COMPANY: SANTOS MAGELLAN

WELL: WEST MEREENIE # 13

FIELD: WEST MEREENIE

RIG: EWS W/O **COUNTRY:** AUSTRALIA

RIG: EWS W/O
Field: WEST MEREENIE
Location: BLOCK NT OL-4
Well: WEST MEREENIE # 13
Company: SANTOS / MAGELLAN

Schlumberger

PLATFORM EXPRESS (AITH)
RUN #2, SUITE #2
SCALE 1:200

LOCATION
BLOCK NT OL-4

Elev.: R.T. 770.5 M
G.L. 764.8 M
D.F. 770.5 M

Permanent Datum: GROUND LEVEL Elev.: 764.8 M
Log Measured From: RT 5.7 M above Perm. Datum
Drilling Measured From: RT

STATE:	Max. Well Deviation	Longitude	Latitude
NTH. TERRITOTY		131 28' 39.17"E	23 57' 24.30"S

Logging Date	4-DEC-1997	
Run Number	2	
Depth Driller	1605 M	
Schlumberger Depth	1603 M	
Bottom Log Interval	1600.5 M	
Top Log Interval	1496.7 M	
Casing Driller Size @ Depth	8.625 IN @ 1506 M	@
Casing Schlumberger	1496.7 M	
Bit Size	7.625 IN	
Type Fluid In Hole	Crude oil	
MUD Density / Viscosity		
MUD Fluid Loss / PH		
MUD Source Of Sample	N/A	
RM @ Measured Temperature	@	@
RMF @ Measured Temperature	@	@
RMC @ Measured Temperature	@	@
Source RMF / RMC	N/A / N/A	
RM @ MRT / RMF @ MRT	@ 62 / @ 62	@ / @
Maximum Recorded Temperatures	62 DEGC / 62	
Circulation Stopped / Time	4-DEC-1997 / 10:00	
Logger On Bottom / Time	4-DEC-1997 / 14:18	
Unit Number / Location	3140 / QEA	
Recorded By	KAMALUDDIN JANSEN	
Witnessed By	I.FENDLEY	

	Run 1	Run 2	Run 3	Run 4
Logging Date				
Run Number				
Depth Driller				
Schlumberger Depth				
Bottom Log Interval				
Top Log Interval				
Casing Driller Size @ Depth	@		@	
Casing Schlumberger				
Bit Size				
Type Fluid In Hole				
MUD Density / Viscosity				
MUD Fluid Loss / PH				
MUD Source Of Sample				
RM @ Measured Temperature	@		@	
RMF @ Measured Temperature	@		@	
RMC @ Measured Temperature	@		@	
Source RMF / RMC				
RM @ MRT / RMF @ MRT	@ / @		@ / @	
Maximum Recorded Temperatures				
Circulation Stopped / Time				
Logger On Bottom / Time				
Unit Number / Location				
Recorded By				
Witnessed By				

ALL INTERPRETATIONS ARE OPINIONS BASED ON INFERENCES FROM ELECTRICAL OR OTHER MEASUREMENTS AND WE CANNOT, AND DO NOT GUARANTEE THE ACCURACY OR CORRECTNESS OF ANY INTERPRETATIONS, AND WE SHALL NOT, EXCEPT IN THE CASE OF GROSS OR WILLFUL NEGLIGENCE ON OUR PART, BE LIABLE OR RESPONSIBLE FOR ANY LOSS, COSTS, DAMAGES OR EXPENSES INCURRED OR SUSTAINED BY ANYONE RESULTING FROM ANY INTERPRETATION MADE BY ANY OF OUR OFFICERS, AGENTS OR EMPLOYEES. THESE INTERPRETATIONS ARE ALSO SUBJECT TO CLAUSE 4 OF OUR GENERAL TERMS AND CONDITIONS AS SET OUT IN OUR CURRENT PRICE SCHEDULE.

OTHER SERVICES1	OTHER SERVICES2
OS1: NONE	OS1:
OS2:	OS2:
OS3:	OS3:
OS4:	OS4:
OS5:	OS5:

REMARKS: RUN NUMBER 1	REMARKS: RUN NUMBER 2

* Log correlated to Platform Express run #1, suite #2 dated 23-Nov-1997

* AITH failed during the above logging suite (23-Nov-97), re-run to acquire AITH
. data only. HGNS and HRMS run with AITH to provide GR and caliper reading. No
. nuclear data presented.

* HGNS run without bowspring. AITH run with 0.5" standoffs as per tool sketch.

* Mud sample not available, no measurement taken

* Well drilled to TD on 16-Oct-1997, and was completed barefoot in the open hole
. section.

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RUN 1			RUN 2		
SERVICE ORDER #:			SERVICE ORDER #:		
PROGRAM VERSION:		8C0-609	PROGRAM VERSION:		
FLUID LEVEL:			FLUID LEVEL:		
LOGGED INTERVAL	START	STOP	LOGGED INTERVAL	START	STOP

EQUIPMENT DESCRIPTION

RUN 1

RUN 2

SURFACE EQUIPMENT

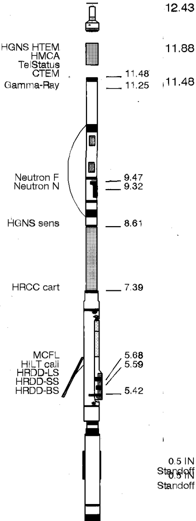
TCM-AB
GSR-U/Y
NCT-B
CNB-AB
NCS-VB

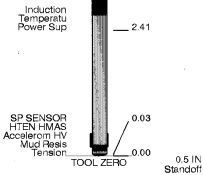
DOWNHOLE EQUIPMENT

PEH-A
PEH-A

AH-64
AH-64

HILTB-CTS
HGNSC-B
HMCA
TCC-B
HGNS-H 856
NLS-KL
NSR-F
HACCZ
HCNT
HGR
HRCC-B 868
HRMS-B 861
HRGD 788
GLS-VJ 5684
MCFL Device
HILT Nucl. LS
HILT Nucl. SS
HILT Nucl. BS
AIT-H
AHIS-BA 256
BOW-SPR
NPV-N





