AT+S

TEXACO

CARCAJOU O-25

9211-A31-2-2

Canada Oil and Gas Lands Administration
Administration du pétrole et du gaz des terres du Canada

D.A. 1269

E.A. #174

Nova Scotia	☐	West Coast	☐	Exploratory	☒
Newfoundland	☐	Northern	☒	Development	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Delineation	☐
				Service	☐

AUTHORITY TO DRILL A WELL

APPLICATION

This application is submitted with Section 82 of the Canada Oil and Gas Drilling Regulations. When approved under Section 83 of the Regulations, it is the requisite authority for the commencement of drilling operations.

Well Name in Full: AT&S TEXACO CARCAJOU O-25

Operator: AT&S EXPLORATION LTD.

Drilling Program No: N/A

Contractor: JADE DRILLING LTD.

Permit or Lease No: -

Drilling Rig ~~XXXX~~: No. 5

Estimated Well Cost: -

Location Unit: Ø Section: 25 Grid Area: 65-40-128-15

Coordinates Lat: 65° 34' 50.806" N Long: 128° 19' 34.530" W

Area: Norman Wells, N.W.T.

Field/Pool: -

Elevation-~~XX~~KB: 114.0 m ~~XSX XXXXXX~~ Grd. 107.0 m ~~XBRX~~

Approx. Spud Date: 1986-01-15

Estimated Days on Location: 20

Anticipated Total Depth: 780 mKB

Target Horizon(s): Devonian Kee Scarp

UWI 3000256540128150 Location at Shot Point 497 on Line W-83-NA

EVALUATION PROGRAM

Ten metre sample intervals

Five metre sample intervals: Surface to FTD, 5 sets vials, 3 bag sets

Canned sample intervals: Geochem 1 bag set 10 m int., below surface csg., 1 bag set unwashed 5 m int.

Conventional cores at: 1st porosity or show "Kee Scarp". Core & Test.

Logs and Tests: CNL - FDC - GR, BHCS - GR - DLL

CASING AND CEMENTING PROGRAM

O.D.	Weight	Grade	Setting Depth KB ~~XXXXXXXXX~~	Cementing Program (Volumes)
340 mm	81.1 kg/m	J-55, LT&C	40 m	5.0 Tonnes incl. (100% excess)
245 mm	53.6 kg/m	J-55, LT&C	190 m	13.1 Tonnes incl. (100% excess)
178 mm	34.2 kg/m	J-55, LT&C	780 m	25.3 Tonnes incl. (100% excess)

Volumes to be calculated following caliper log.

B.O.P. Equipment:
2 - 228.6 mm 21,000 kPa Single Shaffers
1 - 228.6 mm 21,000 kPa Shaffer Spherical
Accumulator (410 litres)
Manifold 76 mm x 34,000 kPa

Other Information:
Dependent on on-site inspection and final survey, location will be within 61 m of specification.

Signed D.R. Winslet /D.R. Winslet Title Vice President, Exploration

Date 29 August , 1985 Company AT&S EXPLORATION LTD.

APPROVAL

An approved copy of this notice is to be posted at each wellsite.

Signed [signature]
Engineering Branch

Date 26 Nov 1985

File 9211-A31-2-2

Department of Energy, Mines and Resources
Ministère de l'Énergie, des Mines et des Ressources

Department of Indian Affairs and Northern Development
Ministère des Affaires indiennes et du Nord Canadien

Canada

9811-A31-2-2

SUMMARY

TITLE PAGE

FINAL WELL REPORT AT&S CARCAJOU 0.25

Date 21st May 1986

Unique Well Identifier 3000256540128150

Operator's Representative: Mr. W.H. Slaght.

CONTENTS

WELL SUMMARY: AT&S-Texaco Carcajou O-25

AREA: Norman Wells, N.W.T.

LOCATION: Land

OPERATOR: AT&S Exploration Ltd.

DRILLING CONTRACTOR: Jade Drilling Ltd. Rig #5

SPUDDED: January 14, 1986

RIG RELEASE: January 27, 1986

PARTNERS: AT&S Exploration Ltd. Paying 100%
AT&S Post completion interest 75%
Texaco Post completion interest 25%

SEISMIC LINE: W83 NASP

WELL CLASS: Wildcat

WELL STATUS: Dry & Abandoned

LAT: 65° 34' N LONG: 128° 19' W

RIG Jade Rig #5

KB: 112.5 m

ELEV: 108.0 m (Ground)

FTD: Driller 760.0 m
Logger 760.2 m

WELL OBJECTIVES:

THE D-5 WELL HAVING ENCOUNTERED NON-COMMERCIAL GAS ON THE REEF INTERIOR SUGGESTS THAT THE REEF RIMS WOULD BE APPROPRIATE TARGETS MOST LIKELY TO HAVE BETTER DEVELOPED POROSITY. TWO TESTS WILL BE NECESSARY TO TEST THIS THEORY. THE FIRST TO BE LOCATED ON THE SOUTHEAST RIM AT THE HIGHEST STRUCTURAL POSITION ON AT&S ACREAGE. THE SECOND SIMILARLY LOCATED ON THE NORTHWEST REEF RIM.

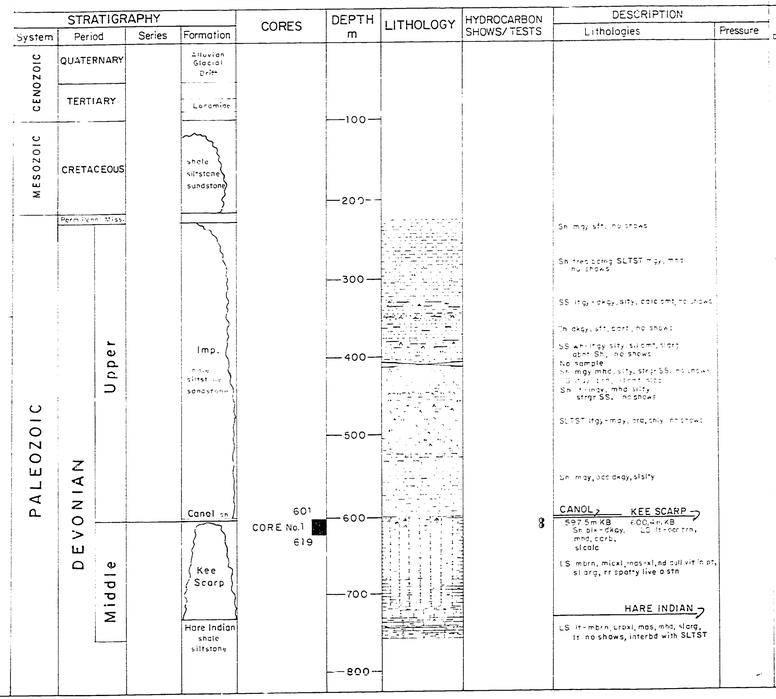
WELL RESULTS:

THIS WELL WAS DRILLED ON THE NORTHWESTERN FLANK OF THE CARCAJOU REEF COMPLEX TO EVALUATE THE KEE SCARP POTENTIAL. THE KEE SCARP WAS ENCOUNTERED AT 600.4 M KB (-487.9 M SS). THE FORMATION HERE CONSISTED OF LIMESTONE, MEDIUM BROWN, MICROCRYSTALLINE, MASSIVE CRYSTALLINE IN PART. RARE SPOTTY OIL STAIN WAS EVIDENT WITHIN RARE SPOTTY PINPOINT POROSITY. ONE 18 METRE CORE WAS CUT FROM 601 - 619 M KB. THROUGHOUT THE 132.6 M OF KEE SCARP SECTION, THE INDICATION OF HYDROCARBONS WAS LIMITED TO SPOTTY OIL BLEEDING FROM FRACTURES AND STYLOLITES.

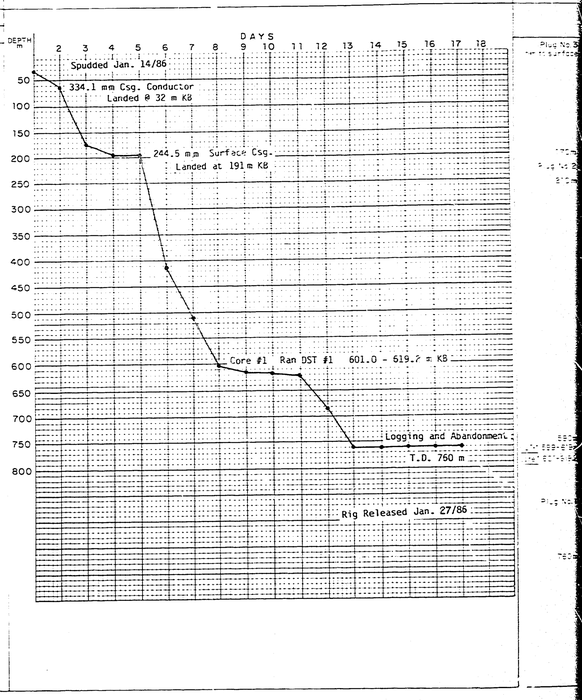
CONCLUSIONS:

CARCAJOU O-25, THE THIRD WELL DRILLED BY AT&S ON THE CARCAJOU REEF COMPLEX, ENCOUNTERED 132.6 M OF KEE SCARP. THE SECTION WAS VOID OF EFFECTIVE POROSITY. THE RESULTS OF THE THREE CARCAJOU WELLS LIMITS ANY PROTECTIVE POROUS REEF TO THE HIGHEST UP-DIP POSITION ON THE REEF. NO FURTHER EXPLORATION ON THIS PLAY IS ANTICIPATED.

