Indian and Northern Affairs Affaires indiennes et du Nord

Well Name / Nom du puits: Bluemount ~~EXG~~ Gulf South Delta K-80	Drilling Authority No. / Autorisation de forage n° 603
Field/Area / Gisement/Région	Date Issued / Date d'émission 21-06-72
Location / Emplacement — Unit / Unité: K-80-67-40-134-30 — Section	Permit or Lease: 3808
Latitude: 67-39-36	Longitude: 134-44-28.8
U.W.L.R. / N.R.U.E.P.: 67.66000 -- 134.74133	
U.W.I. No. / N.I.P. No.: 300K80674O134300	
File Microfilmed	Rig. Release Date / Date de transfert de la tour de forage
Tour Sheets, Microfilmed	Status / Statut
	Information Release Date / Date de publication autorisée des informations

CHANGE OF NAME / CHANGEMENT DE NOM: Bluemount et al Gulf South Delta J-80

Change of Location / Changement de emplacement: 67°39'40.43" — 134°43'38.4"
67.66123 — 134.72733
300J80674O134300

INDEX	DATE RECEIVED / RECU LE		INDEX
Application for a Drilling Authority	12-07-72	RM	Demande d'autorisation de forage
Well Completion Data			Renseignements sur le forage d'un puits
Well History Report			Données chronologiques sur le puits
Application to Amend a Drilling Authority	28-11-72	RM	Demande de modification d'une autorisation de forage
Application to Change a Well Name			Demande de changement du nom d'un puits
Application to Abandon a Well or Suspend Drilling			Demande d'abandon d'un puits ou de suspension du forage
Application to Alter Condition of a Well			Demande d'autorisation de modifier l'état d'un puits
Well History Supplement			Supplément aux données chronologiques sur le puits
Well Completion Data			Renseignements sur le forage d'un puits
Work-Over Report No.			Rapport de reconditionnement n° . . . . .
Application to Commingle Production before Measurement			Demande d'autorisation de mélanger la production avant jaugeage
Data for Back Pressure Test on Natural Gas Wells			Données de calcul de la capacité de production d'un puits de gaz naturel — Méthode graphique n° 7
Data for Back Pressure Test on Natural Gas Walls			Données de calcul de la capacité de production d'un puits de gaz naturel — Méthode de Vitter
M.P.R. — Oil — Calculations			Calcul du T.M.P. (Taux maximal de oroduction) de pétrole
New Oil Well Report			Rapport sur un nouveau puits de pétrole
New Gas Well Report			Rapport sur un nouveau puits de gaz naturel
Well Inspection Report			Rapport d'inspection de l'emplacement d'un puits
Rig Inspection Report			Rapport d'inspection d'une tour de forage
Battery Inspection Report			Rapport d'inspection d'une batterie de puits
Equipment Report			Rapport d'inspection des compteurs
Well Card			Fiche de puits
New Service Well Report			Rapport sur un nouveau puits de service
Strat Service Logs			Rapport mensuel des injections d'eau
Logs — Large scale			Diagrammes: Grande échelle
Logs — Small scale			Diagrammes: Petite échelle

IAND 52-90 (6-72)

002-11-06-083

OIL & MINERAL DIVISION
DIVISION DU PÉTROLE ET DES MINÉRAUX

RENSEIGNEMENTS SUR LES FORAGES

Nº de l'autorisation de forage

Date Issued June 21, 1972
Date de délivrance

To be submitted in duplicate within thirty days after the completion, rework, abandonment, recompletion or suspension of every well.
À présenter en double dans les trente jours suivant l'achèvement, le remaniement, l'abandon et le reconditionnement de chaque puits, ou après suspension.

Well Name & No — Nom et nº du puits	Permit No. — Nº de permis	Lease No. — Nº de concession
Bluemount et al Gulf South Delta J-80	3808	N/A

(Permittee) — (Détenteur de permis ou de licence, du concessionnaire)	Exploratory Licence No. — Nº de licence de sondage
Gulf Oil Canada Ltd.	1530
(Operator) — (Exécutant)	Exploratory Licence No. — Nº de licence de sondage
Bluemount Resources Ltd.	1586

LOCATION — *EMPLACEMENT*

Unit — Unité	Section	Grid — Étendue quadrillée	Latitude	Longitude
J	80	67-40, 134-30	67° 39' 40.43"N	134° 43' 38.4"W

Unique Well Identifier — Code d'ordinateur	Universal Well Location Reference — Références universelles d'emplacement du puits
300J806740134300	67.66123° N, 134.72733° W

	Date	Depth — Profondeur
Spudded — Début des travaux	Dec. 21/72	
Suspended — Suspension des travaux	–	
Resumed Operations — Reprise des travaux	–	
Finished Drilling — Forage terminé	Feb. 7/73	9500'
Deepened — Approfondissement	–	
Complete (Gas/Oil) — Achèvement (Gaz/Pétrole)	–	
Abandoned — Abandon	Feb. 21/73	9500'
Rig Released — Fin des travaux	Feb. 23/73	

Pool(s) — *Gisement(s)*: N/A

Interval(s) Open to Production — *Intervalle(s) de production*: Nil

Elevation: Gr. — *Altitude du sol*: 37' K.B. — *du carré d'entraînement*: 50'

Rig No. — *Nº de la tour de forage*: 7

Drilling Contractor — *Entrepreneur en forage*: Kenting Petrolia

Contractor's Business Licence No. — *Nº du permis de l'entrepreneur*: 0230

CASING RECORD — *TUBAGE*

Casing Size (Inches) — Diamètre (en pouces)	Grade — Qualité	Weight — Poids	Amount — Longeur	Set at — Fixation à	Sacks of Cement and Additives — Sacs de ciment et d'additifs
1. 28 x 20 refrigerated conductor pipe			65'	82'	+ 65 sx cement 203 Permafrost neat
2. 13-3/8"	K-55	54.5	420.96'	441.21'	644 Permafrost neat
3. 9-5/8"	K55	36#	1520.82'	1521.00'	175 Permafrost plus
4.					475 Oilwell
5.					
6.					

Geological Tops — Sommet des formations	Elevation — Profondeur: Depths — Sous le niveau du sol	Sub-Sea — Sous le niveau de la mer
Spud in Imperial?		
Hume	6022	-5968
Gossage	6343	-6286
Ronning	8665	-8609

Core Record — *Carottes*

From — de	To — à	Rec. — Récupérées	From — de	To — à	Rec. — Récup.
No Cores Taken					

Log Record — *Diagrammes*

Run — Série	Type of Log — Genre de diagramme	From — De	To — À
1	Comp. Neutron Formation Density	1521	9491'
1-2	Borehole Comp Sonic	411	9491'
1-2	Dual Induction-Laterolog	411	9498'
1	Continuous Dipmeter	9492	9500'

CEMENTING RECORD (Plug, Squeeze, etc.) / CIMENTATION (Bouchon, sous pression, etc.)

Date	From – de	To – à	Remarks – Remarques
2/21/73	8800	8550	C140 neat, Plug #1
2/21/73	7460	6890	C400 neat, Plug #2 felt @ 6843' after 8 hrs
2/22/73	1570	1470	C100 + 3% $CaCl_2$, Plug #3, felt @ 1306 after 9 hrs.

PERFORATING RECORD (Bullet, Jet) / PERFORATION (à balles, à jet)

Date	From – de	To – à	Remarks – Remarques
Nil			

SERVICING RECORD (Acidizing, Fracing, etc.) / ENTRETIEN (acidification, fracturation, etc.)

Date	From – de	To – à	Remarks – Remarques
Nil			

DRILL STEM TESTS – ESSAIS AUX TIGES

No. – N°	Date	Formation	From – de	To – à	V.O. Mins. Vanne ouverte (minutes)	I.S.I. Mins. Première obturation (minutes)	F.S.I. Mins. Obturation définitive (minutes)	I.S.I.B.H.P. Pression de fond à la 1re obturation	F.S.I.B.H.P. Pression de fond à l'obturation définitive	I.F.B.H.P. Pression de fond au jaillissement	F.F.B.H.P. Pression de fond à l'écoulement définitif	L.H.P. Pression hydrostatique de début	F.H.P. Pression hydrostatique définitif	Remarks – Remarques
1	Feb. 6/73	Ronning	9215	9365	120	60	240	4322	4319	642	3811	4768	Clock Failed	Recovered 7517' salt water + 470' mud
2	Feb. 10/73	Ronning	9270	9315	180	60	270	Tool stuck, never recovered						Pumped out recovery, sub plugged. Displaced up annulus, no annulus fluid noted.

ANALYSIS – ANALYSE

Lab. No. N° de laboratoire	Sample Echantillon	From – de	To – à	Source	Remarks – Remarques
921-3210	DST #1	9215	9365	Bottomhole sampler	Water analysis – Core Lab.
921-3138	DST #1	9115	9235	Top of recovery	Water analysis – Core Lab
921-3138	DST #1	9115	9265	Top of recovery	Preliminary Chloride only – Core Lab.

PRESENT STATUS OF WELL / ETAT ACTUEL DU PUITS

Oil Pétrole			(Interval)(Intervalle)
Gas Gaz			(Interval)(Intervalle)
Dry Sec	0	–	9500'
Susp. Travaux sus			

Company Société: Bluemount Resources Ltd.

Signed by Signé par: J.K. Rudolph

Title Titre: for Operations Superintendent

Date:

Forms to be prepared in duplicate and forwarded to the District Conservation Engineer.

Présenter les formules remplies à l'ingénieur en conservation du district.

CANADA

Drilling Authority No. 603

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT
OIL AND MINERAL DIVISION

Application to Abandon a Well or Suspend Drilling

In compliance with the "Canada Oil and Gas Land Regulations", application is hereby made for approval to abandon, to suspend drilling:—

Name and number of well Bluemount et al Gulf South Delta J-80

Location: Unit J Section 80 Grid 67-40 134-30

Latitude 67° 39' 39" North Longitude 134° 43' 47" West

From Established Reference Marker

Universal Well Location Reference Lat. 67.66123 N, Long. 134.72733° W

Permit No. 3808 Lease No. N/A

Gulf Oil Canada Ltd.
(Permittee, ~~Licencee, Lessee~~)

Date of commencement of proposed program February 21, 1973

OIL, GAS, AND WATER ENCOUNTERED
(Depths)

Oil at Nil

Gas at Nil

Water at 9215' - 9365' (Ronning)

Total Depth 9500' Date of last operations February 21, 1973

Present condition of well February 21, Fishing, top of fish 8820'
August 28, Abandoned

CASING RECORD

Casing Size O.D. Inches	Weight	Amount	Set At—	Sacks of Cement and Additives	Amount Pulled
1. 28" x 20" refrigerated cond. pipe	65'		82'	C203 Permafrost	Nil
2. 13-3/8"	54.0	420.96	441.21	C644 Permafrost	Nil
3. 9-5/8"	36.0	1520.82	1521.00	C175 Permafrost +	
4.				C475 Oilwell	Nil
5.					

PROPOSED ABANDONMENT PROGRAM

Plug No.	Plug Position	Geological Formation	Number of Sacks of Cement	Remarks
1	8800 - 8550	Bottom Hole - Ronning	140 Oilwell	No feel
2	7460 - 6890	Gossage Porosity - fracturing	400 OW neat	Felt @ 6843 after 8 hrs.
3	1570 - 1470	Surface casing	100 OW + 3% $CaCl_2$	Felt @ 1306 after 9 hrs.

Casing cut 4' below ground level, puddled 10 sx into top of 9-5/8" casing, weld plate over stub, welded sign post with well sign 4' above ground level, put 10 sx cement over 9-5/8" in floor of cellar.

The following logs have been run DIL, BHCS-GR-C, CNL-FDC, HDT, CIS(SRS)

Other operations proposed

Operations to be carried out by Bluemount Resources Ltd. Contractor Licence No. 0230 (Kenting Ltd.)

Address 1450, 717 - 7th. Ave. S. W. Calgary, Alta Address Pacific Building, Calgary, Alta.

Responsible Agent in field K. O. Blackwell

Dated at Calgary, this 28 Day of August 19 73

Signed by [signature] Company Bluemount Resources Ltd.

Title for Operations Superintendent Operator's Exploratory Licence No. 1586

Note:—The District Conservation Engineer's office must be notified before work is commenced.

(For OIL AND MINERAL DIVISION use only)

APPROVAL

This application has been examined and proposed programme approved, subject to the following conditions:

Dated Dec 5, 19 74

[signature]
District Conservation Engineer

IAND 52-90-5 (7-71)

Forms to be submitted in triplicate to District Conservation Engineer, Department of Indian Affairs and Northern Development.

Voir au verso

Drilling Authority No. 603

CANADA

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

OIL AND MINERAL DIVISION

Application to Amend a Drilling Authority

This application, in triplicate, must be submitted and approved before commencing operations. If the well location is changed, this application must be accompanied where required, with a plan of survey approved by the Surveyor General.

In compliance with the "Canada Oil and Gas Land Regulations", application is hereby made to amend Drilling Authority No. 603, concerning well previously licensed as Bluemount NNG Gulf South Delta K-80-67-40-134-30, to change the name of the well and location of the well (Name and Number of Well) to Bluemount et al Gulf South Delta J-80-67-40-134-30.

The latitude/longitude of the location as it is now proposed is 67° 39' 40.43" North, 134° 43' 38.4" West

The Unique Well Identifier from 300K806740134300 to 300J806740134300

The Universal Well Location Reference from Lat. 67.66000° N to 67.66123° N Long. 134.74133° W to 134.72733° W

Reasons for the amendments: 1. Change in working interest partners.

2. Result of legal survey run to confirm the location of proposed wellsite and geophysical control with respect to the boundaries of the grid area.

3. Re-examination of geophysical control.

Dated at Calgary, this 17th day of November, 19 72

Signed by Robert Schwab

Title Operations Superintendant

Company Bluemount Resources Ltd.

(For Oil and Mineral Division use only)

APPROVED

This application has been examined and approved subject to the following conditions:

Date November 24., 1972

District Conservation Engineer

Forms to be submitted to the District Conservation Engineer, Department of Indian Affairs and Northern Development.

IAND 52-90-3 (8-71)

Voir au verso

Drilling Authority No. 603

CANADA

DEPARTMENT OF INDIAN AFFAIRS AND NORTHERN DEVELOPMENT

OIL AND MINERAL DIVISION

Application for a Drilling Authority

This notice of intention to begin drilling operations, in triplicate, and where required a plan of survey approved by the Surveyor General showing the target area or the site of the well must be submitted and approved before commencing operations.

In compliance with the "Canada Oil and Gas Land Regulations", application is hereby made for approval to drill:–

Name and number of well . BLUEMOUNT. NNG. GULF. SOUTH .DELTA .K-80

Location: Unit K Section 80 Grid 67-40-134-30
Latitude 67° 39' 36" N. Longitude 134° 44' 28.8" W.
Unique Well Identifier. 300K806740134300
Universal Well Location Reference. . Lat. 67.66000° N. . . . Long. 134.74133° W.

Elevation: Ground 37' K.B. 50' feet above sea-level.
Well is expected to produce from Ronning formation at a depth of about 8,200 feet. Expected total final depth 10,000 feet
Area assigned to well

(for District Conservation Engineer's use only)

Permit No. 3808 Lease No. N/A Acreage 24,402
Permittee, ~~licensee, or lessee~~ Gulf Oil Canada Limited
Exploratory Licence No. 1530
Surface owned by Crown or

(If alienated submit name and address of owner and occupant.)

Petroleum and natural gas rights owned by Crown
We propose to use the following strings of casing, either cementing or landing them as indicated below:–

Casing Size O.D. (Inches)	Weight (Lb./Ft.)	Grade	New or Used	Estimated Depth	Sacks of Cement
1. 20"x28"	Refrigerated Conductor Pipe			60	To surface.
2. 13 3/8"	54.5	K-55	New	350-500	Permafrost to Surface
3. 9 5/8"	36	K-55	New	1,500	Oilwell to surfac
4. 7"	26&23	MN80	Used	10,000	As required.
5.					

Expected water, gas, and oil horizons and type of control equipment. Upper Devonian sands, Middle Devonia Carbonates, Ronning (oil, gas, water) controlled by Hydrostatic pressure of mud column, with 12" Series 900 GK Hydril and 12" Series 900 Type B double gate, Shaffer BOPs, remote control panel, accumulator, floor controlled drilling choke, dual wing manifold plus straight gut line.
Well will be drilled with Rotary Rig No. 7 by Petrolia Oilwell Drilling
(Drilling Contractor or company)

Responsible agent of applicant:–
At well. E. Schack Contractor's Business Licence No. 0230
Address Inuvik, N.W.T. At registered office R. Schwab
Address 1450, 717-7th Ave. S.W., Calgary, Alta.
It is understood that if changes become necessary, notice of the change of plan will be submitted.
Dated at Calgary, Alberta, this 20th day of June 19 72
Signed by [signature] Company Bluemount Resources Ltd.
Title Operations Superintendent Operator's Licence No. 1586

(For Oil and Mineral Division use only)

APPROVED

This application has been examined and approved subject to the following conditions:

PLEASE SEE CONDITIONS OF APPROVAL ON THE ATTACHED SHEET

Dated. June 21st, 19 72 [signature]
District Conservation Engineer

Forms to be submitted to District Conservation Engineer, Department of Indian Affairs and Northern Development.

IAND 52-90-1 (8-71)

Voir au verso

CONDITIONS OF APPROVAL FOR DRILLING AUTHORITY NO. 603
FOR Bluesmount NNG Gulf South Delta K-80

1. Copies of this Drilling Authority shall be exhibited at the Drilling Rig in both the Doghouse and the Drilling Foreman's Office between spud and rig release dates.

2. The Company will submit to this office, on Tuesday of each week/~~daily~~, the latest reports received by radio on the progress of the well.

3. During well drilling and testing operations, every effort shall be made to ensure that drilling fluids, chemicals and wastes shall be disposed of or contained in a manner that will prevent the contamination of adjacent vegetation and surface or sub-surface waters.

4. We draw your attention to Sections 95 and 96 of the Canada Oil and Gas Land Regulations.

5. Any additional strings of casing must be approved by the District Conservation Engineer prior to running.

M. D. Thomas
Dist. Conservation Engineer
Districts 2 and 3

MDT:bl

Jack Rudolph

BLUEMOUNT RESOURCES LTD.

Addition to Well History Report as requested August 22, 1973, request received August 14, 1974.

1.	Name of Well:	Bluemount et al Gulf South Delta J-80 J-80-67-40-134-30
2.	Permittee:	Gulf Oil Canada Limited.
3.	Permit No.:	3808
4.	Operator:	Bluemount Resources Ltd.
5.	Drilling Contractor:	Kenting Petrolia Drilling Ltd.
6.	Drilling Authority No.: Date Issued: Date Amended:	603. June 21, 1972 November 24, 1972
7.	Classification:	Wildcat
8.	Date Spudded:	December 21, 1972
9.	Rig Release Date:	February 23, 1973
10.	Total Depth:	9,500'

TABLE OF CONTENTS

Bluemount et al Gulf South Delta J-80

PROGRAM AND PROGNOSIS

Bluemount et al Gulf South Delta J-80

Location:

Grid:	67-40-134-30
Latitude:	67° 39' 40.43"N
Longitude:	134° 44' 38.4"W

Elevation:

Surface Elevation:	37' estimated
K.B. Elevation:	50' estimated

Hole Size:

Conductor Hole:	34"
Permafrost Protection Hole:	17½"
Surface Hole:	12¼"
Main Hole:	8-3/4"

Prognosis:

FORMATION	DEPTH
Quaternary	at surface
Cretaceous	200'
Cretaceous Sands	-----
Jurassic and/or Triassic	-----
Imperial	3,500'
Hume	6,000'
Gossage	6,300'
Ronning	8,500'
T.D.	9,500'

Note: Prognosis of Gossage thickness includes 500 ft. of possible Delorme formation which is believed to thin northward. The Ronning, therefore, may be reached at 8,000 ft.

Samples:

Conservation Board - 10' samples from surface to T.D.

Bluemount Resources Ltd.- 10' samples from surface to T.D. are standard. The wellsite geologist can vary this interval as he deems necessary for best evaluation. Tin cans are supplied for the surface permafrost samples. Can one sample every 10' for the first 350'.

Petrofina Canada Ltd.- 10' unwashed samples from base of permafrost to T.D. Plastic lined sample bags are provided for this. One set of samples 10' intervals from permafrost to T.D. in bottles. This cut will be done by Petrocraft in Calgary.

Others - One additional full bag to be caught at 10' intervals for partner requirements. Cuts will be made in Calgary by Petrocraft. All accumulated samples should be shipped out by F-27 only weekly.

.... 2

Anticipated Problem Areas:

(a) Conductor Hole

Boulders could greatly slow down the drilling of the conductor hole. Caution will have to be used so as not to damage the drilling bucket. Cutting teeth, reamer teeth and spare pockets will have to be changed as they get worn so as not to damage the body of the bucket.

(b) Permafrost Protection Hole

While drilling this portion of the hole, insure that the temperature of the drilling fluid is at freezing temperature. Keep steam hose out of mud tanks at all times.

Freezing points of KCl solutions are as follows:

Pounds per barrel KCl	Freezing Point
3.5	31.17° F.
7.0	30.35° F.
10.5	29.52° F.
21.0	26.96° F.
35.0	23.36° F.
45.5	20.39° F.

If at any time during the drilling of this portion of the hole, drilling operations have to stop, slow the pump down to an idle and rotate drill string. Large amounts of drilling fluid coming out of the bit will have a tendency to wash the hole around the bit area. Also, if shut down for any length of time, insure that pipe is rotated so that the pipe will not freeze to the wall of the hole.

(c) Surface Hole

While drilling surface hole, as in drilling the permafrost protection hole, the same amount of caution is advised. Deviation may be encountered, so constant deviation checks will have to be made.

(d) Main Hole

A large sand section could be encountered below surface casing. Mud weight at this time could have a tendency to climb rapidly. Dumping of tanks will be required to control solids that the shale shaker and desilter do not take out. Do not dump indiscriminately, but only on the basis of mud checks for solids and weight. Shoughing shale, lost circulation and high pressure water and gas zones are all possibilities.

1. Rig Move

Prior to rig move, an access road from staging area to drilling location will have to be built. This will be done only when enough frost is in the ground to insure that no damage will be done to the terrain. Do not, under any circumstances, use the cat blade to level off any area of the

road. A drag, consisting of an old cat track, is provided and this is the only piece of equipment that is to be used to level the road system.

An ice bridge will have to be built over the stream between staging area and drilling location. There are to be no binding materials used in the ice bridge. All equipment and vehicles traveling over road are to be equipped with a garbage can so that no waste of any sort is thrown on the ground.

2. Lease Preparation

Prior to lease preparation, contact land use people in Inuvik and receive proper authorization for building of location, timber disposal and sump requirements.

In the area where rig and camp are to be situated, try and leave as much of the small tree growth and moss covering as possible. Only where the sump is located, doze off all the moss. Pile this in such a manner that it can be used to spread over the sump at the end of the well. Try and dig sump with D-7E cat; if unable to do this, a sump may have to be blasted.

3. Rig Up

When choosing actual location, choose the most level area and the least spruce or fir growth possible within limits of the target area. If ground is level enough do not use fill out of the sump. Lay a sheet of plastic (orange #14250) down on area where rig will sit. On this spread sawdust, no less than 4" thick in any one place, then lay another plastic tarp (clear woven plastic #SL830) on top of the levelled sawdust. Place 6 mil poly over sheet of woven plastic, lay matting and proceed with rig up.

The mud tanks do not have to sit on any pad; keep them off the ground with 3 x 12 planks.

The light plant and boilers will have to have a sawdust pad and 6 mil poly over the sawdust. Lay 3 x 12 planks on top of the poly and spot light plant and boilers on the planks.

The camp will not need a pad. Keep well off the ground with 3 x 12 planks.

4. Drilling and Cementing of Conductor Hole

While rig is being moved and rigged up, a cellar will have to be dug to a depth of six feet. Use gasoline powered jack hammer, no steam or hot water. As soon as possible proceed to drill the conductor hole. The rig does not have to be fully rigged up to do this. One crew can operate the rig while the other two crews continue to rig up. Drill 34" conductor hole to a depth of 67' ground level.

As the conductor hole is being drilled, weld the two sections of inner conductor barrel together. This can probably be done best by using metal straps welded to both sections of the inner barrel. Preheat welding area and do not allow to cool rapidly. Lay conductor barrel on cat walk and have ready to pick up. Tie sling from blocks around top end of barrel and a second sling at the center of the barrel to

both winch truck and high line. The high line can be used to take some of the weight off of the welded area as the conductor barrel is being picked up off of the cat walk. The winch line of the truck can be used to take pressure off of the welded area as the conductor barrel goes up the ramp. The rotary table will have to be pulled out before picking up the conductor barrel. Lower conductor barrel so that welding area is at floor level. Complete welding the two inner pieces together, pack the area with zonolite and weld the outer covering around casing. Again, preheat all areas to be welded and allow to cool slowly.

Lower the conductor casing to the bottom of the hole leaving outlets for refrigeration coil approximately 5" above the bottom of the cellar. Mix up permafrost cement in chemical barrel and pour slurry down annulus. At same time, crib cellar and pour concrete ditch from the cellar to outside the substructure. Maintain a proper slurry temperature of approximately 32° F. A slurry temperature of more than 40° F. will thaw the permafrost in the well bore. Do not drill out before 30 hours. It may take up to 36 hours for cement to set properly. Drill out with a 17½" bit using extreme caution not to damage cement bond. Do not use a smaller bit until drilled out + 30'.

5. Drilling of 17½" Hole

Drill out conductor casing with 17½" bit. Drill ahead with 17½" bit. If deviation occurs and can not be readily brought back by the fanning method, go to an 8-3/4" packed hole assembly consisting of: 8-3/4" bit - one 6 point roller reamer with "Q" cutters - one 8-3/4" O.D. 30' long square drill collar - one 3 point roller reamer with "Q" cutters - one 8-3/4" O.D. 30' long square drill collar - one 3 point roller reamer with "Q" cutters - remainder of drill collar string.

The 8-3/4" hole will then be reamed out to 12¼" to 17½" hole. Whenever the square drill collars are used, keep a roller reamer on the top and bottom of each collar to protect against excessive wear.

6. Drilling 12¼" Hole

Drill out 13-3/8" casing with 12¼" bit. Use this size until deviation becomes a problem then go to a packed hole assembly as in '5' above.

7. Drilling 8-3/4" Hole

Drill 8-3/4" hole with packed hole assembly as discussed above. Use "Q" cutters on the reamers in all shale drilling. Change reamers to Knobby cutters when in the carbonates. Do not use any Knobby cutters in the shale section.

When a cutter or reamer change is made, record change in tour reports as to what number and what type of cutter was installed and the serial number of the reamer bodies that were picked up.

When drilling with a tandem square drill collar hook up, use the rotary torque guage to detect possible deviation. Also use this method to try and assist in drilling a straight hole.

.... 5

A shock sub will be put in string on top of the square drill collars when button bits are being used.

There will be two shock subs on location. The shock sub that is being used will have to be checked very carefully for packing wear during each bit change. When packing element shows signs of wear, put new shock sub in string.

There will be a weekly exchange of shock subs to and from Edmonton via the F-27. The used shock sub will be brought back to Drilco's shop in Edmonton to be inspected, magnafluxed and serviced.

8. Mud Program

(a) 17½" Hole

While W.O.C. on conductor casing mix up 350 barrel mud system. Add 10 pounds per barrel bentonite plus 1/2 pound per barrel Kelzan AL. After this system has yielded, mix 10 pounds per barrel KCl into system. Roll this mud until ready to drill out. The make up water being used should come directly out of the water hole, not out of the water tank, so that the temperature of the make up water is as low as possible.

Any further additions to the mud system should be done with the aid of the prehydration tank. For viscosity increase, mix bentonite:Kelzan AL at a ratio of 20:1 and keep chlorides at 8,000 to 10,000 ppm with additions of KCl.

Regulate viscosity for adequate hole cleaning.

(b) 12¼" Hole

The same mud system will be used for the 12¼" hole as was used for the 17½" hole.

(c) 8-3/4" Hole

During W.O.C. on 9-5/8" surface casing, dump and clean all mud tanks. Fill half full of warm fresh water. Isolate the suction tank to be able to drill out cement using only one tank.

Fill prehydration tank with water. Treat out any hardness with Soda Ash at the ratio listed below:

ppm Calcium in Water	Soda Ash Required
0 - 50	5 lbs. per 100 bbls. water
50 - 100	10 lbs. per 100 bbls. water
100 - 200	20 lbs. per 100 bbls. water
200 - 500	50 lbs. per 100 bbls. water
500 - 1000	100 lbs. per 100 bbls. water

Mix up a gel-Ben-ex system at the ratio of 500 lbs. bentonite to 2 lbs. Ben-ex. Mix 25 lbs. per bbl. bentonite and allow to prehydrate. This should give a 400 - 500 sec. viscosity.

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Drill out cement with water using only the suction tank portion of the mud tanks. After shoe is drilled out, dump suction tank and treat out the remaining cement contaminated water with Sodium Bicarbonate.

Feed small stream of prehydrated mud into mud tanks as drilling ahead. Raise viscosity of drilling fluid to 40-45 sec. Run Hi Vis C.M.C.:Dextrid at a ratio of 1:3 in the main mud system as the prehydrated mud is being added. Add the C.M.C. and Dextrid slowly until the water loss is down to an 8 - 10 cc range. Increase mud weight and viscosity as hole conditions warrant. Use the shale shaker and desilter to aid in mud weight control.

9. Hole Depths

(a) Conductor Hole

Drill 34" conductor hole to 67' below ground level.

(b) Permafrost Protection Hole

Drill 17½" permafrost protection hole to the first consolidated formation below 350'. Set 13-3/8" casing into 40' of the first consolidated formation. If no consolidated formation is reached by 450', the depth of the hole will be regulated by the casing measurements. In this case, do not drill less than 450' or more than 500' from ground level.

(c) Surface Hole

Drill 12¼" surface hole to a minimum depth of 1,500' from ground level. Actual depth to be regulated by casing measurements.

(d) Main Hole

Drill 8-3/4" main hole to the first diagnostic porosity in the Ronning or 9,500', whichever occurs first.

10. Casing and Cementing

(a) 17½" Hole - 13-3/8" Casing

When running 13-3/8" casing, thread lock float shoe and float collar; do not arc weld. Thread lock as many joints as will stand in derrick. Run one centralizer 5' above shoe. Run casing to bottom and circulate until hole is clean enough so that casing can be left in slips without circulation and reciprocation.

Run open end drillpipe down inside 13-3/8" casing; install inner string handling sub, run drillpipe as close to float collar as possible. Circulate and reciprocate 13-3/8" casing until hole is properly clean.

Cement casing with Permafrost Cement having final slurry temperature at 30 - 35° F. Slurry weight should be 15.6# per gal. Consult Halliburton temperature tables prior to cementing, record the temperature of the dry cement and adjust the temperature of the water accordingly. Run cement until returns reach the surface.

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Set the 13-3/8" casing at a depth that will enable the 13-3/8" screw on flange, 12" Series 900 spool and B.O.P. to be set on top of casing. Displace the cement out of the drillpipe and backwash excess cement in the casing leaving approximately 3 - 4 feet of cement slurry on top of float.

Wait on cement a minimum of 16 hours before slack off or use the setting time on the conductor casing as a guideline.

Nipple up B.O.P. using 13-3/8" screw on 12" Series 900 flange, 12" Series 900 Spool with 3" flanged outlets, 12" Series 900 double gate B.O.P., 12" Series 900 Hydril B.O.P. Install Cameron Type 'F' hydraulically controlled valve outboard from the spool outlet on the choke manifold side; use one manual valve inboard in conjunction with this. 3" lines are required on both the kill line and the choke manifold line. See sketch attached.

Pressure test to 500 psi for 15 mins. and record results in tour report book. Drill out in 24 hours with 12¼" bit using 50 RPM and 5,000 lbs.

(b) 12¼" Hole - 9-5/8" Casing

When running 9-5/8" casing, thread lock float shoe and float collar; do not arc weld. Thread lock as many joints as will stand in derrick. Run two centralizers, one 5' above shoe and one 100' above shoe. Run casing to bottom and circulate until hole is clean enough to leave casing in slips without circulation or reciprocation.

Run open end drillpipe down inside of the 9-5/8" casing, install inner string handling sub, run drillpipe as close to the float collar as possible. Circulate and reciprocate 9-5/8" casing until hole is properly clean.

Cement casing string starting out with Permafrost Cement. Calculate the required Permafrost Cement to go from 350' to surface. No excess is required as 9-5/8" casing is inside 13-3/8" casing. Use a 30 - 35° F. slurry for this. Use Oilwell Cement for the remainder of the job, using a slurry temperature of 50° F. and a weight of 15.6 lbs. per gal. with 2% $CaCl_2$. Mix cement until returns reach surface. Land casing on bottom, slack off as soon as plug down. Displace cement out of drillpipe and backwash excess cement in casing leaving approximately 3 - 4 feet of cement slurry on top of float. Steady casing in table with slips.

Tie sling from blocks to B.O.P. and take 12" Series 900 flange off of bottom of spool. Cut 13-3/8" casing off at bottom of cellar and leave B.O.P. hang for 6 hours after plug down. Cut off 9-5/8" casing as high above ground as possible in 6 hours and lay down B.O.P. Lift 13-3/8" screw on flange out of cellar and put away to protect against damage.

Wait on cement 12 hours and nipple up B.O.P. as per attached sketch. Drill out in 24 hours after testing B.O.P. as set out in program following. Install wear ring in 9-5/8" bowl. A Cameron weldless Model UGGR casing bowl will be used.

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The entire length of the casing bowl is 32½", 17½" being taken up by the slip and seal assembly, while 15" is the height from the point where the bowl rests on the edge of the 9-5/8" casing to the top of the 10" Series 900 flange.

Cut casing several inches higher than required on the first cut, then measure exact height of cut off. Cut off level and smooth edges of casing with a grinder. Slip casing bowl down over casing, making sure that casing is clean and has no scratches that may damage seal. Oil the outside of the casing so that the bowl may slide easily.

When bowl is properly set on casing, tighten slips to 40 foot pounds with torque wrench or one man on a 2 foot handle. When slips are tightened, tighten seals to 40 foot pounds with the allen screws.

Test slips by pulling up on casing bowl with cat line and five wraps on cat head. If holding O.K., nipple up B.O.P.

If slip and seal assembly do not work properly a 9-5/8" x 10" 3000# weld on bowl is available and can be used.

Pressure test to 1000 psi for 15 mins. and record results in tour report book.

(c) 8-3/4" Hole - 7" Casing

A separate program will be issued if 7" casing is required. The order in which it should be run is as below:

7" String Design.

0' - 946'	(946')	7" x 26# Mod. N-80 Buttress
946' - 3,119'	(2,173')	7" x 26# Mod. N-80 Hydril Triple Seal
3,119' - 4,424'	(1,305')	7" x 23# Mod. N-80 LT&C
4,424' - 10,000'	(5,576')	7" x 26# Mod. N-80 LT&C

N.B. If 7" x 26# Hydril Triple Seal is run, insure that casing protectors for this casing are saved and brought back to Northwest Pipe and Supply Ltd.

11. Pressure Testing of Casing, B.O.P. Stack and Formation

Pressure test B.O.P., stack and blowout manifold to 1000 psi before drill out of 13-3/8" and 9-5/8" casing.

Drill out 9-5/8" surface casing, drill 30', hook Halliburton to wellhead and pressure test formation to a point just short of the break down point of the formation.

In order to do this, rig up a valve and pressure recorder right next to the wellhead. Close B.O.P. around drillpipe and proceed to pressure up.

Take pressure up to 750 psi without stopping. From 750 psi on take the pressure up in accurately measured ½ bbl. increments. Each time ½ bbl. is pumped record the pressure and leave for 10 mins. Plot the pressure vs. the displacement immediately. Repeat this operation until a change in curve appears on the plot indicating imminent formation breakdown, or the pressure reaches 2000 psi. Do not breakdown formation.

The point at which the formation breaks down is where the pressure does not increase lineally for the same amount of displacement fluid being pumped. A close watch will have to be kept on the pressure guage to get the exact point where the formation breaks down. Use a sensitive pressure guage and do not rely on the pressure recorder, use it only as a back up. Record all results in the tour report book, and plot the curve as it is run.

Pressure test B.O.P. stack on a regular weekly basis starting seven days from drill out of 9-5/8" casing. A testing tool and a retreiving tool are supplied. Pressure test B.O.P. to the same pressure as that of the formation break down and record results in tour report book.

In the event of a blowout, do not allow oil to vent to atmosphere. Risk down-hole formation breakdown rather than loss of oil at surface.

12. Equipment Supplied by Contractor

(a). "Sample Boy" type sample catcher to be in operation from spud to total depth.

(b). Milchem RVS triple screen shale shaker to be installed prior to rig up.

(c). Automatic drilling time recorder - 4 pen minimum showing weight, time, torque and rotary speed, to be in operation from 57' to total depth.

(d). "Poor-boy" type degasser to be hooked up when heading up on 13-3/8" casing.

(e). Kelly cock and spare wrench.

(f). Stabbing valves for all pipe used to be available on the floor at all times.

(g). Desilter.

(h). Flow line sensor, pump stroke counter and pit level indicator to be in operation when drilling surface hole.

(i). Five gas masks and air for 16 hours.

13. Equipment Supplied by Operator

(a) Mud saver sub to be used at all times.

(b) Incinerator. All garbage from camp and rig to be burned in the incinerator. The spare derrickmen are the only people who are to run the incinerator.

(c) Cameron Type 'F' hydraulic valve to be hooked up outboard from the spool outlet on the blowdown line when heading up on 13-3/8" casing.

(d) Drilco type degasser to be hooked up on mud tanks before drilling out 13-3/8" casing.

(e) Sentry gas logging equipment to be in operation for drilling 17½" permafrost protection hole.

(f) All drill collars and reamers will be magnafluxed on a weekly basis by Western Drill Collar Inspection or Derek Drill Collar Inspection.

14. Geological Program

Surface Hole:

Do not test on way down. If logs indicate potential hydrocarbon zones, tests will be conducted before drilling ahead.

Main Hole:

Test any porous post Devonian reservoir after penetrating 30' of effectively continuous porosity that indicate hydrocarbon potential by either gas detector or sample evidence. If water free hydrocarbon is recovered on tests, core and test in 50' intervals to water or base of reservoir. It is not the intent to test post Devonian reservoirs on the way down that have discontinuous porosity or which are probably wet. Cut one core at about 2200' in conjunction with a routine trip for bit for paleontological evidence.

Test the first porosity in the Ronning after penetrating 50' of effective porosity. If water free hydrocarbon is recovered, core ahead. Tests will be run to adequately evaluate the reservoir but at a frequency dependent on proximity to breakup and supply situation. Total depth is defined as penetration of diagnostic Ronning porosity or 9500', whichever shall occur first.

15. Logging Program

Run One: at T.D. of surface hole (±1,500')

Run 1: DIL, 2" and 5" scale, full length.
BHCS-GR-C, 2" and 5" scale, full length. Integrate Sonic throughout.

If field interpretation of run 1 indicates possible hydrocarbon bearing reservoir, run FDC and SNP over full length. Do not tape curves in field.

Run Two: at T.D. of main hole (±9500')

Run 2: DIL, 2" and 5" scale, full length.
BHCS-GR-C, 2" and 5" scale, full length. Integrate Sonic throughout.
FDC*, 2" and 5" scale, full length.
SNP, 2" and 5" scale, full length.

Tape all curves for Coriband type analysis. A Velocity Survey will be run.

* If no gross changes in mud system have occurred, an Rxo-FDC combination tool may be substituted for the FDC.

Special Instructions

(1). Strap pipe every 2,000' or before testing or logging.

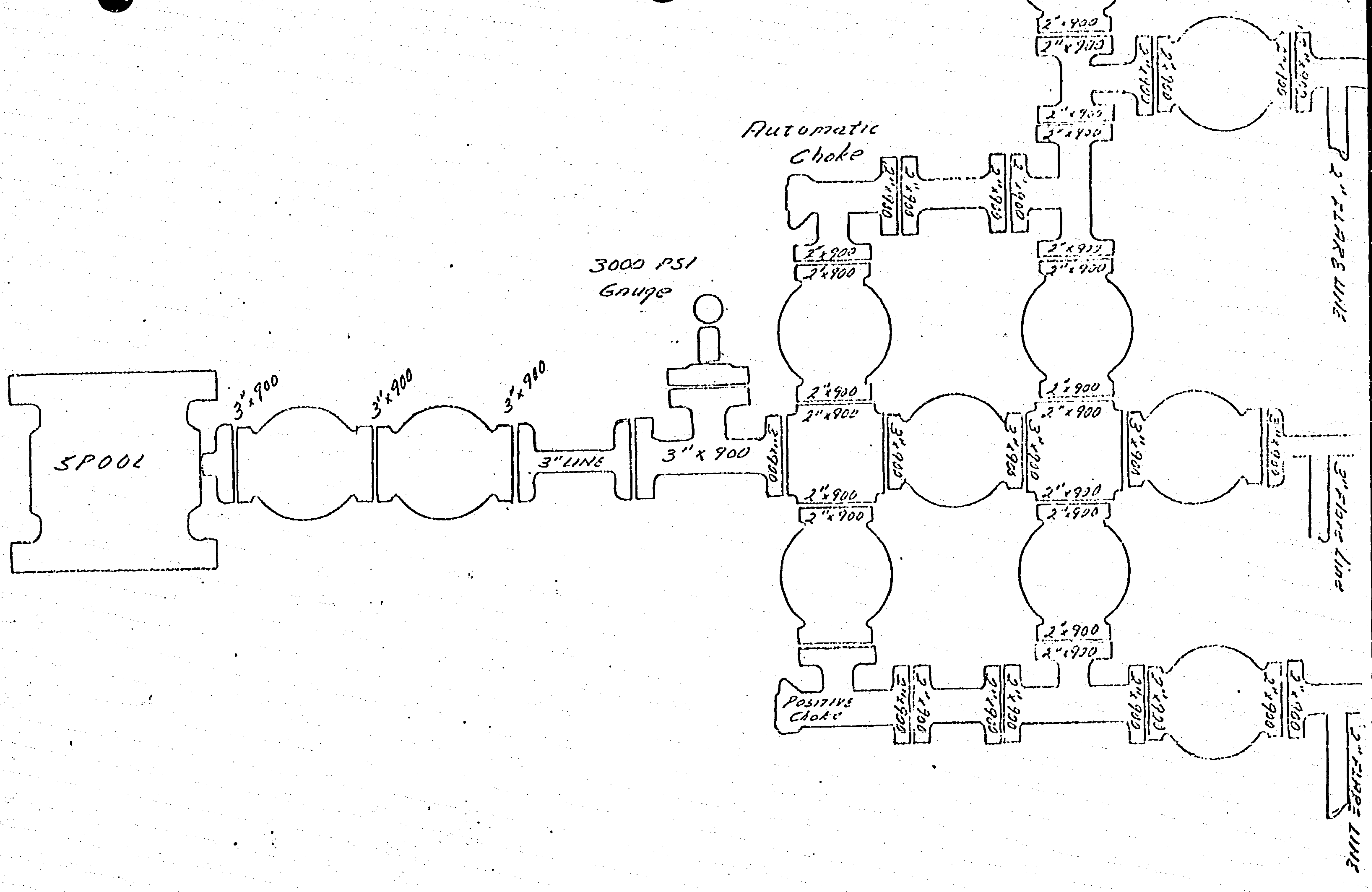
(2). All information is to be kept confidential.

