AT-S

CARCAJOU D-05

9211-A31-1-1

D.A. #1204
E.A. #174

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

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 CARCAJOU D-05

Operator: AT&S Exploration Ltd. Drilling Program No.:

Contractor: Kenting Drilling Permit or Lease No.:

Drilling Rig or Unit: #33 Estimated Well Cost: $1 159 500.

Location-Unit: D Section: 05 Grid Area: 65-40-128-15

* Coordinates: Lat.: 65°34'13.6"N Long.: 128°16'42.68"W

Area: Norman Wells Field/Pool:

Elevation-~~KX~~/KB: 104.01 M (ASL) Ground: 100.05 m (ASL)

Approx. Spud Date: Jan 1st, 1985 Estimated Days on Location: 21

Anticipated Total Depth: 575 M Subsea Target Horizon(s): Devonian Kee Scarp

Anticipated Total Depth Drilled: 675.5 MKB UWI: 300D055540128150

EVALUATION PROGRAM

Ten-metre sample intervals: -

Five-metre sample intervals: Surface - FTD 5 Vials, 2 Bags

Canned sample intervals: 170 m-FTD @ 10 m intervals

Conventional cores at: One 18 M core at top Kee Scarp. Four further cores if warranted.

Logs and Tests: DIL/LL, BHCS-GR, CNL-FDC Sfc. to FTD
One Test in Kee Scarp if warranted.

CASING AND CEMENTING PROGRAM

O.D.	Weight:	Grade:	Setting Depth (m KB)	Cementing Program (Volumes)
340	54.5 lb/ft	H-40	30 M	600 Sx incl. 100% excess
245	53.6 Kg/M	J-55 ST&C	170 M	600 Sx incl. excess
178	34.2 Kg/M	J-55 ST&C	675.5 M	1 150 Sx incl. 100% excess

Volumes to be calculated following caliper log.

B.O.P. Equipment: Schaffer LWS Single (#2) 254 MM 21 000 KPa
Hydril GK (#1) 254 M 21 000 KPa
Accumulator 545 litre Wagner 4
Manifold 76 MM 21 000 KPa

Other Information:

* Dependent on on-site inspection and final survey.
Location will be within 200' of specification.

Signed: [signature] Title: Vice President, Exploration

Date: Oct 17 1984 Company: AT&S Exploration Ltd.

APPROVAL

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

Signed: [signature]
Engineering Branch

Date: 84.11.21

File: 9211-A31-1-1

Department of Energy, Mines and Resources | Department of Indian Affairs and Northern Development

Ministère de l'Énergie, des Mines et des Ressources | Ministère des Affaires indiennes et du Nord Canadien

Canada

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

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

APPLICATION TO ALTER CONDITION OF A WELL

This application form is to be submitted in triplicate to the District Conservation Engineer at least 45 days before commencement of operations.

Well Name: AT&S CARCAJOU D-05 Area: NORMAN WELLS, N.W.T.

Coordinates Lat: 65°34'13.6"N Long: 128°16'42.68"W

Operator: AT&S EXPLORATION LTD. Contractor: Beta Well Servicing

Service Rig or Unit: #60 Depth: 755 M

Date ATDW Issued: 84-11-21 Date of Last Operation: 85-01-22 0230 Hrs.

TYPE OF OPERATION

COMPLETE & TEST

SUMMARY OF PROPOSED OPERATIONS

SEE ATTACHED COMPLETION PROGRAM

Signed: D. R. Dimmitt Title: Vice President, Exploration

Date: January 29, 1985 Company: AT&S EXPLORATION LTD.

APPROVAL

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

Signed: [illegible]
Conservation Engineer

Date: 4 Feb 85

ATDW No: 1204 File: 9211-A31-1-1

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

COMPLETION PROGRAM

WELL: AT&S Carcajou D-5

WELL STATUS: Suspended Pending Testing

GROUND: 100.05 M

K.B.: 4.64 M

STATUS QUO:

Surface Casing: 15 jts. of 245 mm 53.6 kg/m J-55 LT&C new casing cemented full length.

Core: Cut Core #1 from 549 m to 563.8 m Kee Scarp formation. Well kicked while pulling off bottom with core. Killed Well.

Intermediate Casing: 52 jts. of 177.8 mm 34.2 kg/m J-55 3rd LT&C new casing landed to 562 M K.B. cemented full length.

Production Casing: 63 Jts. of 114.3 mm 14.14 kg/m J-55 ST&C new casing cemented from 755 M to 450 M K.B. using oil well cement.

Program:

1. Move on service rig complete with pump and tank.
2. Rig up to well.
3. Install tubing head and B.O.P.'s.
4. Pressure test B.O.P.'s tubing spool and casing to 15.000 Kpa.
5. Rig up Computalog. Run G.R.N.C. and C. log from P.B.T.D. to 525 M KB. Correlate to Computalog Neutron-Density Log dated 85-01-20.

6. Run Cement Bond Log from P.B.T.D. to top of cement at approx. 450 M.

7. Perforate Interval 727.0 M to 730.0 M KB. with 8 shots per metre using a 79.2 mm steel carrier casing gun.

8. Make up Lynes 96.0 mm test tools on 60.3 mm tubing with pumpout sub 3 joints up from top of tools. Set packer at 725 M KB. If good blow on test, use times of 10-60-60-120 minutes: if otherwise, ensure final shut in is twice flow period.

9. Pull out of hole. Ensure careful sampling of fluids. Phone test results to AT&S Calgary. If well is productive, wait on orders.

10. If well is non-productive, run in and set cement retainer at 660 M KB on 60.3 mm tubing.

11. Conduct cement squeeze 100 sx with standing squeeze pressure of 14,000 kpa. Pull stinger from retainer and backwash any excess cement from tubing. POH.

12. Run in with Baker 4-10 packer. Set packer at 632 M KB.

13. Rig to swab. Swab tubing down to 570 M.

14. Perforate interval 642.5 to 644.5 with 8 shots per metre using a 1-11/16 inch steel carrier tubing gun, with minimum hydrostatic head above packer. Ensure careful sampling of fluids.

15. Phone results to AT&S Calgary. Wait on orders.

A revised program will be issued at this point.

It would be the intention to test the gas zone in the general depths of 560 to 570 metres KB if lower zones failed to yield significant hydrocarbons.

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

				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 CARCAJOU D-05 (Unit Section) Area: Norman Wells, N.W.T.

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

Permit or Lease No.: N84A262 Final Coordinates: Lat.: 65°34'13.6" N Long.: 128°16'42.68" W

Drilling Unit: Kenting #33 Beta Well Servicing #60 Elevations-RT/KB: 104.01 M SF/GL: 100.05 M

Spud Date: Kenting #33 1930 84-12-11 Beta #60 85-02-07 Rig Released: Kenting #33 0230 85-01-22 0900 85-02-24 Beta #60 Total Depth: 755 M

CASING AND CEMENTING

O.D.	Weight:	Grade:	Depth Set	Cement and Additives:
S-15 Jts 245 mm	53.6/kg/M J-55	LT&C	179 M	Polarset & NOWSCO 16.6 Tonnes 16% R-15
Int-52 Jts 177.8mm	34.2/kg/M J-55	LT&C	562 M	3 tonnes 1602 kg/M slurry & 11 tonnes 1901 kg/M slurry, Class G & .75% T-10
Prod-63 Jts 114.3mm	14.14/kg/M J-55	LT&C	755 M	4.8 tonnes Class G & .75% T-10

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Vic Elford from (person) COGLA Yellowknife, Kem Singh of the Canada Oil and Gas Lands Administration by means of on End - March 1985

Type of Plug:	Interval:	Felt:	Cement and Additives:
Well Suspended			
Blanking Plug in F Nipple			
Well-Head Chained & Padlocked			

Lost Circulation/Overpressure Zones: As base core reached, lost & regained circ. twice. During trip out with core, Well Kicked - 4 days to control. After drilling out 177.8 mm csg. shoe. Lost circ. - regained & well drilled to TD.

Equipment left on Seafloor (Describe):

Provision for Re-entry (Describe and attach sketch):

Cores: Type: Full Diameter Intervals: 546 M - 564 M Kee Scarp Cut 17.8 M Rec 17.8 M.

Other Downhole Completion/Suspension Equipment:

CERTIFICATION

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

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

Name: D.R. Winslet Date: May 17, 1985

Acknowledged by: Engineering Branch

Date:

File:

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

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

ATDW: 1204
E.A. #174

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

APPLICATION TO ALTER CONDITION OF A WELL

This application form is to be submitted in triplicate to the District Conservation Engineer at least 45 days before commencement of operations.

Well Name: AT&S CARCAJOU D-05 Area: Norman Wells Region, NWT

Coordinates: Lat: 65° 34' 14" N Long: 128° 16' 43" W

Operator: AT&S EXPLORATION LTD. Contractor: JADE DRILLING LTD.

Drilling Rig ~~XXXX~~ No. 5 Depth: 575 mKB

Date ATDW Issued: 84-11-21 Date of Last Operation 85-02-24

TYPE OF OPERATION

Abandon Well.

SUMMARY OF PROPOSED OPERATIONS

Kill well. Remove wellhead. Install Rig BOP's. Pull tubing. Set cement retaineer at 555 mKB. Rerun tubing sting into retainer. Squeeze 2 tonnes of Class 'G' cement into perfs. at 560 to 563.5 to 14,000 kPa. Pull tubing. Run 10 m cement. Plug in top of csg. Cut csg. off 1 m below ground. Weld cap on top of csg. Install well identifier on 1-1/2 riser.

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 should be posted at each wellsite.

Signed: [signature]
Conservation Engineer

Date: 26 Nov 1985

ATDW No: 1204 File: 9211-A31-1-1

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

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

E.A. 174
D.A. 1204

Nova Scotia	☐	West Coast	☐	Well Status	
Newfoundland	☐	Northern	☒	Suspended	☐
Gulf of St. Lawrence	☐	Hudson Bay	☐	Completed	☐
				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 D-05 Area: NWT

Grid Area: 65° 40' 128.00" Field/Pool: Exploratory

Permit or Lease No.: N84A262 Final Coordinates: Lat.: 65° 34' 14" N Long: 128° 16' 43" W

Drilling Unit: Jade #5 (for abandonment) Elevations: /KB: 104.01m GL: 100.5m

Re-entry Date: 86-02-01 Rig Released: 86-02-01 Total Depth: 562 m

CASING AND CEMENTING

O.D.:	Weight:	Grade:	Depth Set:	Cement and Additives:
244 mm	53.6	J-55	177 m	16.6 tonnes polarset cement
177.8 mm	34.20	J-55	562 m	11 tonnes Glass G + .75% T-10

PLUGGING PROGRAM

Approval of the following program was obtained by (person) Vic Elford from (person) Kem Singh of the Canada Oil and Gas Lands Administration by means of ..... on ..... 19 .

Type of Plug: Interval: Felt: Cement and Additives:

0800 Jan 23/86 SITP 5370 Kpa Annulus Zero. Jade #5 rig up wireline. Run press gradient - stops @ 156 m, 309 m, 461 m, and 531 m and 561.7 m (middle perfs). Gradient test showed no water in tubing. Start abandonment 86-02-01 SITP 500 Kpa. Kill well using 4m$_3$ fresh water. Remove well head. Pull out of packer well seal bore extension - PU tubing 20 m. Re-land in dog-nut pump 1 m$_3$ @ 10,000 Kpa. Mix 2 tonnes class G cement squeezed 1.29 m$_3$ cement into perfs 560-563.5 m to obtain standing feed pressure 7000 Kpa.

Ran 90m plug in top csg. 1 tonne class G cement. Cut csg. 1 m below ground level. Weld on cap and identifier. Rig Released @ 2000 hrs 86-02-01

Provision for Re-entry (Describe and attach sketch):

Cores: Type: Full Di Conventional Intervals: Perf. Interval 560-563.5 (Kee Scarp)

Core: 546-549 m (Kee Scarp); 549-562 m

Other Downhole Completion/Suspension Equipment:

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

Name: W.H. Slaght

Title: Chief Geologist

Date: February 6, 1986

Acknowledged by: L. Thomas
Engineering Branch

Date: 1986-05-~~08~~ 21

File: 9211-A31-1-1

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

SUMMARY

WELL SUMMARY: AT&S Carcajou Ridge D-05

AREA: Norman Wells, N.W.T.	
LOCATION: Land	
OPERATOR: AT&S Exploration Ltd.	
DRILLING CONTRACTOR: Kenting No. 33 / Beta Well Serv. No. 60	
SPUDDED: December 22, 1984	/ February 7, 1985
RIG RELEASE: Jan. 22, 1985	/ February 24, 1985
PARTNERS: AT&S Exploration Ltd.	Earning 100%
AT&S	After Earning 50%
Texaco	After Earning 50%

SEISMIC LINE: W83NA S.P. 329	RIG: Kenting Rig No. 33
WELL CLASS: Newfield Wildcat	KB: 104.69 m
WELL STATUS: Aband. Non Com.Gas	ELEV: 100.05 m
LAT: 65°34'N / LONG: 128°16'W	FTD: Driller 755 m / Logger 753.8 m
	Well Cased for Testing

WELL OBJECTIVES:

THE CARCAJOU D-05 WELL WAS DRILLED ON A SEISMIC ANOMALY IN THE INTERIOR OF A SEISMICALLY DEFINED KEY SCARP BUILD-UP. THE KEY SCARP REEF WAS THE PRIMARY OBJECTIVE.

WELL RESULTS:

THE KEY SCARP WAS ENCOUNTERED 70 M LOW TO PROGNOSIS @ 544 (-439.31) M. A CORE WAS CUT 546 - 564 M. CUT 17.8 M, REC. 17.8 M. AS BASE OF CORE WAS REACHED, LOST CIRCULATION WAS TWICE ENCOUNTERED AND REGAINED BOTH TIMES. DURING TRIP OUT WITH CORE #1, THREE STANDS OF PIPE WERE PULLED WHEN THE WELL KICKED AND EMPTIED THE WELL BORE. PIPE RAMS WERE CLOSED AND GAS WAS FLARING. THE GAS ORIGINATED FROM THE FRACTURE SYSTEM EVIDENT IN THE CORE. IT TOOK FOUR DAYS TO REGAIN CONTROL OF THE WELL BEFORE RECOVERING CORE #1. CORE DESCRIPTION (FACIES INTERPRETATION - BACK REEF).

A DECISION WAS MADE TO LOG THE WELL AND RUN INTERMEDIATE CASING (177.8 MM). AFTER DRILLING OUT 177.8 CASING SHOE, LOST CIRCULATION WAS AGAIN INCURRED. AFTER CIRCULATION WAS REGAINED, DRILLING CONTINUED TO T.D. LITHOLOGY REMAINED CONSTANT EXCEPT FOR A DETRITAL LIMESTONE, 642 - 647 M, THAT EXHIBITED GOOD OIL STAINING. THE HARE INDIAN WAS ENCOUNTERED AT 733 (-628.31)M.

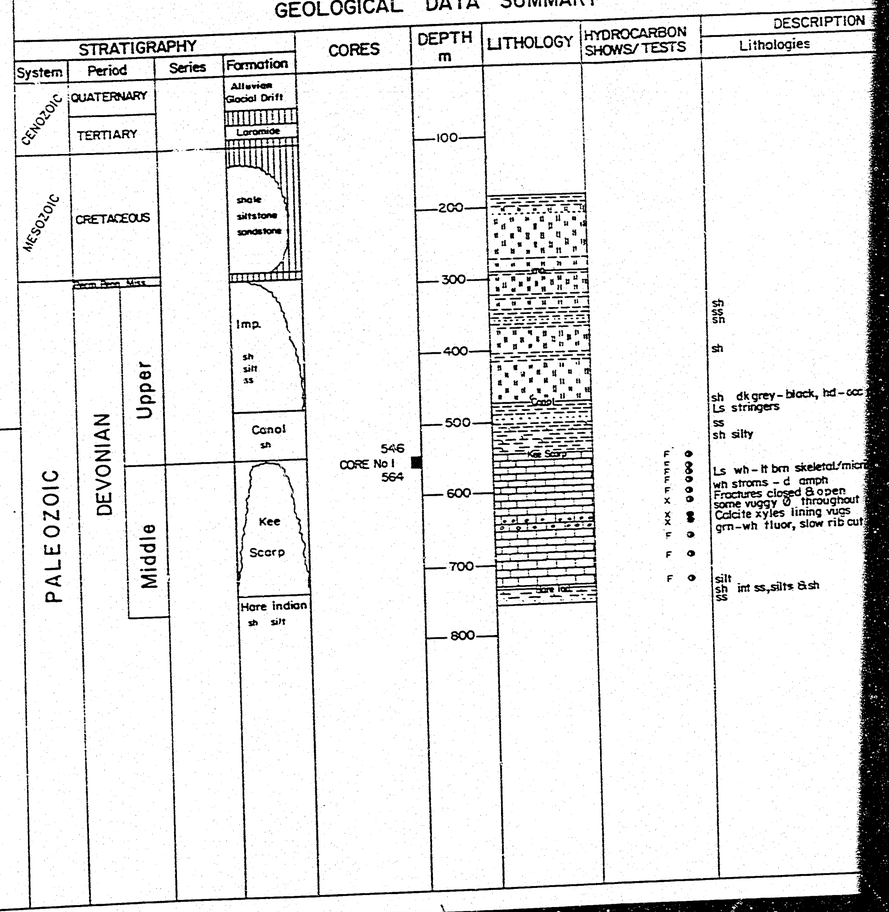
CONCLUSIONS:

CARCAJOU D-05 ENCOUNTERED 189 M (INCLUDING PLATFORM) OF KEY SCARP. THE SECTION WAS ESSENTIALLY SKELETAL/MICRITIC LS - FAIR TO COARSELY CRYSTALLINE, COMPOSED OF STROMS AND AMPHIPORA IN A MICRITIC GROUND MASS - EXHIBITING CLOSED AND OPEN FRACTURES WITH VARYING AMOUNTS OF CALCITE INFILLING - FACIES - BACK-REEF.

THE TESTING OF THIS WELL CONFIRMED THAT THE CARCAJOU REEF COMPLEX IS NOT FLUSHED BECAUSE OF (1) PRESENCE OF HYDROCARBON (2) DEFINITE FORMATION WATER (NOT FRESHWATER.)

IT IS OUR FIRM OPINION THAT THE CARCAJOU REEF COMPLEX IS NOT FLUSHED AND MERITS FURTHER EXPLORATION.

GEOLOGICAL DATA SUMMARY



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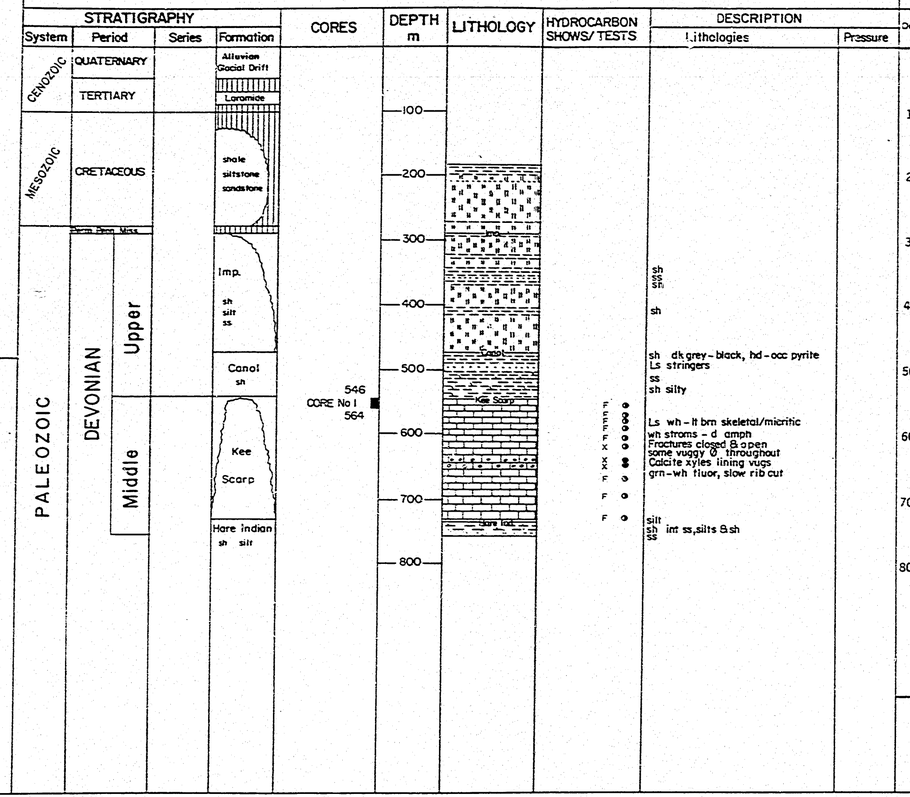
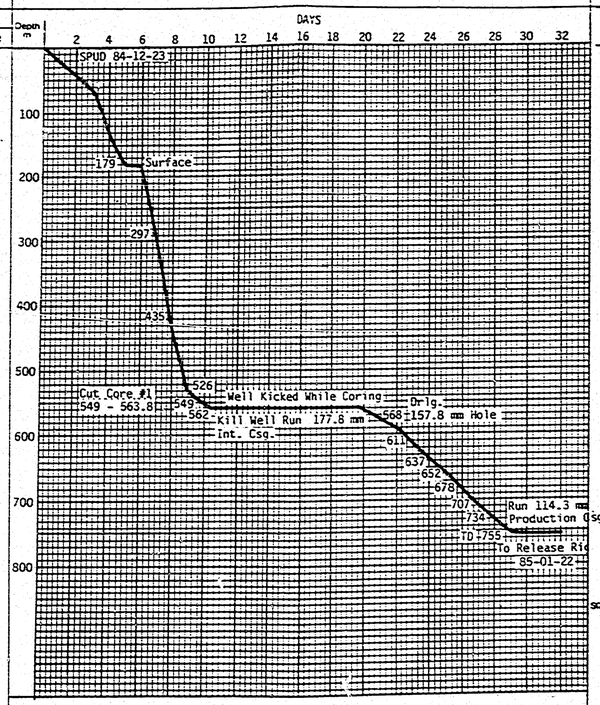
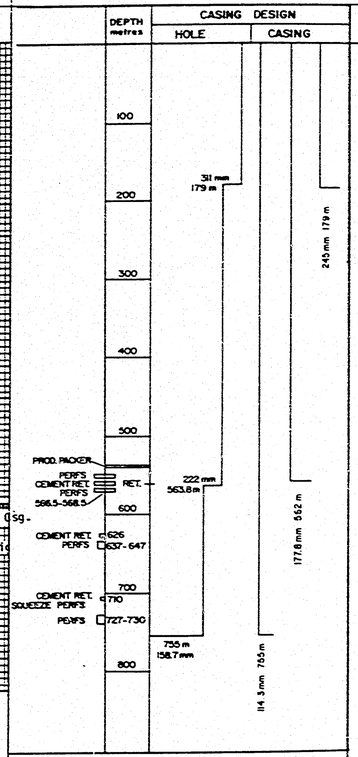
GEOLOGICAL DATA SUMMARY

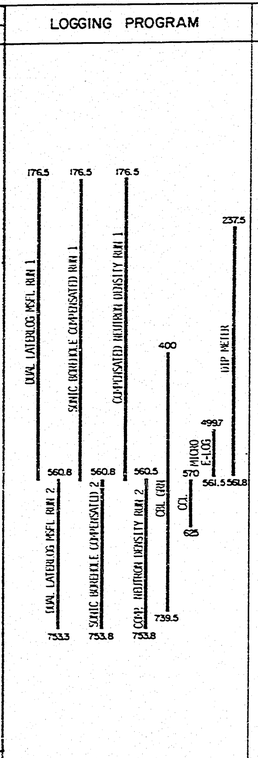


DRILLING PROGRESS CHART



EVALUATION PROGRAM





TEST THRU CASING: FOR REC

DST #1

727-730 KB. 8 x 12 gram.
carrier csg. gun. Rec.
wtr. Pre-flow weak air b
V.O. very weak air blow.

