Drilling Authority No. 150

Date Issued .....

WELL NAME Calstan Imperial Bonvier L-69

FIELD ..... Area: .....

LOCATION: Unit ..... L ..... Section ..... 69 ..... Grid ... 60-50; 118-30 .....

Latitude ... 60-48-34 ..... Longitude ... 118-42-59.7h .....

From Established Reference Marker .....

.....

Rig Release Date: .....

Status .....

Information Release Date .....

CHANGE OF NAME:

DATE RECEIVED	INDEX
	Application for a Drilling Authority.
	Well Completion Data.
	Well History Report.
	Application to Amend a Drilling Authority.
	Application to change a Well Name.
	Application to Abandon a Well or Suspend Drilling.
	Application to Alter Condition of a Well.
	Well History Supplement.
	Well Completion Data.
	Work-over Report No. .....
	Application to Commingle Production before Measurement.
	Data for Back Pressure Test on Natural Gas Wells — Monograph 7 Method.
	Data for Back Pressure Test on Natural Gas Wells — Vitter's Method.
	M.P.R. — Oil — Calculations.
	New Oil Well Report.
	New Gas Well Report.
	Well Inspection Report.
	Rig Inspection Report.
	Battery Inspection Report.
	Equipment Report.
	Well Card.
	Well Visit.
	Daily Drilling Reports.
	Logs. Large scale ..... Small scale .....

CANADA

Drilling Authority No. 150

Date Issued January 29, 1965

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
RESOURCES DIVISION

WELL COMPLETION DATA

(To be submitted in duplicate within thirty days after the completion rework, abandonment, recompletion or suspension of every well.)

Well name and number Calstan Imperial Bouvier L-69

Permit No. Imp. 3186 Lease No.

The California Standard Company (Permittee, Licensee, Lessee) Exploratory Licence No. 680998

(Operator) Exploratory Licence No.

Location: Unit L Section 69 Grid 60° 50' N 118° 30' W

Latitude 60° 48' 34.00" N Longitude 118° 42' 59.76" W

From Established Reference Marker Meridian through N.E. corner Sec. 33-132-5-6

	DATE	DEPTH
Spudded	Jan 29/65	
Suspended		
Resumed		
Finished Drilling	Feb 16/65	3343
Deepened		
Complete (gas/oil)		
Abandoned	Feb 21/65	3343
Rig released	Feb 21/65	

Pool (s)

Interval(s) open to production Abandoned

Elevation: Gr. 1150.9

K.B. 1162

Drilling Contractor & Rig No. Tri City Rig #4

Contractor's Licence No. A-11750

CASING RECORD

Casing Size (Inches)	Weight	Amount	Set at—	Sacks of Cement	Method
1. 7"	20#		243.6	150 sx + 2% $CaCl_2$	
2.				Top re-cemented w/	
3.				31 sx cement.	
4.					
5.					
6.					

GEOLOGICAL TOPS	ELEVATION	
	Depths	Sub-Sea
Tetcho	Cased out	
Redknife	925	+ 237
Jean Marie	1083	+ 79
Fort Simpson	1104	+ 58
Slave Point	2922	-1760
Watt Mountain	3066	-1904
Sulphur Point	3074	-1912
Presqu'ile	3098	-1936
Granite Wash	3297	-2135
Precambrian	3310	-2148

CORE RECORD

From	To	Rec.	From	To	Rec.
2990	3030	41.7'			

LOG RECORD

Run No.	Type of Log	From	To
1	Induction Electric Log 2" = 100' & 5" = 100'	243	3343
1	Bore Hole Compensated	243	3341
2	Sonic (w/ Intergrater	243	3342
3	2" = 100'	2900	3341

CEMENTING RECORD (Plug, Squeeze, etc.)

Date	From	To	Remarks
Feb. 20/65	3245	3343	30 sx neat cement
Feb. 20/65	3151	3050	35 sx + 3% $CaCl_2$ felt at 3042'
Feb. 20/65	2870	2970	45 sx neat cement felt at 2863'
Feb. 21/65	195	300	40 sx neat cement felt at 176'

PERFORATING RECORD (Bullet, Jet)

Date	From	To	Remarks

SERVICING RECORD (Acidizing, Fracing, etc.)

Date	From	To	Remarks

DRILL STEM TESTS

No.	Date	Formation	From	To	V.O. Mins.	I.S.I. Mins.	F.S.I. Mins.	I.S.I.B.H.P.	F.S.I.B.H.P.	I.F.B.H.P.	F.F.B.H.P.	I.H.P.	F.H.P.	REMARKS
1	Feb.13/65	Slave Point	2965	2990	90	60	60	1335	144	31	86	1587	1608	Rec. 120' slightly gas cut mud
2	Feb.18/65		3144	3159	--	Misrun	--							
3	Feb. 18/65		3146	3161	--	Misrun	--							
4	Feb.19/65	Presqu'ile	3124	3164	120	60	60	1335	1289	183	990	1659	1659	Rec. 250' salt water cut mud & 1600' of salt water.
5	Feb.20/65	Presqu'ile	3092	3115	120	30	120	1273	1237	111	571	1633	1626	Rec. 180' salt water cut gassy mud & 1360' of salt water.

Lab. No.	Sample	From	To	Source	Remarks
E25135	Water	3124	3164	Presqu'ile	D.S.T. #4
E25134	Water	3092	3115	Presqu'ile	D.S.T. #5
E25162	Gas	3092	3115	Presqu'ile	D.S.T. #5

PRESENT STATUS OF WELL

Oil ..... (Interval.)

Gas ..... (Interval.)

Dry .....

Susp .....

Company The California Standard Company

Signed by Arthur L. Wood

Title Division Engineer

Date May 28/65

Forms to be prepared in duplicate and forwarded to the Conservation Engineer, Calgary, Alberta.

File No.
Drilling Authority No. 150

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
RESOURCES DIVISION

Application to Abandon a Well or Suspend Drilling

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

Name and number of well: Calstan Imperial Bouvier L-69

Location: Unit L Section 69 Grid 60°50' N, 118° 30' W

Latitude 60° 48' 34.00" N Longitude 118° 42' 59.74" W

From Established Reference Marker: Meridan through NE Corner Sec 33-132-5-6

Permit No. Imperial 3186 Lease No.

The California Standard Company
(Permittee, Licensee, Lessee)

Date of commencement of proposed programme: February 20, 1965

OIL, GAS, AND WATER ENCOUNTERED
(Depths)

Oil at

Gas at

Water at

Total Depth 3343 Date of last operations February 21, 1965

Present condition of well: Abandoned

CASING RECORD

Casing Size O.D. Inches	Weight	Amount	Set At—	Sack of Cement	Method	Amount Pulled
1. 7"	20#.	232.91'	244	150 +2% CaCl	Howco	None
2.	Recemented top casing with 31 sacks					
3.						
4.						
5.						

PROPOSED ABANDONMENT PROGRAMME

Plug No.	Plug Position	Geological Formation	Number of Sacks of Cement	Remarks
1	3245-3343	Granite Wash	30 sacks	No feel
2	3050-3151	Watt Mountain, sulphur point	35 " +3% CaCl	Checked @ 3042 Ft.
3	2870-2970-	Slave Point	45 " -	Checked @ 2863 Ft.
4	300- 195	Across surface casing	40 "	Checked @ 176 Ft.
5	Surface		5 "	Welded on steel cover plate and steel post with well name.

The following logs have been run: IES, Gamma Sonic Caliper

Other operations proposed:

Operations to be carried out by Tri-City Drilling Limited Contractor Licence No. A-1179.0

Address Edmonton Address 10605 - 118 Avenue

Responsible Agent in field R. G. Cosgrove

Dated at Edmonton, this 13 Day of April 19 65

Signed by [signature] Company The California Standard Company

Title Division Superintendent Exploratory Licence No. 898

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

(For RESOURCES DIVISION use only)

APPROVAL

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

Confirming oral approval given by Mr. A.E. Cozd on 20th February 1965

Dated 15th April, 1965 [signature]

Forms to be submitted in triplicate to Oil Conservation Engineer, Calgary, Alberta

NANR 52-90 (5) (1-61)

File No.....

Drilling Authority No. 150

DEPARTMENT OF NORTHERN AFFAIRS AND NATIONAL RESOURCES
RESOURCES 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 made hereby for approval to drill:—

Name and number of well Caistan Imperial Bonnier L-69

Location: Unit L Section 69 Grid 69°20' North, 118°30' west

Latitude 60° 42' 34.00" North Longitude 118° 42' 59.76" West

From Established Reference Marker Meridian Traverse NE Corner Sec 33-132-5-6

Elevation: Ground 1150.9 K.B. 1162 feet above sea-level.

Well is expected to produce from Slave Point dolomite formation at a depth of about 2860 feet.

Area assigned to well .....
(for Oil Conservation Engineer's use only)

Permit No. Imperial 3156 Lease No. ..... Acreage 11344

Permittee, licensee, or lessee The California Standard Company

Exploratory Licence No. 680

Surface owned by Crown or Crown
(If alienated submit name and address of owner and occupant.)

Petroleum and natural-gas rights owned by Imperial Oil Limited

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	Brand	New or Used	Estimated Depth	Sacks of Cement
1. 7"	20#	J-55		New	200	150
2.						
3.						
4.						
5.						

Expected water, gas, and oil horizons and type of control equipment

Slave Point Dolomite, Sulphur Point, Granite Wash

3rd Hydril 600 Series

3rd Double Gate Cameron 600 series

Well will be drilled with (Rotary) Rig No. 4 by Tri-City Drilling Co. Ltd.
(Drilling Contractor or company)

Responsible agent of applicant:— Contractor's Licence No. A-11790

At well R. C. Cosgrove At registered office R. C. Richardson

Address Box 2296, Edmonton Address Box 2296, Edmonton

It is understood that if changes become necessary, notice of the change of plan will be submitted.

Dated at Edmonton, Alberta, this 28 day of January 19 65

Signed by J. F. Campbell Company The California Standard Company

Title Asst. Division Superintendent Licence No. 898

(For Resources Division use only)

APPROVED

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

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

Dated 29th January 19 65

Forms to be submitted to Oil Conservation Engineer, Calgary, Alberta.

MANR 52-29(1) (1-61)

WELL HISTORY REPORT

CALSTAN IMPERIAL BOUVIER L-69

Unit L, Section 69,
Grid 60° 48' 34" N, 118° 42' 59.75" W

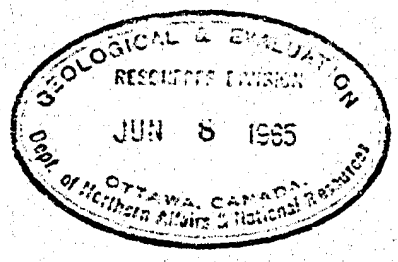
THE CALIFORNIA STANDARD COMPANY

11605 - 118 Avenue, Edmonton, Alberta.

WELL HISTORY REPORT

CALSTAN IMPERIAL BOUVIER L-69

Unit L, Section 69,
Grid 60° 48' 34" N, 118° 42' 59.75" W



DATE: MAY 10 1965

SIGNED:

R. C. RICHARDSON
Division Superintendent.

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Appendix C	D.S.T. Charts and Pressure Reports	
Appendix D	Water Analysis	
Appendix E	Gas Analysis	

Well History Report

Section I

a) Well Name: Calstan Imperial Bouvier L-69

b) Permittee: Imperial Oil Limited
11160 Jasper Avenue
EDMONTON, Alberta

c) Licencee: The California Standard Company
P. O. Box 2296,
EDMONTON, Alberta

d) Operator: The California Standard Company
P. O. Box 2296
EDMONTON, Alberta

e) Location: Unit L, Section 69, Grid 60° ~~48' 34~~ 30' North
118° ~~59' 75~~ 30' West

f) Coordinates: Latitude 60° 48' 34.00" North
Longitude 118° 42' 59.74" West

g) Permit Number: # 3186

h) Drilling Contractor: Tri City Drilling Co. Ltd.
Rig #4 L.C. Moore telescoping derrick

i) Drilling Authority: 150 issued January 29th, 1965

j) Classification: Wildcat

k) Elevations: Ground 1150.9'
K.B. 1162'

l) Spudded: 12:00 a.m., January 29th, 1965

m) Completed Drilling: 12:00 p.m., February 16th, 1965

n) Total Depth: Driller 3343'
Schlumberger 3343'

o) Well Status: Abandoned

p) Rig Released: 10:00 p.m., February 21st, 1965

q) Hole Size: 9 7/8" 0 - 248'
6 1/4" 248 - 3343'

r) Casing:

Size	Type	Weight	Set at	Sax of Cement
7"	J-55	20#	243.61'	150 + 2% $CaCl_2$ - Top of cem. reclemented with 31 sacks.

Section II - Geological Summary

a) Formation Tops:

	Depth (Sample)	Depth (Log)	Elev.
Tetcho	Cased out		
Redknife	1047	925	+ 237
Jean Marie	1185	1083	+ 79
Fort Simpson	1215	1104	+ 58
Slave Point	2916	2922	-1760
Watt Mountain	3066	3066	-1904
Sulphur Point	3074	3074	-1912
Presqu'ile	3096	3098	-1936
Granite Wash	3297	3297	-2135
Precambrian	3309	3310	-2148

b) Cored Intervals:

Core #1 Slave Point 2990 - 3030' Recovered 41.7'

c) Core Description:

See Appendix B.

d) Sample Description:

See Appendix A.

Section III - Engineering Summary

a) Drill Stem Tests:

For D.S.T. Charts and Pressure Reports - See Appendix C.

All Pressures are corrected from field measurements.

D.S.T. #1 2955 - 2990'
Preflow 5 minutes. Initial shut 60 minutes. Final shut in 60 minutes. Valve open 90 minutes. Good initial puff Recovered 120 feet of slightly gassified mud.
IHP 1587; FHP 1608; ISIP 1335; FSIP 144; IFP 31; FFP 86; BHT 86°.

D.S.T. #2 3144 - 3159' Presqu'ile
Misrun. Packer seat failure.

D.S.T. #3 3146 - 3161' Presqu'ile
Misrun. Packer seat failure.