(3). A transmittal form will have to be signed by the wellsite supervisor and by the person receiving core samples and other well information that is shipped via F-27.

Service Companies

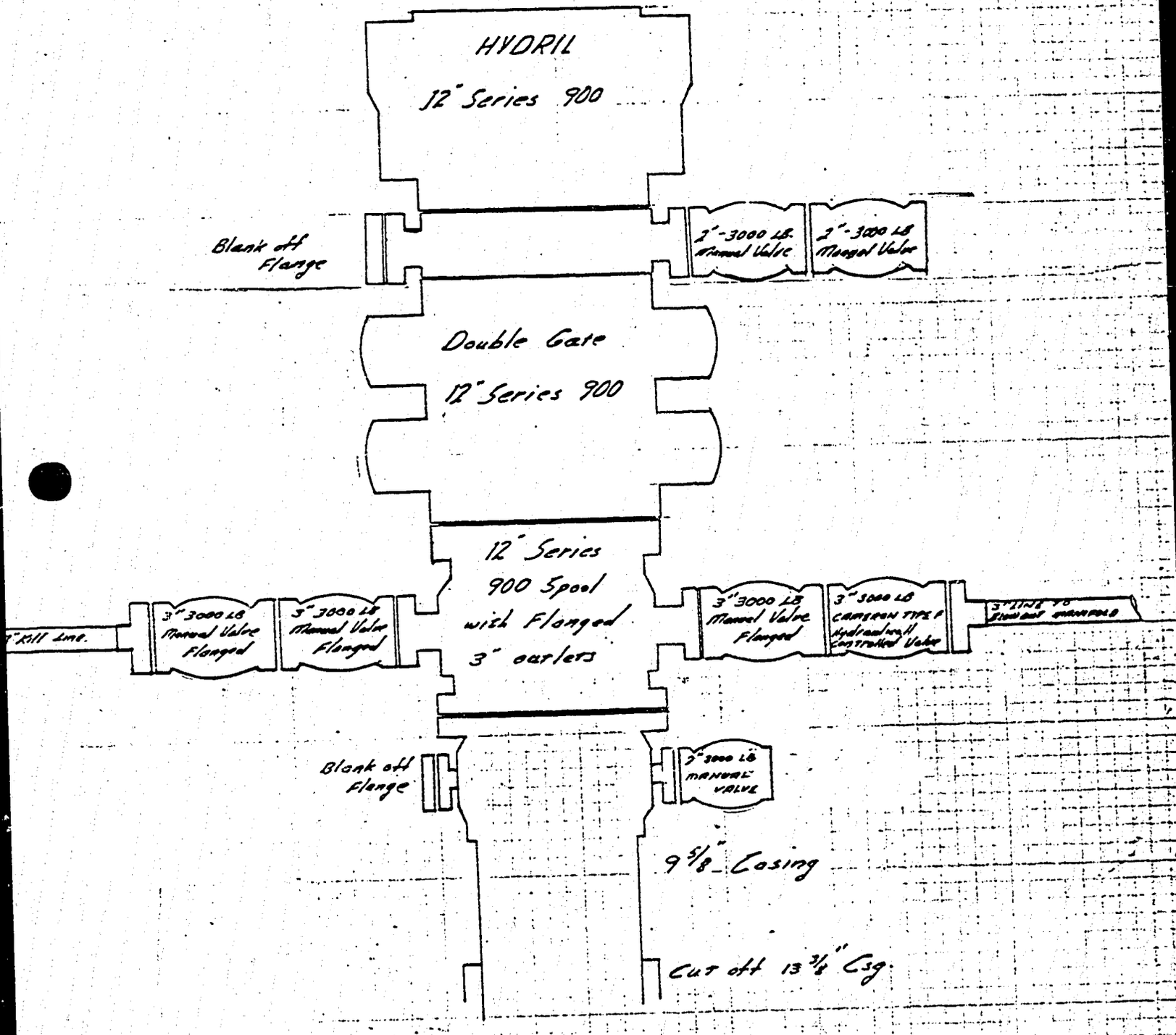
Mud	-	Baroid of Canada Ltd. - materials only.
Mud Supervision	-	Bluemount Resources Ltd. representative, unless serious mud problems exist.
Coring	-	Dy-Drill Ltd.
Testing	-	Lynes United Services Ltd.
Logging	-	Schlumberger of Canada
Gas Logging	-	Sentry Engineering Company
Cementing	-	Halliburton Services Ltd.
Expediting	-	Hanvold Expediting Services Ltd. Inuvik
Communications	-	Tel/Com Services (Marlene) Ltd. Inuvik
Aircraft	-	Kaps Transport Ltd. - F-27 for weekly flight Edmonton to Inuvik Trans North Turbo Air Ltd. - for casual charter
Sump Blasting	-	Arctic Blasting & Drilling Co. Ltd. Phone: 979 - 2142 Inuvik
Consultant Geologist	-	Bill Smith
Consultant Drilling Foreman	-	Kayo Blackwell
Company Drilling Foreman	-	Ernie Schack
Trucking and Construction	-	Kaps Transport Ltd.
Inner String Handling Subs	-	Oil Patch Equipment Rentals, Inuvik

Blowout Manifold for [redacted] Delta J-8-0

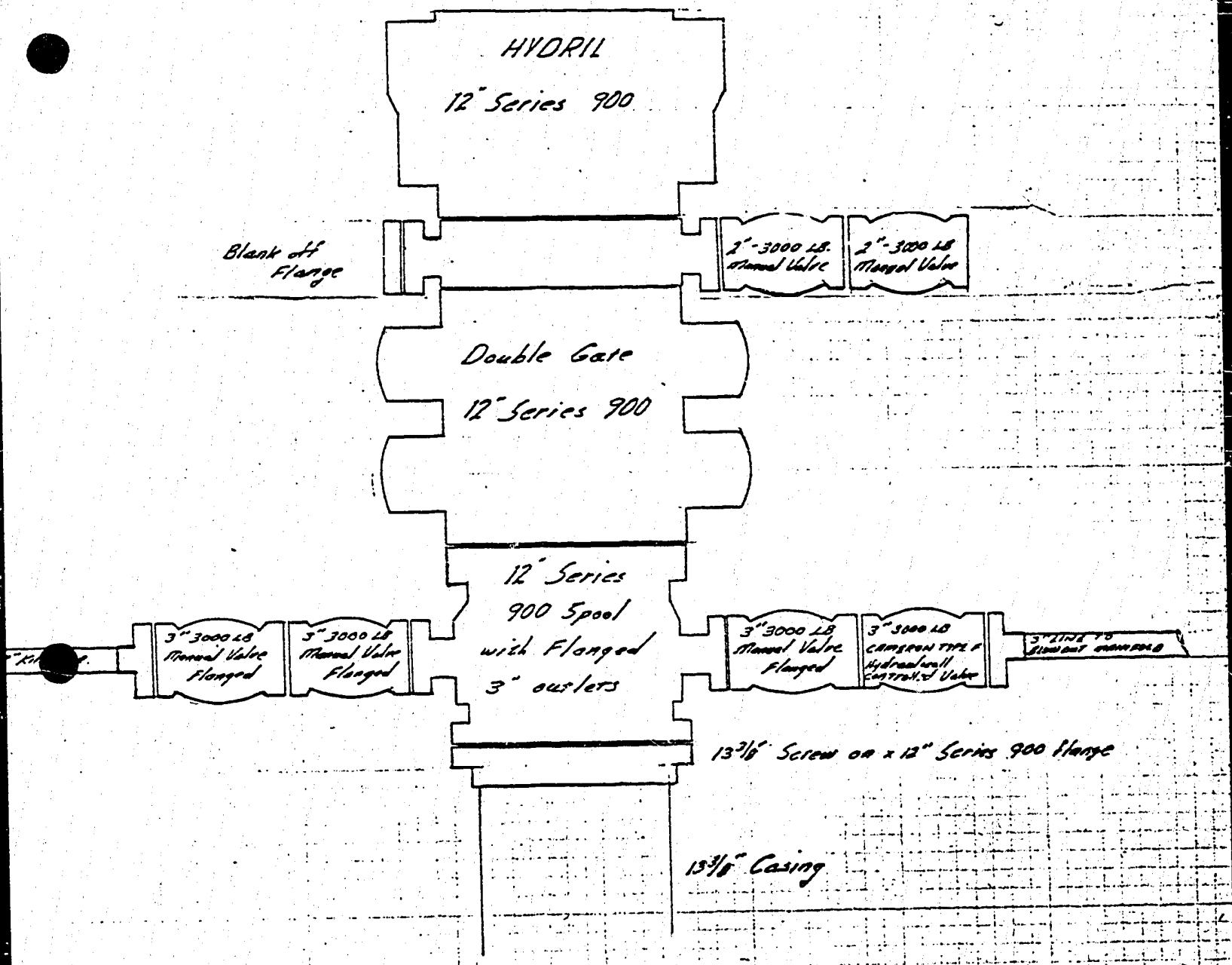


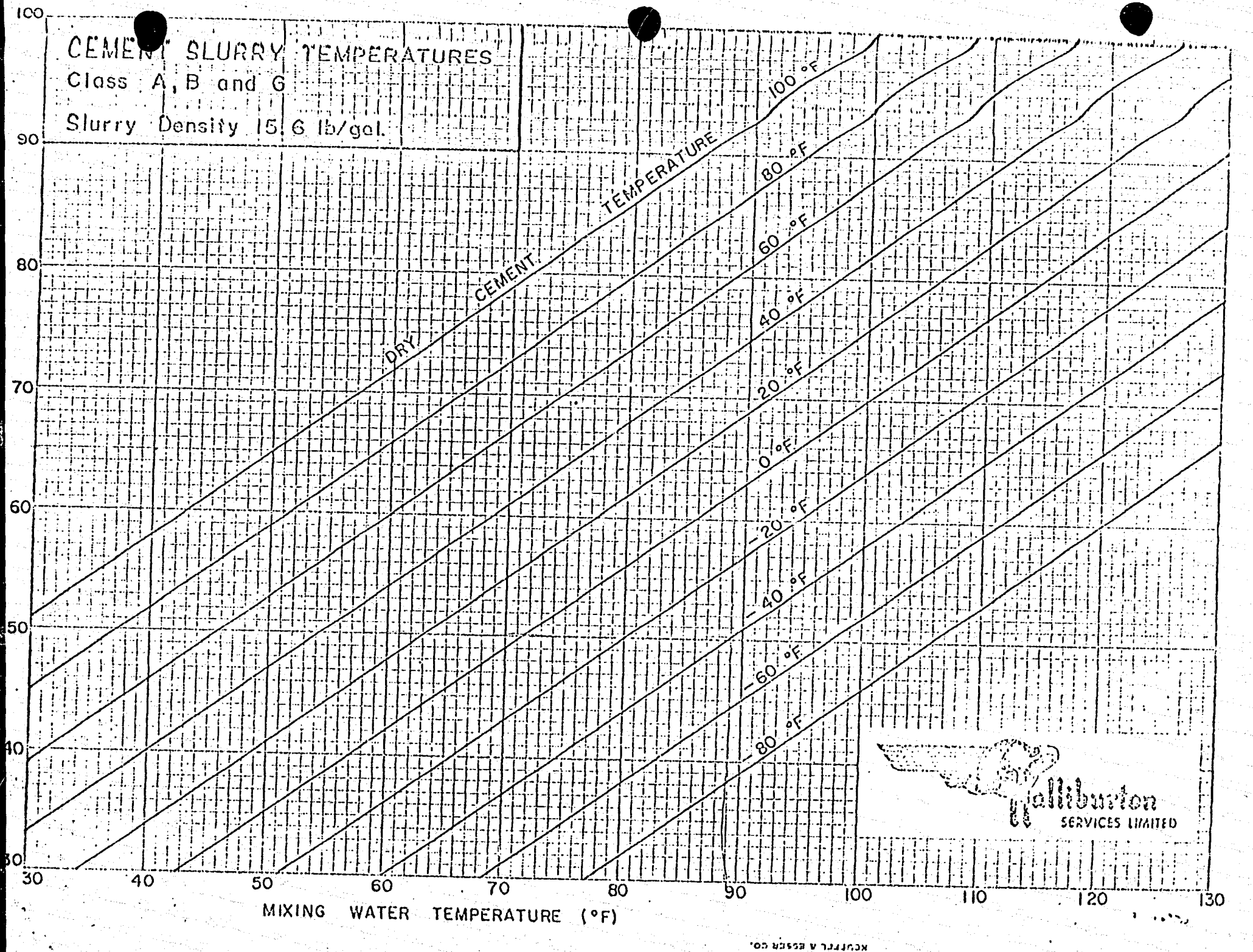
BOP Hook up on 9 5/8" Casing

S. Dett



BOP Hook up on 13 3/8 Casing




CEMENT SLURRY TEMPERATURES
Class A, B and G
Slurry Density 15.6 lb/gal.
DRY CEMENT TEMPERATURE
100 °F
80 °F
60 °F
40 °F
20 °F
0 °F
-20 °F
-40 °F
-60 °F
-80 °F
100
90
80
70
60
50
40
30
30
40
50
60
70
80
90
100
110
120
130
MIXING WATER TEMPERATURE (°F)
Halliburton
SERVICES LIMITED

Program and Prognosis

Bluemount et al Gulf South Delta J-80

Amendment to paragraph #3 "Rig up"

When choosing actual location, choose the most level area and the least spruce or fir growth possible within limits of the target area. If ground is level enough, do not use fill out of the sump. Lay a sheet of plastic (orange #14250) down on the area where rig will sit. On this spread sawdust, no less than 4" thick in any one place. On top of the sawdust lay the purlboard. Place this in such a manner so that the entire substructure base will sit on the purlboard. On top of this place another plastic tarp (clear woven plastic #SL830) then place 6 mil poly over sheet of woven plastic. Lay matting and proceed with rig up.

WELL SUMMARY

Well Name Bluemount et al Gulf South Delta J-80 Status D & A

Location J-80-67-40-134-30 Operator Bluemount Resources Ltd License No. 603

Coordinates 67° 39' 39" North

134° 43' 47" West Surveying Co. Dabbs

Elev.: Gr. 37' K.B. 50' C.B.F. 53' AFE 5512 & 5513

T.D., drlr. 9500' Log 9500' Terminal Formation Ronning

Contractor Kenting Petrolia Rig No. 7 Toolpush Don Barker

Hole Size 34" Conductor hole; 17½" Permafrost Protection Hole; 12¼" Surface Hole; 8-3/4" Main Hole

Directions to rig: 40 miles South west of Inuvik

Rig Equipment: Dwks Unit 40 Line Size 1-1/8"

Motors Two D-353 Caterpillars Total H.P. 800

Derrick Lee C. Moore Capacity 490,000#

Substructure 24 x 50 Height 14' Capacity 600,000#

BOP's: Gate Shaffer Size 12" Series 900

Annular Hydril G.K. Size 12" Series 900

Mud Pump: Main DA-500 Power Floor Motors

Standby DA-500 Power Floor Motors

Mud Tanks: No. 2 Capacity 500 Bbls. Prehydration Tank 65 Bbl.

Drill Pipe 4" 3½"H-90 Conn.

Drill Collars 6¼"x 4½"H-90; 7" x 5" H-90

Spud Date Dec. 16, 1972 Rig Release Feb. 23, 1973

Finish Drilling Feb. 7, 1973

Mud Type Gel. - Ben-ex

Service Co. Baroid

Sample Intervals -- Oper. Surface to T.D. Stored Calgary

Sample Intervals--Gov't Surface to T.D. Shipped to Calgary Date Mar. 1/73

CORED INTERVALS: None Service Co. -

Nos.	Intervals	Formation	Rock Type	Analyzed	By

TUBULAR PRODUCT:

	Size	Max. Wt.	Landed KB	Int. Cemented	Date	Amt. Cemented	Remark
Conductor ~~Surface~~	28" x 20"		82'	65'	12/21/72	203 Sax Permafrost cement	This was cemented own the annulus.
Permafrost string ~~Intermediate~~	13-3/8"	54.5	420.96	441.21'	12/24	644 Sax Permafrost cement	Cemented this with inner string handling sub.
~~Production~~ Surface ~~Liner~~	9-5/8"	36#	1520.82	1521.00'	1/2/73	175 Sax Permafrost cement and 475 sax oilwell cement.	Cemented this with inner string handling sub.
Tubing							

Desc. of Bowl 10" series 900 w/2" flanged outlets. Cameron Model VGGR slip on.

LOGS Serv. Co. Schlumberger

Type		Run No.	Interval	Date
DIL	2" and 5"	1-2	441-9489	Dec.30/72 - Feb.8/73
BHCS-GR-C	2" and 5" Integrated	1-2	441-9491	Dec.30/72 - Feb.8/73
CN-FD		1	1521-9491	Feb. 8/73
FA Continuous Dipmeter		1	9492-9500	Feb. 10/73

Velocity Survey Run by _____ Owner of Vel. Survey _____

Drillstem Tests

No.	Testing Co.	Interval	Recovery
one	Lynes United Services	9215'-9365'	470' drilling mud 7515' salt water
two	Lynes United Services	9320'-9365'	unable to get recovery as DST was left down hole.

Formation Tops

K. B. Elev. 54'

Formation	Expected	Sample	Log	Subsea (Log)
Quarternary	Surface			
Cretaceous	200'			
Cretaceous Sands		not present		
Jurassic and/or Triassic		not present		
Imperial	3,500'			
Hume	6,000'	6022'	6022'	-5968'
Gossage	6,300'	6343'	6340'	-6286'
Ronning	8,500'	8675'	8663'	-8609'
T.D.	9,500'	9500'	9500'	-9446'

DAILY PROGRESS REPORTS

Bluemount et al Gulf South Delta J-80

(1972)	(Depth)	
December 5		Crew flew from Edmonton to Inuvik by F27 and from Inuvik to rack site by chopper. Working on camp.
6		Waiting on clearance from Dept. Land Affairs to start on road to location, working on camp.
7		Working on road from rack site to location.
8		Working on road from rack site to location.
9		Clearing camp site, digging camp sump start moving camp from rack site to location.
10		Moving camp, digging camp sump, clearing location site.
11		Clearing location, rigging up camp, digging rig sump.
12		Level rig pad, laying plastic, sawdust, insulation and matting, rigging up sub, digging rig sump.
13		Hauling rig from rack site, rigging up, digging cellar and rig sump.
14		Rigging up, pin derrick, digging cellar and rig sump.
15		Rigging up, raised derrick, digging cellar and rig sump.
16		Rigging up, digging cellar and rig sump.
17	26'	Spud 10 p.m. Dec. 16, 1972. Drill 34" conductor hole. Drill 3' in 10 hrs. (15' KB + 8' cellar)
18	51'	Drill ahead 25' in 24 hrs. Going very slow due to perma-frost.
19	75'	Drill ahead 24' in 16 hrs. Broke bottom plate off of bucket, fish and repair bucket for 8 hrs.
20	82'	Drill ahead 7' in 7½ hrs. Tear out rotary table and run 28" OD x 20" ID refrigerated conductor casing. Landed @ 82' K.B.

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December 21		82'	Cemented conductor bbl. w/203 sax perma-frost cement. Completed cementing @ 10 a.m. December 20/72. Cemented cellar with 65 sax perma-frost cement. Begin mixing surface hole mud system.
	22	315'	W.O.C. on conductor casing for 36½ hrs. Drill out 10:30 p.m. Dec. 21/72. Drill ahead 233' with 17½" hole in 8¼ hrs.
	23	382' - 17½" hole 452' - 12¼" hole	Drill 17½" hole from 315' to 382'. (67') Deviations went from 0° to 1-5/8°. Trip out and pilot ahead 12¼" hole from 382' to 452'. Hole wanting to deviate, went out to 2° w/120 RPM and 3-5 M on bit. Trip out w/12¼" bit, run in to ream 12¼" hole to 17½" hole.
	24	452' - 17½" hole	Ream 12¼" hole from 382' to 452' in 4¼ hrs. Circulate and condition hole to run 13-3/8" perma-frost protection casing. Ran 13 jts. 13-3/8" 54.5# K-55 casing. Landed @ 441.21' K.B. Cemented w/644 sax perma-frost cement. Plug down 6:30 a.m. Dec. 24.
	25	452'	W.O.C., nipple up BOP.
	26	452'	Nipple up BOP, blow out manifold and flow line. Pressure test BOP stack, 13-3/8 screw-on flange developed leak in threads. Weld 13 3/8 screw on flange to casing. Pressure test BOP 15 min., held O.K.
	27	567' - 12¼" hole 696' - 8-3/4"	Drill out w/12¼" bit to 567', unable to control deviation w/12¼" bit, pick up 8-3/4" bit to try and correct hole angle. Drill ahead from 567' to 696'.
	28	705' - 12¼" hole 947' - 8-3/4"	Drill 8-3/4" hole from 696' to 705'. Ream 8-3/4" hole to 12¼" hole from 567' to 705'. Hole angle went out to 4° while reaming. Pick up tandem square drill collars and drill 8-3/4" hole from 705' to 947'.
	29	1214' - 8-3/4"	Trip out, pick up 60' round drill collars, one 6 pt. reamer, 30' square drill collar, EZE-change stabilizer. Drill ahead w/the pendulum method from 947' to 1015'. Trip out w/this string to add 10' onto the round pendulum; able to control deviation better with 70' of round drilling hook up. Drill ahead from 1015' to 1214'.
	30	705' - 12¼" hole 1525' - 8-3/4"	Drill ahead to 1525' w/8-3/4" bit. Rig up to log w/Schlumberger.

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December 31	953' - 12¼" hole 1525' - 8-3/4"		Log w/Schlumberger, ran DIL - 1525' to 441' 2" & 5", ran BHCS-GR-C 1525' to 441' 2" & 5" (integrated). Ream from 705' to 953'.
(1973)			
January 1	1325' - 12¼" hole 1525' - 8-3/4"		Ream 8-3/4" hole to 12¼" hole 18-3/4 hrs, 372'. Reaming very slow due to hard formation.
2	1521' - 12¼" hole 1525' - 8-3/4"		Ream 8-3/4" hole to 12¼" hole from 1325' to 1521' in 8-3/4 hrs. Condition hole to run 9-5/8" surface casing.
3	1521 - 8-3/4"		Ran 49 jts. 1520.82', 9-5/8, 36#, K-55, R 2 & 3 surface casing. Landed @ 1521' K.B. Cemented w/ 175 sax perma-frost cement and 475 sax Oilwell cement. Plug down 2 p.m. Jan. 2/73. W.O.C.
4		1521'	Install Cameron model VGGR casing bowl w/ 40# torque on slip and seal assembly. Pressure test seals, held O.K. Pressure test blind rams to 1000 psi, 15 min. held O.K.; check motor shutoffs.
5		1700'	Pressure test pipe rams, blow out manifold, Kelly cock, Hydril to 1000 psi for 15 minutes, held O.K. Drill out float and shoe w/ 8-3/4" bit, drill ahead to 1653'. At 1653' pressure tested formation in 1/10 bbl. increments, formation started to yield at 1600' psi. Drill ahead to 1700'.
6		2142'	Drill ahead 442' in 19-3/4 hrs. Drilling hook up in hole from bottom up is: bit, one 6 pt. reamer, one 30' square drill collar, one 3 pt. reamer, one 30' square drill collar, one EZE change stabilizer, one low temperature shock sub, string of round drill collars.
7		2708'	Drill ahead 566' in 22¼ hrs.
8		3200'	Drill ahead 492' in 23½ hrs.
9		3468'	Drill ahead 268' in 18 hrs. Trip for bit, 10' fill on bottom.
10		3814'	Drill ahead 346' in 23¼ hrs.
11		4185'	Drill ahead 371' in 23¼ hrs.
12		4517'	Drill ahead 332' in 23½ hrs.

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January 13	4660'	Drill ahead 143' in 13½ hrs. Trip for bit, hole good.
14	4995'	Drill ahead 335' in 23 hrs.
15	5280'	Drill ahead 285' in 21½ hrs.
16	5510'	Drill ahead 230' in 19½ hrs. Hole good on trip.
17	5666'	Drill ahead 156' in 13 hrs. Trip for bit, hole good.
18	5791'	Drill ahead 125' in 20 hrs.
19	5950'	Drill ahead 159' in 18-3/4 hrs. Trip for bit, bridge @ 4300'.
20	6190'	Drill ahead 240' in 23 hrs.
21	6450'	Drill ahead 260' in 23¾ hrs.
22	6597'	Drill ahead 147' in 13¼ hrs. Trip for bit, pressure test BOP stock. Held O.K.
23	6877'	Drill ahead 280' in 23½ hrs.
24	7220'	Drill ahead 343' in 22-3/4 hrs.
25	7443'	Drill ahead 223' in 15 hrs. Trip for bit.
26	7530'	Ream bridges on way in hole w/ new bit. Bridges encountered @ 4340'- 4400',4470'- 4860',5600'- 5640', had 60' fill on bottom. Drill ahead 87' in 9-3/4 hrs.
27	7703'	Drill ahead 173' in 18-3/4 hrs.
28	7840'	Drill ahead 137' in 14½ hrs. Trip for bit, clean bridges from 4727'- 4882'. Clean 30' fill to bottom.
29	7967'	Drill ahead 127' in 17½ hrs. Trip for bit. Lost cone off of bit.
30	8000'	Run in w/ bit and junk sub, grind on cone and work junk sub. Ream 6' undergauge hole. Drill ahead 33' in 5 hrs.
31	8112'	Drill ahead 112' in 13¾ hrs. Trip for bit, inspect drill collar string.
February 1	8238'	Drill ahead 126' in 15 hrs. Trip for bit.
2	8367'	Drill ahead 129' in 15½ hrs. Trip for bit.

...../5

February 3	8637'	Drill ahead 270' in 23½ hrs.
4	8987'	Drill ahead 350' in 23 hrs.
5	9115'	Drill ahead 128' in 10½ hrs. Trip for bit.
6	9365'	Drill ahead 250' in 12-3/4 hrs. Circulate and condition hole to test. Pick up DST tools.
7	9370'	Run in with DST #1 (9215' - 9365'). Test for 7 hrs. Trip out, lay down DST #1. Run in with bit, drill ahead 5' in ½ hr.
8	9500'	Drill ahead 130' in 7½ hrs. Condition hole to log. Ran DIL 1521' - 9500'. BHCS 1521' - 9500'.
9	9500'	Log CNL-FDC - 1521' - 9489'.
10	9500'	Ran HDT (4 arm dip meter) from 1521' to 9489'. Stuck tool at 3875'. Unable to log 3875' to 3855'. Ran Velocity Survey. Ran in, condition hole and mud. Begin making up DST #2.
11	9500'	Ran in to test, DST #2. Air blow, no gas; test for 8½ hrs. tool stuck at end of test. No rotation, no vertical movement, unable to fire jars, unable to deflate packers. Attempted to backwash through pumpout sub, sub plugged after 3 hrs. Break circulation down drillpipe through pumpout sub. Unable to detect any water, hydrocarbon or drillstem test recovery in fluid returns except for air in mud for 50 min. Top pump out sub at 9091' (129' above top packer, three collars above tool). Work pipe to 285 M. N.B. See detailed fishing report for detailed operational report.
12	9500'	Run free point, unable to back off.
13	9500'	Work pipe, backed off in drillpipe at 4207' while working torque in pipe for back off shot, unable to screw back in. Latch on with overshot, back off drillpipe again above overshot, screw back in, unable to work torque into pipe.
14	9500'	Change overshot, latch onto and work stuck fish, shoot off at 8741' (top of drill collars). Pick up jars, bumper sub, collars and run in.
15	9500'	Hole sticky at 8670'. Drawwork clutch failed, shut down on bottom for repairs.
16	9500'	Spot oil, repair clutch. Work pipe and run free point.

..../6

February	17	9500'	Work stuck pipe, back off at 8820', continue to work stuck pipe.
	18	9500'	Work stuck pipe, attempted to back off at 9000', unsuccessful, string parted at bumper sub. Latch onto fish, unable to break circulation.
	19	9500'	Attempt to knock pipe clear for back off shots, stick sinker bars, pull out of rope socket. Circulated pipe and conditioned hole to attempt hydrostatic pressure reduction tool.
	20	9500'	Lowered hydrostatic pressure 618 psi, failed to pop fish free. Jar on sinker bars, lost drive point.
	21	9500'	Unable to work past bridge on pipe at 8820'. Decision to suspend fishing job and abandon hole.
	22		Plug #1 - 8800' - 8550'. C140 neat, displaced with 81 bbls. mud, plug down 11:30 a.m. Feb. 21/73, slurry weight 15.5 ppg. No feel. Plug #2 - 7460' - 6890'. C400 neat, displaced with 65 bbls. mud, plug down 2:30 p.m. Feb. 21/73, slurry weight 15.5 ppg. Felt after 8 hrs, found at 6843'. Plug #3 - 1570' - 1470'. C100 + 3% $CaCl_2$, displaced with 14 bbls. mud, plug down 2:00 a.m. Feb. 22/73. Waiting to feel.
	23		Feel for Plug #3 after 9 hours, found at 1306' with full weight of pipe (166' hi, much excess run for safety). Clean mud tanks, lay down drill pipe, tear out BOP. Begin move to staging site. Rig Released: 4:00 p.m. February 23, 1973.
	24		Cut casing 4' below ground level, puddled 10 sax cement into top of 9-5/8" casing, weld plate over stub, weld sign post with well sign 4' above ground level, put 10 sax cement over 9-5/8" in floor of cellar. Moving out to staging site at Ft. MacPherson.
	25		Hauled 5 loads of equipment from rig site to staging site at Ft. MacPherson. Total of 21 loads have been hauled so far.
	26		Hauled 9 loads. Total of 30 loads.
	27		Hauled 8 loads. Total of 38 loads.
	28		Hauled 9 loads. Total or 47 loads.

...../7

March	1	Hauled 9 loads. Total of 56 loads.
	2	Hauled 10 loads. Total of 66 loads.
	3	Hauled 11 loads. Total of 77 loads.
	4	Hauled 8 loads. Total of 85 loads.
	5	Hauled 5 loads. Total of 90 loads. Plus hauled five loads of fuel.
	6-10 incl.	Hauled 6 more loads of rig equipment and a total of 26 loads of fuel and gasoline.
		Complete location and staging site clean up. Received approval for clean up from Forestry. Clean up road from S-Delta J-80 to Ft. McPherson. JOB END.

Deviation Summary

Bluemount et al Gulf South Delta J-80

138' - 1° - 17-1/2" hole
168' - 3/4° - 17-1/2" hole
199' - 1/2° - 17-1/2" hole
261' - 1/2° - 17-1/2" hole
321' - 1/4° - 17-1/2" hole
352' - 1-1/2° - 17-1/2" hole
312' - 1-5/8° - 17-1/2" hole
410' - 1-7/8° - 8-3/4" hole
441' - 2-1/4° - 8-3/4" hole
452' - 2-1/4° - 8-3/4" hole
452' - 2° - 8-3/4" hole
452' - 1-1/4° - 17-1/2" hole
538' - 2-3/4° - 8-3/4" hole
569' - 2-3/4° - 8-3/4" hole
601' - 3° - 8-3/4" hole
644' - 3° - 8-3/4" hole
696' - 3° - 8-3/4" hole
705' - 3-1/8° - 8-3/4" hole
800' - 3° - 8-3/4" hole
920' - 3-7/8° - 8-3/4" hole
947' - 4° - 8-3/4" hole
1091' - 4-1/2° - 8-3/4" hole
1152' - 4° - 8-3/4" hole
1214' - 4° - 8-3/4" hole
1298' - 3-1/2° - 8-3/4" hole
1373' - 3° - 8-3/4" hole
1470' - 3-1/8° - 8-3/4" hole
1475' - 3-1/2° - 12-1/4" hole
1676' - 2-1/8° - 8-3/4" hole
1802' - 2° - 8-3/4" hole
1926' - 2° - 8-3/4" hole
2130' - 2° - 8-3/4" hole
2456' - 1-1/4° - 8-3/4" hole
2834' - 3/4° - 8-3/4" hole
3210' - 1/2° - 8-3/4" hole
3707' - 3/4° - 8-3/4" hole
4144' - 1-1/2° - 8-3/4" hole
4525' - 1-7/8° - 8-3/4" hole
4955' - 4° - 8-3/4" hole
5280' - 4-3/4° - 8-3/4" hole
5666' - 4-1/4° - 8-3/4" hole
6107' - 3-3/4° - 8-3/4" hole
6561' - 4° - 8-3/4" hole
7056' - 3-1/4° - 8-3/4" hole
7433' - 4-1/8° - 8-3/4" hole
7695' - 3° - 8-3/4" hole
7957' - 3-1/8° - 8-3/4" hole
8238' - 4° - 8-3/4" hole
8657' - 3-1/2° - 8-3/4" hole
9023' - 4° - 8-3/4" hole
9500' - 4° - 8-3/4" hole

WELL NAME: Bluemount et al Gulf South Delta J-80
LOCATION: J-80-67-40-134-30
CONTRACTOR: Kenting Petrolia
RIG NO.: 7
DATE SPUDDED: Dec. 16, 1972
DATE RIG RELEASED: Feb. 23, 1973

BLUEMOUNT RESOURCES LTD. BIT RECORD

DRILL PIPE: SIZE O.D. 4" WT. 15.4# TYPE T.J. 3½" H-90
SIZE O.D. ____ WT. ____ TYPE T.J. ____
DRILL COLLARS: NO. 35 O.D. 6¼" I.D. 2-7/8" TYPE T.J. 4½" H-90
NO. 7 O.D. 7" I.D. 2-7/8" TYPE T.J. 5" H-90
NO. 2 O.D. 8-3/4" sq. I.D. 2-7/8" TYPE T.J. 5" H-90
NO. ____ O.D. ____ I.D. ____ TYPE T.J. ____

BIT NO	SIZE	MAKE	TYPE	SERIAL NO.	NOZZLE SIZES	DEPTH OUT	FEET	HOURS	CUMUL HOURS	NO OF D.C.S.	WT 1000#	RPM	DULL COND T	DULL COND B	DULL COND G	REMARKS
1A	34"	Conductor - hole bucket				82'	65'	57½	57½	1						
1B	17½ R.T	Smith	S4TJ	306684	18-18-18	382'	300'	10½	68	12	20	110	5	4	I	Retip bit
2B	8 3/4"	Smith	SDGH	JR768	13-13-13	452'	70'	4	72	12	3- 5	120	2	2	I	
3B	12¼"	Security	Hole opener	X4878		452'	70'	4	76	12	5	70	3	3	I	
4B	12¼"	Smith	S4TJ	346501	18-18-18	452'	70'	4¼	80¼	12	5-10	130	Good			Pilot bit on 17½ hole opener
5B	17½"	Security	Hole opener	X5567		452'	70'	4¼	84½	12	5-10	130	4	4	I	
1C	12¼"	Smith	S4TJ	346501	This bit is re-run # 4B & was used to drill out cement in 13 3/8" casing.											
2C	8-3/4"	Security	S44	913017	12-12-12	567'	115'	4½	89	12	3- 6	100	2	2	I	
3C	12¼"	Security	hole opener	X4878	open	567'	115'	3	92	12	5	110	4	4	I	
2C	8-3/4"	Security	S44	913017	12-12-12	705'	138'	3½	95½	12	5	140	4	4	I	
3C	12¼"	Security	hole opener	X4878	open	705'	138'	3½	99½	12	5	140	2	2	I	
2C	8-3/4"	Security	S44	913017	12-12-12	947'	242'	9¼	108¼	12	10-22	110-120	5	4	I	
4C	8-3/4"	Security	M44N	913153	12-12-12	1015'	68'	3½	111-3/4	12	5	120	2	2	I	
5C	8-3/4"	Smith	SDGH	JR942	12-12-12	1475'	460'	20¼	132	12	20-30	110	6	6	I	
6C	8-3/4"	Smith	SDGH	JZ991	12-12-12	1525'	50'	2¼	134¼	12	20	110	4	3	I	
3C	12¼"	Security	hole opener	X4878	open	753'	50'	3	137¼	12	25	110	5	5	I	cutters were rerun
7C	12¼"	Security	hole opener	X4878	open	1168'	415'	10	147¼	12	20	110	6	3	I	new set of cutters

WELL NAME: Bluemount et al Gulf South Delta J-80
LOCATION: J-80-67-40-134-30
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RIG NO.: 7
DATE SPUDDED: Dec. 16, 1972
DATE RIG RELEASED: 4 PM Feb. 23, 1973

BLUEMOUNT RESOURCES LTD. BIT RECORD

DRILL PIPE: SIZE O.D. 4" WT. 15.4# TYPE T.J. 3½"H-90
SIZE O.D. ____ WT. ____ TYPE T.J. ____
DRILL COLLARS: NO. 35 O.D. 6¼" I.D. 2-7/8" TYPE T.J. 4½"H-90
NO. 7 O.D. 7" I.D. 2-7/8" TYPE T.J. 5" H-90
NO. 2 O.D. 8 3/4 sq I.D. ____ TYPE T.J. 5" H-90
NO. ____ O.D. ____ I.D. ____ TYPE T.J. ____

BIT NO	SIZE	MAKE	TYPE	SERIAL NO.	NOZZLE SIZES	DEPTH OUT	FEET	HOURS	CUMUL HOURS	NO OF D.C.S.	WT 1000#	RPM	DULL COND T	DULL COND B	DULL COND G	REMARKS
8C	12¼"	Security	hole opener	X4878	open	1343'	175'	10	157¼	12	20	100	6	4	I	Ream 8-3/4 hole to 12¼"
9C	12¼"	Western	OSC-3RT	25325	open	1475'	132'	5¼	162½	12	15	160	7	4	I	" " " " "
10C	12¼"	Security	S44R.T	204557	open	1520'	45'	2 3/4	165¼	12	15	160	4	3	I	" " " " "
1	8-3/4"	Smith	SDGH	JR832	11-12-12	1926'	406'	21	186¼	18	20-30	78	5	6	I	16-Round, 2-Square D.C
2	8-3/4"	Sec.	S86	428321	11-12-12	3223'	1297'	53 3/4	240	18	30	40-45	3	4	I	" " " " "
3	8-3/4"	H. W.	J33	LT559	12-12-12	4525'	1302'	87⅛	327⅛	18	35	45	2	2	I	" " " " "
4	8-3/4"	Sec.	S88	913115	11-13-13	5280'	755'	56½	384	18	45	45	5	6	0	1 cone Locked 50% inserts broken off
5	8-3/4"	Sec.	M88	913160	13-13-13	5666'	386'	31 3/4	415 3/4	17	40-45	45	4	7	I	15-Round, 2 Squares D.C.
6	8-3/4"	Sec.	H88	395631	13-13-13	5791'	125'	20	435 3/4	17	40	40-45	1	1	I	
7	8-3/4"	H.W.	J55	48669	13-13-13	6461'	670'	65¼	501	17	40	42	2	4	I	
8	8-3/4"	H.W.	J44	DL529	13-13-13	7443'	982'	73½	574½	17	35-40	65	6	4	I	
9	8-3/4"	H.W.	X55R	49078	13-13-13	7703'	260'	28½	603	20	35-50	40-65	8	7	I	18-Round, 2 Square D.C.
10	8-3/4"	Sec.	M88	913165	13-14-14	7967'	264'	33	636	20	40	40	8	8	I	Lost 1 cone
11	8-3/4"	Sec.	H77C	374686	16-16-16	7973'	6'	6½	642½	20	milling	on cone	7	5	0	
12	8-3/4"	Sec.	H77C	230343	13-14-14	8006'	33'	6	648½	20	30	63	4	5	I	Mill on iron
13	8-3/4"	Sec.	M88	913166	14-14-14	8238'	232'	28¼	676 3/4	20	40	44	7	8	I	Bearing gone #3 cone

BIT RECORD

BLUEMOUNT RESOURCES LTD.

WELL NAME: Bluemount et al Gulf South Delta J-80
LOCATION: J-80-67-40-134-30
CONTRACTOR: Kenting Petrolia
RIG NO.: 7
DATE SPUDDED: Dec. 16, 1972
DATE RIG RELEASED: Feb. 23, 1973

DRILL PIPE: SIZE O.D. 4" WT. 15.4# TYPE T.J. 3½" H-90
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NO. ____ O.D. ____ I.D. ____ TYPE T.J. ____

IT NO.	SIZE	MAKE	TYPE	SERIAL NO.	NOZZLE SIZES	DEPTH OUT	FEET	HOURS	CUMUL HOURS	NO OF D.C.S.	WT 1000#	RPM	DULL COND T	DULL COND B	DULL COND G	REMARKS
14	8-3/4"	H.W.	X55R	490771	5-15-15	8330'	92'	10 3/4	687½	20	40	44	8	4	I	
15	8-3/4"	H.W.	J55	419561	5-15-15	9023'	693'	53¼	740 3/4	20	40	44	8	6	I	
16	8-3/4"	H.W.	X55R	403851	6-16-18	9365'	342'	20 3/4	761½	20	40	44	4	4	I	
17	8 3/4	Smith	5JS	ME4961	8-18-18	9500'	135'	7 3/4	769¼	20	40	44	3	3	I	
						T.D. 9500' Feb. 7, 1973 3:15 P.M.										

