DEER CREEK
Energy Limited

Innovative Energy Technologies Program
Project Annual Report Requirements

September, 2007

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1 Summary

Total E&P Canada Joslyn pilot project Phase 1 began in the field in November 2003 with drilling operations. This pilot aimed to validate the feasibility of shallow SAGD (Steam Assisted Gravity Drainage). In 2004 and 2005 oil was produced by using two types of artificial lift, a Sucker Rod Pump and an ESP (Electrical Submersible Pump). In 2006 production continued with the use of ESP and reached a yearly high of 62 m^3/d of bitumen. The goal of this pilot was to earn experience and increase knowledge of shallow SAGD mechanisms to operate and optimize future commercial projects. The production for the Phase 1 Pilot produced to the Phase 1 Plant until February 2006. The production was at that point disconnected from Phase1 and tied into the Phase 2 Facility via Pad 204.

1.1 Chronological activities

The following are the main activities that took place on Phase 1 in 2006:

- February 2006: Phase 1 production no longer goes to Phase 1 plant. Tie in is completed to the Phase 2 Pad 204 and the Phase 2 Facility. For further information refer to Appendix 7.
- February 2006: Workover completed to remove ESP for inspection and evaluation of well. A Formation Saver Valve (FSV) was installed to prevent cooling of the wellbore during workover operation. For further information refer to section 3.2 and Appendix 3.
- April 2006: Workover to replace pump. For further information refer to section 3.2 and Appendix 3.
- April 2006: Workover to pull, inspect and remove obstruction in injection tubing. For further information refer to section 3.2 and Appendix 3.
- July 2006: Workover to replace pump. For further information refer to section 3.2 and Appendix 3.

The ESP failures mentioned above and further in section 3.2 and Appendix 3 were mainly due to electrical problems along with general wear on the pump components. All pumps were sent to Schlumberger in Nisku, Alberta to be broken down and inspected. Components that were salvageable were placed in customer inventory or used on replacement pumps. Longest run life for an ESP on this well was 231operating days with a Schlumberger DN1750 pump. This pump was installed in late July 2006 and pulled at the end of June 2007 and replaced by a PCM (Kudu Industries Inc) Vulcain 400MET100 Progressing Cavity Pump (PCP).

2 Pilot Data

2.1 Data submission

2.1.1 Geology and geophysical data

2.1.1.1 Producer & Injector well-pair

As described in the 2005 report, the Phase 1 well pair was drilled before both slant observation wells, relying on logs and cores that were done previously on the heel and toe area of the horizontal wells. This first data collected showed good reservoir quality, and the drilling trajectories of the well pair were designed in accordance with this data. Later, two slant observation wells were drilled and logs done in the middle part of the horizontal well pair, revealing that this area of the reservoir was not as good as expected. In fact the heel portion of the producer was drilled too low and outside the reservoir.

Full lithological descriptions can be found in the geology reports of the producer and injector well. (Appendix 3/B/C1/D1/D2) Gamma ray logs can be found in Appendix 3/C1/C2.

2.1.1.2 Observation and core wells

Survey (trajectories, GR) are available in the Appendix 3/E1/2 and on the CD under Appendix 3-2 under LAS format files.
Cores were only done with vertical observation wells (B/11-33, 0/11-33, A/11-33, OB1C). Pictures are shown in Appendix 3/F1.

Well name	UWI	Status	Drilling date
A/11-33	A/11-33-95-12W4	Core well	1974
B/11-33	B/11-33-95-12W4	Core well	2000
0/11-33	0/11-33-95-12W4	Observation well with casing but not equipped	2003
OB1AA or OB1P1H	103/06-33-095-12W4	Slant observation well	2004
OB1B or OB1P1M	102/06-33-095-12W4	Slant observation well	2004
OB1C or OB1P1T	100/03-33-095-12W4	Observation well	2003

Table 1: Observation & core wells descriptions

2.1.1.3 Cross sections & maps

Refer to Appendix 3E1/2.

2.1.2 Laboratory studies

No additional laboratory studies for Phase 1 were completed in 2006.

2.1.3 Simulations

The description of what has been done in geophysics and reservoir simulation (input data, methodology and main results) is available in Appendix 4. This data was not updated in 2006.

2.1.4 Pressure, temperature and other applicable reservoir data

Updated 2006 pressure data for the injector and the producer along with the temperature at the pump intake can be found in Appendix 5.

2.1.5 Any other measurements, observations, test or data pertinent to the pilot

Raw well data (Injector, producer and observation wells) data and production data with trends are available in Appendix 5. BHP is maintained in a range from 600kPa to 1200kPa, with a slightly higher pressure for the injector. BHP never reached the maximum allowable pressure of 1200 kpa that was defined after the steam release on Phase 2 well 204-P1.

2.2 Interpretation of Pilot Data

This pilot has allowed gathering a of information in SAGD technology. Geologically, the formation has been well described. Unfortunately, both slant observation wells were drilled after the horizontal well pair and showed worse quality than expected.

- Sensa fibre allows operations to monitor temperature changes, issues are identified early and acted on immediately.

3 Well Information

3.1 Well layout map

Refer to table 1 and Appendix 1.

3.2 Review completion operations and any difficulties encountered in 2006

DATE	***EVENTS***
	WELL OPERATIONS
February 2006	**Work-over: Schlumberger ESP** *(Electrical Submersible Pump)* • **Producer:** o 38.1 mm CT removed o 88.9mm tubing removed o Removed Schlumberger REDA DN1750 pump o Performed maintenance on the well o Install Sensa Fibres aling with 89mm tbg o Installation of the Schlumberger REDA DN1750 30 stage Hotline I pump ▪ Bottom feeder intake ▪ Advanced gas handler ▪ 42.8 hp Dominator motor ▪ Protector consisting of a labyrinth and two parallel Aflas bags ▪ VFD: REDA Speedstar 2000, 6 pulse, 460 volt ▪ Backspin relay **Comments:** - The ESP was removed due to electrical failures in the system - Wanted to perform routine maintenance on the well to enhance the production *For more details about operating phase completion, refer to Appendix 2*
April 2006	**Work-over: Schlumberger ESP (R &R ESP System)** Installation of the Schlumberger REDA DN1750 30 stage Hotline I pump – Bottom feeder intake – Advanced gas handler – 42.8 hp Dominator motor – Protector consisting of a labyrinth and two parallel Aflas bags – VFD: REDA Speedstar 2000, 6 pulse, 460 volt – Backspin relay • **Producer:** o 88.9mm tubing removed o Breakdown ESP system o Install new Schlumberger REDA DN1750 30 stage Hotline I pump **Comments:** - The ESP was removed due to electrical failures in the system *For more details about operating phase completion, refer to Appendix 2*
April 2006	**Work-over: 60.3 mm tubing string** • **Injector:** o Pull 60.3 mm string for inspection o Re-installed 60.3 mm tubing o Found obstruction @ jnt 69 o Unable to get past obstruction after flushing csg and tbg o Pulled 60.3 mm string and tried 60.3 mm Hydril 503 pipe o Could only get ~13 m past the heel landed tbf @ 355.82 m **Comments:** *For more details about circulation phase completion, refer to Appendix2*
July 2006	**Work-over: Pump Replacement** Installation of the Schlumberger REDA DN1750 30 stage Hotline I pump – Bottom feeder intake – Advanced gas handler

	– 42.8 hp Dominator motor – Protector consisting of a labyrinth and two parallel Aflas bags – VFD: REDA Speedstar 2000, 6 pulse, 460 volt – Backspin relay • **Producer:** o 88.9mm tubing removed o Breakdown ESP system o Install new Schlumberger REDA DN1750 30 stage Hotline I pump **Comments:** Pump was pulled due to normal wear.

Table 2: Drilling and completion operations summary

3.3 Well operation

3.3.1 Well list and status

Well name	UWI	Status	Distance from 1I1 (m)	Distance from 1P1 (m)
Phase 1 P1 (1P1)	102/03-33-095-12W4/00	Producer	-	-
Phase 1 I1 (1I1)	103/03-33-095-12W4/00	Injector	-	-
OB1AA or OB1P1H	103/06-33-095-12W4	Observation wells	3.60	3.07
OB1B or OB1P1M	102/06-33-095-12W4		6.05	5.40
OB1C or OB1P1T	100/03-33-095-12W4		0.45	0.69
0/11-33	0/11-33-95-12W4	Observation well with casing but not equipped	-	-
B/11-33	B/11-33-95-12W4	Core wells	-	-
A/11-33	A/11-33-95-12W4			
PW 10214-20	102/14-20-095-12W4M	Produced water disposal wells (No longer utilized in Phase 2)	-	-
PW 102-14-36	102/14-36-095-12W4M			
PW 11-36	100/11-36-095-12W4M			
PW 14-20	100/14-20-095-12W4M			
PW-14-36	100/14-36-095-12W4M			
PW 3-29	100/03-29-095-12W4M			
PW 5-4	100/05-04-096-11W4M			
BD 15-12	100/15-12-095-13W4M	Blow-down disposal wells (No longer utilized in Phase 2)	-	-
BD 4-16	100/04-16-095-12W4M			
BD 5-16	100/05-16-095-12W4M			
BD 7-13	100/07-13-095-12W4M			

Table 3: Well list and status - distance of observation wells from 1P1 & 1I1

3.3.2 Wellbore schematics

Refer to Appendix 2 - Completion & work-over for all producer and injector wellbore schematics.

4 Production performance and data

4.1 Injection and production history on an individual well and composite basis

The 2006 production fluctuated between 20-60 m3/d of bitumen. This is illustrated in Figures 1 and 2 below. The workover in February 2006 is responsible for the production fall at this period. Total steam injection was increased slowly at the beginning of 2006 and was maintained towards the end of 2006. Different injection strategies have been applied between Heel and Toe, to ensure a homogeneous development of the steam chamber and to optimize the subcools. Optimum subcools are 1-2 in order to optimize the production. The pump subcool is the difference between the pump inlet temperature and the steam temperature (calculated with a steam table knowing the pressure). Reservoir subcool is the difference between the reservoir temperature in the injector (calculated with a steam table knowing the BHP), and the producer reservoir temperature.

4.2 Composition of produced / injected fluids

For oil analysis refer to Appendix 5B. Produced water was not analysed.

4.3 Comparison of predicted versus actual well / pilot performance and discussion regarding the difference

See Figure 1 below. The production actuals were lower due to forecasts based on early modelling. The producer heel being drilled too low can partly explain this. Operations experienced difficulty maintaining pump subcool lower than 15-20˚C This can be explained by the ESP not being the optimal type of artificial lift for this type of application. In 2007 replacement of the ESP with a new type of PCP is expected to improve the means of extracting the bitumen in SAGD.

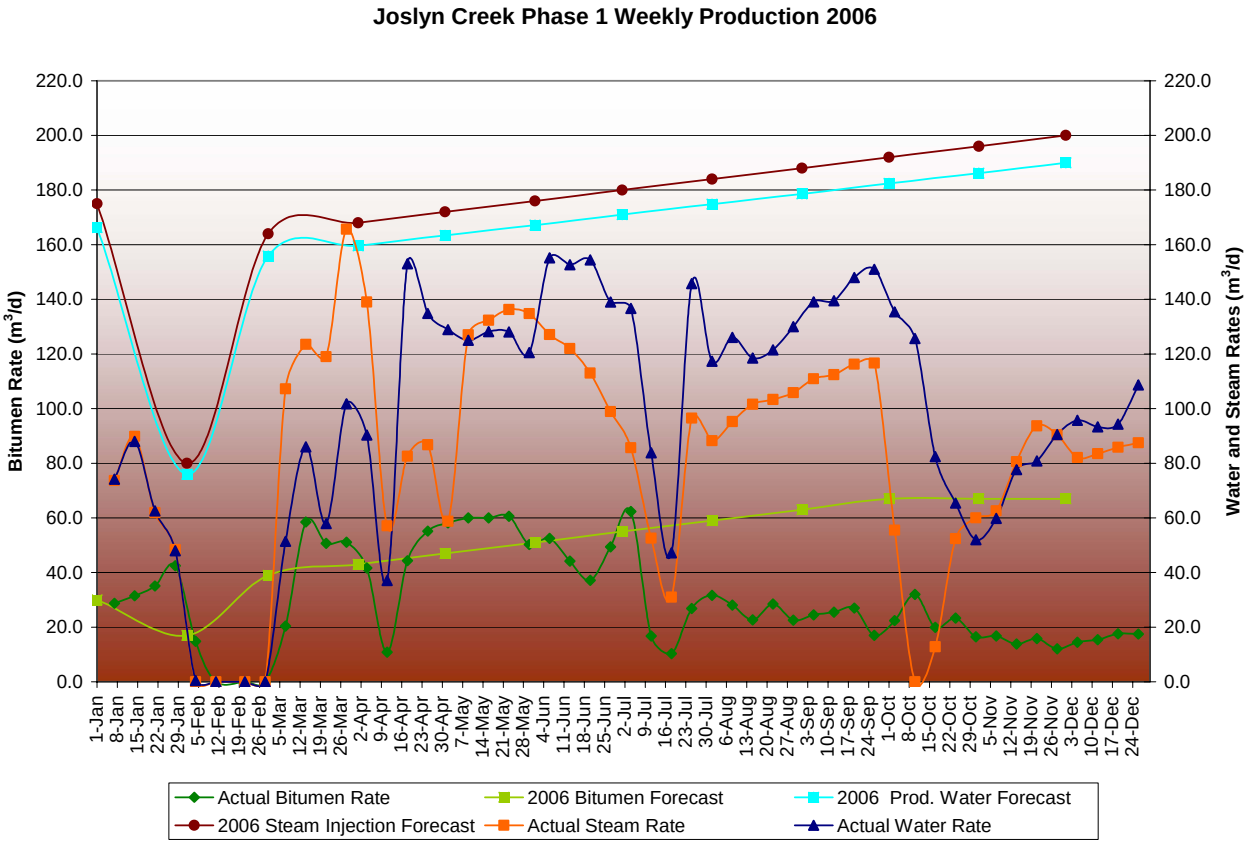


Figure 1: Actual vs Forecast

4.4 Updated incremental production

See Figure 2 below for updated incremental production. Raw data can be found in Appendix 5.

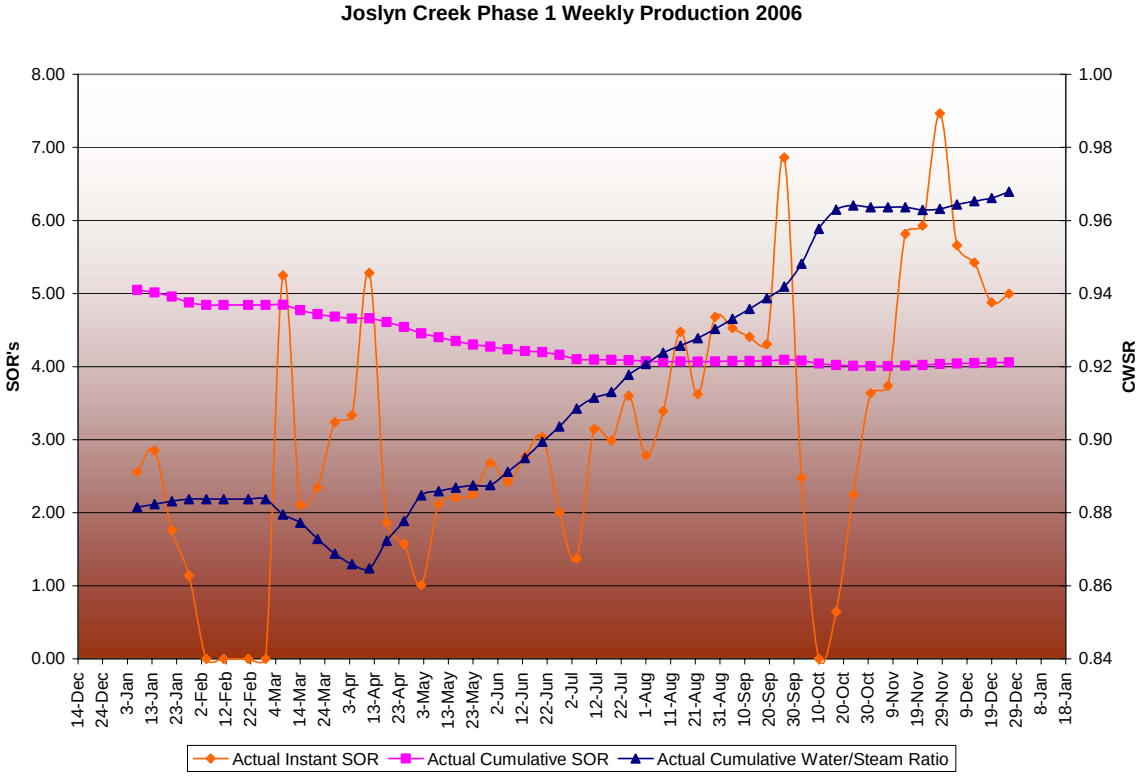


Figure 2 Weekly Cumulative Production - Actual

4.5 History of injection, production and observation well pressures and temperatures

The following Figures 3, 4 and 5 demonstrate the pressure and temperature history during the year 2006. The lower temperatures result from workover periods and the warmer areas are during the production phase. BHP was always lower than the injector operating between 600-1000 kPa.

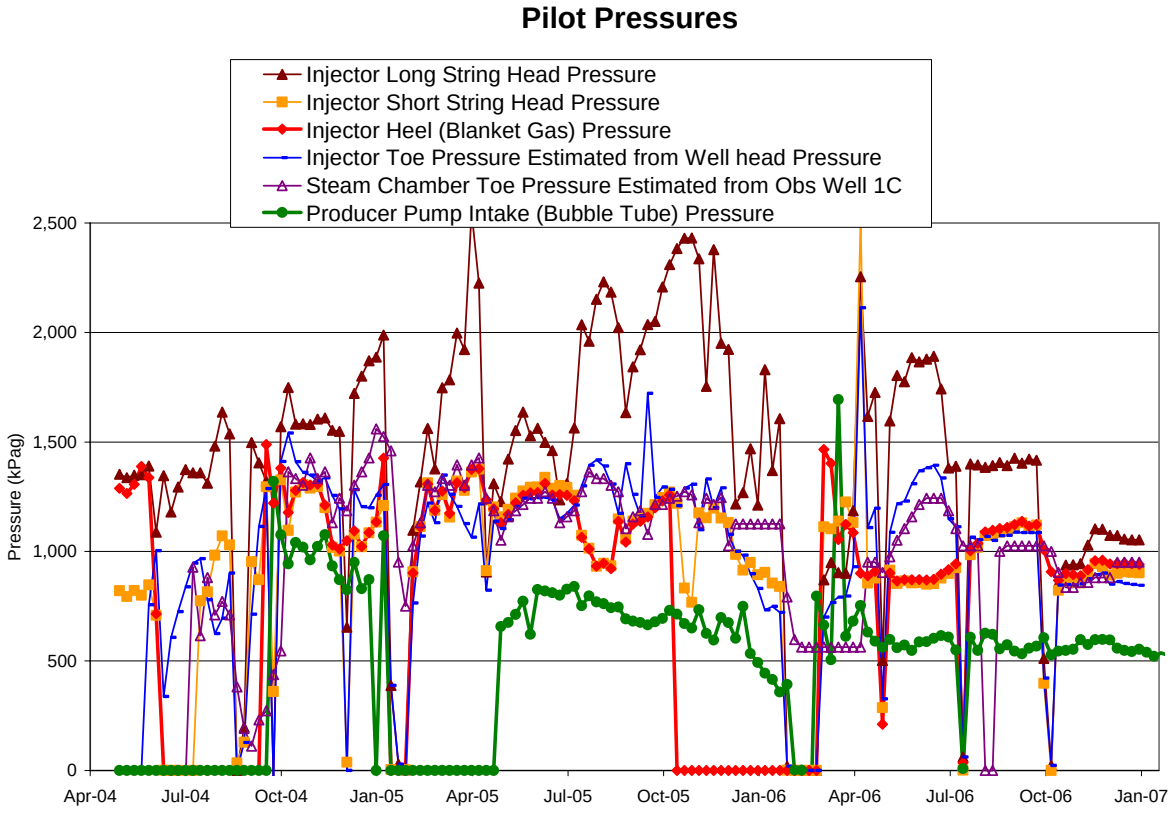


Figure 3 Pilot Pressures 2006

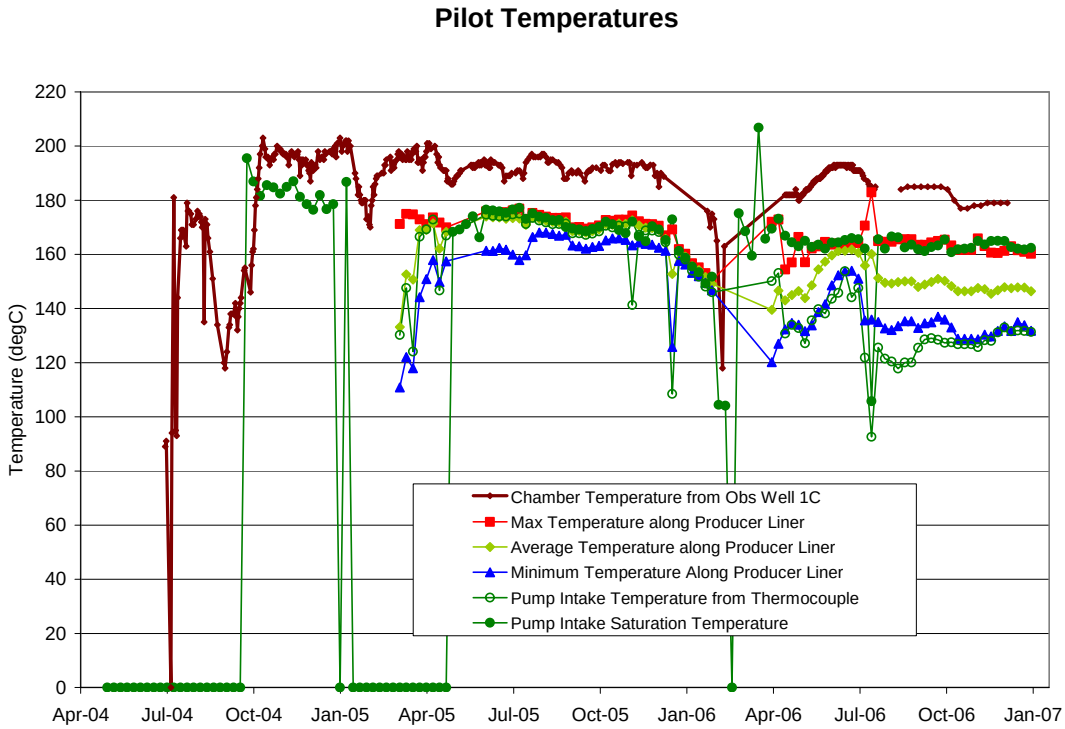


Figure 4 Pilot Temperatures

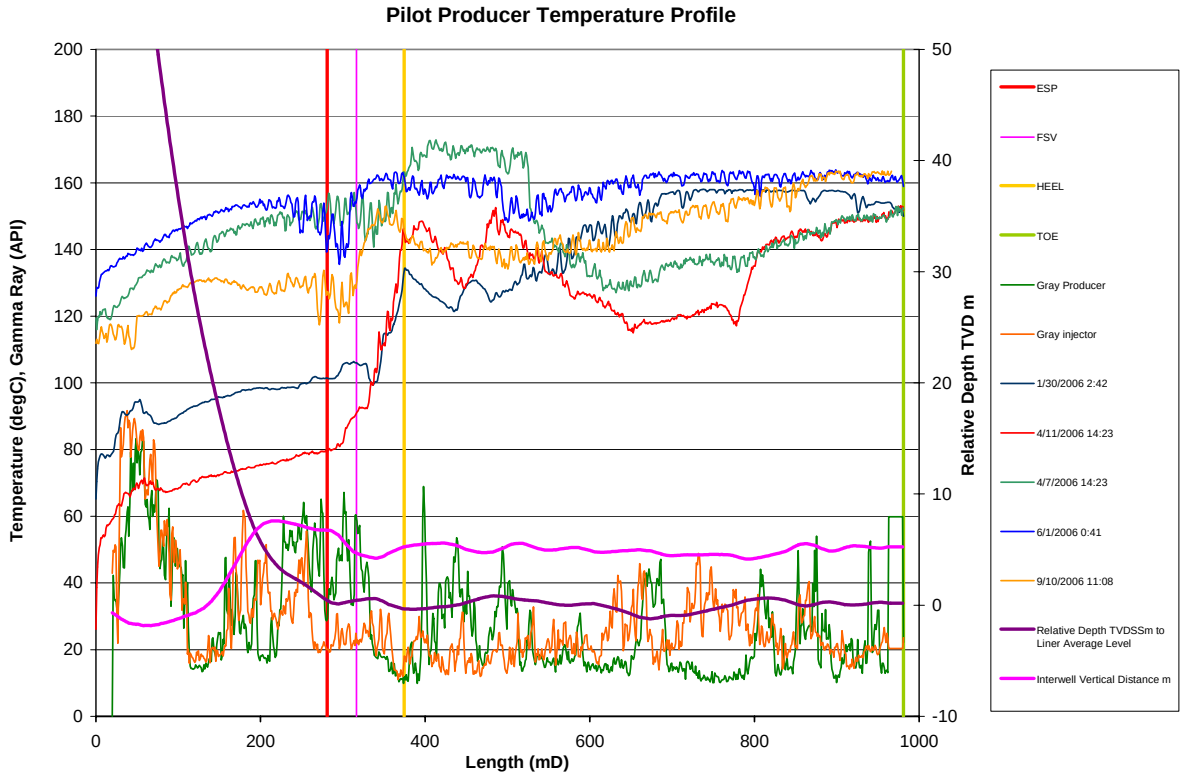


Figure 5 Pilot Temperature Profile

5 Pilot economics to date

5.1 Sales volumes of natural gas and by-products

No natural gas or by-products are sold.

5.2 Revenue

Gross revenue for 2006 was **$4,397,991**
For details, refer to Appendix 6.

5.3 Capital costs (include a listing of items with installed cost greater than 10,000$)

- Well workover capital portion (gross): $942,731
- Decommissioning costs for 2006 including tie in to Phase 2: $337,976

For details, refer to Appendix 6.

5.4 Direct and indirect operating costs by category (e.g. fuel, injectant costs, electricity)

Refer to Appendix 6 for more details.

Total costs for 2006. The cost for Phase 1 has been calculated by dividing the total operating cost for 2006 by the number of well operating months and then multiplied by the number of operating months for the phase 1 wells.

Direct operating costs	Pipeline/Terminal expense	27,991
	Trucking	965,893
	Diluent	2,180,161
	Total	**3,174,045**
Indirect operating costs	Operations Staff	857,015
	Facility Costs	252,579
	Fuel	597,757
	Consumables	15,898
	Utilities	274,673
	Chemicals	96,518
	Transportation	193,940
	Repairs and Maintenance	214,153
	Workovers	707,314
	Total	**3,209,847**

Table 4: Direct & indirect operating costs gathering 2006

5.5 Crown royalties, applicable freehold royalties, and taxes

Refer to Appendix 6 for more details.

Total royalties paid for 2006: $14,065 (Phase 1 fraction of total in 2006)

5.6 Cash flow

Refer to Appendix 6.

5.7 Cumulative project costs and net revenue

Refer to Appendix 6.

Cumulative project cost: $19,372,372

Net revenue: $1,209,881 (2006). Excluding royalty paid of $2,500,000

5.8 Explanation of material deviation from budget costs

N/A

6 Facilities

6.1 Description of major capital items (including new facilities and additions / modifications to existing facilities)

In early 2006 the Phase 2 Plant was completed and the production from Phase 1 Pilot was tied in to the Phase 2 facility. The Phase 1 Plant was scheduled for decommissioning in mid 2007.

6.2 Capacity limitation, operational issues, and equipment integrity

The main issues and limitations that have been experienced are mainly due to pump issues. No major surface facility issues have been experienced. In a low pressure SAGD the ESP's are difficult to maintain and require a lot of attention by both operations and engineering.

6.3 Process flow and site diagram identifying major facilities, including production equipment, connected pipelines, gathering and compressing facilities

The Phase 1 wells are now tied in to Pad 204 and the Phase 2 facility. PFD/P&ID's of Pad 204 has been included in Appendix 6.

7 Environment / Regulatory / Compliance

7.1 Summary of project regulatory requirements and compliance status

The pilot project is in compliance with all the necessary regulation.

7.2 Procedures to address environmental and safety issues

Company HSE procedures are being followed and are in compliance with environmental regulations.

7.3 Plan for shut-down and environmental clean-up

Decommissioning of the Phase 1 facility will be completed in 2007. All environmental requirements will be fulfilled.

8 Future operating plan

8.1 Project schedule update including deliverables and milestones

In 2007, one main event will occurred in this pilot facility:

- Dismantling of Phase 1 Plant.

8.2 Changes in pilot operations, including production operations, injection process, and cost optimization strategies

The pilot well is now linked to the new commercial production facility through the Phase 2 Pad 204. Steam is coming from the Phase 2 facility and production is treated in the Phase 2 process.

8.3 Salvage update

As Phase 1 is being dismantled, any equipment that can be used in Phase 2 will be transferred and used in the Phase 2 process or additional well pads.

9 Interpretations and conclusions

9.1 Lessons learned

As more experience was gained with shallow SAGD operations the following optimizations were implemented.

- Formations Saver Valve (FSV) installed in February 2006. The purpose of this valve is to prevent cooling of the well chamber during workovers. This was implemented successfully.
- Found that ESP's were not the ideal pumps for this type of shallow SAGD production. Plan to use a high temperature Progressing Cavity Pump (PCP) in the future.
- Steam chamber expertise has continued to increase and with this, well production is expected to improve.

9.2 Difficulties encountered

Refer to 9.1 for operational issues.

9.3 Technical and economic viability

From a technical point of view, this pilot was successful and demonstrated that shallow SAGD could be produced safely, efficiently and within economic viability. A PCP pump is being installed in 2007 and further research is being done to increase pump efficiency and runtime.

9.4 Overall effect on overall gas and bitumen recovery

Pilot oil is considered dead oil. Gas recovery is not applicable here.
An efficient oil recovery was successfully demonstrated.

9.5 Assessment of future expansion or commercial field application and discussion of reasons

The pilot facility is called Phase 1 within the Company. Because of the pilot project success, the commercial Phase 2 was built in 2005/2006. In February 2006, the pilot well pair was connected to the commercial facility, phase 2 together with 4 other wellpads. Further development is being evaluated.

APPENDIX

Appendix 1: Drilling operations
- Appendix 1/A: Injector well
- Appendix 1/B: Producer well
- Appendix 1/C: Observation wells

Appendix 2: Completion operations
- Appendix 2/A1: February 2006, ESP Workover Replacement
- Appendix 2/A2: New Completion Drawing
- Appendix 3/A3: April 2006, ESP Pump Replacement

Appendix 3: Mud and Geological Reports
- Appendix 3/A: Injector well
- Appendix 3/B: Producer well
- Appendix 3/C1: Injector well – Horizontal lithology strip log
- Appendix 3/C2: Producer well – Horizontal lithology strip log
- Appendix 3/D1: Injector well – Vertical lithology strip log
- Appendix 3/D2: Producer well – Vertical lithology strip log
- Appendix 3/E1: Injector well – Cross section through Facies model
- Appendix 3/E2: Producer well – Log cross section
- Appendix 3/F: Core pictures

Appendix 4: Geophysics simulations

Appendix 5: Production data
- Appendix 5/A: Observation Well Temperatures
- Appendix 5/B: Oil analysis

Appendix 6: Economics data
- Appendix 6/A: Statement of operating income 2006
- Appendix 6/B: Capital 2006

Appendix 7: Facilities
- Appendix 7/A: Process Flow Sheet
- Appendix 7/B1: P&ID: Phase 1
- Appendix 7/B2: P&ID: Pad 204
- Appendix 7/C: Facilities plot
- Appendix 7/D: Major Equipment Listing
- Appendix 7/E1: Process Description
- Appendix 7/E2: Pilot overall description

APPENDIX 1:

Drilling operations

APPENDIX 1/A:

Injector well

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Well License :	0296169		Spud : 11/26/2003	GL :	339.70
AFE # :	054-0303S-I	Amount : $1,411,066	R.R. : 12/3/2003	CF :	0.00
Ops. Objective :	TO INJECT IN TO THE MCMURRAY FM			KB :	343.46
AM Ops. :	Cleaning Rig & Rentals				
Ops. Forecast :	Finish cleaning rig, load out rentals & rig				

Report # :	8
Ops. Date :	12/3/2003
Days From Spud :	7
Day Cost :	$168,599
Cost To Date :	$1,070,631
Est. TD :	966.0
Depth @ 2400hr :	0.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm BHA : 0.00 m
DC OD : 0.00 mm String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : Screens :

Time Distribution Total Hours : 0.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:00:00 AM	Rig Up/Tear Down	Tear out rig, steam clean equipment, strip back mud

Contractor : Precision Drilling	Rig Manager : Ken Hein	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear/ -11		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	7				
Ops. Date :	12/2/2003				
Days From Spud :	6				
Day Cost :	$245,695				
Cost To Date :	$897,532				
Est. TD :	966.0				
Depth @ 2400hr :	0.00				
Progress :	0.0				
Day Rot. Hrs. :	0.00				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Steam cleaning rig, begin tear out.
Ops. Forecast : Steam clean rig and rentals, start tearing & loading out rentals

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
11:30:00 AM	Polymer	1070	71	19	16	4.5	6.0	5.0	9.0	5.0	500	0.0	56	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Caustic soda	1	0
DSCO Defoan	1	0
Defoam X	4	0
EMI-695	1	0
Fedzan	10	0
Poly plus dry	5	0

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
PDC bit	1	270.0	0.35
Motor	1	203.2	7.34
Float sub	1	170.0	0.72
Non-mag DC	1	170.0	9.28
Hang-off sub	1	168.0	1.70
X/O sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:30:00 AM	Reaming	Ream & pump to FTD w/ reamer BHA.
12:30:00 AM	3:00:00 AM	Circ./Condition Mud	Circulate hole clean. (Mud foaming, used vacuum truck to aid transfer pump in keeping transfer tank from flooding).
3:00:00 AM	6:00:00 AM	Reaming	POOH & lay down reamer BHA. Tripped out w/o pumps, hole in good condition.
6:00:00 AM	6:15:00 AM	Rig Service	Rig service.
6:15:00 AM	6:30:00 AM	Safety Meetings	Safety meeting prior to running liner.

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear/ -11		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	7				
Ops. Date :	12/2/2003				
Days From Spud :	6				
Day Cost :	$245,695				
Cost To Date :	$897,532				
Est. TD :	966.0				
Depth @ 2400hr :	0.00				
Progress :	0.0				
Day Rot. Hrs. :	0.00				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Steam cleaning rig, begin tear out.
Ops. Forecast : Steam clean rig and rentals, start tearing & loading out rentals

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
11:30:00 AM	Polymer	1070	71	19	16	4.5	6.0	5.0	9.0	5.0	500	0.0	56	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Average Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
SAPP	4	0

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
6:30:00 AM	12:30:00 PM	Run Csg & Cement	Run 47 joints (636.61m) of 291.1mm, 53.75kg/m, L80, Rge slotted liner. make up davis aluminum tapered shoe & run slotted liner to joint #19. Then from jnt #20 blank, #21 slot and alternated in this sequence to joint #32. Then ran 2 blanks #35 slot, #36 & #37 blanks, #38 slot, #39 & #40 blanks, #41 slot, #42 & #43 blanks, #44 slot, #45 #46 & #47 blanks. Instsalled davis type bow centralisers w/ stop collars on jts #46 & #47.
12:30:00 PM	4:00:00 PM	Run Csg & Cement	Make up Baker HTLLP on Joint #47. Start pump & check seals - o.k. Liner weight, 25 DaN up & 4DaN down RIH w/ HWDP to land liner.
4:00:00 PM	4:15:00 PM	Rig Service	Rig service.

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear/ -11		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	7
Ops. Date :	12/2/2003
Days From Spud :	6
Day Cost :	$245,695
Cost To Date :	$897,532
Est. TD :	966.0
Depth @ 2400hr :	0.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Steam cleaning rig, begin tear out.
Ops. Forecast : Steam clean rig and rentals, start tearing & loading out rentals

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
11:30:00 AM	Polymer	1070	71	19	16	4.5	6.0	5.0	9.0	5.0	500	0.0	56	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
4:15:00 PM	4:30:00 PM	Run Csg & Cement	Break circulation @ landing depth of 973m. Drop ball & pump 105 stks. Stop pump @ 6,200 kpa. Pressure bled back to 1,200kpa & held for 2 min. Bleed off pressure. Start pump and pressure up to 8,500kpa to shear running tool.
4:30:00 PM	5:00:00 PM	Circ./Condition Mud	Pick up string to ensure liner hanger was free - string weight up was 11,900 DaN Displace casing over to water.
5:00:00 PM	6:30:00 PM	Tripping	POOH & lay down HWDP. Rig out import running tool.
6:30:00 PM	12:00:00 AM	Rig Up/Tear Down	Rig out & tear down rig Start cleaning rig & tanks. Rig released Dec 2/03 @ 24:00 hrs.

Contractor : Precision Drilling	Rig Manager : Rick Higgins		Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181		Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy			Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear/ -11			Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Wellcore

Casing Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-33-9

Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient Mud Type
Surface	508.0	28.0	28.0	0.0	0.0
Intermediate	374.6	375.0	374.0	0.0	0.0
Liner	**269.0**	**982.0**	**0.0**	**0.0**	**0.0**

Casing

For : Liner | Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight	Grade	Range	Connection	Length	From	To
	Guide Shoe	1	Import	0.0	0.0	0.00				0.0	**0.0**	**0.0**
	Slotted Joint			219.1	198.8	53.57	L80	3		14.3	**-14.3**	**0.0**
				0.0	0.0	0.00				12.9	**-27.2**	**-14.3**
				0.0	0.0	0.00				13.5	**-40.7**	**-27.2**
				0.0	0.0	0.00				13.4	**-54.1**	**-40.7**
				0.0	0.0	0.00				13.6	**-67.7**	**-54.1**
				0.0	0.0	0.00				13.5	**-81.2**	**-67.7**
				0.0	0.0	0.00				13.5	**-94.6**	**-81.2**
				0.0	0.0	0.00				13.7	**-108.3**	**-94.6**
				0.0	0.0	0.00				13.7	**-122.0**	**-108.3**
				0.0	0.0	0.00				13.6	**-135.5**	**-122.0**
				0.0	0.0	0.00				12.5	**-148.0**	**-135.5**
				0.0	0.0	0.00				13.4	**-161.4**	**-148.0**
				0.0	0.0	0.00				13.6	**-174.9**	**-161.4**
				0.0	0.0	0.00				12.5	**-187.4**	**-174.9**
				0.0	0.0	0.00				13.4	**-200.8**	**-187.4**
				0.0	0.0	0.00				13.4	**-214.2**	**-200.8**
				0.0	0.0	0.00				13.5	**-227.7**	**-214.2**

Actual Above KB : 0.00 | Above KB : **636.61**

Accessories

Item	Type	Quantity	Spacing	From	To

Tally Documents

Torque Monitoring : | Torque Company :

Jts. Delivered : | Jts. In Hole : | Jts. Left On Rack : 0

Comments

Wellcore

Casing Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-33-9

Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient Mud Type

Casing

For : Liner | Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight Grade	Range	Connection	Length	From	To
				0.0	0.0	0.00			13.2	**-240.9**	**-227.7**
				0.0	0.0	0.00			13.8	**-254.7**	**-240.9**
	Blank Joint			0.0	0.0	0.00			13.6	**-268.3**	**-254.7**
	Slotted Joint			0.0	0.0	0.00			12.5	**-280.8**	**-268.3**
	Blank Joint			0.0	0.0	0.00			14.4	**-295.2**	**-280.8**
	Slotted Joint			0.0	0.0	0.00			14.0	**-309.2**	**-295.2**
	Blank Joint			0.0	0.0	0.00			12.8	**-322.0**	**-309.2**
	Slotted Joint			0.0	0.0	0.00			13.5	**-335.5**	**-322.0**
	Blank Joint			0.0	0.0	0.00			13.5	**-348.9**	**-335.5**
	Slotted Joint			0.0	0.0	0.00			13.5	**-362.4**	**-348.9**
	Blank Joint			0.0	0.0	0.00			13.8	**-376.2**	**-362.4**
	Slotted Joint			0.0	0.0	0.00			13.3	**-389.4**	**-376.2**
	Blank Joint			0.0	0.0	0.00			13.6	**-403.0**	**-389.4**
	Blank Joint			0.0	0.0	0.00			13.8	**-416.8**	**-403.0**
	Slot Joint			0.0	0.0	0.00			13.5	**-430.3**	**-416.8**
	Blank Joint			0.0	0.0	0.00			14.4	**-444.6**	**-430.3**
	Blank Joint			0.0	0.0	0.00			13.2	**-457.8**	**-444.6**
	Slotted Joint			0.0	0.0	0.00			13.8	**-471.7**	**-457.8**

Actual Above KB : 0.00 | Above KB : **636.61**

Accessories

Item	Type	Quantity	Spacing	From	To

Tally Documents

Torque Monitoring : | Torque Company :

Jts. Delivered : | Jts. In Hole : | Jts. Left On Rack : 0

Comments

Wellcore

Casing Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-33-9

Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient Mud Type

Casing

For : Liner | Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight Grade	Range	Connection	Length	From	To
	Blank Joint			0.0	0.0	0.00			13.9	**-485.5**	**-471.7**
	Blank Joint			0.0	0.0	0.00			14.3	**-499.9**	**-485.5**
	Slotted Joint			0.0	0.0	0.00			13.9	**-513.8**	**-499.9**
	Blank Joint			0.0	0.0	0.00			13.7	**-527.5**	**-513.8**
	Blank Joint			0.0	0.0	0.00			14.5	**-542.0**	**-527.5**
	Slotted Joint			0.0	0.0	0.00			13.8	**-555.8**	**-542.0**
	Blank Joint			0.0	0.0	0.00			13.5	**-569.3**	**-555.8**
	Blank Joint			0.0	0.0	0.00			13.2	**-582.5**	**-569.3**
	Slotted Joint			0.0	0.0	0.00			13.3	**-595.8**	**-582.5**
	Blank Joint			0.0	0.0	0.00			13.5	**-609.3**	**-595.8**
	Blank Joint			0.0	0.0	0.00			13.9	**-623.2**	**-609.3**
	Blank Joint			0.0	0.0	0.00			13.5	**-636.6**	**-623.2**

Actual Above KB : 0.00 | Above KB : **636.61**

Accessories

Item	Type	Quantity	Spacing	From	To

Tally Documents

Torque Monitoring : | Torque Company :

Jts. Delivered : | Jts. In Hole : | Jts. Left On Rack : 0

Comments

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	6
Ops. Date :	12/1/2003
Days From Spud :	5
Day Cost :	$63,080
Cost To Date :	$576,722
Est. TD :	966.0
Depth @ 2400hr :	982.00
Progress :	117.0
Day Rot. Hrs. :	4.75

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Running 219.1mm Liner
Ops. Forecast : Run 219.1 mm production liner, tear out & clean tanks. Steam down rig and tanks.

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition
1P	269	Reed	DSS9	155	11	117.0	4.75	24.6	982.0	607	19.50	31.1	0-0-NO-A--I-NO-TD

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
11:30:00 AM	Polymer	1070	71	19	16	4.5	6.0	5.0	9.0	5.0	500	0.0	56	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%
1P	12.7,12.7,12.7,12.7,12.7,12.	BSF-80	229	152	90	BSF-80	229	152	90	7500	1070	2.13	0	48	17.3

Mud Additivies

Mud Item	Unit	# of
Caustic soda	1	
DSCO Defoan	1	
Defoam X	4	
EMI-695	1	
Fedzan	10	
Poly plus dry	5	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
PDC bit	1	270.0	0.35
Motor	1	203.2	7.34
Float sub	1	170.0	0.72
Non-mag DC	1	170.0	9.28
Hang-off sub	1	168.0	1.70
X/O sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	Rig service.
12:15:00 AM	1:45:00 AM	Drilling	Drill 269 mm horizontal production hole from 865 to 915mMD.
1:45:00 AM	2:45:00 AM	Directional Work	Accumulated directional surveys.
2:45:00 AM	5:30:00 AM	Miscellaneous	Circulate hole & wait on Heatseekers (Lost resistivity/ MGT signal too weak for Sperry-Sun to range against - attempted three shots, Heatseekers pulled resistivity tool OOH [producer well] and changed coil out & Welltec changed relay to tractor).
5:30:00 AM	7:00:00 AM	Tripping	Ten single wiper trip.
7:00:00 AM	7:30:00 AM	Drilling	Drill 269 mm horizontal production hole from 915 to 942mMD.
7:30:00 AM	8:00:00 AM	Directional Work	Accumulated directional surveys.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear/ -11 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	6
Ops. Date :	12/1/2003
Days From Spud :	5
Day Cost :	$63,080
Cost To Date :	$576,722
Est. TD :	966.0
Depth @ 2400hr :	982.00
Progress :	117.0
Day Rot. Hrs. :	4.75

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Running 219.1mm Liner
Ops. Forecast : Run 219.1 mm production liner, tear out & clean tanks. Steam down rig and tanks.

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
11:30:00 AM	Polymer	1070	71	19	16	4.5	6.0	5.0	9.0	5.0	500	0.0	56	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
SAPP	4	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
8:00:00 AM	10:45:00 AM	Drilling	Drill ahead from 942 to 982mMD (FTD).
10:45:00 AM	12:00:00 PM	Directional Work	Accumulated directional surveys.
12:00:00 PM	1:00:00 PM	Circ./Condition Mud	Circulate & condition hole clean.
1:00:00 PM	1:15:00 PM	Rig Service	Rig Service.
1:15:00 PM	6:00:00 PM	Tripping	POOH to lay down directional tools (Backream & pump to intermediate casing shoe).
6:00:00 PM	7:00:00 PM	Directional Work	Lay down directional tools.
7:00:00 PM	8:00:00 PM	Slip/Cut Drilling Line	Slip & cut 12.1 m drill line/ Rig service.
8:00:00 PM	8:15:00 PM	Safety Meetings	Pre-job safety meeting (Handling reamer BHA).
8:15:00 PM	11:45:00 PM	Reaming	RIH w/ reamer BHA.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear/ -11 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	6
Ops. Date :	12/1/2003
Days From Spud :	5
Day Cost :	$63,080
Cost To Date :	$576,722
Est. TD :	966.0
Depth @ 2400hr :	982.00
Progress :	117.0
Day Rot. Hrs. :	4.75

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Running 219.1mm Liner
Ops. Forecast : Run 219.1 mm production liner, tear out & clean tanks. Steam down rig and tanks.

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
11:30:00 AM	Polymer	1070	71	19	16	4.5	6.0	5.0	9.0	5.0	500	0.0	56	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0
Liner	0.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
11:45:00 PM	11:59:59 PM	Rig Service	Rig Service. Visually inspect pipe arm, iron roughneck & top drive.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear/ -11 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	5
Ops. Date :	11/30/200
Days From Spud :	4
Day Cost :	$93,193
Cost To Date :	$513,642
Est. TD :	966.0
Depth @ 2400hr :	865.00
Progress :	490.0
Day Rot. Hrs. :	14.75

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Wiper trip @ 915mMD (10 Joints DP)/ Troubleshoot Heatseekers/ Welltec resistivity problem.
Ops. Forecast : Drill ahead to TD, POOH & L/D directional tools, RIH w/ reamer assembly, POOH, Run liner

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition
1P	269	Reed	DSS9	155	11	490.0	14.75	33.2	490.0	490	14.75	33.2	-------

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
8:00:00 PM	Polymer	1060	42	11	5	1.5	2.0	5.0	9.0	4.0	450	96.0	44	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%
1P	12.7,12.7,12.7,12.7,12.7,12.	BSF-80	229	152	90	BSF-80	229	152	90	8100	1060	2.13	0	48	15.8

Mud Additivies

Mud Item	Unit	# of
Antifoam D47	4	
Antifoam M45	1	
DSCO Defoan	4	
Defoam X	11	
SAPP	10	
Safe-solv	4	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
PDC bit	1	270.0	0.35
Motor	1	203.2	7.34
Float sub	1	170.0	0.72
Non-mag DC	1	170.0	9.28
Hang-off sub	1	168.0	1.70
X/O sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	Rig service.
12:15:00 AM	12:30:00 AM	Directional Work	Continue to P.U. directional tools.
12:30:00 AM	2:30:00 AM	Tripping	RIH (Tag cement top @ 366mMD).
2:30:00 AM	3:00:00 AM	Drill Out	Drill out float & shoe. Drill ahead to 375mMD.
3:00:00 AM	3:30:00 AM	Circ./Condition Mud	Displace hole to polymer mud.
3:30:00 AM	6:00:00 AM	Drilling	Drill 269 mm horizontal production hole to 465mMD. (Install pulldowns @ 379mMD).
6:00:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Rig Service	Rig Service. Visually inpsect pipe arm & top drive

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear/ -16 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Well License :	0296169	Spud : 11/26/2003	GL :	339.70	
AFE # :	054-0303S-I	Amount : $1,411,066	R.R. :	CF :	0.00
Ops. Objective :	TO INJECT IN TO THE MCMURRAY FM			KB :	343.46
AM Ops. :	Wiper trip @ 915mMD (10 Joints DP)/ Troubleshoot Heatseekers/ Welltec resistivity problem.				
Ops. Forecast :	Drill ahead to TD, POOH & L/D directional tools, RIH w/ reamer assembly, POOH, Run liner				

Report # :	5
Ops. Date :	11/30/200
Days From Spud :	4
Day Cost :	$93,193
Cost To Date :	$513,642
Est. TD :	966.0
Depth @ 2400hr :	865.00
Progress :	490.0
Day Rot. Hrs. :	14.75

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
8:00:00 PM	Polymer	1060	42	11	5	1.5	2.0	5.0	9.0	4.0	450	96.0	44	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Sodium bicarb	2	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm BHA : 26.38 m
DC OD : 0.00 mm String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1910	1025
Centrifuge	Swaco	1910	1025
Desander	Swaco	1225	1060

Shaker : Brandt Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
8:15:00 AM	2:45:00 PM	Drilling	Drill ahead to 695mMD.
2:45:00 PM	4:00:00 PM	Deviation Survey	Accumulated directional surveys.
4:00:00 PM	4:15:00 PM	Rig Service	Rig Service. Visually inpsect iron roughneck.
4:15:00 PM	10:00:00 PM	Drilling	Drill ahead to 865mMD.
10:00:00 PM	11:59:59 PM	Deviation Survey	Accumulated directional surveys.

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear/ -16		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Wellcore

Daily Geology Operations

Project : Joslyn Creek Phase 1	Well : DCEL 1I1 JOSLYN CREI	Main Hole : 103/03-33-095-12-W4M		Date :	11/30/2003
Well Type : Steam Injector	Surface : 10-33-095-12-W4M	AFE # : 054-0303S-I		Report # :	4
Objective : TO INJECT INTO THE MCMURRAY FM		AFE $:	$1,411,066	Day Cost :	$93,193
	Spud Date :	DFS :	0	Cost To Date :	$513,642

MD :	0.00	TVD :	0.00	PD MD :	0.00	24 Hr. Progress :	0
Current FM :		ROP :	0.00	Sliding :	0.00	Rotating :	0

AM Operations :

24 Hr. Summary : begin drilling out at 3:30 am. first sample at 4:21. first samples are fine grained with ~20% coal, rare mica, pyrite and multi-colored chert.

24 Hr Forecast :

Contractor : Rig : Mud : Directional Co. : MWD :

Mechanical Hole Conditions Comments :

	Today		Yesterday			Today		Yesterday	
	Value	Comment	Value	Comment		Value	Comment	Value	Comment
Drag Rot. Up	0.0		0.0		Drag Rot. Down	0.0		0.0	
Drag Slide Up	0.0		0.0		Drag Slide Down	0.0		0.0	
Max. Allow Ten	0.0		0.0		Torque	0.0		0.0	
String Weight	0.0		0.0		Max. Allow Torque (90%)	0.0		0.0	

Mud

Type :	
Density :	0
Viscosity :	0
WL :	0.00
pH :	0.00

Bit Run Data

				Daily						Cumulative			
Bit #	Size	Mfg	Model	Progress	Hours	ROP	RPM	WOB	Depth Out	Depths	Hours	ROP	Condition

Remarks

Geologist : Drilling Foreman :

Geologist Phone : Drilling Foreman Phone :

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	4
Ops. Date :	11/29/200
Days From Spud :	3
Day Cost :	$116,070
Cost To Date :	$420,449
Est. TD :	966.0
Depth @ 2400hr :	375.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drilling 269 mm horizontal hole @ 421mMD.
Ops. Forecast : Drill 269 mm horizontal production hole.

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
6:15:00 AM	Polymer	1080	47	17	7	4.0	7.0	6.0	10.0	5.5	450	0.0	50	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Defoam X	11	
Cellophane		
Antifoam M45	1	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
PDC bit	1	270.0	0.35
Motor	1	203.2	7.34
Float sub	1	170.0	0.72
Non-mag DC	1	170.0	9.28
Hang-off sub	1	168.0	1.70
X/O sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow	
Centrifuge	Swaco		0	0
Centrifuge	Swaco		0	0
Desander	Swaco		0	0

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 23.99

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	
12:15:00 AM	5:45:00 AM	Run Csg & Cement	Continue to run intermediate casing: 375.8 m (5 jts. 69.9 kg/ m & 27 jts. 89.27 kg/ m), L80, U.S. Steel. Casing landed @ 374.0mMD. (Had to align each joint in order to make-up connections properly; installed pulldowns @ 295mMD.)
5:45:40 AM	8:00:00 AM	Circ./Condition Mud	Circulate & condition hole/ W.O. cement plug (wrong size plug brought out by cementers).
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	1:00:00 PM	Circ./Condition Mud	Circulate & condition hole; decrease visc. to 47 sec/ l, LSRV to 4700 cP./ W.O. cement plug.
1:00:00 PM	1:15:00 PM	Safety Meetings	Pre-job safety meeting w/ Sanjel cementers.

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear -18		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	4				
Ops. Date :	11/29/200				
Days From Spud :	3				
Day Cost :	$116,070				
Cost To Date :	$420,449				
Est. TD :	966.0				
Depth @ 2400hr :	375.00				
Progress :	0.0				
Day Rot. Hrs. :	0.00				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drilling 269 mm horizontal hole @ 421mMD.
Ops. Forecast : Drill 269 mm horizontal production hole.

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
6:15:00 AM	Polymer	1080	47	17	7	4.0	7.0	6.0	10.0	5.5	450	0.0	50	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow	
Centrifuge	Swaco		0	0
Centrifuge	Swaco		0	0
Desander	Swaco		0	0

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 23.99

Time From	Time To	Time Category	Remarks
1:15:00 PM	2:30:00 PM	Run Csg & Cement	Rig to & cement intermediate casing. Pump 5.0 m3 H2O ahead. PT lines to 19.0 MPa. Pump 1.0 m3 scavenger @ 1300 kg/ m3. Pump 27.0 m3 (36.0 tonnes) Thermal 40 + 2.0% CaCl2 + 0.25% CFL-3 + 1.0% FWCA-H @ 1885 kg/ m3. Displace casing w/ 21.65 m3 H2O. Plug down @ 1412hrs. Nov. 29/ 03. Float & annulus held okay. Had 4.0 m3 good cement returns. Plug @ 367.3mMD.
2:30:00 PM	6:30:00 PM	WOC	WOC.
6:30:00 PM	8:00:00 PM	Miscellaneous	Cut conductor & casing, weld conductor back together & install flow line.
8:00:00 PM	8:15:00 PM	Safety Meetings	Pre-job safety meeting w/ Sperry-Sun - P.U. directional tools.
8:15:00 PM	8:30:00 PM	Rig Service	
8:30:00 PM	9:30:00 PM	Miscellaneous	Change out Ketch pump (for transfer tank).

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear -18		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	4				
Ops. Date :	11/29/200				
Days From Spud :	3				
Day Cost :	$116,070				
Cost To Date :	$420,449				
Est. TD :	966.0				
Depth @ 2400hr :	375.00				
Progress :	0.0				
Day Rot. Hrs. :	0.00				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drilling 269 mm horizontal hole @ 421mMD.
Ops. Forecast : Drill 269 mm horizontal production hole.

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation
6:15:00 AM	Polymer	1080	47	17	7	4.0	7.0	6.0	10.0	5.5	450	0.0	50	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 26.38 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow	
Centrifuge	Swaco	0	0	
Centrifuge	Swaco	0	0	
Desander	Swaco	0	0	

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 23.99

Time From	Time To	Time Category	Remarks
9:30:00 PM	11:59:59 PM	Directional Work	P.U. directional tools.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -18 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Casing Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-33-9

Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient Mud Type
Surface	508.0	28.0	28.0	0.0	0.0
Intermediate	**374.6**	**375.0**	**374.0**	**0.0**	**0.0**

Casing For : Intermediate Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight Grade	Range	Connection	Length	From	To
				0.0	0.0	0.00			0.0	**374.0**	**374.0**
1	Shoe Joint	1	U.S. Steel	298.5	273.6	89.27	L80	3	7.5	**366.5**	**374.0**
2	Casing			0.0	0.0	0.00			10.5	**355.9**	**366.5**
3	Casing			0.0	0.0	0.00			10.7	**345.3**	**355.9**
4	Casing			0.0	0.0	0.00			10.5	**334.8**	**345.3**
5	Casing			0.0	0.0	0.00			10.7	**324.1**	**334.8**
6	Casing			0.0	0.0	0.00			10.7	**313.4**	**324.1**
7	Casing			0.0	0.0	0.00			12.3	**301.1**	**313.4**
8	Casing			0.0	0.0	0.00			11.9	**289.2**	**301.1**
9	Casing			0.0	0.0	0.00			12.6	**276.6**	**289.2**
10	Casing			0.0	0.0	0.00			10.3	**266.3**	**276.6**
11	Casing			0.0	0.0	0.00			13.0	**253.3**	**266.3**
12	Casing			0.0	0.0	0.00			12.8	**240.6**	**253.3**
13	Casing			0.0	0.0	0.00			11.8	**228.8**	**240.6**
14	Casing			0.0	0.0	0.00			12.0	**216.8**	**228.8**
15	Casing			0.0	0.0	0.00			11.9	**204.9**	**216.8**
16	Casing			0.0	0.0	0.00			12.7	**192.2**	**204.9**
17	Casing			0.0	0.0	0.00			11.8	**180.4**	**192.2**

Actual Above KB : 0.00 Above KB : **1.87**

Accessories

Item	Type	Quantity	Spacing	From	To
Semi-rigid centralizer		1	2.0	373.0	373.0
Rigid centralizer		3	6.0	367.0	356.9
Semi-rigid centralizer		22	12.5	356.9	93.5
Semi-rigid centralizer		4	25.0	93.5	29.8
Rigid centralizer		3	0.0	29.8	0.0

Tally Documents

Torque Monitoring : Torque Company : Hunting

Jts. Delivered : 35 Jts. In Hole : 32 Jts. Left On Rack : 3

Comments

Wellcore

Casing Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-33-9

Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient Mud Type

Casing

For : Intermediate | Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight Grade	Range	Connection	Length	From	To
18	Casing			0.0	0.0	0.00			12.8	**167.7**	**180.4**
19	Casing			0.0	0.0	0.00			12.4	**155.2**	**167.7**
20	Casing			0.0	0.0	0.00			12.8	**142.4**	**155.2**
21	Casing			0.0	0.0	0.00			12.7	**129.8**	**142.4**
22	Casing			0.0	0.0	0.00			12.8	**117.0**	**129.8**
23	Casing			0.0	0.0	0.00			12.5	**104.5**	**117.0**
24	Casing			0.0	0.0	0.00			12.0	**92.5**	**104.5**
25	Casing			0.0	0.0	0.00			12.6	**79.9**	**92.5**
26	Casing			0.0	0.0	0.00			12.5	**67.4**	**79.9**
27	Casing			0.0	0.0	0.00			12.8	**54.6**	**67.4**
28	Casing			0.0	0.0	0.00			12.9	**41.7**	**54.6**
29	Casing			0.0	0.0	0.00			12.9	**28.8**	**41.7**
30	Casing			0.0	0.0	0.00			12.4	**16.4**	**28.8**
31	Casing			0.0	0.0	0.00			12.0	**4.4**	**16.4**
32	Casing			0.0	0.0	0.00			0.0	**4.4**	**4.4**
33	Casing			0.0	0.0	0.00			0.0	**4.4**	**4.4**
34	Casing			0.0	0.0	0.00			6.3	**-1.9**	**4.4**

Actual Above KB : 0.00 | Above KB : **1.87**

Accessories

Item	Type	Quantity	Spacing	From	To

Tally Documents

Torque Monitoring : | Torque Company : Hunting

Jts. Delivered : 35 | Jts. In Hole : 32 | Jts. Left On Rack : 3

Comments

Wellcore

Cementing Details

Project : Joslyn Creek Phase 1

Well Type : Steam Injector

Well Name : DCEL 1I1 JOSLYN CREEK 3-33

Main Hole : 103/03-33-095-12-W4M

Hole

Section	Hole Depth	Hole Size	Casing OD	Casing Set At (MD)	Casing Set At (TVD)
Surface	28.0	508.0	406.40	28.0	0.0
Intermediate	**375.0**	**374.6**	**42.24**	**374.0**	**0.0**

Cement

Cement Job Date : 11/29/2003

Sequence	Blend	Additives	Volume	Density	Weight	Interval Top	Interval Bottom
Scavenger	Thermal 40	2.0% CaCl2 + 0.25% CFL-3 + 1.0% FWCA-H	1.00	1300.0	0	0.0	0.0
Fill	Thermal 40	2.0% CaCl2 + 0.25% CFL-3 + 1.0% FWCA-H	27.00	1885.0	0	0.0	375.0

Total Volume : 28.00 m3

	Yes	No
Reciprocated :	X	
Rotated Casing :	X	
Bumped Plugs :	X	
Floats Held :	X	
Annulus Held :	X	
Held Back Pressure :		X
Fluid Returns :	X	
Cement Returns :	X	
Loss of Circulation :		X

Cement Return Volume : 4.00

Remarks

Rig to & cement intermediate casing. Pump 5.0 m3 H2O ahead (red dye & celloflake mixed in as marker). Pressure test lines to 19.0 MPa. Pump 1.0 m3 scavenger @ 1300 kg/ m3. Pump 27.0 m3 (36.0 tonnes) Thermal 40 + 2.0% CaCl2 + 0.25% CFL-3 + 1.0% FWCA-H @ 1885 kg/ m3. Displace casing w/ 21.65 m3 H2O. Plug down @ 1412hrs. Nov. 29/ 03. Float & annulus held okay. Had 4.0 m3 good cement returns. Casing landed @ 374.0mMD. Float @ 367.3mMD.

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	3
Ops. Date :	11/28/200
Days From Spud :	2
Day Cost :	$133,668
Cost To Date :	$304,379
Est. TD :	966.0
Depth @ 2400hr :	375.00
Progress :	347.0
Day Rot. Hrs. :	21.00

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Wait on 298mm wiper plug
Ops. Forecast : Cement intermediate casing, WOC, P/U BHA & Drill out, drill 269mm hztl hole

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition
1I	375	RR	S11J	195	10	347.0	21.00	16.5	375.0	622	34.50	18.0	-------

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
7:15:00 AM	Polymer	1080	58	20	12	4.0	6.5	0.0	0.0	5.0	0	0.0	50	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%
1I	17.5,17.5,17.5	BSF-80(	229	152	110	BSF-80	229	152	110	7200	1080	2.61	27	0	30.1

Mud Additivies

Mud Item	Unit	# of
Safe-solv	4	
Fedzan		
Poly plus dry		
Safe surf		

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
Bit	1	374.6	0.35
Motor	1	203.2	7.34
X/O Sub	1	203.2	0.44
Float sub	1	203.0	0.90
Non-mag DC	3	201.0	13.95
Hang-off sub	1	207.0	1.91
Non-mag DC	2	203.0	18.46
X/O sub	1	200.0	0.43
Jars	1	168.0	6.35

DP OD : 0.00 mm | BHA : 50.13 m
DC OD : 127.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	Rig Service
12:15:00 AM	6:45:00 AM	Drilling	Drill 374.6 mm intermediate hole from 303 to 375mMD. (Problems w/ Welltec tractor).
6:45:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Circ./Condition Mud	Circulate & condition hole/ Rig Service.
8:15:00 AM	12:30:00 PM	Tripping	Wiper trip to SC shoe (Ream to Sc & back to bottom).
12:30:00 PM	12:45:00 PM	Rig Service	Rig service Visually inspect pipe arm, iron roughneck and top drive - o.k.
12:45:00 PM	1:30:00 PM	Circ./Condition Mud	Condition mud & circulate hole clean prior to running casing.
1:30:00 PM	4:00:00 PM	Tripping	POOH to lay down directional tools & run casing.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -16 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	3
Ops. Date :	11/28/200
Days From Spud :	2
Day Cost :	$133,668
Cost To Date :	$304,379
Est. TD :	966.0
Depth @ 2400hr :	375.00
Progress :	347.0
Day Rot. Hrs. :	21.00

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Wait on 298mm wiper plug
Ops. Forecast : Cement intermediate casing, WOC, P/U BHA & Drill out, drill 269mm hztl hole

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Mud Loss Oil %	Mud Loss Volume	Formation
7:15:00 AM	Polymer	1080	58	20	12	4.0	6.5	0.0	0.0	5.0	0	0.0	50	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Average Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm | BHA : 50.13 m
DC OD : 127.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	374.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
4:00:00 PM	6:00:00 PM	Directional Work	Lay down directional tools.
6:00:00 PM	6:15:00 PM	Safety Meetings	Pre-job safety meeting w/ Hunting casing hand.
6:15:00 PM	11:59:59 PM	Run Csg & Cement	Rig to & run 298.5 mm intermediate casing. (Circulate out mud ring @ SC shoe/ clean flowline.)

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -16 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1
Well Type : Steam Injector
Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Main Hole : 103/03-33-095-12-W4M

Report # :	2
Ops. Date :	11/27/200
Days From Spud :	1
Day Cost :	$0
Cost To Date :	$0
Est. TD :	966.0
Depth @ 2400hr :	0.00
Progress :	275.0
Day Rot. Hrs. :	13.50

Well License : 0296169
AFE # : 054-0303S-I Amount : $1,411,066
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM
AM Ops. : Drilling 374.6 mm intermediate hole @ 357mMD.
Ops. Forecast :

Spud : 11/26/2003
R.R. :

GL : 339.70
CF : 0.00
KB : 343.46

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition
1I	375	RR	S11J	195	9	275.0	13.50	20.4	303.0	275	13.50	20.4	-------

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:30:00 PM	Polymer	1100	40	11	5	2.5	3.0	0.0	10.0	6.0	600	0.0	29	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %
1I	17.5,17.5,17.5	BSF-80I	0	0	0		0	0	0	0	0	0.00	0	0	0.0

Mud Additivies

Mud Item	Unit	# of
Caustic soda	2	
SAPP	11	
Sawdust	15	
Citric acid	2	
Sodium bicarb	2	
Safe-solv	2	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
32.13	43.40	190.00
41.09	45.30	189.80
49.85	47.60	189.60
58.69	50.90	189.90
68.17	54.30	190.50
77.10	56.90	191.00

BHA

Item	# Of	O.D.	Length
Bit	1	374.6	0.35
Motor	1	203.2	7.34
X/O Sub	1	203.2	0.44
Float sub	1	203.0	0.90
Non-mag DC	3	201.0	13.95
Hang-off sub	1	207.0	1.91
Non-mag DC	2	203.0	18.46
X/O sub	1	200.0	0.43
Jars	1	168.0	6.35

DP OD : 0.00 mm
DC OD : 127.00 mm
BHA : 50.13 m
String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	375.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt
Screens : 20

Time Distribution

Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	1:15:00 AM	Miscellaneous	Continue to weld casing, install belly pan & flow line.
1:15:00 AM	1:30:00 AM	Rig Service	Rig service
1:30:00 AM	5:00:00 AM	Directional Work	P.U. directional tools 9Change offset pads).
5:00:00 AM	6:15:00 AM	Drill Out	Drill out cement. (Tag cement @ 24mMD).
6:15:00 AM	7:30:00 AM	Drilling	Drill 374.6 mm intermediate hole from 28 to 67mMD.
7:30:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Rig Service	Rig Service
8:15:00 AM	12:00:00 PM	Drilling	Drill intermediate hole from 67 to 104mMD.
12:00:00 PM	1:45:00 PM	Circ./Condition Mud	Displace hole to polymer mud & clean transfer tank.

Contractor : Precision Drilling
Rig : Precision #297
Lease : Good condition/ Icy
Weather : Clear -12

Rig Manager : Rick Higgins
Rig Manager Phone : 403 850 7181

Geologist : Dane Bridge
Engineer : Rodney Tetreault
Superintendent : Dave Loxam
Supervisor : Rodney Tetrault

Phone # : 403 540 8729
Phone # : 403 804 6953
Phone # : 403 538 4590
Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	2				
Ops. Date :	11/27/200				
Days From Spud :	1				
Day Cost :	$0				
Cost To Date :	$0				
Est. TD :	966.0				
Depth @ 2400hr :	0.00				
Progress :	275.0				
Day Rot. Hrs. :	13.50				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drilling 374.6 mm intermediate hole @ 357mMD.
Ops. Forecast :

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
10:30:00 PM	Polymer	1100	40	11	5	2.5	3.0	0.0	10.0	6.0	600	0.0	29	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%

Mud Additivies

Mud Item	Unit	# of
Defoam X	5	
Antifoam D47	2	
Antifoam M45	2	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
86.80	59.40	191.90
95.87	61.70	191.20
104.75	64.10	189.50
113.60	65.90	188.60
122.44	68.90	188.80
131.86	72.60	189.50

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm | BHA : 50.13 m
DC OD : 127.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	375.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
1:45:00 PM	3:15:00 PM	Drilling	Drill intermediate hole from 104 to 132mMD.
3:15:00 PM	4:00:00 PM	Deviation Survey	Accumulated directional surveys.
4:00:00 PM	4:15:00 PM	Rig Service	Rig Service.
4:15:00 PM	11:15:00 PM	Drilling	Drill intermediate hole from 132 to 303mMD.
11:15:00 PM	11:59:59 PM	Deviation Survey	Accumulated directional surveys. (Problems w/ Welltec tractor [hydraulics- movement]).

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -12 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	2				
Ops. Date :	11/27/200				
Days From Spud :	1				
Day Cost :	$0				
Cost To Date :	$0				
Est. TD :	966.0				
Depth @ 2400hr :	0.00				
Progress :	275.0				
Day Rot. Hrs. :	13.50				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drilling 374.6 mm intermediate hole @ 357mMD.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation
10:30:00 PM	Polymer	1100	40	11	5	2.5	3.0	0.0	10.0	6.0	600	0.0	29	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
140.82	75.70	190.80
150.32	78.20	191.90
159.23	81.00	191.90
168.31	82.40	192.10
177.28	84.40	192.80
186.60	85.00	194.10

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm | BHA : 50.13 m
DC OD : 127.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	375.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	1:15:00 AM	Miscellaneous	Continue to weld casing, install belly pan & flow line.
1:15:00 AM	1:30:00 AM	Rig Service	Rig service
1:30:00 AM	5:00:00 AM	Directional Work	P.U. directional tools 9Change offset pads).
5:00:00 AM	6:15:00 AM	Drill Out	Drill out cement. (Tag cement @ 24mMD).
6:15:00 AM	7:30:00 AM	Drilling	Drill 374.6 mm intermediate hole from 28 to 67mMD.
7:30:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Rig Service	Rig Service
8:15:00 AM	12:00:00 PM	Drilling	Drill intermediate hole from 67 to 104mMD.
12:00:00 PM	1:45:00 PM	Circ./Condition Mud	Displace hole to polymer mud & clean transfer tank.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -12 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Well License :	0296169	Spud : 11/26/2003	GL :	339.70	
AFE # :	054-0303S-I	Amount : $1,411,066	R.R. :	CF :	0.00
Ops. Objective :	TO INJECT IN TO THE MCMURRAY FM			KB :	343.46
AM Ops. :	Drilling 374.6 mm intermediate hole @ 357mMD.				
Ops. Forecast :					

Report # :	2
Ops. Date :	11/27/200
Days From Spud :	1
Day Cost :	$0
Cost To Date :	$0
Est. TD :	966.0
Depth @ 2400hr :	0.00
Progress :	275.0
Day Rot. Hrs. :	13.50

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:30:00 PM	Polymer	1100	40	11	5	2.5	3.0	0.0	10.0	6.0	600	0.0	29	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
195.69	85.40	194.70
205.12	85.30	194.60
214.20	84.90	194.60
223.02	85.50	194.90
231.98	86.30	194.60
241.28	86.90	194.10

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm BHA : 50.13 m
DC OD : 127.00 mm String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	375.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
1:45:00 PM	3:15:00 PM	Drilling	Drill intermediate hole from 104 to 132mMD.
3:15:00 PM	4:00:00 PM	Deviation Survey	Accumulated directional surveys.
4:00:00 PM	4:15:00 PM	Rig Service	Rig Service.
4:15:00 PM	11:15:00 PM	Drilling	Drill intermediate hole from 132 to 303mMD.
11:15:00 PM	11:59:59 PM	Deviation Survey	Accumulated directional surveys. (Problems w/ Welltec tractor [hydraulics- movement]).

