

Figure 10. A) Histogram showing the overall accuracy of Artificial Neural Network result in the estimation of 5 lithologies within the cored interval for different combinations of well logs (GR: Gamma-ray; ILD: Deep-resistivity; DPHI: Density-porosity; NPHI: Neutron-porosity). Result by using all the available logs has the highest overall accuracy (0.664). B) Histogram showing the accuracy for five lithologies estimated by the Artificial Neural Network using GR, ILD, DPHI, and NPHI. Accuracies are calculated by dividing the number of correctly estimated lithology by the total number of lithology in confusion matrix (See Figure 11 for the merged lithology estimations). C) Confusion matrix associated with the Artificial Neural Network for which all the available well logs (GR, ILD, NPHI and DPHI) are used as inputs. Blue highlighted cells represent the number of correctly predicted lithologies in the cored interval. All the other cells represent mis-predicted lithologies. The number of correctly estimated sandy mudstone is quite low. The numbers of sandy mudstones mis-predicted as mudstones, and mudstones mis-predicted as sandy mudstones (grey highlighted cells) are greater than the correctly predicted sandy mudstones, indicating that if mudstones and sandy mudstones are merged better estimation can be obtained. Similarly, the number of muddy sandstones mis-predicted as sandstones (and vice versa) is high (orange highlighted cells). By merging the muddy sandstones and sandstones high degree of confusion can be avoided.