D.S.T. #4 3124 - 3164' Presqu'ile
Preflow 5 minutes, faint air blow. Initial shut in 60 minutes. Final shut in 60 minutes. Valve open for 120 minutes. Faint air blow increasing to fair in 10 minutes remained steady to end of test. Recovered 250' of salt water cut mud and 1600' of salt water.
IHP 1659; FHP 1659; ISIP 1335; FSIP 1289; IFP 183; FFP 990 BHT 87°.

D.S.T. #5 3092 - 3115' Presqu'ile
Preflow 5 minutes. Initial shut in 30 minutes. Final shut in 120 minutes. Valve open 120 minutes. Strong air blow with gas to surface in 2 minutes with an estimated blow of 47 Mcf/day. Recovered 180 feet of salt water cut gassy mud + 1360 feet of salt water.
IHP 1633; FHP 1626; ISIP 1273; FSIP 1237; IFP 111; FFP 571; BHT 105°.

b) Casing Record:

Only surface casing run.

Size	TYPE	Weight	Set at	Sax of Cement
7"	J-55	20#	243.61'	150 + 2% $CaCl_2$ - Top cem. cemented with 31 sacks.

c) Bit Record:

Number	Size	Serial	Kind	From	To	Hours on Bottom
2 A	9 7/8	26003	OWV	38	140	10 1/2
3 A	9 7/8	46361	OSC-3	140	248	20 3/4
1	6 1/4	37159	OSC-1G	248	608	23
2	6 1/4	38861	OSC-1G	608	1016	26 3/4
3	6 1/4	37158	OSC-1G	1016	1558	22
4	6 1/4	37162	OSC-1G	1558	1933	16 1/4
5	6 1/4	38858	OSC-1G	1933	2242	18
6	6 1/4	38851	OSC-1G	2242	2411	11 3/4
7	6 1/4	37169	OSC-1G	2411	2667	19 1/4
8	6 1/4	44288	OSC-1G	2667	2905	20 3/4
9	6 1/4	38946	OSC-1G	2905	2990	14 3/4
10	6 13/16	EC-1508	Diamond	2990	3030	10 1/4
11	6 1/4	42258	OWV	3030	3170	17
12	6 1/4	83525	W7R-2	3170	3284	17 1/2
13	6 1/4	43161	W7R-2	3284	3343	13

d) Mud Report:

Materials	Quantity (Sacks)
Magcogel	448
Barium Carbonate	1
Sapp	1
Caustic Soda	28
Soda Ash	1
Calcium Chloride	2
Sawdust	110
Spersene	18
Tannathin	33
Fiberseal	5
Driscose	5

A chemical gel mud was used.

e) Deviation Record:

A "Sure Shot" deviation recorder was used.

Depth	Reading (in degrees)
60	1
154	1
244	1
492	1/4
710	1/4
926	3/4
1138	1
1380	1
1625	2
1840	1 1/2
2055	2

e) Deviation Record - Continued

Depth	Reading (in degrees)
2148	2 1/4
2304	1 3/4
2528	1 1/4
2744	3/4
3051	1 1/2
3343	2 1/4

f) Abandonment Plugs:

Plug #1 3245 - 3343'
30 sacks of neat cement.

Plug #2 3151 - 3050'
35 sacks of cement + 3% $CaCl_2$, felt at 3042'.

Plug #3 2870 - 2970'
45 sacks of neat cement, felt at 2863'.

Plug #4 195 - 300'
40 sacks of neat cement, felt at 176'.

g) Lost Circulation Zones:

Depth	Zone	Materials Used
240 - 330		4000 lbs. of gel 10 sacks of sawdust 150 lbs. of Caustic

h) Report of Blowouts:

None.

Section IV - Logs

Run #1 at final T.D. on February 17th, 1965.

By Schlumberger.

Induction Electrical Log

2" = 100'	243 - 3343'
5" = 100'	243 - 3343'

Bore Hole Compensated Sonic - Gamma Ray Caliper (with Intregator)

2" = 100'	243 - 3341'
2" = 100'	243 - 3341'
2" = 100'	2900 - 3341'

Note: All Logs have been forwarded previously under separate cover.

Section V - Analysis

a) Core Analysis:

See Appendix B.

b) Water Analysis:

See Appendix D.

c) Gas Analysis:

See Appendix E.

d) Oil Analysis:

None.

APPENDIX A

Sample Description

Calstan Imperial Bouvier L-69

by: M.C. Pick
C. Johnson

Sample Description

0-300 No sample.

Tetcho

310 Limestone, cream to light brown, microcrystalline, slightly silty, slightly dolomitic, some finely disseminated pyrite. Crinoid ossicles. Rare large clastic crystals, smaller crystals are more common and probably represent fracture fillings. No porosity or permeability (other than fractures).

320 Limestone, as above, minute fractures infilled with calcite; probably ostracods or algal structures.

330 Limestone as above.

340 Limestone, cream to light brown, microcrystalline, slightly silty and dolomitic. Crinoid ossicles, brachiopods, algal material.

350 Limestone as above, large calcite crystals.

360 Limestone as above, but slightly more silty; gastropods, minute fractures.

370 Limestone, cream, microcrystalline, very slightly silty; algal material, large pyrite crystals.

380 Limestone, as above with interbeds of very light grey algal limestone.

390 Limestone, cream, microcrystalline, very slightly silty, algal material, large pyrite crystals.

400 Limestone as above.

410 Limestone as above, with interbeds of light green calcareous and silty mudstone, very finely laminated.

420 Limestone as above.

430 Limestone as above, no mudstone interbeds.

440 Limestone as above, but moderately silty and with less algal material.

450 Limestone as above.

460 Limestone, cream, microcrystalline, very slightly silty, algal material, brachiopods, pyrite.

470 Limestone as above, calcite crystals .

480 Limestone as above.

490 Limestone as above.

500 Limestone as above with some silty interbeds.

510 Limestone as above, but no silty interbeds.

520 As above.

530 As above, rare sand grains.

540 Limestone, as above, slightly silty; rare interbeds of pelletoid limestone.

550 Limestone, cream, microcrystalline, very slightly silty, algal material, brachiopods, pyrite.

560 Limestone as above, grading to cryptocrystalline,

570 As above.

580 As above, with trace light green dolomitic mudstone.

590 Limestone, cream, microcrystalline to cryptocrystalline, very slightly silty, algal material, brachiopods; trace dolomitic limestone.

600 Limestone, cream, slightly silty, dolomitic, algal structures, slightly pyritic; interbedded with sandstone, very fine grained, light green - grey dolomitic, quartzitic; rare light green grey dolomitic siltstone.

610 As above, large pyrite crystals, brachiopods.

620 Limestone, cream, microcrystalline, very slightly silty, non dolomitic, algal material, large pyrite crystals, brachiopods. Slightly silty, trace siltstone.

630 Limestone as above.

640 As above, large calcite crystals.

650 Limestone as above, with interbeds of light green calcareous mudstone.

660 Limestone as above, some finely crystalline interbeds.

670 Limestone as above with interbedded skelet pelletoid limestone.

680 As above.

690 As above, trace calcitic mudstone.

700 Limestone as above, becoming mainly light grey in color. Some beds are dolomitic.

710 Limestone, creamy grey, slightly silty, pelletoid, micro-crystalline, minor interbeds of algal limestone, some pyrite.

720 As above, some finely crystalline limestone interbeds.

730 As above, but with some crypto to microcrystalline limestone interbeds instead of fine crystalline ones.

740 As above, large calcite crystals.

750 As above, colour predominantly cream.

760 Limestone, cream, slightly silty, pelletoid, microcrystalline, minor interbeds of crypto to microcrystalline limestone. Trace light grey calcareous mudstone, pyrite and large calcite crystals.

green

770 Limestone as above, brachiopods.

780 As above; fragments of finely crystalline, light grey bituminous limestone.

790 Limestone, creamy and creamy white, crypto- micro crystalline limestone with rare pelletoid layers, large calcite crystals, brachiopods. Trace light brown calcareous mudstone.

800 As above.

810 As above, a few chips of fine-grained quartzitic, light grey sandstone, moderately sorted with rounded grains (Trout River Formation ?)

Top Kakisa 815'

820 Limestone, pelletoid, cream and light brown grey, mainly micro-crystalline, occasionally dolomitic.

830 Limestone, light grey and light brown grey, microcrystalline, occasionally dolomitic.

840 As above, very slightly silty.

850 As above, somewhat siltier, trace glauconite.

860 As above, no glauconite.

870 As above.

880 As above, trace very fine grained quartzitic sandstone. Minor very light grey cryptocrystalline limestone.

890 Limestone, light grey, sandy and dolomitic; interbeds of cryptocrystalline limestone. Trace algal material; some pelletoid limestone.

900 As above, pyrite crystals.

910	Limestone, dolomitic, slightly silty, light grey, micro to finely crystalline, some quartz grains, pyrite.
920	As above, large calcite crystals.
930	As above, trace glauconite grains
940	Limestone as at 910'.
950	As above.
960	As above, brachiopods.
970	Limestone as at 910', trace green calcareous siltstone.
980	As above.
990	Limestone as at 910'.
1000	As above, with interbeds of light grey dolomitic mudstone and siltstone.
1010	Limestone, dolomitic, slightly silty, light grey, micro to finely crystalline, some quartz grains, pyrite, brachiopods.
1020	Limestone as above, with interbeds of light grey dolomitic (occasionally calcareous) siltstone and mudstone.
1030	As above.
1040	As above.
	Top Redknife 1047'
1050	As above, shale becoming more abundant.
1060	Probably mainly shale, light green and light greenish grey, slightly calcareous; interbedded with limestone, light brown, slightly silty, micro to finely crystalline limestone.
1070	As above.
1080	Probably mainly shale, light green, calcareous.
1090	As above, sample mainly cavings.
1100-1120	Shale as above.
1130	Shale as above, some sandy laminations.
1140	Shale, light green, calcareous.
1150	Shale, light green and light greenish grey, slightly calcareous; interbedded with limestone, light brown, silty (slightly), micro to finely crystalline.
1160	As above.

1170	Mainly shale, light green, calcareous; thin interbeds of dark grey shale.
1180	Shale, light green, calcareous.
	Top Jean Marie 1185'
1190	Shale as above; few chips of limestone, white to very light brown, soft, cryptocrystalline.
1200	Limestone as above, more abundant. Maybe stylolitic.
1210	Limestone as above.
	Top Ft. Simpson 1215'
1220	Limestone, as above, trace of fossils; shale (light green grey, micromicaceous, slightly calcareous) becoming more abundant.
1230	Shale as above; trace siltstone, light brown, calcareous.
1240	Shale as above. Some interbeds light to medium grey shale.
1250	As above, trace siltstone, light brown, calcareous.
1260	As above, small amount of pyrite in green shale.
1270	Shale as above, trace light brown calcareous siltstone.
1280	As above; some maroon-grey shale.
1290	As above; some shale is very slightly calcareous or non calcareous.
1300	Main shale as above, minor siltstone, light brown, calcareous.
1310	Main shale as above.
1320	Main shale as above, minor siltstone, light brown, calcareous.
1330	As above, some sandstone, light brown, quartzitic, slightly calcareous, very fine grained.
1340	Mainly shale, light green, with some silty layers.
1350	Shale as above.
1360	As above, with some fine grained sandstone as at 1330'.
1370-1390	Shale, lightly green, with some silty layers.
1400-1480	Shales, light green and slightly maroon grey or medium grey, some siltstone.
1490	Shale as above, some silty layers.
1500	Shale as above; some siltstone and very fine sandstone interbeds, light brown, calcareous.

1510-1540	Shale as above, interbeds of light grey green calcareous siltstone.
1550	Shale as above; some siltstone and very fine sandstone interbeds, light brown, calcareous.
1560-1620	Shale, light green, slightly maroon greey or medium grey, some siltstone,
1630	Shale as above; interbeds of light green calcareous siltstone.
1640-1670	As above.
1680	Shale as above; trace light brown, calcareous, fine grained sandstone.
1690	Shale, light green and slightly maroon grey or medium grey; some interbeds of siltstone, light brown, calcareous.
1700	As above.
1710-1740	Shale, light green and slightly maroon grey or medium grey, some siltstone.
1750	As above; trace light green calcareous siltstone.
1760	As above.
1770	Shale as above.
1780	As above.
1790	No sample.
1800	No sample.
1810-1660	Shale, light green and slightly maroon grey or medium grey, some siltstone.
1870	Shale as above; interbeds of light green calcareous siltstone.
1880	As above.
1890	Shale, light green and slightly maroon grey or medium grey, some siltstone.
1900	As above
1910	Shale as above; interbeds of light green calcareous siltstone.
1920	As above.
1930	Shale, light green and slightly maroon grey or medium grey, some siltstone; mainly cavings.
1940	Shale as above.
1950	Shale as above.

1960	Shale as above, mainly shale cavings.
1970	Shale as above.
1980	Shale as above; interbeds of light grey calcareous siltstone.
1990-2020	Shale as above, interbeds of limestone, light brown, grey, micritic.
2020-2040	Limestone, argillaceous, silty, micritic, trace dolomite.
2040-2050	Shale, calcareous, silty, micromicaceous, green-grey, flaky.
2050-2080	Siltstone, calcareous, argillaceous, micaceous.
2080-2290	Shale, variably calcareous, silty, micromicaceous, flaky, green-grey, occasional very fine sandstone, angular, argillaceous and siltstone and micritic limestone stringers over interval.
2290-2360	Limestone, argillaceous, silty, grey-brown, micritic, with siltstone interbeds.
2360-2700	Shale, very calcareous, green-grey to grey-brown, flaky to massive, silty, micromicaceous with interbeds micrite, siltstone and very fine sandstone stringers. Sandstone beds at 2455', 2480', 2520', very fine, angular, argillaceous and micromicaceous.
2700-2730	Limestone, very argillaceous, grey-brown, micrite, trace cream micrite.
2730-2760	Siltstone, argillaceous, very calcareous, brown-grey, hard dense.
2760-2916	Shale, calcareous, green-grey, massive, flakey, micromicaceous, with limestone stringers over interval, mainly cream micrite, but one stringer at 2825' with Tentactulites.
	Top Slave Point 2916'
2916-2960	Limestone, non-argillaceous, medium brown, pelletoid, coarse fraction 60-70% 1/8 - 1/4 mm. 20-30% spar cement, 10-20% micrite matrix, abundant light brown chert replacing some of limestone in upper 20', some bituminous matter, dead oil staining. Massive stromatoporoids and amphipora at 2960'. No porosity, no permeability.
2960-2990	Limestone, non-argillaceous, medium to light brown, as above, with Thamnopora trace, and some fossil fragments (brachs. etc) trace to 3% pin point porosity, but permeability appears low. Positive chlorathene HC cut.
2990-3030	Core #1 - see core description.
3030-3050	Limestone, non-argillaceous, light to medium brown, oolitic or (1/8 - 1/4 mm.) pelletoid, occasional amphipora, coarse fraction 60-70%, 30-40% spar. Stylolites, bituminous partings.