Test #2

642.5 - 644.5 8 x 6 gra
Steel carrier thru tubing

Perf. Int. 644.5 - 647.0
6 gram shots/M w/ 39.7
tubing. No fluid recovery
637 to 647 M. Swab
present. Cemented perfs.

Test #3

Perf. 566.5 - 568.5 M w
w/79 mm steel carrier csg
17.8 mm choke. Well fl
wtr. spray. After 11 hrs.
to moderate flowing gas
decreasing 1 M^3/hr. We
csg. frozen off @ surf
Cement retainer @ 565.5 M
MKB. 13 x 12 gram shots/M
csg. gun. Small amount
560-561.75 w 13 x 12 gram

Swabbed - well started t
choke. Well flowing swe
water rate 1 M^3/ hr. Stay
flowing sweet gas w/hea
choke. Sour gas & hea
loading up with water.
water. Well suspended.

CASING: FOR REC

8 x 12 gram. . gum. Rec. w weak air b ak air blow.

5 8 x 6 gra r thru tubing 44.5 - 647.0 /M w/ 39.7 luid recovery M. Swab ented perfs.

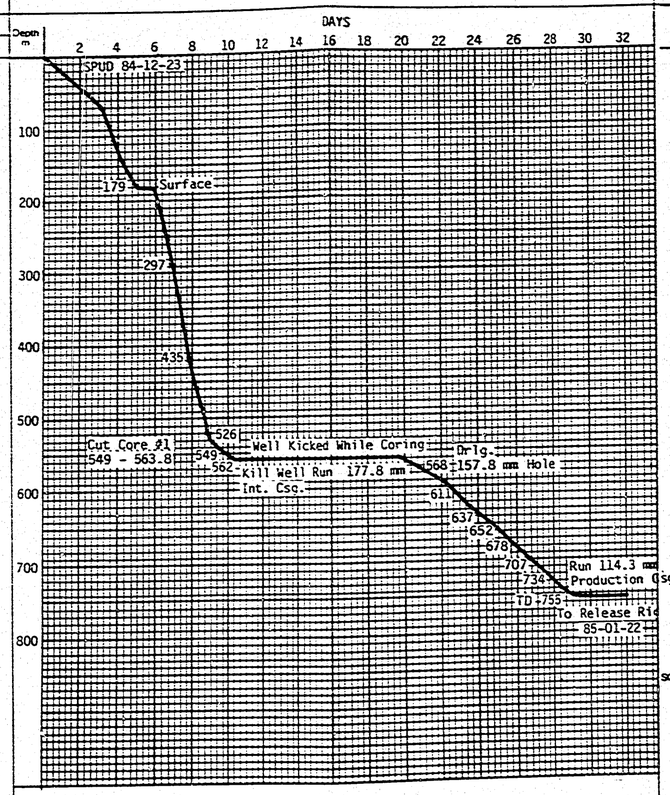
- 568.5 M w l carrier csg ke. Well fl After 11 hrs. flowing gas M^3/hr. We off @ surf her @ 565.5 M gram shots/M mall amount 13 x 12 gram

ll started to flowing swe M^3/ hr. Stay t gas w/heat gas & heat with water. uspended.

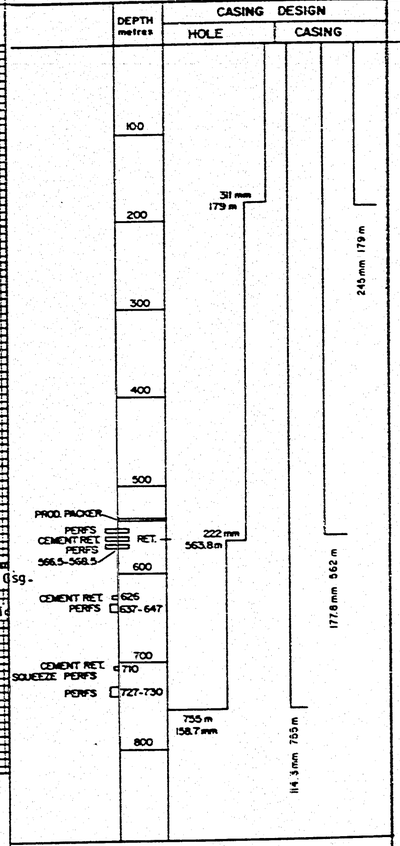
CAL DATA SUMMARY

ES	DEPTH m	LITHOLOGY	HYDROCARBON SHOWS/TESTS	DESCRIPTION Lithologies	Pressure
	100				
	200				
	300			sh	
				ss	
				sh	
	400			sh	
	500			sh dk grey-black, hd-occ pyrite	
				Ls stringers	
				ss	
546				sh silty	
No I			F		
564			F	Ls wh-lt brn skeletal/micritic	
	600		F	wh stroms - d amph	
			F	fractures closed & open	
			F	some vuggy Ø throughout	
			F	Calcite xyles lining vugs	
			F	grn-wh fluor, slow rib cut	
	700		F		
			F	silt	
				sh int ss, silts & sh	
				ss	
	800				

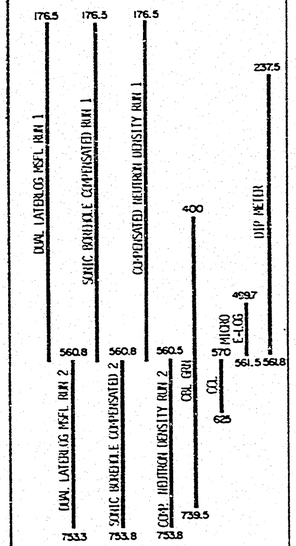
DRILLING PROGRESS CHART



EVALUATION PROGRAM



LOGGING PROGRAM



TEST THRU CASING: FORMATION FLUID RECOVERY FLOW RATES

DST #1

727-730 KB. 8 x 12 gram. shts./M w/79 mm steel carrier csg. gun. Rec. 270 M of sli. salty wtr. Pre-flow weak air blow -- v.w. in 10 min. V.O. very weak air blow. Dead in 40 min.

Test #2

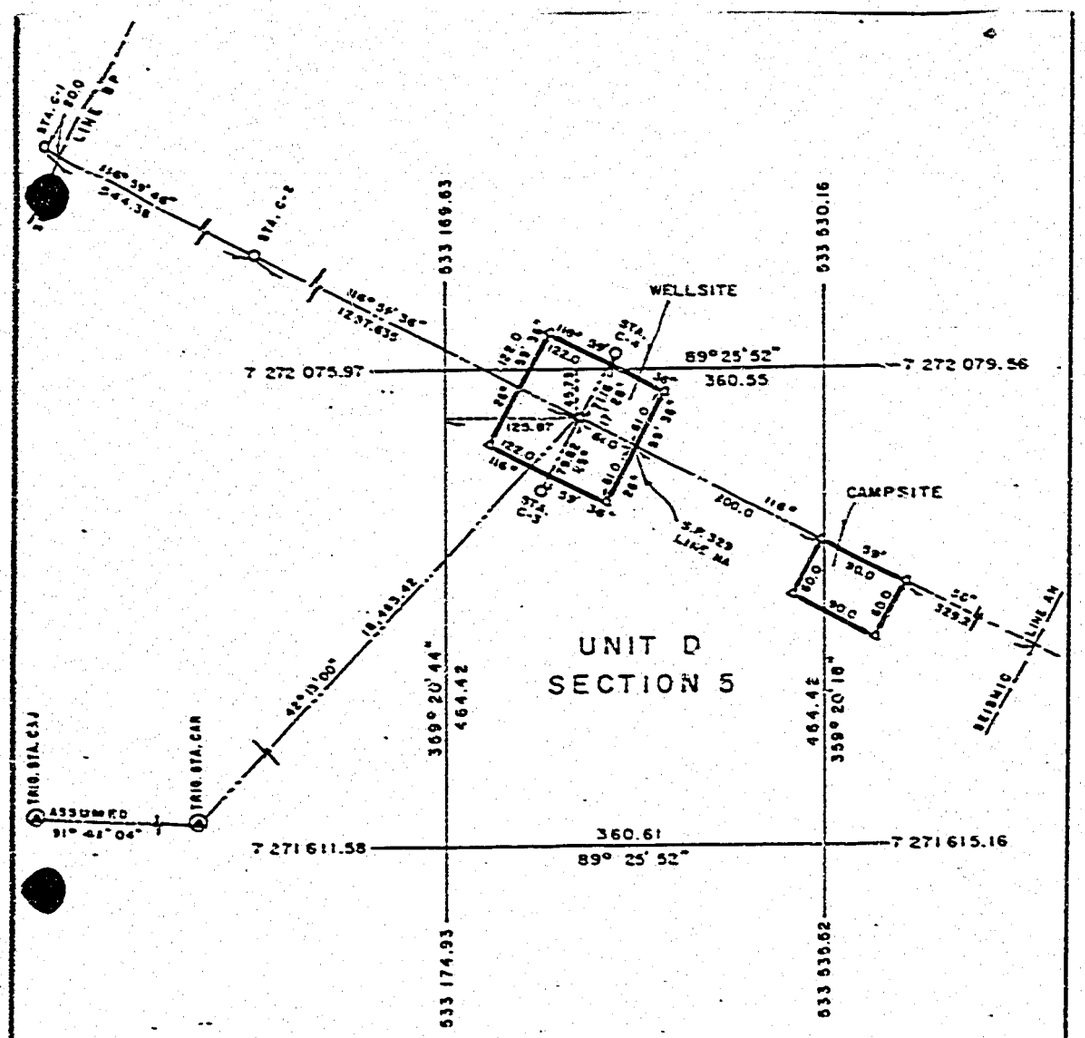
642.5 - 644.5 8 x 6 gram. shts./M (w/39.7 mm) Steel carrier thru tubing. No fluid recovery.

Perf. Int. 644.5 - 647.0 M & 637 - 642.5 w/8 x 6 gram shots/M w/ 39.7 mm steel carrier thru tubing. No fluid recovery. Acidized perfs. from 637 to 647 M. Swabbed. No hydrocarbons present. Cemented perfs.

Test #3

Perf. 566.5 - 568.5 M w/8 x 12 gram. shots/M w/79 mm steel carrier csg. gun. Well flowing on 17.8 mm choke. Well flowing gas with heavy wtr. spray. After 11 hrs. water spray decreased to moderate flowing gas & water @ 2 M^3/hr. decreasing 1 M^3/hr. Well died. Production csg. frozen off @ surface. Cement squeeze. Cement retainer @ 565.5 M. Perf. 561.75 - 563.5 MKB. 13 x 12 gram shots/M w/79 mm steel carrier csg. gun. Small amount of gas. Perf. Int. 560-561.75 w 13 x 12 gram shots/M.

Swabbed - well started to flow. Flow on 48/64 choke. Well flowing sweet gas @ 1.2 mmcf/D water rate 1 M^3/ hr. Stay on 48/64" choke. Well flowing sweet gas w/heavy water spray. 20/64 choke. Sour gas & heavy water spray. Well loading up with water. Sample gas & sample water. Well suspended.



INTENDED WIDTH OF LINES - 10 METERS

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

A.T. & S. EXPLORATION LTD.

PRELIMINARY SKETCH SHOWING WELL LOCATION

A.T. & S. CARCAJOU 5-D

UNIT D, SECTION 5, GRID AREA 65° 40', 128° 15'

A.T. & S. EXPLORATION LTD.

S. R. Winsett

CERTIFIED CORRECT:
THIS 4th. DAY OF SEPTEMBER, A.D. 1984.

CANADA LANDS SURVEYOR

ELEVATION	GEOGRAPHIC CO-ORD'S.	U.T.M. CO-ORDINATES
GROUND AT WELLHEAD : 100.05	NORTH LATITUDE: 65° 34' 13.60" (65.5704443°) WEST LONGITUDE: 128° 16' 42.68" (128.2785230°)	NORTHING: 7,272,031.49 EASTING: 533,296.01 CO-ORDINATES ARE COMPUTED FOR ZONE 9, CENTRAL MERIDIAN 129°W.

LEGEND	AREAS REQUIRED	
Survey Monument found ●	WELLSITE = 3.68 Acres 1.488 ha.	HOSFORD, IMPEY, WELTER AND ASSOCIATES LTD.
Survey Monument placed O	CAMPSITE = 1.33 Acres 0.540 ha.	P.O. BOX 1409, YELLOWKNIFE, X1A 2P1
Traverse Station Q	FUEL SITE = —— Acres —— ha.	NORTHWEST TERRITORIES
SCALE 1:5000	TOTAL = 5.01 Acres 2.028 ha	FILE NO. Y84-013 DATE: SEPT 4/84

GEOLOGICAL
REPORT

GEOLOGICAL WELLSITE REPORT

FOR

AT&S CARCAJOU RIDGE D-05

Lat. 65° 34' N, Long. 128° 16' W

UNIQUE WELL IDENTIFIER
300D056540128150

Prepared for

AT&S EXPLORATION LTD.

By

Vic Dudus

PRO GEO CONSULTANTS

fb

December 1984-January 1985

PRO GEO CONSULTANTS

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WELL SUMMARY

WELL NAME:	AT&S CARCAJOU RIDGE D-05	
CO-ORDINATES:	Lat. 65° 34' N; Long. 128° 16' W	
LOCATION:		
ELEVATIONS:	Ground:	100.05 m
	KB:	104.69 m
OPERATOR:	AT&S Exploration Ltd.	
DRILLING CONTRACTOR:	Kenting #33	
WELLSITE SUPERVISION:	Toolpusher:	Elwood Watchell
	Engineer:	Earl Staroszik
	Geologist:	Vic Dudus
WELL SPUDDED:	19.30 1984-12-22	
DRILLING COMPLETED:	05.34 1985-01-20	
BIT SIZES:	Surface:	311 mm
	Downhole:	222 mm
CASING SIZES:	Surface:	245 mm
	Intermediate:	177.8 mm
	Production:	114.3 mm
TOTAL DEPTH:	Driller:	755 m
	Logger:	753.8 m
BOTTOM HOLE FORMATION:	Hare Indian	
CORES CUT:	One: 546-564 m	
LOGS RUN:	Run #1: BHC SONIC: DLL-MSFL, MEL, CDL-CNL, Dipmeter Run #2: BHC SONIC, DLL-MSFL, CDL-CNL	
DRILL STEM TESTS RUN:	None	
RIG RELEASED:	1985-01-22 at 02.30	
WELL STATUS:	Cased for evaluation	

DAILY SUMMARY

1984-12-19 to 1984-12.21

- Move in and rig up rotary tools

1984-12-22

- Depth 15 m. Drill conductor hole.

1984-12-23 Day 1

- Depth 18 m. Cement conductor pipe. Spud at 19.30 1984-12-22.

1984-12-24 Day 2

- Depth 21 m, progress 3 m
- Pull conductor pipe - ream out cement

1984-12-25 Day 3

- Depth 63 m, progress 21 m.
- Drill surface hole - caving problems

1984-12-26 Day 4

- Depth 145 m, progress 82 m
- Drill 311 mm surface hole

1984-12-27 Day 5

- Depth 179 m, progress 34 m
- Run surface casing - WOC

1984-12-28 Day 6

- Depth 179 m, progress nil
- Nipple up BOP's

1984-12-29 Day 7

- Depth 292 m, progress 113 m
- Drill ahead with water

1984-12-30 Day 8

- Depth 435 m, progress 143 m
- Drill ahead - mud up at 332 m.

1984-12-30 Day 9

- Depth 526 m, progress 91 m
- Drill ahead

1985-01-01 Day 10

- Depth 549 m, progress 23 m
- Cutting Core #1 546-564 m

1985-01-02 Day 11

- Depth 562 m, progress 13 m
- Cutting Core #1

1985-01-03 Day 12

- Depth 563.8 m, progress 1.8 m
- Mixing mud and barite - well kicked - under control

1985-01-04 Day 13

- Depth 563.8 m, progress nil
- Mixing barite to raise mud density

1985-01-05 Day 14

- Depth 563.8 m, progress nil
- Trip out with Core #1

1985-01-06 Day 15

- Depth 563.8 m, progress nil
- Logging with Computalog

1985-01-07 Day 16

- Depth 563.8 m, progress nil
- Trip out to run 177.8 mm casing

1985-01-08 Day 17

- Depth 563.8 m, progress nil

1985-01-09 Day 18

- Wait on 88.9 mm drill string

1985-01-10 Day 19

- Wait on drill string

1985-01-11 Day 20

- Nipple up BOP's
- Change to 88.9 mm pipe rams

1985-01-12 Day 21

- Depth 568 m, progress 4 m
- Drilling ahead at 1 m/hr.

1985-01-13 Day 22

- Depth 586 m, progress 18 m
- Drill at 1 m/hr.

1985-01-14 Day 23

- Depth 611 m, progress 25 m
- Drilling at 1.03 m/hr

1985-01-15 Day 24

- Depth 611 m, progress 26 m
- Drilling at 1.13 m/hr.

1985-01-16 Day 25

- Depth 652 m, progress 15 m
- Tripping for new bit

1985-01-17 Day 26

- Depth 678 m, progress 26 m
- Drilling ahead at 1.04 m/hr.

1985-01-18 Day 27

- Depth 707 m, progress 29 m
- Drilling at 1.16 m/hr.

1985-01-19 Day 28

- Depth 734 m, progress 27 m
- Drilling at 1.29 m/hr.

1985-01-20 Day 29

- Depth 755 m, progress 21 m
- Preparing to log

1985-02-21 Day 30

- Depth 755 m, progress nil
- Trip out to log

1985-01-22 Day 31

- Depth 755 m, FTD
- Rig out, move to Hoosier F-27

1985-01-23 Day 32

- Rig released at 02.30 1985-01-22

CASING SUMMARY

Surface Casing

Ran 15 joints 245 mm, J-55, LT&C, 53.6 kg/m surface casing. Cemented by Nowsco with 16.6 tonnes Polarset cement - 16% R-15. Landed at 179 m. Plug down at 1984-12-27 06.35. 6 m^3 cement returns to surface.

Intermdiate Casing

Ran 52 jts. 177.8 mm 34.2 kg/m J-55 ST&C casing. Cemented with 3 tonnes 1602 kg/m slurry - 11 tonnes 1901 kg/m Slurry Class C and .75% T10. Landed at 562 m. Plug down at 18.39 1985-01-07. 2 m^3 cement returns to surface.

Production Casing

Ran 63 jts. 114.3 mm 14.14 kg/m J-55 LT&C. Cemented by Nowsco with 4.8 tonnes class G and .75% T10. Landed at 755 m. Plug down 12.35 1985-01-22. Cement top at 450 m.

GEOLOGICAL SUMMARY

The Carcajou D-05 prospect was seismically defined on an arm of the main Kee Scarp platform. The anomaly could be interpreted as an isolated patch reef or a reef margin developed in response to varying rises in sea level, or many other possible interpretations.

Drilling commenced on December 28th, 1984, after running surface casing to 179 m KB, sample quality remaining a constant concern due to the shale shaker being located outside and temperatures around the -60°C mark. Overall sample quality was poor and not representative.

The Canol sample top was picked as a change of shale, but the shale was not typical Canol shale. After logs were run there seemed to be no Canol shale seen on logs.

The proposed top of the Kee Scarp came in approximately 70 m low to prognosis. I drilled 2 meters into the Kee Scarp to be certain that it was not a limestone bed above the main reef. During coring the average coring time per meter was 100 minutes. As we reached the base of the core, lost circulation was incurred and regained, but was incurred a second time and regained. During the trip out with Core #1, three stands of pipe had been pulled when the well kicked and emptied the well bore. The hydril and pipe rams were closed and sour gas (6 ppm) was flaring at an approximate rate of 140 x $10^3 m^3$/day. The gas originated from a fracture system that was cored. It took four days to regain control of the well before recovering Core #1. After a core description was made (facies interpretatation - back reef), a decision was made to log the well and run intermediate casing (177.8 mm).

Drilling resumed four days later after 88.9 mm drill string was located and shipped to Kenting 33. After drilling out 177.8 casing shoe, lost circulation was again incurred. At this point sawdust was mixed and mud flow was diverted past the shaker. Sample quality was poor and not representative. After circulation was regained, drilling proceeded at a slow rate, mainly due to a lack of force on the bit. Lithology remained constant except for a Detrital Limestone, 642-647 m, that had good oil staining. The Hare Indian came in at 733 m KB and was a siltstone with minor sandstone and shale.

