PRESSURE, SPACING, AND UNIFORMITY FOR

CENTER-PIVOT IRRIGATION SYSTEMS
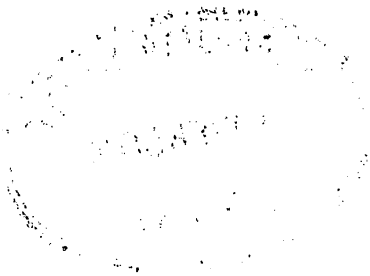
By

DAVID GEORGE PETERSEN

Bachelor of Science

Oklahoma State University

Stillwater, Oklahoma

1974

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
July, 1976

PRESSURE, SPACING, AND UNIFORMITY FOR

CENTER-PIVOT IRRIGATION SYSTEMS

Thesis Approved:

Armond D. Barefoot
Thesis Adviser

James E. Garton

Charles E. Rice

Richard N. DeVries

Norman N. Durham
Dean of Graduate College

ii

PREFACE

I thank Tom Rains, John Sheppard, Henry Halliburton, and Janet Karpel for their help with equipment setup, data collection, and data analysis. I also thank my fellow graduate students for their assistance.

Finally, I thank my parents for encouraging me to obtain a Master of Science degree.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

The Problem

An irrigation survey obtained from County Extension Directors in
Oklahoma in 1971 listed a total of 656,000 acres under irrigation with
229,000 acres irrigated by sprinklers. About 500 of the 3,000 sprink-
ler systems in operation at that time were self-propelled. Of the 500,
292 were listed as center-pivot, self-propelled systems. In 1971 the
initial cost of these systems was estimated to be in excess of five
million dollars. In comparison, a 1973 survey listed 758,036 acres
under irrigation with 312,614 acres irrigated with sprinklers. Of the
102,036 acres increase, 82% was irrigated with sprinklers. About 640
of the 3,230 sprinkler systems in operation in 1974 were self-propelled
of which 465 were center-pivot systems. The initial cost of these
systems is estimated to be over 10 million dollars.

A United States Department of Agriculture Inter-Agency Committee
was appointed in 1970 to study the suitability of center-pivot sprink-
ler irrigation systems under Oklahoma conditions (16). Three factors
were responsible for the study: (1) increasing farmer interest in
such systems, (2) the difficulties some farmers had experienced with
these systems, and, (3) the need to develop uniform guidelines for
agency use when advising farmers.

Some excerpts from the engineering guidelines of the committee report are:

> The irrigation system should have the capacity to meet the peak moisture demands of all crops that the purchaser may desire to irrigate within the design area.
>
> The application rate for the particular length of the sprinkler line to be used should not cause runoff during the water application period.
>
> Total depth of application (equivalent rainfall) per irrigation should be governed by the moisture storage capacity of the soil and the principle root zone depth of the crop irrigated.
>
> Uniformity of water application on the field in total is affected by sprinkler discharge rate, sprinkler spacing, and the constancy of speed of travel over the ground.
>
> Successful operation of self-propelled irrigation systems is dependent upon maintaining traction on wetted soils.
>
> Two inches of water applied every six days will result in approximately 20% less evaporation losses than using two 1-inch applications three days apart.

These systems were designed mainly to reduce labor; therefore, it may not be possible to fulfill the recommended guidelines.

ASAE recommendations (1, p. 572) for the uniformity of water application state:

> Differences in pressure at the sprinkler shall be kept to a minimum to assure reasonably uniform distribution of water over the entire design area. A common rule, which should be adhered to as closely as practicable, is to limit pressure differences along a sprinkler lateral to ± 10% of the nozzle pressure selected as a basis for design. Therefore, the pressure drop between the first and distal sprinkler should be held to 20%.

For a stationary lateral irrigation system the discharge from each sprinkler varies about 10% between the first and distal sprinklers

for a pressure drop of 20%. For a center-pivot irrigation system to apply a uniform depth, the distal sprinkler must have a considerably greater discharge than the first sprinkler. The greater discharge at the distal sprinkler causes a greater friction loss in the lateral. With this greater friction loss the center-pivot system may need to operate with high pressures to stay within 20% pressure variation. It may be possible to design a center-pivot system to apply a uniform depth of application at lower operating pressures without following the 20% pressure variation criterion.

The energy crisis is a major factor in increased farm production costs. A large percent of the energy used in operating a self-propelled, center-pivot irrigation system is necessary to maintain the high recommended operating pressures, which range from 40 to 55 Newtons per square centimeter. One assumed reason for these high operating pressures is to provide better distribution from the large diameter nozzles near the end of the lateral. If this high pressure can be reduced and still maintain a uniform distribution, the operating cost of the system will be reduced and energy conserved.

In certain areas of the high plains heavy alluvial soils reduce the trafficability of self-propelled center-pivot systems. In some cases the systems create a rut, which may become as deep as 60 centimeters, causing the system to become stuck. If this happens the system will automatically shut down; however, it may be difficult to free the system and return to normal operation. It may be possible to use part circle sprinklers and spray nozzles for irrigation behind the lateral to increase trafficability. To use part circle sprinklers and spray nozzles, their uniformity of application must be comparable

to the full circle sprinkler.

Self-propelled sprinkler systems often apply light applications at high rates (.4 centimeters per hour in some cases) with high pressure nozzles. This high pressure reduces the drop size, causing more drift and probably greater evaporation.

Self-propelled spray systems have recently been introduced. It is suspected that the spray systems have greater losses due to evaporation than sprinkler systems under windy conditions.

Scope of Investigation

The study described in this thesis was designed to evaluate the water application from a single riser to determine the effects of reduced pressure on energy consumption and uniformity of water application for center-pivot irrigation. The effect of irrigating behind the lateral with part circle sprinklers and spray nozzles was also explored.

A full circle and part circle sprinkler, and a spray nozzle were operated between pressures of 20 and 55 Newtons per square centimeter. The stationary distribution patterns obtained from these tests were used to simulate a continuously moving pattern. The rate and uniformity of application were evaluated for the continuously moving pattern. The evaporation and the effect of pressure on energy consumption were also determined.

Objectives

1. To determine the effect of reduced pressure on uniformity of application and energy consumption for center-pivot

irrigation systems.

2. To evaluate the effect of low pressure sprinklers and
   spray nozzles on the distribution of water for center-
   pivot irrigation systems.

3. To evaluate the depth, rate, and uniformity of application
   of center-pivot irrigation systems equipped with part
   circle sprinklers and spray nozzles, which can apply
   water behind the lateral.

4. To determine the evaporation losses of a system using
   part circle sprinklers and spray nozzles under Oklahoma's
   windy conditions.

CHAPTER II

REVIEW OF LITERATURE

Considerable literature has been written on several aspects of sprinkler irrigation. The variables reviewed for this study were depth, rate, and uniformity of application, and application losses due to evaporation.

Depth and Uniformity of Application

Christiansen's coefficient of uniformity is generally used as a basis for describing the uniformity of water distribution in sprinkler irrigation (6). The formula used in calculating the coefficient is

$$Cu = 100 \ (1.0 - \frac{\Sigma x}{MN}) \qquad (1)$$

where

    Cu = Uniformity coefficient

    x = Deviation from the mean of individual observations

    M = Mean value of observations

    N = Number of observations

Bilanski and Kidder (2) studied factors that affect the distribution of water from a medium-pressure rotary irrigation sprinkler. They determined that under zero wind conditions the trajectory distance of the distribution pattern was increased only 1.5 meters by increasing

the pressure from 20 to 41 Newtons per square centimeter. This is shown in Figure 1.

Pair (13) and Davis (8) used catch-cans to collect spray samples from operating sprinkler systems. The catch-cans were made of quart oil cans and placed in a grid system. The volume collected in the cans was measured with a graduated cylinder. Davis stated that each can should represent from 2 to 2.5% of the area for purposes of measuring the uniformity of water distribution.

Wiersma (17) tested the effects of pressure on the uniformity of application from a handmove irrigation system. He stated that there was little or no difference in uniformity of water distribution between 38.6 and 32.8 Newtons per square centimeter, and only a slight difference between 20.7 and 27.6 Newtons per square centimeter. The use of pressures above 38.6 Newtons per square centimeter was of little value in obtaining better distributions. Wiersma also conducted tests to determine the effect of wind on the distributions. Results of these tests state that the wind direction had no effect on the uniformity of application. The relationship between uniformity of application and wind velocity was shown to be linear.

Jones (11) tested the effect of wind velocity on the uniformity of application for a center-pivot system. The relationship appeared to be linear. The uniformities obtained ranged from 81.5 to 90.4 for the center-pivot system tested.

Bittinger and Longenbaugh (3) studied a theoretical distribution of water from a moving irrigation sprinkler. They compared moving a sprinkler in a straight line as opposed to moving the sprinkler in a circular path for center-pivot irrigation. They determined that
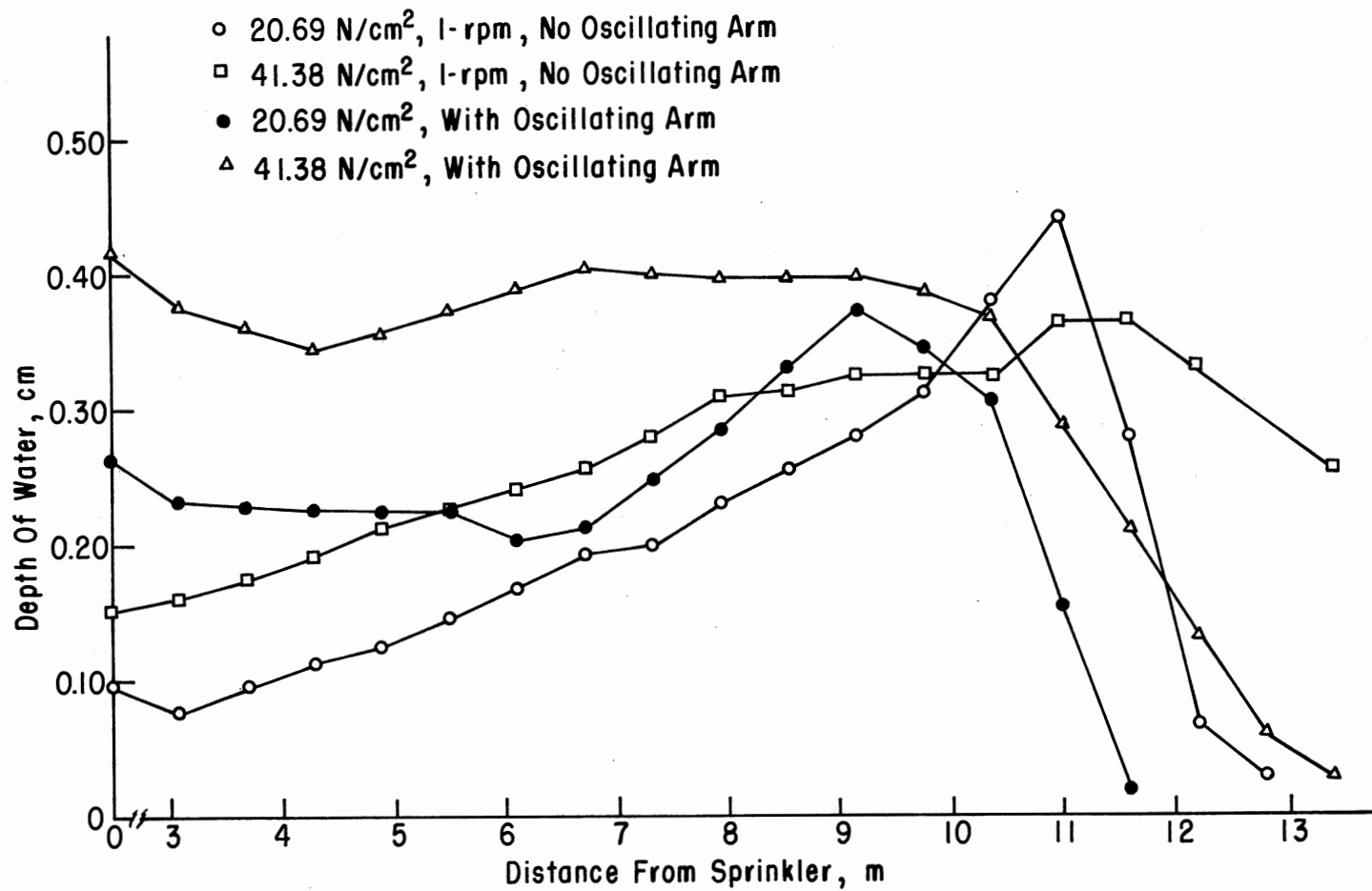
Figure 1. Trajectory Distance of a 0.48 Centimeter Nozzle Under Zero Wind Velocity.

sprinklers which move in a circular path have a skewed pattern when located close to the pivot point. For sprinklers located at a distance of at least five sprinkler radii from the pivot point, the distortion was small and a straight path may be assumed.

Brancheid and Hart (4) conducted tests to determine correct methods for utilizing single-sprinkler patterns in the prediction of field distributions. They determined that predicting field distributions with single-sprinkler patterns was accurate, if the relative positions of the sprinklers were accounted for.

The Application Rate

Established guidelines such as the American Society of Agricultural Engineers recommendations stated that water should be applied at a rate which does not cause runoff during the normal operating period, nor cause water to stand on the surface of the ground after the sprinkler line has been shut off.

Pair (13) studied the effects of the application rates used by a center-pivot irrigation system 441 meters in length. The application rate was found to be 0.53 centimeters per hour at the first tower from the pivot point and 2.57 centimeters per hour at the last tower. He found that the application rate for much of the lateral exceeded the soil infiltration rate of 0.89 centimeters per hour, which is greater than the soil infiltration rate of many soils under irrigation today.

Busch, Rochester, and Jernigan (5) studied the effect of sprinkler intensity on soil crusting. It was found that lower application rates produced weaker crust.

Keller (12) studied the effect of sprinkler intensity on soil tilth. He stated that soil tilth can be destroyed by high application rates.

Application Losses Due to Evaporation

Seginer and Kostrinsky (15) studied the effect of wind velocity on water loss during sprinkling. They concluded that wind velocity had little direct effect on water losses.

Clark and Finley (7) determined the water losses from a system of 15 sprinklers irrigating an area of 1,673 square meters. Their work revealed that wind velocity and vapor pressure deficit had the most influence on evaporation, while water pressure had a minor influence. They stated that at high wind velocities the wind was the dominant factor causing the water losses.

Frost and Schwalen (9) used the catch-can method to determine evaporation and drift losses. No corrections were made for evaporation loss from the water collected in the can during test periods, since in previous work the corrections had appeared to be negligible. They stated that spray losses were greatly reduced when overlapping of the sprinkler patterns was considered. They also found that losses were approximately proportional to nozzle pressure and wind velocity. They obtained good correlation between spray losses and vapor pressure deficit.

CHAPTER III

THE EXPERIMENTAL EQUIPMENT

The System

The system for this research consisted of the sprinklers and spray nozzle, location, pump, orifice and manometer, flow meter, pipeline, pressure gages, catch-cans, and anemometer. The layout of the system is shown in Figure 2. Each component of the system is discussed below.