3050-3066 Limestone, non-argillaceous, light to medium brown, mainly micritic 20% fossil fragments, some spar, stylolites, very fine quartz crystals in residue.

Top Watt Mountain 3066'

3066-3074 Shale, non-calcareous, light blue-green, clayey looking, waxy, soapy surface, abundant pyrite, probably limestone breccia fragments embedded in it as from sulphur point below.

Top Sulphur Point 3074'

3074-3096 Limestone, non-argillaceous, white to cream, micro-crystalline, and recrystallized, probably from pelletoid limestone, with possible ghost of stromatoporoids. Trace to 2% earthy porosity, no oil staining, but very faint positive chlorothene cut.

Top Presqu'ile 3096'

3096-3100 Dolomite, non-argillaceous, medium brown, fine to medium crystalline, vugular and intercrystalline porosity approximately 6%, poor to fair permeability. Positive Chlorothene H.C. cut under fluorescope. Probably water wet.

3100-3150 Dolomite, non-argillaceous, medium brown, white, grey, medium crystalline, porosity 6% decreasing to 2% by 3120'. Occasional H.C. cut, but probably water wet. No oil staining.

3150-3240 Dolomite, non-argillaceous, light brown, white, grey, fine to microcrystalline, occasional trace intercrystalline porosity.

3240-3250 Limestone, slightly argillaceous, medium brown, very fine fossil fragments 20%, micrite 80%, 20% of rock replaced by microcrystalline dolomite.

3250-3297 Dolomite, slightly argillaceous, medium to light brown, microcrystalline with some very fine sand grains in basal 15'. Pin point earthy porosity trace to 2%, trace clear crystalline gypsum probably from occasional vug fillings. Trace green, non-calcareous, pyritic clay.

Top Granite Wash 3297'

3297-3309 Quartzite, clear, medium grained, sub-angular to sub-rounded occasional very coarse rounded grains, very hard.

Top Granite 3309'

3309-T.D. Pink, medium crystalline biotite granite.

APPENDIX B

Core Description

Calstan Imperial Bouvier L-69

by: C. Johnson

Core Description

Core #1 2990 - 3030' Rec. 41.7'

2990-2994 Limestone, non-argillaceous, laminated pelletoid mainly. Bituminous partings, stylolites, medium brown, to grey-brown. Trace to 2% pin point porosity with 1' (2993-2994'), vuggy and pin point porosity 6%. Gas bubbling from pin points (strong methane and sulphurous odour) at relatively slow rate. Dark brown oil very slowly oozing from pin points at various points, particularly vugs at 2993' at very slow rate for 5 hr. period.

2994-3030 Limestone, medium brown to grey-brown, with massive stromatoporoids beds, amphipora laminated beds and beds with stromatoporoids, amphipora and thamnopora mixed, occasional interbeds pelletoid limestone. Occasional Emaunella type brachiopod beds. Stylolites and bituminous partings, trace to 2% pin point porosity, very rare, unconnected (brach cavity) vug. Very slowly oozing oil from occasional pin point or stylolite at several points, generally decreasing to base. Gas also bubbling from pin points as above.

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

10568 - 114 St. EDMONTON, ALBERTA PHONES: 25624 42562

FULL DIAMETER CORE STUDY

OPERATOR The California Standard Company FIELD WELL NO. Caletan Imp. Bouvier L-69

LOCATION 60° 48'22"N 118° 43'W. FORMATION Slave Point DEPTHS 2990' - 3030' DATE Received: March 3, 1965 LAB NO. E25108

Footage of Slave Point formation cored	40'	No. of representative samples selected for analysis	36
FEET OF CORE:			
Received at laboratory for analysis	41.7'	Compared (to tested samples)	---
Extra:	1.7'	Dense sections not represented	6.6'
Represented by samples	35.1'	Badly fractured sections not represented	---

SUMMARY OF REPRESENTED SECTIONS:

(1) $\frac{\text{represented}}{\text{received}} = \frac{35.1'}{41.7'}$ (2) $\frac{\text{represented}}{\text{cored}} = \frac{35.1'}{40.0'}$

Weighted average porosity	2.2	%	Maximum porosity	6.3	%
Weighted average K_H permeability	1.3	md.	Minimum porosity	< 0.5	%
Weighted average K' permeability	0.30	md.	Maximum K_H permeability	17.	md.
Weighted average vertical permeability	0.08	md.	Minimum K_H permeability	< 0.01	md.
Weighted average maximum permeability	---	md.	Maximum vertical permeability	0.60	md.
Porosity Feet	75.56		Minimum vertical permeability	< 0.01	md.

CORE WITH MAXIMUM PERMEABILITY:

	10.0 md. or greater		between 1.0 and 9.9 md. inclusive		less than 1.0 md.	
Footage	2.1		3.3		29.7	
Weighted average porosity	4.4	%	2.5	%	2.0	%
Weighted average K_H permeability	15.	md.	3.1	md.	0.18	md.
Weighted average vertical permeability	0.17	md.	0.15	md.	0.07	md.
Porosity feet	9.25		8.29		58.02	

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Operator The California Standard Company

Well No. Calstan Imp. Bouvier L-69

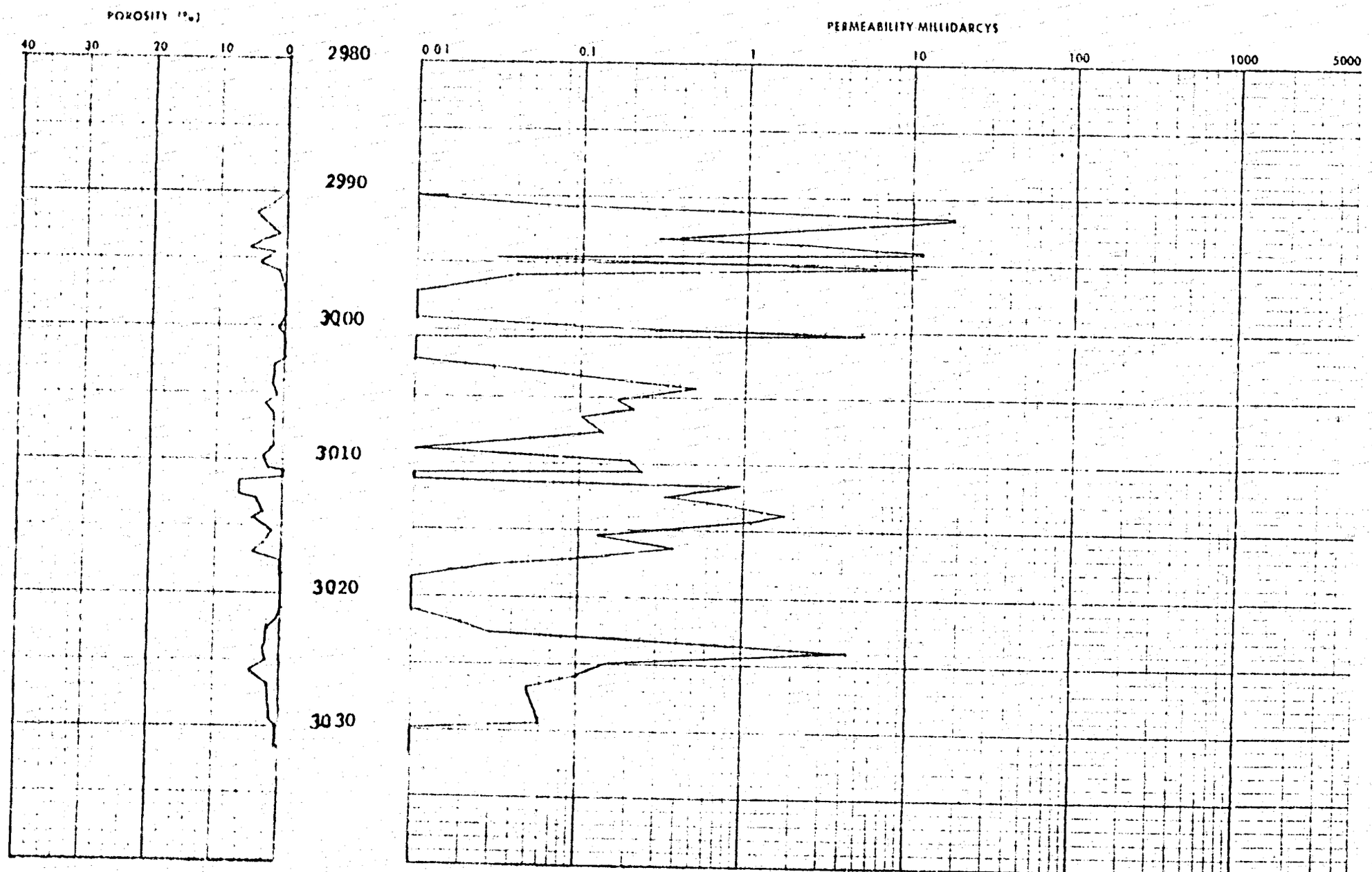
Lab. No. E25108

Interval Cored 2990' To 3030'

Coring Fluid ---

Elevation ---

Formation Slave Point



Chemical & Geological Laboratories Ltd.

Operator The California Standard Company Well No. Calstan Imp. Bouvier L-69 Lab. No. E25108 Date Received: March 3, 1965

Sample Number	Midpoint of Sample in Ft.	Representative of Feet	Footage Rep.	Permeability md. Vertical	K_H	K'	% Porosity	Porosity Feet	Description
	Core Number 1		2990' - 3030'		Recovered 41.7'				
1	2990.9	2990.0-2991.2	1.2	<0.01	0.09	<0.01	2.0	2.40	Ls VSI OccV R2
2	2991.5	2991.2-2992.5	1.3	0.24	17.	<0.01	4.2	5.46	Ls I OccPPV VC R2
3	2993.1	2992.5-2993.5	1.0	<0.01	0.29	<0.01	1.3	1.30	Ls VSI St R2
4	2993.6	2993.5-2993.9	0.4	0.05	2.1	0.14	3.3	1.32	Ls V R2
5	2994.1	2993.9-2994.4	0.5	0.04	12.	8.3	5.3	2.65	Ls PPV I R2
6	2994.6	2994.4-2995.0	0.6	<0.01	0.03	0.03	1.9	1.14	Ls OccV R2
7	2995.2	2995.0-2995.3	0.3	0.08	11.	6.6	3.8	1.14	Ls V VF R2
7A	2996.0	2995.3-2997.2	1.9	0.01	0.04	0.04	0.8	1.52	Ls OccV R2
No Sample		2997.2-2999.2	2.0	---	---	---	---	---	D Ls R2
8	2999.7	2999.2-2999.9	0.7	0.05	0.09	0.01	<0.5	0.35	Ls R2
9	3000.1	2999.9-3000.6	0.7	0.06	5.0	0.08	0.7	0.49	Ls OccV VF R2
No Sample		3000.6-3002.3	1.7	---	---	---	---	---	D Ls R2
10	3002.9	3002.3-3003.5	1.2	<0.01	0.03	<0.01	1.4	1.68	Ls Ca R2
11	3004.2	3003.5-3004.8	1.3	0.10	0.50	0.42	1.7	2.21	Ls OccV RF R2
12	3005.2	3004.8-3005.4	0.6	0.03	0.17	0.02	1.1	0.66	Ls OccV RF R2
13	3005.9	3005.4-3006.1	0.7	0.03	0.21	0.17	2.6	1.82	Ls VSI RF R2
14	3006.4	3006.1-3007.0	0.9	0.03	0.10	0.07	1.6	1.44	Ls Ca OccV R2
15	3007.5	3007.0-3008.2	1.2	0.01	0.14	0.09	1.8	2.16	Ls OccV R2
16	3009.0	3008.2-3009.3	1.1	<0.01	<0.01	<0.01	1.6	1.76	Ls R2
17	3009.8	3009.3-3010.1	0.8	0.19	0.20	0.05	2.9	2.32	Ls Ca VSI R2
18	3010.6	3010.1-3010.8	0.7	0.15	0.24	0.18	2.1	1.47	Ls Ca VSI St R2
No Sample		3010.8-3011.2	0.4	---	---	---	---	---	D Ls R2
19	3011.6	3011.2-3012.1	0.9	0.33	0.95	0.81	6.2	5.58	Ls I OccV RF R2
20	3012.5	3012.1-3012.7	0.6	0.10	0.32	0.16	6.3	3.78	Ls I R2
21	3013.0	3012.7-3013.5	0.8	0.26	0.74	0.13	4.0	3.20	Ls I RF R2
22	3013.9	3013.5-3014.2	0.7	0.14	1.7	0.81	2.7	1.89	Ls VSI OccV St R2
23	3014.4	3014.2-3014.8	0.6	0.50	1.2	0.47	4.2	2.52	Ls Ca I OccV RF R2
24	3015.4	3014.8-3016.0	1.2	0.03	0.14	0.11	1.6	1.92	Ls Ca OccV St R2
25	3016.3	3016.0-3016.7	0.7	0.31	0.38	0.12	2.8	1.96	Ls Ca SV RF R2
26	3017.0	3016.7-3017.4	0.7	0.07	0.14	<0.01	4.2	2.94	Ls SI R2
27	3017.6	3017.4-3018.5	1.1	0.03	0.03	0.01	0.5	0.55	Ls OccV R2
No Sample		3018.5-3021.0	2.5	---	---	---	---	---	D Ls R2
28	3021.8	3021.0-3022.0	1.0	0.02	0.02	0.02	0.6	0.60	Ls Ca VSI R2
29	3022.6	3022.0-3023.1	1.1	0.01	0.03	0.02	2.0	2.20	Ls OccPPV R2
30	3023.5	3023.1-3023.7	0.6	0.60	0.78	0.38	2.1	1.26	Ls Ca VSI RC R2
31	3024.0	3023.7-3024.6	0.9	0.06	4.5	0.59	2.3	2.07	Ls VSI RC R2

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Operator The California Standard Company Well No. Calstan Imp. Bouvier L-69 Lab. No. E25108 Date Received: March 3, 1965

Sample Number	Midpoint of Sample in Ft.	Representative of Feet	Footage Rep.	Permeability md. Vertical	K_H	K'	% Porosity	Porosity Feet	Description
32	3025.0	3024.6-3025.5	0.9	0.15	0.17	0.03	2.0	1.80	Ls Ca OccPPV RC R2
33	3025.8	3025.5-3026.1	0.6	0.04	0.10	0.08	4.2	2.52	Ls VSI St R2
34	3026.8	3026.1-3028.3	2.2	<0.01	0.05	0.02	1.9	4.18	Ls VSI R2
35	3029.4	3028.3-3029.9	1.6	0.03	0.06	0.01	1.5	2.40	Ls VSI R2
36	3030.9	3029.9-3031.7	1.8	<0.01	<0.01	<0.01	<0.5	0.90	Ls VSI R2

CORE DESCRIPTION SYMBOLS

Ls	Limestone
VSI	Very Slightly Intergranular
OccV	Occasional Vugs
R2	Reactive to cold 15% HCl
I	Intergranular
OccPPV	Occasional Pin Point Vugs
VC	Vertical
St	Stylolite
V	Vuggy
PPV	Pin Point Vugs
VF	Vertical Fracture
D	Dense
Ca	Calcite
RF	Random Fracture
SV	Slightly Vuggy
SI	Slightly Intergranular
RC	Random Crack
$K_{\|\|}$	Maximum Horizontal Permeability Measured
$K^{\vee}$	Taken 90° to $K_{\|\|}$

NB. $K_{\|\|}$ and $K^{\vee}$ are transverse permeability measurements on full diameter samples.