FORMATION TOPS

FORMATION	SAMPEL		LOG	
	Depth (m)	Subsea	Depth (m)	Subsea
Imperial	288	-183.31	283	-178.31
Canol	474	-369.31	not present	
Kee Scarp	544	-439.31	544	-439.31
Hare Indian	733	-628.31	731.5	-626.81
F.T.D.	755	-650.31	753.8	-649.11

SAMPLE DESCRIPTIONS

Depth (m)	Description
180-200	Shale; dark grey, blocky, hard, micromicaceous, silty in part, occasional chert pebbles variegated, subrounded Sandstone; trace, white to clear, 95% quartz, very fine grained, well sorted, subangular, 5% silica cement, hard, tight, no shows
200-271	Siltstone with minor beds of Sandstone Siltstone; dark grey brown, blocky, soft, micromicaceous, trace of pyrite and glauconite Sandstone; medium brown, 70% quartz, clear, very fine grained, well sorted, subangular, 30% silt matrix, soft, tight, no shows, micromicaceous Lithic Sandstone; whitish orange, fine grained, well sorted, angular, hard, tight, no shows Sandstone, white, 100% quartz, very fine grained, well sorted, subrounded to subangular, silica cement, hard, tight, no shows Sandstone; grey brown, 60% quartz, clear, very fine to fine grained, moderate sorting, subrounded, 20% silt, 20% silica cement, moderately hard, tight, no shows.
271-288	Interbedded Shale and Siltstone Shale; dark grey, subfissile to fissile, hard, siliceous Siltstone; dark grey, blocky, moderately hard, siliceous, micromicaceous
IMPERIAL 288-337	Interbedded Shale, Siltstone and Sandstone Siltstone; grey black, blocky, soft, micromicaceous, trace glauconite and pyrite Shale; grey black, fissile, hard, siliceous, trace glauconite, trace pyrite, worm burrows, carbonaceous plant remains Sandstone; light brown to clear, 100% quartz, fine to coarse grained, poor sorting, angular, unconsolidated, no shows, trace garnet, dark red-brown, well rounded, trace pyritized fossil fragments throughout section Sandstone; light brown to clear 80% quartz, very fine grained, well sorted, angular, 20% silt, friable, no shows. Sandstone; grey brown, 75% quartz, clear, very fine grained, well sorted, angular, 20% silt matrix, 5% dolomitic cement, hard, tight, no shows, micromicaceous, trace glauconite.
337-381	Interbedded Shale, Siltstone and Sandstone Shale; black, fissile to subfissile, hard, micromicaceous, silty, trace pyrite and glauconite Siltstone; dark grey, blocky, hard, siliceous Sandstone; grey brown, 70% quartz clear to light brown, very fine to medium grained, poor sorting, angular, 20% silt, 10% silica cement, hard, tight, no shows, micromicaceous

Depth (m)	Description
381-474	Interbedded Siltstone, Sandstone and Shale Siltstone; medium grey, blocky, hard, micromicaceous, carbonaceous flecks in part Shale; dark grey, fissile, hard, siliceous Sandstone; medium grey 90% quartz clear, very fine grained, subangular, well sorted, 5% silt 5% silica cement, hard, tight, no shows, micromicaceous Sandstone; a/a, with carbonaceous flecks. Occasional laminae of Siltstone, light grey, blocky, soft, trace siltstone, white, massive, soft, bentonitic, limy cement, occasional chert pebbles, white to dark grey, subrounded to angular, trace glauconite. Shale; dark grey, fissile, hard Siltstone; medium grey, blocky, hard, micromicaceous, carbonaceous flecks in part Shale; dark grey, fissile, hard, siliceous
CANOL?? 474-544	Interbedded Shale, Siltstone and occasional Limestone stringers Shale; dark grey black, fissile, hard, silty in part at top of section Siltstone; grey black, blocky, hard, occasional pyrite veining Sandy Limestone; white, micritic, 10% quartz and chert, clear to black, very fine to medium grained, poor sorting, angular, 10% silt, hard, tight, no shows Occasional limestone stringers, white critic, hard.
KEE SCARP 544-564	Limestone; white to light brown, micritic to medium crystalline, hard SEE DETAILED CORE DESCRIPTION
564-592	Limestone; Skeletal Micritic, 60-100% micrite, dark brown grey, hard, tight, 0-40% skeletal - stromatopora and amphipora, white to light grey, calcite, 3-5% fracture and vuggy porosity, trace live oil stain in and on fractures, trace dead oil stain near base section, green white spotty fluorescence and slow green white ribbon cut, argillaceous in micrite, calcite veining throughout section, shale laminae throughout Limestone; trace, whit, chalky, soft, tight, no shows Limestone; trace, black brown, micritic, hard, tight, no shows
592-639	Limestone with minor beds of Shale and Siltstone Limestone; skeletal/micritic, 60-100% micrite, light grey brown, 0-40% skeletal white (amphipora and stromatopora) micritic to coarse crystalline, hard, 0-5% fracture and vuggy porosity throughout section, spotty live oil stain, spotty green white fluorescence, slow green white ribbon cut, argillaceous in micritic portions, trace calcite crystals lining fractures and vugs. Shale; black, fissile, hard, calcareous Siltstone; medium grey, blocky, soft, calcareous Shale; black, fissile, soft, glauconitic, calcareous, trace free quartz grains, clear angular, coarse grains

Depth (m)	Description
592-639 Ctd.	Shale: medium grey, blocky, hard, calcareous
639-650	Detrital Limestone: brown grey, micritic to coarse crystalline 60-70% micrite, 30-40% Detrital Limestone grains, clear, very fine to coarse grained/crystalline, angular to subrounded, poor sorting, 5-12% pinpoint to intercrystalline porosity, common live oil stain, common dead oil stain, yellow green fluorescence and slow ribbon cut, trace orange fluorescence in base of section, very argillaceous
650-698	Limestone: skeletal/micritic, skeletal 10-20% white to light grey, fine to coarse crystalline. 80-90% micritic, light to dark grey brown, micritic to medium crystalline, hard, 3-5% fracture porosity, trace live oil stain and dead oil stain, spotty green white fluorescence and slow ribbon cut, porosity is 95% bitumen filled, very calcitic, trace pyrite, argillaceous Shale laminae: trace, brown black, blocky, hard, calcareous, bituminous, fossiliferous Calcite crystals, trace, lining fractures/vugs? Trace shell fragments
698-733	Interbedded Limestone, crystalline/skeletal-micritic Skeletal Micritic Limestone: 30-40% skeletal white to clear, fine to coarse crystalline, 60-70% micritic, dark grey, 3-8% fracture porosity and intercrystalline porosity, trace live oil stain, spotty green white fluorescence plus slow ribbon cut, abundant dead oil stain plugging fractures and intercrystalline porosity, free calcite crystals Shale laminae throughout section Limestone: light to medium grey, fine to medium crystalline, hard, 8-12% intercrystalline porosity, trace spotty live oil stain, trace dead oil stain, abundant pyrite crystals throughout, spotty green white fluorescence and slow ribbon cut.
HARE INDIAN 733-755	Interbedded Siltstone, Shale and Sandstone Siltstone: medium grey, massive, hard, very calcareous, slightly sandy in part, micaceous, argillaceous, pyritic, fossiliferous at top of section Shale: dark grey, blocky, hard, calcareous, carbonaceous in part, micaceous Sandstone: medium grey, 80% quartz, clear very fine grained, well sorted, subangular to subrounded, 10% silt 10% limy cement, hard, tight, no shows, micaceous, trace pyrite
FTD	

DETAILED CORE DESCRIPTION

Core No.1 546-564 m Kee Scarp Cut 17.8 m, Rec. 17.8 m

Coring Times: Mins. per 1/5th of a Meter

54,64,46,36,36; 32,32,30,28,26; 26,26,24,25,23; 24,19,21,22,22; 22,20,21,20,19;
18,20,15,18,18; 18,18,16,18,18; 18,18,19,18,18; 18,18,16,13,14; 18,16,18,18,16;
18,18,24,24,22; 20,20,19,19,19; 22,20,21,20,20; 20,19,19,20,19; 22,20,20,22,21;
19,20,18,22,23; 16,18,17,16,20; 15,20,17,24,6+?

Depth (m)	Thickness	Description
546-555.1	9.1 m	Limestone; skeletal/micritic; 5-50% skeletal light grey, fair to coarse crystalline, calcite infilling, composed of stroms, massive and trace cylindrical amphipora; 50-95% micritic groundmass, dark grey, argillaceous, calcite filled fractures, tight, no shows.
555.1-562.8	7.7	Limestone; skeletal/micritic; 60-95% skeletal, light to medium grey, fine to coarse crystalline, composed of massive and cylindrical stroms, usually in beds alternating with amphipora, calcite infilling, 5-40% micrite, dark grey, very argillaceous, 3-12% porosity composed mainly of fractures, with leached vuggy porosity, some fractures and vugs lined with calcite crystals, light brown oil staining in most fractures and some vugs, good yellow green fluorescence with a massive yellow green cut to ribbon cut, fracturing also seen around outline of massive strom, shale partings throughout section, becoming very argillaceous at base of section
562.8-564	1.2	Limestone; micritic/skeletal; 60-100% micrite, dark black, brown, hard, tight, no shows, 0-40% massive stroms, some amphiporafine crystalline, trace intraclasts and pellets, calcite filled fractures.

Facies interpretation: Back Reef

BIT RECORD

WELL NAME: CARCAJOU D-05

BIT NO.	SERIAL	SIZE MM	TYPE	DEPTH OUT M	DISTANCE M	HOURS	WEIGHT daN	RPM	DULL COND T	B	G
1A	36909	311.2	XDV	24	24	13-1/2	500	50	5	2	I
2A	45504	311.2	JD7	145	121	33-3/4	4-8000	50/80	4	2	I
3A	26908	311.2	XDV	179	34	5-1/2	8-9000	80/110	2	1	I
1	AH030	222	J3	468	289	29-1/2	12-16000	85/95	5	4	I
2	1217	222	J22	546	78	18-1/2	4-5000	90	2	2	I
CH#1	060514	221.5	C40	564	18	33-1/4	8-9000	90	90% 2-Broken Pads		
2RR	1217	222	J22	564	2-Clean Out Trips						
3	6438	158.7	R4	579	15	13	3-6000	60	4	4	I
4	6378	158.7	J33	651	72	66-3/4	6000	60	3	3	I
5	6388	158.7	J33	755	104	85	6000	60	2	4	I
				T.D.							

BIT RECORD

WELL NAME: CARCAJOU D-05

BIT NO.	SERIAL	SIZE MM	TYPE	DEPTH OUT M	DISTANCE M	HOURS	WEIGHT daN	RPM	DULL COND T	B	G
1A	36909	311.2	XDV	24	24	13-1/2	500	50	5	2	I
2A	45504	311.2	JD7	145	121	33-3/4	4-8000	50/80	4	2	I
3A	26908	311.2	XDV	179	34	5-1/2	8-9000	80/110	2	1	I
1	AH030	222	J3	468	289	29-1/2	12-16000	85/95	5	4	1
2	1217	222	J22	546	78	18-1/2	4-5000	90	2	2	I
CH#1	060514	221.5	C40	564	18	33-1/4	8-9000	90	90% 2-Broken Pads		
2RR	1217	222	J22	564	2-Clean Out Trips						
3	6438	158.7	R4	579	15	13	3-6000	60	4	4	I
4	6378	158.7	J33	651	72	66-3/4	6000	60	3	3	I
5	6388	158.7	J33	755	104	85	6000	60	2	4	I
				T.D.							

CARCAJOU D-5

BETA RIG #60

85-02-07

Rig up rig and equipment. Lay steam lines. Block lines up off ground. Start up Boiler. Remove well head. Install BOP's. Rig up tubing equipment. Feb. 6/85, 2000 hrs. shut down for night.

85-02-08

Rig up Computalog. Ran G.R.N. C.C.C.L & G.B.L. from P.B.T.D. to 740 M K.B. Correlate to Computalog G.R.N. open hole log dated 85-01-20. Good cement bond over interval logged. Run in perforate interval 727.0 M to 730.0 M K.B. with eight-12 gram shots/M using a 79 mm steel carrier csg. gun. Rig out Computalog; make up Lynes D.S.T. tools; run in on 74 jts. of 60.3 mm tubing. Set packer at 725.5 M K.B. Open tool.

Times: 10-60-60 FSI 10 hrs.

Left tool shut in over night.

Flow description. Pre-flow weak air blow, decreasing to very weak in 10 min. V.O. very weak. Air Blow dead in 40 min. No gas to surface. Left tool shut-in over night.

85-02-09

Unseat Packer. Pull out of hole with test tools. Lay down tools.

Recovery: 270 M of slightly salty water.

Pressures: 1H 7125 kPa Preflow 299 kPa 1S1 418 kPa
1F 299 kPa FF 358 kPa FSI 657 kPa FH 7125 kPa

Rig up Computalog. Run in and set Baker Model S. Cement retainer at 710 M K.B. Make up retainer stinger on 60.3 mm tubing. Run in hole, tag retaine , pick tubing up 2 M, displace well to warm fresh water. Sting into retainer. Pressure up on annulus to 7000 kPa. Pressure up on Perfs. to 20.600 kPa. Perfs. would not break down. Bleed pressure off. Pull 5 jts. of tubing out of well.
1900 hrs. secure well shut down for night.

85-02-10

Run 5 jts. of tubing in. cir. well to warm fresh water. Rig up NOWSCO cement unit. Sting into retainer. Establish feed rate into Perfs., at 0.039 M^3 per min. at 25.000 kPa. Pressure annulus up to 10.000 kPa. Mix and pump 250 Kg of Class 'G' oil well cement. Squeeze 0.1 M^3 of cement slurry through retainer. Pressure up to 27.000 kPa with no bleed off. Bleed pressure off of tubing and annulus. Pull stinger out of retainer. Pump 40 M of cement on top of retainer. Pull tubing up to 670 M. Back wash tubing.

Pull out of hole standing tubing in derrick, remove retainer stinger. Make up Baker 410 full bore packer on 60.3 mm tubing, run 10 jts. 1900 hrs. secure well shut down for night.

85-02-11

Finish running in hole with Baker 410 Packer, set Packer at 626 M K.B. using 65 jts. of 60.3 mm tubing.

Pressure up on annulus to 7000 kPa held okay. Rig to swab. Swab well down to 570 M K.B. Rig up Computalog. Run in with perforating gun, fluid at 571 M K.B. Tag top of cement that was dumped on top of cement retainer at 671 M K.B. log three collars. Perforate interval 642.5 to 644.5 with eight-6 gram shots/M, using 39.7 mm steel carrier through tubing, decentralized gun. Pull up to 300 M with gun, wait 1 hr, run back in hole tage fluid at 570 M KB. No fluid entry, rig out Computalog. Rig to swab. Pulled 3 swabs from PSN at 624 M KB with no fluid recovery. 1800 hrs secure well shut down for night.

85-02-12

Check well 12 hr. SIT Zero kPa. Rig to swab, pulled 2 swabs from PSN at 622 M KB. No fluid. Rig out swab eqpt. Rig up Computalog. Run in with perforating gun. Log 3 collars. Perforate interval 644.5 to 647.0 and interval 637.0 to 642.5 M KB with 8 x 6 gram shots per metre, using at 39.7 mm through tubing gun. No indication of fluid entry after perforating. Rig out Computalog. Rig to swab. Pull 4 swabs from PSN at 622 M KB. No fluid recovery. 1800 hrs. secure well shut down for night.

85-02-13

Check well 14 hr. SIT Zero kPa. Pull 3 swabs from PSN at 622 M KB. No fluid recovery. Rig out swab equipment. Wait on Dowell to do acid job. Thaw out Propane lines at camp. Rap all lines with insulation. Start heaters in camp. Fill tubing with water, unseat Baker 410 Packer, lower tubing and Packer down to 651 M KB. Left Packer unseated. 1800 hrs. secure well shut down for night.
Note: Will do acid job February 13/85 in the A.M.

85-02-14

No progress due to cold weather -55°C.

85-02-15

Rig to cir. well with warm water. Rig up Dowell to do acid job. Pressure test all surface lines to 20.000 kPa. Pump 2 M^3 of 20% HCL acid down tubing, acid contained .4% inhibitor, .2% surfactant, 1% demulsifier. Displace acid down tubing and across Perfs. from 637 M to 647 M KB. Wash 0.8 M^3 of acid across Perfs. in 10-10 min. stages, increasing back pressure 150 kPa on each stage. Formation started to feed at 15.000 kPa. Stop pump for 10 min. Squeeze 1.2 M^3 of acid into formation at .3 M^3 per min. at 14.000 kPa. Stop pump ISD 12.000 kPa.15 min. 10.000 kPa. Rig out Dowell. Backwash spent acid from well. Pull and lay down 3 jts. of tubing. Set 410 Packer at 624 M KB. Pressure up on annulus to 7000 kPa. Packer holding. Rig to swab. 1900 hrs. Shut down for night.

85-02-16

0700 hrs. Check well 12 hrs. SIT Zero kPa. Run in with swab. Pulled 3 swabs from PSN at 622 M KB. Tubing swabbed dry. All load water and spent acid recovered. Pulled 2 swabs per hr. for 8 hrs. no fluid. Tubing dry. No hydrocarbons present. 1800 hrs. Shut down for night.

85-02-17

Check well 12 hr. SIT zero kPa. Run in with swab to PSN at 622 M KB. Pull out recover 0.3 M^3 of salty formation water with slight trace of oil. Pull 2 more swabs from PSN no recovery with no hydrocarbons present. Shut down wait 3 hrs., run in with swab to PSN at 622 M KB. Pull out, no fluid, no hydrocarbons present. Fill tubing with water unseat 410 packer. Pull out of hole standing tubing in derrick. Rig up Computalog. Run in hole with 114.3 mm cement retainer set retainer at 626 M KB. Rig out Computalog. Install retainer stinger on 60.3 mm tubing, ran in hole, tag retainer, space out tubing. 1900 hrs. secure well shut down for night.

85-02-18

Rig up circulate well with warm water. Rig up NOWSCO. Sting into cement retainer at 626 M. Establish feed rate down tubing at 0.159 M^3/min. at 7000 kPa using 2 M^3 of water, mix and pump 3 tonnes of class G oilwell cement. Total slurry 2.3 M^3 squeezed 2 M^3 of cement slurry into Perfs. at 12,000 kPa. Pressure up to 14.000 kPa. Bleed pressure off. Pull sting out of retainer. Pull two jts. out and lay down, left 8 M of cement on top of retainer. Attempt to backwash tubing. Pressure up to 15.000 kPa. Pull out of hole with wet string found bottom 10 jts. of tubing cemented up.

Rig up Computalog, run in and perforate interval 566.5 M to 568.5 M with eight 12 gram shots per metre, using a 79 mm steel carrier casing gun. Rig out Computalog. 1200 kPa gas presure on well. Pump 2 M^3 of water down casing. Pressure increased to 1800 kPa. 1800 hrs. secure well shut down for night.

85-02-19

Check well 12 hrs. SIC 2205 kPa. No tubing in well. Open casing up and flow to flare pit. Well started unloading workover water.

Leave well flowing on 17.8 mm choke for clean up. Well flowing gas with heavy water spray. Water density (8.3) 1000 Kg/m^3 after 11 hrs. flowing water spray decreased to moderate.

85-02-20

Flow well to flare pit on 17.8 mm choke for clean up.

Well flowing gas with heavy water spray. Close well in for 1 hr. Pressure built up to 4000 kPa. Open well up and flow to pit. Flowing pressure 400 kPa on 17.8 mm choke flowing gas and water at 2 M^3/hr. decreasing to 1 M^3/hr.

Total hrs. well flowed 34, estimate fluid recovered 48 M^3, leave well flow to pit over night.

2300 hrs. check well no water spray. Gas rate decreasing. 0100 hr. well dead.

85-02-21

Check well, found production casing froze off at surface. Pick up 1 jt. of tubing, run in close hydrill cir. well with hot water.

Thaw out casing. Pump 2 M^3 of hot water down casing. Lay down tubing. Let well flow to flare pit, catch gas sample and water sample.

Note, had mud engineer at Kenting run analysis check on water.

Chlorides	15.000 PPM
Total Salt	24.000 PPM
P.H.	7.5 PPM
Calcium	600 PPM
Carbonate	900 PPM

Gas rate decreasing and water rate decreasing. Shut well in. Pump 2 M^3 of hot water down casing. Will set cement retainer and do cement squeeze this A.M.

85-02-22

Rig up Computalog, run in and set Baker 114.3 mm cement retainer at 565.5 M KB. Make up retainer sting on 60.3 mm tubing run in hole cir well to warm water. Sting into ret. Pressure up on annulus to 7000 kPa. Establish feed rate down tubing at 0.3 M^3/min. at 4000 kPa. With 2 M^3 of water. Rig up Nowsco mix and pump 3.6 tonnes of class G oil well cement 2.6 M^3 of cement slurry. Squeeze 2.3 M^3 of cement slurry into perfs. at 566.5 to 568.5 M KB to establish a standing squeeze pressure of 10.000 kPa with no bleed off. Pull stinger out of retainer. Backwash 0.3 M^3 of cement slurry from tubing. Rig out Nowsco, pull out of hole standing tubing in derrick W.O.C. 8 hrs.

Rig up Computalog, run in and perforate interval 561.75 to 563.5 M KB with thirteen 12 gram shots per metre using a 79 mm steel carrier csg. gun small amount of gas on csg. after perforating. Run in with gun #2.

Perforate interval 560 to 561.75 M KB with thirteen 12 gram shots per metre. Rig out Computalog. Leave well shut-in.

0700 hrs. check well SIP on casing 1655 kPa. Note: Casing was swabbed down to 150 M KB.

85-02-23

Check well SIC Pressure 1655 kPa. Open well up, bleed gas pressure off to flare pit - no fluid. Wait on Computalog. Rig up Computalog. Pick up Baker Model FB-1 Production Packer. With tail pipe assembly with blaning plug in place.

Set Packer at 544.5 M KB. Tail pipe with NO-GO at 559 M KB, ID of NO-GO 145 mm profile. Pick up Baker Model E-22 anchor seal assembly, production tube, size 21-23 c/w. Premium seals run in on 60.3 mm tubing tag Packer, remove BOP's space out tubing, latch into Packer, land tubing in hanger in 1000 dan. tension, install well head.

Rig up Computalog. Run in and recover plug from Baker Model F nipple. Rig out Computalog.

0300 hrs. secure well shut down for night.

Note: Top 60 M of annulus full of diesel fuel.

85-02-24

Check well SIT zero kPa. Rig to swab. Pulled 3 swabs from Baker F nipple at 548 M KB.

Well started to flow. Leave well flow on clean up. Shut well in after 3 hrs. flowing. Install choke, open well up and flow on 48/64 choke setting holding 750 kPa back-pressure. Well flowing sweet gas rate 1.210 mmcf/d, water rate 2 M^3 per hr., estimate.

After 19 hrs. flowing gas rate 1.216 mmcf/d water rate decreased to 1 M^3 per hr. Will flow well and try different choke setting today. Feb. 24/85, will release rig this A.M.

85-02-25

0900 hrs. Feb. 24, release service rig. Leave well flowing on 48/54 choke. Pressure 5000 kPa well flowing sweet gas and heavy water spray.