GEOLOGICAL DATA SUMMARY

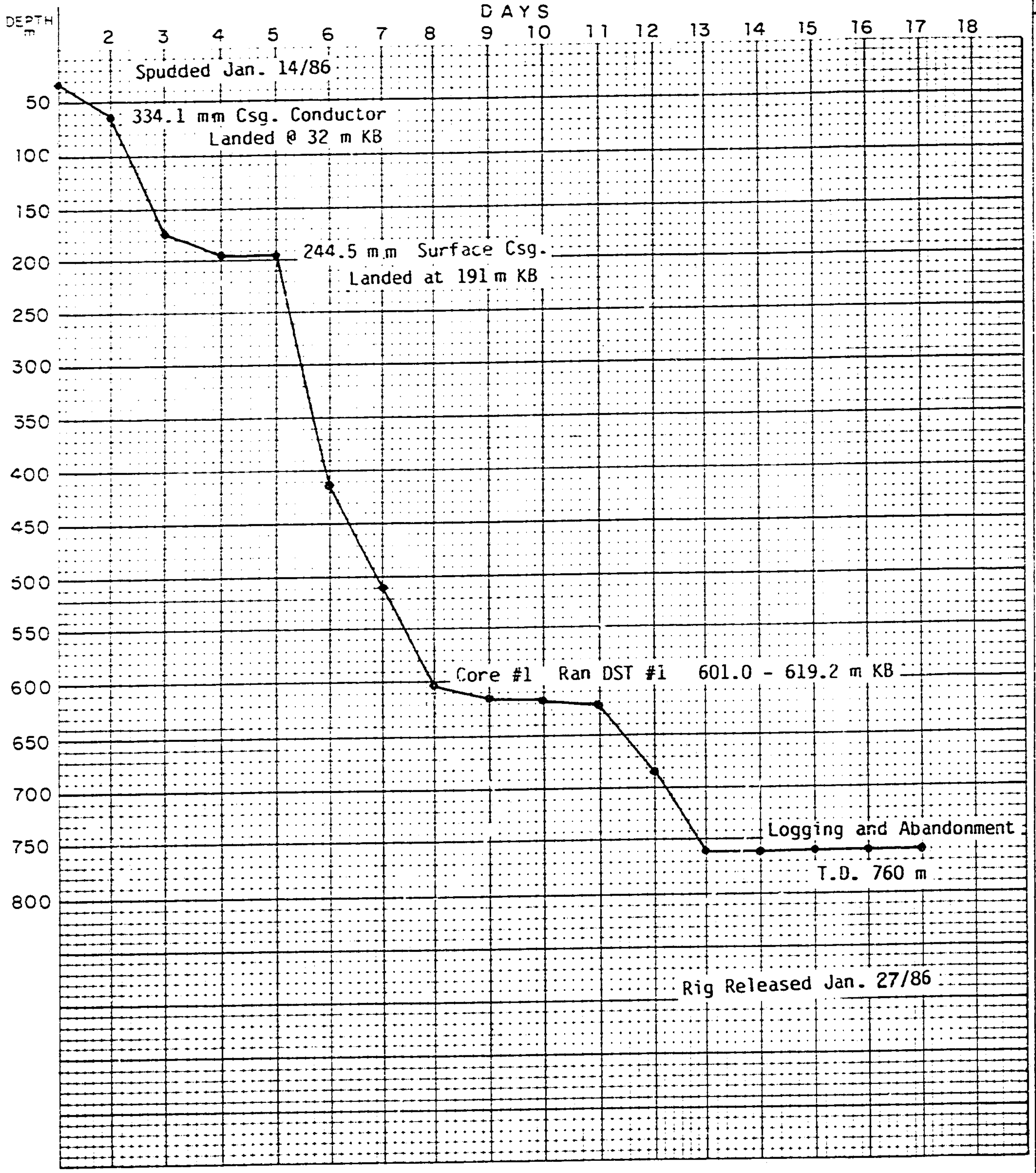


DRILLING PROGRESS CHART

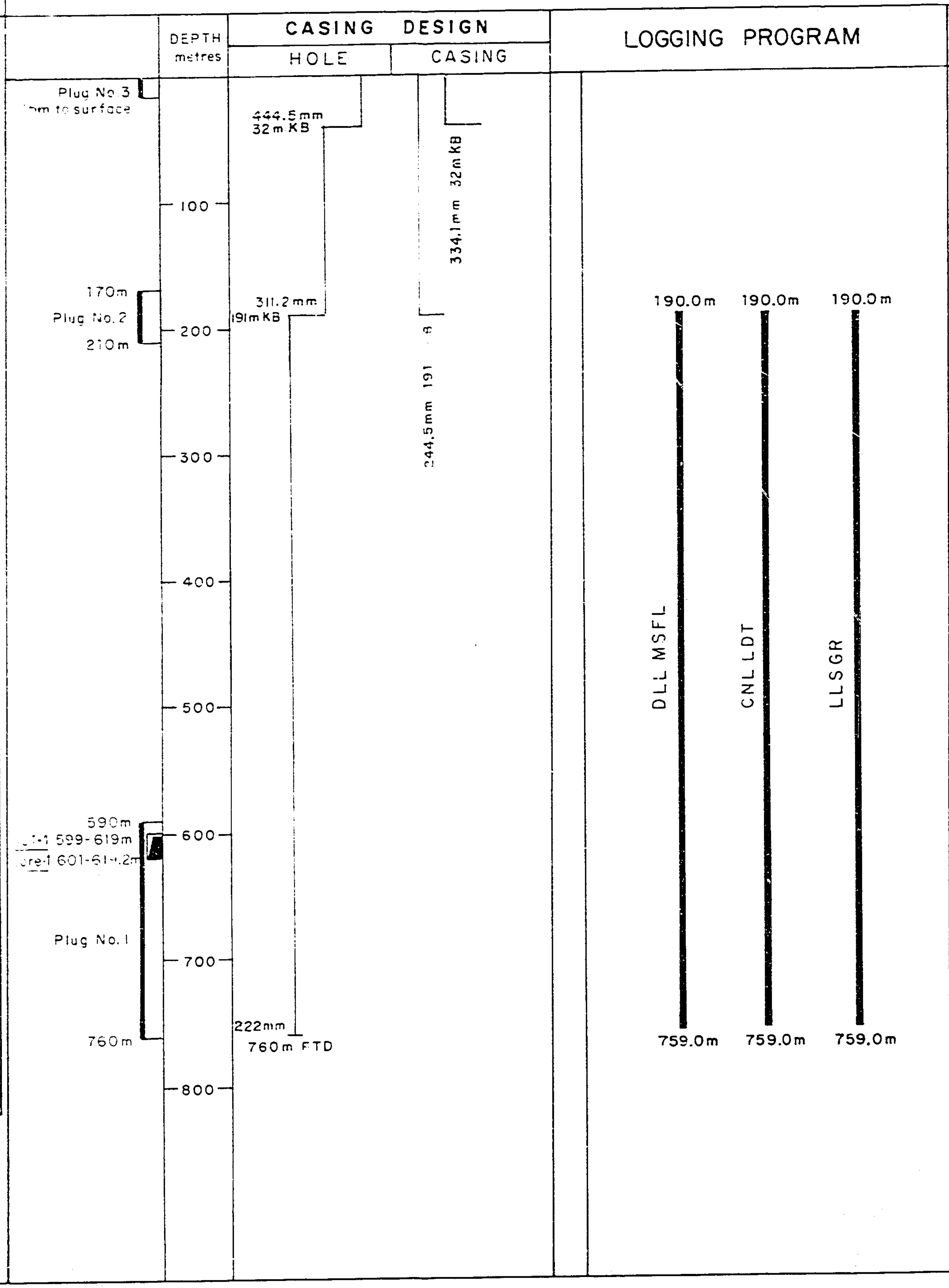


...PTION	Pressure
...E SCARP ...0.4 m KB	
...RE INDIAN ...as, mhd, slarg, ...rbd with SLTST	

DRILLING PROGRESS CHART



EVALUATION PROGRAM



DST's | **FORMATION FLUID RECOVERY FLOW RATES**

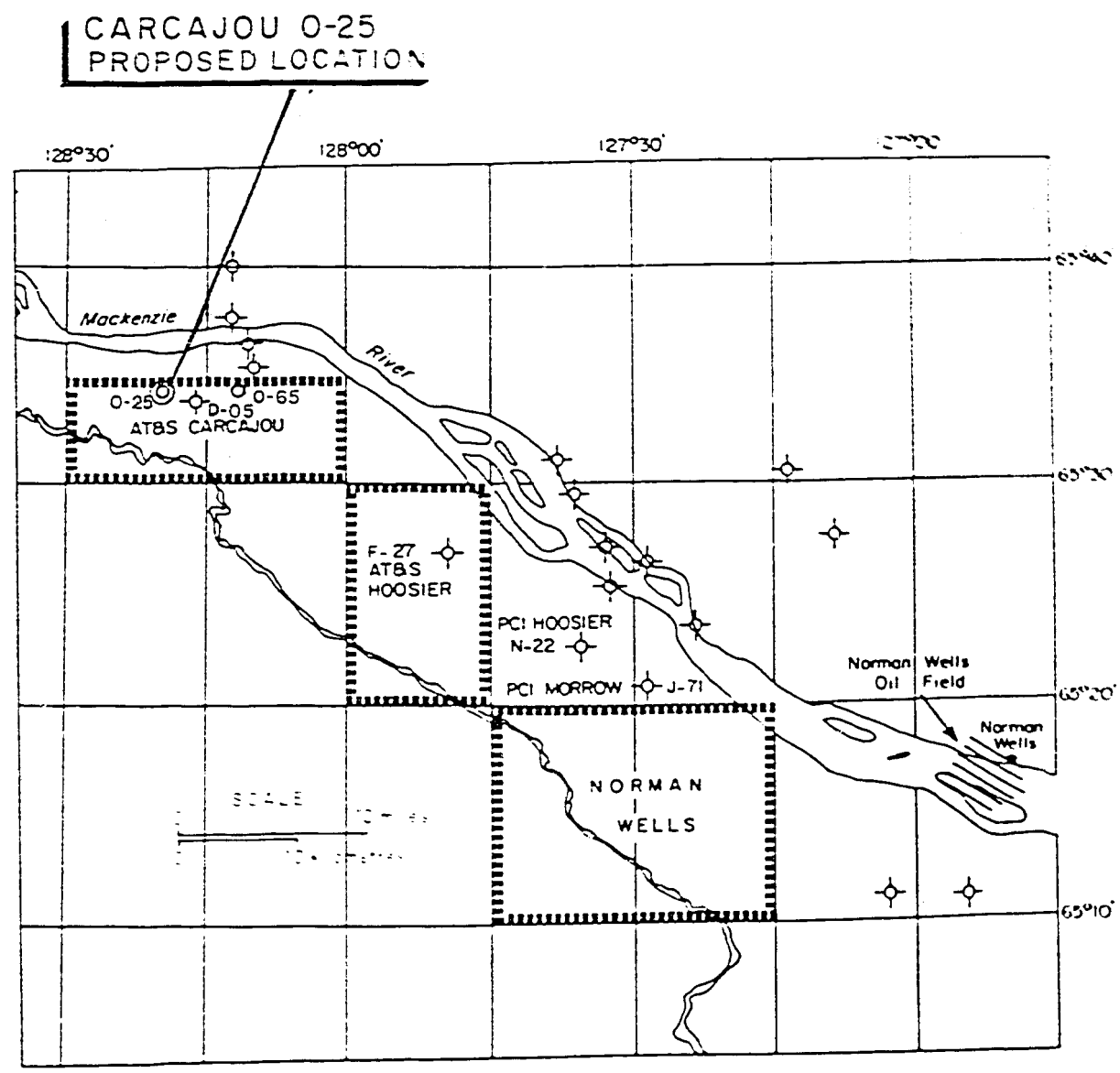
DRILL STEM TEST SUMMARY

DST #1 INTERVAL: 599-619M FM: KEE SCARP
TYPE: BOTTOM HOLE INFLATE

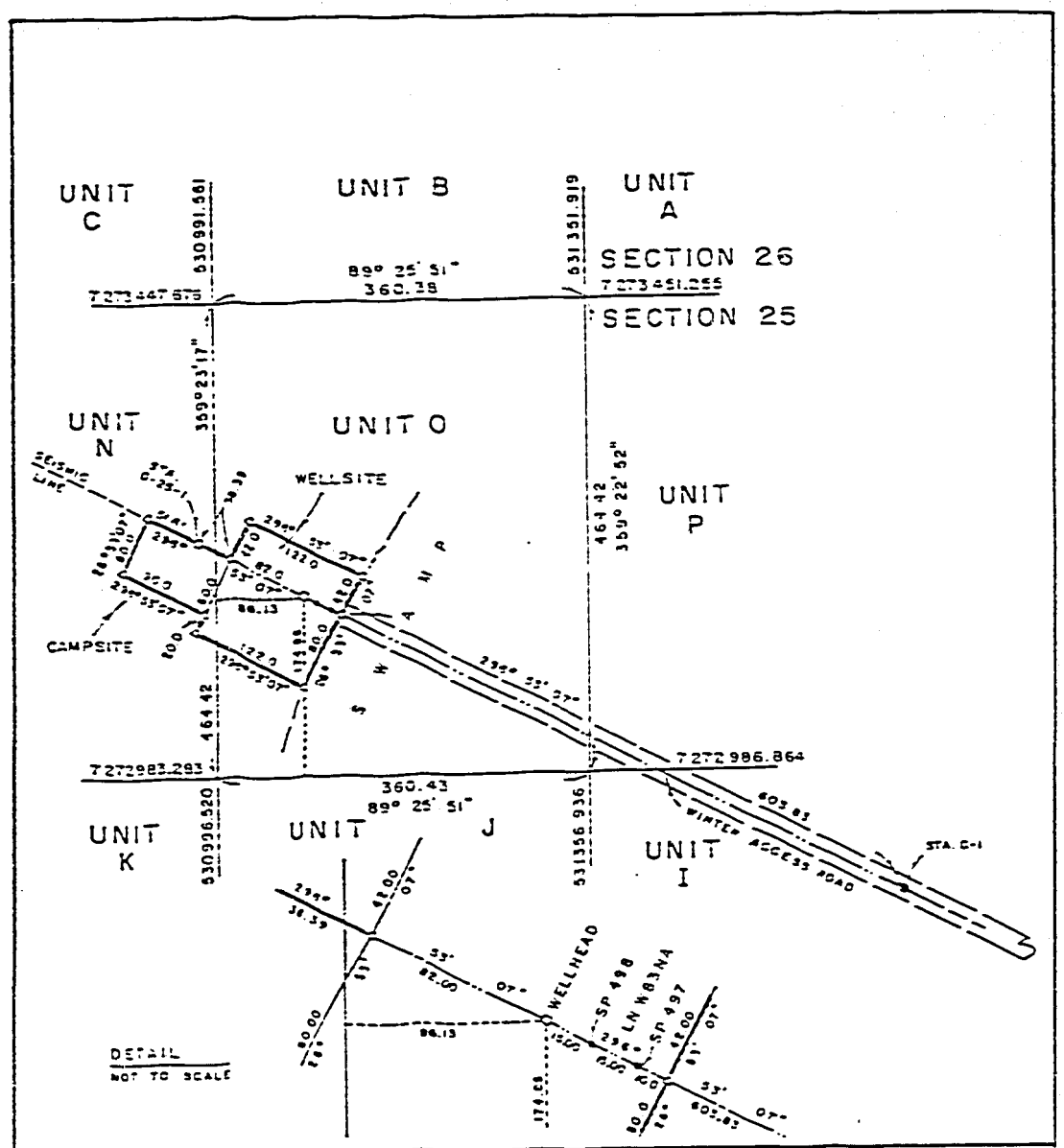
TIMES:	10/30/60/120
PF:	WEAK TO STRONG AIR BLOW IN 15 MINS
VO:	STRONG AIR BLOW IMMEDIATELY WITH GTS-TSTM
RECOVERY:	35M OF DRILLING MUD
HP:	6690/6690 KPA
SIP:	4679/4748 KPA
FP:	144/284/564 KPA