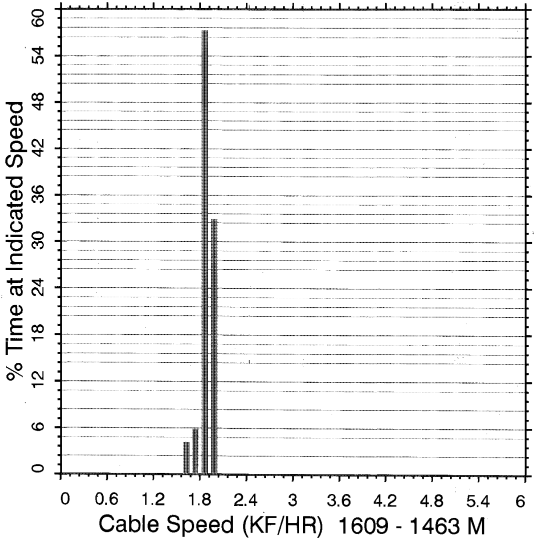
MAXIMUM STRING DIAMETER 4.88 IN
MEASUREMENTS RELATIVE TO TOOL ZERO
ALL LENGTHS IN METERS

Schlumberger

MAIN LOG

MAXIS 500 Field Log

Sequence # 045 (Dec 04 14:49:23 1997)



Input DLIS Files

DEFAULT	HILTC .045	FN:33	FIELD	04-Dec-1997 14:32	1609.3 M	1463.1 M

Output DLIS Files

DEFAULT	HILTC .048	FN:36	FIELD	04-Dec-1997 15:12	1609.3 M	1463.2 M

OP System Version: 8C0-609

MCM

HILTB-CTS APCW-97Q2

PIP SUMMARY

▮ Time Mark Every 60 S

AIT-H 90 Inch Investigation (AHT90)
0.2 (OHMM) 2000

H. Res. Invaded Zone Resistivity (RXO8)
0.2 (OHMM) 2000

Undergauge From HCAL to BS

AIT-H 60 Inch Investigation (AHT60)
0.2 (OHMM) 2000

Caliper (HCAL)
6 (IN) 16

AIT-H 30 Inch Investigation (AHT30)
0.2 (OHMM) 2000

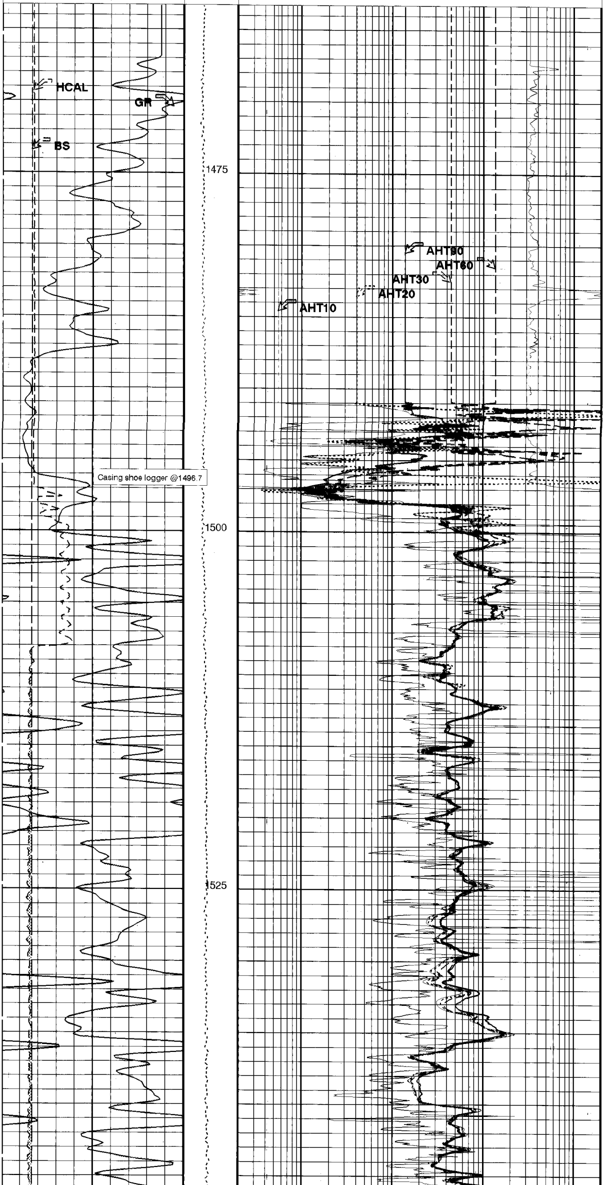
Gamma Ray (GR)
0 (GAPI) 200

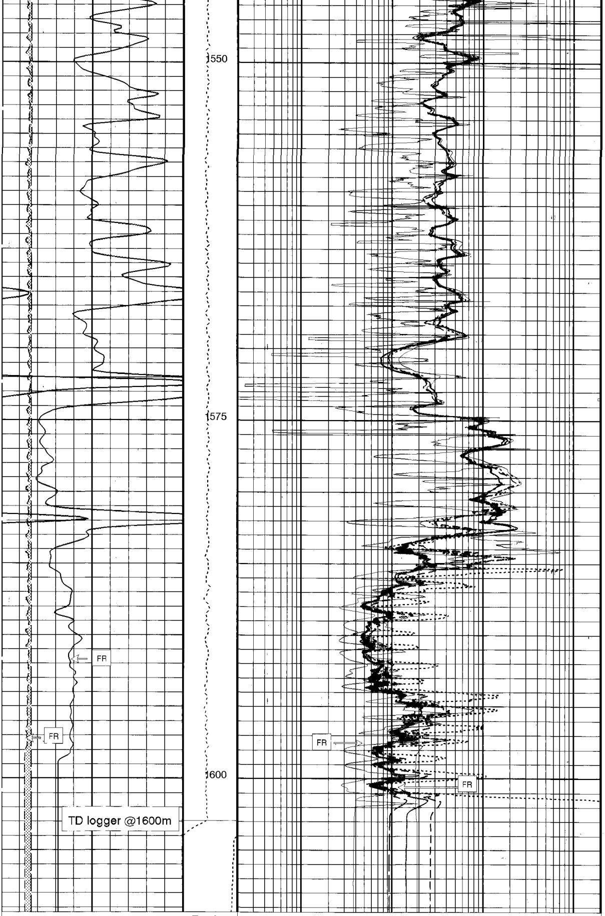
AIT-H 20 Inch Investigation (AHT20)
0.2 (OHMM) 2000