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear -12		Supervisor : Rodney Tetrault	Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	2
Ops. Date :	11/27/200
Days From Spud :	1
Day Cost :	$0
Cost To Date :	$0
Est. TD :	966.0
Depth @ 2400hr :	0.00
Progress :	275.0
Day Rot. Hrs. :	13.50

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S-I | Amount : $1,411,066 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drilling 374.6 mm intermediate hole @ 357mMD.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:30:00 PM	Polymer	1100	40	11	5	2.5	3.0	0.0	10.0	6.0	600	0.0	29	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additives

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
250.05	86.20	194.30
258.96	85.40	194.10
267.72	86.40	193.50
276.82	86.90	194.00

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm | BHA : 50.13 m
DC OD : 127.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0
Intermediate	375.0

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	2010	1030
Centrifuge	Swaco	2010	1030
Desander	Swaco	1385	1100

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	1:15:00 AM	Miscellaneous	Continue to weld casing, install belly pan & flow line.
1:15:00 AM	1:30:00 AM	Rig Service	Rig service
1:30:00 AM	5:00:00 AM	Directional Work	P.U. directional tools 9Change offset pads).
5:00:00 AM	6:15:00 AM	Drill Out	Drill out cement. (Tag cement @ 24mMD).
6:15:00 AM	7:30:00 AM	Drilling	Drill 374.6 mm intermediate hole from 28 to 67mMD.
7:30:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Rig Service	Rig Service
8:15:00 AM	12:00:00 PM	Drilling	Drill intermediate hole from 67 to 104mMD.
12:00:00 PM	1:45:00 PM	Circ./Condition Mud	Displace hole to polymer mud & clean transfer tank.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -12 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Wellcore

Daily Geology Operations

Project : Joslyn Creek Phase 1	Well : DCEL 1I1 JOSLYN CREI	Main Hole : 103/03-33-095-12-W4M		Date :	11/28/2003
Well Type : Steam Injector	Surface : 10-33-095-12-W4M	AFE # : 054-0303S-I		Report # :	2
Objective : TO INJECT INTO THE MCMURRAY FM		AFE $:	$1,411,066	Day Cost :	$133,668
	Spud Date :	DFS :	0	Cost To Date :	$304,379

MD :	0.00	TVD :	0.00	PD MD :	0.00	24 Hr. Progress :	0
Current FM :		ROP :	0.00	Sliding :	0.00	Rotating :	0

AM Operations :

24 Hr. Summary : continue drilling intermediate section. samples are very bitumen rich with little sand. difficult to clean. a fair amount of clearwater/wabiskaw (contain glauconite) siltstones present in almost all samples, along with rare to trace pyrite. many samples also have rare to trace mica and coal. finish drilling intermediate section at 8am. landed at 375m MD. POOH, run casing.

24 Hr Forecast :

Contractor : Rig : Mud : Directional Co. : MWD :

Mechanical Hole Conditions Comments :

	Today Value	Today Comment	Yesterday Value	Yesterday Comment		Today Value	Today Comment	Yesterday Value	Yesterday Comment
Drag Rot. Up	0.0		0.0		Drag Rot. Down	0.0		0.0	
Drag Slide Up	0.0		0.0		Drag Slide Down	0.0		0.0	
Max. Allow Ten	0.0		0.0		Torque	0.0		0.0	
String Weight	0.0		0.0		Max. Allow Torque (90%)	0.0		0.0	

Mud

Type :	
Density :	0
Viscosity :	0
WL :	0.00
pH :	0.00

Bit Run Data

				Daily						Cumulative			
Bit #	Size	Mfg	Model	Progress	Hours	ROP	RPM	WOB	Depth Out	Depths	Hours	ROP	Condition

Remarks

Geologist : Drilling Foreman :

Geologist Phone : Drilling Foreman Phone :

Wellcore

Daily Geology Operations

Project :Joslyn Creek Phase 1	Well :DCEL 1I1 JOSLYN CREI	Main Hole :103/03-33-095-12-W4M		Date :11/27/2003	
Well Type :Steam Injector	Surface :10-33-095-12-W4M	AFE # :054-0303S-I		Report # :	1
Objective :TO INJECT INTO THE MCMURRAY FM		AFE $:	$1,411,066	Day Cost :	$0
	Spud Date :	DFS :	0	Cost To Date :	$0

MD :	0.00	TVD :	0.00	PD MD :	0.00	24 Hr. Progress :	0
Current FM :		ROP :	0.00	Sliding :	0.00	Rotating :	0

AM Operations :

24 Hr. Summary :drill out of surface casing at 5:00. first sample at 50m at 7:35. samples every ten metres.

24 Hr Forecast :

Contractor : Rig : Mud : Directional Co. : MWD :

Mechanical Hole Conditions Comments :

	Today		Yesterday			Today		Yesterday	
	Value	Comment	Value	Comment		Value	Comment	Value	Comment
Drag Rot. Up	0.0		0.0		Drag Rot. Down	0.0		0.0	
Drag Slide Up	0.0		0.0		Drag Slide Down	0.0		0.0	
Max. Allow Ten	0.0		0.0		Torque	0.0		0.0	
String Weight	0.0		0.0		Max. Allow Torque (90%)	0.0		0.0	

Mud

Type :	
Density :	0
Viscosity :	0
WL :	0.00
pH :	0.00

Bit Run Data

				Daily						Cumulative			
Bit #	Size	Mfg	Model	Progress	Hours	ROP	RPM	WOB	Depth Out	Depths	Hours	ROP	Condition

Remarks

Geologist : Drilling Foreman :

Geologist Phone : Drilling Foreman Phone :

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	1				
Ops. Date :	11/26/200				
Days From Spud :	0				
Day Cost :	$0				
Cost To Date :	$1,069,559				
Est. TD :	966.0				
Depth @ 2400hr :	28.00				
Progress :	28.0				
Day Rot. Hrs. :	3.00				
Well License :	0296169	Spud : 11/26/2003	GL :	339.70	
AFE # :	054-0303S	Amount : $2,603,270	R.R. :	CF :	0.00
Ops. Objective :	TO INJECT IN TO THE MCMURRAY FM			KB :	343.46
AM Ops. :	Drill out surface casing shoe.				
Ops. Forecast :	Drill Int hole				

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition
1S	508	Hughes	GTX11H	100	4	28.0	3.00	9.3	28.0	28	3.00	9.3	-------

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation
10:00:00 AM	Gel slurry	1080	40	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %
1S	22.2,22.2,22.2	BSF-80(	229	152	100		0	0	0	0	1080	1.18	0	6	0.0

Mud Additivies

Mud Item	Unit	# of
Caustic soda	1	
Gel	11	
Defoam X	1	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
Bit	1	508.0	0.40
Reamer Stab	1	508.0	2.04
X/ O Sub	1	203.0	0.43
X/O Sub	1	200.0	0.61
2 DC	2	205.0	19.08
X/O Sub	1	173.0	0.41
X/O Sub	1	165.0	0.34

DP OD : 127.00 mm BHA : 23.31 m
DC OD : 0.00 mm String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : Brandt Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	4:00:00 AM	Rig Up/Tear Down	Rig up to spud @ 45 degrees.
4:00:00 AM	4:15:00 AM	Rig Service	
4:15:00 AM	6:15:00 AM	Directional Work	P.U. 508 mm surface bit & BHA.
6:15:00 AM	6:30:00 AM	Safety Meetings	Pre-spud safety meeting.
6:30:00 AM	7:00:00 AM	Rig Repair	Thaw out frozen line between mud pumps (ice plug).
7:00:00 AM	8:00:00 AM	Drilling	Spud 508 mm surface hole & drill ahead to 12mMD.
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	10:15:00 AM	Drilling	Drill 508 mm surface hole from 12 to 28mMD. Hit boulder @ 25mMD.
10:15:00 AM	10:45:00 AM	Circ./Condition Mud	Circulate & condition hole.

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetrault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear -12		Supervisor : Rodney Tetrault	Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	1				
Ops. Date :	11/26/200				
Days From Spud :	0				
Day Cost :	$0				
Cost To Date :	$1,069,559				
Est. TD :	966.0				
Depth @ 2400hr :	28.00				
Progress :	28.0				
Day Rot. Hrs. :	3.00				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drill out surface casing shoe.
Ops. Forecast : Drill Int hole

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation
10:00:00 AM	Gel slurry	1080	40	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 23.31 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
10:45:00 AM	12:15:00 PM	Tripping	POOH to run surface casing.
12:15:00 PM	12:30:00 PM	Safety Meetings	Pre-job safety meeting w/ Hunting hand.
12:30:00 PM	3:45:00 PM	Run Csg & Cement	Rig to & run 28.26 m, 2 jts, 406.4 mm,96.71 kg/ m, H40, BT&C Lonestar surface casing. Casing landed @ 28.0 mMD.
3:45:00 PM	4:00:00 PM	Safety Meetings	Pre-job safety meeting w/ Sanjel cementers.
4:00:00 PM	5:00:00 PM	Run Csg & Cement	Rig to & cement surface casing. Pump 3.0 m3 H2O ahead. Pressure test lines to 14MPa. Pump 10.0 tonnes (7.5 m3) Thermal 40F + 3.0% CaCl2. Plug down @ 1641hrs. Nov. 26/ 03. Float & annulus held okay. Had 4.0 m3 good cement returns. Plug @ 27.86mMD.
5:00:00 PM	5:15:00 PM	Rig Service	
5:15:00 PM	9:45:00 PM	WOC	

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -12 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1I1 JOSLYN CREEK 3-3
Well Type : Steam Injector | Main Hole : 103/03-33-095-12-W4M

Report # :	1				
Ops. Date :	11/26/200				
Days From Spud :	0				
Day Cost :	$0				
Cost To Date :	$1,069,559				
Est. TD :	966.0				
Depth @ 2400hr :	28.00				
Progress :	28.0				
Day Rot. Hrs. :	3.00				

Well License : 0296169 | Spud : 11/26/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : | CF : 0.00
Ops. Objective : TO INJECT IN TO THE MCMURRAY FM | KB : 343.46
AM Ops. : Drill out surface casing shoe.
Ops. Forecast : Drill Int hole

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:00:00 AM	Gel slurry	1080	40	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 23.31 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	28.0

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
9:45:00 PM	11:59:59 PM	Miscellaneous	Cut 406.4 mm casing. Install belly pan. Weld 406.4 mm casing to cut-off casing.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -12 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Wellcore

Casing Report

Project : Joslyn Creek Phase 1
Well Type : Steam Injector

Well Name : DCEL 1I1 JOSLYN CREEK 3-33-9
Main Hole : 103/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient Mud Type
Surface	508.0	28.0	28.0	0.0	0.0

Casing For : Surface Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight Grade	Range	Connection	Length	From	To
1	Float Shoe	1		406.4	0.0	0.00		Butt	0.4	**27.6**	**28.0**
2	Casing	2	Lonestar	406.4	387.4	96.73 H40	3	Butt	27.9	**-0.3**	**27.6**

Actual Above KB : 0.00 Above KB : **0.26**

Accessories

Item	Type	Quantity	Spacing	From	To

Tally Documents

Torque Monitoring : Yes Torque Company : Hunting

Jts. Delivered : 3 Jts. In Hole : 2 Jts. Left On Rack : 1

Comments

Unable to make up casing joints @ 45 degree angle. Had to weld casing joints together.

Wellcore

Cementing Details

Project : Joslyn Creek Phase 1

Well Type : Steam Injector

Well Name : DCEL 1I1 JOSLYN CREEK 3-33

Main Hole : 103/03-33-095-12-W4M

Hole

Section	Hole Depth	Hole Size	Casing OD	Casing Set At (MD)	Casing Set At (TVD)
Surface	28.0	508.0	406.40	28.0	0.0

Cement

Cement Job Date : 11/26/2003

Sequence	Blend	Additives	Volume	Density	Weight	Interval Top	Interval Bottom
	10.0 tonnes Thermal 40F	3.0 % CaCl2	7.50	1885.0	0	0.0	28.0

Total Volume : 7.50 m3

	Yes	No
Reciprocated :	X	
Rotated Casing :		X
Bumped Plugs :	X	
Floats Held :	X	
Annulus Held :	X	
Held Back Pressure :		
Fluid Returns :	X	
Cement Returns :	X	
Loss of Circulation :		X

Cement Return Volume : 4.00

Remarks

Rig to & pump 3.0 m3 H2O ahead. Pressure test lines to 14MPa. Pump 10.0 tonnes (7.5 m3) Thermal 40F cement + 3.0% CaCl2. Displace casing w/ 3.29 m3 H2O. Plug down @ 1641hrs. Nov. 26/ 03. Float & annulus held okay. Had 4.0 m3 good cement returns.

APPENDIX 1/B:

Producer well

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	1
Ops. Date :	17/11/200
Days From Spud :	0
Day Cost :	$56,994
Cost To Date :	$96,272
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Loading out rig from CNRL Locaiton
Ops. Forecast : MIRU on Joslyn 1P 3-33-95-12w4

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm | BHA : 0.00 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : | Screens :

Time Distribution Total Hours : 13.00

Time From	Time To	Time Category	Remarks
7:00:00 AM	8:00:00 PM	Rig Up/Tear Down	Crew & Trucks on CNRL Location. Held safety meeting. Tear out rig w/ trucks, load and move rig to DCEL 1P1 Joslyn 3-33-95-12w4 Pad. Move rig in to Fort Mcmurray and wait on daylight to travel into location

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403-540-8729
Rig : Precision #297 | Rig Manager Phone : 403-850-7181 | Engineer : Rodney Tetreault | Phone # : 403-804-6953
Lease : Good Condition | Superintendent : Dave Loxam | Phone # : 403-538-4590
Weather : -2, no snow | Supervisor : Rodney Tetreault | Phone # : 403-804-6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	2
Ops. Date :	18/11/200
Days From Spud :	0
Day Cost :	$148,790
Cost To Date :	$245,062
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Moving rig into location
Ops. Forecast : MIRU Central system and rig, spot rentals, rig in

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition
	0			0	0	0.0	0.00	0.0	0.0	0	0.00	0.0	-------

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %
			0	0	0		0	0	0	0	0	0.00	0	0	0.0

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
Bit	1	444.0	0.40
Welded Blade	1	444.0	1.88
Cross Over Su	1	203.0	0.89
Drill Collar	2	203.0	19.08
Cross Over Su	1	171.0	0.74
HWDP	2	127.0	19.01

DP OD : 127.00 mm | BHA : 42.00 m
DC OD : 203.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : | Screens :

Time Distribution | Total Hours : 16.00

Time From	Time To	Time Category	Remarks
8:00:00 AM	4:00:00 PM	Rig Up/Tear Down	Unload trucks on location, remove outer tires on rig carrier to cross bridge for the els river - cross bidge & re-install tires. Spot rig and central system over location
4:00:00 PM	7:00:00 PM	Rig Up/Tear Down	Finish spotting rentals
7:00:00 PM	12:00:00 AM	Rig Up/Tear Down	Rig in central system

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403-540-8729
Rig : Precision #297 | Rig Manager Phone : 403-850-7181 | Engineer : Rodney Tetreault | Phone # : 403-804-6953
Lease : Good Condition | Superintendent : Dave Loxam | Phone # : 403-538-4590
Weather : -2, no snow | Supervisor : Rodney Tetreault | Phone # : 403-804-6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	3
Ops. Date :	19/11/200
Days From Spud :	0
Day Cost :	$83,924
Cost To Date :	$328,987
Est. TD :	967.5
Depth @ 2400hr :	42.00
Progress :	42.0
Day Rot. Hrs. :	1.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Finish rigging in & get ready to spud
Ops. Forecast : Rig to spud, spud & drill 444mm surface hole to 40mMD, run & cement csg, WOC.

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition
1A	444	Reed	HD3082	115	4000	42.0	1.00	42.0	42.0	42	1.00	42.0	0-0-NO-N--I-NO-TD

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
12:00:00 AM	Gel Chem	1030	60	0	0	0.0	0.0	0.0	9.5	0.0	0	0.0	0	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%
1A	19.0,19.0,19.0,15.9		203	165	115		203	165	115	3300	0	0.00	0	0	0.0

Mud Additivies

Mud Item	Unit	# of
Caustic Soda		1
Gel		55

Today's Mud Cost : $422

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
Bit	1	444.0	0.40
Welded Blade	1	444.0	1.88
Cross Over Su	1	203.0	0.89
Drill Collars	2	203.0	19.08
Cross Over Su	1	171.0	0.74
HWDP	2	127.0	19.01

DP OD : 127.00 mm | BHA : 42.00 m
DC OD : 203.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow

Shaker : | Screens :

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	8:00:00 AM	Rig Up/Tear Down	Fire up boilers, rig up prefabs, circ steam & water through central system, raise derrick to 45 deg
8:00:00 AM	4:00:00 PM	Rig Up/Tear Down	Finish rigging in central system to spud
4:00:00 PM	7:00:00 PM	Rig Up/Tear Down	Finish rigging in solids control equipment
7:00:00 PM	7:30:00 PM	Safety Meetings	Have safety meeting & procedural review w/ both rig crews
7:30:00 PM	8:30:00 PM	Drilling	Spud & drill 444mm surface hole to surface TD @ 42mMD
8:30:00 PM	12:00:00 AM	Run Csg & Cement	Condition mud & wait on Hunting Tubulars rep to arrive with casing nubins - blizzard conditions across the province.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403-540-8729
Rig : Precision #297 | Rig Manager Phone : 403-850-7181 | Engineer : Rodney Tetreault | Phone # : 403-804-6953
Lease : Good Condition | Superintendent : Dave Loxam | Phone # : 403-538-4590
Weather : -13 deg, 3" snow overnight. | Supervisor : Rodney Tetreault | Phone # : 403-804-6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	4
Ops. Date :	20/11/200
Days From Spud :	1
Day Cost :	$60,183
Cost To Date :	$389,170
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	84.0
Day Rot. Hrs. :	3.50

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Drilling 311 mm intermediate hole @ 160mMD.
Ops. Forecast : Drill 311mm hole to ICP, wiper trip, rig to & run casing

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition
1A	444	Reed	HD3082	100	4	42.0	1.00	42.0	42.0	84	2.00	42.0	-------
1I	311	Hughes	X1CXP	75	6	42.0	2.50	16.8	84.0	42	2.50	16.8	-------

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
10:00:00 PM	Water	1030	30	0	0	0.0	0.0	0.0	8.0	2.0	0	0.0	32	

Circulation Record

		Pump#1				Pump #2							Average		ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%
1A	19.0,19.0,19.0,15.9		0	0	0		0	0	0	0	0	0.00	0	0	0.0
1I	17.5,17.5,17.5		0	0	0		0	0	0	0	0	0.00	0	0	0.0

Mud Additivies

Mud Item	Unit	# of
Gel		
Caustic Soda		
Poly Plus Dry	1	
SAPP		
Fedzan	5	
Caustic Soda		

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
Bit	1	311.0	0.30
Motor	1	203.2	7.34
Float sub	1	163.0	0.53
Non Mag DC	3	169.0	16.49
Hang off sub	1	168.0	1.70
Non mag DC	2	167.0	18.43
XO sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 51.78 m
DC OD : 127.00 mm | String Wgt. : 8.00

Geological

Formation	Top
	0.0

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	0	0
Centrifuge	Swaco	0	0
Desander	Swaco	0	0

Shaker : Brandt | Screens : 50

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:45:00 AM	Circ./Condition Mud	Circulate & condition hole (W.O. Hunting thread-hand for casing nubbins).
12:45:00 AM	2:30:00 AM	Tripping	POOH to lay down stabilizer.
2:30:00 AM	4:45:00 AM	Run Csg & Cement	Pre-job safety meeting./ Rig to & run 41.74 m, 3 jts., 339.7 mm, 71.43 kg/ m, J55, LT&C Lonestar Surface casing.
4:45:00 AM	5:15:00 AM	Circ./Condition Mud	Circulate & condition hole to cement. Decrease visc. to 45, density - 1020 kg/ m3.
5:15:00 AM	5:30:00 AM	Safety Meetings	Pre-job safety meeting w/ cementers.
5:30:00 AM	7:00:00 AM	Run Csg & Cement	Rig to & cement surface casing. Pump 4.0 m3 H2O preflush. Pressure test lines to 17MPa. Pump 10.0 tonnes (7.6 m3) Thermal 40F cement + 3.0% CaCl2. Displace casing w/ 3.39 m3 H2O. Plug down @ 0617Hrs. Nov. 20/ 03. Float & annulus held okay. Had 4.0 m3 good cement returns. Casing landed @ 41.3mMD. Float @ 41.1mMD.

Contractor : Precision Drilling	Rig Manager : Ken Hein	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetrault	Phone # : 403 804 6953
Lease : Good condition		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Overcast -14		Supervisor : Rodney Tetrault	Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	4
Ops. Date :	20/11/200
Days From Spud :	1
Day Cost :	$60,183
Cost To Date :	$389,170
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	84.0
Day Rot. Hrs. :	3.50

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Drilling 311 mm intermediate hole @ 160mMD.
Ops. Forecast : Drill 311mm hole to ICP, wiper trip, rig to & run casing

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:00:00 PM	Water	1030	30	0	0	0.0	0.0	0.0	8.0	2.0	0	0.0	32	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Average Press.	Average Dens.	Average Output	ΔP DC	ΔP DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Safe-Solv		
Safe Surf		
Defoamer A		
Sodium Bicarb		

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 51.78 m
DC OD : 127.00 mm | String Wgt. : 8.00

Geological

Formation	Top
	0.0

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	0	0
Centrifuge	Swaco	0	0
Desander	Swaco	0	0

Shaker : Brandt | Screens : 50

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
7:00:00 AM	1:15:00 PM	WOC	
1:15:00 PM	1:30:00 PM	Rig Service	
1:30:00 PM	4:00:00 PM	Directional Work	P.U. directional tools (W.O. magnetic storm to pass in order to receive accurate directional survey data.
4:00:00 PM	4:15:00 PM	Rig Service	
4:15:00 PM	4:45:00 PM	Directional Work	Continue to P.U. directional tools.
4:45:00 PM	5:45:00 PM	Slip/Cut Drilling Line	Slip & cut 12.15 m drill line.
5:45:00 PM	8:15:00 PM	Directional Work	Continue to P.U. directional tools. (Magnetic storm subsided).
8:15:00 PM	8:30:00 PM	Drill Out	Drill out cement & shoe (Tag cement top @ 39mMD).

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -14 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	4
Ops. Date :	20/11/200
Days From Spud :	1
Day Cost :	$60,183
Cost To Date :	$389,170
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	84.0
Day Rot. Hrs. :	3.50

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Drilling 311 mm intermediate hole @ 160mMD.
Ops. Forecast : Drill 311mm hole to ICP, wiper trip, rig to & run casing

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:00:00 PM	Water	1030	30	0	0	0.0	0.0	0.0	8.0	2.0	0	0.0	32	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 51.78 m
DC OD : 127.00 mm | String Wgt. : 8.00

Geological

Formation	Top
	0.0

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow	
Centrifuge	Swaco		0	0
Centrifuge	Swaco		0	0
Desander	Swaco		0	0

Shaker : Brandt | Screens : 50

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
8:30:00 PM	11:00:00 PM	Drilling	Drill 311 mm intermediate hole from 42 to 84mMD.
11:00:00 PM	11:59:59 PM	Deviation Survey	Accumulated directional surveys.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -14 | Supervisor : Rodney Tetrault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	5
Ops. Date :	21/11/200
Days From Spud :	2
Day Cost :	$64,119
Cost To Date :	$453,289
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	248.0
Day Rot. Hrs. :	16.25

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Wiper trip to SC shoe. (ICP = 374.5mMD).
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition
1I	311	Hughes	X1CXP	175	9	248.0	16.25	15.3	332.0	290	18.75	15.5	-------

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
4:30:00 PM	Polymer	1050	44	12	8	2.5	3.0	6.0	9.0	3.1	450	3.1	38	McMurray

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %
1I	17.5,17.5,17.5	F800	229	165	100	F800	229	165	100	6800	1050	2.79	0	0	35.6

Mud Additivies

Mud Item	Unit	# of
SAPP		
Envirofloc		
Desco		
Defoamer A		
EMI-695		
Sawdust		

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
Bit	1	311.0	0.30
Motor	1	203.2	7.34
Float Sub	1	163.0	0.53
Non-mag DC	1	0.0	16.49
Hang-off Sub	1	168.0	1.70
Non-mag DC	1	167.0	18.43
X/O sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 0.00 mm | BHA : 51.78 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top
	0.0

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1800	1015
Centrifuge	Swaco	1800	1015
Desander	Swaco	1110	1020

Shaker : Brandt | Screens : 50

Time Distribution | Total Hours : 23.98

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	
12:15:00 AM	12:45:00 AM	Circ./Condition Mud	Displace hole to pre-mixed polymer mud.
12:45:00 AM	7:00:00 AM	Drilling	Drill 311 mm intermediate hole from 84 to 196mMD (Aerated/ foaming mud).
7:00:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	11:30:00 AM	Drilling	Drill 311 mm intermediate hole from 196 to 241mMD (Aerated/ foaming mud).
11:30:00 AM	12:15:00 PM	Deviation Survey	Accumulated directional surveys.
12:15:00 PM	4:00:00 PM	Circ./Condition Mud	Condition mud and hole (aerated mud system).
4:00:00 PM	4:15:00 PM	Rig Service	

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -14 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	5
Ops. Date :	21/11/200
Days From Spud :	2
Day Cost :	$64,119
Cost To Date :	$453,289
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	248.0
Day Rot. Hrs. :	16.25

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Wiper trip to SC shoe. (ICP = 374.5mMD).
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
4:30:00 PM	Polymer	1050	44	12	8	2.5	3.0	6.0	9.0	3.1	450	3.1	38	McMurray

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Fedzan	5	
Poly Plus Dry	1	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 0.00 mm | BHA : 51.78 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top
	0.0

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1800	1015
Centrifuge	Swaco	1800	1015
Desander	Swaco	1110	1020

Shaker : Brandt | Screens : 50

Time Distribution | Total Hours : 23.98

Time From	Time To	Time Category	Remarks
4:15:00 PM	11:00:00 PM	Drilling	Drill 311 mm intermediate hole from 241 to 332mMD.
11:00:00 PM	11:59:00 PM	Deviation Survey	Accumulated directional surveys.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -14 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	6
Ops. Date :	22/11/200
Days From Spud :	3
Day Cost :	$148,458
Cost To Date :	$594,665
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	42.5
Day Rot. Hrs. :	0.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : WOC.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition
1I	311	Hughes	X1CXP	175	9	42.5	0.00	0.0	374.5	333	18.75	17.7	-------

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:45:00 PM	Polymer	1100	44	13	7	4.5	7.5	6.0	9.0	7.0	400	0.0	34	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %
1I	17.5,17.5,17.5	F800	229	152	100	F800	229	152	100	6600	0	2.37	0	37	0.0

Mud Additivies

Mud Item	Unit	# of
Poly Plus Dry		
Sawdust		
Defoam X		7

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
0.00	45.00	193.00
5.40	45.00	193.00
51.20	49.80	191.30
60.10	51.70	196.60
69.12	54.00	193.30
78.62	56.00	194.40

BHA

Item	# Of	O.D.	Length
Bit	1	311.0	0.30
Motor	1	203.2	7.34
Float Sub	1	163.0	0.53
Non-mag DC	1	0.0	16.49
Hang-off Sub	1	168.0	1.70
Non-mag DC	1	167.0	18.43
X/O sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 51.78 m
DC OD : 0.00 mm | String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1690	1040
Centrifuge	Swaco	1690	1040
Desander	Swaco	0	0

Shaker : Brandt | Screens : 50

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	
12:00:00 AM	12:00:00 AM		
12:15:00 AM	3:15:00 AM	Drilling	Drill 311 mm intermediate hole from 332 to 374.5mMD.
3:15:00 AM	4:00:00 AM	Deviation Survey	Accumulated directional surveys.
4:00:00 AM	5:15:00 AM	Circ./Condition Mud	Circulate hole clean.
5:15:00 AM	8:00:00 AM	Tripping	Wiper trip from 374.5 to 42mMD/ Backream & pump out.
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	9:15:00 AM	Tripping	Continue wiper trip to SC.
9:15:00 AM	10:15:00 AM	Circ./Condition Mud	Circulate hole clean.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -30 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	6
Ops. Date :	22/11/200
Days From Spud :	3
Day Cost :	$148,458
Cost To Date :	$594,665
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	42.5
Day Rot. Hrs. :	0.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : WOC.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
10:45:00 PM	Polymer	1100	44	13	7	4.5	7.5	6.0	9.0	7.0	400	0.0	34	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
87.72	58.40	195.20
96.68	60.20	195.50
105.93	62.50	197.10
114.69	64.90	196.90
123.79	67.30	196.50
132.94	69.70	196.50

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 51.78 m
DC OD : 0.00 mm | String Wgt. : 15.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1690	1040
Centrifuge	Swaco	1690	1040
Desander	Swaco	0	0

Shaker : Brandt | Screens : 50

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
10:15:00 AM	12:00:00 PM	Tripping	Trip to lay down directional tools.
12:00:00 PM	12:15:00 PM	Miscellaneous	Winterize mud lines.
12:15:00 PM	1:30:00 PM	Directional Work	Lay down directional tools.
1:30:00 PM	1:45:00 PM	Safety Meetings	Pre-job safety meeting w/ casing hand.
1:45:00 PM	4:00:00 PM	Run Csg & Cement	Rig to & run 244.5 mm intermediate casing.
4:00:00 PM	4:15:00 PM	Rig Service	
4:15:00 PM	9:30:00 PM	Run Csg & Cement	Continue to run intermediate casing.
9:30:00 PM	11:45:00 PM	Circ./Condition Mud	Circulate & condition hole; decrease viscosity to 44, density 1100, pH 9.0.
11:45:00 PM	11:59:59 PM	Safety Meetings	Pre-job safety meeting w/ cementers.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -30 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	7
Ops. Date :	23/11/200
Days From Spud :	4
Day Cost :	$53,381
Cost To Date :	$648,046
Est. TD :	967.5
Depth @ 2400hr :	637.00
Progress :	262.5
Day Rot. Hrs. :	6.25

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Drilling 216 mm production horizontal hole @ 804mMD.
Ops. Forecast : Drill ahead to TD @ 974mMD, Ream back to shoe, POOH & L/D Tools, RIH w/ reamer assembly

Bit Record

						Daily			Depth	Cumulative			
Bit #	Size	Mfg.	Model	RPM	WOB	Progress	Hours	ROP	Out	Depth	Hours	ROP	Condition
1P	216	Reed	DSX146	210	12	262.5	6.25	42.0	637.0	263	6.25	42.0	-------

Mud Record

						Gel Strength				Solids	Cl		Mud Loss	
Time	Type	Density	Visc.	PV	YP	10 Sec	10 Min	W.L.	pH	%	(ppm)	Oil %	Volume	Formation
7:00:00 PM	Polymer	1050	40	11	6	5.0	5.0	8.0	9.5	3.0	440	0.0	18	

Circulation Record

		Pump#1				Pump #2						Average			ΔP
Bit #	Nozzles	Model	Stroke	Liner	Spm	Model	Stroke	Liner	Spm	Press.	Dens.	Output	DC	DP	%
1P	11.1,11.1,11.1,15.9,15.9	F800	229	152	130	F800	229	152	130	5200	1050	3.08	128	128	62.4

Mud Additivies

Mud Item	Unit	# of
Sodium Bicart	2	
Defoam X	7	
Defoamer A	2	
SAPP	3	
Safe-Solv	1	
EMI-695	1	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
374.00	89.90	182.00
387.27	89.80	182.40
400.95	90.70	182.00
414.64	90.40	180.40
428.29	90.20	180.10
441.95	91.10	180.30

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1790	1020
Centrifuge	Swaco	1790	1020
Desander	Swaco	1040	1250

Shaker : Brandt | Screens : 50

BHA

Item	# Of	O.D.	Length
Bit	1	216.0	0.20
Motor	1	171.5	6.54
Float sub	1	163.0	0.53
Non-mag DC	3	169.0	16.49
Hang-off sub	1	168.0	1.70
Non-mag DC	2	167.0	18.43
XO sub	1	162.0	0.64
Jars	1	168.0	6.35

DP OD : 127.00 mm | BHA : 50.88 m
DC OD : 127.00 mm | String Wgt. : 16.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5

Time Distribution Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	
12:15:00 AM	2:15:00 AM	Run Csg & Cement	Rig to & cement intermediate casing. Pump 5.0m3 H2O ahead. Pump 2.0 m3 scavenger @ 1500 kg/m3. Pump 35.0 tonnes (27.0 m3) slurry @ 1885 kg/m3. Plug down @ 0231hrs. Nov. 22/03. Float & annulus held okay. Had 9.0m3 good cement returns. Casing landed @ 374.5mMD. Float @ 366.6mMD.
2:15:00 AM	6:30:00 AM	WOC	
6:30:00 AM	8:00:00 AM	Miscellaneous	Cut casing & weld on 254 mm casing & flow tee.
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	10:30:00 AM	Miscellaneous	Install belly pan & weld on flow tee.
10:30:00 AM	1:30:00 PM	Directional Work	P.U. directional tools.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -10 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	7
Ops. Date :	23/11/200
Days From Spud :	4
Day Cost :	$53,381
Cost To Date :	$648,046
Est. TD :	967.5
Depth @ 2400hr :	637.00
Progress :	262.5
Day Rot. Hrs. :	6.25

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Drilling 216 mm production horizontal hole @ 804mMD.
Ops. Forecast : Drill ahead to TD @ 974mMD, Ream back to shoe, POOH & L/D Tools, RIH w/ reamer assembly

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume Formation
7:00:00 PM	Polymer	1050	40	11	6	5.0	5.0	8.0	9.5	3.0	440	0.0	18

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Envirofloc	2	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
455.63	91.40	180.10
469.28	91.20	179.80
482.97	90.40	179.60
496.57	89.00	179.70
510.20	89.20	179.70
523.87	89.90	179.80

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 50.88 m
DC OD : 127.00 mm | String Wgt. : 16.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1790	1020
Centrifuge	Swaco	1790	1020
Desander	Swaco	1040	1250

Shaker : Brandt | Screens : 50

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
1:30:00 PM	3:15:00 PM	Tripping	Run in hole to 366mMD (Tag cement top).
3:15:00 PM	4:00:00 PM	Drill Out	Drill out float & shoe.
4:00:00 PM	4:15:00 PM	Rig Service	
4:15:00 PM	4:45:00 PM	Drill Out	Continue to drill out.
4:45:00 PM	11:00:00 PM	Drilling	Drill 216.0 mm production hole from 374.5 to 637mMD.
11:00:00 PM	11:59:59 PM	Deviation Survey	Accumulated directional surveys.

Contractor : Precision Drilling | Rig Manager : Ken Hein | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetrault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Overcast -10 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	8
Ops. Date :	24/11/200
Days From Spud :	5
Day Cost :	$282,420
Cost To Date :	$954,318
Est. TD :	967.5
Depth @ 2400hr :	981.00
Progress :	607.0
Day Rot. Hrs. :	18.50

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : POOH to lay down reamer BHA & PU 177.8 mm liner.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
2:00:00 PM	Polymer	1050	42	12	6	2.5	4.0	7.5	9.0	3.1	550	0.0	47	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)
981.00	90.30	180.00

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 50.88 m
DC OD : 0.00 mm | String Wgt. : 21.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1960	1020
Centrifuge	Swaco	1970	1020
Desander	Swaco	1040	1190

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	
12:15:00 AM	7:00:00 AM	Drilling	Drill 216.0 mm horizontal hole from 637 to 855mMD.
7:00:00 AM	8:00:00 AM	Deviation Survey	Accumulated directional surveys.
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	1:45:00 PM	Drilling	Drill 216.0 mm horizontal hole from 855 to 981mMD.
1:45:00 PM	2:45:00 PM	Deviation Survey	Accumulated directional surveys.
2:45:00 PM	3:45:00 PM	Circ./Condition Mud	Circulate & condition hole.
3:45:00 PM	4:00:00 PM	Tripping	Hoist to bit.

Contractor : Precision Drilling | Rig Manager : Ken Hein/ Rick | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : Clear -16 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	8
Ops. Date :	24/11/200
Days From Spud :	5
Day Cost :	$282,420
Cost To Date :	$954,318
Est. TD :	967.5
Depth @ 2400hr :	981.00
Progress :	607.0
Day Rot. Hrs. :	18.50

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : POOH to lay down reamer BHA & PU 177.8 mm liner.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Mud Loss Formation
2:00:00 PM	Polymer	1050	42	12	6	2.5	4.0	7.5	9.0	3.1	550	0.0	47	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 50.88 m
DC OD : 0.00 mm | String Wgt. : 21.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1960	1020
Centrifuge	Swaco	1970	1020
Desander	Swaco	1040	1190

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 24.00

Time From	Time To	Time Category	Remarks
4:00:00 PM	4:15:00 PM	Rig Service	
4:15:00 PM	8:30:00 PM	Tripping	Hoist to bit.
8:30:00 PM	9:30:00 PM	Directional Work	Lay down directional tools.
9:30:00 PM	9:45:00 PM	Safety Meetings	Pre-job safety meeting (PU reamer assembly).
9:45:00 PM	10:30:00 PM	Slip/Cut Drilling Line	
10:30:00 PM	11:59:59 PM	Reaming	PU Reamer assembly & ream/ pump to FTD.

Contractor : Precision Drilling	Rig Manager : Ken Hein/ Rick	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : Clear -16		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Wellcore

Daily Drilling Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	9
Ops. Date :	25/11/200
Days From Spud :	6
Day Cost :	$115,242
Cost To Date :	$1,069,559
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Rig released. Moved to DCEL 1I1 Josylnn Creek 10-33-95-12 W4M.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
4:00:00 AM	Polymer	1040	52	11	9	0.0	0.0	0.0	0.0	0.0	0	0.0	47	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of
Defoam X	2	
Fedzan	5	
Poly Plus Dry	1	

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length
		0.0	0.00
		0.0	0.00
		0.0	0.00
		0.0	0.00
		0.0	0.00
		0.0	0.00
		0.0	0.00
		0.0	0.00

DP OD : 127.00 mm | BHA : 0.00 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1960	1020
Centrifuge	Swaco	1970	1020
Desander	Swaco	1040	1190

Shaker : Brandt | Screens : 20

Time Distribution Total Hours : 20.75

Time From	Time To	Time Category	Remarks
12:00:00 AM	12:15:00 AM	Rig Service	
12:15:00 AM	2:30:00 AM	Reaming	Continue to ream to bottom w/ reamer BHA.
2:30:00 AM	4:30:00 AM	Circ./Condition Mud	Circulate & condition hole clean & mud (increase LSRV to 11,000).
4:30:00 AM	6:45:00 AM	Tripping	POOH & lay down reamer BHA.
6:45:00 AM	7:00:00 AM	Safety Meetings	Pre-job safety meeting w/ Import liner technician & Hunting thread monitor.
7:00:00 AM	8:00:00 AM	Run Csg & Cement	Rig to & run 639.47 m, 47 jts. (44 slotted jts & 3 blank jts.), 177.8 mm, 43.15 kg/ m, L80, Rge 3, Production liner & 37 jts. HWDP. Liner landed @ 974.77mMD, liner top @ 335.3mMD.
8:00:00 AM	8:15:00 AM	Rig Service	
8:15:00 AM	2:45:00 PM	Run Csg & Cement	Finish running production liner. Set packer with 9000 kPa, release liner with 12,000 kPa.

Contractor : Precision Drilling	Rig Manager : Rick Higgins	Geologist : Dane Bridge	Phone # : 403 540 8729
Rig : Precision #297	Rig Manager Phone : 403 850 7181	Engineer : Rodney Tetreault	Phone # : 403 804 6953
Lease : Good condition/ Icy		Superintendent : Dave Loxam	Phone # : 403 538 4590
Weather : 7		Supervisor : Rodney Tetreault	Phone # : 403 804 6953

Daily Drilling Report

Wellcore

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Report # :	9
Ops. Date :	25/11/200
Days From Spud :	6
Day Cost :	$115,242
Cost To Date :	$1,069,559
Est. TD :	967.5
Depth @ 2400hr :	0.00
Progress :	0.0
Day Rot. Hrs. :	0.00

Well License : 0295554 | Spud : 19/11/2003 | GL : 339.70
AFE # : 054-0303S | Amount : $2,603,270 | R.R. : 25/11/2003 | CF : 0.00
Ops. Objective : Drill Horizontal Producer in McMurray | KB : 343.46
AM Ops. : Rig released. Moved to DCEL 1I1 Josylnn Creek 10-33-95-12 W4M.
Ops. Forecast :

Bit Record

Bit #	Size	Mfg.	Model	RPM	WOB	Daily Progress	Daily Hours	Daily ROP	Depth Out	Cumulative Depth	Cumulative Hours	Cumulative ROP	Condition

Mud Record

Time	Type	Density	Visc.	PV	YP	Gel Strength 10 Sec	Gel Strength 10 Min	W.L.	pH	Solids %	Cl (ppm)	Oil %	Mud Loss Volume	Formation
4:00:00 AM	Polymer	1040	52	11	9	0.0	0.0	0.0	0.0	0.0	0	0.0	47	

Circulation Record

Bit #	Nozzles	Pump#1 Model	Pump#1 Stroke	Pump#1 Liner	Pump#1 Spm	Pump #2 Model	Pump #2 Stroke	Pump #2 Liner	Pump #2 Spm	Press.	Dens.	Output	Average DC	Average DP	ΔP %

Mud Additivies

Mud Item	Unit	# of

Today's Mud Cost : $0

Deviation Record

Depth	Incl (deg)	Az (deg)

BHA

Item	# Of	O.D.	Length

DP OD : 127.00 mm | BHA : 0.00 m
DC OD : 0.00 mm | String Wgt. : 0.00

Geological

Formation	Top

Casing

Section	Set At
Surface	41.3
Intermediate	374.5
Liner	974.8

Solids Control

Item	Make	U. Flow	O. Flow
Centrifuge	Swaco	1960	1020
Centrifuge	Swaco	1970	1020
Desander	Swaco	1040	1190

Shaker : Brandt | Screens : 20

Time Distribution | Total Hours : 20.75

Time From	Time To	Time Category	Remarks
2:45:00 PM	3:15:00 PM	Circ./Condition Mud	Displace casing to water.
3:15:00 PM	3:30:00 PM	Miscellaneous	Blow out top drive, winterize rig and rig lines.
3:30:00 PM	4:00:00 PM	Tripping	POOH to lay down HWDP & liner release tool.
4:00:00 PM	4:15:00 PM	Rig Service	
4:15:00 PM	4:45:00 PM	Tripping	Continue to POOH/ Lay down landing tool.
4:45:00 PM	8:45:00 PM	Rig Up/Tear Down	Tear out rig, clean mud tanks, and blow suitcases clean.
			Rig released @ 2045hrs. Nov. 25/ 03.

Contractor : Precision Drilling | Rig Manager : Rick Higgins | Geologist : Dane Bridge | Phone # : 403 540 8729
Rig : Precision #297 | Rig Manager Phone : 403 850 7181 | Engineer : Rodney Tetreault | Phone # : 403 804 6953
Lease : Good condition/ Icy | Superintendent : Dave Loxam | Phone # : 403 538 4590
Weather : 7 | Supervisor : Rodney Tetreault | Phone # : 403 804 6953

Wellcore

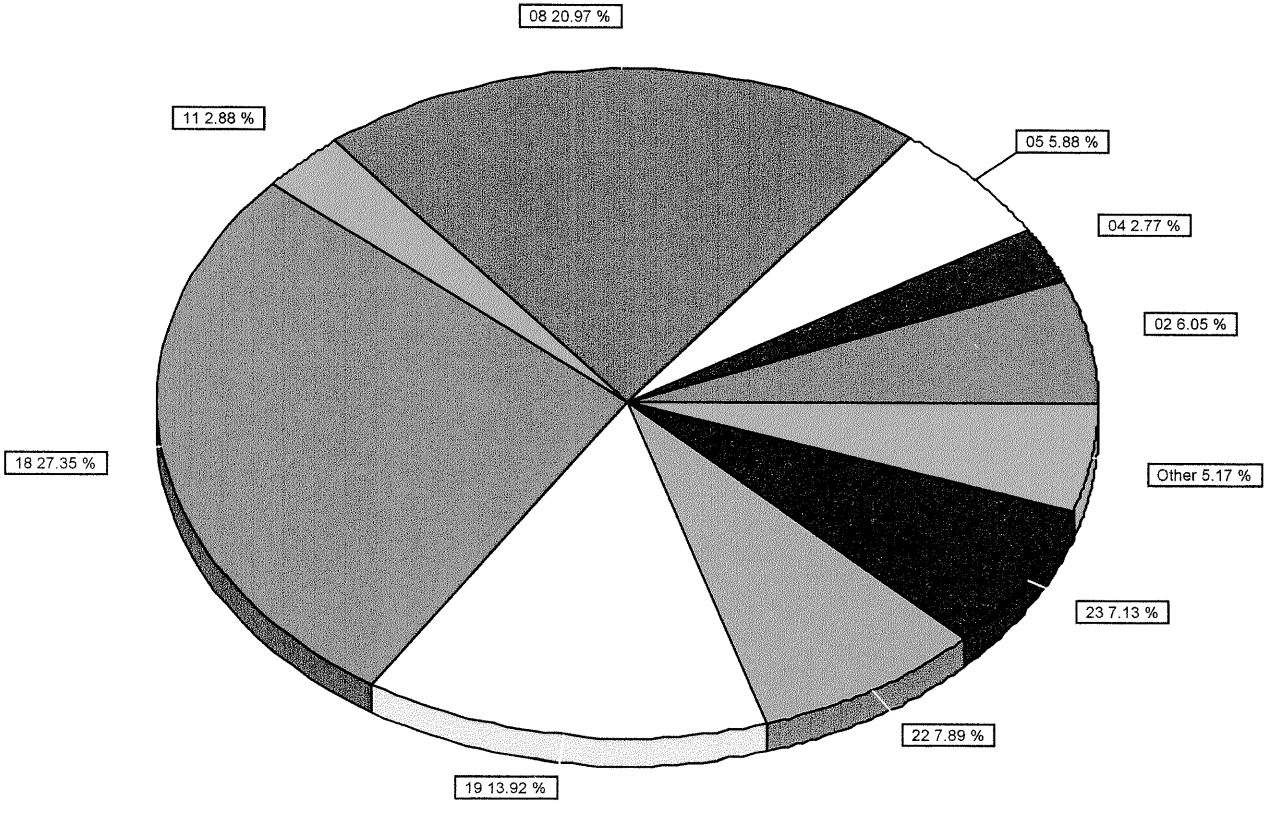
Time Breakdown Drilling Graph

Project : Joslyn Creek Phase 1
Well Name : DCEL 1P1 Joslyn Creek 3-33-9
Well Type : Producer
Main Hole : 102/03-33-095-12-W4M
Operation Objective : Drill Horizontal Producer in McMurray

Date Range
Start Date : Beginning of Time
End Date : End of Time

Rollup Selection
Corporation : X
Project :
Well Type :
Well :
Operation :
Rig :

Category	Code	Hours
Cement Squeeze	01	0.00
Circ./Condition Mud	02	12.40
Coring	03	0.00
Deviation Survey	04	5.67
Directional Work	05	12.05
Drill Out	06	0.90
Drill Stem Test	07	0.00
Drilling	08	42.95
Fishing	09	0.00
Lay Down DP/DC	10	0.00
Miscellaneous	11	5.89
NUBOP's	12	0.00
Plug Back	13	0.00
Pressure Test B.O.P.'	14	0.00
Reaming	15	3.44
Rig Repair	16	0.30
Rig Service	17	3.00
Rig Up/Tear Down	18	56.00
Run Csg & Cement	19	28.50
Safety Meetings	20	1.49
Slip/Cut Drilling Line	21	1.45
Tripping	22	16.15
WOC	23	14.60
Wait on Orders	24	0.00
Wait on Tools/Service	25	0.00
Wireline Logging	26	0.00



Wellcore

Mud Inventory

Total Mud Cost : $422

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3 | Spud Date : 19/11/2003

Well Type : Producer | Main Hole : 102/03-33-095-12-W4M | R.R. Date : 25/11/2003

Ops. Objective : Drill Horizontal Producer in McMurray

Mud Company : M-I Drilling Fluids

Mud Item	Price/Unit	Unit	Transferred In	New Delivery	Used	Cost	Returned	Remaining
	$0.00				0	$0		0
Alcomer 74	$288.96				0	$0		0
Alkapam 1103	$288.96				0	$0		0
Antifoam D47	$239.20				0	$0		0
Antifoam M45	$377.00				0	$0		0
CI-40	$86.13				0	$0		0
Calcium Carbonate	$4.76				0	$0		0
Calcium Carbonate 325	$4.76				0	$0		0
Calcium Carbonate Poultry	$4.76				0	$0		0
Caustic Soda	$28.58				1	$29	0	-1
Cellophane	$38.50				0	$0		0
Citric Acid	$196.22				0	$0		0
DSCO Defoam	$95.55				0	$0		0
Defoam X	$135.30	2			0	$0		0
Defoamer A	$137.94				0	$0		0
Desco	$54.62				0	$0		0
Drilling Detergent	$35.98				0	$0		0
EMI-695	$1,495.00				0	$0		0
Envirofloc	$28.21				0	$0		0
Ethylene Glycol	$0.00				0	$0		0
Fedzan	$219.35	5			0	$0		0
Gel	$7.15				55	$393		-55
Green-cide	$187.39				0	$0		0
Lime	$6.33				0	$0		0
Mix II Fine	$39.09				0	$0		0
Mix II Med	$39.09				0	$0		0
Poly Plus Dry	$179.52	1			0	$0		0
SAPP	$51.15				0	$0		0
Safe Surf	$1,541.00				0	$0		0
Safe-Solv	$880.95				0	$0		0
Sawdust	$3.67				0	$0		0
Sodium Bicarb	$17.26				0	$0		0
Walnut Plug	$22.07				0	$0		0

Wellcore

Bit & Pump Report With Costs

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-95-12

Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Operation Objective : Drill Horizontal Producer in McMurray

Pumps

Pump Type	Rod	Efficiency (%)	Model	Remarks
Triplex	229.00	95	F800	

Bits

Bit #	Size	Mfg.	Model	Serial #	Nozzle Details #1	#2	#3	#4	#5	#6	Cumulative Depth	Out	Hours	ROP	WOB Min.	Max.	RPM Min.	Max.	Average Press.	Output	Bit Condition
1A	444	Reed	HD3082	HD3082	19.0	19.0	19.0	15.9	0.0	0.0	84	42	2.0	42.0	4	4000	100	115	0	0.00	-------
1S	444	Reed	S31G	HD3082	24.0	24.0	24.0	24.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0.00	
1I	311	Hughes	X1CXP	J22115	17.5	17.5	17.5	0.0	0.0	0.0	333	375	18.8	17.7	6	9	75	175	0	2.42	-------
1P	216	Reed	DSX146	47259	11.1	11.1	11.1	15.9	15.9	0.0	870	981	24.8	35.1	12	12	210	210	5592	3.08	-------

Bit Costs

Rig Operating Cost/Hr. : $0

Bit #	Model	Bit Hrs.	Made	ROP	Trip Hrs.	Bit Cost $	Drill $	Trip $	Total $	Cost/depth
1A	HD3082	2.0	84	42.0	0.00	$0	$0	$0	$0	$0.00
1S	S31G	0.0	0	0.0	0.00	$0	$0	$0	$0	$0.00
1I	X1CXP	18.8	333	17.7	0.00	$0	$0	$0	$0	$0.00
1P	DSX146	24.8	870	35.1	0.00	$0	$0	$0	$0	$0.00

Bit Remarks

Wellcore

Casing Report

Project : Joslyn Creek Phase 1
Well Type : Producer

Well Name : DCEL 1P1 Joslyn Creek 3-33-95-1
Main Hole : 102/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient	Mud Type
Surface	**444.0**	**42.0**	**41.3**	**42.0**	**0.0**	**Gel Chem**
Intermediate	311.0	374.5	374.5	99.5	0.0	Polymer
Liner	216.0	981.0	974.8	0.0	0.0	Polymer

Casing For : Surface Casing Date : 20/11/2003

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight	Grade	Range	Connection	Length	From	To
1	Shoe Joint	1	Lonestar	339.7	333.0	71.43	J55	3	LT&C	13.7	**27.5**	**41.3**
2	Casing	2	Lonestar	339.7	333.0	71.43	J55	3	LT&C	28.0	**-0.5**	**27.5**

Actual Above KB : 0.00 Above KB : **0.49**

Accessories

Item	Type	Quantity	Spacing	From	To
Centralizers	Semi Rigid	3	13.0	5.0	39.0
Stop Collars	Screw-On	2	0.0	5.0	39.0

Tally Documents

Torque Monitoring : No Torque Company :

Jts. Delivered : 3 Jts. In Hole : 3 Jts. Left On Rack : 0

Comments

Made up casing w/ rig's top drive. Casing went to bottom 'good'.

Wellcore

Casing Report

Project : Joslyn Creek Phase 1 | Well Name : DCEL 1P1 Joslyn Creek 3-33-95-1

Well Type : Producer | Main Hole : 102/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient	Mud Type
Surface	444.0	42.0	41.3	42.0	0.0	Gel Chem
Intermediate	**311.0**	**374.5**	**374.5**	**99.5**	**0.0**	**Polymer**
Liner	216.0	981.0	974.8	0.0	0.0	Polymer

Casing

For : Intermediate | Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight	Grade	Range	Connection	Length	From	To
1	Float Shoe	1		244.5	0.0	69.53				0.6	**373.9**	**374.5**
	Casing	1	Tiajin	244.5	0.0	69.53	L80	3	Butt	6.8	**367.1**	**373.9**
	Float Collar	1		244.5	0.0	69.53				0.5	**366.6**	**367.1**
	Casing	28	Tiajin	244.5	0.0	69.53	L80	3		367.7	**-1.1**	**366.6**

Actual Above KB : 0.00 | Above KB : **1.11**

Accessories

Item	Type	Quantity	Spacing	From	To
Centralizer	Semi-rigid	1	3.0	371.0	371.0
Centralizer	Rigid	6	13.0	366.0	40.0

Tally Documents

Torque Monitoring : Yes | Torque Company : Hunting

Jts. Delivered : 31 | Jts. In Hole : 29 | Jts. Left On Rack : 2

Comments

Nubbin became 'stuck' on one joint, joint laid down and alternate run. Casing went in hole 'good'.

Wellcore

Casing Report

Project : Joslyn Creek Phase 1

Well Type : Producer

Well Name : DCEL 1P1 Joslyn Creek 3-33-95-1

Main Hole : 102/03-33-095-12-W4M

Section

Section	Hole Size	Hole Depth	Casing Set At (MD)	Casing Set At (TVD)	Leak Off Gradient	Mud Type
Surface	444.0	42.0	41.3	42.0	0.0	Gel Chem
Intermediate	311.0	374.5	374.5	99.5	0.0	Polymer
Liner	**216.0**	**981.0**	**974.8**	**0.0**	**0.0**	**Polymer**

Casing

For : Liner

Casing Date :

Run Order	Description	# Of	Type/Mfgr.	OD	ID	Weight Grade	Range	Connection	Length	From	To
1	Guide shoe	1	Import	177.8	0.0	0.00		Butt	0.6	**974.2**	**974.8**
2	Slotted liner	44	Tiajin	177.8	153.9	43.15	L80	3	596.7	**377.5**	**974.2**
3	Blank liner	3	Tiajin	177.8	153.9	43.15	L80	3	41.3	**336.2**	**377.5**
4	Packer	1	Import packer	177.8	0.0	0.00			0.9	**335.3**	**336.2**
5	HWDP	37		127.0	76.0	74.35		2	336.0	**-0.7**	**335.3**

Actual Above KB : 0.00

Above KB : **0.70**

Accessories

Item	Type	Quantity	Spacing	From	To

Tally Documents

Torque Monitoring : Yes

Torque Company : Hunting

Jts. Delivered : 62

Jts. In Hole : 47

Jts. Left On Rack : 15

Comments

Rotated liner into hole from ICP to FTD. Liner went in hole 'good'. Dropped ball & circulated with rig mud pump to set, set packer with 9000 kPa & released liner with 12,000 kPa. Displaced hole to water.

Wellcore

Cementing Details

Project : Joslyn Creek Phase 1

Well Type : Producer

Well Name : DCEL 1P1 Joslyn Creek 3-33-95

Main Hole : 102/03-33-095-12-W4M

Hole

Section	Hole Depth	Hole Size	Casing OD	Casing Set At (MD)	Casing Set At (TVD)
Surface	**42.0**	**444.0**	**339.70**	**41.3**	**42.0**
Intermediate	374.5	311.0	244.50	374.5	99.5
Liner	981.0	216.0	162.11	974.8	0.0

Cement

Cement Job Date : 19/11/2003

Sequence	Blend	Additives	Volume	Density	Weight	Interval Top	Interval Bottom
Fill	Thermal 40F	3.0% CaCl2	7.60	1876.0	0	0.0	42.0

Total Volume : 7.60 m3

	Yes	No
Reciprocated :	X	
Rotated Casing :		
Bumped Plugs :	X	
Floats Held :	X	
Annulus Held :	X	
Held Back Pressure :		
Fluid Returns :	X	
Cement Returns :	X	
Loss of Circulation :		

Cement Return Volume : 4.00

Remarks

Pump 4.0 m3 H2O ahead. Pressure test lines to 17.0 MPa. Pump 10.0 tonnes Thermal 40F + 3.0% CaCl2 (7.6 m3 Slurry). Displace casing w/ 3.39 m3 H2O. Plug down @ 0617Hrs. Nov.19/ 03. Float & annulus held okay. Had 4.0 m3 good cement returns.

Wellcore

Cementing Details

Project : Joslyn Creek Phase 1

Well Type : Producer

Well Name : DCEL 1P1 Joslyn Creek 3-33-95

Main Hole : 102/03-33-095-12-W4M

Hole

Section	Hole Depth	Hole Size	Casing OD	Casing Set At (MD)	Casing Set At (TVD)
Surface	42.0	444.0	339.70	41.3	42.0
Intermediate	**374.5**	**311.0**	**244.50**	**374.5**	**99.5**
Liner	981.0	216.0	162.11	974.8	0.0

Cement

Cement Job Date : 22/11/2003

Sequence	Blend	Additives	Volume	Density	Weight	Interval Top	Interval Bottom
Scavenger	Thermal 40	2% CaCl2 + 0.25% CFL-3 + 2% FWCA-H	2.00	1500.0	0	0.0	0.0
Fill	Thermal 40	2% CaCl2 + 0.25% CFL-3 + 2% FWCA-H	33.00	1885.0	0	0.0	374.5

Total Volume : 35.00 m3

	Yes	No
Reciprocated :	X	
Rotated Casing :	X	
Bumped Plugs :	X	
Floats Held :	X	
Annulus Held :	X	
Held Back Pressure :		
Fluid Returns :	X	
Cement Returns :	X	
Loss of Circulation :		

Cement Return Volume : 9.00

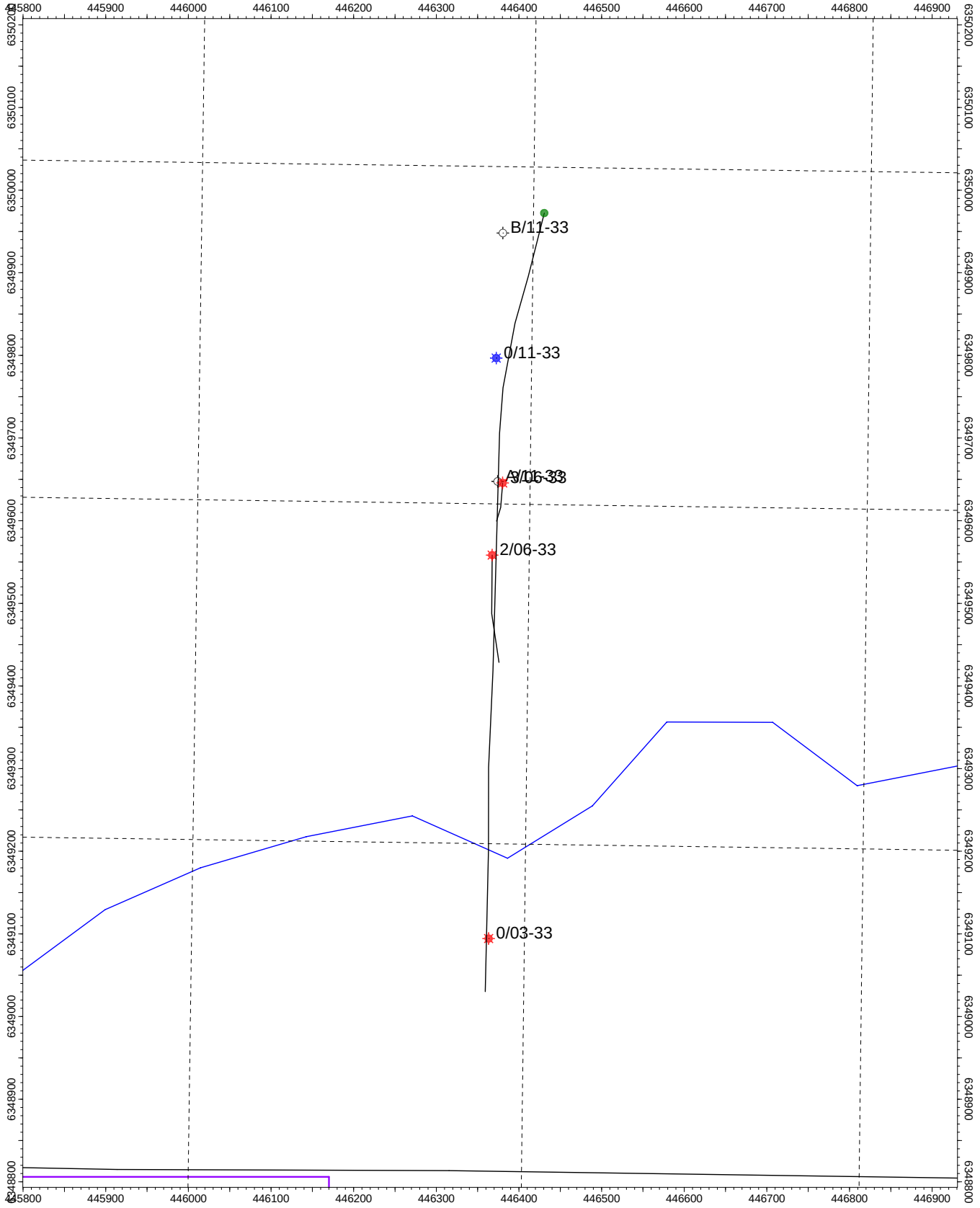
Remarks

Pump 5.0 m3 H2O (w/ red dye marker ahead). PT lines to 21MPa. Pump 2.0 m3 scavenger @ 1500 kg/ m3. Pump 27.0 m3 (35 tonnes) Thermal 40 + 2% CaCl2 + 0.25% CFL-3 + 2% FWCA-H @ 1885 kg/ m3. Plug down @ 0231hrs. Nov. 22/ 03. Float & annulus held okay. Had 9.0 m3 good cement returns.

APPENDIX 1/C:

Observation wells

Joslyn - Phase I Base Map with Observation Wells



0 50 100 150 200 250m

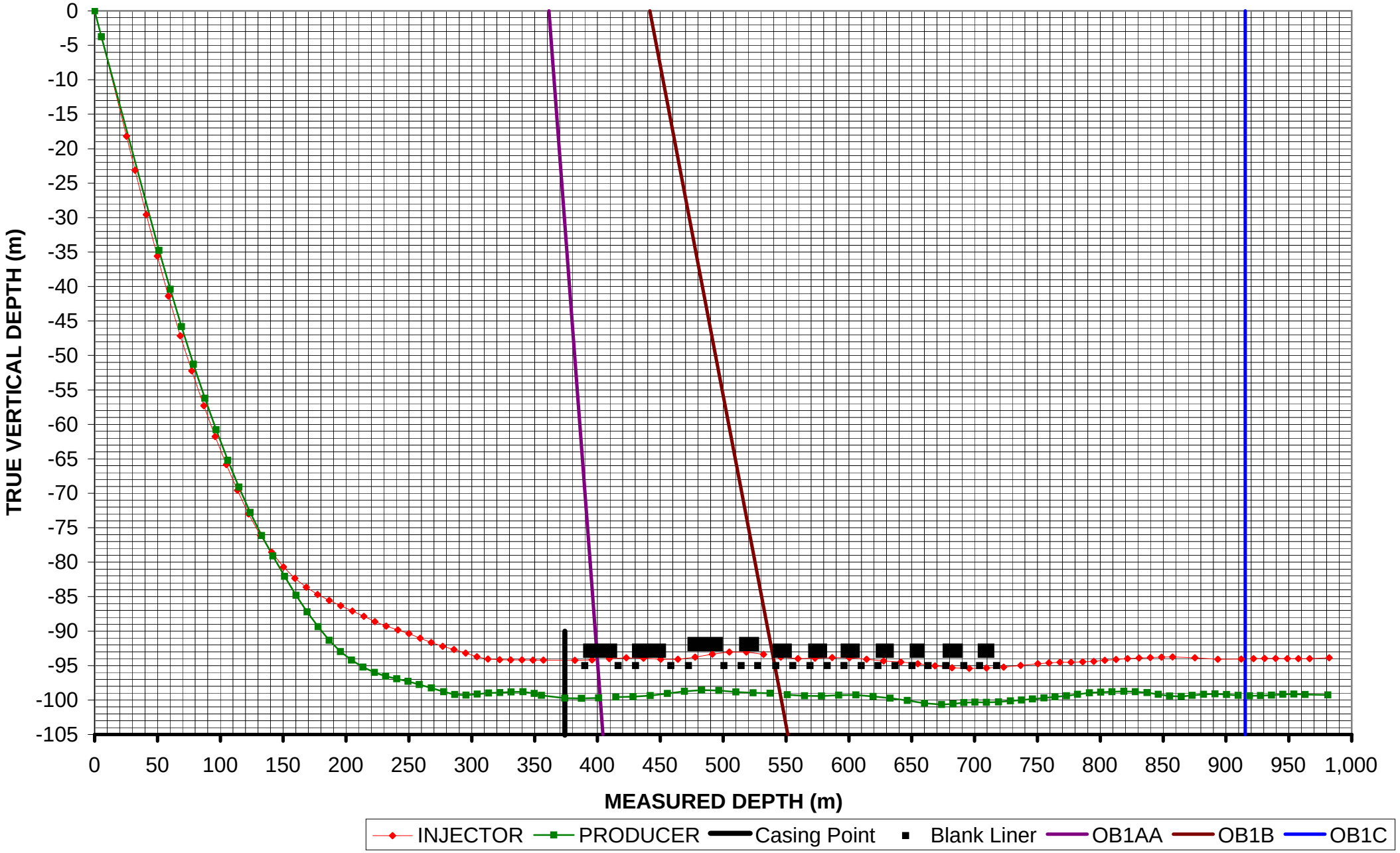
1:5000

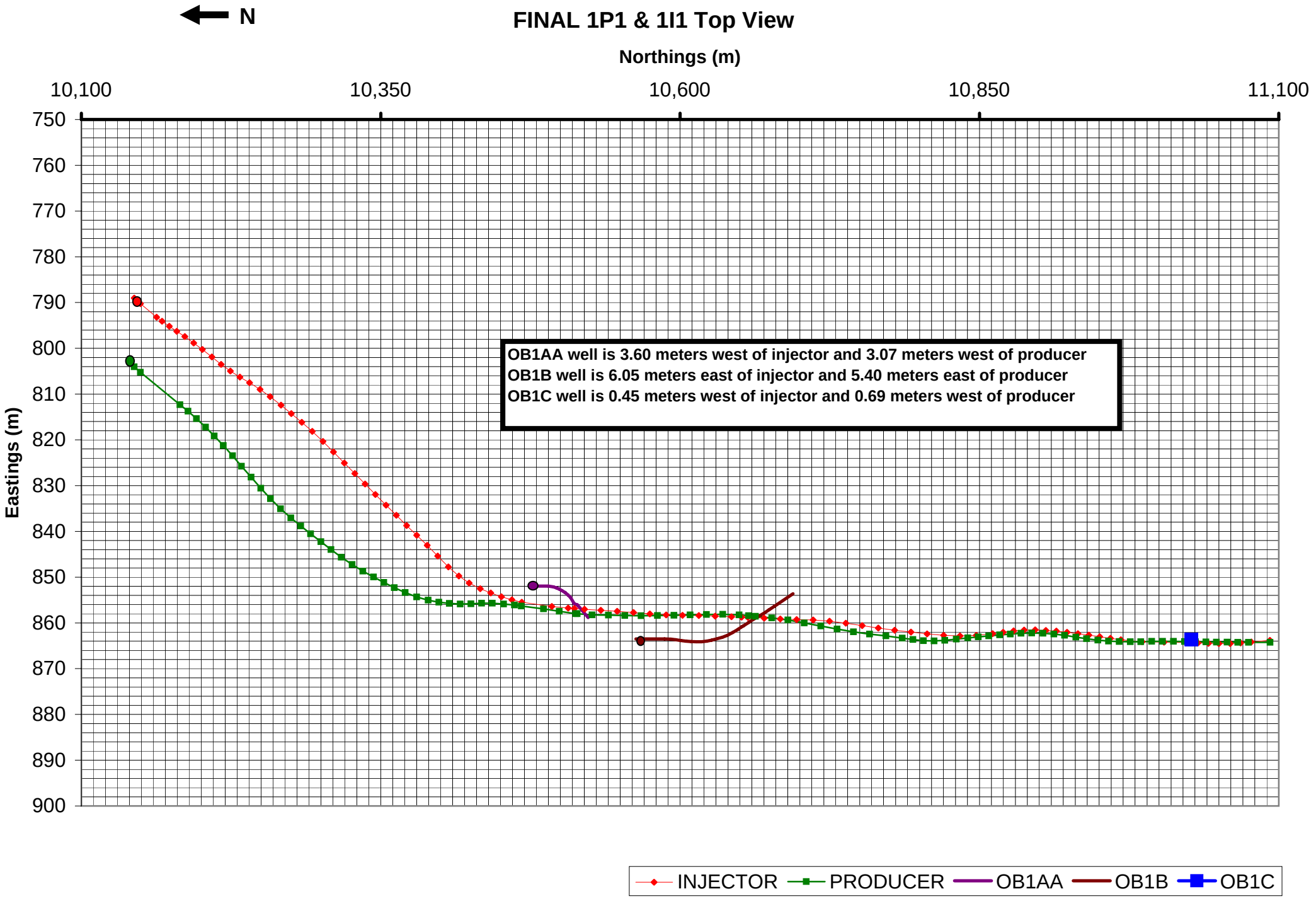
Map

Country	*Scale* 1:5000
Block	*Contour inc*
License	*User name* j0226453
Model name	*Date* 06/13/2006
Horizon name	*Signature*

PETREL

FINAL 1P1 & 1I1 MD VS. TVD




N
FINAL 1P1 & 1I1 Top View
Northings (m)
10,100
10,350
10,600
10,850
11,100
Eastings (m)
750
760
770
780
790
800
810
820
830
840
850
860
870
880
890
900
OB1AA well is 3.60 meters west of injector and 3.07 meters west of producer
OB1B well is 6.05 meters east of injector and 5.40 meters east of producer
OB1C well is 0.45 meters west of injector and 0.69 meters west of producer
INJECTOR
PRODUCER
OB1AA
OB1B
OB1C

APPENDIX 2:

Completion operations

APPENDIX 2/A1:

Completion operations

February 2006, ESP workover replacement

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/1/2006
Report #: 1.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
15	15

Daily Summary
RUSR

Planned Operations
Pull out CTU Instrument string

6 am Status
Rig up service rig/ Move equipment from pad 204

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	Move In/Rig Up		Spot and Rig up - Move all equipment from pad 204. Clear Snow.
07:00	07:30	Safety		HA Meeting - Topic: BOP
07:30	08:00	Kill Well		Prepare to kill well.
08:00	12:00	Wait on Repairs		Power end on rig pump froze (water and oil) due to not winterizing the equipment
12:00	14:00	Kill Well		Kill the well. SITP=0 , SICP = TSTM. Pump 5m3 water down tubing (tbg on vac). Temp profile at the control room showed significant temperature change at the heel. Pump 30 m3 down 245/89 annulus thru casing well. Large temp change at the toe. Casing dead.
14:00	19:00	Coiled Tubing Op.		Spot RU CTU and spool unit. Check guide string pressure (slight blow TSTM). Remove showerhead &Select Oil tool CT hanger & pack-off assy. Install Rockwell hydraulic window & annular assembly.
19:00	19:30	Safety		HA Meeting
19:30	00:00	Coiled Tubing Op.		Serv Rig crew RU & get ready for BOP installation. CTU :Attempt to pump down 60.3 guide string - pressure up - Unable to pump past (Likely due to select hanger tool packer sealing off) POOH 38.1mm Instrumentation string - string very oily Rig out CTU

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/2/2006
Report #: 2.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
15	30

Daily Summary
RUSR - POOH w/ ESP Assy.