Sprinklers and Spray Nozzle

Part circle sprinklers and spray nozzles that are, or could be, used on center-pivot irrigation systems and could be used for irrigation behind the lateral were chosen. The spray nozzle selected, Spraying Systems Company Floodjet spray nozzle model 1/2K-80, is presently being used for center-pivot irrigation and irrigates behind the lateral. A part circle sprinkler, Rainbird model 65J-DA, was chosen since it could be used for irrigation behind the lateral. For comparison, a full circle sprinkler was selected which is commonly used on center-pivot systems today, Rainbird model 70EW. The full circle sprinkler, part circle sprinkler, and the spray nozzle will be denoted by FC, PC, and SN, respectively. The sprinklers and spray nozzle are shown in Figures 3, 4, and 5. The spray nozzle had a diameter of 0.75 centimeters, while the sprinklers had a nozzle diameter of
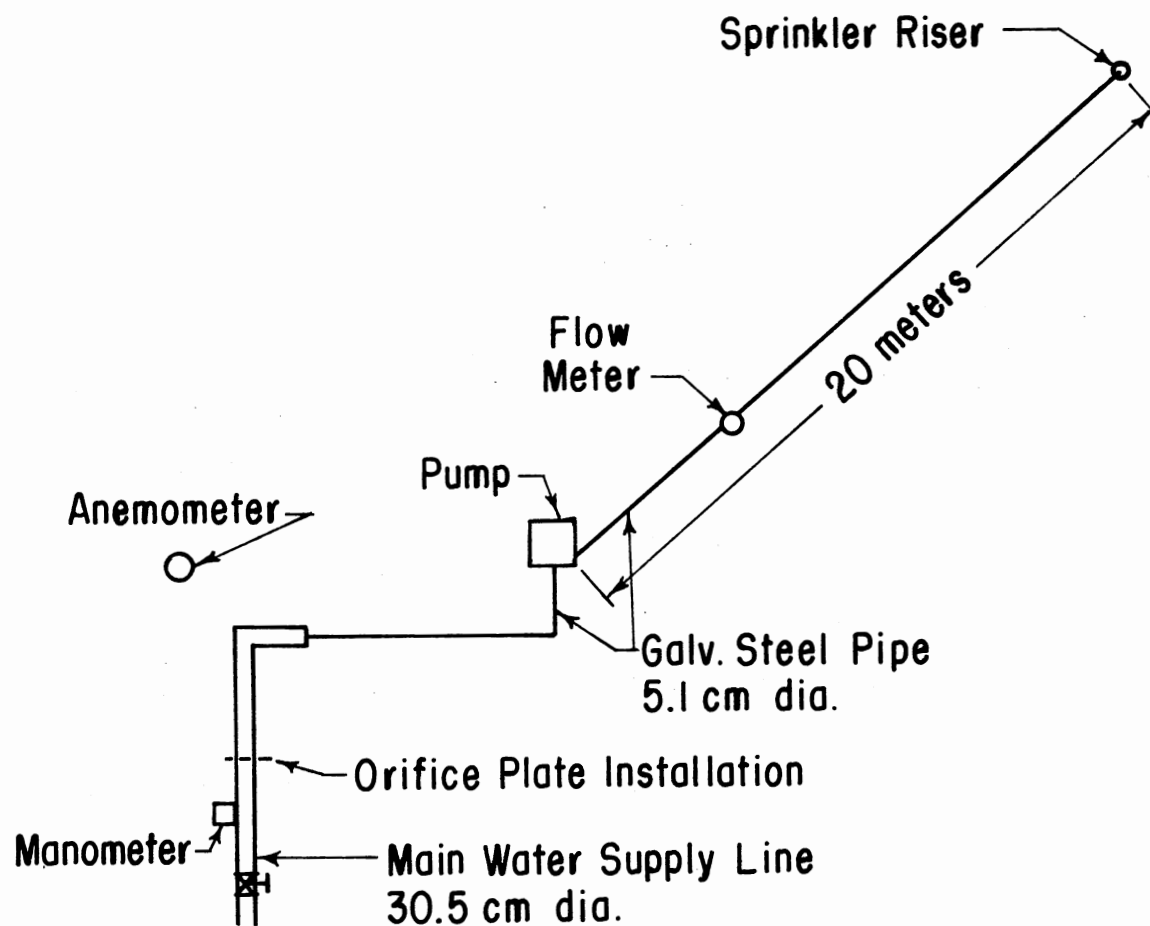
Figure 2. System Layout.
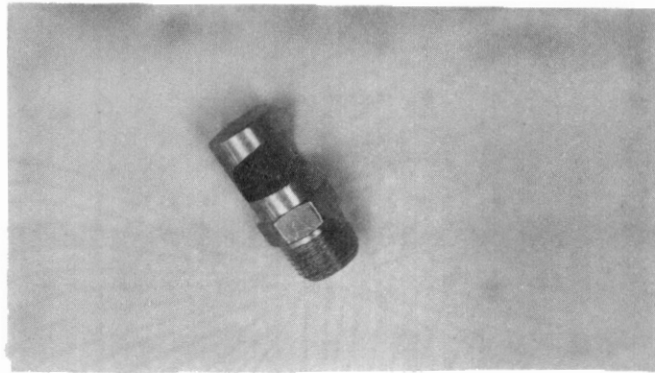
Figure 3. Spray Nozzle.
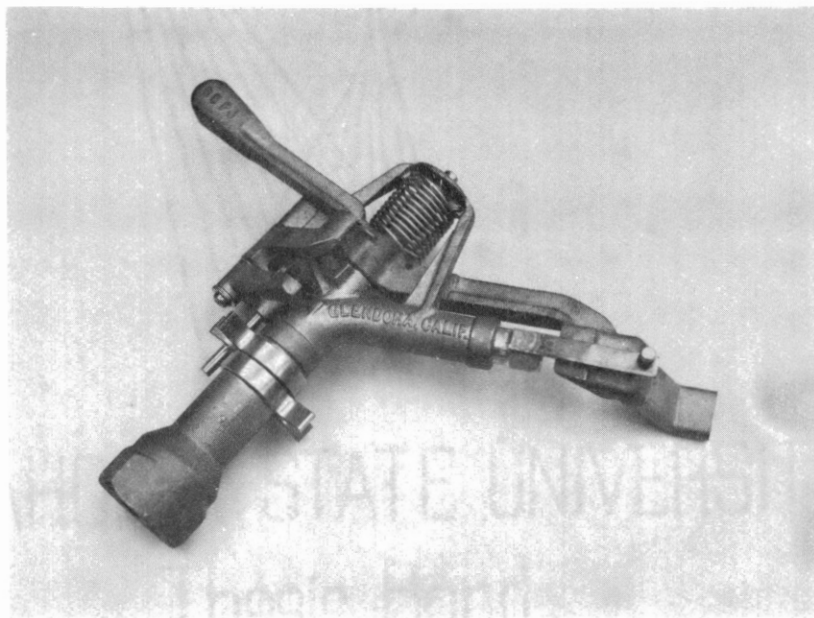
Figure 4. Part Circle Sprinkler.
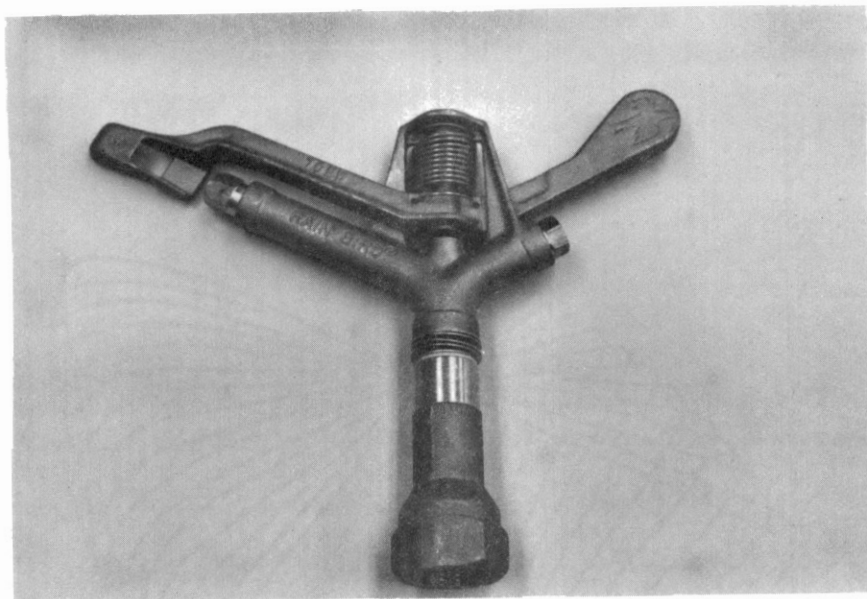
Figure 5. Full Circle Sprinkler.
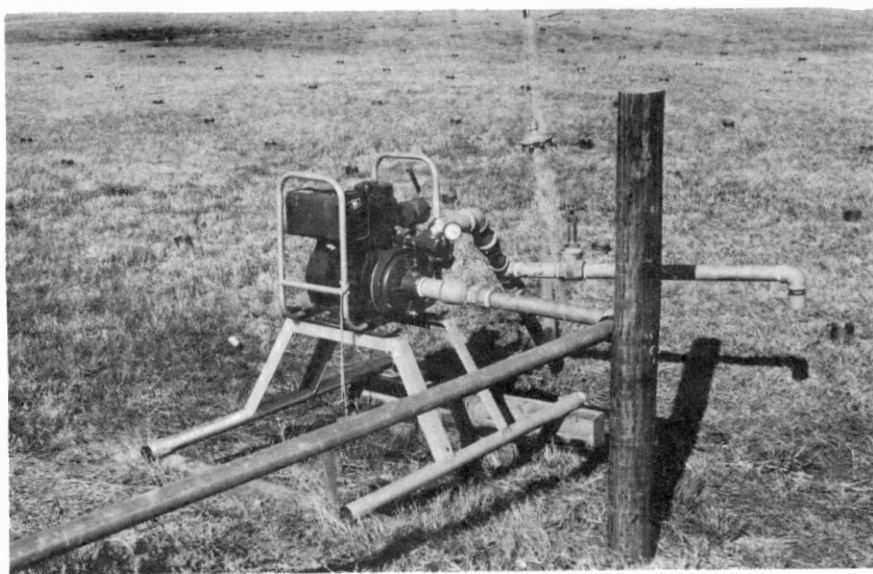
Figure 6. Pump.

0.62 centimeters. These were the only nozzle diameters used for this study.

The sprinklers were placed atop a 3.08 meter riser, the approximate height of sprinklers on center-pivot irrigation systems.

Location

The full circle sprinkler required an area with a diameter of 46 meters and a flow rate of 62 liters per minute at 55.1 Newtons per square centimeter. Therefore, a location had to be selected that would meet these requirements. The location selected was the Water Conservation Structures Laboratory of the Agricultural Research Service at Stillwater, Oklahoma. The water was supplied by gravity through a 30.5 centimeter pipeline from nearby Lake Carl Blackwell.

Pump

Since the operating pressure of center-pivot irrigation systems is between 41 and 55 Newtons per square centimeter, the single sprinkler or spray nozzle would also be required to operate at those pressures or higher. Therefore, a pump had to be selected that could produce at least 62 liters per minute at 55 Newtons per square centimeter. The pump selected, shown in Figure 6, was a single stage, centrifugal Marlow pump capable of pumping 227 liters per minute at 70 Newtons per square centimeter of total head.

Pipeline

A 5.04 centimeter nominal diameter galvanized steel pipeline was used to connect the main water supply to the pump, and the pump to

the sprinkler. This pipe size was chosen due to availability.

Orifice and Manometer

For this study, it was necessary to know accurately the inflow to the sprinkler for the measurement of evaporation. One method to accurately measure flow is by measuring the head loss of the flow as it passes through an orifice. The head loss can be easily measured with a manometer. A U-tube manometer was available that could measure a maximum head loss of 127 centimeters of water. Therefore, the orifice diameter had to be large enough to pass 62 liters per minute with a head loss of 127 centimeters or less. A 2.22 centimeter diameter orifice would meet these requirements. An orifice plate was constructed of aluminum and placed into the 30.5 centimeter diameter water supply line. The setup of the orifice plate is shown in Figure 7. The orifice was calibrated by time-volume measurements. The calibration is shown in Figure 8.

Flow Meter

A 5.04 centimeter nominal diameter Trident nutating disk flow meter was placed in the pipeline between the pump and the sprinklers as a check of the flow rates obtained by the orifice.

Pressure Gages

The operating pressure of the nozzle was measured by a standard pressure gage in pounds per square inch. A static pressure, assumed to be the operating pressure of the nozzle, was measured 0.6 meters below the nozzle. The pressure was also measured with a pitot tube

Upstream Flange Pressure Taps

Flow

Downstream Flange Pressure Taps

Aluminum Orifice Plate

TOP VIEW

2.22 centimeter diameter Orifice

SECTION A-A
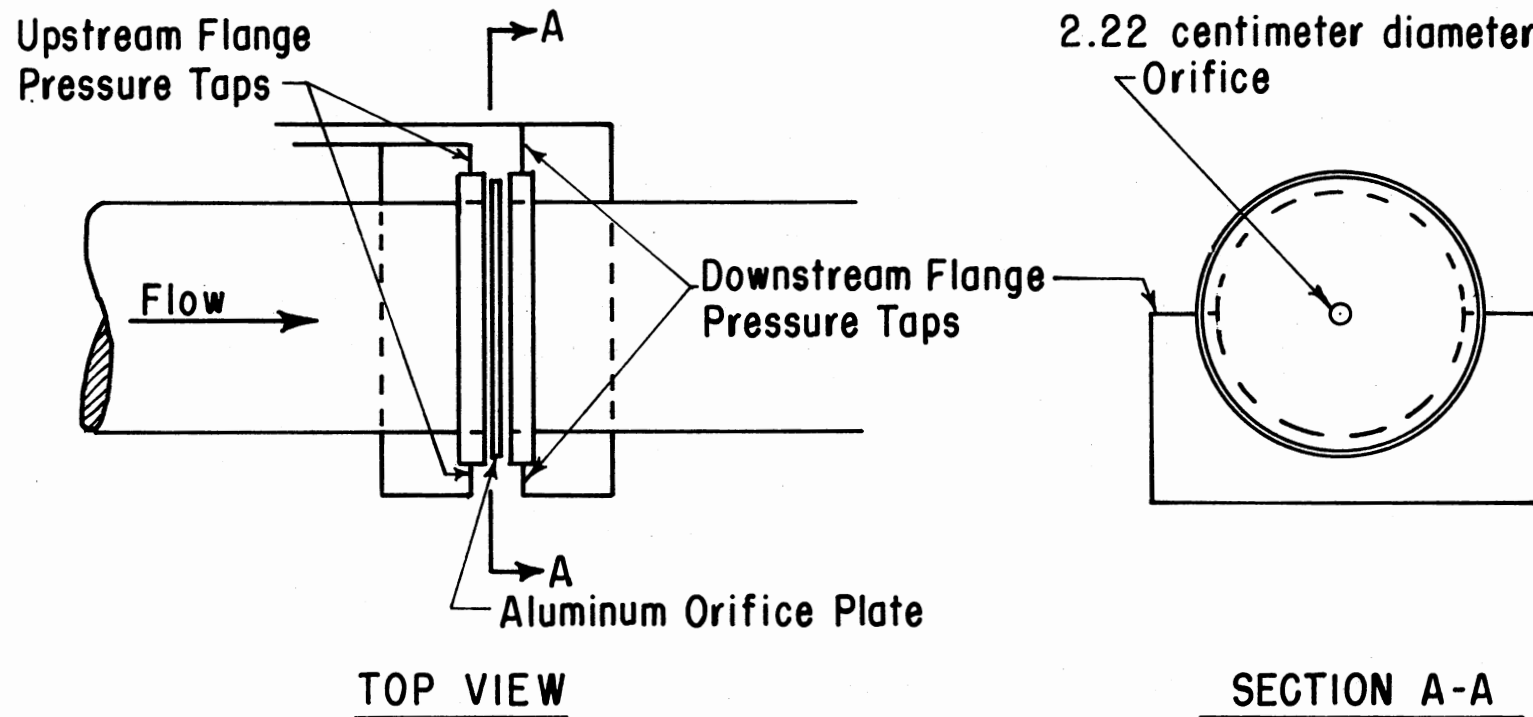
Figure 7. Orifice Plate Installation.
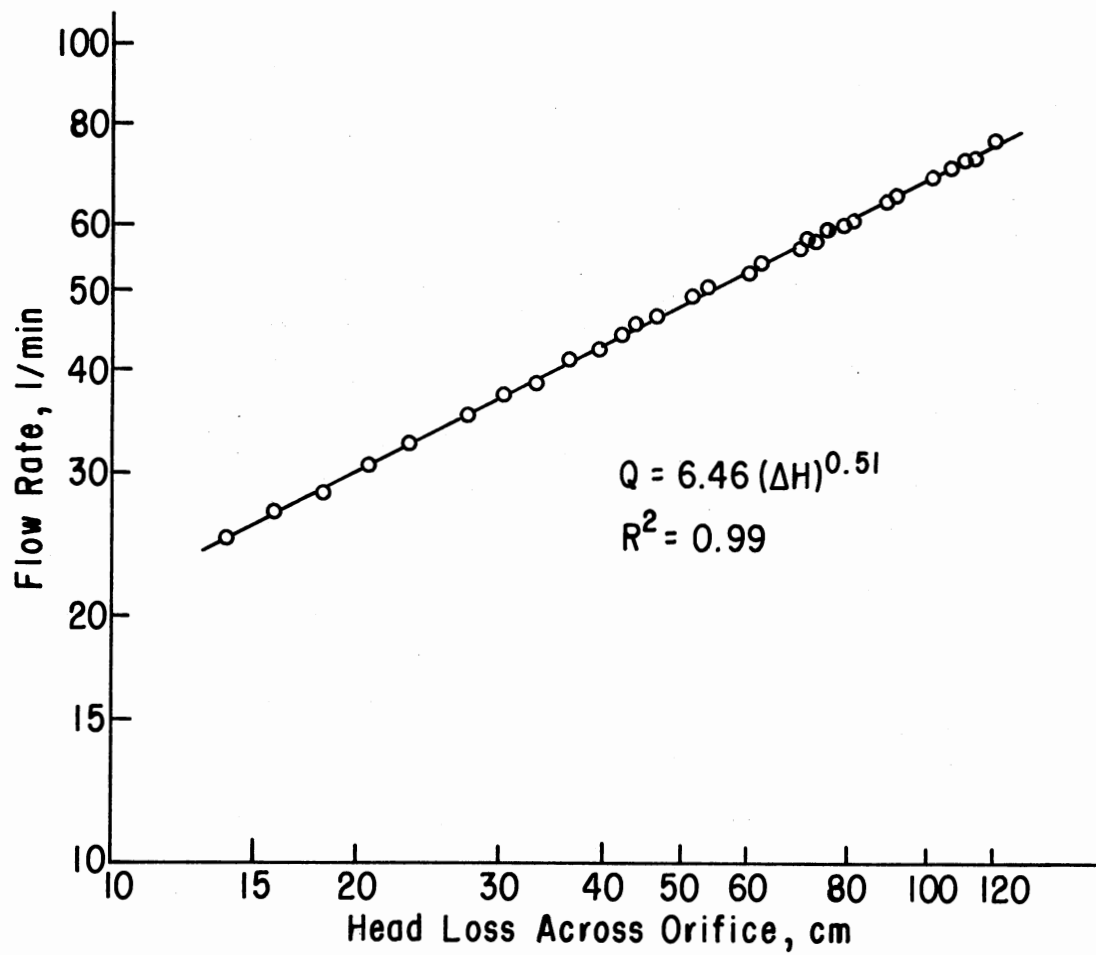
Figure 8. Orifice Calibration.

and pressure gage combination at the nozzle.

The static pressure below the nozzle was calibrated to the head loss across the orifice for each sprinkler and the spray nozzle. The plots of pressure versus head loss for each sprinkler and the spray nozzle are shown in Figure 9.

Catch-Cans

The catch-can method was used to collect the sprinkler spray samples. The catch-cans, number 3 squat cans obtained from a food canning plant, were 9.4 centimeters in height with a top diameter of 11.0 centimeters with a sharp edge. The catch-cans were placed in a grid network. Preliminary tests showed that the distribution pattern of the sprinklers could be determined adequately with a 2 meter grid spacing, while that of the spray nozzle could be determined with a 1 meter grid spacing.

Anemometer

A cup-type totalling anemometer was used to measure the wind velocity. The calibration of the anemometer was checked with one used by Professor F. R. Crow, Agricultural Engineering Department, Oklahoma State University.
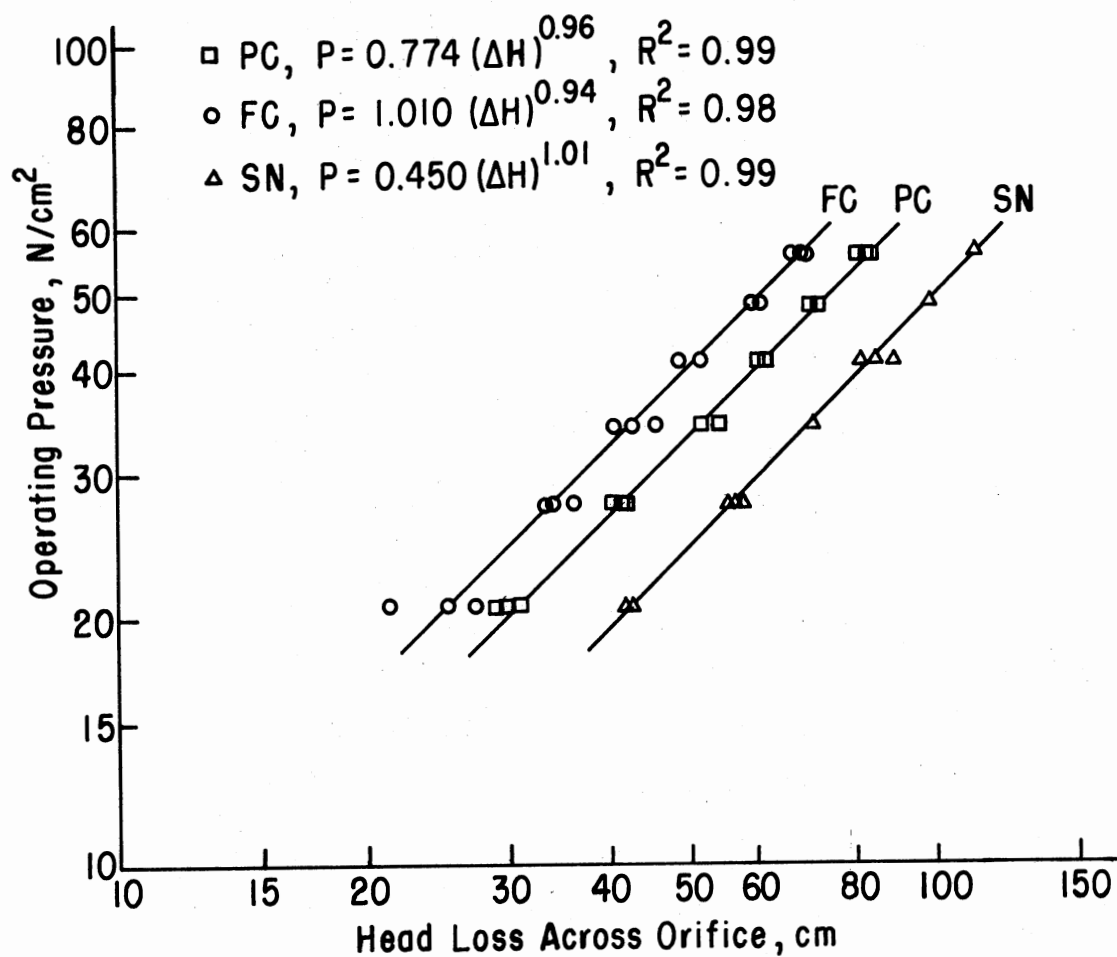
Figure 9. Operating Pressure Versus Head Loss Across Orifice.