APPENDIX C

D.S.T. Charts and Pressure Reports

JOHNSTON TESTERS

TEST DATA

Formation	Slave Point	Zone Thickness		Ft.	
Interval	2955	To	2990	T.D.	2990
Type of Test	Open Hole, Bottom Hole				
Time Started in Hole	1100	Hrs.	Tool Open	1407	Hrs.
First Flow	5	Min.	Shut In	60	Min.
Second Flow	90	Min.	Final Shut In	60	Min.
Pulled Loose @	1742	Hrs.	Out of Hole	1945	Hrs.
Wt. Set on Packer	25,000	#	Pulled Loose Wt.	50,000	#

Remarks

Description of Blow During Test: Good Blow, Dead in 20 Minutes.

GAS BLOW MEASUREMENTS

Measured with ____ I.D. Riser or Est. ☐

Type of Instrument

Time	Sfce. Choke	Reading Inches	Cubic Feet/Day

FLUID RECOVERY

Was Test Reverse Circulated Yes ☐ No ☒

Fluid Recovered (Total) 120' Ft.

Description of Fluid Recovered: 120' Slightly Gas Cut Drilling Fluid.

Remarks: Test Satisfactory.

Co. Rep.

Tester: T. Scheffelmaier

Elevation	1164 KB
Bottom Hole Choke Size	1/2"
Fluid Cushion Type	
Amount	

TOOL SEQUENCE

Tool	Length	O.D.
Sub.	.76	4 3/4"
P.O. Sub.	.86	4 3/4"
Sub.	.57	4 3/4"
D.P. Sub.	.66	4 5/8"
Shut in Tool	6.03	4 3/4"
Hyd. Tool	7.49	4 3/4"
Safety Jt.	1.74	4 7/8"
T.C. & Pkr.	5.30	
Total	23.51	
Stub	1.25	
Perf.	9.50	4 3/4"
Recorder	5.91	4 7/8"
Recorder	4.37	4 7/8"
Perf.	5.00	4 3/4"
Recorder	3.17	4 5/8"
Perf.	4.93	4 3/4"
Perf. & B.N.	1.63	4 3/4"
Total Interval	35.76	
Total Length	59.27	

MUD AND HOLE DATA

Mud Type	Gel and Chem	Wt.	6.0
Filter Cake	2/32	Visc.	65
Wt	10.2		
Time Taken	1000 hrs.		
Contractor	Tri-City Drilling		
Rig No.	4		
Drill Pipe Size	3 1/2 IF		
Drill Collar Size	2" ID	Length	240'
Main Hole Size	6 1/4"		
Rat Hole Size			

District	Edmonton	Ticket No.	C 3387
Date	February 13/65		
Company	California Standard Company	Address	P.O. Box 2296, Edmonton, Alberta
Well Name	Calstan Imperial Bouvier L-69	Test No.	1
J.T.L. Test No.	1		
Number	60°-48'-34"N-118°-42'-59.4"W	Field	Wildcat
Province	N.W.T.		
Formation	Slave Point DST#1	Consultant	
and Interval	2955-2990		
Distribution of Reports	5 - Edmonton		

JOHNSTON TESTERS

Pressure Data Test Ticket No. C 3387

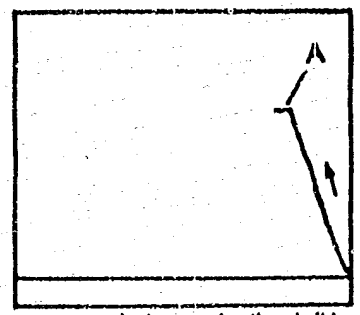
Recorder No.	T-396	AK1-2080	826		
Capacity (P.S.I.G.)	3000	3100	3000		
Recorder Depth	2966	2972	2981		
Pressure Gradient P.S.I./Ft.					
Well Temperature °F.	86°	86°	86°		
A Initial Hydrostatic	1574#	1578#	1537#		
B First Initial Flow	35#	36#	31#		
C Initial Shut-In-Pres	1323# FALSE	1329# FALSE	1335#		
D Flowing Pres	42#	50#	50#		
E Final Flow	88#	93#	86#		
F Final Shut-In	146#	150#	144#		
G Final Hydrostatic	1597#	1596#	1608#		

Remarks

T-396 - Outside Recorder
AK1-2080 - Outside Recorder
826 - Outside Recorder - Called in for Recalibration.

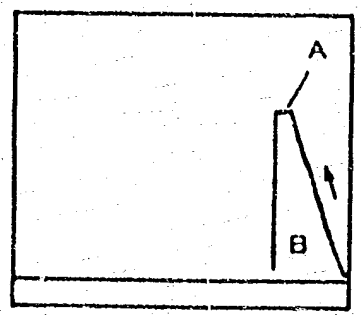
GUIDE TO INTERPRETATION AND IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS

1



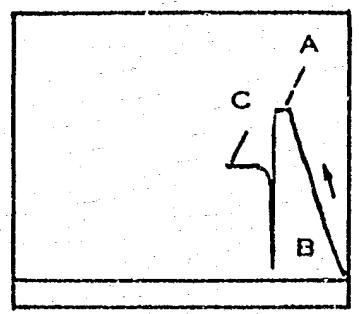
The pressure chart records the build-up in hydrostatic pressure as the testing assembly is lowered into the hole. Upon reaching the testing depth the hydrostatic head or pressure of mud column is recorded.

2



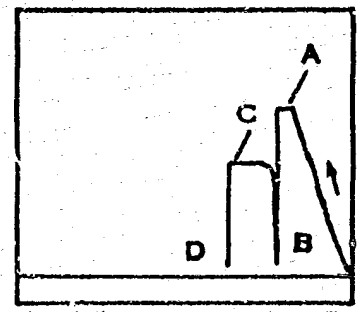
The packer is expanded and set to isolate the test zone. When the test valve is opened, a pressure drop is indicated on the pressure chart. This pressure drop is caused by removal of the hydrostatic mud pressure from the formation, allowing the formation to produce.

3



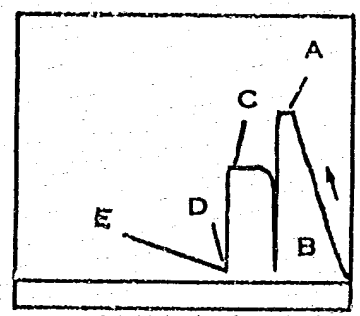
This chart shows the initial shut-in pressure. There is one mechanical method commonly used to obtain this pressure. A 4 stage shut-in tool, that is run-in in the open position and rotated closed when the desired amount of initial flow time is obtained. This initial shut-in pressure is the best method yet devised for recording the original undisturbed reservoir pressure of a formation.

4



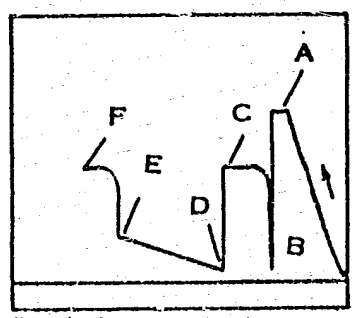
The chart indicates a pressure drop. The test tool has been opened to the surface by rotating the 4 stage shut-in tool into the open position. Permitting the open formation to produce.

5



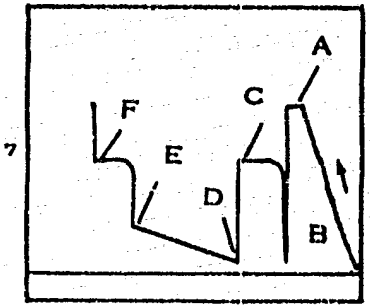
The pressure of fluid flowing from the formation into the well bore, through the perforated anchor, and into the drill pipe, is recorded on the chart.

6



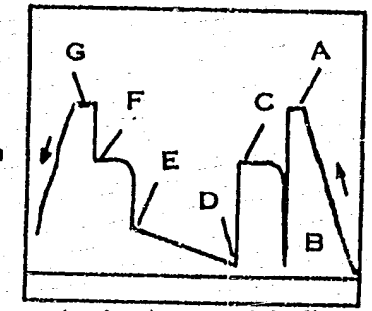
The final shut-in pressure is taken by stopping the flow of formation fluid into the drill pipe. Note the characteristic build-up curve. The well bore pressure is approaching equilibrium with the static reservoir pressure. When the shut-in curve levels-off the static reservoir pressure has been reached.

7



The chart shows the equalizing, the by-pass ports have been opened permitting the drilling fluid to flow through the packer to the test zone. Thus, pressure is equalized above and below the packer. The equalization of the pressure facilitates easier removal of the packer from the packer seat.

8



The packer has been unseated. The testing assembly is being removed from the hole.

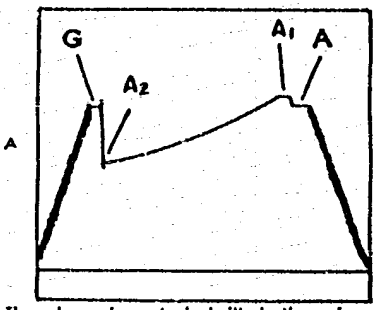
INDEX OF LABELED POINTS:

A—Initial Hyd. Mud
B—First Initial Flow
C—Initial Shut-in
D—Initial Flow
E—Final Flow
F—Final Shut-in
G—Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings, (testing different zones).

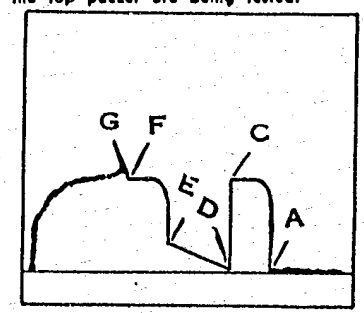
A-1, A-2, A-3, etc. Initial Hyd. Pressures.
B, B-1, B-2, B-3, First Initial Flow.
C-1, C-2, C-3, etc. The Initial Shut-In Pressures.
D-1, D-2, D-3, etc. Flowing Pressures.
E1, E-2, E-3, etc. The Final Flow Pressures or Final Shut-in Pressures.
F-1, F-2, F-3, etc. The Final Shut-In Pressures.
G-1, G-2, G-3, etc. Final Hyd. Mud Pressures.
Z — Special pressure points such as pumping pressure recorded for formation breakdown.

A



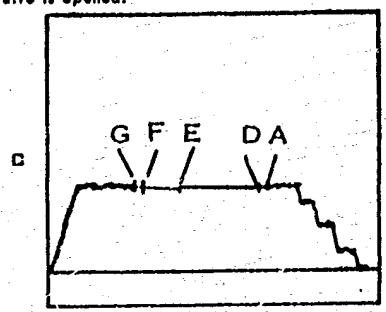
The above is a typical illustration of a chart from a recorder that is run below the bottom packer on a conventional straddle test. Only the hydrostatic mud pressures are recorded. When the tool is opened, there is a pressure differential across the bottom packer. This differential is lessened by the rubber flow of the packer element, which in turn causes a drawdown in pressure. If the below straddle chart reads the same as a chart that is run to record pressures of the test zone, then the bottom packer has failed. If this occurs, all zones below the top packer are being tested.

B



In this case a recorder has been run in an air chamber. The hydrostatic mud pressures are not influencing the recorder while going in or coming out of the hole due to the main tester valve being closed. The flow pressures and shut-in pressures are recorded while the main tester valve is opened.

C



In this case a recorder has been run above the main tester valve with a fluid cushion used in the drill pipe. No pressure is recorded as the testing tool is being lowered into the hole. Then the fluid cushion pressure is recorded as the drill pipe is filled with fluid. As more stands are run into the hole, the recorder registers the hydrostatic pressures of the cushion. When the main testing valve is opened the pressure of the cushion column or the flowing pressure of the formation, (which ever is greater), is recorded.

JOHNSTON TESTERS

TEST DATA

Formation		Zone Thickness		Ft.	
Interval	3144	To	3159	T.D.	3343
Type of Test	Open Hole, Straddle, Conventional				
Time Started in Hole	0545	Hrs.	Tool Open	1039	Hrs.
First Flow	7	Min.	Shut In	0	Min.
Second Flow	0	Min.	Final Shut In	0	Min.
Pulled Loose @	1046	Hrs.	Out of Hole	1130	Hrs.
Wt. Set on Packer	40,000	#	Pulled Loose Wt.	62,000	#

Remarks

Description of Blow During Test: Mis-Run, Seat Failure.

GAS BLOW MEASUREMENTS

Measured with ____ I.D. Riser or Est. ☐

Type of Instrument

Time	Sfce. Choke	Reading Inches	Cubic Feet/Day

FLUID RECOVERY

Was Test Reverse Circulated Yes ☐ No ☒

Fluid Recovered (Total) 1260' Ft.