Planned Operations
Pull out ESP hotline pump assy & 114 mm tail pipe c/w Import packer

6 am Status
Install BOP

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	02:00	Move In/Rig Up		Spot & RUSR
02:00	07:00	BOP/Install/Remove/...		Install class III 228.8mm BOP (annular/ 88.9mm pipe/blind). Pressure test to 1400 & 13790 kPa. Rig up to pull out ESP.
07:00	07:30	Safety		Held HA meeting - Topic : wellhead configuration
07:30	13:30	Wait on Repairs		Accumulator not functioning. Rockwell responsible for time lost.
13:30	14:00	Wait on Repairs		Hole BOP drill
14:00	19:00	Tripping pipe (in/out)		POOH & lay down w/ 26 jts of 89mm, L-80 Hydrill 533 tubing and ESP assy. Lay out and breakdown pump for Schlumberger. All Hydrill tubing racked for storage.
19:00	19:30	Safety		Held HA
19:30	22:30	Assemble/Disassemble BHA		Lay down & break down REDA ESP assy.
22:30	00:00	BOP/Install/Remove/...		Crew installs BOP's, very hard to remove wellhead studs. Function test BOP. Pull out hanger assy.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/3/2006
Report #: 3.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
15	45

Daily Summary
RIH w/ fishing tools and pull production string.

Planned Operations
M-U cyclone Bailer Assy

6 am Status
Install BOP's/ POOH 60.3mm tubing

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	BOP/Install/Remove/...		Crew installs BOP's, very hard to remove wellhead studs. Function test BOP. Pull out hanger assy.
07:00	08:00	Kill Well		Flush well of 5m3 hot produced water down tubing 15m3 down annulus
08:00	12:00	Tripping pipe (in/out)		POOH w/ 60.3mm tubing
12:00	14:00	BOP/Install/Remove/...		Change pipe rams on BOP's to 88.9mm
14:00	19:00	Tripping pipe (in/out)		RUSR & RIH w/ Weatherford fishing tools consisting of spear assy for 114 mm Hydrill pipe, 120.65 mm bumper sub, jars, 12 x 89 mm HWDP, 120.65 compounder, 88.9 mm J-55 EUE tubing and XO's to fish 244.5 mm import ESP hanger packer c/w 19 jts 114.3mm tailpipe.
19:00	19:30	Safety		Crew change - Hazard assessment completed and handed in w/ SWA
19:30	00:00	Tripping pipe (in/out)		Continue RIH w/ fishing string. Tagged liner top at 328.5m MD. Pulled up and only gained 2000 Dan. try go back down and lost .5 m Repeat same step 4 times with same result. Pushed spear w/ pull down system and moved down to just above 244.5 x 177.8 mm liner packer into @ 335 mMD Pull up and still only have 2000 daN over string. Continue to POOH and lay down tubing joints. caught string 2 jts up and had to fire jars @ 30,000 DaN to get by. appears to be pieces of hanger and setting tool catching on packer and casing collars. POOH to packer. Pull fishing assy and lay down on catwalk to break down.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/4/2006
Report #: 4.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
15	60

Daily Summary
Try cleanout with Cyclone bailer

Planned Operations
Clean out horizontal section

6 am Status
Clean horizontal section w/ bailer assy

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	04:00	Tripping pipe (in/out)		Continue to POOH and lay down 19 joints 114.3mm
04:00	04:30	Safety		Hazard Assessment meeting with the crew and Weatherford hand about the bailer assy Water spill around the pump by the truck driver - covered the area with sand after vaccuming
04:30	07:00	Tripping pipe (in/out)		RIH w/ Weatherford Cyclone 3 1/8" bailer assy c/w 10 jt 88.9 J-55 EUE chamber and sawtooth collar on bottom on 88.9mm tubing. Land bottom of string @ 360.0 mMD. Did not tag top of liner hanger. Begin to pump rate @ 0.5m3/min. Work down 400 mKB. Stop pumping.
07:00	07:30	Safety		Crew change - HA meeting
07:30	13:00	Tripping pipe (in/out)		Continue RIH w/ bailer assy to 510m
13:00	00:00	Wait on Repairs		Gen set down - accumulator not working couldn't continue running the bailer. Also pump leaking, Order Sanjel cement truck to pump water - arrived on location 21:30. Wait on repairs for Genset.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/5/2006
Report #: 5.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
15	75

Daily Summary
Down for generator repairs

Planned Operations
Wait for

6 am Status
Gen set down - Rig shut down

Remarks

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	Rig Down/Move Out		Gen set not working - unable to operate accumulator properly. Waiting for gen set to arrive on lease.
07:00	07:30	Safety		HA meeting
07:30	11:00	Wait on Repairs		Due to bad road conditions gen set arrive with delay @ 11am.
11:00	19:00	Wait on Repairs		Genset had wrong end, electricain tried to connect but had to order new cable. Wait for cable to arrive.
19:00	19:30	Safety		HA Meeting
19:30	00:00	Wait on Repairs		Waiting for Gen Set power cord.
00:00	02:00	Wait on Repairs		Fixing Gen set power cord

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/6/2006
Report #: 6.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Down for generator repairs

Planned Operations
Wait on rig repairs

6 am Status
Waiting for electrician to fix gen set

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	Wait on Repairs		Waiting for electrician to fix gen set
07:00	07:30	Safety		Crew Change - HA meeting
07:30	10:00	Wait on Repairs		Continue waiting for Gen set Power Cord
10:00	14:30	Wait on Repairs		Get set power cord arrived at 10:30 am crew got it working. started back into the hole to continue bailing. tagged 11000 KPa at 0.12 m3/min.
14:30	19:00	Tripping pipe (in/out)		Decided to POOH check bailer, installed 2nd 6.5mm nozzle. Had a thick coating of bitumen on pipe. Cleaned out bailer with zero trace of sand. Started running back in the hole.
19:00	19:30	Safety		Crew change - HA meeting
19:30	22:00	Tripping pipe (in/out)		Change out the shoe on the bottom of the bailer assy to 149.86mm wash shoe. RIH w/ bailer BHA c/w 10 joint 89mm chamber on 89mm EUE tubing. Spot bottom of tubing @ 510m MD.
22:00	00:00	Circulating		RU pump line from Sanjel cement truck to tubing. Start pumping down tubing. Pressure increased to 15.0 MPa, rate 270L/min. Increase rate to 330L/m, Pressure incease to 18.0Mpa.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/7/2006
Report #: 7.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Try cleanout with Cyclone bailer

Planned Operations
Perform well cleanout w/ cyclone bailer

6 am Status
RIH w/ bailer assy to clean horizontal section

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	05:00	Tripping pipe (in/out)		Continue to RIH w/ tubing while circulating thru cyclone bailer. Repeat procedure for each joint and work tubing down from 510m MD to 681.47m MD.
05:00	06:00	Circulating		Tag with exessive drag @ 681.47m MD. Stop & circulate an extra 5m3. Volumetric flow decreased to 200L/min with same pressure (18MPa) then dropped to 120l/min. Stop pumping and prepare to POOH
06:00	07:00	Tripping pipe (in/out)		POOH w/ tubing to empty the bailer.
07:00	07:30	Safety		Crew change - HA meeting
07:30	08:30	Tripping pipe (in/out)		Continue POOH w/ tubing to empty the bailer using vacum truck and mudcan. Top 7 jts full of only water and heavy bitumen water mixture was found in the net bottom 2jts with bottom joint of chamber being dry?? No sand was noticed - sample to be checked for BSW cut by plant personell.
08:30	10:00	Rig/Equip. Maintenance		Check the bailer assy. Visually found nothing that might have caused rate loss
10:00	12:00	Tripping pipe (in/out)		RIH w/ bailer assy to clean 660m MD to 980m MD. Land slow at 660m MD.
12:00	17:00	Circulating		Attempt to circulate 300L/min. Pressure increase to 18 MPa. Had to reduce rate to 120 L/min to maintain pressure below 18MPa. Pump total of 5m3 with no increase in flow rate. Disconnect & pump lines and pulled tubing up 5 joints. RI pump lines and try to circulate with 120L/min. Tubing filled and pressure increase up to 18 MPa. Stop pumping. RIH tubing to 681m MD. RI lines to tubing. Pump 2.0m3 plant Diluant solution. Then followed by produced water. Tubing pressured up to 21 MPa solid. Attempt to bleed back to pumper unit. Started getting Diluant fumes back. Rig in return lines to rig tank and to bleed pressure to rig tank.
17:00	19:00	Tripping pipe (in/out)		RIH w/ bailer assy utilizing pull down system and tag PBTD @ 982m MD. No noticeable areas of plugging of sand. Attempt to pump thru tool - hit maximum pressure with no rate.
19:00	19:30	Safety		Crew change - HA
19:30	00:00	Tripping pipe (in/out)		POOH w/ bailer assy. Teardown bailer for inspection and found screen clean and nothing in nozzles or ports. Tokk several samples of bitumen water mixture in bailer chamber. will have BSW cut done in morning.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/8/2006
Report #: 8.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Run cleanout scraper and mill

Planned Operations
Run scraper and clean out mill

6 am Status
Finish cleaning the horizontal section

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	03:30	Tripping pipe (in/out)		Spott new rig pump that was brought up from rockwells yard. Assembled the 244.5mm shoe and scraper, along with the cyclone bailer and RIH.
03:30	07:00	Tripping pipe (in/out)		RIH w/ cyclone bailer assy to the liner top
07:00	07:30	Safety		Crew Change - HA meeting
07:30	10:00	Tripping pipe (in/out)		RIH w/ cyclone bailer assy c/w 220 mm OD wash shoe and 244.5 mm casing scraper to top of 177.8mm hanger
10:00	13:00	Tripping pipe (in/out)		Attempt to operate cyclone bailer - pressure up to 18.5 MPa and only able to pump 26 l/min - rig pump unable to pump slow enough at this pressure.
13:00	16:00	Tripping pipe (in/out)		POOH lay down tubing. lay down Cyclone bailer and found 1/2 L of hard bitumen balls w/ small pieces of wire and unknow material. Try to break down w/ varsol solvent but had to work betwenn fingers to break it donw to paste w/ very fine grit to materil. Possibly asphaltenes from well of Diluant tank.
16:00	19:00	Tripping pipe (in/out)		Assemble 177.8mm milling scraper & pump to surface bailer. RIH to bottom, got hung up 177.8 hanger packer unable to get through with pull downs. decided to POOH
19:00	19:30	Safety		Crew change- HA meeting
19:30	22:30	Tripping pipe (in/out)		Continued to POOH with 177.8mm Milling scraper and pump to surface bailer. Noticed drilline cable was sticking out so did cut & slip line. Continue to POOH.
22:30	00:00	Tripping pipe (in/out)		Assembled 88.9 mule shoe with flapper valve, 10 joint chamber, 73mm pump to surface bailer assembly, ball check and dump joint, for BHA. RIH to 335m just past liner hanger packer and start bailling by working each joint several strokes per connection. work bailer total length of liner.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/9/2006
Report #: 9.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Pull Bailer - RIH w/ Packer and pressue test 219 mm casing - good

Planned Operations
Pressure test & set packers

6 am Status
POOH w/ bailer assy

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	Tripping pipe (in/out)		Tagged 177.8mm hanger at 329.81m no problems getting by it. Continued to RIH with 73mm pump to surface bailer, Stroking the bailer 3 times each joint.Tagged bottom at 975.5m
07:00	08:30	Tripping pipe (in/out)		After tagging bottom at 975.5m stroked bailer 10 time and started POOH
08:30	09:00	Safety		Crew change - HA meeting
09:00	14:00	Tripping pipe (in/out)		POOH & lay down scraper assy & pump to surface bailer. Took 5 samples from every other chamber joint & gave to DEL for testing. The bottom joint had considerable amount of sand. The results were 75% sand for the bottom joint, 40-60% sand for other joints.
14:00	21:00	Tripping pipe (in/out)		Assembled packer assy & RIH to the heel - Flushed 10 m3 85*C hot produced water - set packer @ 329.0 mMD to do a casing pressure test at 5000 kPa. Lost 3000 KPa in 5 mins. Pull 5000 extra DaN into packer and try pressure test to 5000 Kpa and lose 3000 KPa in 5 mins again. Repeat test and got same leakoff again. Unset packer & pull up joints. Reset packer @ 250mMD and pressure test 5000kPa for one hour losing 300kPa.
21:00	21:30	Safety		Crew Change HA meeting
21:30	02:00	Tripping pipe (in/out)		Released packer & started tripping out of hole. Got the pump parts for rig pump. Started putting pump back together. Pumped 10m3 down hole to cool wellbore.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/10/2006
Report #: 10.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Run & Pull Cup Tool

Planned Operations
RIH w/ 89 x 178 tapered production string

6 am Status
Pull Bailer

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	Tripping pipe (in/out)		Assembles 73mm Pump to surface bailer RIH. Put rig pump together and circulated pump
07:00	07:30	Safety		Crew Change HA meeting
07:30	11:00	Tripping pipe (in/out)		RIH w/ plunge bailer assy followed by 88.9mm EUE to clean the horizontal section. Two complete cycles per connection for the low intervals of 280-300, 370-400, 510-730, 820-850, 880-900. Stroke for 20 minutes at the very bottom of the well (974 mMD).
11:00	14:00	Tripping pipe (in/out)		POOH 72 joints w/ bailer assy
14:00	14:30	Prepare/Clear Lease		Move tubing joints to the pipe racks. Crew taking break
14:30	17:30	Tripping pipe (in/out)		Continue POOH w/ bailer assy. Took 5 samples from every other chamber joint & gave to DCEL for testing. Bottom joint contained 40% sand likely due to tagging bottom. Rest of the chamber contained 1%-3% sand.
17:30	19:00	Tripping pipe (in/out)		Assembled & RIH w/ CUP TOOL followed by 88.9mm EUE joints. Operators had to let out the steam from the injector well to be able to shut the phase 1 plant down. Crew found the work area too noisy. Shut down .
19:00	19:30	Safety		Crew Change HA-Meeting
19:30	23:00	Tripping pipe (in/out)		Started to RIH with CUP TOOL Measured length 5.39m and 88.9mm EUE joints. run to bottom Tagged bottom at 974.68m
23:00	00:00	Tripping pipe (in/out)		POOH with CUP TOOL and 88.9mm EUE joints

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Unit: LWO, Rockwell S70

Well Name: 1P1_102/03-33-095-12-W4M

Start Date: 2/11/2006
Report #: 11.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Bailer run and sample cut

Planned Operations
Prepare well to run production tubing.

6 am Status
Pull Bailer

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	02:00	Tripping pipe (in/out)		Continue to POOH with CUP TOOL to top of last blank joint of 177.8mm hanger. Rigged up rig pump and open tool by shearing off pins. Tool open at 19.5 MPa
02:00	05:00	Circulating		Reverse circulated hole (30m3), collecting samples of bitumen and sand. Circulated until returns were fairly clean produced water. Minimal loss to formation.
05:00	07:00	Tripping pipe (in/out)		POOH with CUP TOOL and begin to assemble 73mm pump to surface bailer
07:00	07:30	Safety		Crew change - HA meeting
07:30	12:30	Tripping pipe (in/out)		RIH w/ 73mm pump to surface bailer followed by 88.9EUE tubing with two complete strokes per connection during the following intervals : 280-300 mMD (30 min), 370-400 mMD (45 min), 510-730 mMD (1.25hr) , 820-850 (30min), 880-900 (30min) and 15 complete strokes at bottom 974.0 m) of liner.
12:30	17:00	Tripping pipe (in/out)		POOH w/ 73mm pump to surface bailer & joints. All chambers empty likely due to ball check not functioning properly. Tiny amount of oil found in the bottom chamber. 19% sand 2% water.
17:00	18:15	Wait on Orders		Sample cut determined 19% sand and 2% water assembled pump to surface bailer assy again.
18:15	19:00	Tripping pipe (in/out)		RIH w/ 73mm pump to surface bailer & 88.9mm EUE tubing to clean horizontal sectional again.
19:00	19:30	Safety		Crew change - HA meeting
19:30	00:00	Tripping pipe (in/out)		Continued to RIH with 73mm Pump to surface Bailer Stoking at the same intervals as stated above

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/12/2006
Report #: 12.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Make Bailer Run & Get BSW done on samples

Planned Operations
Prepare to run in production string

6 am Status
Pull Bailer

Remarks
Accident Free: Yes
Last Safety Meeting: 2/12/2006

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	05:00	Tripping pipe (in/out)		Tagged bottom (975.32) with 73mm pump to surface bailer, stroked bailer 20 times. Started to POOH.
05:00	07:00	Tripping pipe (in/out)		73mm Bailer assembly at surface, grabbed 3 samples, sample # 1 1st joint in chamber, sample #2 3rd joint in chamber, Sample #3 last joint in chamber Take over to plant for BS&W
07:00	07:30	Safety		Crew Change HA-Meeting
07:30	09:00	Wait on Orders		Waiting for BS&W results, results are as follows -- samples #1 less than 2% sand #2 Less than 2% sand & sample#3 less than 5%.
09:00	10:00	Move In/Rig Up		Clean & prepare bailer assy for another run. Move pipes.
10:00	14:45	Tripping pipe (in/out)		RIH w/ 10 jts of chamber, pump to surface bailer & plunger bailer followed by 88.9mm EUE tubing attempting to clean following low intervals of the horizontal section: 280- 300 mMD (30 min), 370-400 mMD (45 min), 510-730 mMD (1.25hr) , 820-850 (30min), 880-900 (30min) and 15 complete strokes at bottom (974.0 m) of liner.
14:45	19:00	Tripping pipe (in/out)		POOH w/ both bailers & 89mm tubing.
19:00	19:30	Safety		Crew Change - HA meeting
19:30	00:00	Tripping pipe (in/out)		Completed POOH with 73mm pump to surface bailer, Had 4 samples Sample#1 top of chamber 0.5% sand, Sample #2 middle of chamber 0.5% sand, Sample #3 joint 8 of chamber 0.5% sand Last Joint of chamber water no sand

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Unit: LWO, Rockwell S70

Well Name: 1P1_102/03-33-095-12-W4M

Start Date: 2/13/2006
Report #: 13.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
RIH w/ tail string and 177.8 mm FSV string c/w Sensa & Petrospec lines.

Planned Operations
Run Production string Assy

6 am Status
Run Tail Sting

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	04:00	Rig/Equip. Maintenance		Started to move production string on to location, 36 joints of 177.8mm casing along with 69 joints of 88.9mm casing. Had rig crew clean down rig and prepare to run in hole with production string. Sensa alerted to be here by 06:00
04:00	06:00	Move In/Rig Up		Set up production string on pipe racks consisting of 66 joints of 88.9mm (8 joints are slotted) 13.85kg/m TKC 4040, and 34 joints of 177.8mm 34.26 kg/m SLHT casing. Cleaned rig from top to bottom to ensure properly work equipment to run in the SENSA fibre optic cable and clamps
06:00	07:00	Wait on Services		Waiting for Sensa to set up and RIH
07:00	07:30	Safety		Crew change HA-meeting
07:30	09:30	BOP/Install/Remove/...		Rotate BOP so that pipe rams could be replaced for 177.8 mm later.
09:30	10:00	Safety		Safety meeting with sensa & rig crew. Discussed procedure & possible issues.
10:00	16:00	Tripping pipe (in/out)		RIH w/ Muleshoed 88.9mm, 13.85kg/m TKC 4040 Sensa Turnaround sub 9 joints of blank 88.9mm 13.85kg/m TKC 4040 tubing, 2 joints of perforated 88.9mm, 10 blank joints, 2 perforated joints, 10 blank joints, 2 perforated, 10 blank joints, 2 perforated. Tie in Sensa conduit lines into turnaround sub and RIH w/ tubing while banding Sensa Escapulated lines to tubing every connection.
16:00	19:00	BOP/Install/Remove/...		Tally & drift pipes. Change pipe rams & slips to 177.8mm
19:00	19:30	Safety		Crew Change HA-meeting
19:30	00:00	Tripping pipe (in/out)		Continued to RIH with 177.8mm production string and running & banding SENSA escapsulated to tubing.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/14/2006
Report #: 14.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Continue to run and set FSV production sring

Planned Operations
Run Blackcat packer & FSV system.

6 am Status
Run Tail Sting

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	07:00	Tripping pipe (in/out)		Continue running 177.8mm casing and Sensa, had to splice sensa conduit together at joint 23 on the 177.8mm casing
07:00	07:30	Safety		Crew change - HA meeting
07:30	15:00	Tripping pipe (in/out)		Continue running 177.8mm casing & Sensa slowly to ensure Sensa conduit is not being damaged. Insert sensa conduit lines thru hanger assy and install split packoff fittings. Land tubing w/ 177.8 tbg c/w 88.9 changeover located @ 320.09 & 88.9mm tubing landed @ 970.92 m MDKB
15:00	19:00	Install/Repair Wellhead		Galaxy technicians install 297.4mm X 177.8 mm wellhead tubing spool c/w snsa conduit lines passed thru and packed off w/ split glands.
19:00	19:30	Safety		Crew change & Safety meeting
19:30	00:30	BOP/Install/Remove/...		Install BOP w/ 88.9mm pipe rams. prepare to RIH w/ Weatherford Blackcat packer.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/15/2006
Report #: 15.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
Work

Planned Operations
Run Blackcat packer & FSV system.

6 am Status
RIH & set Weatherford Retrievable Sealbore Packer

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	01:00	BOP/Install/Remove/...		Pressure test BOP's, pipe rams and blind rams, 1400KPa for 10 min then 7000KPa for 10min
01:00	07:00	Tripping pipe (in/out)		Assemble Weatherford """"Blackcat"" BHA (6.55m) start RIH 32 joints to total depth of 317.73 mMD, set packer held 16 MPa for ten mins. Sheared off of packer assembly at 19.5 MPa while pulling 5 DaN with rig. Started to POOH
07:00	07:30	Safety		Crew Change - HA meeting
07:30	10:00	Tripping pipe (in/out)		POOH w/ 88.9mm working string & lay down w/ HPG BlackCat Hydraulic Setting Tool. Inspect tool on surface everything looks normal
10:00	15:00	Tripping pipe (in/out)		Assemble & RIH as follows: 101.6mm Latch c/w FSV latch into top of Blackcat packer (@316.63mMD). Disconnect from on/off tool by slacking of 100 daN then picking up with left hand torque. Fill casing & pressure test packer & 177.8 casing to 3000 kPa solid for 5 min.
15:00	17:00	Tripping pipe (in/out)		Bleed off pressure & POOH on/off skirt & 88.9mm working string.
17:00	19:00	Tripping pipe (in/out)		Prepare to Assemble w/ REDA ESP, Steaming BHA and running 88.9mm TKC 4040 Pipe
19:00	19:30	Safety		Crew Change - HA Meeting
19:30	21:30	Install/Repair Wellhead		Assemble REDA ESP and began to RIH with BHA
21:30	00:00	Tripping pipe (in/out)		RIH in hole with REDA ESP

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 2/16/2006
Report #: 16.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
RIH w/ ESP and pump test

Planned Operations
Run and land ESP

6 am Status
SET REDA ESP

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	05:30	Tripping pipe (in/out)		Continue RIH w/ REDA ESP followed by 88.9mm tubing running inside 177.8mm casing. Slow rate due to cold weather & caution to land the pump safely while not damaging other downhole equipment. Run 1 joint deep w/ cable to allow BOP removal.
05:30	11:30	BOP/Install/Remove/...		Strip off BOP's over hanger assy.& Pull up extra joint (thermo-coupler folded over in casing but tested good after straightening) and makeup ESP connector , install ESP pass thru connector and insert bubble tube and thermo-coupler thru hanger assy.
11:30	16:30	Install/Repair Wellhead		Crew change, complete HA & safety meeting. Install top end of wellhead. Tie in Reda electric cable.
16:30	23:30	Tripping pipe (in/out)		Continuing to RIH with REDA ESP. Cold weather playing a part in trying to get wires running properly into hole without Pinching or Crimping the ESP Cable or Petrospecs Cable, Temp -38
23:30	00:00	Safety		Crew Change - HA meeting

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/14/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Unit: LWO, Rockwell S70

Well Name: 1P1_102/03-33-095-12-W4M

Start Date: 2/17/2006
Report #: 17.0

Country : Canada	Slot : Producer 1	Water Depth :	Spud Date :
Field : Joslyn	North :	Location : ONSHORE	Objective : Flowing Oil
Platform : Pad 1	East :	Well shape : Vertical	Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	4	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	2/1/2006	12/13/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)
	75

Daily Summary
ROSR and Circulate light Oil

Planned Operations
Pump light oil down 177.8mm casing thru ESP - ESP test

6 am Status
Rig In Sanjel

Remarks
Accident Free: Yes

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	03:00	Install/Repair Wellhead		Try to function test REDA ESP, had power to ESP Schlumberger rep. said it was working, could not flow test due to heavy oil at pump.
03:00	07:00	Wait on Services		Cleaned up service rig, lease and around wellhead. Waited for Sanjel pumper and light crude oil. Rigged into wellhead to pump down 88.9mm tubing back up the 177.8mm annulus to circulate light crude to ESP.
07:00	07:30	Safety		Crew Change HA-meeting
07:30	07:30			
07:30	09:30	Wait on Services		Wait for Sanjel pumping unit to arrive on location
09:30	10:00	Safety		Safety meeting with rig crew, Sanjel crew & others on location about procedure & hazards of pumping light oil
10:00	12:00	Circulating		Rigged in Sanjel to wellhead circulated light crude down 88.9mm tubing through ESP back up the 177.8 annular to rig tank. Stop pumping. REDA hand tried pumping reverse with ESP & got good flow to the tank w/ proper Amperage. Switched pump forward rotation got 200L/min at proper torque level. Return 1m3. Stop pump. Rig Sanjel to 244.5mm by 177.8mm annulus pumped down 40m3 of light curde oil . (Specefic gravity=.82, flash =40*C, RVP=11kpa) Flushed lines w/ water. Rigged out Sanjel.
12:00	18:00	Rig/Equip. Maintenance		Rig out & got welder to fix loose stairs & handrails. Clean up lease & winterize all equipment.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

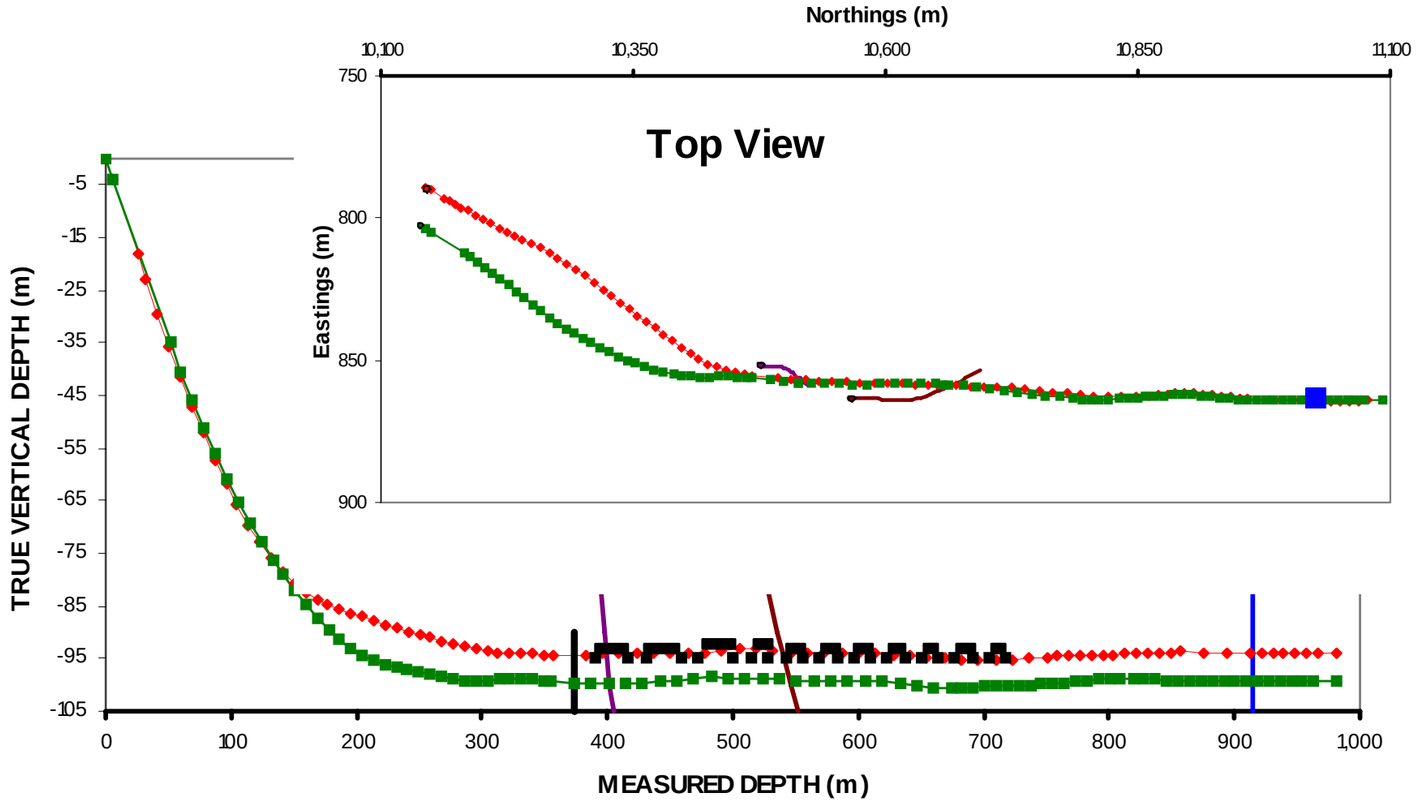
Report printed: 9/14/2007

APPENDIX 2/A2:

Completion operations

New completion drawing

OB1AA well is 1.0 meters west of injector and 1.97 meters west of producer
OB1B well is 2.1 meters east of injector and 1.46 meters east of producer
OB1C well is 0.45 meters west of injector and 0.69 meters west of producer



S:\LOGOS\Deer Creek Logo.jpg Not To Scale	PROJECT **JOSLYN SAGD PROJECT** **Phase I Workover**	TITLE **WELL COMPLETIONS** **Operating Phase**	BY / DATE DRAWN: **B. Harll** — **Jan 2006** FILENAME: **Phase1_Workover_Jan2006**

APPENDIX 2/B:

Completion operation

April 2006, ESP pump replacement

Well Servicing Daily Operation

TOTAL E&P Canada

Well Name: 1P1_102/03-33-095-12-W4M

Unit: LWO, Rockwell S70

Start Date: 4/10/2006
Report #: 1.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	5	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	4/10/2006	4/11/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)

Daily Summary
Rig to Pull ESP Assy. Circulate CaCl2 to kill well.

Planned Operations
Pull ESP

6 am Status
Move from Pad 203-P3

Remarks
Required CaCl2 to kill well

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	09:00	ON-RURD	PT	Moved rig & set up equipment
09:00	10:00	SN-HSE	Misc	Safety Meeting w/ Operations Staff & Rig Crew at Phase 2 plant
10:00	17:00	OC-KILL	PT	Rigged up lines & circulated 2m3 of hot water to clean the well. Filled up the well w/ 8m3 of CaCl2 density 1374kg/m3. FSV already closed due heavy oil sitting on top.
17:00	00:00	OC-TOOL	PT	POOH w/ 88.9mm production string & ESP. Every joint had to be cleaned & clamps taken off.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1	84.00	84.00

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)
Service	Others	7	12	84

Supervisors

Supervisor
Lee Getzinger

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/17/2007

Well Servicing Daily Operation

TOTAL E&P Canada

Unit: ,

Well Name: 1P1_102/03-33-095-12-W4M

Start Date: 4/11/2006
Report #: 2.0

Country : Canada Field : Joslyn Platform : Pad 1	Slot : Producer 1 North : East :	Water Depth : Location : ONSHORE Well shape : Vertical	Spud Date : Objective : Flowing Oil Status : Completed

Activity Type	Chrono number	Job Type WS	Classification WS	Status WS
Pump Change Out	5	HWO	WO	

Rig/WS Unit and Equipment Details

Rig/Unit Name	Local Contractor	Rig/Unit Type	Start Date	End Date
Rockwell S70	Lyle Aubin	LWO	4/10/2006	4/11/2006

Description	Actual Location	Pressure Rating (bars)	Nominal ID (in)	Spool Date	Used Hours (hrs)	Wire Left (m)

Make	Model	Component Height (m)	Max Hang Off Weight (tonnesf)	Certification Date

Daily Operation Details

Daily Field Est Cost (Local)	Cum Field Est Cost (Local)

Daily Summary
Pooh w/ failed ESP and RIH partially with replacment unit c/w control lines and thermocouplers.

Planned Operations
Install ESP

6 am Status
POOH w/ ESP

Remarks

Production Losses / MAP

Time Log

Start Time	End Time	Code	Unsched Type	Comment
00:00	09:00	OC-TOOL	PT	Continue POOH w/ 88.9mm tubing.
09:00	10:30	ON-ESP	PT	Lay down ESP & sent to Nisku for repairs. Motor was full of water.
10:30	13:00	ON-RURD	PT	replaced broken ESP and got ready to RIH with new pump
13:00	18:00	FN-RURD	NPT	REDA Schlumberger spooler trailer broke down. Take to FORT MC to fix. Spooler trailer arived on location at 6pm
18:00	00:00	ON-TOOL	PT	tally pipe, drift and load pipe racks 27 joints 88.9mm 40/40 and changeovers Start RIH.

Work Strings

String Description	Run Date	Pull Date	Set Depth (mKB)

Safety and Personnel Details

Days without LTI	Personnel Total Hours (hrs)	Cum Personnel Total Hours (hrs)
1		84.00

STOP Cards Submitted

Parent Company	Quantity	Comment

POB

Type	Parent Company	Head Count	Dur (hrs)	Tot Time (hrs)

Supervisors

Supervisor

Safety Incidents

Time	Event Type	Associated Rig

Number of Fatalities	Number of Lost Days

Main Stocks Consumed

Main Stock Des	Consumed	Received	Returned	Stock

Start and End Pressures

Time	Test Type	Activity

Start Time	Pres Tub Start (bars)	Pres Cas Start (bars)	Pres Ann Start (bars)

End Time	Pres Tub End (bars)	Pres Cas End (bars)	Pres Annulus End (bars)

Report printed: 9/17/2007

APPENDIX 3:

Mud and geological report

APPENDIX 3/A:

Mud and geological report

Injector well

WELL SUMMARY

The horizontal SAGD well DCEL 1I1 JOSLYN CREEK 3-33-95-12 was the injector well of a single well pair drilled for Deer Creek Energy in November and December 2003. The spud date for the well was November 26, 2003 at 07:00 hours with a slant rig, Precision Drilling Rig #297. A 506 mm surface hole was drilled to 28 m at a 45 degree angle and 406.4 mm surface casing was set at 28.0 m and cemented.

Surface casing was drilled out with a 375 mm bit and directional tools commencing at 05:00 on November 27. Delays were caused by welding difficulties, a misalignment in the surface casing, and difficulties with ranging tools with Heat Seakers. The mud was not changed out in 1I1 until the well was definitely in McMurray Formation dominated by sand. Based on 1P1, McMurray sand was expected at 113 m MD and occurred at 111 m MD.

Clearwater cavings were common in the intermediate hole through to TD. No McMurray mud lumps were observed as had been in the 1P1 intermediate hole. The shakers became bitumen clogged and many samples had a very minor sand component.

Total time was 2 days 00:10 hours from spud to drilling the heel point of the horizontal injector at 375.0 m.

Total time from drilling to the heel point of the horizontal injector at 375 m to drilling out the shoe for the horizontal leg was 1 day, 19:40 hours. A major delay was waiting for a cementing plug.

The MI surfactant used in the horizontal without cooling the mud system worked well. The shaker screens held most of the bitumen the mud stayed clean and the sand from the centrifuge was clean.

The horizontal leg was drilled from 374.0 to 982.0 m. It was in mainly fine grained quartz sand with inferred good to excellent reservoir quality. This was in contrast to the medium to coarse grained sand in the underlying producer. There was no evidence of intergranular cement.

The following summarizes the reservoir quality in the horizontal leg of 1I1 from the intermediate casing point at 374.0 m to the end of gamma at TD at 963 m, an interval of 595 m:

Reservoir Type	**Gamma in API**	**Total Length**	**% of Reservoir**
Clean sand	Mainly 15	194.0	32.6
Minor mud interbeds	15-30	314.0	52.8
Total good reservoir	15-30	508.0	85.6
Common mud interbeds	30-45	82.0	13.8
Dominantly mud	>45	5.0	0.8

Total time for drilling the horizontal producer from drilling out the intermediate shoe to TD was 33:15 hours. Instrument problems with Heat Seekers resulted in a delay.

Total time from spud to TD was 4 days, 18:45 hours.

WELL DATA SUMMARY

WELL NAME: DCEL 1I1 JOSLYN CREEK 3-33-95-12

OPERATOR: Deer Creek Energy Limited

SURFACE LOCATION: 10-33-95-12W4M
BOTTOM HOLE LOCATION: 03-33-95-12W4M

SURFACE CO-ORDINATES: 432.0m South and 790.2 m West

INTERMEDIATE CO-ORDINATES: 336.81 m South, 66.44 m West (Extrapolated)
BOTTOM HOLE CO-ORDINATES: 943.26m South, 59.02 m West (Extrapolated)

UNIQUE ID: 103/03-33-095-12W4/00 **WELL CLASS:** DEV (NC)

LICENCE #: 029554 **AFE:** 064-0303

ELEVATIONS: **Ground:** 339.7m
Kelly Bushing: 343.6m

CONTRACTOR: Precision Drilling Slant Rig, Rig #297

SPUD DATE: November 26, 2003 @ 07:00 Hrs.
T.D. DATE: December 1, 2003 @ 11:45 Hrs.

T.D. : 982.00 m MD 93.87 m TVD 249.7 m SS 943.25 m VS

HOLE SIZE: **Surface:** 506 mm to 28.0 m MD
Intermediate: 374.6 mm to 375.0 m MD
Final: 269 mm to 982.0 m MD

SURFACE CASING: 406.4 mm set at 28.0 m.
INTERMEDIATE CASING: 298.45 mm set at 374.0 m
HORIZONTAL LINER: Information not available

SAMPLE INTERVAL: 10 m intervals in the 45 degree inclined intermediate section from 50 m to 370 m, 15 m intervals in the horizontal section from 390 m to T.D. No samples submitted to E.U.B.

MUD TYPE: Water in Clearwater section, polymer in the McMurray section.
MUD COMPANY: MI Drilling Fluids Canada, Inc.

INTERMEDIATE HOLE LOGGING: Gamma MWD by Sperry 20.0-356.0 m
MAIN HOLE LOGGING: Gamma MWD by Sperry 374.0-969.0 m

GEOLOGISTS: Dane Bridge and Esther Visser

DRILLING SUPERVISORS: Rodney Tetreault and Vince Crawchuk

PROGNOSIS AND RESULTS

GL: 339.7 m **KB:** 343.6 m

Note: Survey data at target points are extrapolated from the last actual survey.

Item	Prognosis SS m	Prognosis South m	Prognosis West m	Drilled SS m	Drilled South m	Drilled West m
Heel Target	249.15	327.26	51.74	249.5	336.81	66.44
Toe Target	249.15	943.26	59.02	249.7	943.25	73.58

Note: The toe prognosis for 1I1 has been changed in this table to the drilled coordinates of 1P1 so that the injector well will directly overlie the producer well.

FORMATION TOPS

Formation	Drilled MD m	Drilled TVD m	Drilled SS m
Clearwater Top	29.2	21.0	322.6
McMurray Top	90.2	59.0	284.6

FORMATION EVALUATION

The McMurray Formation in the 1I1 intermediate hole was relatively clean bitumen saturated sand to 227 m MD. The section from 227 to 333 m was interbedded with mud and displayed a gamma commonly of 45-60 API and locally 30-45 API. At 333 m to the final gamma at 355 m MD the gamma was mainly 15-20 API indicating clean sands. The sand in this interval was mainly medium to coarse grained with the lower coarse fraction predominating.

The following summarizes the reservoir quality in the intermediate section of 1I1 from the

interval of sands with minor mud interbeds starting at 291 m MD, with gamma from the intermediate and horizontal legs:

From	To	Interval	Gamma	Description
m	m	m	API units	
291.0	326.0	35.0	20-25	Clean bitumen saturated sand with sections **with minor mud interbeds**
326.0	363.0	37.0	20-30	Clean bitumen saturated sand with sections **with minor mud interbeds**
363.0	374.0	11.0	15	Clean bitumen saturated sand

The following details the reservoir quality in the horizontal leg of 1I1 from the intermediate casing point at 374.0 m to 969.0 m at the final gamma reading behind TD at 982.0 m:

From	To	Interval	Gamma	Description
m	m	m	API units	
374.0	385.0	11.0	15	Clean bitumen saturated sand
385.0	405.0	20.0	20-25	Clean bitumen saturated sand with sections **with minor mud interbeds**
405.0	442.0	37.0	15	Clean bitumen saturated sand with minor mud interbeds
442.0	448.0	6.0	20-30	Clean bitumen saturated sand with sections **with minor mud interbeds**
448.0	512.0	64.0	15	Clean bitumen saturated sand
512.0	534.0	22.0	20-25, local 15	Clean bitumen saturated sand with sections **with minor mud interbeds**
534.0	554.0	20.0	15-20	Clean bitumen saturated sand
554.0	597.0	43.0	15-30	Clean bitumen saturated sand with sections **with minor mud interbeds**
597.0	615.0	18.0	15-20	Clean bitumen saturated sand
615.0	628.0	13.0	20-25	Clean bitumen saturated sand with sections **with minor mud interbeds**
628.0	**640.0**	**12.0**	**30-45**	Bitumen saturated sand with **common mud interbeds**
640.0	658.0	18.0	20-30	Clean bitumen saturated sand with sections **with minor mud interbeds**
658.0	**670.0**	**12.0**	**35-45**	Bitumen saturated sand with **common mud interbeds**
670.0	713.0	43.0	15-25	**Minor interbedded mud** and bitumen saturated sand
713.0	729.0	16.0	30-40	Clean bitumen saturated sand with sections with **minor to common mud interbeds**
729.0	**734.0**	**5.0**	**45-50**	**Interbedded mud** and minor bitumen saturated sand
734.0	**754.0**	**20.0**	**35-45**	Bitumen saturated sand with **common mud interbeds**
754.0	774.0	20.0	25-35	Clean bitumen saturated sand with sections **with minor mud interbeds**
774.0	**781.0**	**7.0**	**35-40**	Clean bitumen saturated sand with sections with **minor to common mud interbeds**
781.0	806.0	25.0	20-35	Clean bitumen saturated sand with sections **with minor mud interbeds**
806.0	853.0	47.0	20-30	Clean bitumen saturated sand with sections **with minor mud interbeds**
853.0	868.0	15.0	30-40	Clean bitumen saturated sand with sections with **minor to common mud interbeds**
868.0	908.0	40.0	20-30	Clean bitumen saturated sand with sections **with minor mud interbeds**
908.0	952.0	44.0	15-20	Clean bitumen saturated sand
952.0	969.0	17.0	20-30	Clean bitumen saturated sand with sections **with minor mud interbeds**

The following summarizes the reservoir quality in the horizontal leg of 1P1 from the intermediate casing point at 374.0 m to the end of gamma at TD at 963 m, an interval of 595 m:

Reservoir Type	Gamma in API	Total Length	% of Reservoir
Clean sand	Mainly 15	194.0	32.6
Minor mud interbeds	15-30	314.0	52.8
Total good reservoir	15-30	508.0	85.6
Common mud interbeds	30-45	82.0	13.8
Dominantly mud	>45	5.0	0.8

DAILY OPERATIONS

Date	Depth *at Midnight*	Progress	Rotating Hrs.	Operations Conducted *(00:00 hrs to 24:00 hrs)*
Nov. 25, 2003	0m	0m	0	Move rig onto location from 1P1,rig up.
Nov. 26	28m	28m	3.00	Continue rip up and pick up tools, 20:45-07:00, spud surface hole at 07:00 hours, drill surface hole at 45 degrees to 28.0 m, POOH, rig to run surface casing, run 16 inch surface casing 12:30-15:45, rig in cementers, cement surface casing 16:00-17:00, wait on cement, cut and weld csg/conductor.
Nov. 27	303m	275m	14.75	Continue welding, pick up tools 01:30, drill out 05:00, drill to 103 m at 11:55 and change out tanks and displace hole to mud, continue drilling at 14:10, drill and survey to 303m.
Nov. 28	375m	72m	6.50	Drill and survey to 275m at 07:10, wiper trip to shoe, back ream to TD and ream out, POOH, lay down directional tools, run intermediate casing 18:25-24:00.
Total time spud to TD of intermediate at heel: 2 days, 00:10.				
Nov. 29	375m	0	0	Continue to run casing to 05:45, wait on cement plug, cement casing 13:15-14:30 with 11 ¾ inch plug down, wait on cement, cut conductor and casing, pick up tools.
Nov. 30	864m	489m	14.75	Continue picking up directional tools, drill out float and shoe at 375 m at 02:30, displace hole to mud, drill land survey to 864 m.
Total time from TD at heel of intermediate to drilling out shoe: 1 day, 19:40.				

Dec.1	982m	118m	4.25	Drill and survey to 915 m at 02:45, circulate and wait on Heat Seekers, wiper trip 10 singles, drill and survey 07:00 to 11:45 to TD at 982.0 m, POOH, lay down tools, RIH with porcupine reamer.

Total time from drilling out intermediate shoe to TD of Hz leg: 1 day, 9:15 hours.

RECORD OF MUD PROPERTIES

Mud Type: Polymer **Mud Company:** MI Drilling Fluids Canada, Inc.

Note: Special reports will be produced by contractors on the mud system. The following table includes only the data entered on the drilling tour sheets on the Pason.

Depth	Den	Vis	Wat/l	pH	Cl	yp	Gels	Solids	Sand	Oil
m								%	%	%
68		38								
155	1060	38		8.5						
221	1110	41		9.5						
287	1100	48		10.0						
312	1050	40		10.5						
335	1050	40		10.0						
357	1050	43		10.0						
370	1065	43								
421	1060	42								
595	1070	38		9.5						
680	1060	41		10.0						
770	1065	41		9.0						
798	1065	40		9.0						
886	1065	40		9.0						
915	1070	49		10.0						
970	1075	70		9.0						

BIT RECORD

Bit#	Size	Mfg.	Type	Serial#	Jets	In	Out	Int.	Hrs.	Cond.
	mm					m	m	m		
1	508	Hughes	GTX11H	F04DK	3/22.2	0	28	28	3.0	n/a
2	374.6	J&L	S11J	RR00848	3/22	28	375	347	24.25	n/a
3	270	Reed	DS59	H45147	6/12	375	982	607	19.0	n/a

LITHOLOGICAL DESCRIPTIONS FOR INTERMEDIATE HOLE

Note: Sample descriptions are all of unconsolidated sandstone, bitumen saturated with inferred good to excellent intergranular porosity unless otherwise specified. Grain size distributions are displayed graphically on the strip log.

40-50 m: Medium-dark grey mud with trace very fine sand and loose very coarse sand probably from till, rare pyrite, minor cavings from till not shown on grain size histogram.

50-60 m: Medium-dark grey mud and trace siltstone with minor very fine sand to medium grained sand and loose very coarse sand probably from till, rare pyrite, rare glauconite, rare shell fragments, minor cavings from till not shown on grain size histogram.

60-70 m: Medium-dark grey mud and trace dark siltstone and very fine sand-siltstone with a mud matrix, minor very fine to fine grained sand and loose very coarse sand probably from till, rare pyrite, very rare glauconite, minor cavings from till not shown on grain size histogram.

70-80 m: Medium-dark grey mud and rare dark siltstone, trace very fine to fine grained sand and rare loose very coarse sand probably from till, rare pyrite, minor cavings from till not shown on grain size histogram.

80-90 m: Medium-dark grey mud , trace very fine to medium grained sand and rare loose very coarse sand probably from till, rare pyrite, minor cavings from till not shown on grain size histogram.

90-100 m: Medium-dark grey Clearwater mud and 5%, very fine to medium grained claer quartz sand from McMurray, rare loose very coarse sand probably from till, rare pyrite, rare coal, weakly bitumen saturated, minor cavings from till not shown on grain size histogram.

Note: McMurray sample are unconsolidated, bitumen saturated sand with intergranular porosity and inferred good to excellent porosity unless otherwise indicated.

100-110 m: McMurray clear quartz sand mainly fine to medium grained, >50% Clearwater mud and trace coarser sand from till, rare pyrite, weakly bitumen saturated

110-120 m: McMurray clear quartz sand mainly fine to medium grained, ~20% Clearwater mud cavings, minor siltstone cavings, rare to trace pyrite, weakly bitumen saturated

120-130 m: poor sample, McMurray clear quartz sand mainly fine to medium grained, 75% Clearwater mud cavings, rare to trace pyrite, weakly bitumen saturated

130-140 m: McMurray clear quartz sand mainly fine to medium grained, trace very coarse, 5% Clearwater mud cavings, rare pyrite, moderately bitumen saturated

140-150 m: McMurray clear quartz sand mainly fine grained, trace coarse, sample mainly bitumen with 10-15% sand, 2% Clearwater mud cavings, rare pyrite, rare muscovite, bitumen saturated

150-160 m: Murray clear quartz sand mainly fine grained, trace coarse, sample mainly bitumen with 10-15% sand, 2% Clearwater mud cavings, rare pyrite, rare muscovite, bitumen saturated

160-170 m: McMurray clear quartz sand mainly fine grained, very well sorted, good sample with abundant sand, trace pyrite, trace varicoloured chert, bitumen saturated

170-180 m: McMurray clear quartz sand mainly medium and fine grained, fair sample with abundant sand, 25% Clearwater siltstone and lesser mud, rare pyrite, trace muscovite, bitumen saturated

180-190 m: McMurray clear quartz sand mainly medium grained, rare coarse to very coarse, rare pyrite, trace muscovite, bitumen saturated

190-200 m: McMurray clear quartz sand mainly medium grained, rare coarse to very coarse, rare pyrite, trace muscovite, bitumen saturated

200-210 m: McMurray clear quartz sand, predominantly medium grained, rare pyrite, rare muscovite

210-220 m: McMurray clear quartz sand, mainly medium to lower coarse grained, rare pyrite, bitumen saturated. minor clearwater siltstones less than previous sample

220-230 m: McMurray clear quartz sand, mainly medium grained, rare pyrite, rare, large pieces of coal. bitumen saturated. minor large pieces of siltstone.

230-240 m: McMurray clear quartz sand, mainly medium to coarse grained, rare pyrite, rare multicolored chert. bitumen saturated. minor siltstone (more than previous sample)

240-250 m: McMurray clear quartz sand, mainly medium to lower coarse grained, trace pyrite, rare multicolored chert, rare muscovite and coal. bitumen saturated. minor siltstone

250-260 m: McMurray clear quartz sand, mainly coarse grained, rare pyrite, rare multicolored chert, rare muscovite and coal. bitumen saturated. minor siltstone, one grain appears to be pyrite cemented, probable McMurray silts

260-270 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, mainly medium grained, rare pyrite, rare muscovite and one very large coal grain. minor siltstone, (may be glauconitic?) probably McMurray interbeds.

270-280 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, moderate to well sorted, fine to lower coarse sand, rare pyrite, rare coal. minor glauconotic siltstone, probably Wabiskaw cavings

280-290 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, moderately sorted, mostly upper fine to lower coarse sand, rare pyrite. minor glauconotic siltstone, probably Wabiskaw cavings

290-300 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, moderately sorted, mostly upper fine to lower coarse sand, rare pyrite and coal. trace mica. trace siltstone.

300-310 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. 80% McMurray quartz sand, moderately sorted, mostly upper fine to lower coarse sand, rare pyrite

and coal. trace to minor mica. minor glauconitic siltstone (Wabiskaw cavings)

310-320 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. 80% McMurray quartz sand, moderate to well sorted, mostly medium grained sand, rare pyrite. trace mica. common small coal fragments. minor siltstone

320-330 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. 75% McMurray quartz sand, moderate to well sorted, mostly medium grained sand, rare pyrite, trace mica, abundant small coal fragments, minor siltstone, some is glauconitic.

330-340 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray quartz sand, moderate to well sorted, mostly fine grained sand, rare pyrite, rare mica, abundant small coal fragments, minor siltstone, some is glauconitic.

340-350 m: sample very bitumen rich, <5% McMurray quartz sand, well sorted, mostly fine grained sand, rare pyrite, trace small coal fragments, minor siltstone, probably cavings.

350-360 m: sample very bitumen rich, about 5% McMurray quartz sand, well sorted, mostly fine grained sand, rare pyrite, minor small coal fragments, rare muscovite, trace siltstone, probably cavings.

360-370 m: sample very bitumen rich, about 10% McMurray quartz sand, well sorted, mostly fine grained sand, rare pyrite, minor small coal fragments, rare muscovite, trace siltstone and glauconite, probably cavings.

LITHOLOGICAL DESCRIPTIONS FOR HORIZONTAL LEG

Note: Sample descriptions are all of unconsolidated sandstone, bitumen saturated with inferred good to excellent intergranular porosity unless otherwise specified. Grain size distributions are displayed graphically on the strip log.

375-390m: abundant coal, rare multi-colored chert, very rare pyrite.390-405m: very abundant coal (20%), rare multi-colored chert, rare mica, rare pyrite.

405-420m: very abundant coal (20%), rare multi-colored chert, rare mica, rare pyrite.420-435m: very abundant coal (20%), trace multi-colored chert, rare mica, rare pyrite.

435-450 m: very abundant coal and casing cement (20% each), ~1% very coarse sand.450-465 m: very abundant casing cement (50%), common coal, rare pyrite, trace very coarse sand, including varicoloured chert.

465-480 m: abundant casing cement (10-15%), minor coal, trace pyrite.480-495 m: trace casing cement, trace pyrite, trace varicoloured chert.

495-510 m: trace pyrite, trace varicoloured chert, minor gray to black siltstone, probably Clearwater cavings.

510-525 m: trace pyrite, minor varicoloured chert, rare coal, minor gray to black siltstone, probably Clearwater cavings.

525-540 m: rare pyrite and varicoloured chert, 1-2% coarse to very coarse grained sand, very rare muscovite, minor gray to black siltstone, probably Clearwater cavings and cement.

540-555 m: rare pyrite and varicoloured chert, <1% coarse to very coarse grained sand, very rare muscovite, trace coal, trace gray to black siltstone, probably Clearwater cavings and 5% cement.

555-570 m: rare pyrite and varicoloured chert, <1% very coarse grained sand, very rare muscovite, rare coal, trace gray to black siltstone, probably Clearwater cavings and trace cement.

570-585 m: rare pyrite and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and minor cement.

585-600 m: rare pyrite, coal and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and minor cement.

600-615 m: rare muscovite, trace coal and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and trace cement.

615-630 m: rare muscovite and pyrite, trace coal and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and trace cement.

630-645 m: trace coal and varicoloured chert, minor muscovite, trace gray to black siltstone, probably Clearwater cavings and minor cement.

645-660 m: trace chert, coal and muscovite, increase in medium grained sand, trace gray to black siltstone, probably Clearwater cavings and minor cement.

660-675 m: trace chert and coal, increase in medium grained sand, rare gray to black siltstone, probably Clearwater cavings.

675-690 m: very rare chert, rare gray to black siltstone, probably Clearwater cavings, trace cement from casing.

690-705 m: very rare chert and coal, rare black siltstone, probably Clearwater cavings, trace cement from casing.

705-720 m: very rare chert and coal, rare black siltstone, probably Clearwater cavings, trace cement from casing.

735-750 m: very rare chert, coal, and black siltstone, probably Clearwater cavings, very rare cement from casing.

750-765 m: minor coal, rare chert, pyrite and very rare cement from casing.765-780 m: minor coal, very rare chert and pyrite.

780-795 m: minor coal, very rare chert and pyrite. very rare feldspar.

795-810 m: minor coal, rare pyrite. rare chert.

810-825 m: trace coal, rare pyrite. rare chert.

825-840 m: rare coal, rare pyrite. rare chert.

840-855 m: rare coal, very rare pyrite. rare chert.

855-870 m: trace chert, rare coal, rare mica, very rare pyrite.

870-885 m: trace coal, rare chert and mica, very rare pyrite.

885-900 m: trace coal, rare chert, very rare pyrite.

900-915 m: abrupt grainsize change, much higher percentage of finer grained sands, rare coal, rare chert, very rare pyrite, mica and light gray siltstone, rare cement remnants.

915-930 m: abrupt grainsize change to predominately coarse grained, very rare

930-945 m: predominately coarse grained as at 930 m, very rare chert and pyrite

945-960 m: predominately lower coarse and upper medium grained, very rare chert and pyrite

960-975m: predominately lower coarse and upper medium grained, very rare chert and pyrite.

APPENDIX 3/B:

Mud and geological report

Producer well

WELL SUMMARY

The horizontal SAGD well DCEL 1P1 JOSLYN CREEK 3-33-95-12 was the producer well of a single well pair drilled for Deer Creek Energy in November and December 2003. The spud date for the well was November 19, 2003 at 19:30 hours with a slant rig, Precision Drilling Rig #297. A 444 mm surface hole was drilled to 42 m at a 45 degree angle and 339.7 mm surface casing was set at 41.3 m and cemented.

Surface casing was drilled out with a 311mm bit and directional tools at 20:15 on November 20. A magnetic storm caused by sun spot activity interfered with the Sperry directional tools and delayed the drill out on November 20.

The mud system became severely aerated at 08:30 November 21 at a MD of 196 m and drilling was delayed until 10:45. Drilling resumed but was frequently delayed in order to reduce foaming caused by the aerated mud again. The aeration was due a mud system that was designed to handle relatively clean oil sand. Due to excessive caving from the Clearwater Formation, the mud system was much more clay rich than expected. The sample caught at 190 m was very mud rich, Clearwater rich and deficient in McMurray sand. The material coming across the shaker at 190m had changed from dark, bitumen dominated to grey and mud dominated. The next sample at 200 m was mainly black bitumen with minor Clearwater cavings and McMurray sand.

Most samples from 250 to 290 m contained lumps of medium grey, soft, pliable mud that probably represents McMurray mud interbeds rather than Clearwater cavings.

Total time was 3 days 1:35 hr from spud to drilling the heel point of the horizontal producer at 374.5 m.

A strip log was produced from sampling on 10 m intervals for the intermediate hole. The strip log is in vertical format but the hole is inclined at 45 degrees at the top and horizontal at the base. The Clearwater interval was drilled with water and about 42 m MD of Clearwater is below the cemented surface casing. Consequently most of the early recovered samples from the shaker were resistant cemented sandstone and siltstone interbeds from the dominantly mudstone of the Clearwater Formation. Some rounded clasts of Clearwater mud were recovered. Clearwater cavings were observed in the samples collected at the shaker while drilling the entire McMurray interval in the intermediate hole.

Total time from drilling to the heel point of the horizontal producer at 374.5 m to drilling out the shoe for the horizontal leg was 1 day, 10:30 hr.

The MI surfactant used in the horizontal without cooling the mud system worked well. The shaker screens stayed clean, and relatively clean sand with minor bitumen came across the shakers. Samples were easy to clean with hot water and a small amount of detergent.

The horizontal leg was drilled from 374.5 to 981.0 m. It was in mainly medium to coarse grained quartz sand with inferred good to excellent reservoir quality. Rare, very fine grains of possible siderite were observed in some samples. The only other evidence of intergranular cements were a few quartz grains cemented by pyrite. Pyrite occurred in most samples but is a very rare component.

The following summarizes the reservoir quality in the horizontal leg of 1P1 from the intermediate casing point at 374.5 m to the end of gamma at TD at 963 m, an interval of 588.5 m:

Reservoir Type	Gamma in API	Total Length	% of Reservoir
Clean sand	Mainly 15, locally to 30	385.5 m	65.5
Minor mud interbeds	Mainly 30	91.0 m	15.5
Total good reservoir	15-30 with minor above 30	476.5	81.0
Common mud interbeds	30-45	103.0 m	17.5
Dominantly mud	>45	9.0 m	1.5

Total time for drilling the horizontal producer from drilling out the intermediate shoe to TD was 24 hours.

44 slotted joints of 177.8 mm production liner and 3 blank joints at the top was landed at 974.77 m. The top of the liner string is at 355.3 m.

The rig was released at 20:45 on November 25.

Total time from spud to rig release was 6 days, 1:15.

WELL DATA SUMMARY

WELL NAME: DCEL 1P1 JOSLYN CREEK 3-33-95-12

OPERATOR: Deer Creek Energy Limited

SURFACE LOCATION: 10-33-95-12W4M
BOTTOM HOLE LOCATION: 03-33-95-12W4M

SURFACE CO-ORDINATES: 433.0m South and 805.2m West

INTERMEDIATE CO-ORDINATES: 337.02 m South, 51.49 m West (Extrapolated)
BOTTOM HOLE CO-ORDINATES: 943.26m South, 59.02 m West (Extrapolated)

UNIQUE ID: 102/03-33-095-12W4/00 **WELL CLASS:** DEV (NC)

LICENCE #: 029554 **AFE:** 064-0303

ELEVATIONS: **Ground:** 339.7m
Kelly Bushing: 343.6m

CONTRACTOR: Precision Drilling Slant Rig, Rig #297

SPUD DATE: November 19, 2003 @ 19:30 Hrs.
T.D. DATE: November 24, 2003 @ 14:30 Hrs.

T.D. : 981.00 m MD 99.26 m TVD 244.3 m SS 945.08 m VS

HOLE SIZE: **Surface:** 444 mm to 42.0 m MD
Intermediate: 311 mm to 374.5 m MD
Final: 219 mm to 981.0 m MD

SURFACE CASING: 339.7 mm set at 41.3m.
INTERMEDIATE CASING: 244.5 mm set at 374.5 m
PRODUCTION LINER: 44 slotted joints and 3 blank joints at top of 17.8 mm, 43.15 kg/m liner, landed at 974.77m, top at 355.3 m.

SAMPLE INTERVAL: 10 m intervals in the 45 degree inclined intermediate section from 50 m to 374.5 m, 15 m intervals in the horizontal section from 390 m to T.D. No samples submitted to E.U.B.

MUD TYPE: Water in Clearwater section, polymer in the McMurray section.
MUD COMPANY: MI Drilling Fluids Canada, Inc.

INTERMEDIATE HOLE LOGGING: Gamma MWD by Sperry 21.8-355.2 m
MAIN HOLE LOGGING: Gamma MWD by Sperry 374.5-962.0 m

GEOLOGISTS: Dane Bridge and Esther Visser

DRILLING SUPERVISORS: Rodney Tetreault and Vince Crawchuk

PROGNOSIS AND RESULTS

GL: 339.7 m **KB:** 343.6 m

Note: Survey data at target points are extrapolated from the last actual survey.

Item	Prognosis SS m	Prognosis South m	Prognosis West m	Drilled SS m	Drilled South m	Drilled West m
Heel Target	244.15	327.26	51.74	244.03	339.36	51.49
Toe Target	244.15	927.26	51.74	244.34	943.26	59.02

FORMATION TOPS

Formation	Drilled MD m	Drilled TVD m	Drilled SS m
Clearwater Top	28.4	19.7	323.9
McMurray Top	89.8	57.3	286.3

FORMATION EVALUATION

The McMurray Formation in the intermediate hole was relatively clean bitumen saturated sand to 227 m MD. The section from 227 to 333 m was interbedded with mud and displayed a gamma commonly of 45-60 API and locally 30-45 API. At 333 m to the final gamma at 355 m MD the gamma was mainly 15-20 API indicating clean sands. The sand in this interval was mainly medium to coarse grained with the lower coarse fraction predominating.

The following summarizes the reservoir quality in the intermediate section of 1P1 from the main interval of poor reservoir quality starting at 227 m MD:

From	**To**	**Interval**	**Gamma**	**Description**
m	m	m	API units	
227	277	50.0	45-60	**Interbedded mud** and bitumen saturated sand, McMurray mud was recovered in cuttings as rolled mud lumps at 260 and 270 m.
277	300	33.0	30-45	**Minor to common interbedded mud** and bitumen saturated sand, McMurray mud was recovered in cuttings as rolled mud lumps at 290 m.
300	309	9.0	45-70	**Interbedded mud** and minor bitumen saturated sand
309	314.5	5.5	35	**Minor interbedded mud** and bitumen saturated sand
314.5	323	8.5	50-60	**Interbedded mud** and minor bitumen saturated sand
323	333	10.0	35-45	**Minor to common interbedded mud** and bitumen saturated sand
333	355	22.0	15-20	Clean bitumen saturated sand
355	374.5	19.5	15	Clean bitumen saturated sand

The following details the reservoir quality in the horizontal leg of 1P1 from the intermediate casing point at 374.5 m to TD at 981.0 m:

From	To	Interval	Gamma	Description
m	m	m	API units	
374.5	397	22.5	15	Clean bitumen saturated sand
397	403	6.0	30-70	**Interbedded mud** and minor bitumen saturated sand
403	416	13.0	15-30	Clean bitumen saturated sand with minor mud interbeds
416	442	26.0	30-45, locally 55	**Interbedded mud** and bitumen saturated sand**, locally mainly mud interbeds**
442	461	19.0	30-40	**Minor to common interbedded mud** and bitumen saturated sand
461	477	16.0	20-30	Clean bitumen saturated sand with sections with minor to common mud interbeds
477	514	37.0	30, local 45	**Minor to common interbedded mud** and bitumen saturated sand
514	663	149.0	15-20, local 30	Clean bitumen saturated sand with sections **with minor to locally common mud interbeds**
663	693	30.0	35-45	**Minor to common interbedded mud** and bitumen saturated sand
693	802	109.0	15	Clean bitumen saturated sand
802	824	22.0	30, local 45	Clean bitumen saturated sand with sections with **minor to locally common mud interbeds**
824	850	26.0	15	Clean bitumen saturated sand
850	878	28.0	30-50	**Interbedded mud** and minor to common bitumen saturated sand
878	883	5.0	15	Clean bitumen saturated sand
883	893	10.0	30	**Minor interbedded mud** and bitumen saturated sand
893	939	46.0	15, local 20-25	Clean bitumen saturated sand with sections with **minor mud interbeds**
939	942	3.0	60	**Interbedded mud** and minor bitumen saturated sand
942	952	10.0	30	**Minor interbedded mud** and bitumen saturated sand
952	963	11.0	15	Clean bitumen saturated sand
963	981	18.0	n/a	**No data due to MWD tool about 20 m behind the bit**

The following summarizes the reservoir quality in the horizontal leg of 1P1 from the intermediate casing point at 374.5 m to the end of gamma at TD at 963 m, an interval of 588.5 m:

Reservoir Type	Gamma in API	Total Length	% of Reservoir
Clean sand	Mainly 15, locally to 30	385.5 m	65.5
Minor mud interbeds	Mainly 30	91.0 m	15.5
Total good reservoir	15-30 with minor above 30	476.5	81.0
Common mud interbeds	30-45	103.0 m	17.5
Dominantly mud	>45	9.0 m	1.5

DAILY OPERATIONS

Date	Depth *at Midnight*	Progress	Rotating Hrs.	Operations Conducted *(00:00 hrs to 24:00 hrs)*
Nov. 18, 2003	0m	0m	0	Move rig onto location and rig up.
Nov. 19	42m	42m	1.00	Spud surface hole at 19:30 hours, drill and surface hole at 45 degrees to 42.0 m
Nov. 20	84m	42m	2.75	Condition mud, wait on casing nubbins, POOH, laydown stab, run casing 02:30-04:45, cement casing 05:15-07:00, wait on cement, wait on Sperry tools not functioning due to abnormal sunspot activity, drill out cement and shoe at 39m @ 20:15-20:30, drill and survey to 84m.
Nov. 21, 03	332m	248m	15.00	Displace hole with after encountering oil sands at about 84m, displace mud 00:15-00:45, drill and survey to 322 m.
Nov. 22	374.5m	42.5m	3.00	Drill and survey to 374.5m @ 04:00, circulate bottoms up to 05:15, wiper trip and back ream, POOH, run casing 13:45-21:30, circulate casing.
Total time spud to drilling to heel at 374.5 m: 3 days, 1:35 hr.				
Nov. 23	637m	252.5m	6.25	Cement 00:15-02:15, wait on cement, cut casing and weld on conductor, pickup directional tools, RIH to drill out float shoe at 366 m, drill out shoe at 14:30, drill and survey to 637 m.
Total time from heal to drilling out shoe for horizontal leg: 1 day, 10:30 hr.				
Nov. 24	981m	344m	12.25	Drill and survey 637 to TD at 981m at 14:30, circulate, wiper trip to shoe, POOH, lay down

				Sperry tools, pickup porcupine and ream to bottom.

Total time for drilling horizontal leg from drilling out intermediate shoe to TD: 24 hr.

Nov. 25	981m	0	0	Continue reaming, POOH, rig to run casing, run & inch slotted liner 07:00-14:45, displace hole to water, POOH, rig release at 20:45.

Total time spud to rig release: 6 days, 1:15.

RECORD OF MUD PROPERTIES

Mud Type: Polymer **Mud Company:** MI Drilling Fluids Canada, Inc.

Note: Special reports will be produced by contractors on the mud system. The following table includes only the data entered on the drilling tour sheets on the Pason.

Depth	Den	Vis	Wat/l	pH	Cl	yp	Gels	Solids	Sand	Oil
m								%	%	%
0	1020	40		9.5						
0	1030	45		9.5						
24	1030	60		9.5						
42	1020	45								
104	1080	54		9.5						
139	1080	55		9.5						
178	1090	53		9.5						
239		44								
312		51								
333		55								
364		60								
417	1050	40								
600	1050	41								
635	1040	42		9.5						
717	1040	41		9.5						
802	1050	43		10.0						
850	1045	42								
874	1050	43								

BIT RECORD

Bit#	Size	Mfg.	Type	Serial#	Jets	In	Out	Int.	Hrs.	Cond.
	mm					m	m	m		
1	444	Reed	S31G	HD3082	4/20	0	42	42	1.0	n/a
2	311	J&L	L114CXP	52044	3/22	42	374.5	332.5	21.75	n/a
3	219	Hycalog	DSX-146	H47747	4/18	374.5	981.0	606.5	18.5	n/a

LITHOLOGICAL DESCRIPTIONS FOR INTERMEDIATE HOLE

Note: The grain size distribution is shown graphically on the strip log.

Clearwater Top: Estimated at 28.4 m MD, 323.9 m SS, based on gamma.

40-50m: unrepresentative sample (only resistant materials preserved) consists of light gray, very poorly sorted and a well sorted sandstone with clay matrix and a med to dark gray siltstone.

50-60m: unrepresentative sample (mostly resistant materials preserved) consists of med to dark gray siltstone and some well sorted sandstone with clay matrix. pyrite more prevalent. Clearwater muds represented by large mud balls.

60-70m: unrepresentative sample (mostly resistant materials preserved) consists of med to dark gray siltstone, minor well sorted sandstone with clay matrix, minor very coarse to pebble. Clearwater muds represented by large mud balls. One chip glauconitic sandstone.