CHAPTER IV

THE EXPERIMENTAL PROCEDURE

The part circle sprinkler was tested as four sprinklers, simply by changing the arc of rotation. For example, if the arc of rotation was 90°, the sprinkler rotated 90°, then reversed the direction of rotation. The arcs of rotation chosen were 90°, 120°, 150°, and 180°. Arcs of rotation below 90° and above 180° were believed to be of little value. These sprinklers will be referred to as the PC-90, PC-120, PC-150, and PC-180, respectively.

For the part circle sprinklers and spray nozzles, the median direction of spray from the nozzle was either 0° (due north) or 180° (due south), depending on the wind direction. If the wind was 90° to 270°, the spray from the nozzle was directed north, or if the wind was from 270° to 0° and 0° to 90° the spray direction was south. This was done to reduce the effects of the wind direction on the distribution patterns.

The schedule given in Table was followed in this study. For each test it was necessary to know the pressure, flow, wind velocity, time of application, depth applied, and the distribution pattern.

Pressure Measurement

Initially, the flow of water was cut off from the sprinkler. The pressure of the pump was raised to the desired sprinkler pressure by

21

TABLE I

THE EXPERIMENTAL SCHEDULE

Type	Test Number	Operating Pressure (N/cm^2)	Time of Application (hrs)	Flow Rate (1/m)	Wind Velocity (km/hr)	Depth of Application and the Distribution Pattern
PC-90	1	20.3	1.00			
	2	27.8	1.00			
	3	33.8	1.00			
	4	35.2	1.00			
	5	49.4	0.87			
	6	56.5	1.00			
PC-120	7	20.0	1.00			
	8	27.6	1.50			
	9	36.5	1.57	MEASURE	MEASURE	MEASURE
	10	42.3	1.00			
	11	49.1	1.00			
	12	55.1	1.00			
PC-150	13	20.3	1.00			
	14	27.2	1.05			
	15	34.0	1.00			
	16	41.9	1.00			
	17	48.1	1.00			
	18	53.8	1.00			
PC-180	19	27.5	1.50			

TABLE I (Continued)

Type	Test Number	Operating Pressure (N/cm^2)	Time of Application (hrs)	Flow Rate (1/m)	Wind Velocity (km/hr)	Depth of Application and the Distribution Pattern
	20	30.7	1.50			
	21	35.5	1.50			
	22	37.6	1.50			
	23	54.4	1.50			
	24	59.3	1.50			
FC	25	22.4	2.00			
	26	27.4	2.50			
	27	36.7	2.00	MEASURE	MEASURE	MEASURE
	28	41.4	2.50			
	29	49.7	2.00			
	30	55.8	2.50			
SN	31	20.5	0.50			
	32	27.8	0.33			
	33	34.6	0.33			
	34	39.1	0.33			
	35	48.1	0.33			
	36	55.2	0.33			

increasing the engine revolutions per minute. The flow was opened to the sprinkler, and the desired static pressure below the nozzle was set by changing the engine revolutions per minute. The pressure was checked by using the pitot tube and pressure gage combination. Tests were conducted with each sprinkler at operating pressures ranging from 20 to 55 Newtons per square centimeter.

The pressure measurements taken during the test were used only to set a flow rate from the nozzle. The actual operating pressure was obtained from the pressure versus head loss across the orifice relation, given in Figure 9.

The Time of Application

The time of application was of sufficient length to obtain a good representation of the depth and distribution of the pattern. The times of application are shown in Table 1. The time was measured by a stopwatch from the time the flow was allowed to the sprinkler until it was cut off.

Flow Measurement

Flow measurement was taken with the orifice and the flow meter. The head loss across the orifice was measured at the beginning, middle, and end of each test. For each measurement ten readings of head loss to the nearest tenth of an inch of water were obtained, since the head loss oscillated slightly. These readings were averaged to obtain an average measurement. The three measurements were averaged to give an average head loss for the entire test period. The head loss, converted to centimeters of water, was changed to liters per minute using the

calibration curve for the orifice.

The flow meter measured the total volume of water to the nearest gallon. Therefore, a reading of the flow meter was taken before and after each test. The flow rate was determined by dividing the difference between the two readings by the time of application. The flow meter was used only as a check of the flow rate obtained by the orifice. The flow meter and orifice usually agreed within 2%.

<div align="center">

The Depth of Application and
the Distribution Pattern

</div>

The volume collected and the location within the grid network of each catch-can was recorded directly after each test. Each volume was measured to the nearest 5 milliliters. For volumes greater than 100 milliliters, a 0 to 500 milliliter graduated cylinder was used, and for volumes less than 100 milliliters, a 0 to 100 milliliter graduated cylinder was used. The evaporation from the cans was not suppressed, since Frost and Schwalen (9) stated that this correction appeared to be negligible.

<div align="center">

Wind Measurement

</div>

The cup-type totalling anemometer measured the total flow of wind in miles. Therefore, an anemometer reading was taken before and after each test. The wind velocity was obtained by dividing the difference between the two readings by the time of application. The wind direction was taken before each test by observing a wind vane. It was found that the wind direction taken in this manner was insufficient for data analysis, and will not be included in this study.

CHAPTER V

ANALYSIS OF DATA AND PRESENTATION

OF RESULTS

The Uniformity of Application

For this project it was desired to determine the uniformity of
application that could be obtained with a center-pivot irrigation
system by using only one of the stationary distribution patterns
obtained from the previous test. The operating pressure, flow rate,
and wind velocity for each test are shown in Table II. First, the
depth of water that would be collected by an imaginary row of cans
placed ahead of a single, continuously moving pattern were calculated.
These depths, along with the depths obtained from six other identical
patterns, were used to calculate the uniformity of application for
various riser spacings. The procedure of the analysis is given below.

In order for each stationary distribution pattern to represent a
continuously moving pattern, it was found necessary to represent each
grid location by a point within a 30 X 30 array. The array is shown
in Figure 10. The riser location was assigned the position (15, 15).
The can volumes were placed at the appropriate locations within the
array using the sprinkler location as a reference. These 30 X 30
arrays are given in Appendix A for each test. The depth at each
location was calculated by dividing the volume by the cross-sectional

TABLE II

OPERATING CONDITIONS
FOR EACH TEST

Type	Test Number	Date	Time of Application (hrs)	Operating Pressure (N/cm^2)	Flow Rate (1/m)	Wind Velocity (km/hr)
PC-90	1	9-6-75	1.00	20.3	37.1	8.5
	2	9-6-75	1.00	27.8	43.7	8.9
	3	8-20-75	1.00	33.8	48.5	9.7
	4	9-6-75	1.00	35.2	49.5	10.5
	5	9-4-75	0.87	49.4	59.0	9.3
	6	9-6-75	1.00	56.5	63.3	9.3
PC-120	7	9-6-75	1.00	20.0	36.8	6.8
	8	9-9-75	1.50	27.6	43.6	11.3
	9	9-12-75	1.57	36.5	50.4	8.8
	10	9-13-75	1.00	42.3	54.5	5.2
	11	9-13-75	1.00	49.1	58.9	9.2
	12	9-13-75	1.00	55.1	62.5	6.8
PC-150	13	9-13-75	1.00	20.3	37.0	5.6
	14	9-18-75	1.05	27.2	43.2	4.6
	15	9-19-75	1.00	34.0	48.6	10.1
	16	9-22-75	1.00	41.9	54.2	13.7
	17	9-25-75	1.00	48.1	58.3	4.5
	18	9-26-75	1.00	53.8	61.7	8.5
PC-180	19	8-11-75	1.50	27.5	41.1	14.3
	20	8-13-75	1.50	30.7	46.1	14.7
	21	8-13-75	1.50	35.5	49.7	15.9
	22	8-19-75	1.50	37.6	51.2	13.6
	23	8-19-75	1.50	54.4	62.1	7.6
	24	8-18-75	1.50	59.3	64.9	7.7
FC	25	9-27-75	2.00	22.4	35.0	9.5
	26	9-27-75	2.50	27.4	39.2	14.4
	27	9-27-75	2.00	36.7	45.9	13.9
	28	10-3-75	2.50	41.4	49.0	6.4
	29	10-4-75	2.00	49.7	54.1	4.2
	30	10-4-75	2.50	55.8	57.5	9.3
SN	31	10-24-75	0.50	20.5	44.4	22.2
	32	10-25-75	0.33	27.8	51.7	6.8
	33	10-25-75	0.33	34.6	57.8	7.3
	34	10-25-75	0.33	39.1	61.5	9.8
	35	10-25-75	0.33	48.1	68.3	4.4
	36	10-25-75	0.33	55.2	73.3	4.4

area of the can top. The application rate was found by dividing the depth by the time of application.

The accumulated depth caught by an imaginary row of cans placed ahead of a continuously moving pattern, as shown in Figure 10 by D (J), where J = 1, 2, 3, ---30, can be approximated for a complete passage of the pattern. The simulated direction of movement is shown in Figure 10. The accumulated depth collected at any point D (J), assuming the travel path can be approximated by a straight line, would be given by the equation below.

$$D\ (J) = \frac{CS}{V} \sum_{I=1}^{30} A\ (I,\ J) \tag{2}$$

where

D (J) = Accumulated depth applied at point J in centimeters

CS = The can spacing in meters

V = The velocity of pattern movement in meters per hour

A (I, J) = The application rate at the position in centimeters per hour

For this study, the velocity of pattern movement was 36.6 meters per hour. These accumulated depths versus distance from riser were plotted for selected pressures for each sprinkler and the spray nozzle. These plots are given in Appendix B.

The depths obtained by the continuously moving pattern were arranged in a one dimensional array as shown below.

[D (1) D (2)---D (29) D (30)]

Seven of these arrays were meshed to obtain the depths that would

A (1, 1) A (1, 2)-----------------------------------A (1, 29) A (1, 30)

<pre>
            '   '
            '   '
            '   '
            '   '
            '   Location of sprinkler for each test   '
     A (15, 1)-----------------A (15, 15)-----------------A (15, 30)
            ' | '
            ' | '
            ' | '
            '   ↓   '
            '   '
            '   '
            '   '
            '   Simulated direction of movement   '
</pre>

A (30, 1) A (30 ,2)-------------------------------A (30, 29) A (30, 30)

D (1) D (2)-------------------------------------D (29) D (30)
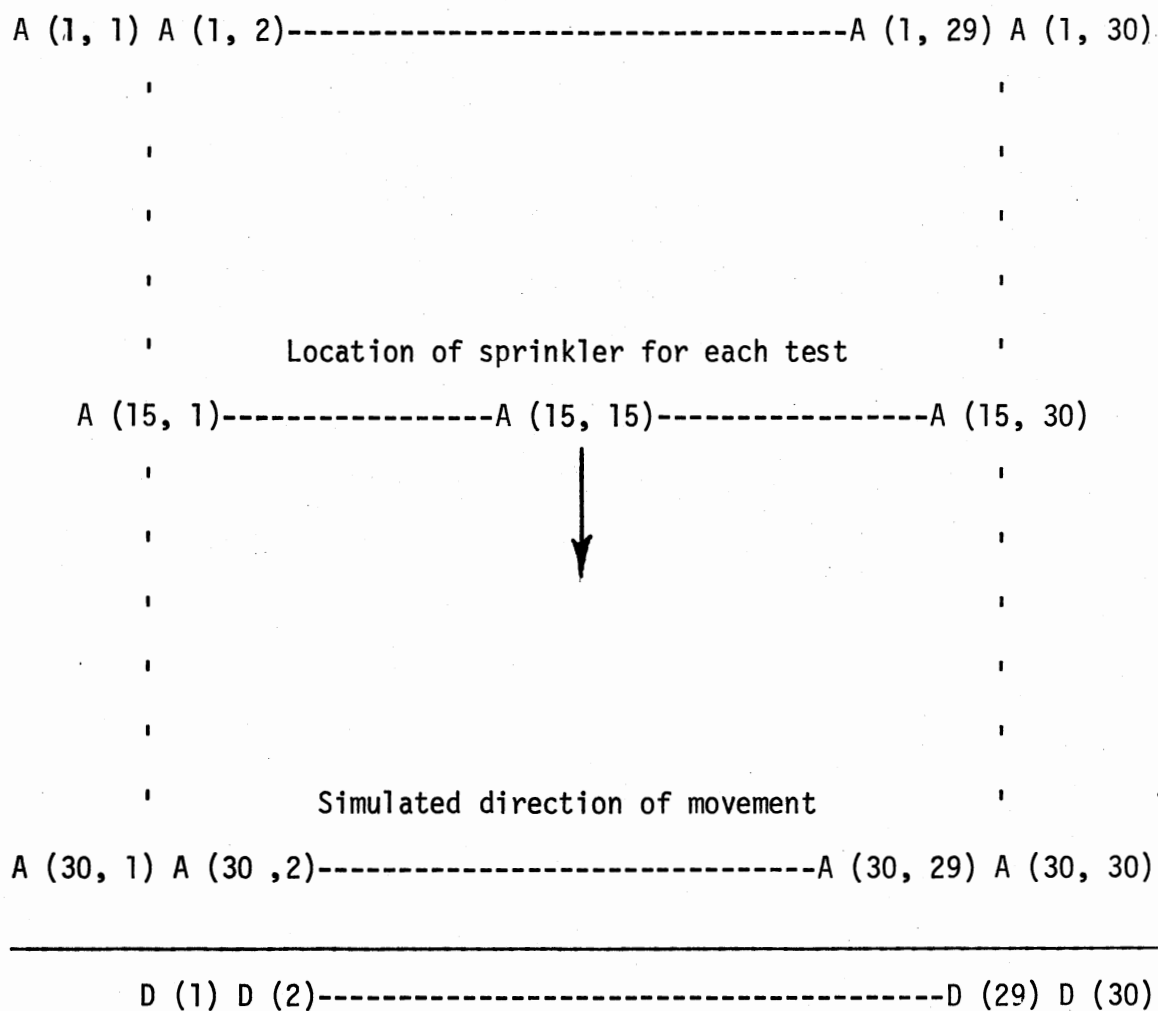
Figure 10. The 30 X 30 Array Representing the Distribution Pattern.

be applied, if seven identical distribution patterns were overlapped. The meshing for increments one and two are shown in Figure 11. The overlapping continued for 30 increments. Each increment would represent a spacing between risers depending on the can spacing. For instance, the spacing on increment 1 would be 58 meters for a 2 meter can spacing, or 29 meters for a 1 meter can spacing.

A new array, which would give the accumulated depths applied by the complete passage of at most seven overlapped patterns, was constructed for each increment of the meshing by summing the depths in columns 1 through 30. Only those columns which contained non-zero values in the center array were used in the calculation of Christiansen's uniformity coefficient, given by Equation (1). This analysis was performed on each distribution pattern obtained from each sprinkler and spray nozzle. The uniformity coefficient versus the spacing at each increment are plotted in Figures 12, 13, 14, 15, 16, and 17.

The number of patterns involved in the calculation of the uniformity were found with the equation below.

$$N = \frac{2w}{s} - 1 \qquad\qquad (3)$$

where

N = Number of patterns

w = Width of pattern in meters

s = Spacing between risers in meters

If the number of patterns at any spacing was found to exceed seven, then the value of uniformity at that spacing was not plotted in the previous figures. Since only seven patterns were involved in the

For Increment One

```
                                        Column (1) (2)----(29) (30)

                                        [D (1) D (2)----D (29) D (30)]
                            [D (1) D (2)----D (29) D (30)]          [D (1) D (2)----D (29) D (30)
                [D (1) D (2)----D (29) D (30)]                               [D (1) D (2)----D (29) D (30)]
    [D (1) D (2)----D (29) D (30)]                                                   [D (1) D (2)----D (29) D (30)]
```

For Increment Two

```
                                        Column (1) (2)----(29) (30)

                                        [D (1) D (2)----D (29) D (30)]
                            [D (1) D (2)----D (29) D (30)] [D (1) D (2)----D (29) D (30)]
                [D (1) D (2)----D (29) D (30)]                       [D (1) D (2)----D (29) D (30)]
    [D (1) D (2)----D (29) D (30)]                                           [D (1) D (2)----D (29) D (30)]
```