1000 hrs. set choke on 20/64 well started to flow sour gas and very heavy water spray. Could not keep flare going. Pressure decreased 1000 to 3000 kPa. Well loading up with water, catch water sample.

Will catch gas sample this A.M. Shut well in 1900 hrs. Feb. 24/85. Flowed well total 31 hrs. Total water recovered 74 M^3.

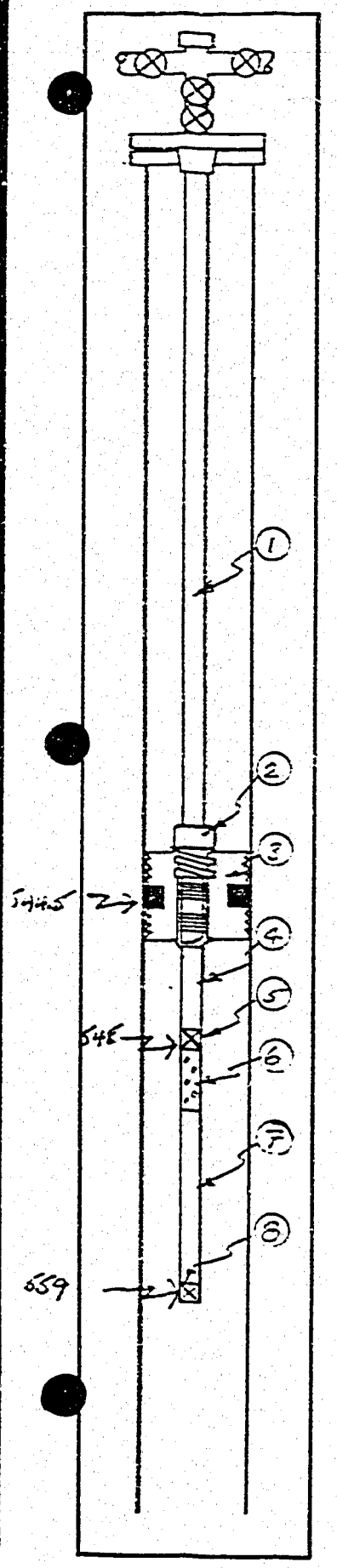
WELL SUSPENDED

BLANKING PLUG IN "F" NIPPLE

WELL HEAD CHAINED AND PADLOCKED

WELL PROFILE

DOWELL



COMPANY	WELL NAME & NUMBER	DATE
A.T. & S	Carcajou D-05	1985-02-19

	SIZE	WEIGHT	GRADE	THREAD	DEPTH
CASING	114 mm	14.1 kg/m			
LINER					
TUBING	60 mm	7.0 kg/m		8 rd EUE	560 metres

Prepared By:	Office:	Telephone:	X	Recommendation
DON SMITH	CALGARY	267-3412		as run

DOWELL

DOWELL OF CANADA

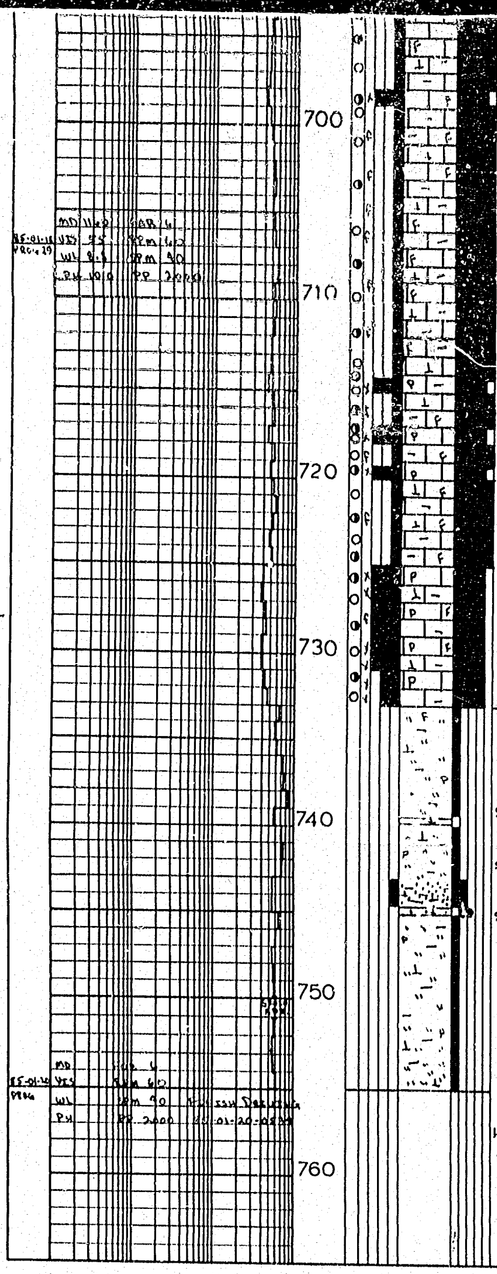
DIVISION OF DOW CHEMICAL OF CANADA LTD.

Comments:

ITEM	EQUIPMENT GUIDE
1.	60 mm tubing to surface.
2.	Baker Model E-22 Anchor Seal Assembly, Product No. 443-48, size 21-23, c/w premium seals, 60 mm 8 rd EUE box up and half mule shoe down.
3.	Baker Model FB-1 Retainer Production Packer, Product No. 413-08, size 24-23, c/w 60 mm 8 rd box down.
4.	Two (2) metres pup joint.
5.	Baker Model "F" Seating Nipple, Product No. 801-50, size 45 mm, c/w 60 mm 8 rd EUE box x pin.
6.	Two or three metres perforated pup joint.
7.	One joint of tubing.
8.	Baker Model "R" Bottom No-Go Seating Nipple, Product No. 801-55, size 45 mm, c/w 60 mm 8 rd EUE box x pin.

"DB" or "FB" Packer with Seal Bore Extension and Anchor Seal Assembly

HISTORY LOG



698-723 INTERBEDDED LIMESTONES CRYSTALLINE/SKELETAL MICRITIC

SKELETAL-MICRITIC LIMEST. 30-40% SKEL. WH SCLR, F SC'LN, 60-70% MICRITE, DK GY 3-8% FRAC. Ø + INTERCRYN Ø, TR LOS SPOT. GRN WH FLOUR + SL. BTB. CUT; ABUN DOS PLUG/FRAC + Ø, FR RR CALCITE VNS SH LAMINAE THROUGH OUT SECTION.

LIMEST LT + MED GY, F + M X'LN, HD, 8-12% INTERCRYN Ø, TR SPOT. LOS, TR DOS, ABUN. PYRITE VNS THROUGHOUT, SPOT GR. WH FLOUR + SL. BTB. CUT

HARE INDIAN 733 (-628.5)

INTERBEDDED SILTST, SH AND MINOR SANDSTONE

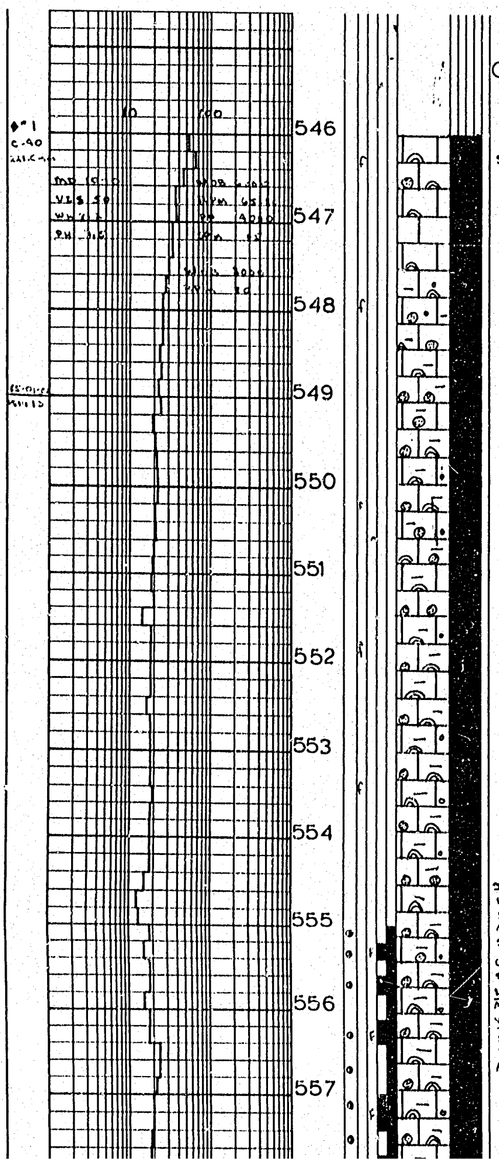
SILTST MED GY, MASS, HD, V CALC, SL SANDY I/P, MICACEOUS, ARGILL. PYRITE, FOSSIL. AT TOP OF SECTION.

SH DK GY, BLKY, HD, CALC, CARBON I/P, MICA,

SS MED GY, 80% QTZ, CLR, vfg, WS, SA SR, 10% SILT 10% LIMEY CEM, HD, TT, NS, MICA, TR PYRITE.

LOG RUN #2 DLL-MSFL, BHC SONIC, CBL-CNL.

R.R. 85-01-22-0230



CORE NO.1 546-562 CUT/REC.17.8m

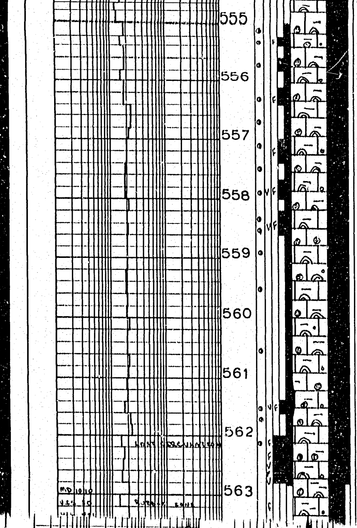
546-555.1 LS SKEL/MICRIT; 5-50% SKEL. LT GY, F SC X'LN, CALCITE INFILLING, COMPOSED OF: STROMATOLITES AND TR. CYLINDRICAL, AMPHIPORA; 50-90% MICRITIC GROUND MASS DK GY, ARGILL, CALCITE FILLED FRACTURES. TIGHT NO SHOWS

Fractures throughout SECTION

555.1 - 562.8 LS SKEL/MICRIT. 60-95% SKEL. LT GY, F SC X'LN, COMPOSED OF: MASSIVE + CYLIND. STROMS, USUALLY IN BEDS ALTERNATING WITH AMPHIPORA, CALCITE INFILL. IN STRUCTURES, 5-40% MICRITE, DK GY, V. ARGILL., 3-1390 Ø

COMPOSED OF MANY FRACTURES AND VUGGY/LEACHED SOME FRACTURES + VUGS MENDED WITH CALCITE CRYSTALS, LIGHT BROWN OIL STAINING IN MOST FRACTURES AND IN VUGS, GOOD YELL. GRN, FLOUR., WITH A MASS YELL GRN CUT TO RIBBON CUT FRACTURES ALSO SEEN AROUND OUT END OF MASS. STROM, SHALE PARTINGS THROUGHOUT SECTION, BECOMING V. ARGILL. AT BASE OF SECTION.

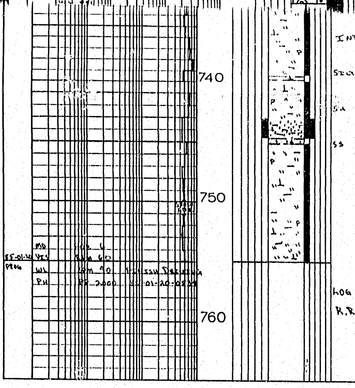
6 OF



555–562 LS SKEL/MICRET. 60-95% SKEL. LT OR. (F OC/LW), COMPOSED OF: MASSIVE + CLOUD. STROMS, USUALLY IN BEDS ALTERNATING WITH AMPHEPORA, CALCITE INFILL IN STRUCTURES, 5-40% MICRITE, DK GY, V. ARGILL. 3-1338 ft

COMPOSED OF MAINLY FRACTURES AND VUGS/LEACHED SOME FRACTURED + VUGS LINED WITH CALCITE CRYSTALS, LIGHT BROWN OIL STAINING IN MOST FRACTURES AND IN VUGS; GOOD YELLOW FLUOR. WITH A WHITE YELLOW CUT IN RIBBON CUT. FRACTURES AND SEAM AROUND OUTLINES OF MASS. STROM; SHALE PARTINGS THROUGHOUT SECTION, BACKFILLING V. ARGILL. AT BASE OF SECTION.

562.5-564 LS MICRETIC/SKELETAL, 60-100% MICRETIC, DK BLK BRN, HD, TT, NS 0-40% MASS STROMS (CLOUD), AND TR. AMPHEPORA, PERIR W'LW. EC. EXTRACLASTS AND PELLETS, CALCITE FILLED FRACTURES.



INTERBEDDED SILTST, SH AND MEDIUM SANDSTONE

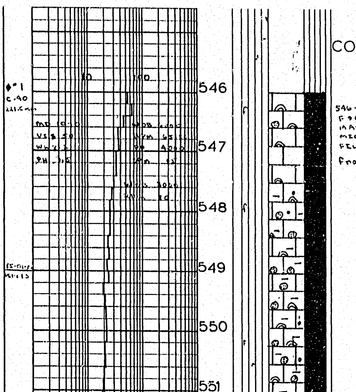
SILTST MOD GY, MASS, HD; V CALC, SL SANDY I/P, MICACEOUS, ARGILL, PYRITE, FOSSIL. AT TOP OF SECTION.

SH DK GY, BLKY, HD, CALC, CARBON I/P, MICA,

SS MOD GY, 70% QTZ, CHT, VFG, WS, SA SR, 10% SILT 10% WHITE CEM, HD, TT, NS, MICA, TR PYRITE.

MOD RUN #2 DLL-MSFL, BHC SONIC, CDL-CNL.

R.R. 85-01-22-0230



CORE NO.1 546-562 CUT/REC.17.8m

546-547.1 LS SKEL/MICRET; 5-60% SKEL. LT GY, F OC W'LW, CALCITE INFILLING, COMPOSED OF: STROMATALITES AND TR. GYNEODECAL, AMPHEPORA; 50-95% MICRETIC GROUNDMASS DK GY, ARGILL, CALCITE FILLED FRACTURES. TIGHT NO SHOWS

Fractures throughout section

547.1-562.8 LS SKEL/MICRET. 60-95% SKEL. LT OR. GY (F OC/LW), COMPOSED OF: MASSIVE + CLOUD. STROMS, USUALLY IN BEDS ALTERNATING WITH AMPHEPORA, CALCITE INFILL IN STRUCTURES, 5-40% MICRITE, DK GY, V. ARGILL. 3-1338 ft

COMPOSED OF MAINLY FRACTURES AND VUGS/LEACHED SOME FRACTURED + VUGS LINED WITH CALCITE CRYSTALS, LIGHT BROWN OIL STAINING IN MOST FRACTURES AND IN VUGS; GOOD YELLOW FLUOR. WITH A WHITE YELLOW CUT IN RIBBON CUT. FRACTURES AND SEAM AROUND OUTLINES OF MASS. STROM; SHALE PARTINGS THROUGHOUT SECTION, BACKFILLING V. ARGILL. AT BASE OF SECTION.

562.5-564 LS MICRETIC/SKELETAL, 60-100% MICRETIC, DK BLK BRN, HD, TT, NS 0-40% MASS STROMS (CLOUD), AND TR. AMPHEPORA, PERIR W'LW. EC. EXTRACLASTS AND PELLETS, CALCITE FILLED FRACTURES.

FACIES INTERPRETATION: BACK REEF

by: Vic Dubois

LOGGING: MOD 13 [illegible]

7 of 7

CORE
ANALYSIS

CORE LABORATORIES - CANADA, LTD.

Petroleum Reservoir Engineering

CORE ANALYSIS

ATIS EXPLORATION LTD.
ATIS CARCAJOU D-05
WILDCAT, CARCAJOU, N.W.T.
65 34'13.60" N LAT. 128 16'42.68" W LONG.
85-01-10

CORE LABORATORIES - CANADA, LTD.

COMPANY ATIS EXPLORATION LTD.
WELL ATIS CARCAJOU D-05
FIELD WILDCAT, CARCAJOU, N.W.T.
LOCATION 65 34'13.60" N LAT. 126 16'42.68" W LONG.

FORMATION KEE SCARP
CORING EQUIPMENT DIAMOND
CORE DIAMETER.(mm) 100
CORING FLUID WATER BASE MUD

PAGE 1
FILE 7004-85-37C
DATE 85-01-10
ANALYSTS RP

FULL DIAMETER ANALYSIS

Sample Number	Depth Metres (m)	m Rec.	Sample Length	Permeability to Air Millidarcys mD Max.	mD 90 des.	mD V	Perm. X m	Porosity	Porosity X m	Density kg/m3 Bulk	Grain	Residual Saturation (Frac of Pore Vol) Oil	Water	VISUAL EXAMINATION
	CORE NO. 1	546.00 m - 562.00	(core received	17.70 m)	(	16 Boxes)								
NA	546.00-46.25	0.25	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 1	546.25-46.43	0.18	-	<0.01	-	-	-	0.015	0.003	-	2710	-	-	Is i
NA	546.43-47.09	0.66	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 2	547.09-47.18	0.09	-	<0.01	-	-	-	0.019	0.002	-	2710	-	-	Is i
SP 3	547.18-47.29	0.11	-	<0.01	-	-	-	0.020	0.002	-	2710	-	-	Is i
NA	547.29-48.10	0.81	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 4	548.10-48.18	0.08	-	<0.01	-	-	-	0.009	0.001	-	2700	-	-	Is i
NA	548.18-48.97	0.79	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 5	548.97-49.09	0.12	-	<0.01	-	-	-	0.014	0.002	-	2710	-	-	Is i
NA	549.09-49.38	0.29	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 6	549.38-49.53	0.15	-	<0.01	-	-	-	0.010	0.001	-	2710	-	-	Is i
NA	549.53-51.66	2.13	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 7	551.66-51.76	0.10	-	<0.01	-	-	-	0.015	0.002	-	2710	-	-	Is i
NA	551.76-52.46	0.70	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 8	552.46-52.59	0.13	-	<0.01	-	-	-	0.011	0.001	-	2700	-	-	Is i
NA	552.59-53.25	0.66	-	-	-	-	-	-	-	-	-	-	-	No analysis requested
SP 9	553.25-53.34	0.09	-	<0.01	-	-	-	0.011	0.001	-	2700	-	-	Is i
10	553.34-53.44	0.10	.06	3.30	2.61	1.28	0.330	0.013	0.001	2680	2710	-	-	Is i ppv sv sty frac
11	553.44-53.58	0.14	.10	0.70	0.12	0.04	0.098	0.010	0.001	2660	2700	-	-	Is i sty frac
SP 12	553.58-53.73	0.15	-	<0.01	-	-	-	0.013	0.002	-	2700	-	-	Is i
13	553.73-53.91	0.18	.13	1.96	0.62	0.10	0.353	0.007	0.001	2670	2700	-	-	Is i ppv sty frac
AST13	553.91-54.13	0.22	-	1.96	0.62	0.10	0.431	0.007	0.002	2670	2700	-	-	Is i ppv sty frac
SP 14	554.13-54.34	0.21	-	0.02	-	-	0.004	0.017	0.004	-	2710	-	-	Is i

CORE LABORATORIES - CANADA, LTD.

COMPANY ATIS EXPLORATION LTD.
WELL ATIS CARCAJOU D-05

FORMATION KEE SCARP
CORING EQUIPMENT DIAMOND

FILE 7004-85-37C

FULL DIAMETER ANALYSIS

Sample Number	Depth Metres (m)	m Rep.	Sample Length	Permeability to Air Millidarcys mD Max.	mD 90 des.	mD V	Perm. X m	Porosity	Porosity X m	Density kg/m3 Bulk	Density kg/m3 Grain	Residual Saturation (Frac of Pore Vol) Oil	Residual Saturation (Frac of Pore Vol) Water	VISUAL EXAMINATION
	CORE NO. 1 CONTINUED													
							-	-	-	-	-	-	-	No analysis requested
NA	554.34-55.51	1.17	-	-	-	-	0.003	0.012	0.002	-	2710	-	-	Is i
SF 15	555.51-55.64	0.13	-	0.02	-	-	-	-	-	-	-	-	-	No analysis requested
NA	555.64-56.00	0.36	-	-	-	-	0.933	0.013	0.003	2665	2700	-	-	Is i ppv sty frac
16	556.00-56.25	0.25	.20	3.73	2.58	0.21	-	-	-	-	-	-	-	No analysis requested
NA	556.25-57.39	1.14	-	-	-	-	0.002	0.029	0.003	-	2700	-	-	Is i
SF 17	557.39-57.50	0.11	-	0.02	-	-	-	-	-	-	-	-	-	No analysis requested
NA	557.50-59.52	2.02	-	-	-	-	0.286	0.005	0.001	2688	2700	-	-	Is i vfrac
18	559.52-59.79	0.27	.09	1.06	0.14	0.89	-	-	-	-	-	-	-	No analysis requested
NA	559.79-60.22	0.43	-	-	-	-	0.021	0.028	0.004	2616	2690	-	-	Is i ppv sv frac
19	560.22-60.36	0.14	.12	0.15	0.06	0.01	-	-	-	-	-	-	-	No analysis requested
NA	560.36-61.13	0.77	-	-	-	-	2.958	0.015	0.003	2660	2700	-	-	Is i ppv sv mv frac
20	561.13-61.30	0.17	.12	17.4	0.08	0.02	-	-	-	-	-	-	-	No analysis requested
NA	561.30-62.65	1.35	-	-	-	-	2.142	0.018	0.004	2645	2690	-	-	Is i ppv sv sty frac
21	562.65-62.86	0.21	.19	10.2	6.38	0.02	-	-	-	-	-	-	-	No analysis requested
NA	562.86-63.70	0.84	-	-	-	-								

CORE LABORATORIES - CANADA, LTD.