70-80m: unrepresentative sample (mostly resistant materials preserved) consists of med to dark gray siltstone, minor well sorted sandstone and coarse grained sandstone with clay matrix. Clearwater muds represented by large mud balls. minor amounts of coal and pyrite

84m: Drillers noted tar sand.

McMurray Top: Estimated at 89.8 m MD, 286.3 m SS, based on gamma and cuttings.

80-90m: lithologically diverse sample with Clearwater and McMurray, very abundant pyrite, minor glauconite. Clearwater muds still evident as large mud balls. large range in quartz grainsize and rounding.

90-100m: clear quartz sand with about 50% uphole siltstone. large range in quartz grainsize and rounding but with very fine to fine predominate and overall well sorted to moderately well sorted. minor pyrite.

100-110m: clear quartz sand with about 50% uphole siltstone. large range in quartz grainsize and rounding but with very fine predominating and overall well sorted to moderately well sorted. minor pyrite

110-120m: clear quartz sand with about 50% uphole siltstone. range in quartz grainsize and rounding but with sub-ang/sub-rounded fine grains predominating. overall well sorted. minor pyrite

120-130m: clear quartz sand with about 50% uphole siltstone. range in quartz grainsize and rounding but with upper fine/lower medium grains dominating. overall well to mod well sorted. minor pyrite

130-140m: clear quartz sand with about 30% uphole siltstone. range in quartz grainsize and rounding but with sub-rounded upper fine grains dominating. overall mod-well to well sorted. moderate pyrite

140-150m: clear quartz sand with about 20% uphole siltstone. upper fine/lower medium sub-angular to sub-rounded grains dominating. overall well sorted. minor pyrite

150-160m: clear quartz sand with about 20% uphole siltstone. mainly lower to upper fine sub-angular to sub-rounded clear quartz sand grains. overall well sorted. common pyrite. one feldspar grain.

160-170m: clear quartz sand with about 20% uphole siltstone. mainly lower to upper fine sub-angular to sub-rounded clear quartz sand grains. overall well sorted. common pyrite.

170-180m: clear quartz sand with about 15% uphole siltstone. sample did not wash clean and was dried with still some bitumen causing aggregation of grains, difficult to determine size distribution, appears similar to 170m, possible slightly more coarse, very common pyrite

180-190m: very poor sample, probably due to an aerated mud system caused by excessive Clearwater cavings, abundant wood from mud additive, 70% siltstone amd mud lumps from Clearwater, sand may not be representative of McMurray due to small and poor sample, common pyrite

190-200m: thick black bitumen with minor Clearwater cavings and rare McMurray sand, sand content about 15% of that obtained from samples in the 100-150 m range, minor pyrite.

200-210m: thick black bitumen with minor Clearwater cavings. McMurray sand is mod-well sorted and mostly sub-rounded, sand content about 25% of that obtained from samples in the 100-150 m range, minor pyrite.

210-220m: thick black bitumen with some siltstone cuttings. McMurray sand is well sorted and mostly sub-rounded, sand content about 25% of that obtained from samples in the 100-150 m range, minor pyrite.

220-230m: thick black bitumen with minor siltstone cuttings. McMurray sand is moderately well sorted and mostly sub-angular. minor pyrite. good quantity of sand in sample.

230-240m: sample difficult to wash. lots of mud and several large siltstone chunks. McMurray is moderately well sorted, dominated by sub-angular to sub-rounded lower to upper medium grains. abundant pyrite.

240-250m: clear quartz sand with about 15% uphole siltstone is well sorted, dominated by sub-rounded to rounded, lower coarse to coarse grains. moderate pyrite.

NOTE: Possible McMurray mud lumps from insitu mud beds in 260 and 270 m samples.

250-260 m: low bitumen and mud rich sample, 50% large clasts and lumps, about half mud lumps, medium grey, soft, pliable, possible McMurray and half Clearwater siltstone and silty sandstone, 50% quartz sand, mainly coarse as above, trace pyrite.

260-270 m: moderate bitumen and moderately mud rich sample, 25% large clasts and lumps, about half mud lumps, medium grey, soft, pliable, possible McMurray and half Clearwater siltstone and silty sandstone, 80% quartz sand, mainly coarse as above, minor pyrite, minor small siltstone fragments, probably cavings.

270-280 m: moderate bitumen with minor mud, 10% large clasts of Clearwater siltstone and silty sandstone, trace granitic and iron stained quartzite, 90% quartz sand, mainly coarse as above, trace pyrite, minor small siltstone fragments, probably cavings.

NOTE: Possible McMurray mud lumps from insitu mud beds in 290 m sample.

280-290 m: moderate bitumen with minor mud, 10% large clasts and lumps, about half mud lumps, medium grey, soft, pliable, possible McMurray and half Clearwater siltstone and silty sandstone, 90% quartz sand, mainly coarse as above, minor pyrite, minor small siltstone fragments, probably cavings.

290-300 m: moderate bitumen saturation with very minor Clearwater siltstone and silty sandstone, mainly quartz sand, mainly coarse with more medium than above, minor pyrite.

300-310m: quartz sand, mainly medium grained with common fine and very fine, <5% very coarse, minor pyrite.

310-320m: quartz sand, mainly medium and coarse grained, minor pyrite, common fragments of black vitreous coal.

320-330m: well sorted quartz sand, predominantly medium grained, minor pyrite, some fragments of black vitreous coal.

330-340m: well sorted quartz sand, predominantly medium to coarse grained, minor pyrite.

340-350m: well sorted quartz sand, predominantly upper medium to coarse grained, minor pyrite.

350-360m: well sorted quartz sand, predominantly coarse grained, minor pyrite and coal. some shale, could be McMurray?

360-370m: well sorted quartz sand, predominantly coarse grained, minor pyrite

370-374.5m: well sorted quartz sand, predominantly coarse grained, percentages the same as the profile for 360m MD

LITHOLOGICAL DESCRIPTIONS FOR HORIZONTAL HOLE

Note: Sample descriptions are all of unconsolidated sandstone, bitumen saturated with inferred good to excellent porosity. Grain size distributions are displayed graphically on the strip log.

374.5-390 m: quartz sand, predominately coarse grained, rare multicoloured chert, rare pyrite (one grain), rare coal (one grain), minor cement from shoe

390-405 m: quartz sand, predominately coarse grained, rare multicoloured chert, rare pyrite (one grain), minor cement from shoe

405-420 m: quartz sand, predominately coarse grained, rare multicoloured chert, trace cement from shoe

420-435 m: quartz sand, predominately upper medium grained to lower coarse grained, rare

multicoloured chert, rare pyrite cementing sand grains

435-450 m: quartz sand, predominately lower coarse and upper medium grained, rare multicoloured chert and siltstone

450-465 m: quartz sand, predominately upper medium grained, rare multicoloured chert and siltstone, rare pyrite

465-480 m: quartz sand, predominately medium grained with abundant lower coarse, rare multicoloured chert and siltstone, rare pyrite

480-495 m: quartz sand, predominately medium grained with abundant lower coarse, rare multicoloured chert, rare pyrite

495-510 m: quartz sand, predominately medium grained with lower coarse, rare multicoloured chert, rare pyrite

510-525 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite but more than normal, one grain of feldspar

525-540 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite ?

540-555 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite, less than in 540 m sample

555-570 m: quartz sand, predominately medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite, much less than in 540 m sample

570-585 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite, even less than in 570 m sample

585-600 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite

600-615 m: quartz sand, predominately angular to sub-angular and coarse grained, rare multicoloured chert, very rare pyrite (two grains)

615-630 m: quartz sand, predominately angular to sub-angular and medium to coarse grained, rare multicoloured chert, very rare pyrite (one grain)

630-645 m: quartz sand, predominately coarse grained, rare multicoloured chert, very rare feldspar (one grain)

645-660 m: quartz sand, predominately sub-angular and medium to coarse grained, rare multicoloured chert, very rare pyrite

660-675 m: quartz sand, predominately angular to sub-angular and coarse grained, rare multicoloured chert

675-690 m: quartz sand, predominately angular to sub-angular and medium to coarse grained, rare multicoloured chert, rare pyrite

690-705 m: quartz sand, predominately sub-angular to sub-rounded and medium to coarse grained, rare multicoloured chert

705-720 m: quartz sand, predominately sub-angular to sub-rounded coarse grained

720-735 m: quartz sand, predominately sub-angular to sub-rounded and medium to coarse grained, rare multicoloured chert, rare, very fine grained, light brown siderite. very rare pyrite.

735-750 m: quartz sand, predominately sub-angular to sub-rounded and medium to coarse grained, rare multicoloured chert, rare, very fine grained, light brown siderite. (less than 735 sample) very rare pyrite.

750-765 m: quartz sand, predominately sub-angular to sub-rounded and coarse grained, rare multicoloured chert, very rare pyrite.

765-780 m: quartz sand, predominately sub-angular to sub-rounded and coarse grained, rare multicoloured chert, rare pyrite, rare siderite.

780-795 m: quartz sand, predominately sub-angular to sub-rounded and coarse to medium grained, rare multicoloured chert, rare pyrite, rare siderite.

795-810 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite, rare siderite but much less than in previous samples.

810-825 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite, rare coal

825-840 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite, rare coal

840-855 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite

855-870 m: quartz sand, predominately angular to sub-rounded and predominately coarse to medium grained, rare multicoloured chert

870-885 m: quartz sand, predominately angular to sub-rounded, moderately sorted, medium to very coarse grained, rare multicoloured chert, rare pyrite

885-900 m: quartz sand, predominately angular to sub-rounded, well sorted, very coarse grained, rare multicoloured chert, rare pyrite

900-915 m: quartz sand, angular to rounded, predominately, well sorted, very coarse grained, rare multicoloured chert, very rare pyrite

915-930 m: quartz sand, angular to rounded, predominately well sorted, very coarse grained, rare multicoloured chert, very rare pyrite, possibly one grain of limestone. grey with ooids.

930-945 m: quartz sand, angular to rounded. predominately, sub-angular and moderate to well sorted, medium grained, rare multicoloured chert, very rare pyrite.

945-960 m: quartz sand, angular to subrounded. predominately sub-angular, well sorted, rare multicoloured chert, very rare pyrite.

960-975 m: quartz sand, angular to subrounded. predominately sub-angular, well sorted, rare multicoloured chert, very rare pyrite

APPENDIX 3/C1:

Mud and geological report

Injector well – Horizontal lithology strip log

HORIZONTAL LITHOLOGY STRIP LOG

WellSight Systems Inc.

Scale 1:240 (5"=100') Metric

Well Name:	**DCEL 1I1 JOSLYN CREEK 3-33-95-12**		
Location:	**103/03-33-095-12W4/0**		
Licence Number:	**0296169**	**Region:**	**Athabasca**
Spud Date:	**Nov. 26, 2003**	**Drilling Completed:**	**Dec. 1, 2003**
Surface Coordinates:	**LSD 10-33-095-12 W4M** **429.9 m South, 790.2 m West**		
Bottom Hole Coordinates:	**943.25 m South, 73.58 m West (Extrapolated)**		
Ground Elevation (m):	**339.2**	**K.B. Elevation (m):**	**343.6**
Logged Interval (m):	**374.0 To: 969.0**	**Total Depth (m):**	**982.0**
Formation:	**McMurray**		
Type of Drilling Fluid:	**Polymer**		

Printed by WellSight Log Viewer from WellSight Systems Inc. 1-800-447-1534 www.wellsight.com

OPERATOR

Company: Deer Creek Energy Limited
Address: Bow Valley Square Two
2600, 205 Fifth Avenue SW
Calgary, Alberta, T2P 2V7

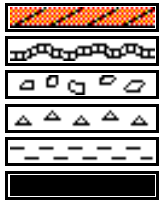
GEOLOGIST

Name: Dane Bridge, M. Sc., P. Geol. and Esther Visser, B. Sc., GIT
Company: Dane A Bridge Consulting
Address: 16 Massey Place SW
Calgary, Alberta, T2V 2G3
403-259-2826

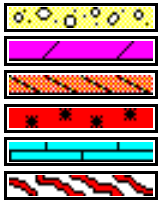
Comments

The grain size distribution of the McMurray sands appears to be reliable even though very small amonts of sand were recovered from the shaker. Samples every 45 to 60 m from centrifuge starting at at 495 m indicated a similar size distribution but without any lower coarse or coarser sand.
Surveys are MWD and not back survey afjusted.

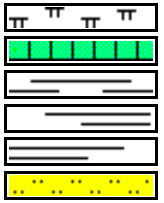
ROCK TYPES



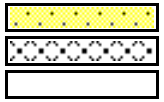
Anhy
Bent
Brec
Cht
Clyst
Coal



Congl
Dol
Gyp
Igne
Lmst
Meta



Mrlst
Salt
Shale
Shcol
Shgy
Sltst



Ss
Till
Blank

ACCESSORIES

MINERAL

Anhy
Arggrn
Arg
Bent
Bit
Brecfrag
Calc
Carb
Chtdk
Chtlt
Dol
Feldspar
Ferrpel
Ferr
Glau
Gyp
Hvymin
Kaol

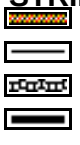
Marl
Minxl
Nodule
Phos
Pyr
Salt
Sandy
Silt
Sil
Sulphur
Tuff

FOSSIL

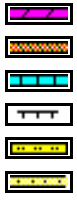
Algae
Amph
Belm
Bioclst
Brach
Bryozoa
Cephal

Coral
Crin
Echin
Fish
Foram
Fossil
Gastro
Oolite
Ostra
Pelec
Pellet
Pisolite
Plant
Strom

STRINGER



Anhy
Arg
Bent
Coal



Dol
Gyp
Ls
Mrst
Sltstrg
Ssstrg

TEXTURE

Boundst
Chalky
Cryxln
Earthy
Finexln
Grainst
Lithogr
Microxln
Mudst
Packst
Wackest

OTHER SYMBOLS

POROSITY TYPE

Earthy
Fenest
Fracture
Inter
Moldic
Organic
Pinpoint

Vuggy

SORTING

Well
Moderate
Poor

ROUNDING

Rounded
Subrnd

Subang
Angular

OIL SHOWS

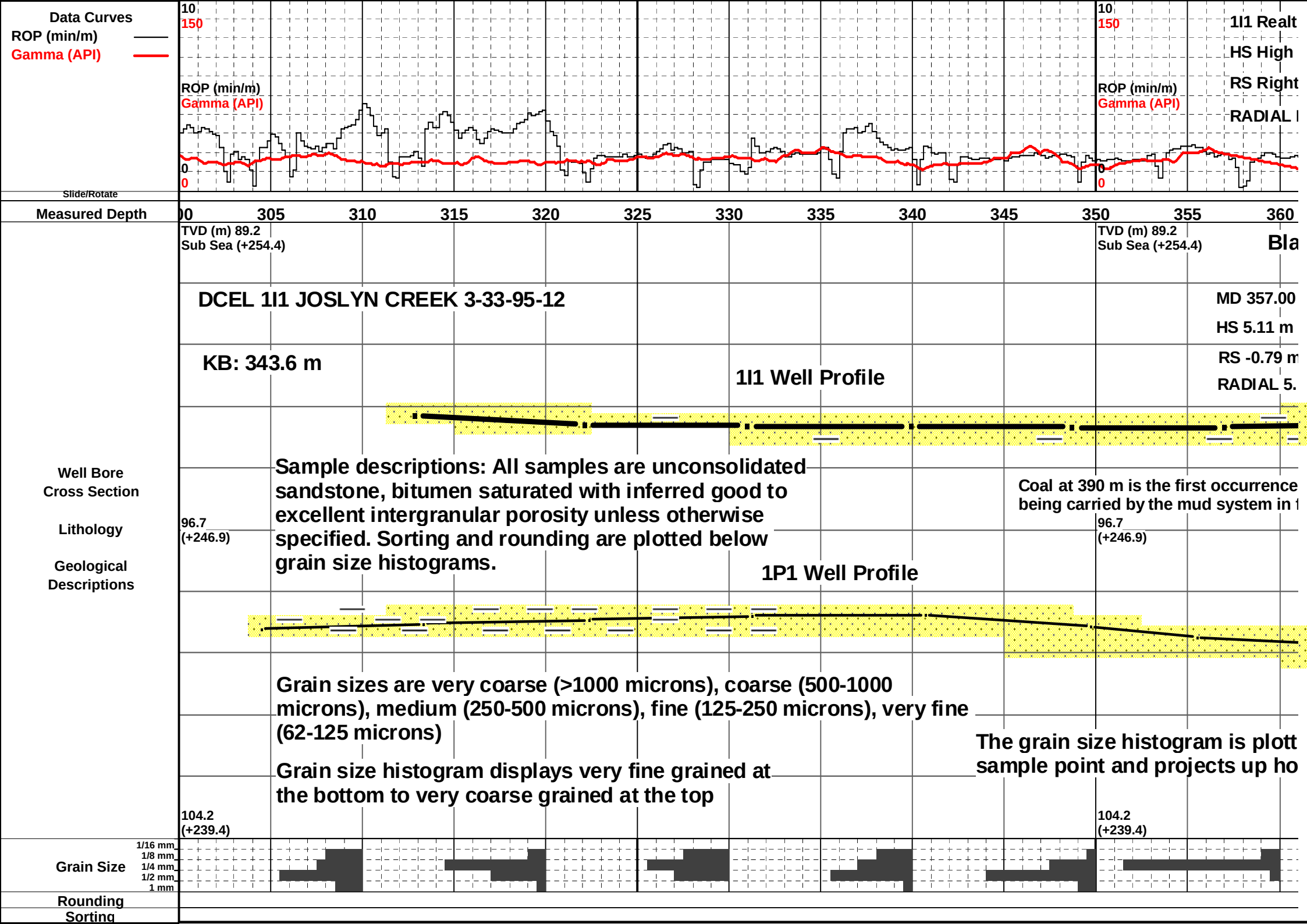
Even
Spotted
Ques
Dead

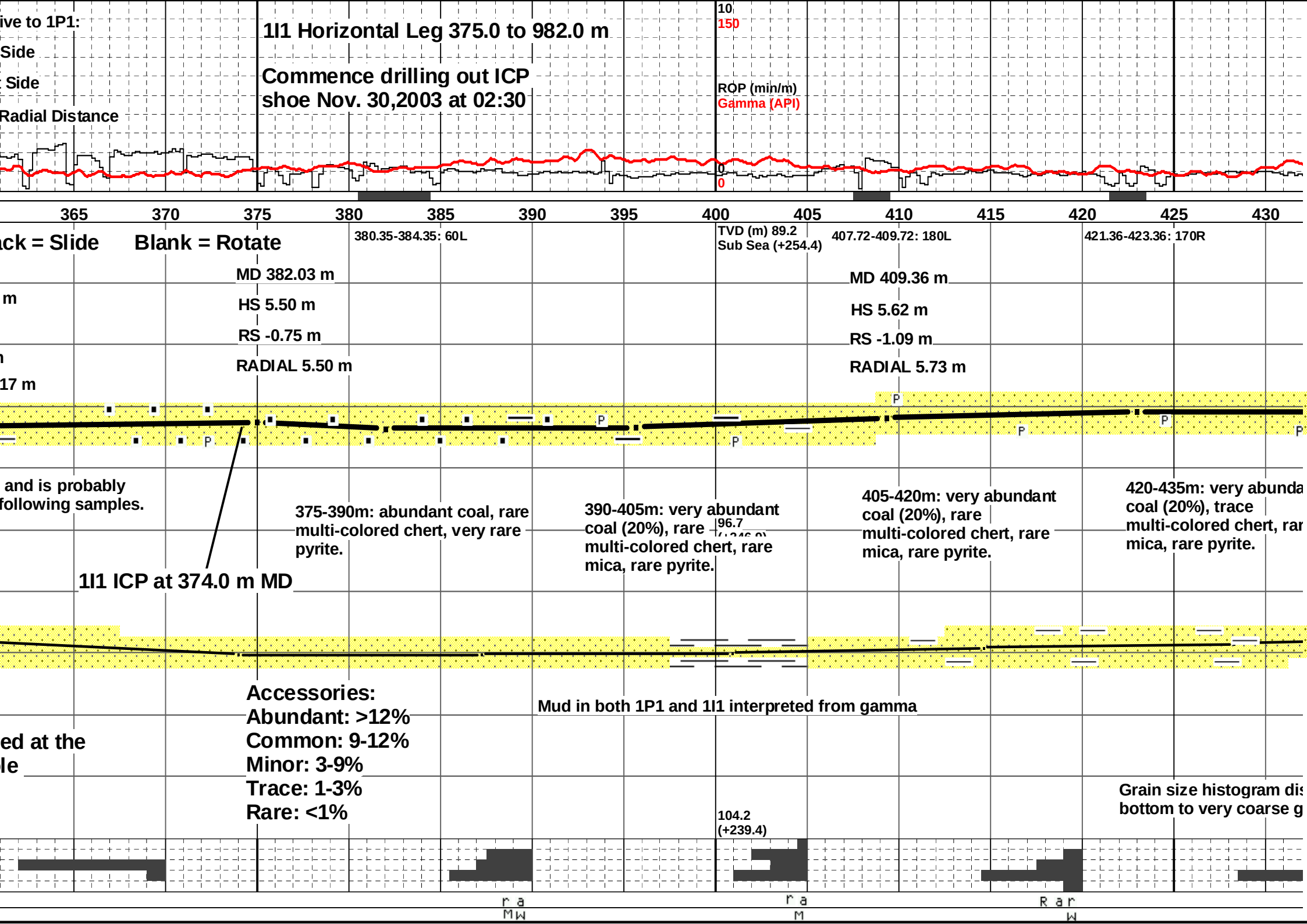
INTERVALS

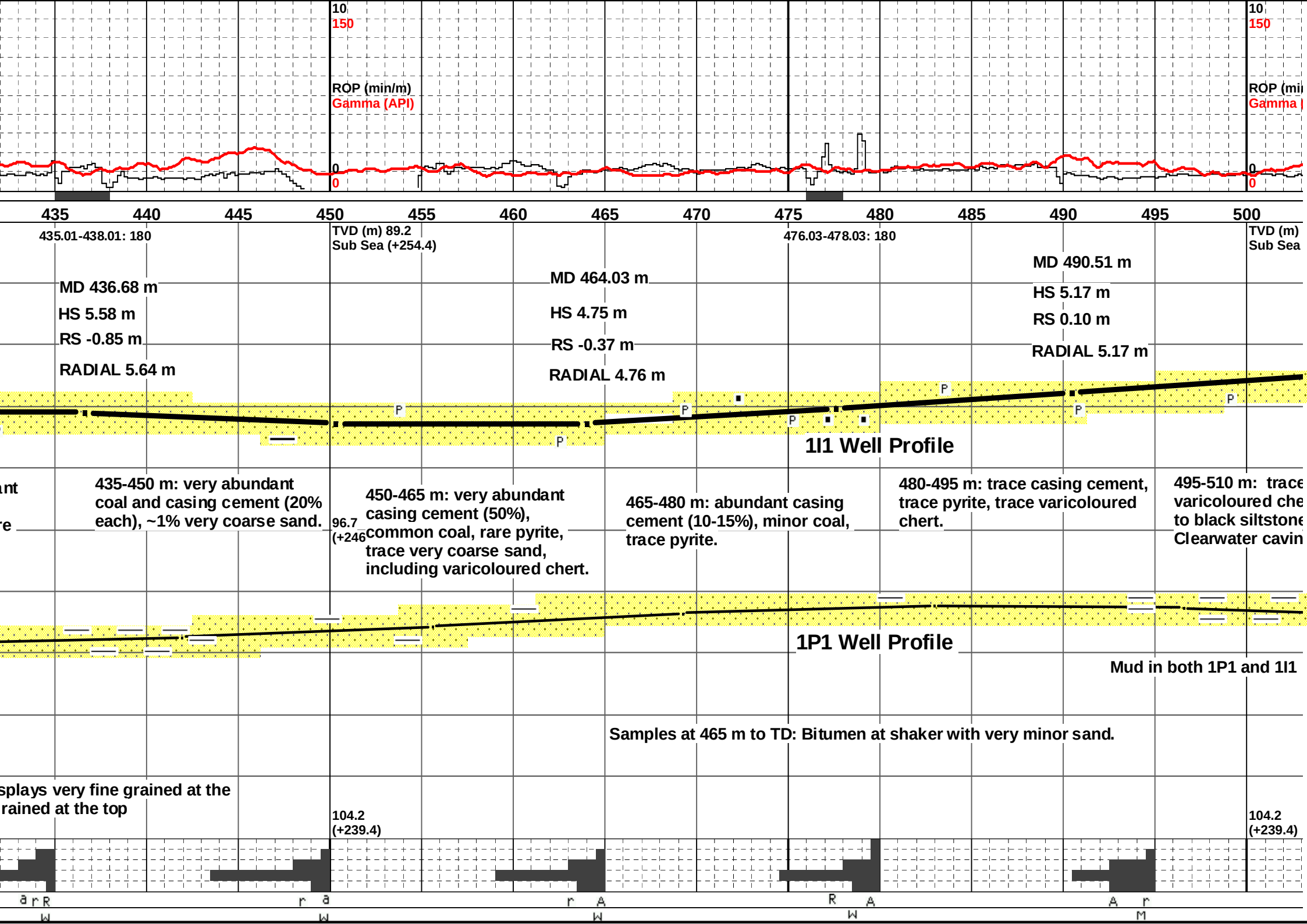
None
Core
Dst

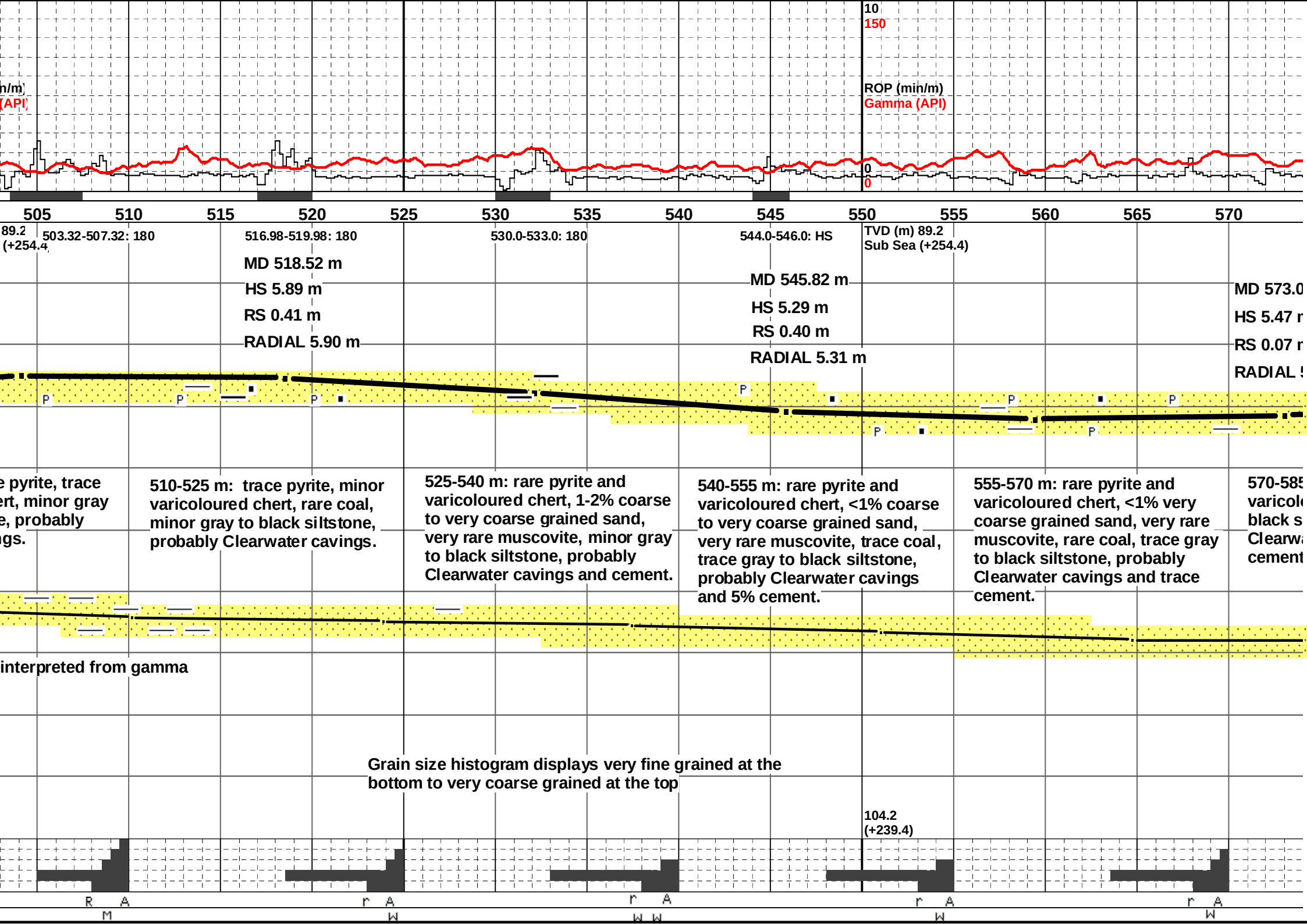
EVENTS

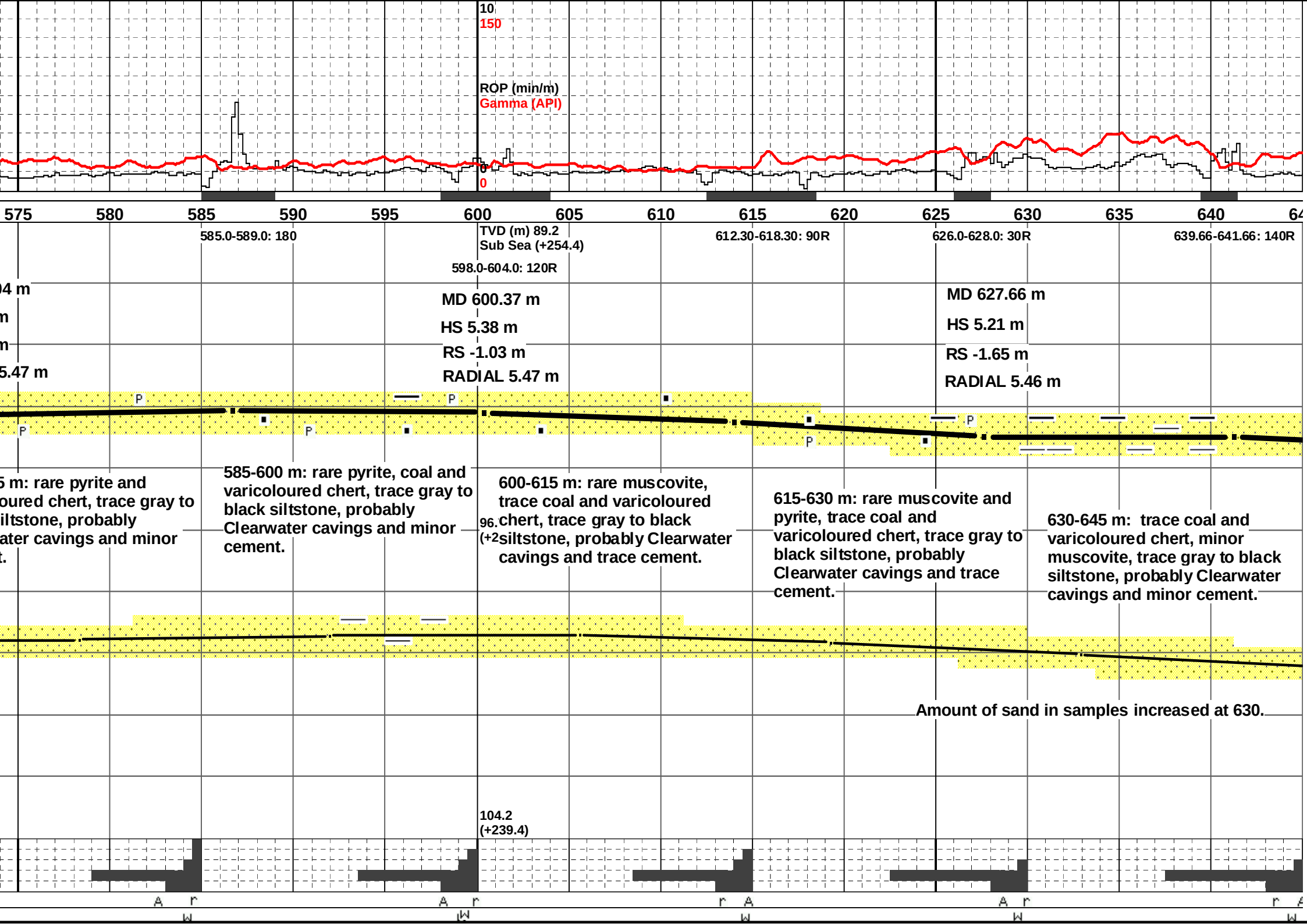
Rft
Sidewall

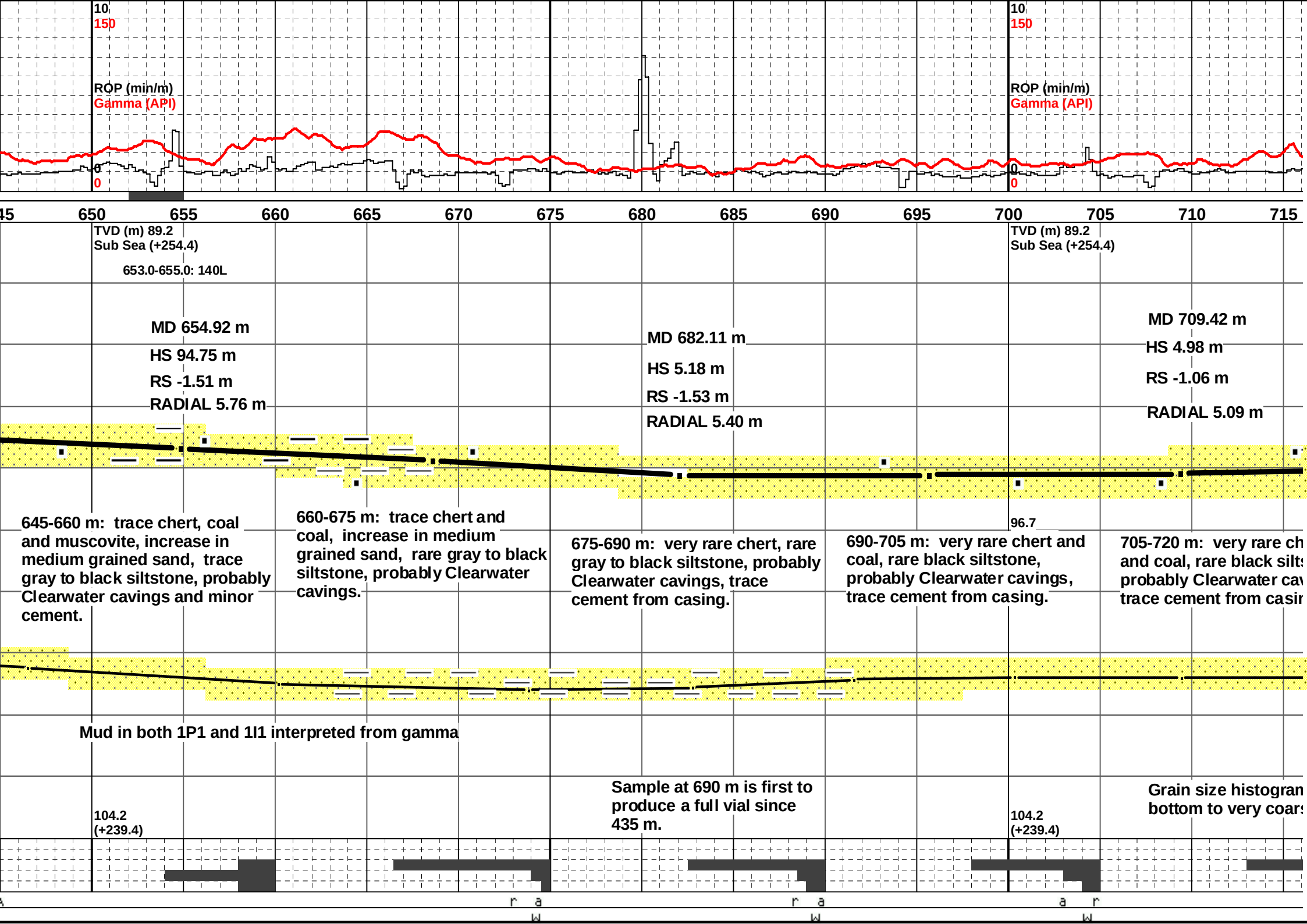

Data Curves
ROP (min/m)
Gamma (API)
10
150
ROP (min/m)
Gamma (API)
0
0
10
150
ROP (min/m)
Gamma (API)
0
0
1I1 Realt
HS High
RS Right
RADIAL
Slide/Rotate
Measured Depth
00
305
310
315
320
325
330
335
340
345
350
355
360
TVD (m) 89.2
Sub Sea (+254.4)
TVD (m) 89.2
Sub Sea (+254.4)
Bla
DCEL 1I1 JOSLYN CREEK 3-33-95-12
MD 357.00
HS 5.11 m
RS -0.79 m
RADIAL 5.
KB: 343.6 m
1I1 Well Profile
Well Bore
Cross Section
Lithology
Geological
Descriptions
Sample descriptions: All samples are unconsolidated sandstone, bitumen saturated with inferred good to excellent intergranular porosity unless otherwise specified. Sorting and rounding are plotted below grain size histograms.
Coal at 390 m is the first occurrence being carried by the mud system in f
96.7
(+246.9)
96.7
(+246.9)
1P1 Well Profile
Grain sizes are very coarse (>1000 microns), coarse (500-1000 microns), medium (250-500 microns), fine (125-250 microns), very fine (62-125 microns)
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
The grain size histogram is plott sample point and projects up ho
104.2
(+239.4)
104.2
(+239.4)
Grain Size
1/16 mm
1/8 mm
1/4 mm
1/2 mm
1 mm
Rounding
Sorting

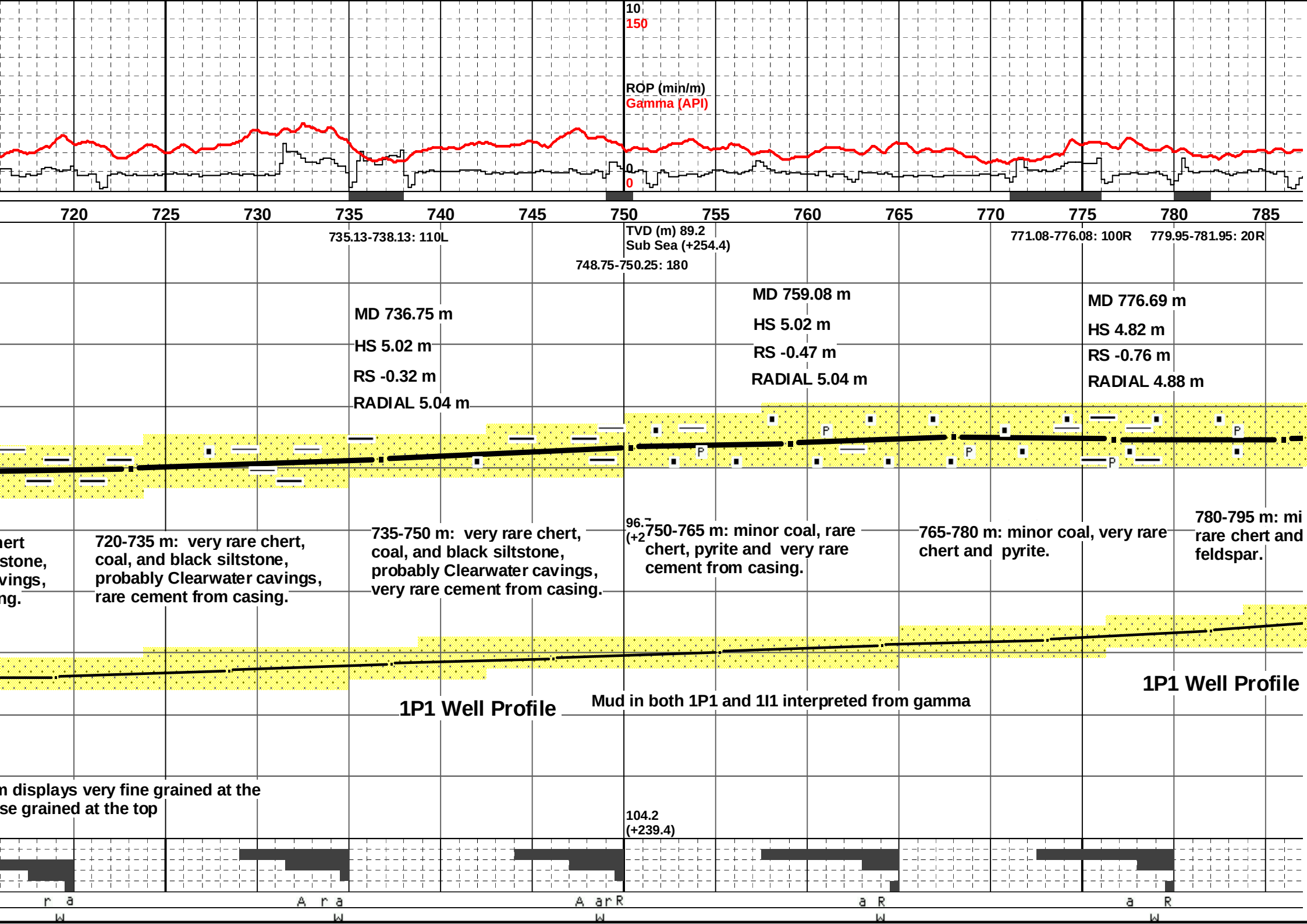

ive to 1P1:
Side
Side
Radial Distance
1l1 Horizontal Leg 375.0 to 982.0 m
Commence drilling out ICP shoe Nov. 30,2003 at 02:30
10
150
ROP (min/m)
Gamma (API)
0
0
365
370
375
380
385
390
395
400
405
410
415
420
425
430
ack = Slide
Blank = Rotate
380.35-384.35: 60L
TVD (m) 89.2
Sub Sea (+254.4)
407.72-409.72: 180L
421.36-423.36: 170R
MD 382.03 m
HS 5.50 m
RS -0.75 m
RADIAL 5.50 m
MD 409.36 m
HS 5.62 m
RS -1.09 m
RADIAL 5.73 m
and is probably
following samples.
375-390m: abundant coal, rare multi-colored chert, very rare pyrite.
390-405m: very abundant coal (20%), rare multi-colored chert, rare mica, rare pyrite.
96.7
405-420m: very abundant coal (20%), rare multi-colored chert, rare mica, rare pyrite.
420-435m: very abunda
coal (20%), trace
multi-colored chert, rar
mica, rare pyrite.
1l1 ICP at 374.0 m MD
Accessories:
Abundant: >12%
Common: 9-12%
Minor: 3-9%
Trace: 1-3%
Rare: <1%
Mud in both 1P1 and 1l1 interpreted from gamma
ed at the
le
104.2
(+239.4)
Grain size histogram dis
bottom to very coarse g
r a
M W
r a
M
R a r
W

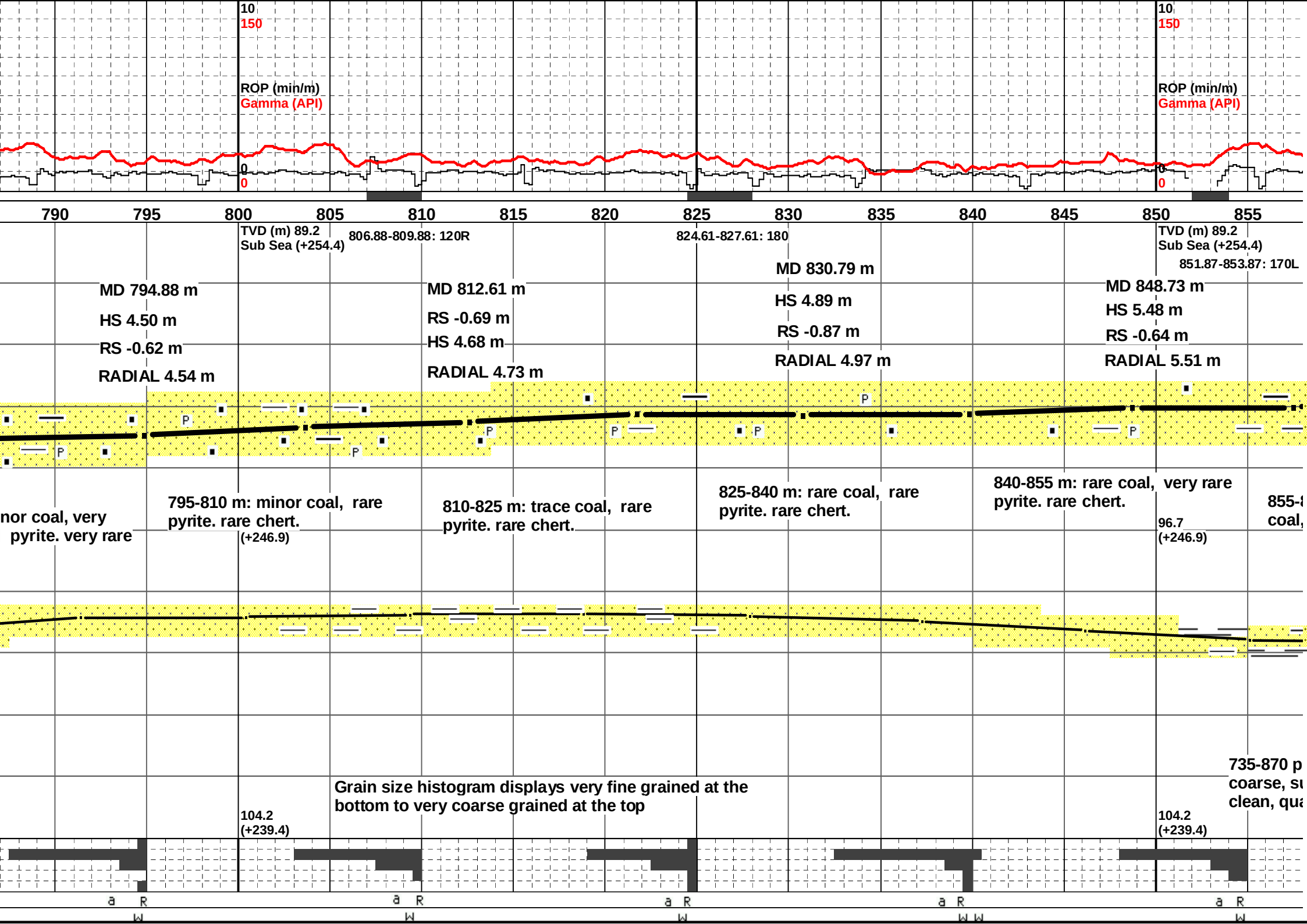

10
150
ROP (min/m)
Gamma (API)
0
0
435
440
445
450
455
460
465
470
475
480
485
490
495
500
435.01-438.01: 180
TVD (m) 89.2
Sub Sea (+254.4)
476.03-478.03: 180
TVD (m)
Sub Sea
MD 436.68 m
HS 5.58 m
RS -0.85 m
RADIAL 5.64 m
MD 464.03 m
HS 4.75 m
RS -0.37 m
RADIAL 4.76 m
MD 490.51 m
HS 5.17 m
RS 0.10 m
RADIAL 5.17 m
1I1 Well Profile
435-450 m: very abundant coal and casing cement (20% each), ~1% very coarse sand.
450-465 m: very abundant casing cement (50%), common coal, rare pyrite, trace very coarse sand, including varicoloured chert.
465-480 m: abundant casing cement (10-15%), minor coal, trace pyrite.
480-495 m: trace casing cement, trace pyrite, trace varicoloured chert.
495-510 m: trace varicoloured che to black siltstone Clearwater cavin
96.7
(+246
1P1 Well Profile
Mud in both 1P1 and 1I1
Samples at 465 m to TD: Bitumen at shaker with very minor sand.
104.2
(+239.4)
104.2
(+239.4)

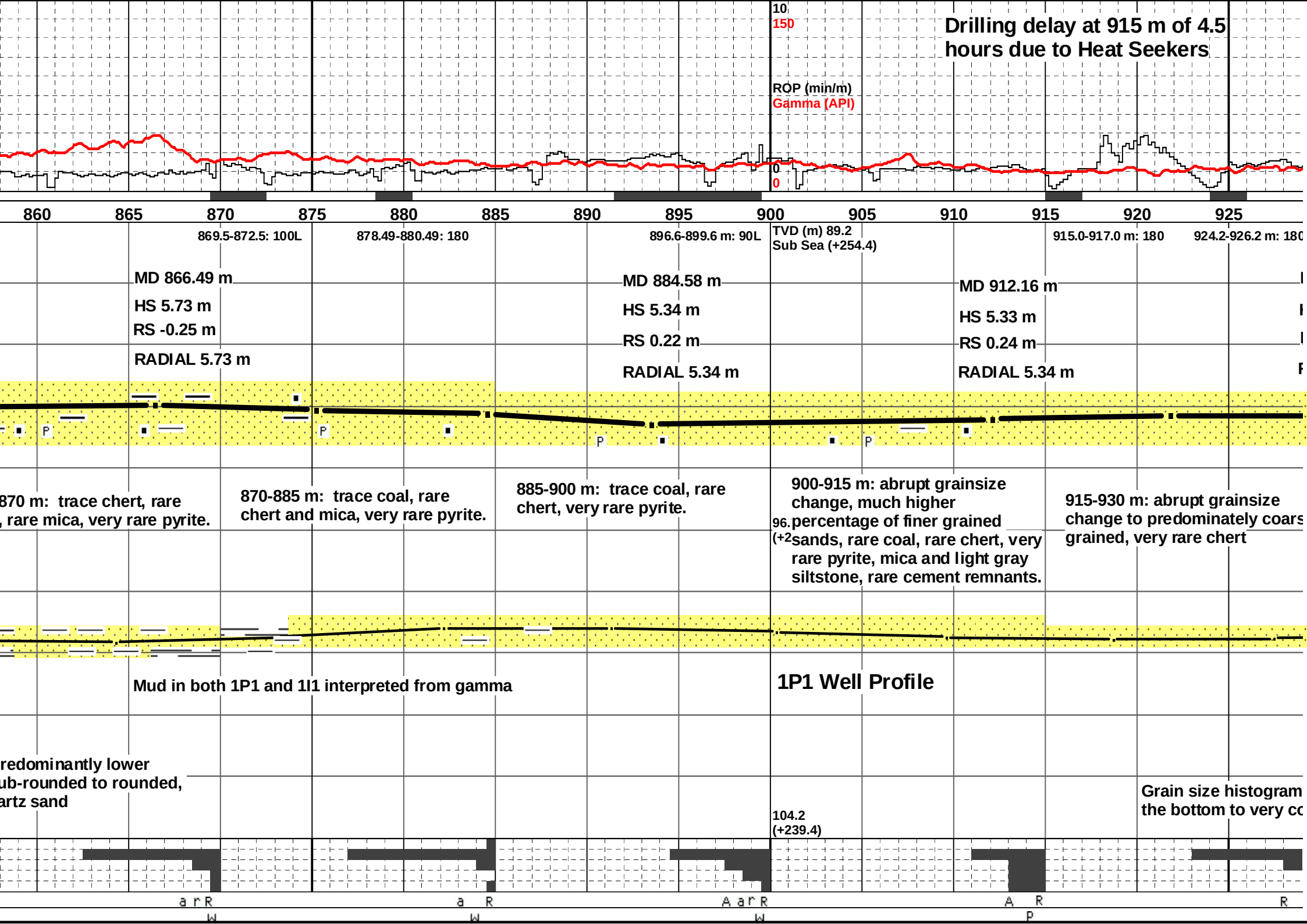

10
150
ROP (min/m)
Gamma (API)
0
0
505
510
515
520
525
530
535
540
545
550
555
560
565
570
89.2
(+254.4
503.32-507.32: 180
516.98-519.98: 180
530.0-533.0: 180
544.0-546.0: HS
TVD (m) 89.2
Sub Sea (+254.4)
MD 518.52 m
HS 5.89 m
RS 0.41 m
RADIAL 5.90 m
MD 545.82 m
HS 5.29 m
RS 0.40 m
RADIAL 5.31 m
MD 573.0
HS 5.47 r
RS 0.07 r
RADIAL
e pyrite, trace
ert, minor gray
e, probably
ngs.
510-525 m: trace pyrite, minor varicoloured chert, rare coal, minor gray to black siltstone, probably Clearwater cavings.
525-540 m: rare pyrite and varicoloured chert, 1-2% coarse to very coarse grained sand, very rare muscovite, minor gray to black siltstone, probably Clearwater cavings and cement.
540-555 m: rare pyrite and varicoloured chert, <1% coarse to very coarse grained sand, very rare muscovite, trace coal, trace gray to black siltstone, probably Clearwater cavings and 5% cement.
555-570 m: rare pyrite and varicoloured chert, <1% very coarse grained sand, very rare muscovite, rare coal, trace gray to black siltstone, probably Clearwater cavings and trace cement.
570-585
varicol
black s
Clearwa
cement
interpreted from gamma
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
104.2
(+239.4)

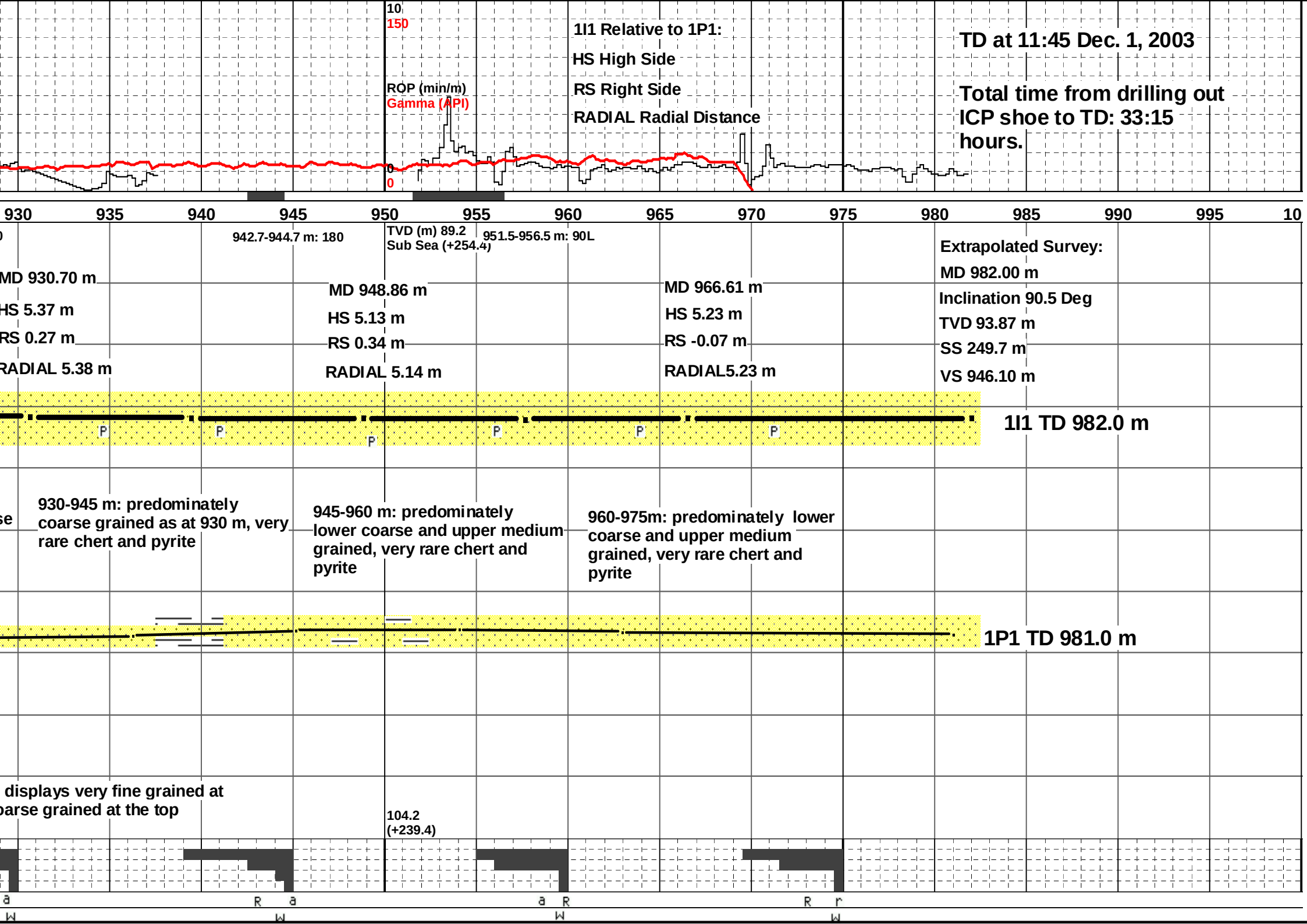

10
150
ROP (min/m)
Gamma (API)
0
0
575
580
585
590
595
600
605
610
615
620
625
630
635
640
585.0-589.0: 180
TVD (m) 89.2
Sub Sea (+254.4)
598.0-604.0: 120R
612.30-618.30: 90R
626.0-628.0: 30R
639.66-641.66: 140R
MD 600.37 m
HS 5.38 m
RS -1.03 m
RADIAL 5.47 m
MD 627.66 m
HS 5.21 m
RS -1.65 m
RADIAL 5.46 m
585-600 m: rare pyrite, coal and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and minor cement.
600-615 m: rare muscovite, trace coal and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and trace cement.
615-630 m: rare muscovite and pyrite, trace coal and varicoloured chert, trace gray to black siltstone, probably Clearwater cavings and trace cement.
630-645 m: trace coal and varicoloured chert, minor muscovite, trace gray to black siltstone, probably Clearwater cavings and minor cement.
Amount of sand in samples increased at 630.
104.2
(+239.4)


10
150
ROP (min/m)
Gamma (API)
0
0
10
150
ROP (min/m)
Gamma (API)
0
0
45
650
655
660
665
670
675
680
685
690
695
700
705
710
715
TVD (m) 89.2
Sub Sea (+254.4)
653.0-655.0: 140L
TVD (m) 89.2
Sub Sea (+254.4)
MD 654.92 m
HS 94.75 m
RS -1.51 m
RADIAL 5.76 m
MD 682.11 m
HS 5.18 m
RS -1.53 m
RADIAL 5.40 m
MD 709.42 m
HS 4.98 m
RS -1.06 m
RADIAL 5.09 m
645-660 m: trace chert, coal and muscovite, increase in medium grained sand, trace gray to black siltstone, probably Clearwater cavings and minor cement.
660-675 m: trace chert and coal, increase in medium grained sand, rare gray to black siltstone, probably Clearwater cavings.
675-690 m: very rare chert, rare gray to black siltstone, probably Clearwater cavings, trace cement from casing.
690-705 m: very rare chert and coal, rare black siltstone, probably Clearwater cavings, trace cement from casing.
96.7
705-720 m: very rare ch
and coal, rare black silt
probably Clearwater cav
trace cement from casir
Mud in both 1P1 and 1I1 interpreted from gamma
Sample at 690 m is first to produce a full vial since 435 m.
Grain size histogran
bottom to very coars
104.2
(+239.4)
104.2
(+239.4)
r a
r a
a r


10
150
ROP (min/m)
Gamma (API)
0
0
720
725
730
735
740
745
750
755
760
765
770
775
780
785
735.13-738.13: 110L
TVD (m) 89.2
Sub Sea (+254.4)
748.75-750.25: 180
771.08-776.08: 100R
779.95-781.95: 20R
MD 736.75 m
HS 5.02 m
RS -0.32 m
RADIAL 5.04 m
MD 759.08 m
HS 5.02 m
RS -0.47 m
RADIAL 5.04 m
MD 776.69 m
HS 4.82 m
RS -0.76 m
RADIAL 4.88 m
720-735 m: very rare chert, coal, and black siltstone, probably Clearwater cavings, rare cement from casing.
735-750 m: very rare chert, coal, and black siltstone, probably Clearwater cavings, very rare cement from casing.
750-765 m: minor coal, rare chert, pyrite and very rare cement from casing.
765-780 m: minor coal, very rare chert and pyrite.
780-795 m: mi rare chert and feldspar.
1P1 Well Profile
Mud in both 1P1 and 1I1 interpreted from gamma
1P1 Well Profile
104.2
(+239.4)


10
150
ROP (min/m)
Gamma (API)
0
0
790
795
800
805
810
815
820
825
830
835
840
845
850
855
TVD (m) 89.2
Sub Sea (+254.4)
806.88-809.88: 120R
824.61-827.61: 180
851.87-853.87: 170L
MD 794.88 m
HS 4.50 m
RS -0.62 m
RADIAL 4.54 m
MD 812.61 m
RS -0.69 m
HS 4.68 m
RADIAL 4.73 m
MD 830.79 m
HS 4.89 m
RS -0.87 m
RADIAL 4.97 m
MD 848.73 m
HS 5.48 m
RS -0.64 m
RADIAL 5.51 m
nor coal, very
pyrite. very rare
795-810 m: minor coal, rare
pyrite. rare chert.
(+246.9)
810-825 m: trace coal, rare
pyrite. rare chert.
825-840 m: rare coal, rare
pyrite. rare chert.
840-855 m: rare coal, very rare
pyrite. rare chert.
855-
coal,
96.7
(+246.9)
735-870 p
coarse, su
clean, qua
Grain size histogram displays very fine grained at the
bottom to very coarse grained at the top
104.2
(+239.4)
104.2
(+239.4)
a R
a R
a R
a R
a R


Drilling delay at 915 m of 4.5 hours due to Heat Seekers
10
150
ROP (min/m)
Gamma (API)
0
0
860
865
870
875
880
885
890
895
900
905
910
915
920
925
869.5-872.5: 100L
878.49-880.49: 180
896.6-899.6 m: 90L
TVD (m) 89.2
Sub Sea (+254.4)
915.0-917.0 m: 180
924.2-926.2 m: 180
MD 866.49 m
HS 5.73 m
RS -0.25 m
RADIAL 5.73 m
MD 884.58 m
HS 5.34 m
RS 0.22 m
RADIAL 5.34 m
MD 912.16 m
HS 5.33 m
RS 0.24 m
RADIAL 5.34 m
870 m: trace chert, rare
, rare mica, very rare pyrite.
870-885 m: trace coal, rare chert and mica, very rare pyrite.
885-900 m: trace coal, rare chert, very rare pyrite.
900-915 m: abrupt grainsize change, much higher
96. percentage of finer grained
(+2 sands, rare coal, rare chert, very rare pyrite, mica and light gray siltstone, rare cement remnants.
915-930 m: abrupt grainsize change to predominately coars grained, very rare chert
Mud in both 1P1 and 1I1 interpreted from gamma
1P1 Well Profile
redominantly lower
ub-rounded to rounded,
artz sand
104.2
(+239.4)
Grain size histogram
the bottom to very co
a r R
W
a R
W
A a r R
W
A R
P
R


10
150
ROP (min/m)
Gamma (API)
0
0
1I1 Relative to 1P1:
HS High Side
RS Right Side
RADIAL Radial Distance
TD at 11:45 Dec. 1, 2003
Total time from drilling out ICP shoe to TD: 33:15 hours.
930
935
940
945
950
955
960
965
970
975
980
985
990
995
10
942.7-944.7 m: 180
TVD (m) 89.2
Sub Sea (+254.4)
951.5-956.5 m: 90L
MD 930.70 m
HS 5.37 m
RS 0.27 m
RADIAL 5.38 m
MD 948.86 m
HS 5.13 m
RS 0.34 m
RADIAL 5.14 m
MD 966.61 m
HS 5.23 m
RS -0.07 m
RADIAL5.23 m
Extrapolated Survey:
MD 982.00 m
Inclination 90.5 Deg
TVD 93.87 m
SS 249.7 m
VS 946.10 m
1I1 TD 982.0 m
930-945 m: predominately coarse grained as at 930 m, very rare chert and pyrite
945-960 m: predominately lower coarse and upper medium grained, very rare chert and pyrite
960-975m: predominately lower coarse and upper medium grained, very rare chert and pyrite
1P1 TD 981.0 m
displays very fine grained at
oarse grained at the top
104.2
(+239.4)

10
150

ROP (min/m)
Gamma (API)

0
0

00 1005

TVD (m) 89.2
Sub Sea (+254.4)

96.7
(+246.9)

104.2
(+239.4)

APPENDIX 3/C2:

Mud and geological report

Producer well – Horizontal lithology strip log

HORIZONTAL LITHOLOGY STRIP LOG

WellSight Systems Inc.

Scale 1:240 (5"=100') Metric

Well Name:	**DCEL 1P1 JOSLYN CREEK 3-33-95-12**		
Location:	**102/03-33-095-12W4/0**		
Licence Number:	**0295554**	**Region:**	**Athabasca**
Spud Date:	**Nov. 19, 2003**	**Drilling Completed:**	**Nov. 24, 2003**
Surface Coordinates:	**LSD 10-33-095-12 W4M** **433.0m South, 805.2 m West**		
Bottom Hole Coordinates:	**943.26 m South, 59.02 m West**		
Ground Elevation (m):	**339.2 m**	**K.B. Elevation (m):**	**343.6**
Logged Interval (m):	**374.5 m To: 962.0 m**	**Total Depth (m):**	**981.0 m**
Formation:	**McMurray**		
Type of Drilling Fluid:	**Polymer**		

Printed by WellSight Log Viewer from WellSight Systems Inc. 1-800-447-1534 www.wellsight.com

OPERATOR

Company: Deer Creek Energy Ltd.
Address: Bow Valley Square Two
2600, 205 Fifth Avenue SW
Calgary, Alberta, T2P 2V7

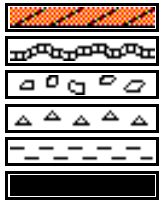
GEOLOGIST

Name: Dane Bridge, M.Sc., P. Geol. and Esther Visser, B.Sc., GIT
Company: Dane A Bridge Consulting and Deer Creek Energy
Address: 16 Massey Place SW
Calgary, Alberta, T2V 2G3
403-259-2826

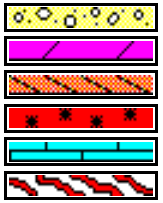
Comments

Production Liner: 44 joints of 177.8 mm slotted liner with 3 blank joints at the top, landed at 974.77 m MD, top at 355.3 m MD.