Figure 11. Meshing for Increments One and Two.
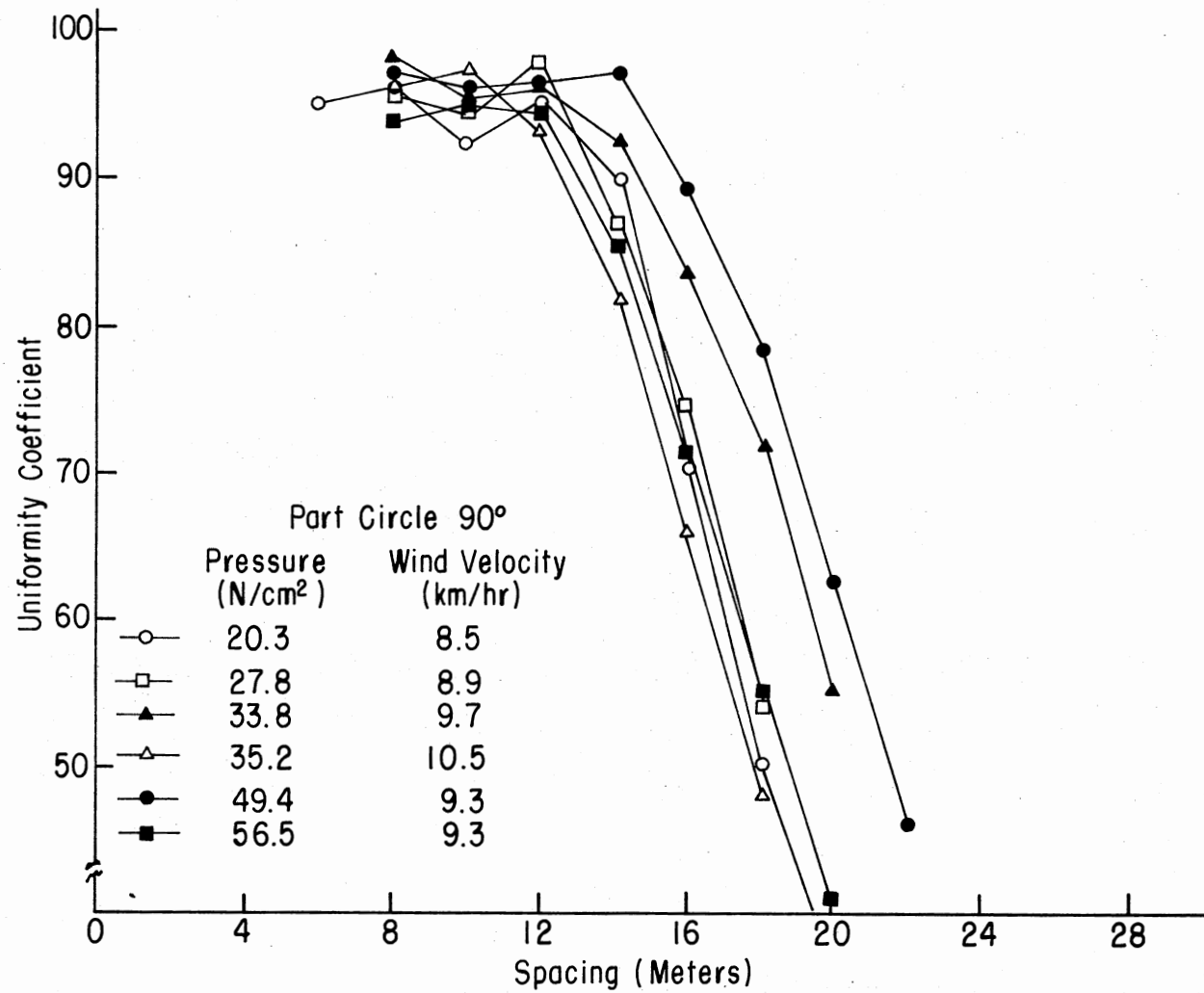
Figure 12.   Uniformity Coefficient Versus Spacing for the Part Circle 90°
Sprinkler.
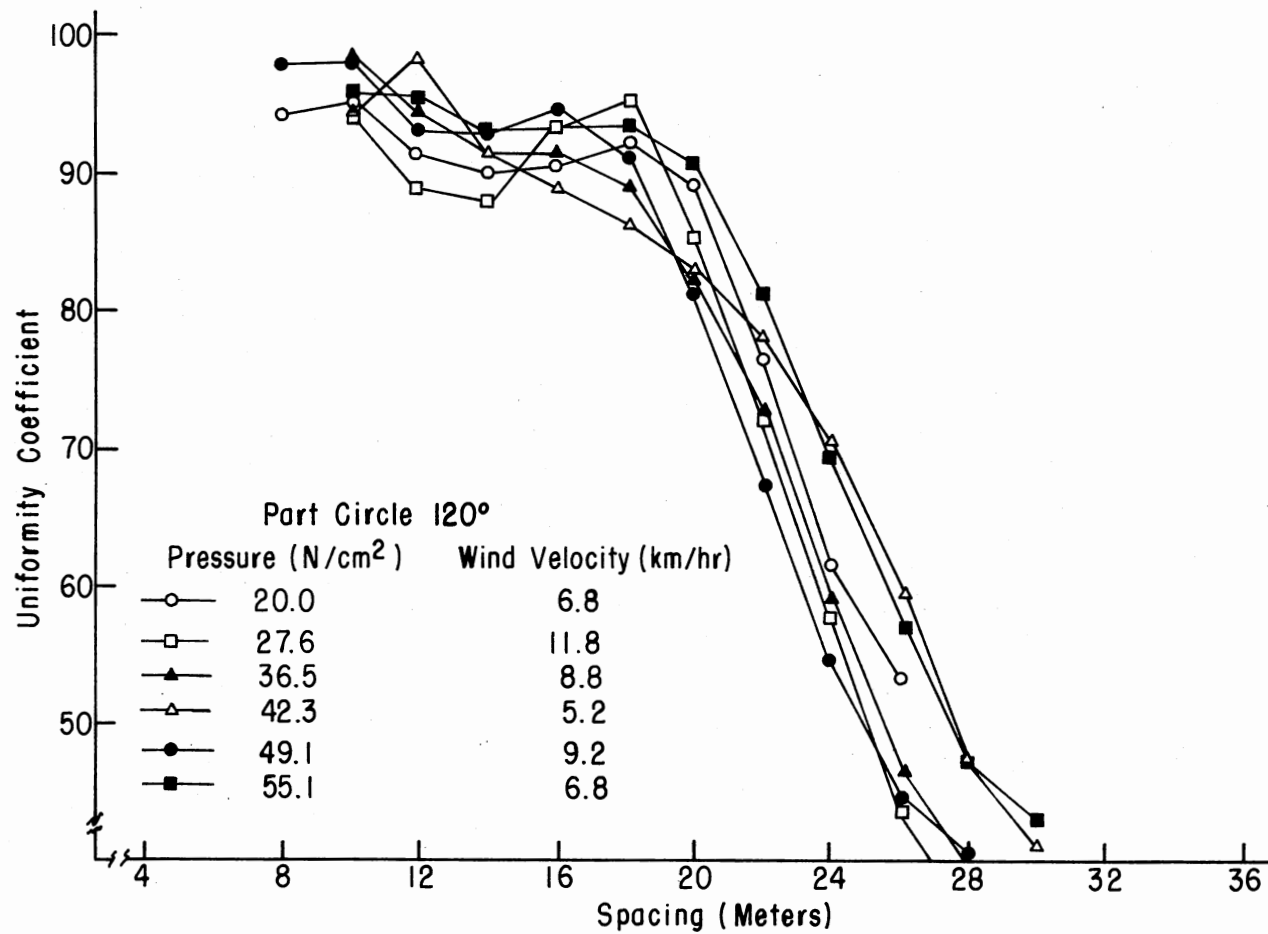
Figure 13. Uniformity Coefficient Versus Spacing for the Part Circle 120°
Sprinkler.
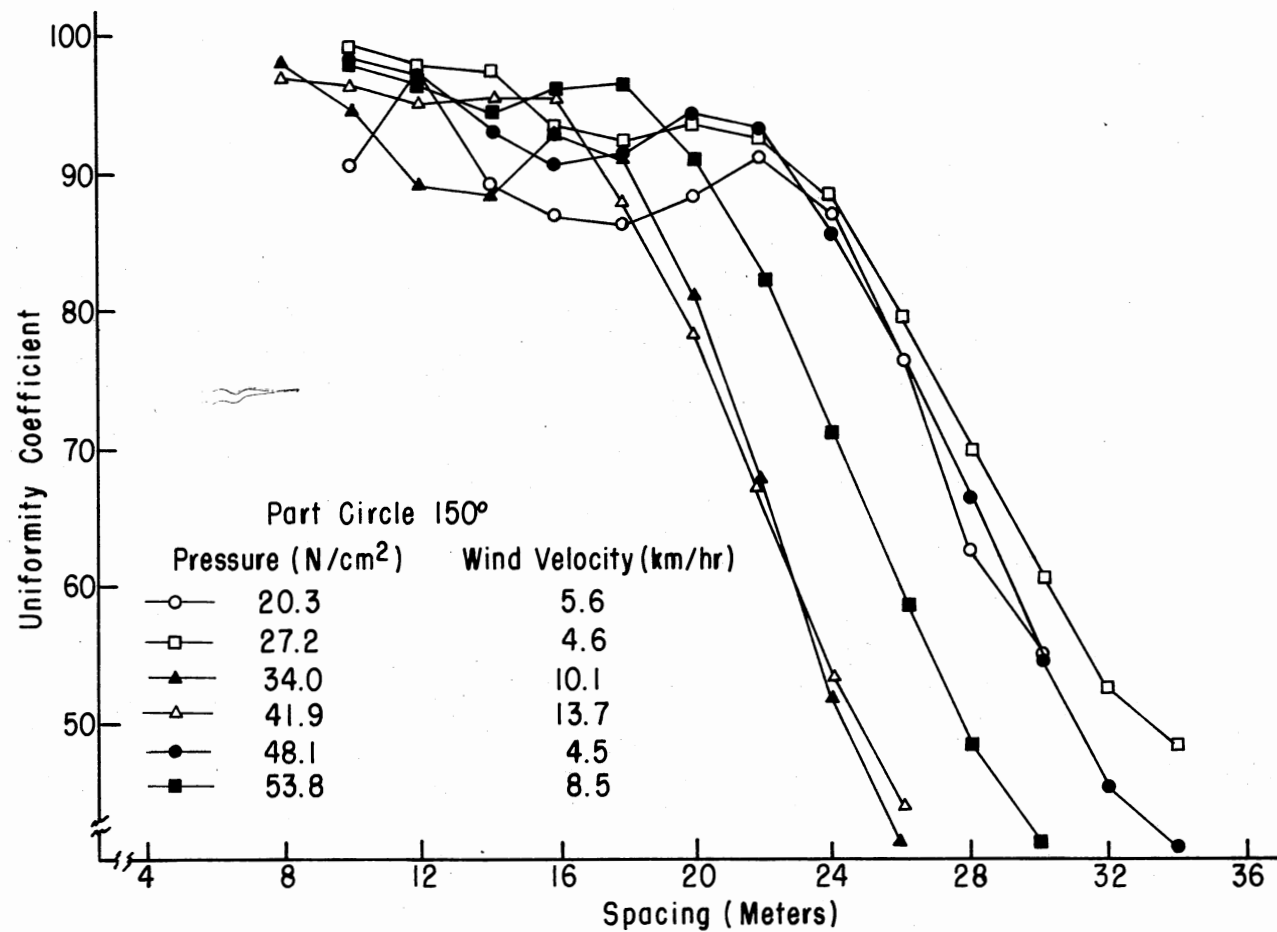
Figure 14. Uniformity Coefficient Versus Spacing for the Part Circle 150° Sprinkler.
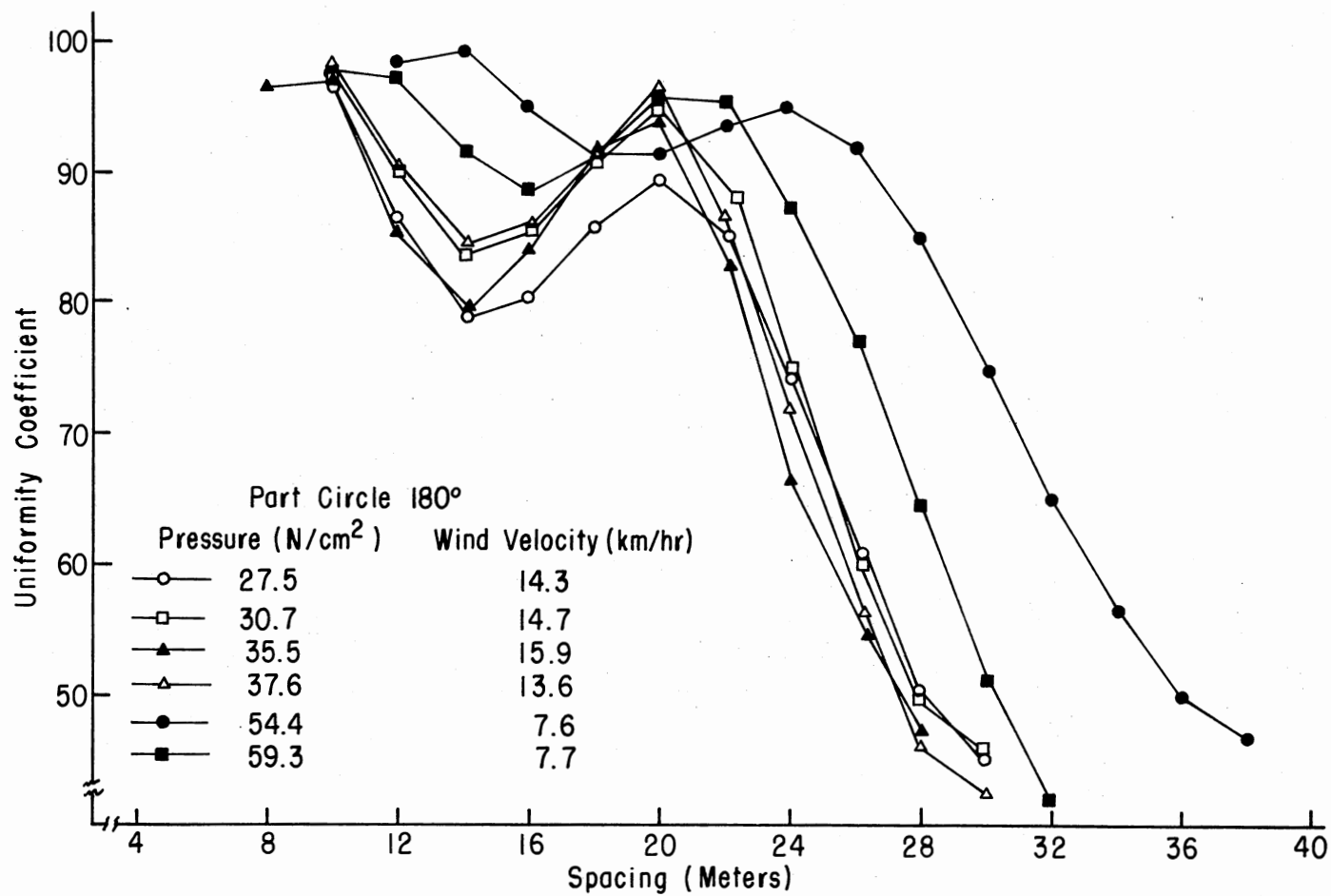
Figure 15. Uniformity Coefficient Versus Spacing for the Part Circle 180° Sprinkler.
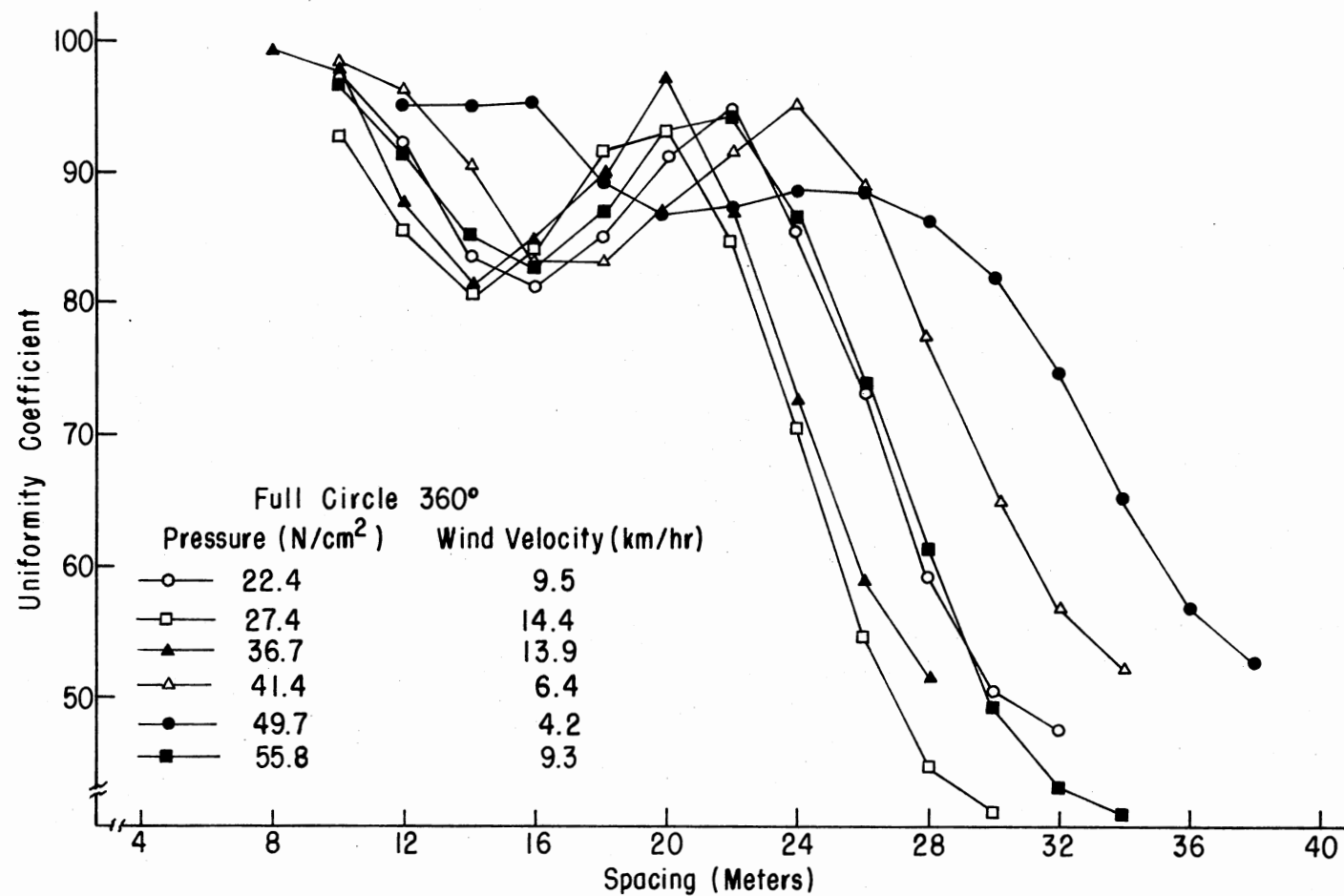
Figure 16. Uniformity Coefficient Versus Spacing for the Full Circle Sprinkler.
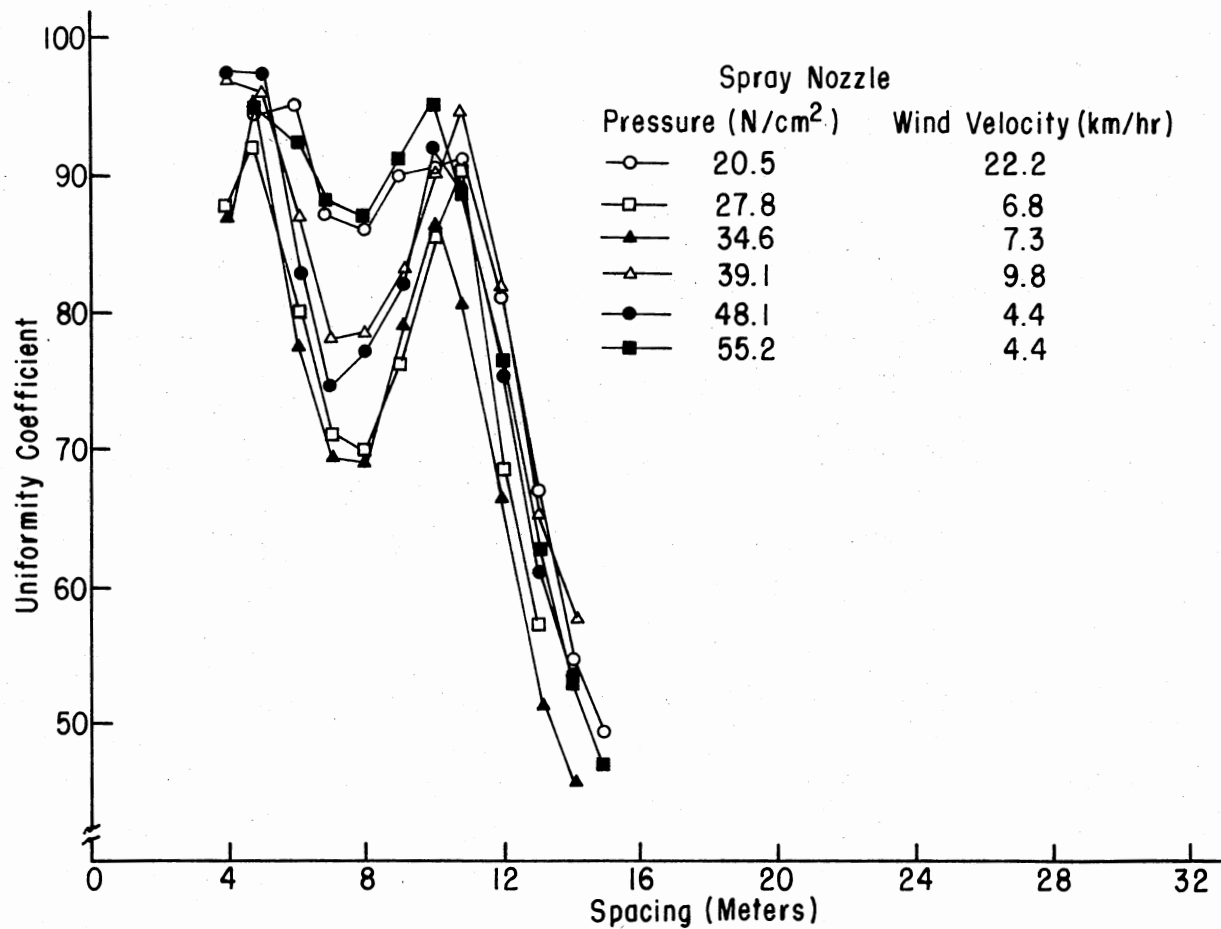
Figure 17. Uniformity Coefficient Versus Spacing for the Spray Nozzle.

overlapping, spacings with more than seven patterns would give false values of uniformity.

