031.7	-7232.9	-7234.9	-7235.1	-7235.2	-7235.2	-7235.2	-7235.2
-4631.0	-4818.7	-4819.8	-4820.1	-4820.1	-4820.1	-4820.1	-4820.1
-2241.7	-2408.0	-2404.7	-2404.9	-2405.0	-2405.0	-2405.0	-2405.0
149.28	10.975	10.574	10.354	10.309	10.306	10.306	10.306
2598.4	2461.1	2459.8	2459.6	2459.5	2459.5	2459.5	2459.5
5047.5	4909.3	4909.0	4908.8	4908.7	4908.7	4908.7	4908.7
7496.6	7358.4	7358.1	7358.0	7357.9	7357.9	7357.9	7357.9
9945.8	9807.6	9807.3	9807.2	9807.1	9807.1	9807.1	9807.1
12395.	12257.	12257.	12256.	12256.	12256.	12256.	12256.
14844.	14706.	14706.	14706.	14706.	14706.	14706.	14706.
17293.	17156.	17155.	17155.	17155.	17155.	17155.	17155.
19742.	19604.	19604.	19604.	19604.	19604.	19604.	19604.
22191.	22053.	22053.	22053.	22053.	22053.	22053.	22053.
24641.	24503.	24502.	24502.	24502.	24502.	24502.	24502.
27090.	26953.	26952.	26952.	26952.	26952.	26952.	26952.
29539.	29402.	29401.	29401.	29401.	29401.	29401.	29401.
31850.	31850.	31850.	31850.	31850.	31850.	31850.	31850.

WATER SATURATIONS

SLICE 1

0.69060	0.85624	0.85225	0.85225	0.85225	0.85225	0.85225	0.85225
0.71931	0.88504	0.87689	0.87689	0.87689	0.87689	0.87689	0.87689
0.74946	0.90120	0.90153	0.90153	0.90153	0.90153	0.90153	0.90153
0.77997	0.92515	0.92617	0.92617	0.92617	0.92617	0.92617	0.92617
0.81475	0.95035	0.95082	0.95082	0.95082	0.95082	0.95082	0.95082
0.85791	0.97816	0.97546	0.97546	0.97546	0.97546	0.97546	0.97546
0.89995	1.0011	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99931	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0043	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0037	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0003	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0019	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0006	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99935	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0072	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0061	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	1.0011	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99939	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
0.89995	0.99940	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

AIR SATURATIONS

SLICE 1

0.14544	0.14780	0.14775	0.14775	0.14775	0.14775	0.14775	0.14775
0.12087	0.12322	0.12311	0.12311	0.12311	0.12311	0.12311	0.12311
0.96307E-01	0.98457E-01	0.98468E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01	0.98471E-01
0.71752E-01	0.73805E-01	0.73825E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01	0.73828E-01
0.47255E-01	0.49170E-01	0.49182E-01	0.49184E-01	0.49185E-01	0.49185E-01	0.49185E-01	0.49185E-01
0.22875E-01	0.24571E-01	0.24538E-01	0.24540E-01	0.24541E-01	0.24541E-01	0.24541E-01	0.24541E-01
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

NAPL SATURATIONS

SLICE 1

0.16396	-0.40373E-02	-0.27756E-16	0.22204E-15	0.38858E-15	0.16653E-15	-0.38858E-15	-0.22204E-15
0.15982	-0.82558E-02	-0.30531E-15	0.55511E-16	0.41633E-16	-0.18041E-15	-0.22204E-15	-0.33307E-15
0.15424	0.34390E-03	0.12490E-15	0.30531E-15	0.37470E-15	0.13878E-16	0.31919E-15	-0.33307E-15
0.14827	0.10417E-02	0.13878E-16	0.23592E-15	-0.27756E-16	-0.97145E-16	0.97145E-16	-0.20817E-15
0.13799	0.47848E-03	0.27062E-15	-0.90206E-16	0.35388E-15	0.17347E-15	0.37470E-15	-0.90206E-16
0.11922	-0.27304E-02	-0.52042E-16	0.24286E-15	0.52389E-15	0.43368E-15	-0.12837E-15	0.18041E-15
0.10005	-0.11457E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	0.68559E-03	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.43363E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.37483E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.27046E-03	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.19008E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.61598E-03	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	0.65062E-03	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.72127E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.60998E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	-0.11426E-02	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	0.61247E-03	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10005	0.59949E-03	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

RECURRENT DATA

DELT	DTMIN	SWMAX	CFAC	TCHG	NS	NRR
0.00000	0.00000	0.00000	0.00000	0.00000	0	0

VITA

Sara Wakelam-Sayler

Candidate for the Degree of

Master of Science

Thesis: EFFECTS OF DENSITY AND VISCOSITY ON CONTAMINANT TRANSPORT OF LNAPLS AND DNAPLS IN AN AQUIFER SYSTEM

Major Field: Civil Engineering

Biographical:

Personal Data: Born Beech Grove, Indiana on April 21, 1958, the daughter of Charles and Clare Wakelam. Married Robert Sayler, September, 1990.

Education: Graduated from Beech Grove High School, Beech Grove, Indiana in June 1976. Received the Bachelor of Science Degree in Geology/Geophysics from Purdue University, West Lafayette, Indiana in December, 1981. Completed requirements for the Master of Science Degree in Civil Engineering at Oklahoma State University in December, 1995.

Professional Experience: Employed as an exploration geophysicist for Union Oil of California, Oil and Gas Division, in Oklahoma City, Oklahoma from 1982 to 1991. Worked as a development geophysicist for UNOCAL, in Oklahoma City Oklahoma from 1991 to 1993.