DRILLING FLUID DATA SHEET – WEEKLY REPORT

WELL Bluemount et al Gulf
South Delta J-80

PAGE ONE

DATE	TOUR	DEPTH	WEIGHT LBS PER GAL. FLOWLINE	WEIGHT SUCTION	VISCOSITY DISCHARGE DESANDER	VISCOSITY UNDERFLOW DESANDER	VISCOSITY DISCHARGE DESILTER	VISCOSITY UNDERFLOW DESILTER	VISCOSITY FUNNEL	VISCOSITY PLASTIC	VISCOSITY YIELD VALUE	VISCOSITY GELS	SOLIDS % BENT FLOWLINE	SOLIDS % DRILL FLOWLINE	SOLIDS % BENT DISCH. DESANDER	SOLIDS % DRILL DISCH. DESANDER	SOLIDS % BENT DISCH. DESILTER	SOLIDS % DRILL DISCH. DESILTER	SOLIDS % UNDERFLOW DESANDER	SOLIDS % UNDERFLOW DESILTER	SOLIDS % API	SOLIDS % HPHT	RATE GAL/MIN DYNAMIC	FILTRATE PH	FILTRATE TOTAL HARDNESS	ION ANAL. CHLORIDE	SHALE ANAL. SHALE DENSITIES	SHALE ANAL. ME BLUE	PRODUCTS GEL, 100# sacks	PRODUCTS BARITES	PRODUCTS POTASH, 100# sacks	PRODUCTS KELZAN AL, 50# sacks	PRODUCTS SODA ASH, 100# sacks	PRODUCTS BICARBONATE of SODA, 100#	PRODUCTS BENEX, 1lb	PRODUCTS CMC, Regular, 50# sacks	PRODUCTS DEXTRID, 50# sacks	DAILY COST	CUM. COST	REMARKS
'72 DECEM 21	II	82																											55	15	3										
	III	115																												30											
22	I	315	9¼						200																															
	II	382	9⅝						85																															
23	I	452	9⅝						87																				15	5											Rrrg, Permafrost Csg
	II	452	9⅝						83																				15	5										
26	II	473																											40	28	3									
27	I	696	9¼						42																				3	15										
	II	705	8⅞						39																															
	III	801	9⅛						38												60																			
28	I	956	9⅜						41																															
	II	1015	9⅛						41												40								8		22									
29	I	1215	9¼						43																															
	II	1360	9⅝						48																				10		2									
	III	1475	9⅞						54																															
30	I	1525	9⅜						80												35											2							Log, Run 1
	III	753	10⅛						90																															Ream to 12¼"
31	I	853	10¼						130																							1							
	II	953	10¼						85																															
	III	1175	9⅜						58																															
'73 JAN 1	I	1325		10°			9⅜	14⅜	63																															
	II	1475							53																															Surface Csg
	III	1525							62																															
4	III	1644																														1							
5	II	1850		8¼					28																															
	III	1926		8¼					28																				11					4						
6	I	2150		8¼					28																															
	II	2340		8¼					28																				10					4						
	III	2530		8¼					29																				20					8	1					
7	I	2732		8⅛					30																				10					4						
	II	2910		8⅜					33																				10					4	1					
	III	3060		8⅜			8⅜	9⅝	35												17	20⅜			11⅝										1	3				
8	I	3214		9⅛			8⅜	10⅜	35	6	6	2/13									14	16			11															
	II	3235		8⅜					35																															
	III	3355					8⅜	10⅜													15	15⅜			11				5				1		2	1	3			

DRILLING FLUID DATA SHEET — WEEKLY REPORT

WELL Bluemount et al Gulf

South Delta J-80

PAGE TWO

DATE	TOUR	DEPTH	WEIGHT LBS. PER GAL.						VISCOSITY				SOLIDS %			RATE GAL/MIN		FILTRATE			ION ANAL.			SHALE ANAL.		PRODUCTS													REMARKS
			FLOWLINE	SUCTION	DISCHARGE DESANDER	UNDERFLOW DESANDER	DISCHARGE DESILTER	UNDERFLOW DESILTER	FUNNEL	PLASTIC	YIELD VALUE	GELS	BENT / DRILL FLOWLINE	BENT / DRILL DISCH. DESANDER	BENT / DRILL DISCH. DESILTER	UNDERFLOW DESANDER	UNDERFLOW DESILTER	API	HPHT	DYNAMIC	PH	[redacted] Ca++, ppm	CHLORIDE, PPM	SHALE DENSITIES	ME BLUE	GEL, 100# sacks	BARITES, 100# sacks	BENEX, lbs	CMC, REGULAR, 50# sacks	DEXTRID, 50# sacks	CALCIUM CHLORIDE, 100 ES & SY	CMC, HI-VIS, 50# sacks	CAUSTIC SODA, 50# sacks	SODA ASH, 100# sacks			DAILY COST	CUM. COST	
JAN 9	I	3478		9.2			8.9	9.6	36	8	4	1/3					1+	10.3			8					10		4											
	II	3590		9.1					35																														
	III	3718		9.1					33									12.4			10.5					10		4											
JAN 10	I	3834		9.1					34	2	8	1/2						8.2			10.0								1	1									
	II	3965		9.1					33	4	0	0/1						11.0			9.0	20	150																
	III	4089		9.0			9.0	9.5	36								1.5	9.6			8.5							2		3	10	1							
JAN 11	I	4203		9.2			8.7	9.5	35	8	2	1/2					1.75	9.7				20	26																
	II	4308		9.3			9.1	9.6	36								2.5	8.2			8.0					30		12											
	III	4427		9.2			9.2	9.4	35																	10		4											
JAN 12	I	4525		9.2					34	8	5	3/7						10.4			7.2	20																	
	III	4579		9.2			9.2	13.5	40								0.5	10.2			7.0					13		4											
JAN 13	I	4675		9.3					42	17	16	6/18																											
	II	4790		9.4			9.3	10.2	43								2	11.6			7.0					10		4		3		1							
	III	4899		9.4			9.2	10.2	46								2+	9.8			7.0																		
JAN 14	I	5009					9.3	10.3	43	18	16	6/22					2+	12.8			6.5					10		4											
	II	5110		9.4			9.2	10.8	39								2.5	12.6			7.0					10		4					1						
	III	5214		9.4			9.1	12.6	40								2.0	10.2			7.0					20		8		3		1	1						
JAN 15	I	5280		9.3			9.2	10.4	43	18	14	6/16					2	9.2			8.5	10				30		12											
	II	5330		9.3			9.3	10.1	59								2.5	12.0			7.0																		
	III	5424		9.2			9.8	10.3	43								2.5	10.3			8.5					10		4					1						
JAN 16	I	5522		9.2			9.1	10.5	41	15	8	6/17					1.5	12.2			9.0	10																	
	II	5620		9.2			9.1	10.2	44								2.0	13.2			8.0					20		8											
	III	5666		9.3					43									14.0			8.0																		
JAN 17	II	5717		9.2			9.1	10.3	45	11	16	3/10					2.0	10.8			8.0	5				10		4				1							
	III	5755		9.1					42																								1						
JAN 18	I	5791		9.3			9.1	10.2	42								2.0	10.2			8.5					10		4											
	II	5820		9.2					38																														
	III	5887		9.1			9.8	9.4	42	13	14	5/13					4	10.0			9.0					10		16	1					1					
JAN 19	I	5958		9.2			9.1	9.3	46	16	18	13/25					4	9.2			8.5					20		8											
	II	6034		9.1			9.1	9.4	49	13	11	6/14					3.5	8.8			8.5	0				20		8											
	III	6120		9.1			9.1	9.4	47								3.8									10		10						2					
JAN 20	I	6212		9.8			9.1	9.5	44	8	14	7/19					3.9	11.5			9.0					20		8											
	II	6283		9.0					45																														
	III	6376		9.0			8.9	9.8	44	12	16	12/19					1.0	8.8			8.5					20		8											

DRILLING FLUID DATA SHEET – WEEKLY REPORT

WELL Bluemount et al Gulf
South Delta J-80

PAGE THREE

DATE	TOUR [redacted]	DEPTH	WEIGHT (LBS. PER GAL.): FLOWLINE	SUCTION	DISCHARGE DESANDER	UNDERFLOW DESANDER	DISCHARGE DESILTER	UNDERFLOW DESILTER	VISCOSITY: FUNNEL	PLASTIC	YIELD VALUE	GELS
JAN 21	I	6461		9^{0}			9^{1}	10^{0}	47	13	21	14/24
	III	6521	8^{9}	8^{9}			9^{0}	9^{5}	45	12	19	12/30
JAN 22	I	6606		9^{0}			9^{1}	10^{6}	49	10	21	22/34
	II	6702		9^{0}			9^{0}	10^{8}	47			
	III	6802	9^{0}	9^{0}			9^{0}	9^{9}	47	11	17	7/22
JAN 23	I	6892		8^{8}			8^{9}	9^{6}	57	18	23	18/34
	II	7014		8^{7}			8^{7}	9^{9}	52			
	III	7112		8^{7}			8^{8}	9^{6}	52	12	26	21/30
JAN 24	I	7242		8^{7}			8^{7}	9^{5}	55	13	32	14/32
	II	7360		8^{7}			8^{7}	9^{2}	52			
	III	7448		8^{7}			8^{6}	9^{2}	59			
JAN 25	II	7448		8^{6}					52			
	III	7465		8^{7}			8^{6}	9^{3}	50			
JAN 26	I	7540	8^{7}	8^{7}			8^{7}	9^{3}	54	10	23	13/35
	II	7617	8^{7}	8^{7}			8^{6}	9^{2}	49	7	26	24/30
	III	7693	8^{6}	8^{7}			8^{6}	9^{3}	59	13	33	30/70
JAN 27	I	7703	8^{7}	8^{7}			8^{6}	9^{3}	56	10	27	26/47
	III	7764		8^{7}			8^{7}	9^{3}	61			
JAN 28	I	7850		8^{7}			8^{7}	9^{2}	58	8	34	20/45
	II	7914		8^{7}			8^{7}	9^{4}	84			
	III	7961	8^{7}	8^{6}			8^{7}	9^{2}	64	7	35	35/45
JAN 29	I	7967		8^{7}					57			
	II	7967		8^{7}			8^{7}	9^{6}	53	9	35	31/31
	III	7973		8^{8}					59			
JAN 30	I	8006		9^{2}					64	9	35	35/35
	II	8006										
	III	8055		9^{1}					57	11	33	31/21
JAN 31	I	8120	9^{4}	9^{4}					51	11	33	33/29
	II	8185		9^{4}					51	12	40	36/33
	III	8238	9^{4}	9^{5}					56	13	36	35/30
FEB 1	II	8305	9^{3}	9^{6}					51	14	38	39/30
	III	8330	9^{6}	9^{5}					50	13	22	24/21
FEB 2	I	8375	9^{7}	9^{6}					61	26	27	10/30
	II	8460	9^{7}	9^{7}					59	19	21	8/26
	III	8552	9^{6}	9^{7}					51	17	16	11/21

DATE	TOUR	DEPTH	SOLIDS %: BENT FLOWLINE	DRILL FLOWLINE	BENT DISCH. DESANDER	DRILL DISCH. DESANDER	BENT DISCH DESILTER	DRILL DISCH DESILTER	RATE GAL/MIN: UNDERFLOW DESANDER	UNDERFLOW DESILTER	FILTRATE: API	HPHT	DYNAMIC	ION ANAL.: PH	[redacted] Ca++, ppm	CHLORIDE, ppm	SHALE ANAL.: SHALE DENSITIES	ME BLUE	PRODUCTS: GEL, 100# sacks	BARITES, 100# sacks	BENEX, lbs	DEXTRID, 50# sacks	CMC. HI-VIS, 50# sacks	CAUSTIC SODA, 50# sacks	SODA ASH, 100# sacks	BICARBONATE OF SODA, 100# sacks	Q-BROXIN, 50# sacks			DAILY COST	CUM. COST	REMARKS
JAN 21	I	6461								2	11^{0}			9^{0}					20		8											
	III	6521								2	12^{0}			9^{0}																		
JAN 22	I	6606								2	11^{8}								10		4				1							
	II	6702								2	14^{0}								10		4											
	III	6802								2	14^{8}			8^{5}	20				51		16											
JAN 23	I	6892								2	12^{4}			8^{5}					35		14											
	II	7014								2									15		6											
	III	7112								2	12^{3}			9^{0}	[illegible]				10		4											
JAN 24	I	7242								2	12^{0}			[illegible]					20		8											
	II	7360								2									20		8											
	III	7448								2									5		2											
JAN 25	II	7448																														Ream fill into btm
	III	7465								2									55		22											
JAN 26	I	7540								2	16^{0}			11^{0}					10		4				1							
	II	7617								1^{5}	15^{0}			8^{0}	tr																	
	III	7693								2	14^{8}			7^{8}	120				55		22					2						
JAN 27	I	7703								2	17^{0}			7^{6}	200										2							
	III	7764								2									50						1							
JAN 28	I	7850								2	15^{0}			8^{3}	150										1							
	II	7914								2				.					20		8				1							
	III	7961								2	15^{2}			8^{8}																		
JAN 29	I	7967												8^{7}					6	6	2				1							
	II	7967								1^{5}	15^{4}			9^{0}	40	5500																Mill on [illegible]
	III	7973																	12	6	4											
JAN 30	I	8006												9^{3}	52	5300			10	150	4			2								
	II	8006																		10												
	III	8055									24			7^{6}	200	10500			12		4											
JAN 31	I	8120									16^{0}			10^{0}	32	9500			22	120	13			1	4							
	II	8185									21^{0}			10^{5}	20	8000			20	170	16			2								
	III	8238									15^{3}			10^{5}	20	6200			35	15	14											
FEB 1	II	8305									15^{3}			9^{2}	20	7600			23	56	10			1			2					
	III	8330									15^{2}			9^{5}	12	5700				125				1			3					
FEB 2	I	8375									14^{0}			10^{0}	10	5300			15	150	10			1			4					
	II	8460									14^{1}			10^{0}	10	5100			40	100	19						1					
	III	8552									14^{4}			9^{5}	20	3800			25	101	16			1			1					

DRILLING FLUID DATA SHEET -- WEEKLY REPORT

WELL Bluemount et al Gulf
South Delta J-80

PAGE FOUR

DATE	TOUR	DEPTH	Weight (lbs. per gal.): Flowline	Suction	Discharge Desander	Underflow Desander	Discharge Desilter	Underflow Desilter	Viscosity: Funnel	Plastic	Yield Value	Gels	Solids %: Bent/Drill Flowline	Bent/Drill Disch. Desander	Bent/Drill Disch. Desilter	Underflow Desander	Underflow Desilter	API	HPHT	Rate (gal/min): Dynamic	PH	[redacted] Ca++, ppm	Filtrate: Chloride	Shale Densities	ME Blue	Gel, 100# sacks	Barites, 100# sacks	Benex, lbs	Caustic Soda, 50# sacks	Q-Broxin, 50# sacks	Soda Ash, 50# sacks	CMC, Regular, 50# sacks	Scot-Free, 5 gal Drums			Daily Cost	Cum. Cost	REMARKS
FEB 3	I	8649	9.7+	9.7+					58	22	30	13/23						15.2			9.0	20	3300			35	120	18										
	II	8751	9.7	9.7					53	17	21	11/20						15.0			9.0	20	2900															
	III	8856	9.6+	9.7					53	17	28	21/30						16.8			9.2	13	3800			22	75	12	1	2								
FEB 4	I	9006	9.7	9.7					52	17	19	12/21						16.4			8.2	120	3800															
	II	9023		9.7					54																	21	115	10	2	1								
FEB 5	I	9125		9.9					60	19	32	23/45						13.0			10.0	40	3300			14	120	10	2		1							
	II	9251	10.0	10.0					50	18	19	14/21						15.2			9.5	20	3100															
	III	9365	10.0	10.0					54	20	24	20/26						15.1			10.0	44	2500			23	70	10		1								
FEB 6	I	9365		10.1					63																		20											DST #1
FEB 7	I	9382	10.1						68	22	30	23/58						15.7			8.5	50	2800															T.D.
	II	9500	10.1	10.0					64	16	46	21/40						13.7			8.8	80	3500			58	60	24	2		2							Log, Run #2
	III	9500		9.9					69	21	45	33/49						13.4			10.0	80	3200			8	15		2									Clean hole, cond log
FEB 9	III	9500		9.6					80												10.0						15											Stuck w/DST 2
FEB 12	II	9500	9.9	10.0					76	28	32	21/30						11.7			9.0		3800			12	45	6	1	2		1						
	III	9500																								6		2										
FEB 14	II	9500		10.0					95												8.3					15	20	8										
FEB 15	I	9500		9.9					88																	10		4										
	II	9500	10.0	10.0					92	27	40	22/47						12.2			8.0	100	2500						2			2	6					
	III	9500	9.9						80	27	38	18/60						9.4			9.5	40	3400															
FEB 17	I	9500	9.8	9.8					89	30	30	9/47						10.0			9.0																	
	II	9500		9.5					80																	10		4		2		2						
	III	9500		9.5					98	32	33	7/42						7.4			9.0	16	2900			5	10	2				1						
FEB 18	III	9500	9.6						93	33	34	6/36						7.4			9.0	40	2900				10											Lowered annulus, HP, took on minor salt wtr
FEB 19	III	9500	9.6						96	32	35	1/54						7.6			9.0	40	2900															Abandon

DESILTER DATA AND PERFORMANCE

RIG NO. Kenting Petrolia 7 WELL NAME AND NO. Bluemount et al Gulf South Delta J-80

TIME DATE Jan.	DEPTH	SYSTEM MUD WEIGHT	POUNDS SOLIDS /BBL	UNDERFLOW MUD WEIGHT	POUNDS SOLIDS /BBL	UNDERFLOW RATE x 1.71 = IMP gpm	BBL/HR	LBS SOLIDS REMOVED /HR	ESTIMATED UNDERFLOW RATE bpd	LBS SOLIDS REMOVED PER DAY	EQUIVALENT WHOLE MUD DUMPED	ESTIMATED WATER SAVED/DAY	APPROX. GEL SAVINGS	PV	YP	REMARKS
9	3468'	9.0	47	9.6	89	1	1.71	1.42	30	2670	55	25	375#	3	5	18 hrs. running
10	3814'	9.0	47	9.8	103	2	3.42	3.52	53	5459	119	66	1000#	2	8	16 " "
11	4185'	9.2	61	9.3	68	2	3.42	2.32	72	4872	80	8	200#	8	2	21
12	4517'	9.2	61	9.6	89	3	5.13	4.56	56	5016	82	26	400#	9	5	11
13	4660'	9.3	68	10.3	138	1	1.71	2.36	22	3068	45	23	400#	15	10	13
14	4995'	9.4	75	10.3	138	2	3.42	4.72	65	9058	121	56	800#	18	16	19
15	5280'	9.3	68	10.8	173	2	3.42	5.92	68	11840	174	106	1600#	18	14	20
16	5510'	9.2	61	10.3	138	2	3.42	4.72	81	11328	185	103	1600#	15	8	24
17	5666'	9.3	68	10.2	131	2	3.42	4.41	27	3528	52	25	400#	15	8	8
18	5791'	9.3	68	10.5	152	2	3.42	5.20	53	8320	123	70	1100#	17	18	16
19	5950'	9.2	61	9.4	75	4	6.84	5.12	130	9728	159	29	500#	16	18	19
20	6190'	9.0	47	9.4	75	4	6.84	5.12	157	11776	250	93	1400#	16	18	23
21	6450'	8.9	40	9.9	110	2	3.42	3.76	82	9024	225	143	2200#	13	21	24
22	6597'	9.0	47	10.4	145	2	3.42	4.96	41	6448	137	96	1500#	10	21	13
23	6877'	8.8	33	9.5	82	2	3.42	2.80	82	6720	204	122	1900#	16	22	24
24	7220'	8.7	26	9.5	82	2	3.42	2.80	82	6720	258	176	2600#	13	32	24
25	7443'	8.7	26	9.2	61	2	3.42	2.08	48	2912	112	64	1000#	13	32	14
26	7530'	8.7	26	9.5	82	2	3.42	2.11	51	3165	122	71	1100#	10	23	15
27	7703'	8.7	26	9.3	68	2	3.42	2.32	65	4408	170	105	1600#	10	27	19
28	7840'	8.7	26	9.1	54	2	3.42	1.85	61	3310	127	66	1000#	8	34	18
29	7967'	8.7	26	9.2	61	2	3.42	2.08	61	3744	144	83	1000#	7	35	18

Desilter Shut Down

REPORT ON FISHING OPERATIONS

BLUEMOUNT ET AL GULF SOUTH

DELTA J-80

The Coriband Log analysis indicated a zone of interest between 9306' and 9368' that was deemed worth a drillstem test utilizing a long flow period; the possibility of very heavy viscous crude was envisioned from log interpretation and prior drillstem test. Drillstem Test #2 was run using a Lynes Inflate tool, testing the interval 9320' - 9365'. The tool remained set for 8½ hours, and when the test was complete, the tool was stuck, apparently differentially immediately above the tool (porosity existed as high as 9165'). Fishing operations continued for ten days until it was decided to discontinue the fishing job and abandon the hole. The entire testing tool and 15 drill collars were unrecovered and cemented in the hole. A detailed report of fishing operations follows.

February 11, 1973

Drillstem Test #2, Lynes Inflate packer assembly, was run between 9320' - 9365'. At the end of 8½ hours testing time, an unsuccessful attempt was made to deflate the packers and pull the tool. The tool was stuck, with no vertical movement either up or down, nor was any rotation possible. Pipe was worked but it was not possible to fire the jars. The pumpout sub was opened (at 9071') and an attempt made to reverse out the recovery; the pumpout sub plugged after displacing 30 bbls down the annulus (no surface recovery). Pumping down the pipe and up the annulus was initiated, and circulation was broken with no problem in this direction. There was no indication of hydrocarbon or water in the circulated fluid except that there was a portion of the mud that was air cut that came over the shaker for a 50 minute period. Pipe was worked and hole circulated while waiting for Homco fisherman and Schlumberger wire line man.

February 12, 1973

Continued working stuck string to 285,000# maximum while waiting on Homco. Ran free point by Homco on Schlumberger unit. First reading 8780' free, 9090' free, 9120' stuck, 9200' stuck. Ran in hole with back off shot string loaded with 800 gr. Fired at 9042' in 6¼" collars, no results. Loaded back off string shot with 1000 gr, fired at 9042', no results. Ran Homco free point indicator; free at 8710', stuck at 8728'. Tear out Homco and pick up Kelly.

February 13, 1973

Work pipe and circulate thru pumpout sub 7-3/4 hours. Ran free point and found drill collars stuck at 8750' (top of 6¼" drill collars); drill pipe free at 8720'. Ran in with string back off shot loaded with 1000 gr. While putting left-hand torque into pipe for back off, drill pipe backed off at 4207'. Unable to screw back into fish. Pulled out of hole and ran in with Homco overshot dressed with 5⅛" grapple; caught fish, but while putting left-hand torque in string for back off shot, drill pipe

..../2

backed off again above overshot. Screwed back into fish, released overshot, pulled out of hole. Checked all connections on drill pipe, found 2 tool joints loose. Dressed overshot with 5" grapple.

February 14, 1973

Ran in hole with overshot dressed with 5" grapple. Unable to latch onto and hold onto fish; pulled out of hole. Ran in hole with bent single, screwed into fish, worked and circulated pipe for 2 hrs. Ran back off string shot loaded with 1000 gr., unable to get past 4270', pulled back off string shot, ran in with Homco Sinker bars; unable to get past 4270'. Pulled out sinker bars, put Kelly on string and circulated thru pumpout sub at 9071'. Ran Homco back off shot with 1000 gr., backed off at 8741' (top of 6¼" drill collars), left twelve 6¼" collars, pumpout sub, change over sub, six 7" collars and drill stem test tools in hole. Top of fish 8741', bottom of fish 9376'. Pulled out of hole with drill pipe, no bent drill pipe. Picked up one drill collar, bumper sub, jars, 19 drill collars, started in hole.

February 15, 1973

Finished running in hole with jars and bumper sub. Screwed into fish at 8741'. Worked jars and bumper sub for 6½ hrs. Ran in for free point. While running free point, drawworks master clutch stuck. Unable to finish free point, fishing string showed signs of sticking, pulled free point, put Kelly on string, circulating and working jars using drawworks high clutch every 20 minutes while waiting on drawworks repairs.

February 16, 1973

While waiting on drawworks repairs, worked fish by jarring and working bumper sub every 20 minutes. Circulated and conditioned mud. Spotted total of 54 bbls diesel fuel plus Skot-Free, 35 bbls around outside of collars, leaving 19 bbls on inside; displaced with 66 bbls mud and 7 bbls of diesel fuel at surface to prevent freezing. Moved oil one bbl. every hour. Moved 10 bbls oil total while repairing drawworks. After drawworks repaired, worked jars and bumper sub steady for 2 hrs. Ran free point, unable to get past 4764'. Pulled free point, ran Homco sinker bars, drove bridge from 4764' to 9249'. Pulled out, ran free point, found drill collars free at 8800', 90% free at 8850', and stuck at 8900'.

February 17, 1973

Jarred and worked fish for 4 hrs. Ran Homco free point, found collars free at 8800', 10% free at 8825' and stuck at 8850' by torque measurement, free at 8850', 25% free at 8900' by stretch measurement. Ran back off string with 1000 gr. and backed off at 8820'; pulled out of hole, recovered three 6¼" drill collars. Layed down collars and picked up new set of jars. Ran back in hole, screwed into fish at 8820'. Circulated and worked fish.

..../3

February 18, 1973

Worked fish with jars and bumper sub for 2 hrs. Ran free point. Unable to get past 8820'. Pulled out, ran Homco sinker bars, drove bridge from 8824' to 9250' (top of fish 8820'). Pulled out sinker bars, ran free point, found drill collars stuck by torque at 8850', and by stretch 8850' - 50% free, 8900' - 35% free, 9000' - 35% free; pulled out. Circulated and worked fish for 2 hrs. Ran back off string with 1000 gr. Tried to back off at 9000', no results. Circulated and worked fish, string parted; pulled out of hole, found mandrel on bumper sub had parted. Laid down 16 joints bent drill pipe, picked up overshot, ran in hole, caught fish, unable to circulate. Removed goose neck on swivel to run back off shot, plan to back off at bottom of bumper sub.

February 19, 1973

Unable to get back off shot string past 8820'. Pulled out of hole, ran sinker bars and drove bridge to 8844', sinker bars stuck while jarring on bridge with wire line jars. Pulled out of rope socket leaving top of sinker bars sticking 3' above top of fish, released overshot from fish, circulated and conditioned mud for 2½ hrs., pulled out of hole. Redressed overshot, picked up differential pressure relief tool and started in hole.

February 20, 1973

Finished trip in hole with overshot and differential pressure relief tool, latched onto fish. Rigged up Otis wire line unit, opened differential tool at 8800', formation pressure on DST #1 with mud weight 9.6 ppg at 8800' was 4392 H.P., 132 psi over formation pressure; tool at 8800' will put 89 bbls mud in pipe and lower mud in annulus to 1250' or 324 psi reduction in hydrostatic pressure, i.e. 492 psi lower than formation pressure. Worked jars for 1 hr., no results; filled hole, released overshot, came out of hole, laid down differential pressure relief tool, dressed overshot, ran in hole, circulated top of fish 1½ hrs., latched onto fish. Ran into hole with wire line overshot and jars, jarred sinker bars loose. Came out of hole with sinker bars, found bottom of driving point on sinker bars had broken off (driving point 11" long).

February 21, 1973

Ran in with wire line overshot to fish for 11" driving point, unable to get past 8820', driving point at 8844' (8820' top of drill collars, 8812' top of fish, i.e. bumper sub). Pull out with wire line overshot, ran in with wire line driving tool. Unable to get past 8812', pulled out, changed to chisel point and laid down 15' of sinker bars. Ran in hole with chisel point, unable to get past 8820'. While driving and spudding on bridge, tools became stuck; wire line jars quit. Worked and pulled on sinker bars, pulled out of rope socket, pulled wire line out of hole. Abandon fishing operations, released overshot on fish, pulled out of hole, laid down drill collars and fishing tool. Started running abandonment plugs.

TOOLS LOST IN HOLE

LYNES-UNITED:

1 - Lee jars
1 - Sampler
1 - HYD Tool
1 - Bowen safety joint
1 - Inflate pump
1 - Screen sub
1 - K-3 Carrier
3 - 8 ft Spacing
1 - 4 ft Spacing
1 - 2 ft Spacing
1 - Belly Spring
1 - Slick joint
1 - 5 ft Bypass
1 - 2 ft Bypass
1 - 1 ft "
2 - 16 ft "
1 - 6" Ported combination sub
1 - Drop bar
2 - AK-1 Recorders
2 - AK-1 Clocks
1 - 7" Top Packer
1 - 7" Bottom Packing
2 - & 3/8 x 66 x 7 5/8
1 - 4½ H90 Pump out sub
1 - 3½ FH x 4½ REG Pin sub
2 - AK-1 Recorder Hanger

HOMCO:

1 - 1 3/8 Rope Socket
4 - 5 ft sinker bars
1 - Spudding Chisel
1 - Sub 5/8 S.R. Box 3/4" S.R. Pin
1 - Sub 5½ REG Box x 4½" H90 Pin - 20" long 6 3/4 O.D.
1 - 5½ REG x 6 3/4 O.D. Bumper Jar with 60" stroke
1 - 1 3/8 Collar locators
1 - 1 3/4 Bowen HYD Rod Jars
1 - Sub 1 3/8 Bar thread x 5/8" S.R. Pin
1 - Sub 3/4 S.R. Box x 5/8 S.R. Pin

PETROLIA DRILLING:

9 - 6¼ O.D. x 4½" H90 Drill Collars 263.50 ft
6 - 7" O.D. x 5" H90 Drill collars 183.00 ft
1 - 7" O.D. x 5" H90 x 4½ REG B.T. Sub 3.90 ft
1 - 7" O.D. x 6¼ O.D. 4½ H90 x 5 H90 Change Over Sub 2.62 ft

Perma Frost Protection Pipe

BLUEMOUNT RESOURCES LTD.

PIPE TALLY SHEET

WELL NAME Bluemount et al Gulf South Delta J-80 DATE Dec. 24/72

	33	60
	33	09
	33	91
	30	62
	32	45
	33	29
	33	22
	32	22
	32	33
	29	04
	31	38
	31	65
	34	16
**	26	82
**	32	43
**	33	38
**	33	94
**	34	13
**	33	43
	615	09

Mill Tally of Total pipe on lease

620-61'

Mill Tally of Total pipe in hole

424.74'

Mill Tally of pipe left out

195.87'

O.D. 13-3/8"

Wt. 54.5#

Grade J-55

Range 2

Thread 8 Rd

Collar Short

Mfgr. S & L

SUMMARY		
Col. 1	615	09
2		
3		
4		
5	615	09
Fwd.		
Fwd.		
Fwd.		
	615	09
	194	13
	420	96

Threads - off Tally;
add .291 per joint for mill tally.

Tallied by: Blackwell - crew

19 Tot. Jts. on location

6 Jts. out (Incl. Ldg. Jt.)

13 Jts. perm. in hole

Remarks:

** - Jts. out

6 jts. 13-3/8" casing hauled back to rack site Peel River

Indicate Shoe Joint or Landing Joint if applicable.

Agent of Operator C.T. Blackwell

BLUEMOUNT RESOURCES LTD.

Perma Frost String

[redacted]

RUNNING AND CEMENTING

DATE Dec. 24/72

WELL NAME: Bluemount et al Gulf South Delta J-80 T.D. 452' CASING SIZE 13-3/8"

GR. ELEV. 37' KB to GR. 17' KB ELEV. 54' KB to Csg FLANGE 17'

MUD TYPE Gel - Potash PROPERTIES Wt. 9.4# Vis. 93

B.O.P's

HOLE SIZE	17½"			Csg. IN HOLE	20"	
DEPTH	452'			DEPTH SET	82'	

RUNNING

POWER TONGS Nil TORQUE: Nom. - Min. - Max. -

JOINTS NOT ACCEPTABLE WITHIN TORQUE SPECS: Total - Joint Nos. -

TIME PIPE STARTED 4:00 p.m. TIME ON BOTTOM 12:45 a.m MINS. CIRCULATED 90

FILLUP POINTS as needed BTM by Csg 452' FEET UP FROM KB 9'

INSPECTIONS RUN: Transverse - Longitudinal - Wall Thick - Grade Verification -

Pin/Collar - Pig - Service Co. Howco

Rejects:

EQUIPMENT

SHOE: Mfgr. Davis Lynch Type Float Guide Shoe

FLOAT: Mfgr. Davis Lynch Type Float Collar

OTHER EQUIPMENT IN STRING:

CENTRALIZERS: No. 1 Mfgr. Davis Lynch Type Wrap Around

Positions 430', (10' up from shoe)

SCRATCHERS: No. - Mfgr. - Type -

Positions -

PLUGS: Type Wiper - Type Top Plug - Plug Loading Head? -

REMARKS: Cemented thru 4" drill pipe set at 396' with oil patch cementing head.

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE: Dec. 24/72

CEMENTING

CEMENT CO. Howco OPERATOR Elliott TIME ON LOCATION Skid mixer

TYPE & QUANTITY PRE-FLUSH water

TYPE & QUANTITY CEMENT 644 sacks perma frost cement

Height to be Cemented surface Basis for fillup calc. calculated plus 50%

Temperatures: Ambient 48 °F; Dry Cement 46 °F; Mix Water 55 °F; Slurry 45 °F.

Water ahead 20 bbls; Start Mix 5:30 a.m. Finish Mix 6:25 a.m. Slurry Wt. 15.2#

Calc. Disp. 6 bbls; Start Disp. 6:25 a.m. Finish Disp. 6:30 a.m. Actual Disp. 5 mins.

Max. Pump Pres. 250 Were lines pumped clear behind top plug? -

Was pipe reciprocated? yes Length of stroke 27' During what phase? cementing How long? 35mins.

Was pipe rotated? no What rotary speed - During what phase? - How long? -

Displaced with (fluid) water Bumped: Press - Times -

Float held? yes Pressure left on casing? nil Was landing it bailed or heated? heated

Cement Returns? yes Est. Quantity 25 bbl. Length from float to shoe 33.62'

REMARKS: Cemented and displaced thru 4" drill pipe set at 396 ft. Float collar at 404 ft., with inner string handling sub.

LANDING

Slacked off: Time 7:00 a.m. Date Dec. 25/72 Time plug down-slack off 24½ hrs.

Make of Bowl Flange Nom. Size 13-3/8" Flange: Size 10" Pres. 3000#

Type of bowl (screw, weld) screw Model bowl Cameron Model slips

Seals: Primary R-53 Ring Gasket Secondary 8 round threads

Wear bushing installed? no Calc. wt. of csg. above cement top

Wt. of annular fluid above cement (incl. wash if applic.)

Buoyancy effect of free string

Net tensile load at surf

*Theoretical thermal expansion of free string:

*Theoretical stretch of entire string: ; of free string

REMARKS

* See charts, reverse side NB: Buoyancy effect = (Wt. free pipe) — (Wt. of fluid displaced by pipe)

BLUEMOUNT RESOURCES LTD.

CASING DATA

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE Dec. 24/72 CASING SIZE 13-3/4"

Permafrost String

LIST CASING BOTTOM TO TOP

	Jts. on Location	Feet on Location*	Csg. Wt.	Grade	Rge.	Thr.	T & C	Mfgr.	Jts. Run	Feet Run in hole*	Depth Landed	Thd. Loss per jt.	Thd. Loss on Jts. Run	Mill Tally of Pipe Run
1	19	615.09'	54.5#	J55	2	8rd	short	S&L	13	420.96'	441.21'	.291	3.78	424.74
2														
3														
4														
5														
6														
7														
8														
	19	615.09'	* threads off measurements						13	420.96'				424.74

SUBTOTALS

ADD: SHOE: Mfgr. Davis-Lynch Type Float guide shoe	Length	1.75'	
ADD: FLOAT: Mfgr. Davis-Lynch Type Float collar	Length	1.50'	
ADD: LANDING JOINT	Length		
ADD: OTHER EQUIP. (Specify)	Length		
SUBTOTAL: Overall Length of Casing String		424.21'	
SUBTRACT: Feet from KB	Tally	17.00'	
SUBTOTAL: Setting Depth, K.B.: Drlr.	Tally	441.21'	
SUBTRACT: Shoe Joint, overall incl. float & shoe		36.85'	
TOTAL: Float Collar Landing Depth, K.B.: Drlr.	Tally	404.36'	

Was landing joint recovered intact? yes

If so, Class J55 Length w/thds. 27.07'

Disposition Rack site-Peel River

Cut-off Jt: Wt. - T & C -

Class ____ Length -

Disposition -

Unused Pipe: Disposition Rack site

Date 26/12 Via Kaps

Class J55 Truck Ticket No. ____

Rejected Pipe: Disposition -

Date - Via -

Class - Truck Ticket No. -

REMARKS:

6 jts. - 26.82, 32.43, 33.38, 33.94, 34.13, 33.43 hauled back to rack site on Peel River

Surface Casing
~~Intermediate Casing~~
~~Production Casing~~
~~Liner~~
~~Tubing~~

BLUEMOUNT RESOURCES LTD.

PIPE TALLY SHEET

WELL NAME Bluemount et al Gulf South Delta J-80 DATE Jan 2, 1973

*	27	03	28	.35	28	95				
	28	38	28	42	29	32				
	31	–	32	63	30	44				
	26	60	30	45	33	65				
	32	30	26	36	30	71				
	32	28	28	70	28	94				
	31	88	25	90	31	50				
	31	68	32	70	29	36				
	27	68	29	98	30	07				
	32	58	25	52	**32	73				
	39	52	30	82	**33	52				
	26	88	29	24	**28	42				
	29	20	31	05						
	40	60	28	78						
	31	35	31	55						
	38	98	32	33						
	31	14	36	00						
	31	78	41	08						
	26	22	33	12						
	28	12	39	70						
	625	20	622	68	367	61				

O.D. 9-5/8"
Wt. 36#
Grade K-55
Range 2 & 3
Thread 8 round
Collar ST&C
Mfgr. Mannesmann

	SUMMARY	
Col. 1	625	20
2	622	68
3	367	61
4		
5		
	1615	49
Fwd.		
Fwd.		
Fwd.		
	1615	49
	94	67
	1520	82

Threads - off Tally;
add .28 per joint for mill tally.

Tallied by:
C. T. Blackwell

52 Tot. Jts. on location

3 Jts. out (Incl. Ldg. Jt.)

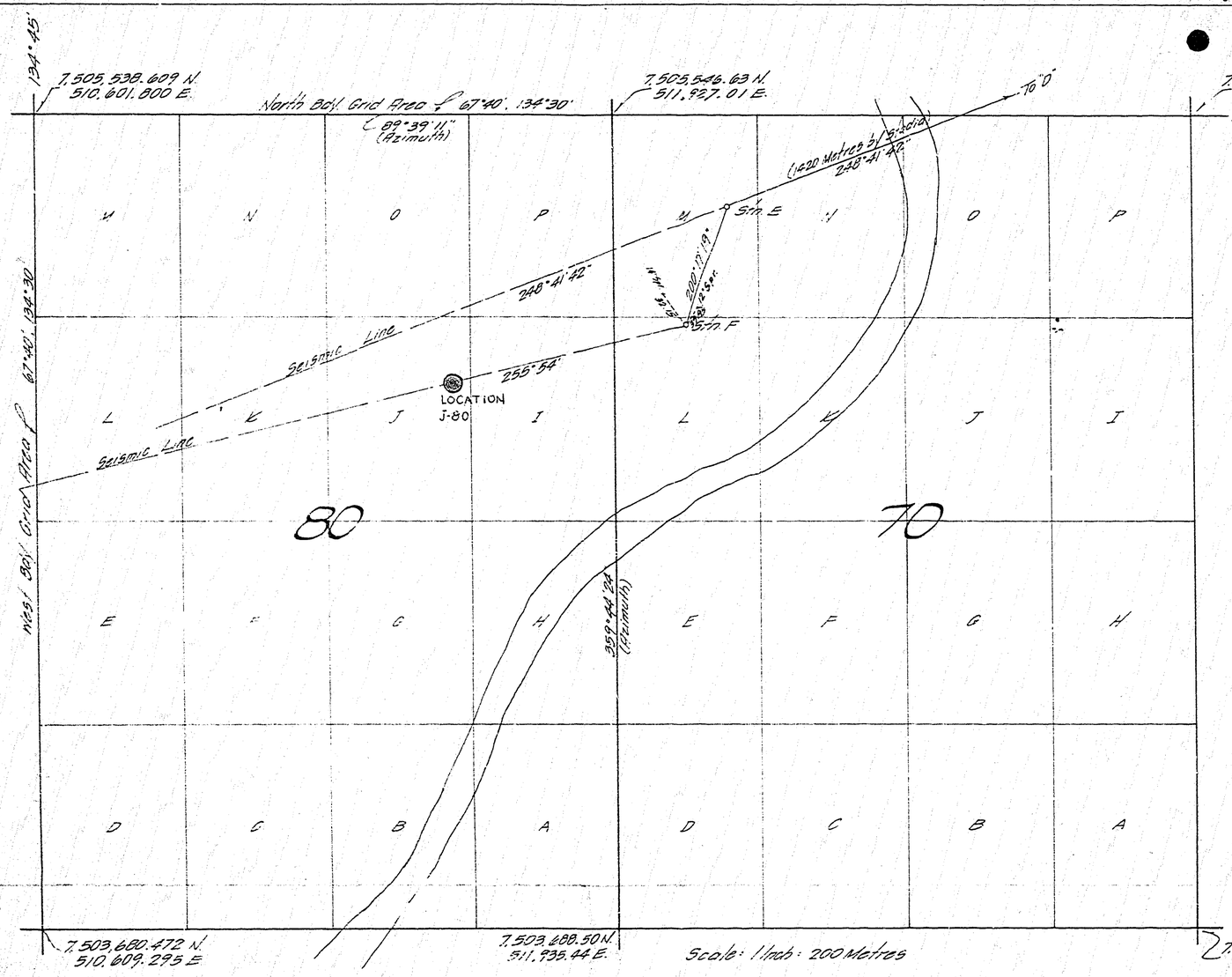
49 Jts. perm. in hole

Remarks:
** Left out

* Shoe jt.

Indicate Shoe Joint or Landing Joint if applicable.

Agent of Operator E. Schack



BLUEMOUNT RESOURCES LTD.

Plan Showing

CONTROL SURVEY

N.T.S. Map Sheet No. 106 M.

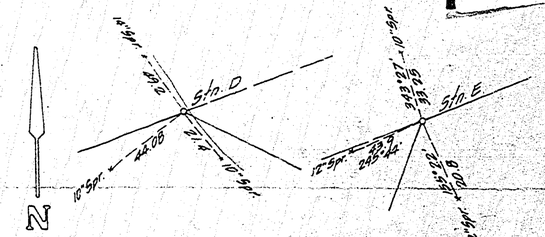
NORTHWEST TERRITORIES

Scale: As Noted
Date: Aug. 11th, 1972.
Prepared By: Dabbs Control Surveys Ltd.

Co-ordinates shown are U.T.M. co-ordinates in metres
Central Meridian 135°00', 500,000 False Easting
Azimuths shown are U.T.M. grid azimuths
Distances are in meters and reduced to U.T.M. grid.

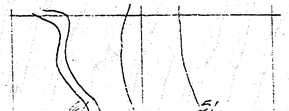
10f

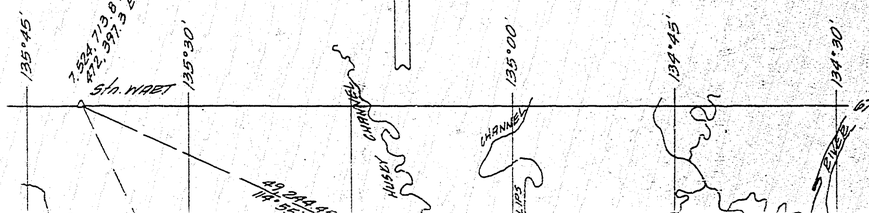
NOTE: Bearing Trees are Not To Scale.