Description of Fluid Recovered 1260' Drilling Fluid.

Remarks: Mis-Run, Seat Failure.

Co. Rep.

Tester: T. Scheffelmaier

District	Edmonton	Ticket No.	C 3388
Company	California Standard Company	Address	P.O. Box 2295, Edmonton, Alberta
Well Name	Calstan Imperial Bouvier L-69	Test No.	2
Number	60°-48'-34"N-118°-42'-59.4"W	Field	Wildcat
Formation and Interval	DST#2 3144-3159	Consultant	
Distribution of Reports	5 - Edmonton		

Date: February 18/65

J.T.L. Test No. 2

Province: N.W.T.

Elevation	1164 KB
Bottom Hole Choke Size	1/2"
Fluid Cushion Type	
Amount	

TOOL SEQUENCE

Tool	Length	O.D.
Sub.	.76	
P.O. Sub.	.86	
Sub.	.67	
D.P. Sub.	.66	
Shut in Tool	6.03	
Hyd. Tool	7.49	
Recorder	4.37	
Safety Jt.	1.74	
T.C. & Pkr.	5.30	
Total	27.88	
Stub	1.25	
Perf.	4.85	
Recorder	5.91	
T.C. & Stub	3.00	
Total Interval	15.01	
Pkr.	3.50	
T.C. & Pkr.	3.17	
Perf.	17.48	
Sub.	.83	
D.P.	153.49	
Sub.	.80	
Perf.	3.98	
B. N.	.85	
Total Below Intv.	184.10	
Total Length	226.99	

MUD AND HOLE DATA

Mud Type	Gel and Chem	W.L.	9.0
Filter Cake	2/32	Visc. 58	Wt. 9.9
Time Taken	0400 hrs.		
Contractor	Tri-City Drilling	Rig No.	4
Drill Pipe Size	3 1/2 IF		
Drill Collar Size	2" ID	Length	241'
Main Hole Size	6 1/4"		
Rat Hole Size			

JOHNSTON TESTERS

Pressure Data Test Ticket No. C 3388

JTL-CD-5

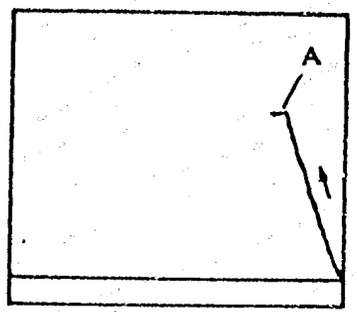
Recorder No.	AK1-2080	T-396	826		
Capacity (P.S.I.G.)	4100	3000	3000		
Recorder Depth	3132'	3140	3162		
Pressure Gradient P.S.I./Ft.					
Well Temperature °F.	86°	86°	86°		
A Initial Hydrostatic	1664#	1664#	1670#		
B First Initial Flow					
C Initial Shut-In-Pres	Mis-Run,	Seat Failure.	RAN		
D Flowing Pres			BELOW		
E Final Flow			STRADDLE		
F Final Shut-In					
G Final Hydrostatic	1663#	1663#	1670#		

Remarks

AK1-2080 - Inside Recorder
T-396 - Outside Recorder
826 - Outside Recorder

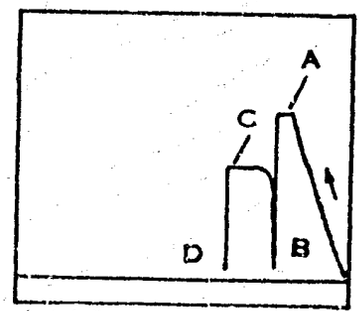
GUIDE TO INTERPRETATION AND IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS

1



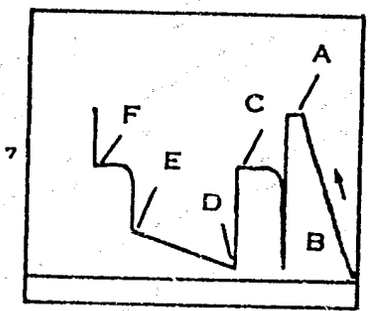
The pressure chart records the build-up in hydrostatic pressure as the testing assembly is lowered into the hole. Upon reaching the testing depth the hydrostatic head or pressure of mud column is recorded.

4



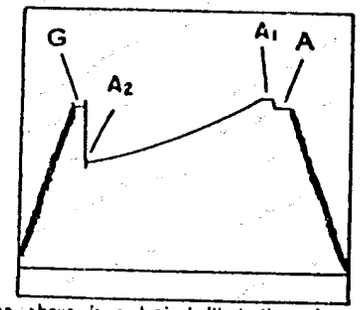
The chart indicates a pressure drop. The test tool has been opened to the surface by rotating the 4 stage shut-in tool into the open position. Permitting the open formation to produce.

7



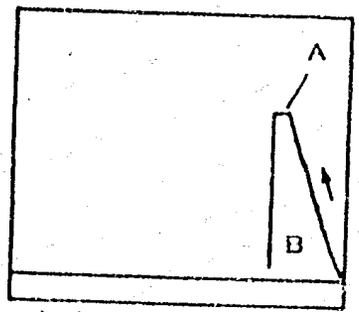
The chart shows the equalizing, the by-pass ports have been opened permitting the drilling fluid to flow through the packer to the test zone. Thus, pressure is equalized above and below the packer. The equalization of the pressure facilitates easier removal of the packer from the packer seat.

A



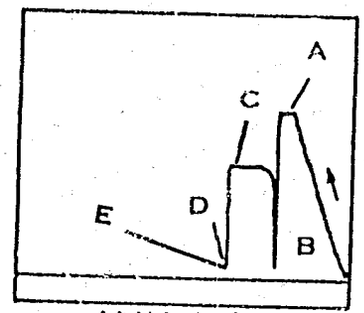
The above is a typical illustration of a chart from a recorder that is run below the bottom packer on a conventional straddle test. Only the hydrostatic mud pressures are recorded. When the tool is opened, there is a pressure differential across the bottom packer. This differential is lessened by the rubber flow of the packer element, which in turn causes a drawdown in pressure. If the below straddle chart reads the same as a chart that is run to record pressures of the test zone, then the bottom packer has failed. If this occurs, all zones below the top packer are being tested.

2



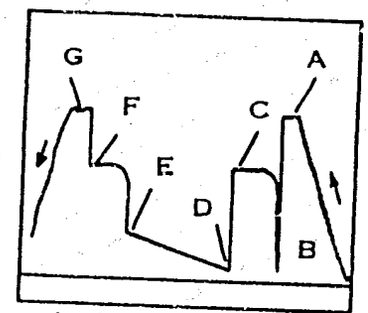
The packer is expanded and set to isolate the test zone. When the test valve is opened, a pressure drop is indicated on the pressure chart. This pressure drop is caused by removal of the hydrostatic mud pressure from the formation, allowing the formation to produce.

5



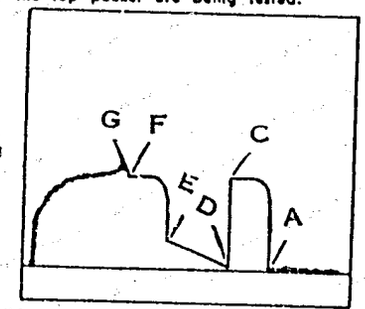
The pressure of fluid flowing from the formation into the well bore, through the perforated anchor, and into the drill pipe, is recorded on the chart.

8



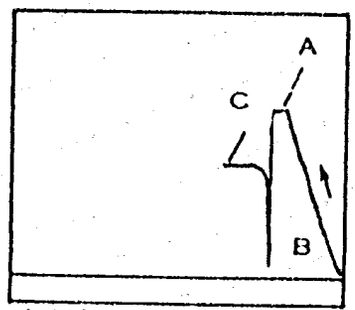
The packer has been unseated. The testing assembly is being removed from the hole.

B



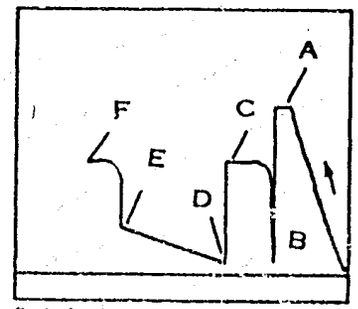
In this case a recorder has been run in an air chamber. The hydrostatic mud pressures are not influencing the recorder while going in or coming out of the hole due to the main tester valve being closed. The flow pressures and shut-in pressures are recorded while the main tester valve is opened.

3



This chart shows the initial shut-in pressure. There is one mechanical method commonly used to obtain this pressure. A 4 stage shut-in tool, that is run-in in the open position and rotated closed when the desired amount of initial flow time is obtained. This initial shut-in pressure is the best method yet devised for recording the original undisturbed reservoir pressure of a formation.

6



The final shut-in pressure is taken by stopping the flow of formation fluid into the drill pipe. Note the characteristic build-up curve. The well bore pressure is approaching equilibrium with the static reservoir pressure. When the shut-in curve levels-off the static reservoir pressure has been reached.

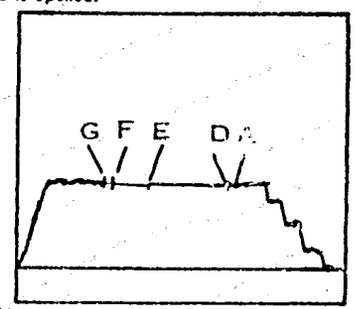
INDEX OF LABELED POINTS:

A—Initial Hyd. Mud
B—First Initial Flow
C—Initial Shut-in
D—Initial Flow
E—Final Flow
F—Final Shut-in
G—Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings, (testing different zones).

A-1, A-2, A-3, etc. Initial Hyd. Pressures.
B, B-1, B-2, B-3, First Initial Flow.
C-1, C-2, C-3, etc. The Initial Shut-in Pressures.
D-1, D-2, D-3, etc. Flowing Pressures.
E1, E-2, E-3, etc. The Final Flow Pressures or Final Shut-in Pressures.
F-1, F-2, F-3, etc. The Final Shut-in Pressures.
G-1, G-2, G-3, etc. Final Hyd. Mud Pressures.
Z — Special pressure points such as pumping pressure recorded for formation breakdown.

C



In this case a recorder has been run above the main tester valve with a fluid cushion used in the drill pipe. No pressure is recorded as the testing tool is being lowered into the hole. Then the fluid cushion pressure is recorded as the drill pipe is filled with fluid. As more stands are run into the hole, the recorder registers the hydrostatic pressures of the cushion. When the main testing valve is opened the pressure of the cushion column or the flowing pressure of the formation, (which ever is greater), is recorded.

JOHNSTON TESTERS

TEST DATA

Formation		Zone Thickness		Ft.	
Interval	3146	To	3161	T.D.	3343
Type of Test	Open Hole, Straddle, Conventional				
Time Started in Hole	1130	Hrs.	Tool Open	1535	Hrs.
First Flow	10	Min.	Shut In	0	Min.
Second Flow	0	Min.	Final Shut In	0	Min.
Pulled Loose @	1545	Hrs.	Out of Hole	1845	Hrs.
Wt. Set on Packer	40,000	#	Pulled Loose Wt.	65,000	#

Remarks

Description of Blow During Test: Mis-Run, Seat Failure.

GAS BLOW MEASUREMENTS

Measured with I.D. Riser or Est. ☐

Type of Instrument

Time	Sfce. Choke	Reading Inches	Cubic Feet/Day

FLUID RECOVERY

Was Test Reverse Circulated Yes ☐ No ☒

Fluid Recovered (Total) 1050' Ft.

Description of Fluid Recovered 1050' Drilling Fluid.

Remarks: Mis-Run, Seat Failure.

Co. Rep.

Tester: T. Scheffelmaier

Elevation	1164 KB
Bottom Hole Choke Size	1/2"
Fluid Cushion Type	
Amount	

TOOL SEQUENCE

Tool	Length	O.D.
Sub.	.76	
P.O. Sub.	.86	
Sub.	.67	
D.P. Sub.	.66	
Shut in Tool	6.03	
Hyd. Tool	7.49	
Recorder	4.37	
Safety Jt.	1.74	
T.C. & Pkr.	6.50	
T.C. & Pkr.	5.30	
Total	34.38	
Stub	1.25	
Perf.	4.85	
Recorder	5.91	
T.C. & Stub	3.00	
Total Interval	15.01	
Pkr.	3.50	
Recorder	3.17	
Perf.	15.68	
Sub.	.83	
D.P.	153.49	
Sub.	.80	
Perf.	3.98	
B. M.	.85	
Total Below Intv.	182.30	
Total Length	231.69	

MUD AND HOLE DATA

Mud Type	Gel and Cham	W.L.	9.0		
Filter Cake	2/32	Visc.	58	Wt.	9.9
Time Taken	0400 hrs.				
Contractor	Tri-City Drilling				
				Rig No.	4
Drill Pipe Size	3 1/2 IF				
Drill Collar Size	2" ID	Length	240'		
Main Hole Size	6 1/4"				
Rat Hole Size					

District	Edmonton
Company	California Standard Company
Well Name	Calstan Imperial Bouvier L-69
Number	60°-48'-34"N-118°-42'-59.4"W
Formation and Interval	DST#3 3146-3161
Distribution of Reports	5 - Edmonton

Ticket No. C 3389 Date February 18/65

Address P.O. Box 2296, Edmonton, Alberta

Test No. 3 J.T.L. Test No. 3

Field Wildcat Province N.W.T.