Bit Size (BS)
6 (IN) 16

Tension (TENS) (LBF)
0 2000

AIT-H 10 Inch Investigation (AHT10)
0.2 (OHMM) 2000





Bit Size (BS)
(IN)
6 16

Tension
(TENS)
(LBF)
0 2000

AIT-H 10 Inch Investigation (AHT10)
(OHMM)
0.2 2000

Gamma Ray (GR)
(GAPI)
0 200

AIT-H 20 Inch Investigation (AHT20)
(OHMM)
0.2 2000

Caliper (HCAL)
(IN)
6 16

AIT-H 30 Inch Investigation (AHT30)
(OHMM)
0.2 2000

Undergauge
From HCAL to BS

AIT-H 60 Inch Investigation (AHT60)
(OHMM)
0.2 2000

H. Res. Invaded Zone Resistivity (RXO8)
(OHMM)
0.2 2000

AIT-H 90 Inch Investigation (AHT90)
(OHMM)
0.2 2000

PIP SUMMARY

Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 256 (AHTNO)
...Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Mud Resistivity computed. Borehole diameter taken as input (see GCSE parameter)
Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 7.63 IN.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	20.000 DEGC	Bottom Temperature (BHT)	63.000 DEGC
Total Depth (TD)	1605.000 M		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	-50000.000 OHMM	Mud Filtrate Sample Temperature (MFST)	-50000.000 DEGC
Resitivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: OFF

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	0_ComputeMudResistivity	
AHBLM	AIT-H Basic Logs Mode	1_Two	
AHCDE	AIT-H Casing Detection Enable	No	
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered	
AHCSED	AIT-H Casing Shoe Estimated Depth	-50000	M
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	0.5	IN
BHT	Bottom Hole Temperature (used in calculations)	63	DEGC
BS	Bit Size	7.625	IN
DFD	Drilling Fluid Density	-50000.00	G/C3
DO	Depth Offset	0.0	M
DORL	Depth Offset Repeat Analysis	0.0	M
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCM	HILT Speed Correction Mode	TSCD_SPEED_CORRECTION	
HSTI	STI Uses HILT Acceleration	YES	
MPOF	MCFL Processing Operation Mode	ON	
MST	Mud Sample Temperature	-50000.00	DEGC
PP	Playback Processing	OFF	
RIAV	MCFL Resistivity Algorithm Version	1.07	
SHT	Surface Hole Temperature	20	DEGC
TD	Total Depth	1605	M

Format: AITH_200 Vertical Scale: 1:200 Graphics File Created: 04-Dec-1997 15:12

OP System Version: 8C0-609
MCM

HILTB-CTS APCW-97Q2

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT	HILTC .045	FN:33	FIELD	04-Dec-1997 14:32	1609.3 M	1463.1 M

Output DLIS Files

DEFAULT	HILTC .048	FN:36	FIELD	04-Dec-1997 15:12

Schlumberger

REPEAT ANALYSIS

MAXIS 500 Field Log

Input DLIS Files

DEFAULT	HILTC .045	FN:33	FIELD	04-Dec-1997 14:32	1609.3 M	1463.1 M
DEFAULT	HILTC .047	FN:35	FIELD	04-Dec-1997 15:09	1608.9 M	1464.9 M