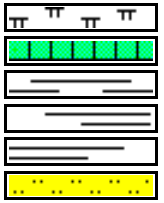
ROCK TYPES



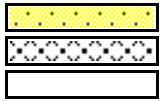
Anhy
Bent
Brec
Cht
Clyst
Coal



Congl
Dol
Gyp
Igne
Lmst
Meta



Mrlst
Salt
Shale
Shcol
Shgy
Sltst



Ss
Till
Blank

ACCESSORIES

MINERAL

Anhy
Arggrn
Arg
Bent
Bit
Brecfrag
Calc
Carb
Chtdk
Chtlt
Dol
Feldspar
Ferrpel
Ferr
Glau
Gyp
Hvymin
Kaol

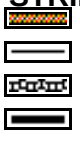
Marl
Minxl
Nodule
Phos
Pyr
Salt
Sandy
Silt
Sil
Sulphur
Tuff

FOSSIL

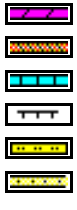
Algae
Amph
Belm
Bioclst
Brach
Bryozoa
Cephal

Coral
Crin
Echin
Fish
Foram
Fossil
Gastro
Oolite
Ostra
Pelec
Pellet
Pisolite
Plant
Strom

STRINGER



Anhy
Arg
Bent
Coal



Dol
Gyp
Ls
Mrst
Sltstrg
Ssstrg

TEXTURE

Boundst
Chalky
Cryxln
Earthy
Finexln
Grainst
Lithogr
Microxln
Mudst
Packst
Wackest

OTHER SYMBOLS

POROSITY TYPE

Earthy
Fenest
Fracture
Inter
Moldic
Organic
Pinpoint

Vuggy

SORTING

Well
Moderate
Poor

ROUNDING

Rounded
Subrnd

Subang
Angular

OIL SHOWS

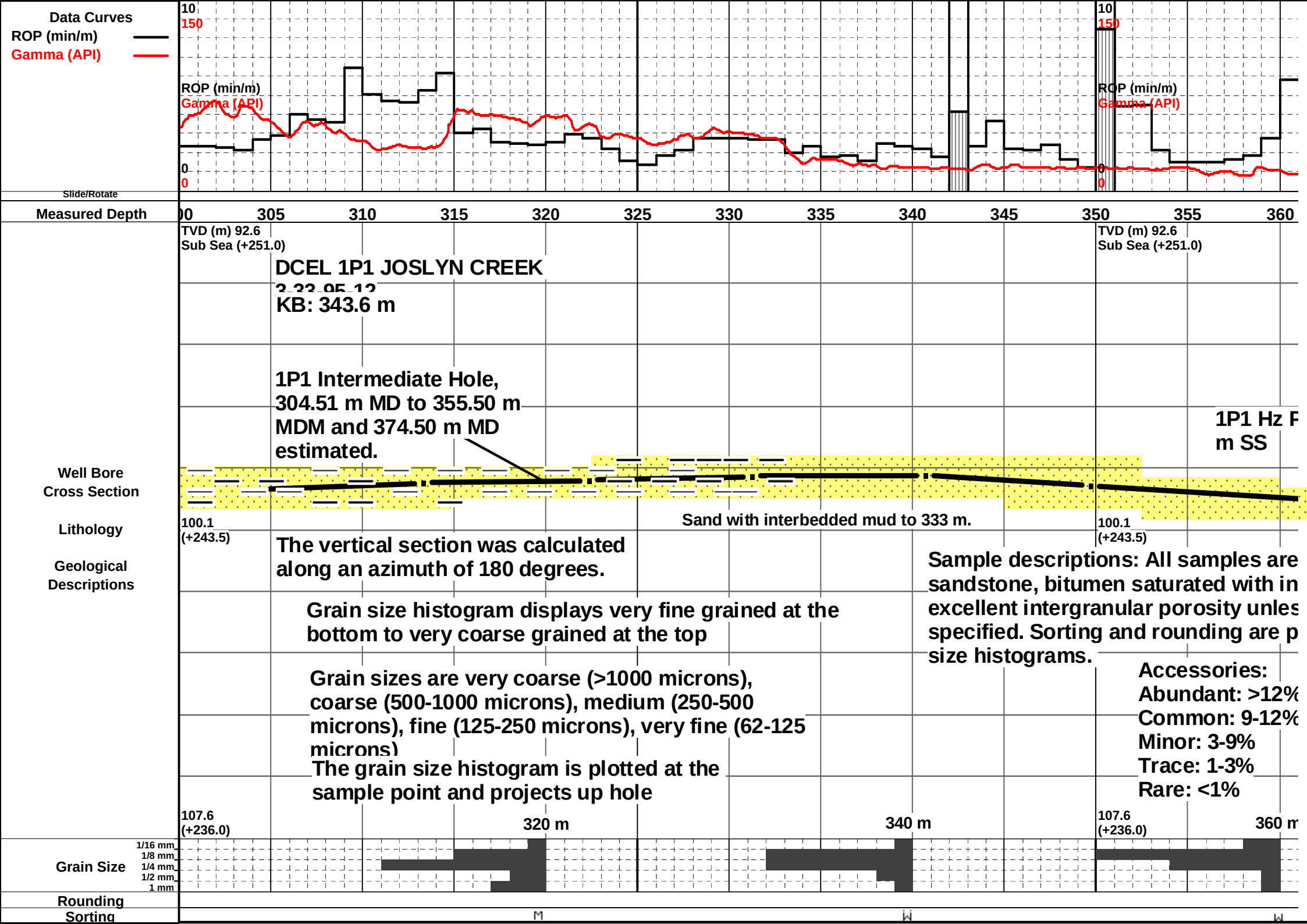
Even
Spotted
Ques
Dead

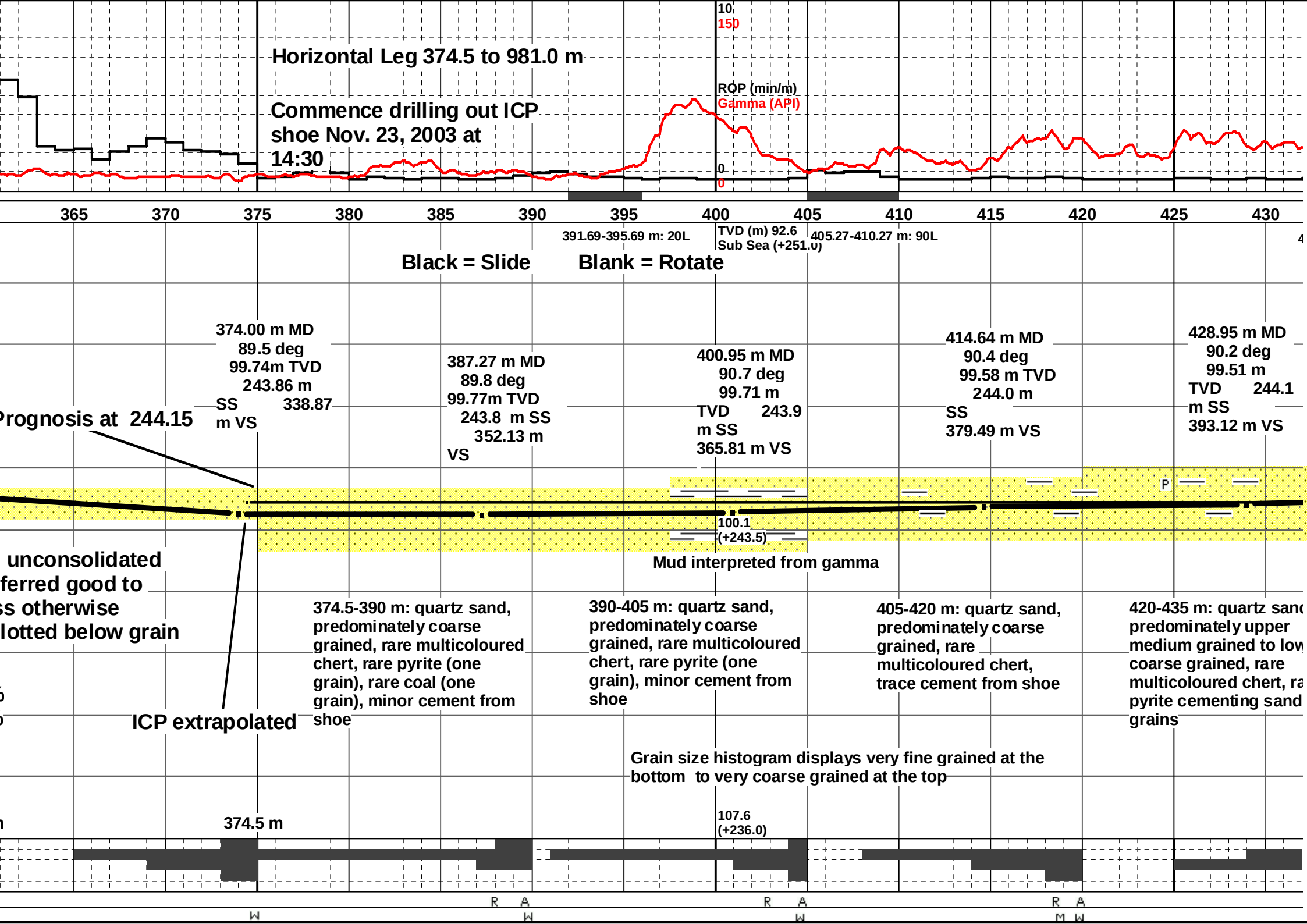
INTERVALS

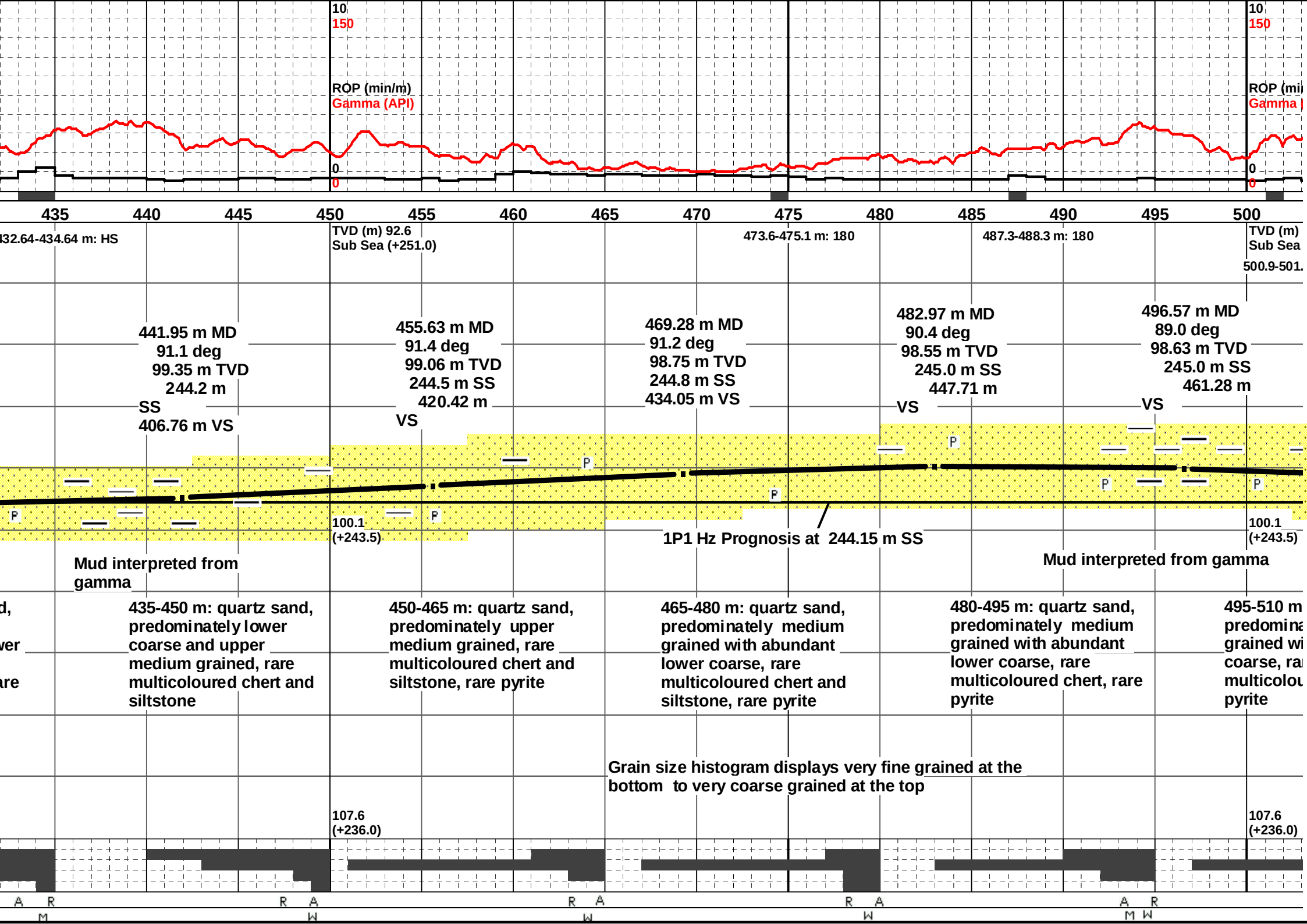
None
Core
Dst

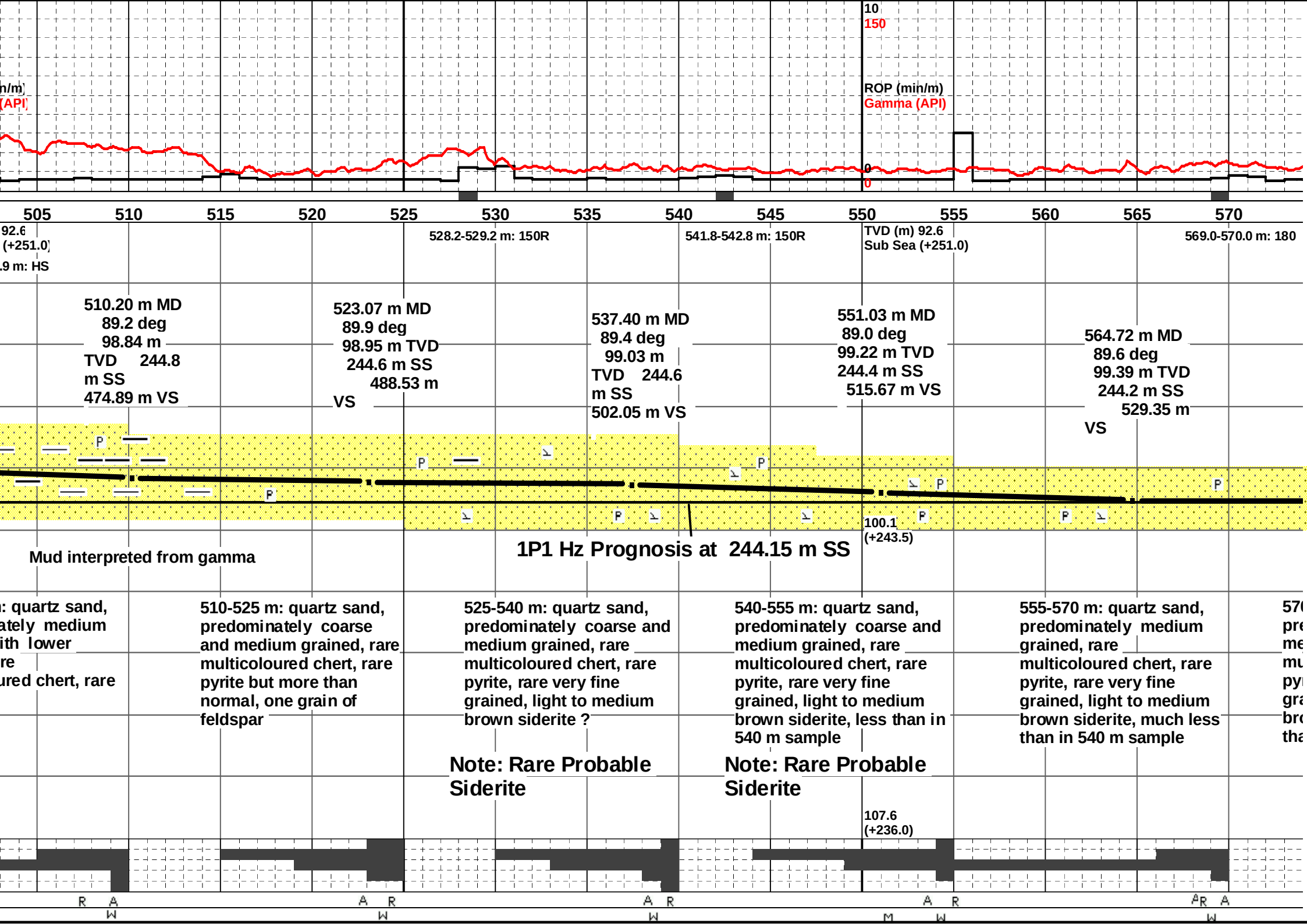
EVENTS

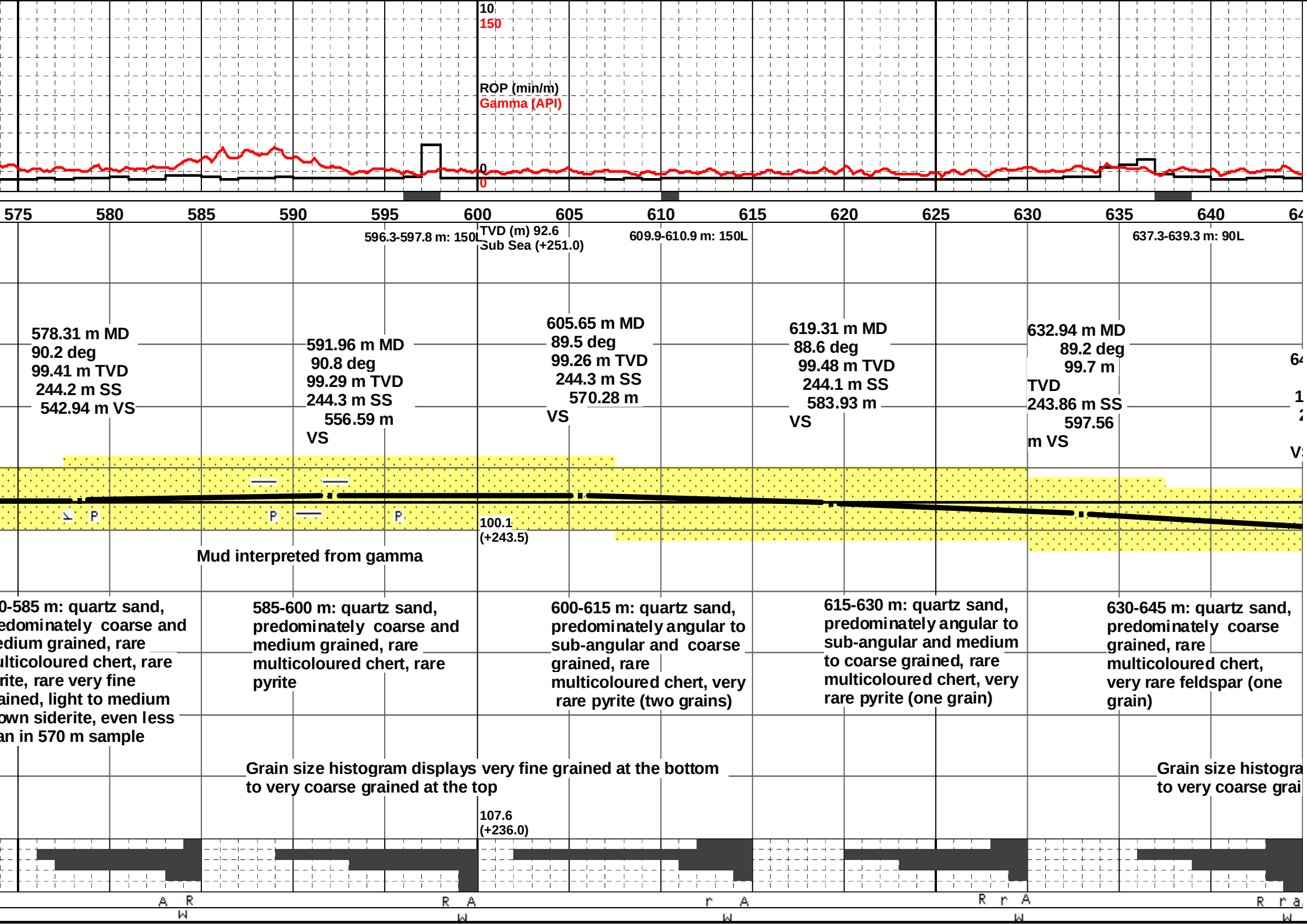
Rft
Sidewall

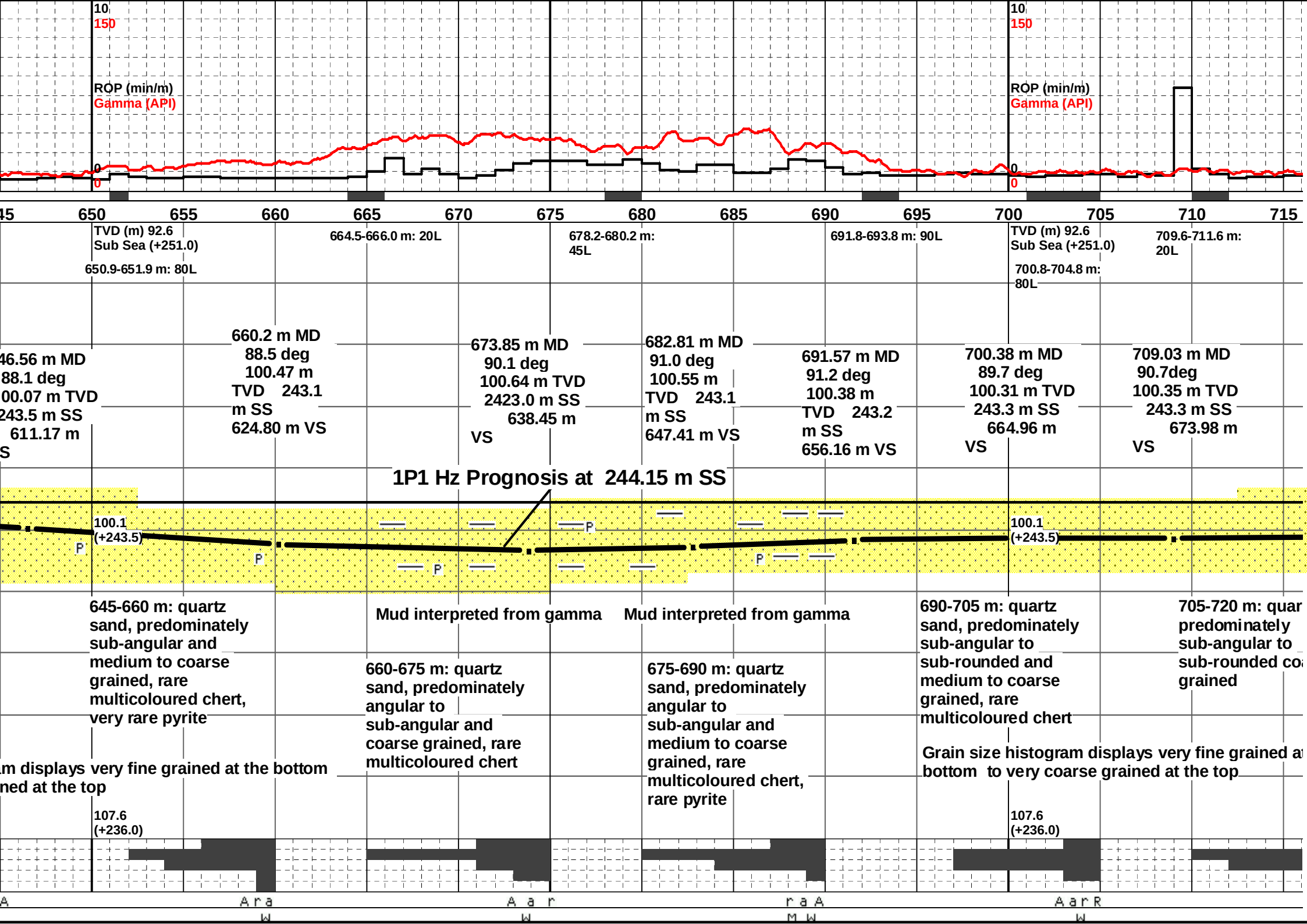

Data Curves
ROP (min/m)
Gamma (API)
10
150
ROP (min/m)
Gamma (API)
0
0
Slide/Rotate
Measured Depth
00
305
310
315
320
325
330
335
340
345
350
355
360
TVD (m) 92.6
Sub Sea (+251.0)
DCEL 1P1 JOSLYN CREEK
KB: 343.6 m
1P1 Intermediate Hole,
304.51 m MD to 355.50 m
MDM and 374.50 m MD
estimated.
1P1 Hz P
m SS
Well Bore
Cross Section
Lithology
Geological
Descriptions
100.1
(+243.5)
Sand with interbedded mud to 333 m.
The vertical section was calculated
along an azimuth of 180 degrees.
Sample descriptions: All samples are
sandstone, bitumen saturated with in
excellent intergranular porosity unles
specified. Sorting and rounding are p
size histograms.
Grain size histogram displays very fine grained at the
bottom to very coarse grained at the top
Grain sizes are very coarse (>1000 microns),
coarse (500-1000 microns), medium (250-500
microns), fine (125-250 microns), very fine (62-125
microns)
The grain size histogram is plotted at the
sample point and projects up hole
Accessories:
Abundant: >12%
Common: 9-12%
Minor: 3-9%
Trace: 1-3%
Rare: <1%
107.6
(+236.0)
320 m
340 m
360 m
Grain Size
1/16 mm
1/8 mm
1/4 mm
1/2 mm
1 mm
Rounding
Sorting
M
W
W

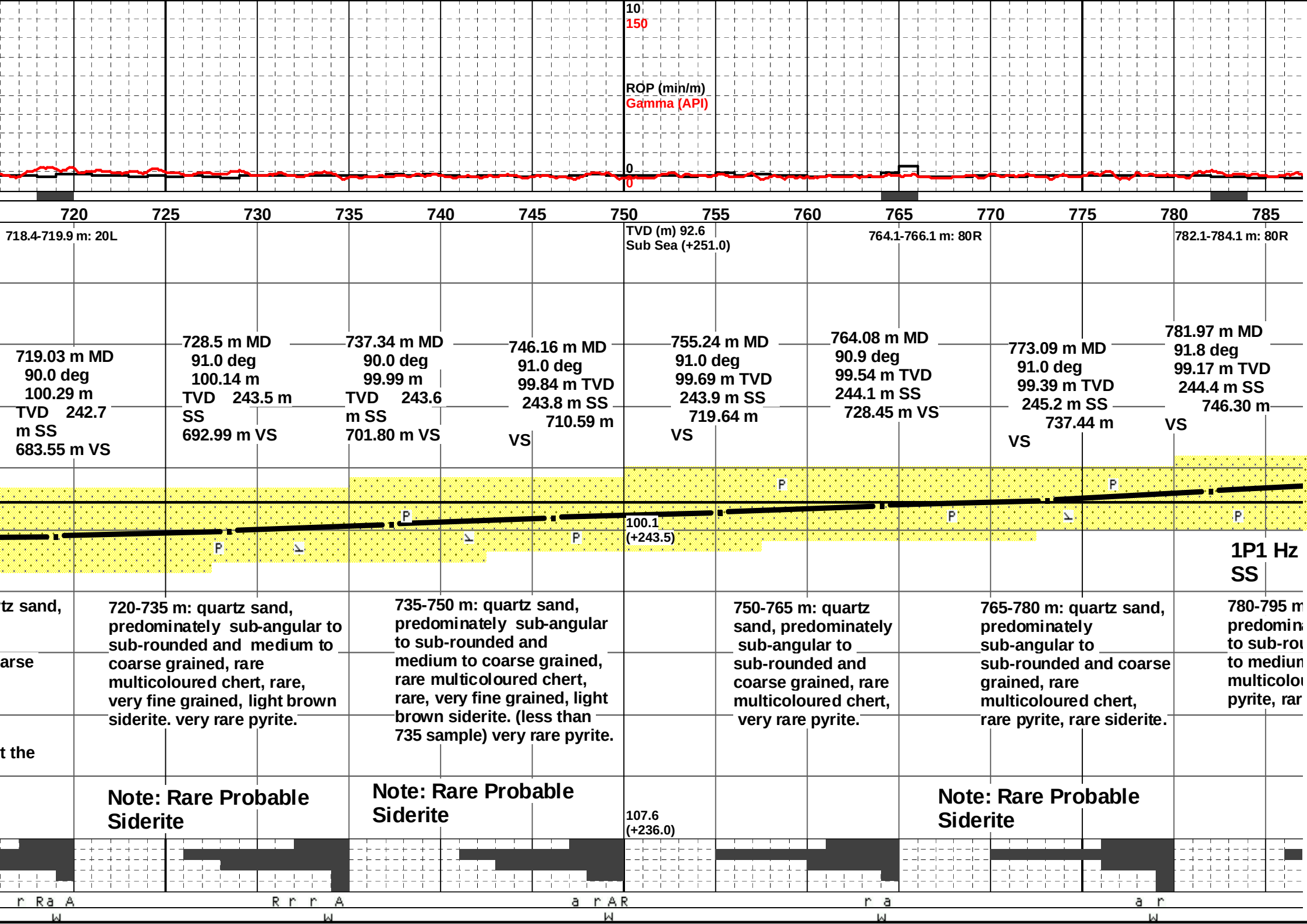

Horizontal Leg 374.5 to 981.0 m
Commence drilling out ICP shoe Nov. 23, 2003 at 14:30
10
150
ROP (min/m)
Gamma (API)
0
0
365 370 375 380 385 390 395 400 405 410 415 420 425 430
391.69-395.69 m: 20L
TVD (m) 92.6
Sub Sea (+251.0)
405.27-410.27 m: 90L
Black = Slide
Blank = Rotate
374.00 m MD
89.5 deg
99.74m TVD
243.86 m SS
338.87 m VS
387.27 m MD
89.8 deg
99.77m TVD
243.8 m SS
352.13 m VS
400.95 m MD
90.7 deg
99.71 m TVD
243.9 m SS
365.81 m VS
414.64 m MD
90.4 deg
99.58 m TVD
244.0 m SS
379.49 m VS
428.95 m MD
90.2 deg
99.51 m TVD
244.1 m SS
393.12 m VS
Prognosis at 244.15
100.1
(+243.5)
Mud interpreted from gamma
unconsolidated
ferred good to
ss otherwise
lotted below grain
ICP extrapolated
374.5-390 m: quartz sand, predominately coarse grained, rare multicoloured chert, rare pyrite (one grain), rare coal (one grain), minor cement from shoe
390-405 m: quartz sand, predominately coarse grained, rare multicoloured chert, rare pyrite (one grain), minor cement from shoe
405-420 m: quartz sand, predominately coarse grained, rare multicoloured chert, trace cement from shoe
420-435 m: quartz sand predominately upper medium grained to low coarse grained, rare multicoloured chert, ra pyrite cementing sand grains
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
374.5 m
107.6
(+236.0)
R A
W
R A
W
R A
M W

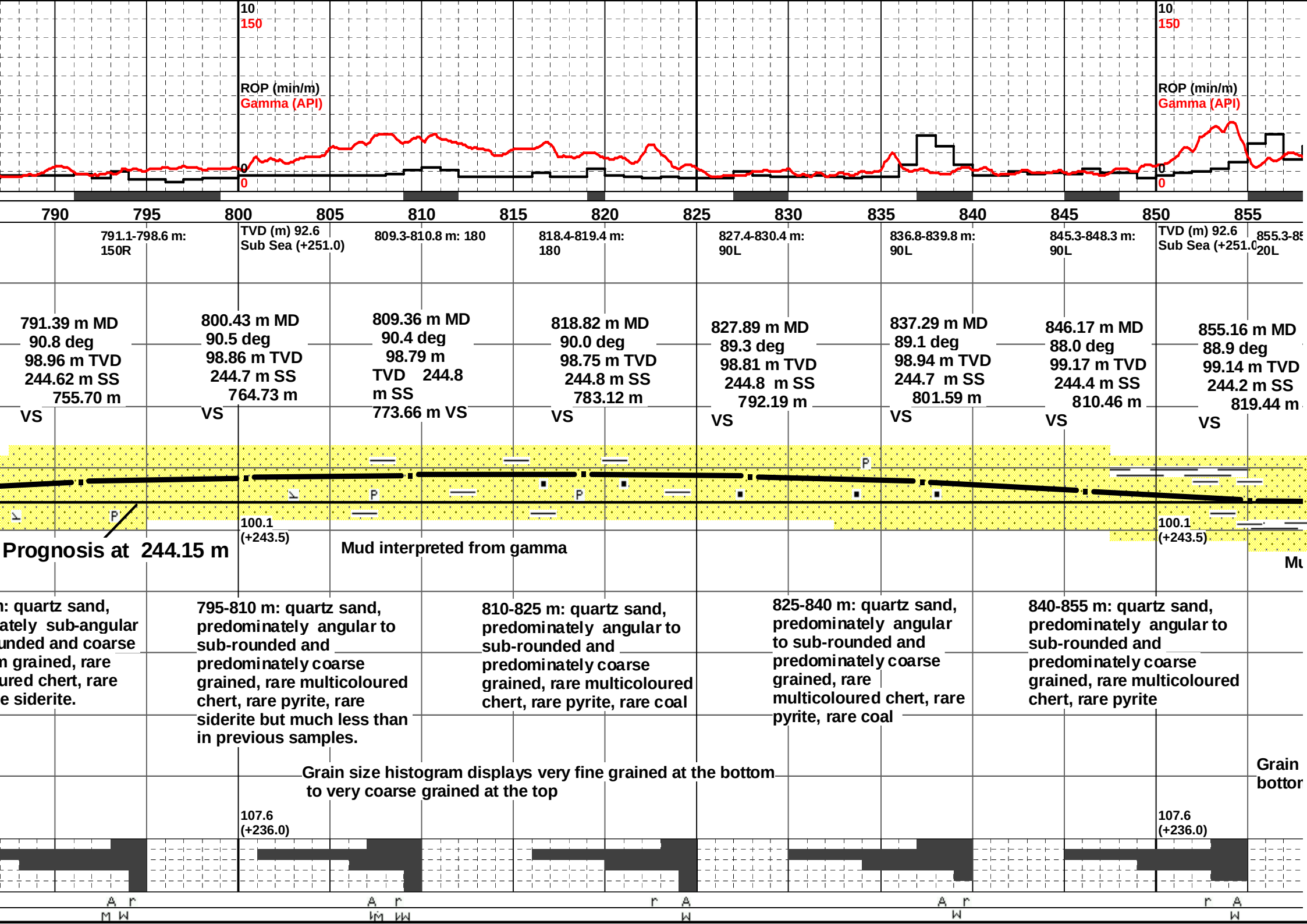

10
150
ROP (min/m)
Gamma (API)
0
0
435
440
445
450
455
460
465
470
475
480
485
490
495
500
TVD (m) 92.6
Sub Sea (+251.0)
473.6-475.1 m: 180
487.3-488.3 m: 180
TVD (m)
Sub Sea
500.9-501.
441.95 m MD
91.1 deg
99.35 m TVD
244.2 m
SS
406.76 m VS
455.63 m MD
91.4 deg
99.06 m TVD
244.5 m SS
420.42 m
VS
469.28 m MD
91.2 deg
98.75 m TVD
244.8 m SS
434.05 m VS
482.97 m MD
90.4 deg
98.55 m TVD
245.0 m SS
447.71 m
VS
496.57 m MD
89.0 deg
98.63 m TVD
245.0 m SS
461.28 m
VS
P
100.1
(+243.5)
1P1 Hz Prognosis at 244.15 m SS
Mud interpreted from gamma
Mud interpreted from gamma
435-450 m: quartz sand, predominately lower coarse and upper medium grained, rare multicoloured chert and siltstone
450-465 m: quartz sand, predominately upper medium grained, rare multicoloured chert and siltstone, rare pyrite
465-480 m: quartz sand, predominately medium grained with abundant lower coarse, rare multicoloured chert and siltstone, rare pyrite
480-495 m: quartz sand, predominately medium grained with abundant lower coarse, rare multicoloured chert, rare pyrite
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
107.6
(+236.0)
A R
M
R A
W
R A
W
R A
W
A R
M W

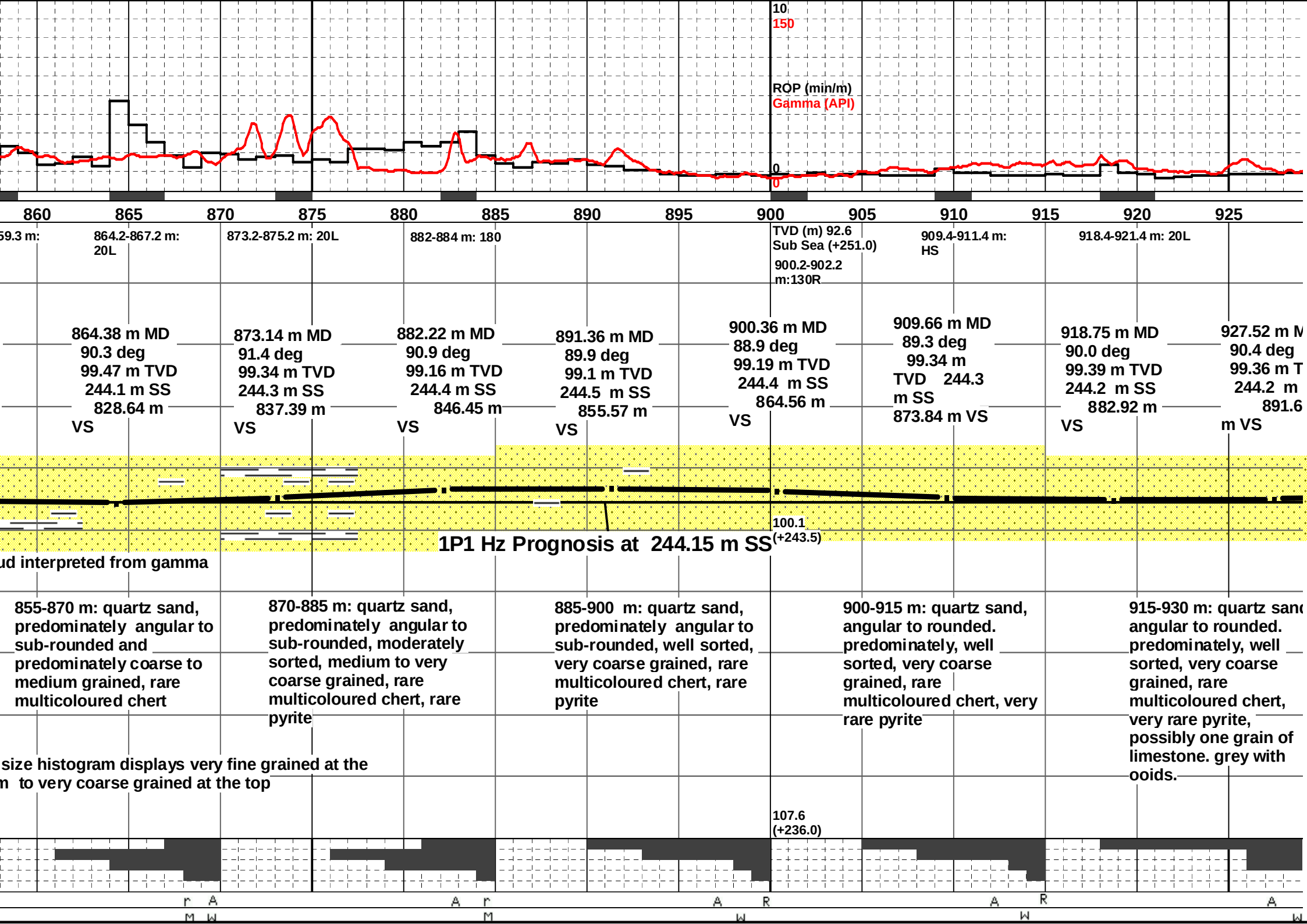

10
150
ROP (min/m)
Gamma (API)
0
0
505
510
515
520
525
530
535
540
545
550
555
560
565
570
TVD (m) 92.6
Sub Sea (+251.0)
528.2-529.2 m: 150R
541.8-542.8 m: 150R
569.0-570.0 m: 180
510.20 m MD
89.2 deg
98.84 m TVD
244.8 m SS
474.89 m VS
523.07 m MD
89.9 deg
98.95 m TVD
244.6 m SS
488.53 m VS
537.40 m MD
89.4 deg
99.03 m TVD
244.6 m SS
502.05 m VS
551.03 m MD
89.0 deg
99.22 m TVD
244.4 m SS
515.67 m VS
564.72 m MD
89.6 deg
99.39 m TVD
244.2 m SS
529.35 m VS
100.1
(+243.5)
Mud interpreted from gamma
1P1 Hz Prognosis at 244.15 m SS
510-525 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite but more than normal, one grain of feldspar
525-540 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite ?
540-555 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite, less than in 540 m sample
555-570 m: quartz sand, predominately medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite, much less than in 540 m sample
Note: Rare Probable Siderite
Note: Rare Probable Siderite
107.6
(+236.0)

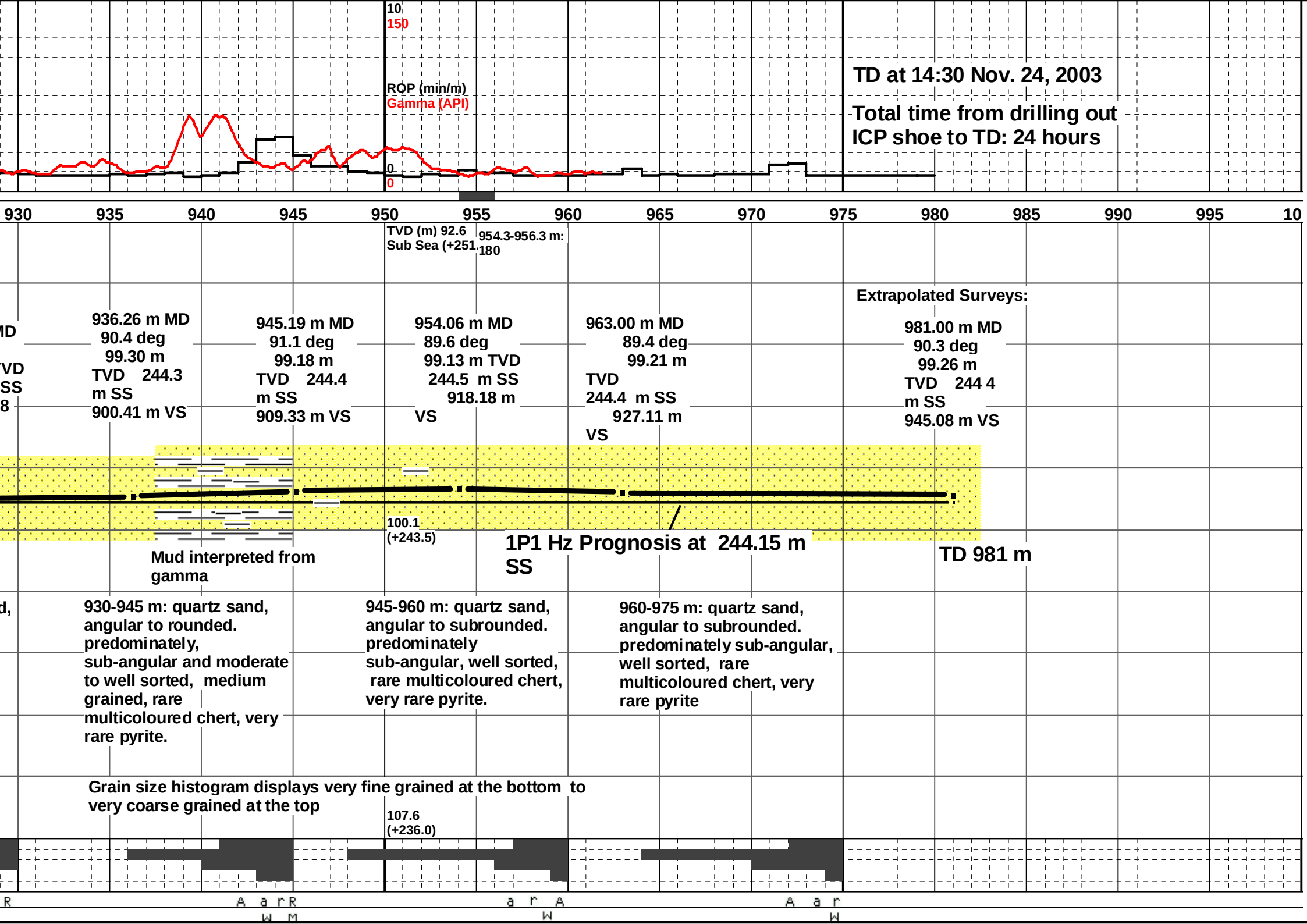

10
150
ROP (min/m)
Gamma (API)
0
0
575
580
585
590
595
600
605
610
615
620
625
630
635
640
596.3-597.8 m: 150L
TVD (m) 92.6
Sub Sea (+251.0)
609.9-610.9 m: 150L
637.3-639.3 m: 90L
578.31 m MD
90.2 deg
99.41 m TVD
244.2 m SS
542.94 m VS
591.96 m MD
90.8 deg
99.29 m TVD
244.3 m SS
556.59 m VS
605.65 m MD
89.5 deg
99.26 m TVD
244.3 m SS
570.28 m VS
619.31 m MD
88.6 deg
99.48 m TVD
244.1 m SS
583.93 m VS
632.94 m MD
89.2 deg
99.7 m TVD
243.86 m SS
597.56 m VS
100.1
(+243.5)
Mud interpreted from gamma
0-585 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite, rare very fine grained, light to medium brown siderite, even less than in 570 m sample
585-600 m: quartz sand, predominately coarse and medium grained, rare multicoloured chert, rare pyrite
600-615 m: quartz sand, predominately angular to sub-angular and coarse grained, rare multicoloured chert, very rare pyrite (two grains)
615-630 m: quartz sand, predominately angular to sub-angular and medium to coarse grained, rare multicoloured chert, very rare pyrite (one grain)
630-645 m: quartz sand, predominately coarse grained, rare multicoloured chert, very rare feldspar (one grain)
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
Grain size histogra
to very coarse grai
107.6
(+236.0)


10
150
ROP (min/m)
Gamma (API)
0
0
10
150
ROP (min/m)
Gamma (API)
0
0
45
650
655
660
665
670
675
680
685
690
695
700
705
710
715
TVD (m) 92.6
Sub Sea (+251.0)
650.9-651.9 m: 80L
664.5-666.0 m: 20L
678.2-680.2 m: 45L
691.8-693.8 m: 90L
TVD (m) 92.6
Sub Sea (+251.0)
700.8-704.8 m: 80L
709.6-711.6 m: 20L
46.56 m MD
88.1 deg
00.07 m TVD
243.5 m SS
611.17 m
S
660.2 m MD
88.5 deg
100.47 m
TVD 243.1
m SS
624.80 m VS
673.85 m MD
90.1 deg
100.64 m TVD
2423.0 m SS
638.45 m
VS
682.81 m MD
91.0 deg
100.55 m
TVD 243.1
m SS
647.41 m VS
691.57 m MD
91.2 deg
100.38 m
TVD 243.2
m SS
656.16 m VS
700.38 m MD
89.7 deg
100.31 m TVD
243.3 m SS
664.96 m
VS
709.03 m MD
90.7deg
100.35 m TVD
243.3 m SS
673.98 m
VS
1P1 Hz Prognosis at 244.15 m SS
100.1
(+243.5)
100.1
(+243.5)
P
P
P
P
P
645-660 m: quartz sand, predominately sub-angular and medium to coarse grained, rare multicoloured chert, very rare pyrite
Mud interpreted from gamma
Mud interpreted from gamma
690-705 m: quartz sand, predominately sub-angular to sub-rounded and medium to coarse grained, rare multicoloured chert
705-720 m: quar
predominately
sub-angular to
sub-rounded co
grained
660-675 m: quartz sand, predominately angular to sub-angular and coarse grained, rare multicoloured chert
675-690 m: quartz sand, predominately angular to sub-angular and medium to coarse grained, rare multicoloured chert, rare pyrite
am displays very fine grained at the bottom
ned at the top
Grain size histogram displays very fine grained at
bottom to very coarse grained at the top
107.6
(+236.0)
107.6
(+236.0)


10
150
ROP (min/m)
Gamma (API)
0
0
720
725
730
735
740
745
750
755
760
765
770
775
780
785
718.4-719.9 m: 20L
TVD (m) 92.6
Sub Sea (+251.0)
764.1-766.1 m: 80R
782.1-784.1 m: 80R
719.03 m MD
90.0 deg
100.29 m
TVD 242.7
m SS
683.55 m VS
728.5 m MD
91.0 deg
100.14 m
TVD 243.5 m
SS
692.99 m VS
737.34 m MD
90.0 deg
99.99 m
TVD 243.6
m SS
701.80 m VS
746.16 m MD
91.0 deg
99.84 m TVD
243.8 m SS
710.59 m
VS
755.24 m MD
91.0 deg
99.69 m TVD
243.9 m SS
719.64 m
VS
764.08 m MD
90.9 deg
99.54 m TVD
244.1 m SS
728.45 m VS
773.09 m MD
91.0 deg
99.39 m TVD
245.2 m SS
737.44 m
VS
781.97 m MD
91.8 deg
99.17 m TVD
244.4 m SS
746.30 m
VS
100.1
(+243.5)
1P1 Hz
SS
tz sand,
arse
t the
720-735 m: quartz sand, predominately sub-angular to sub-rounded and medium to coarse grained, rare multicoloured chert, rare, very fine grained, light brown siderite. very rare pyrite.
735-750 m: quartz sand, predominately sub-angular to sub-rounded and medium to coarse grained, rare multicoloured chert, rare, very fine grained, light brown siderite. (less than 735 sample) very rare pyrite.
750-765 m: quartz sand, predominately sub-angular to sub-rounded and coarse grained, rare multicoloured chert, very rare pyrite.
765-780 m: quartz sand, predominately sub-angular to sub-rounded and coarse grained, rare multicoloured chert, rare pyrite, rare siderite.
780-795 m
predomina
to sub-rou
to mediun
multicolou
pyrite, rar
Note: Rare Probable Siderite
Note: Rare Probable Siderite
Note: Rare Probable Siderite
107.6
(+236.0)
r Ra A
R r r A
a r A R
r a
a r


10
150
ROP (min/m)
Gamma (API)
0
0
790
795
800
805
810
815
820
825
830
835
840
845
850
855
791.1-798.6 m:
150R
TVD (m) 92.6
Sub Sea (+251.0)
809.3-810.8 m: 180
818.4-819.4 m:
180
827.4-830.4 m:
90L
836.8-839.8 m:
90L
845.3-848.3 m:
90L
855.3-85
20L
791.39 m MD
90.8 deg
98.96 m TVD
244.62 m SS
755.70 m
VS
800.43 m MD
90.5 deg
98.86 m TVD
244.7 m SS
764.73 m
VS
809.36 m MD
90.4 deg
98.79 m
TVD 244.8
m SS
773.66 m VS
818.82 m MD
90.0 deg
98.75 m TVD
244.8 m SS
783.12 m
VS
827.89 m MD
89.3 deg
98.81 m TVD
244.8 m SS
792.19 m
VS
837.29 m MD
89.1 deg
98.94 m TVD
244.7 m SS
801.59 m
VS
846.17 m MD
88.0 deg
99.17 m TVD
244.4 m SS
810.46 m
VS
855.16 m MD
88.9 deg
99.14 m TVD
244.2 m SS
819.44 m
VS
P
100.1
(+243.5)
Prognosis at 244.15 m
Mud interpreted from gamma
795-810 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite, rare siderite but much less than in previous samples.
810-825 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite, rare coal
825-840 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite, rare coal
840-855 m: quartz sand, predominately angular to sub-rounded and predominately coarse grained, rare multicoloured chert, rare pyrite
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
107.6
(+236.0)
A r
M W


10
150
ROP (min/m)
Gamma (API)
0
0
860
865
870
875
880
885
890
895
900
905
910
915
920
925
59.3 m:
864.2-867.2 m: 20L
873.2-875.2 m: 20L
882-884 m: 180
TVD (m) 92.6
Sub Sea (+251.0)
900.2-902.2 m:130R
909.4-911.4 m: HS
918.4-921.4 m: 20L
864.38 m MD
90.3 deg
99.47 m TVD
244.1 m SS
828.64 m VS
873.14 m MD
91.4 deg
99.34 m TVD
244.3 m SS
837.39 m VS
882.22 m MD
90.9 deg
99.16 m TVD
244.4 m SS
846.45 m VS
891.36 m MD
89.9 deg
99.1 m TVD
244.5 m SS
855.57 m VS
900.36 m MD
88.9 deg
99.19 m TVD
244.4 m SS
864.56 m VS
909.66 m MD
89.3 deg
99.34 m TVD 244.3 m SS
873.84 m VS
918.75 m MD
90.0 deg
99.39 m TVD
244.2 m SS
882.92 m VS
927.52 m M
90.4 deg
99.36 m T
244.2 m
891.6 m VS
100.1
(+243.5)
1P1 Hz Prognosis at 244.15 m SS
ud interpreted from gamma
855-870 m: quartz sand, predominately angular to sub-rounded and predominately coarse to medium grained, rare multicoloured chert
870-885 m: quartz sand, predominately angular to sub-rounded, moderately sorted, medium to very coarse grained, rare multicoloured chert, rare pyrite
885-900 m: quartz sand, predominately angular to sub-rounded, well sorted, very coarse grained, rare multicoloured chert, rare pyrite
900-915 m: quartz sand, angular to rounded. predominately, well sorted, very coarse grained, rare multicoloured chert, very rare pyrite
915-930 m: quartz sand angular to rounded. predominately, well sorted, very coarse grained, rare multicoloured chert, very rare pyrite, possibly one grain of limestone. grey with ooids.
size histogram displays very fine grained at the
m to very coarse grained at the top
107.6
(+236.0)


10
150
ROP (min/m)
Gamma (API)
0
0
TD at 14:30 Nov. 24, 2003
Total time from drilling out ICP shoe to TD: 24 hours
930
935
940
945
950
955
960
965
970
975
980
985
990
995
10
TVD (m) 92.6
Sub Sea (+251.
954.3-956.3 m:
180
Extrapolated Surveys:
936.26 m MD
90.4 deg
99.30 m
TVD 244.3
m SS
900.41 m VS
945.19 m MD
91.1 deg
99.18 m
TVD 244.4
m SS
909.33 m VS
954.06 m MD
89.6 deg
99.13 m TVD
244.5 m SS
918.18 m
VS
963.00 m MD
89.4 deg
99.21 m
TVD
244.4 m SS
927.11 m
VS
981.00 m MD
90.3 deg
99.26 m
TVD 244 4
m SS
945.08 m VS
100.1
(+243.5)
Mud interpreted from gamma
1P1 Hz Prognosis at 244.15 m SS
TD 981 m
930-945 m: quartz sand, angular to rounded. predominately, sub-angular and moderate to well sorted, medium grained, rare multicoloured chert, very rare pyrite.
945-960 m: quartz sand, angular to subrounded. predominately sub-angular, well sorted, rare multicoloured chert, very rare pyrite.
960-975 m: quartz sand, angular to subrounded. predominately sub-angular, well sorted, rare multicoloured chert, very rare pyrite
Grain size histogram displays very fine grained at the bottom to very coarse grained at the top
107.6
(+236.0)

10
150

ROP (min/m)
Gamma (API)

0
0

00 1005

TVD (m) 92.6
Sub Sea (+2510)

100.1
(+243.5)

107.6
(+236.0)

APPENDIX 3/D1:

Mud and geological report

Injector well – Vertical lithology strip log

LITHOLOGY STRIP LOG
WellSight Systems Inc.
Scale 1:240 (5"=100') Metric

Well Name:	DCEL 1I1 JOSLYN CREEK 3-33-95-12		
Location:	103/03-33-095-12W4/0		
Licence Number:	0296169	**Region:**	Athabasca
Spud Date:	Nov. 26, 2003	**Drilling Completed:**	Heel: Nov. 28
Surface Coordinates:	LSD 10-33-095-12W4M 432.9 m South, 790.2 m West		
Bottom Hole Coordinates:	Extrapolated: 336.81 m South, 66.44 m West, 340.71 m.		
Ground Elevation (m):	339.7 m	**K.B. Elevation (m):**	343.6 m
Logged Interval (m):	20.0 m To: 356.0 m	**Total Depth (m):**	375.0 m
Formation:	Clearwater and McMurray		
Type of Drilling Fluid:	Water for surface hole, K2SO4-H2O/polymer in McMurray		

OPERATOR

Company: Deer Creek Energy Ltd.
Address: Bow Valley Square Two
2600, 205 Fifth Avenue SW
Calgary, Alberta, T2P 2V7

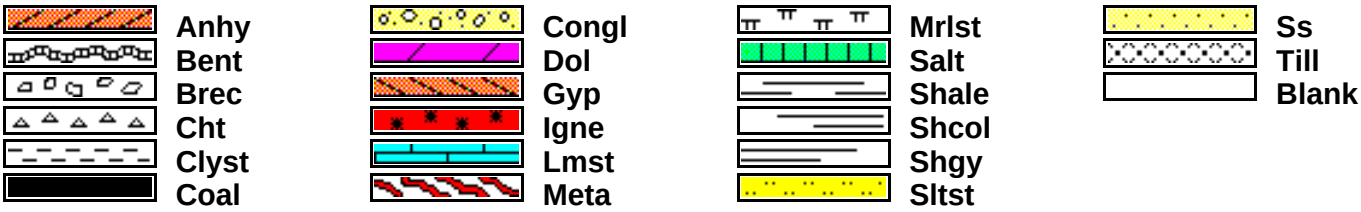
GEOLOGIST

Name: Dane Bridge, M. Sc., P. Geol. and Esther Visser, B. Sc., GIT
Company: Dane A Bridge Consulting and Deer Creek Energy
Address: 16 Massey Place SW
Calgary, Alberta, T2V 2G3
403-259-2826

Comments

Intermediate Hole for DCE 1I1
Intermediate casing point 374.0m, 1.0 m off bottom.

ROCK TYPES



ACCESSORIES

MINERAL
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

FOSSIL
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

STRINGER
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

TEXTURE
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OTHER SYMBOLS

POROSITY TYPE
- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

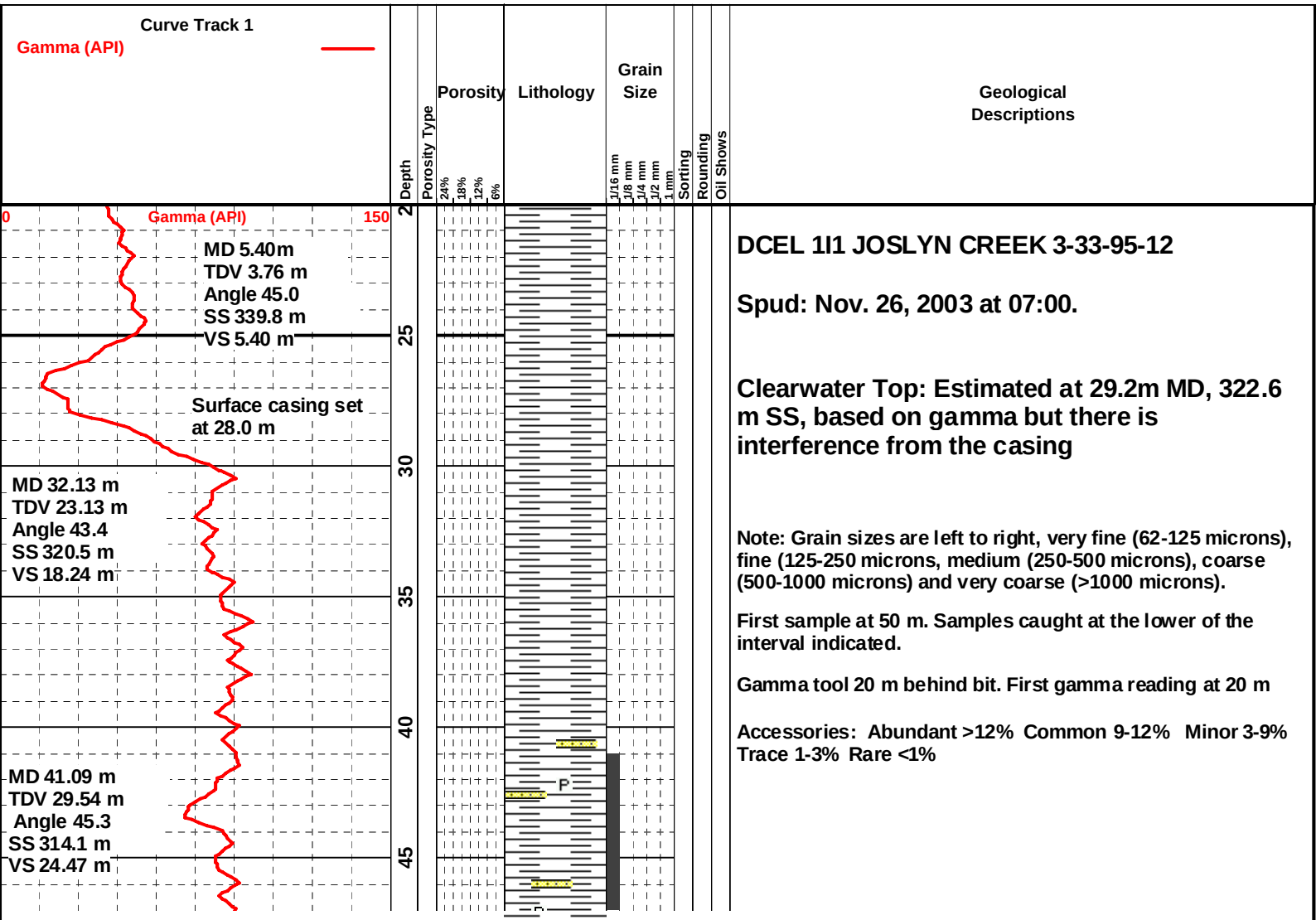
SORTING
- Well
- Moderate
- Poor

ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

OIL SHOWS
- Even
- Spotted
- Ques
- Dead

INTERVALS
- None
- Core
- Dst

EVENTS
- Rft
- Sidewall



DCEL 1I1 JOSLYN CREEK 3-33-95-12

Spud: Nov. 26, 2003 at 07:00.

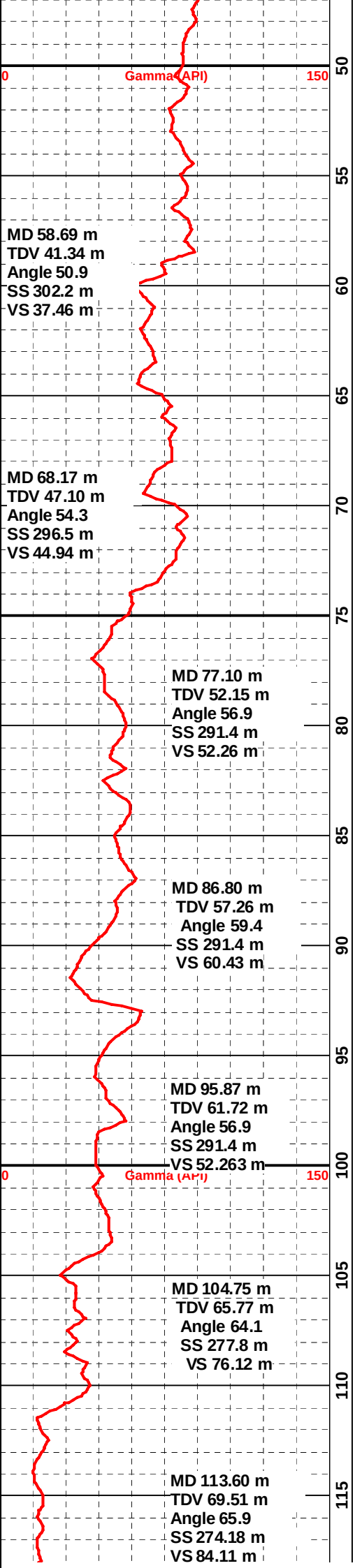
Clearwater Top: Estimated at 29.2m MD, 322.6 m SS, based on gamma but there is interference from the casing

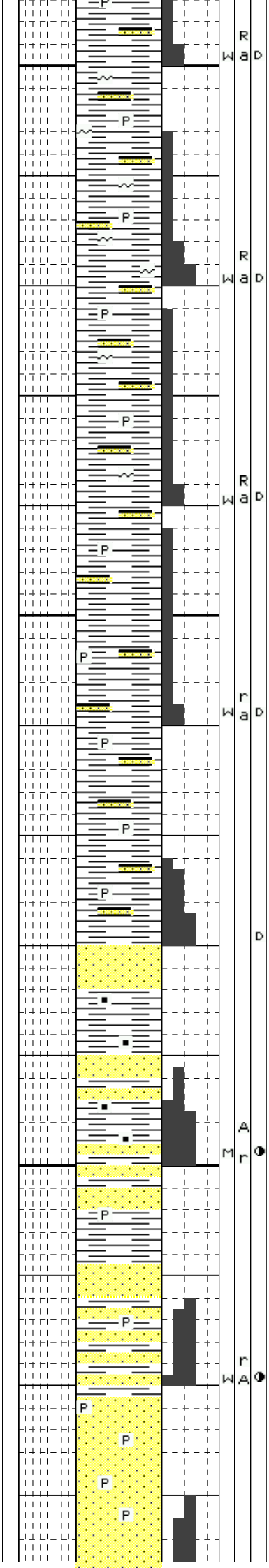
Note: Grain sizes are left to right, very fine (62-125 microns), fine (125-250 microns, medium (250-500 microns), coarse (500-1000 microns) and very coarse (>1000 microns).

First sample at 50 m. Samples caught at the lower of the interval indicated.

Gamma tool 20 m behind bit. First gamma reading at 20 m

Accessories: Abundant >12% Common 9-12% Minor 3-9% Trace 1-3% Rare <1%





40-50 m: Medium-dark grey mud with trace very fine sand and loose very coarse sand probably from till, rare pyrite, minor cavings from till not shown on grain size histogram.

50-60 m: Medium-dark grey mud and trace siltstone with minor very fine sand to medium grained sand and loose very coarse sand probably from till, rare pyrite, rare glauconite, rare shell fragments, minor cavings from till not shown on grain size histogram.

60-70 m: Medium-dark grey mud and trace dark siltstone and very fine sand-siltstone with a mud matrix, minor very fine to fine grained sand and loose very coarse sand probably from till, rare pyrite, very rare glauconite, minor cavings from till not shown on grain size histogram.

70-80 m: Medium-dark grey mud and rare dark siltstone, trace very fine to fine grained sand and rare loose very coarse sand probably from till, rare pyrite, minor cavings from till not shown on grain size histogram.

80-90 m: Medium-dark grey mud , trace very fine to medium grained sand and rare loose very coarse sand probably from till, rare pyrite, minor cavings from till not shown on grain size histogram.

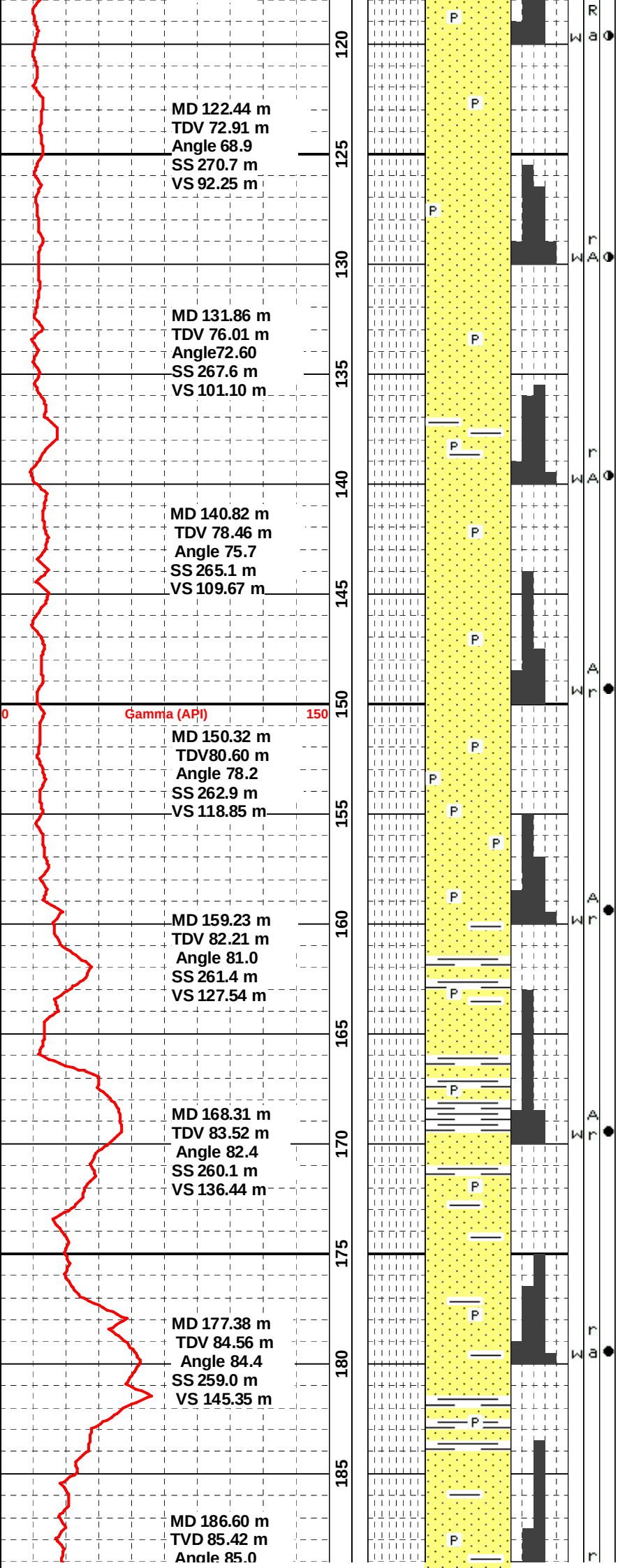
McMurray Top: 90.2 m MD, 284.6 m SS, based on gamma and cuttings

90-100 m: Medium-dark grey Clearwater mud and 5%, very fine to medium grained claer quartz sand from McMurray, rare loose very coarse sand probably from till, rare pyrite, rare coal, weakly bitumen saturated, minor cavings from till not shown on grain size histogram.

Note: McMurray sample are unconsolidated, bitumen saturated sand with intergranular porosity and inferred good to excellent porosity unless otherwise indicated.

100-110 m: McMurray clear quartz sand mainly fine to medium grained, >50% Clearwater mud and trace coarser sand from till, rare pyrite, weakly bitumen saturated

110-120 m: McMurray clear quartz sand mainly fine to medium grained, ~20% Clearwater mud cavings, minor



siltstone cavings, rare to trace pyrite, weakly bitumen saturated

120-130 m: poor sample, McMurray clear quartz sand mainly fine to medium grained, 75% Clearwater mud cavings, rare to trace pyrite, weakly bitumen saturated

130-140 m: McMurray clear quartz sand mainly fine to medium grained, trace very coarse, 5% Clearwater mud cavings, rare pyrite, moderately bitumen saturated

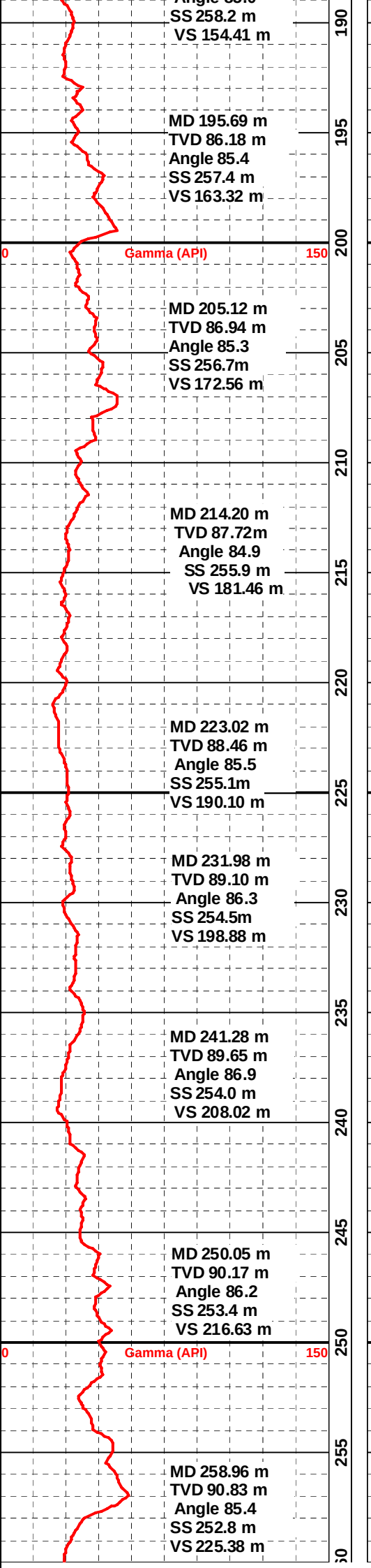
140-150 m: McMurray clear quartz sand mainly fine grained, trace coarse, sample mainly bitumen with 10-15% sand, 2% Clearwater mud cavings, rare pyrite, rare muscovite, bitumen saturated

150-160 m: McMurray clear quartz sand mainly fine grained, trace coarse, sample mainly bitumen with 10% sand, 1-2% Clearwater mud cavings, trace pyrite, bitumen saturated

160-170 m: McMurray clear quartz sand mainly fine grained, very well sorted, good sample with abundant sand, trace pyrite, trace varicoloured chert, bitumen saturated

170-180 m: McMurray clear quartz sand mainly medium and fine grained, fair sample with abundant sand, 25% Clearwater siltstone and lesser mud, rare pyrite, trace muscovite, bitumen saturated

180-190 m: McMurray clear quartz sand mainly medium grained, rare coarse to very coarse, rare pyrite, trace muscovite, bitumen saturated



muscovite, bitumen saturated

190-200 m: McMurray clear quartz sand mainly medium grained, rare coarse to very coarse, rare pyrite, trace muscovite, bitumen saturated

200-210 m: McMurray clear quartz sand, predominantly medium grained, rare pyrite, rare muscovite, bitumen saturated. some clearwater siltstones and lesser muds present in sample

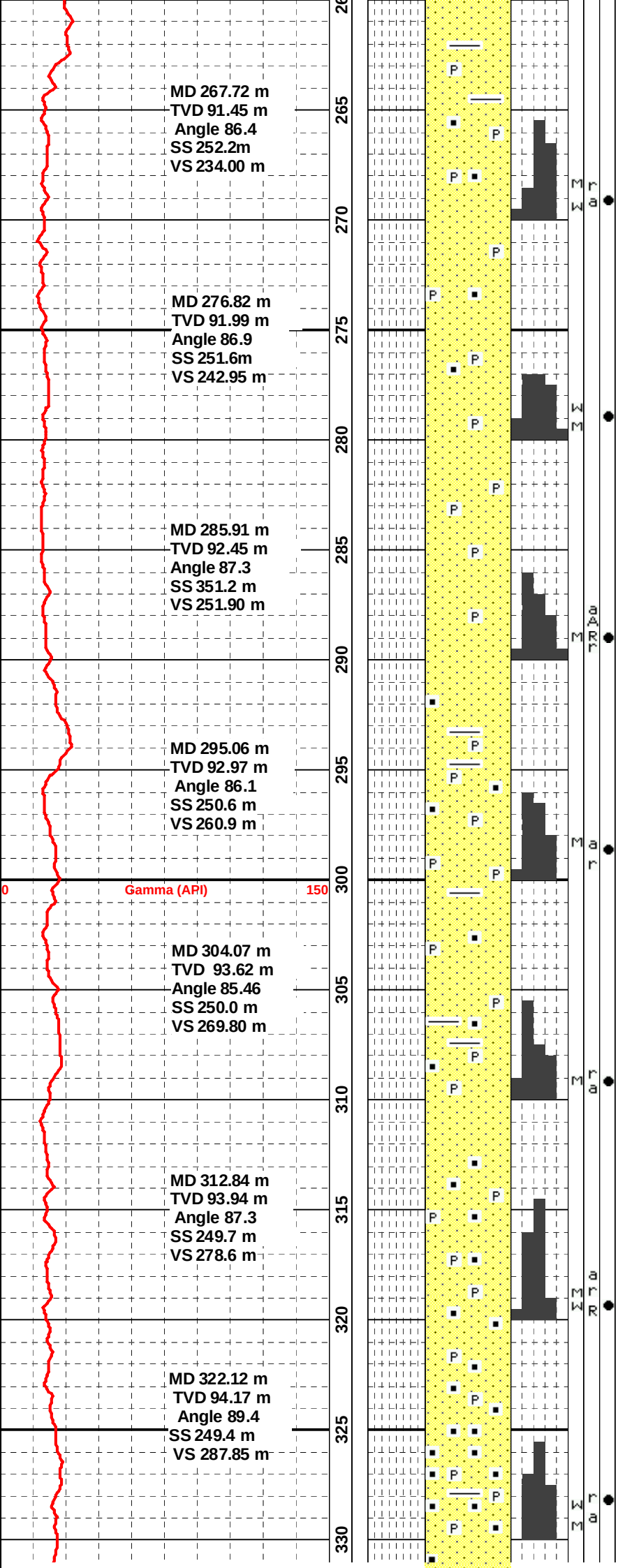
210-220 m: McMurray clear quartz sand, mainly medium to lower coarse grained, rare pyrite, bitumen saturated. minor clearwater siltstones less than previous sample

220-230 m: McMurray clear quartz sand, mainly medium grained, rare pyrite, rare, large pieces of coal. bitumen saturated. minor large pieces of siltstone.

230-240 m: McMurray clear quartz sand, mainly medium to coarse grained, rare pyrite, rare multicolored chert. bitumen saturated. minor siltstone (more than previous sample)

240-250 m: McMurray clear quartz sand, mainly medium to lower coarse grained, trace pyrite, rare multicolored chert, rare muscovite and coal. bitumen saturated. minor siltstone

250-260 m: McMurray clear quartz sand, mainly coarse grained, rare pyrite, rare multicolored chert, rare muscovite and coal. bitumen saturated. minor siltstone, one grain appears to be pyrite cemented, possibly McMurray siltstone



260-270 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, mainly medium grained, rare pyrite, rare muscovite and one very large coal grain. minor siltstone, (may be glauconitic?) probably mcmurray interbeds.