Consultant

JOHNSTON TESTERS

Pressure Data

Test Ticket No. C 3389

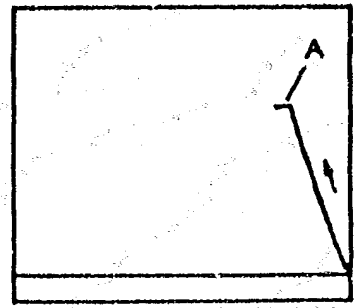
Recorder No.	AK1-2080	T-396	826		
Capacity (P.S.I.G.)	4100	3000	3000		
Recorder Depth	3130	3138	3160		
Pressure Gradient P.S.I./Ft.					
Well Temperature °F.	86°	86°	86°		
A Initial Hydrostatic	1662#	1675#	1697#		
B First Initial Flow					
C Initial Shut-In-Pres	Mis-Run,	Seat Failure.	RAN		
D Flowing Pres			BELOW		
E Final Flow			STRADDLE		
F Final Shut-In					
G Final Hydrostatic	1662#	1674#	1697#		

Remarks

AK1-2080 - Inside Recorder
T-396 - Outside Recorder
826 - Outside Recorder

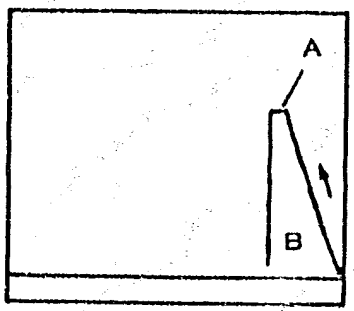
GUIDE TO INTERPRETATION AND IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS

1



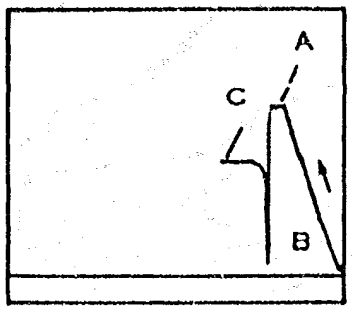
The pressure chart records the build-up in hydrostatic pressure as the testing assembly is lowered into the hole. Upon reaching the testing depth the hydrostatic head or pressure of mud column is recorded.

2



The packer is expanded and set to isolate the test zone. When the test valve is opened, a pressure drop is indicated on the pressure chart. This pressure drop is caused by removal of the hydrostatic mud pressure from the formation, allowing the formation to produce.

3



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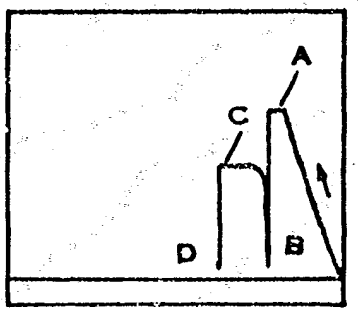
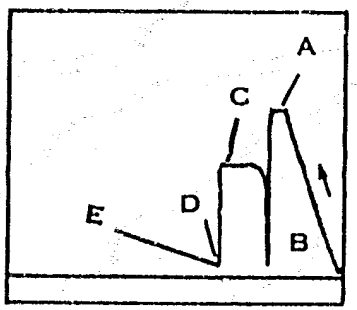
4



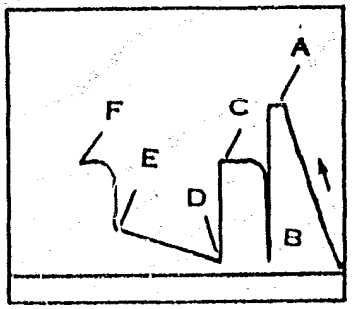
The chart indicates a pressure drop. The test tool has been opened to the surface by rotating the 4 stage shut-in tool into the open position. Permitting the open formation to produce.

5



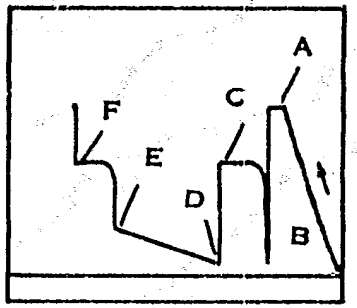
The pressure of fluid flowing from the formation into the well bore, through the perforated anchor, and into the drill pipe, is recorded on the chart.

6



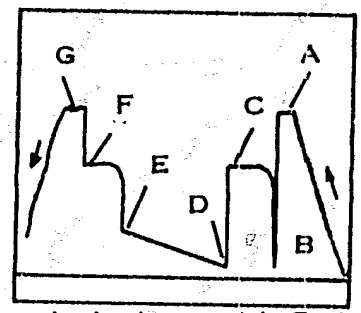
The final shut-in pressure is taken by stopping the flow of formation fluid into the drill pipe. Note the characteristic build-up curve. The well bore pressure is approaching equilibrium with the static reservoir pressure. When the shut-in curve levels-off the static reservoir pressure has been reached.

7



The chart shows the equalizing, the by-pass ports have been opened permitting the drilling fluid to flow through the packer to the test zone. Thus, pressure is equalized above and below the packer. The equalization of the pressure facilitates easier removal of the packer from the packer seat.

8



The packer has been unseated. The testing assembly is being removed from the hole.

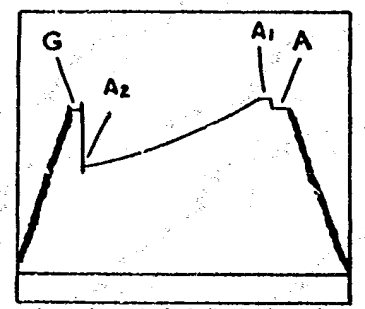
INDEX OF LABELED POINTS:

A—Initial Hyd. Mud
B—First Initial Flow
C—Initial Shut-in
D—Initial Flow
E—Final Flow
F—Final Shut-in
G—Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings, (testing different zones).

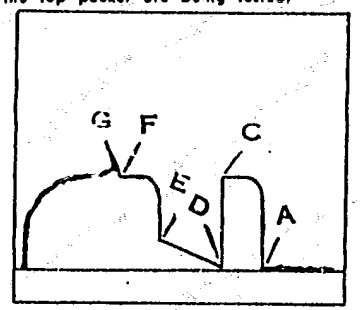
A-1, A-2, A-3, etc. Initial Hyd. Pressures.
B, B-1, B-2, B-3, First Initial Flow.
C-1, C-2, C-3, etc. The Initial Shut-in Pressures.
D-1, D-2, D-3, etc. Flowing Pressures.
E1, E-2, E-3, etc. The Final Flow Pressures or Final Shut-in Pressures.
F-1, F-2, F-3, etc. The Final Shut-in Pressures.
G-1, G-2, G-3, etc. Final Hyd. Mud Pressures.
Z — Special pressure points such as pumping pressure recorded for formation breakdown.

A



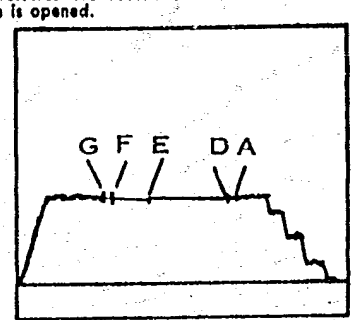
The above is a typical illustration of a chart from a recorder that is run below the bottom packer on a conventional straddle test. Only the hydrostatic mud pressures are recorded. When the tool is opened, there is a pressure differential across the bottom packer. This differential is lessened by the rubber flow of the packer element, which in turn causes a drawdown in pressure. If the below straddle chart reads the same as a chart that is run to record pressures of the test zone, then the bottom packer has failed. If this occurs, all zones below the top packer are being tested.

B



In this case a recorder has been run in an air chamber. The hydrostatic mud pressures are not influencing the recorder while going in or coming out of the hole due to the main tester valve being closed. The flow pressures and shut-in pressures are recorded while the main tester valve is opened.

C



In this case a recorder has been run above the main tester valve with a fluid cushion used in the drill pipe. No pressure is recorded as the testing tool is being lowered into the hole. Then the fluid cushion pressure is recorded as the drill pipe is filled with fluid. As more stands are run into the hole, the recorder registers the hydrostatic pressures of the cushion. When the main testing valve is opened the pressure of the cushion column or the flowing pressure of the formation, (which ever is greater), is recorded.

JOHNSTON TESTERS

TEST DATA

Formation	Tight Hole	Zone Thickness		Ft.	
Interval	3124	To	3164	T.D.	3343
Type of Test	Open Hole, Straddle, Conventional				
Time Started in Hole	0330 Hrs.	Tool Open	0705	Hrs.	
First Flow	5 Min.	Shut In	60	Min.	
Second Flow	120 Min.	Final Shut In	60	Min.	
Pulled Loose @	1110 Hrs.	Out of Hole	1630	Hrs.	
Wt. Set on Packer	40,000	# Pulled Loose Wt.	62,000	#	

Remarks: Mud Dropped 2 Feet During Test Period. Tool was Chased 1 Foot During Test Period.

Description of Blow During Test: Good Blow, Increasing to Strong Blow.

GAS BLOW MEASUREMENTS

Measured with ____ I.D. Riser or Est. ☐

Type of Instrument ____

Time	Sfce. Choke	Reading Inches	Cubic Feet Day

FLUID RECOVERY

Was Test Reverse Circulated Yes ☐ No ☒

Fluid Recovered Total: 1850' Ft

Description of Fluid Recovered: 250' Salt Water Cut Drilling Fluid. 1600' Salt Water.

Remarks: Test Satisfactory.

Co. Rep. ____

Tester: T. Scheffelmaier

Elevation	1164 KB		
Bottom Hole Choke Size	1/2"		
Fluid Cushion Type			
Amount			

TOOL SEQUENCE

Tool	Length	O.D.
Sub.	.76	4 3/4"
P.O. Sub.	.86	4 3/4"
Sub.	.67	4 3/4"
D.P. Sub.	.66	4 5/8"
Shut in Tool	6.03	4 3/4"
Hyd. Tool	7.49	4 3/4"
Safety Jt.	1.74	4 7/8"
TC & Pkr.	6.50	
TC & Pkr.	5.30	
Total	30.01	
Perf.	1.25	
Perf.	5.00	4 3/4"
2 Recorders	10.28	4 7/8"
Perf.	20.62	4 3/4"
TC & Stub	3.00	
Total Interval	40.15	
Pkr.	3.50	4 3/4"
Recorder	3.17	4 5/8"
Perf.	12.77	4 3/4"
Sub.	.83	4 3/4"
DP	153.09	
Sub.	.80	4 3/4"
Perf	3.98	4 3/4"
B N.	.85	
Total Below Intv.	178.99	
Total Length	249.15	

MUD AND HOLE DATA

Mud Type	Gel and Chem	W.L.	9.5
Filter Cake	2/32 Visc. 55	Wt.	9.9
Time Taken	0200 hrs.		
Contractor	Tri-City Drilling	Rig No.	4
Drill Pipe Size	3 1/2 IF		
Drill Collar Size	2" ID	Length	240'
Main Hole Size	6 1/4"		
Rat Hole Size			

District	Edmonton	Ticket No. C 3390	Date February 19/65
Company	California Standard Company	Address P.O. Box 2295, Edmonton, Alberta	
Well Name	Calstan Imperial Bouvier L-69	Test No. 4	J.T.L. Test No. 4
Number	60°-48'-34"N-118°-42'-59.4"W	Field Wildcat	Province N.W.T.
Formation	Tight Hole DST#4	Consultant	
and Interval	3124-3164		
Distribution of Reports	5 - Edmonton		

JOHNSTON TESTERS

Pressure Data

Test Ticket No. C 3390

Recorder No.	T-396	AK1-2080		826	
Capacity P.S.I.G.	3000	4100		3000	
Recorder Depth	3130	3136		3167	
Pressure Gradient P.S.I. Ft.					
Well Temperature °F.	87°	87°		87°	
A Initial Hydrostatic	1650#	1659#		1665#	
B First Initial Flow	181#	183#	A-1	2058#	
C Initial Shut-In-Pres	1336# FALSE	1335#		RAN	
D Flowing Pres	202#	219#		BELOW	
E Final Flow	988#	990#		STRADDLE	
F Final Shut-In	1284#	1289#	A-2	1310#	
G Final Hydrostatic	1643#	1659#		1665#	

Remarks

T-396 - Inside Recorder
AK1-2080 - Outside Recorder
826 - Outside Recorder

JOHNSTON TESTERS

Pressure Breakdown Data

Date February 19, 1965 Test Ticket No. C 3390

Recorder No. AK1-2080 Capacity 4100 Recorder Depth 3136

Clock No. _____ Clock travel _____ inches per min. Well Temperature 87 °F.

Point		Pressure
A	Initial Hydrostatic	1659#
B	First Initial Flow	183#
C	Initial Shut-In-Pres	1335# FALSE
D	Flowing Pres	219#
E	Final Flow	990#
F	Final Shut-In	1289#
G	Final Hydrostatic	1659#

	Time Given	Time Computed
Opened Tool	0705 M.	
First Flow	5 Mins.	_____ Mins.
Initial Shut-In	60 Mins.	_____ Mins.
Flow	120 Mins.	_____ Mins.
Final Shut-In	60 Mins.	_____ Mins.

Remarks: _____

PRESSURE INCREMENTS

INITIAL SHUT-IN

Breakdown: 20 increments of 3 mins. and a final increment of _____ mins.

Point Minutes	Pressure	$\frac{T + \Delta t}{\Delta t}$
INITIAL SHUT-IN FALSE		

FINAL SHUT-IN

Breakdown: 20 increments of 3 mins. and a final increment of _____ mins.

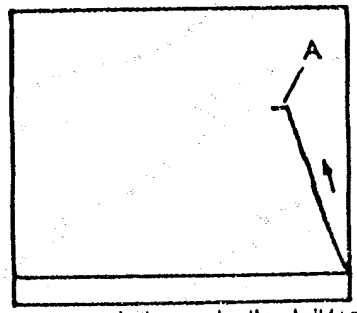
Point Minutes	Pressure	$\frac{T + \Delta t}{\Delta t}$
0	990	-----
3	1282	42.67
6	1285	21.83
9	1286	14.89
12	1287	11.42
15	1288	9.33
18	1288	7.94
21	1288	6.95
24	1288	6.21
27	1289	5.63
30	1289	5.17
33	1289	4.79
36	1289	4.47
39	1289	4.21
42	1289	3.98
45	1289	3.78
48	1289	3.60
51	1289	3.45
54	1289	3.31
57	1289	3.19
60	1289	3.08

Breakdown: _____ increments of _____ mins. and a final increment of _____ mins.

Point Minutes	Pressure	$\frac{T + \Delta t}{\Delta t}$

GUIDE TO INTERPRETATION AND IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS

1



The pressure chart records the build-up in hydrostatic pressure as the testing assembly is lowered into the hole. Upon reaching the testing depth the hydrostatic head or pressure of mud column is recorded.