What would be the recommended spacing between risers using the previous plots of uniformity versus spacing? Jones (11) measured the uniformity of application for a center-pivot irrigation system and obtained uniformities between 81.5 and 90.4. Heerman and Hein (10) reported uniformities of 90.5 and 87.3. Pair (13) found uniformities of 81 and 86. A uniformity of 80 appears to be a suitable lower limit of uniformity for a center-pivot irrigation system. The recommended spacings using the above limit for the sprinklers and the spray nozzle are given in Table III. It was assumed that at the spacings where the uniformity was not plotted, the uniformity remained above 80.

The Effect of Pressure
on the Uniformity
of Application

Within the range of recommended spacings previously given, the uniformity of application remained above the lower limit of 80 for pressures between 20 and 55 Newtons per square centimeter.

The Application Rate

The average application rate for each depth found in each meshing increment for a complete passage of the overlapped pattern was found with the equation:

$$AA(J) = \frac{DD(J)\ V}{L(J)} \tag{4}$$

TABLE III

RECOMMENDED SPACINGS FOR THE SPRINKLERS
AND SPRAY NOZZLE

Type	Recommended Spacings (Meters)
PC-90	$S < 14$
PC-120	$S < 20$
PC-150	$S < 20$
PC-180	$S < 23$
FC	$S < 23$
SN	$9 < S < 11$ $S < 5$

where

    AA (J) = Average application rate for column J in centimeters
             per hour

    DD (J) = Depth for column J in centimeters

        V = Velocity of pattern movement in meters per hour

     L (J) = Length of overlapped pattern for column J in meters

A plot of application rate versus distance from the riser for each
sprinkler and the spray nozzle is shown in Figure 18 for a spacing of
10 meters between risers and a flow rate of about 44 liters per minute.

For a center-pivot irrigation system designed to operate with
full circle sprinklers, with riser spacings less than 10 meters, a
uniformity greater than 80 could be obtained using the part circle
sprinklers or the spray nozzle (see Table III). What would be the
effect on the application rate, if the part circle sprinkler or the
spray nozzle were used instead of the full circle sprinkler? Since
the system is designed for a certain flow rate, it would be undesirable
to change the flow rate when changing to a part circle sprinkler or a
spray nozzle. The effect is shown in Figure 18. The average appli-
cation rate of the part circle sprinklers combined was about 1.7 times
as great as the average application rate of the full circle, and the
application rate of the spray nozzle was 5.5 times as great.

The Evaporation Losses

The evaporation losses were found for each test. The evaporation
losses considered were those between the nozzle and the ground. The
evaporation loss was found by determining the difference between the
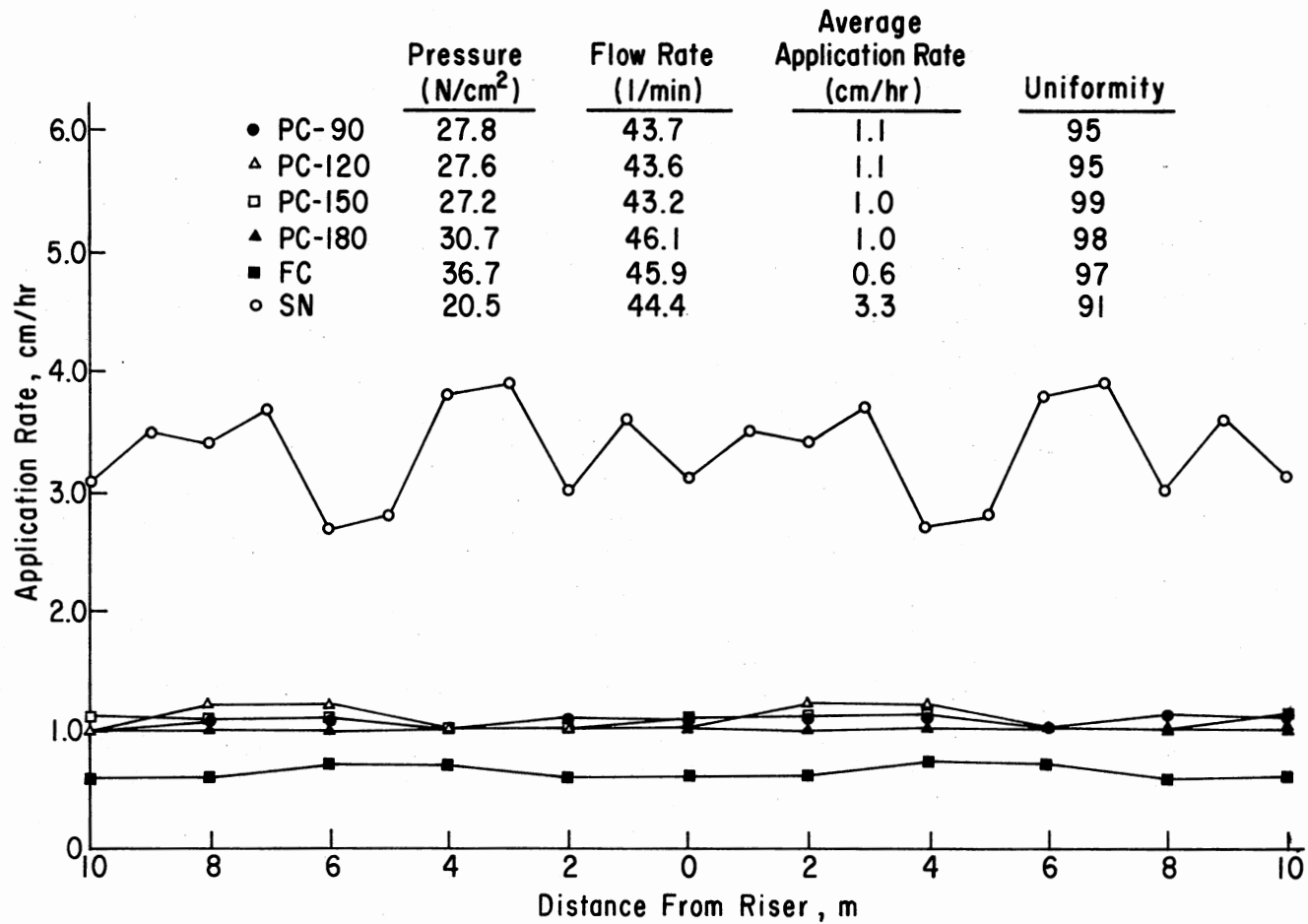
Figure 18. A Comparison of Application Rates at a Spacing of 10 Meters.

volume of water leaving the nozzle and the volume reaching the ground.

The volume of water leaving the nozzle was by continuity equal to the volume passing through the orifice. Therefore, the flow rate obtained by the orifice, multiplied by the time of application, gave the volume of water leaving the nozzle. The volume was found using the equation:

$$Q1 = Q \ (TA) \ 60.0 \tag{5}$$

where

$Q1$ = Volume of water leaving the nozzle in liters

Q = Flow rate in liters per minute

TA = Time of application in hours

The volume of water reaching the ground was found by summing the depths at each array position (see Figure 10), then multiplying this sum by the area represented by each can. For the 2 meter and 1 meter can spacing, the area was 4.0 and 1.0 square meters, respectively. The equation used is given below.

$$Q2 = 10.0 \ (\Sigma D) \ A \tag{6}$$

where

$Q2$ = Volume of water applied in liters

D = Depth of water in each can in centimeters

A = Area represented by each can in square meters

The percent evaporation was found by the equation:

$$E = (\frac{Q1-Q2}{Q1}) \quad 100.0 \tag{7}$$

where

   E = Percent evaporation

Q1 = Volume of water leaving the nozzle in liters

Q2 = Volume of water reaching the ground in liters

The results are given in Table 4. The average evaporation loss for the part circle 90, part circle 120, part circle 150, part circle 180, full circle, and spray nozzle, was 20.0, 12.5, 13.4, 22.8, 25.4, and 2.26%, respectively.

The Effect of Pressure on
Energy Consumption

Suppose a center-pivot irrigation system, operating at 55 Newtons per square centimeter, is redesigned to operate at 25 Newtons per square centimeter. Both designs have the same flow rate and design area. What would be the energy savings per unit volume of water applied by operating at 25 instead of 55 Newtons per square centimeter?

The power required by an irrigation pump is:

$$W = \frac{27.25 \ Q \ TDH}{EP} \tag{8}$$

where

   W = Power in kilowatts

   Q = Flow rate in hectare-meters per hour

TDH = Total dynamic head in meters

TABLE IV

EVAPORATION LOSSES

Type	Test Number	Date	Time of Application (hrs)	Volume Applied (1)	Volume Leaving Nozzle (1)	Wind Velocity (km/hr)	Percent Evapo-Ration
PC-90	1	9-6-75	1.00	1857	2227	8.5	16.7
	2	9-6-75	1.00	2111	2626	8.9	19.6
	3	8-20-75	1.00	2252	2913	9.7	22.7
	4	9-6-75	1.00	2470	2975	10.5	17.0
	5	9-4-75	0.87	2372	3088	9.3	23.2
	6	9-6-75	1.00	3012	3804	9.3	20.8
PC-120	7	9-6-75	1.00	1907	2211	6.8	13.8
	8	9-9-75	1.50	3081	3927	11.3	21.5
	9	9-12-75	1.57	4289	4759	8.8	9.9
	10	9-13-75	1.00	3108	3275	5.2	5.1
	11	9-13-75	1.00	3027	3539	9.2	14.5
	12	9-13-75	1.00	3363	3758	6.8	10.5
PC-150	13	9-13-75	1.00	2071	2224	5.6	6.9
	14	9-18-75	1.05	2239	2726	4.6	17.9
	15	9-19-75	1.00	2666	2921	10.1	8.7
	16	9-22-75	1.00	2741	3257	13.7	15.8
	17	9-25-75	1.00	3069	3501	4.5	12.4
	18	9-26-75	1.00	3006	3710	8.5	19.0
PC-180	19	8-11-75	1.50	2521	3708	14.3	32.0
	20	8-13-75	1.50	2945	4154	14.7	29.1
	21	8-13-75	1.50	3607	4481	15.9	19.5
	22	8-19-75	1.50	3497	4615	13.6	24.2
	23	8-19-75	1.50	4848	5595	7.6	13.4
	24	8-18-75	1.50	4747	5851	7.7	18.9
FC	25	9-27-75	2.00	3378	4210	9.5	19.8
	26	9-27-75	2.50	4115	5884	14.4	30.1
	27	9-27-75	2.00	3972	5518	13.9	28.0
	28	10-3-75	2.50	5358	7357	6.4	27.2
	29	10-4-75	2.00	5352	6501	4.2	17.7
	30	10-4-75	2.50	6066	8636	9.3	29.8
SN	31	10-24-75	0.50	1204	1334	22.2	9.7
	32	10-25-75	0.33	1025	1025	6.8	0.0
	33	10-25-75	0.33	1125	1146	7.3	1.8
	34	10-25-75	0.33	1219	1219	9.8	0.0
	35	10-25-75	0.33	1333	1356	4.4	1.7
	36	10-25-75	0.33	1450	1454	4.4	0.3

EP = Pump efficiency expressed as a decimal

The total dynamic head is given by:

$$TDH = H + HP + HF \qquad (9)$$

where

    H = Static head in meters of water

  HF = Friction head in meters of water

  HP = Pressure head in meters of water

The new design is to pump from the same water source and at the same flow rate as the old design; thus, the static and friction heads should be equal in both designs. The change in energy requirements per unit volume of water applied from Equation (8) is:

$$\Delta KH = \frac{27.25 \ \Delta HP}{EP} \qquad (10)$$

where

  ΔKH = Change in energy requirements per unit volume of

        water applied in kilowatt-hours per hectare-meter

  ΔHP = Change in pressure head in meters of water

   EP = Pump efficiency expressed as a decimal

A reduction in operating pressure from 55 to 25 Newtons per square centimeter would give a change in pressure head of 30 meters of water. Assuming a 70% pump efficiency for both designs, the energy savings per unit volume of water applied is 1,168 kilowatt-hours per hectare-meter. This is shown with a nomograph in Figure 19. Similar calculations can
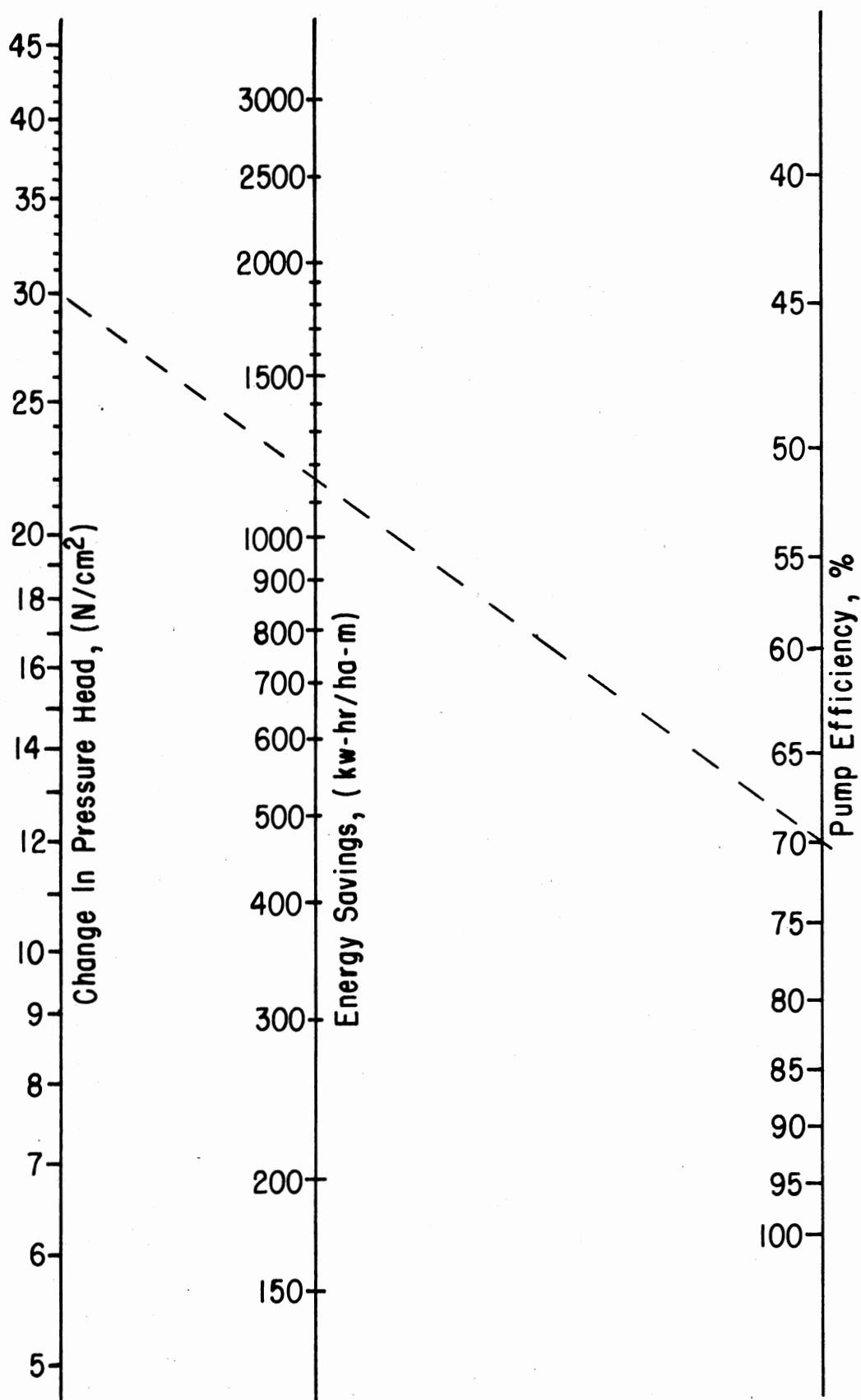
Figure 19. Nomograph to Determine Energy Savings for a Reduction of Pressure.

be made for other pressure reductions.

What does this energy savings mean in terms of money? Multiplying
ΔKH by the total cost per unit of energy is equal to the money saved
per unit volume of water applied as given by the equation:

$$MS = \frac{\Delta KH \ TC}{100} \qquad (11)$$

where

   MS = Money saved per unit volume of water applied in
      dollars per hectare-meter

   ΔKH = Change in energy requirements per unit volume of
      water applied in kilowatt-hours per hectare-meter

   TC = Total cost per unit of energy in cents per
      kilowatt-hours

Schwab, Garton, and Howell (14) stated that total cost per unit of
energy should be the sum of depreciation, repairs, taxes, insurance,
interest, and fuel and filter costs of the power unit. Schwab also
showed total cost per unit of energy ranged from 0.54 to 5.64 cents per
kilowatt-hour.