270-280 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, moderate to well sorted, fine to lower coarse sand, rare pyrite, rare coal. minor glauconotic siltstone, probably Wabiskaw cavings

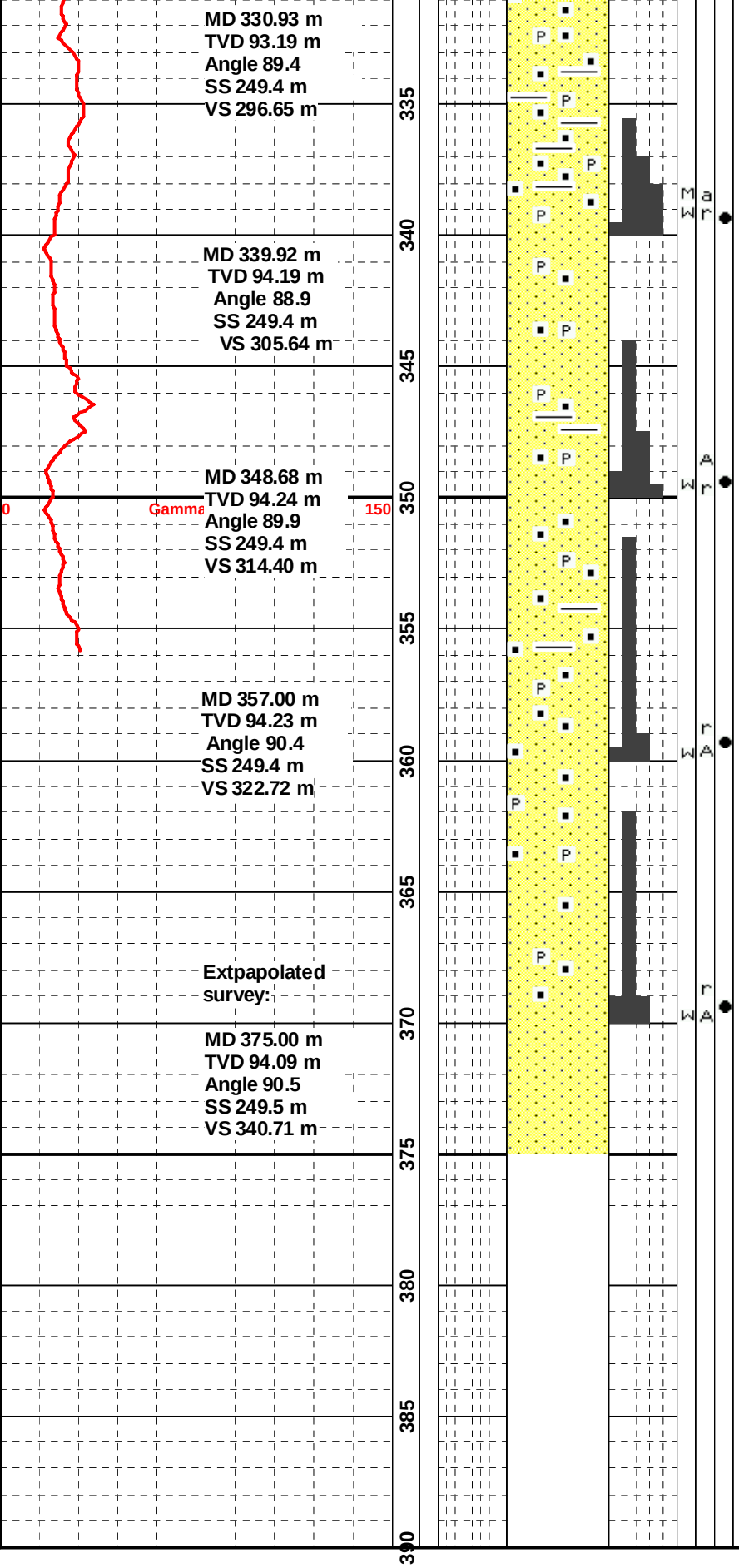
280-290 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, moderately sorted, mostly upper fine to lower coarse sand, rare pyrite. minor glauconotic siltstone, probably Wabiskaw cavings

290-300 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray clear quartz sand, moderately sorted, mostly upper fine to lower coarse sand, rare pyrite and coal. trace mica. trace siltstone.

300-310 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. 80% McMurray quartz sand, moderately sorted, mostly upper fine to lower coarse sand, rare pyrite and coal. trace to minor mica. minor glauconitic siltstone (Wabiskaw cavings)

310-320 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. 80% McMurray quartz sand, moderate to well sorted, mostly medium grained sand, rare pyrite. trace mica. common small coal fragments. minor siltstone

320-330 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. 75% McMurray quartz sand, moderate to well sorted, mostly medium grained sand, rare pyrite, trace mica, abundant small coal fragments, minor siltstone, some is glauconitic.



330-340 m: sample very bitumen rich, difficult to clean. small amount of sample recovered. McMurray quartz sand, moderate to well sorted, mostly fine grained sand, rare pyrite, rare mica, abundant small coal fragments, minor siltstone, some is glauconitic.

340-350 m: sample very bitumen rich, <5% McMurray quartz sand, well sorted, mostly fine grained sand, rare pyrite, trace small coal fragments, minor siltstone, probably cavings.

350-360 m: sample very bitumen rich, about 5% McMurray quartz sand, well sorted, mostly fine grained sand, rare pyrite, minor small coal fragments, rare muscovite, trace siltstone, probably cavings.

360-370 m: sample very bitumen rich, about 10% McMurray quartz sand, well sorted, mostly fine grained sand, rare pyrite, minor small coal fragments, rare muscovite, trace siltstone and glauconite, probably cavings.

TD for intermediate hole 375.0 m MD

TD: Nov. 28, 2003 at 07:10

Intermediate casing set at 374.0 m MD

APPENDIX 3/D2:

Mud and geological report

Producer well – Vertical lithology strip log

LITHOLOGY STRIP LOG
WellSight Systems Inc.
Scale 1:240 (5"=100') Metric

Well Name:	DCEL 1P1 JOSLYN CREEK 3-33-95-12		
Location:	102/03-33-095-12W4/0		
Licence Number:	0295554	**Region:**	Athabasca
Spud Date:	Nov. 19, 2003	**Drilling Completed:**	Heel: Nov. 22
Surface Coordinates:	LSD 10-33-095-12W4 433.0 m South 805.2 m West		
Bottom Hole Coordinates:	337.02 m South, 51.49 m West, Vertical Section 339.36 m.		
Ground Elevation (m):	339.7 m	**K.B. Elevation (m):**	343.6 m
Logged Interval (m):	21.8 m To: 355.2 m	**Total Depth (m):**	374.50 m
Formation:	Clearwater and McMurray		
Type of Drilling Fluid:	Water for surface hole, K2S04-H2O/polymer in McMurray		

Printed by WellSight Log Viewer from WellSight Systems Inc. 1-800-447-1534 www.wellsight.com

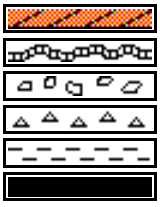
OPERATOR

Company: Deer Creek Energy Ltd.
Address: Bow Valley Square Two
2600, 205 Fifth Avenue SW
Calgary, Alberta, T2P 2V7

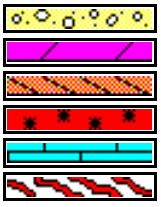
GEOLOGIST

Name: Dane Bridge, M. Sc., P.Geol. and Esther Visser, B. Sc., GIT
Company: Dane A Bridge Consulting and Deer Creek Energy
Address: 16 Massey Place SW
Calgary, Alberta, T2V 2G3
403-259-2826

ROCK TYPES

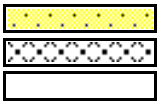


Anhy
Bent
Brec
Cht
Clyst
Coal



Congl
Dol
Gyp
Igne
Lmst
Meta

Mrlst
Salt
Shale
Shcol
Shgy
Sltst



Ss
Till
Blank

ACCESSORIES

MINERAL
- Anhy
- Arggrn
- Arg
- Bent
- Bit
- Brecfrag
- Calc
- Carb
- Chtdk
- Chtlt
- Dol
- Feldspar
- Ferrpel
- Ferr
- Glau
- Gyp
- Hvymin
- Kaol
- Marl
- Minxl
- Nodule
- Phos
- Pyr
- Salt
- Sandy
- Silt
- Sil
- Sulphur
- Tuff

FOSSIL
- Algae
- Amph
- Belm
- Bioclst
- Brach
- Bryozoa
- Cephal
- Coral
- Crin
- Echin
- Fish
- Foram
- Fossil
- Gastro
- Oolite
- Ostra
- Pelec
- Pellet
- Pisolite
- Plant
- Strom

STRINGER
- Anhy
- Arg
- Bent
- Coal
- Dol
- Gyp
- Ls
- Mrst
- Sltstrg
- Ssstrg

TEXTURE
- Boundst
- Chalky
- Cryxln
- Earthy
- Finexln
- Grainst
- Lithogr
- Microxln
- Mudst
- Packst
- Wackest

OTHER SYMBOLS

POROSITY TYPE
- Earthy
- Fenest
- Fracture
- Inter
- Moldic
- Organic
- Pinpoint
- Vuggy

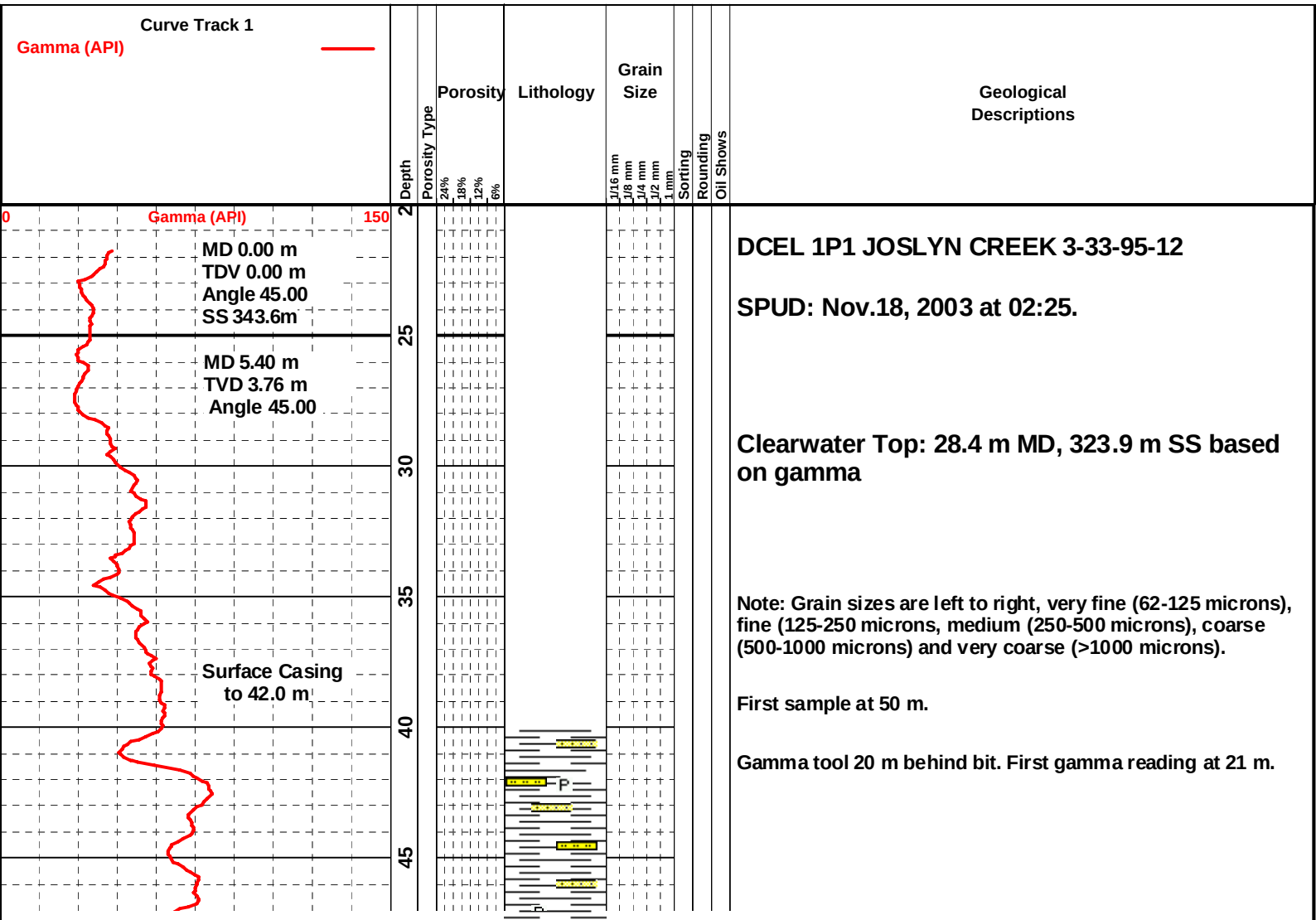
SORTING
- Well
- Moderate
- Poor

ROUNDING
- Rounded
- Subrnd
- Subang
- Angular

OIL SHOWS
- Even
- Spotted
- Ques
- Dead

INTERVALS
- None
- Core
- Dst

EVENTS
- Rft
- Sidewall



DCEL 1P1 JOSLYN CREEK 3-33-95-12

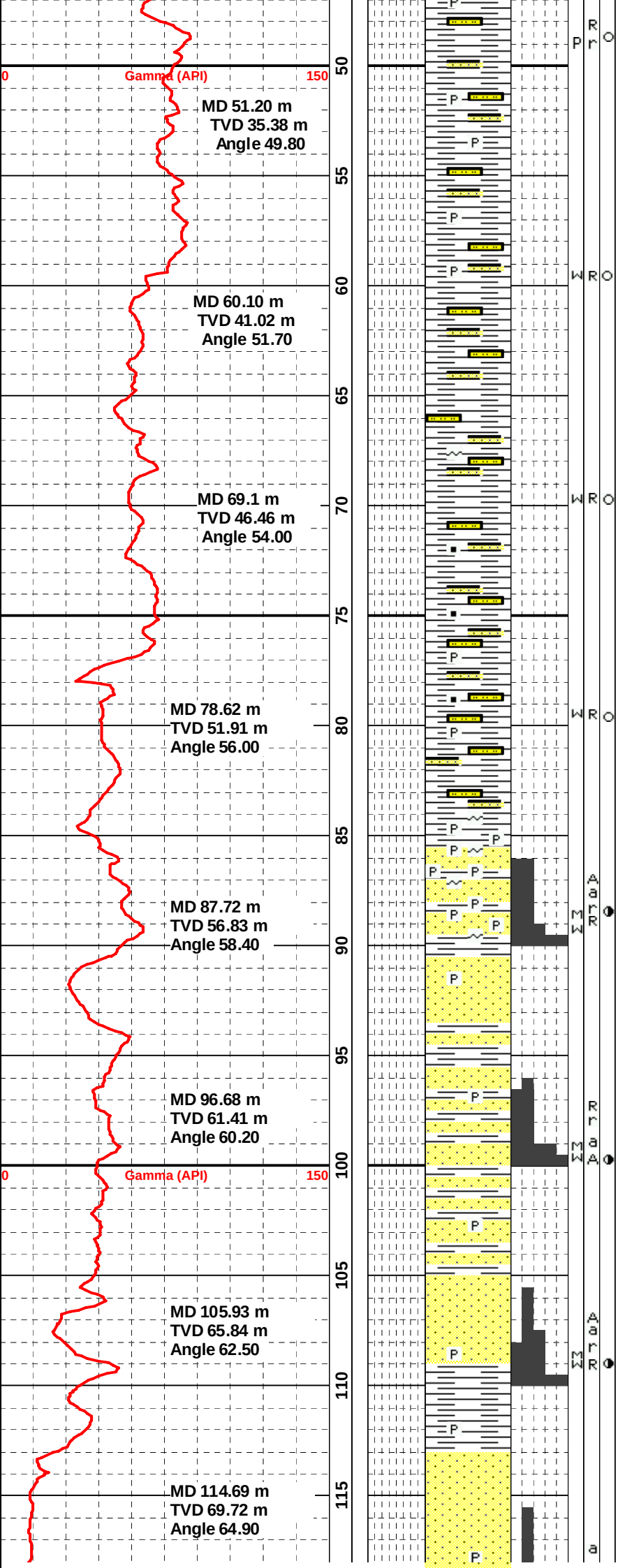
SPUD: Nov.18, 2003 at 02:25.

Clearwater Top: 28.4 m MD, 323.9 m SS based on gamma

Note: Grain sizes are left to right, very fine (62-125 microns), fine (125-250 microns, medium (250-500 microns), coarse (500-1000 microns) and very coarse (>1000 microns).

First sample at 50 m.

Gamma tool 20 m behind bit. First gamma reading at 21 m.



40-50m: unrepresentative sample (only resistant materials preserved) consists of light gray, very poorly sorted and a well sorted sandstone with clay matrix and a med to dark gray siltstone.

50-60m: unrepresentative sample (mostly resistant materials preserved) consists of med to dark gray siltstone and some well sorted sandstone with clay matrix. pyrite more prevalent. Clearwater muds represented by large mud balls.

60-70m: unrepresentative sample (mostly resistant materials preserved) consists of med to dark gray siltstone, minor well sorted sandstone with clay matrix, minor very coarse to pebble. Clearwater muds represented by large mud balls. One chip glauconitic sandstone.

70-80m: unrepresentative sample (mostly resistant materials preserved) consists of med to dark gray siltstone, minor well sorted sandstone and coarse grained sandstone with clay matrix. Clearwater muds represented by large mud balls. minor amounts of coal and pyrite

84m: Drillers noted tar sand.

McMurray Top: 89.8 m MD, 286.3 m SS based on gamma.

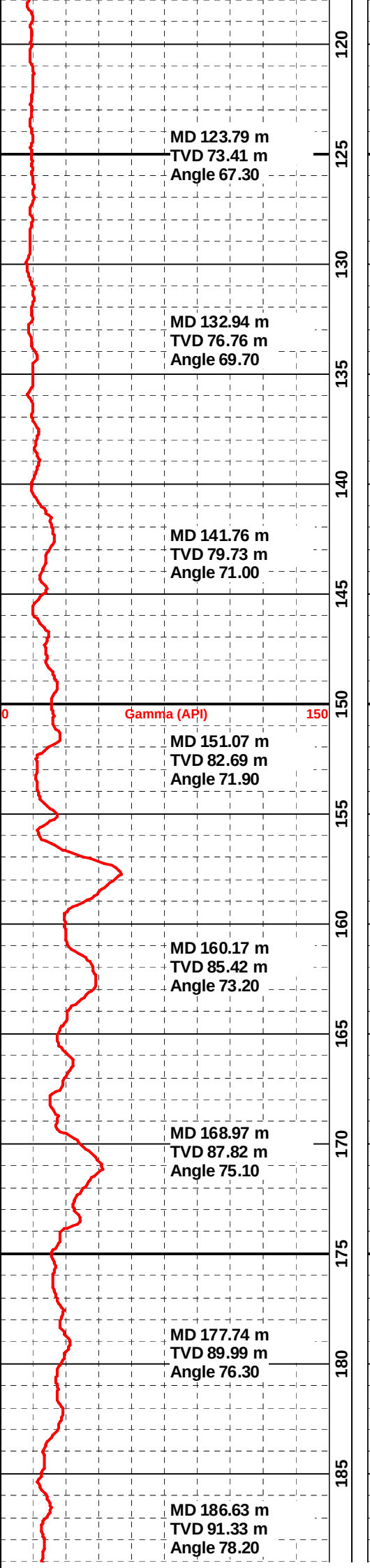
80-90m: lithologically diverse sample with Clearwater and McMurray Formation cuttings, very abundant pyrite, minor glauconite. Clearwater muds still evident as large mud balls. large range in quartz grainsize and rounding.

Note: McMurray sample are unconsolidated, bitumen saturated sand with intergranular porosity and inferred good to excellent porosity unless otherwise indicated.

90-100m: clear quartz sand with about 50% uphole siltstone. large range in quartz grainsize and rounding but with very fine to fine predominate and overall well sorted to moderately well sorted. minor pyrite.

100-110m: clear quartz sand with about 50% uphole siltstone. large range in quartz grainsize and rounding but with very fine predominating and overall well sorted to moderately well sorted. minor pyrite

110-120m: clear quartz sand with about 50% uphole siltstone. range in quartz grainsize and rounding but with



sub-ang/sub-rounded fine grains predominating. overall well sorted. minor pyrite

120-130m: clear quartz sand with about 50% uphole siltstone. range in quartz grainsize and rounding but with upper fine/lower medium grains dominating. overall well to mod well sorted. minor pyrite

130-140m: clear quartz sand with about 30% uphole siltstone. range in quartz grainsize and rounding but with sub-rounded upper fine grains dominating. overall mod-well to well sorted. moderate pyrite

140-150m: clear quartz sand with about 20% uphole siltstone. upper fine/lower medium sub-angular to sub-rounded grains dominating. overall well sorted. minor pyrite

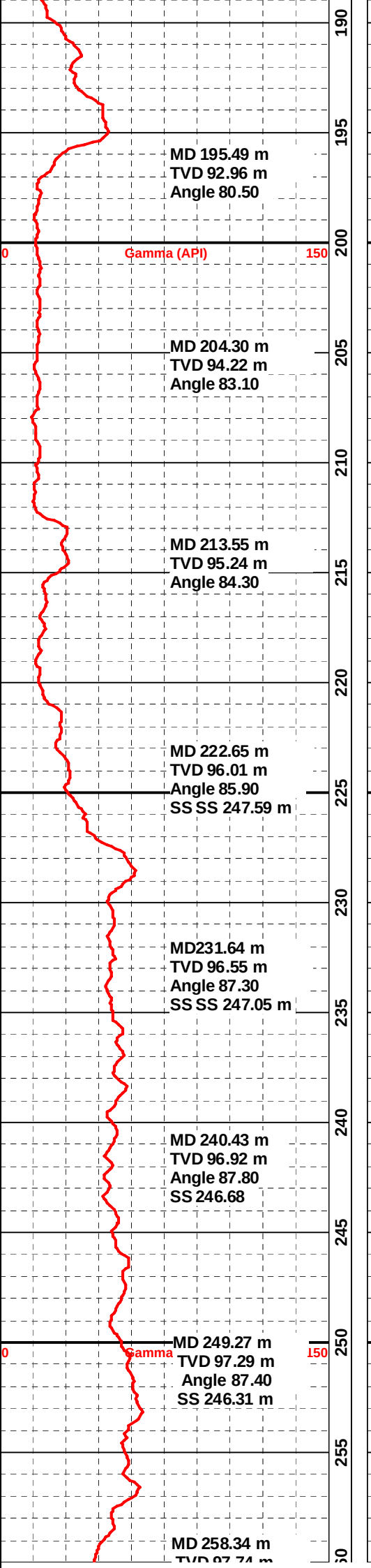
150-160m: clear quartz sand with about 20% uphole siltstone. mainly lower to upper fine sub-angular to sub-rounded clear quartz sand grains. overall well sorted. common pyrite. one feldspar grain.

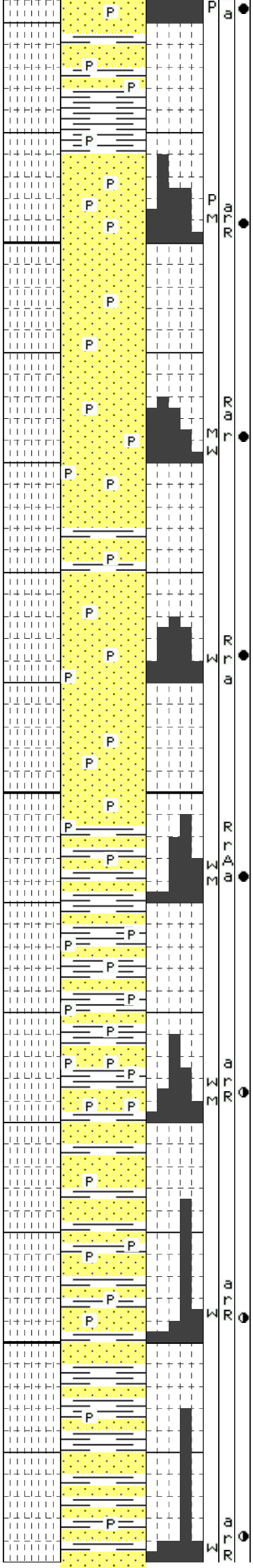
160-170m: clear quartz sand with about 20% uphole siltstone. mainly lower to upper fine sub-angular to sub-rounded clear quartz sand grains. overall well sorted. common pyrite.

Samples at 170 and 180m were more difficult to clean.

170-180m: clear quartz sand with about 15% uphole siltstone. sample did not wash clean and was dried with still some bitumen causing aggregation of grains, difficult to determine size distribution, appears similar to 170m, possible slightly more coarse, very common pyrite

180-190m: very poor sample, probably due to an aerated mud system caused by excessive Clearwater cavings, abundant wood from mud additive, 70% siltstone amd mud lumps from Clearwater, sand may not be representative of





lumps from Clearwater, sand may not be representative of McMurray due to small and poor sample, common pyrite

190-200m: thick black bitumen with minor Clearwater cavings and rare McMurray sand, sand content about 15% of that obtained from samples in the 100-150 m range, minor pyrite.

200-210m: thick black bitumen with minor Clearwater cavings. McMurray sand is mod-well sorted and mostly sub-rounded, sand content about 25% of that obtained from samples in the 100-150 m range, minor pyrite.

210-220m: thick black bitumen withsome siltstone cuttings. McMurray sand is well sorted and mostly sub-rounded, sand content about 25% of that obtained from samples in the 100-150 m range, minor pyrite.

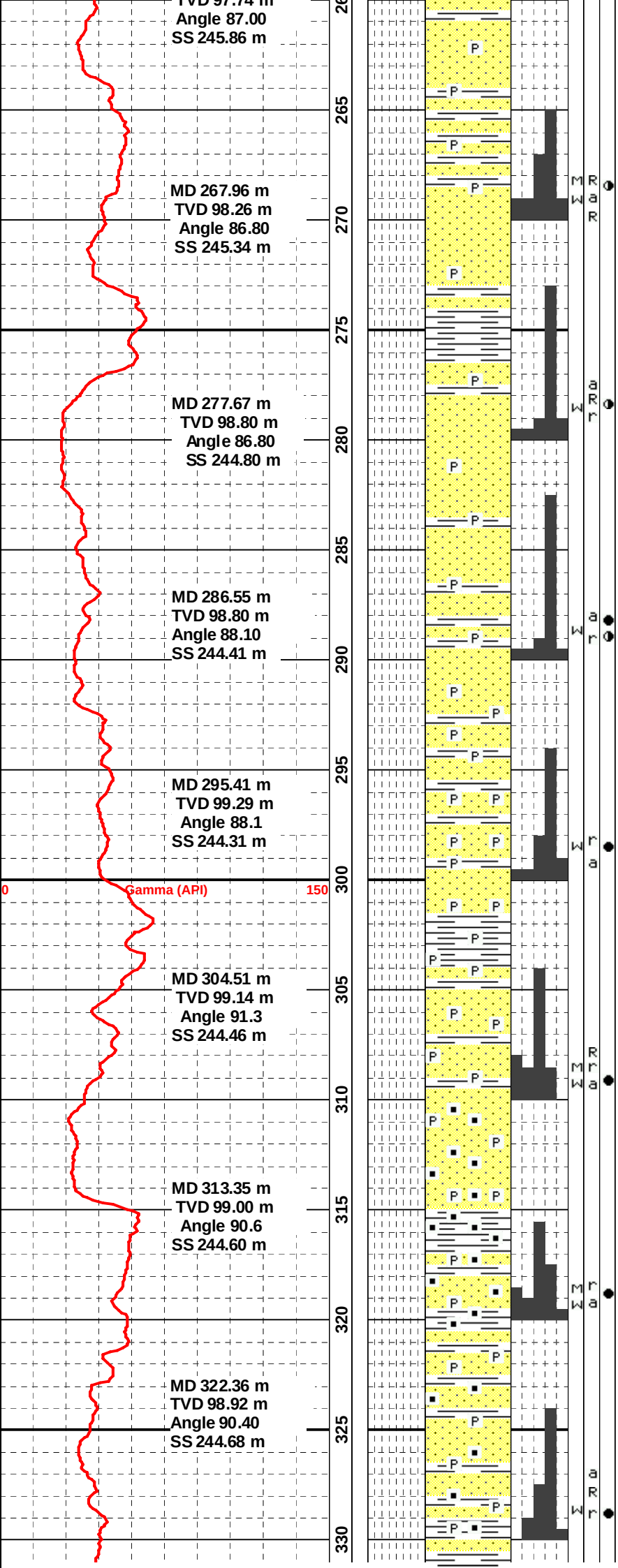
220-230m: thick black bitumen with minor siltstone cuttings. McMurray sand is moderately well sorted and mostly sub-angular. minor pyrite. good quantity of sand in sample.

230-240m: sample difficult to wash. lots of mud and several large siltstone chunks. McMurray is moderately well sorted, dominated by sub-angular to sub-rounded lower to upper medium grains. abundant pyrite.

240-250m: clear quartz sand with about 15% uphole siltstone is well sorted, dominated by sub-rounded to rounded, lower coarse to coarse grains. moderate pyrite.

NOTE: Possible McMurray mud lumps from insitu mud beds in 260 and 270 m samples.

250-260 m: low bitumen and mud rich sample, 50% large clasts and lumps, about half mud lumps, medium grey, soft, pliable, possible McMurray and half Clearwater siltstone and silty sandstone, 50% quartz sand, mainly coarse as above, trace pyrite.



260-270 m: moderate bitumen and moderately mud rich sample, 25% large clasts and lumps, about half mud lumps, medium grey, soft, pliable, possible McMurray and half Clearwater siltstone and silty sandstone, 80% quartz sand, mainly coarse as above, minor pyrite, minor small siltstone fragments, probably cavings.

270-280 m: moderate bitumen with minor mud, 10% large clasts of Clearwater siltstone and silty sandstone, trace granitic and iron stained quartzite, 90% quartz sand, mainly coarse as above, trace pyrite, minor small siltstone fragments, probably cavings.

NOTE: Possible McMurray mud lumps from insitu mud beds in 290 m sample.

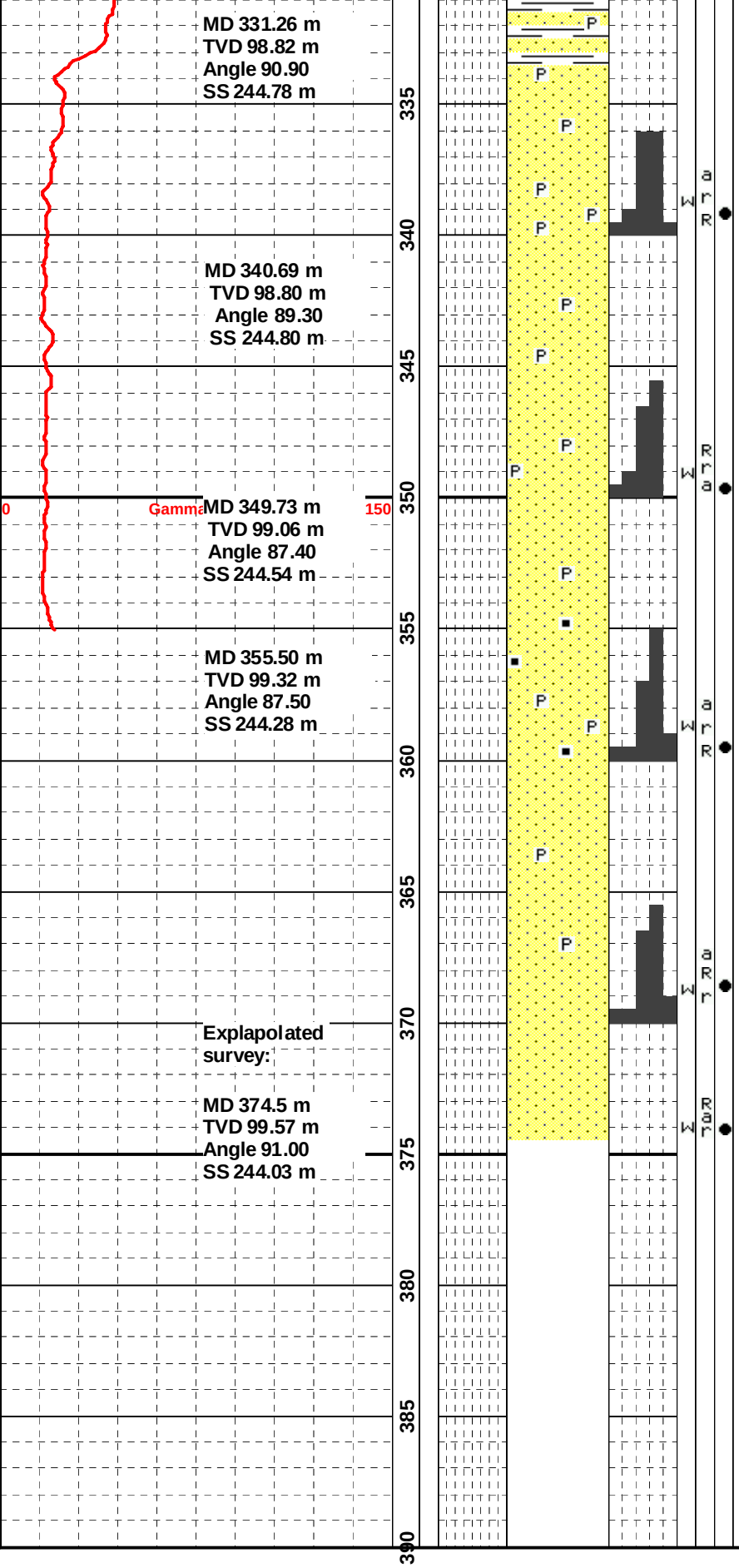
280-290 m: moderate bitumen with minor mud, 10% large clasts and lumps, about half mud lumps, medium grey, soft, pliable, possible McMurray and half Clearwater siltstone and silty sandstone, 90% quartz sand, mainly coarse as above, minor pyrite, minor small siltstone fragments, probably cavings.

290-300 m: moderate bitumen saturation with very minor Clearwater siltstone and silty sandstone, mainly quartz sand, mainly coarse with more medium than above, minor pyrite.

300-310m: quartz sand, mainly medium grained with common fine and very fine, <5% very coarse, minor pyrite.

310-320m : quartz sand, mainly medium and coarse grained, minor pyrite, common fragments of black vitreous coal.

320-330m : well sorted quartz sand, predominantly medium grained, minor pyrite, some fragments of black vitreous coal.



330-340m : well sorted quartz sand, predominantly medium to coarse grained, minor pyrite.

340-350m : well sorted quartz sand, predominantly upper medium to coarse grained, minor pyrite.

350-360m : well sorted quartz sand, predominantly coarse grained, minor pyrite and coal. some shale, could be McMurray?

360-370m : well sorted quartz sand, predominantly coarse grained, minor pyrite

370-374.5m : well sorted quartz sand, predominantly coarse grained, percentages the same as the profile for 360m MD

TD for Intermediate Hole 374.5 m MD

TD: Nov. 21, 2003 at 04:00.

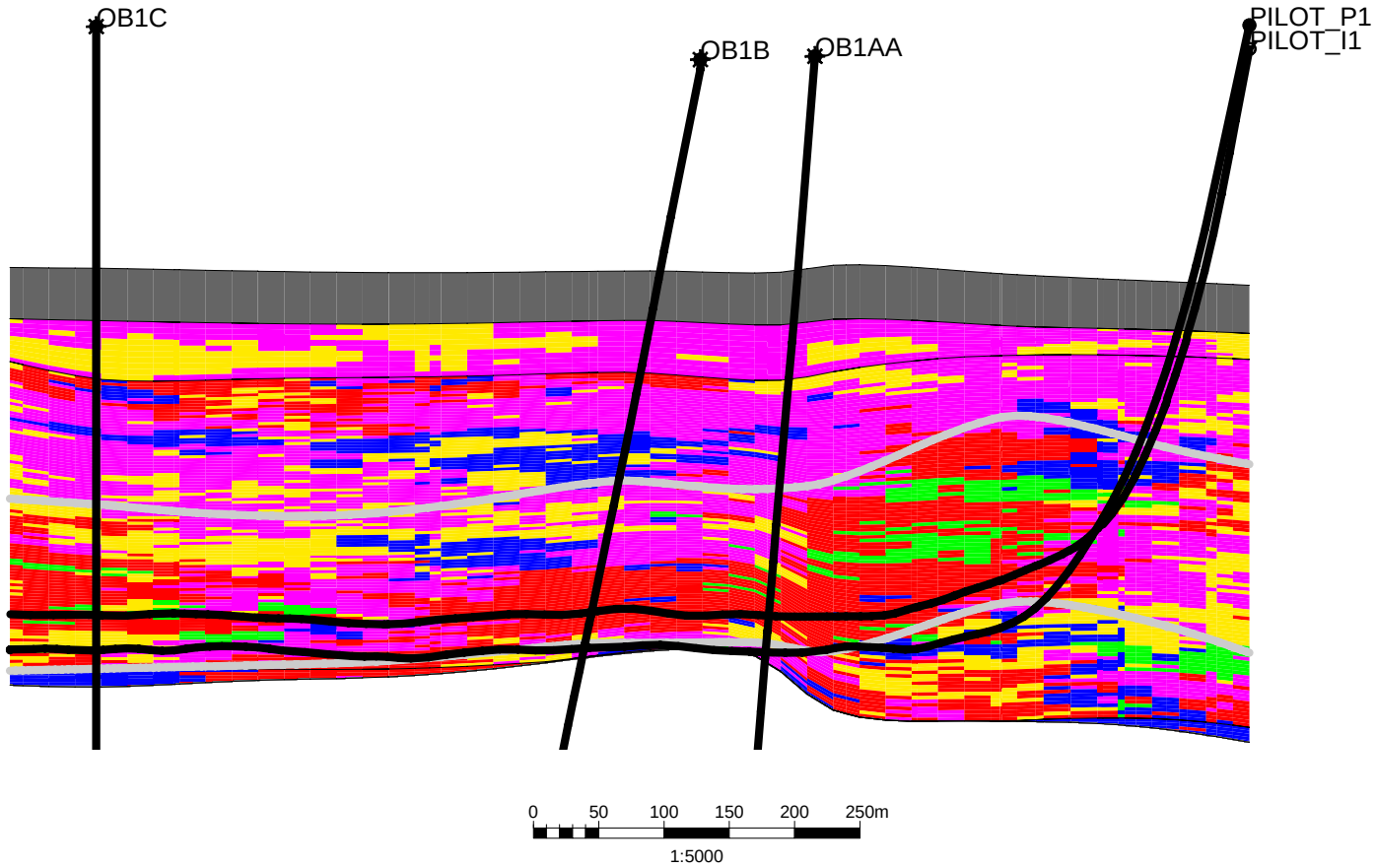
Intermediate casing set at 374.5 m MD

APPENDIX 3/E1:

Mud and geological report

Cross section through Facies model

Phase I - Pilot Cross Section through Facies Model



Quaternary	UM Interbedded Sand	MM Shale	LM Interbedded Sand	Devonian Shale	PILOT_P1
Clear Water Shale	UM Shale	MM Breccia	LM Shale	OB1C	PILOT_I1
Wabiskaw Shale	MM Sand	MM Channel Sand	LM Breccia	OB1B	
UM Sand	MM Interbedded Sand	LM Sand	LM Channel Sand	OB1AA	

DEER CREEK Energy Limited

TOTAL E&P CANADA LTD - JOSLYN PROJECT
STRATIGRAPHY, DEPOSITIONAL ENVIRONMENT AND FACIES CHART

AGE	FORMATION	MEMBER	DEPOSITIONAL SETTING	DEPOSITIONAL ENVIRONMENT	FACIES	FACIES SYMBOL	FACIES CODE	DCEL CODE	PETREL CODE	COLOUR CODE	FACIES DESCRIPTION	GEOTECH FLAGS	UPSCALED FACIES 2005 petrel model
QUATERNARY (0-1,600,000 YBP) / HOLOCENE (0-11,000 YBP)			Continental		Quaternary (Undifferentiated)	Q	1999	90	0		Only used if cores do not have auger reports and/or borehole logs.		Q
				Organic	Muskeg	Ho	1040	898			Peat, moss, organic; fibrous, woody and amorphous texture. Usually has high water content.		
				Fluvial	Alluvium	Hf	1030	896			Variable Recent creek/river deposited sand, silt, and clay with plant rootlet/ organic fragments.		
				Lacustrine	Lacustrine Lakeshore / Bottom	Hl	1020	894			Very soft clay and silt, sandy, grey to brown, sometimes whitish / marly with small gastropod shells and fibrous organic materials; usually saturated.	very soft mud	
				Aeolian	Dune	Hae	1010	892			Fine-grained wind-blown deposits (surface) sand.		
QUATERNARY (0-1,600,000 YBP) / PLEISTOCENE (11,000-1,600,000 YBP)			Continential	Glacio-Lacustrine	Lake Bottom	Pl	2090	880	1		Stratified very fine grained sandy silt and clay; minor gravel clasts, grey and/or pink color which is diagnostic; can be till-like.	soft mud	Q
				Glacial	Ablation Till	Pga	2080	870	2		Till, sandy, silty with trace of clay and trace of gravel, brown to dark brown, overlying fluvial sand or basal firebag till, loose to medium firm, non-plastic to medium plasticity, possible ablation deposits.	plastic	
				Glacio-Fluvial	Fluvial Sand	Pfs	2070	860	3		Glaciofluvial Pfs is mostly clean fg-cg sands, well sorted, moderately to poorly graded; deposited as eskers or as fluvial fans.		
					Fluvial Gravel	Pfg/Pfsg	2060	840	4		Poorly sorted with pebble and occasional cobble deposits (with > 50% > 4.75mm gradation) as well as gravely sand (with 15-50% >4.75 mm).		
				Glacial	Clayey Till	Pgtc	2050	830	5		Clayey/silty till, sandy, with trace of gravel; medium firm to very firm; dark brown to dark grey (with Kc matrix); low to high plasticity; low permeability.	soft mud, plastic	
					Sandy Till	Pgts	2040	820	6		Till, brown to dark brown with high sand and silt content; firm to very hard; gritty with up to 15% gravel clasts to cobble size; commonly with bituminous odor and/or fluvial sand lenses or stringers; possible lodgment till.		
					Silty Till	Pgt	2030	810	7		Till, brown to dark brown with high silt content, firm to very hard; gritty with up to 10% gravel clasts to cobble size; commonly with bituminous odor; possible lodgment till.		
					Rafted Clearwater Clayey and Glauconitic Sand	PgKc	2020	805			Dark grey clay with distorted laminations; occasional fg-cg sand and subround pebble clasts, stiff to hard, low to high plasticity;0-80% glauconitic fine sand; ice thrusted/rafted Clearwater clay.	plastic	
					Rafted/Disturbed McMurray Formation	PgKm	2010	800	8		Fined grained sand and mud with <10% pebbles and cobbles, bitumen odor but none to weak stain on fingers; dry, structureless; dark brown color; ice thrusted/rafted McMurray Formation.		
EROSIONAL UNCONFORMITY													
LOWER CRETACEOUS (97.5-144 MYBP)	CLEARWATER		Marine	**The Clearwater Formation is identified by intervals of medium grey silty clay, low-density dark muds and glauconitic sandy silt lenses/laminae.**									
				Marine Shelf	Clearwater Formation (Undifferentiated)	Kc	3999	85	9		Often fissile, very low angle, parallel bedded / x-bedded to homogeneous, non- to highly plastic, occasionally slickensided, dark grey to black clay with rare to moderate light greenish grey, glauconitic, sandy silt laminae/lenses and low density intervals. Rare to moderate indurations throughout. This facies is intended exclusively for interpreting the Clearwater from borehole logs. It is not to be used for core description.	plastic, slksd, low-den	CWS
					Offshore Transition "B"	Kc4	3040				Dark grey shale with silt-sand laminae/lenses. Lower contact is commonly marked by black, fissile low-density clay.	plastic, slksd, low-den	
				?? Transgressive Marker (T31) ??									
					Offshore Mud "B"	Kc3	3030				Greyish-black shale with local low-angle, parallel bedded to x-bedded, glauconitic sandy silt. Lower contact is marked by a dual indurated bed and bound by a black, fissile, low-density clay cap.	plastic	CWS
					Offshore Transition "A"	Kc2	3020				Dark grey shale with moderate to common silt lenses. Local thin beds of low-density clay. Thin, locally indurated beds. Lower contact may be marked by a thin interval of glauconitic shale and capped by a dual indurated bed.		
					Offshore Mud "A"	Kc1	3010				Black, fissile, low-density clay with rare to moderate silt laminae/lenses. Upper contact is commonly marked by an indurated bed.	plastic, slksd, low-den	
				Transgresive Marker (T21) Maximum Flooding Surface - Rapid Relative Sea Level Rise									
		Wabiskaw		Marine Shelf	Wabiskaw Member (Undifferentiated)	Kcw	4999	80	10		This facies is intended exclusively for interpreting the Wabiskaw member from borehole logs. It is not to be used for core description.	plastic, slksd	WS
					Offshore Transition "B"	Kcw3	4030	71, 72, 73			Churned / bioturbated glauconitic silty sand and dark grey mud laminae. Sharp contact with the overlying low-density clay; lower contact is marked by an induratation.		
					Offshore Mud	Kcw2	4020	75			Dark grey mud with minor glauconitic silt laminae / lenses and rare burrows. Locally very dark grey/black fissile clay.	plastic, slksd	
					Offshore Transition "A"	Kcw1	4010	74			Thinly laminated to churned, medium to dark grey mud with moderate to common glauconitic silt and sand lenses / burrows throughout. Occasional thinly indurated beds, commonly near contacts.		
				Transgressive Marker (T10.5) Wave Ravinement Surface									
				The Upper McMurray is identified by the large marine burrows, stratigraphic position and the waning of glauconite.									
		Upper McMurray	Marine		Upper McMurray Formation (Undifferentiated)	Kmu	5999	501			This facies is intended exclusively for interpreting the Upper McMurray Formation from borehole logs. It is not to be used for core description.		
				Shoreface	Foreshore	FS	5060	500	11		<10% mud. Clean, fine to coarse grained, well sorted, even parallel to low angle, large-scale x-bedded (10-30°) sand with rare millimetre to centimetre-scale, dark grey clay laminae/beds. Rare, relatively large, marine burrows may be present.	gas	UMS
					Upper Shoreface	USF	5050	510	12		10-25% mud. Decimetre interbeds of fine to medium grained, well sorted, massive to vague, small-scale x-bedded sands and millimetre to centimetre-scale, wavy, parallel to non-parallel bedded, dark grey clay with moderate to common, relatively large marine burrows.	gas	
					Middle Shoreface	MSF	5040	520	13		25-50% mud. Small-scale interbeds of fine to medium grained sand and dark grey, wavy parallel to non-parallel clay with moderate to common, relatively large marine burrows.	gas	
					Lower Shoreface	LSF	5030	530	14		50-75% mud. Dark grey clay with rarely to moderately interbedded with millimetre to centimetre-scale, wavy to lenticular, very fine to medium grained sand/silt and rare large marine burrows.		UMIS
				Offshore	Offshore Transition	OT	5020	540	15		75-90% mud. Dark grey clay with thinly interbedded (mm-cm), wavy to lenticular, very fine to fine grained sand/silt and rare to moderate, small and/or large, marine burrows.	plastic	
					Offshore Mud	OM	5010	550	16		>90% mud. Often fissile, low angle, parallel bedded, dark grey clay with rare silt laminae/lenses and rare marine burrows.	plastic	UMSH
				Erosional Marker (E10)									
		Middle McMurray	Estuarine	**The Middle McMurray is identified by the small estuarine burrows and light grey coloured muds.**									
					Middle McMurray Formation (Undifferentiated)	Kmm	6999	405			This facies is intended exclusively for interpreting the Middle McMurray Formation from borehole logs. It is not to be used for core description.		
				Flood Plain	Estuarine Backswamp / Marsh / Coal	E BS, M	6130	340	17		Medium grey to black, coaly/carbonaceous, slight to moderately plastic, rooted, churned clay with up to 10% silt/sand.	plastic, coal, soft mud, low-den mud	MMSH
					Estuarine Floodplain	E FP	6120	333			>90% mud. Massive to bedded, possibly carbonaceous, light to medium grey, silty clay.	soft mud, coal	
				Tidal Flat	Muddy Tidal Flat	TFM	6110	440	18		75-90% mud. Beds dip <2°. Light to medium grey, massive/churned to laminated silty clay with rare to moderate low angle, small-scale x-bedding/current ripples with wavy, lenticular or flaser silty sand beds and usually small burrows with typically common bioturbation but varies from moderate to abundant. Frequently include rare to common centimetre-scale, siderite cemented nodules/bands		
					Mixed Tidal Flat – Water Sand	TFXWS	6101	432			Same as description below but sandy intervals have <4% weight bitumen.	watersand	MMIS
					Mixed Tidal Flat	TFX	6100	430	19		25-75% mud. Beds dip <2°. Often small scale current rippled/x-bedded, centimetre to decimetre-scale, very fine to fine grained silty sand with moderate low angle, light to medium grey, silty clay interbeds and usually small burrows with typically common bioturbation but varies from moderate to abundant. Frequently include rare to common centimetre-scale, siderite cemented nodules/bands	gas	
					Sandy Tidal Flat – Water Sand	TFSWS	6091	422			Same as description below but sandy intervals have <4% weight bitumen.	watersand	MMS
					Sandy Tidal Flat	TFS	6090	420	20		10-25% mud. Beds dip <2°. Often small scale current rippled/x-bedded, centimetre to decimetre-scale, very fine to fine grained silty sand with rare low angle, light to medium grey, silty clay interbeds and usually small burrows with typically common bioturbation but varies from moderate to abundant. Frequently include rare to common centimetre-scale, siderite cemented nodules/bands	gas	
					Tidal Creek - Water Sand	TCSWS	6081	412			Same as description below but sandy intervals have <4% weight bitumen.	watersand	
					Tidal Creek	TCS	6080	410	21		<10% mud. Massive, parallel bedded or small scale x-bedded, very fine to medium grained sand and silt rarely interbedded with light to medium grey clay. Tidal creeks are restrained to the tidal flat environment.	gas	
				Estuarine Channel	Tidal Lateral Accretion Beds – Muddy with Flushed Sand Interbeds	TLABMWS	6071	492	22		Same as description below but sandy intervals have <4% weight bitumen.	flushed	MMSH
					Tidal Lateral Accretion Beds – Muddy	TLABM	6070	492			75-90% mud. Dips are consistent but range from 2 to 10°. Inclined, millimetre to decimetre-scale, wavy, non-parallel to parallel, light to medium grey, silty clay and rare to moderate interbeds of centimetre-scale, small scale x-bedded, very fine to medium grained sand. Typically moderate bioturbation but varies from rare to abundant. May include rare to common centimetre-scale, siderite cemented nodules/bands		
					Tidal Lateral Accretion Beds – Mixed Water Sand	TLABXWS	6061	482	23		Same as description below but sandy intervals have <4% weight bitumen.	watersand	MMIS
					Tidal Lateral Accretion Beds – Mixed	TLABX	6060	480			25-75% mud. Dips are consistent but range from 2 to 10°. Inclined, millimetre to decimetre-scale, interbeds of wavy, non-parallel to parallel, light to medium grey, silty clay and small scale x-bedded, very fine to medium grained sand. Typically moderate bioturbation but varies from rare to abundant. May include rare to common centimetre-scale, siderite cemented nodules/bands		
					Tidal Lateral Accretion Beds – Sandy Water Sand	TLABSWS	6051	472			Same as description below but sandy intervals have <4% weight bitumen.	watersand	MMS
					Tidal Lateral Accretion Beds – Sandy	TLABS	6050	470	24		10-25% mud. Dips are consistent but range from 2 to 10°. Centimetre to decimetre-scale, small scale x-bedded, very fine to medium grained sand and rare to moderate interbeds of inclined, millimetre to decimetre-scale, wavy, non-parallel to parallel, light to medium grey, silty clay. Typically moderate bioturbation but varies from rare to common. May include rare to common centimetre-scale, siderite cemented nodules/bands		
					Tidal Channel Margin (Undifferentiated) – Water Sand	TCMWS	6041	462	25		Same as description below but sandy intervals have <4% weight bitumen.	watersand	
					Tidal Channel Margin (Undifferentiated)	TCM	6040	460			This facies has been replaced by mixed & sandy tidal lateral accretion beds and is no longer used for core description. Dips are consistent but range from 2 to 10°. Inclined, millimetre to decimetre-scale, interbeds of wavy, non-parallel to parallel, light to medium grey, silty clay/mud drapes and small scale x-bedded, very fine to medium grained sand. Typically moderate bioturbation but varies from rare to abundant. May include rare to common centimetre-scale, siderite cementex		
					Abandoned Channel Fill	ACF	6030	330	26		Massive, light to medium grey, may be rooted, silty clay with rare to moderate, sand/silt splays. May be slumped and faulted. May include rare to common centimetre-scale, siderite cemented nodules/bands.	high angle, slump, fault	MMSH
					Tidal Channel Breccia – Water Sand	TCBWS	6021	322			Same as description below but sandy intervals have <4% weight bitumen.	watersand	MMB
					Tidal Channel Breccia	TCB	6020	320	27		>10% clasts. Massive, chaotic, very fine to medium grained sand with very poorly to moderately sorted, angular to sub-rounded, millimetre to decimetre-scale, light to medium grey, silty clay clasts. Clasts are usually ripped-up tidal flat/lateral accretion bed sediments and/or large slump blocks (bank collapse).	gas	
					Tidal Channel – Water Sand	TCWS	6011	302			Same as description below but sandy intervals have <4% weight bitumen.	watersand	MMCS
					Tidal Channel	TC	6010	300	28		Massive, homogeneous to small or large-scale x-bedded, low or high angle, may be graded, very fine to coarse grained sand. May include carbonaceous debris, pebbles, <10% silty clay rip-up clasts and laminae/beds throughout and centimetre to decimetre-scale, possibly siderite or silica, cemented intervals near the base of the channel.	gas, rich oilsand	
				Erosional Marker (E5)									
		Lower McMurray	Continental	**The Lower McMurray is identified by its cream coloured muds, coarse grained sands and common carbonaceous debris. Scoyenia ichnofossils, when present, are diagnostic for the formation.**									
					Lower McMurray Formation (Undifferentiated)	Kml	7999	201			This facies is intended exclusively for interpreting the Lower McMurray Formation from borehole logs. It is not to be used for core description.		
				Flood Plain	Backswamp / Marsh / Coal	BS, M	7110	240	29		Low density, variable colour: light grey to black, moderate to abundant coaly/carbonaceous debris/laminae, waxy, often slickensided, moderate to highly plastic, rooted, churned, homogeneous, massive clay with rare to moderate silt content and rare sand grains or nodules. Often slumped and faulted.	slksd, plastic, coal, low-den, slump, fault	LMSH
					Floodplain	FP	7100	230	30		Vaguely bedded to well laminated or varved, light to dark brownish grey, silty clay with moderate to common rootlets and carbonaceous debris and rare to common sand/silt beds. May be burrowed.	coal	
					Overbank	OB	7090	220	31		Massive, homogeneous, chaotic silty clay that may be rooted and/or burrowed with a rare to moderate silt/sand component.		
					Crevasse Splay	CS	7080	210	32		Interbedded to chaotic, poorly sorted, fine to coarse grained silty sand and light grey or creamy clay with scattered or interbedded carbonaceous debris and rare clay rip-up clasts.		LMIS
				Fluvial Channel	Fluvial Lateral Accretion Beds – Muddy with Flushed Sand Interbeds	FLABMWS	7071	192			Same as description below but sandy intervals have <4% weight bitumen.	flushed	LMSH
					Fluvial Lateral Accretion Beds – Muddy	FLABM	7070	190	33		75-90% mud. Dips are consistent but range from 2 to 10°. Inclined, millimetre to decimetre-scale, wavy, non-parallel to parallel, light grey or creamy, silty clay and rare to moderate interbeds of centimetre-scale, small scale x-bedded, very fine to medium grained sand. May include rare burrows and rare to common centimetre-scale, siderite cemented nodules/bands.		
					Fluvial Lateral Accretion Beds – Mixed Water Sand	FLABXWS	7061	182			Same as description below but sandy intervals have <4% weight bitumen.	watersand	LMIS
					Fluvial Lateral Accretion Beds – Mixed	FLABX	7060	180	34		25-75% mud. Dips are consistent but range from 2 to 10°. Inclined, millimetre to decimetre-scale, interbeds of wavy, non-parallel to parallel, light grey or creamy, silty clay and small scale x-bedded, very fine to medium grained sand. May include rare burrows and rare to common centimetre-scale, siderite cemented nodules/bands.		
					Fluvial Lateral Accretion Beds – Sandy Water Sand	FLABSWS	7051	172			Same as description below but sandy intervals have <4% weight bitumen.	watersand	LMS
					Fluvial Lateral Accretion Beds – Sandy	FLABS	7050	170	35		10-25% mud. Dips are consistent but range from 2 to 10°. Centimetre to decimetre-scale, small-scale x-bedded, very fine to medium grained sand and rare to moderate interbeds of inclined, millimetre to decimetre-scale, wavy, non-parallel to parallel, light grey or creamy, silty clay. May include rare burrows and rare to common centimetre-scale, siderite cemented nodules/bands		
					Fluvial Channel Margin (Undifferentiated) – Water Sand	FLCMWS	7041	162			Same as description below but sandy intervals have <4% weight bitumen.	watersand	
					Fluvial Channel Margin (Undifferentiated)	FLCM	7040	160	36		This facies has been replaced by mixed & sandy fluvial lateral accretion beds and is no longer used for core description. Dips are consistent but range from 2 to 10°. Inclined, millimetre to decimetre-scale, interbeds of wavy, non-parallel to parallel, light grey or creamy, silty clay/mud drapes and small scale x-bedded, very fine to medium grained sand. May include rare burrows and rare to common centimetre-scale, siderite cemented nodules/bands		
					Fluvial Abandoned Channel Fill	F ACF	7030	130	37		Massive, light grey or creamy, may be rooted, silty clay and rare to moderate, sand splays. Often slumped and faulted. May include rare to common centimetre-scale, siderite cemented nodules/bands.	high angle, slump, fault	LMSH
					Fluvial Channel Breccia – Water Sand	FCBWS	7021	122			Same as description below but sandy intervals have <4% weight bitumen.	watersand	LMB
					Fluvial Channel Breccia	FCB	7020	120	38		>10% clasts. Massive, chaotic, fine to coarse grained sand with very poorly to moderately sorted, angular to sub-rounded, millimetre to decimetre-scale, light to medium grey or creamy, silty clay clasts. Clasts are usually rip-up lateral accretion bed sediments and/or large slump blocks (bank collapse).		
					Fluvial Channel – Water Sand	FCWS	7011	102			Same as description below but sandy intervals have <4% weight bitumen.	watersand	LMCS
					Fluvial Channel	FC	7010	100	39		Massive, homogeneous to small or large-scale x-bedded, low or high angle, often graded, fine to very coarse grained sand and pebbles. May include carbonaceous debris, <10% silty clay rip-up clasts and laminae/beds and centimetre to decimetre-scale, siderite, pyrite or silica cemented intervals. Occasional conglomerate near the base of the channel	rich oilsand	
EROSIONAL UNCONFORMITY													
DEVONIAN (360-408 MYBP)	WATERWAYS		Marine	**There is often a centimetre to decimetre-scale pyrite nodule/cemented interval at the Cretaceous-Devonian erosional unconformity.**									
				Offshore	Devonian (Undifferentiated)	DEV	8999	50	40		This facies is intended exclusively for interpreting the Devonian from borehole logs. It is not to be used for core description.		DEV
					Paleosol	PAL	8080	51			Light greyish green with variable, usually red or orange, colours if iron stained; waxy, slickensided, argillaceous/limy mud. May be highly plastic and include siderite/pyrite nodules.	plastic, slksd, fault, slump	
					Calcareous Shale	CALC SH	8070	52			<50% Calcium Carbonate. Light to medium grey or buff, usually well bedded, rare to moderately calcareous, fissile shale with rare fossil fragments and <25% limestone lenses. Fizzes rare to moderate with acid.		
					Argillaceous Limestone	ARG LS	8060	53			>50% Calcium Carbonate. 20-50% clay (argillite), light to medium grey or buff, homogeneous to finely bedded, calcareous mud with rare fossil fragments and <25% limestone lenses. Fizzes moderate to well with acid.		
					Interbedded Limestone	INT LS	8050	59			>25% nodules. Light grey to buff, typically centimetre-scale, limestone nodules interbedded with light/medium grey to buff, calcareous shale. May include rare fossil fragments.		
					Nodular Limestone	NOD LS	8040	54			>25% nodules. Light grey to buff, typically centimetre-scale, limestone nodules in a light/medium grey to buff, calcium carbonate mud matrix. May include rare fossil fragments.	jointed	
					Massive Limestone	MASS LS	8030	55			Massive, light grey to buff, limestone and possibly rare fossil fragments.	jointed	
					Fossiliferous Limestone (Biomicrite)	FOSS LS	8020	56			Moderate to abundant fossil fragments (mostly crinoidal stems and brachiopod shells but may include coral fragments and other marine fossils) in a calcareous mud, nodular or massive limestone.		
					Karsted Limestone (Collapse Breccia)	KARST LS	8010	58			Limestone breccia (limestone clasts in a microcrystalline, calcareous mud matrix) or slump structures with intermixed carbonate mud, limestone nodules and/or McMurray formation sediments.	karst	

Revised: Adel Tammam & Darren Valin, December 2005
Major Revision: Darren Valin, November 2004

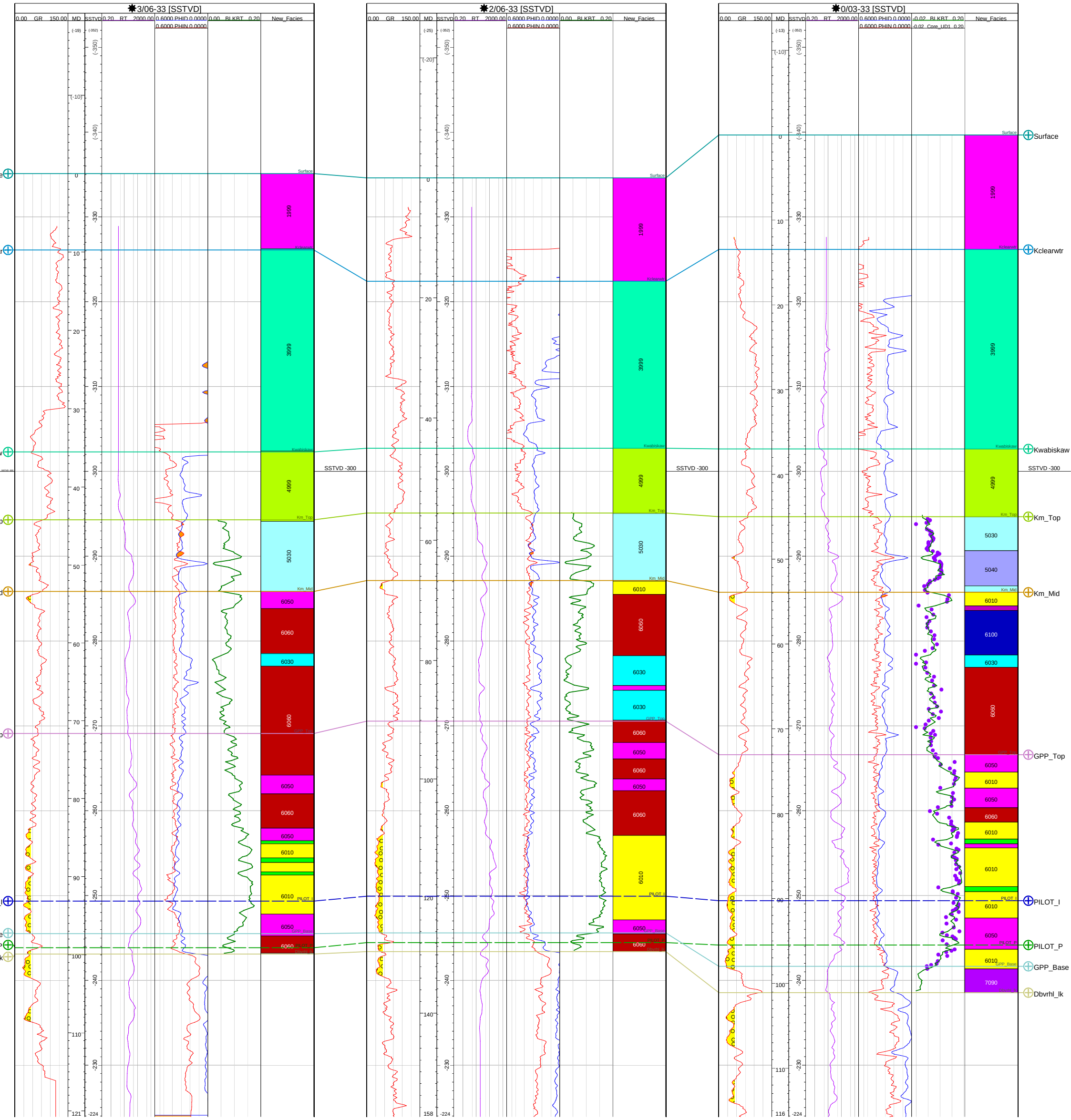
Note: This is a general classification of depositional environments and their associated facies. Within any particular environment, any individual facies may occur in any order, be repeated any number of times or may be not present. Only the boundaries between members have time implications.

Sources:
Terracon Geotechnique Ltd., 2004, Overburden Soil Classification and Material Utilization Chart for Deer Creek Energy Limited
Boggs Jr., S., 1995, Principles of Sedimentology and Stratigraphy 2nd ed, Prentice-Hall Inc., New Jersey, p. 197-211.
Walker, R. and James, N., 1992, Facies Models: Response to Sea Level Change, Geological Association of Canada, St. John's, p.179-219 & 265-303.
Bates, R. and Jackson, J., 1984, Dictionary of Geological Terms 3rd ed, Doubleday, New York.

APPENDIX 3/E2:

Mud and geological report

Log cross section


3/06-33 [SSTVD]
2/06-33 [SSTVD]
0/03-33 [SSTVD]
0.00 GR 150.00
MD
SSTVD
0.20 RT 2000.00
0.6000 PHID 0.0000
0.6000 PHIN 0.0000
0.00 BLKBT 0.20
-0.02 BLKBT 0.20
-0.02 Core_UD1 0.20
New_Facies
Surface
Kclearwtr
Kwabiskaw
Km_Top
Km_Mid
GPP_Top
PILOT_I
PILOT_P
GPP_Base
Dbvrhl_lk
SSTVD -300
1999
3999
4999
5030
5040
6010
6100
6060
6030
6050
7090

DCEL OB1A JOSLYN 100/11-33-95-12W4

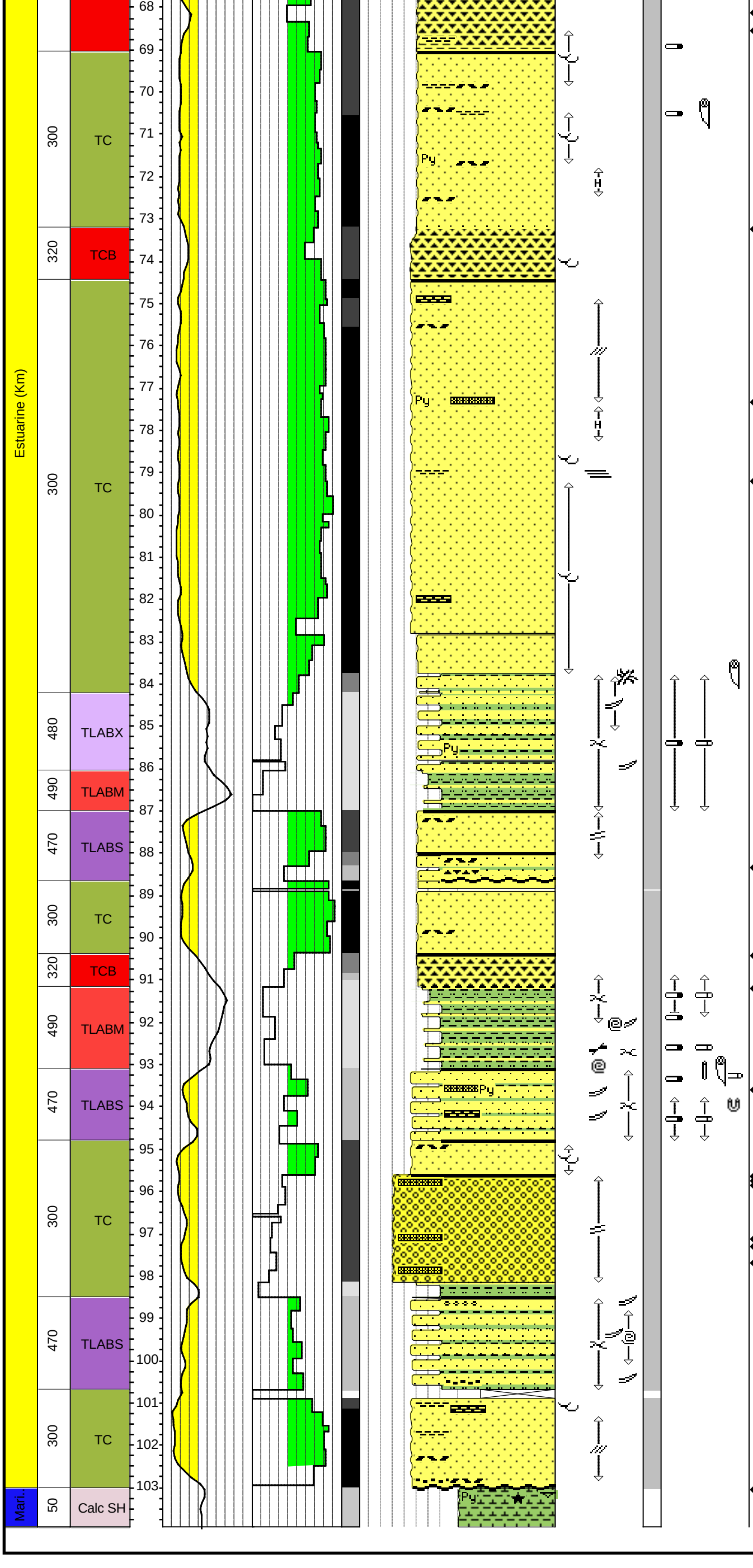
11-33-95-12w4 OSL 24 DEER CREEK ENERGY

Date Logged: March 27, 2003

Logged by: OSGA - Laurie Butkovic

Ground: 334.20 m KB: 335.70 m

Remarks:



G.A. DIAKIW GEOLOGICAL SERVICES LTD. | LEASE No. BSL 24 | WELL No. AB/11-33-95-12 W4

STRAT. INTERVAL 60.40 - 115.95 m | TOTAL DEPTH 115.95m | WELL NAME DCEL OV-1 JOSLYN W 11-33-95-12

GL 342.20 m | KB 342.20m | LOGGED BY Gary Diakiw | DATE 28 Nov 2000 | PAGE 1 OF 1

CORE QUALITY — R/R 10 March 2000 — FROZEN ☑ YES ☐ NO — DRYING

REMARKS

Core has been depth corrected to geophysical logs

60.40 - 61.40, sandy tidal flat.

61.40 - 62.65, mixed tidal flat.

Upper and lower contacts rapidly gradational.