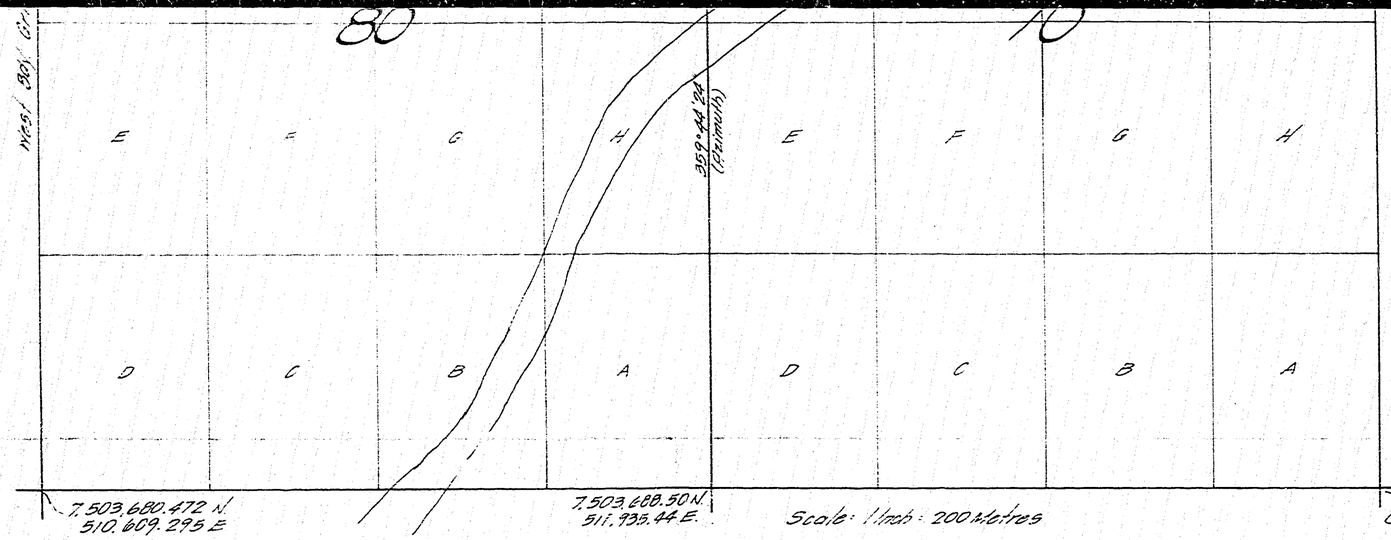
U.T.M. CO-ORDS FOR:

Stn	North	East
B	7,503,957.4	511,053.6
C	7,504,604.8	516,087.7
D	7,505,842.7	513,516.45



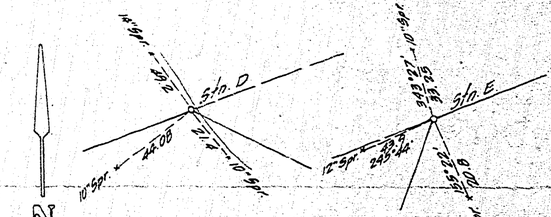


Coordinates shown are U.T.M. coordinates in metres
Central Meridian 135°00', 500,000 False Easting
Azimuths shown are U.T.M. grid azimuths
Distances are in metres and reduced to U.T.M. grid.



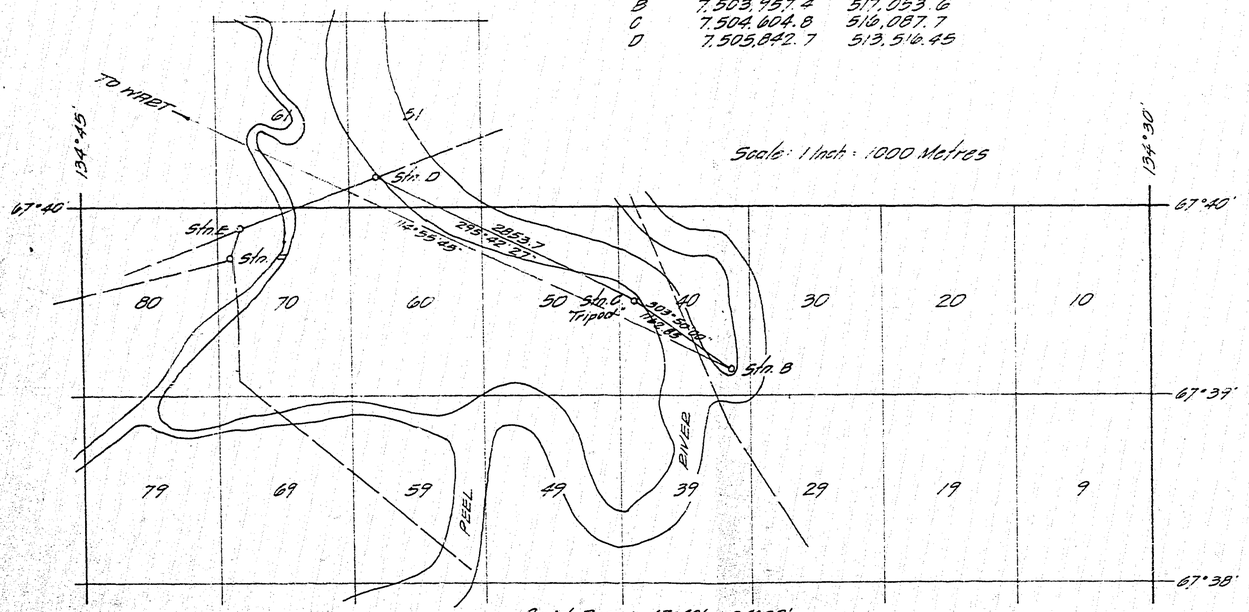
Scale: 1 Inch = 200 Metres

NOTE: Bearing Trees are Not To Scale.

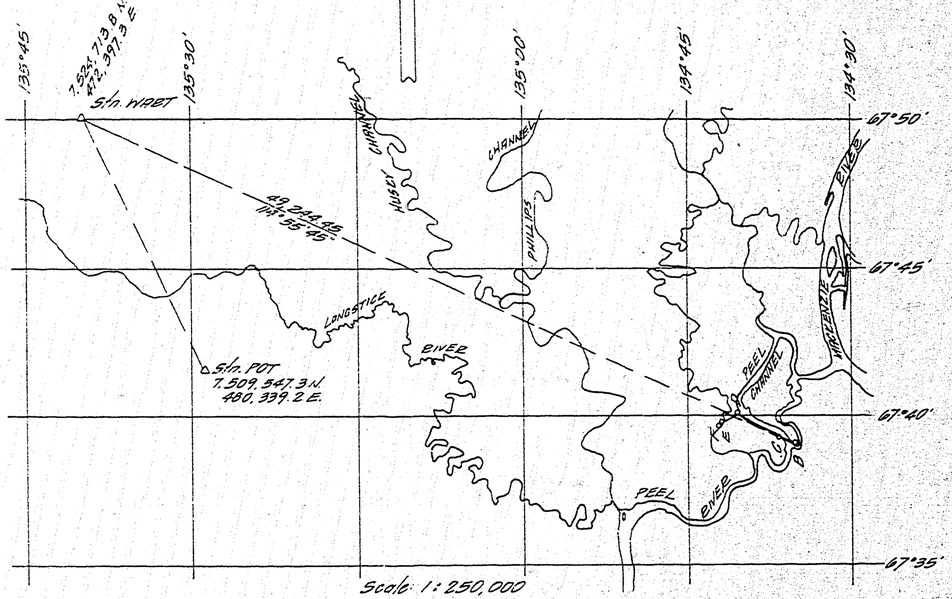


UTM COORDS FOR:

Stn	North	East
B	7,503,957.4	517,053.6
C	7,504,604.8	516,087.7
D	7,505,842.7	513,516.45



Grid Area: 67°40', 134°30'



Scale: 1:250,000

2 of 2

150103
FB 174 - 10/14

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE: Dec. 24/72

CEMENTING

CEMENT CO. Howco OPERATOR Elliott TIME ON LOCATION Skid mixer

TYPE & QUANTITY PRE-FLUSH water

TYPE & QUANTITY CEMENT 644 sacks perma frost cement

Height to be Cemented surface Basis for fillup calc. calculated plus 50%

Temperatures: Ambient 48 °F; Dry Cement 46 °F; Mix Water 55 °F; Slurry 45 °F.

Water ahead 20 bbls; Start Mix 5:30 a.m. Finish Mix 6:25 a.m. Slurry Wt. 15.2#

Calc. Disp. 6 bbls; Start Disp. 6:25 a.m. Finish Disp. 6:30 a.m. Actual Disp. 5 mins.

Max. Pump Pres. 250 Were lines pumped clear behind top plug? -

Was pipe reciprocated? yes Length of stroke 2' During what phase? cementing How long? 35mins.

Was pipe rotated? no What rotary speed - During what phase? - How long? -

Displaced with (fluid) water Bumped: Press - Times -

Float held? yes Pressure left on casing? nil Was landing it bailed or heated? heated

Cement Returns? yes Est. Quantity 25 bbl. Length from float to shoe 33.62'

REMARKS: Cemented and displaced thru 4" drill pipe set at 396 ft. Float collar at 404 ft., with inner string handling sub.

LANDING

Slacked off: Time 7:00 a.m. Date Dec. 25/72 Time plug down-slack off 24½ hrs.

Make of Bowl Flange Nom. Size 13-3/8" Flange: Size 10" Pres. 3000#

Type of bowl (screw, weld) screw Model bowl Cameron Model slips

Seals: Primary R-53 Ring Gasket Secondary 8 round threads

Wear bushing installed? no Calc. wt. of csg. above cement top

Wt. of annular fluid above cement (incl. wash if applic.)

Buoyancy effect of free string

Net tensile load at surf

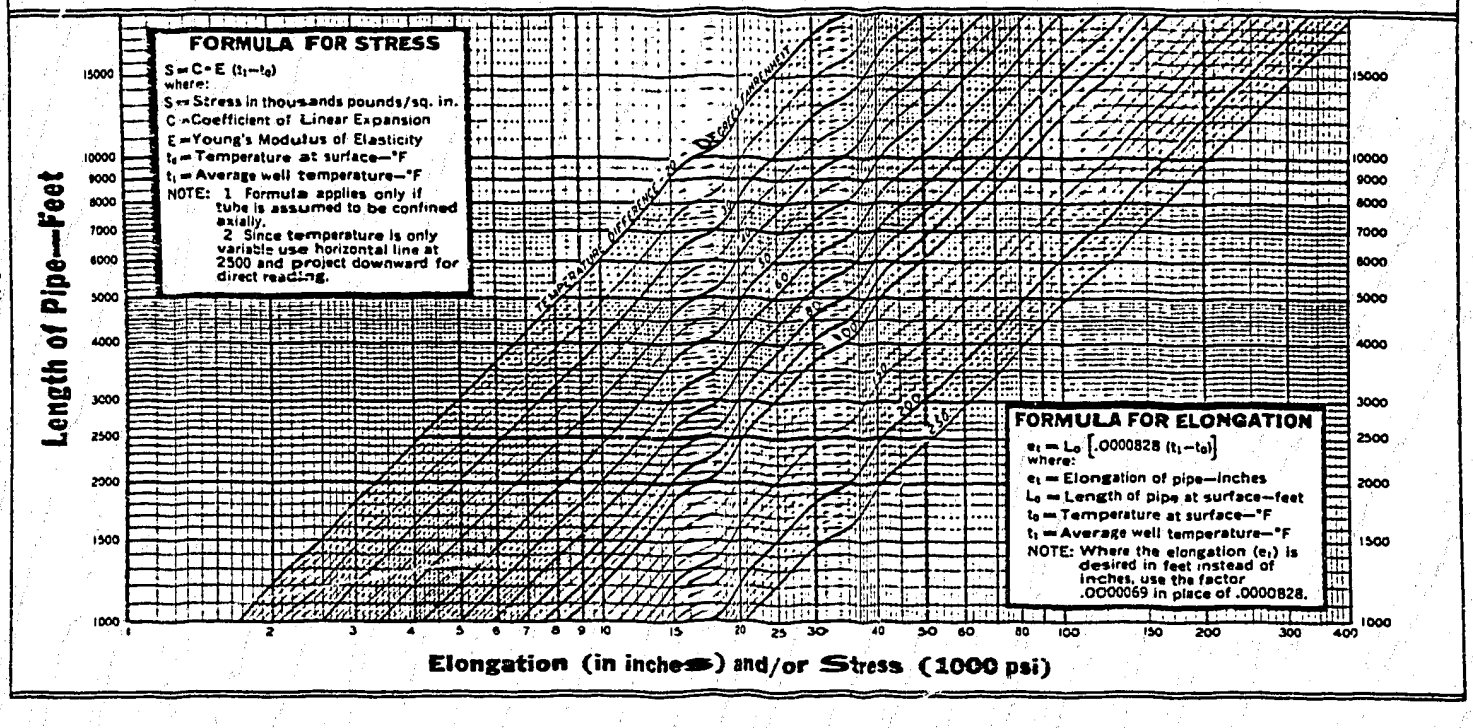
*Theoretical thermal expansion of free string:

*Theoretical stretch of entire string: ; of free string

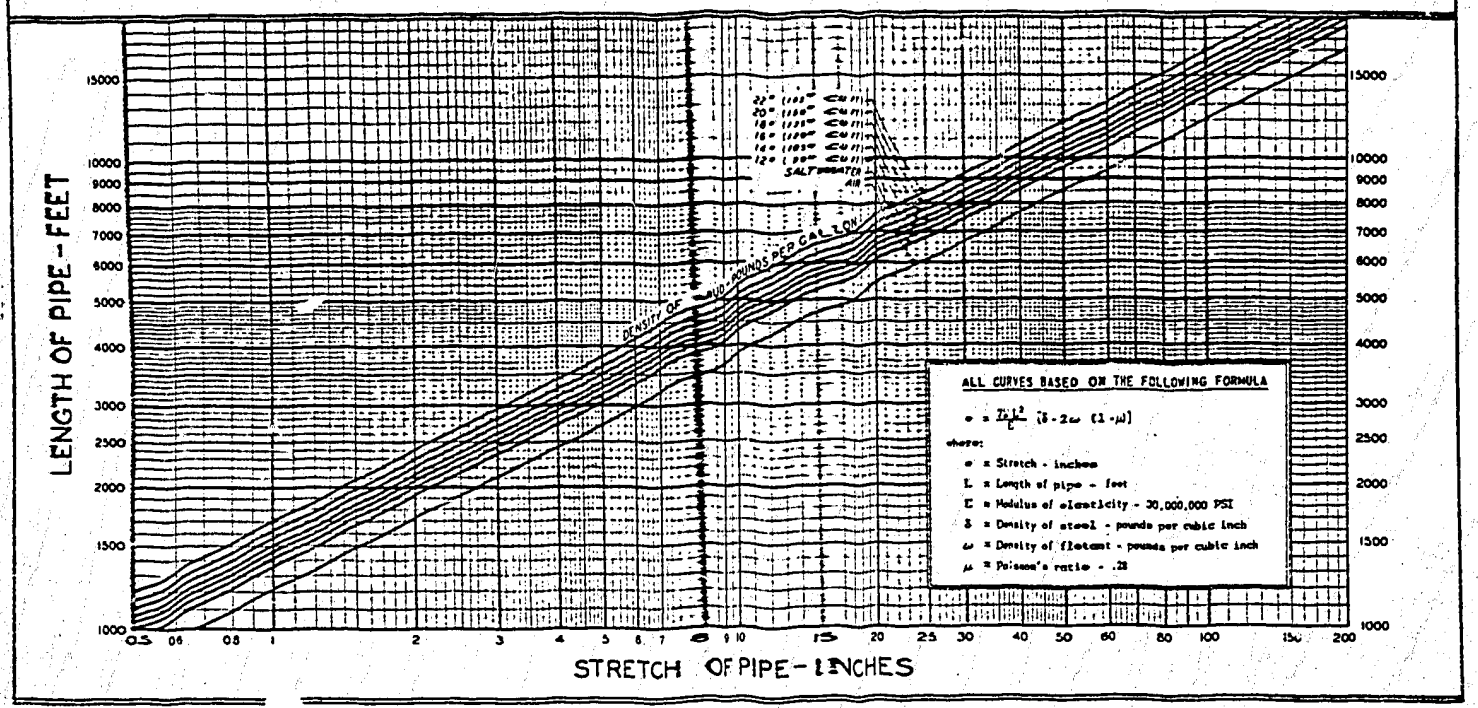
REMARKS

* See charts, reverse side NB: Buoyancy effect = (Wt. free pipe) — (Wt. of fluid displaced by pipe)

Effect of Temperature on Casing, Tubing or Drill Pipe



Stretch of Suspended Casing, Tubing or Drill Pipe



BLUEMOUNT RESOURCES LTD.

CASING DATA

Permafrost String

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE Dec. 24/72 CASING SIZE 13-3/4"

LIST CASING BOTTOM TO TOP

	Jts. on Location	Feet on Location*	Csg. Wt.	Grade	Rge.	Thr.	T & C	Mfr.	Jts. Run	Feet Run in hole*	Depth Landed	Thd. Loss per jt.	Thd. Loss on Jts. Run	Mill Tally of Pipe Run
1	19	615.09'	54.5#	J55	2	8rd	short	S&L	13	420.96'	441.21'	.291	3.78	424.74
2														
3														
4														
5														
6														
7														
8														
	19	615.09'	* threads off measurements						13	420.96'				424.74
			SUBTOTALS											

ADD:	SHOE: Mfgr. Davis-Lynch Type Float guide shoe	Length	1.75'
ADD:	FLOAT: Mfgr. Davis-Lynch Type Float collar	Length	1.50'
ADD:	LANDING JOINT	Length	
ADD:	OTHER EQUIP. (Specify)	Length	
SUBTOTAL:	Overall Length of Casing String		424.21'
SUBTRACT:	Feet from KB	Tally	17.00'
SUBTOTAL:	Setting Depth, K.B.: Drlr.	Tally	441.21'
SUBTRACT:	Shoe Joint, overall incl. float & shoe		36.85'
TOTAL:	Float Collar Landing Depth, K.B.: Drlr.	Tally	404.36'

Was landing joint recovered intact? yes

If so, Class J55 Length w/thds. 27.07'

Disposition Rack site-Peel River

Cut-off Jt: Wt. - T & C -

Class - Length -

Disposition -

Unused Pipe: Disposition Rack site

Date 26/12 Via Kaps

Class J55 Truck Ticket No. -

Rejected Pipe: Disposition -

Date - Via -

Class - Truck Ticket No. -

REMARKS:

6 jts. - 26.82, 32.43, 33.38, 33.94, 34.13, 33.43 hauled back to rack site on Peel River

Surface Casing
~~Intermediate Casing~~
~~Production Casing~~
~~Liner~~
~~Tubing~~

BLUEMOUNT RESOURCES LTD.

PIPE TALLY SHEET

WELL NAME Bluemount et al Gulf South Delta J-80 DATE Jan 2, 1973

*	27	03	28	.35	28	95				
	28	38	28	42	29	32				
	31	-	32	63	30	44				
	26	60	30	45	33	65				
	32	30	26	36	30	71				
	32	28	28	70	28	94				
	31	88	25	90	31	50				
	31	68	32	70	29	36				
	27	68	29	98	30	07				
	32	58	25	52	**32	73				
	39	52	30	82	**33	52				
	26	88	29	24	**28	42				
	29	20	31	05						
	40	60	28	78						
	31	35	31	55						
	38	98	32	33						
	31	14	36	00						
	31	78	41	08						
	26	22	33	12						
	28	12	39	70						
	625	20	622	68	367	61				

O.D. 9-5/8"
Wt. 36#
Grade K-55
Range 2 & 3
Thread 8 round
Collar ST&C
Mfgr. Mannesmann

SUMMARY		
Col. 1	625	20
2	622	68
3	367	61
4		
5		
	1615	49
Fwd.		
Fwd.		
Fwd.		
	1615	49
	94	67
	1520	82

Threads - off Tally;
add .28' per joint for mill tally.

Tallied by:
C. T. Blackwell

52 Tot. Jts. on location

3 Jts. out (Incl. Ldg. Jt.)

49 Jts. perm. in hole

Remarks:
** Left out

* Shoe jt.

Indicate Shoe Joint or Landing Joint if applicable.

Agent of Operator E. Schack

BLUEMOUNT RESOURCES LTD.

SURFACE CASING
[redacted]

RUNNING AND CEMENTING

DATE Jan. 2, 1973

WELL NAME: Bluemount et al Gulf South Delta J-80 T.D. 1521' CASING SIZE 9-5/8"

GR. ELEV. 37' KB to GR. 17' KB ELEV. 54' KB to Csg FLANGE 18'

MUD TYPE KCl - Kelzan AL PROPERTIES 9.9 wt. 75 viscosity

B.O.P's

HOLE SIZE	34"	17½"		Csg. IN HOLE	28"	13-3/8"
DEPTH	82'	441'		DEPTH SET	82'	441'

RUNNING

POWER TONGS Rope TORQUE: Nom. - Min. - Max. -

JOINTS NOT ACCEPTABLE WITHIN TORQUE SPECS: Total N/A Joint Nos.

TIME PIPE STARTED 11:30 p.m. Jan 1/73 TIME ON BOTTOM 9 a.m. 1/02/73 MINS. CIRCULATED ½ hr.

FILLUP POINTS every joint BTM by Csg 1521' FEET UP FROM KB 2.82'

INSPECTIONS RUN: Transverse - Longitudinal - Wall Thick - Grade Verification -

Pin/Collar Pig Service Co.

Rejects:

EQUIPMENT

SHOE: Mfgr. Davis Lynch Type Float

FLOAT: Mfgr. Davis Lynch Type Float

OTHER EQUIPMENT IN STRING:

CENTRALIZERS: No. two Mfgr. B & W Type Latch-on

Positions 5' and 90' above shoe.

SCRATCHERS: No. none Mfgr. Type

Positions

PLUGS: Type Wiper Type Top Plug Plug Loading Head?

REMARKS:

RUNNING & CEMENTING – Page 2

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE: Jan. 2, 1973

CEMENTING

CEMENT CO. Howco OPERATOR Forestburg TIME ON LOCATION Jan. 1, 1973

TYPE & QUANTITY PRE-FLUSH 10 bbls. water

TYPE & QUANTITY CEMENT 175 sax perma frost cement, 475 sax oilwell cement.

Height to be Cemented 1521' Basis for fillup calc. actual cement returns

Temperatures: Ambient + 15 °F; Oilwell -20°F Permafrost - 20°F Mix Water + 80°F + 50 °F; Slurry 50°F 35 °F. 15# permafrost

Water ahead 10 bbls; Start Mix 1:00 p.m. Finish Mix 1:45 p.m. Slurry Wt. 15.5# oilwell

Calc. Disp. 14.7 bbls; Start Disp. 1:50 p.m. Finish Disp. 2:00 p.m. Actual Disp. 14.7 bbl.

Max. Pump Pres. 400# Were lines pumped clear behind top plug? _____

Was pipe reciprocated? yes Length of stroke 10' During what phase? cementing How long? 3/4 hr.

Was pipe rotated? no What rotary speed – During what phase? – How long? –

Displaced with (fluid) water Bumped: Press no Times N/A

Float held? yes Pressure left on casing? yes Was landing it bailed or heated? bailed

Cement Returns? yes Est. Quantity 5 bbls. Length from float to shoe 30.03'

REMARKS: An inner string handling sub was used for cementing.

LANDING

Slacked off: Time 7:00 a.m. Date Jan. 3/73 Time plug down-slack off 17 hrs.

Make of Bowl Cameron Nom. Size 9-5/8" Flange: Size 10" Pres. 3000#

Type of bowl (screw, weld) slip & seal Model bowl VGGR Model slips _____

Seals: Primary R-57 Secondary Slip & seal assembly

Wear bushing installed? yes Calc. wt. of csg. above cement top _____

Wt. of annular fluid above cement (incl. wash if applic.) _____

Buoyancy effect of free string _____

Net tensile load at surf _____

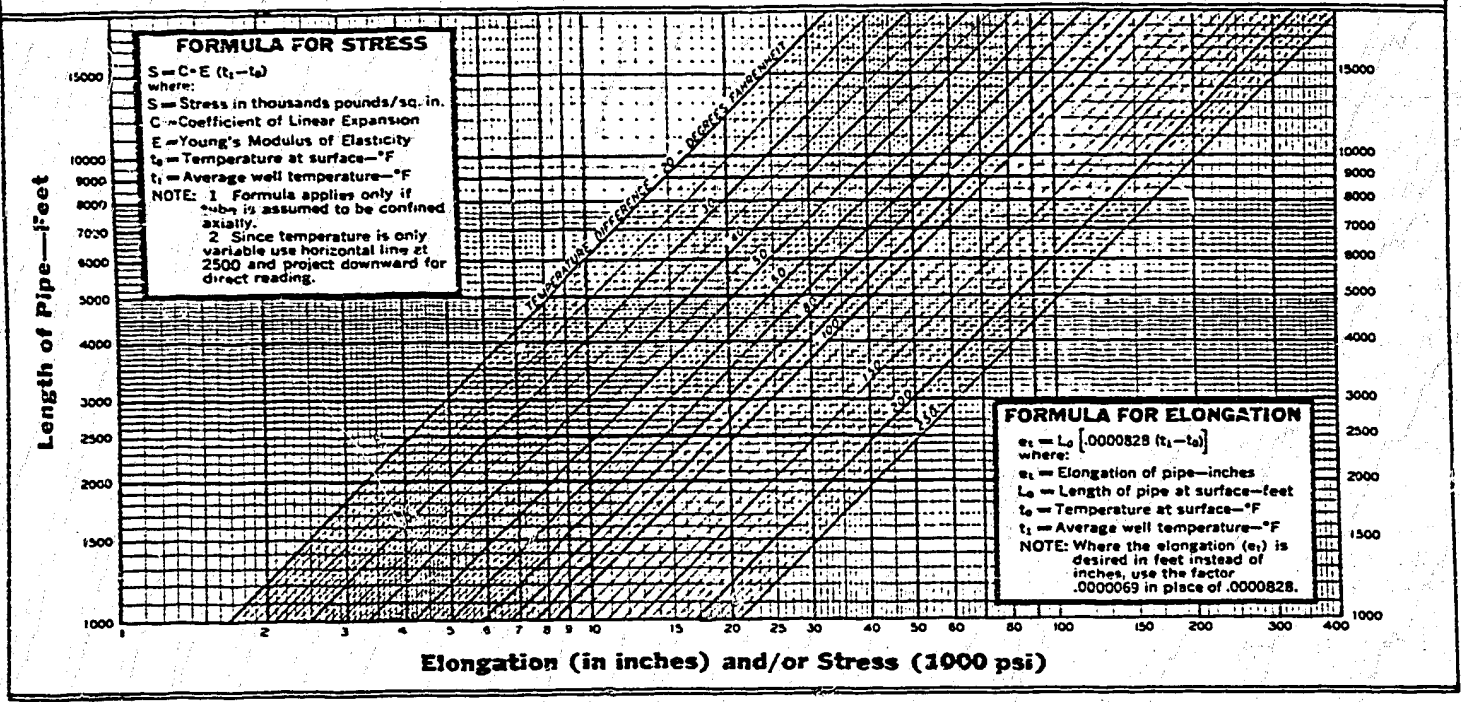
*Theoretical thermal expansion of free string: _____

*Theoretical stretch of entire string: _____ ; of free string _____

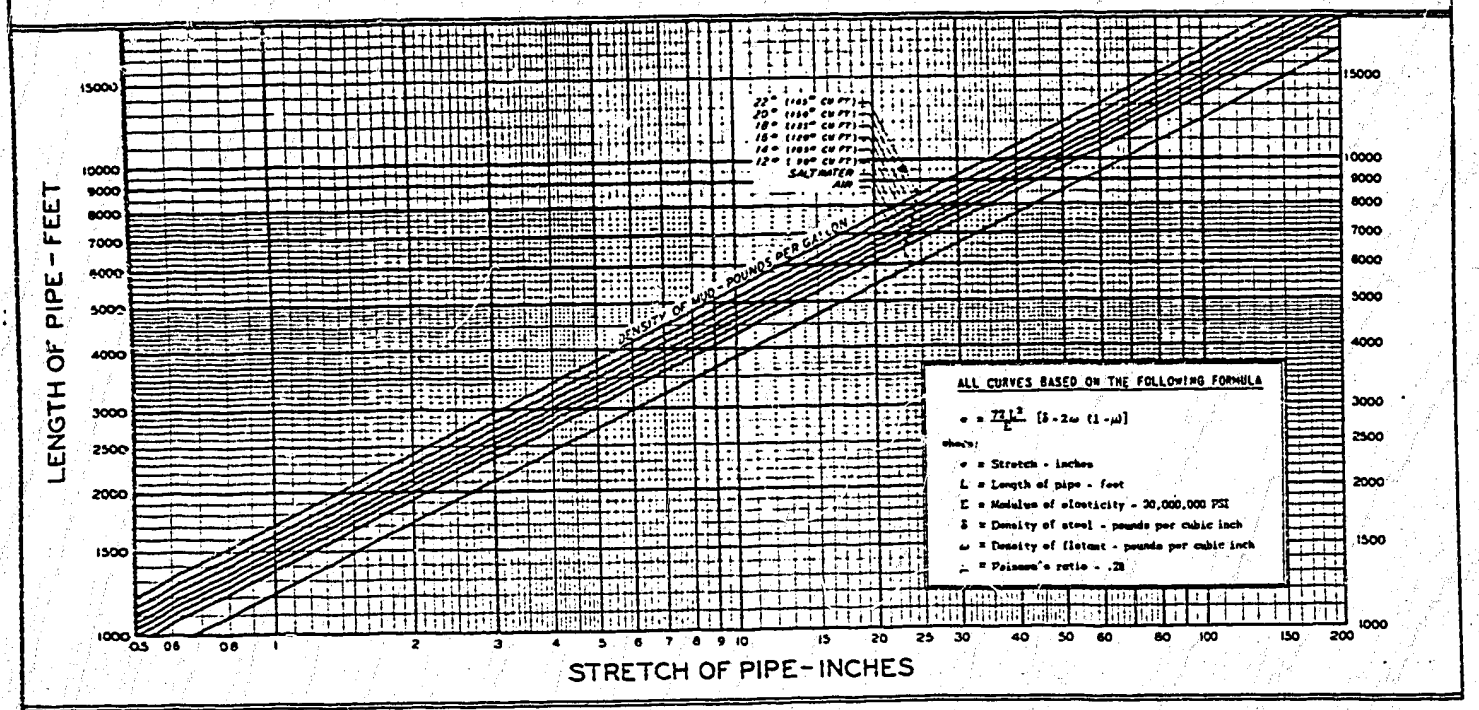
REMARKS _____

* See charts, reverse side NB: Buoyancy effect = (Wt. free pipe) – (Wt. of fluid displaced by pipe)

Effect of Temperature on Casing, Tubing or Drill Pipe



Stretch of Suspended Casing, Tubing or Drill Pipe



BLUEMOUNT RESOURCES LTD.

CASING DATA

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE Jan. 2, 1973 CASING SIZE 9-5/8"

Surface Casing
x Intermediate Casing
x Production Casing
Liner

LIST CASING BOTTOM TO TOP

	Jts. on Location	Feet on Location*	Csg. Wt.	Grade	Rge.	Thr.	T & C	Mfgr.	Jts. Run	Feet Run in hole*	Depth Landed	Thd. Loss per jt.	Thd. Loss on Jts. Run	Mill Tally of Pipe Run
1	52	1615.49	36#	K-55	3	8rd.	S	Mann.	49	1520.82	1521.00'	.28	13.72	1534.54'
2														
3														
4														
5														
6														
7														
8														
	52	1615.49'	* threads off measurements SUBTOTALS						49	1520.82'				1534.54'

ADD:	SHOE: Mfgr. Davis Lynch Type Float	Length	1.50'
ADD:	FLOAT: Mfgr. Davis Lynch Type Float	Length	1.50'
ADD:	LANDING JOINT	Length	
ADD:	OTHER EQUIP. (Specify)	Length	
SUBTOTAL:	Overall Length of Casing String		1523.82'
SUBTRACT:	Feet from KB	Tally	2.82'
SUBTOTAL:	Setting Depth, K.B.: Drlr.	Tally	1521.00'
SUBTRACT:	Shoe Joint, overall incl. float & shoe		30.03'
TOTAL:	Float Collar Landing Depth, K.B.: Drlr.	Tally	1490.97'

Was landing joint recovered intact? no

If so, Class ____ Length w/thds. ____

Disposition ____

Cut-off Jt: Wt. 36# T & C short

Class E Length 16'

Disposition scrap

Unused Pipe: Disposition stock pile

Date ____ Via ____

Class ____ Truck Ticket No. ____

Rejected Pipe: Disposition ____

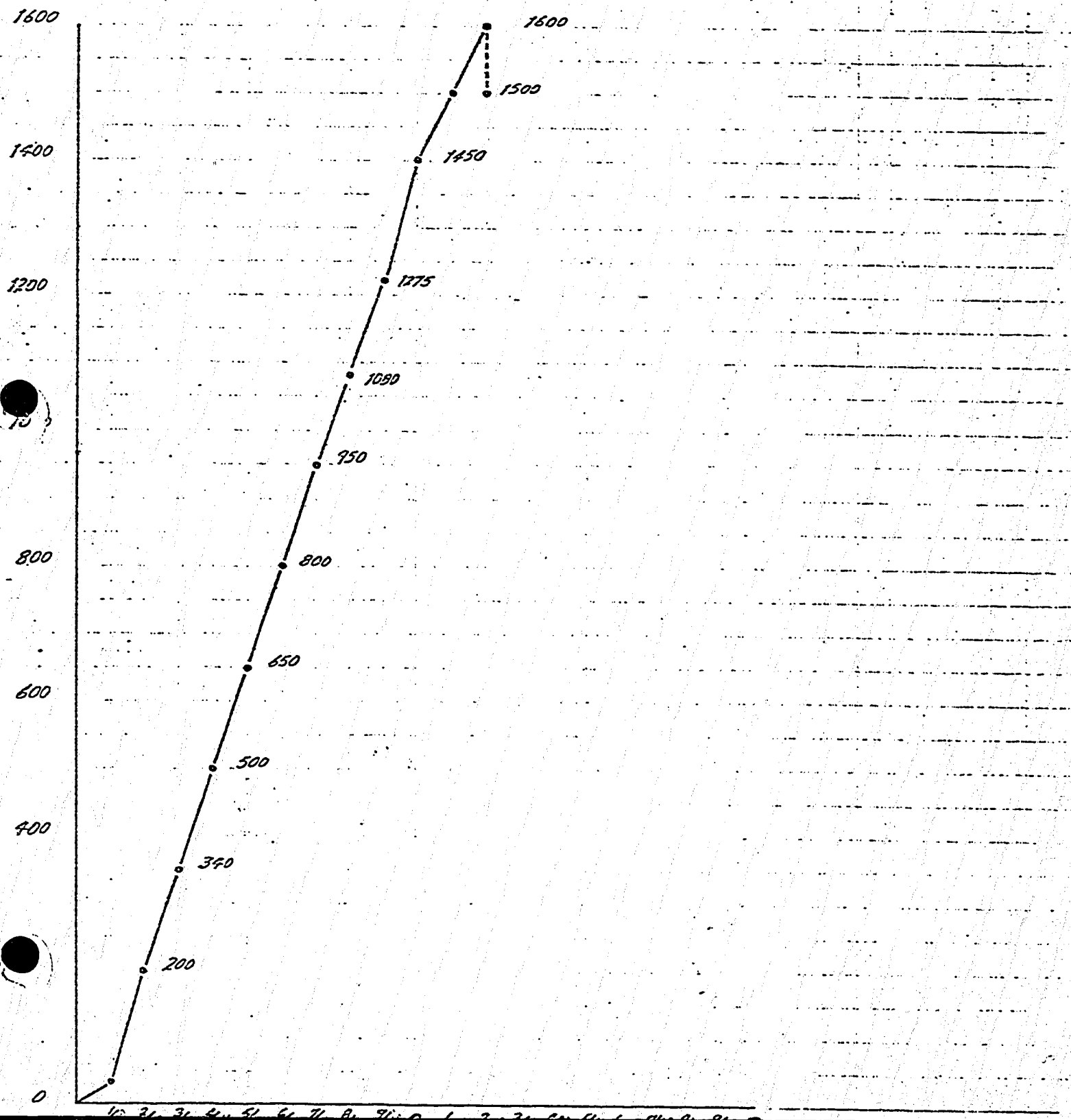
Date ____ Via ____

Class ____ Truck Ticket No. ____

REMARKS: ____

Bluemount et al Gulf S. Delta F-80 January 5, 1973

Pressure test on formation breakdown, 9 5/8" 36# surface casing set at 1521' K.B., hole depth 1653' K.B., when reaching 2 1/2 bbl. and waiting for 5 minutes the pressure fell back to 1500 PSI, and still decreasing rapidly.



BLUEMOUNT RESOURCES LTD.

DRILLSTEM TEST REPORT

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE: Feb. 6, 1973 DST. NO. 1

TESTING COMPANY Lynes United OPERATOR: Rausch DEPTH HOLE: 9365'

FORMATION TESTED Ronning INTERVAL: 9215' - 9365' HOLE SIZE: 8-3/4"

EQUIPMENT

Type Test Conventional bottom hole.

No. Rubbers 2 Size, Top Down 7-3/4" Type Bob Tail Rubber Hardness 90

Safety JT Bowen Jars Lee Pump out Sub Lynes United

Bottom Hole Sampling Chamber Lynes United At What Stage Does Sampler trap Sample final shut-in Depth 9178'

No. Bombs 2 Mfgr. Kuster Model AKI Element Capacity 5400'

Failsafe Head remote control Flow Manifold Lynes United Size Bottom Hole Choke 1"

Other Equipment

Size D.P. 4" WT. 15.4# No. of Collars 14 Size: O.D. 6¼"-7" I.D. 2-7/8"

OPERATION

MUD: WT. 10.0 VIS. 62 W.L. 15.2 F.C. 2/32 GELS. 20-26

PACKER SET WITH 30,000 LBS ; PACKER PULLED LOOSE WITH 40,000 LBS.

TIME STARTED IN HOLE 6:30 a.m.

TIME ON BOTTOM 1:26 a.m.

TIME VALVE OPEN (Pre-flo) 1:26 p.m.

TIME FLOW PERIOD START 2:31 p.m.

TIME FLOW PERIOD END 4:31 p.m.

TIME SHUT IN END 8:31 p.m.

TIME PACKER OUT OF HOLE 1:30 a.m. 2/7/73

TEST PERIODS:

INITIAL SHUT IN 60 MINS.

FINAL SHUT IN 240 MINS.

PRE-FLOW PERIOD 5 MINS.

FLOW PERIOD 120 MINS.

DID JARS HIT no RUBBER DAMAGE 1

DID MUD DROP no ESTIMATED LOSS none

WATER CUSHION nil INHIBITOR N.L.

COMPANY REPRESENTATIVES PRESENT C.T. Blackwell

DRILLSTEM TEST REPORT, PAGE 2

WELL NAME: Bluemount et al Gulf South Delta J-80 DST. NO. 1

TEST RESULTS

DESCRIBE BLOW: Weak air blow increasing to end of pre-flow. Good air blow steady throughout flow period.

GAS FLOW – Mcf/day measured estimated; Gas to surface – mins; Was flare lit – ; Size riser –

length of flame – sweet or sour – color of flame –

How was gas measured – Summarize raw flow data at max flow –

RECOVERY:

TOTAL FLUID IN PIPE:		8015	feet	82	bbls
OIL IN PIPE	(Gassy) (Dead):	–	feet	–	bbls
WATER IN PIPE	(Gassy) (Dead):	7515	feet	77	bbls
MUD IN PIPE	(Gassy) (Dead):	470	feet	5	bbls
WATER CUSHION	(Gassy) (Dead):	Nil	feet	Nil	bbls

BBLS/100'
5" DP.: 1.73
4½" DP.: 1.42
3½" DP.: 0.74
2-7/8" DP.: 0.45

REMARKS:

FLUID DESCRIPTION: Water Color Dark Gray Salinity 150,000 ppm NaCl Cl⁻ (delete as appropriate)

How was salinity measured Refractometer

Resistivity (calc) – @ 68° F.

OIL: Color – Gravity, °API – @ 60° F.

SAMPLES: what fluid mud - salt water depth collected top - middle - bottom

Shipped to Harvold via F27 Date Feb. 7/73

REMARKS:

PRESSURES:

Do charts show mechanically successful test: Yes: X No:

Do you consider that test was satisfactory: Yes: X No:

Pressure Recorder No. 2835 -2834 Depth 9222' - 9227' BH Temp. 290 °F.

	FIELD	FINAL		FIELD	FINAL
INITIAL HYDROSTATIC	4693	4768	FINAL HYDROSTATIC	4693	clock ran out
MINIMUM PREFLOW	543	544	MAXIMUM PREFLOW	543	544
INITIAL FLOW	651	642	FINAL FLOW	3826	3811
INITIAL SHUT-IN, MAX.	4287	4322	FINAL SHUT-IN, MAX.	4260	4319

DESCRIBE CURVE: Curve built up @ 85° to horizontal, suggesting average permeability.

REMARKS:

BLUEMOUNT RESOURCES LTD.

DRILLSTEM TEST REPORT

WELL NAME: Bluemount et al Gulf South Delta J-80 DATE: Feb. 10/73 DST. NO. 2

TESTING COMPANY Lynes United OPERATOR: Rausch DEPTH HOLE: 9500'

FORMATION TESTED Ronning INTERVAL: 9320'-9365' HOLE SIZE: 8-3/4"

EQUIPMENT

Type Test Lynes United Inflatable Straddle

No. Rubbers 2 Size, Top Down 7-3/4" Type Inflatable Rubber Hardness –

Safety JT Bowen Jars Lee Pump out Sub Lynes

Bottom Hole Sampling Chamber Lynes At What Stage Does Sampler trap Sample Final shut-in Depth 9280'

No. Bombs 2 Mfgr. Kuster Model AKI Element Capacity 5400'

Failsafe Head Lynes Rotating Head Flow Manifold no Size Bottom Hole Choke 1"

Other Equipment

Size D.P. 4" WT. 15.5# No. of Collars 18 Size: O.D. 6¼"-7" I.D. 2-7/8"

OPERATION

MUD: WT. 9.9 VIS. 67 W.L. 15.4 F.C. 2/32 GELS. 30-49

PACKER SET WITH 30,000 LBS PACKER PULLED LOOSE WITH _____ LBS.

TIME STARTED IN HOLE 10:30 a.m.

TIME ON BOTTOM 2:50 p.m.

TIME VALVE OPEN (Prefio) 2:50 p.m.

TIME FLOW PERIOD START 3:55 p.m.

TIME FLOW PERIOD END 6:55 p.m.

TIME SHUT IN END 11:20 p.m.

TIME PACKER OUT OF HOLE _____

TEST PERIODS:

INITIAL SHUT IN 60 MINS.

FINAL SHUT IN 270 MINS.

PRE-FLOW PERIOD 5 MINS.

FLOW PERIOD 180 MINS.