Output DLIS Files

DEFAULT	HILTC .048	FN:36	FIELD	04-Dec-1997 15:12

OP System Version: 8C0-609
MCM

HILTB-CTS APCW-97Q2

PIP SUMMARY

Time Mark Every 60 S

RXO8_REP Curve (RXO8_REP)
0.2 (OHMM) 2000

AHT90_REP Curve (AHT90_REP)
0.2 (OHMM) 2000

Undergauge
From HCAL to BS

AHT60_REP Curve (AHT60_REP)
0.2 (OHMM) 2000

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

AHT30_REP Curve (AHT30_REP)
0.2 (OHMM) 2000

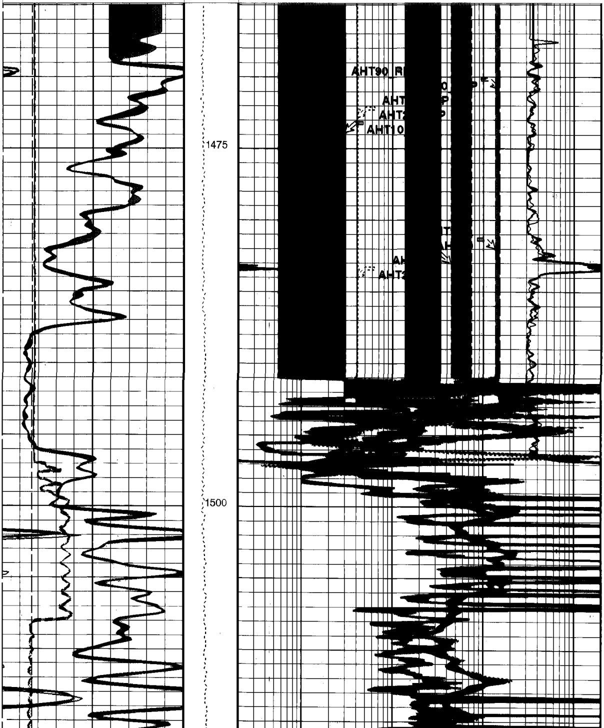
GR_REP Curve (GR_REP)
0 (GAPI) 200

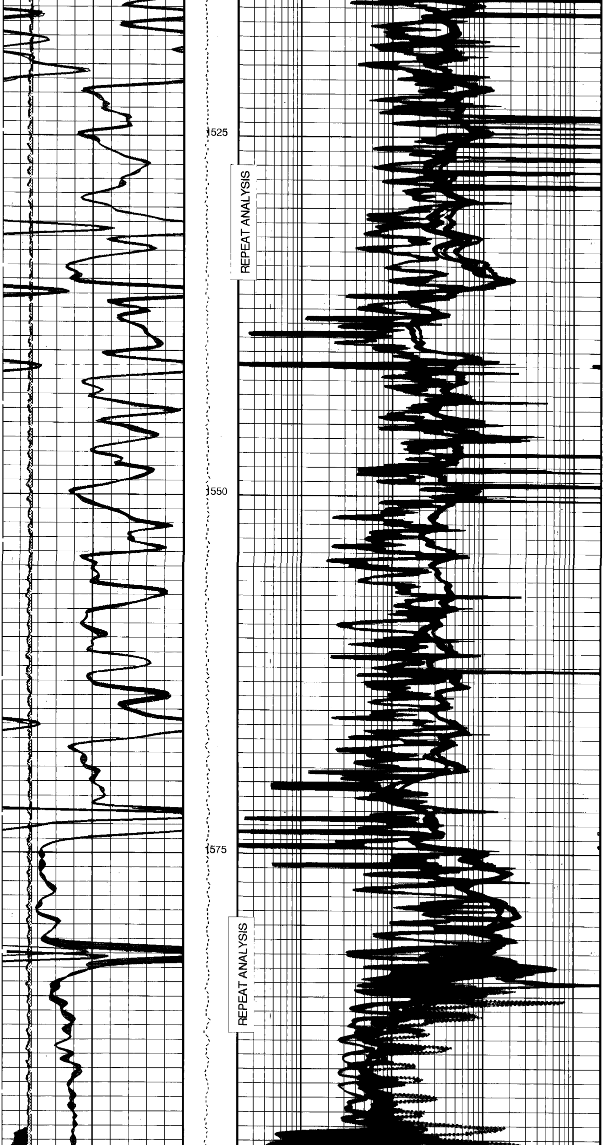
AHT20_REP Curve (AHT20_REP)
0.2 (OHMM) 2000

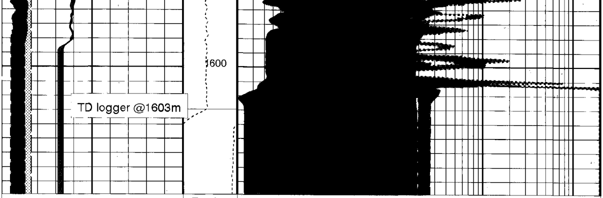
Bit Size (BS)
6 (IN) 16

Tension
(TENS)
(LBF)
0 2000

AHT10_REP Curve (AHT10_REP)
0.2 (OHMM) 2000







Bit Size (BS)
6 (IN) 16

Tension (TENS) (LBF)
0 2000

AHT10_REP Curve (AHT10_REP)
0.2 (OHMM) 2000

GR_REP Curve (GR_REP)
0 (GAPI) 200

AHT20_REP Curve (AHT20_REP)
0.2 (OHMM) 2000

HCAL_REP Curve (HCAL_REP)
6 (IN) 16

AHT30_REP Curve (AHT30_REP)
0.2 (OHMM) 2000

▨ Undergauge From HCAL to BS

AHT60_REP Curve (AHT60_REP)
0.2 (OHMM) 2000

AHT90_REP Curve (AHT90_REP)
0.2 (OHMM) 2000

RXO8_REP Curve (RXO8_REP)
0.2 (OHMM) 2000

PIP SUMMARY

■ Time Mark Every 60 S

AIT-H Answer Product Processing Summary. Data taken with tool # 256 (AHTNO)
...Acquired data from HILT/HAIT

***** Bhole Correction *****

Effective Mud Resistivity computed. Borehole diameter taken as input (see GCSE parameter)

Tool is run in ECCENTERED mode with a tool stand-off of 0.50 IN. Bit Size is 7.63 IN.

***** Input Selections to AIT Answer Product processing *****

Caliper (GCSE): HCAL Mud Resistivity (GRSE): AHMF Temperature (GTSE): LINEAR_ESTIMATE Porosity (FPHI): DPHZ

***** Other parameters used by AIT-H Answer Product processing *****

Surface Hole Temperature (SHT)	20.000 DEGC	Bottom Temperature (BHT)	63.000 DEGC
Total Depth (TD)	1605.000 M		
Form Factor Exponent (FEXP)	2.000	Form Factor Numerator (FNUM)	1.000
Mud Filtrate Sample Resistivity (RMFS)	-50000.000 OHMM	Mud Filtrate Sample Temperature (MFST)	-50000.000 DEGC
Resitivity Connate Water (RW)	1.000 OHMM		

***** AIT-H Answer Product processing control parameters *****

Playback Mode: OFF

Parameters

DLIS Name	Description	Value	
AHBHM	AIT-H Bhole Correction Mode	0_ComputeMudResistivity	
AHBLM	AIT-H Basic Logs Mode	1_Two	
AHCDE	AIT-H Casing Detection Enable	No	
AHCEN	AIT-H Tool Centering Flag (in Borehole)	Eccentered	
AHCSED	AIT-H Casing Shoe Estimated Depth	-50000	M
AHMRF	AIT-H Mud Resistivity Factor	1	
AHSTA	AIT-H Tool Standoff	0.5	IN
BHT	Bottom Hole Temperature (used in calculations)	63	DEGC
BS	Bit Size	7.625	IN
DFD	Drilling Fluid Density	-50000.00	G/C3
DO	Depth Offset	0.0	M
DORL	Depth Offset Repeat Analysis	0.0	M
FEXP	Form Factor Exponent	2	
FNUM	Form Factor Numerator	1	
GCSE	Generalized Caliper Selection	HCAL	
GDEV	Average Angular Deviation of Borehole from Normal	0	DEG
GGRD	Geothermal Gradient	0.018227	DC/M
GRSE	Generalized Mud Resistivity Selection	AITH_RESIST	
GTSE	Generalized Temperature Selection	LINEAR_ESTIMATE	
HSCM	HILT Speed Correction Mode	TSCD_SPEED_CORRECTION	
HSTI	STI Uses HILT Acceleration	YES	
MPOF	MCFL Processing Operation Mode	ON	
MST	Mud Sample Temperature	-50000.00	DEGC
PP	Playback Processing	OFF	
RIAV	MCFL Resistivity Algorithm Version	1.07	
SHT	Surface Hole Temperature	20	DEGC
TD	Total Depth	1605	M