FORMATION	ENVIRONMENT	FACIES	INTERVAL	REMARKS
Km	peritidal	Sand Flat	61.40	
		Mixed Flat	62.65	62.65 - 65.0, sandy tidal flat. Bottom 0.50m closer to a mixed flat.
		Sand Flat	65.0	60.40 - 65.0, saturation poor, patchy, mottled throughout
		Mud Flat	68.0	65.0 - 68.0, muddy tidal flat. Bottom 0.5m heavily faulted - minor slumping.
		Mixed Flat	68.55	Poor recovery. Core broken and disturbed in places due to drilling. Unable to accurately determine dips.
		Channel Sand	70	68.0 - 68.55, mixed tidal flat, rapidly grading down to sand flat at base - contact.
			73.10	68.55 - 73.10, channel sand. Very gradational with overlying unit.
		Sand Flat	75	73.10 - 91.10, tidal flat complex. Alternating sand flat and mixed flat, cut by numerous small tidal creek/channels.
			76.75	73.10 - 76.75, sandy tidal flat.
		Mixed Flat	80	Maybe closer to a channel margin. Very consistent 10-15° dip in lower half.
			85.25	76.75 - 85.25, predominantly mixed tidal flat. Tidal creek sands to 55cm. Dips extremely variable - range from 0 to 10°.
		Sand Flat	91.10	85.25 - 91.10, interval ranges from mixed tidal flat to channel sand. Fairly consistent dip of 5 - 8°.
		Channel Margin	96.15	91.10 - 96.15, channel margin sediments. Very dense carbonaceous laminae in bottom 2m. Very steep dips throughout.
		Mixed Flat	97.90	96.15 - 97.90, mixed tidal flat sediments. Abundant carbonaceous laminae and fine grained carbonaceous debris. Soft sediment deformation in bottom 1.25m. Muds are very sandy, convoluted.
	peritidal	Channel Breccia	100	97.90 - 101.60, predominantly a channel breccia. 98.30, 37cm mixed tidal flat interbed - appears to be intact and in-place. Not a clast. 26cm muddy interbed at basal contact appears to be a large clast.
			101.60	Clasts elongate, sub-rounded to very angular, dark grey silty muds.
	estuarine	Channel Sand	105	101.60 - 106.70, channel sand. Unit comprised of 3 larger fining-up sequences. 2.50 m pebble conglomerate, weakly cemented throughout. Contact appears irregularly interbedded.
			106.70	
?		Mixed Flat	107.45	106.70 - 107.45 ?, possibly mixed tidal flat sediments. Heavily faulted throughout, with scattered clasts! May be a channel full of sorts.
Km ?		Channel Sand	110.15	107.45 - 110.15, channel sand. Unit comprised of 3 larger fining-up sequences. Dense pebble lags at base of each sequence. Pebble conglomerate weakly cemented.
	continental?	Floodplain?	111.25	110.15 - 111.25, possibly continental floodplain sediments. Strong muddy tidal flat appearance?
Kw	marine	Calcareous Shale		

975935 METRIC
88/02

APPENDIX 3/F1:

Mud and geological report

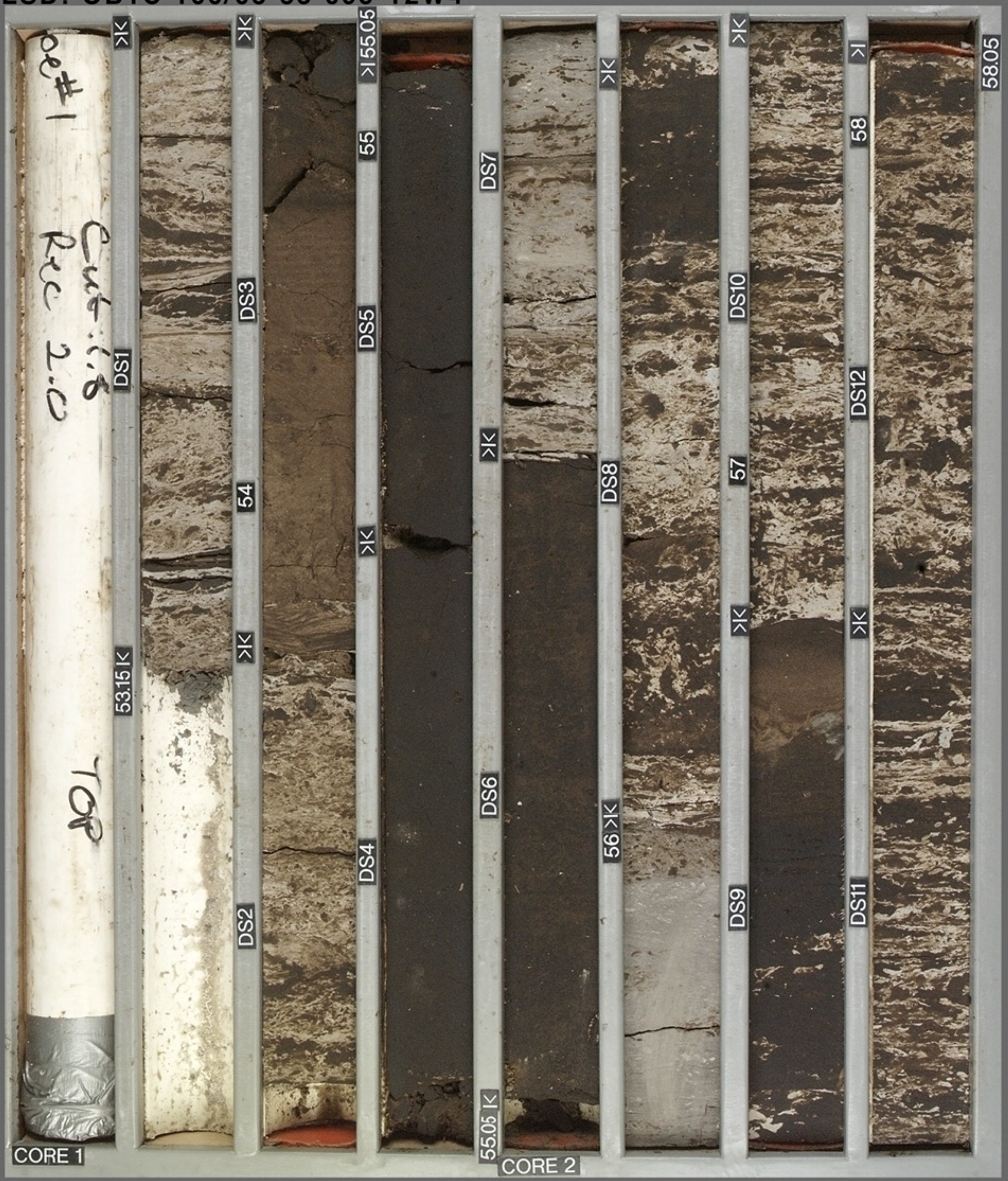
Core pictures

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4



CORE#	01	02
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	53.15-55.05 m	55.05-58.05 m
REC.	1.90/1.90 m	3.00/3.00 m

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	03	04
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	58.05-60.85 m	60.85-63.85 m
REC.	2.80/2.80 m	3.00/3.00 m

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	05		06	
BOX#	1 OF 2	2 OF 2	1 OF 2	2 OF 2
INT.	63.85-66.85 m		66.85-70.00 m	
REC.	3.00/3.00 m		3.00/3.15 m	

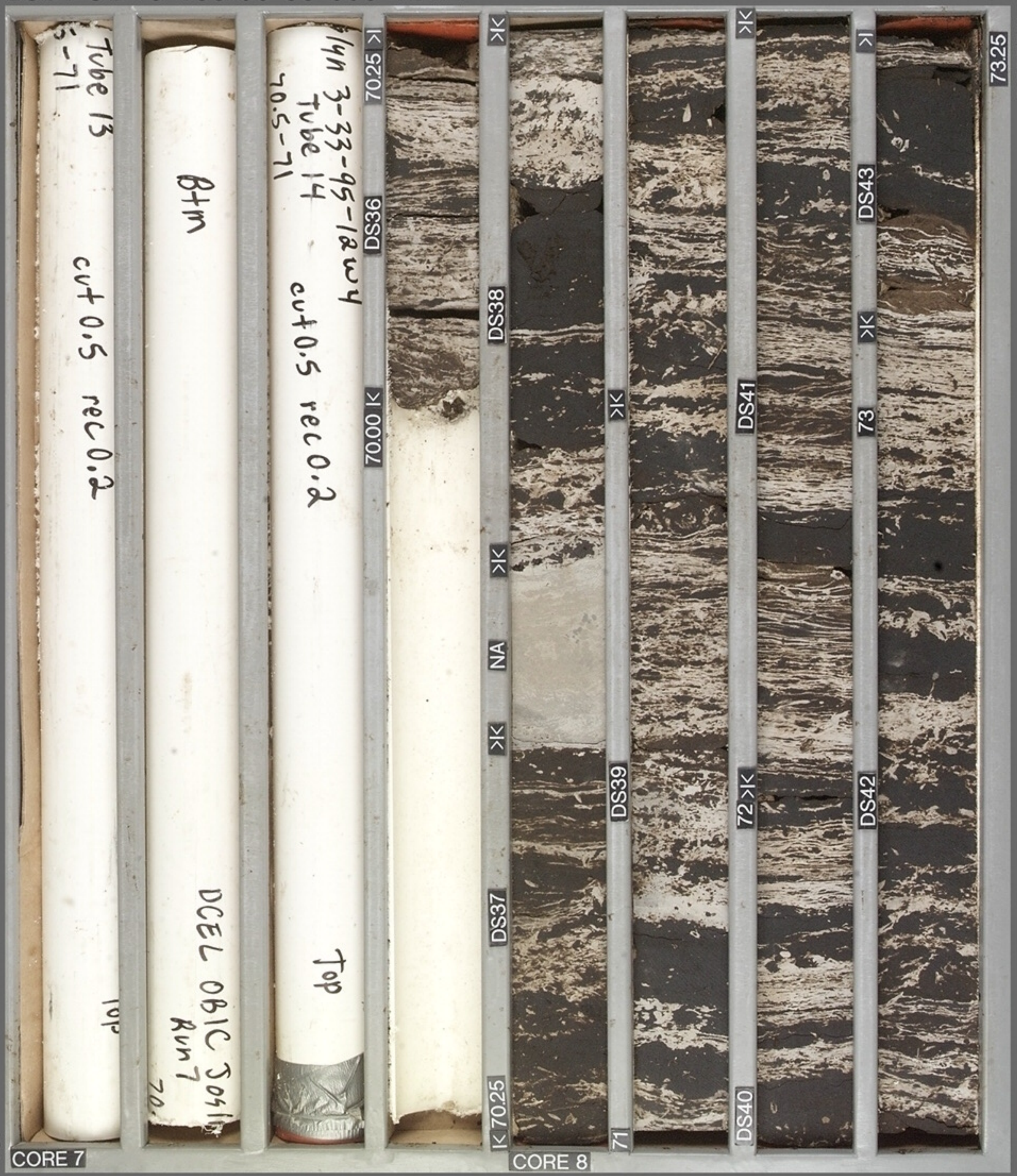
NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4



CORE#	07	08
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	70.00-70.25 m	70.25-73.50 m
REC.	0.25/0.25 m	3.00/3.25 m

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	09	10
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	73.50-76.10 m	76.10-79.10 m
REC.	2.60/2.60 m	3.00/3.00 m

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	11		12	
BOX#	1 OF 2	2 OF 2	1 OF 2	2 OF 2
INT.	79.10-82.00 m		82.00-85.50 m	
REC.	2.45/2.90 m		3.00/3.50 m	

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	13	14
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	85.50-87.70 m	87.70-91.50 m
REC.	2.20/2.20 m	3.00/3.80 m

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	15	16
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	91.50-94.95 m	94.95-97.35 m
REC.	2.85/3.45 m	2.40/2.40 m

NORWEST LABS

DEER CREEK Energy Limited

CORES: 1-18
INT. 53.15-103.15 m
REC. 46.85/50.00 m

C03-13841
2003-03-31

DCE et al S JOSLYN
LSD: OB1C 100/03-33-095-12W4

CORE#	17	18
BOX#	1 OF 2 2 OF 2	1 OF 2 2 OF 2
INT.	97.35-100.40 m	100.45-103.15 m
REC.	2.65/3.05 m	2.75/2.75 m

NORWEST LABS

APPENDIX 4:

Geophysics simulations

2005 - Geological Model

Objectives

Use the available Petrel package as a geological tool to build a geostatistical model for validating and quality checking the well data as well as to use as input for reservoir simulation.

Petrel Input data (NAD83)

- Log data from over 200 core holes
  - Gamma ray
  - Density porosity
  - Neutron porosity
  - Resistivity
- Petrophysical curves
  - Lithological facies
  - Effective porosity
  - Oil / Water Saturation
  - Bulk bitumen weight percent
- Stratigraphic picks
  - Clearwater
  - Wabiskaw
  - McMurray (top, middle, lower)
  - Devonian
  - GPP (top & base)
- Seismic Data
  - Reflective and refractive interpreted 2D lines
- LiDAR
  - Surface topography for SAGD PDA area
- Horizontal well trajectories
  - Phase I – single well pair
  - Phase II – 17 well pairs
  - Phase IIIA – 26 well pairs
- Culture Data
  - Lease boundary
  - Grid (TWP, RGE, Sections, LSD)
  - Hydrology
  - Plant site

Structural Modeling

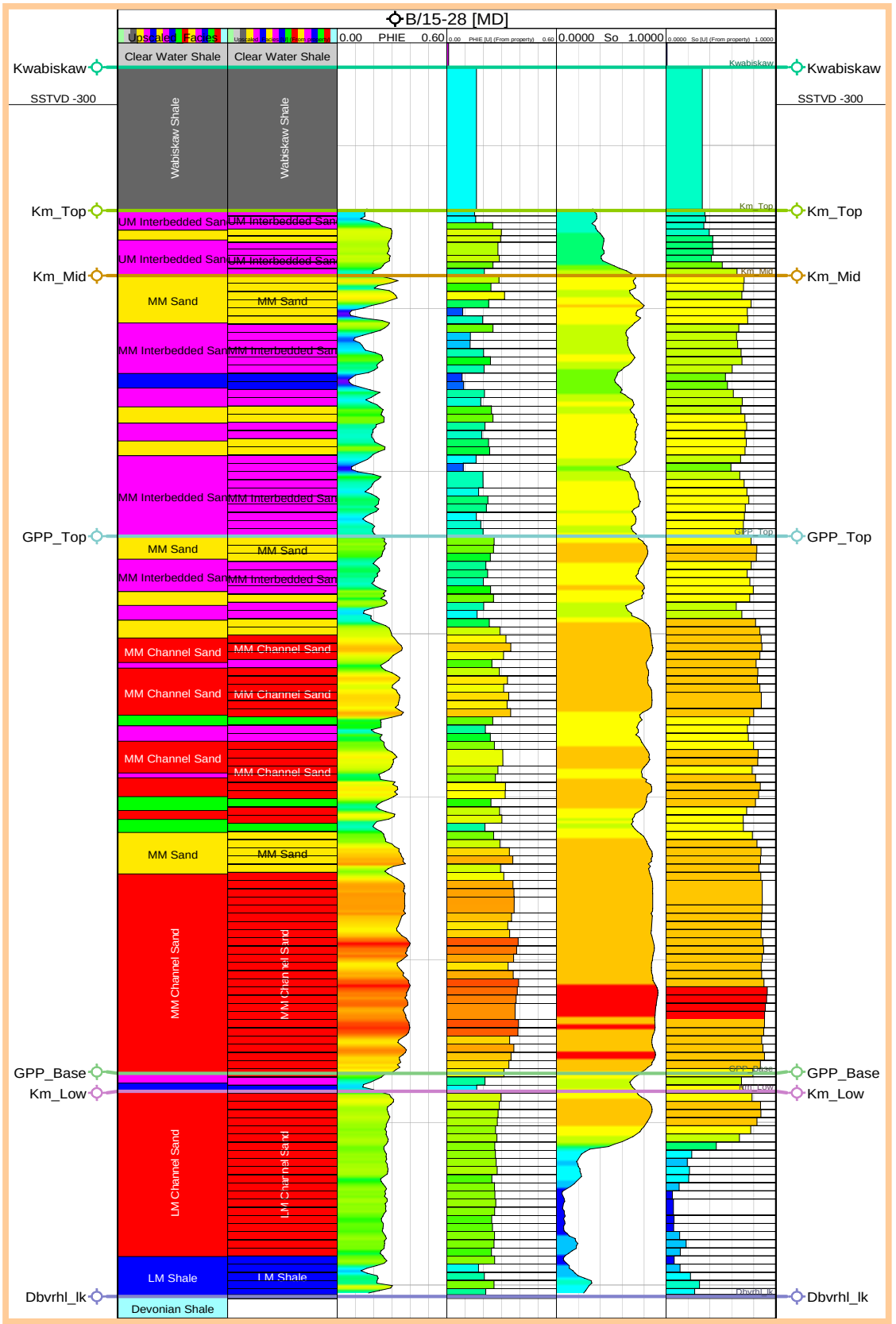
- Model area is approximately 4.4 km (east-west) and 6.6 km (north-south) *[Does not cover entire Phase IIIA PDA]*
- 3D Grid block dimensions are 20m x 20m x 1m
- Stratigraphic horizons were generated using surfaces created via well picks *[Petrel surface were compared to Geographics mapping]*
- Surfaces were generated in high resolution 2D grids (10m x 10m) using the available convergent interpolation algorithm
- Model zonations were defined using structural horizons
- McMurray zone was further sub divided into three sub-zones to represent the difference in depositional environments

Zone	Type of Layer	Number of Layers	Average layer thickness
Clearwater	Proportional	1.0	30.0
Wabiskaw	Proportional	1.0	8.0
Upper McMurray	Proportional	10.0	0.5
Middle McMurray	Proportional	100.0	0.5
Lower McMurray	Top Conforming	Various	0.5

Scale Up Well Logs

- Facies description for each well is grouped to reduce the number to something more manageable to be handled by Petrel. For the middle McMurray (productive zone) there was 5 grouped facies:
    - Channel Sand (<10% shale)
    - Sand (10 – 25% shale)
    - Interbedded Sand (25 - 75% shale)
    - Shale (> 75% shale)
    - Breccia

- Scaling up of detailed logs from 0.15m to grid size of approximately 0.5m in the McMurray zone
    - Facies – “Most of” method
    - PHIE – Arithmetic average
    - Oil Saturation – Arithmetic average

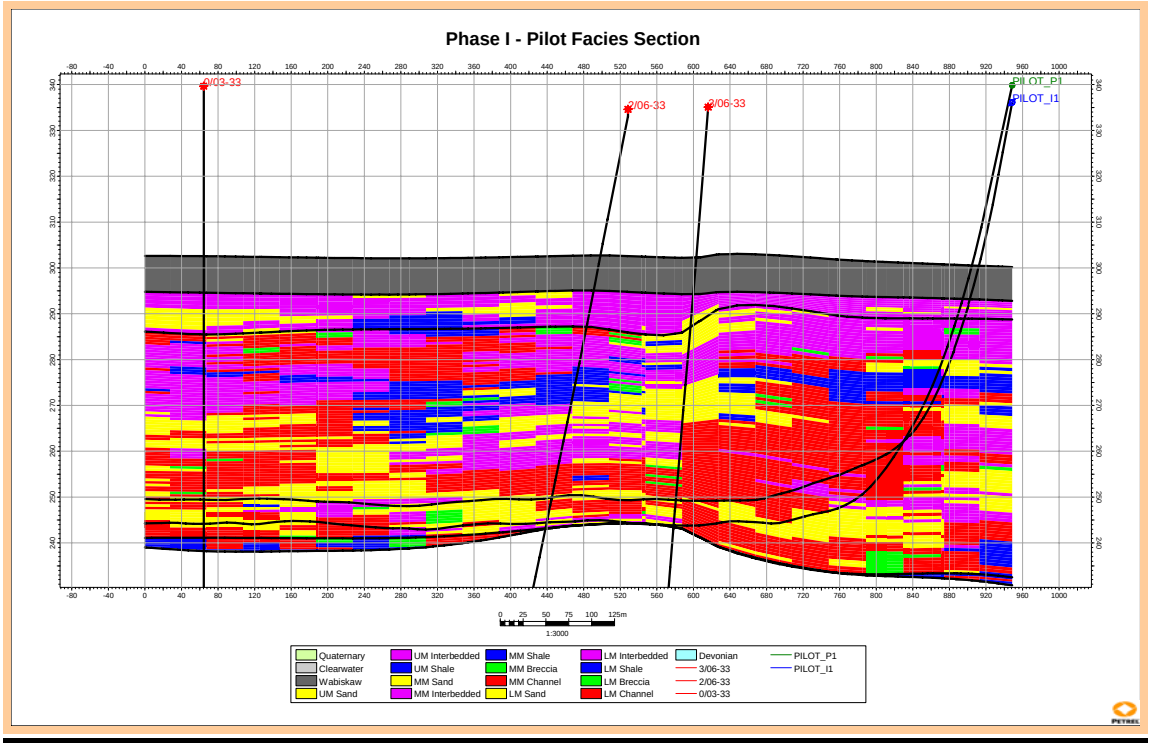

B/15-28 [MD]
Upscaled Facies
0.00 PHIE 0.60
0.0000 So 1.0000
Clear Water Shale
Wabiskaw Shale
UM Interbedded Sand
MM Sand
MM Interbedded Sand
MM Channel Sand
LM Channel Sand
LM Shale
Devonian Shale
Kwabiskaw
SSTVD -300
Km_Top
Km_Mid
GPP_Top
GPP_Base
Km_Low
Dbvrhl_lk

Data Analysis

- Log grouped facies were used to generate horizontal and vertical variograms
- Variogram model parameters were adjusted to fit the experimental variogram (spatial continuity of geological property)
- Variograms in the vertical direction were better defined than in the horizontal direction
- The range of variograms in the horizontal directions were defined with collaboration with project geologist

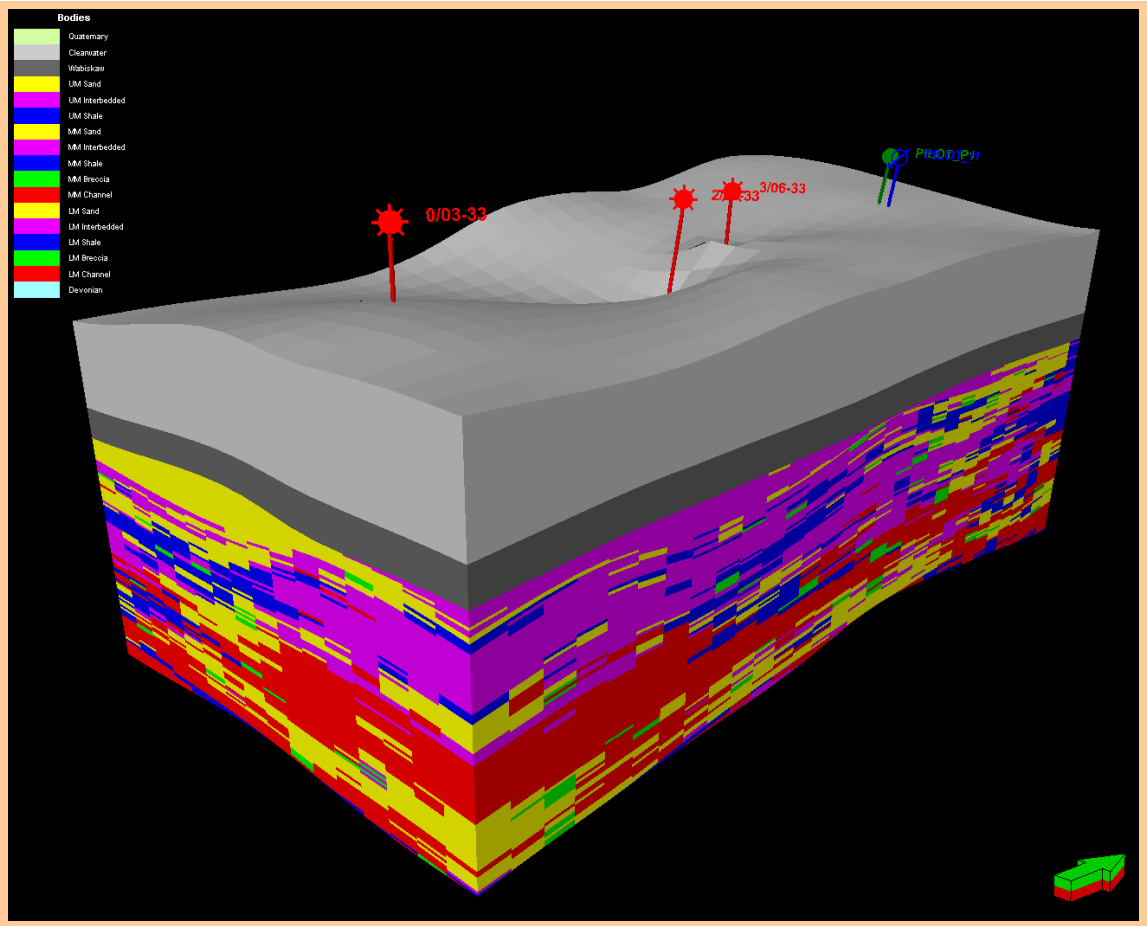
Facies Modeling

- Facies population was generated using the stochastic method via the sequential indicator simulation algorithm
- Clearwater and Wabiskaw zones are assumed a constant facies type
- McMurray zones are populated based on variogram results established in the data analysis
- A total of 10 realizations were generated



Petrophysical Modeling

- Petrophysical distribution for porosity and oil saturation was generated using the stochastic method via the sequential Gaussian simulator algorithm
- Clearwater and Wabiskaw zones are assumed a constant porosity and oil saturation
- McMurray zones are populated based on variogram results conditioned to facies
- Property distribution for permeability, water saturation and net to gross were generated using property calculator (note: net-to-gross ratio was calculated based on a cut off from the product of effective porosity and oil saturation)
- A total of 10 realizations were generated for each of the 10 facies realizations created



Upscale / Downscale for Simulation

- From the 100 realizations created, bitumen in place volumes was calculated to generate a statistical distribution. From there, the P10, P50 and P90 models were selected for numerical simulation input
- Simulation model grid:
    - Upscaled areal (perpendicular to well 20m to 2m)
    - Downscaled areal (parallel to well 20m to 100m)
    - Downscaled vertical (perpendicular to well 0.5m to 2m)

Petrel Model Results

- An iterative procedure is used between the geo-model, the basic geological maps, and the surface constraints to obtain the optimal horizontal well placement
- A hard bottom target depth is determined as the lowest depth in which the well can be placed without intercepting the GPP base
- The producer target midpoint depth is picked 1.0 meter above the GPP base
- From the gamma ray log that was run in each of the lateral section the overall effective well length was estimated to be 95%

Geomodel Methodology - Future Development

- Declustering – assigning the data weights that account for the proximity to surrounding coreholes
- Two models with different resolutions would be used:
    - Coarse model over the entire SAGD PDA area (40x40x1)
    - Refined model for flow simulation for PAD area (5x5x0.5)
- The horizontal and vertical Variogram parameter range will be adjusted to match regional values
- Continue updating the model with data from the 2005/2006 winter wells
- Conduct a channel lag study outside of the geomodel to determine
    - Chance of occurrence and lateral continuity
    - Quantify the impact on existing geomodel and reservoir model results

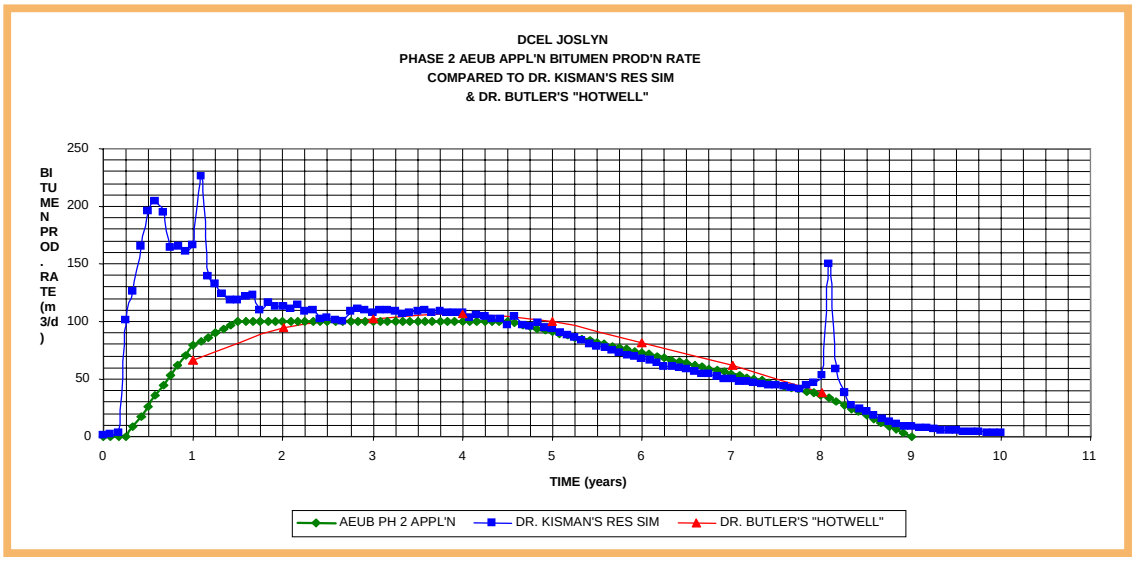
2005 Phase I - Dynamic Model

Objectives

- Validate deterministic forecasts generated using Dr. Butler's GravDrain analytical model and Dr. Ken Kisman's simple 3D Exotherm model
- Establish an expected recovery factor for Regulatory Application
- Sensitivities Analysis
    - Well spacing
    - Pay zone thickness
    - Upper Transition Zone (UTZ) and Lower Transition Zone (LTZ)
- Monitor performance and troubleshoot for Phase I well pair

Basis of Generic Forecast

As indicated above prior to any detailed static and dynamic modeling a simple approach was taken to generate the generic forecast that was to be expected from each well pair. There was an analytical calculation using Dr. Butler's GravDrain software and a simple 3D Exotherm numerical model (constant rock properties) by Dr. Ken Kisman. The two methods were combined to generate an estimated average forecast to be used in the EUB application. Below is a summary of the forecasts.



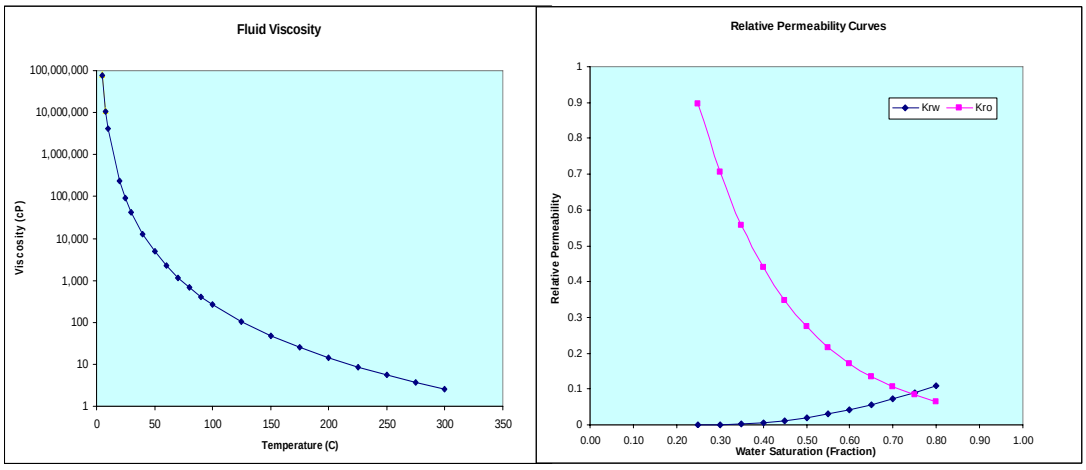
3D CMG STARS Model Input for Single Well Pair

- Rectangular grid with 100x2x2 m block dimensions
- Areal extent is 700 m along the well length and 100m perpendicular to the well
- Range of gross vertical thickness is 15 to 35 m
- Porosity and Saturation are upscaled from a detailed geostatistical Petrel geological model
- Permeability is determined using a transform from porosity-permeability cross-plot generated from core data
- Fluid and thermal properties are based on UTF field data and industry standard

PARAMETER	**VALUE**
Bitumen Gravity (API)	8
Bitumen Viscosity at TRES (cp)	>1,000,000
Initial Reservoir Temperature	5 C
Initial Reservoir Pressure at 100 mKB	800 kPa
Net Pay Thickness	21 m (15-35 m)
Porosity in pay zone	32% (30 - 35%)
Oil Saturation in pay zone	84% (70 - 90%)
Gas Saturation	0 %
Horizontal Permeability	6000 mD (4800 - 8000 mD)
Vertical Permeability	4800 mD (400 - 5000 mD)

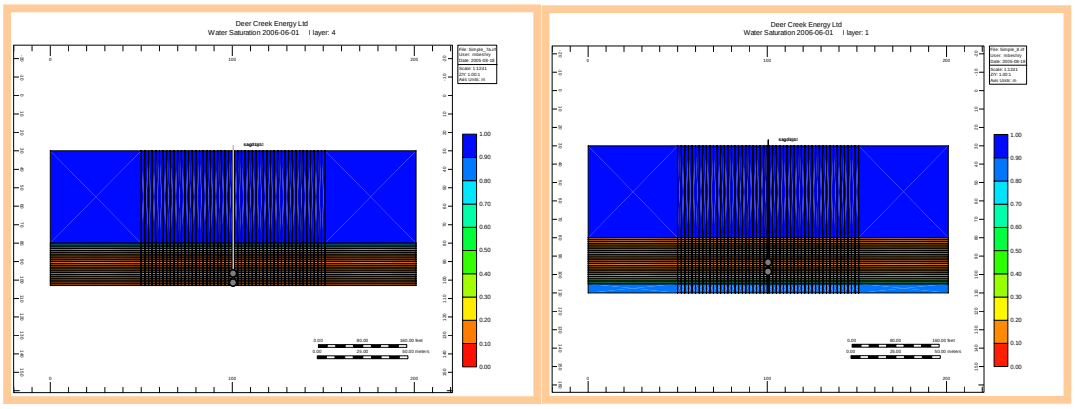
PVT and Relative Permeability Data

- Fluid viscosity verified on lease through samples taken from core hole in Jan-99
- Relative permeability data is based on the available UTF data and industry standard



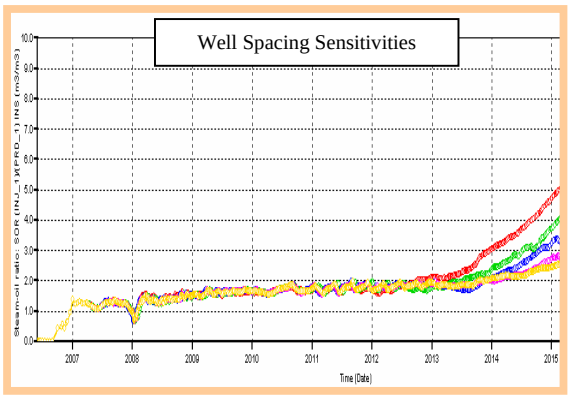
Reservoir Model – Sensitivities

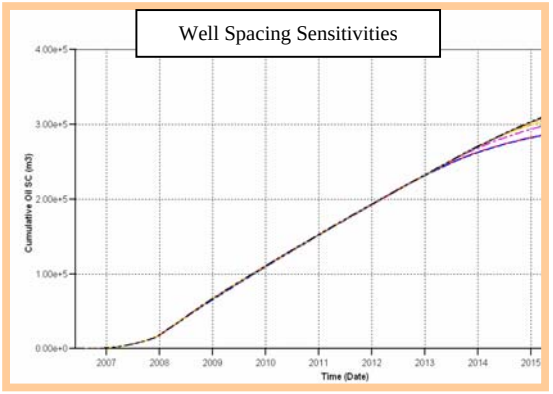
- For Regulatory Application there were four reservoir sensitivities analyzed using simplified geological models with constant porosity of 34%, So of 84% and Kh at 7000 mD:
    - Well Spacing (80, 90, 100, 110 & 120m)
    - Pay Thickness (12, 15, 18, 20m)
    - Upper Transition Zone (Sw at 25, 50 & 75%)
    - Lower Transition Zone (Kv/Kh at 0.1, 0.3 & 0.5)
- Fluid rate was the primary simulator constraint with BHP as the secondary constraint



Reservoir Model - Sensitivities Results

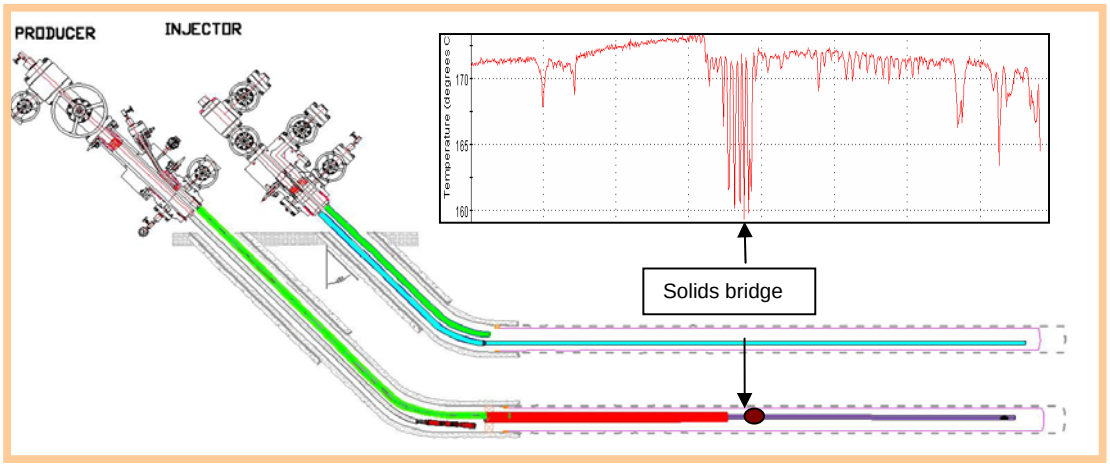
- The 100 m well spacing for the Phase II PADs was chosen based on:
    - the average pay thickness
    - the general width of the geological trends
    - the physical ability to drill and complete the well pairs
    - overall economics.
- Pay zone results were very much dependent on the economic model we applied to the forecast
- The presence of the UTZ and LTZ intervals will have minimal impact on the overall performance on the SAGD well pairs.

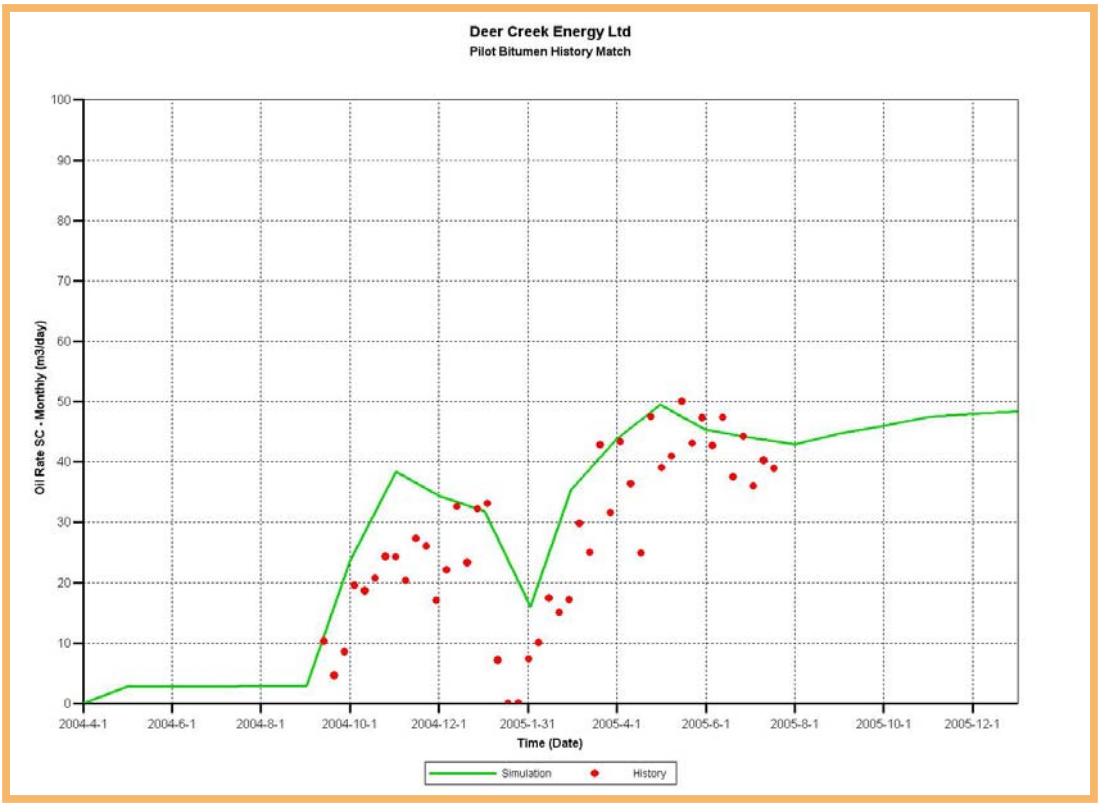


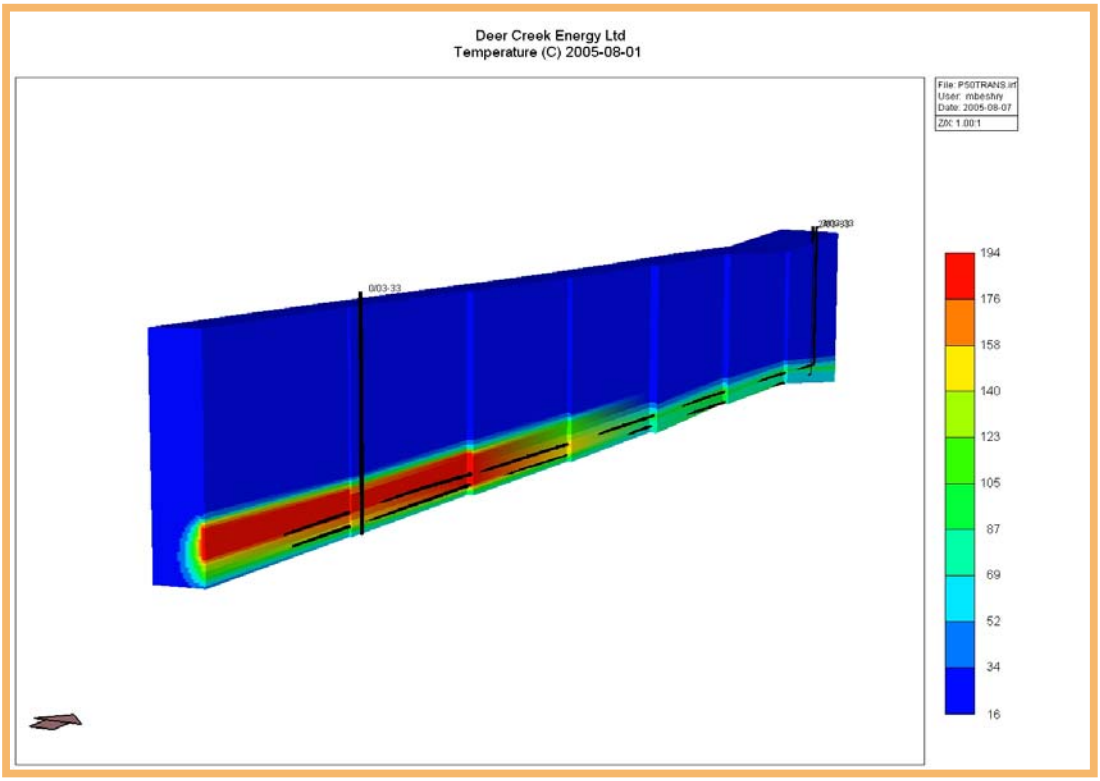


Reservoir Model – Phase I

- Original modeling for the pilot in early 2005 was focused on history matching between September 2004 to August 2005 (as illustrated below) and performance forecast to the end of the year 2005.
- By mid 2005 the focus was shifted to understanding operational issues and investigating possible causes and remedies. One of the issues was a possible solid bridge at the end of the tail pipe in the producer lateral section (as illustrated below). The 3D view illustrates a remedial scenario model of the temperature profile with steam chamber development from the toe to mid section of the well only.
- Early 2006 a well clean out was implemented on the pilot well pair. Recovered samples indicate the presence of fine sand (mud) at the expected locations along the linear.
- **Currently there is not enough steady state production data to adequately generate a reliable history match and production forecast for the Pilot.**




Deer Creek Energy Ltd
Pilot Bitumen History Match
Oil Rate SC - Monthly (m3/day)
100
90
80
70
60
50
40
30
20
10
0
2004-4-1
2004-6-1
2004-8-1
2004-10-1
2004-12-1
2005-1-31
2005-4-1
2005-6-1
2005-8-1
2005-10-1
2005-12-1
Time (Date)
Simulation
History


Deer Creek Energy Ltd
Temperature (C) 2005-08-01
194
176
158
140
123
105
87
69
52
34
16

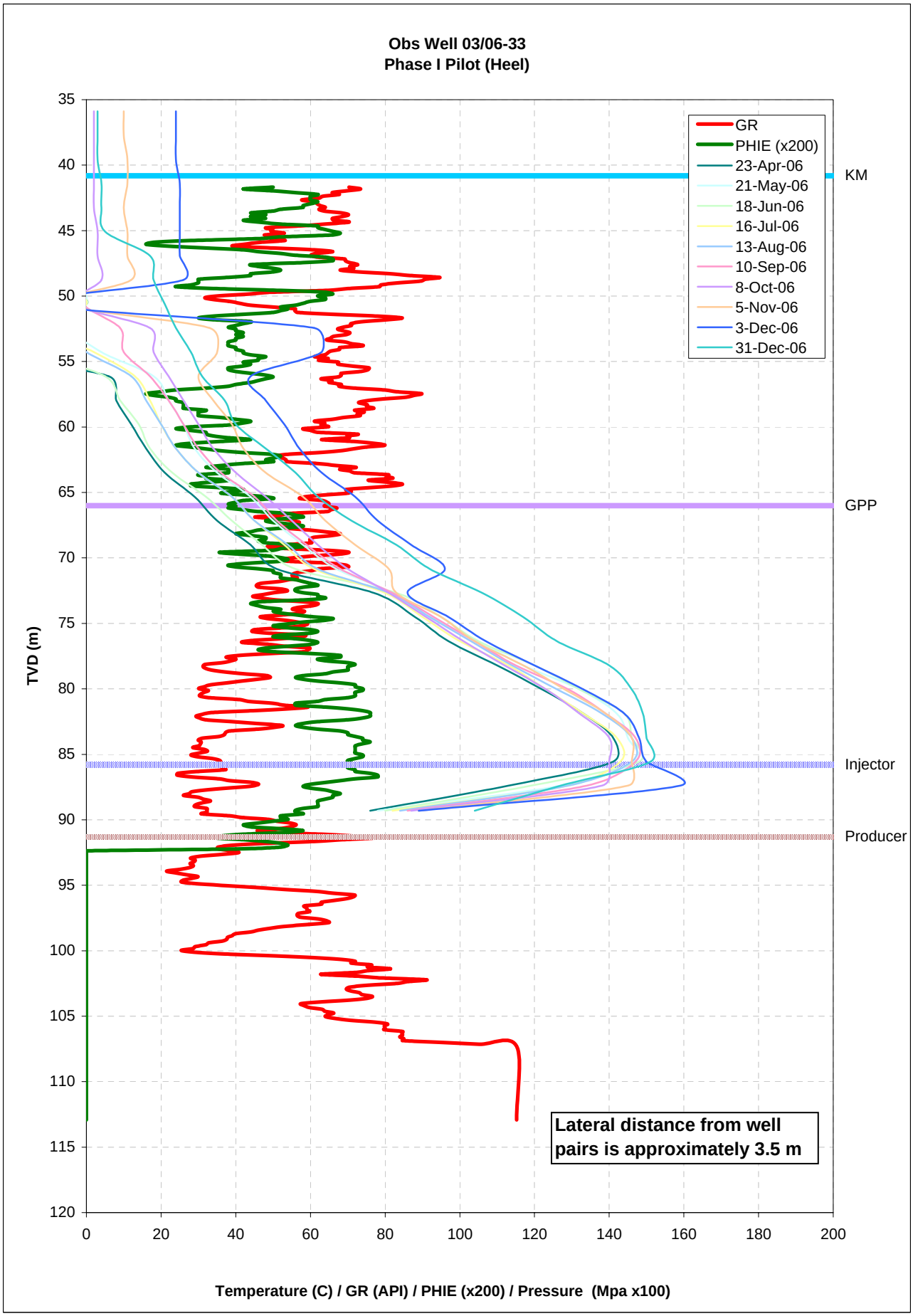
APPENDIX 5:

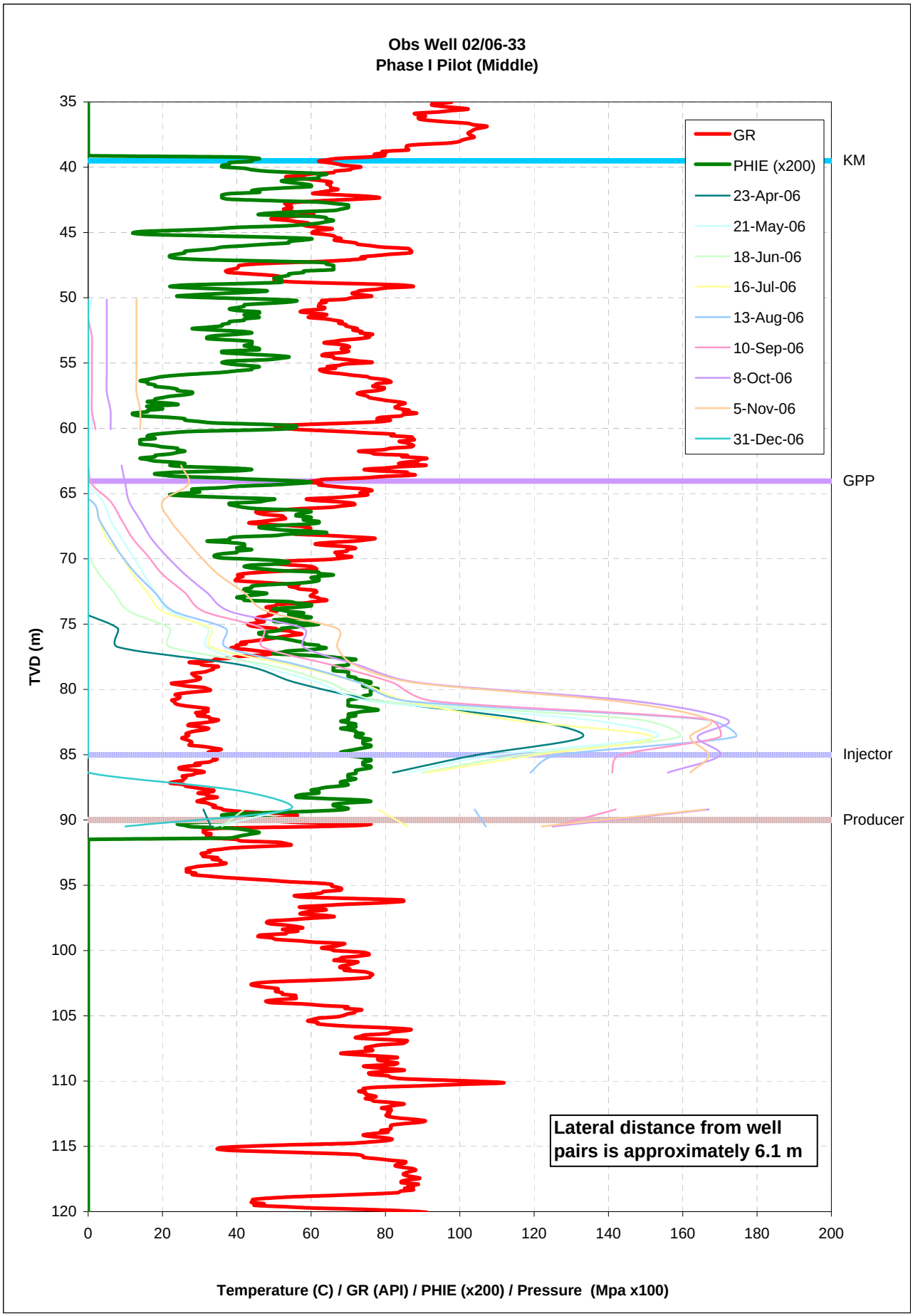
Production data

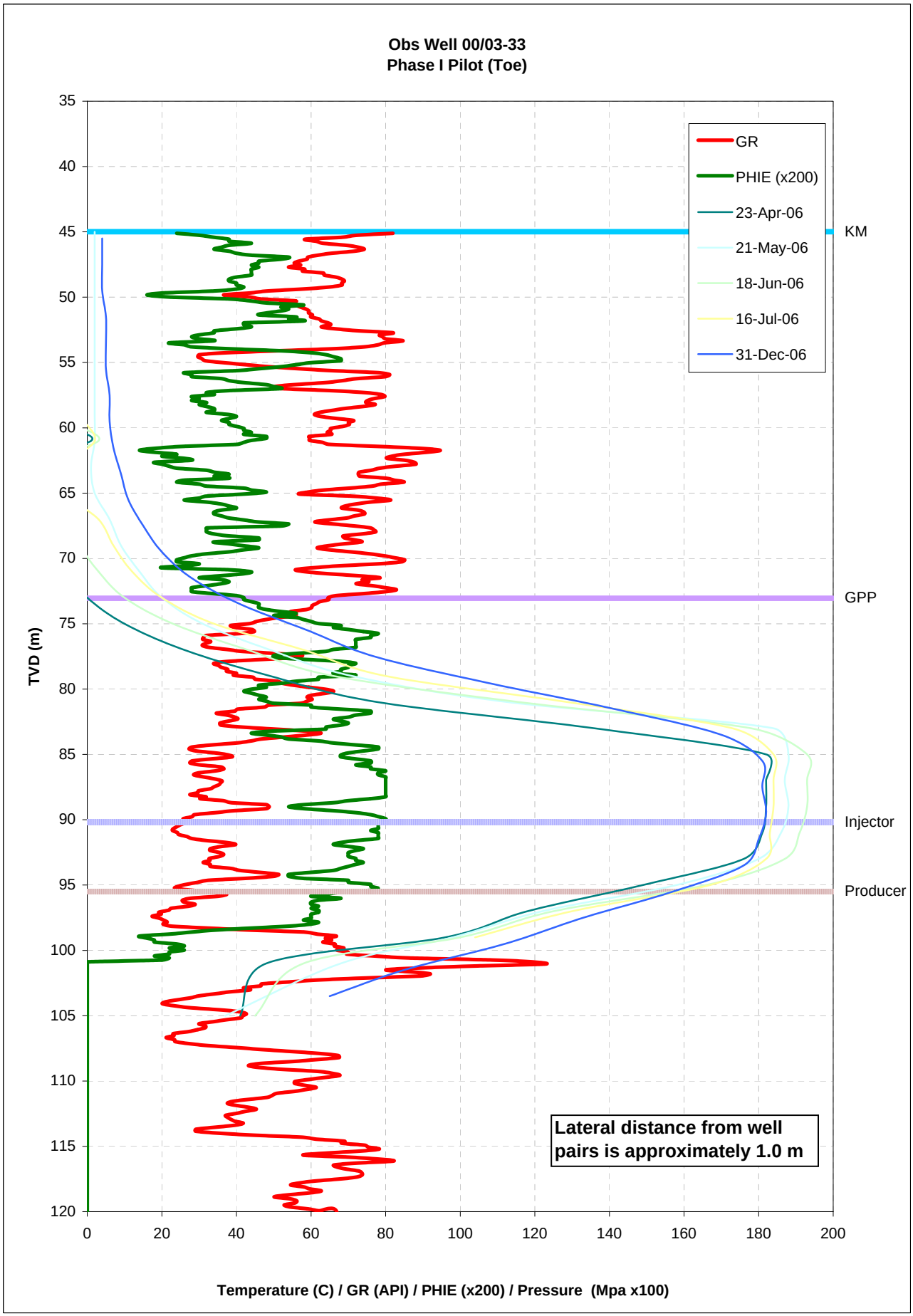
APPENDIX 5/A:

Production data

Observation wells temperatures


Obs Well 03/06-33
Phase I Pilot (Heel)
GR
PHIE (x200)
23-Apr-06
21-May-06
18-Jun-06
16-Jul-06
13-Aug-06
10-Sep-06
8-Oct-06
5-Nov-06
3-Dec-06
31-Dec-06
KM
GPP
Injector
Producer
TVD (m)
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
0
20
40
60
80
100
120
140
160
180
200
Lateral distance from well pairs is approximately 3.5 m
Temperature (C) / GR (API) / PHIE (x200) / Pressure (Mpa x100)


Obs Well 02/06-33
Phase I Pilot (Middle)
GR
PHIE (x200)
23-Apr-06
21-May-06
18-Jun-06
16-Jul-06
13-Aug-06
10-Sep-06
8-Oct-06
5-Nov-06
31-Dec-06
KM
GPP
Injector
Producer
TVD (m)
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
0
20
40
60
80
100
120
140
160
180
200
Lateral distance from well pairs is approximately 6.1 m
Temperature (C) / GR (API) / PHIE (x200) / Pressure (Mpa x100)


Obs Well 00/03-33
Phase I Pilot (Toe)
GR
PHIE (x200)
23-Apr-06
21-May-06
18-Jun-06
16-Jul-06
31-Dec-06
KM
GPP
Injector
Producer
TVD (m)
35
40
45
50
55
60
65
70
75
80
85
90
95
100
105
110
115
120
0
20
40
60
80
100
120
140
160
180
200
Lateral distance from well pairs is approximately 1.0 m
Temperature (C) / GR (API) / PHIE (x200) / Pressure (Mpa x100)

APPENDIX 5/B:

Production data

Oil analysis

DEER CREEK ENERGY

Job/Sample	Analysis Type	Well Name/Sample ID	Sample Point
A426009/ 676090	Certificate of Analysis	DEER CREEK ENERGY JOSLYN CREEK	JOSLYN CREEK BITUMEN

Report Distribution

1	Reports(A426009) DARCY DERDAK	DEER CREEK ENERGY	2600, 205 - 5 AVENUE S.W.	CALGARY, CANADA
0	Reports(A426009) DARYL WARK	DEER CREEK ENERGY	2600, 205 - 5 AVENUE S.W.	CALGARY, CANADA

BEATA KARPINSKA, MSc	Manager, Compositional Analysis Laboratory	Beata.Karpinska@MaxxamAnalytics.com
CARMEN TOKER, CT	Manager, Inorganics and Toxicology Laboratory	Carmen.Toker@MaxxamAnalytics.com
BRANKO BANJAC, B.Sc.	Manager, Petroleum Properties Laboratory	Branko.Banjac@MaxxamAnalytics.com

Date of Issue 2004/11/03

CERTIFICATE OF ANALYSIS

Sample Point I.D.	Client I.D.	Meter Number	Laboratory Number
			A426009:676090

Operator Name	NTS (BC Survey)	Well ID
DEER CREEK ENERGY		

Well Name	Name of Sampler	Company
DEER CREEK ENERGY JOSLYN CREEK	DARYL	DEER CREEK

Field or Area	Pool or Zone	Sample Point	Container Identity	Percent Full
JOSLYN CREEK		JOSLYN CREEK BITUMEN	Glass	

Test Recovery	Sample Gathering Point	Solution Gas

Test Type	No.	Multiple Recovery	Interval 1	Interval 2	Interval 3	Elevations (m) KB	Elevations (m) GRD	Well Fluid Status	Well Status Mode
			From: To:						

Production Rates Water m3/d	Production Rates Oil m3/d	Production Rates Gas 1000m3/d	Gauge Pressures kPa Source	Gauge Pressures kPa As Received	Temperature °C Source	Temperature °C As Received	Well Status Type	Well Type
						23.0		

Gas or Condensate Project	Licence No.

Date Sampled Start	Date Sampled End	Date Received	Date Reported	Date Revision Reported	Analyst
2004/10/25		2004/10/27	2004/11/03	2004/11/03	SK1,CM4

PARAMETER DESCRIPTION	RESULTS	Units	Method	MDL
Density Analysis				
Measured Relative Density @ 15 °C	0.9926	N/A	ASTM D5002	
Physical Properties				
Absolute Density @ 15 °C	991.7	kg/m3	ASTM D5002	0.1
Acid Number	2.20	mgKOH/g	ASTM D664	0.01
API Gravity @ 15 °C	11.1	N/A		

** Information not supplied by client -- data derived from LSD information

Results relate only to items tested

Remarks:

APPENDIX 6:

Economics

APPENDIX 6/A:

Economics

Statement of operating income / 2006

Deer Creek Energy Limited
Statement of Operating Income
Twelve Months Ended December 31
(Unaudited)

(by accounting month)	January 2006	February 2006	March 2006	April 2006	May 2006	June 2006	July 2006	August 2006	September 2006	October 2006	November 2006	December 2006	YTD 2006	
	31	28	31	30	31	30	31	31	30	31	30	31	365	
Operating Statistics														
Blend Sales (m3/d)	22.8	-	40.8	52.3	92.1	48.9	58.6	35.2	123.8	196.5	84.3	135.2	74.8	
Blend Sales (bbls/d)	143.3	.	256.6	329.1	579.0	307.7	368.8	221.1	778.8	1,235.7	530.4	850.3	470.4	
Diluent (included in Blend Sales) (m3/d)	9.3	-	10.2	21.2	23.2	20.6	15.1	16.1	44.2	57.9	22.0	30.3	22.6	30%
Bitumen sales (m3/d)	13.5	-	30.6	31.1	68.8	28.3	43.5	19.1	79.6	138.6	62.4	104.9	52.1	
Bitumen sales (bbls/d)	84.7	-	192.5	195.9	432.9	178.1	273.7	120.1	500.6	871.6	392.3	659.6	327.9	
Bitumen sales ($/bbl)	$ 0.67	$ -	$ 3.05	$ 3.34	$ 16.86	$ 9.74	$ 42.67	$ 9.42	$ 18.00	$ 15.11	$ (26.47)	$ 25.67	$ 12.83	
Produced Bitumen (m3/d)	22.2	-	40.8	31.1	68.8	28.3	43.5	19.1	79.6	138.6	59.1	98.4	52.9	
Produced Bitumen (bbls/d)	139.9	-	256.6	195.9	432.9	178.1	273.7	120.1	500.6	871.6	371.8	619.0	332.9	
Produced Bitumen (m3)	689.6	-	1,265.0	934.4	2,134.0	849.5	1,349.0	592.0	2,388.0	4,296.0	1,773.5	3,051.0	19,322.0	
Produced Bitumen (bbls)	4,337.1	-	7,956.0	5,876.7	13,421.4	5,342.8	8,484.3	3,723.3	15,018.9	27,018.9	11,154.1	19,188.7	121,522.0	SAGD - Prd. - Wellhead YTD
Operating expenses ($/bbl)	$ 262.03	$ -	$ 251.32	$ 434.85	$ 223.66	$ 230.26	$ 156.53	$ 536.24	$ 149.88	$ 90.36	$ 195.80	$ 212.70	$ 213.81	
Revenue														Phase 1 portion
Blend Sales	$ 289,343	$ (16,731)	$ 386,299	$ 315,595	$ 1,109,728	$ 561,188	$ 837,289	$ 413,538	$ 1,184,128	$ 1,510,632	$ (28,325)	$ 1,351,872	7,914,557	$ 4,397,991
Pipeline/Terminal expense	(3,051)	1,620	(2,846)	(2,122)	(6,402)	(4,210)	(4,716)	(2,565)	(10,003)	(16,076)	-		(50,372)	$ (27,991)
Trucking	32,430	(149,701)	(79,098)	(54,998)	(235,406)	(95,850)	(149,679)	(74,752)	(253,256)	(460,675)	(40,087)	(177,132)	(1,738,206)	$ (965,893)
Diluent	(315,763)	107,289	(280,097)	(225,539)	(565,203)	(371,177)	(195,031)	(271,653)	(500,315)	(454,973)	(352,803)	(498,118)	(3,923,384)	$ (2,180,161)
						-	-							Total
Bitumen Sales	2,959	(57,523)	24,258	32,935	302,716	89,951	487,862	64,568	420,554	578,908	(421,215)	676,622	2,202,595	$ 1,223,946
Data Sharing								-	-	-	-	-	-	
Marketing fee	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Royalty paid	(813)	1,083	(77)	77	(3,384)	(3,722)	(2,554)	(606)	(1,269)	(3,419)	484	(11,111)	(25,311)	(14,065)
Net Revenue	2,146	(56,440)	24,181	33,012	299,332	86,229	485,308	63,962	419,285	575,488	(420,731)	665,511	2,177,284	1,209,881
Royalty received						2,500,000							2,500,000	2,500,000
Expenses														
Operations Staff	288,858	389,810	696,724	773,706	1,098,215	675,801	420,538	631,419	1,124,959	917,330	468,495	1,084,292	8,570,145	857,015
Facility Costs	79,482	107,176	70,133	18,782	70,355	61,362	72,050	200,495	191,150	215,637	697,598	741,568	2,525,787	252,579
Consumables	(1,000)	6,050	11,733	4,531	15,728	10,100	3,455	10,000	15,461	5,598	8,898	68,430	158,984	15,898
Fuel	490,099	501,648	703,426	766,348	701,377	227,651	268,180	508,169	499,842	520,577	288,256	502,000	5,977,574	597,757
Utilities	141,437	252,716	82,305	310,205	318,512	71,473	265,319	169,244	199,818	256,061	149,084	530,552	2,746,726	274,673
Chemicals	9,903	56,256	95,408	72,835	230,824	90,623	(17,155)	75,000	73,158	88,167	69,103	121,058	965,181	96,518
Transportation	91,590	335,972	225,980	366,026	288,235	12,504	(24,444)	100,884	78,199	131,851	80,117	252,485	1,939,400	193,940
Repairs and Maintenance	43,502	136,821	113,799	(6,920)	73,588	75,937	74,132	53,976	68,450	301,324	437,162	769,754	2,141,526	214,153
Workovers	(7,400)	(9,700)	-	250,000	205,000	4,753	266,000	247,377	-	4,746	(14,746)	11,284	957,314	707,314
	1,136,470	1,776,749	1,999,509	2,555,513	3,001,835	1,230,205	1,328,074	1,996,564	2,251,036	2,441,291	2,183,968	4,081,424	25,982,637	3,209,847
Net operating income (loss)	$ (1,134,324)	$ (1,833,190)	$ (1,975,328)	$ (2,522,501)	$ (2,702,503)	$ 1,356,024	$ (842,766)	$ (1,932,601)	$ (1,831,751)	$ (1,865,803)	$ (2,604,698)	$ (3,415,913)	$ (21,305,354)	$ 500,035

Royalties paid in total **$25,311.00**
$1,209,881.34

Net revenue

Phase 1 fraction 14,065

Gross revenue phase 1

Direct operating costs (3,174,045)

Indirect costs 3,209,847

1 workover not in phase 1 subtracted

Notes
1.
Facility costs increased due to yearly insurance costs booked

2.
Over accrual of oil sales in Oct by $500,000
(Volume was estimated at 6091m3 based on
actual volume to Oct 21 of 4126m3.
There only an actual additional volume
shipped of 44m3

84% Op Stmt
Per GL

Difference

Gross

3
Trucking charges are reduced in Nov due
to a price reduction in shipping costs being
routed through the Enbridge terminal

APPENDIX 6/B:

Economics

Capital 2006

AFE Number	SALSA WBS	AFE Description	WI%	Status	AFE Budget	Closing Balances Dec-04 Gross	Closing Balances Dec-05 Gross	Actuals Jan-06 Gross 100%	Actuals Feb-06 Gross 100%	Adjustments Feb-06 Gross 100%	Total Feb-06 Gross 100%	Actuals Mar-06 ross 100%	justmen Mar-06 ross 100%	Total Mar-06 ross 100%	Actuals Apr-06 ross 100%	Adjustments Apr-06 Gross 100%	Total Apr-06 ross 100%	Actuals May-06 Gross 100%	Adjustments May-06 Gross 100%	Total May-06 Gross 100%	Actuals Jun-06 Gross 100%	Adjustments Jun-06 Gross 100%	Total Jun-06 Gross 100%	Actuals Jul-06 ross 100%
SAGD Phase I											-			-			-	-		-	-		-	-
002-0001-0002-0015		*Storage Charges for Steam Generators*	*84%*	*Inactive*	*11,350*	7,400	350	-	200		200	800		800	(400)		(400)	1,600		1,600	(2,000)		(2,000)	-
002-0001-0003-0020		*1P1 ESP Installation*	*84%*	*Inactive*	*884,742*	"	*890,662*	*(1,581)*	"		"	"		"	"		"	"		"	"		"	"
002-0001-0003-0022		*Phase 1 Production Well Workover*	*84%*	*Inactive*	*825,635*		"	"	*900,158*		*900,158*	*(192)*		*(192)*	*(98,118)*		*(98,118)*	*88,195*		*88,195*	*51,057*		*51,057*	*800*
002-0001-0002-0024	CAOA3001542122420000	Phase I Decommission	84%	Active	250,000						-			-	100,000		100,000	-		-	10		10	(24,908)
																		-		-	-		-	-

Adjustments Jul-06 Gross 100%	Total Jul-06 Gross 100%	Actuals Aug-06 Gross 100%	Adjustments Aug-06 Gross 100%	Total Aug-06 Gross 100%	Actuals Sep-06 Gross 100%	Adjustments Sep-06 Gross 100%	Total Sep-06 Gross 100%	Actuals Oct-06 Gross 100%	Adjustments Oct-06 Gross 100%	Total Oct-06 Gross 100%	Actuals Nov-06 Gross 100%	Adjustments Nov-06 Gross 100%	Total Nov-06 Gross 100%	Actuals Dec-06 Gross 100%	Adjustments Dec-06 Gross 100%	Total Dec-06 Gross 100%	Total L-T-D Gross 100%	Gross Capital Costs Current Month	Gross Capital Costs Current Year	Net Current Year	Supplemental Required
	-	-		-	-		-	-	#REF!	#REF!				-			-					
	-	-		-	-		-	-		-				-			-	7,950	-	200	168	-
	"	"		"	"		"	"		-				-			-	889,081	-	(1,581)	(1,328)	"
	800	"		"	*510*		*510*	*321*		321				-			-	942,731	-	942,731	791,894	"
	(24,908)	650		650	44,357		44,357	49,956		49,956	35,424		35,424	132,486		132,486	337,976	132,486	337,976	283,900	57,976
		-			-													*2,177,739*	*132,486*	*1,279,327*	*1,074,635*	

APPENDIX 7:

Facilities

APPENDIX 7/A:

Facilities

Process Flow Sheet

E-400/E-408 INLET HEAT EXCHANGER | V-101 FUEL GAS SCRUBBER | P-505 DILUENT PUMP | V-100 HIGH TEMPERATURE SEPARATOR | T-707/708 DILUENT STORAGE TANK | T-700 SLOP STORAGE TANK | T-701 PRODUCTION STORAGE TANK | T-702 SHIPPING STORAGE TANK | T-703 SHIPPING STORAGE TANK | T-704 DESAND STORAGE TANK

P-500 RECYCLE PUMP | E-402 A/B WATER DUMP EXCHANGER | E-401 A/B OIL DUMP EXCHANGER

CASING GAS
ESDV 9
STEAM FROM STEAM HEADER SHEET 3 OF 4
START UP STEAM FROM INJECTION WELL SHEET 3 OF 4
TEMPORARY START UP SPOOLS
TOE
HEEL
PRODUCTION WELL
ESDV 1
GLYCOL RETURN D-33359-F-00-07
TCV 4045
165°C 760 kPag 500 Sm³/D
E-400/ E-408
GLYCOL SUPPLY D-33359-F-00-07
START UP PRODUCTION FROM INJECTION WELL SHEET 3 OF 4
TEMPORARY START UP SPOOLS
STATIC MIXER
FUEL GAS SUPPLY
TO FLARE K.O. DRUM SHEET 4 OF 4
PCV 10010
FE 10009
140°C 690 kPag 372 Sm³/D
TO WATER TANKS VAPOUR OUT SHEET 2 OF 4
V-100
DESLUDGE
T-704
TRUCK OUT
TCV 4010
GLYCOL SUPPLY D-33359-F-00-07
GLYCOL RETURN D-33359-F-00-07
E-401A /B
LCV 10008
FE 10018
90°C 138 Sm³/D
10°C 690 kPag
TCV 4020
GLYCOL SUPPLY D-33359-F-00-07
GLYCOL RETURN D-33359-F-00-07
E-402A/B
90°C 362 Sm³/D
FE 10020
LCV 10005
TO PRODUCED WATER STORAGE SHEET 2 OF 4
TO P-501 SKIM PUMP SHEET 2 OF 4
FROM P-501 SKIM PUMP SHEET 2 OF 4
FE 10110
ESDV 10101
FROM ATCO FUEL GAS
PCV 10102
10°C 1035 kPag 28x10³ Sm³/D
V-101
LCV 10107
10°C 30 Sm³/D
FE 5052
P-505
T-707
T-708
T-700
T-701
T-702
T-703
DILUENT TRUCK IN
FROM ORF SHEET 2 OF 4
OVERFLOW
FE 5004
P-500
OIL TRUCK OUT
DESAND WASH SHEET 2 OF 4

NO.	REVISION	PROJ. No.	BY	DATE	CHK.	DATE
7	GENERAL REVISIONS	33359	CT	04.09.17		
6	POST CONSTRUCTION ISSUE	33359	CT	04.04.27		
5	GENERAL REVISIONS	33359	CT	04.01.28		
4	GENERAL REVISIONS	33359	CT	03.12.17		
3	GENERAL REVISIONS	33359	CT	03.11.12		
2	GENERAL REVISIONS	33359	CT	03.10.29		
1	GENERAL REVISIONS	33359	CT	03.09.29		
0	ISSUED FOR APPROVAL	33359	CT	03.06.09		

PERMIT STAMP:

GENERAL NOTES:
1. "POST CONSTRUCTION DRAWINGS" ARE GENERATED FROM CONSTRUCTION CHANGE INFORMATION FURNISHED TO BOWER DAMBERGER ROLSETH ENGINEERING LTD. BY THE OWNER'S FIELD SUPERVISORS AND OR VENDOR CONTRACTORS. ANY CHANGES NOT DOCUMENTED WILL NOT APPEAR ON THE DRAWINGS AND THEREFORE, THE DRAWINGS MAY NOT BE AN ACCURATE REPRESENTATION OF THE CONSTRUCTED FACILITY.
2. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND OR EXCAVATION IT SHALL BE THE RESPONSIBILITY OF THE OWNERS REPRESENTATIVE TO VERIFY THE LOCATION AND STATUS OF ANY PIPING, ELECTRICAL, EQUIPMENT OR BUILDINGS.
3. ANY REVISIONS MADE TO EXISTING EQUIPMENT, PIPING OR ELECTRICAL ON A FACILITY NOT DESIGNED BY B.D.R. ENG. LTD. IS ONLY SHOWN AS A REPRESENTATION OF WHAT EXISTS AND MUST BE VERIFIED BY THE OWNER.