DID JARS HIT _____ RUBBER DAMAGE _____

DID MUD DROP _____ ESTIMATED LOSS _____

WATER CUSHION _____ INHIBITOR _____

COMPANY REPRESENTATIVES PRESENT _____

DRILLSTEM TEST REPORT, PAGE 2

WELL NAME: Bluemount et al Gulf South Delta J-80 DST. NO. 2

TEST RESULTS Preflow - weak air blow increasing slightly.

DESCRIBE BLOW: Flow period - very weak air blow, increasing slightly after 10 min. and remaining steady for 45 min, after tool open for 120 min. opened to flare line for 30 min., closed valve to flare line, air puff increased for 15 min. then remained steady rest of test.

GAS FLOW - Mcf/day measured estimated; Gas to surface - mins; Was flare lit - ; Size riser -

length of flame - sweet or sour - color of flame -

How was gas measured - Summarize raw flow data at max flow -

RECOVERY:

TOTAL FLUID IN PIPE:		feet	bbls
OIL IN PIPE	(Gassy) (Dead):	feet	bbls
WATER IN PIPE	(Gassy) (Dead):	feet	bbls
MUD IN PIPE	(Gassy) (Dead):	feet	bbls
WATER CUSHION	(Gassy) (Dead):	feet	bbls

BBLS/100'
5" DP.: 1.73
4½" DP.: 1.42
3½" DP.: 0.74
2-7/8" DP.: 0.45

REMARKS: Pumped out recovery, sub plugged after displacing 30 bbls down annulus. Pumped down pipe, up annulus; broke circulation. Fluid returns monitored closely, no sign of oil or water in mud, mud was air-$NaCl$ Cl^- cut for 50 min. period.

FLUID DESCRIPTION: Water Color Salinity ppm (delete as appropriate)

How was salinity measured

Resistivity (calc) @ 68° F.

OIL: Color Gravity, °API @ 60° F.

SAMPLES: what fluid depth collected

Shipped to via Date

REMARKS: Mud checks performed immediately after starting to circulate through the pumpout sub showed one patch of mud with anomalously high salt water cut which may in part be attributable to drillstem test recovery. (9200 ppm Cl^- vs 3150 ppm Cl^- background)

PRESSURES:

Do charts show mechanically successful test: Yes: No:

Do you consider that test was satisfactory: Yes: No:

Pressure Recorder No. Depth BH Temp. °F.

	FIELD	FINAL		FIELD	FINAL
INITIAL HYDROSTATIC			FINAL HYDROSTATIC		
MINIMUM PREFLOW			MAXIMUM PREFLOW		
INITIAL FLOW			FINAL FLOW		
INITIAL SHUT-IN, MAX.			FINAL SHUT-IN, MAX.		

DESCRIBE CURVE:

REMARKS: Tool differentially stuck, never recovered, cemented in hole when abandoned. No pressures were ever obtained.

BLUEMOUNT RESOURCES LTD.

1450 ELVEDEN HOUSE
717 SEVENTH AVENUE S.W.
CALGARY 2, ALBERTA

TELEPHONE (403) 263-7084

January 2, 1973

Bluemount et al Gulf South Delta J-80

Remarks on logs run

1.) In addition to logs run, the oscilloscope was visually monitored throughout sonic logging to check for wave attenuation resulting from fracturing. Signals were exceptionally strong throughout, not only on compression breaks but including second generation waves in the train. The bias level was adjusted as low as would be meaningful without picking distortions in advance of the first break. Some instances of wave modification were evident (compression to shear across fracture boundaries with consequent algebraic addition and subtraction) particularly in the wave-form recorded by the second receiver. These wave-form modifications were interpreted as being indicative of minor fracturing, largely healed, ineffective for reservoir purposes; they appear as spikes particularly evident from 665'-775', 1050'-1100', and right around 1200', as well as occurances elsewhere.

2.) Mud checks between 1400' and 1475' showed that a calculated 7.6' of anhydrite was drilled through this interval. No evidence was seen in samples or logs.

3.) Gas detector indicated Methane only as trip gas in mud on trip for bit at 1475'. No source was discernible from logs or samples. Trip gas was not present on the prior trip at 1015', nor was trip gas evident when circulation was broken after logging. No prior indication of gas had been detected except immediately beneath conductor pipe at 80', believed to be associated with the base of Permafrost.

REMARKS ON LOGS RUN, RUN #2

Bluemount et al Gulf South Delta J-80

During the running of the Sonic log on Run #2, the oscilloscope was again visually monitored to check for wave attenuation that might suggest fracturing, extreme porosity, etc. The following remarks were made at the time of logging; please note that although specific depths are shown, the remarks cover a broader zone, usually commencing at the depth shown and extending shallower.

9398'	strong attenuation
9240'	medium attenuation
8998'	wave distortion
8227'	attenuation and distortion
7950'	attenuation (over a 30' interval)
7225'	distortion
7040'	attenuation and distortion (over 100' interval with mud cake buildup)
6140'	distortion and attenuation

Feb. 8, 1973

ABANDONMENT REPORT

Bluemount et al Gulf South Delta J-80

Feb. 21, 1973

Plug #1 8800' - 8550'

Cemented with:	140 sax Oilwell neat
Slurry weight:	15.5 ppg
Displaced with:	81 bbls mud
Plug down:	11:30 a.m. Feb. 21, 1973
Felt at:	No feel

Plug #2 7460' - 6890'

Cemented with:	400 sax Oilwell neat
Slurry weight:	15.5 ppg
Displaced with:	65 bbls. mud
Plug down:	2:30 p.m. Feb. 21, 1973
Felt at:	6843' after 8 hrs.

Plug #3 1570' - 1470'

Cemented with:	100 sax Oilwell & 3% $CaCl_2$
Displaced with:	14 bbls. mud
Plug down:	2:00 a.m. Feb. 22, 1973
Felt at:	1306' after 9 hours, (166' high, much excess run for safety)

Cut casing 4' below ground level, puddled 10 sax cement into top of 9-5/8" casing, welded plate over stub, welded sign post with well sign 4' above ground level, put 10 sax cement over 9-5/8" in floor of cellar.

CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

WATER ANALYSIS

File 921-3210 Page 2 of 4

Company Bluemount Resources Ltd.

Well Bluemount et al Gulf South Delta J-80 K.B. 54' Grd. 37'

Location 67° 39'40.43 N.L. 134° 43'38.40 W.L. Field Red Arctic River Province

Formation Ronning Interval 9215' - 9365'

Sampled from DST #1 (Bottomhole Sampler) by Lynes United Services

Date sampled Feb. 5/73 Date analysed March 6/73 Analyst LK

Recovery 9200' Liquid.

Mud type Water cushion

Resistivity 0.045 Ohm-meters @ 75 °F

Specific gravity 1.1314 @ 60°F

pH 5.3 H_2S Present

Refractive Index 1.3639 @ 73°F

Total Solids:

Calculated 189,148 mg/liter

By evaporation @ 110°C - mg/liter

By evaporation @ 180°C - mg/liter

At ignition - mg/liter

MILLIGRAMS PER LITER

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO_3	SO_4	CO_3	OH
63505	8708	868	Pres.	Abs.	-	-	115475	405	187	0	0

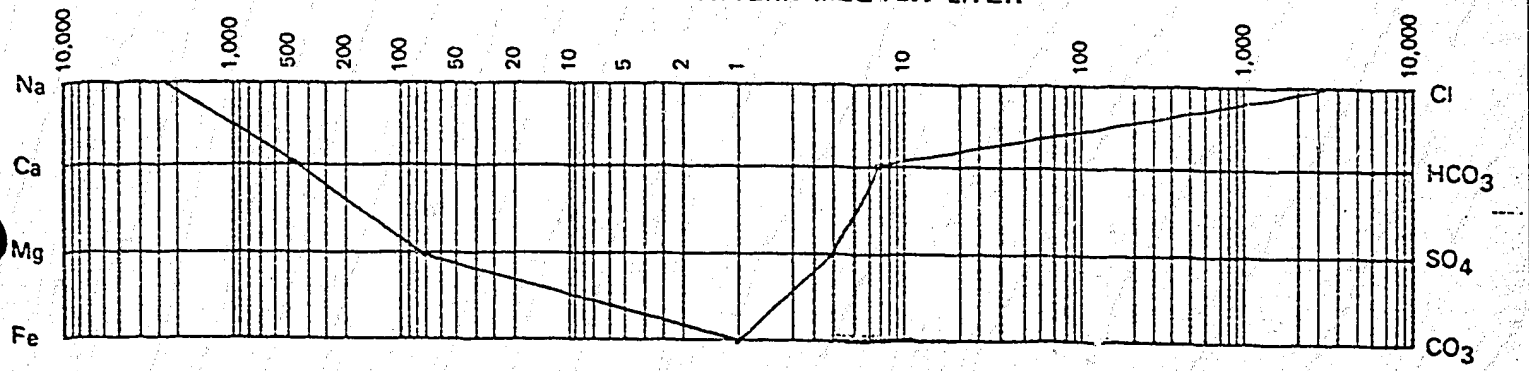
PER CENT CALCULATED SOLIDS

33.6	4.6	.5	Pres.	Abs.	--	-	61.1	.2	.1	.0	.0

MEQ PER LITER

2761.1	434.5	71.3	Pres.	Abs.	-	-	3256.4	6.6	3.9	.0	.0

LOGARITHMIC PATTERN MEQ PER LITER



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CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

WATER ANALYSIS

File 921-3138 PAGE: 1 of 1

Company Bluemount Resources Ltd.

Well Bluemount et al Gulf South Delta J-80 K.B. 54' Grd. 37'

Location 67°39'40.43 N.L. 134°43'38.40 W.L. Field Red Arctic River Province

Formation Ronning Interval 9115' - 9265'

Sampled from DST #1 (1410') by

Date sampled February 6, 1973 Date analysed March 16, 1973 Analyst G. Anderson

Recovery

Mud type Water cushion

Resistivity 1.13 Ohm-meters @ 69 °F

Specific gravity 1.0052 @ 60°F

pH 9.0 H_2S Absent

Refractive Index 1.3330 @ 71°F

Total Solids:

Calculated 5,745 mg/liter

By evaporation @ 110°C mg/liter

By evaporation @ 180°C mg/liter

At ignition mg/liter

MILLIGRAMS PER LITER

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO_3	SO_4	CO_3	OH
2054	47	2	Trace	-	-	-	2306	381	902	53	0

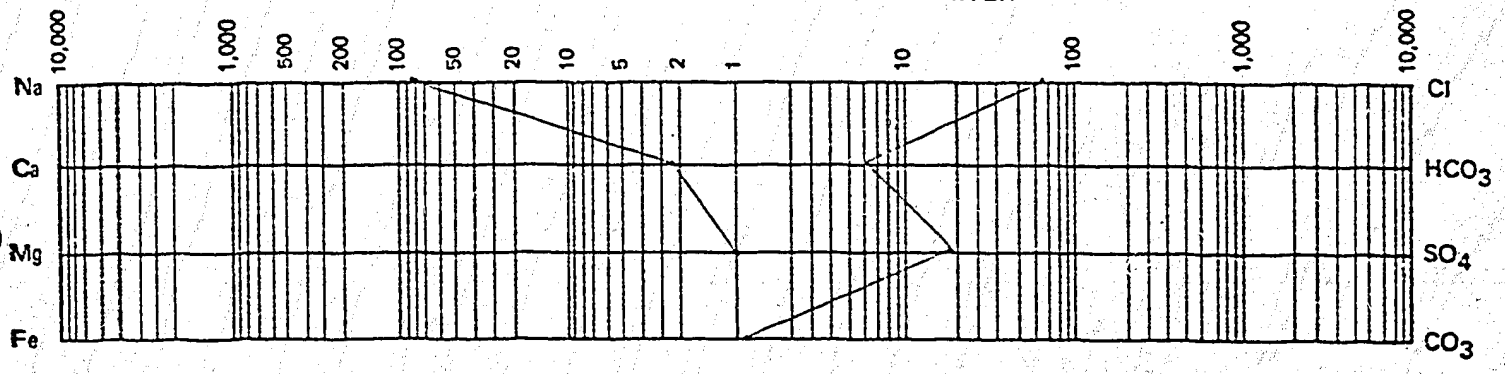
PER CENT CALCULATED SOLIDS

35.8	.8	.0	Trace	-	-	-	40.1	6.6	15.7	.9	.0

MEQ PER LITER

89.3	2.3	.2					65.0	6.2	18.8	1.8	.0

LOGARITHMIC PATTERN MEQ PER LITER



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CORE LABORATORIES — CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

Company Bluemount Resources Ltd. Page 2 of 2

Well Bluemount et al Gulf South Delta J-80 File 921-3138

Field Red Arctic River, Alberta Analyst G. Anderson

Location 67 39'40.43 N.L. 134 43'38.40 W.L. Elevation: K.B. 54' Grd. 37'

Formation Ronnie Depth 9115' - 9265'

Sampled from DST#1 (1410') by Lynes United Services

Sampling pressure _____ psig Sampling temp. _____ °F Ambient temp. _____ °F

Date sampled Feb. 6/73 Date received Feb. 12/73 Date analysed Feb. 16/73

Container pressure _____ Mud _____ Water cushion _____

Recovery or flowrate: _____

ANALYSIS

Chloride = 2,306 mg/liter

FORMATION MARKER SUMMARY

Bluemount et al Gulf South Delta J-80

K.B. Elevation: 54'

Formation	Expected	Sample	Log Depth	Subsea	Interval
Quaternary	At surface				
Crectaceous	200				
Cretaceous Sands		Not present	Not present		
Jurassic and/or Triassic		Not present	Not present		
Imperial	3500	Not present	Not present		
Hume	6000	6022	6022	-5986	318
Gossage	6300	6340	6340	-6286	1550
Delorme		7890	7890	-7836	773
Ronning	8500	8663	8663	-8609	837
T.D.	9500	9500	9500	-9446	

WELL NAME Bluemount et al Gulf South Delta J-80 SHEET No. 1.

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
0	50	D		50		Siltstone and silt - grey brown, unconsolidated in part.
50	80	D		30		Sand - varicoloured grains, unconsolidated, poorly sorted, quartz in part (subangular grains), mafics (subrounded grains), very fine to medium grained.
80	100	D		20		Sand - varicoloured grains, unconsolidated, fine to medium grained, quartz in part (subangular grains), mafics (subangular grains). Shale - black to dark grey, medium hard, micromicaceous. Trace Dolomite grains - buff, cryptocrystalline.
100	130	D		30		Claystone - grey brown, soft, bentonitic, carbonaceous material (woody) in part.
130	160	D		30		Claystone - grey brown, soft, bentonitic, carbonaceous material in part. Shale - grey, medium hard.
160	170	D		10		Shale - grey to dark grey, medium hard, silty in part, micromicaceous. Sand grains - varicoloured, medium grained, rounded, quartz and chert. Shale - red and brown, medium hard.
170	180	D		10		Shale - grey to dark grey, medium hard, micromicaceous silty in part..
180	190	D		10		Shale - grey to dark grey, medium hard, micromicaceous silty in part. Siltstone - grey to dark grey, medium hard.
190	200	D		10		Shale - grey to dark grey, medium hard, micromicaceous silty in part, trace of carbonaceous partings.
200	220	D		20		Shale - grey, medium hard, very slightly dolomitic, micromicaceous. Siltstone - grey, hard to very hard, micaceous, very slightly dolomitic.
220	230	D		10		Shale - grey to dark grey, medium hard, micromicaceous silty in part.
230	250	D		20		Shale - grey to dark grey, medium hard, micromicaceous Siltstone - grey, medium to very hard, very slightly dolomitic, micromicaceous.
250	270	D		20		Sandstone - grey, medium to very hard, very fine grained, medium to poor sorting, quartzose (subrounded grains), chert (subrounded to rounded grains), trace of glauconite, clay matrix, very slightly dolomitic.
270	290	D		20		Sandstone - grey, medium to very hard, very fine grained grading to siltstone, medium hard to very hard poor sorting, quartzose (rounded grains), chert (rounded grains), micromicaceous in part, pyritic in part, carbonaceous veinlets and partings.
290	300	D		10		Shale - grey to dark grey, medium hard, micromicaceous silty in part. Sandstone - grey, medium hard to very hard, very fine grained grading to siltstone, poor

WELL NAME Bluemount et al Gulf South Delta J-80 SHEET No. 2.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						sorting, quartzose (rounded grains), chert (rounded grains), clay matrix, micromicaceous.
300	310	D		10		Sandstone - grey, medium to very hard, fine to medium grained, poor sorting, quartzose (rounded to subrounded grains), chert (subrounded grains), pyrite matrix in part, siliceous matrix in part, carbonaceous parting (trace).
310	330	D		20		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey, medium hard, slightly dolomitic. Sandstone - grey, medium hard, fine grained grading to siltstone, poor sorting, quartzose (rounded grains), chert (rounded grains), clay matrix in part, very slightly dolomitic.
330	340	D		10		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey, medium hard, very slightly dolomitic, carbonaceous partings in part.
340	350	D		10		Sandstone - grey, medium hard to very hard, fine grained grading to siltstone, medium sorting, quartzose (subrounded grains), chert (rounded grains), siliceous cement in part, micromicaceous.
350	380	D		30		Shale - grey to dark grey, medium hard, micrmicaceous. Sandstone - grey, medium hard to very hard, fine grained grading to siltstone, poor sorting, quartzose (subrounded grains), chert (subrounded grains), siliceous cement in part, some clay matrix, trace carbonaceous partings.
380	400	D		20		Sandstone - grey, medium to very hard, fine grained grading to siltstone, medium sorting, quartzose (rounded grains), chert (rounded grains), siliceous cement. Shale - grey to dark grey, medium hard, micromicaceous.
400	420	D		20		Sandstone - grey, medium to very hard, very fine grained grading to siltstone, medium to poor sorting, quartzose (rounded grains), chert (rounded grains), siliceous cement.
420	430	D		10		Siltstone - grey, medium hard to very hard, micromicaceous. Shale - grey to dark grey, medium hard, micromicaceous in part.
430	440	D		10		Sandstone - grey, medium hard, fine grained grading to siltstone, medium sorting, quartzose (rounded grains), mafics (subrounded grains), clay matrix in part.
440	460	D		20		Siltstone - grey, medium hard, micromicaceous. Sandstone - grey, medium hard, very fine grained, medium sorting, quartzose (rounded), clay matrix in part.
460	470	D		10		Siltstone - grey, medium hard. Shale - dark grey, medium hard, fissile in part, micromicaceous, trace carbonaceous partings.

FROM	TO	CORE C D DITCH	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
470	500	D		30		Shale - grey to dark grey, medium hard, micromicaceous, silty in part.
500	530	D		30		Sandstone - grey to dark grey, medium hard, fine grained grading to siltstone, medium sorting, quartzose (rounded grains), chert (rounded grains), clay matrix in part, quartz veinlets. Shale - grey to dark grey, medium hard, micromicaceous in part.
530	560	D		30		Siltstone - grey, medium hard, micromicaceous. Shale - grey to dark grey, medium hard, micromicaceous, trace quartz veinlets.
560	570	D		10		Sandstone - grey, medium hard, very fine grained, poor sorting, quartzose (rounded grains), chert (rounded grains). Shale - grey to dark grey, medium hard, micromicaceous, silty in part.
570	610	D		40		Shale - grey to dark grey, medium hard, micromicaceous, silty in part.
610	640	D		30		Siltstone - grey, medium hard. Shale - grey to dark grey, medium hard, micromicaceous, trace pyrite.
640	670	D		30		Shale - dark grey, medium hard, micromicaceous, silty in part.
670	680	D		10		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey, medium hard.
680	710	D		30		Siltstone - light grey to grey, medium hard. Sandstone - light grey, medium hard, very fine grained, medium sorting, quartzose (rounded grains), clay matrix in part. Shale - grey to dark grey, medium hard, micromicaceous, siliceous cement in small part.
710	720	D		10		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey, medium hard.
720	730	D		10		Siltstone - light grey, medium hard. Sandstone - grey and light grey, medium to very hard, poor sorting, quartzose (subround to round), chert (subrounded), siliceous cement, trace of carbonaceous material, trace of quartz veinlets.
730	770	D		40		Siltstone - light grey to grey, medium to very hard, sandy in part. Shale - grey to dark grey, medium hard, micromicaceous, trace quartz veinlets.
770	830	D		60		Siltstone - light grey to grey, medium hard, micaceous in part, sandy in part.
830	840	D		10		Siltstone - light grey to grey, medium hard, micromicaceous, sandy in part. Sandstone - light grey to grey, medium hard, very fine grained, poorly sorted, quartzose (rounded grains), mafics (subrounded grains), clay matrix in part.
840	960	D		120		Sandstone - light grey to grey, medium hard, fine grained grading to siltstone, poorly sorted, quartzose

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						(rounded grains), chert (rounded grains), clay matrix in part, micromicaceous in part, argillaceous. Siltstone - grey to dark grey, medium hard, micromicaceous trace of pyrite.
960	980	D		20		Sandstone - grey, medium hard, fine grained grading to siltstone, medium sorting, quartzose (rounded grains), mafics (subrounded grains), clay matrix, trace glauconite. Shale - grey to dark grey, medium hard, micromicaceous.
980	1,000	D		20		Sandstone - grey and grey-brown, medium hard, very fine grained grading to siltstone, poorly sorted, quartzose (rounded grains), chert (rounded grains), micromicaceous, carbonaceous in part, clay matrix in part. Trace of claystone - buff, slightly calcareous.
1,000	1,010	D		10		Sandstone - grey and grey-brown, medium hard, medium grained grading to siltstone, very poor sorting, quartzose (rounded grains), chert (rounded grains), trace glauconite, siliceous in small part, clay matrix.
1,010	1,030	D		20		Sandstone - grey and grey-brown, medium hard, very fine grained grading to siltstone, very poor sorting, quartzose (rounded grains), chert (rounded grains), some siliceous cement, some clay matrix. Shale - grey brown to dark grey, medium hard, micromicaceous in part.
1,030	1,040	D		10		Sandstone - grey brown, medium hard, medium grained grading to siltstone, poor sorting, chert (subrounded grains), quartz (subrounded grains), clay matrix. Siltstone - grey brown, medium hard.
1,040	1,090	D		50		Siltstone - grey and grey brown, medium hard, Sandstone - grey brown, medium hard, fine grained grading to siltstone, poorly sorted, quartzose (rounded grains), clay matrix. Shale - dark grey, medium hard, micromicaceous in part.
1,090	1,100	D		10		Siltstone - grey and grey brown, medium hard, sandy in part. Shale - dark grey, medium hard, micromicaceous
1,100	1,160	D		60		Siltstone - grey, medium hard. Sandstone - grey, medium hard, medium grained grading to siltstone, poorly sorted, chert (rounded grains), quartz (subrounded grains), clay matrix in part. Shale - dark grey, medium hard, micromicaceous.
1,160	1,190	D		30		Siltstone - grey, medium hard. Sandstone - grey, medium hard, medium grained grading to siltstone, poor to medium sorting, chert (subrounded), quartz (subrounded), clay matrix in part. Shale - dark grey, medium hard, micromicaceous.
1,190	1,210	D		20		Siltstone,- grey, medium hard, sandy in part. Shale - dark grey, medium hard.

WELL NAME Bluemount et al-Gulf South Delta J-80 SHEET No. 5

FROM	TO	CORE / DITCH	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
1,210	1,220	D		10		Shale - grey to dark grey, medium hard, micromicaceous, silty in part. Sandstone - grey and grey brown, medium hard to very hard, medium grained grading to siltstone, poor sorting, chert (rounded grains), quartz (subrounded grains), siliceous cement in small part, clay matrix in part. Quartz fragments.
1,220	1,240	D		20		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey, medium hard, micromicaceous, sandy in part. Sandstone - grey to dark grey, fine grained, medium hard, poor sorting, chert (rounded grains), quartz (subrounded grains), clay matrix. Quartz fragments.
1,240	1,270	D		30		Sandstone - grey and grey brown, medium to very hard, fine grained grading to siltstone, poor sorting, chert (subrounded grains), quartz (subrounded to rounded), siliceous cement in part, clay matrix in part. Shale - dark grey, medium hard, micromicaceous. Quartz veinlets. Claystone - white to grey, soft. Trace pyrite.
1,270	1,310	D		40		Sandstone - grey brown, medium hard, fine grained grading to siltstone, poor to medium sorting, quartzose (subrounded grains), chert (rounded grains), clay matrix in part, quartz veinlets. Shale - dark grey and dark brown, medium hard, micromicaceous in part. Claystone - white to grey, soft, calcareous in part.
1,310	1,340	D		30		Sandstone - grey and grey brown, medium hard, fine grained grading to siltstone, poorly sorted, quartzose (subrounded to rounded grains), chert (rounded), clay matrix in part, white, calcareous clay matrix in part, quartz veinlets.
1,340	1,370	D		30		Sandstone - grey and grey brown, medium hard, medium grained grading to siltstone, unsorted, chert (subrounded grains), quartz (subrounded), clay infilling in part, quartz veinlets, trace pyrite.
1,370	1,380	D		10		Sandstone - grey, medium hard, fine grained grading to siltstone, unsorted, quartzose (subrounded grains), chert (rounded grains), clay matrix in part. Siltstone - grey, medium hard, micromicaceous. Shale - dark grey, medium hard, micromicaceous, trace sideritic shale - brown.
1,380	1,400	D		20		Siltstone - grey, medium hard, micromicaceous, sandy. Shale - grey to dark grey and dark brown, medium hard to soft, slickensided in part. Sandstone - grey, medium hard to very hard, poorly sorted, quartzose (subrounded grains), chert (rounded grains), siliceous in part, pyrite matrix in part, clay matrix in part, quartz veinlets.
1,400	1,410	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey and grey-brown, medium hard, micromicaceous in part, sandy in part. Quartz grains - round, fine grained.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O, G, W,	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
1,410	1,420	D		10		Sandstone - grey and grey brown, medium hard, fine to very fine grained, quartzose (rounded grains), chert (rounded grains), clay matrix in part. Claystone - white to light grey, soft, slightly calcareous. Shale - grey to dark grey, medium hard, micromicaceous.
1,420	1,430	D		10		Siltstone - grey, medium hard, micromicaceous, sandy in part - chert and quartz grains, rounded, fine grained Shale - grey to dark grey, medium hard, micromicaceous.
1,430	1,440	D		10		Siltstone - grey and grey brown, medium hard, sandy in part, micromicaceous. Sandstone - grey to dark grey and grey brown, medium hard, fine grained grading to siltstone, poorly sorted, quartzose (subrounded grains) chert (subrounded grains), clay matrix in part, siliceous cement in part. Shale - dark grey to black, medium hard, micromicaceous, quartz veinlets. Claystone - white to light grey, slightly calcareous.
1,440	1,460	D		20		Sandstone - grey to dark grey, medium to very hard, fine grained grading to siltstone, poorly sorted, quartzose (rounded grains), clay matrix in part, siliceous cement. Siltstone - grey and grey brown, medium hard, micromicaceous, quartz veinlets. Claystone - white to grey, soft, slightly calcareous.
1,460	1,470	D		10		Sandstone - grey and grey brown, medium hard, medium grained grading to siltstone, poor sorting, chert (rounded grains), quartz (rounded grains), siliceous cement in small part, clay matrix in part, quartz veinlets. Claystone - white to grey, soft, very slightly calcareous, calcite crystals. Pyrite.
1,470	1,500	D		30		Siltstone, grey and grey brown, medium hard, sandy in part, quartz (subround, fine grains). Sandstone - grey and grey brown, medium hard, very fine grained grading to siltstone, poor sorting, chert (rounded grains), quartz (rounded grains), clay matrix. Shale - dark grey and dark brown, medium hard, micromicaceous, quartz veinlets. Claystone - white to grey, soft, slightly dolomitic.
1,500	1,525	D		25		Sandstone - grey to dark grey and dark brown, medium hard, fine grained grading to siltstone, poorly sorted, quartzose (rounded grains), chert (rounded grains), clay matrix common. Shale - grey to dark grey, medium hard, micromicaceous, quartz veinlets. Claystone - white to grey, soft, very slightly dolomitic.
1,525	1,540	D		15		Siltstone - grey brown to dark grey, medium, sandy in part, micromicaceous in part. Shale - dark grey, medium hard, micromicaceous, trace pyrite, trace of quartz veinlets.
1,540	1,550	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous, sandy in small part. Claystone - white to grey

FROM	TO	CORE C D DITCH	No. of Ft Porous	No. of Ft Non-porous	Shows O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						brown, soft.
1,550	1,590	D		40		Shale - dark grey, medium hard, micromicaceous, silty in part. Sandstone - grey and grey brown, medium hard, fine grained grading to siltstone, poorly sorted, quartzose (rounded to subrounded grains), trace of glauconite, clay matrix in part. Claystone - buff to grey brown, soft, trace quartz veinlets, slightly calcareous.
1,590	1,600	D		10		Shale - dark grey, medium hard, micromicaceous, silty in part. Siltstone - grey brown to dark grey, medium hard, micromicaceous.
1,600	1,620	D		20		Shale - dark grey, medium hard, micromicaceous. Sandstone - grey and grey brown, medium hard, very fine grained grading to siltstone, unsorted, quartzose (subangular to subrounded grains), clay matrix. Quartz grains - yellow and brown, medium grained, subangular.
1,620	1,650	D		30		Shale - dark grey and grey brown, medium hard, micromicaceous, silty in part. Trace Claystone - buff to grey, medium hard, very slightly calcareous. Trace pyrite.
1,650	1,660	D		10		Sandstone - grey brown to dark grey, medium to very hard, fine grained grading to siltstone, unsorted, quartzose (rounded grains), siliceous in part, clay matrix common. Shale - dark grey, medium hard, micromicaceous.
1,660	1,700	D		40		Shale - dark grey, medium hard, micromicaceous. Sandstone - grey brown, medium hard, very fine grained grading to siltstone, unsorted, quartzose (rounded grains), clay matrix. Claystone - buff to grey, soft.
1,700	1,710	D		10		Shale - dark grey, medium hard, micromicaceous. Sandstone - grey brown, medium hard, fine grained grading to siltstone, unsorted, quartzose (rounded and subrounded grains), chert (rounded grains), trace glauconite, clay cement in part. Claystone - buff to grey, soft. Trace quartz veinlets.
1,710	1,750	D		40		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard, micromicaceous in part. Trace Claystone - buff to grey, soft.
1,750	1,770	D		20		Shale - dark grey, medium hard, micromicaceous, carbonaceous partings. Siltstone - grey brown, medium hard, micromicaceous. Sandstone - grey brown, medium hard, fine grained grading to siltstone, poor to medium sorting, quartzose (subrounded grains), clay matrix in part. Trace Claystone - white to grey, soft.
1,770	1,780	D		10		Shale - dark grey, medium hard, micromicaceous, carbonaceous partings in part. Siltstone - grey brown, medium hard, micromicaceous.

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Oil, Gas, Water	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
1,780	1,790	D		10		Shale - dark grey, medium hard, micromicaceous, fissile in small part.
1,790	1,800	D		10		Shale - dark grey, medium hard, micromicaceous, Siltstone - grey brown, medium hard, very slightly dolomitic, sandy in part. Quartz veinlets (trace). Trace calcite.
1,800	1,820	D		20		Shale - dark grey, medium hard, micromicaceous, carbonaceous flecks and partings, fissile in small part. Siltstone - grey brown to dark grey, medium hard, dolomitic in small part, micromicaceous.
1,820	1,840	D		20		Shale - dark grey, medium hard, micromicaceous, fissile in part. Siltstone - grey brown to dark grey, medium hard, sandy in part, slightly dolomitic in part, secondary anhydrite - microcrystalline and calcite filling fractures. Claystone - white, buff and grey, soft.
1,840	1,890	D		50		Shale - dark grey, medium hard, micromicaceous, fissile in part. Sandstone - grey brown to dark brown, medium hard, very fine grained grading to siltstone, poor sorting, quartzose (subrounded grains), clay matrix, trace pyrite, calcite and secondary anhydrite vein filling. Claystone - white to grey, soft, slightly dolomitic.
1,890	1,910	D		20		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard, disseminated pyrite, trace calcite.
1,910	1,930	D		20		Shale - dark grey, medium hard, micromicaceous, interbedded with Sandstone - grey brown to dark grey, medium hard, very fine grained grading to siltstone, medium sorting, quartzose (rounded grains), trace glauconite, clay matrix in part. Claystone - white to grey, soft.
1,930	1,940	D		10		Shale - dark grey, medium hard, micromicaceous, silty in part. Siltstone - grey and grey brown, medium hard, micromicaceous, calcite veinlets. Claystone - buff to grey, soft, slightly calcareous.
1,940	1,970	D		30		Siltstone - grey, medium hard, micromicaceous. Sandstone - grey, medium hard, very fine grained, poorly sorted, quartzose (rounded to subangular grains), siliceous cement in small part, clay matrix in part. Shale - dark grey, medium hard, micromicaceous. Calcite veinlets common.
1,970	2,030	D		60		Siltstone - grey, medium hard, sandy in small part. Sandstone - grey, medium hard, very fine grained, medium sorting, quartzose (rounded to subangular grains), trace of glauconite, clay matrix in part. Quartz veinlets common. Shale - dark grey, medium hard, micromicaceous. Trace calcite. Trace Claystone - buff to grey, soft.
2,030	2,040	D		10		Siltstone - grey, medium hard, sandy in part. Shale -

FROM	TO	CORE / DITCH	No. of Ft Porous	No. of Ft Non-porous	Shows of O.C.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						dark grey, medium hard, micromicaceous in small part. Calcite and secondary anhydrite veinlets.
2,040	2,060	D		20		Shale - dark grey to black, medium hard, micromicaceous. Sandstone - light grey, salt and pepper, medium hard, medium sorting, quartzose (subrounded grains), mafics (subrounded grains), clay matrix common. Claystone - (trace), buff to grey, soft. Quartz veinlets (trace).
2,060	2,120	D		60		Siltstone - grey brown, medium hard, sandy in small part, micromicaceous. Shale - dark grey, medium hard, micromicaceous. Sandstone - grey, medium hard, very fine grained, poorly sorted, quartzose (subrounded grains), chert (subrounded grains), clay matrix in part, siliceous cement in small part. Claystone - buff to grey, soft, slightly dolomitic. Pyrite. Trace Calcite.
2,120	2,140	D		20		Siltstone - grey and grey brown, medium hard, sandy in small part. Shale - dark grey, medium hard, micromicaceous, slightly fissile. Quartz veinlets. Claystone - buff to grey, soft. Trace secondary anhydrite.
2,140	2,200	D		60		Siltstone - grey and grey brown, medium hard, micromicaceous. Sandstone - grey and grey brown, medium hard, very fine grained. medium sorting, quartzose (subrounded grains), siliceous in part, clay matrix in part. Shale - dark grey, medium hard, micromicaceous, Claystone (trace) - buff to grey, soft. Trace secondary anhydrite - buff, microcrystalline. Trace of slickensiding.
2,200	2,210	D		10		Shale - dark grey, medium hard, micromicaceous, slickensided. Siltstone - grey and grey brown, medium hard, micromicaceous, sandy in part. Trace Calcite. Trace of secondary anhydrite on fracture faces. Claystone - buff to grey, soft.
2,210	2,220	D		10		Siltstone - light grey to grey brown and dark grey, medium hard, sandy in part. Shale - grey to dark grey, medium hard, micromicaceous. Calcite and secondary anhydrite on fracture faces.
2,220	2,240	D		20		Siltstone - grey to dark grey and grey brown, medium hard, micromicaceous, sandy in part. Shale - dark grey, medium hard, micromicaceous. Quartz veinlets, calcite crystals and secondary anhydrite on fracture faces.
2,240	2,250	D		10		Sandstone - light grey and grey brown, medium hard, very fine grained grading to siltstone, poor sorting, quartzose (subrounded grains), mafics (subrounded), micaceous in part, clay matrix in part. Siltstone - grey and grey brown, medium hard, micromicaceous, quartz crystals and calcite in fractures, partings of carbonaceous material. Claystone - buff to grey, soft.
2,250	2,320	D		70		Siltstone - grey brown, medium hard, micromicaceous, sandy in part. Shale - grey to dark grey, medium hard,

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O, G, W	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						micromicaceous. Secondary anhydrite and calcite fracture filling. Claystone - buff to grey, soft. Quartz fragments. Trace pyrite.
2,320	2,350	D		30		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark brown, medium hard. Claystone - buff to grey, soft. Quartz, calcite and secondary anhydrite fracture filling.
2,350	2,380	D		30		Siltstone - grey brown, medium hard, micromicaceous. Shale - dark grey, medium hard, micromicaceous. Calcite quartz and secondary anhydrite fracture filling. Claystone - (trace) buff to grey, soft.
2,380	2,410	D		30		Siltstone - grey brown, medium hard, micromicaceous, sandy in part. Shale - dark grey, medium hard, micromicaceous. Sandstone - grey brown, medium hard, very fine grained, poorly sorted, quartzose (subrounded grains), chert (rounded grains), micaceous in part, clay matrix in part, secondary anhydrite, calcite and quartz veinlet filling. Claystone - buff to grey, soft.
2,410	2,430	D		20		Shale - grey to dark grey, medium hard, micromicaceous, blocky in part. Siltstone - grey to dark grey, medium hard, pyritic in small part, micromicaceous. Calcite and secondary anhydrite as fracture filling. Trace Claystone - buff to grey, soft. Trace of slickensiding in small part.
2,430	2,490	D		60		Siltstone - grey brown to dark grey, medium hard, micaceous, sandy in part. Shale - dark grey, medium hard, micromicaceous. Quartz, calcite and secondary anhydrite fracture filling. Trace Claystone - buff to grey, soft.
2,490	2,520	D		30		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard. Quartz and calcite as fracture filling. Trace Claystone buff to grey, soft. Trace pyrite veinlets.
2,520	2,540	D		20		Siltstone - grey brown to dark brown, medium hard, micromicaceous. Shale - dark grey, medium hard, micromicaceous, slickensided in part. Quartz and calcite fracture filling. Trace Claystone - buff to grey, soft.
2,540	2,550	D		10		Shale - dark grey, medium hard, micromicaceous, trace of slickensiding. Siltstone - grey brown, medium hard, micromicaceous. Claystone - buff to grey, quartz and secondary anhydrite as fracture filling.
2,550	2,590	D		40		Siltstone - grey brown to dark grey, medium hard, micromicaceous, sandy in part. Shale - grey to dark grey, medium hard, micromicaceous, blocky. Claystone - buff to grey. Quartz, calcite and secondary anhydrite as fracture filling.
2,590	2,600	D		10		Siltstone - grey to dark grey, medium hard, micromicaceous. Shale - grey to dark grey, medium hard, micro-

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Kind O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						micaceous, blocky in part. Sandstone - grey, medium hard to very hard, very fine grained, poor sorting, quartzose (subangular grains), siliceous in part, clay matrix in part. Calcite and secondary anhydrite fracture filling.
2,600	2,620	D		20		Shale - dark grey, medium hard, blocky, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous. Shale slickensided in very small part. Calcite, quartz and secondary anhydrite fracture filling.
2,620	2,640	D		20		Siltstone - grey brown to dark grey, medium hard, micromicaceous. Shale - grey to black, medium hard, micromicaceous. Calcite, quartz and secondary anhydrite fracture filling.
2,640	2,680	D		40		Shale - dark grey to black, medium hard, micromicaceous, blocky in part. Siltstone - grey to dark grey, medium hard, sandy in part, micromicaceous. Calcite and secondary anhydrite fracture filling. Slickensiding.
2,680	2,690	D		10		Siltstone - grey to dark grey, medium hard, micromicaceous. Shale - dark grey, medium hard, micromicaceous. Calcite, quartz and secondary anhydrite fracture filling. Trace slickensiding.
2,690	2,750	D		60		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous, sandy in part. Calcite, quartz and secondary anhydrite fracture filling. Trace slickensiding.
2,750	2,780	D		30		Siltstone - light to dark grey and grey brown, medium hard, micromicaceous. Shale - grey to dark grey, medium hard, micromicaceous. Calcite, quartz and secondary anhydrite as fracture filling.
2,780	2,820	D		40		Shale - dark grey, medium hard, micromicaceous, quartz, secondary anhydrite and calcite fracture filling.
2,820	2,830	D		10		Shale - dark grey, medium hard, micromicaceous. Sandstone - grey to dark grey, medium to fine grained, medium to very hard, poorly sorted, chert (rounded grains), quartz (rounded, frosted grains), clay matrix. Calcite, quartz and secondary anhydrite fracture filling.
2,830	2,860	D		30		Shale - dark grey, medium hard, micromicaceous. Calcite and quartz fracture filling.
2,860	2,870	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, sandy in small part, micromicaceous.
2,870	2,880	D		10		Siltstone - grey brown to dark grey, medium hard, micromicaceous, sandy in part. Quartz, calcite and secondary anhydrite fracture filling.
2,880	2,930	D		50		Siltstone - grey brown to dark grey, medium hard, micromicaceous, sandy in part. Shale - dark grey, medium hard, micromicaceous. Quartz, calcite and second-

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows(s) O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						ary anhydrite fracture filling.
2,930	2,940	D		10		Siltstone - grey and grey brown to dark brown, medium hard, micromicaceous. Sandstone - grey brown, medium hard, fine to very fine grained, medium sorting, chert (rounded grains), quartz (rounded to subrounded grains), clay matrix in part. Shale - dark grey, medium hard, micromicaceous. Quartz and secondary anhydrite fracture filling.
2,940	2,960	D		20		Siltstone - dark grey to grey brown, medium hard, micromicaceous, sandy in part. Shale - dark grey, medium hard, micromicaceous, quartz and secondary anhydrite infilling fractures.
2,960	2,970	D		10		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard. Trace Sandstone - white to light brown, medium hard, medium sorting, quartzose (subrounded grains), micaceous, white clay matrix, dolomitic. Quartz and secondary anhydrite as fracture filling.
2,970	2,980	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - light to dark grey, medium hard, micromicaceous. Quartz and secondary anhydrite fracture filling.
2,980	2,990	DD		10		Shale - dark grey, medium hard, micromicaceous, silty in part. Quartz and secondary anhydrite as fracture filling.
2,990	3,040	D		50		Siltstone - grey to dark grey, medium hard, micromicaceous, sandy in small part. Shale - grey to dark grey, medium hard, trace secondary dolomite and secondary anhydrite as fracture filling. Trace slickensiding.
3,040	3,050	D		10		Sandstone - light grey to grey, medium hard, fine to very fine grained, poor sorting, quartzose (subrounded to rounded grains), clay matrix in part. Siltstone - light to dark grey, medium hard, micromicaceous. Shale - grey to dark grey, medium hard, micromicaceous. Secondary anhydrite, secondary dolomite and quartz fracture filling.
3,050	3,090	D		40		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - light to dark grey, medium hard, micromicaceous, quartz and secondary anhydrite fracture filling.
3,090	3,130	D		40		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - light to dark grey, medium hard, micromicaceous. Sandstone - light grey to grey, medium hard, poor sorting, quartzose (subrounded grains), clay matrix in part, secondary anhydrite, secondary dolomite and quartz fracture filling.
3,130	3,160	D		30		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey and grey brown to dark grey, medium hard, quartz, secondary dolomite and secondary anhydrite

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						as fracture filling. Trace slickensiding.
3,160	3,190	D		30		Siltstone - grey to grey brown and dark grey, medium hard, sandy in part, quartz, secondary dolomite and secondary anhydrite fracture filling.
3,190	3,240	D		50		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark grey. Secondary dolomite and secondary anhydrite fracture filling.
3,240	3.250	D		10		Siltstone - grey to dark grey, medium hard, micromicaceous. Shale - grey to dark grey, medium hard, micromicaceous, trace of slickensiding, quartz fracture filling.
3,250	3,260	D		10		Siltstone - grey to dark grey, medium hard, micromicaceous in part. Sandstone - light grey to grey, medium hard to very hard, medium sorting, quartzose (rounded to subrounded grains), clay matrix in part, siliceous cement in part. Shale - grey to dark grey, medium hard, micromicaceous, quartz and secondary anhydrite fracture filling.
3,260	3,280	D		20		Siltstone - grey to dark grey, medium hard, micromicaceous in part, quartz and secondary anhydrite fracture filling.
3,280	3,310	D		30		Siltstone - grey to dark grey, medium to very hard, micromicaceous. Shale - dark grey to black, medium hard, micromicaceous. Quartz and secondary anhydrite fracture filling.
3,310	3,320	D		10		Sandstone - grey, medium to vey hard, very fine grained grading to siltstone, medium sorting, quartzose (subrounded to rounded grains), siliceous in part, clay matrix in part. Siltstone - grey to dark grey, medium to very hard, micromicaceous in part. Quartz and secondary anhydrite fracture filling.
3,320	3,330	D		10		Siltstone - grey, grey brown and dark grey, medium to very hard, micromicaceous in part. Quartz and secondary anhydrite fracture filling.
3,330	3,340	D		10		Silstone - grey, grey brown and dark grey, medium to very hard, micromicaceous in part. Sandstone - grey brown and dark grey, medium hard to very hard, very fine grained, medium sorting, quartzose (subrounded grains), chert (rounded grains), clay matrix in part, siliceous in part. Quartz and secondary anhydrite fracture filling.
3,340	3,410	D		70		Shale - grey to dark grey, medium hard, micromicaceous, Siltstone - grey to dark grey, medium hard, micromicaceous, quartz, secondary anhydrite and calcite as fracture filling.
3,410	3,430	D		20		Siltstone - grey brown to dark grey, medium hard. Sandstone - grey brown, medium to very hard, fine grained, medium sorting, quartzose (subangular to

FROM	TO	CORE / DITCH	No. of Ft Porous	No. of Ft Non-porous	Showings C.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						subrounded), siliceous in part. Quartz and secondary anhydrite fracture filling.
3,430	3,440	D		10		Shale - dark grey to grey, medium hard, micromicaceous in part. Siltstone - grey, grey brown and dark grey, medium hard, micromicaceous in part, quartz and secondary anhydrite fracture filling.
3,440	3,450	D		10		Shale - dark grey to grey, medium hard, micromicaceous in part, quartz and secondary dolomite fracture filling.
3,450	3,490	D		40		Siltstone - grey brown to dark grey, medium hard, micromicaceous. Shale - grey to dark grey, medium hard, blocky in part, secondary dolomite fracture filling.
3,490	3,520	D		30		Siltstone - grey brown to dark grey, medium hard, micromicaceous. Sandstone - grey brown, medium hard, very fine grained, medium sorting, quartzose (rounded to subrounded grains), chert (subrounded grains), clay matrix in part, slightly siliceous in part. Shale - dark grey, medium hard, micromicaceous. Quartz fracture filling.
3,520	3,550	D		30		Sandstone - grey brown, medium hard, fine grained grading to siltstone, medium sorting, quartzose (rounded grains), mafic (subrounded grains), clay matrix in large part. Siltstone - grey brown to dark grey, medium hard, sandy in part. Quartz and secondary anhydrite fracture filling.
3,550	3,560	D		10		Siltstone - grey to dark grey and grey brown, medium hard, sandy in part. Shale - dark grey to black, medium hard, micromicaceous, trace slickensiding. Quartz and secondary anhydrite fracture filling.
3,560	3,570	D		10		No sample caught.
3,570	3,580	D		10		Shale - grey to black, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard, quartz fracture filling.
3,580	3,590	D		10		Siltstone - grey brown and dark grey, medium to very hard, micromicaceous. Sandstone - fine grained to very fine grained, medium sorting, quartzose (subrounded grains), chert (rounded grains), clay matrix. Shale - grey to black, medium hard, micromicaceous. Quartz fracture filling.
3,590	3,620	D		30		Shale - dark grey to black, medium hard, micromicaceous in part, fissile in small part. Trace Quartz fracture filling.
3,620	3,640	D		20		Siltstone- light grey, grey brown and dark grey, medium hard. Shale - grey to dark grey, medium hard, micromicaceous, splintery in part. Sandstone - light grey to grey, medium hard, very fine grained, medium sorting, quartzose (rounded grains), clay matrix in part, siliceous in part. Quartz fracture filling.