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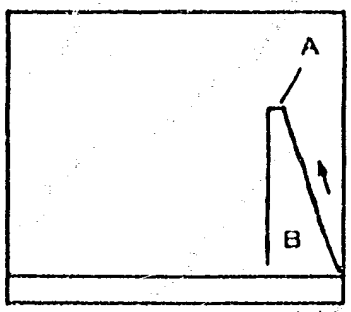

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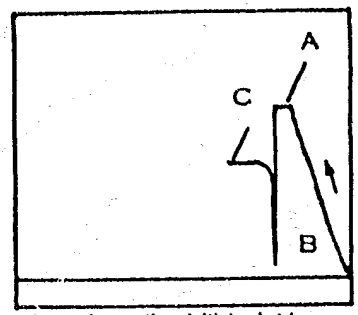

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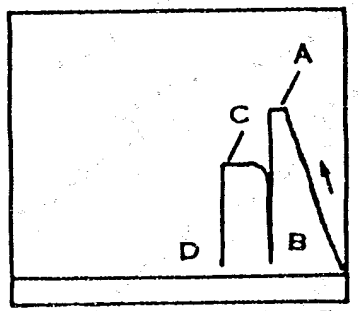
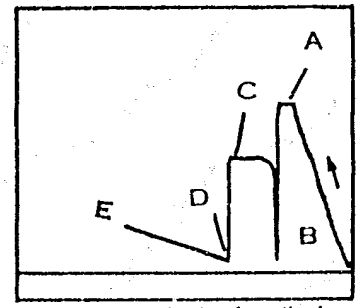


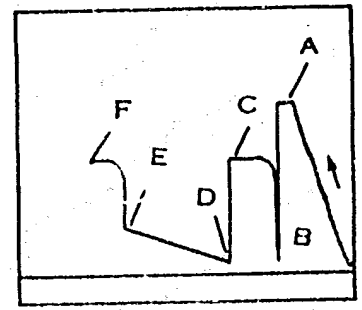
The chart indicates a pressure drop. The test tool has been opened to the surface by rotating the 4 stage shut-in tool into the open position. Permitting the open formation to produce.

5



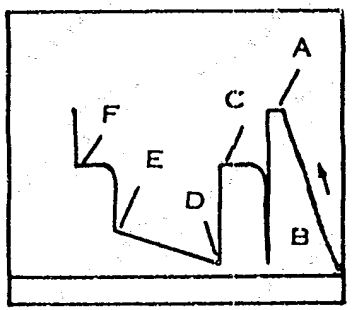
The pressure of fluid flowing from the formation into the well bore, through the perforated anchor, and into the drill pipe, is recorded on the chart.

6



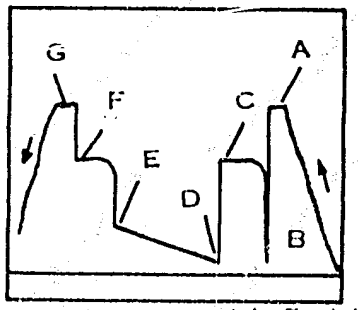
The final shut-in pressure is taken by stopping the flow of formation fluid into the drill pipe. Note the characteristic build-up curve. The well bore pressure is approaching equilibrium with the static reservoir pressure. When the shut-in curve levels-off the static reservoir pressure has been reached.

7



The chart shows the equalizing, the by-pass ports have been opened permitting the drilling fluid to flow through the packer to the test zone. Thus, pressure is equalized above and below the packer. The equalization of the pressure facilitates easier removal of the packer from the packer seat.

8



The packer has been unseated. The testing assembly is being removed from the hole.

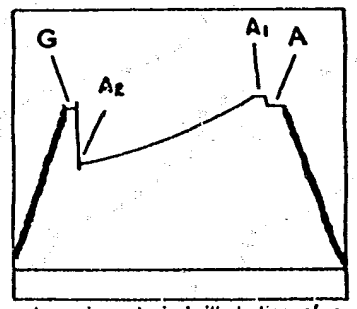
INDEX OF LABELED POINTS:

A—Initial Hyd. Mud
B—First Initial Flow
C—Initial Shut-in
D—Initial Flow
E—Final Flow
F—Final Shut-in
G—Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings, (testing different zones).

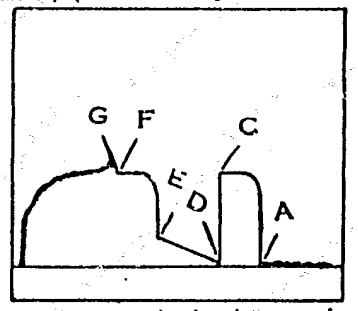
A-1, A-2, A-3, etc. Initial Hyd. Pressures.
B, B-1, B-2, B-3, First Initial Flow.
C-1, C-2, C-3, etc. The Initial Shut-in Pressures.
D-1, D-2, D-3, etc. Flowing Pressures.
E1, E-2, E-3, etc. The Final Flow Pressures or Final Shut-in Pressures.
F-1, F-2, F-3, etc. The Final Shut-in Pressures.
G-1, G-2, G-3, etc. Final Hyd. Mud Pressures.
Z — Special pressure points such as pumping pressure recorded for formation breakdown.

A



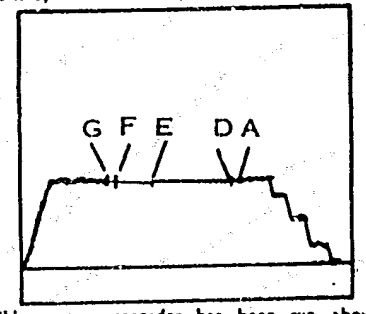
The above is a typical illustration of a chart from a recorder that is run below the bottom packer on a conventional straddle test. Only the hydrostatic mud pressures are recorded. When the tool is opened, there is a pressure differential across the bottom packer. This differential is lessened by the rubber flow of the packer element, which in turn causes a drawdown in pressure. If the below straddle chart reads the same as a chart that is run to record pressures of the test zone, then the bottom packer has failed. If this occurs, all zones below the top packer are being tested.

B



In this case a recorder has been run in an air chamber. The hydrostatic mud pressures are not influencing the recorder while going in or coming out of the hole due to the main tester valve being closed. The flow pressures and shut-in pressures are recorded while the main tester valve is opened.

C



In this case a recorder has been run above the main tester valve with a fluid cushion used in the drill pipe. No pressure is recorded as the testing tool is being lowered into the hole. Then the fluid cushion pressure is recorded as the drill pipe is filled with fluid. As more stands are run into the hole, the recorder registers the hydrostatic pressures of the cushion. When the main testing valve is opened the pressure of the cushion column or the flowing pressure of the formation, (which ever is greater), is recorded.

JOHNSTON TESTERS

JTL-CDA

TEST DATA

Formation	Tight Hole	Zone Thickness		Ft.	
Interval	3091 To 3117	T.D.	3343		
Type of Test	Open Hole, Straddle, By-Pass				
Time Started in Hole	2200 Hrs.	Tool Open	0205	Hrs.	
First Flow	4 Min.	Shut In	30	Min.	
Second Flow	120 Min.	Final Shut In	120	Min.	
Pulled Loose @	0639 Hrs.	Out of Hole	1200	Hrs.	
Wt. Set on Packer	40,000 #	Pulled Loose Wt.	64,000	#	

Remarks

Description of Blow During Test: Strong Blow. Gas to Surface in 2 Minutes.

GAS BLOW MEASUREMENTS

Measured with: 2 I.D. Riser or Est. ☐

Type of Instrument: Manometer

Impact Water

Time	Sfce. Choke	Reading Inches	M Cubic Feet/Day
0340		.125	47

FLUID RECOVERY

Was Test Reverse Circulated Yes ☐ No ☒

Fluid Recovered Total: 1540' Ft.

Description of Fluid Recovered: 180' Salt and Gas Cut Drilling Fluid.
1360' Salt Water.

Remarks: Test Satisfactory.

Co. Rep.

Tester: T. Scheffelmaier

Elevation	1164 KB
Bottom Hole Choke Size	1/2"
Fluid Cushion Type	
Amount	

TOOL SEQUENCE

Tool	Length	O.D.
Sub.	.76	
P.O. Sub.	.86	
Sub.	.67	
D.P. Sub.	.66	
Shut in Tool	6.03	
Hyd. Tool	7.49	
Safety Jt.	1.74	
T. C. & Pkr.	6.50	
T. C. & Pkr.	5.30	
Total	30.01	
Stub	1.27	
Perf.	11.00	
R. Sub.	.85	
Recorder	4.37	
Recorder	5.91	
T. C. & Stub	3.00	
Total Interval	26.40	
Pkr.	3.50	
Perf.	1.83	
Recorder	3.17	
Perf.	.65	
Sub.	.83	
D.P.	212.44	
Sub.	.80	
Perf. & B. N.	3.65	
Total Below Intv.	226.87	
Total Length	283.28	

MUD AND HOLE DATA

Mud Type: Gel and Chem W.L. 9.5

Filter Cake 2/32 Visc. 55 Wt. 9.9

Time Taken 1900 hrs.

Contractor: Tri-City Drilling Rig No. 4

Drill Pipe Size: 3 1/2 IF

Drill Collar Size: 2" ID Length 240'

Main Hole Size: 6 1/4"

Rat Hole Size:

District	Edmonton	Ticket No.	C 3391	Date	February 19/65
Company	California Standard Company	Address	P.O. Box 2296, Edmonton, Alberta		
Well Name	Calstan Imperial Bouvier L-6	Test No.	5	J.T.L. Test No.	5
Number	60°-48'-34"N-118°-42'-59.4"W	Field	Wildcat	Province	N.W.T.
Formation	Tight Hole DST#5	Consultant			
and Interval	3091-3117				
Distribution of Reports		5 - Edmonton			

JOHNSTON TESTERS

Pressure Data Test Ticket No. C 3391

Recorder No.	T-396	AK1-2080		826	
Capacity (P.S.I.G.)	3000	4100		3000	
Recorder Depth	3002	3106		3131	
Pressure Gradient P.S.I./Ft.					
Well Temperature °F.	105° Est.	105° Est.		105° Est.	
A Initial Hydrostatic	1628#	1633#		1647#	
B First Initial Flow	106#	111#	A-1	1801#	
C Initial Shut-In-Pres	1265#	1273#		RAN	
D Flowing Pres	129#	136#		BELOW	
E Final Flow	571#	571#		STRADDLE	
F Final Shut-In	1235#	1237#	A-2	1637#	
G Final Hydrostatic	1617#	1626#		1615#	

Remarks

T-396 - Outside Recorder
AK1-2080 - Outside Recorder
826 - Outside Recorder

JOHNSTON TESTERS

Pressure Breakdown Data

Date February 19, 1965 Test Ticket No. C 3391

Recorder No. AK1-2080 Capacity 4100 Recorder Depth 3106

Clock No. _____ Clock travel _____ inches per min. Well Temperature 105 °F. Est.

Point	Pressure
A Initial Hydrostatic	1633#
B First Initial Flow	111#
C Initial Shut-In-Pres	1273#
D Flowing Pres	136#
E Final Flow	571#
F Final Shut-In	1237#
G Final Hydrostatic	1626#

	Time Given	Time Computed
Opened Tool	0205 M.	
First Flow	4 Mins.	_____ Mins.
Initial Shut-In	30 Mins.	_____ Mins.
Flow	120 Mins.	_____ Mins.
Final Shut-In	120 Mins.	_____ Mins.

Remarks: _____

PRESSURE INCREMENTS

INITIAL SHUT-IN

Breakdown: 10 increments of 3 mins. and a final increment of _____ mins.

Point Minutes	Pressure	$\frac{T + \Delta t}{\Delta t}$
0	111	----
3	1131	2.33
6	1251	1.67
9	1263	1.44
12	1269	1.33
15	1272	1.27
18	1272	1.22
21	1272	1.19
24	1273	1.17
27	1273	1.15
30	1273	1.13

FINAL SHUT-IN

Breakdown: 40 increments of 3 mins. and a final increment of _____ mins.

Point Minutes	Pressure	$\frac{T + \Delta t}{\Delta t}$
0	571	-----
3	929	42.33
6	1036	21.67
9	1084	14.78
12	1112	11.33
15	1132	9.27
18	1147	7.89
21	1156	6.90
24	1166	6.17
27	1173	5.59
30	1180	5.13
33	1185	4.76
36	1189	4.44
39	1193	4.18
42	1196	3.95
45	1199	3.76
48	1202	3.58
51	1206	3.43
54	1208	3.30
57	1210	3.18
60	1212	3.07
63	1214	2.97
66	1216	2.88
69	1218	2.80
72	1220	2.72

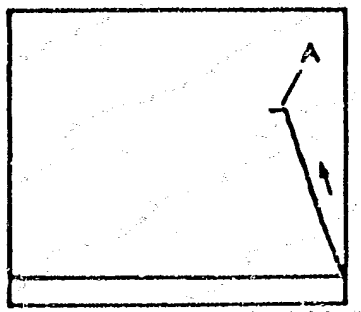
FINAL SHUT-IN Con't

Breakdown: _____ increments of _____ mins. and a final increment of _____ mins.

Point Minutes	Pressure	$\frac{T + \Delta t}{\Delta t}$
75	1222	2.65
78	1223	2.59
81	1224	2.53
84	1225	2.48
87	1226	2.43
90	1227	2.38
93	1228	2.33
96	1229	2.29
99	1230	2.25
102	1231	2.22
105	1232	2.18
108	1233	2.15
111	1234	2.12
114	1235	2.09
117	1236	2.06
120	1237	2.03

GUIDE TO INTERPRETATION AND IDENTIFICATION OF DRILL STEM TEST PRESSURE CHARTS

1



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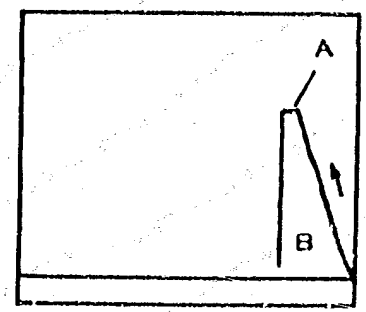

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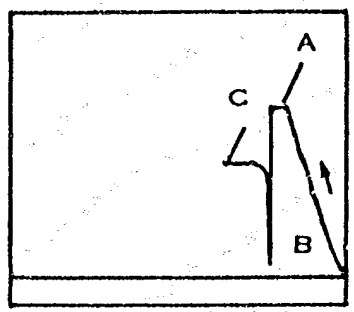

This chart shows the initial shut-in pressure. There is one mechanical method commonly used to obtain this pressure. A 4 stage shut-in tool, that is run-in in the open position and rotated closed when the desired amount of initial flow time is obtained. This initial shut-in pressure is the best method yet devised for recording the original undisturbed reservoir pressure of a formation.