A nomograph to determine the money saved per unit volume of water
applied is shown in Figure 20. For example, the money saved per unit
volume of water applied for a reduction in pressure of 30 Newtons per
square centimeter, a pump efficiency of 70%, and total power cost per
unit of energy of three cents per kilowatt-hour, is 35 dollars per
hectare-meter.
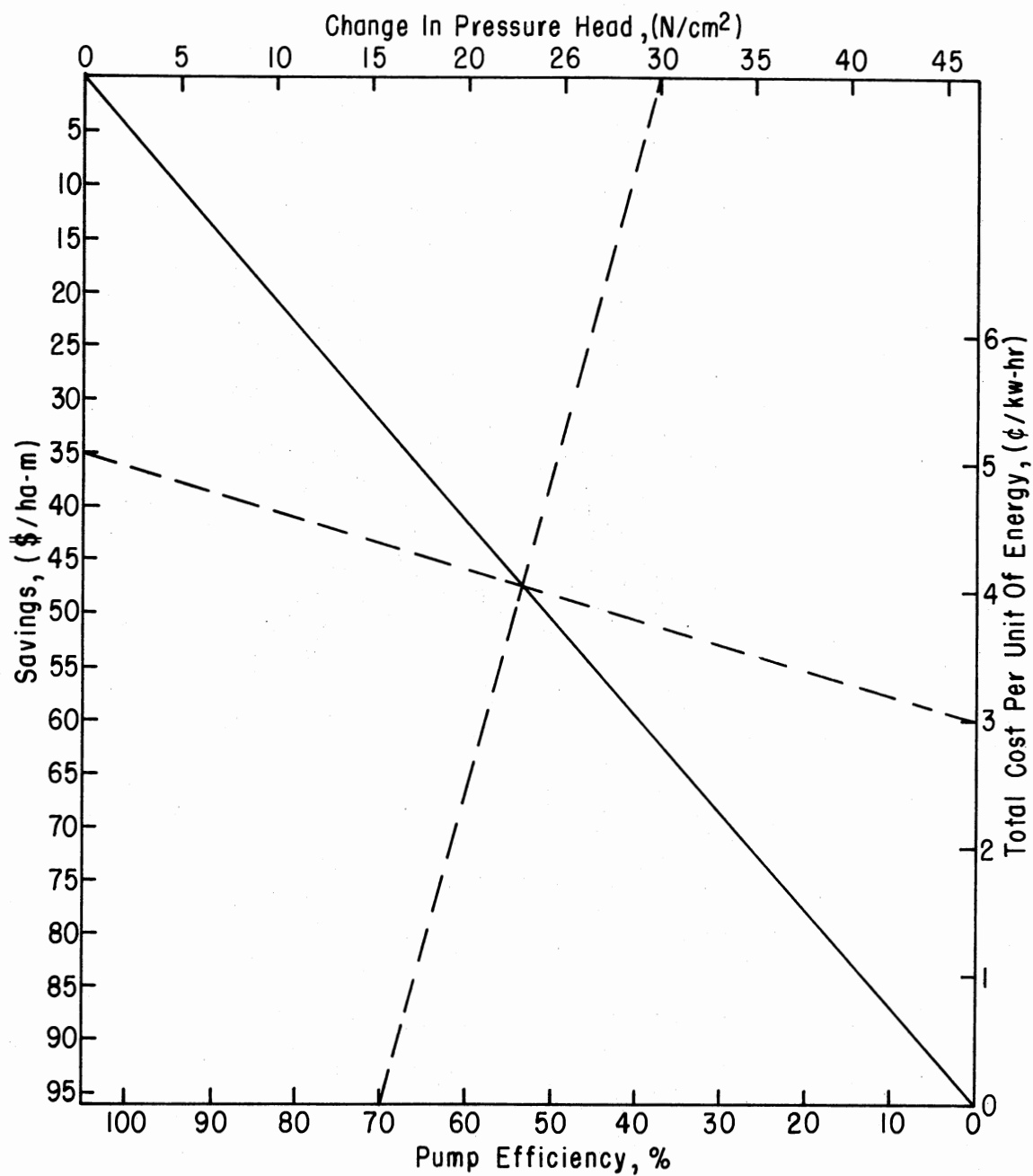
Figure 20. Nomograph to Determine Savings for a Reduction of Pressure.

CHAPTER VI

SUMMARY AND CONCLUSIONS

Summary

The uniformity of application for a center-pivot system with full circle and part circle sprinklers, and spray nozzles was found using a stationary distribution test. The depths collected by a single, continuously moving distribution pattern were meshed together with the depths from six other identical distribution patterns. The meshing was done in increments; therefore, each increment represented a spacing between risers. The combined depths were used to find Christiansen's (6) uniformity coefficient at each increment of spacing. The part circle sprinklers and the spray nozzle had uniformities comparable to the full circle sprinkler.

From the work of Jones (11), Heerman and Hein (10), and Pair (13), the lower limit of uniformity for a center-pivot system was set at 80. Using this criterion, a range of recommended spacings, given in Table III, was established for each sprinkler and the spray nozzle. Within the range of recommended spacings the uniformity of application of each sprinkler and spray nozzle remained above 80 for pressures between 20 and 55 Newtons per square centimeter.

The application rate versus distance from riser was determined for each increment of meshing. The application rates for each sprinkler

49

and spray nozzle were compared for a spacing of 10 meters and a flow rate of about 44 liters per minute. The spacing of 10 meters was chosen, since each sprinkler and the spray nozzle obtained uniformities above 80 at this spacing. The flow rate was chosen arbitrarily. The application rate for the full circle sprinkler was 0.60 centimeters per hour. The application rate of the part circle sprinkler and the spray nozzle was 1.7 and 5.5 times, respectively, greater than the rate of the full circle sprinkler.

A nomograph was presented for the comparison of energy consumption between two center-pivot systems, one operating at a high pressure and the other at a low pressure. The two systems were pumping from the same water source and at the same efficiency, carrying the same flow rate, and irrigating the same design area. Another nomograph was given to show the money savings per unit volume of water applied due to the pressure reduction.

The evaporation loss was determined for each distribution test conducted. The losses considered were between the nozzle and the ground. No corrections were made for losses from the cans. The average evaporation losses ranged from 2.26% for the spray nozzle to 25.4% for the full circle sprinkler.

Conclusions

1. The part circle sprinklers and spray nozzle had uniformities comparable to the full circle sprinkler.
2. Within the range of recommended spacings the uniformity of application of each sprinkler and spray nozzle remained above 80 for pressures

between 20 and 55 Newtons per square centimeter.

3. For a spacing of 10 meters and a flow rate of
   about 44 liters per minute, the average application
   rate of the part circle sprinkler and spray nozzle
   was 1.7 and 5.5 times as great as the rate of the
   full circle sprinkler, respectively.

4. The average evaporation loss of the part circle 90,
   part circle 120, part circle 150, part circle 180,
   full circle, and spray nozzle was 20.0, 12.5, 13.4,
   22.8, 25.4, and 2.3%, respectively.

Suggestions for Future Research

1. Perform more extensive test with the single riser
   to determine the effect of operating pressure, wind
   velocity, wind direction, nozzle diameter, and angle
   of trajectory on sprinkler spacing.

2. Determine the change in the uniformity of application
   when the pressure is reduced on a commercial
   center-pivot system.

3. Determine if part circle sprinklers will reduce
   trafficability problems.

4. Compare the uniformity of application of a
   center-pivot system with a corner unit to the same
   system without a corner unit.

5. Determine the depth, rate, and uniformity of appli-
   cation for center-pivot systems with spray nozzles.

SELECTED BIBLIOGRAPHY

(1) American Society of Agricultural Engineers. "Minimum Require-
       ments for the Design, Installation, and Performance of
       Sprinkler Irrigation Equipment." Agricultural Engineers
       Yearbook. St. Joseph, Michigan, 1975, 572-574.

(2) Bilanski, W. K., and E. H. Kidder. "Factors that Affect the
       Distribution of Water from a Medium-Pressure Rotary
       Irrigation Sprinkler." Transactions of the American
       Society of Agricultural Engineers, Vol. 1, No. 1 (1958),
       19-23.

(3) Bittinger, M. W., and R. A. Longenbaugh. "Theoretical
       Distribution of Water from a Moving Irrigation Sprinkler."
       Transactions of the American Society of Agricultural
       Engineers, Vol. 5, No. 1 (1962), 26-31.

(4) Branscheid, V. O., and W. E. Hart. "Predicting Field Distribu-
       tions of Sprinkler Systems." Transactions of the American
       Society of Agricultural Engineers, Vol. 11, No. 6 (1968),
       801-803.

(5) Busch, C. D., E. W. Rochester, and C. L. Jernigan. "Soil
       Crusting Related to Sprinkler Intensity." Transactions of
       the American Society of Agricultural Engineers, Vol. 16,
       No. 4 (1973), 808.

(6) Christiansen, J. E. "Irrigation by Sprinkling." Bulletin 670.
       Berkeley, Calif: Agricultural Experimental Station,
       University of California, 1942.

(7) Clark, R. N., and W. W. Finley. "Sprinkler Evaporation Losses
       in the Southern Plains." Paper No. 75-2573. St. Joseph,
       Michigan: American Society of Agricultural Engineers, 1975.

(8) Davis, J. R. "Measuring Water Distribution From Sprinklers."
       Transactions of the American Society of Agricultural
       Engineers, Vol. 9, No. 1 (1966), 94-97.

(9) Frost, K. R., and H. C. Schwalen. "Sprinkling Evaporation
       Losses." Agricultural Engineering, Vol. 36, No. 8 (1965),
       526-528.

(10) Heerman, D. F., and P. R. Hein. "Performance Characteristics of Self-Propelled Center-Pivot Sprinkler Irrigation Systems." Transactions of the American Society of Agricultural Engineers, Vol. 11, No. 1 (1968), 11-15.

(11) Jones, L. K. "Evaluation of Water Application of a Center-Pivot Sprinkler Irrigation System." (Unpublished M. S. Thesis, Stillwater, Oklahoma, Oklahoma State University, 1974.)

(12) Keller, J. "Sprinkler Intensity and Soil Tilth." Transactions of the American Society of Agricultural Engineers, Vol. 13, No. 1 (1970), 118-125.

(13) Pair, C. H. "Water Distribution Under Sprinkler Irrigation." Transactions of the American Society of Agricultural Engineers, Vol. 11, No. 5 (1968), 648-651.

(14) Schwab, D., J. E. Garton, and J. V. Howell. Comparative Fuel Costs for Irrigation Pumping. Stillwater, Oklahoma: Oklahoma State University Extension Facts, No. 1204, 1973.

(15) Seginer, I., and M. Kostrinsky. "Wind, Sprinkler Patterns, and System Design." Proceedings of the American Society of Civil Engineers. Journal of the Irrigation and Drainage Division, Vol. 101, No. IR4 (1975), 251-264.

(16) U. S. Department of Agriculture. Guidelines for Application of Sprinkler Irrigation Systems in Oklahoma. Stillwater, Oklahoma: Oklahoma State University Extension, 1972.

(17) Wiersma, J. L. "Effect of Wind Variation on Water Distribution from Rotating Sprinklers." Technical Bulletin 16. Brookings, South Dakota: Agricultural Experiment Station, 1955.

APPENDIX A

THE DISTRIBUTION PATTERNS

```
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 5. 5. 5. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 10. 30. 35. 20. 20. 20. 15. 5. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 50. 95. 80. 55. 65. 60. 45. 50. 25. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 65.100.125. 90. 95.105.150. 90. 45. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 50.105.125.150.150.150.150. 80. 20. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 15. 75.115.175.175.150.125. 50. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 30. 60.150.145.100. 70. 15. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 10. 30. 65. 90. 45. 15. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 15. 15. 15. 15. 15. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
```

TEST NUMBER 2   DATE 9-6-75   TYPE PC - 90

```
 5.  5.  5.  5.  5.
 5. 20. 30. 30. 25. 15.  5.
 5. 30. 50. 65. 55. 40. 20.  5.
10. 30. 65.105.115.100. 50. 40.  5.
15. 40. 85.125.175.150. 95. 55.  5.
15. 35. 70.175.175.125. 65. 30.  5.
10. 40. 70.125.180.125. 75. 35.  5.
10. 35. 80.120.150.125. 55. 25.  5.
 5. 25. 55.100.125.105. 75. 35. 15.  5.
 5. 35. 55. 65. 50. 35. 15.  5.  5.
 5. 15. 15.  5.  5.  5.  5.
 5.  5.
```

TEST NUMBER 3   DATE 8-20-75   TYPE PC - 90

```
C.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0:  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0. 10. 2C. 30. 40. 50. 50. 50. 30. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 25. 50. 70. 75. 95. 95.105. 85. 70. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 50. 90.105.120.115.125.150.125.105. 65. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 15. 45. 90.115.135.130.155.165.150.100. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  5. 20. 50.110.130.150.145.155.105. 50.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 60.100.125.110. 95. 65. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 25. 50. 80. 75. 55. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  C.  0.  0.  0.  0.  0.  0.  0.  5. 20. 40. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  5. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 4   DATE 9-6-75   TYPE PC - 90

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5.  5. 15. 15. 10.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 20. 30. 35. 40. 40. 30. 30. 20. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 30. 55. 70. 90. 85. 85. 80. 45. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 45.100.125.150.160.150.135. 80. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 45.110.175.200.220.210.175. 95. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 30.110.175.205.225.200.150. 65.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 20. 70.135.155.175.140. 75. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 15. 40. 60. 85. 90. 60. 30. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 10. 20. 35. 45. 70. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5.  5. 10. 10. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 5   DATE 8-4-75   TYPE PC - 90

```
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.   0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.   0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.   5.   5.   5.   5.   5.   5.   5.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 5.  10.  20.  25.  20.  20.  20.  15.  5.  5.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 20. 35.  50.  70.  65.  65.  60.  50. 35. 15.  5. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 20. 45. 70.  95. 105. 115. 100.  90.  90. 70. 35. 15. 5. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 30. 70.100. 115. 125. 125. 125. 115. 120. 80. 50. 15. 5. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 30. 55.115. 120. 130. 125. 130. 120. 110. 80. 25.  5. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 20. 35. 75.100. 115. 125. 110. 115.  85. 40.  5.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 15. 40.  65. 105. 110. 105.  80.  55.  5.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 15.  40.  65.  75.  70.  50.  20.  5.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  5.  15.  35.  50.  40.  20.   5.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   5.  10.  25.  10.   5.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   5.   5.   5.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0.  0.   0.   0.   0.   0.   0.   0.  0.  0.  0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
```

TEST NUMBER 6   DATE 9-6-75   TYPE PC - 90

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5.  5. 15. 15. 20. 20. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 25. 40. 60. 65. 60. 60. 55. 35. 20. 10.  5.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 55.100.125.145.135.135.125. 80. 40. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 30. 80.180.200.225.205.200.170. 90. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 65.190.250.290.250.210.150. 65. 10.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  5. 35. 60.150.250.225.190.175.100. 20.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 20. 40.120.150.165.135.100. 45. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  5. 20. 40. 70. 80. 75. 70. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 25. 35. 40. 30. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 15. 15. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 7   DATE 9-6-75   TYPE PC - 120

TEST NUMBER 8   DATE 9-9-75   TYPE PC - 120

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 30. 35. 35. 30. 15. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0. 10. 30. 55. 70. 80. 65. 55. 45. 45. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0. 10. 40. 85.100.110.120.110.105. 95. 60. 45. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0. 15. 55.105.135.145.140.115.155.125.170.155.145. 65. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 40. 75.100.125.140.135.140.145.160.160.125. 45.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 40.100.125.110.110.130.135.110. 45.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 60. 75. 70. 65. 55. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 35. 25. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 9   DATE 9-12-75   TYPE PC - 120

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 15. 15. 10. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 20. 45. 75. 95.115. 95. 45.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 15. 40. 90.160.160.185.210.225.195. 85.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 60.130.185.205.250.250.265.275.250.195. 75. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 15. 80.160.180.200.210.245.275.275.250.200.150. 85. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 45. 85.150.160.170.200.225.225.210.175.125. 90. 45. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0. 10. 30. 75. 90.100.120.235.140.135.130.100. 60. 25.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0. 15. 30. 40. 40. 45. 60. 60. 60. 45. 25.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5.  5.  5. 10. 10. 10. 15.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  10. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  10. 35. 60. 80. 65. 40.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  20. 60.100.130.135.170.200.105.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  10. 35. 85.115.130.150.150.160.170.210.210. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  5.  5.  25. 70.100.105.120.125.155.155.150.130.120. 85. 60. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  10. 35. 70. 95.100.105.125.135.150.145.130.115. 90. 65. 40. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5.  35. 60. 70. 75. 80.100.100.110.110.100. 80. 60. 35. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  15. 30. 40. 45. 50. 55. 60. 65. 60. 45. 35. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  10. 20. 20. 25. 25. 25. 20. 20. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5.  5.  10.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 11   DATE 9-13-75   TYPE PC - 120

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 10. 10. 15.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 25. 40. 40. 45. 45. 35. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 20. 30. 55. 75. 80. 90. 90. 80. 60. 40. 25.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 30. 75.100.115.130.135.135.135.125. 95. 75. 35. 10.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 45. 90.115.130.150.155.170.190.180.155.115. 65. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0. 10. 30. 90.100.120.150.170.190.195.175.150.110. 50. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 10. 35. 50. 90.120.145.150.155.135.100. 55. 20.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5.  5. 20. 30. 40. 55. 90.105. 90. 65. 40. 10.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 10. 15. 25. 30. 40. 30. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

65

TEST NUMBER 12   DATE 9-13-75   TYPE PC - 120

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5. 10. 10. 15. 15.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 20. 25. 40. 50. 45. 50. 50. 40. 25. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 15. 40. 70. 85.100.115.115.110. 90. 75. 50. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0. 15. 4C.100.125.130.150.145.155.145.135.130.100. 70. 40. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0. 15. 65.115.145.145.150.150.155.160.165.160.145.125. 70. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 30. 75.105.120.135.150.160.165.165.175.150.110. 45.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5.  5. 25. 40. 65. 95.135.140.150.150.125. 75. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 10. 15. 35. 60.120.110. 90. 55. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 15. 40. 45. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
TEST NUMBER  13      DATE   9-13-75      TYPE   PC - 150

0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 30. 35. 35. 30. 25. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5. 30. 55. 60. 60. 65. 65. 65. 50. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0. 10. 55. 60. 60. 55. 55. 60. 65. 75. 65. 65. 35. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 60.120.100. 55. 50. 55. 75. 80. 80. 70. 70. 75. 60. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  5. 65. 85. 95. 85. 90. 80. 75. 75. 80. 95.110.115. 80. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 40. 75. 60. 75.125.130. 75. 70. 75. 95.100. 40.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 40. 80. 85. 35. 30. 25. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 25. 15. 15.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

67

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 15. 15.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 20. 30. 30. 30. 30. 25. 20. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 15. 25. 35. 40. 45. 45. 45. 40. 40. 30. 25. 20. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 30. 40. 50. 55. 60. 60. 60. 60. 50. 40. 35. 30. 30. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 20. 30. 45. 55. 60. 70. 75. 75. 75. 70. 60. 60. 55. 50. 40. 30.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 40. 60. 70. 75. 90. 90. 90. 85. 80. 75. 75. 65. 55. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 35. 50. 70. 90. 95. 90. 85. 80. 85. 80. 75. 55. 35. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 20. 35. 45. 55. 70. 75. 70. 65. 70. 55. 40. 30. 20. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 35. 45. 45. 45. 35. 20. 15. 10.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 15. 10.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 15   DATE 9-19-75   TYPE PC - 150

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 10. 15. 25. 20. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 35. 50. 50. 45. 70. 70. 60. 35. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 30. 60. 85. 95. 95.105.120.130.135.110. 65. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 15. 45. 80.110.115.110.110.130.150.160.130. 80. 40.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 35. 75. 95.105. 95.110.130.130.135. 95. 60. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 25. 45. 75.100. 95.105.120.100. 95. 75. 35. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 60. 75. 85. 85.100. 90. 60. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 40. 60. 75. 65. 75. 60. 35. 20. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 50. 40. 45. 30. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 10. 10. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 16   DATE   9-22-75   TYPE   PC - 150

```
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.
0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 20. 20. 20. 25. 25. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 30. 35. 75. 80. 75. 80. 80. 60. 40. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 15. 35. 70. 95.115.125.120.125.130.115.  85. 55. 25. 10.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 2C. 40. 6C.100.120.145.155.140.140.115.  90. 65. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 25. 50. 75.125.140.155.125.125.130.  95. 55. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  C.  C.  0.  0. 10. 25. 45. 55. 95.100.115.115.115.115.  85. 45. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 30. 40. 55. 75.100. 90. 95. 80.  45. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 30. 55. 55. 55. 60. 45.  45. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  5.  5.  5. 25. 25. 30. 25. 25.  15. 10.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 17   DATE 9-25-75   TYPE PC - 150