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
3,640	3,650	D		10		Shale - grey to dark grey and black, medium hard, micromicaceous. Siltstone - light to dark grey, medium hard, quartz fracture filling.
3,650	3,660	D		10		Shale - grey to dark grey and black, medium hard, micromicaceous, silty in part. Sandstone - grey, medium hard to very hard, fine grained, medium sorting, quartzose (subrounded to subangular grains), siliceous cement. Quartz and secondary anhydrite fracture filling.
3,660	3,720	D		60		Shale - grey to dark grey, medium hard, micromicaceous, fissile in small part. Siltstone - grey to dark grey, medium hard, secondary anhydrite and quartz as fracture filling. Trace slickensiding.
3,720	3,730	D		10		Siltstone - grey brown to dark grey, medium hard, quartz and secondary anhydrite fracture filling.
3,730	3,740	D		10		Shale - grey to dark grey, micromicaceous. Siltstone - grey brown to dark grey, medium hard, quartz fracture filling.
3,740	3,760	D		20		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous. Sandstone - light grey, medium hard, very fine grained, medium sorting, quartz (subrounded grains), chert (subrounded grains), clay matrix in part, quartz fracture filling.
3,760	3,790	D		30		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous, quartz fracture filling.
3,790	3,850	D		60		Shale - grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous, quartz and secondary anhydrite fracture filling.
3,850	3,860	D		10		Shale - grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous. Sandstone - grey to dark grey, medium to very hard, very fine grained, quartzose (subangular grains), siliceous in part, clay matrix in part, quartz and calcite in fractures.
3,860	3,890	D		30		Shale - grey to black, medium hard, micromicaceous in part, fissile in part, silty in small part.
3,890	3,900	D		10		Shale - grey to dark grey, medium hard, micromicaceous, splintery in part. Siltstone - grey to dark grey, medium hard, sandy in part, slightly dolomitic, calcite, secondary anhydrite and quartz fracture filling.
3,900	3,910	D		10		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - grey brown and dark grey, hard to very hard, siliceous in part. Trace Sandstone - dark grey, very hard, medium sorting, quartz (subrounded grains), chert (subrounded to rounded grains), siliceous, quartzitic, quartz, secondary anhydrite.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Oil, Gas, Wtr.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
3,910	3,930	D		20		Shale - dark grey, medium hard, micromicaceous. Shale - dark brown, medium to very hard, siliceous. Siltstone - grey to dark grey, medium to very hard, siliceous in part. Sandstone - grey, medium hard to very hard, coarse to fine grained, poor sorting, chert (subangular grains), quartz (subrounded to rounded grains), siliceous cement, trace of coarse chert grains (floating). Secondary anhydrite and secondary dolomite and quartz fracture filling.
3,930	3,940	D		10		Siltstone - buff to dark grey, medium to very hard, slightly dolomitic. Shale - black to grey, medium hard, micromicaceous in part, Sandstone - grey to dark grey, medium hard to very hard, quartzitic in part, medium sorting, quartzose (subrounded grains), siliceous cement.
3,940	3,950	D		10		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - dark grey, medium to very hard, sandy in part. Trace Sandstone - grey, medium to very hard, medium to very fine grained.
3,950	3,980	D		30		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - dark grey, medium hard to very hard. Sandstone - grey to dark grey, fine grained to medium grained, poorly sorted, chert (rounded), quartz (subrounded), siliceous cement, quartzitic in part, quartz and secondary anhydrite fracture filling.
3,980	3,990	D		10		Shale - dark grey to black, medium hard to very hard, micromicaceous. Siltstone - grey brown to dark grey, medium to very hard, sandy in part, siliceous in part, secondary anhydrite and quartz as fracture filling. Trace of slickensiding.
3,990	4,030	D		40		Shale - dark grey, medium hard, micromicaceous, silty in part, quartz and secondary anhydrite as fracture filling. Trace of slickensiding.
4.030	4,040	D		10		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard, very slightly dolomitic, secondary dolomite and secondary anhydrite as fracture filling.
4,040	4,050	D		10		Shale - dark grey to black, medium hard, micromicaceous, secondary anhydrite and secondary dolomite as fracture filling.
4,050	4,080	D		30		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey brown and dark grey, medium hard, pyrite (trace), secondary dolomite and secondary anhydrite fracture filling.
4,080	4,090	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium to very hard. Trace Sandstone - grey, medium to very hard, poor sorting, quartzose (subrounded grains), mafics (rounded to subrounded), siliceous (quartzitic), quartz and

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Oil, Gas, Water	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						secondary dolomite fracture filling.
4,090	4,130	D		40		Shale - dark grey, medium hard, micromicaceous, quartz and secondary anhydrite fracture filling.
4,130	4,140	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, secondary anhydrite and quartz fracture filling.
4,140	4,160	D		20		Shale - dark grey, medium hard, micromicaceous, secondary anhydrite fracture filling.
4,160	4,170	D		10		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, medium to very hard. Secondary dolomite and secondary anhydrite fracture filling.
4,170	4,190	D		20		Shale - dark grey to black, medium hard, micromicaceous, fissile in part, secondary anhydrite fracture filling. Trace slickensiding.
4,190	4,200	D		10		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, calcite fracture filling.
4,200	4,210	D		10		Shale - grey to dark grey, medium hard, micromicaceous, calcite fracture filling.
4,210	4,220	D		10		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, slightly dolomitic, calcite fracture filling.
4,220	4,240	D		20		Shale - grey to dark grey and dark brown, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, dolomitic, secondary dolomite fracture filling.
4,240	4,250	D		10		Sandstone - grey, medium hard, fine grained, medium sorting, quartzose (subrounded grains), chert (subrounded grains), slightly dolomitic. Siltstone - buff to dark grey, medium hard, slightly dolomitic, quartz and secondary dolomite fracture filling.
4,250	4,280	D		30		Shale - black, medium hard, micromicaceous, platy. Siltstone - buff to grey brown and dark grey, medium hard, micromicaceous, dolomitic. Sandstone - grey brown, medium hard, fine to very fine grained, medium sorting, quartzose (rounded to subangular grains), dolomitic, quartz and secondary dolomite fracture filling.
4,280	4,320	D		40		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, slightly dolomitic, calcite and secondary anhydrite fracture filling. Trace slickensiding.
4,320	4,340	D		20		Shale - black to dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium to very hard, slightly dolomitic, sandy in part, secondary dolomite fracture filling.

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
4,340	4,360	D		20		Shale - dark grey to black, medium hard, micromicaceous, secondary dolomite as fracture filling.
4,360	4,380	D		20		Shale - grey to dark grey, medium hard, micromicaceous in part. Siltstone - buff to grey and dark grey, dolomitic, medium hard, micromicaceous, secondary dolomite fracture filling.
4,380	4,400	D		20		Siltstone - light to dark grey, medium hard, micromicaceous, dolomitic. Shale - grey to dark grey, medium hard, micromicaceous, quartz and secondary dolomite fracture filling.
4,400	4,410	D		10		Siltstone - grey brown, medium hard, micromicaceous, dolomitic, quartz and secondary dolomite fracture filling.
4,410	4,430	D		20		Siltstone - grey brown to dark grey, medium hard, micromicaceous, dolomitic. Sandstone - light grey, medium to very hard, fine grained, medium sorting, quartzose (subrounded grains), dolomitic, quartzitic. Shale - dark grey, medium hard, micromicaceous, quartz and secondary dolomite fracture filling.
4,430	4,460	D		30		Siltstone - grey to dark grey, medium hard, micromicaceous, dolomitic. Shale - grey to dark grey, medium hard, dolomitic, micromicaceous in part, secondary dolomite and quartz fracture filling.
4,460	4,470	D		10		Shale - grey to dark grey, medium hard, micromicaceous in part. Sandstone - light grey to grey, medium hard, very fine grained, poorly sorted, quartzose (subrounded grains), dolomitic, siliceous in small part, quartz and secondary dolomite fracture filling.
4,470	4,480	D		10		Shale - grey to dark grey, medium hard, micromicaceous in part, Siltstone - light grey to grey, medium hard, micromicaceous, dolomitic, secondary dolomite and quartz fracture filling.
4,480	4,490	D		10		Shale - grey to dark grey, medium hard, micromicaceous in part. Sandstone - grey brown, medium hard, very fine grained grading to siltstone, poorly sorted, quartzose (rounded grains), dolomitic, clay matrix in part, micaceous, secondary anhydrite and calcite fracture filling.
4,490	4,510	D		20		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - light to dark grey, medium hard, micromicaceous, dolomitic, secondary dolomite as fracture filling.
4,510	4,520	D		10		Trip sample, cannot interpret.
4,520	4,530	D		10		Shale - dark grey to black, medium hard, micromicaceous, trace carbonaceous partings, dolomitic in small part. Siltstone - grey to dark grey, medium hard to very hard, micromicaceous in part, dolomitic, secondary anhydrite,

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						secondary dolomite and calcite as fracture filling.
4,530	4,560	D		30		Shale - dark grey to black, medium hard, micromicaceous Siltstone - grey to dark grey, medium hard,
4,560	4,580	D		20		Shale - grey to black, medium hard, micromicaceous in part. Sandstone - light grey, medium hard, fine grained grading to siltstone, unsorted, quartzose (subrounded grains), argillaceous, slightly siliceous in part, secondary dolomite fracture filling.
4,580	4,590	D		10		Sandstone - light grey, medium to very hard, very fine grained grading to siltstone unsorted, quartzose (subangular grains), siliceous in part, dolomitic, micaceou Siltstone - light grey to grey, medium hard, micromicaceous. Quartz fracture filling, also secondary dolomite.
4,590	4,600	D		10		Siltstone - light grey to grey, medium to very hard, micromicaceous, slightly dolomitic, secondary dolomite and quartz fracture filling.
4,600	4,610	D		10		Sandstone - light grey, salt and pepper, medium hard, fine grained grading to siltstone, medium sorting, quartzose (subrounded grains), mafics (subrounded grains), siliceous matrix in part, clay matrix in part, secondary dolomite and quartz fracture filling.
4,610	4,640	D		30		Siltstone - grey to dark grey, medium hard, dolomitic. Sandstone - light grey, medium hard, very fine grained, medium sorting, quartzose (subrounded), mafics (subrounded grains), siliceous matrix in part, dolomitic, clay matrix in part, secondary dolomite and quartz fracture filling.
4,640	4,650	D		10		Shale - dark grey to dark brown, medium hard, micromicaceous, slightly dolomitic in part, secondary dolomite fracture filling.
4,650	4,670	D		20		Siltstone - grey, grey brown and dark grey, medium hard, micromicaceous, sandy in part, dolomitic. Shale - dark grey, medium hard, micromicaceous, secondary dolomite and quartz fracture filling.
4,670	4,680	D		10		Shale - dark grey to black, medium hard, micromicaceous silty in small part.
4,680	4,690	D		10		Siltstone - buff to dark grey, medium hard, slightly dolomitic, sandy in small part, micromicaceous in small part. Shale - dark grey, medium hard, micromicaceous, secondary dolomite fracture filling.
4,690	4,720	D		30		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard, micromicaceous, dolomitic, secondary dolomite as fracture filling.
4,720	4,750	D		30		Sandstone - light grey, medium hard, fine to very fine grained, poor to medium sorting, quartzose (subrounded to subangular grains), dolomitic, siliceous in part,

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O, G, W	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						clay matrix in part. Siltstone - light to dark grey, medium hard, micromicaceous, dolomitic. Shale - grey to black and dark brown, medium hard, micromicaceous, splintery in part.
4,750	4,770	D		20		Shale - grey to dark grey and black, medium hard, micromicaceous. Siltstone - grey brown to dark grey, medium hard, micromicaceous, dolomitic, trace carbonaceous partings, secondary dolomite and secondary anhydrite fracture filling.
4,770	4,780	D		10		Siltstone - light to dark grey, medium to very hard, micromicaceous. Sandstone - light grey, medium to very hard, very fine grained, medium sorted, quartzose (subangular grains), siliceous in part, dolomitic, clay matrix in part, secondary dolomite fracture filling.
4,780	4,790	D		10		Shale - black to dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium to very hard, argillaceous, dolomitic.
4,790	4,800	D		10		Shale - grey to dark grey, medium hard, micromicaceous, calcite fracture filling.
4,800	4,820	D		20		Siltstone - grey brown to dark grey, medium to very hard, micromicaceous in part, siliceous in part, dolomitic. Shale - dark grey, medium hard, micromicaceous, secondary dolomite and secondary anhydrite as fracture filling.
4,820	4,830	D		10		Siltstone - grey to dark grey, medium to very hard, micromicaceous in part, dolomitic, grading to Sandstone grey, medium hard, very fine grained, poorly sorted, quartzose (rounded grains), argillaceous, dolomitic, clay matrix in part. Shale - grey to black, medium hard, micromicaceous, quartz, calcite and secondary dolomite as fracture filling.
4,830	4,850	D		20		Siltstone - grey brown to dark grey, medium to very hard, siliceous in part, dolomitic, sandy in part (fine rounded quartz grains), quartz and secondary dolomite fracture filling.
4,850	4,860	D		10		Sandstone - grey brown, medium hard, very fine grained grading to siltstone, medium sorting, quartzose (subrounded grains), dolomitic, quartzitic in small part, secondary dolomite fracture filling.
4,860	4,880	D		20		Shale - black to dark grey, medium hard, micromicaceous splintery in part. Sandstone - grey brown, medium hard very fine grained grading to siltstone, medium sorting, quartzose (subrounded grains), dolomitic, quartzitic in small part, quartz and secondary dolomite fracture filling.
4,880	4,890	D		10		Siltstone - grey, medium to very hard, micromicaceous, dolomitic, secondary dolomite as fracture filling.

WELL NAME Bluemount et al Gulf South Delta J-80 SHEET No. 21

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Oil Gas Wtr	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
4,890	4,900	D		10		Siltstone - grey brown to dark grey, medium hard, dolomitic. Shale - dark grey to black, medium hard, micromicaceous, quartz, secondary dolomite and secondary anhydrite as fracture filling.
4,900	4,960	D		60		Sandstone - grey brown, medium hard, very fine grained grading to siltstone, poor sorting, quartzose (subrounded to rounded grains), dolomitic. Siltstone - grey to dark grey, medium hard, dolomitic, secondary anhydrite, secondary dolomite and quartz as fracture filling.
4,960	4,990	D		30		Shale - dark grey, medium hard, micromicaceous, splintery in part. Sandstone - grey and grey brown, medium hard, very fine grained grading to siltstone, poor sorting, quartzose (subrounded to subangular grains), dolomitic.
4,990	5,010	D		20		Shale - grey to black, medium hard, micromicaceous, splintery in part. Siltstone - light to dark grey; medium hard, dolomitic, quartz and secondary dolomite fracture filling.
5,010	5,030	D		20		Shale - dark grey to black, medium hard, micromicaceous splintery in part. Siltstone - grey to dark grey, medium hard, dolomitic, sandy in part, secondary dolomite and quartz fracture filling.
5,030	5,070	D		40		Shale - dark grey to black, medium hard, micromicaceous. Sandstone - light to dark grey, medium hard, very fine grained grading to siltstone, medium sorting, quartzose (subangular grains), dolomitic, secondary dolomite, secondary anhydrite and quartz fracture filling.
5,070	5,080	D		10		Sandstone - light grey to grey, medium hard, very fine grained grading to siltstone, poor to medium sorted, quartzose (rounded grains), slightly dolomitic, clay matrix in part, micromicaceous in part. Shale - dark grey to black, medium hard, micromicaceous in part, secondary dolomite and secondary anhydrite fracture filling.
5,080	5,100	D		20		Sandstone - light grey to grey, medium hard, very fine grained, medium sorting, quartzose (rounded grains), dolomitic, clay matrix in part. Siltstone - light to dark grey, medium hard, micromicaceous, dolomitic, secondary dolomite and secondary anhydrite fracture filling.
5,100	5,110	D		10		Shale - dark grey to black, medium hard, micromicaceous fissile in part. Siltstone - light to dark grey, medium hard, dolomitic, secondary dolomite fracture filling.
5,110	5,150	D		40		Shale - dark grey to black, medium to very hard, micromicaceous. Sandstone - grey to dark grey, medium hard, very fine grained grading to siltstone, quartzose (subrounded grains), mafics (subrounded grains),

FROM	TO	CORE / DITCH	No. of Ft Porous	No. of Ft Non-porous	Shewings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						dolomitic, clay matrix in part, secondary anhydrite fracture filling. Slickensiding (trace).
5,150	5,260	D		110		Siltstone - grey brown to dark grey, medium hard, micromicaceous, dolomitic, sandy in part. Shale - dark grey to black, medium hard, micromicaceous, secondary dolomite fracture filling.
5,260	5,270	D		10		Sandstone - grey, medium hard to very hard, very fine grained grading to siltstone, poorly sorted, quartzose (subrounded grains), dolomitic, siliceous in small part, clay matrix in part. Siltstone - grey to dark grey, medium to very hard, micromicaceous. Shale - dark grey, medium hard, micromicaceous, secondary dolomite fracture filling.
5,270	5,310	D		40		Shale - grey to black, medium hard, micromicaceous, splintery. Siltstone - grey to dark grey, medium hard, micromicaceous, sandy in part, dolomitic, quartz and secondary dolomite fracture filling.
5,310	5,320	D		10		Shale - dark grey, medium hard, micromicaceous, silty in part. Sandstone - light to dark grey, very fine grained, poorly sorted, quartzose (subrounded grains), dolomitic, clay matrix in part. Siltstone - grey to dark grey, medium hard, dolomitic, quartz fracture filling.
5,320	5,340	D		20		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, medium to very hard, micromicaceous in part, dolomitic.
5,340	5,350	D		10		Shale - dark grey to black, medium hard, micromicaceous, silty in part. Sandstone - light to dark grey, medium to very hard, fine grained grading to siltstone, poorly sorted, quartzose (subrounded to subangular grains), siliceous in part, dolomitic in part, clay matrix in part, secondary anhydrite fracture filling. Trace slickensiding.
5,350	5,360	D		10		Sandstone - light to dark grey, medium hard, fine grained grading to siltstone, poor sorting, quartzose (subrounded to rounded grains), dolomitic, clay matrix in part, secondary anhydrite and secondary dolomite fracture filling.
5,360	5,400	D		40		Siltstone - grey to dark grey, medium to very hard, carbonaceous partings, dolomitic, grading to Sandstone - light to dark grey, medium to very hard, fine grained, poor to medium sorting, quartzose (subrounded grains), siliceous in part, dolomitic in part. Shale - grey to dark grey, medium hard, micromicaceous, secondary dolomite and secondary anhydrite fracture filling.
5,400	5,450	D		50		Siltstone - grey to dark grey, medium to very hard, micromicaceous, dolomitic. Shale - grey to dark grey, medium hard, micromicaceous, secondary anhydrite frac-

FROM	TO	CORE C or DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Oil, Gas, W	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						ture filling, trace of slickensiding.
5,450	5,460	D		10		Shale - dark grey, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous in part, dolomitic, secondary dolomite, secondary anhydrite and quartz fracture filling.
5,460	5,470	D		10		Shale - dark grey, medium hard, micromicaceous. Sandstone - light grey to grey brown, fine grained grading to siltstone, poorly sorted, quartzose (subangular grains), mafics (subrounded grains), dolomitic, clay matrix in part, micromicaceous.
5,470	5,510	D		40		Siltstone - buff to dark grey, medium hard, dolomitic, sandy in part. Shale - dark grey and black, medium hard, micromicaceous, slickensiding in part, quartz fracture filling.
5,510	5,530	D		20		Siltstone - light to dark grey, medium to very hard, siliceous, dolomitic, micromicaceous, grading to Sandstone - light grey to grey, medium to very hard, very fine grained, poor sorting, quartzose (subangular grains), trace glauconite, dolomitic, siliceous in small part, clay matrix in part. Shale - dark grey to black, medium hard, micromicaeous, secondary dolomite and secondary anhydrite fracture filling.
5,530	5,540	D		10		Siltstone - light to dark grey, medium to very hard, siliceous in part, dolomitic. Shale - grey to black, medium hard, micromicaceous, secondary dolomite fracture filling.
5,540	5,550	D		10		Sandstone - light grey and grey brown, medium to very hard, fine grained grading to siltstone, medium sorting, quartzose (subangular to subrounded grains), dolomitic, siliceous in part. Siltstone - grey to dark grey, medium to very hard, dolomitic, secondary anhydrite and secondary dolomite fracture filling.
5,550	5,590	D		40		Siltstone - grey to dark grey, medium to very hard, very slightly dolomitic, micromicaceous. Shale - black to dark grey, medium hard, micromicaceous, secondary dolomite.
5,590	5,620	D		30		Shale - grey to dark grey, medium hard, micromicaceous, trace carbonaceous partings. Siltstone - grey to dark grey, medium hard, sandy in part, micromicaceous, secondary anhydrite, secondary dolomite and quartz fracture filling.
5,620	5,630	D		10		Sandstone - light grey to grey brown, medium hard, fine to very fine grained, medium sorting, quartzose (subangular grains), dolomitic. Siltstone - light to dark grey, medium to very hard, quartz and secondary dolomite fracture filling.
5,630	5,640	D		10		Shale - dark grey, medium hard, micromicaceous in part. Siltstone - light to dark grey, medium hard to very

FROM	TO	CORE C DITCH D	No. of ft Porous	No. of ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						hard, dolomitic, grading to Sandstone - grey to dark grey, medium hard, fine grained, medium sorting, quartzose (subrounded to subangular grains), dolomitic, secondary dolomite fracture filling.
5,640	5,660	D		20		Shale - black to dark grey, medium hard, micromicaceous. Siltstone - light to dark grey, medium hard, micromicaceous, secondary dolomite.
5,660	5,670	D		10		Shale - dark grey to black, medium hard, micromicaceous.
5,670	5,700	D		30		Shale - grey to dark grey, medium hard, micromicaceous. Siltstone - light grey to dark grey, medium hard, sandy in small part, dolomitic, quartz fracture filling.
5,700	5,720	D		20		Shale - dark grey to black, medium hard, fissile in small part, micromicaceous. Sandstone - grey brown to dark grey, medium to very hard, fine grained grading to siltstone, medium sorting, quartzose (subrounded grains), very slightly dolomitic, siliceous cement in part, quartz fracture filling.
5,720	5,730	D		10		Sandstone - light to dark grey, medium hard to very hard, fine grained grading to siltstone, poor to medium sorting, quartzose (subrounded to rounded), slightly dolomitic, siliceous in part, clay matrix in part, quartz fracture filling.
5,730	5,750	D		20		Shale - dark grey to black, medium hard, micromicaceous in part, Sandstone - light to dark grey, medium hard to very hard, fine grained grading to siltstone, poor sorting, quartzose (subrounded grains), siliceous in part, calcareous, secondary dolomite fracture filling.
5,750	5,760	D		10		Shale - dark grey to black, medium hard, slightly fissile, splintery in part, silty in part, carbonaceous partings (trace), secondary dolomite fracture filling.
5,760	5,770	D		10		Shale - grey to black, medium hard, splintery in part, micromicaceous. Sandstone - light grey to grey, medium to very hard, very fine grained grading to siltstone, poor sorting, quartzose (subrounded grains), slightly dolomitic, siliceous in small part.
5,770	5,780	D		10		Siltstone - grey to dark grey, medium hard, micromicaceous in part, slightly dolomitic, sandy in part. Sandstone - light grey to grey, medium hard, very fine grained, medium sorting, quartzose (subrounded grains), siliceous in small part, dolomitic, calcite fracture filling.
5,780	5,800	D		20		Shale - dark grey to black, medium hard, micromicaceous in part, blocky in part, silty in part. Siltstone - grey to dark grey, medium to very hard, siliceous in small part, very slightly dolomitic, quartz and secondary dolomite fracture filling.
5,800	5,840	D		40		Shale - dark grey to black and dark brown, medium hard, micromicaceous, fissile in part, splintery in part.

FROM	TO	CORE C DITCH D	No. of Ft Porous.	No. of Ft Non-porous	Shows G.C.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						Siltstone - grey to dark grey, medium hard, slightly dolomitic, slickensliding (trace).
5,840	5,860	D		20		Shale - dark grey to black, medium hard, micromicaceous in part, silty in part, quartz fracture filling.
5,860	5,930	D		70		Shale - dark grey to black, medium hard, micromicaceous in part. Siltstone - light to dark grey, medium hard, very slightly dolomitic, sandy in part, micromicaceous in part.
5,930	5,950	D		20		Shale - dark grey to black, medium hard, micromicaceous, silty in part, quartz and secondary anhydrite fracture filling. Trace carbonaceous material (coal?).
5,950	5,980	D		30		Shale - dark grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, slightly dolomitic, secondary anhydrite fracture filling.
5,980	6,000	D		20		Shale - grey to black, medium hard, micromicaceous. Siltstone - grey to dark grey, medium hard, micromicaceous, very slightly dolomitic, trace of carbonaceous material.
6,000	6,020	D		20		Shale - dark grey to black, medium hard, micromicaceous, fissile in small part, pyritic in small part, carbonaceous material (coal?), bituminous. Siltstone - light to dark grey, medium hard, slightly dolomitic, pyrite and secondary dolomite as fracture filling.
6,020	6,030	D		10		Shale - black, medium hard, fissile in part, micromicaceous, bituminous, pyritic, carbonaceous material, secondary dolomite, secondary anhydrite and quartz fracture filling common. Limestone - white and buff to brown, medium hard to soft, cryptograined, chalky in part, slightly argillaceous.
6,030	6,050	D		20		Limestone - buff to dark brown, soft to medium hard, cryptograined, chalky in large part, very slightly argillaceous, calcite veinlets, pyrite.
6,050	6,080	D		30		Limestone - buff to dark brown and grey brown, soft to medium hard, cryptograined, chalky in part, calcite veinlets, dense in large part, pyrite.
6,080	6,100	D		20		Limestone - buff to dark brown and black, medium hard to soft, crypto to micrograined, chalky in part, calcite fracture filling, pyrobitumen common, pyritic.
6,100	6,140	D		40		Limestone - buff to dark brown, medium hard to soft, crypto to micrograined, chalky in part, calcite fracture filling, pyrobitumen infilling porosity, trace pyrite.
6,140	6,150	D		10		Limestone - buff to grey brown, medium hard to soft cryptograined, chalky in part, calcite and pyrobitumen in fractures and porosity, trace of pyrite.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
6,150	6,180	D		30		Limestone - buff to grey brown, medium hard to soft, cryptograined to fine grained, chalky in part, lump texture in part, calcite and pyrobitumen in fractures and porosity.
6,180	6,220	D		40		Limestone - buff to dark brown and grey brown, medium hard to soft, cryptograined to fine grained, chalky in part, lump texture in small part, calcite and pyrobitumen in former porosity. Fine interbeds of Shale - dark grey, medium hard, calcareous.
6,220	6,240	D		20		Limestone - buff to grey brown and black, medium hard to soft, crypto to fine grained, chalky in small part, pelletoidal in part, grading to Shale - black, very calcareous, calcite and pyrobitumen filling in former porosity.
6,240	6,250	D		10		Limestone - buff to brown and grey to dark grey, medium hard to soft, fine to cryptograined, pelletoidal in part, chalky in part, calcite and pyrobitumen filling in former porosity, pyritic in part.
6,250	6,280	D		30		Limestone - buff to grey brown, dark brown and black, medium hard to soft, crypto to fine grained, chalky in part, pelletoidal in part, calcite crystals and pyrobitumen in former porosity, pyritic.
6,280	6,300	D		20		Limestone - white to grey, grey brown and dark grey, medium hard to soft, crypto to fine grained, chalky in part, pelletoidal in part, calcite crystals and pyrobitumen in former porosity, shaly in small part.
6,300	6,310	D		10		Limestone - buff to grey and grey brown, medium hard to soft, crypto to fine grained, chalky in part, pelletoidal in part, dense in part, pyrobitumen in former porosity.
6,310	6,330	D		20		Limestone - buff to grey brown and black, medium hard to soft, crypto to fine grained, chalky in part, pelletoidal in part, shaly in part, calcite crystals and pyrobitumen in former porosity.
6,330	6,350	D		20		Limestone - buff to grey brown, medium hard, cryptograined to fine grained, chalky in part, pelletoidal in part, pyrobitumen and calcite crystals, trace of disseminated pyrite.
6,350	6,370	D		20		Limestone - buff to brown, medium hard to soft, fine grained to cryptograined, pelletoidal in part 40%, aphanitic in 55%, calcite, etc 5%, fossils.
6,370	6,390	D		20		Limestone - buff to brown, medium hard to soft, medium to cryptograined, chalky in small part, pelletoidal in 50%, fossil debris in 35%, aphanitic in 15%.
6,390	6,430	D		40		Limestone - buff to dark brown and grey, medium hard to soft, fine to cryptograined, pelletoidal in large part, trace calcite crystals.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
6,430	6,450	D		20		Limestone - buff to dark brown and dark grey, medium hard to soft, fine to cryptograined, pelletoidal in part, chalky in part, fossil debris in part, calcite crystals common.
6,450	6,460	D		10		Trip sample, cannot interpret.
6,460	6,490	D		30		Limestone - white and buff to dark grey brown, medium hard to soft, medium to cryptograined, pelletoidal 10%, fossil debris 60%, aphanitic 30%, trace of calcite and pyrite.
6,490	6,580	D		90		Limestone - buff to grey brown, medium hard to soft, medium to cryptograined, chalky in small part, fossil debris 80%, pelletoidal 5%, aphanitic 15%, calcite crystals.
6,580	6,640	D		60		Limestone - buff to dark brown and grey, medium hard to soft, medium to cryptograined, fossil debris 75%, pelletoidal 15%, aphanitic 10%, calcite crystals and veinlets, pyrobitumen partings and filling in former porosity, fossil fragments.
6,640	6,710	D		70		Limestone (Calcarenitic) - buff to grey brown and black, medium hard to soft, cryptograined to medium grained, chalky in small part, pelletoidal 40%, lump texture 40%, aphanitic 20%, pyrobitumen partings and fracture filling calcite crystals common, fossil fragments.
6,710	6,770	D		60		Limestone (Calcarenitic) - buff to grey brown, medium hard to soft, cryptograined to fine grained, chalky in part, obscure pelletoidal 40%, lump texture 40%, aphanitic 20%, trace of stylolites, calcite crystals.
6,770	6,780	D		10		Limestone (Calcarenitic) - cream to brown, medium hard to soft, medium to fine grained, lump texture in large part, trace of open calcite crystals, pyrobitumen on crystal faces and in former porosity.
6,780	6,810	D		30		Limestone - cream to grey brown and very dark brown, medium hard to soft, crypto to fine grained, chalky in small part, lump texture in large part, trace of fossils calcite crystals common, pyrobitumen in former porosity.
6,810	6,830	D		20		Limestone (Calcarenitic) - buff to dark brown, medium hard to soft, crypto to fine grained, chalky in small part, obscure pelletoidal in part, lump texture in large part, calcite crystals. Limestone - black, medium hard, fine grained, argillaceous.
6,830	6,840	D		10		Limestone - buff to dark brown and black, medium hard to soft, crypto to fine grained, argillaceous in part, shaly in part, lump texture 40%, aphanitic 60%, calcite crystals.
6,840	6,870	D		30		Limestone - buff to dark brown, medium hard to soft, crypto to fine grained, lump texture in part, chalky in small part. Shale - dark brown to black, medium hard, slightly calcareous, calcite crystals.

WELL NAME Bluemount et al Gulf South Delta J-80 SHEET No. 28

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
6,870	6,880	D		10		Limestone - buff to dark brown, medium hard, crypto to fine grained, lump texture. Marlstone - grey, soft, calcareous. Shale - dark brown to black, medium hard, slightly calcareous, calcite crystals.
6,880	6,890	D		10		Marlstone - grey, soft, calcareous, interbedded with Shale - dark brown to black, calcareous, calcite crystals.
6,890	6,910	D		20		Shale - dark brown, to black, medium hard, calcareous in part, Marlstone - grey, soft to medium hard, calcareous, calcite crystals, fossil fragments.
6,910	6,920	D		10		Limestone - buff to black, medium hard, micrograined to fine grained, argillaceous, calcite veinlets. Marlstone - grey to dark grey, soft, calcareous.
6,920	6,960	D		40		Limestone - dark brown to black, medium to very hard, micrograined, argillaceous, siliceous, calcite common. Marlstone - grey, soft, calcareous, fossil fragments (crinoids?).
6,960	6,980	D		20		Limestone - dark brown to black, medium hard, micrograined, argillaceous, marly in part, much evidence of fracturing, calcite crystals on fracture faces and as veinlets common.
6,980	7,000	D		20		Limestone - grey brown to dark grey and black, medium hard, crypto to micrograined, marly in part, abundant fine to coarse calcite crystals - white to black, poor porosity (4%) in 5% of cuttings in fine vugs, and as fine intercrystalline, no fluorescence, fossil (trace brachiopods).
7,000	7,030	D		30		Limestone - grey brown to dark grey, medium hard to soft marly, micrograined, abundant calcite crystals, fine to coarse, white to clear to black, many open faced, fossil fragments (crinoids?).
7,030	7,080	D		50		Limestone - grey brown to black, medium hard to soft, marly in part, micrograined, calcite crystals fracture filling.
7,080	7,100	D		20		Limestone - grey brown to black, medium hard to soft, marly in part, micro to fine grained, argillaceous, Shale - black, medium hard, calcareous, calcite crystals as fracture filling, shale is slightly bituminous.
7,100	7,150	D		50		Limestone - black to grey, medium hard, fine to cryptograined, argillaceous. Marlstone - grey brown, calcareous, soft, trace of calcite.
7,150	7,160	D		10		Limestone - grey brown, medium hard, fine to cryptograined, obscure pelletoidal texture, calcite common.
7,160	7,180	D		20		Limestone - dark brown to grey brown, fine to cryptograined, medium hard, marly in part, obscure pelletoidal texture.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows of O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
7,180	7,200	D		20		Limestone - black to light grey, fine to cryptograined, medium hard to soft, pelletoidal and lump texture, slightly argillaceous, marly in part, calcite crystals common.
7,200	7,220	D		20		Limestone - grey to brown to black, firm to hard, argillaceous, microgranular and marlstone, soft to firm, white to light buff, calcite crystals common; pyrite inclusions rare, traces only of black carbonaceous shale.
7,220	7,290	D		70		Limestone - light buff, microgranular, dense, firm to hard, with marlstone as above, minor to traces only grey argillaceous limestone, calcite crystals rare, traces pyrobitumen 7250' - 7260'.
7,290	7,300	D		10		Limestone - as above with traces orange to pink mottling in calcite and white marlstone.
7,300	7,320	D		20		Limestone - as above with traces claystone, pale grey, soft non-calcareous, with abundant pyrite specks.
7,320	7,360	D		40		Limestone - as above, with limestone - pale light grey, firm, cryptogranular to microgranular with abundant pyrite ; continued orange-pink mottling in calcite and marlstone (traces only).
7,360	7,380	D		20		Limestone - as above, with trace dolomite - light grey, microgranular to microcrystalline, hard.
7,380	7,430	D		50		Limestone - light buff to light grey, microcrystalline; dolomite, light grey, hard to very hard, microgranular to microcrystalline, dense, hard, pyritic. Calcite crystals rare.
7,430	7,440	D		10		Trip sample - no interpretation.
7,440	7,470	D		30		Dolomite - light grey to light buff to white, microcrystalline to very fine crystalline, pyritic in small part, traces intercrystalline porosity, traces calcite veinlet filling. Limestone (20%) - light buff, microcrystalline, dense.
7,470	7,490	D		20		Dolomite - as above, no traces porosity.
7,490	7,510	D		20		Dolomite - light buff to buff, with lesser light grey, very fine to microcrystalline, dense, with dolomite - white, fine to medium crystalline, firm, friable, with pyrobitumen filled pore spaces and with frequent fair, open intercrystalline porosity. No fluorescence.
7,510	7,530	D		20		Dolomite - as above, traces porosity to nil.
7,530	7,600	D		70		Dolomite - light grey to buff with minor medium brown, hard, dense, microcrystalline to fine crystalline in small part, calcite and pyrite rare.
7,600	7,610	D		10		Dolomite - as above and Limestone (20%) - white to light buff, soft, chalky to firm, microgranular.