Format: AITH_rep Vertical Scale: 1:200 Graphics File Created: 04-Dec-1997 15:12

OP System Version: 8C0-609

MCM

HILTB-CTS APCW-97Q2

Speed Corrected - Depth Matched LOG

Input DLIS Files

DEFAULT	HILTC .045	FN:33	FIELD	04-Dec-1997 14:32	1609.3 M	1463.1 M
DEFAULT	HILTC .047	FN:35	FIELD	04-Dec-1997 15:09	1608.9 M	1464.9 M

Output DLIS Files

DEFAULT HILTC .048 FN:36 FIELD 04-Dec-1997 15:12

Schlumberger

CALIBRATIONS

MAXIS 500 Field Log

Calibration and Check Summary

Measurement	Nominal	Master	Before	After	Change	Limit	Units
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Thru Cal Mag. & Phase							
Master: Oct 29 14:35 1997 Before: Dec 03 15:36 1997							
Thru Cal Magnitude - 0	0	0.6052	0.6041	N/A	N/A	N/A	V
Thru Cal Magnitude - 1	0	1.243	1.240	N/A	N/A	N/A	V
Thru Cal Magnitude - 2	0	0.6163	0.6143	N/A	N/A	N/A	V
Thru Cal Magnitude - 3	0	0.6963	0.6948	N/A	N/A	N/A	V
Thru Cal Magnitude - 4	0	1.309	1.305	N/A	N/A	N/A	V
Thru Cal Magnitude - 5	0	1.892	1.889	N/A	N/A	N/A	V
Thru Cal Magnitude - 6	0	1.886	1.885	N/A	N/A	N/A	V
Thru Cal Magnitude - 7	0	1.352	1.357	N/A	N/A	N/A	V
Phase - 0	0	64.89	64.24	N/A	N/A	N/A	DEG
Phase - 1	0	63.85	63.22	N/A	N/A	N/A	DEG
Phase - 2	0	59.99	59.41	N/A	N/A	N/A	DEG
Phase - 3	0	59.19	58.62	N/A	N/A	N/A	DEG
Phase - 4	0	52.66	52.19	N/A	N/A	N/A	DEG
Phase - 5	0	50.68	50.27	N/A	N/A	N/A	DEG
Phase - 6	0	50.68	50.26	N/A	N/A	N/A	DEG
Phase - 7	0	46.03	46.18	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Electronics Calibration Check - Auxilliary							
Master: Oct 29 14:35 1997 Before: Dec 03 15:36 1997							
AIT-H SPA Plus	990.5	993.0	994.2	N/A	N/A	N/A	MV
AIT-H SPA Zero	0	0.04659	0.01634	N/A	N/A	N/A	MV
AIT-H Temperature Plus	0.9150	0.9196	0.9206	N/A	N/A	N/A	V
AIT-H Temperature Zero	0	0.00006353	7.865E-006	N/A	N/A	N/A	V
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Test Loop Gain Correction							
Master: Oct 29 14:50 1997							
Test Loop Gain Magnitude - 0	0	1.026	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 1	0	1.020	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 2	0	1.031	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 3	0	1.020	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 4	0	1.004	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 5	0	1.002	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 6	0	1.016	N/A	N/A	N/A	N/A	V
Test Loop Gain Magnitude - 7	0	1.019	N/A	N/A	N/A	N/A	V
Phase - 0	0	0.4012	N/A	N/A	N/A	N/A	DEG
Phase - 1	0	0.4930	N/A	N/A	N/A	N/A	DEG
Phase - 2	0	-0.9370	N/A	N/A	N/A	N/A	DEG
Phase - 3	0	0.4308	N/A	N/A	N/A	N/A	DEG
Phase - 4	0	-0.3170	N/A	N/A	N/A	N/A	DEG
Phase - 5	0	-0.2073	N/A	N/A	N/A	N/A	DEG
Phase - 6	0	0.2204	N/A	N/A	N/A	N/A	DEG
Phase - 7	0	-0.1622	N/A	N/A	N/A	N/A	DEG
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Sonde Error Correction							
Master: Oct 29 15:06 1997							
R Sonde Error Correction - 0	0	-80.60	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 1	0	148.7	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 2	0	113.0	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 3	0	60.48	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 4	0	23.82	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 5	0	13.71	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 6	0	9.639	N/A	N/A	N/A	N/A	MM/M
R Sonde Error Correction - 7	0	-0.2755	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 0	0	75.81	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 1	0	-1.747	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 2	0	50.92	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 3	0	3.249	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 4	0	21.76	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 5	0	-3.865	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 6	0	7.261	N/A	N/A	N/A	N/A	MM/M
X Sonde Error Correction - 7	0	-0.4168	N/A	N/A	N/A	N/A	MM/M
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Mud Gain Correction							
Master: Calibration out of date Jun 23 20:35 1997							
Coarse - Mag, Real, Imag - 0	0	1.065	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 1	0	1.065	N/A	N/A	N/A	N/A	
Coarse - Mag, Real, Imag - 2	0	1.065	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 0	0	1.061	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 1	0	1.061	N/A	N/A	N/A	N/A	
Fine - Mag, Real, Imag - 2	0	1.061	N/A	N/A	N/A	N/A	
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Stab Measurement Summary							
Before: Dec 03 15:39 1997							
BS Window Ratio	1.015	N/A	1.016	N/A	N/A	N/A	
BS Window Sum	17600	N/A	17600	N/A	N/A	N/A	CPS
SS Window Ratio	0.4533	N/A	0.4548	N/A	N/A	N/A	
SS Window Sum	10680	N/A	10700	N/A	N/A	N/A	CPS
LS Window Ratio	0.2881	N/A	0.2835	N/A	N/A	N/A	
LS Window Sum	1394	N/A	1389	N/A	N/A	N/A	CPS
High resolution Integrated Logging Tool-CTS Wellsite Calibration - Photo-multiplier High Voltages Calibrations							
Before: Dec 03 15:39 1997							
BS PM High Voltage (Command)	1748	N/A	1745	N/A	N/A	N/A	V
SS PM High Voltage (Command)	1835	N/A	1827	N/A	N/A	N/A	V
LS PM High Voltage (Command)	1634	N/A	1629	N/A	N/A	N/A	V