2 of 2

LOCATION MAP



SURVEY PLAT



N.T.S. MAP SHEET: 106 H/9	METRIC	NORTHWEST TERRITORIES

A.T. & S. EXPLORATION LTD.

PRELIMINARY SKETCH SHOWING WELL LOCATION

A.T.& S. CARCAJOU O-25

UNIT O, SECTION 25, GRID AREA 65° 40', 128° 15'

A.T.& S.EXPLORATION LTD.

CERTIFIED CORRECT:
THIS 3rd. DAY OF JULY , AD 1985.

CANADA LANDS SURVEYOR

ELEVATION	GEOGRAPHIC CO-ORD'S.	U.T.M. CO-ORDINATES
ON GROUND AT WELLHEAD : 104.12	NORTH LATITUDE: 65°34'50.806" (65.5807794°) WEST LONGITUDE: 128°19'34.530" (128.3262583°)	NORTHING 7,273,158.973 EASTING 531,080.780 CO-ORDINATES ARE COMPUTED FOR ZONE 9 CENTRAL MERIDIAN 129°W

LEGEND	AREAS REQUIRED	
Survey Monument found Survey Monument placed Traverse Station	WELLSITE = 3.68 Acres 1.488 ha. CAMPSITE = 1.33 Acres 0.540 ha. FUEL SITE = —— Acres —— ha. TOTAL = 5.01 Acres 2.028 ha.	HOSFORD, IMPEY, WELTER AND ASSOCIATES LTD. P.O. BOX 1409, YELLOWKNIFE, X1A 2P1 NORTHWEST TERRITORIES
SCALE 1:5000		FILE NO. Y85012 DATE July 3/85

GEOLOGICAL
REPORT

GEOLOGICAL WELLSITE REPORT

FOR

AT&S TEXACO

CARCAJOU O-25

Prepared For

AT&S EXPLORATION LTD.

By

C. Darren Frew

PRO GEO CONSULTANTS

January, 1986

PRO GEO CONSULTANTS

TABLE OF CONTENTS

WELL SUMMARY

WELL NAME:	AT&S TEXACO CARCAJOU O-25
COORDINATES:	65° 34' N, 128° 19' W
LOCATION:	NWT
ELEVATIONS:	Ground: 108.0m KB: 112.5m
OPERATOR:	AT&S Exploration Ltd.
DRILLING CONTRACTOR:	Jade Drilling Ltd. Rig #5
WELLSITE SUPERVISION:	Toolpusher: Les Zolkowski/Dave Ostapovich Engineer: Earl Staroszik Geologist: C. Darren Frew
WELL SPUDDED:	1986/01/14 2145 hours
DRILLING COMPLETED:	1986/01/27 0645 hours
BIT SIZES:	Surface: 311.2mm Downhole: 222.2mm
CASING SIZES:	Surface: 244.5mm Production:
TOTAL DEPTH:	Driller: 760.0m Logger: 760.2m
BOTTOM HOLE FORMATION:	Hare Indian
CORES CUT:	Core #1 601 - 619.2m
LOGS RUN:	DLL-MSFL; CNL-LDT; LLS-GR
DRILL STEM TESTS:	DST #1 599 - 619m
RIG RELEASED:	1986/01/30
WELL STATUS:	Dry and Abandoned
ADDITIONAL:	

DAILY SUMMARY

1986/01/14

- Make up bit - run 1 joint casing in top part of rat hole
- Pack barite around outside of casing and weld on spout to cellar to circulate and drill with bit inside 9 5/8" casing
- Drill out rathole - cut off spout to cellar and weld o cap
- Lower casing and pack with barite
- Weld spout to cellar back on 1.5m higher
- Drill rat hole inside 244.5mm liner
- Patch and re-weld spout to cellar 1m higher
- Drill 222mm rat hole inside casing liner
- Case rathole - cellar leaking mud
- SPUD 2145 nours with 311.2mm pilot bit
- Pick up kelly sock, thaw out rotary table, make up bit to drill conductor hole.
- Build volume - mix mud and L.C.M.
- Drill conductor hole (444.5mm)

1986/01/15

- Drill conductor hole
- Circulate to condition hole and mud
- Blow kelly and POOH, lay down 228mm DC's
- Rig up and run casing - circulate prior to cementing
- Ran 3 joints 334.1mm H-50 71.43 kg/m, 8rd ST&C casing (33.69m total length)
- Landed at 32m KB. Cemented with 4.5 tonnes Polarset. In place at 1045 hours, good returns
- WOC
- Weld on conductor pipe, and cement around top and bottom of cellar. Steam to ream mouse hole
- Pick up one 228 DC and shock sub and RIH

1986/01/16

- Blow kelly and drill out cement (tag cement at 30m KB)
- Drill 311.2mm surface hole
- Survey at 41m, survey barrel stuck in collars, POOH to retrieve survey
- Drill and survey

1986/01/17

- Drill and survey (surveys from 0^{o} to $1/8^{o}$)
- Circulate prior to dummy trip
- Dummy trip to bit, strap out, blow kelly
- RIH, drill to 191m
- Blow kelly, POOH, lay down 228mm DC
- Rig up and run casing
- Rig up to circulate casing
- Cement casing
- W.O.C.

1986/01/18

- Cut conductor and casing
- Weld on casing bowl - pressure test to 10,000 KPa. Good
- Nipple up BOP
- Nipple up lines and manifold
- Pressure test BOP's, low - 1400 KPa, 15 min each, high - 14,000 15 mins each
- Blow with steam and fill with antifreeze

1986/01/19

- Drill out cement and shoe at 191m
- Drill to 194m, perform leak-off test - good
- Trip for plugged jet
- Drill and survey, clean tanks ad strat mixing mud at 350m

1986/01/20

- Drill and survey to 415m
- Trip out bit #1
- RIH with bit #2
- Drill
- POOH 2 stands and repair washed out pipe packing

1986/01/21

- Drill and survey to 544m, circulate sample
- Drill to 600m, circulate sample

1986/01/22

- Drill to 601m, circulate sample
- POOH with bit #2RR, strap out difference of 0.31m, do correction
- Pick up core barrel and jars
- Blow kelly, break circulation and clean to bottom, 5m fill
- Cut core #1

1986/01/23

- Cut Core #1
- Hoist and recover 18m core
- Service and stand back core barrel, WOO, blow flare line with steam
- Make up and run in with DST #1 and head up

1986/01/24

- Inflate packer and test. DST #1 599 - 619m
- Pull packer loose and hoist using test plugs
- Break and lay down test tools
- Run back in DST and pick up core barrel
- Lay down core barrel and blow flare line with steam
- Run in with bit #2RR
- Break circulation and repack swivel - 4 1/4 hours
- Ream rathole 601 - 619m - 5 hours
- Drill and survey

1986/01/25

- Drill and survey

1986/01/26

- Drill and survey

1986/01/27

- Drill and survey
- Circulate sample at 760m
- Dummy trip 8 stands
- Run in to log with Schlumberger

1986/01/28

- Log with Schlumberger
- Rig out Schlumberger
- RIH, circulate, WOO

1986/01/29

- Lay down singles
- Run plugs 1, 2 & 3
- Lay down BOP
- Cut casing and cap 1m below surface

CASING SUMMARY

Surface Casing

Ran 16 joints 244.5mm, 53.6 kg/m, ERW (15 LT&C, 1 ST&C) surface casing. Cemented by Nowsco with 14.5 tonnes Class "G" + 2% $CaCl_2$. Landed at 191m. Plug down at 2245 hours, 1986/01/18. $3m^3$ cement returns to surface.

DRILL STEM TEST SUMMARY

DST #1 Interval: 599 - 619m Fm: Kee Scarp Type: Bottom Hole Inflate

TIMES:	10/30/60/120
PF:	weak to strong air blow in 15 mins
VO:	strong air blow immediately with GTS - TSTM
RECOVERY:	35m of drilling mud
HP:	6690/6690 KPa
SIP:	4679/4748 KPa
FP:	144/284/564 KPa
OTHER:	Outside recorder chart registered extreme high pressures (11,839 KPa) when tool was opened, returning to hydrostatic when packer was pulled loose.

ABANDONMENT PROGRAM

Plug #1 Interval: 210 - 170m

Cemented with 2.8 tonnes 20% Excess Class "G". Plug down at 1140 hours, 1986/01/29.

Plug #2 Interval: 162m

Plug #3 Interval: 15m - surface

Cemented with 0.5 tonnes Class "G". Plug down at 2130 hours

Drilling Fluids

Attached is the mud program which was followed thoughout the operation with no problems nor abnormalities.

Mud Additives Used (sacks)

Oil 339

Sawdust 220

Caustic Soda 11

Quickseal 3

Bicarb 4

Peltresc 2

Benex 9

Sapp 1

Caltex 2

Stayflo 6

Barite 152

MUDCO SERVICES LTD.

Telephone 269-5359
1517 Norcen Tower
715 - 5th Avenue S.W.
Calgary, Alberta
T2P 2X6

June 20, 1985

DRILLING FLUIDS PROGRAM

AT&S MAIDA CREEK & CARCAJOU

N.W.T.

Prepared For: Mr. V. Elford

Prepared By: Mr. Clare Smith

Mudco Contact

Clare Smith 269-5359 (24 Hrs)
289-6723 (Res.)

DRILLING FLUID PROCEDURE

SURFACE HOLE 0 - 170 m

To be drilled with a Gel-Lime slurry with a viscosity sufficient to maintain stable hole conditions.

A viscosity of 75-80 s/L is recommended for an efficient surface casing operation.

Lost circulation could be a problem on surface hole in this area. If it should occur raise the viscosity to 80-85 s/L and start adding Sawdust and Kwik Seal up to 25-30 lbs/bbl.

In case the problem is severe increase the concentration of Sawdust and Kwik Seal and if this fails to control the losses other products and/or methods should be considered, but this should be a field decision. (Gel-diesel or cement plugs). Drilling blind is also a possibility. If drilling blind use heavy viscous pills to sweep hole if hole becomes tight while drilling.

Avoid damaging surge and swabbing pressures on all operations.