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
7610	7640	D		30		Dolomite (70%) - light buff to light grey, lesser medium brown, hard, microcrystalline to very fine crystalline in small part, grading in part to Limestone, dolomitic, with thin interbeds white, chalky limestone; traces firm black carbonaceous shale; traces only pyrite & calcite.
7640	7650	D		10		Dolomite and Limestone - as above with traces Siltstone grey, non-calcareous, with included mica and black specks
7650	7690	D		40		Dolomite - light to medium buff to light grey, micro-crystalline, hard; and limestone (20%), dolomitic, white to light buff, firm, friable, microgranular to very fine granular.
7690	7700	D		10		Dolomite - light to medium grey, buff, microcrystalline and medium brown, very fine to fine crystalline, hard. Frequent calcite crystals, free and as veinlet filling.
7700	7710	D		10		Trip sample - non-interpretive.
7710	7740	D		30		Dolomite - medium to dark grey, slightly argillaceous and brown, microcrystalline, hard to very hard, occasional calcite veinlet filling; grading to limestone in small part, dolomitic: limestone, dolomitic, light buff, firm, very fine to microgranular.
7740	7790	D		50		Dolomite - predominantly medium buff with light buff, microcrystalline to very fine crystalline in part. frequent calcite filled veinlets, traces pyrobitumen.
7790	7810	D		20		Dolomite - medium brown to dark grey, slightly argillaceous, microcrystalline to very fine and fine crystalline, hard, dense, increasingly calcareous to base; continuous very thin interbeds light buff, firm, microgranular limestone.
7810	7890	D		80		Dolomite - as above becoming predominantly dark grey, argillaceous.
7890	7900	D		10		Dolomite (75%) - as above; limestone - white, soft, chalky, obscure pelletoidal texture to buff, microgranular.
7900	7930	D		30		Limestone - light tan to light grey, dense, hard, microcrystalline to sub-lithographic, widely disseminated pyrite specks; frequent shell fragments (?) or fish scales (?), nothing diagnostic, i.e. no striations etc.; Abundant large calcite crystals.
7930	7960	D		30		Dolomite - dark grey to black, argillaceous, to buff, very fine crystalline with lesser limestone as above; occasional siltstone, soft, grey, calcareous; abundant large calcite crystals.
7960	7970	D		10		Trip sample. Dolomite - medium to light buff, microcrystalline; chert, occasional, first appearance, light grey, fragmental, very sharp edges.
7970	7990	D		20		Trip sample. Dolomite - dark grey, argillaceous to medium buff, microcrystalline, mottled in large part;

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						very thin interbeds limestone, microgranular to soft, white, chalky; frequent chert as above and chert, light to dark brown and black, one rounded edge and traces of calcite on chert; traces light grey-brown siltstone, soft, light grey-brown, calcareous. Calcite rare.
7,990	8,000	D		10		Dolomite as above; chert as above with traces chert with adhering calcite.
8,000	8,010	D		10		Trip sample - no interpretation.
8,010	8,020	D		10		Dolomite - very light buff to very light grey, microcrystalline, hard, dense, grading to dolomitic limestone in part, lesser dark brown-grey, argillaceous and limestone, soft, white, chalky to microgranular, firm.
8,020	8,050	D		30		Dolomite - medium to dark brown to brown-grey, hard, microcrystalline, frequent calcite veinlet filling.
8,050	8,060	D		10		Dolomite, as above and light grey-white, microcrystalline
8,060	8,070	D		10		Dolomite, becoming predominantly light grey, dense, microcrystalline.
8,070	8,080	D		10		Dolomite, predominantly dark grey, argillaceous, microcrystalline.
8,080	8,120	D		40		Dolomite, predominantly light grey, as above. Continual alternating colour changes. Continued traces to frequent limestone, white, chalky to microgranular, firm, pelletoidal texture in part. Trace black and brown fragmental chert @ 8110'.
8,120	8,140	D		20		Dolomite - dark grey to brown, microcrystalline, very hard and dolomite, light grey, dense, hard, microcrystalline, frequent calcite vein filling.
8,140	8,160	D		20		Dolomite, predominantly light grey, as above to hard, buff,
8,160	8,200	D		40		Dolomite, as above becoming dark grey to black, argillaceous in large part. Continued calcite.
8,200	8,210	D		10		Dolomite - grey to buff and dark grey, medium to very hard, silty in small part, microcrystalline, trace pyrite, trace of calcite.
8,210	8,220	D		10		Dolomite - grey brown to grey, dark brown and medium hard crypto to microcrystalline; Limestone - buff to grey, medium hard to soft, cryptograined to micrograined, chalky in part, calcite crystals common.
8,220	8,240	D		20		Dolomite - grey to dark brown and dark grey, medium to very hard, microcrystalline, silty in part, siliceous in small part, disseminated pyrite. Limestone - buff to grey, medium hard, cryptograined to micrograined, calcite crystals common.
8,240	8,250	D		10		Dolomite - dark grey to grey, medium to very hard, microcrystalline, siliceous in part, silty in small part, very slightly argillaceous, secondary dolomite common, calcite crystals, sparse, pyrobitumen (trace).

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows Gas, Oil, W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
8,250	8,260	D		10		Limestone - buff to dark brown and black, medium hard, micro to crypto grained, slightly argillaceous, siliceous in small part. Dolomite - buff to dark brown, medium hard to very hard, microcrystalline, siliceous in part, argillaceous in part.
8,260	8,280	D		20		Limestone - grey to dark brown and black, medium to very hard, crypto to micro grained, pelletoidal in part, dolomitic in small part, siliceous, argillaceous in part, calcite crystals, shaly in part, silty in part, secondary dolomite.
8,280	8,300	D		20		Limestone - buff to grey brown and black, medium hard to very hard, cryptograined to fine grained, dolomitic, sileceous in part, obscure pelletoidal, slightly argillaceous in part. Dolomite - grey to black, medium to very hard, micro to finely crystalline, siliceous in part, calcite crystals, secondary dolomite and quartz as fracture filling, pyrite.
8,300	8,310	D		10		Limestone - buff to grey brown and dark grey, medium hard, cryptograined, dense, fossils, chalky in small part, calcite in former vugs, pyritic.
8,310	8,320	D		10		Limestone - buff to grey brown and black, medium to very hard, crypto to fine grained, slightly argillaceous in part, obscure pelletoidal in part, fossil debris, siliceous in part, shaly in part, calcite crystals and veinlets.
8,320	8,340	D		20		Trip sample, cannot interpret.
8,340	8,350	D		10		Dolomite - buff to dark brown, medium to very hard, crypto to microcrystalline, argillaceous in part, siliceous, calcite crystals.
8,350	8,360	D		10		Dolomite - buff to black, medium to very hard, microcrystalline, slightly argillaceous in part. Limestone - cream to black, medium hard, micro to fine grained, obscure pelletoidal and lump texture, very slightly argillaceous, shaly in small part, calcite and secondary dolomite.
8,360	8,380	D		20		Limestone - cream to black, medium to very hard, micro to fine grained, argillaceous in part, obscure pelletoidal in part. Dolomite - buff and grey to black, medium to very hard, microcrystalline, slightly argillaceous. Siltstone - grey, medium hard, dolomitic, calcite crystals.
8,380	8,390	D		10		Dolomite - grey to black, medium to very hard, microcrystalline, siliceous in part, argillaceous in part, many calcite veinlets, shaly in small part. Limestone - buff to dark brown and black, medium hard, crypto to fine grained, pelletoidal in part, some secondary dolomite, lump texture in part.

FROM	TO	CORE C D DITCH	No. of Ft Porous	No. of Ft Non-porous	Shows O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
8,390	8,400	D		10		Limestone - buff to dark brown and black, medium hard, crypto to fine grained, chalky in part, lump tecture in part, calcite common, dolomitic in part, siliceous in small part.
8,400	8,520	D		120		Limestone - buff to dark brown and black, medium hard, crypto to fine grained, chalky in part, pelletoidal in part, calcite common, fossil shadows, trace pyrite, trace pyrobitumen on fracture faces.
8,520	8,540	D		20		Limestone - buff to dark brown, medium hard, crypto to fine grained, chalky in part, pelletoidal in part, fossil debris, calcite, pyrobitumen in fractures. Dolomite - grey to dark brown, medium to very hard, micro to finely crystalline, slightly argillacecus.
8,540	8,550	D		10		Limestone - buff to dark grey, medium hard, crypto grained to fine grained, chalky in part, pelletoidal in part, lump texture in part, argillaceous in part, shaly in small part, calcite and secondary dolomite.
8,550	8,560	D		10		Limestone - buff to dark brown and dark grey, medium hard, crypto to fine grained, earthy in part, pelletoidal and lump texture, calcite veinlets. Dolomite - grey to dark grey, medium hard, microcrystalline to finely crystalline, slightly argillaceous.
8,560	8,570	D		10		Limestone - buff to dark brown and dark grey, medium hard, micro to fine grained, pelletoidal and lump texture, dolomitic in part, calcite common.
8,570	8,590	D		20		Limestone - buff to dark brown and dark grey, medium hard, crypto to fine grained, chalky in small part, pelletoidal and lump texture. Dolomite - dark grey to black, medium to very hard, micro to finely crystalline siliceous in small part, argillaceous in part, shaly in small part, calcite crystals common.
8,590	8,600	D		10		Dolomite - grey to grey brown and dark grey, medium hard, micro to finely crystalline, slightly argillaceous, calcite, secondary dolomite and quartz fracture filling. Limestone - buff to dark brown, medium hard, fine grained to micro grained, pelletoidal in part.
8,600	8,610	D		10		Dolomite - light grey to brown and dark grey, medium hard, micro to finely crystalline, limey in part, calcite and secondary dolomite common, quartz sparse.
8,610	8,620	D		10		Dolomite - light to dark grey, medium hard, fine to medium crystalline, very slightly argillaceous, secondary dolomite and calcite crystals. Limestone - grey brown, medium hard, cryptograined, dense.
8,620	8,630	D		10		Limestone - buff to grey brown, medium hard to soft, cryptograined, chalky in part, slightly argillaceous, calcite crystals, trace pyrite.
8,630	8,650	D		20		Limestone - buff to grey brown to black, medium hard to soft, crypto to micro grained, chalky in part, cal-

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Showings O.G.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
						cite crystals. Dolomite - grey to black, medium hard, micro to finely crystalline, slightly argillaceous in part.
8,650	8,660	D		10		Limestone - buff to grey brown and black, medium hard to soft, crypto grained to fine grained, slightly argillaceous, chalky in part. Dolomite - grey to black, medium to very hard, micro to finely crystalline slightly argillaceous, siliceous in part, calcite crystals, trace pyrite.
8,660	8,680	D		20		Dolomite - grey to black, medium to very hard, micro to finely crystalline, slightly argillaceous in part, siliceous. Limestone - buff to dark brown, medium hard, crypto grained to fine grained, pelletoidal in part, chalky in part, calcite crystals, fossil fragments pyrite.
8,680	8,690	D		10		Dolomite - grey and grey brown to black, medium to very hard, micro to finely crystalline, slightly argillaceous, calcite crystals and secondary dolomite. Limestone - buff and grey brown to black, medium hard, crypto to fine grained, slightly argillaceous, obscurely pelletoidal.
8,690	8,700	D		10		Dolomite - grey and grey brown to dark brown and black, finely crystalline, medium hard, very slightly argillaceous, calcite and secondary dolomite.
8,700	8,790	D		90		Dolomite - grey and grey brown to dark brown and dark grey, fine to medium crystalline, medium to very hard, siliceous in part, secondary dolomite common, trace of calcite crystals, trace quartz crystals, trace pyrite.
8,790	8,860	D		70		Dolomite - light to dark grey, medium to very hard, fine to medium crystalline, siliceous in part, leached in part, secondary dolomite common, quartz crystals.
8,860	8,940	D		80		Dolomite - light to dark grey, medium to very hard, fine to coarse crystalline, siliceous in small part, leached in part, secondary dolomite common, quartz crystals, open faced crystals (trace).
8,940	8,980	D	tr	40		Dolomite - buff to grey, medium hard, fine to coarsely crystalline, leached in large part, secondary dolomite crystals abundant, fair criteria for porosity, trace of pyrite, trace of open faced crystals.
8,980	9,020	D	tr	40		Dolomite - buff to dark grey and light brown, medium hard, fine to coarsely crystalline, leached in large part, abundant secondary dolomite crystals, trace of very poor intercrystalline porosity, no fluorescence, some open crystal faces.
9,020	9,060	D		40		Dolomite - buff to grey and brown, medium hard, fine to medium crystalline, leached, abundant secondary dolomite crystals, very slightly argillaceous, quartz crystals.

FROM	TO	CORE C / DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows O, G, W	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
9,060	9,120	D		60		Dolomite - buff to brown and dark grey, medium to very hard, finely crystalline, leached in small part, secondary dolomite and quartz crystals.
9,120	9,140	D		20		Dolomite - buff to brown and dark grey, medium to very hard, fine to medium crystalline, secondary dolomite and quartz crystals, slightly argillaceous.
9,140	9,160	D		20		Dolomite - buff to dark grey, medium to very hard, micro to finely crystalline, slightly siliceous in part, slightly argillaceous in part, leached, abundant secondary dolomite, quartz crystals trace of pyrite.
9,160	9,230	D		70		Dolomite - cream to grey, medium hard, fine to medium crystalline, leached, some open faced crystals, secondary dolomite and quartz, trace of pyrobitumen, trace pyrite, trace calcite.
9,230	9,250	D	tr	20		Dolomite - buff to light grey, medium hard, fine to medium grained, trace of very poor porosity in very fine widely scattered vugs, trace of fluorescence, leached, secondary dolomite common, some open faced crystals, quartz crystals, disseminated pyrite. Trace Limestone - cream, soft to medium hard, cryptograined, chalky in part.
9,250	9,320	D	tr	70		Dolomite - cream to buff and light grey, medium hard, fine to coarsely crystalline, leached, secondary dolomite abundant, trace of very poor porosity in widely scattered vugs, no fluorescence, quartz crystals, some open faced crystals. Trace Limestone - cream, soft, cryptograined, chalky in part. Disseminated pyrite.
9,320	9,330	D	10			Dolomite - cream, white and buff, medium hard, fine to coarsely crystalline, leached, secondary dolomite abundant, open crystal faces common, trace of poor porosity in fine and as fine intercrystalline, no fluorescence.
9,330	9,340	D	1	9		Dolomite - white, buff and light grey, medium hard, fine to coarsely crystalline, secondary dolomite crystals common, some open faced, quartz crystals, trace of very poor fine vugular porosity, no fluorescence.
9,340	9,365	D	2	23		Dolomite - white, buff and light grey, medium hard, fine to coarsely crystalline, secondary dolomite crystals common, some crystal clusters, quartz crystals, poor intercrystalline porosity in 5% of sample, no fluorescence. Limestone - cream, soft, cryptograined, chalky. Pyrite (disseminated). Trace pyrobitumen. Porosity may be infilled with calcareous material.

WELL NAME Bluemount et al Gulf South Delta J-80 SHEET No. 36

FROM	TO	CORE C DITCH D	No. of Ft Porous	No. of Ft Non-porous	Shows O.C.W.	GEOLOGICAL SAMPLE AND CORE DESCRIPTION
9,365	9,420	D	20	35		Dolomite - white and buff, medium hard, fine to medium crystalline, secondary dolomite crystals abundant, some crystal clusters, trace of poor porosity in fine vugs, no fluorescence, quartz crystals, pyrite (disseminated).
9,420	9,430	D	6	4		Dolomite - white to grey and buff, medium to very hard, fine to medium crystalline, trace of very poor to fair intercrystalline porosity, no fluorescence, dolomite crystals abundant, crystal clusters common, trace of disseminated pyrite, trace of pyrobitumen, quartz crystals.
9,430	9,450	D		20		Dolomite - white to grey and buff, medium to very hard, micro to finely crystalline, secondary dolomite crystals common, open faced in part, siliceous in part, quartz crystals.
9,450	9,470	D		20		Dolomite - cream to brown and grey, medium to very hard fine to medium crystalline, some secondary dolomite with open faced crystals, trace of very poor porosity as fine vugs, no fluorescence, siliceous in part, trace of pyrite.
9,470	9,500	D		30		Dolomite - cream and buff to grey, medium to very hard, fine to medium crystalline, secondary dolomite crystals common (clusters in part), siliceous in part, trace of pyrite, trace of pyrobitumen. Trace Limestone - cream, medium hard, cryptograined, chalky in part.
						Total Depth 9,500' by driller.

LYNES UNITED SERVICES LTD.

TEST DATA				GENERAL INFORMATION	
Test No.	2	Lynes Test	2		
Formation		T.D.	9500 Ft.	Company	Bluemont Resources Ltd.
Interval Tested	9270	Ft. to	9315 Ft.	Address	1450 Elveden House
Interval Tested	45 Ft.	Net Pay Tested	Ft.		Calgary, Alberta
Type Test	Inflatable Straddle				
Position		Amount	Ft.	Well Name	Bluemont et al Gulf
Started in Hole at	10:30 Hrs.	Tool Open at	2:50 Hrs.	Well Number	J-80
Pre-Flow	5 Mins.	Initial Shut-in	60 Mins.	K.B. Elevation	54 Sub-Sea Elevation
2nd Flow	Mins.	Second Shut-in	Mins.	Area	South Delta Province N.W.T.
Final Flow	180 Mins.	Final Shut-in	270 Mins.	Company Rep.	K. Blackwell
				Tester	L. Rausch
				Contractor	Kenting Petrolia Rig No. 7
				Ticket No.	Date Feb 10/73
				Service Reports To:	

Remarks: Weak initial puff on preflow building. Blow very weak on final flow building after 10 min. to weak and remaining steady for 45 min then increasing,

GAS BLOW MEASUREMENTS

Measured with

Time	Surface Choke	Reading Inches	Cubic Feet/Day
no gas to surface			

MUD AND HOLE DATA

Mud Type	Gel				
Weight	10	Viscosity	54	Water Loss	15.0
Filter Cake	2/32"	Bottom Hole Temperature			
Drill Pipe Size	4H90			Weight	15.40
Drill Collars	4 1/2&5	I.D.		Feet Run	534.00
Main Hole or Casing Size	8 3/4"				
Rathole or Liner Size				No. of Feet	
Bottom Hole Choke Size	1"				
Surface Choke Size	1"				
Packer Rubber Size	7 3/4"				

REMARKS

Open valve to pit after 120 min for 30 min. Closed valve - air puff increased for 15 min then remained constant.

Stuck in hole above tool - when pulling loose at 11:20 PM, Feb10

RECOVERY

TOTAL FLUID RECOVERED nil Ft. Consisting of:

Ft. of

Ft. of

Ft. of

Ft. of

Test was/was not Reverse Circulated

Oil Recovery A.P.I. Water Specific Gravity

Salinity

PRESSURE READINGS

	Inside	Outside X	Inside	Outside X	Inside	Outside	Inside	Outside
Recorder No.		2834		2745				
Capacity		5400		4650				
Depth		9300		9295				

lost tool in hole.

NUMBER KEY:

1 - INITIAL HYDROSTATIC
2 - PRE-FLOW
3 - INITIAL SHUT-IN
4a - 2nd INITIAL FLOW
4b - 2nd FINAL FLOW
4c - 2nd SHUT-IN
5 - 3rd INITIAL FLOW
6 - FINAL FLOW
7 - FINAL SHUT-IN
8 - FINAL HYDROSTATIC

Company: Bluemont Resources Ltd.
Well Name and Description: Bluemont et al Gulf J-80
Test No. 2
Date of Test: Feb 10/73

LYNES UNITED SERVICES LTD.

WELL NAME - BLUEMOUNT ET AL GULF SOUTH DELTA

LOCATION - J-80

DST NUMBER - 1

INTERVAL TESTED - 9215 TO 9365

RECORDER NO. - 2835

DEPTH - 9122

INITIAL SHUT IN PRESSURE

TIME(MIN) Φ	T + Φ / Φ	PSIG
0	0.0000	556
5	2.0000	4250
10	1.5000	4298
15	1.3333	4309
20	1.2500	4317
25	1.2000	4325
30	1.1667	4326
35	1.1429	4328
40	1.1250	[illegible]
45	1.1111	4328
50	1.1000	4329
55	1.0909	4328
60	1.0833	4328

EXTRAPOLATION OF INITIAL SHUT-IN = 4333.25

WELL NAME - BLUEMOUNT ET AL GULF SOUTH DELTA

LOCATION - J-[illegible]

DST NUMBER - 1

INTERVAL TESTED - 9215 TO 9365

RECORDER NO. - 2835

DEPTH - 9122

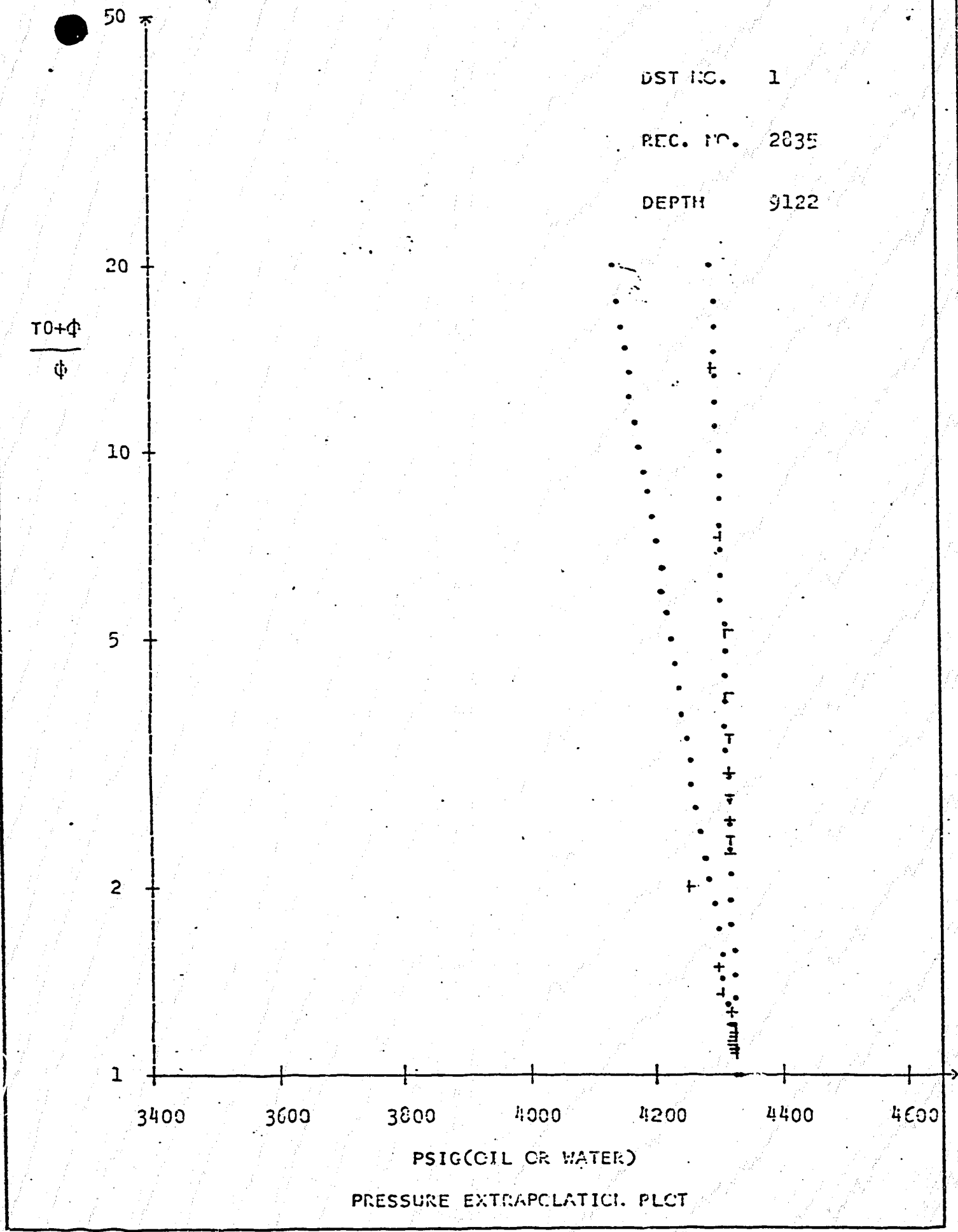
SECOND SHUT IN PRESSURE

TIME(MIN) Φ	(T + Φ)/Φ	PSIG
0	0.0000	3819
10	13.5000	4293
20	7.2500	4308
30	5.1667	4312
40	4.1250	4316
50	3.5000	4317
60	3.0833	4318
70	2.7857	4318
80	2.5625	4318
90	2.3889	4320
100	2.2500	4320

EQU. FITTED LINE IS LOG((T0+Φ)/Φ)= -0.04024 PSIG + 174.19890

EXTRAPOLATION OF SECOND SHUT-IN = 4328.75 M= 24.85

LYNES UNITED SERVICES LTD.



PRESSURE EXTRAPOLATION PLOT

LYNES UNITED SERVICES LTD.

TEST DATA					GENERAL INFORMATION	
Test No.	1	Lynes Test	1			
Formation	Ronning	T.D.	9365	Ft.	Company	Bluemont Resources
Interval Tested	9215	Ft. to	9365	Ft.	Address	717 - 7 Avenue S.W.
Interval Tested	150	Ft. Net Pay Tested		Ft.		
Type of Test	Bottom Hole Conv.					
Cushion		Amount		Ft.	Well Name	Bluemont et al Gulf S. Delta
Started in Hole at	6:30	Hrs. Tool Open at	1326	Hrs.	Well Number	J-80
Pre-Flow	5	Mins. Initial Shut-in	60	Mins.	K.B. Elevation	54 Sub-Sea Elevation
2nd Flow		Mins. Second Shut-in		Mins.	Area	South Delta Province N.W.T.
Final Flow	120	Mins. Final Shut-in	240	Mins.	Company Rep.	K. Blackwell
Remarks:					Tester	L. Rausch
					Contractor	Kenting Petrolia Rig No. 7
					Ticket No.	6378 Date Feb 6/73
					Service Reports To:	
						10 - above address

Blow: Weak air puff on tool open building in strength. Air puff to surface immediately on final flow building and remaining steady.

GAS BLOW MEASUREMENTS

Measured with no gas to surface after 120 min

Time	Surface Choke	Reading Inches	Cubic Feet/Day

MUD AND HOLE DATA

Mud Type	Gel
Weight	10.0 Viscosity 54 Water Loss 15
Filter Cake	2/32" Bottom Hole Temperature
Drill Pipe Size	4 1/2H90 Weight 15.40
Drill Collars	4 1/2&5" I.D. Feet Run 627.67
Main Hole or Casing Size	8 1/4"
Rathole or Liner Size	No. of Feet
Bottom Hole Choke Size	1"
Surface Choke Size	1"
Packer Rubber Size	7 3/4"

REMARKS: Clocks ran out after approximately 100 min of the final shut-in period. Shut-in pressures suggest average permeability within the interval tested.

RECOVERY

TOTAL FLUID RECOVERED 8015 Ft. Consisting of:

470	Ft. of	drilling mud
7545	Ft. of	water
	Ft. of	
	Ft. of	

Test was/was not Reverse Circulated was not

Oil Recovery A.P.I. Water Specific Gravity

Salinity 150,000 PPM

PRESSURE READINGS

	Inside Outside x	Inside Outside x	Inside Outside	Inside Outside
Recorder No.	2834	2835		
Capacity	5400	5400		
Depth	9127	9122		

NUMBER KEY:				
1 - INITIAL HYDROSTATIC	4768	4781		
2 - PRE-FLOW	544	556		
3 - INITIAL SHUT-IN	4322	4328		
4a - 2nd INITIAL FLOW				
4b - 2nd FINAL FLOW				
4c - 2nd SHUT-IN				
5 - 3rd INITIAL FLOW	642	628		
6 - FINAL FLOW	3811	3818		
7 - FINAL SHUT-IN	4319	4320		
8 - FINAL HYDROSTATIC	clocks ran out -------			

Bluemont Resources Ltd. (Company) — Bluemont et al Gulf South Delta J-80 (Well Name and Description) — #1 (Test No.) — Feb 6/73 (Date of Test)

CORE LABORATORIES – CANADA LTD.

PETROLEUM RESERVOIR ENGINEERING

WATER ANALYSIS

File 921-3138 PAGE: 1 of 1

Company Bluemount Resources Ltd.

Well Bluemount et al Gulf South Delta J-80 K.B. 54' Grd. 37'

Location 67°39'40.43 N.L. 134°43'38.40 W.L. Field Red Arctic River Province

Formation Ronning Interval 9115' - 9265'

Sampled from DST #1 (1410') by

Date sampled February 6, 1973 Date analysed March 16, 1973 Analyst G. Anderson

Recovery

Mud type Water cushion

Resistivity 1.13 Ohm-meters @ 69 °F

Specific gravity 1.0052 @ 60°F

pH 9.0 H_2S Absent

Refractive Index 1.3330 @ 71°F

Total Solids:

Calculated 5,745 mg/liter

By evaporation @ 110°C mg/liter

By evaporation @ 180°C mg/liter

At ignition mg/liter

MILLIGRAMS PER LITER

Na + K	Ca	Mg	Fe	Ba	Br	I	Cl	HCO_3	SO_4	CO_3	OH
2054	47	2	Trace	-	-	-	2306	381	902	53	0

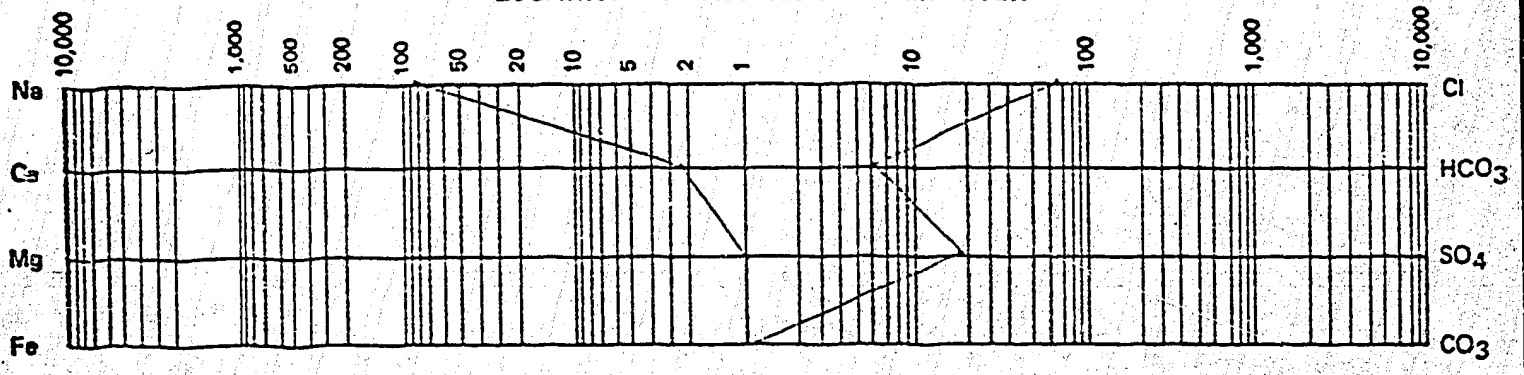
PER CENT CALCULATED SOLIDS

35.8	.8	.0	Trace	-	-	-	40.1	6.6	15.7	.9	.0

MEQ PER LITER

89.3	2.3	.2					65.0	6.2	18.8	1.8	.0

LOGARITHMIC PATTERN MEQ PER LITER



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BLUEMOUNT RESOURCES LTD.

1450 ELVEDEN HOUSE
717 SEVENTH AVENUE S.W.
CALGARY 2, ALBERTA

TELEPHONE (403) 265-7984

May 29, 1972

Department of Indian Affairs and
Northern Development
Oil and Mineral Division
112 - 11th Avenue S.E.
Calgary, Alberta

Attention: Mr. Morris Thomas,
District Conservation Engineer

Dear Sirs:

I would like to amend the proposed casing program as set out in our application to drill a well known as Bluemount NNG Gulf South Delta K80. It is requested that the casing program for which approval was requested in our application dated May 24, 1972, be changed as follows:

(a) Set 60' of insulated and refrigerated conductor pipe, cemented to surface using Permafrost cement, conductor pipe to be 16" x 20" (approximately).

(b) Set ±400' of 13-3/8" - 54.5 - J55 casing, final selection of setting depth to be 40' of penetration into consolidated formation, but not less than 350' nor more than 500' and such casing to be cemented to surface with Permafrost cement.

(c) Set 1200' of 9-5/8" - 36# - J or K55 casing, such casing to be cemented to surface with both Permafrost and Oilwell cements, amounts to be dictated by depth to base of Permafrost.

(d) Drill ahead with 8-3/4" bit; if production is indicated or an intermediate string of casing required,10,000' of 7" - 26# - N80 casing will be on site.

The requested amendment will allow blowout preventors to be in place before drilling below 500' and before drilling into any anticipated reservoir. Our proposed blowout preventor hookups will be as

. . . 2

follows:

(a) During drilling conductor hole to 60'±, no blowout equipment will be installed. Hole will be drilled with a bucket, dry.

(b) To drill the hole for the Permafrost string to between 350' and 500', no blowout equipment will be installed. Hole will be drilled with a polymer-KCl mud, weight approximately 9.0 pounds per gallon.

(c) After drilling and setting 13-3/8" casing to 350'-500', a screw-on flange will be installed and a minimum of a 12" - Series 900 GK Hydril installed and pressure tested. Surface hole to 1200' will be drilled using a polymer-KCl mud, weight approximately 9.0 pounds per gallon. The 9-5/8" casing will be landed on bottom and cemented full length with Oilwell and Permafrost cement as required by determined depth of the base of Permafrost.

(d) After landing and cementing the 9-5/8" casing, the 13-3/8" Permafrost casing string will be cut below ground level and the permanent BOP stack rigged up on top of the 9-5/8" surface casing. We wish to avoid permanently heading up on the 13-3/8" casing to reduce the possibility of casing buckling through the Permafrost layer. Our BOP stack below surface casing will be a 12"-S900 GK Hydril and a 12" - S900 Type B double gate Shafer.

A sketch of our proposed casing strings is attached as attachment A. You will note that we have included as a part of our blowout preventor stack a floor controlled hydraulic Cameron Type F 3" x 3000 psi valve with manual override in immediate proximity to the spool on the blowdown line below the Shafer BOP and outboard from a manual valve. This arrangement will permit repairs to be effected to the hydraulic valve, if necessary, during drilling. The manual inboard valve will be kept open at all times except when the hydraulic valve is under repair. The rig is equipped with a Martin Decker pit volume totalizer with chart recorder and adjustable high-low audible and visual alarm. Additionally, a flow line sensor will be rigged and operative prior to drillout of surface casing and will be rigged with an audible alarm system.

. . . 3

This proposed casing program has been laid out to eliminate any reasonable chance that any reservoir will be encountered before blowout prevention equipment is installed. The prognosis attached as Attachment B represents our geologist's "most likely" prediction based on regional subsurface geology, examination and measurement of outcrop sections in the Richardson Mountains, and interpretation of available seismic data. This "most likely" prediction places the basal Cretaceous sand, the shallowest predictable reservoir, at about 3800'. Existing control suggests the rather remote possibility of a pre-Cretaceous unconformity wedging Jurassic-Triassic-Permian-Pennsylvanian sediments such that the basal Cretaceous sand could be elevated to a maximum depth of 1600'; this remote possibility is reflected on the cross-section attached to the prognosis. Geophysical data through this post-Imperial section is non-definitive with present control. The proposed casing program would insure that blowout prevention equipment is in place for any possible shallow gas accumulation associated with the base of the Permafrost, and further have full surface casing set before encountering the first major potential reservoir, i.e. the basal Cretaceous sand, at its shallowest predictable depth. The Cretaceous section above the basal sand is indicated regionally to consist of shales and tight impermeable siltstones with no effective reservoir.

In addition to the blowout preventor stack sketches for each string and the geological prognosis and cross-section discussed above, enclosed is a rough sketch of the rig layout. The camp will be located between 400' and 600' from the well bore along the access road so that in the event of an emergency requiring camp evacuation, such evacuation can be readily carried out without coming in dangerous proximity of the rig. The main fuel storage will be at the staging site on the banks of the Peel River, some 7400' by trail away from this proposed location.

I recognize there are at least two additional enclosures that are required before you will be able to issue a drilling licence, i.e. a letter from Gulf designating Bluemount as Operator of this Permit, and a land use permit authorizing access to and use of the proposed location. Both these items are being worked on and will be submitted as soon as obtained. Of paramount concern to me at this time, however, is interim approval of the casing program so that this material can be firmly ordered in time for the barging season. Your earliest approval, reproposal or request for additional data would be appreciated.

Yours very truly,

BLUEMOUNT RESOURCES LTD.

R. Schwab

RS/mcb

Enclosures

Supplement - NING Gulf Delta K-50

ATTACHMENT B

Prognosis

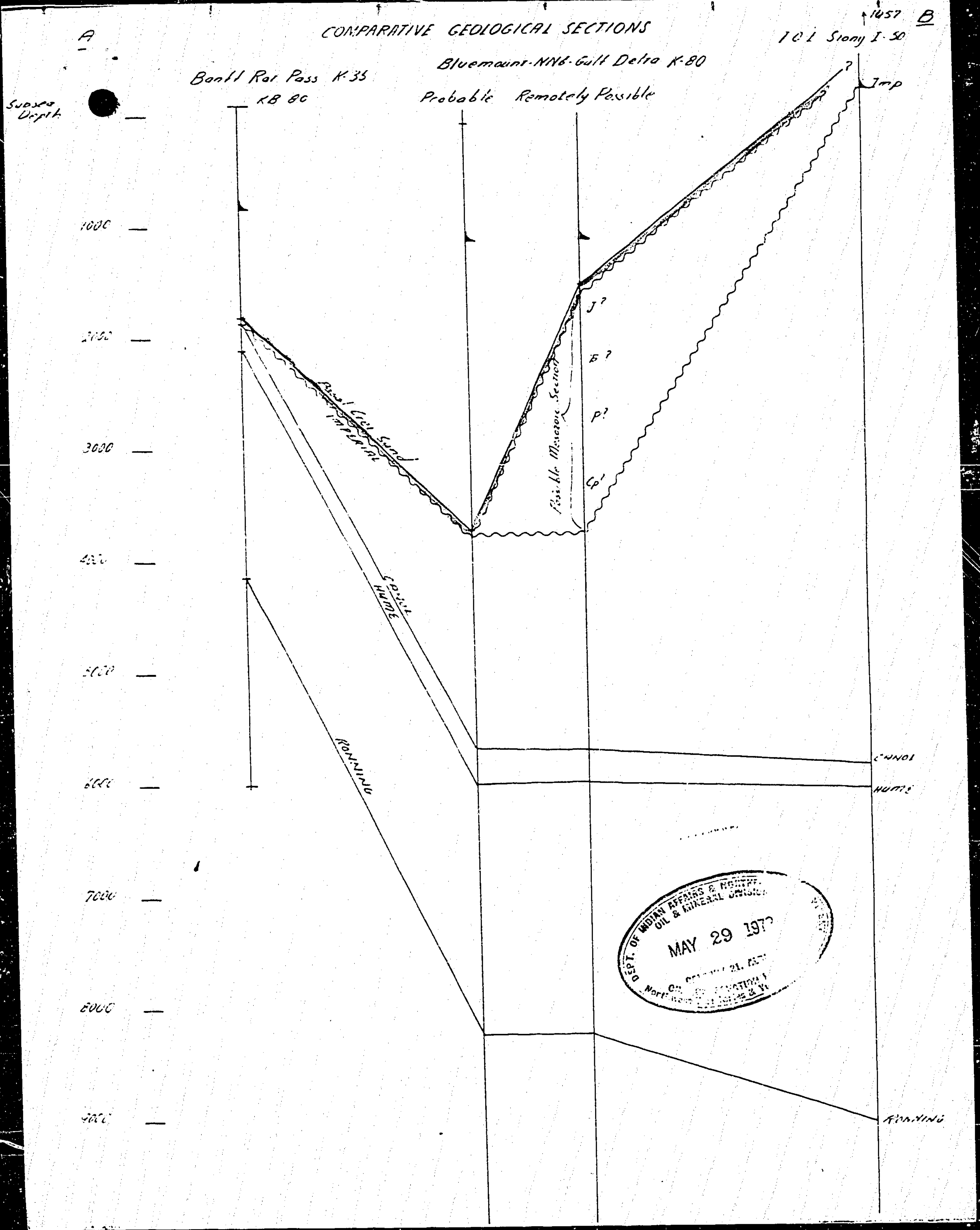
Estimated K.B.: 50'

	DEPTH	SUB-SEA
Spud in Quaternary		
Lower Cretaceous	150	- 100
Base of Permafrost	350	- 300
Basal Cretaceous Sand	3800	-3750
Imperial (Upper Devonian Silts and Shales)	3850	-3800
Hume equivalent (Middle Devonian Carbonate)	6050	-6000
Ronning	8250	-8200

Total depth as defined in the farmout agreement is the first diagnostic porosity in the Ronning or 10,000' below ground level, whichever shall occur first.

COMPARATIVE GEOLOGICAL SECTIONS

Bluemount-NN6-Gulf Delta K-80



BLUEMOUNT RESOURCES LTD.

1450 ELVEDEN HOUSE
717 SEVENTH AVENUE S.W.
CALGARY 2, ALBERTA

TELEPHONE (403) 265-7984

June 5, 1972

Mr. Morris Thomas
District Conservation Engineer
Box 1430
Inuvik, Alberta

Dear Sir:

Enclosed are two additional copies of the BOP and manifold diagram, the sketch plan of rig component layout, and the location, access and camp plan on aerial mosaic. All future material forwarded to you will be in triplicate.

This will confirm also that we will run and set 9 5/8" - 36# - K55 - ST&C new Mannesmann seemless casing to 1500' instead of 1200' at our planned well, Bluemount NNG Gulf South Delta K80. A 7" long string is being put together and details will be submitted to you before the end of the week.

Yours very truly,

R. Schwab

RS/mr

Enclosure

BLUEMOUNT RESOURCES LTD.

1450 ELVEDEN HOUSE
717 SEVENTH AVENUE S.W.
CALGARY 2, ALBERTA

TELEPHONE (403) 265-7984

June 6, 1972

Mr. Morris Thomas
District Conservation Engineer
Box 1430
Inuvik, Alberta

Dear Sir:

If production or intermediate casing is required at our planned Bluemount NNG Gulf South Delta K-80 well, we plan to have the following string of pipe available on site.

946' - 7" - 26# - MN80 - Buttress
2,173' - 7" - 26# - MN80 - Hydril Triple Seal
1,305' - 7" - 23# - MN80 - LT&C
5,576' - 7" - 26# - MN80 - LT&C

This pipe has been previously run as a turnkey committment, but was recovered after no production. The pipe was Tuboscoped prior to running and has been drifted, steam cleaned and examined for thread damage since recovery. A copy of the original inspection report is attached except for the triple seal Hydril which is not able to be located.

The actual safety factors that would apply at the time of running would depend upon mud weight and depth casing would be set. However, the casing string would be adequate to provide a 1.0 safety factor in collapse at 10,000' with 10.4 ppg mud, assuming empty casing to total depth and no cement sheath around the pipe and with annulus full of mud. With a salt water gradient of 0.5000, a safety factor of 1.08 in collapse is realized.

We would propose that the 7" casing be run as listed, if required and barring totally anomalous conditions, i.e. the 26# - LT&C at the bottom of the string, the 26# Buttress at the top. Tensile safety factors at various points are tabulated below; buoyancy has been ignored except in a single example case.

. . . 2

(a) At base of 23# section, i.e. at depth of 4,424' joint safety factor = 3.05, body safety factor = 3.67.

(b) At top of 23# section, i.e. at depth of 3,119', joint safety factor = 2.53, body safety factor = 3.04.

(c) At top of 26# Hydril Triple seal section, i.e. at depth of 946', joint safety factor = 2.55, body safety factor = 2.61. Considering buoyancy, joint safety factor = 3.03, body safety factor = 3.10 (using 10.4 ppg mud).

(d) At surface, i.e. at top of Buttress section, joint safety factor = 2.60, body safety factor = 2.36.

Burst strength allows a 6600 psi pressure overbalance with safety factor of 1.0 (e.g. 12.7# ppg mud in 10,000' of casing with completely empty annulus). Burst is more critical at total depth than it is at any portion of the 23# segment.

In these calculations, the following assumptions have been made.

(a) Buoyancy has generally been ignored.
(b) No consideration has been allowed for dogleg severity.
(c) Reduction of collapse strength resulting from axial tensile load is in accord with the attached chart.

The final decision of use, safety factors and conditions will, of course, be made only under the light of known factors present when pipe is run. The existence of this string on site at a time of the year when the rig is largely isolated from source of major supply will undoubtedly figure in any decision made.