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Crystal Quality Resolutions Calibration
Before: Dec 03 15:39 1997

BS Crystal Resolution	13.23	N/A	13.22	N/A	N/A	N/A	%
SS Crystal Resolution	9.896	N/A	9.965	N/A	N/A	N/A	%
LS Crystal Resolution	9.123	N/A	9.276	N/A	N/A	N/A	%

High resolution Integrated Logging Tool-CTS Wellsite Calibration - MCFL Calibration
Before: Dec 03 15:41 1997

Raw B0 Resistivity	3875	N/A	3863	N/A	N/A	N/A	OHMM
Raw B1 Resistivity	3830	N/A	3804	N/A	N/A	N/A	OHMM
Raw B2 Resistivity	3830	N/A	3826	N/A	N/A	N/A	OHMM

High resolution Integrated Logging Tool-CTS Wellsite Calibration - HILT Caliper Calibration
Before: Dec 03 15:44 1997

HILT Caliper Zero Measurement	8.000	N/A	8.007	N/A	N/A	N/A	IN
HILT Caliper Plus Measurement	12.00	N/A	12.23	N/A	N/A	N/A	IN

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Detector Calibration
Before: Dec 03 15:38 1997

Gamma Ray Background	30.00	N/A	50.87	N/A	N/A	N/A	GAPI
Gamma Ray (Jig - Bkg)	168.7	N/A	168.7	N/A	N/A	15.33	GAPI
Gamma Ray (Calibrated)	162.0	N/A	162.0	N/A	N/A	15.00	GAPI

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Zero Measurement
Master: Nov 20 15:47 1997 Before: Dec 03 15:40 1997

CNTC Background	25.72	25.72	25.20	N/A	N/A	3.858	CPS
CFTC Background	26.65	26.65	25.99	N/A	N/A	3.998	CPS

High resolution Integrated Logging Tool-CTS Wellsite Calibration - Accelerometer Calibration
Before: Dec 04 13:45 1997

Z-Axis Acceleration	9.810	N/A	9.786	N/A	N/A	N/A	M/S2

High resolution Integrated Logging Tool-CTS Master Calibration - Inversion results
Master: Nov 20 14:43 1997

Rho Aluminium	2.596	2.598	--	--	--	--	G/C3
Rho Magnesium	1.686	1.687	--	--	--	--	G/C3
Pe Aluminium	2.570	2.588	--	--	--	--	
Pe Magnesium	2.760	2.732	--	--	--	--	

High resolution Integrated Logging Tool-CTS Master Calibration - Deviation Summary
Master: Nov 20 14:43 1997

BS Average Deviation	0	0.2762	--	--	--	--	%
BS Max Deviation	0	1.324	--	--	--	--	%
SS Average Deviation	0	0.5351	--	--	--	--	%
SS Max Deviation	0	1.138	--	--	--	--	%
LS Average Deviation	0	0.4596	--	--	--	--	%
LS Max Deviation	0	1.244	--	--	--	--	%

High resolution Integrated Logging Tool-CTS Master Calibration - Tank Measurement
Master: Nov 20 15:47 1997

Thermal Near Corr. (Tank)	6031	5645	--	--	--	--	CPS
Thermal Far Corr. (Tank)	2793	2386	--	--	--	--	CPS
CNTC/CFTC (Tank)	2.159	2.366	--	--	--	--	

The CNT Master Calibration Was Done With The Following Parameters :

NCT-B Water Temperature	37.0	DEGC.
Thermal Housing Size	3.375	IN.

High resolution Integrated Logging Tool-CTS / Equipment Identification

Primary Equipment:

Array Induction Tool - H	AIT - H	
Array Induction Sonde	AHIS - BA	256
HILT high-Resolution Mechanical Sonde	HRMS - B	861
HILT Rxo Gamma-ray Device	HRGD -	788
HILT Nuclear Back-Scatter Detector	HILT -	
HILT Nuclear Short-Spacing Detector	HILT -	
HILT Nuclear Long-Spacing Detector	HILT -	
Micro Cylindrically Focused Log Device	MCFL -	

Auxiliary Equipment:

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V	Nominal	Value	Phase DEG	Nominal
0	Master	0.6052		0.6050	64.89		71.00
	Before	0.6041			64.24		
1	Master	1.243		1.270	63.85		70.00
	Before	1.240			63.22		
2	Master	0.6163		0.6230	59.99		66.00
	Before	0.6143			59.41		
3	Master	0.6963		0.7040	59.19		65.00
	Before	0.6948			58.62		
4	Master	1.309		1.337	52.66		59.00
	Before	1.305			52.19		
5	Master	1.892		1.955	50.68		57.00
	Before	1.889			50.27		
6	Master	1.888		1.955	50.68		57.00
	Before	1.885			50.26		
7	Master	1.352		1.415	46.03		53.00
	Before	1.357			46.18		
		60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)	Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)

Master: Oct 29 14:35 1997 Before: Dec 03 15:36 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Electronics Calibration Check - Auxiliary

Phase	AIT-H SPA Plus MV	Value	Phase	AIT-H SPA Zero MV	Value
Master		993.0	Master		0.04659
Before		994.2	Before		0.01634
	941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)			-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	
Phase	**AIT-H Temperature Plus V**	**Value**	**Phase**	**AIT-H Temperature Zero V**	**Value**
Master		0.9196	Master		6.353E-00
Before		0.9206	Before		7.865E-00
	0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)			-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: Oct 29 14:35 1997 Before: Dec 03 15:36 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.026		0.4012	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.020		0.4930	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.031		-0.9370	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.020		0.4308	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	1.004		-0.3170	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	1.002		-0.2073	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.016		0.2204	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.019		-0.1622	
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: Oct 29 14:50 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	-80.60		75.81	
		-231.0 (Minimum) -56.00 (Nominal) 119.0 (Maximum)		-2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	148.7		-1.747	
		114.0 (Minimum) 159.0 (Nominal) 204.0 (Maximum)		-625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	113.0		50.92	
		66.00 (Minimum) 111.0 (Nominal) 156.0 (Maximum)		-350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)
3	60.48		3.249	
		39.00 (Minimum) 64.00 (Nominal) 89.00 (Maximum)		-250.0 (Minimum) 0 (Nominal) 250.0 (Maximum)
4	23.82		21.76	
		15.00 (Minimum) 25.00 (Nominal) 35.00 (Maximum)		-63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	13.71		-3.865	
		4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)		-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)
6	9.639		7.261	
		5.000 (Minimum) 10.00 (Nominal) 15.00 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)
7	-0.2755		-0.4168	
		-5.000 (Minimum) 0. (Nominal) 5.000 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)