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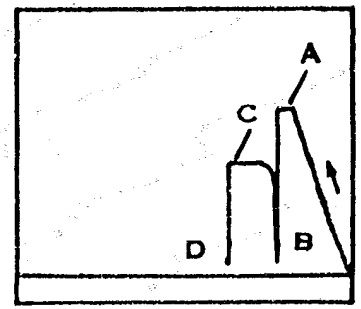

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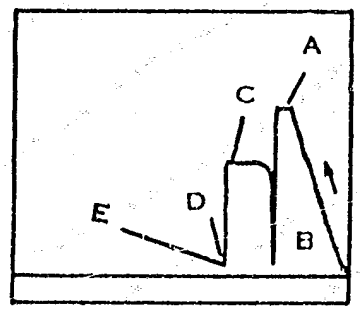

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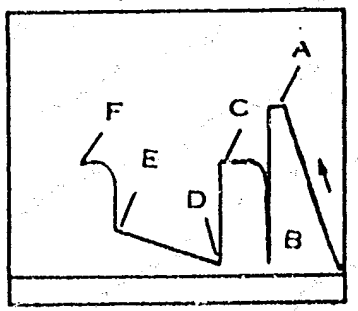

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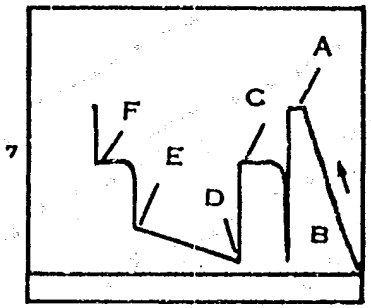

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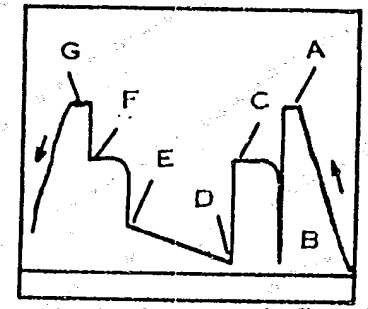


The packer has been unseated. The testing assembly is being removed from the hole.

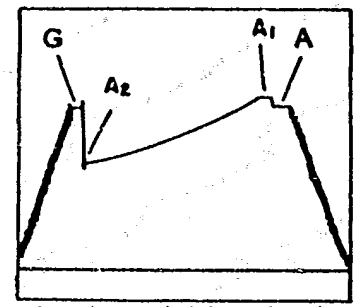
INDEX OF LABELED POINTS:

A—Initial Hyd. Mud
B—First Initial Flow
C—Initial Shut-in
D—Initial Flow
E—Final Flow
F—Final Shut-in
G—Final Hyd. Mud

The following points are either fluctuating pressures or points indicating other packer settings, (testing different zones).

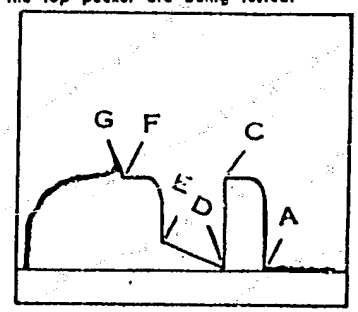
A-1, A-2, A-3, etc. Initial Hyd. Pressures.
B, B-1, B-2, B-3, First Initial Flow.
C-1, C-2, C-3, etc. The Initial Shut-in Pressures.
D-1, D-2, D-3, etc. Flowing Pressures.
E1, E-2, E-3, etc. The Final Flow Pressures or Final Shut-in Pressures.
F-1, F-2, F-3, etc. The Final Shut-in Pressures.
G-1, G-2, G-3, etc. Final Hyd. Mud Pressures.
Z — Special pressure points such as pumping pressure recorded for formation breakdown.

A



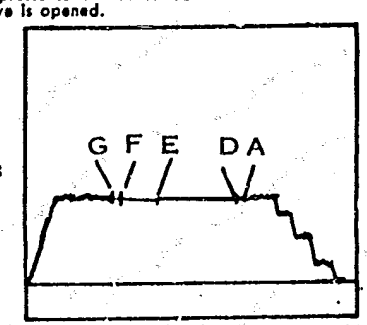
The above is a typical illustration of a chart from a recorder that is run below the bottom packer on a conventional straddle test. Only the hydrostatic mud pressures are recorded. When the tool is opened, there is a pressure differential across the bottom packer. This differential is lessened by the rubber flow of the packer element, which in turn causes a drawdown in pressure. If the below straddle chart reads the same as a chart that is run to record pressures of the test zone, then the bottom packer has failed. If this occurs, all zones below the top packer are being tested.

B



In this case a recorder has been run in an air chamber. The hydrostatic mud pressures are not influencing the recorder while going in or coming out of the hole due to the main tester valve being closed. The flow pressures and shut-in pressures are recorded while the main tester valve is opened.

C



In this case a recorder has been run above the main tester valve with a fluid cushion used in the drill pipe. No pressure is recorded as the testing tool is being lowered into the hole. Then the fluid cushion pressure is recorded as the drill pipe is filled with fluid. As more stands are run into the hole, the recorder registers the hydrostatic pressures of the cushion. When the main testing valve is opened the pressure of the cushion column or the flowing pressure of the formation, (which ever is greater), is recorded.

APPENDIX D

Water Analysis

CGL-6

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Edmonton — Fort St. John — Calgary

WATER ANALYSIS REPORT: Lab. No. E25135 Received: March 15, 1965 Reported: March 18, 1965

Well: Calstan Imp. Bouvier L-69 Operator: The California Standard Company

Field or Area: (Wildcat) Location: 60° 48' 38" N 118° 42' 59.74" W Elev.: K.B. 1162' Grd. 1151'

Zone and Formation: PresQue'Ile Sample Interval: 3124' - 3164'

Method of Production: D.S.T. #4 Well Production or Recovery at Sampling Time: Oil: N/A bpd; Gas: N/A MCFD; Water: N/A bpd. Recovered 250' salt water cut mud and 1600' salt water.

Sampled from: Drill Pipe 6' above tool. Sampled by: Operator Date: February 19, 1965

OTHER PERTINENT DATA Pressure: (a) at point of sampling: N/A psig (b) Gas Bomb pressure: N/A psig.. Temperature: (a) at point of sampling: 10 °F. (b) Separator: N/A °F.. Open hole interval. Pressures: Resevoir: 1250, Tubing: N/A, Casing: N/A, Separator: N/A.

(Signed) B. Boyce
The California Standard Company

Milligrams Per Liter (Parts Per Million)

Na + K	Ca	Mg	SO_4	Cl	CO_3	HCO_3	OH	
38333	11532	4325	104	91800		460		

Milligram Equivalents

1667.49	575.45	355.52	2.16	2588.76		7.54	

Iron Trace Hydrogen Sulfide Present

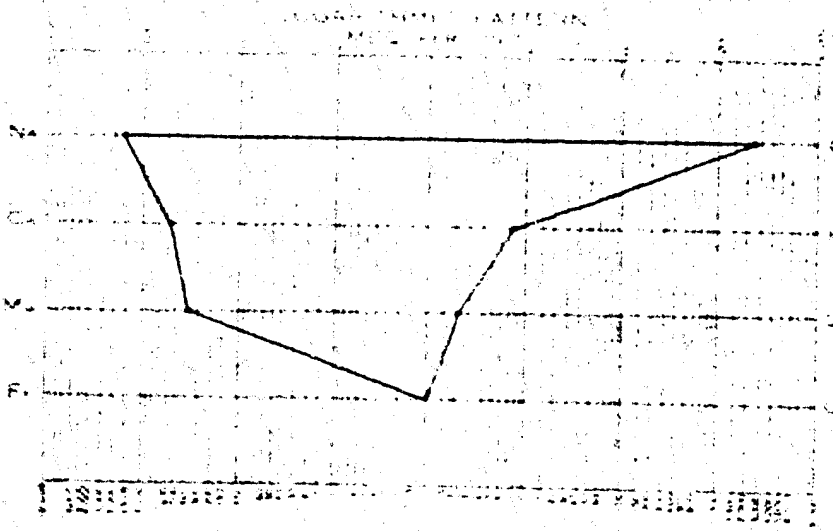
Total Solids in Milligrams Per Liter:

By evaporation	176,880
After ignition	135,960
Calculated	146,320

Physical Properties:

Resistivity	0.070 ohm meters @ 68 °F
Observed pH	6.7
Specific Gravity	1.099

Remarks and Conclusions Refractive Index: 1.3615. The sample has the characteristics of a formation water.



CGL-6

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Edmonton — Fort St. John — Calgary

WATER ANALYSIS REPORT: Lab. No. E25134 Received: March 15, 1965 Reported: March 18, 1965

Well: Calstan Imp. Bouvier L-69 Operator: The California Standard Company

Field or Area: Wildcat Location: 60° 48' 38" N. 118° 42' 59.74" W. Elev.: K.B. 1162' Grd. 1151'

Zone and Formation: PresQue'Ile Sample Interval: 3092' - 3115'

Method of Production: D.S.T. #5 Well Production or Recovery at Sampling Time: Recovered

180' salt water cut gassy mud and 1360' salt water.

Sampled from: Drill Pipe-6' above tool. Sampled by: Operator Date: February 20, 1965

OTHER PERTINENT DATA Temperature at point of sampling: 10 °F.. Reservoir pressure: 1200.

Open hole interval.

(Signed) B. Boyce
The California Standard Company

Milligrams Per Liter (Parts Per Million)

Na + K	Ca	Mg	SO_4	Cl	HCO_3	CO_3
32490	9786	3460	119	77200	400	

Milligram Equivalents

1413.35	488.32	284.41	2.48	2177.04	6.56	

Iron Trace Hydrogen Sulfide

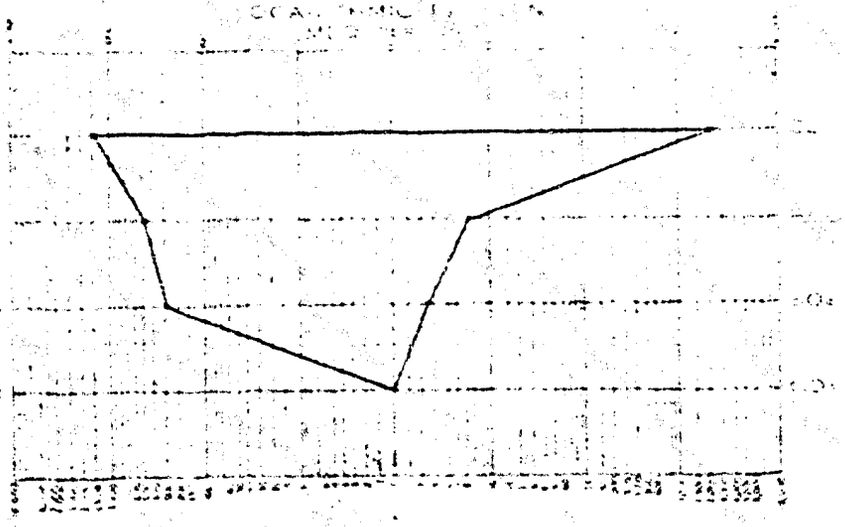
Total Solids in Milligrams Per Liter:

By evaporation 146,040
After ignition 115,260
Calculated 123,252

Physical Properties:

Resistivity 0.078 ohm meters @ 68 F.
pH 7.2
Specific gravity 1.084

Remarks and Conclusions Refractive Index: 1.3581. The sample has the characteristics of a slightly diluted formation water.



APPENDIX E

Gas Analysis

CGL-4

CHEMICAL & GEOLOGICAL LABORATORIES LTD.

Edmonton — Fort St. John — Calgary

GAS ANALYSIS REPORT: Lab. No. E25162 Received: March 15,1965 Reported: March 23,1965

Well: Calstan Imp. Bouvier L-69 Operator: The California Standard Company

Field or Area: (Wildcat), Yukon Territories. Location: 60° 48' 38"N. 118° 42' 59.74"W. Elev.: K.B. 1162' Grd. 1151'

Zone and Formation: Pres Qui'le Sample Interval: 3092' - 3115' Open Hole

Well production at sampling time: Oil N/A bpd; Gas N/A MCFD; Water N/A bpd.

Sampled from: Drill Pipe Sampled by: Operator Date: Feb. 20, 1965

Pressure: (a) at point of sampling N/A psig (b) Gas Bomb pressure 100 psig

Temperature: (a) at point of sampling 10 F (b) Separator N/A F

Pressures: Reservoir 1200 Tubing N/A Casing N/A Separator N/A

OTHER PERTINENT DATA D.S.T. #5. Recovered 180' salt water cut gassy mud and 1360' salt water.

(Signed) Mel Hansen
The California Standard Company

HYDROGEN SULFIDE (by Tutwiler Method)

Grains of hydrogen sulfide per 100 cu. ft of gas at 60°F. and 14.65 p.s.i.a. 100.

GROSS B.T.U. (Calculated) 60 F. and 14.65 p.s.i.a 1025

SPECIFIC GRAVITY (Calculated) 0.632

Specific Gravity, by Weight 0.634

VAPOR PRESSURE (Calculated) of actual pentanes 12.45

Calculated Pc 669.7

Tc 356.9

Remarks and conclusions:

The sample was received at a pressure of 20 psig. with no apparent liquids.

COMPOSITION	% by Volume	G.P.M. in Imp. Gal. @ 60°F. & 14.65 PSIA
Helium	0	
Oxygen	4.31	
Nitrogen	1.24	
Carbon dioxide	0.16	
Hydrogen sulfide	88.86	
Methane	2.93	
Ethane	1.34	0.306
Propane	0.25	0.068
Isobutane	0.45	0.118
N butane	0.15	0.045
Isopentane	0.14	0.042
N-pentane	0.10	0.034
Hexanes	0.07	0.030
Heptanes		
TOTAL	100.00	0.643
G.P.M.		0.151
Actual pentanes		
Calculated at 12 lbs		---
Calculated at 18 lbs		0.158
Calculated at 22 lbs		0.185
Calculated at 26 lbs		0.204