In the event of gravel, sand or boulders are encountered, raise the viscosity as high as required to clean the hole; use Hydrogel only (no extenders) this will give a good even viscous consistency.

FROM UNDER SURFACE CASING TO ±350 m (hole conditions permitting)

Drill out surface casing cement and shoe with water and bypass cement contaminated fluid. Treat out any remaining cement with Sodium Bicarbonate to a pH of 9.5.

Drill ahead with water, circulating the sump.

If water availability is a problem, or if difficulty is experienced in keeping the weight and solids down, we recommend the use of small amounts of SAPP to help precipitate the drilled solids.

In the event of "mud ring" problems use SAPP down the drill pipe when making connections.

The interval on water is too short to be economically advantageous to flocculate.

The following precautionary steps should be taken while drilling with water:

1) Do not stop tools for any extended period of time.

2) Circulate at least 15-20 minutes prior to trips and watch closely for tight hole on connections and trips.

3) Maintain an annular velocity of 46-48 m/min.

While drilling with water or while W.O.C. and if the rig equipment can be conveniently adapted to mix a standby system in the tank(s), this should be done as follows:

1) Clean tank(s) and fill with clean, fresh water.

2) Reduce the calcium ion of the water to below 20 mg/L with Soda Ash, if necessary.

3) Raise the viscosity to about 50 s/L with Gel and Benex. (6:1)

4) Adjust the pH to 8.5-9.5, using Soda Ash, if required.

This mud can be used to displace the hole at mud-up depth or sooner if hole conditions should deteriorate.

While drilling on water maintain annular velocities between 46 and 48 m/min.

FROM ±350 m TO TOTAL DEPTH (±750 m)

Displace the hole slowly with the premixed fluid from the tank, if available. If not available, mix as per above.

Drill ahead with the low solids fluid maintaining the properties as follows:

Density:	1018 to 1120 kg/m³ as drilling progresses.
	Keep hole full at all times as a precautionary measure.

Logged hole, no problems. Ran 178 mm casing to 560 m. No problems. Circulating head installed at this point.

Lost mud at 568 m. Lowered mud weight to 1200 kg/m³ (no gas). No problems after 585 m. Final mud weight of 1150 kg/m³ at 755 m.

ANHYDRITE

As soon as it is encountered treatment with Soda Ash should immediately be initiated.

Due to the anhydrite higher calcium readings will occur and in order to control the rheology it might be necessary to use Peltex and Caustic Soda. (Ratio of 2:1 with a pH of 11.0).

The above chemicals would only be used to avoid abnormal pumping pressures caused by "ash gels" or if massive anhydrite is drilled. (Ash gels are caused by overtreatment with Soda Ash).

While drilling anhydrite maintain the pH in the 10.5-11.0 range.

If the fluid loss has to be controlled, be sure all the calcium is treated out before adding any Staflo or CMC.

The Bentonite concentration should be between 15 and 20 lbs/bbl or 42 to 57 kg/m³.

LOST CIRCULATION REMARKS

The sump is usually filled with water during rig up and W.O.C. for surface casing. Therefore, when returns are lost the water supply on hand prevents down time.

Some contractors maintain good hole conditions with annular rates of 30 m/min. This slow rate is not recommended for rigs without experience in the area, however, at the same time, a rate in excess of 38 m/min. is considered a waste of water, and probably diminishes the possibility of getting circulation restored.

Hole conditions are usually good when returns are lost in total. When partial returns are regained hole conditions could become sticky. This adverse hole condition is caused by the slip velocity of the cuttings being greater than the annular rate which causes a cutting build up over the fractured area.

Normally when partial returns are regained a heavy mud slurry is mixed with lost circulation material. This slurry is pumped to the fractured zone, and will usually seal the zone sufficiently to give an increase in annular rates, and remove cuttings.

After returns are partially or totally regained it is important to maintain a fluid that will improve and strengthen the seal in the lost circulation zone.

Usually small amounts of Kwik Seal and Sawdust are carried in the system. The seal of the lost circulation zone must be capable of maintaining a hydrostatic head resulting from a 1120 kg/m³ mud while drilling to T.D.

It is important to trip and make connections slowly to keep surge pressures to a minimum throught lost circulation zones.

Mud thinners should be utilized to minimize equivalent circulating densities and avoid induced fluid loss.

Diesel fuel can be used if mud weights are critical for lost circulation (970-1020 kg/m³).

Recommend to pilot hole ahead on surface hole if lost circulation is a problem. All glacial till should be drilled and cased off.

NOTE * Pretreatment of LCM should be considered at 550-560 m if the same zone should be encountered that was present on Carcajou. (±15 lbs/bbl of Sawdust and Kwik Seal).

ESTIMATED USAGE FOR 2 HOLE PROGRAM

PRODUCT	CAPCALCU USAGE	MUD AT LOCATION	EST. USAGE FOR 2 HOLES	AUG. 1985 ORDER	WEIGHT
Barite	996	810	1000		
Bentonite	751	1072	1000	300	30,000
Caustic Soda	26	4	40	50	2,500
Sawdust	741	788	1000	1000	25,000
Peltex	20	24	40	40	2,200
Soda Ash	2	0	20	40	2,200
No-Stik	0	4	0	0	
Lime	0	60	0	0	
XC-Polymer	0	3	6	5	275
CMC	9	0	20	30	1,650
Staflo/Drispac	9	0	20	30	1,650
Bicarb.	8	2	10	10	1,000
Benex	80	0	200	200	200
SAPP	1	2	4	6	528
Kwik Seal	100	180	0	0	
Cellophane	0	64	0	0	
Cane Fiber	0	48	0	0	
Pro Fiber	0	48	0	0	

	67,203 lbs
	6,000 lbs
Sea Can Boxes Required ±30 Weight 30 x 200 = 6000	73,203 lbs
TOTAL WEIGHT	73,203 lbs

This order will be ready for shipment from Edmonton by August 9, 1985.

Prices will be the same as quoted on your 1984 work.

Yours truly,

Clare Smith

Mr. Clare Smith
General Manager
MUDCO SERVICES LTD.

CS/bm

Formation Leakoff Test

Casing 244.5 mm

Landed at 191 m KB

Fluid Water: Density 8.3

Pressure: (a) 1600 KPa No leak off
(b) 2800 KPa No leak off

TIME DISTRIBUTION CARCAJOU O-25

DAYS FROM SPUD

ACTIVITY	PRE-SPUD																					
	2	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Total
Rig Up Tear Down	24	24	21 3/4															2½	2			26¼
Drill			2¼	5¼	20	10		13¾	18	21½	1¼		2½	22½	23¼	6½						146¼
Ream													5									5
Core											12¼	9¼										21½
Circ/Condition				2		2¼		1¼			3½					1	18	1¼				29¼
Trip				2	1	4 3/4		3¼	3¼		6	6¼	7			3 3/4	5½	8½				51¼
Lubricate Rig				3/4	1	½	¼	½	3/4	3/4	3/4	½	3/4	3/4		¼	½					8
Repair Rig									1 3/4	3/4												2½
Cut Line													4¼									4¼
Dev Survey					¼	½		½	¼	1	¼			3/4	3/4	¼						4½
Logging																12¼						12¼
Run Casing/Cement				2		4 3/4												8				14 3/4
WOC				12		1¼	6½															19 3/4
Nipple Up							9½															9½
Test BOP							3	1½														4½
DST												6	3									9
Plug Back																		3 3/4				3 3/4
Squeeze																						
Fishing																						
Dir Work																						
Other					1 3/4		4 3/4	3 3/4				2	1½									13 3/4
	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	2		386

GEOLOGICAL SUMMARY

AT&S Texaco Carcajou O-25 was drilled with the intent of exploration of the hydrocarbon potential of the Kee Scarp limestone. This well was spudded at 2145 hours, 1986/01/14 by Jade Drilling Ltd. Rig #5. Surface casing of 244.5mm diameter was set at 191 meters K.B.

The primary objective, the Kee Scarp, was encountered in the samples at 600.4m K.B.(-487.9m SS). This formation consisted of limestone, medium brown, microcrystalline, massive - crystalline in part moderately hard, dull - vitreous in part, slightly argillaceous, rare spotty live oil stain, tight with rare spotty pinpoint porosity, pale yellow direct fluorescence, slow pale milky yellow cut fluorescence, rare streaming. One 18 meter core was cut in the Kee Scarp, from 601 - 619.2m K.B. (refer to detailed core description). Throughout the Kee Scarp the main indication of hydrocarbons was limited to spotty oil bleeding from fractures and stylolites.

Sampling in this well commenced at 200m K.B. For the first 25 meters samples were poor, consisting of fragments, cements and minor sandstones.

The greater percentage of the well consisted of variable shales, silty shales, siltstones and some minor sandstones.

The first significant formation top was that of the Canol shale; 597.5m K.B. (-485.0m SS). The Canol Shale itself was black - occasional dark grey, moderately hard, firm, blocky, dull, carbonaceous, slightly calcareous, slow pale milky yellow cut fluorescence, with stringers of white limestone.

Drilling was completed in the Hare Indian formation, the top of which was marked by siltstone, white - medium grey, very fine grained in part, very calcareous, moderately hard - hard, very argillaceous, massive, tight, no show. The rest of the Hare Indian as encountered consisted of siltstone as described interbedded with abundant Limestone; light - medium brown, cryptocrystalline, massive, moderately hard, dull - earthy, slightly argillaceous, tight, no shows.

Subsequent to coring by Norton Christensen, a bottom hole inflate test was conducted by Halliburton.

Drilling finished at 0645 hours, 1986/01/27, following this, open hole logging was performed by Schlumberger, with the following logs run: DLL-MSFL; NCL-LDT; LLS-GR.

FORMATION TOPS

	Depth Depth (m)	Depth Subsea (m)	Log Depth (m)	Log Subsea (m)
Canol	597.5	-485.0	597.5	-485.0
Kee Scarp	600.4	-487.9	498.75	-486.25
Hare Indian	733.0	-620.5	733.5	-621.0
F.T.D.	760.0	-647.5	760.2	-647.7

SAMPLE DESCRIPTIONS

Depth	Description
195 - 205m	Sandstone: light - medium gray, very fine - fine crystalline, subangular, moderately well sorted, well consolidated, clear, siliceous cement, argillaceous, rare glauconite, tight, no show
205 - 215m	Roch Fragments: black chert, orange and white quartzite, quartz, minor granite
215 - 225m	No sample
225 - 275m	Shale: medium gray, moderately hard, firm, blocky, dull, grading to siltstone in part, no no show
275 - 300m	Shale: dark grey, soft, firm, subfissile dull - micromicaceous, carbonaceous, no show
300 - 324m	Shale: dark grey,soft, firm, subfissile dull - micromicaceous, carbonaceous, no show
324 - 338m	Sandstone: light grey - dark grey in part, silty - very fine grained, moderately well sorted, good clear calcite cement - siliceous in part, slightly argillaceous, rare pyrite, rare glauconite, no show
338 - 344m	Shale: dark grey, soft, firm, subfissile, dull - micromicaceous, carbonaceous, no show