WELL: ATIS CARCAJOU D-05

FORMATION: KEE SCARP

FILE: 7004-85-37C

SUMMARY INTERVAL: 546.00- 563.70

TOTAL: 17.70

METRES ANALYZED: 3.33

METRES NOT ANALYZED: TOTAL 14.37 DENSE 0.00 LOST 0.00 *NA 14.37 DRILLED 0.00 RUBBLE 0.00

SUMMARY OF ANALYZED CORE:	METRES	FRACTION OF ANALYZED CORE	WEIGHTED AVERAGE POROSITY	POROSITY METRES	WEIGHTED AV. HORIZONTAL PERMEABILITY	PERMEABILITY METRES	WEIGHTED AVERAGE RESID. OIL	WEIGHTED AVERAGE TOT. WATER
TOTAL	3.330	1.000	0.014	0.045	2.272	7.567	0.000	0.000
BY PERM RANGES								
LESS THAN 0.01 mD	1.200	0.360	0.014	0.016	0.005	0.006	0.000	0.000
0.01 0.09 mD	0.450	0.135	0.018	0.008	0.020	0.009	0.000	0.000
0.10 0.49 mD	0.140	0.042	0.028	0.004	0.150	0.021	0.000	0.000
0.50 0.99 mD	0.140	0.042	0.010	0.001	0.700	0.098	0.000	0.000
1.0 9.99 mD	1.020	0.306	0.009	0.009	2.267	2.333	0.000	0.000
GREATER THAN 9.99 mD	0.380	0.114	0.017	0.006	13.421	5.100	0.000	0.000

*NOT ANALYZED BY REQUEST

CORE LABORATORIES - CANADA, LTD.

CODE KEY - DESCRIPTIONS

anhy = Anhydrite
AST = Appears similiar to
bk = Break
bldr = Boulder
c = Coarse
calc = Calcite (areous)
carb = Carbonaceous
cbl = Cobble
CEC = Cation exchange capacity
cgl = Conglomerate
cht = Chert
coal = Coal/Coal Inclusion
dol = Dolomite
f = Fine
fest = Ironstone
foss = Fossil (iferous)
frac = Fracture
fri = Friable
glauc = Glauconite (ic)
gnul = Granule
gyp = Gypsum
h frac = Horizontal fracture
hal = Halite (Salt)
i = Intergranular
lam = Laminae (Laminated)
lay = Limy
ls = Limestone
lv = Large vug
m = Medium
mi = Mud invaded
mic = Micaceous
mshy or shy = Moderately shaly (20-40%)
mv = Medium vug
NA = Not analysed by request
NP = No permeability measurement
ool = Oolitic
OB = Overburden
P = Preserved for future studies
pbl = Pebble
POA = portion removed for oil analysis
ppv = Pinpoint Vug
PSA = Particle size analysis
pyr = Pyrite (ic)
pyrbit = Pyrobitumen
SCAL = removed for special core analysis
sdy = Sandy
SEM = Scanning electron microscope analysis
sh = Shale
sltst = Siltstone
slty = Silty
ss = Sandstone
sshy = Slightly Shaly(<20%)
sty = Stylolite (ic)
sulf = Sulphur
sv = wet/dry sieve analysis
tr = Trace
TS = Thin section
uncons = Unconsolidated
vfrac = Vertical fracture
vf = Very fine
VOB = Vertical overburden sample
vshy = Very shaly (>40%)
vug = Vuggy (ular)
* = broken core
** = Permeability > 10740 mD

CLEANING

Solvent	TOLUENE
Extraction Equipment	VAPOR PHASE EXTRACTOR
Extraction Time	4 DAYS
Drying Equipment	GRAVITY OVEN
Drying Time	48 HOURS
Drying Temperature	132 DEG.C

ANALYSIS

Pore volume measured by Boyle's Law in a Hassler holder using He
X Grain vol msrd by Boyle's Law in a modified U.S.B.M. porosimeter using He
X Grain volume measured by Boyle's Law in a matrix cup using He
X Bulk volume measured by calipering
Bulk Volume by Archimedes Principle
Porosity determined by summation of fluids (retort)
Fluid saturations by retort on end pieces of full diameter samples
Fluid saturation by retort
Water saturations by Dean-Stark
Oil saturations by weight difference in Dean-Stark
Permeabilities measured on 20mm cubes
X Permeabilites measured on 38 mm diameter drilled plugs
X Core Gamma Composite
Core Gamma Spectral

REMARKS:-

6

PERMEABILITY VS POROSITY

FILE: 7004-85-37C

COMPANY: ATLAS EXPLORATION LTD.

WELL : ATLAS CARCAJOU D-05

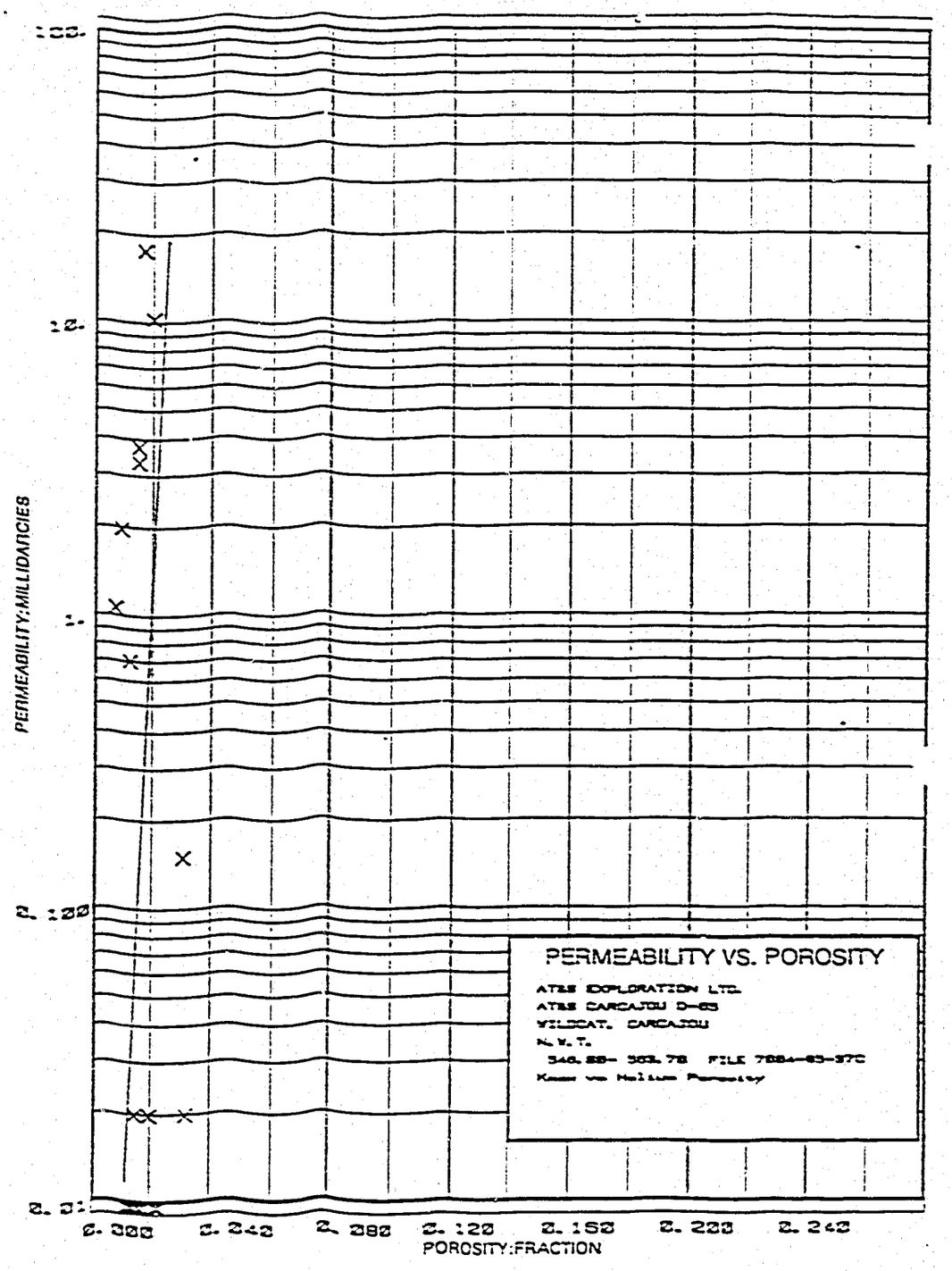
FIELD : WILDCAT, CARCAJOU

PROVINCE: N.W.T.

FORMATION: KEE SCARP

AIR PERMEABILITY : MD - MAXIMUM (UNCORRECTED FOR SLIPPAGE)
POROSITY : FRACTION (HELIUM)

DEPTH INTERVAL	METERS ANALYZED	RANGE & SYMBOL	PERMEABILITY MINIMUM	PERMEABILITY MAXIMUM	POROSITY MIN.	POROSITY MAX.	POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	HARMONIC	GEOMETRIC
546.00 - 563.70	3.33	1 (X)	0.000	20.0	0.000	0.460	0.014	2.3	0.01	0.13



EQUATION OF REDUCED LINE RELATING PERMEABILITY (K) TO POROSITY

LOG (K) = (SLOPE)(POROSITY) – LOG OF INTERCEPT

K = ANTILOG (SLOPE)(POROSITY) – LOG OF INTERCEPT

RANGE	SYMBOL	EQUATION OF THE LINE

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: ATIS EXPLORATION LTD.
FIELD : WILDCAT, CARCAJOU

WELL : ATIS CARCAJOU D-05
PROVINCE: N.W.T.

AIR PERMEABILITY : MD. (MAXIMUM) RANGE USED 0.000 TO 20.
POROSITY : FRACTION (HELIUM) RANGE USED 0.000 TO .46

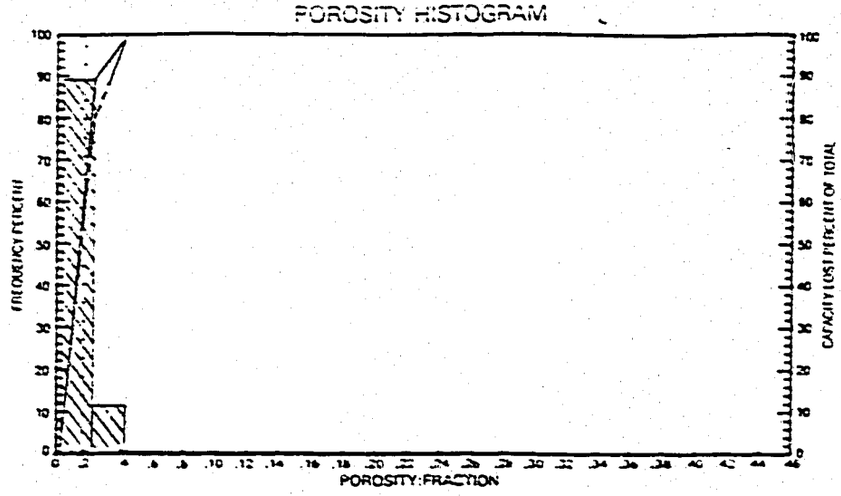
(PERMEABILITY UNCORRECTED FOR SLIPPAGE)

DEPTH LIMITS : 546.00 - 563.70 INTERVAL LENGTH : 17.70
METRES ANALYZED IN ZONE : 3.33 LITHOLOGY EXCLUDED : NONE

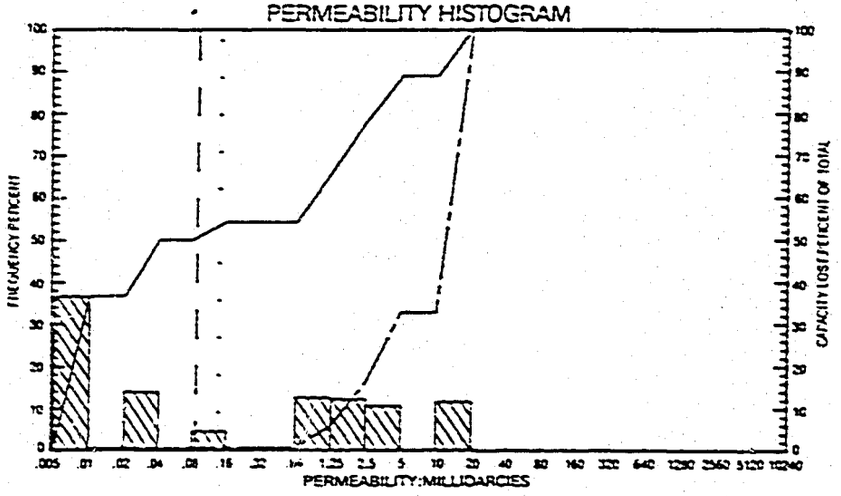
DATA SUMMARY

POROSITY AVERAGE	PERMEABILITY AVERAGES ARITHMETIC	HARMONIC	GEOMETRIC
0.014	2.3	0.01	0.13

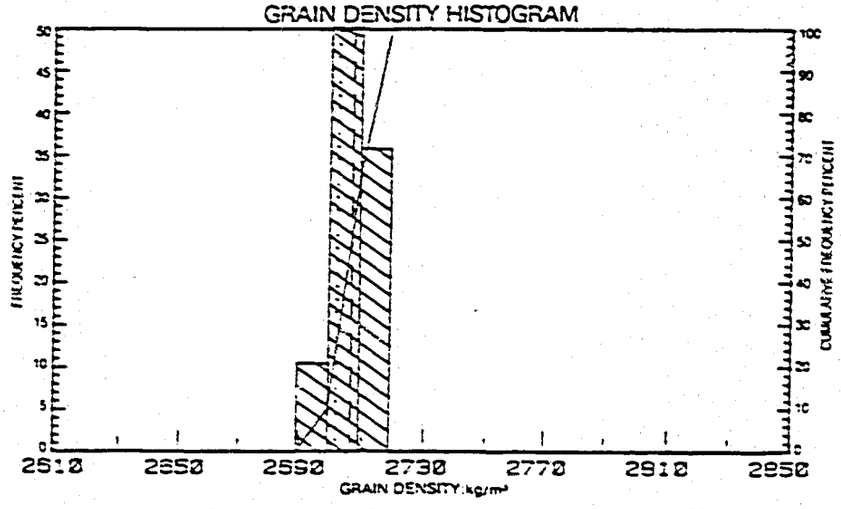
POROSITY HISTOGRAM



PERMEABILITY HISTOGRAM



GRAIN DENSITY HISTOGRAM



ATES EXPLORATION LTD.
ATES CARCAJOU D-85
WILDCAT. CARCAJOU
N. W. T.
548.28- 553.78 FILE 7884-85-37C
Kmax and Helium Porosity

LEGEND

- MEDIAN VALUE
- CUMULATIVE FREQUENCY
- CUMULATIVE CAPACITY LOST
- ARITHMETIC MEAN POROSITY
- GEOMETRIC MEAN PERMEABILITY
- ARITHMETIC MEAN GRAIN DENSITY

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: ATAS EXPLORATION LTD.
FIELD : WILDCAT, CARCAJOU

WELL : ATAS CARCAJOU D-05
PROVINCE: N.W.T.

GROUPING BY POROSITY RANGES

POROSITY RANGE	METRES IN RANGE	AVERAGE POROSITY	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.000 -0.020	3.0	0.012	0.160	2.5	89.2	89.2
0.020 -0.040	0.4	0.026	0.029	0.066	10.8	100.0

TOTAL NUMBER OF METRES = 3.33

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: ATAS EXPLORATION LTD.
FIELD : WILDCAT, CARCAJOU

WELL : ATAS CARCAJOU D-05
PROVINCE: N.W.T.

GROUPING BY PERMEABILITY RANGES

PERMEABILITY RANGE	METRES IN RANGE	AVERAGE PERM. (GEOM.)	AVERAGE PERM. (ARITH)	AVERAGE POROSITY	FREQUENCY (PERCENT)	CUMULATIVE FREQUENCY (%)
0.005 - 0.010	1.2	0.005	0.005	0.014	36.0	36.0
0.020 - 0.039	0.5	0.020	0.020	0.018	13.5	49.5
0.078 - 0.156	0.1	0.150	0.150	0.023	4.2	53.7
0.625 - 1.250	0.4	0.920	0.937	0.007	12.3	66.1
1.250 - 2.500	0.4	2.0	2.0	0.007	12.0	78.1
2.500 - 5.000	0.3	3.6	3.6	0.013	10.5	88.6
10.- 20.	0.4	13.	13.	0.017	11.4	100.0

TOTAL NUMBER OF METRES = 3.33

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: ATAS EXPLORATION LTD.
FIELD : WILDCAT, CARCAJOU

WELL : ATAS CARCAJOU D-05
PROVINCE: N.W.T.

POROSITY-METRES OF STORAGE CAPACITY LOST FOR SELECTED POROSITY CUT OFF

POROSITY CUT OFF	METRES LOST	CAPACITY LOST (%)	METRES REMAINING	CAPACITY REMAINING (%)	ARITH MEAN	MEDIAN
0.000	0.0	0.0	3.3	100.0	0.014	
0.020	3.0	79.3	0.4	20.7	0.026	
0.040	3.3	100.0	0.0	-0.0	0.000	

TOTAL STORAGE CAPACITY IN POROSITY-METRES = 0.045

STATISTICAL DATA FOR POROSITY AND PERMEABILITY HISTOGRAM

COMPANY: ATIS EXPLORATION LTD.
FIELD : WILDCAT, CARCAJOU

WELL : ATIS CARCAJOU D-05
PROVINCE: N.W.T.

MILLIDARCY-METRES OF FLOW CAPACITY LOST FOR SELECTED PERMEABILITY CUT OFF

PERMEABILITY CUT OFF	METRES LOST	CAPACITY LOST (%)	METRES REMAINING	CAPACITY REMAINING (%)	GEOM MEAN	MEDIAN
0.005	0.0	0.0	3.3	100.0	0.13	0.08
0.010	1.2	0.1	2.1	99.9	0.84	1.40
0.020	1.2	0.1	2.1	99.9	0.84	1.40
0.039	1.7	0.2	1.7	99.8	2.29	2.07
0.078	1.7	0.2	1.7	99.8	2.29	2.07
0.156	1.8	0.5	1.5	99.5	2.93	2.33
0.312	1.8	0.5	1.5	99.5	2.93	2.33
0.625	1.8	0.5	1.5	99.5	2.93	2.33
1.250	2.2	5.6	1.1	94.4	4.47	3.47
2.500	2.6	15.9	0.7	84.1	7.01	10.28
5.	3.0	32.6	0.4	67.4	12.95	
10.	3.0	32.6	0.4	67.4	12.95	
20.	3.3	100.0	0.0	0.0	1.00	

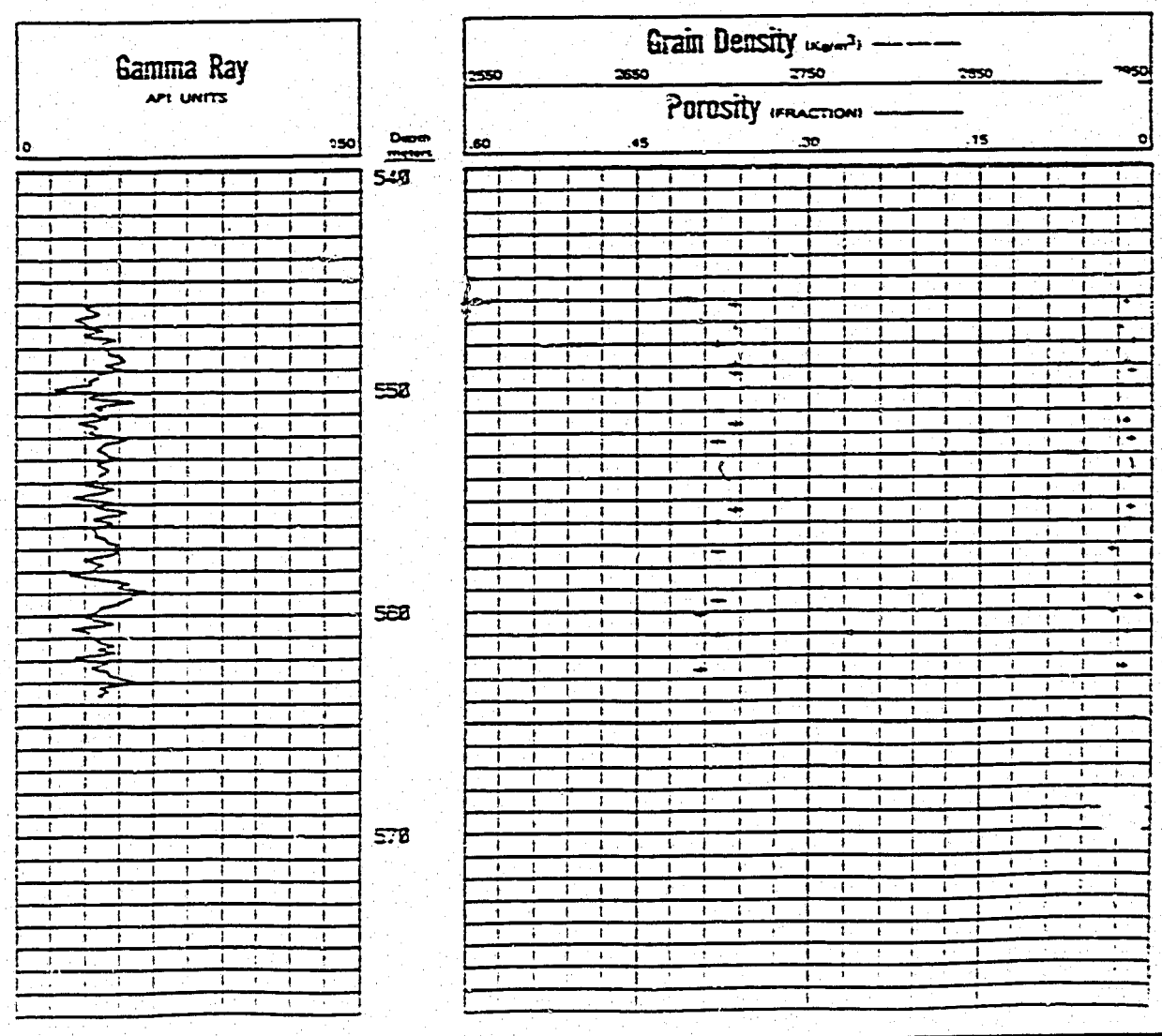
TOTAL FLOW CAPACITY IN MILLIDARCY-METRES(ARITHMETIC) = 7.57

CORE LABORATORIES – CANADA, LTD. CORE LAB *Petroleum Reservoir Engineering*

COMPANY AT&S EXPLORATION LTD. FILE NO. 7004-85-370
WELL AT&S CARCAJOU D-05 DATE
FIELD WILDCAT, CARCAJOU FORMATION KEE SCARP ELEV.
PROVINCE NORTHWEST TERRITORIES DRLG. FLD. WATER BASE MUD CORES 1
LOCATION 65°34'13.60" N LAT. 125°16'42.68" W LONG.