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  5.  5. 10. 10. 10. 10. 10. 10. 10. 10. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5. 1C. 15. 20. 20. 25. 25. 20. 20. 20. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  5. 10. 15. 25. 30. 35. 40. 40. 40. 40. 35. 20. 20. 10.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 10. 15. 25. 40. 45. 50. 55. 55. 55. 55. 45. 40. 30. 20. 10.  5.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 15. 25. 40. 55. 65. 70. 70. 70. 75. 70. 60. 50. 45. 30. 20.  5.  5.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 10. 20. 40. 60. 85. 85. 90. 90. 90. 95. 80. 70. 60. 55. 45. 20.  5.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 30. 50. 80.100.105.105.105.105.105. 95. 85. 70. 65. 40. 20.  5.  5.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  5. 20. 35. 60. 80.110.110.110.100.105.100.105. 90. 80. 60. 30. 10.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 20. 50. 75.1CC.105.100.110. 90. 90. 85. 70. 50. 30.  5.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0. 10. 30. 45. 55. 60. 60. 60. 50. 50. 40. 30. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  5. 10. 20. 25. 30. 30. 30. 20. 15. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 1C. 10. 10. 10. 10. 10.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 18   DATE 9-26-75   TYPE PC - 150

```
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 15. 15. 20. 30. 25. 20. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  5. 20. 35. 35. 40. 50. 70. 45. 50. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 35. 60. 65. 70. 75. 95. 80. 75. 50. 35. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  5. 15. 25. 45. 65. 70. 90.100.105. 95. 85. 70. 50. 35. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 20. 30. 50. 90.100.110.105.115.110.100. 80. 65. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  .0.  5. 20. 25. 40. 75.100.115.120.120.105.125.110. 95. 85. 60. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 15. 30. 45. 75.100.120.125.125.110.120. 95. 90. 65. 45. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 20. 40. 65. 90.100.105.100. 85. 85. 70. 60. 35. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5. 20. 30. 45. 65. 75. 65. 50. 45. 35. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  5.  5.  5. 15. 25. 30. 20. 15.  5.  5.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  5.  5.  5. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  C.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 19   DATE 8-11-75   TYPE PC - 180

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 30. 25. 25. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 30. 50. 55. 65. 55. 65. 35. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  C.  0.  0.  0.  0.  5. 15. 20. 55. 70. 75. 80. 90.100. 75. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 35. 50. 80. 90. 90. 75. 85. 80. 70. 60. 50.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  C.  0.  0.  5. 20. 45. 75. 90.100. 90. 90. 80. 80. 75. 70. 55. 20.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  C.  0.  0.  5. 3C. 60.100.120.120. 95. 85. 90. 90. 95.100. 70. 35. 15.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 35. 70.120.130.115. 80. 65. 65. 70. 95. 90. 70. 40. 15.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  5. 30. 70.110.120. 80. 50. 35. 30. 40. 45. 30. 25.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  5. 10. 25. 45. 45. 30. 15.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 20   DATE 8-13-75   TYPE PC - 180

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  5.  5. 15. 15. 15. 20. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 45. 55. 60. 60. 55. 50. 30. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 45. 60. 90. 90.100. 95. 70. 45. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  C.  0.  0.  5. 15. 40. 65. 95.110.115.100.130. 90. 75. 55. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 25. 6C. 90.115.115.125.115.115. 90. 80. 60. 35. 10.  5.  0.  0.  0.  0.  0.  0. 25.
C.  C.  0.  0.  0.  0.  0.  5. 15. 45. 75.105.115.125.100.125.120.105.120.100. 55. 30.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 15. 50. 95.115.125.110. 80. 75. 85.100.110.105. 70. 25.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 50. 95.120.105. 75. 55. 45. 55. 75. 75. 60. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0. 10. 35. 60. 70. 60. 45. 25. 20. 25. 30. 30. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  5.  5.  5. 15. 20.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 21   DATE 8-13-75   PC - 180

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 30. 30. 25. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 35. 55. 70. 75. 70. 50. 30.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 50.100.100.115.110.125.100. 60. 25.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 25. 55.100.135.170.140.140.110.120. 95. 45. 10.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 55.120.175.180.175.120.120.120.125.120. 60. 20.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 30. 90.160.175.205.170.130.120.140.145.120. 90. 30.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 45.110.170.170.130.115. 90. 90.120.145.135. 75. 25.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 55.110.160.140.105. 70. 50. 60. 90. 90. 75. 35. 10.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 25. 60. 80. 60. 40. 35. 25. 30. 30.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 15. 15. 15. 15. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 30. 20. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 35. 50. 65. 75. 50. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 20. 40. 85.110.110.115.105.100. 55. 20.  5.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 25. 50. 85.115.140.160.145.135.105. 80. 45.  5.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 40. 90.130.165.155.155.125.115.100. 90. 70. 20.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 30. 65.110.160.150.180.150.120.130.165.110. 75. 40.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 50.100.140.150.135.110.105. 95.105.125.120. 90. 40.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 45.105.140.140.110. 80. 65. 60. 80. 95. 95. 60. 20.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 40. 85. 95. 85. 55. 35. 25. 30. 40. 35. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 20. 30. 25. 15.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 23   CATE 8-19-75   TYPE PC - 180

```
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  C.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 15. 15. 20. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 30. 30. 30. 30. 30. 30. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  5. 15. 20. 35. 40. 45. 55. 50. 55. 50. 35. 25. 15.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  5.  5. 15. 30. 40. 60. 70. 80. 85. 80. 80. 75. 70. 55. 35. 15.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  5. 1C. 30. 50. 75. 95.110.135.125.125.125.120.100. 75. 55. 30. 20.  5.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 45. 80.110.120.140.150.150.150.145.135.130.100. 80. 50. 35.  5.  0.  0.  0.  0.
C.  C.  0.  0.  0.  C.  0.  0.  5. 35. 65.100.125.145.155.155.160.160.150.155.145.135.105. 75. 45. 25.  5.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 20. 45. 8C.100.125.135.140.150.155.150.125.120.130.120.115. 90. 65. 35.  5.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 25. 55. 75.110.125.125.125.125.120.110.110.105. 85. 85. 85. 80. 60. 35.  5.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 25. 4C. 50. 65. 85. 95.100. 85. 75. 70. 70. 65. 50. 50. 45. 45. 40. 15.  5.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 25. 35. 40. 50. 40. 30. 20. 20. 20. 15. 10.  5.  5.  5.  5.  5.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  C.  C.  C.  C.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 20. 20. 30. 35. 30. 20. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  5. 15. 35. 60. 80. 85. 85. 85. 50. 35. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 15. 40. 65.105.115.120.125.115.100. 65. 45. 25. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 20. 30. 65.105.120.145.140.130.145.135.120. 80. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  5.  5. 25. 45. 80.105.13C.145.135.140.160.150.135.105. 70. 35. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 50. 90.120.135.135.125.135.125.100. 60. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  5. 25. 60.100.120.135.135.130.140.145.160.140.140.120. 85. 35.  5.  0.  C.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 35. 55. 95.120.130.125.120.130.130.130.135.135.115. 90. 40. 10.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 55. 95.105.11C.100. 95. 95. 95. 95. 90. 90. 75. 60. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  5. 20. 40. 55. 55. 55. 50. 55. 40. 35. 40. 40. 30. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5. 10. 15.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  C.  C.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  C.  C.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  C.  C.  0.  C.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 25   DATE 9-27-75   TYPE FC

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 20. 25. 25. 25. 20. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 30. 40. 45. 40. 45. 40. 35. 20. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 35. 60. 65. 55. 55. 60. 65. 50. 30. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  5. 20. 45. 60. 65. 60. 50. 55. 60. 70. 65. 45. 25. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  5. 10. 35. 50. 55. 55. 45. 45. 50. 55. 65. 65. 65. 40. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 40. 55. 55. 50. 40. 40. 45. 60. 65. 65. 75. 55. 25.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 20. 45. 60. 60. 50. 45. 50. 50. 55. 65. 70. 75. 55. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 20. 40. 65. 55. 55. 60. 50. 50. 50. 65. 75. 80. 60. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 30. 55. 50. 65. 60. 55. 55. 50. 65. 70. 80. 60. 35. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0. 15. 25. 50. 65. 70. 65. 60. 50. 50. 50. 70. 70. 50. 25.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0. 15. 40. 55. 60. 65. 75. 50. 50. 55. 55. 55. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 45. 55. 60. 65. 60. 50. 45. 50. 45. 30. 10.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  5. 30. 45. 55. 45. 45. 45. 50. 35. 35. 20.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 30. 30. 40. 35. 40. 25. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 15. 20. 20. 15. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 1C. 10. 30. 30. 40. 45. 30. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 40. 50. 75. 70. 80.100. 80. 75. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  0.  0.  0.  5. 20. 50. 80.100. 85. 90. 95.115. 85. 60. 25.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 45. 75. 90. 95. 90. 85. 90. 85. 95. 65. 45. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 25. 65.100. 90. 80. 80. 60. 80. 80. 95. 75. 65. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 25. 60. 95. 85. 85. 75. 75. 85. 75. 80. 75. 70. 35. 10.  5.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 20. 55. 95.100.100. 90. 95. 95. 85.100. 85. 80. 45. 15.  5.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  5. 30. 60.100.120.120. 90. 75. 90. 95.115.105. 70. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 20. 45. 80.125.105. 90. 70. 90.115.125.100. 65. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5. 30. 75. 95. 95. 80. 55. 80.100.110. 80. 40. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  5. 45. 65. 80. 60. 65. 80. 80. 80. 35. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 35. 30. 35. 55. 55. 65. 40. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 25. 30. 25. 30. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 10.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 10. 15. 20. 20. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 30. 50. 40. 55. 55. 45. 30. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 30. 65. 80. 75. 85. 85. 80. 65. 40. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 10. 30. 45. 70. 90. 95. 85. 90. 80. 80. 55. 30. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 20. 45. 70. 80. 80. 85. 95. 75. 85. 90. 65. 55. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 25. 55. 75. 95. 70. 75. 75. 75. 80. 80. 80. 70. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 30. 60. 85. 95. 90. 80. 70. 65. 75. 70. 80. 55. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 20. 65.105.100. 90. 85. 70. 75. 80. 90. 80. 60. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 35. 70. 95.100. 95. 70. 60. 80. 95. 95. 85. 55. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  5. 25. 60. 70.100. 80. 70. 60. 75. 90. 95. 80. 55. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 45. 55. 75. 90. 60. 40. 70. 80. 90. 70. 35. 15.  5.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  5. 30. 45. 50. 50. 45. 50. 40. 40. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0. 10. 10. 25. 35. 35. 30. 25. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 10. 15. 10.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
 0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 29   DATE 10-3-75   TYPE FC

```
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 10. 15.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 20. 30. 40. 35. 35. 35. 30. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  5. 15. 30. 45. 65. 75. 65. 55. 65. 55. 40. 25. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 10. 35. 50. 75. 90. 90. 85. 90. 90. 80. 70. 50. 35. 10.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 10. 30. 60. 70. 85. 90. 90. 85. 85. 95. 95. 85. 70. 40. 20.  5.  5.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  5. 20. 40. 65. 85. 85. 85. 85. 85. 80. 80. 80. 90. 95. 80. 60. 30. 15.  5.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 30. 45. 65. 80. 90. 80. 75. 75. 80. 80. 90.100. 85. 70. 40. 15.  5.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0. 10. 35. 50. 70. 85. 90. 75. 75. 75. 80. 85. 90. 90. 95. 75. 50. 20.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0. 10. 35. 50. 70. 90. 80. 80. 70. 65. 65. 75. 95.100. 90. 80. 55. 25. 10.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0. 10. 30. 45. 70. 85. 80. 80. 60. 55. 60. 70. 85. 90. 90. 80. 50. 20.  5.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  5. 25. 40. 60. 75. 80. 80. 60. 45. 55. 70. 80. 90. 90. 70. 40. 20.  5.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 15. 40. 55. 65. 75. 75. 65. 55. 60. 75. 80. 80. 80. 60. 30. 10.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  5. 25. 40. 60. 65. 70. 60. 60. 65. 70. 70. 80. 65. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  5. 10. 25. 45. 55. 60.155. 55. 60. 60. 65. 65. 65. 35. 10.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5. 25. 35. 45. 50. 55. 50. 55. 55. 40. 35. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 25. 30. 35. 40. 40. 40. 35. 30. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10. 15. 20. 20. 20. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 30   DATE 10-4-75   TYPE FC

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  0.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 15.  5. 15.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 30. 45. 45. 45. 45. 35. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 10. 35. 55. 80. 90. 85. 85. 85. 70. 45. 25. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0. 10. 40. 60. 90.115.120.110.105.105. 95. 85. 55. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5. 35. 50. 90.120.140.130.125.120.115.115.100. 65. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 45. 75.110.110.135.115.125.105.125.115.100. 70. 35. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 35. 55. 80.115.120.125.110.110.110.115.130.110. 75. 45. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 10. 35. 55. 85.115.120.120.100.105.105.125.140.130. 95. 50. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 10. 35. 60. 80.110.115.115. 95.100.100.125.150.125. 95. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  5. 10. 30. 55. 75.105.110.125.100. 75. 90.100.125.105.100. 60. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 30. 50. 75.110.115.110. 85. 70. 65.100.120.100. 90. 50. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 25. 45. 75.105.110. 90. 80. 60. 75. 90. 85. 75. 65. 40. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0. 10. 35. 60. 75. 90. 90. 90. 65. 75. 75. 70. 60. 40. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5. 15. 30. 50. 60. 70. 70. 70. 75. 65. 55. 45. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 20. 40. 45. 55. 50. 55. 50. 40. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 15. 25. 30. 25. 30. 30. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

```
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. C. 0. 0. 0. C. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. .0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 5. 0. 5. 0. 0. 0. 5. 20. 30. 20. 5. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 55.120.185.100. 60. 30. 20. 20. 30. 65.205.275.220. 55. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 45.150.285.285.265.205.230.280.480.365.335.325.275. 95. 5. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 5. 20. 75.135.235.445.505.520.535.460.360.240.200. 80. 40. 5. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. C. 0. 0. 0. 5. 10. 45.125.210.215.190.220.170.125. 65. 60. 35. 15. 5. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 10. 40. 60. 80. 80. 80. 75. 50. 50. 25. 20. 5. 5. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 5. 15. 20. 20. 30. 30. 30. 20. 15. 10. 5. 5. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 10. 15. 20. 15. 15. 5. 10. 5. 5. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. C. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 5. 5. 5. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. C. C. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
```

TEST NUMBER 32   DATE 10-25-75   TYPE SN

```
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 0. 0. 5. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 5. 5. 5. 5. 20. 20. 20. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 10. 85. 85. 35. 25. 30. 50. 80.120.120. 55. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 20.375.275.145. 95. 55. 70.100.145.210.290.310. 20. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 40.455.420.280.205.170.180.210.275.310.370.180. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 20. 70.295.395.370.355.365.400.425.130. 10. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 25. 85.205.245.190. 75. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 5. 5. 5. 5. 5. 5. 5. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.
```

TEST NUMBER 33   DATE 10-25-75   TYPE SN

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  0.  0.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5.  5. 10. 15. 10. 15. 20. 20. 30. 25.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5.  5. 50.115. 65. 40. 55. 80.130.190.200.100. 20.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10.220.540.285.175. 95. 95.130.190.270.340.390.180.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5. 10. 70.450.430.275.225.225.225.285.350.325.250. 55.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  5.  5.  5. 60.130.275.345.390.390.400.380.310. 50.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  5.  5.  5.  5. 25. 45.150.165.130. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 34   DATE   10-25-75   TYPE   SN

```
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  U.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5. 10.  5.  5.  5. 10. 35. 60. 20.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  5. 30. 7C. 70. 45. 35. 35. 60.105.135.155. 85.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.100.230.245.180.120.110.100.130.200.275.300.255.105.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.110.145.285.285.260.200.205.185.245.285.295.245.150. 80.  5.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0. 50. 95.275.315.290.330.250.305.330.400.340.130. 65.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 40.115.265.300.285.335.365.130. 70. 30.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 35. 35. 25. 20. 15.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 35   DATE 10-25-75   TYPE SN

```
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  C.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  5.  5.  0. 10.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 15. 15. 15. 15. 30. 50. 70. 20.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  5. 30. 85.105. 40. 30. 40. 90.150.170.155. 40.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  5. 80.240.255.165. 80. 75.100.155.250.300.290.215.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.105.205.240.310.245.185.200.195.300.350.335.255.115. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0. 60.200.395.360.330.350.325.365.395.380.285.170.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0. 10. 45. 75.205.280.355.325.420.435.175. 20.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 10. 25. 65. 55. 15. 10.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

TEST NUMBER 36   DATE 10-25-75   TYPE SN