344 - 347m	Sandstone; light - medium grey, silty - very fine grained, subangular - subrounded, moderately sorted, good siliceous cement, calcareous, argillaceous, trace pyrite, trace glauconite, tight, no show
347 - 372m	Shale; dark grey - black, soft, firm, blocky, dull - micromicaceous, carbonaceous, silty in part, rare disseminated pyrite, no show
372 - 387m	Sandstone: white - light grey, silty - very fine grained, subangular - subrounded, moderately well sorted, poor siliceous cement, slightly argillaceous, tight, no show Abundant Shale; light - medium gray, soft, firm, splintery, full - micromicaceous, silty, no shows
387 - 400m	Shale; light - medium gray, soft, firm, splintery, dull - micromicaceous, silty, no shows Stringers of Sandstone; white - light grey, silty - very fine grained, angular - subrounded, moderately well sorted, poor siliceous cement, slightly argillaceous, tight, no shows
400 - 422m	Shale; medium grey, moderately hard, brittle, subfissile - fissile, dull, slightly carbonaceous, silty, no show Stringers of Sandstone; light - medium grey brown, silty - very fine grained, sub-angular, moderately sorted, good siliceous cement, slightly argillaceous, tight, rare pale, poor milky yellow cut fluorescence, no streaming, NOTE 405-415 no sample
422 - 426m	Sandstone; light - grey brown, very fine - fine grained, subrounded, moderately well sorted, good siliceous cement, slightly calcareous, tight, poor pale milky yellow cut fluorescence, no streaming
426 - 444m	Shale; light - medium grey, moderately hard, firm, blocky - subfissile Stringers of Sandstone; light grey-brown, very fine - fine grained, subrounded, moderately well sorted, good siliceous cement, slightly calcareous, tight, poor pale milky yellow cut fluorescence, no streaming
444 - 454m	Siltstone; light - medium grey, very fine grained in part, moderately hard, argillaceous, siliceous, tight to show Abundant Shale; medium grey, moderately hard, firm, blocky,dull - micromicaceous, silty part, no show

454 - 485m — Siltstone; light grey - medium grey, very fine grained in part, siliceous, argillaceous - shaly in part, moderately hard, tight, no show

485 - 510m — Siltstone; light grey - medium grey, very fine grained in part, siliceous, argillaceous - shaly in part, moderately hard, tight, no show

485 - 510m — Siltstone; light grey - medium grey, very fine grained in part, siliceous, argillaceous - shaley, moderately hard, tight, no show

510 - 545m — Shale; light - medium grey, moderately hard, firm, blocky, micromicaceous, very silty, - becoming siltstone in part, no shows

545 - 597.5m — Shale; medium grey, occasional dark grey, soft, firm, blocky, micromicaceous, slightly silty in part, no show

CANOL 597.5m K.B. (-485.0m SS)

597.5 - 600.4m — Shale; black - occasional dark grey, moderately hard, firm, blocky, dull, carbonaceous, slightly calcareous, slow pale milky yellow cut fluorescence, stringers of white Limestone

KEE SCARP 600.4m K.B. (-497.9m SS)

600.4 - 601m — Limestone; light - occasional medium brown, micro - very fine crystalline, soft, massive - detrital, dull - earthy, slightly argillaceous, occasional poor pale live oil stain, occasional fair intercrystalline and some pinpoint porosity, strong milky yellow cut fluorescence, occasional spotty streaming

601 - 619.2m — Core #1 - refer to detailed core description

619.2 - 660m — Limestone; medium brown, microcrystalline, massive - crystalline in part, moderately hard, dull - vitreous, slightly argillaceous, rare spotty live oil stain, tight, rare spotty pinpoint porosity, pale yellow direct fluorescence, slow pale milky yellow cut fluorescence, rare streaming

660 - 675m — Limestone; light - medium brown, cryptocrystalline, massive - sucrosic in part, dull - earthy, vitreous in part, moderately hard, slightly argillaceous, tight, rare poor intercrystalline pinpoint porosity, no show

675 - 695m — Limestone; white, light - medium brown, microcrystalline - very fine crystalline in part, massive - sucrosic in part, moderately hard, dull - earthy, vitreous in part, slightly argillaceous, tight - rare intercrystalline porosity, no shows

695 - 724m — Limestone; white - medium dark brown, cryptocrystalline, massive, moderately hard, argillaceous - abundant pyrobitumen, silty in part, dull - earthy, vitreous in part, tight - no show
Occasional Siltstone; medium grey, very calcareous, very argillaceous, moderately hard, massive, tight, no show

724 - 726m — Siltstone; medium - dark grey, very calcareous, very argillaceous, shaly in part, moderately hard, massive, tight, no show

726 - 733m — Limestone; light - medium brown, cryptocrystalline, massive, moderately hard dull - earthy, slightly argillaceous, tight, no show

HARE INDIAN 733m K.B. (-620.5m Subsea)

733 - 740m — Siltstone: white - medium grey, very fine grained in part, very calcareous, moderately hard, very argillaceous, massive, tight, no show

740 - 760m — Limestone: light - medium brown, cryptocrystalline, massive, moderately hard dull - earthy, slightly argillaceous, tight, no show
Interbedded with Siltstone; white - medium grey, very fine grained in part, extremely calcareous, moderately hard - hard very argillaceous, tight, no show

DETAILED CORE DESCRIPTION

CORE #1 601.0 - 619.2m K.B. Cut 18.2m Rec. 18.2m

Coring Times: (min/.25m)

16,18,4.6,7; 12,18,12,13,15; 18.20.14,18,20; 8,10,10,12,10; 6,8.8,8,9; 12,14.26,15.17; 17,13,16,16,19; 15,17,12,14,12; 15,13,16,13,11; 10,10,10,12,12; 13,12,15,15,11; 16,16,16,14,16; 25,13,13,16,12; 12,10,12,12,14; 10,10,10,9,9; 11,7.7,6,7; 12,11,10,11,11; 13,12,13,8,8

601.0 - 601.5m — Limestone/Wackestone; dark brown, microcrystalline, massive, moderately hard, slightly argillaceous - some pyrobitumen, tight, no direct fluorescence, no shows
Occasional tabular - individual Stromatporoid; up to 7cm. Some stylolitization on Strom margins

601.5 - 601.64m — Limestone/Packstone; small individual Stromatoporoids up to 2cm, occasional Amphipora in matrix as above, abundant clear calcite infilling between fossils

601.64 - 602.32m — Limestone/Wackestone; medium - dark brown, microcrystalline, massive, hard, dull, slightly argillaceous - minor pyrobitumen, tight, no direct fluorescence, pale milky yellow cut fluorescence, no streaming
Tabular Stromatoporoids, up to 15cm, stylolitized at contacts, rare Amphipora, Strong dark oil smudge from 603.08 - 602.13m

602.32 - 602.28m — Limestone/Micrite; light brown, cryptocrystalline, massive - crystalline texture, hard, clean, vitreous, tight, no direct fluorescence, no cut
Some similar but darker Limestone scattered throughout, some randomly oriented fractures. Sharp upper contact, gradational lower contact

602.68 - 604.4m — Limestone/Micrite; medium - dark brown, microcrystalline, massive, moderately hard, slightly argillaceous with occasionally abundant pyrobitumen, tight, pale yellow direct fluorescence, pale milky yellow cut fluorescence
Scattered small individual Stromatoporoids up to 4cm, scattered small randomly oriented stylolites. From 603.22 - 603.44m there is a band of light brown micrite as above, above this band it is strongly stylolitized.

604.4 - 605.3m — Limestone/Wackestone; medium brown, cryptocrystalline to microcrystalline, massive, moderately hard, dull - vitreous in part, massive poor - moderate live oil stain, tight, moderate yellow direct fluorescence, pale milky yellow cut fluorescence, some ribbony streaming
Top of interval is marked by 25cm tabular Stromatoporoid, bounded on all sides by stylolites, other variable - sized Stroms scattered throughout (up to 15cm). Minor randomly oriented stylolites scattered throughout. From 604.7 - 604.89 is a band of pale brown micrite, as before

605.3 - 608.02m — Limestone/Micrite; medium brown, microcrystalline - occasional very fine crystalline, moderately hard, massive, tight, pale yellow direct fluorescence, no show
Rare very small (1cm) individual Stromatoporoids. Some horizontal bedding, abundant horizontal stylolites, (very small). There are 3 patches (up to 9cm wide) showing strong light oil bleed. There are also patches and beds of pale brown micrite.

608.02 - 610.32m — Limestone/Micrite; light - medium brown, cryptocrystalline - microcrystalline, massive, moderately hard, dull - vitreous in part, poor massive live oil stain, tight, pale yellow direct fluorescence, very poor pale milky yellow cut fluorescence, no streaming
Occasional clusters of horizontal stylolites, some clusters small horizontal oriented tabular Stromatoporoids. Oil bleeding at 609.04m

610.32 - 611.3m — Limestone/Micrite; medium brown, cryptocrystalline - microcrystalline, massive slightly argillaceous, tight, no direct fluorescence, very poor pale milky cut fluorescence with occasional ribbony streaming
Top 3cm consists of horizontally oriented tabular Stromatoporoids (up to 4cm) in a variably colored matrix, abundant small horizontal stylolites
The rest of the interval consists of minor randomly oriented, scattered tabular Stroms (up to 5cm) minor stylolites. Patchy oil bleed from stylolite at 611.13m.

611.3 615.72m — Limestone; light grey brown - medium brown, cryptocrystalline - microcrystalline, massive, moderately hard, clean, tight, occasional pale yellow direct fluorescence, very slow very pale poor milky yellow cut fluorescence, no streaming
Top 43cm of interval is Packstone of variable-sized tabular and individual Stromatoporoids, (up to 5cm) predominantly horizontally oriented, minor stylolites minor clear calcite infillings.
Remainder is Wackestone variable sized randomly oriented tabular and individual strom (up to 7cm), rare Amphipora. There is a 10cm patch of Packstone (as above) from 613.73 - 613.83m. Patchy oil bleeding from stylolite at 613.46m)

615.72 - 617.72m — Limestone/Micrite; medium brown, cryptocrystalline, massive, moderately hard, clean, tight, no shows
Patchy oil bleeding at top of interval; horizontal bedding throughout, abundant horizontal stylolites, rare individual and tabular Stromatoporoids (up to 2cm) 617.04 - 617.18m; extensive spotty oil bleeding along minor fractures and stylolites

617.72 - 618.12m — Limestone/Packstone; medium grey brown, cryptocrystalline, moderately hard, massive, clean, tight, no shows
Abundant tabular and individual Stromatoporoids (up to 6cm), predominantly horizontally oriented with abundant stylolites along contacts. Some poor patchy oil bleeding from stylolites; predominantly near base of interval. Abundant clear to white calcite infilling. Some minor vuggy porosity at base of interval (vugs up to 5m), patchy oil bleeding from vugs

618.12 - 619.2m — Limestone/wackestone; light - medium brown, cryptocrystalline - microcrystalline, massive, moderately hard, clean, moderate yellow direct fluorescence, tight, poor slow streaming cut, occasional tabular Stromatoporoids (up to 7cm).

NOTE: Strong sulphurous/petroliferous odour throughout core.

CORE ANALYSIS REPORT

AT&S EXPLORATION LTD.

AT&S TEXACO CARCAJOU O-25 65-34-50/128-19-34

C86-2644

1986-01-28

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

RESERVOIR STUDIES DIVISION

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

GENERAL INFORMATION

LAB NO: C86-2644
PAGE : 1
DATE : 1986-01-28

COMPANY:	ATLAS EXPLORATION LTD.
WELL:	ATLAS TEXACO CARCAJOU 0-25
LOCATION:	65-34-50/120-19-34
FIELD:	CARCAJOU
FORMATION:	KEE SCARP
ELEVATION:	KB: 119.70 M GRD: 115.20 M
CORING FLUID:	CHEMICAL GEL
CORING EQUIPMENT:	DIAMOND
CORE DIAMETER:	0.089 M
NO. OF CORES:	1
TOTAL CORED:	18.20 M
TOTAL RECOVERED:	18.20 M
PERCENT RECOVERED:	100.00 %
TOTAL TESTED:	0.00 M
PERCENT TESTED:	0.00 %

CORE HANDLING AND ANALYSIS METHODS

Core transported in boxes.