CORRELATION COREGRAPH

VERTICAL SCALE: 10mm = 24m



CORE LABORATORIES – CANADA, LTD. LAB *Petroleum Reservoir Engineering*

COMPANY AT&S EXPLORATION LTD. FILE NO. 7004-85-37

WELL AT&S CARCAJOU D-05 DATE

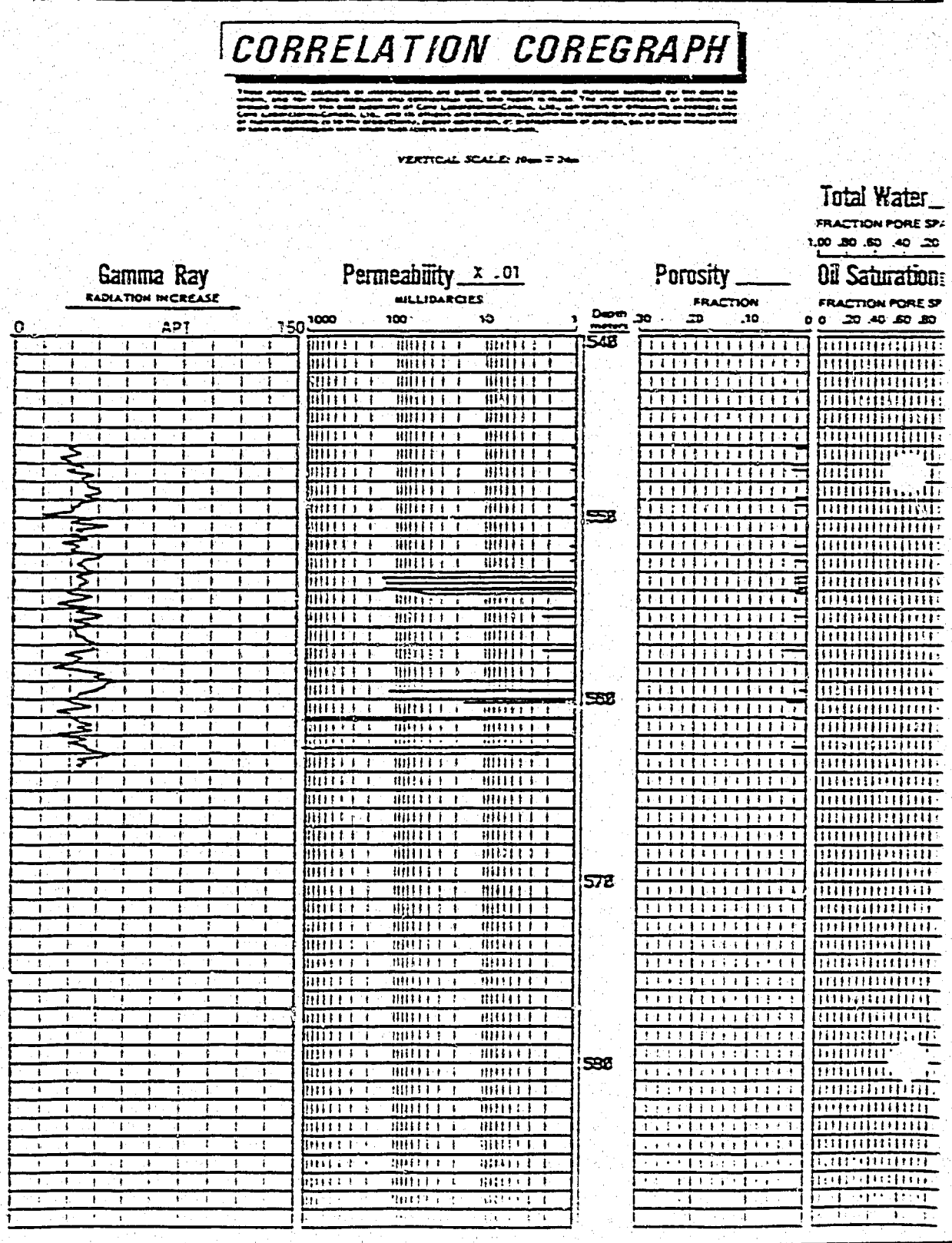
FIELD WILDCAT, CARCAJOU FORMATION KEE SCARP ELEV.

PROVINCE NORTHWEST TERRITORIES DRLG. FLD. WATER BASE MUD CORES 1

LOCATION 65°36'13.60" N LAT 128°16'42.68" W LONG

CORRELATION COREGRAPH

VERTICAL SCALE: 10mm = 2m

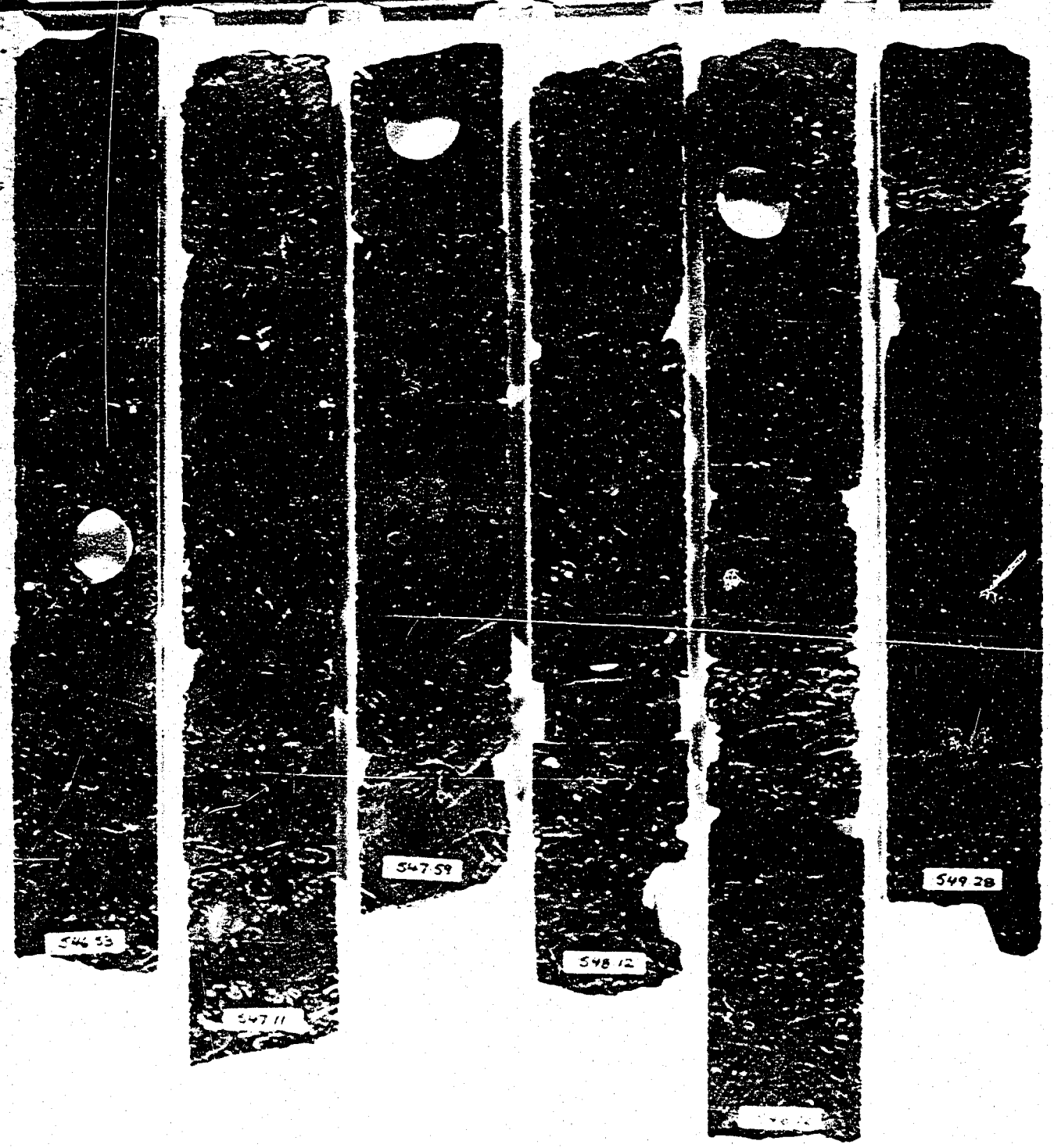


CORE PHOTO'S
CARACAJOU

CORE #1
546.0-564.0m

ATIS CARACJOU D-5
65°34'13.6"N
128°16'40.48"W

1 of 6

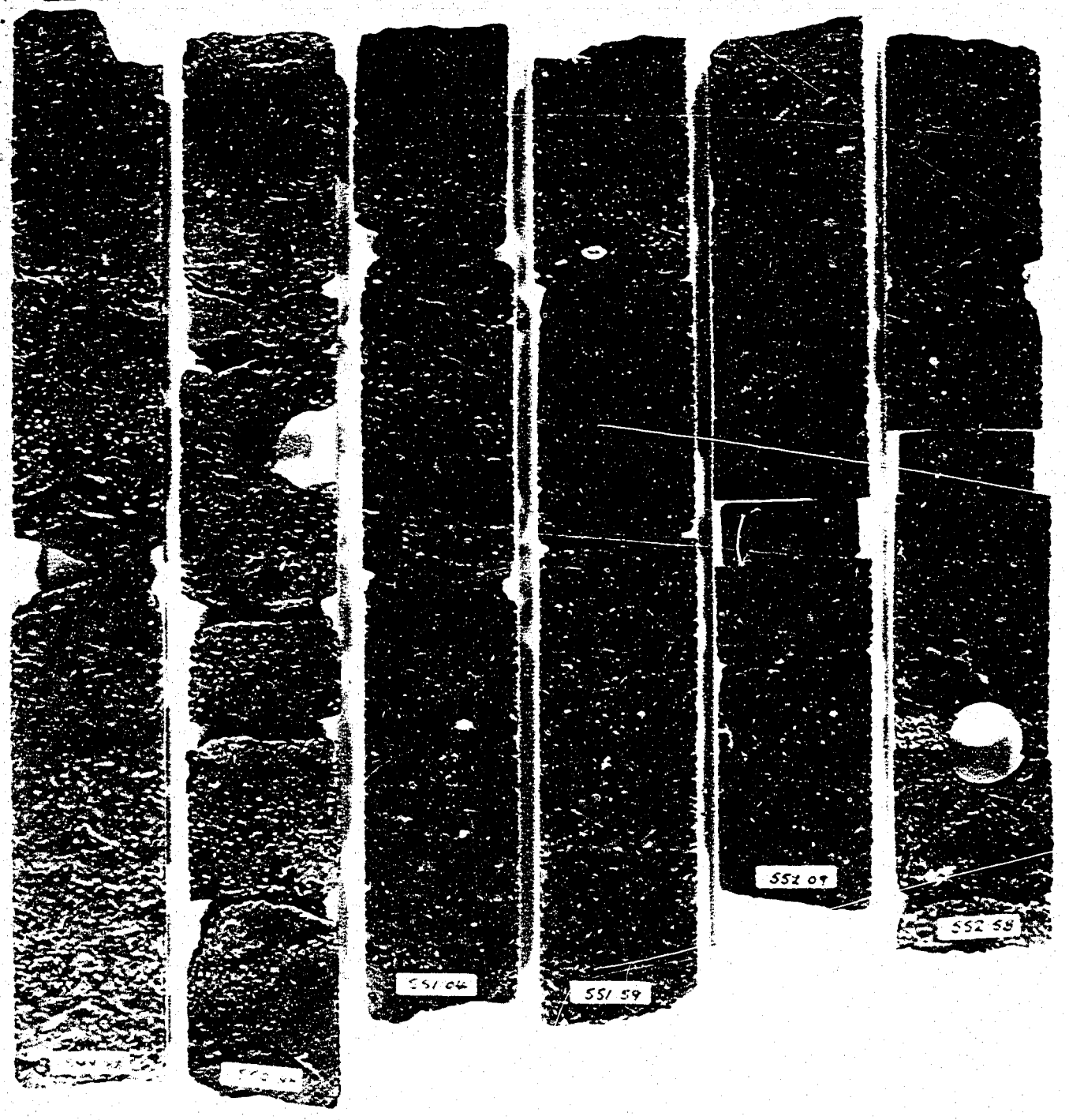


10 millimetres (mm) millimètres 1 centimetre (cm) centimètre

CORE #1
546.0-564.0m

ATIS CARACJOU D-5
65° 34' 13.60" N
128° 16' 42.68" W

2 of 6



10 millimetres (mm) millimetres 1 centimetre (cm) centimetres

CORE #1
546.0-564.0m

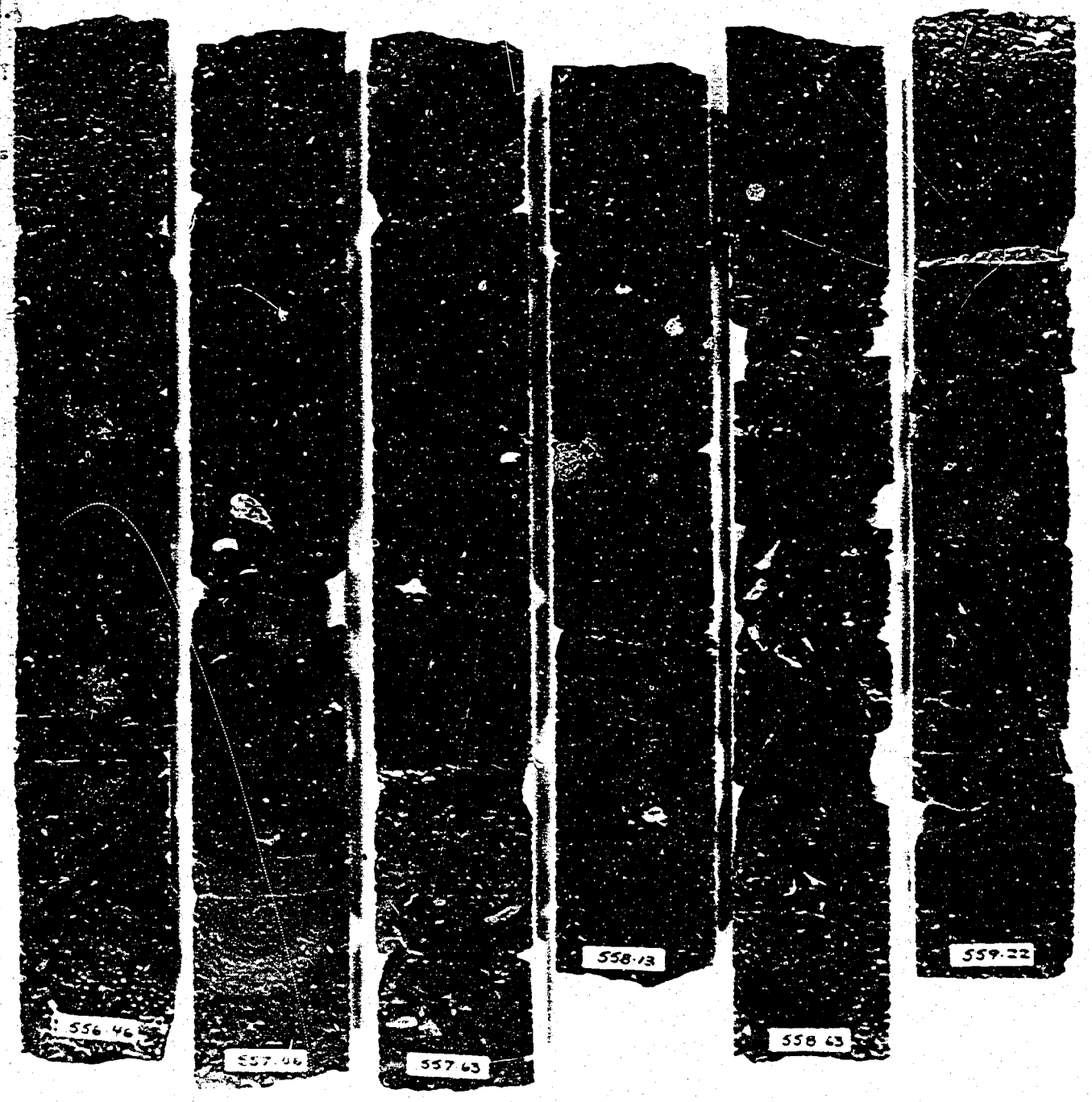
ATIS CARACJOU D-5
65°34' 13.66" N
128° 16' 42.48" W

3 of 6

10 millimetres (mm) millimètres 1 centimetre (cm) centimètre

CORE #1
546.0-564.0m

ATIS CARACTOU D-5
65° 34' 13.6" N
128° 16' 07.45" W



10 millimetres (mm) millimètres
1 centimetre (cm) centimètre


CORE #1
546.0-564.0m
RTS CARACJOU D-5
65° 34' 13.46" N
128° 16' 02.48" W
546
10 millimetres (mm) millimetres
1 centimetre (cm) centimetres
100 centimetres
559.75
560.28
560.86
561.39
561.97
562.52

CORE #1
546.0-564.0m

ATTIS CARACJOU D-5
65°34'1360"N
128° 16' 0248"W

6/6

END CORE #1

10 millimetres (mm) millimètres = 1 centimetre (cm) centimètre

100 centimetres

TESTS
CARACAJOU D-5

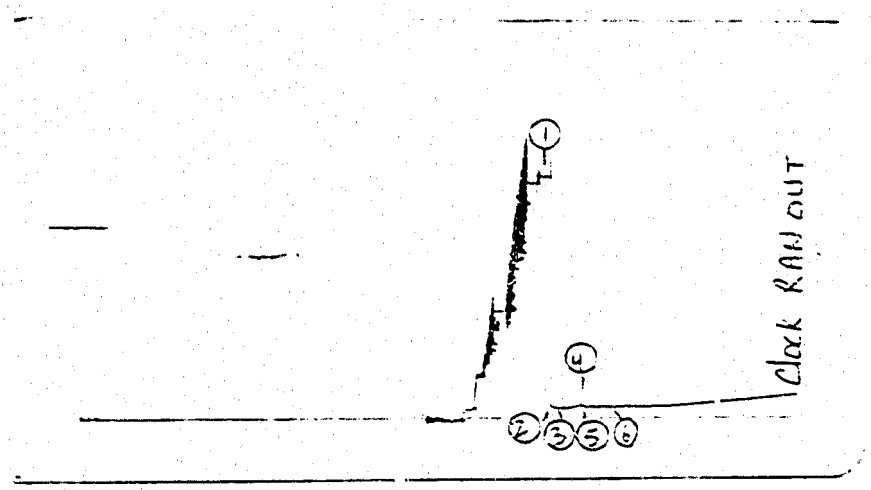
REF#:C-70-999-70088-66

TEST DATE: 85/02/07

AT&S CARCAJOU D-05
400/ 65.341 / 128.160 /00
DST#01
727.00m to 730.00m
KEE SCARP

DEPTH: 726.00m

RECORDER # 009214



	PRESSURE kPa
1) Initial Hydro :	7167.
2) 1st Flow Start:	411.
3) 1st Flow End :	353.
4) END 1st Shutin:	426.
5) 2nd Flow Start:	390.
6) 2nd Flow End :	364.
7) END 2nd Shutin:	
14) Final Hydro. :	

TEST TIMES(MIN)

1stFLOW :	10.
SHUTIN:	60.
2ndFLOW :	60.
SHUTIN:	650.

RECOVERY DATA

TOTAL FLUID RECOVERY CONSISTED OF 270.13 M OF VERY SLIGHTLY SALTY WATER. NO GAS TO SURFACE.

REMARKS AND TEST SUMMARY

Bottom hole pressures and the shape of the shut-in curve suggests VIRTUALLY NO PERMEABILITY within the interval tested. The reported fluid recovery is too large for the flow pressures. It would appear that the majority of the fluid entered the test string while releasing the packers.
Recorder #9214 - the clock stopped 254 minutes into the final shut-in.
Recorder #12168 - the clock stopped 366 minutes into the final shut-in.
No pipe tally data available.

TABLE OF CONTENTS

********** RECORDER PAGES & FIGURES **********

LYNES UNITED SERVICES LTD
DST#01 REPORT

Well name : AT&S CARCAJOU D-05
Location : 400/ 65.341 / 128.160 /00
Interval : 727.00m to 730.00m
Test Date : 85/02/07
Test Type : CASING TEST
Formation : KEE SCARP

K.B.Elevation : 104.69m
Grd.Elevation : 100.05m
TD @ test Date: 755.00m
Ticket Number : 70088
Unit Number : M-9

Started in hole at : 1542 hrs
Tool opened at : 1900 hrs
Reverse circulated?: NO
Contractor & Rig No: BETA WELL #60
Lynes#1 : 1 of 1 on the same trip.

Operator: AT&S EXPLORATION LTD.
4TH FLOOR
800 - 6TH AVE. S.W.
CALGARY ALBERTA
T2P3G3

Company Rep : LAURIE A
Testers : MAYER G

5 REPORTS(S) TO: BILL SLAUGHT
Company:

BLOW DESCRIPTION

Weak air blow decreasing to very weak by the end of preflow. No gas to surface.
Very weak air blow decreasing to nil in 40 minutes on final flow. No gas to surface.

TOTAL LIQUID RECOVERY : 270.13m

For DST# 1 through DST# 1
6 Fluid Samples
Sent to: NOT REPORTED

270.13m VERY SLIGHTLY SALTY WATER.