```
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  C.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  C.  0.  0.  0.  5. 10. 20. 10.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  5.  5. 30. 75. 60. 40. 50. 40. 20. 25. 40. 10.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5. 25. 75.100.170.130.105. 95.125.230.275.265.155.110. 20.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0. 85.160.190.275.285.195.175.190.255.335.385.350.245.120. 65.  5.  0.  0.  0.  0.  0.  0.  0.
C.  C.  0.  0.  0.  0.  0. 75.160.250.385.390.345.375.380.435.500.425.245.130.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  C.  0.  0.  0.  0.  0. 10.100.195.290.260.440.480.500.435.385.150. 35.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  5.  5.  5. 20. 50.140.255. 65. 70. 20.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.
C.  C.  0.  0.  0.  0.  0.  0.  5.  5.  5.  5. 10. 10.  5.  5.  5.  5.  5.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  5.  5.  5.  5.  5.  5.  5.  5.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  C.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  C.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
0.  0.  0.  0.  0.  C.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.  0.
```

APPENDIX B

PLOTS OF ACCUMULATED DEPTH

VERSUS DISTANCE FROM RISER

Figure 21. Accumulated Depth Versus Distance from Riser for the Part Circle 90° Sprinkler.
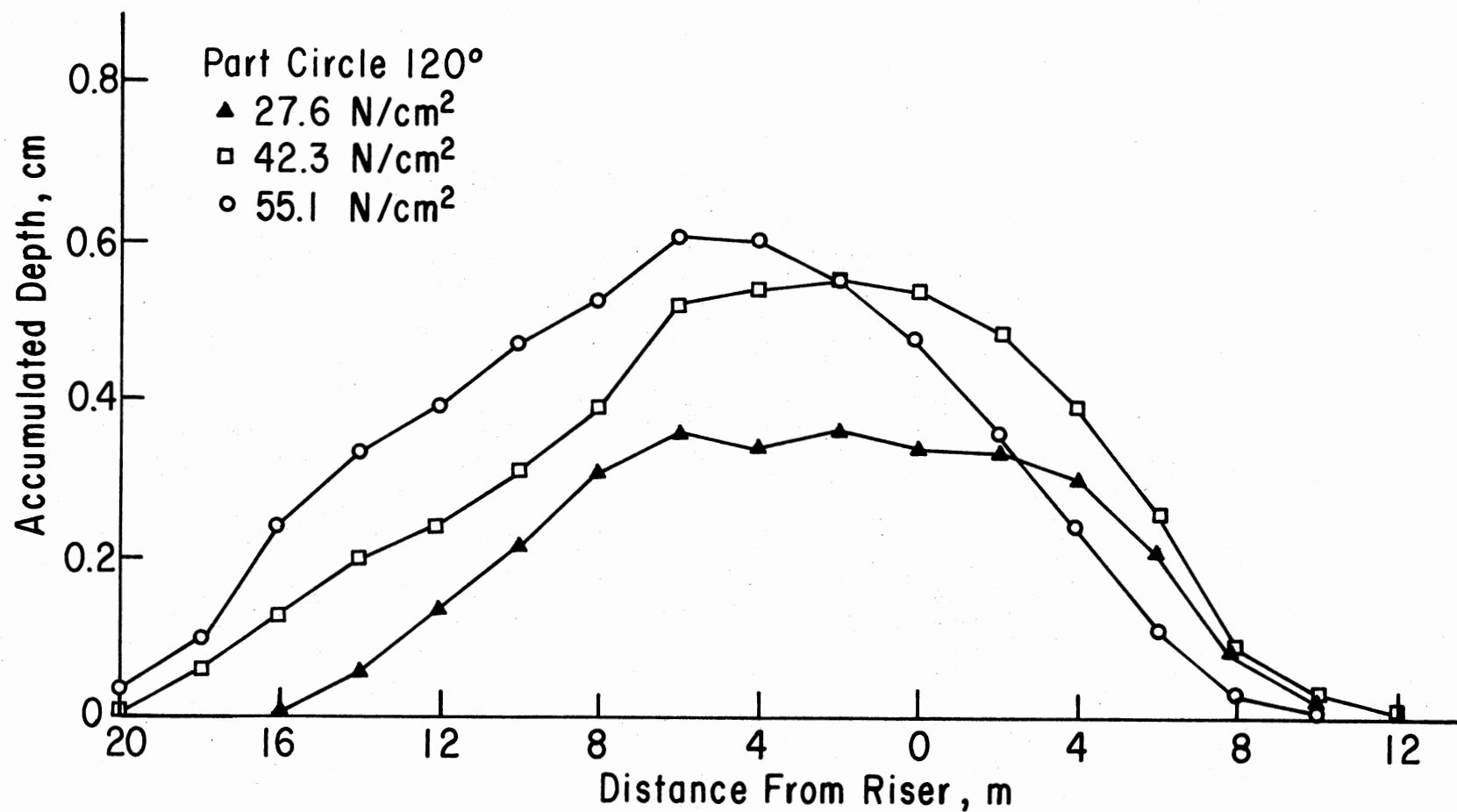
Figure 22. Accumulated Depth Versus Distance from Riser for the Part Circle 120°
Sprinkler.
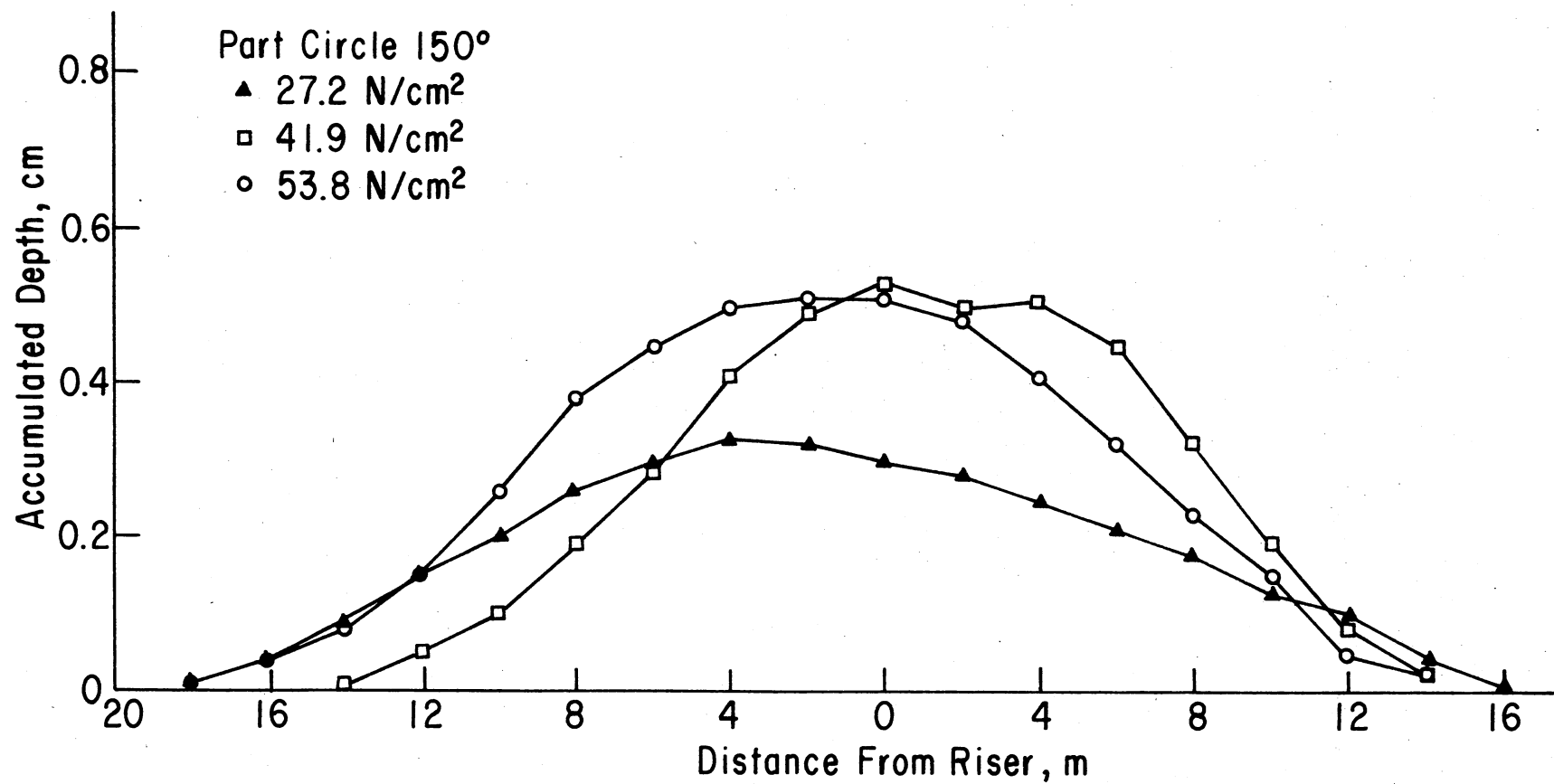
Figure 23. Accumulated Depth Versus Distance from Riser for the Part Circle 150° Sprinkler.
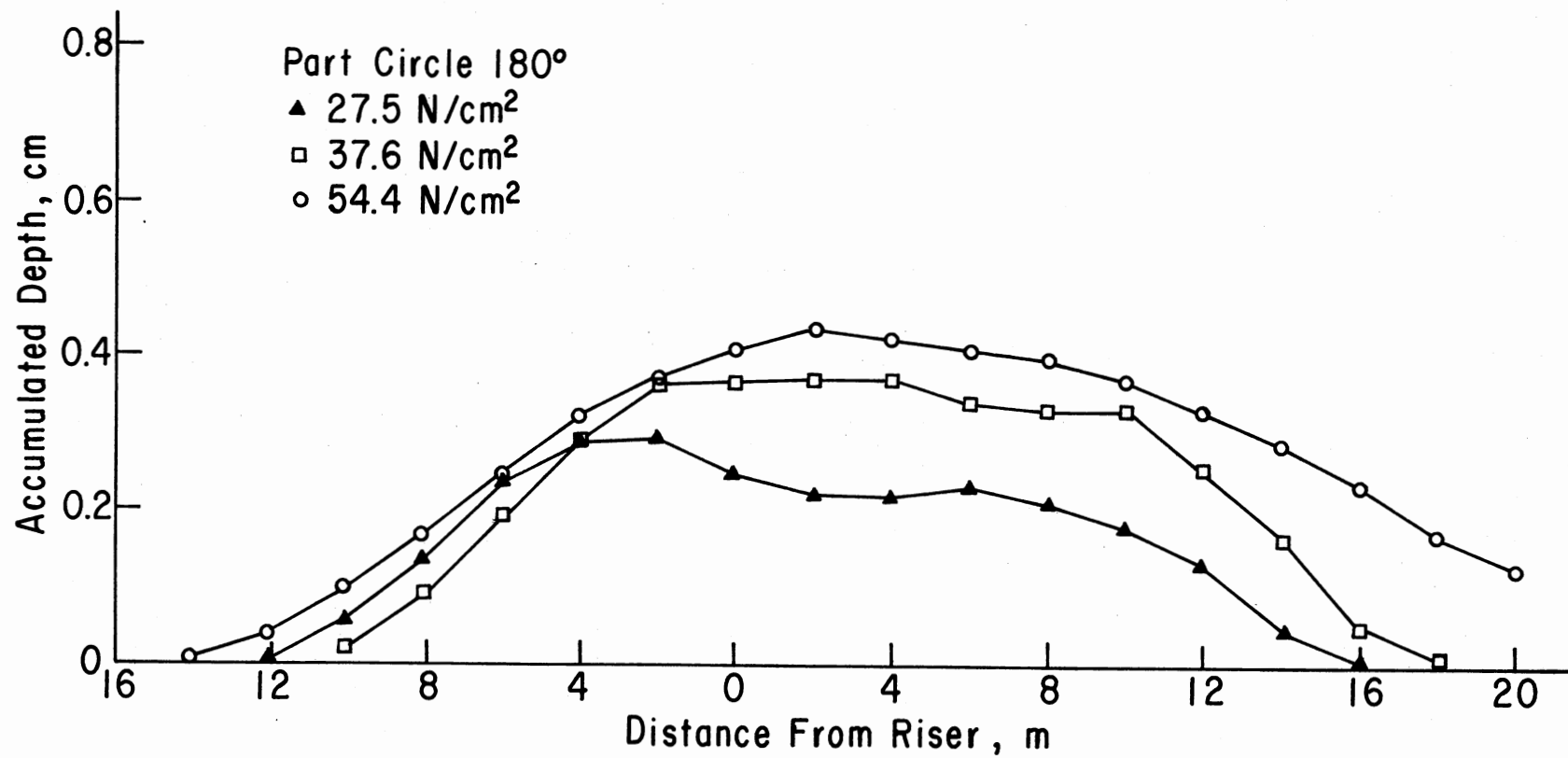
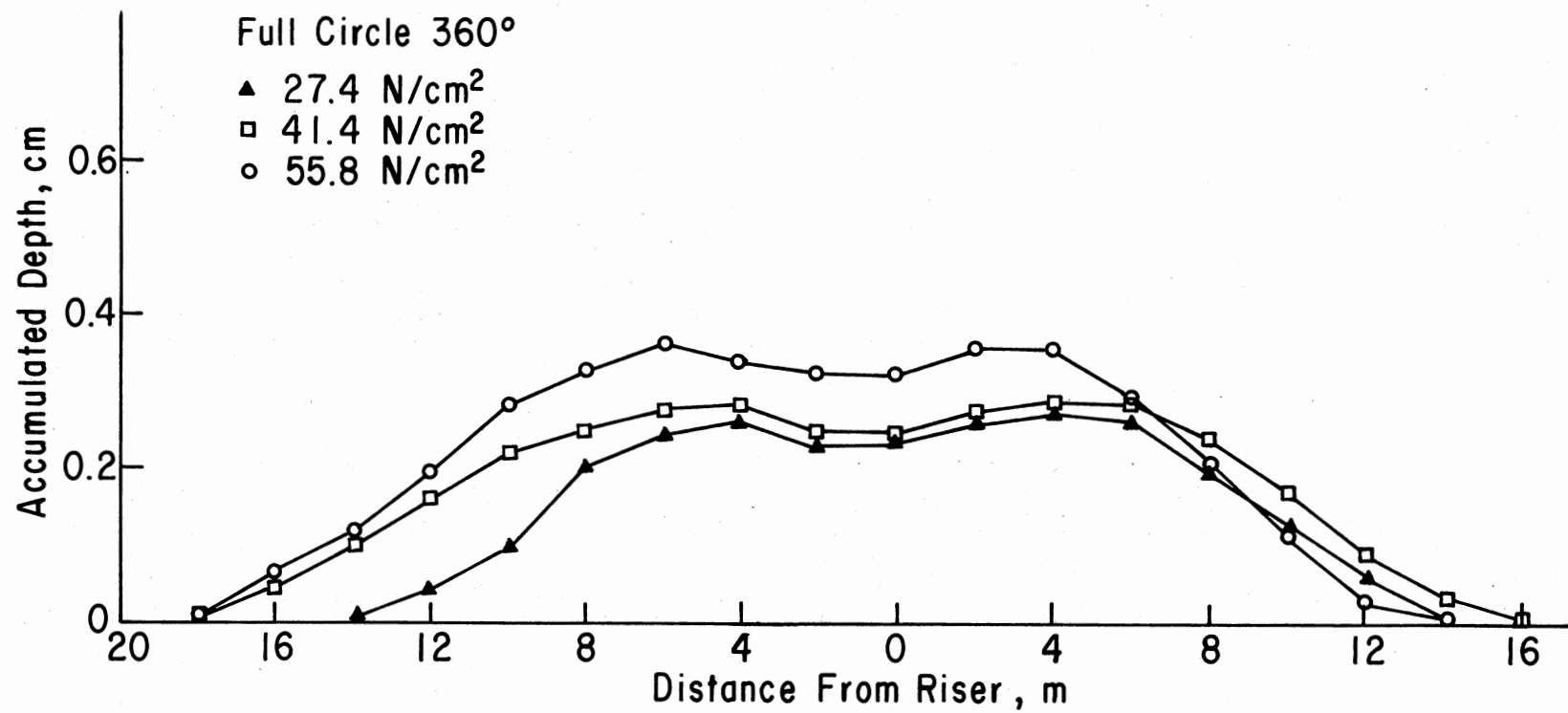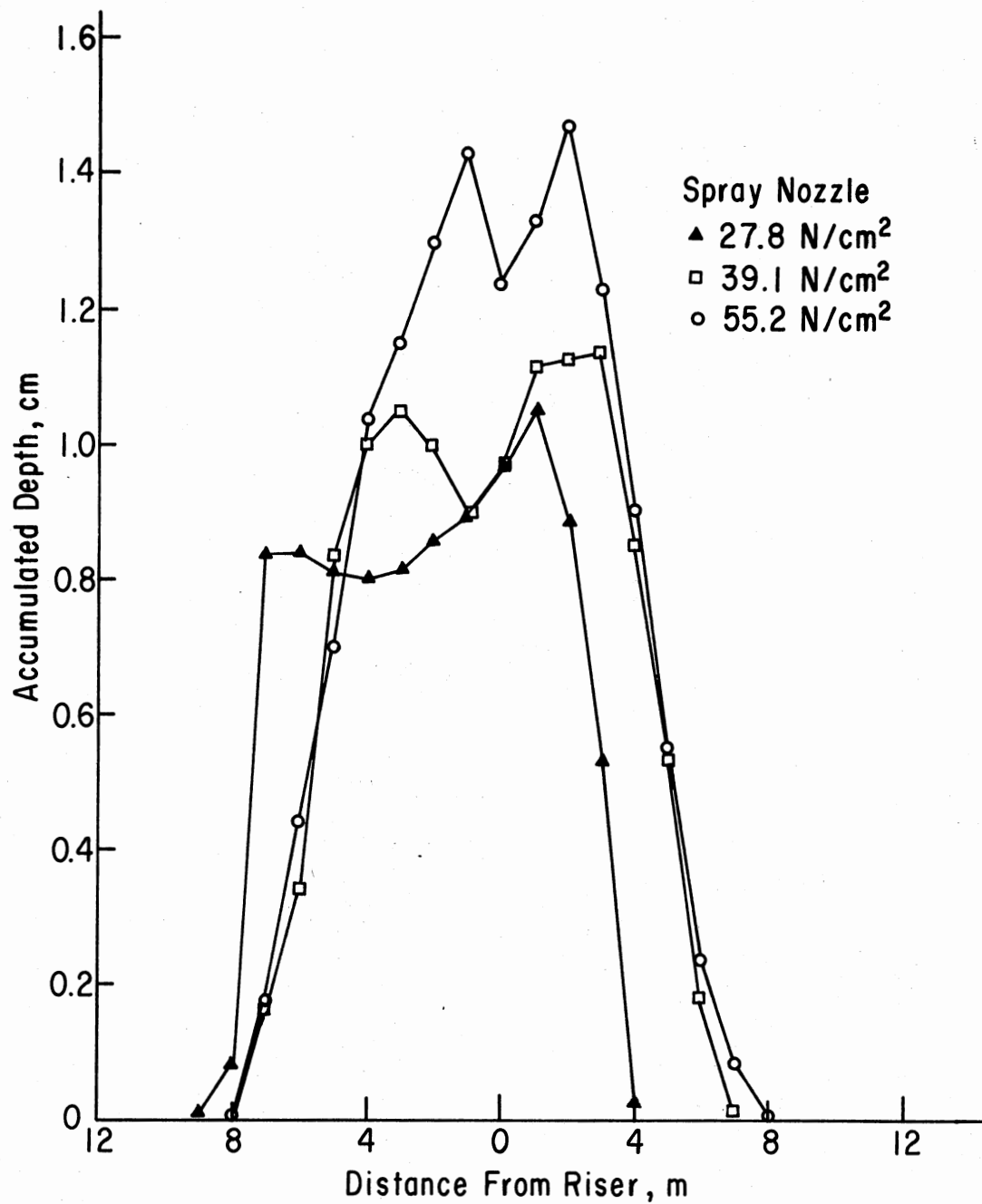Figure 24. Accumulated Depth Versus Distance from Riser for the Part Circle 180° Sprinkler.

Figure 25. Accumulated Depth Versus Distance from Riser for the Full Circle Sprinkler.

Figure 26. Accumulated Depth Versus Distance from Riser for the Spray Nozzle.

VITA$^{\nu}$

David George Petersen

Candidate for the Degree of

Master of Science

Thesis: PRESSURE, SPACING, AND UNIFORMITY FOR CENTER-PIVOT
         IRRIGATION SYSTEMS

Major Field: Agricultural Engineering

Biographical:

    Personal Data: Born in Elk City, Oklahoma, October 11, 1952,
        the son of John R. and Nellie Petersen.

    Education: Graduated from Reydon High School, Reydon,
        Oklahoma, in 1970. Received a Bachelor of Science degree
        in Agricultural Engineering from Oklahoma State University
        in December, 1974; completed the requirements for the
        Master of Science degree in July, 1976.

    Professional Experience: Worked as Engineering Student Trainee
        for the Soil Conservation Service in the summers of 1972,
        1973, and 1974. Graduate Research Assistant from January,
        1975, to May, 1976, and a Graduate Teaching Assistant from
        January, 1976, until May, 1976, for the Agricultural
        Engineering Department of Oklahoma State University.

    Professional and Honorary Organizations: Student member of the
        American Society of Agricultural Engineers; member of
        National Society of Professional Engineers; member of
        Oklahoma Society of Professional Engineers; member of
        Phi Kappa Phi; member of Tau Beta Pi.