REMARKS: No analysis required.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

COMPANY : AT&S EXPLORATION LTD.
WELL : AT3S TEXACO CARCAJOU 0-25 65-34-50/120-19-34
FORMATION: KEE SCARP
CORED INTERVAL: 601.00 - 619.20

LAB NO: C86-?644
PAGE : 2
DATE : 1986-01-20

CORE ANALYSIS DATA REPORT

SMPL NO.	INTERVAL TOP M	INTERVAL BASE M	REP THICK M	SAMPLE LENGTH M	GAS PERMEABILITY - Md KMAX	K90	KV	POROSITY	DENSITY,KG/M3 BULK	GRAIN	RESIDUAL SAT. FRAC OF PV OIL	WATER	VISUAL EXAMINATION
			CORE NO.	1	601.00 -	619.20	RECEIVED IN LAB		18.20 METRES				
DE	601.00	619.20	18.20										LS,MAS,ABNT TR FOS

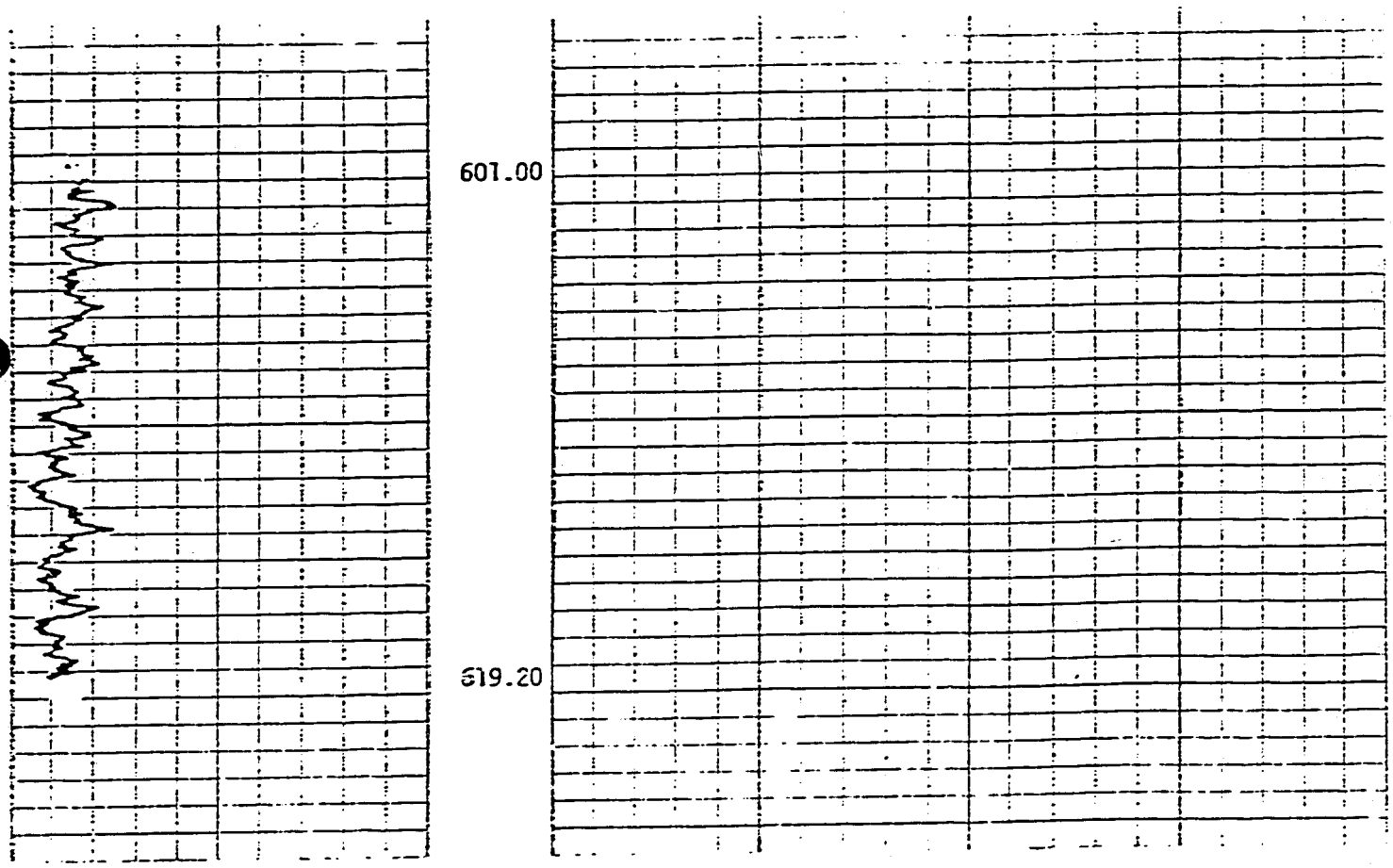
CHEMICAL & GEOLOGICAL LABORATORIES LTD.

COMPANY: AT&S EXPLORATION LTD.
WELL : AT&S TEXACO CARCAJOU 0-25 65-34-50/128-19-34

LAB NO: C86-2644
DATE : 1986-01-28
FIG : 1

GAMMA RAY LOG

VERTICAL SCALE 1:240 T.C. 15 SEC. SENS. 6000 CPM



CHEMICAL & GEOLOGICAL LABORATORIES LIMITED

CORE DESCRIPTION SYMBOLS

abnt	Abundant
Amph	Amphipora
ang	Angular
anhy	Anhydrite (ic)
aren	Arenaceous
arg	Argillaceous
bd	Bed
bdd	Bedded
bdg	Bedding
bf	Buff
biocl	Bioclastic
biot	Biotite
bioturb	Bioturbated
blt	Bitumen (inous)
blk	Black
Brac	Brachiopod
brn	Brown
bur	Burrow (ed)
c	Coarse (ly)
calc	Calcite (areous)
carb	Carbonaceous
cbl	Cobble (64-256 mm)
cgl	Conglomerate
cht	Chert
cl	Clast
cln	Clean
cly	Clay (ey)
cmt	Cement (ed)
coq	Coquina
Cor	Coral
crbnt	Carbonate
Crin	Crinoid (al)
crpxl	Cryptocrystalline
decr	Decrease (ing)
dissm	Disseminated
dk	Dark (er)
dns	Dense
dol	Dolomite (ic)
elg	Elongate
f	Fine (ly)
Fe-st	Ironstone
fis	Fissile
fl	Fill (ed)
fld	Feldspar (thic)
fos	Fossil (iferous)
fr	Fair
frac	Fracture (ed)
frag	Fragment (al)
fri	Friable
g	Good
glau	Glauconite (ic)
gn	Green
gr	Grain (ed)
gran	Granular
grdg	Grading
grnl	Granule
grnt	Granite
gy	Grey
hrtl	Horizontal
HF	Horizontal Fracture
incr	Increase (ing)
intbd	Interbedded
intgran	Intergranular
intlam	Interlaminated
intxl	Intercrystalline
intv	Interval
irreg	Irregular
kao	Kaolin
lam	Laminated
len	Lentil (ecular)
lrg	Large (er)
ls	Limestone
lse	Loose
m	Medium
mar	Maroon
mas	Massive
md	Mod
mic	Micro
mica	Mica (eous)
mnr	Minor
mnrl	Mineral (ized)
mot	Mottled
mtx	Matrix
musc	Muscovite
n	No, none, not
nod	Nodules
occ	Occasional
ool	Oolite (ic)
p	Poor (ly)
pbl	Pebble
phos	Phosphate (ic)
pk	Pink
pl	Plant
plg	Plug
plnr	Planar
por	Porous (sity)
p-p	Pin Point
pred	Predominant (ly)
pt	Part (ly)
ptnl	Paper-Thin Shale Laminations
purp	Purple
pyr	Pyrite (ic) (ized)
pyrblt	Pyrobitumen
qtz	Quartz
rdm	Random
rd	Round (ed)
repl	Replaced (ing) (ment)
rexl	Recrystallize (ation)
RF	Random Fracture
rip	Ripple
rr	Rare
rthy	Earthy
s	Small
sa	Salt
s&p	Salt & Pepper
sb	Sub
scat	Scattered
sd	Sand (1/16-2 mm)
sdy	Sandy
sec	Secondary
sed	Sediment (ary)
sft	Soft
sh	Shale
shy	Shaly
sid	Siderite
sil	Silica (eous)
sl	Slight (ly)
slt	Silt
sltst	Siltstone
slty	Silty
SP	Small Plug
srt	Sort (ed) (ing)
ss	Sandstone
Strom	Stromatoporoid
stromlt	Stromatolite
styl	Stylolite (ic)
suc	Sucrosic
sz	Size
tex	Texture
Tham	Thamnopora
thk	Thick
thn	Thin
thru	Throughout
tr	Trace
tt	Tight (ly)
uncons	Unconsolidated
unident	Unidentifiable
v	Very
var	Variable
vcol	Varicolored
VF	Vertical Fracture
vrtl	Vertical
vug	Vug (gy) (ular)
/	With
w	Well
wh	White
wvy	Wavy
wxy	Waxy
xbd	Cross-bedded
xbdg	Cross-bedding
xl	Crystal (line)
xlam	Cross-laminated
*	Broken Core (K90 used summary purpose)
**	Permeability >10,240 md
<.01	Permeability less than 0.01

KMAX and K90 are transverse permeability measurements on full diameter samples

DE	Dense
DR	Drilled
LC	Lost Core
NA	Not Analyzed
RU	Rubble
Cum	Cumulative
Frac	Fraction
KV	Vertical Permeability
Md-M	Millidarcy Metre
Por-M	Porosity Metre
Resid	Residual
Rng	Range
Smpl	Sample
Thickness	Representative Thickness
Wt. Avg.	Weighted Average

DST's

TESTERS	A. Barlow
[redacted]ESS	E. Staroszik
[redacted]LING CONTRACTOR	Jade #5

HALLIBURTON

FORMATION TESTING
DATA SHEET

REFER TO INVOICE NO.	68 444
DATE OF TEST	86-01-23
TEST No.	1
JOB TYPE	Hydroflate Bottom Hole

PRESSURE SUMMARY kPa						
GAUGE NUMBER	7817	3994	3346			
GAUGE DEPTH	587.27	588.52	602.53			
BLANKED OFF	~~YES~~/NO	~~YES~~/NO	YES/~~NO~~	YES/NO	YES/NO	YES/NO
HOUR CLOCK TRAVEL	24	24	12			
INITIAL HYDROSTATIC	6773	6758	6954			
FIRST FLOW — INITIAL	160	158				
FIRST FLOW — FINAL	291	304				
FIRST CLOSED IN	4730	4749				
SECOND FLOW — INITIAL	414	370				
SECOND FLOW — FINAL	720	716				
SECOND CLOSED IN	4912	4904				
THIRD FLOW — INITIAL						
THIRD FLOW — FINAL						
THIRD CLOSED IN						
FINAL HYDROSTATIC	6788	6741	7244			

TIME PERIODS					
	FIRST	SECOND	THIRD		TIME
FLOW	10	60		TESTER VALVE OPENED	20:52
CLOSED IN	30	120		PACKER UNSEATED	00:32

LIQUID RECOVERY DATA		
	METRES	DESCRIPTION OF LIQUID
MEASURED FROM TESTER VALVE	36	Drilling mud.
	36	TOTAL LIQUID RECOVERY

EQUIPMENT AND WELL DATA			
FORMATION TESTED	Kee Scarp	TEMP. REC. No. DEPTH / MAX. TEMP.	N/A m / °C
NET PRODUCTIVE THICKNESS	m	MUD TYPE	Gel Chemical
K B ELEVATION	112.5 m	MUD DENSITY kg/m³ / MUD VISC s/L	1160 / 57
ALL DEPTHS MEASURED FROM:	☐ KB ☐ GROUND	CASING OR HOLE SIZE	222 mm
PACKER DEPTHS TOP / BOTTOM	599 m	RATHOLE SIZE	mm
DEPTH OF TESTER VALVE	582.57 m	DRILL PIPE OD mm / kg/m	114.3 / 24.7
CASING PERFORATED INTERVAL	N/A m	DRILL COLLARS ABOVE TESTER VALVE ID mm / LENGTH m	73 / 145.05
TOTAL DEPTH	619 m	SURFACE CHOKE	25.4 mm
AMOUNT AND TYPE CUSHION	Nil	BOTTOM CHOKE	19.05 mm

SAMPLE DATA			
OIL GRAVITY @ °C		SAMPLE SHIPPED TO LABORATORY	YES ☒ NO ☐
GAS/OIL RATIO		SAMPLER No.	81
REFRACTOMETER/RELATIVE DENSITY		GAS SAMPLE BOTTLE No.	6353
RECOVERY WATER @ °C		LABORATORY	C and G (Calgary)
CHLORIDE CONTENT mg/L			

REMARKS

Blanked off recorder #3346 plugged off during test.

