## List of Figures:

Figure (1.1): illustrates sharaf oil field 4
Figure (2.1): ): shows the tectonic model of the West and Central African Rift
System
Figure (2.2): Shows the area of study in the Muglad Basin, Sudan and the main oil
fields discovered
Figure (2.3): simplified stratigraphic column of the sedimentary fill of
Muglad basin
Figure (3.1): Shows logging Technique
Figure (3.2): Shows density tool
Figure (3.3):Shows neutron tool
Figure (3.4): Shows the three types of Neutron interactions
Figure (3.5) :Shows Simple sonic tool
Figure (3.6): Shows the three resistivity zones
Figure ( 3.7): Shows the basic physics of laterolog& induction measurements 24
Figure (3.8): Shows DLL-MSFL in hydrocarbon zones
Figure (3.9): Diagram of GR log
Figure (3.10) : Shows the electromotive components of the spontaneous potential 32
Figure (3.11): Shows bed boundaries from SP log
Figure (3.12): Shows the relationship between Rwe and Rw or (Rmfe and Rmf) 35
Figure (3.13): Shows Depths of Investigation and Resolutions of different logging tools 35
Figure(4.1): Shows the IP window
Figure(4.2) shows available logs plot overview around zone of interest
Figure(4.3): Schematic diagram of variation of sediments with clay mineral
content increasing from left to right 40
Figure(4.4): shows the different gamma ray Vclay relationships
Figure(4.5):Shows the GR Histogram a round zone of interest
Figure(4.6): illustrates the principle of neutron-density cross plot as clay indicator 42
Figure(4.7): illustrates neutron-density crossplot around zone of interest
Figure(4.8): shows the output curves
Figure(4.9): shows the input curves for porosity and water saturation analysis 46
Figure(4.10): illustrates the Neutron-Density porosity crossplot
Figure(4.11): shows the pickett plot around zone of interest(16)50

Figure(4.12): shows the crossplot of volume of clay and LLD around zone	
of interest	51
Figure(4.13): shows the crossplot of volume of shale and MSFL around zone of	
interest	52
Figure(4.14): shows apparent water resistivity histogram around zone of interest	. 52
Figure(4.15): shows porosity and water saturation plot around zone (16)	. 53
Figure(4.16): shows the ODT below the zone of interest	54