Master: Oct 29 15:06 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag	Value	Fine - Mag, Real, Imag
0	1.065		1.061	
		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)
1	1.065		1.061	
		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)
2	1.065		1.061	
		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)

Master: Calibration out of date Jun 23 20:35 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Stab Measurement Summary

Phase	BS Window Ratio			Value	Phase	SS Window Ratio			Value	Phase	LS Window Ratio			Value
Before				1.016	Before				0.4548	Before				0.2835
	0.9643 (Minimum)	1.015 (Nominal)	1.066 (Maximum)			0.4306 (Minimum)	0.4533 (Nominal)	0.4760 (Maximum)			0.2737 (Minimum)	0.2881 (Nominal)	0.3025 (Maximum)	
Phase	BS Window Sum CPS			Value	Phase	SS Window Sum CPS			Value	Phase	LS Window Sum CPS			Value
Before				17600	Before				10700	Before				1389
	16720 (Minimum)	17600 (Nominal)	18480 (Maximum)			10150 (Minimum)	10680 (Nominal)	11220 (Maximum)			1324 (Minimum)	1394 (Nominal)	1464 (Maximum)	

Before: Dec 03 15:39 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Photo-multiplier High Voltages Calibrations

Phase	BS PM High Voltage (Command) V			Value	Phase	SS PM High Voltage (Command) V			Value	Phase	LS PM High Voltage (Command) V			Value
Before				1745	Before				1827	Before				1629
	1648 (Minimum)	1748 (Nominal)	1848 (Maximum)			1735 (Minimum)	1835 (Nominal)	1935 (Maximum)			1534 (Minimum)	1634 (Nominal)	1734 (Maximum)	

Before: Dec 03 15:39 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Crystal Quality Resolutions Calibration

Phase	BS Crystal Resolution %			Value	Phase	SS Crystal Resolution %			Value	Phase	LS Crystal Resolution %			Value
Before				13.22	Before				9.965	Before				9.276
	12.23 (Minimum)	13.23 (Nominal)	14.23 (Maximum)			8.896 (Minimum)	9.896 (Nominal)	10.90 (Maximum)			8.123 (Minimum)	9.123 (Nominal)	10.12 (Maximum)	

Before: Dec 03 15:39 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

MCFL Calibration

Phase	Raw B0 Resistivity OHMM			Value	Phase	Raw B1 Resistivity OHMM			Value	Phase	Raw B2 Resistivity OHMM			Value
Before				3863	Before				3804	Before				3826
	3565 (Minimum)	3875 (Nominal)	4185 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)			3524 (Minimum)	3830 (Nominal)	4136 (Maximum)	

Before: Dec 03 15:41 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

HILT Caliper Calibration

Phase	HILT Caliper Zero Measurement IN			Value	Phase	HILT Caliper Plus Measurement IN			Value
Before				8.007	Before				12.23
	6.000 (Minimum)	8.000 (Nominal)	10.00 (Maximum)			9.000 (Minimum)	12.00 (Nominal)	15.00 (Maximum)	

Before: Dec 03 15:44 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Detector Calibration

Phase	Gamma Ray Background GAPI			Value	Phase	Gamma Ray (Jig - Bkg) GAPI			Value	Phase	Gamma Ray (Calibrated) GAPI			Value
Before				50.87	Before				168.7	Before				162.0
	0 (Minimum)	30.00 (Nominal)	120.0 (Maximum)			153.3 (Minimum)	168.7 (Nominal)	184.0 (Maximum)			147.0 (Minimum)	162.0 (Nominal)	177.0 (Maximum)	

Before: Dec 03 15:38 1997

High resolution Integrated Logging Tool-CTS Wellsite Calibration

Zero Measurement

Phase	CNTC Background CPS			Value	Phase	CFTC Background CPS			Value
Master				25.72	Master				26.65
Before				25.20	Before				25.99
	5.000 (Minimum)	25.72 (Nominal)	40.00 (Maximum)			5.000 (Minimum)	26.65 (Nominal)	40.00 (Maximum)	

Master: Nov 20 15:47 1997

Before: Dec 03 15:40 1997

High resolution Integrated Logging Tool-CTS
Wellsite Calibration

Accelerometer Calibration

Phase	Z-Axis Acceleration M/S2			Value
Before				9.786
	9.610 (Minimum)	9.810 (Nominal)	10.01 (Maximum)	

Before: Dec 04 13:45 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Electronics Calibration Check - Thru Cal Mag. & Phase

Idx	Phase	Value	Thru Cal Magnitude V			Nominal	Value	Phase DEG			Nominal
0	Master	0.6052				0.6050	64.89				71.00
1	Master	1.243				1.270	63.85				70.00
2	Master	0.6163				0.6230	59.99				66.00
3	Master	0.6963				0.7040	59.19				65.00
4	Master	1.309				1.337	52.66				59.00
5	Master	1.892				1.955	50.68				57.00
6	Master	1.888				1.955	50.68				57.00
7	Master	1.352				1.415	46.03				53.00
			60.00 % (Minimum)	(Nominal)	140.0 % (Maximum)			Nom -60.00 (Minimum)	(Nominal)	Nom + 60.00 (Maximum)	

Master: Oct 29 14:35 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Electronics Calibration Check - Auxilliary