COMPANY: AT & S EXPLORATION LTD.
LEGAL DESCRIPTION:
PROVINCE OR TERRITORY: N.W.T.
FIELD OR AREA: CARCAJOU
TEST NUMBER: 1
TESTED INTERVAL: 599 - 619
WELL NAME AND NUMBER: AT & S TEXACO CARCAJOU

TICKET NO. 68 444

DATES AND TIMES (00:00-24:00 HRS.)	CHOKE SIZE (mm)	SURFACE PRESSURE (kPa)	GAS RATE (m^3/day)	LIQUID RATE (m^3/day)	REMARKS
86-01-23					
14:00					Make up DST #1.
16:45					Run test tool in.
20:00					Head up.
20:30					Set packers.
20:52					Open for Preflow: Weak air blow increasing to bottom of pail in 5 minutes.
21:02					Shut tool in.
21:32					Valve Open: Strong air blow in pail immediately. Gas to surface in 45 minutes. Too small to measure. Approximately 1 m flame in pit.
22:32					Shut tool in.
86-01-24					
00:32					Pull packers loose and break down head.
01:00					Pull out of hole.
06:00					Recover and read charts.
07:00					Lay down tool.

PRODUCTION TEST DATA

H A L L I B U R T O N S E R V I C E S L I M I T E D

SPECIAL PRESSURE DATA

DATE: 86-01-23 TICKET # 68444

* Gauge Number	:	7817.	*
* Gauge Depth	:	587. m	*
* Time of Flow	:	10.0 min.	*
* Final Pressure	:	291.1 kPa.	*

Initial Hydrostatic Pressure = 6772.9 kPa
Final Hydrostatic Pressure = 6787.7 kPa

GAUGE 1, FLOW 1

	Time Deflection (in)	Time (minutes)	Pressure (kPa)
1.	0.0000	0.0	159.7
2.	0.0160	5.0	230.6
3.	0.0318	10.0	291.1

HALLIBURTON SERVICES LIMITED

GAUGE 1, CIP 1

	Time Deflection (in)	Time (minutes)	T+dt Log ---- dt	Pressure (kPa)
1.	0.0069	2.0	0.7792	600.0
2.	0.0139	4.0	0.5427	1018.0
3.	0.0207	6.0	0.4268	1421.0
4.	0.0275	8.0	0.3529	1830.7
5.	0.0345	10.0	0.3017	2306.1
6.	0.0414	12.0	0.2638	2712.9
7.	0.0519	15.0	0.2218	3333.1
8.	0.0692	20.0	0.1761	4003.4
9.	0.0864	25.0	0.1463	4456.4
10.	0.1038	30.0	0.1249	4730.1

H A L L I B U R T O N S E R V I C E S L I M I T E D

SPECIAL PRESSURE DATA

DATE: 86-01-23 TICKET # 68444

* Gauge Number	:	7817.	*
* Gauge Depth	:	587. m	*
* Time of Flow	:	60.0 min.	*
* Final Pressure	:	720.2 kPa.	*

GAUGE 1, FLOW 2

	Time Deflection (in)	Time (minutes)	Pressure (kPa)
1.	0.0000	0.0	413.5
2.	0.0172	5.0	424.7
3.	0.0339	9.9	453.8
4.	0.0511	15.0	476.9
5.	0.0682	20.0	503.8
6.	0.0851	25.0	528.4
7.	0.1022	30.0	551.5
8.	0.1192	35.0	577.7
9.	0.1365	40.0	611.2
10.	0.1536	45.0	637.4
11.	0.1706	50.0	660.5
12.	0.1876	55.0	689.6
13.	0.2046	60.0	720.2

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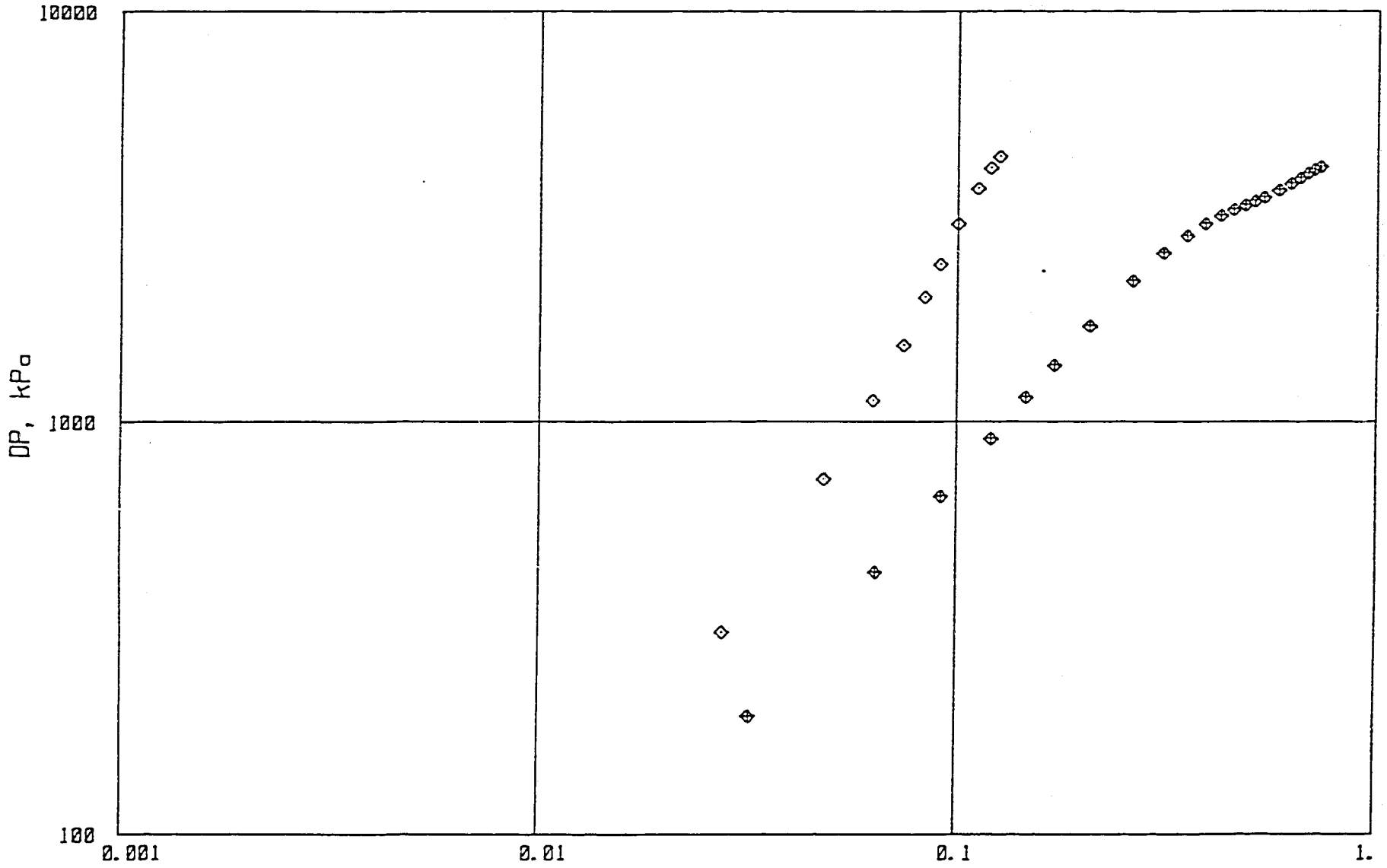
GAUGE 1, CIP 2

	Time Deflection (in)	Time (minutes)	T+t Log ---- dt	Pressure (kPa)
1.	0.0066	2.0	1.5623	913.5
2.	0.0135	4.0	1.2638	1152.3
3.	0.0200	6.0	1.1044	1380.7
4.	0.0269	8.0	0.9873	1632.9
5.	0.0334	10.0	0.9039	1871.8
6.	0.0401	12.0	0.8353	2096.4
7.	0.0501	15.0	0.7541	2436.0
8.	0.0670	20.0	0.6530	2928.6
9.	0.0836	25.0	0.5801	3304.7
10.	0.1004	30.0	0.5230	3566.6
11.	0.1170	35.0	0.4775	3763.9
12.	0.1340	40.0	0.4391	3907.7
13.	0.1505	45.0	0.4077	4015.3
14.	0.1675	50.0	0.3800	4099.0
15.	0.1841	55.0	0.3566	4176.9
16.	0.2009	60.0	0.3357	4248.1
17.	0.2342	70.0	0.3011	4397.1
18.	0.2679	80.0	0.2729	4537.3
19.	0.3014	90.0	0.2498	4658.9
20.	0.3349	100.0	0.2304	4764.2
21.	0.3682	110.0	0.2139	4848.7
22.	0.4017	120.0	0.1996	4911.7