GAS MEASUREMENTS

No Gas Measurements

DST#01
AT&S CARCAJOU D-05
727.00m to 730.00m

TOOL SEQUENCE

SUB	LENGTH (m)

RECORDER SUMMARY

1) NUMBER : 009214
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 12100.00kPa
DEPTH : 726.00m

2) NUMBER : 012168
TYPE : K-3
LOCATION: OUTSIDE
RANGE: 13800.00kPa
DEPTH : 727.00m

******** TOOL TOTAL
DRILL COLLARS
ID= :
ID= :
DRILL PIPE
OD= 60.3mm:
OD= :

COLLAR-PIPE TOTAL

STICK UP ABOVE TABLE :
TOOL ABOVE INTERVAL :
TOTAL INTERVAL : 3.00
BOTTOM CHOKE SIZE:

MUD AND HOLE DATA

Calipered Hole Size @ Test Depth: 114.00mm Water Loss :
Hole Condition at Test Time : GOOD Filter Cake:
Hole Conditioned Prior to Test? : NO
Mud Weight : 1000.0 kg/m3 Main Hole Size: 114.00mm
Mud Type : WATER
Viscosity : 40.0s/l Temperature @726.00m =

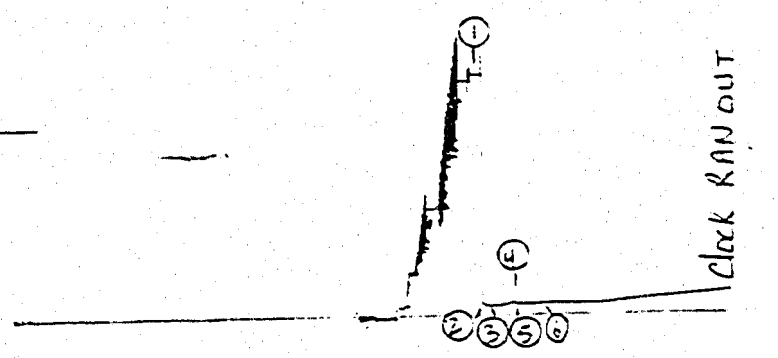
DST#01
AT&S CARCAJOU D-05
727.00m to 730.00m

PRESSURE RECORDER NUMBER : 009214

DEPTH : 726.00m
TYPE : K-3

LOCATION : OUTSIDE
CAPACITY : 12100.00 kPa

	PRESSURE kPa
1) Initial Hydro :	7167.
2) 1st Flow Start:	411.
3) 1st Flow End :	353.
4) END 1st Shutin:	426.
5) 2nd Flow Start:	390.
6) 2nd Flow End :	364.
7) END 2nd Shutin:	
14) Final Hydro. :	



TEST TIMES (MIN)

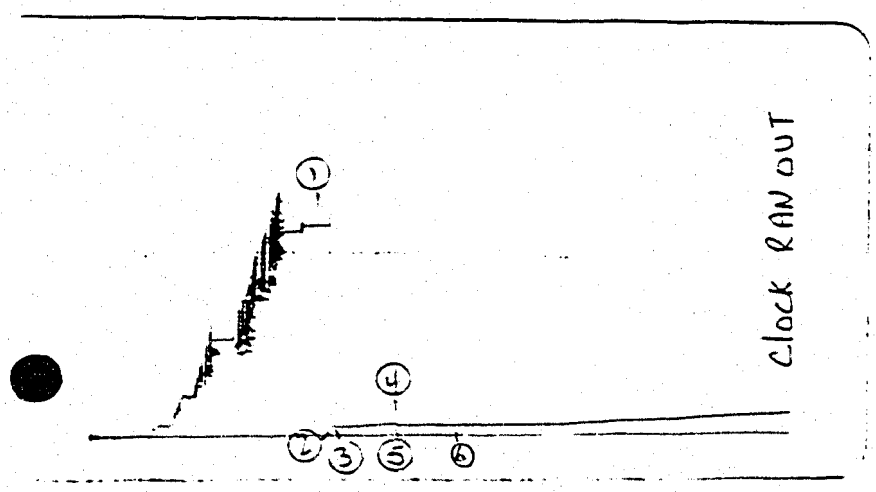
1st	FLOW :	10.
	SHUTIN:	60.
2nd	FLOW :	60.
	SHUTIN:	650.

PRESSURE RECORDER NUMBER : 012168

DEPTH : 727.00m
TYPE : K-3

LOCATION : OUTSIDE
CAPACITY : 13800.00 kPa

	PRESSURE kPa
1) Initial Hydro :	7142.
2) 1st Flow Start:	370.
3) 1st Flow End :	304.
4) END 1st Shutin:	418.
5) 2nd Flow Start:	370.
6) 2nd Flow End :	388.
7) END 2nd Shutin:	
14) Final Hydro. :	



CORE LABORATORIES - CANADA LTD.
Petroleum Reservoir Engineering
CALGARY ALBERTA

WATER ANALYSIS

Plastic — CONTAINER IDENTITY

7021-85-107 — LABORATORY NUMBER

AT&S Exploration Ltd. — OPERATOR

1 of 1 — PAGE

LOCATION

Carcajou D-5 — WELL OR SAMPLE LOCATION NAME

104.69 — KB ELEV. 100.05 — GRD. ELEV.

FIELD OR AREA

POOL OR ZONE

SAMPLER

DST #1 — TEST TYPE & NO.

TEST RECOVERY

Top of Test Tool — POINT OF SAMPLE

AMT. & TYPE CUSHION

@ °C — MUD RESISTIVITY

727 - 730 — TEST INTERVALS OR PERFS.

PUMPING FLOWING GAS LIFT SWAB

WATER m³/d OIL m³/d GAS m³/d

SEPARATOR RESERVOIR @ °C CONTAINER WHEN SAMPLED @ °C CONTAINER WHEN RECEIVED

PRESSURES, kPa

SEPARATOR

TEMPERATURES, °C

85 02 08 — DATE SAMPLED (Y/M/D)

85 02 11 — DATE RECEIVED (Y/M/D)

85 02 13 — DATE ANALYSED (Y/M/D)

LS — ANALYST

REMARKS

ION	mg/L	mg Fraction	MEQ/L
Na	15.	0.0581	0.7
K	6.	0.0232	0.2
Ca	81.	0.3140	4.0
Mg	1.	0.0038	0.1
Ba			
Sr			
Fe	NOT DETECTED		

ION	mg/L	mg Fraction	MEQ/L
Cl	15.	0.0570	0.4
Br			
I			
HCO_3	0.	0.0000	0.0
SO_4	34.	0.1311	0.7
CO_3	88.	0.3392	2.9
OH	19.	0.0735	1.1
H_2S	NOT DETECTED		

TOTAL SOLIDS mg/L

BY EVAPORATION @ 110°C

BY EVAPORATION @ 180°C

AT IGNITION

258. — CALCULATED

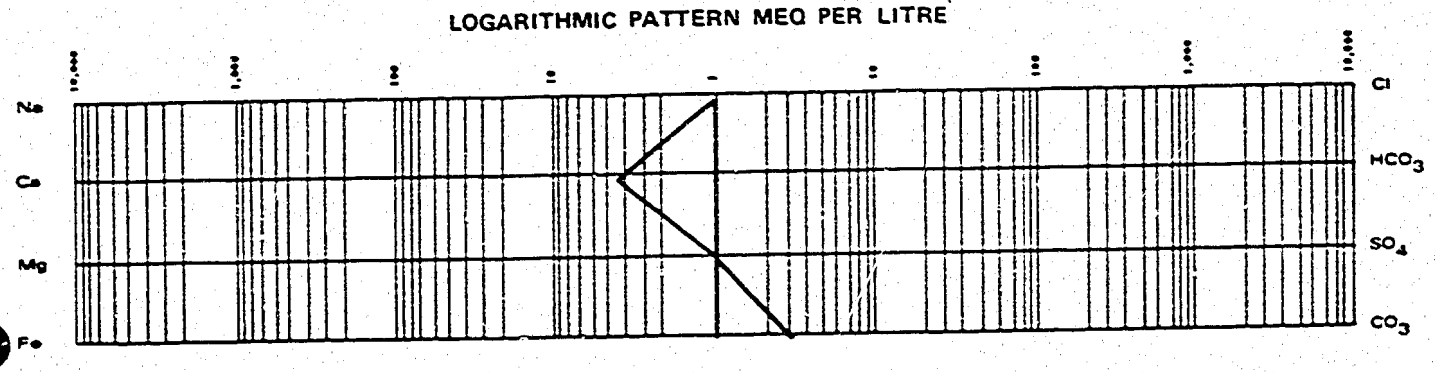
1.0000 @ 15.4°C — SPECIFIC GRAVITY

1.3310 @ 22. — REFRACTIVE INDEX

11.0 — pH

17.000 @ 25°C — RESISTIVITY (OHM/METERS)

LOGARITHMIC PATTERN MEQ PER LITRE



REMARKS NaCl equiv. 337.

FORM NO. 7021-1

WATER and GAS
ANALYSIS

WATER and GAS ANALYSIS
TEST INTERVALS AT 560-563.5,566.5-568.5
637-647 meters

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

EDMONTON FORT ST. JOHN CALGARY

WATER ANALYSIS

LABORATORY NUMBER: E85-13323

CONTAINER IDENTITY:

LICENCE NUMBER:

OPERATOR NAME: AT & S EXPLORATION LTD.

LOCATION:

WELL NAME: CARCAJOU D-5 NORTHWEST TERRITORIES

ELEVATIONS K.B. / GROUND: 104.69 / 100.05

FIELD OR AREA:

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY:

TEST TYPE:

NO.:

TEST RECOVERY:

MULTIPLE RECOVERY: Y N

SAMPLING POINT:

ART. & TYPE OF CUSHION:

MUD RESISTIVITY: @ 25°C

Test Interval (Metres):

TYPE OF PRODUCTION: PUMPING / FLOWING / GAS LIFT / SHUT

PRODUCTION RATES: WATER m^3/d OIL m^3/d GAS $10^3m^3/d$

Perforations (Metres): 637 - 647

GAUGE PRESSURE kPa: SEPARATOR / TREATER / RESERVOIR / SOURCE

TEMPERATURE °C: SEPARATOR / TREATER / RESERVOIR / SOURCE

DATE SAMPLED (Y-M-D)	DATE RECEIVED (Y-M-D)	DATE REPORTED (Y-M-D)	ANALYST	OTHER INFORMATION
	85/03/04	85/03/07	S.T.	NO ADDITIONAL INFORMATION

ION	$mg \cdot l^{-1}$ / $g \cdot m^{-3}$	Mass Fraction	c / $mol \cdot m^{-3}$	ION	$mg \cdot l^{-1}$ / $g \cdot m^{-3}$	Mass Fraction	c / $mol \cdot m^{-3}$
Na	190	0.0048	8.27	Cl	26 850	0.6720	757.17
K	14	0.0004	0.36	Br			
Ca	12 770	0.3196	318.61	I			
Mg	24	0.0006	0.99	HCO_3	0	0.0000	0.00
Ba				SO_4	105	0.0026	1.09
Sr				CO_3	0	0.0000	0.00
Fe	VERY MUCH			OH	0	0.0000	0.00
				H_2S	NIL		

TOTAL SOLIDS $mg \cdot l^{-1}$ / $g \cdot m^{-3}$

EVAPORATED @ 110°C	EVAPORATED @ 180°C
53 170	
AT IGNITION	CALCULATED
37 590	39 953

ORGANICS: PRESENT

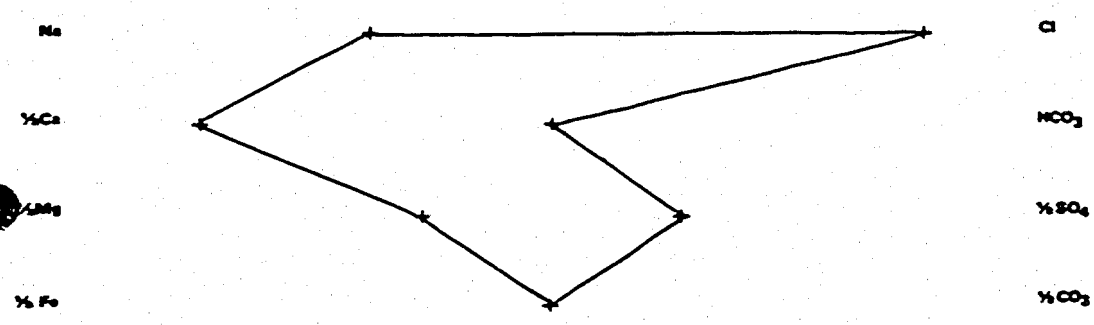
RELATIVE DENSITY	REFRACTIVE INDEX
1.030 @ 20°C	1.3416 @ 20°C

OBSERVED pH	RESISTIVITY (OHM-M)
1.6° 23°	0.134 @ 20°C

REMARKS

The sample consisted of acid water.

LOGARITHMIC PATTERN c/mol.m^{-3}



CHEMICAL & GEOLOGICAL LABORATORIES LTD.

EDMONTON FORT ST. JOHN CALGARY

WATER ANALYSIS

LABORATORY NUMBER: E85-13322-1

OPERATOR NAME: AT & S EXPLORATION LTD.

WELL NAME: CARCAJOU D-5 NORTHWEST TERRITORIES

ELEVATIONS KB: 104.69 GRD: 100.05

LOCATION

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

TEST TYPE

TEST RECOVERY

MULTIPLE RECOVERY

SAMPLING POINT: WATER SAMPLE

AMT & TYPE OF CUSHION

MUD RESISTIVITY @ 25°C

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT SWAB

PRODUCTION RATES: WATER m^3/d OIL m^3/d GAS $10^3m^3/d$

PERFORATION INTERVAL: 566.5 - 568.5

GAUGE PRESSURE kPa: SEPARATOR TREATER RESERVOIR SOURCE

TEMPERATURE °C: SEPARATOR TREATER RESERVOIR SOURCE

DATE SAMPLED (Y-M-D)	DATE RECEIVED (Y-M-D)	DATE REPORTED (Y-M-D)	ANALYST	OTHER INFORMATION
85/02/20	85/03/04	85/03/07	T.F./S.T.	NO ADDITIONAL INFORMATION

ION	$\frac{m \cdot V^{-1}}{g \cdot m^{-3}}$	Mass Fraction	$\frac{c}{mol \cdot m^{-3}}$	ION	$\frac{m \cdot V^{-1}}{g \cdot m^{-3}}$	Mass Fraction	$\frac{c}{mol \cdot m^{-3}}$
Na	7 380	0.3378	321.03	Cl	10 040	0.4595	283.13
K	11	0.0005	0.28	Br			
Ca	130	0.0060	3.25	I			
Mg	134	0.0061	5.51	HCO_3	4 075	0.1865	66.83
Ba				SO_4	78	0.0036	0.81
Sr				CO_3	0	0.0000	0.00
Fe	PRESENT			OH	0	0.0000	0.00
				H_2S	NIL		

TOTAL SOLIDS $\frac{m \cdot V^{-1}}{g \cdot m^{-3}}$

EVAPORATED @ 110°C	EVAPORATED @ 180°C
22 410	

AT IGNITION	CALCULATED
18 260	21 848

ORGANICS: PRESENT

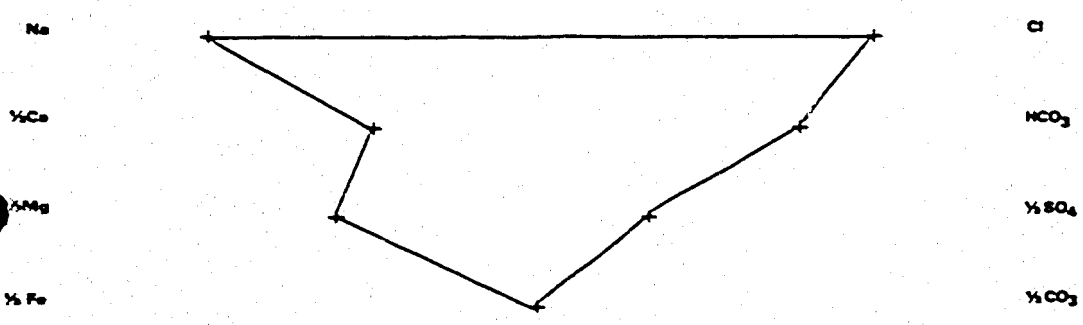
RELATIVE DENSITY	REFRACTIVE INDEX
1.016 @ 20°C	1.3364 @ 20°C

OBSERVED pH	RESISTIVITY (Ohm-m)
8.2 @ 23°C	0.321 @ 20°C

REMARKS

The sample consisted of salty water.

LOGARITHMIC PATTERN $c/mol \cdot m^{-3}$



CHEMICAL & GEOLOGICAL LABORATORIES LTD.

GAS ANALYSIS

LABORATORY NUMBER: E85-13322-2

CONTAINER IDENTITY: 7081, 7610

LICENCE NUMBER:

OPERATOR NAME: AT & S EXPLORATION LTD.

LOCATION: CARCAJOU D-5 NORTHWEST TERRITORIES

ELEVATIONS K.B. / GROUND: 104.69 100.05

FIELD OR AREA:

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY:

TEST TYPE: NO

TEST RECOVERY:

MULTIPLE RECOVERY:

SAMPLING POINT: GAS SAMPLE (FLOW SAMPLE)

AMT. & TYPE OF CUSHION:

MUD RESISTIVITY:

TYPE OF PRODUCTION: PUMPING | FLOWING | GAS LIFT | SHUT

PRODUCTION RATES: WATER m^3/d | OIL m^3/d | GAS $10^3m^3/d$

Perforating Interval: 566.6 - 568.5

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa						35
TEMPERATURE °C						20

DATE SAMPLED (Y-M-D)	DATE RECEIVED (Y-M-D)	DATE REPORTED (Y-M-D)	ANALYST	OTHER INFORMATION
85/02/20	85/03/04	85/03/07	T.F./S.T.	NO ADDITIONAL INFORMATION

COMP	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT cm^3/m^3
H_2	0.0000	0.0000	
He	0.0000	0.0000	
N_2	0.0062	0.0062	
CO_2	0.0001	0.0000	
H_2S	0.0000	0.0000	
C_1	0.9842	0.9843	
C_2	0.0065	0.0065	
C_3	0.0024	0.0024	8.8
IC_4	0.0002	0.0002	1.1
NC_4	0.0003	0.0003	1.4
IC_5	0.0001	0.0001	0.4
NC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7	0.0000	0.0000	0.0
C_8	0.0000	0.0000	0.0
C_9	0.0000	0.0000	0.0
C_{10+}	0.0000	0.0000	0.0
TOTAL	1.0000	1.0000	11.7

GROSS HEATING VALUE MJ/m^3 15°C AND 101.325 kPa

MOISTURE AND ACID GAS FREE MEASURED	MOISTURE AND ACID GAS FREE CALCULATED	DETERMINED DEW POINT °C	VAPOUR PRESSURE PENTANES PLUS kPa
	37.90		141.

RELATIVE DENSITY

MOISTURE (THE) AS SAMPLED MEASURED	MOISTURE (THE) AS SAMPLED CALCULATED	MOISTURE AND ACID GAS FREE MEASURED	MOISTURE AND ACID GAS FREE CALCULATED
INSUFFICIENT	0.563		0.563

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED kPa (abs)	AS SAMPLED °K	ACID GAS FREE kPa (abs)	ACID GAS FREE °K
4634.	192.0	4633.	192.0

H_2S gm^3 0.00

RELATIVE MOLECULAR MASS: 16.31 CO_2 0.00

C5+ ML/MOL 0.009

GROSS HEATING VALUE AS PER AGA REPORT #5

37.89 MAJ/M3 @ 15C AND 101.325 KPA

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

EDMONTON FORT ST. JOHN CALGARY

WATER ANALYSIS

LABORATORY NUMBER: E85-13321-1

OPERATOR NAME: AT & S EXPLORATION LTD.

WELL NAME: CARCAJOU D-5 NORTHWEST TERRITORIES

ELEVATIONS: 104.69 100.05

LOCATION

FIELD OR AREA

POOL OR ZONE

NAME OF SAMPLER

COMPANY

TEST TYPE

TEST RECOVERY

MULTIPLE RECOVERY

SAMPLING POINT: WELL HEAD SAMPLE

AMT & TYPE OF CUSHION

MUD RESISTIVITY

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT SWAB

PRODUCTION RATES: WATER OIL GAS

SEPARATOR TREATER RESERVOIR SOURCE

GAUGE PRESSURE

SEPARATOR TREATER RESERVOIR SOURCE

TEMPERATURE °C

560 – 563.5

DATE SAMPLED	DATE RECEIVED	DATE REPORTED	ANALYST	OTHER INFORMATION
85/02/25	85/03/04	85/03/07	T.F./S.T.	NO ADDITIONAL INFORMATION

ION	$\frac{m \cdot V^{-1}}{g \cdot m^{-3}}$	Mass Fraction	$\frac{c}{mol \cdot m^{-3}}$	ION	$\frac{m \cdot V^{-1}}{g \cdot m^{-3}}$	Mass Fraction	$\frac{c}{mol \cdot m^{-3}}$
Na	11 990	0.3423	521.57	Cl	16 820	0.4801	474.32
K	28	0.0008	0.72	Br			
Ca	120	0.0034	3.00	I			
Mg	231	0.0066	9.49	HCO_3	5 644	0.1611	92.56
Ba				SO_4	198	0.0057	2.06
Sr				CO_3	0	0.0000	0.00
Fe	PRESENT			OH	0	0.0000	0.00
				H_2S	NIL		

TOTAL SOLIDS $\frac{m \cdot V^{-1}}{g \cdot m^{-3}}$

EVAPORATED @ 110°C	EVAPORATED @ 180°C
33 470	

AT IGNITION	CALCULATED
28 320	35 031

ORGANICS: PRESENT

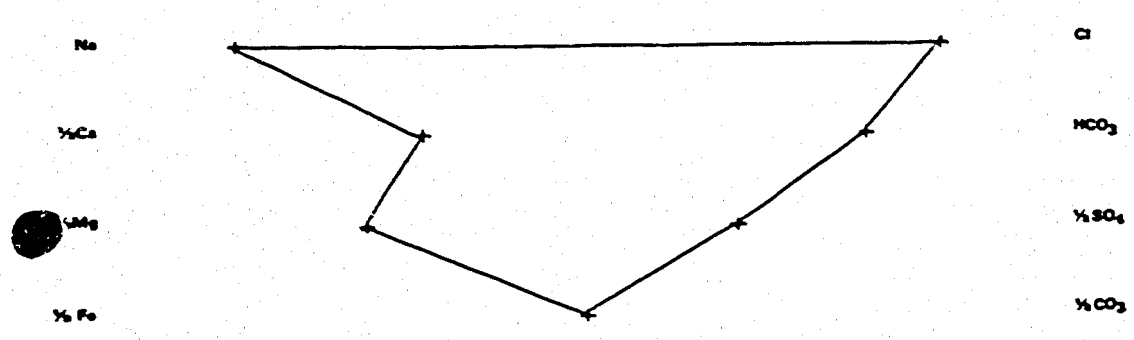
RELATIVE DENSITY	REFRACTIVE INDEX
1.024 @ 20°C	1.3386 @ 20°C

OBSERVED pH	RESISTIVITY (Ohm-m)
8.1 @ 23	0.215 @ 20°C

REMARKS

The sample consisted of salty water.

LOGARITHMIC PATTERN c/mol·m⁻³



CHEMICAL & GEOLOGICAL LABORATORIES LTD.

GAS ANALYSIS

CONTAINER IDENTITY: AGAT X2

LABORATORY NUMBER: E85-13321-2

LICENCE NUMBER:

OPERATOR NAME: AT & S EXPLORATION LTD.