Phase	AIT-H SPA Plus MV	Value	Phase	AIT-H SPA Zero MV	Value
Master	▨	993.0	Master	▨	0.04659
	941.0 (Minimum) 990.5 (Nominal) 1040 (Maximum)			-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)	
Phase	AIT-H Temperature Plus V	Value	Phase	AIT-H Temperature Zero V	Value
Master	▨	0.9196	Master	▨	6.353E-00
	0.8700 (Minimum) 0.9150 (Nominal) 0.9600 (Maximum)			-0.05000 (Minimum) 0 (Nominal) 0.05000 (Maximum)	

Master: Oct 29 14:35 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Test Loop Gain Correction

Idx	Value	Test Loop Gain Magnitude V	Value	Phase DEG
0	1.026	▨	0.4012	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
1	1.020	▨	0.4930	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
2	1.031	▨	-0.9370	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
3	1.020	▨	0.4308	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
4	1.004	▨	-0.3170	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
5	1.002	▨	-0.2073	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
6	1.016	▨	0.2204	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)
7	1.019	▨	-0.1622	▨
		0.9500 (Minimum) 1.000 (Nominal) 1.050 (Maximum)		-3.000 (Minimum) 0 (Nominal) 3.000 (Maximum)

Master: Oct 29 14:50 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Sonde Error Correction

Idx	Value	R Sonde Error Correction MM/M	Value	X Sonde Error Correction MM/M
0	-80.60	▨	75.81	▨
		-231.0 (Minimum) -56.00 (Nominal) 119.0 (Maximum)		-2250 (Minimum) 0 (Nominal) 2250 (Maximum)
1	148.7	▨	-1.747	▨
		114.0 (Minimum) 159.0 (Nominal) 204.0 (Maximum)		-625.0 (Minimum) 0 (Nominal) 625.0 (Maximum)
2	113.0	▨	50.92	▨
		66.00 (Minimum) 111.0 (Nominal) 156.0 (Maximum)		-350.0 (Minimum) 0 (Nominal) 350.0 (Maximum)
3	60.48	▨	3.249	▨
		39.00 (Minimum) 64.00 (Nominal) 89.00 (Maximum)		-250.0 (Minimum) 0 (Nominal) 250.0 (Maximum)
4	23.82	▨	21.76	▨
		15.00 (Minimum) 25.00 (Nominal) 35.00 (Maximum)		-63.00 (Minimum) 0 (Nominal) 63.00 (Maximum)
5	13.71	▨	-3.865	▨
		4.000 (Minimum) 14.00 (Nominal) 24.00 (Maximum)		-50.00 (Minimum) 0 (Nominal) 50.00 (Maximum)
6	9.639	▨	7.261	▨
		5.000 (Minimum) 10.00 (Nominal) 15.00 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)
7	-0.2755	▨	-0.4168	▨
		-5.000 (Minimum) 0 (Nominal) 5.000 (Maximum)		-30.00 (Minimum) 0 (Nominal) 30.00 (Maximum)

Master: Oct 29 15:06 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Mud Gain Correction

Idx	Value	Coarse - Mag, Real, Imag	Value	Fine - Mag, Real, Imag
0	1.065	▨	1.061	▨
		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)
1	1.065	▨	1.061	▨
		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)
2	1.065	▨	1.061	▨
		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)		0.6000 (Minimum) 1.000 (Nominal) 1.400 (Maximum)

Master: Calibration out of date Jun 23 20:35 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Inversion results

Phase	Rho Aluminium G/C3	Value	Phase	Rho Magnesium G/C3	Value
Master	▨	2.598	Master	▨	1.687
	2.586 (Minimum) 2.596 (Nominal) 2.606 (Maximum)			1.676 (Minimum) 1.686 (Nominal) 1.696 (Maximum)	
Phase	Pe Aluminium	Value	Phase	Pe Magnesium	Value
Master	▨	2.588	Master	▨	2.732
	2.470 (Minimum) 2.570 (Nominal) 2.670 (Maximum)			2.660 (Minimum) 2.760 (Nominal) 2.860 (Maximum)	

Master: Nov 20 14:43 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Deviation Summary

Phase	BS Average Deviation %	Value	Phase	SS Average Deviation %	Value	Phase	LS Average Deviation %	Value
Master	▨	0.2762	Master	▨	0.5351	Master	▨	0.4596
-0.6000 (Minimum)	0 (Nominal)	0.6000 (Maximum)	-1.000 (Minimum)	0 (Nominal)	1.000 (Maximum)	-1.500 (Minimum)	0 (Nominal)	1.500 (Maximum)
Phase	**BS Max Deviation %**	**Value**	**Phase**	**SS Max Deviation %**	**Value**	**Phase**	**LS Max Deviation %**	**Value**
Master	▨	1.324	Master	▨	1.138	Master	▨	1.244
-1.600 (Minimum)	0 (Nominal)	1.600 (Maximum)	-2.500 (Minimum)	0 (Nominal)	2.500 (Maximum)	-3.500 (Minimum)	0 (Nominal)	3.500 (Maximum)

Master: Nov 20 14:43 1997

High resolution Integrated Logging Tool-CTS Master Calibration

Tank Measurement

Phase	Thermal Near Corr. (Tank) CPS	Value	Phase	Thermal Far Corr. (Tank) CPS	Value	Phase	CNTC/CFTC (Tank)	Value
Master	▨	5645	Master	▨	2386	Master	▨	2.366
5000 (Minimum)	6031 (Nominal)	7200 (Maximum)	2075 (Minimum)	2793 (Nominal)	3125 (Maximum)	2.120 (Minimum)	2.159 (Nominal)	2.540 (Maximum)

Master: Nov 20 15:47 1997

COMPANY	**SANTOS MAGELLAN**
WELL	**WEST MEREENIE # 13**
FIELD:	**WEST MEREENIE**
RIG	**EWS W/O**
COUNTRY:	**AUSTRALIA**

BOTTOM LOG INTERVAL	1600.5 M
SCHLUMBERGER DEPTH	1603 M
DEPTH DRILLER	1605 M
ROTARY TABLE	770.5 M
DRILL FLOOR	770.5 M
GROUND LEVEL	764.8 M

Schlumberger

PLATFORM EXPRESS (AITH)
RUN #2, SUITE #2
SCALE 1:200