We are further stock piling on site a string of 2-7/8" - 6.5# - J-55 8 Acme Stelco tubing. This thread has been found to have fewer coupling failures, particularly where several trips are necessary, than conventional 8rd API couplings. The tubing has been ordered tested to alternate mill specifications of 6600 psi. Strength for this tubing are tabulated as follows: Burst strength 8300 psi, minimum yield (body) 99,700 pounds; collapse 6800 psi; minimum cross-sectional area of coupling 2.55 square inches.

Yours very truly,

BLUEMOUNT RESOURCES LTD.

R. Schwab

RS/mcb

Attachments

Edmonton Inspection

AMF TUBOSCOPE, INC.
Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY
P. O. Box 808, Houston, Texas 77001 • Area Code 713 748-1300

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Service — Date: August 24, 1970
Location: Edmonton — Work Order Number: 95027
Well Name & Number: Rileys Yard — Customer Order Number:

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION PLUS SPECIAL END AREA INSPECTION FOR HIGH STRENGTH MATERIAL

MATERIALS INSPECTED

2 Total Lengths, 7 " OD Casing, Range 11, Mannesmann Mfg., 23 #, .317 " Wall Thickness, Grade N-80 R&D Type of Connections Buttress

Note: This pipe was inspected for surface defects to conform, with:
☐ Customer Specifications (See Attachment)
☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is ____"
12.5% of the tabulated wall thickness for this pipe is .040

SUMMARY OF RESULTS

2 Lengths were found to be free of inside and/or outside surface defects exceeding 12½% of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

____ Lengths of the above were found to have defective couplings.

The above 2 lengths were found to be free from defects on end area inspection.

* ____ Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.
☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)
☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

____ Lengths of the above were found to have defective couplings.

*NOTE: This section does not apply to inspection to 5A specifications.

____ Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

____ Lengths of the above were found to have defective couplings.

____ Lengths were found to have inside and/or outside surface defects exceeding ____% of the nominal wall thickness. Identified by a red paint band.)

____ Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area,(3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

SERVICED BY Dale Odegaard.

AMF TUBOSCOPE, INC.
Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY
P. O. Box 808, Houston, Texas 77001 • Area Code 713 748-1300

Edmonton Inspection

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Service
Location: Edmonton
Well Name & Number: Rileys Yard

Date: August 24, 1970
Work Order Number: 96027
Customer Order Number:

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION PLUS SPECIAL END AREA INSPECTION FOR HIGH STRENGTH MATERIAL

MATERIALS INSPECTED

44 Total Lengths, 7" OD Casing, Range III, Mannesmann Mfg., 23 #,
.317" Wall Thickness, Grade Modified Type of Connections Buttress

Note: This pipe was inspected for surface defects to conform, with:

☐ Customer Specifications (See Attachment)

☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is "
12.5% of the tabulated wall thickness for this pipe is .040

SUMMARY OF RESULTS

44 Lengths were found to be free of inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

Lengths of the above were found to have defective couplings.

NOTE: All of the above lengths were found to be free of defects on end area inspection.

* Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.

☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)

☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

Lengths of the above were found to have defective couplings.

*NOTE: This section does not apply to inspection to 5A specifications.

Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

Lengths of the above were found to have defective couplings.

Lengths were found to have inside and/or outside surface defects exceeding ____% of the nominal wall thickness. (Identified by a red paint band.)

Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area, (3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

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REPORT PREPARED BY

Edmonton Inspection

AMF TUBOSCOPE, INC.
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P. O. Box 808, Houston, Texas 77001 • Area Code 713 748-1300

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Services
Date: August 24, 1970
Location: Edmonton
Work Order Number: 96027
Well Name & Number: Rileys Yard
Customer Order Number:

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION PLUS SPECIAL END AREA INSPECTION FOR HIGH STRENGTH MATERIAL

MATERIALS INSPECTED

66 Total Lengths, 7" OD Casing, Range III, Mannesmann Mfg., 26#,
.362" Wall Thickness, Grade P-110 Type of Connections Buttress

Note: This pipe was inspected for surface defects to conform, with:

☐ Customer Specifications (See Attachment)

☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is ____"
12.5% of the tabulated wall thickness for this pipe is .045

SUMMARY OF RESULTS

66 Lengths were found to be free of inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

____ Lengths of the above were found to have defective couplings.

NOTE: All of the above lengths were found to be free of defects on end area inspection.

* ____ Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.

☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)

☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

____ Lengths of the above were found to have defective couplings.

*NOTE: This section does not apply to inspection to 5A specifications.

____ Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

____ Lengths of the above were found to have defective couplings.

2 Lengths were found to have inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. Identified by a red paint band.)

____ Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area, (3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

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Edmonton Inspection

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer Canada Cities Services

Work Order No. 56027

DESCRIPTION AND LOCATION OF DEFECTS

Length No.	TYPE OF DEFECT	SIZE OF DEFECT			IDENTIFYING COLOR				LOCATION OF DEFECT	Tally Length
		Depth	Length	Width	Red	Blue	Yel.	Yel. White		
1	External Pit	.056	½"	½"	X				2' From Field End	46'11"
2	Damaged Threads				X				Field End	46'1"

HYCALOG (CANADA) LTD.

10365 - 58TH AVENUE. EDMONTON 70. ALBERTA
TELEPHONE 434-7688 (403)

OILFIELD PIPE INSPECTION

INSPECTION REPORT OF NEW TUBULAR GOODS

Work Order No. 919 Date: November 29th, 1970

Company: Northwest Pipe & Supply

Location: Loadstar Yard - Edmonton

Type of Inspection: Hycalog Standard Rack Inspection

110 Lengths, OD 7" Weight 26# Range III

Grade N-80 Mfg. Takahashi Thread Type Round

RESULTS:

(1) Lengths containing defects up to 12.5% of the original bodywall.

108 lengths were of this classification. Identified by WHITE Paint Band at coupling end.

(2) Lengths containing defects over 12.5% of the original bodywall.

2 lengths were of this classification. Identified by a RED Paint Band around pipe at coupling end.

(3) Lengths containing defects internally of undetermined depth.

..... lengths were of this classification. Identified by BLUE Paint Band around pipe at coupling end.

(4) ..... lengths were found to be mashed. Identified by 2 RED Paint Bands around pipe at the mash area.

THREAD INSPECTION RESULTS

(5) ..... Lengths were found to be free of dangerous thread defects.

(6) ..... Lengths were found to have damaged threads on field end.
Identified by RED Paint Band close to threads.

(7) ..... Lengths were found to have damaged coupling.
Identified by RED Paint Band around coupling.

(8) ..... Lengths were found to have both damaged threads on field end and coupling.
Identified by RED Paint Band at both ends.

Raymond L. Yasman
Operator

HYCALOG (CANADA) LTD.

10365 - 58TH AVENUE, EDMONTON 70, ALBERTA
TELEPHONE 434-7688 (403)

OILFIELD PIPE INSPECTION

INSPECTION REPORT OF NEW TUBULAR GOODS

Work Order No. 919 Date: November 29th, 1970

Company: Northwest Pipe & Supply

Location: Loadstar Yard - Edmonton

Type of Inspection: Hycalog Standard Rack Inspection

118 Lengths, OD 7" Weight 23# Range III

Grade N-80 Mfg. Takahashi Thread Type Round

RESULTS:

(1) Lengths containing defects up to 12.5% of the original bodywall.

117 lengths were of this classification. Identified by WHITE Paint Band at coupling end.

(2) Lengths containing defects over 12.5% of the original bodywall.

1 lengths were of this classification. Identified by a RED Paint Band around pipe at coupling end.

(3) Lengths containing defects internally of undetermined depth.

..... lengths were of this classification. Identified by BLUE Paint Band around pipe at coupling end.

(4) ..... lengths were found to be mashed. Identified by 2 RED Paint Bands around pipe at the mash area.

THREAD INSPECTION RESULTS

(5) ..... Lengths were found to be free of dangerous thread defects.

(6) ..... Lengths were found to have damaged threads on field end.
Identified by RED Paint Band close to threads.

(7) ..... Lengths were found to have damaged coupling.
Identified by RED Paint Band around coupling.

(8) ..... Lengths were found to have both damaged threads on field end and coupling.
Identified by RED Paint Band at both ends.

Raymond L. Yasman
Operator

HYCALOG (CANADA) LTD.

10365 - 58TH AVENUE. EDMONTON 70. ALBERTA
TELEPHONE 434-7688 (403)

OILFIELD PIPE INSPECTION

INSPECTION REPORT OF NEW TUBULAR GOODS

Work Order No. 919 Date: November 29th, 1970

Company: Northwest Pipe & Supply

Location: Loadstar Yard - Edmonton

Type of Inspection: Hycalog Standard Rack Inspection

26 Lengths, OD 7" Weight 29# Range III

Grade N-80 Mfg. Takahashi Thread Type Round

RESULTS:

(1) Lengths containing defects up to 12.5% of the original bodywall.

26 lengths were of this classification. Identified by WHITE Paint Band at coupling end.

(2) Lengths containing defects over 12.5% of the original bodywall.

..... lengths were of this classification. Identified by a RED Paint Band around pipe at coupling end.

(3) Lengths containing defects internally of undetermined depth.

..... lengths were of this classification. Identified by BLUE Paint Band around pipe at coupling end.

(4) ..... lengths were found to be mashed. Identified by 2 RED Paint Bands around pipe at the mash area.

THREAD INSPECTION RESULTS

(5) ..... Lengths were found to be free of dangerous thread defects.

(6) ..... Lengths were found to have damaged threads on field end.
Identified by RED Paint Band close to threads.

(7) ..... Lengths were found to have damaged coupling.
Identified by RED Paint Band around coupling.

(8) ..... Lengths were found to have both damaged threads on field end and coupling.
Identified by RED Paint Band at both ends.

Raymond L. Yasman
Operator

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Edmonton Inspection

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Service
Date: August 24, 1970
Location: Edmonton
Work Order Number: 96026
Well Name & Number: Rileys Yard
Customer Order Number:

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION FULL LENGTH

MATERIALS INSPECTED

70 Total Lengths, 7 " OD Casing, Range III, Mannesmann Mfg., 25 #,
.362 " Wall Thickness, Grade Hoonex Type of Connections L T & C

Note: This pipe was inspected for surface defects to conform, with:

☐ Customer Specifications (See Attachment)

☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is ____"
12.5% of the tabulated wall thickness for this pipe is .045

SUMMARY OF RESULTS

68 Lengths were found to be free of inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

____ Lengths of the above were found to have defective couplings.

* Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.

☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)

☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

____ Lengths of the above were found to have defective couplings.

*NOTE: This section does not apply to inspection to 5A specifications.

____ Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

____ Lengths of the above were found to have defective couplings.

2 Lengths were found to have inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. Identified by a red paint band.)

____ Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area,(3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

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REPORT PREPARED BY Edmonton Inspection

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer Canada Cities Service Work Order No. 96025

Page 2 of 2 Pages

DESCRIPTION AND LOCATION OF DEFECTS

Length No.	TYPE OF DEFECT	SIZE OF DEFECT			IDENTIFYING COLOR				LOCATION OF DEFECT	Tally Length
		Depth	Length	Width	Red	Blue	Yel.	Yel. White		
1	Internal Inclusion	.052	½"	½"	X				20' From Coupling End	45'10"
2	Internal Inclusion	.062	½"	½"	X				4' From Field End	45'2"

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Edmonton Inspection

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Service
Date: August 24, 1970
Location: Edmonton
Work Order Number: 96026
Well Name & Number: Rileys Yard
Customer Order Number:

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION FULL LENGTH

MATERIALS INSPECTED

3 Total Lengths, 7 " OD Casing, Range II, Mannesmann Mfg., 26 #,
.362 " Wall Thickness, Grade N-80 Type of Connections L T & C

Note: This pipe was inspected for surface defects to conform, with:

☐ Customer Specifications (See Attachment)

☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is ____"
12.5% of the tabulated wall thickness for this pipe is .045

SUMMARY OF RESULTS

3 Lengths were found to be free of inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

____ Lengths of the above were found to have defective couplings.

____ Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.

☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)

☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

____ Lengths of the above were found to have defective couplings.

*NOTE: This section does not apply to inspection to 5A specifications.

____ Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

____ Lengths of the above were found to have defective couplings.

____ Lengths were found to have inside and/or outside surface defects exceeding ____% of the nominal wall thickness. Identified by a red paint band.)

____ Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area, (3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

SERVICED BY Dale Odegaard.

REPORT PREPARED BY: Edmonton Inspection

AMF TUBOSCOPE, INC.
Subsidiary of AMERICAN MACHINE & FOUNDRY COMPANY
P. O. Box 808, Houston, Texas 77001 • Area Code 713 748-1300

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Services
Location: Edmonton
Well Name & Number: Rileys Yard

Date: August 24, 1970
Work Order Number: 96026
Customer Order Number: ______

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION FULL LENGTH

MATERIALS INSPECTED

108 Total Lengths, 7" OD Casing, Range III, Mannesmann Mfg., 29 #,
.408" Wall Thickness, Grade [illegible] Type of Connections L T & C

Note: This pipe was inspected for surface defects to conform, with:

☐ Customer Specifications (See Attachment)

☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is ______"
12.5% of the tabulated wall thickness for this pipe is .051"

SUMMARY OF RESULTS

108 Lengths were found to be free of inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

______ Lengths of the above were found to have defective couplings.

* Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.

☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)

☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

______ Lengths of the above were found to have defective couplings.

NOTE: This section does not apply to inspection to 5A specifications.

______ Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

______ Lengths of the above were found to have defective couplings.

______ Lengths were found to have inside and/or outside surface defects exceeding ______% of the nominal wall thickness. (Identified by a red paint band.)

______ Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area, (3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

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Form 102 B Rev. 10-69

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P. O. Box 808, Houston, Texas 77001 • Area Code 713 748-1300

INSPECTION REPORT OF NEW TUBULAR GOODS

Customer: Canada Cities Service
Date: August 24, 1970
Location: Edmonton
Work Order Number: 96026
Well Name & Number: Alleys Yard
Customer Order Number:

TYPE OF INSPECTION

SONOSCOPE PLUS MAGNETIC PARTICLE INSPECTION FULL LENGTH

MATERIALS INSPECTED

2 Total Lengths, 7" OD Casing Range II, Mannesmann Mfg., 29#, .408" Wall Thickness, Grade Modified Type of Connections L T & C

Note: This pipe was inspected for surface defects to conform, with:

☐ Customer Specifications (See Attachment)

☐ Appropriate dimensions per API Standard No. 5A
5% of the tabulated wall thickness for this pipe is ____"
12.5% of the tabulated wall thickness for this pipe is .051

SUMMARY OF RESULTS

2 Lengths were found to be free of inside and/or outside surface defects exceeding 12½ % of the nominal wall thickness. (Identified by a white paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end.)

____ Lengths of the above were found to have defective couplings.

* Lengths were found to have inside and/or outside surface defects exceeding 5 percent of the nominal wall thickness but not exceeding 12.5 percent of the nominal wall thickness.

☐ (Identified by a yellow paint band and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have not been removed.)

☐ (Identified by yellow and white paint bands and "Tuboscope Inspected" stenciled in white on the pipe body near the coupling or box end if the defects have been removed.)

____ Lengths of the above were found to have defective couplings.

*NOTE: This section does not apply to inspection to 5A specifications.

____ Lengths were found to have inside defects where the depths could not be accurately measured. (Identified by a blue paint band.)

____ Lengths of the above were found to have defective couplings.

____ Lengths were found to have inside and/or outside surface defects exceeding ____% of the nominal wall thickness. Identified by a red paint band.)

____ Lengths of the above were found to have defective couplings.

EXPLANATION OF IDENTIFICATION

Defective Lengths are identified by: (1) An assigned numerical identification, the Work Order Number, "Tuboscope Inspected" painted in white, and a paint band of the appropriate color on the body of the pipe adjacent to the coupling box, (2) The defect encircled with paint of the appropriate color and the depth of the defect (when known) written in white on the pipe body near the defective area,(3) In the case of inside defects, the outside surface of the pipe adjacent to the defect will be circled.

Defective Couplings are identified by (1) Appropriate identification on the coupling itself to reflect its conditions, (2) An assigned alphabetical identification, and the Work Order Number painted in white on the coupling, (3) The defect encircled with *red* paint, (4) A *red* paint band around the coupling.

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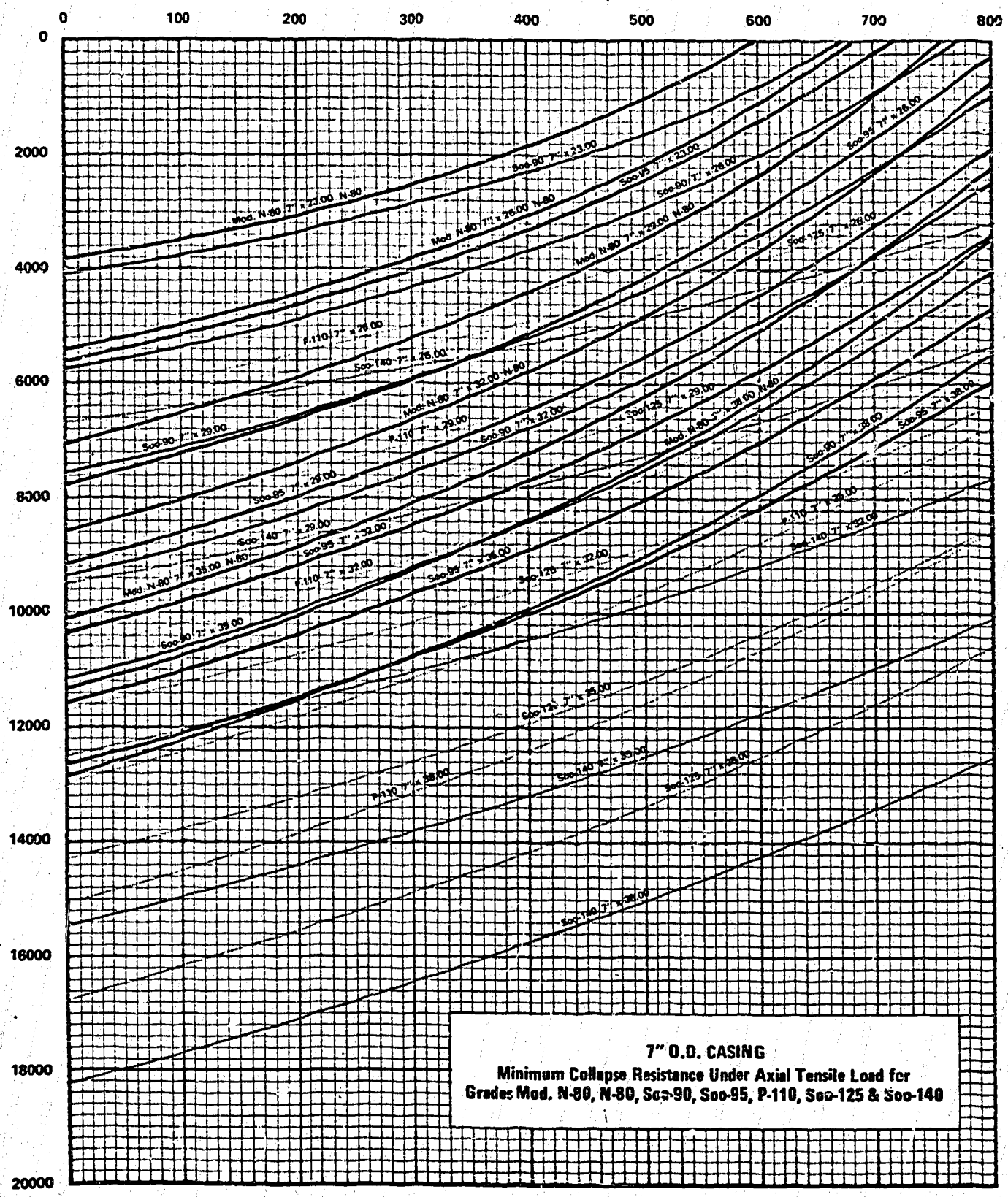
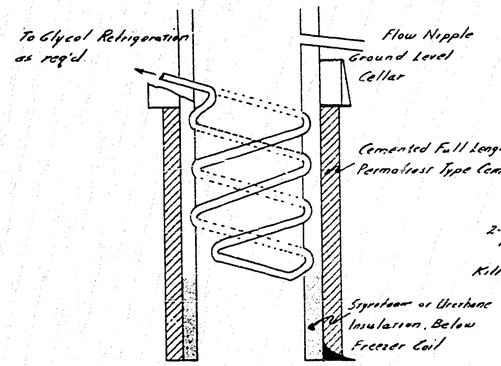
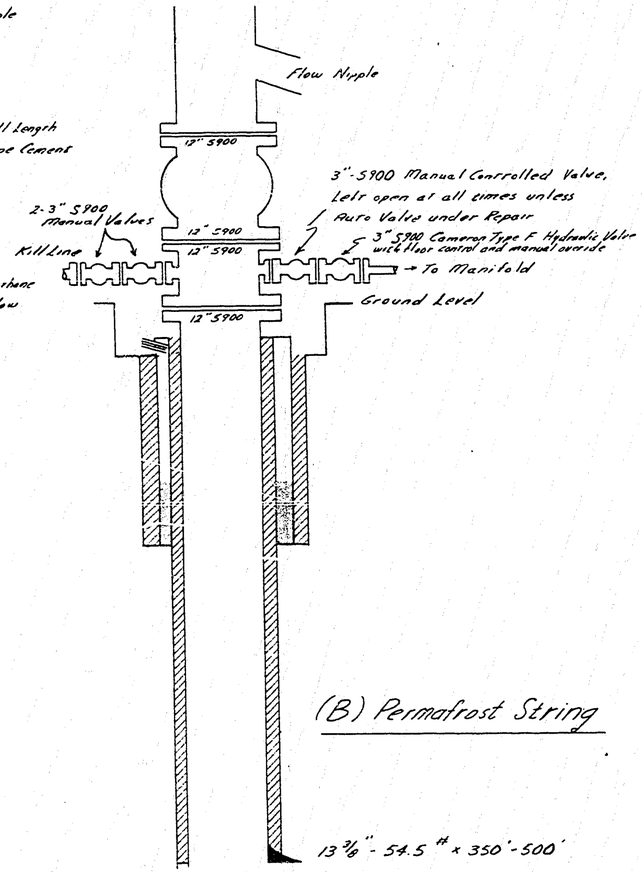
FIGURE 9


TENSILE LOAD, 1000 lb
0
100
200
300
400
500
600
700
800
MINIMUM COLLAPSE RESISTANCE, psi
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
Mod. N-80 7" x 23.00 N-80
Soo-90 7" x 23.00
Soo-95 7" x 23.00
Soo-80 7" x 26.00
Soo-95 7" x 26.00
Mod. N-80 7" x 26.00 N-80
Soo-125 7" x 26.00
P-110 7" x 26.00
Soo-140 7" x 26.00
Mod. N-80 7" x 29.00 N-80
Soo-90 7" x 29.00
Soo-95 7" x 29.00
P-110 7" x 29.00
Soo-140 7" x 29.00
Mod. N-80 7" x 32.00 N-80
Soo-90 7" x 32.00
Soo-95 7" x 32.00
Soo-125 7" x 29.00
Mod. N-80 7" x 35.00 N-80
Soo-125 7" x 32.00
P-110 7" x 32.00
Soo-140 7" x 32.00
Soo-90 7" x 35.00
Soo-95 7" x 35.00
P-110 7" x 35.00
Soo-125 7" x 35.00
Soo-140 7" x 35.00
P-110 7" x 38.00
Soo-125 7" x 38.00
Soo-140 7" x 38.00
7" O.D. CASING
Minimum Collapse Resistance Under Axial Tensile Load for
Grades Mod. N-80, N-80, Soo-90, Soo-95, P-110, Soo-125 & Soo-140



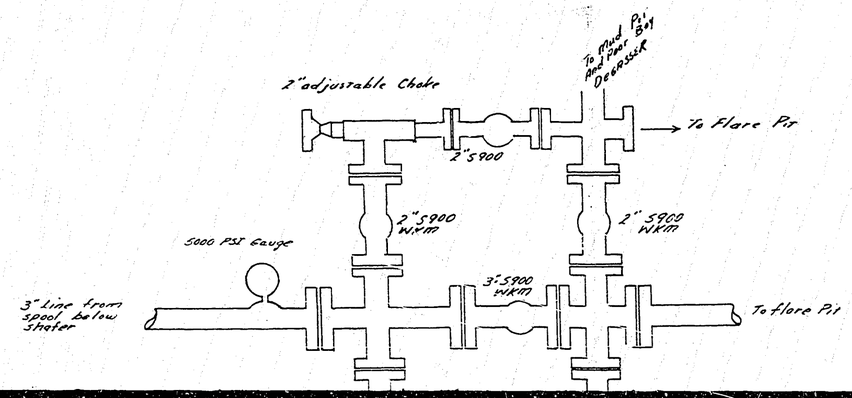
(A) Conductor Pipe

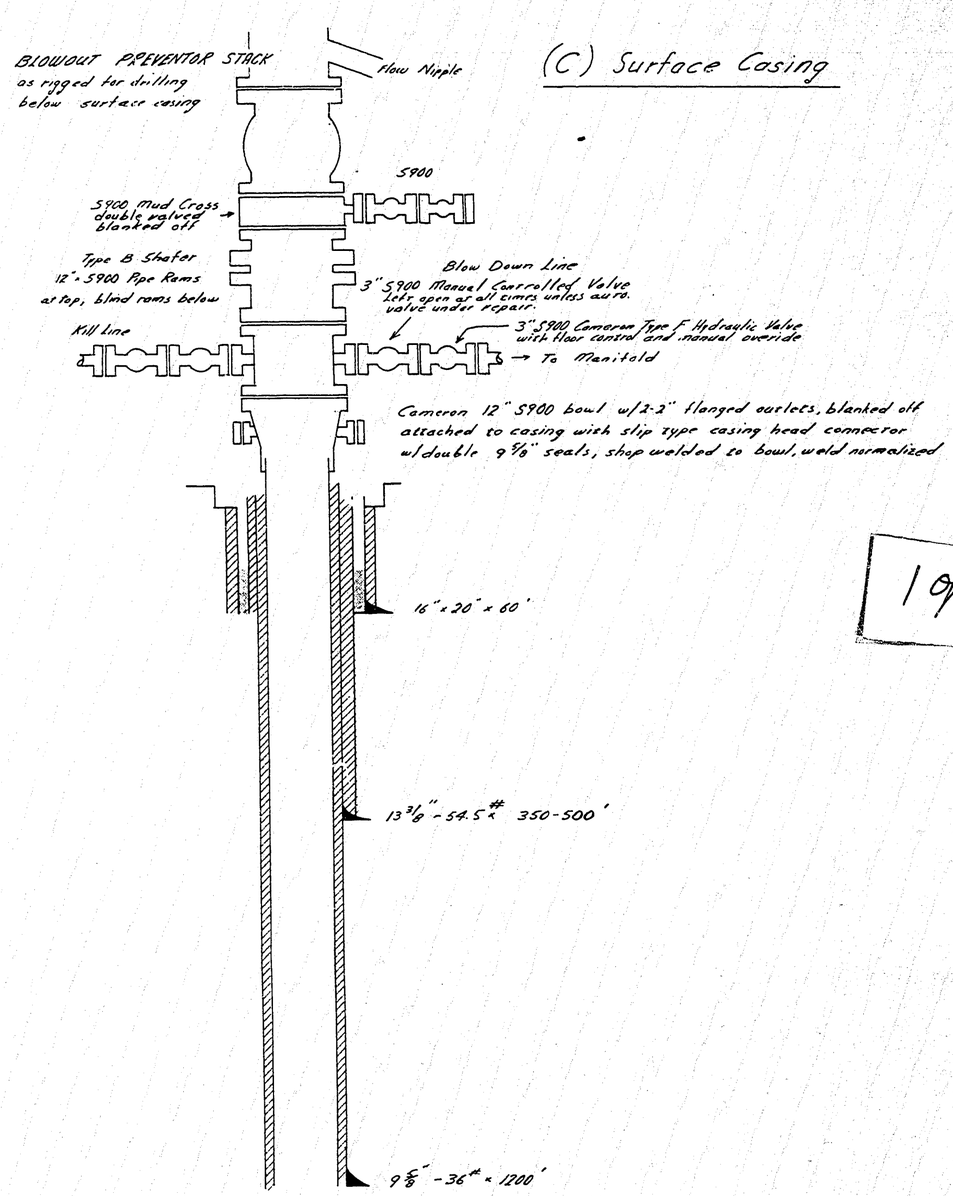
(20" x 16" Approx)



(B) Permafrost String

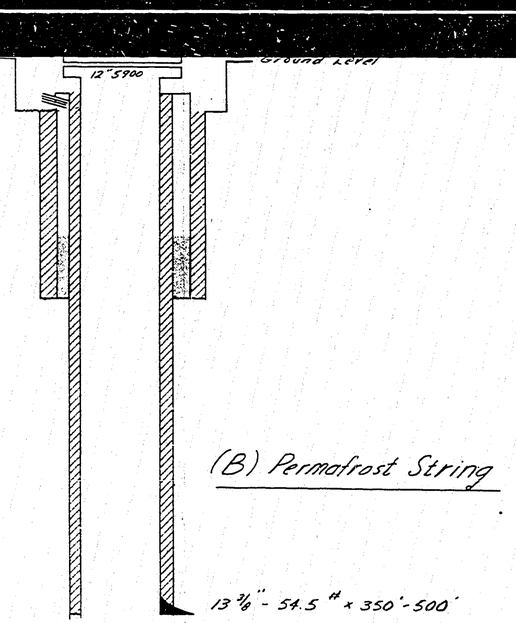
13 3/8" - 54.5 # x 350'-500'



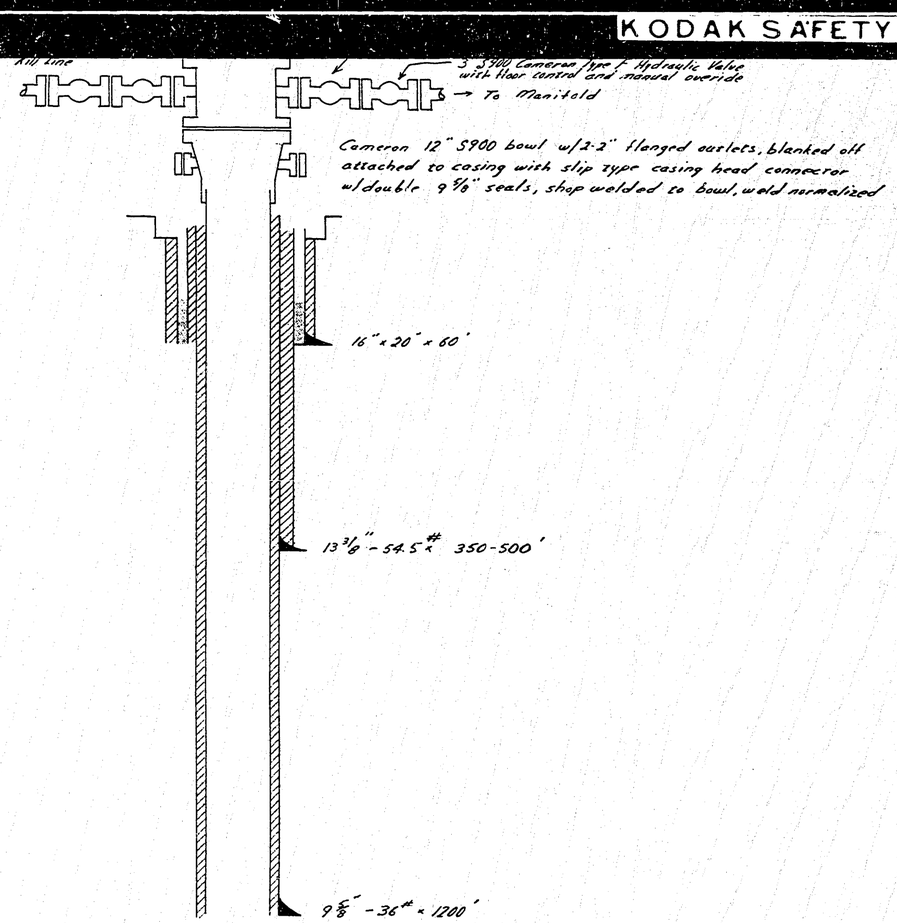


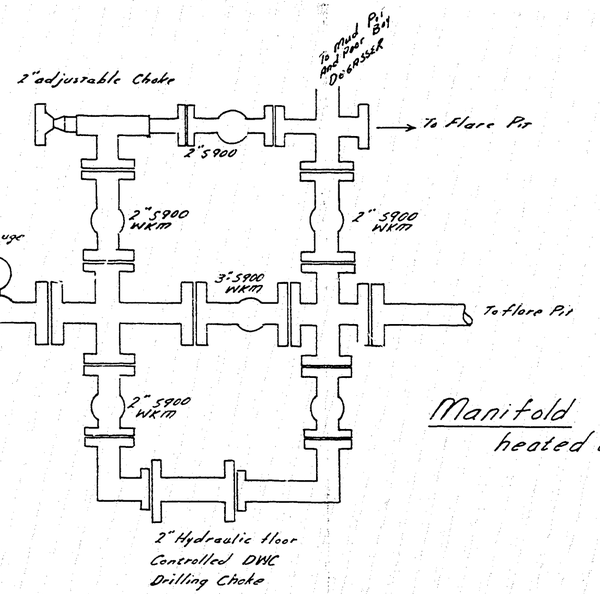
(C) Surface Casing

(A) Conductor Pipe
(20" x 16" Approx)



(B) Permafrost String

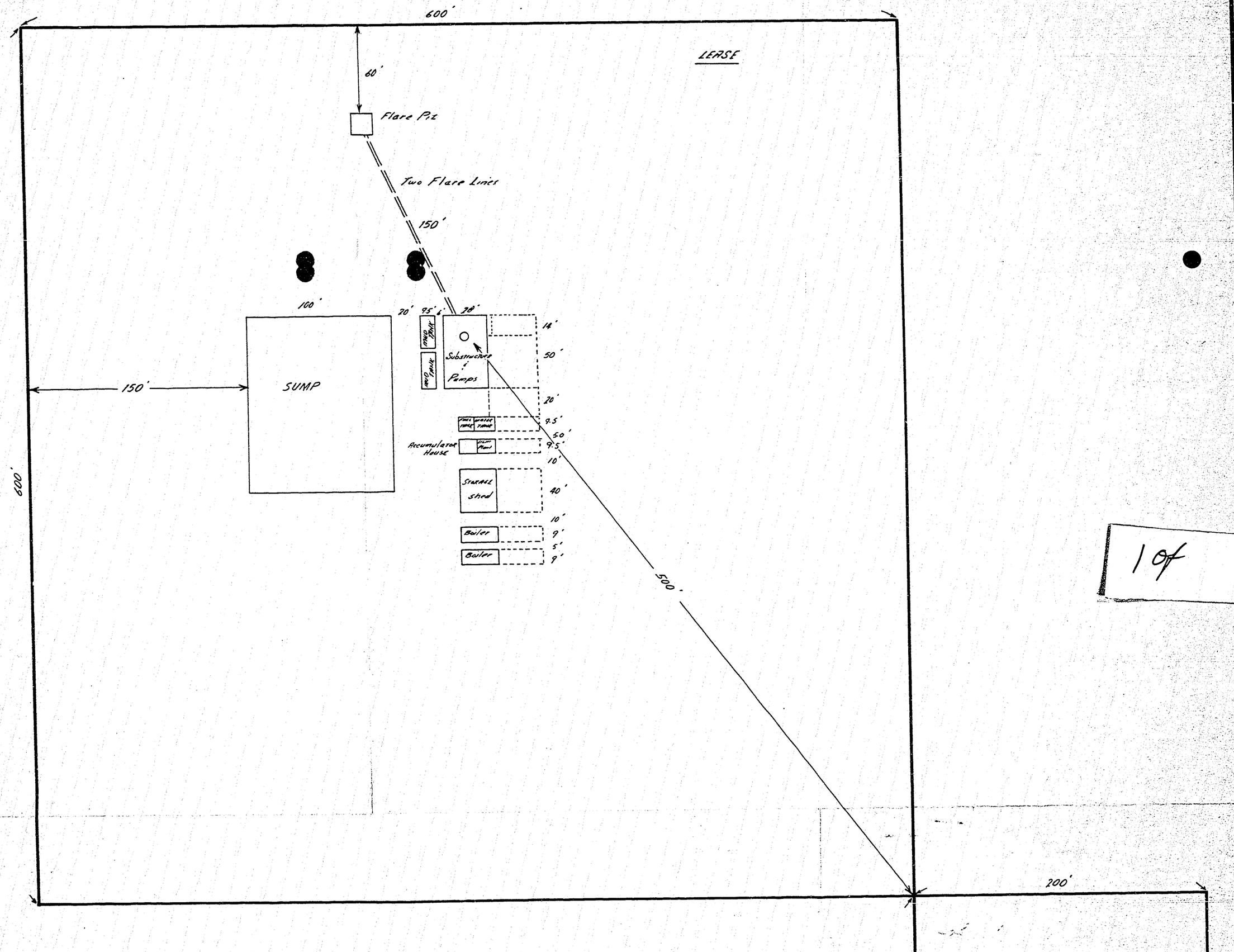




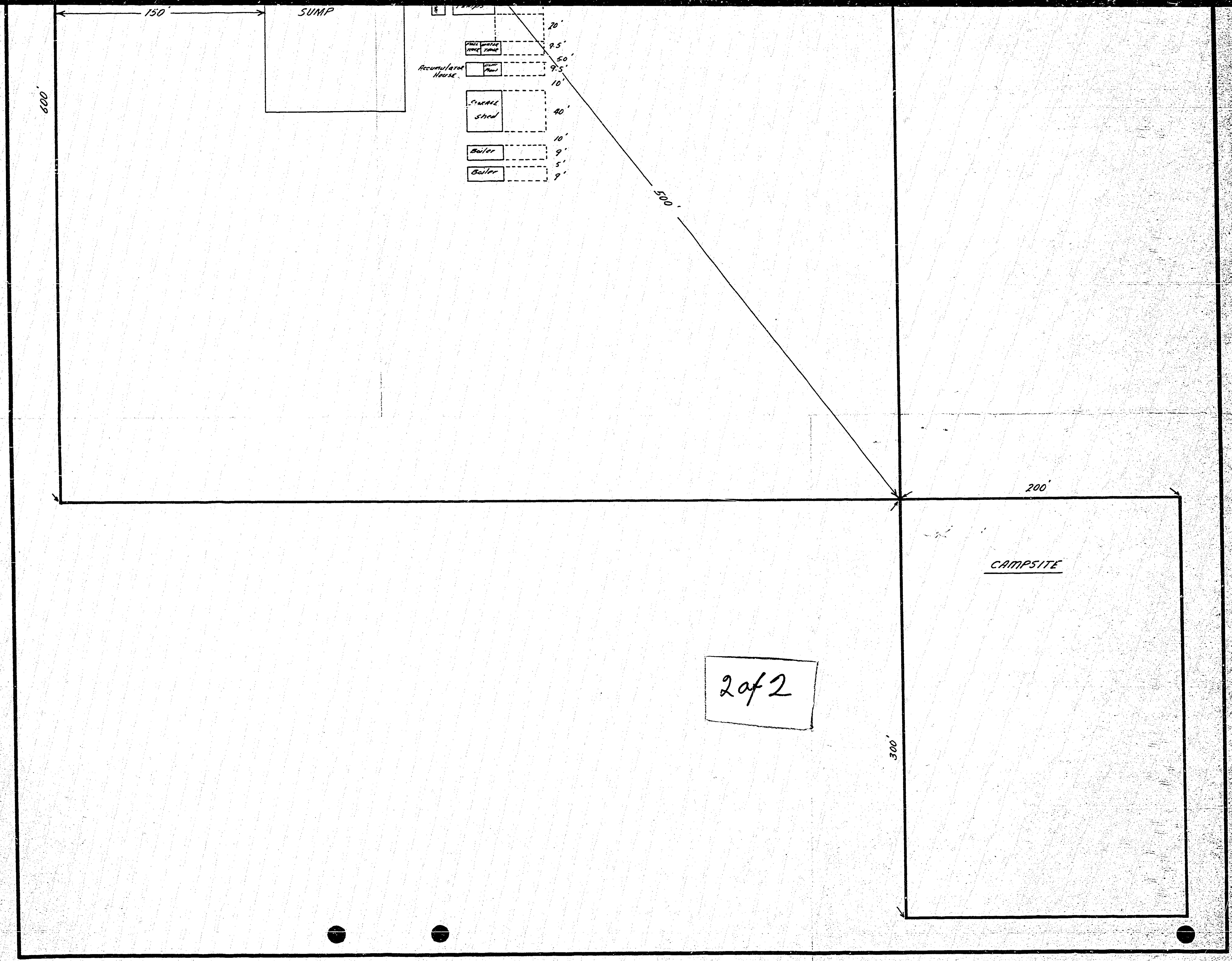
Manifold
heated and winterized

2 of 2

(NOT DRAWN TO SCALE)


600'
LEASE
60'
Flare Pit
Two Flare Lines
150'
100'
20'
9.5'
30'
14'
50'
20'
9.5'
50'
9.5'
10'
40'
10'
9'
5'
9'
150'
SUMP
600'
Fuel Tank
Fuel Tank
Substructure & Pumps
Fuel Pump
Water Tank
Accumulator House
Slum Pump
Storage shed
Boiler
Boiler
500'
200'

1 of


150'
SUMP
600'
20'
9.5'
50'
Accumulator House
9.5'
10'
Storage shed
40'
10'
Boiler
9'
5'
Boiler
9'
500'
200'
CAMPSITE
300'
2 of 2


SHELL AKLAVIK
700'
136°00'
135°00'
134°00'
68°15'
68°00'
AKLAVIK
RICHARDSON MOUNTAINS
750
650
BANFF RAT PASS
450'
BANFF TREELESS CK
450'
HUSKY CHANNEL
MACKENZIE DELTA
PEEL CHANNEL
MACKENZIE RIVER
APPROX. LIMITS OF MACKENZIE DELTA
BLUEMOUNT-NNG-GULF DELTA
SKELLY et al McPHERSON
250'
CORE HOLE PROJECT
350'—375'
RIVER

1 of

BANFF TREELESS CK
450'

HUSKY CHANNEL

CHANNEL

RIVER

650

APPROX LIMITS OF MACKENZIE DELTA

BLUEMOUNT-NN 3-GULF DELTA

CORE HOLE PROJECT
350' — 375'

SKELLY et al McPHERSON
250'

67°30'

I.O.E. 1-50
420'

67°30

RIVER

PEEL

FORT McPHERSON

550

450

350

250

67°15'
136°00'

135°00'

67°15'
134°00'

2 of 2

Bluemont et al
South Delta K-80

100' CONTOURS ON BASE OF PERMAFROST
DEPTHS ARE SUBSURFACE

SKETCH MAP SHOWING

DEPTHS TO BASE OF PERMAFROST

SCALE: 1: 250,000

MAY, 1972