LOCATION: CARCAJOU D-5 NORTH WEST TERRITORIES

ELEVATIONS K.B. / MEAN SEA LEVEL: 104.69 100.05

FIELD OR AREA:

POOL OR ZONE:

NAME OF SAMPLER:

COMPANY:

TEST TYPE: NO

TEST RECOVERY:

MULTIPLE RECOVERY:

SAMPLING POINT: WELLHEAD SAMPLE (GAS SAMPLE)

AMT. & TYPE OF CUSHION:

MUD RESISTIVITY: @ 25°C

TIME PRODUCED (PRODUCING):

TYPE OF PRODUCTION: PUMPING FLOWING GAS LIFT OTHER

PRODUCTION RATES: WATER m³/d OIL m³/d GAS 10³m³/d

PERFORATION INTERVAL: 560 – 563.5

GAUGE PRESSURE kPa

TEMPERATURE °C

CONTAINER: SEPARATOR TREATER RESERVOIR SOURCE SAMPLED RECEIVED 6200

CONTAINER: SEPARATOR TREATER RESERVOIR SOURCE SAMPLED RECEIVED 20

DATE SAMPLED (Y-M-D)	DATE RECEIVED (Y-M-D)	DATE REPORTED (Y-M-D)	ANALYST	OTHER INFORMATION
85/02/25	85/03/04	85/03/07	T.F./S.T.	NO ADDITIONAL INFORMATION

COMP	MOLE FRACTION AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT c/m³
H_2	0.0000	0.0000	
He	0.0000	0.0000	
N_2	0.0024	0.0025	
CO_2	0.0585	0.0000	
H_2S	0.0000	0.0000	
C_1	0.9269	0.9846	
C_2	0.0096	0.0102	
C_3	0.0021	0.0022	7.5
IC_4	0.0002	0.0002	0.9
NC_4	0.0003	0.0003	1.4
IC_5	0.0000	0.0000	0.0
NC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7	0.0000	0.0000	0.0
C_8	0.0000	0.0000	0.0
C_9	0.0000	0.0000	0.0
C_{10+}	0.0000	0.0000	0.0
TOTAL	1.0000	1.0000	9.8

GROSS HEATING VALUE MJ/m³ 101.325 kPa

MOISTURE AND ACID GAS FREE MEASURED	MOISTURE AND ACID GAS FREE CALCULATED	DETERMINED DEW POINT	VAPOUR PRESSURE REF. ANGES PLUS
	38.12	°C	0. kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED MEASURED	MOISTURE FREE AS SAMPLED CALCULATED	MOISTURE AND ACID GAS FREE MEASURED	MOISTURE AND ACID GAS FREE CALCULATED
0.619	0.619		0.563

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED kPa(abs)	AS SAMPLED °K	ACID GAS FREE kPa(abs)	ACID GAS FREE °K
4800. kPa	199.1	4639. kPa	192.6

H_2S mol/mol 0.00

RELATIVE MOLECULAR MASS Total Gas 17.92 CO_2 0.00

C5+ ML/MOL 0.000

GROSS HEATING VALUE AS PER AGA REPORT #5

35.90 MJ/M3 @ 15C AND 101.325 KPA

ELECTRICAL
LOGS

FORM 60A

COMPUTALOG GEARHART LTD

CASED HOLE SERVICES

COLLAR LOG

FILE NO.

L.S.D.

SEC.

TWP.

RGE.

W.

COMPANY AT & S EXPLORATION LTD.

WELL AT & S CARCAJOU D-05

FIELD WILDCAT

PROVINCE NORTHWEST TERRITORIES

LOCATION D-05
LSD ____ Sec. ____ Twp. ____ Rge. ____

Other Services:

Permanent Datum GL Elev. 100.05
Log Measured From KB 4.00 m. Above Perm. Datum
Drilling Measured From KB

ELEV. KB 104.69
D.F.
GL 100.05

Date	10 FEB 85
Run No.	ONE
Type Log	CCL
Depth-Driller	671.0
Depth-Logger	671.0
Btm Logged Inter.	661.0
Top Logged Inter.	600.0
Fluid In Hole	WATER
Fluid Level	570.0
Unit #	307
Location	NORMAN WELLS
Recorded By	MERZA
Witnessed By	LAURIE

Shot Density	No of Shots	Perforating From	Perforating To
7/SPM	15	642.5	644.5

Gun Type HOLLOW STEEL CARRIER
Gun Size 39 /mm

TUBING/CASING RECORD

Size mm	Weight kg/m	From	To
60.3	-	SURF	626.0
114.0	14.1	450.0	750.0

COLLAR LOCATION

Casing	Tubing
651.3	603.3
644.3	613.0
632.3	626.0

OTHER SERVICES

Service	Type	Size	Depth
Bridge Plug			
Produc. Packer			
Cement Retainer			

Tubing Bottom
Seating Nipple 624.5

Junk Basket Size
Gauge Ring Number

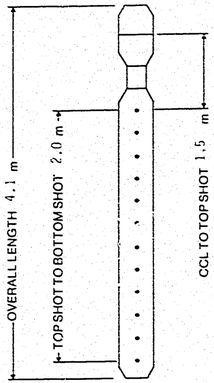
REMARKS

1st Run Service Order # 73253

Field Prints 5
Final Prints
27 MAR 85 CAL S

COLLARS

DEPTHS



DATE: 10 FEB 85
GUN O D 39.2 mm

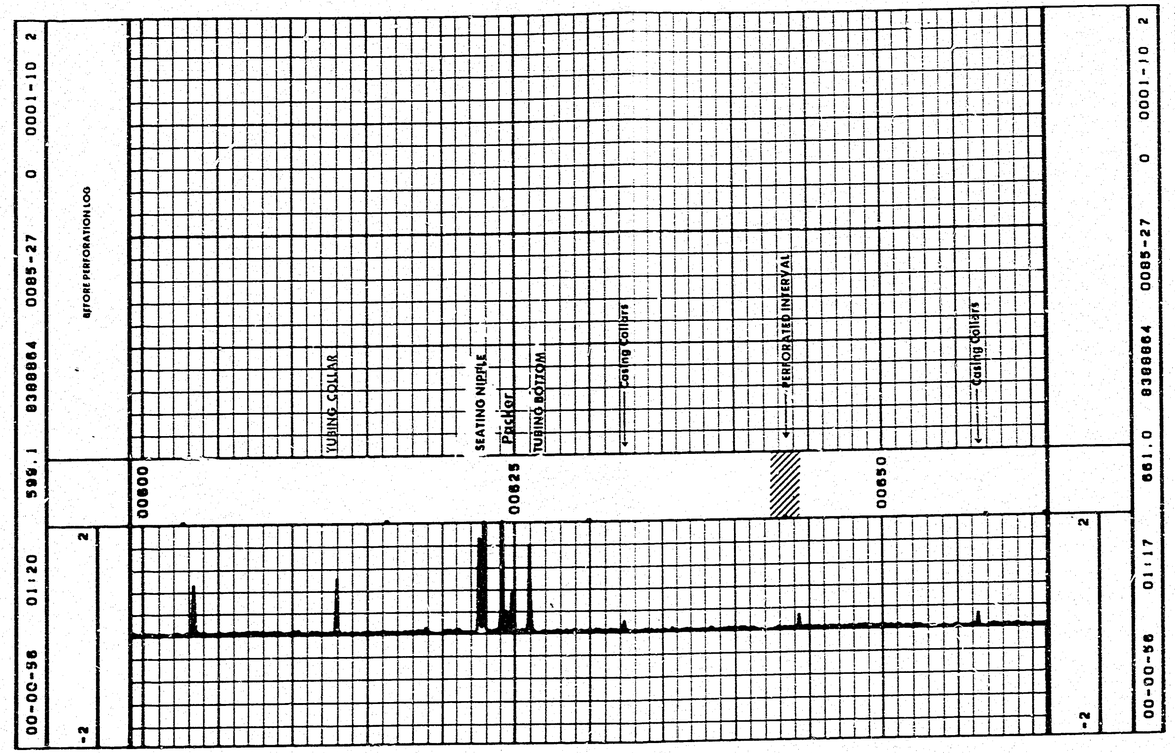
CHARGE TYPE DML

GRAM WEIGHT 6

PHASING 0 DEGREES

DECENTRALIZED YES

Shot Density	No of Shots	Perforated Interval From	To
7/SPM	15	642.5	644.5



FORM 60A

1 of 2

COMPUTALOG GEARHART LTD

CASED HOLE SERVICES

COLLAR LOG

COMPANY	AT & S EXPLORATION LTD.
WELL	AT & S CARCAJOU D-05
FIELD	WILDCAT
PROVINCE	NORTHWEST TERRITORIES

LOCATION D-05
LSD ____ Sec. ____ Twp. ____ Rge. ____

Other Services

Permanent Datum GL Elev. 100.05
Log Measured From KB 4.65 m. Above Perm. Datum
Drilling Measured From KB

ELEV. KB 104.69
DF
GL 100.05

	10 FEB 85
	ONE
	ONE
Driller	671.0
Logger	671.0
Bottom Inter.	661.0
Top Inter.	600.0
Fluid in Hole	WATER
	570.0
	307
Recorded By	NORMAN WELLS
Witnessed By	MERTA LAURIE

Shot Density	No of Shots	Perforating From	Interval To
7spm	15	642.5	644.5

Gun Type HOLLOW STEEL CARRIER
Gun Size 39.2mm

TUBING/CASING RECORD

Size mm	Weight kg/m	From	To
60.3	-	SURF	626.0
114.0	14.1	450.0	750.0

COLLAR LOCATION

	Tubing
	603.3
	613.0
	625.0
Bottom	
Apple	624.5

OTHER SERVICES

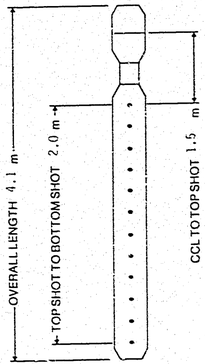
Service	Type	Size	Depth
Bridge Plug			
Produc Packer			
Cement Retainer			
Junk Basket Size			
Gauge Ring Number			

1st Run Service Order # 73253
Field Prints 5
Final Prints
27 MAR 85 CAL SS

REMARKS

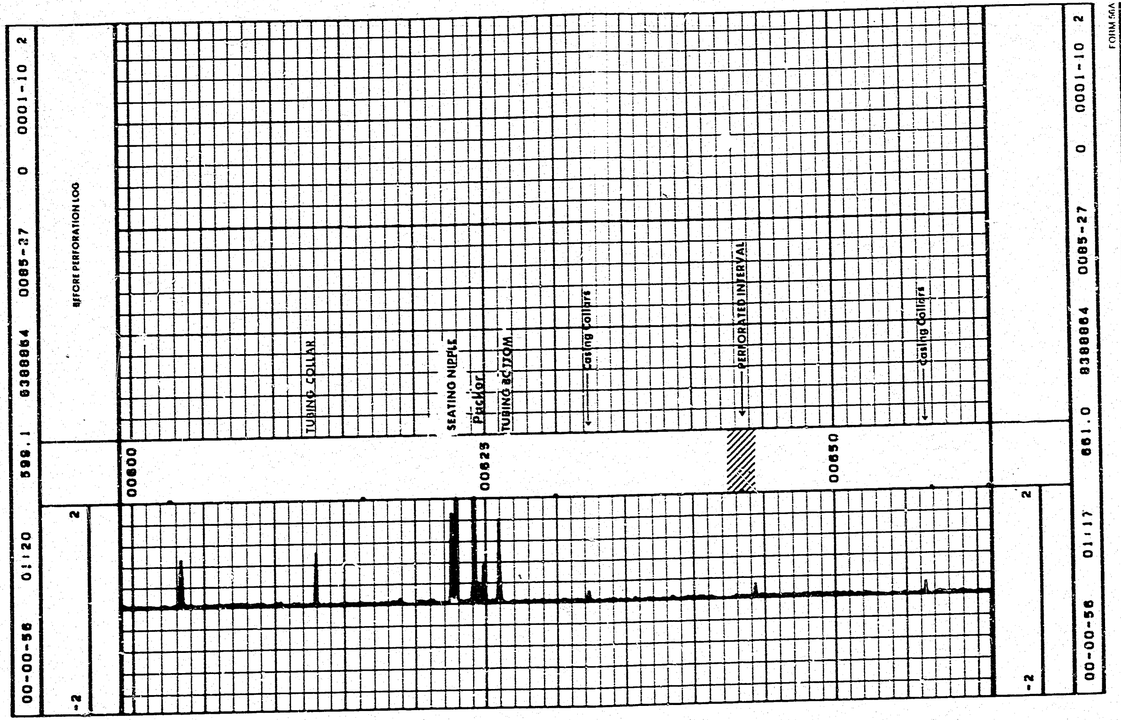
COLLARS

DEPTHS



DATE 10 FEB 85
GUN O.D. 39.7 mm
CHARGE TYPE DP
GRAM WEIGHT 6
PHASING 0 DEGREES
DECENTRALIZED YES

Shot Density	No of Shots	Perforated Interval From	To
7spm	15	642.5	644.5



COMPUTALOG GEARHART LTD

COMPANY AT & S EXPLORATION LTD.
WELL AT & S CARCAJOU D-05
FIELD WILDCAT PROVINCE NORTHWEST TERRITORIES

2 OF 2

FORM 60A

COMPUTALOG GEARHART LTD.

CASED HOLE SERVICES

COLLAR LOG

FILE NO.	
L.S.D.	
SEC.	
TWP.	
RGE.	
W.	

COMPANY: AT & S EXPLORATION LTD.

WELL: AT & S CARCAJOU D-05

FIELD: WILDCAT

PROVINCE: NORTHWEST TERRITORIES

LOCATION: D-05
LSD ____ Sec. ____ Twp. ____ Rge. ____

Other Services:

Permanent Datum: GL Elev. 100.05
Log Measured From: KB 4.64 m. Above Perm. Datum
Drilling Measured From: KB

ELEV. KB 104.69
D.F.
GL 100.05

Date	11 FEB 85
Run No.	ONE
Type Log	CCL
Depth-Driller	671.0
Depth-Logger	670.0
Btm Logged Inter.	660.0
Top Logged Inter.	600.0
Fluid In Hole	WATER
Fluid Level	570.0
Unit #	307
Location	NORMAN WELLS
Recorded By	MERTA
Witnessed By	LAURIE

Shot Density	No of Shots	Perforating From	Interval To
7spm	17	644.5	647.0
7spm	38	637.0	642.5

Gun Type: HOLLOW STEEL CARRIER
Gun Size: 39./mm

TUBING/CASING RECORD

Size mm	Weight kg/m	From	To
60.3	-	SURF	526.0
114.0	14.1	450.0	750.0

COLLAR LOCATION

Casing	Tubing
632.3	603.3
644.3	613.0
651.3	626.0

OTHER SERVICES

Service	Type	Size	Depth
Bridge Plug			
Produc. Packer			
Cement Retainer			

Tubing Bottom 626.0
Seating Nipple 624.5

Junk Basket Size
Gauge Ring Number

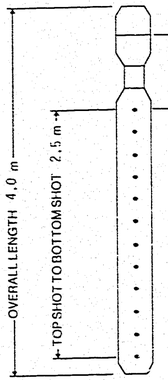
1st Run Service Order # 7324

Field Prints 5
Final Prints
27 MAR 85 CAL SS

REMARKS

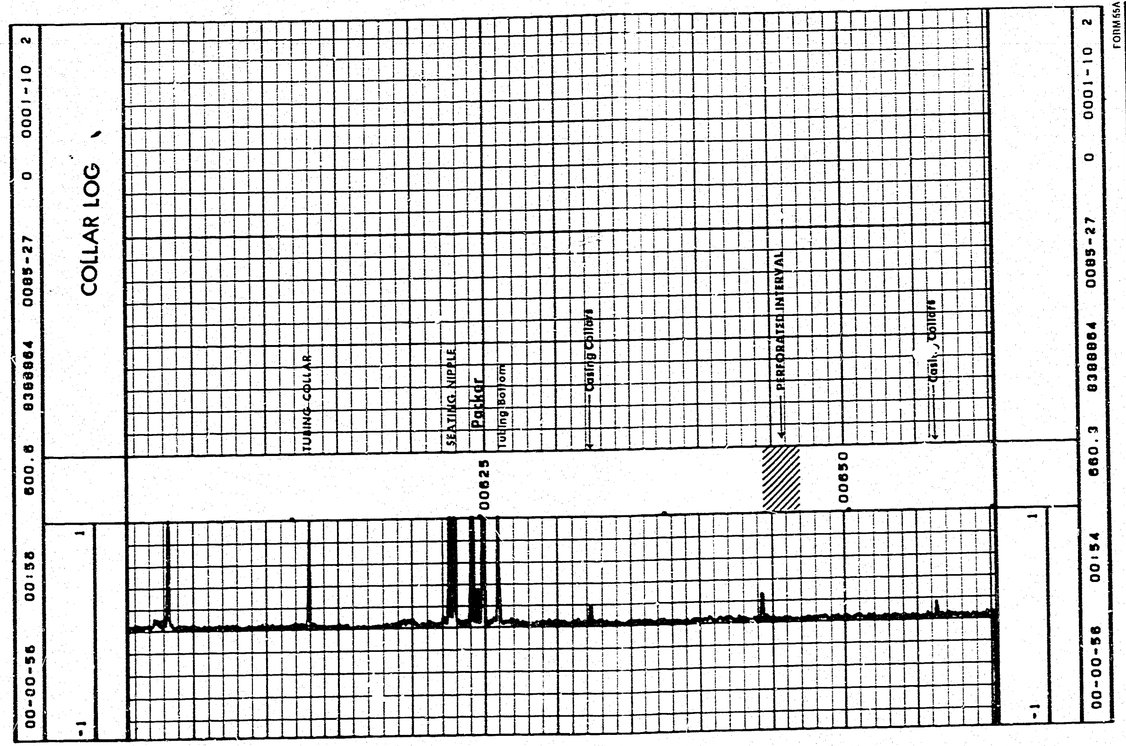
COLLARS

DEPTHS



DATE 12 FEB 85
GUN O.D. 39./ mm
CHARGE TYPE DML
GRAM WEIGHT 6
PHASING 0 DEGREES
DECENTRALIZED YES

Date	No of Shots	Perforated Interval From	To
7spm	17	644.5	647.0



FORM 56A

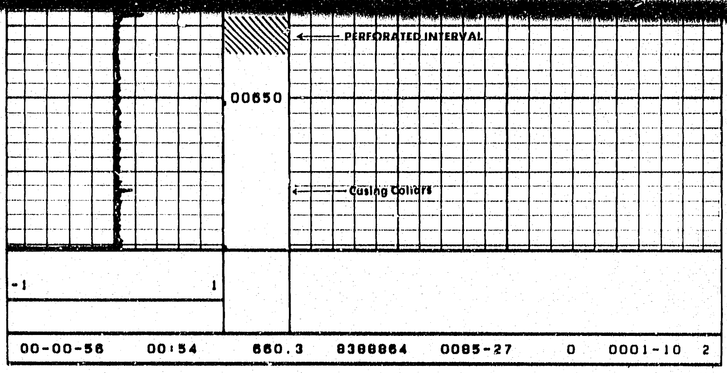
OVERALL LENGTH 1.5m

TOPSHOT TO BOTTOM SHOT 5.5m

DATE 12 FEB 85
GUN O.D. 39./ mm
CHARGE TYPE DML
GRAM WEIGHT 6

GRAM WEIGHT 6

0 DEGREES



FORM 55A

DATE 12 FEB 85

GUN O.D. 39.7 mm

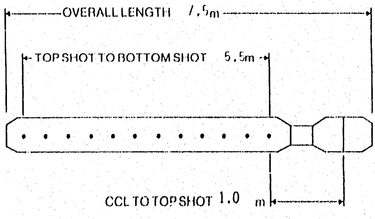
CHARGE TYPE DML

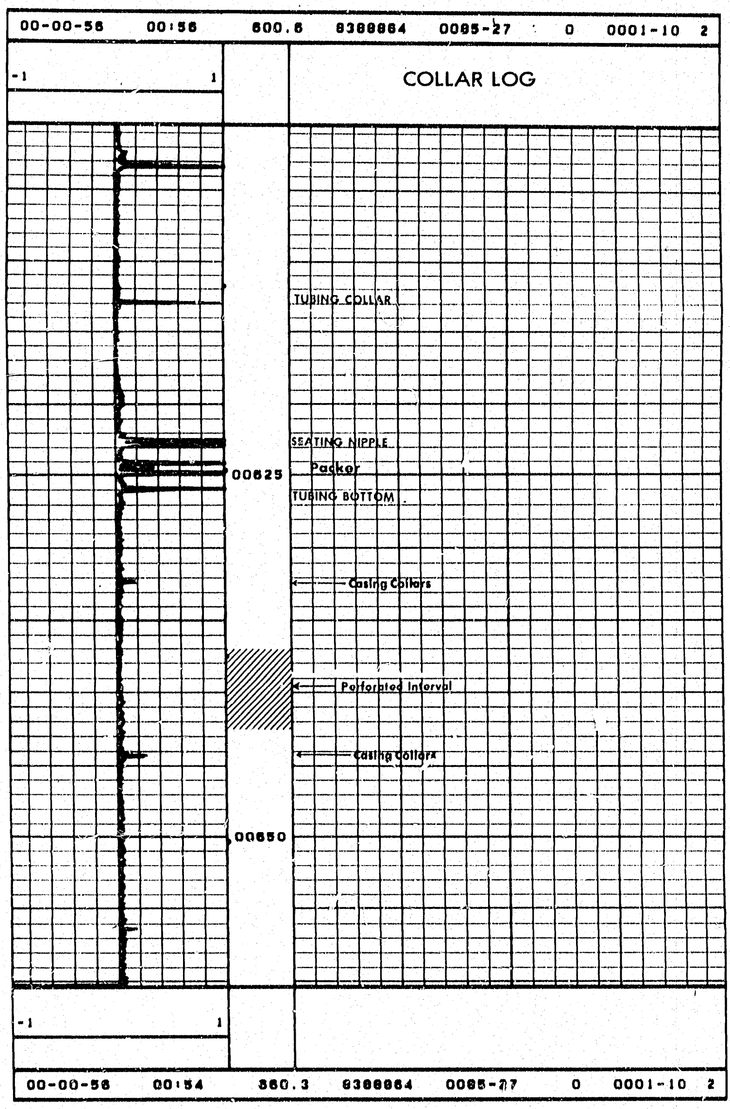
GRAM WEIGHT 6

PHASING 0 DEGREES

DECENTRALIZED YES

Shot Density	Number of Shots	Perforated Interval From	To
7spm	38	637.0	642.5





2 of 2

FORM 56A

COMPANY AL & S EXPLORATION LTD.

WELL AL & S CARCAJOU D-05

FIELD WILDCAT PROVINCE NORTHWEST TERRITORIES

COMPUTALOG GEARHART LTD