GAUGE NO 7817 CIP 1 2

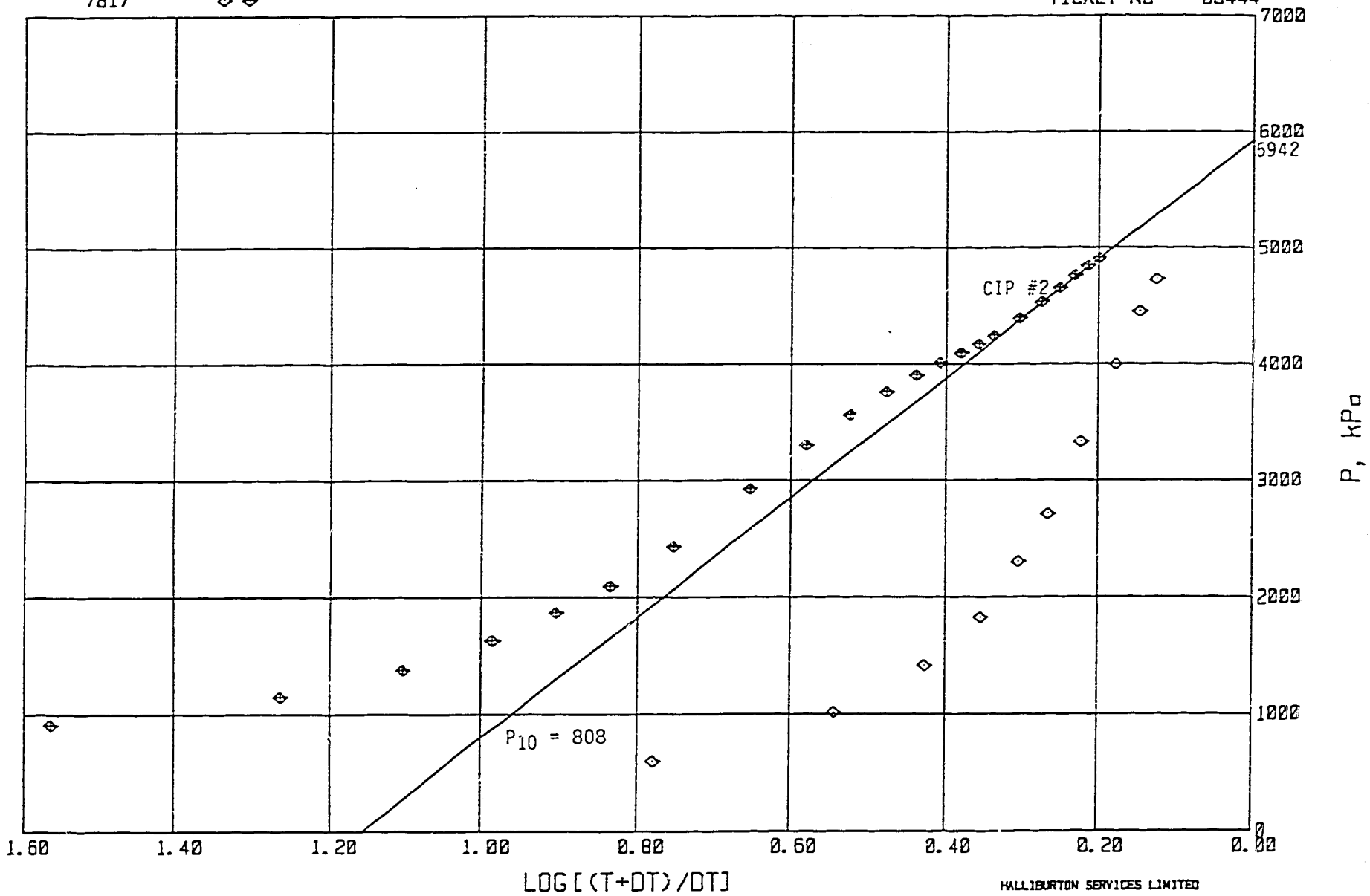
TICKET NO 68444



HALLIBURTON SERVICES LIMITED

GAUGE NO 7817 CIP 1 2

TICKET NO 68444



HALLIBURTON SERVICES LIMITED

HALLIBURTON SERVICES LIMITED

TICKET NO. 68444

		O.D.(mm)	I.D.(mm)	LENGTH(m)	DEPTH(m)
3	DRILL COLLARS.....	165.0	73.0	135.47	
50	IMPACT REVERSING SUB.....	159.0	73.0	0.31	
97	RIG JARS.....	165.0	73.0	4.38	
3	DRILL COLLARS.....	165.0	73.0	9.58	
5	CROSSOVER.....	165.0	73.0	0.31	
60	HYDROSPRING TESTER.....	127.0	19.1	2.54	582.57
14	EXTENSION JOINT.....	127.0	25.4	2.16	
80	AP RUNNING CASE.....	127.0	57.2	1.25	587.27
80	AP RUNNING CASE.....	127.0	57.2	1.25	588.52
16	'R SAFETY JOINT.....	127.0	25.4	1.06	
26	PUMP ASSEMBLY.....	127.0	22.3	2.15	
27	SCREEN ASSEMBLY.....	127.0	25.4	1.34	
11	HYDROFLATE PRESSURE LIMITER.....	127.0	25.4	1.25	
13	HYDROFLATE SAFETY JOINT.....	127.0	25.4	1.55	
74	TOP HYDROFLATE PACKER.....	171.5	26.9	2.55	599.00
28	PORT ASSEMBLY.....	127.0		1.03	
22	BLANK ANCHOR.....	127.0	57.0	1.52	
5	CROSSOVER.....	127.0	57.0	0.31	
98	BELLY SP W/BLANKED OFF RECORDER.		57.2	1.10	602.53
5	CROSSOVER.....	127.0	57.0	0.31	
5	CROSSOVER.....	165.0	73.0	0.31	
3	DRILL COLLARS.....	165.0	73.0	9.56	
5	CROSSOVER.....	165.0	73.0	0.31	
22	BLANK ANCHOR.....	127.0	57.0	4.88	

EQUIPMENT DATA

FLUID ANALYSIS

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

GAS ANALYSIS

CONTAINER IDENTITY: 6353

LABORATORY NUMBER: C86-3045-1

LICENCE NUMBER:

OPERATOR NAME: AT&S EXPLORATION LTD.

LOCATION: 65-34-50/128-19-34

WELL NAME: AT&S Texaco Carcajou O-25

ELEVATIONS: 119.70

FIELD OR AREA: Carcajou

POOL OR ZONE: Kee Scarp

NAME OF SAMPLER:

COMPANY: Halliburton

TEST TYPE: DST

NO: 1

TEST INTERVAL: 599 - 619

TEST RECOVERY: 36 m drilling mud

MULTIPLE RECOVERY: X

SAMPLING POINT: Surface

AMT. & TYPE OF CUSHION:

MUD RESISTIVITY:

TYPE OF PRODUCTION

PUMPING: FLOWING: GAS LIFT: SWAB:

PRODUCTION RATES

WATER: BBL/D GAS: MCF/D

SEPARATOR: TREATER: RESERVOIR: SOURCE: SAMPLED: RECEIVED: 20

CASING PRESSURE: KPa

SEPARATOR: TREATER: RESERVOIR: SOURCE: SAMPLED: RECEIVED: 23

TEMPERATURE: C

DATE SAMPLED (Y-M-D): 1986-01-26

DATE RECEIVED (Y-M-D): 1986-02-03

DATE REPORTED (Y-M-D): 1986-02-10

ANALYST: B. Anderson

OTHER INFORMATION:

COMP	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT (C3+) IGPM
H_2	0.0002	0.0002	
He	0.0001	0.0001	
N_2	0.1368	0.1369	
CO_2	0.0008	0.0000	
H_2S	0.0000	0.0000	
C_1	0.7883	0.7890	
C_2	0.0480	0.0480	
C_3	0.0171	0.0171	62.7
IC_4	0.0023	0.0023	10.0
NC_4	0.0047	0.0047	19.6
IC_5	0.0011	0.0011	5.5
NC_5	0.0002	0.0002	0.9
C_6	0.0003	0.0003	1.4
C_7	0.0001	0.0001	0.8
C_8	TRACE	TRACE	0.2
C_9	0.0000	0.0000	0.0
C_{10+}	0.0000	0.0000	0.0
TOTAL	1.0000	1.0000	101.1

GROSS HEATING VALUE MJ/M3 (15 AND 101.325 KPA)

MOISTURE FREE AS SAMPLED — MEASURED: | CALCULATED: 35.70

MOISTURE AND ACID GAS FREE — MEASURED: | CALCULATED:

VAPOUR PRESSURE PSI(A) AT 100 F: 112.

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED — MEASURED: | CALCULATED: 0.665

MOISTURE AND ACID GAS FREE — MEASURED: | CALCULATED: 0.664

PSEUDO-CRITICAL PROPERTIES CALCULATED

AS SAMPLED: PSIA: 4468. | K: 192.9

ACID GAS FREE: PSIA: 4466. | K: 192.8

0.00

19.25 : 100.21

C5+ ML/MOL 0.208

GROSS HEATING VALUE AS PER AGA REPORT #5

35.68 MAJ/M3 @ 15C AND 101.325 KPA

SAMPLE CORRECTED FOR 0.1322 MOLE FRACTION AIR CONTAMINATION.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

WATER ANALYSIS

C86-3045-5

AT&S EXPLORATION LTD.

65-34-50/128-19-34 | AT&S Texaco Carcajou 0-25 | 119.70

Carcajou | Kee Scarp | Halliburton

DST 1

X

36 m drilling mud

Sample #4

599 - 619

1986-01-26 | 1986-02-03 | 1986-02-10 | S. Sargious

ION	g/dm³	Mass Fraction	moles/dm³	ION	g/dm³	Mass Fraction	meq/dm³
Na	2 025	0.3265	88.09	Cl	1 750	0.2822	49.35
K	20	0.0032	0.51	Br			
Ca	24	0.0039	0.60	I			
Mg	17	0.0027	0.70	HCO_3	1 891	0.3050	31.01
Ba				SO_4	354	0.0571	3.68
Sr				CO_3	120	0.0194	2.00
Fe	TRACE			OH	0	0.0000	0.00

H_2S NIL

TOTAL SOLIDS g/dm³

6 200

4 750 6 201

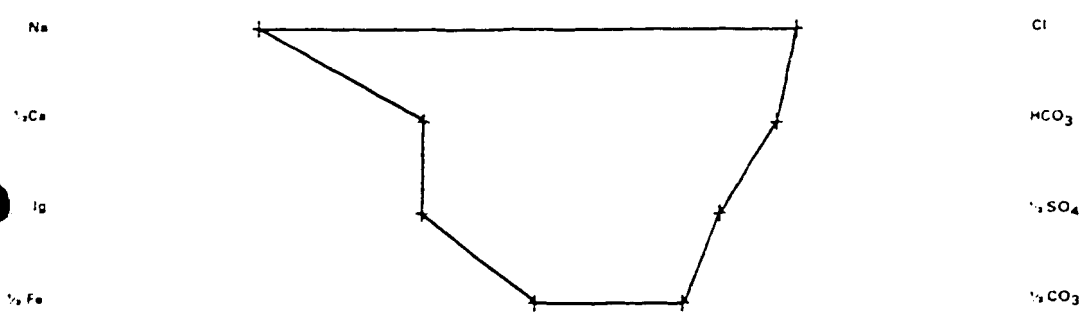
ORGANICS: PRESENT

1.001		1.3334
9.0	23.	1.24

REMARKS

Amber colored filtrate recovered from mud.

LOGARITHMIC PATTERN c/mol m⁻³



AT&S EXPLORATION LTD.

LAB REPORT NO: C86-3045

C86-3045-2 SAMPLE #1

Resistivity: 2.42 ohm m @ 25°C.

Amber colored filtrate recovered from mud.

C86-3045-3 SAMPLE #2

Resistivity: 2.26 ohm m @ 25°C.

Amber colored filtrate recovered from mud.

C86-3045-4 SAMPLE #3

Resistivity: 1.57 ohm m @ 25°C.

Amber colored filtrate recovered from mud.

HISTORY
LOG

E - LOGS

Canada Oil and Gas Lands Administration / Administration du pétrole et du gaz des terres du Canada

E.A. 174
D.A. 1269

				Well Status	
Nova Scotia	☐	West Coast	☐	Suspended	☐
Newfoundland	☐	Northern	☒	Completed	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Abandoned	☒

WELL TERMINATION RECORD

This record is submitted in triplicate in compliance with Section 184 of the Canada Oil and Gas Drilling Regulations.

WELL DATA

Well Name: AT&S TEXACO CARCAJOU O-25 Area: NWT

Grid Area: 65-40-128-15 Field/Pool: Wildcat

Permit or Lease No.: N85A422 Final Coordinates: Lat.: 65°34'50.806"N Long: 128°19'34.530"W

Drilling Unit: Jade #5 Elevations-RT/KB: 114.0m SF/GL: 107.0m

Spud Date: 86-01-15 Rig Released: 86-01-30 Total Depth: 760 m

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
339.7 mm	71.43	H-40	32 m	Conductor 4.5 tonnes polarset cement
244.5 mm	53.60	J-55	191 m	14.5 tonnes Class G cement +2.0% $CaCl_2$

PLUGGING PROGRAM

Approval of the following program was obtained by (person) W.H. Slaght from (person) Kem Singh of the Canada Oil and Gas Lands Administration by means of Telecopy on January 29 1986

Type of Plug:	Interval:	Felt:	Cement and Additives:
Cement Plug #1	760-590 m KB		11 tonnes+20% excess Class G Cement
Cement Plug #2	210-170 m KB	@ 162 m	2.8 tonnes 20% excess Class G Cement
Cement Plug #3	15mK.B. to surface		0.5 tonnes Class G Cement

Cut off casing 1 m below surface and weld on cap and identifier.

Lost Circulation/Overpressure Zones: none

Equipment left on Seafloor (Describe): N/A

Provision for Re-entry (Describe and attach sketch): none

Cores: Type: 4-1/2" conventional Intervals: Cut core No. 1: 601-619mKB Rec. 18m 599-619 m Rec. 36 m Drilling mud

Other Downhole Completion/Suspension Equipment: N/A

CERTIFICATION

I certify on the basis of personal knowledge of operations undertaken at the above named well that the above information is accurate.

Signed: W.H. Slaght P. Eng. Title: Chief Geologist

Name: W.H. Slaght Date: February 6, 1986

Acknowledged by: Kem Singh Engineering Branch

Date: June 6, 1986

File: 9211-A-31-2-2

Department of Energy, Mines and Resources / Ministère de l'Energie, des Mines et des Ressources

Department of Indian Affairs and Northern Development / Ministère des Affaires indiennes et du Nord canadien

Canada