	BY	DATE
DRN.	CT	03.06.09
CHK.		
APP'D.		
L.S.D.	10-33-95-12 W4M	

Bower Damberger Rolseth Engineering Ltd.

DEER CREEK Energy Limited

JOSLYN PHASE #1 DEMONSTRATION FACILITY PROCESS FLOWSHEET SHEET 1 OF 4

SCALE	DRAWING NUMBER	REV
N/A	D-33359-F-00-02	7

P–504 WASH PUMP

P–501 SKIM PUMP

T–705 SKIM STORAGE TANK

T–706 PRODUCED WATER TANK

P–507 ORF FEED PUMP

P–516 IGF FEED PUMP

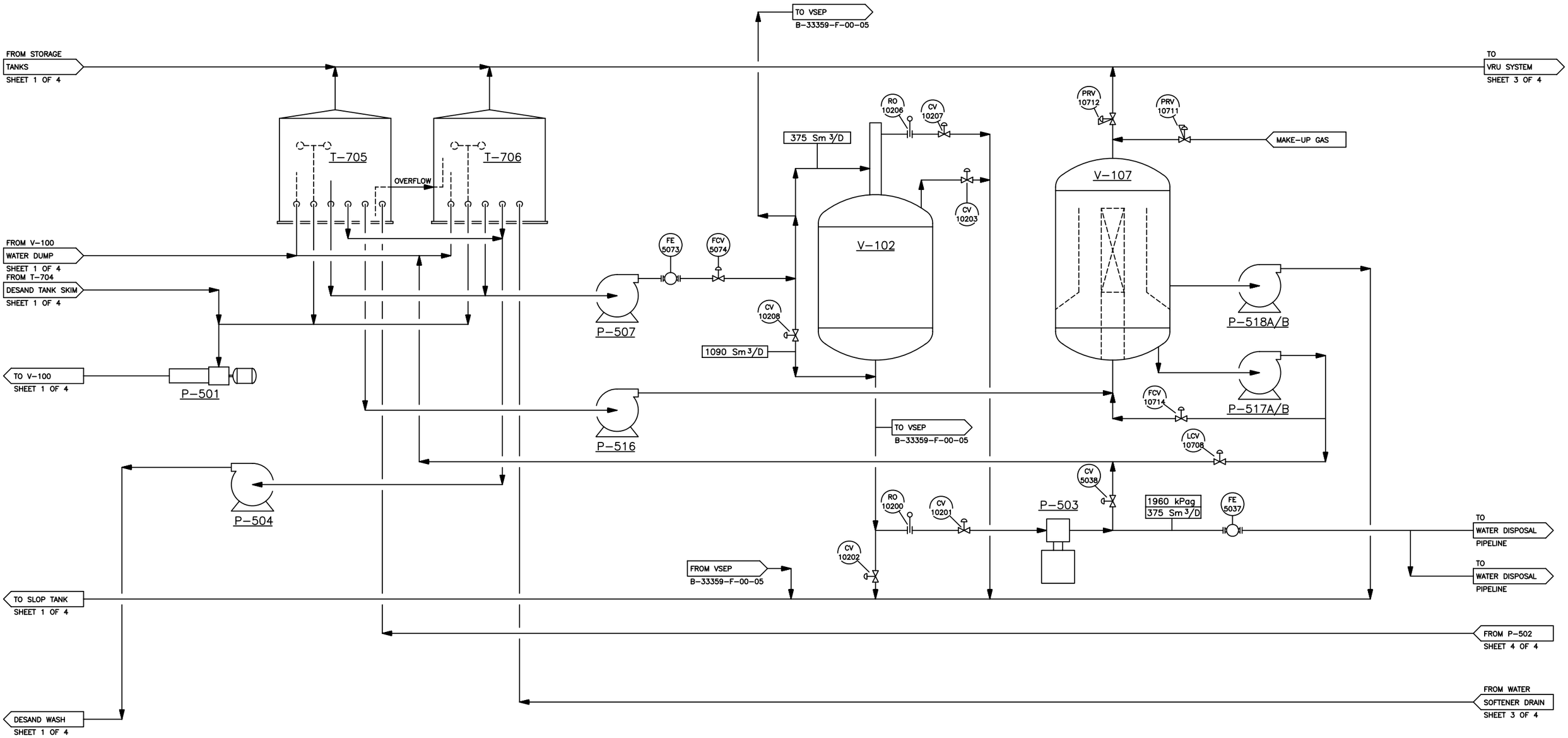
V–102 ORF

P–503 PRODUCED WATER DISPOSAL PUMP

V–107 FLOATATION CELL

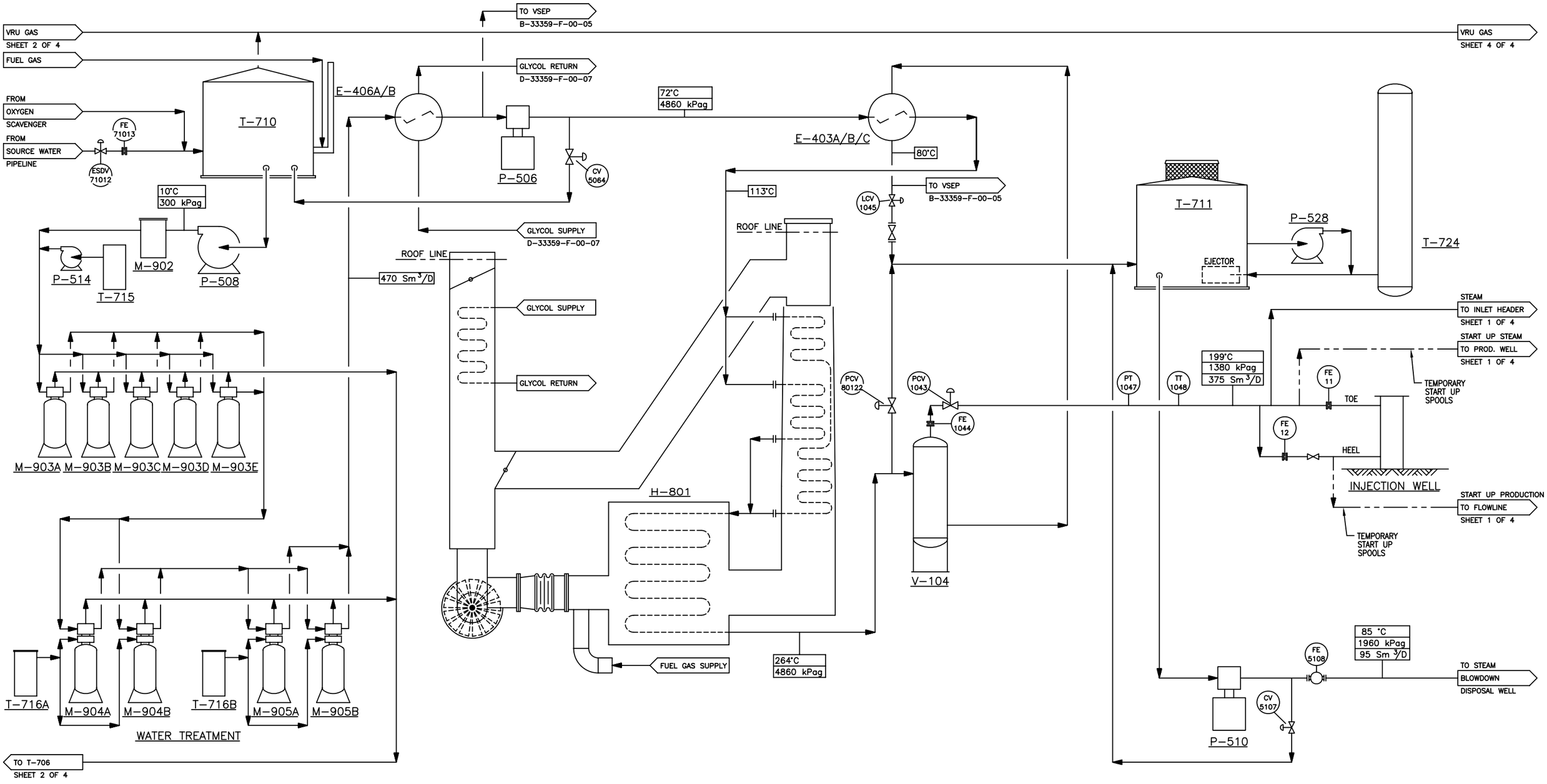
P–517A/B IGF DISCHARGE RECYCLE PUMPS

P–518A/B SKIMMED OIL PUMPS



SHEET NUMBER	DRAWING NUMBER	REV
2 OF 4	D–33359–F–00–02	7

P-508 SOFTENER FEED PUMP
T-710 SOURCE WATER TANK
P-514 POTASSIUM PERMANGANATE PUMP
P-506 STEAM GENERATOR FEED PUMP
H-801 STEAM GENERATOR
E-403 A/B/C BLOWDOWN EXCHANGER
V-104 STEAM SEPARATOR
P-510 BLOWDOWN DISPOSAL PUMP
T-711 STEAM BLOWDOWN TANK
T-724 CO_2 STORAGE TANK
M-902 SOURCE WATER FILTER
T-715 POTASSIUM PERMANGANATE STORAGE TANK
M-904 A/B PRIMARY WATER SOFTENERS
E-406 A/B BFW PRE-HEAT EXCHANGER
P-528 T-711 RECYCLE PUMP
M-903 A/B/C/D/E MANGANESE GREENSAND FILTERS
T-716 A/B BRINE STORAGE TANKS
M-905 A/B POLISHING WATER SOFTENERS



SHEET NUMBER	DRAWING NUMBER	REV
3 OF 4	D-33359-F-00-02	7

P–502 VRU DRAIN PUMP
V–105 VRU SCRUBBER
K–600 VRU BLOWER
P–509 FLARE K.O. DRUM PUMP
T–713 FLARE K.O. DRUM
M–900 FLARE STACK
K–602 ROTARY BLOWER

FROM PLANT PSV'S AND V–100 OHD'S
SHEET 1 OF 4

FROM TANK FARM
SHEET 2 OF 4

FROM TRUCK VAPOUR RETURN

PILOT GAS

M–900

K–602

T–713

K–600

P–509

V–105

TO T–705
SHEET 2 OF 4

P–502

SHEET NUMBER	DRAWING NUMBER	REV
4 OF 4	D–33359–F–00–02	7

APPENDIX 7/B1:

Facilities

P&IDs: Phase 1

LEGEND

- GATE VALVE (GA)
- BALL VALVE (BA)
- PLUG VALVE (PL)
- NEEDLE VALVE (NE)
- GLOBE VALVE (GL)
- CHECK VALVE (CH)
- BUTTERFLY VALVE (BU)
- SOCKET WELD VALVE
- SCREWED VALVE
- FLANGED VALVE
- CONTROL VALVE WITH DIAPHRAGM ACTUATOR
- CONTROL VALVE WITH PISTON ACTUATOR
- PRESSURE REGULATOR
- SOLENOID VALVE
- ANGLE CHOKE
- INLINE CHOKE
- Y–STRAINER
- PRESSURE SAFETY VALVE
- ORIFICE METER RUN
- TURBINE METER OR POSITIVE DISPLACEMENT METER
- SPECTACLE BLIND, OPEN (CLOSED)
- CHANGE IN PIPE SIZE
- INLINE STRAINER
- HIGH TEMPERATURE VALVE

- INSULATION (H–HOT, C–COLD)
- INSULATION & HEAT TRACE
- PROCESS PIPING
- PNEUMATIC SIGNAL
- CAPILLARY TUBING
- ELECTRICAL SIGNAL
- HYDRAULIC SIGNAL
- ELECTROMAGNETIC/SONIC SIGNAL
- SOFTWARE OR DATA LINK
- A.O. AIR TO OPEN (FAIL CLOSED)
- A.C. AIR TO CLOSE (FAIL TO OPEN)
- C.S.O.(C) CAR SEAL OPEN (CLOSED)
- E.S.D. EMERGENCY SHUTDOWN
- F.P. FULL PORT
- R.P. REGULAR PORT
- N.C. NORMALLY CLOSED
- N.O. NORMALLY OPEN
- S.R. SPRING RETURN
- SPEC BREAK
- ▲ SUPPLIED BY OTHERS
- TIE IN NUMBER
- TIE IN LOCATIONS
- PNEUMATIC TO CURRENT
- CURRENT TO PNEUMATIC

- LOCALLY MOUNTED INSTRUMENT
- MOUNTED ON MAIN CONTROL ROOM PANEL
- LOCAL PANEL MOUNTED INSTRUMENT
- DISTRIBUTED CONTROL SYSTEM ITEMS
- DISTRIBUTED CONTROL SYSTEM AUXILIARY OPERATOR'S INTERFACE
- DISTRIBUTED CONTROL SYSTEM ITEMS (COMPUTER FUNCTION)
- PROGRAMMABLE LOGIC CONTROL SYSTEM
- PROGRAMMABLE LOGIC CONTROL SYSTEMS ACCESSIBLE TO OPERATOR
- AUX. PROGRAMMABLE LOGIC CONTROL SYSTEMS ACCESSIBLE TO OPERATOR
- (AT) ANALYZER TRANSMITTER
- (BDV) BLOWDOWN VALVE
- (BCS) BURNER CONTROL STATUS
- (BE) BURNER ELEMENT
- (BZ) BURNER IGNITOR
- (CV) CONTROL VALVE
- (DPI) DIFFERENTIAL PRESSURE INDICATOR
- (DPS) DIFFERENTIAL PRESSURE SWITCH
- (ESDV) EMERGENCY SHUTDOWN VALVE
- (FAH) FLOW ALARM HIGH, L–LOW
- (FC) FLOW CONTROLLER
- (FCV) FLOW CONTROL VALVE
- (FDSD) FIRE DETECTION SHUTDOWN
- (FSDH) FLOW SHUTDOWN HIGH, L–LOW
- (FE) FLOW ELEMENT
- (FFSD) FLAME FAILURE SHUTDOWN
- (FI) FLOW INDICATOR
- (FIR) FLOW INDICATOR RECORDER
- (FR) FLOW RECORDER
- (FS) FLOW SWITCH (H–HIGH, L–LOW)
- (FQI) FLOW TOTALIZER

- (FT) FLOW TRANSMITTER
- (FY) FLOW CONTROL
- (HOA) HAND/OFF/AUTOMATIC
- (H2S) H2S GAS DETECTION
- (LAH) LEVEL ALARM HIGH, L–LOW
- (LC) LEVEL CONTROLLER
- (LCV) LEVEL CONTROL VALVE
- (LEL) COMBUSTIBLE GAS DETECTION
- (LG) LEVEL GAUGE
- (LI) LEVEL INDICATOR
- (LIC) LEVEL INDICATOR CONTROLLER
- (LIR) LEVEL INDICATOR RECORDER
- (LR) LEVEL RECORDER
- (LS) LEVEL SWITCH (H–HIGH, L–LOW)
- (LSDH) LEVEL SHUTDOWN HIGH, L–LOW
- (LT) LEVEL TRANSMITTER
- (LY) LEVEL CONTROL
- (ME) MOISTURE ELEMENT
- (MI) MOISTURE INDICATOR
- (OSS) OVERSPEED SWITCH
- (OSSD) OVERSPEED SHUTDOWN
- (PAH) PRESSURE ALARM HIGH, L–LOW
- (PC) PRESSURE CONTROLLER
- (PCV) PRESSURE CONTROL VALVE
- (PDM) POSITIVE DISPLACEMENT METER
- (PI) PRESSURE INDICATOR
- (PIC) PRESSURE INDICATOR CONTROLLER
- (PIR) PRESSURE INDICATOR RECORDER
- (PR) PRESSURE RECORDER
- (PRV) PRESSURE REGULATING VALVE

- (PS) PRESSURE SWITCH (H–HIGH, L–LOW)
- (PSDH) PRESSURE SHUTDOWN HIGH, L–LOW
- (PSV) PRESSURE SAFETY VALVE
- (PT) PRESSURE TRANSMITTER
- (PVB) PRESSURE VACUUM BREATHER
- (PY) PRESSURE CONTROL
- (PZ) PRESSURE TRANSDUCER
- (RO) RESTRICTING ORIFICE
- (SY) SOLENOID ACTUATED VALVE
- (SC) SURGE CONTROLLER
- (SCV) SURGE CONTROL VALVE
- (SDV) SHUTDOWN VALVE
- (TAH) TEMPERATURE ALARM HIGH, L–LOW
- (TC) TEMPERATURE CONTROLLER
- (TCV) TEMPERATURE CONTROL VALVE
- (TI) TEMPERATURE INDICATOR
- (TIR) TEMPERATURE INDICATOR RECORDER
- (TS) TEMPERATURE SWITCH (H–HIGH, L–LOW)
- (TSDH) TEMPERATURE SHUTDOWN HIGH, L–LOW
- (TT) TEMPERATURE TRANSMITTER
- (TY) TEMPERATURE CONTROL
- (TW) THERMO WELL
- (VI) VALVE ACTUATION INDICATOR
- (VS) VIBRATION SWITCH
- (VSD) VIBRATION SHUTDOWN
- (VSDH) VIBRATION SHUTDOWN HIGH
- (VT) VIBRATION TRANSMITTER
- (Z) TRANSDUCER
- (ZS) LIMIT SWITCH

NO.	REVISION	PROJ. No.	BY	DATE	CHK.	
13	VSEP TAKE–OFFS ADDED/METER ADDED TO BFW PUMP DISCHARGE	43766	CT	04.07.07		
12	FE–45 ADDED TO BITUMEN INLET	33359	CT	04.06.23		
11	V–104 MANUAL BYPASS REVISED	33359	CT	04.06.15		
10	FE–4035;V–104 MANUAL BYPASS ADDED	33359	CT	04.05.26		
9	POST CONSTRUCTION	33359	CT	04.04.27		
8	GENERAL REVISIONS	33359	CT	04.03.26		
7	GENERAL REVISIONS	33359	CT	04.02.24	JG	04.02.24
6	GENERAL REVISIONS	33359	CT	04.02.11		
5	ISSUED FOR CONSTRUCTION	33359	CT	04.01.28	RDB	04.01.23

GENERAL NOTES:

1. "POST CONSTRUCTION DRAWINGS" ARE GENERATED FROM CONSTRUCTION CHANGE INFORMATION FORWARDED TO BOWER DAMBERGER ROLSETH ENGINEERING LTD. BY THE OWNER'S FIELD SUPERVISORS AND OR HIRED CONTRACTORS. ANY CHANGES NOT DOCUMENTED WILL NOT APPEAR ON THE DRAWINGS AND THEREFORE THE DRAWING MAY NOT BE AN ACCURATE REPRESENTATION OF THE CONSTRUCTED FACILITY.
2. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND OR EXCAVATION IT SHALL BE THE RESPONSIBILITY OF THE OWNERS REPRESENTATIVE TO VERIFY THE LOCATION AND STATUS OF ANY PIPING, ELECTRICAL EQUIPMENT OR BUILDINGS.
3. ANY REVISIONS MADE TO EXISTING EQUIPMENT, PIPING OR ELECTRICAL OR A FACILITY NOT DESIGNED BY B.D.R. ENG. LTD. IS SOLELY SHOWN AS A REPRESENTATION OF WHAT EXISTS AND MUST BE VERIFIED BY THE OWNER.

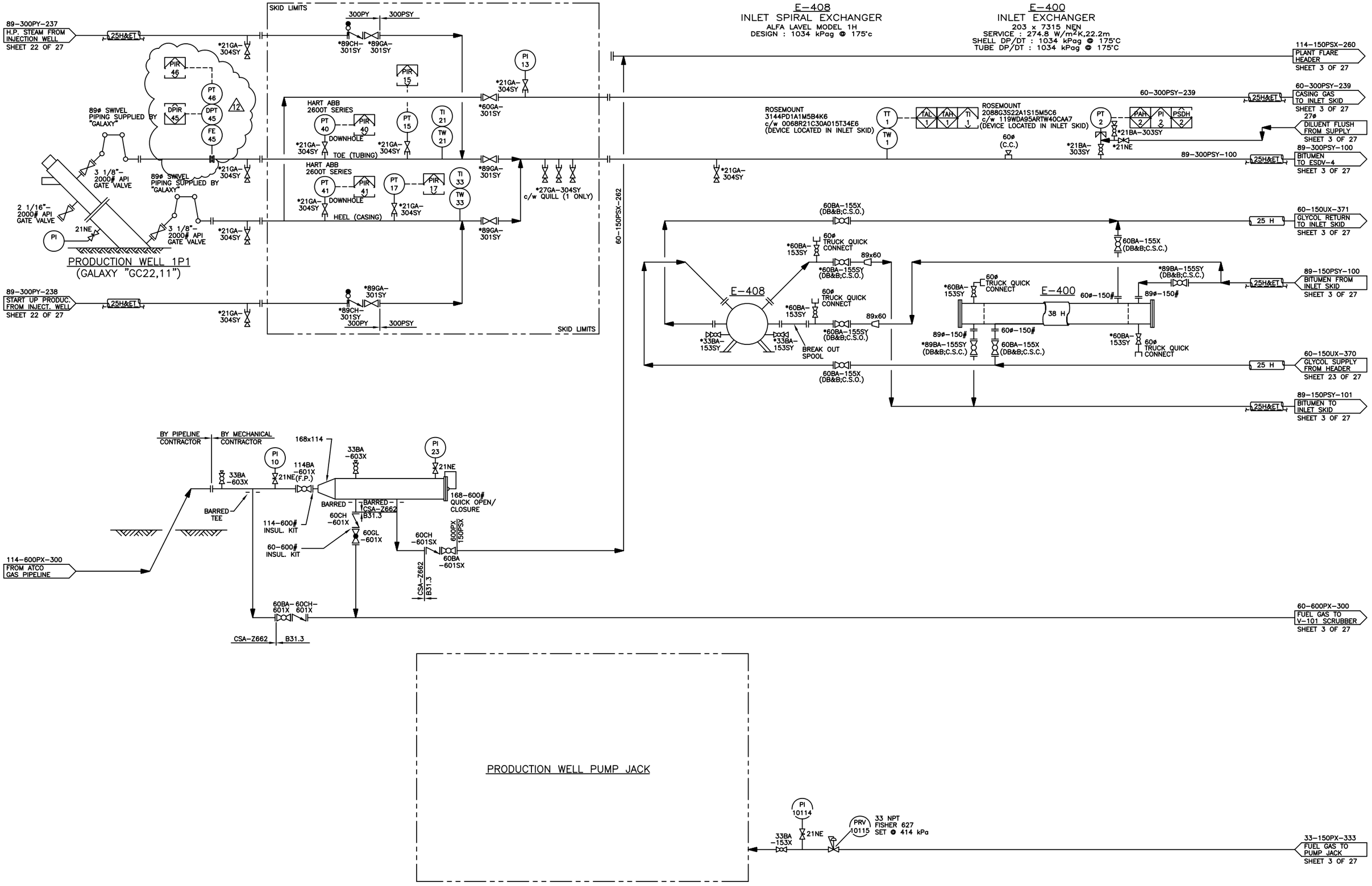
	BY	DATE
DRN.	CT	03.06.12
CHK.	RDB	04.01.23
APP'D.		
L.S.D.	10–33–95–12 W4M	

bdr Bower Damberger Rolseth Engineering Ltd.

DEER CREEK Energy Limited

JOSLYN PHASE #1 DEMONSTRATION FACILITY
MECHANICAL FLOWSHEET

SHEET NUMBER	DRAWING NUMBER	REV
1 OF 27	F–33359–F–00–01	13



SHEET NUMBER	DRAWING NUMBER	REV
2 OF 27	F-33359-F-00-01	13

V-101
FUEL GAS SCRUBBER
457 O.D x 1524 S/S
DESIGN: 1965 kPa @ 38°C
C.A. = 1.6 mm

INLET SKID LIMITS

114-150PSX-260 PLANT FLARE HEADER SHEET 2 OF 27
60-300PSY-239 CASING GAS FROM PROD. WELL SHEET 2 OF 27 27ø
DILUENT FLUSH FROM SUPPLY SHEET 3 OF 27
89-300PSY-100 BITUMEN FROM WELLHEAD SHEET 2 OF 27
60-150UX-371 GLYCOL RETURN FROM E-400 SHEET 2 OF 27
89-150PSY-100 BITUMEN TO E-400 EXCHANGER SHEET 2 OF 27
89-150PSY-101 BITUMEN FROM E-400/E-408 SHEET 2 OF 27
60-600PX-300 FROM ATCO PIPELINE SHEET 2 OF 27
33-600PX-331 PURGE GAS TO HTS BLANKET GAS SHEET 5 OF 27
FROM P-519 DEMULSIFIER D-33359-F-00-10
FROM P-520 REVERSE DEMULSIFIER D-33359-F-00-10
FROM P-521/527 POLYMER/WATER D-33359-F-00-10
33-150PX-333 FUEL GAS TO PUMP JACK SHEET 2 OF 27
60-150PSX-194 FROM WASH WATER HEADER SHEET 17 OF 27

33-150PSX-298
60-150PSX-299
60-150PSX-291
89-150PSY-102
60-150PSX-239
60-150PSX-263
33-150UX-372
60-150PSX-303

PSV 31: 33-300# R.F.x 60-150# R.F. A.G.W. 1E2JLT-JOS-E-35-N2-J SET @ 4378 kPag BLOCKED FLOW ORIFICE = 5.0 mm MAX = 496 m3/D
PSV 28: 27x33 NPT A.G.W. 951101MA SET @ 1034 kPag FIRE ORIFICE = 1.5 mm MAX = 51 m3/d
PSV 3: 48-150# R.F.x60-150# R.F. A.G.W. 1" 1/2F2 JLT-JOS-E-15-N2-J SET @ 1034 kPag BLOCKED FLOW ORIFICE = 7.8mm MAX = 575 m3/D
PSV 4001: 27x33 NPT A.G.W. 951101MA SET @ 1034 kPag LIQUID EXPANSION ORIFICE = 1.9 mm MAX = 51 m3/d
PSV 10109: 33-150# R.F.x60-150# R.F. A.G.W. 1D2 JLT-JOS-E-15-J SET @ 1724 kPag BLOCKED FLOW ORIFICE = 2.8mm MAX = 885 kG/HR

ESDV 9: *60BA-301SY c/w MORIN ACTUATOR MODEL #MRP-037U-T-S080 (F.C.)
ESDV 4: *89BA-301SY c/w MORIN ACTUATOR MODEL #MRP-070U-T-S080 (F.C.)
ESDV 10101: 60BA-601X c/w MORIN ACTUATOR MODEL #MRP-045U-T-S080 (F.C.)
PCV 10102: 60-600# FISHER D BODY c/w 667 ACTUATOR c/w 33ø PORT AND POSITIONER (F.C.)
TCV 4002: 60-150# RF FISHER V200 c/w 1052-20 ACTUATOR (F.O.)
LCV 10107: 60 NPT FISHER D4 1/2' MICROFORM TRIM F.C.

SY 9: FISHER 67 CFR; ASCO EF8320G202-24
SY 4: FISHER 67 CFR; ASCO EF8320G202-24
SY 10101: ASCO EF8320G202-24
PY 10102: FISHER DVC546
TY 4002: FISHER DVC546
LG 10108: DANIEL 91TL

SDY-9 S.S. TUBING C.S. PIPE
SDY-4 S.S. TUBING C.S. PIPE
PCV-10102 S.S. TUBING C.S. PIPE
TCV-4002 S.S. TUBING C.S. PIPE
LC-10107 S.S. TUBING C.S. PIPE
SDY-10101 S.S. TUBING C.S. PIPE

PSDH PAH PAL PI 6: ROSEMOUNT 2088G3S22A1S15M5C6 c/w 119WDA95ARTW40CAA7
PT 6
PI 5
0-0.3m3/hr DWYER RMB-50-SSV 14 NPT 27BA-153SX
FE 10111 FI 10111: FISHER 627
FT 10110 FE 10110: ROSEMOUNT 3095 MVS; 89-150# SENIOR
FI PI TI 10110: ROSEMOUNT 3144
PT 10104: ROSEMOUNT 2088G3S22A1S5M5C6 c/w 0306RT2BA11SG
PI 10103
LC 10107: 60 NPT FISHER L2
TW 10105 TI 10105
PI 10100 PSH 10113 PSDH 10113 PI 10112
AE AT 1011 LEL DETECTION LSDH LAH 1011 1011
AE AT 1012 LEL DETECTION LSDH LAH 1012 1012
AE AT 1013 H2S DETECTION LSDH LAH 1013 1013
AE AT 1014 H2S DETECTION LSDH LAH 1014 1014
TSDH TC TAH TI 4002 4002 4002 4002
TT 4002 TW 4002
TI 7 TW 7
PI 24 TW 25 TI 25 PI 27 TI 26 TW 26 dPI 32 PI 4006 TW 4003 TI 4003

ZSOA 29 ZSO 29: PROXIMITY SWITCH WESTLOCK SILVER MODEL

EXF 1011 HIGH FAN
EXF 1012 LOW FAN

114-150PSX-260 PLANT FLARE HEADER SHEET 5 OF 27
33-150PSX-298 POP HEADER TO STORAGE SHEET 13 OF 27
60-150PSX-291 POP HEADER TO STORAGE SHEET 13 OF 27
33-150IAX-337 INSTRUMENT AIR SHEET 26 OF 27
60-150UX-371 GLYCOL RETURN TO HEADER SHEET 23 OF 27
60-150PSX-242 TO T-700 SLOP TANK SHEET 7 OF 27
89-150PSX-127 FROM P-500 DISCHARGE SHEET 16 OF 27
114-150PSY-101 BITUMEN TO H.T. SEPARATOR SHEET 5 OF 27
33-300PY-236 H.P. STEAM FROM W/H STEAM HDR SHEET 22 OF 27
89-150PX-302 FUEL GAS HEADER SHEET 26 OF 27
33-150PX-333 33ø
60-150PX-151 DILUENT SUPPLY SHEET 4 OF 27
33BA-153X (ON RACK) DILUENT SUPPLY TO LAB SKID
60-150PSX-135 SLOP HEADER TO STORAGE SHEET 5 OF 27

89-150# STATIC MIXER
SHOP INSTALL
27ø TUBING

SHEET NUMBER	DRAWING NUMBER	REV
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P-505
DILUENT SUPPLY PUMP
BLACKMER ROTARY PUMP
MODEL # XRL1.25A c/w INTERNAL RELIEF VALVE
RATED FOR 50M³/D @ 1000 kPa
3/60/600 2 H.P. @ 1150 RPM X.P. MOTOR, VFD

T-707
DILUENT STORAGE TANK
3658 O.D.x HIGH 6096
64m³(400 bbl)
SERIAL # 1170

T-708
DILUENT STORAGE TANK
3658 O.D.x HIGH 6096
64m³(400 bbl)
SERIAL # 1171

PSHA 7074
PT 7074
SET @ 8.4" W.C. 5 oz
(PLUGGED)
21BA-153SX (PLUGGED)
SLOPE (DO NOT POCKET)
25H&ET
PRV 7076
89-150# ENARDO 830-PSO SET 6 oz.
60ø TRUCK QUICK CONNECT (ACID WASH)
60BA-153SX (N.C.)
SLOPE (DO NOT POCKET)
114-150SPSX-270
VRU HEADER
SHEET 7 OF 27
33 NPT FISHER 627
PRV 7077
33CH-153SX
33BA-153SX
PRV 7075
33 FNPT VACU-GUARD #10784
150PSX
150PX
33-150PX-325
MAKE UP GAS FROM F.G. HDR.
SHEET 26 OF 27
89-150SPSX-277
89-150SPSX-278
150SPSX
150PX
89BA-155SX (DB&B;CSO)
33BA-153SX
8-12 oz PRESSURE/0.4 VAC. THIEF HATCH

LSDHH 7073
LSH 7073
5930 mm
60 NPT NORRISEAL 1001A-2SM60NELD
LSDLL 7072
LSL 7072
200 mm
60 NPT NORRISEAL 1001A-2SM60MELR
610x1219 M/W
114x89
89BA-151X
33BA-153X
89-150PX-146
LG 7071
TW 7070
TI 7070
114x60
60BA-151X
89ø
114ø TYP.3
33ø
89BA-151X c/w TRUCK QUICK CONNECT

LSDHH 7083
LSH 7083
LSDLL 7082
LSL 7082
LG 7081
TW 7080
TI 7080
89-150PX-147

89-150PX-145
FROM TRUCK UNLOAD AREA
SHEET 12 OF 27

60-150PX-148
60-150PX-149
60-150PX-150

SKID LIMITS
LOCATED IN VRU/RECYCLE/SKIM BUILDING
27x60 HALLIBURTON EZ-IN c/w MCII+ TOTALIZER
FQI 5052
FIR 5052
FT 5052
FE 5052
PI 5051
HS 5050
21BA-153X (BLEED)
60BA-151X
60-150PX-151
DILUENT SUPPLY
SHEET 3 OF 27
21BA-153X
60BA-60x42 151X
60x42
P-505
60CH-151SX
60BA-151SX
60-150CPSX-152
DILUENT TO P-500
SHEET 16 OF 27
150PX
150CPSX
60-150# BASKET STRAINER C/W 33BA-153X DRAIN

SHEET NUMBER	DRAWING NUMBER	REV
4 OF 27	F-33359-F-00-01	13

P-515
DRAIN PUMP
SANDPIPER PNEUMATIC
DBL. DIAPHRAGM

V-100
HIGH TEMPERATURE SEPARATOR
KVAERNER MODEL # HTS-825-0.00
2438 I.D. x 7620 S/S
DESIGN : 827 kPa @ 165°C
C.A. : 1.6 mm

114-150PSX-260
PLANT FLARE HEADER
SHEET 3 OF 27

114-150PSX-260
PLANT FLARE HEADER
SHEET 15 OF 27

SKID LIMITS

33-600PX-331
PURGE GAS FROM INLET SKID
SHEET 3 OF 27

33 NPT PRV 10002
33BA-603X
33BA-603X
33GL-603X
33BA-153SY
33x21
21CH
21ø TUBING
21GL
600PX-150PSY
C.S. PIPE TUBING
33CH-153SY
33ø TOL (TYP.)
TI 10000 TW 10000
25 H
*114BA-151SY (DB&B;C.S.O.)
33BA-153SY

PR 10009 FR 10009 FE 10009
60x33
I/A
21NE FISHER 67 CFR
PC 10010 FISHER 4150R
33BA-153SX
27BA-153SX
(S.R.)
PCV 10010 FISHER V200 c/w F.C. ACTUATOR
60-150PSX-264 (GAS OUT)

89-150# R.F.x114-150# R.F.
FARRIS 26LA10-120
SET @ 827 kPag
BLOCKED FLOW
ORIFICE = 80.5mm
MAX = TBA kG/HR
PSV 10001
168x114
(TO POP HEADER)
168-150PSX-292
POP HEADER TO STORAGE
SHEET 13 OF 27

PI 10003
CCS 646GZE11-7011 795 kPag
PSH 10007
PSDHH PAHH 10007,10007
60BA-151SX
168-150#
60BA-151SX

DRAIN PUMP
TC-4020
TC-4010
SDY-10011
SDY-10022
LC-10008
S.S. TUBING C.S. PIPE
FISHER L2
LC 10008
21NE FISHER 67 CFR
INSTRUMENT SIGNAL TO LCV-10008
SHEET 6 OF 27
33BA-153X
33-150IAX-338
INSTRUMENT AIR
SHEET 26 OF 27

MAJOR 687-SF-4A-IN
LAHH 10006
LSH 10006
INLET DEFLECTOR
TI 10004 TW 10004
V-100
MATRIX PACK
DIFFUSION PANEL
DIFFUSION PANEL
DIFFUSION PANEL
TRANSVERSE BAFFLE
SAMPLE 33BA-153SX TYP.8 (LOCATED OFF HEAD OF VESSEL)
33BA-153SX S.R.
33-150PSX-204
SAMPLE DRAINS TO E-405 COOLER
SHEET 6 OF 27

89x60
AGAR PROBE 1D201/N7/420
LT 10005
LIR 10005 LC 10005
33BA-153SX (F.P.) TYP.3
O/S ONLY 25H&GT
60-150PSY-103
OIL TO E-401 A/B EXCH.
SHEET 6 OF 27

25 H

114-150PSY-101
BITUMEN FROM HEAT EXCHANGER
SHEET 3 OF 27

610ø MANWAY QTY. 2
SAMPLE BOX
ANODE TYP.8
SAND DAM
50 H
INTERNAL SPRAY NOZZLE FOR AGAR PROBE
33BA-153SX
89-150PSY-155
(WATER OUT)
33ø-TOL FUTURE INJECTION FIELD INSTALL
89BA-151SX (DB&B)

60BA-151SX
33BA-153SX
60BA-151SX (TYP.) (DB&B)
60PL-151SX (TYP.)
60BA-151SX (TYP.) (DB&B)
89BA-151SX (DB&B)
60BA-151SX (DB&B)

33CH-153SX
33BA-153SX
(FLOOR DRAIN)
P-515
SY 10011
SY 10011
21NE FISHER 67 CFR
PRV 10013
33CH-153SX
33BA-153SX
60-150PSX-203

60ø-150# (WASH WATER)
60ø-150# (DESAND DRAIN)
60ø-150# (WASH WATER)
60ø-150# (DESAND DRAIN)
60ø-150# (WASH WATER)
60ø-150# (DESAND DRAIN)
89-150PSX-202 (DESLUDGE)
60-150PSX-201 (VESSEL DRAIN)
33ø-150#

KVAERNER SKID PACKAGE CONTINUED ON SHEET 6
KVAERNER SKID
KVAERNER SKID PACKAGE

O/S ONLY 25H&GT
89-150PSY-155
WATER TO E-402 A/B EXCH.
SHEET 6 OF 27

33-150PSX-205
SAMPLE DRAIN FROM E-405
SHEET 6 OF 27

27BA-153SX
PI 10014
21BA-153SX
33BA-153SX
25 H
89-150SPSX-195
DESAND DRAIN TO STORAGE
SHEET 9 OF 27

QUICK CONNECT
89BA-151SX
(TRUCK WASH)
O/S ONLY 25H&ET
89-150PSX-191
89CH-151SX 89BA-151SX
89-150PSX-191
WASH WATER FROM HEADER
SHEET 17 OF 27

89GL-151SX
60ø CLEAN-OUT
QUICK CONNECT
89BA-151SX
(DESAND TRUCK-OUT)
25 H
89-150SPSX-197
89PL-151SX
89BA-151SX

QUICK CONNECT
89BA-151SX
(OIL TRUCK-OUT)
25 H
89-150PSX-200
89BA-151SX
89x60

SKID LIMITS

60-150PSX-135
SLOP HEADER TO STORAGE
SHEET 3 OF 27

60-150PSX-135
SLOP HEADER TO STORAGE
SHEET 7 OF 27

SHEET NUMBER	DRAWING NUMBER	REV
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E-401 A/B
OIL DUMP EXCHANGER
TYPE : NFN SHELL & TUBE
SIZE : 584ø x 4267 TS/TS (TBC)
DESIGN : TUBESHEET 827 kPa @ 165°C
SHELLSIDE 827 kPa @ 165°C
DUTY : 0.73 MM BTU/HR

E-402 A/B
WATER DUMP EXCHANGER
TYPE : NFN SHELL & TUBE
SIZE : 381ø x 4267 TS/TS (TBC)
DESIGN : TUBESHEET 827 kPa @ 165°C
SHELLSIDE 827 kPa @ 165°C
DUTY : 3.98 MM BTU/HR

E-405
SAMPLE LINE COOLER
SENTRY MODEL FLF-6225 U

SKID LIMITS

27 NPTx33 NPT LIQUID EXPANSION SET @ 827 kPag — PSV 4013 — 33-150UX-368

TC 4010 — TY 4010 — FISHER DVC5020 I/P — TI 4012 — TW 4012 — I/A — 21NE — FISHER 67 CFR

AE 1001 — AT 1001 — LEL DETECTION — LSDH 1001 — LAH 1001

AE 1002 — AT 1002 — H2S DETECTION — LSDH 1002 — LAH 1002

HIGH FAN — EXF 1001 — EXF 1002 — LOW FAN

CAUSTIC WASH CONNECTION — *60BA-151SY — *60BA-155SY (DB&B;C.S.O.) — 60-150UX-365 — 60BA-151X — 89x60 — 25 H — 89-150UX-365 GLYCOL RETURN TO HEADER SHEET 23 OF 27

27GA-153X — 60x33 — TCV 4010 — 60x33

*27BA-153SY — 60BA-155X (DB&B;CSO) — 60GL-151X

O/S ONLY 25H&GT

EXCHANGERS LOCATED OUTSIDE

E-401 A — 50 H

89-150UX-361 GLYCOL SUPPLY FROM HEADER SHEET 23 OF 27

60-150PSY-103 OIL FROM V-100 OUTLET SHEET 5 OF 27

*60BA-151SY CAUSTIC WASH CONNECTION — *60BA-151SY (DB&B; C.S.C.) — 60BA-155X (DB&B;CSO)

INSTRUMENT SIGNAL FROM LC-10008 SHEET 5 OF 27

60BA-151SX (DB&B;C.S.C.) — 60BA-151SX CAUSTIC WASH CONNECTION

E-401 B — 50 H

dPI 4014

TSDH 4010 — TAH 4010 — TC 4010 — TIR 4010 — TT 4010 — ROSEMOUNT

33CH-153SX — 33BA-153SX

33x60 HALLIBURTON EZ-IN c/w MCII+ TOTALIZER — 33-150# RF FISHER 8560-1052 F.C.

PI 10021 — TI 10015 — TW 10015 — FIR 10018 — FT 10018 — FQI 10018 — FE 10018 — LCV 10008

60BA-155SX (DB&B;C.S.O.) — TW 4011 — TI 4011 — 60BA-155X (DB&B;C.S.C.)

60-150UX-362

60BA-151SX CAUSTIC WASH CONNECTION — 60BA-155SX (DB&B;C.S.C.) — O/S ONLY 25H&GT — 60-150PSX-104 — 89x60 — 21BA-153X — (C.C.) 33BA-153SX — 60x33 — 60CH-151SX — 60BA-151SX (DB&B)

27BA-153SX

27 NPTx33 NPT LIQUID EXPANSION SET @ 827 kPag — PSV 4023 — 33-150UX-369

TC 4020 — TY 4020 — FISHER DVC5020 I/P — TI 4022 — TW 4022 — I/A — 21NE — FISHER 67 CFR

33-150UX-367

*60BA-151SY CAUSTIC WASH CONNECTION — *89BA-155SY (DB&B;C.S.O.) — 89-150UX-366 — 89BA-151SX — 89x60 — 89x60 — 89BA-151SX

89-150PSY-155 WATER FROM V-100 OUTLET SHEET 5 OF 27 — O/S ONLY 25H&GT

*27BA-153SY — 89BA-151SX (DB&B;CSO) — 27GA-153SX — TCV 4020

33-150UX-364 — 33GA-153SX — 33GL-153SX

*89BA-155SY (DB&B; C.S.C.) — 60GL-151X

E-405 LOCATED BY SAMPLE BOX

33-150PSX-205 SAMPLE DRAIN TO SAMPLE BOX SHEET 5 OF 27

*60BA-151SY CAUSTIC WASH CONNECTION — 89BA-155X (DB&B;CSO)

89BA-155SX (DB&B;C.S.C.)

E-402 A — 50 H

E-402 B — 50 H

60BA-151SX CAUSTIC WASH CONNECTION — 89BA-155SX (DB&B;C.S.O.) — TW 4021 — TI 4021 — 89BA-155X (DB&B;C.S.C.)

89-150UX-363

60BA-151SX CAUSTIC WASH CONNECTION — 89BA-155SX (DB&B;C.S.C.) — O/S ONLY 25H&GT

27BA-153SX

TSDH 4020 — TAH 4020 — TC 4020 — TIR 4020 — TT 4020 — ROSEMOUNT

PI 10022 — TI 10019 — TW 10019 — 21BA-153X

LC 10005 — SY 10005 — LY 10005 — I/A — 21NE — FISHER 67 CFR — 48x60 HALLIBURTON EZ-IN c/w MCII+ TOTALIZER — FIR 10020 — FT 10020 — FQI 10020 — FE 10020 — F.C. LCV 10005

89BA-151SX — 33BA-153SX — 89x60 — 89CH-151SX — 89BA-151SX (DB&B) — 89x60 — 33BA-153SX

60GL-151SX — 60BA-151SX (DB&B)

FROM P-522/527 POLYMER/WATER D-33359-F-00-10

27CH-153SX — 27BA-153SX c/w QUILL — FUTURE TIE-IN FOR TORR FILTER — 60BA-151SX — 89-150PSX-156 WATER TO STORAGE SHEET 10 OF 27

89GL-151SX — 25H&ET O/S ONLY

33-150PSX-204 SAMPLE DRAINS FROM V-100 SHEET 6 OF 27 — 25 H

60-150PSX-106 OIL TO STORAGE SHEET 7 OF 27

SKID LIMITS

KVAERNER SKID PACKAGE CONTINUED ON SHEET 5

KVAERNER SKID PACKAGE

O/S ONLY 25H&GT

SHEET NUMBER	DRAWING NUMBER	REV
6 OF 27	F-33359-F-00-01	13

T-700
OIL SLOP TANK
4648 O.D. x 7315 HIGH
119m³ (750bbl)
SERIAL # 1079

114-150SPSX-270
VRU HEADER
SHEET 4 OF 27

SLOPE (DO NOT POCKET)

25H&ET

114-150SPSX-270
VRU HEADER
SHEET 8 OF 27

25H&ET

114-150SPSX-279

LAH 70001 LAL 70001 LIR 70001
LT 70001 4-20 ma GML FLUID LEVEL TRANSMITTER

89-150# BLIND

PRESSURE RELIEF HATCH - TBA

8-12 oz PRESSURE/0.4 VAC. THIEF HATCH

LSDH 70002

LSH 70002 7149mm

60 NPT NORRISEAL 1001A-2SM60NELD

T-700

50 H

33-150PX-309

SY 70004 ASCO EF8320 G202-24

FISHER 67 CFR

KIMRAY T12

TC 70003

TI 70003

TW 70003

TSHH 70004

KIMRAY 112 SMT

PRV 70006

PI 70005

SDV 70004

21NE

33BA-153X

PI 70011

TCV 70003

PI 70007

KIMRAY T12

21BA-153X

21CH-153X

PILOT GAS

21x14

BE 70010

BZ 70010

FFSD 70015

25H&ET O/S UTILIDOR

60-150PSX-411

33-150PX-308
FUEL GAS FROM HEADER
SHEET 26 OF 27

33BA-153SX (S.R.) (TYP.5)

33x21

SAMPLE BOX

150PX

150PSX

21CH-153SX

21BA-153SX (S.R.)

60CH-153SX

60BA-153SX (S.R.)

BLOW CASE

219ø x 900 LG.

60BA-153SX

60CH-153SX

27BA-153SX

114BA-155SX (DB&B) C.S.O.

33BA-153SX (DRAIN/PURGE GAS)

610x914 M/W SPLIT

TBA mm

LSL 70000

LSDL 70000

60 NPT NORRISEAL 1001A-2SM60MELR

89BA-151SX c/w TRUCK QUICK CONNECT

33BA-153SX

33BA-153SX

33BA-153SX

FISHER 912

PRV 70008

SY 70009 ASCO EF8320G202-24

TAH 70013

TSH 70013

CCS 6900TUE16 SET 95°C

60CH-151SX

60BA-155SX (DB&B)

89CH-151SX

89BA-155SX (DB&B)

114BA-155SX (DB&B)

89CH-151SX

89BA-155SX (DB&B)

BCS 70012

NAGY FQI-100 BURNER CONTROL SYSTEM

60-150PSX-136

60-150PSX-107

89-150PSX-134

114-150PSX-122

89-150PSX-167

25H&ET O/S UTILIDOR ONLY

33-150PSX-137
P-525 PUMP DISCHARGE
SHEET 25 OF 27
25 H O/S UTILIDOR ONLY

60-150PSX-144
OIL FROM IGF SKID
SHEET 11 OF 27

60-150PSX-242
FROM BITUMEN INLET LINE
SHEET 3 OF 27
25 H

60-150PSX-401
FROM P-512 DISCHARGE
SHEET 25 OF 27

60-150PSX-106
OIL FROM V-100 OIL DUMP
SHEET 6 OF 27

60-150PSX-135
SLOP HEADER TO STORAGE
SHEET 5 OF 27

FUTURE TIE-IN FROM TORR FILTER
60BA-151SX

114-150PSX-121
OIL RECYCLE HEADER
SHEET 8 OF 27

89-150PSX-128
OIL TRANSFER TO STORAGE
SHEET 8 OF 27

60-150PSX-106
OIL TO STORAGE TANKS
SHEET 8 OF 27

89-150PSX-167
V-102 OIL TO T-700
SHEET 14 OF 27

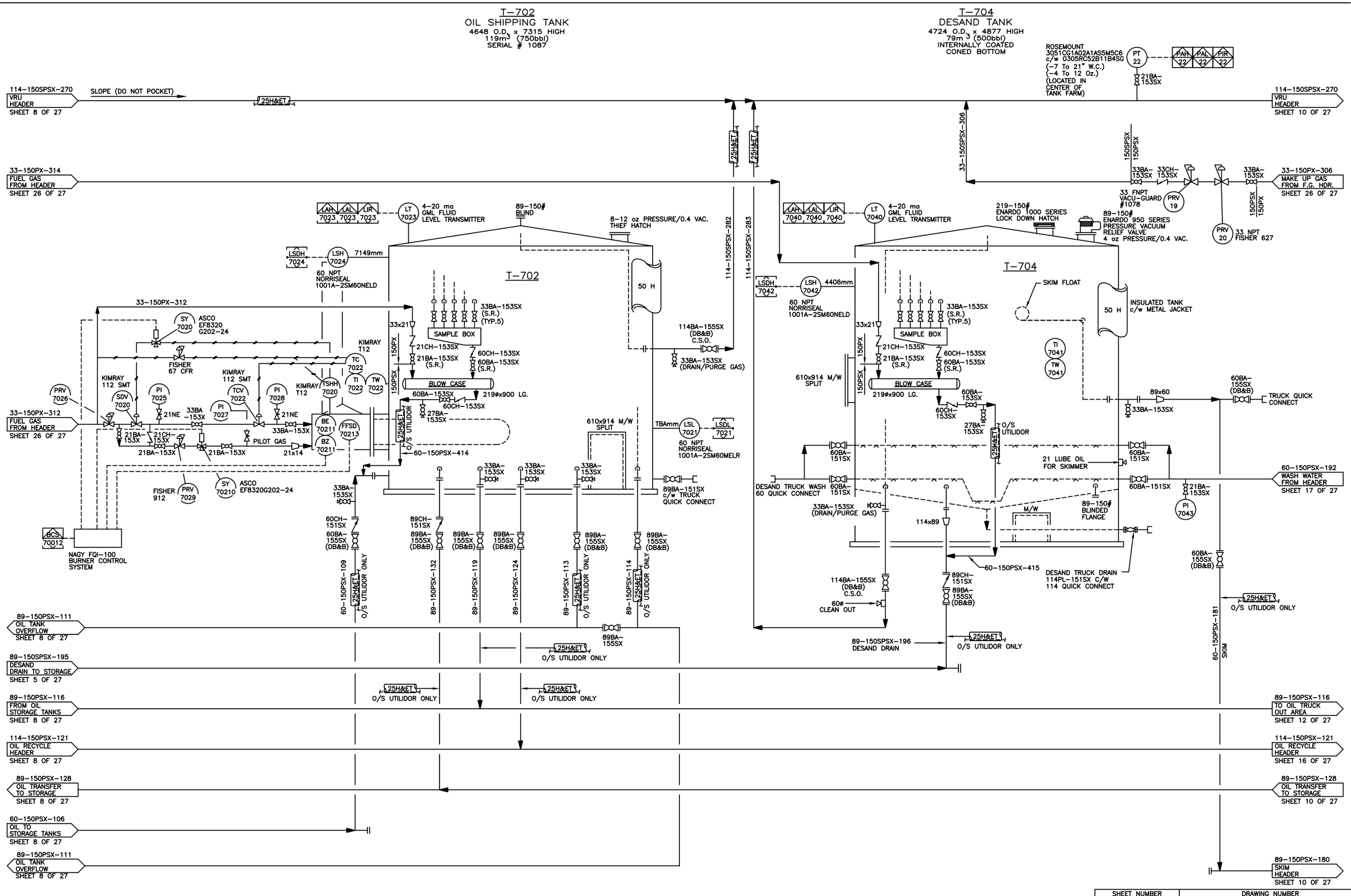
SHEET NUMBER	DRAWING NUMBER	REV
7 OF 27	F-33359-F-00-01	13

T-701
OIL PRODUCTION TANK
4648 O.D. x 7315 HIGH
119m3 (750bbl)
SERIAL # 1089

T-703
OIL SHIPPING TANK
4648 O.D. x 7315 HIGH
119m3 (750bbl)
SERIAL # 1088

114-150SPSX-270 VRU HEADER SHEET 4 OF 27
SLOPE (DO NOT POCKET)
25H&ET
114-150SPSX-270 VRU HEADER SHEET 9 OF 27
33-150PX-310 FUEL GAS FROM HEADER SHEET 26 OF 27
33-150PX-311
114-150SPSX-280
114-150SPSX-281
LAH 70101 LAL 70101 LIR 70101
LT 70101 4-20 ma GML FLUID LEVEL TRANSMITTER
89-150# BLIND
8-12 oz PRESSURE/0.4 VAC. THIEF HATCH
LSDH 70102
LSH 70102 7149mm
60 NPT NORRISEAL 1001A-2SM60NELD
50 H
T-701
SY 70104 ASCO EF8320 G202-24
FISHER 67 CFR
KIMRAY T12
TC 70103
KIMRAY 112 SMT
TCV 70113
PI 70105
PI 70107
PI 70111
SDV 70104
TSHH 70104
TI 70103
TW 70103
PRV 70106
21BA-153X
21NE
33BA-153X
21CH-153X
21BA-153X
PILOT GAS
21x14
BE 70110
BZ 70110
FFSD 70114
FISHER 912
PRV 70108
SY 70109 ASCO EF8320G202-24
BCS 70112
NAGY FQI-100 BURNER CONTROL SYSTEM
33BA-153SX (SPRING RET.) (TYP.5)
SAMPLE BOX
33x21
150PX
150PSX
21CH-153SX
21BA-153SX (S.R.)
60CH-153SX
60BA-153SX (S.R.)
BLOW CASE
60BA-153SX
219øx900 LG.
60CH-153SX
27BA-153SX
27ø
60-150PSX-412
25H&ET
O/S UTILIDOR
114BA-155SX (DB&B) C.S.O.
33BA-153SX (DRAIN/PURGE GAS)
610x914 M/W SPLIT
TBAmm
LSL 70100
LSDL 70100
60 NPT NORRISEAL 1001A-2SM60MELR
89BA-151SX c/w TRUCK QUICK CONNECT
33BA-153SX
60CH-151SX
60BA-155SX (DB&B)
89CH-151SX
89BA-155SX (DB&B)
60-150PSX-108
89-150PSX-133
89-150PSX-118
89-150PSX-123
89-150PSX-112
O/S UTILIDOR ONLY
T-703
LAH 7023 LAL 7023 LIR 7023
LT 7033 4-20 ma GML FLUID LEVEL TRANSMITTER
89-150# BLIND
8-12 oz PRESSURE/0.4 VAC. THIEF HATCH
LSDH 7034
LSH 7034 7149mm
60 NPT NORRISEAL 1001A-2SM60NELD
50 H
33-150PX-313
SAMPLE BOX
33BA-153SX (S.R.) (TYP.5)
21CH-153SX
21BA-153SX (S.R.)
60CH-153SX
60BA-153SX (S.R.)
BLOW CASE
60BA-153SX
219øx900 LG.
60CH-153SX
27BA-153SX
60-150PSX-413
25H&ET
O/S UTILIDOR
114BA-155SX (DB&B) C.S.O.
33BA-153SX (DRAIN/PURGE GAS)
TI 7032
TW 7032
610x914 M/W SPLIT
TBAmm
LSL 7031
LSDL 7031
60 NPT NORRISEAL 1001A-2SM60MELR
89BA-151SX c/w TRUCK QUICK CONNECT
89-150# BLIND
33BA-153SX
60CH-151SX
60BA-155SX (DB&B)
89CH-151SX
89BA-155SX (DB&B)
60-150PSX-110
89-150PSX-131
89-150PSX-120
89-150PSX-125
89-150PSX-115
O/S UTILIDOR ONLY
89-150PSX-111 OIL TANK OVERFLOW SHEET 9 OF 27
89-150PSX-116 TO OIL TRUCK OUT AREA SHEET 9 OF 27
114-150PSX-121 OIL RECYCLE HEADER SHEET 7 OF 27
114-150PSX-121 OIL RECYCLE HEADER SHEET 9 OF 27
89-150PSX-128 OIL TRANSFER TO STORAGE SHEET 7 OF 27
89-150PSX-128 OIL TRANSFER TO STORAGE SHEET 9 OF 27
60-150PSX-106 OIL TO STORAGE TANKS SHEET 7 OF 27
60-150PSX-106 OIL TO STORAGE TANKS SHEET 9 OF 27
89-150PSX-111 OIL TANK OVERFLOW SHEET 9 OF 27

SHEET NUMBER	DRAWING NUMBER	REV
8 OF 27	F-33359-F-00-01	13



SHEET NUMBER	DRAWING NUMBER	REV
9 OF 27	F-33359-F-00-01	13

T-705
SKIM TANK
6553 O.D. x 7315 HIGH
238m³(1500 bbl)
INTERNALLY COATED

T-706
PRODUCED WATER STORAGE TANK
6553 O.D. x 7315 HIGH
238m³(1500 bbl)
INTERNALLY COATED

114-150SPSX-270
VRU HEADER
SHEET 9 OF 27

SLOPE (DO NOT POCKET)

25H&ET

33-150PX-315
FUEL GAS FROM HEADER
SHEET 26 OF 27

33-150PX-316

LC 7050 | LAH 7050 | LAL 7050 | LIR 7050

LT 7050 4-20 ma GML FLUID LEVEL TRANSMITTER

219-150# ENARDO 1000 SERIES LOCK DOWN HATCH

89-150# ENARDO 950 SERIES PRESSURE VACUUM RELIEF VALVE 4 oz PRESSURE/0.4 VAC.

60 NPT NORRISEAL 1001A-2SM60NELD

LSDH 7051 | LSH 7051 7149mm

T-705

33-150PX-315

33x21

33BA-153SX (S.R.) (TYP.5)

SAMPLE BOX

150PX | 150PSX

21CH-153SX

21BA-153SX (S.R.)

60CH-153SX

60BA-153SX (S.R.)

BLOW CASE

219ø x 900 LG.

60BA-153SX

60CH-153SX

60-150PSX-416

25H&ET O/S UTILIDOR

27BA-153SX

60 NPT NORRISEAL 1001A-2SM60MELR

LSDL 7052 | LSL 7052 1194mm

SKIM FLOAT

50 H INSULATED TANK c/w METAL JACKET

114-150SPSX-284

25H&ET

60ø CLEAN OUT

114BA-155SX (DB&B) C.S.O.

33BA-153SX (DRAIN/PURGE GAS)

60-150# BLINDED FLANGE

21 LUBE OIL FOR SKIMMER

89BA-151SX c/w TRUCK QUICK CONNECT

TI 7053 | TW 7053

610x914 M/W SPLIT

CCS 6900TUE16 SET 95°C

TAH 7054 | TSH 7054

114x89

33BA-153SX

89CH-151SX

89BA-155SX (DB&B;CSO)

60BA-155SX (DB&B)

33BA-153SX

89CH-151SX

89BA-155SX (DB&B)

89BA-155SX (DB&B)

114BA-155SX (DB&B)

60BA-155SX (DB&B)

114BA-155SX (DB&B)

89x60

114-150PSX-159 (OVERFLOW)

25H&ET O/S UTILIDOR ONLY

89-150PSX-157

60-150PSX-182

89-150PSX-130

114-150PSX-175

60-150PSX-183

114-150PSX-161

89-150PSX-158

60-150PSX-184

114-150PSX-176

60-150PSX-185

114-150PSX-162

T-706

114-150SPSX-270
VRU HEADER
SHEET 12 OF 27

LC 7060 | LAH 7060 | LAL 7060 | LIR 7060

LT 7060 4-20 ma GML FLUID LEVEL TRANSMITTER

219-150# ENARDO 1000 SERIES LOCK DOWN HATCH

89-150# ENARDO 950 SERIES PRESSURE VACUUM RELIEF VALVE 4 oz PRESSURE/0.4 VAC.

60 NPT NORRISEAL 1001A-2SM60NERD

LSDH 7061 | LSH 7061 7149mm

33BA-153SX (S.R.) (TYP.5)

SAMPLE BOX

33x21

150PX | 150PSX

21BA-153SX (S.R.)

60CH-153SX

60BA-153SX (S.R.)

BLOW CASE

219ø x 900 LG.

60BA-153SX

60CH-153SX

25H&ET O/S UTILIDOR

27BA-153SX

60-150PSX-417

60 NPT NORRISEAL 1001A-2SM60NERR

LSDL 7062 | LSL 7062 1194mm

SKIM FLOAT

50 H INSULATED TANK c/w METAL JACKET

114-150SPSX-285

25 H&T

TI 7063 | TW 7063

33BA-153SX (DRAIN/PURGE GAS)

114BA-155SX (DB&B) C.S.O.

60-150# BLINDED FLANGE

21 LUBE OIL FOR SKIMMER

89BA-151SX c/w TRUCK QUICK CONNECT

610x914 M/W SPLIT

114x89

33BA-153SX

89CH-151SX

89BA-155SX (DB&B)

89x60

60CH-151SX

33BA-153SX

114BA-155SX (DB&B)

60BA-155SX (DB&B)

114BA-155SX (DB&B)

89BA-155SX (DB&B)

60BA-155SX (DB&B)

89x60

25H&ET O/S UTILIDOR ONLY

33BA-153SX (DRAIN)

89CH-151SX

89BA-155SX (DB&B)

25H&ET O/S UTILIDOR ONLY

60-150PSX-142
WATER FROM IGF SKID
SHEET 11 OF 27

60-150PSX-266
DISCHARGE FROM FROM P-509
SHEET 27 OF 27

60-150PSX-207
FROM P-502 DISCHARGE
SHEET 15 OF 27

60-150PSX-172
PUMP RECYCLE FROM P-503
SHEET 17 OF 27

60-150PSX-223
FROM WATER SOFTENER DRAIN
SHEET 19 OF 27

89-150PSX-139
WATER TO IGF SKID
SHEET 11 OF 27

89-150PSX-156
WATER TO STORAGE
SHEET 6 OF 27

114-150PSX-174
WATER TO P-504 WASH WATER PUMP
SHEET 17 OF 27

89-150PSX-128
OIL TRANSFER TO STORAGE
SHEET 9 OF 27

89-150PSX-128
OIL TRANSFER FROM P-500
SHEET 16 OF 27

21ø
PUSH WATER TO CHEMICAL SKID
D-33359-F-00-10

114-150PSX-160
P-507 PUMP SUCTION
SHEET 14 OF 27

89-150PSX-180
SKIM HEADER
SHEET 9 OF 27

89-150PSX-180
SKIM HEADER
SHEET 16 OF 27

SHEET NUMBER	DRAWING NUMBER	REV
10 OF 27	F-33359-F-00-01	13

P–516
IGF FEED PUMP
DEAN HORIZONTAL MODEL#pH2110
1.5x3x6 c/w
1 HP 1750 RPM 3/60/600 TEFC MOTOR

V–107
FLOATATION CELL
1067 I.D. x 1829 T/T
DESIGN : 34 kPa @ 65°C
OPERATING : 4 Oz @ 65°C
WATER RATE : 70 GPM

P–517A/B
IGF DISCHARGE/RECYCLE PUMPS
3x1 1/2x6 c/w
7.5 HP 3550 RPM 3/60/575 TEFC MOTOR
110 GPM @ 310 kPag

P–518A/B
IGF SKIMMED OIL PUMPS
1 1/2x1x6 c/w
3 HP 1800 RPM 3/60/575 TEFC MOTOR
50 GPM @ 138 kPag

SKID LIMITS

UNICEL IGF SKID LIMITS

IGF SKID

33–150PX–330
MAKE–UP GAS
SHEET 26 OF 27

33–150IAX–345
INSTRUMENT AIR
SHEET 26 OF 27

SHOP RUN

SUPPLIED BY DCEL / SUPPLIED BY UNICEL

IGF PUMP/VALVE SEQUENCE			
TAG	NORMAL OPERATION	WAITING TO SKIM	SKIM OPERATION
P–516	ON	ON	ON
P–517	ON	ON	ON
P–518	ON/OFF	ON/OFF	ON/OFF
LCV–10708	ACTIVE	CLOSED	CLOSED
LT–10708	71%	-----	74%
FCV–10714	185 m^3/d	185 m^3/d	185 m^3/d
TIME	15 MIN.	UNTIL 74% CLEARED	10 SEC.

SY 10710 — ASCO EF8320G200
21NE — FISHER 67 CFR
ESDV 10710 — 33 NPT FISHER D2
PRV 10711 — 33 NPT FISHER Y690
PRV 10712 — 33 NPT FISHER 289H
PI 10713
406ø MANWAY
PSV 10700 — ENARDO 850–2x3x111–V12.05
114x60
25H&ET
114–150SPSX–273 — VAPOUR TO VRU SYSTEM — SHEET 15 OF 27

V–107
COALESCER
50 H

PI 10709
LSDH 10704 / LAH 10704 — LSH 10704 — KTEK MS40EX
LG 10702 — KTEK KM26
LSDL 10707 / LAL 10707 — LSL 10707 — KTEK MS40EX
LSH 10701 — KTEK MS40EX — LAH 10701
LG 10705 — KTEK KM26
LSL 10303 — KTEK MS40EX — LALL 10303 / LSDL 10303
89–150PSX–143
LT 10708 — ROSEMOUNT 3051L2
LC 10708 / LAH 10708

33–150PSX–268

HS 5183 / PI 5182 — P–518B — SHOP INSTALL
HS 5181 / PI 5180 — P–518A — SHOP INSTALL
60–150PSX–144 — OIL TO T–700 SLOP.TANK — SHEET 7 OF 27

DISPERSER
FC 10714 — FY 10714 — FIR 10714 — FT 10714 — FE 10714 — ROSEMOUNT 1151DP
FISHER 67 CFR
48x33 / 60x33 — EDUCTOR — 60x48
27BA–153SX c/w QUILL FUTURE CHEMICAL INJECTION
FCV 10714 — 60–150# FISHER 8560 1052K c/w DVC6010
21BA–153SX SAMPLE
25 H

HS 5171 / PI 5170 — P–517A — SHOP INSTALL
HS 5173 / PI 5172 — P–517B — SHOP INSTALL
89–150PSX–141

LC 10708 / LY 10708 — FISHER 67 CFR
60–150# FISHER 8560 1052K c/w DVC6010 — LCV 10708
LOCATED OFF UNICEL IGF SKID LIMITS
60–150PSX–142 — WATER TO T–706 PROD.TANK — SHEET 10 OF 27

60–150PSX–411 — SKID DRAIN TO FLOOR DRAIN HDR — SHEET 25 OF 27

ROSEMOUNT 208G3A22A1S5M5C6
PT 5162 — PSDL 5162 / PAL 5162 / PI 5162 — 21 NE
PI 5161
STAND MOUNTED

HS 5160
TO TORR FILTER
89–150PSX–140
89–150# BF 150 QR ALTA BASKET STRAINER NACE TRIM c/w 48BA–153SX (DRAIN) 21BA–153SX (VENT)
P–516
89–150PSX–139 — WATER FROM T–705 SKIM TANK — SHEET 10 OF 27

AE 1071 / AT 1071 — LEL DETECTION — LSDH 1071 / LAH 1071
AE 1072 / AT 1072 — H2S DETECTION — LSDH 1072 / LAH 1072

HIGH FAN EXF 1071
EXF 1072 LOW FAN

UNICEL IGF SKID LIMITS

SKID LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
11 OF 27	F–33359–F–00–01	13

114–150SPSX–270
VRU
HEADER
SHEET 10 OF 27

SLOPE (DO NOT POCKET)

25H&ET

114–150SPSX–270
VRU
HEADER
SHEET 15 OF 27

27BA–
153SX

25H&ET

GLYCOL FILLED FREEZE–OFF
U–TUBE CPVC/PVC
(LOCATED O/S UTILIDOR BOX)

89–150PSX–117 OIL TRUCK OUT

25H&ET

O/S UTILIDOR ONLY

89–150SPSX–287 TRUCK VAPOUR RETURN

SLOPE

89–150PX–145 DILUENT TRUCK UNLOAD

UTILIDOR BOX

89BA–
151SX

89ø TRUCK
QUICK
CONNECT

33BA–
153SX

89BA–
151SX

89ø TRUCK
QUICK
CONNECT

33BA–
153SX

89CH– 89BA–
151X 151X

89ø TRUCK
QUICK
CONNECT

33BA–
153SX

UTILIDOR BOX

TRUCK
GROUNDING

OIL TRUCK LOADING
TRUCK VAPOUR RETURN
DILUENT UNLOADING
NORTH EAST SIDE OF TANK FARM

89–150PX–145
DILUENT TO T–707
/708 STORAGE
SHEET 4 OF 27

89–150PSX–116
OIL
TRUCK–OUT
SHEET 9 OF 27

SHEET NUMBER	DRAWING NUMBER	REV
12 OF 27	F–33359–F–00–01	13

T-709
POP TANK
3658 O.D. x 3048 HIGH
32m³ (200BBL)

60-150PSX-193
WASH WATER
FROM HEADER
SHEET 17 OF 27

ZSOA 30

ZSO 30
PROXIMITY SWITCH
WESTLOCK SILVER
MODEL

60BA-151SX
(N.C.)

60CH-151SX

89x60

168x89

60-150PSX-293
FROM PSV-10204
ON ORF SKID
SHEET 14 OF 27

168x89

89x60

60-150PSX-294
FROM GLYCOL SKID
PSV-1031
SHEET 23 OF 27

33-150PSX-298
FROM PSV-28
ON INLET SKID
SHEET 3 OF 27

168-150PSX-292
FROM H.T.
SKID
SHEET 5 OF 27

60-150PSX-291
FROM PSV-3
ON INLET SKID
SHEET 3 OF 27

168-150PSX-290

219 ROOF VENT
c/w BIRDSCREEN

219-150#
ENARDO 1000 SERIES
LOCK DOWN HATCH

T-709

610x914 M/W
SPLIT

914mm

LSH 7090

LSDH 7090

60 NPT
NORRISEAL
1001A-2SM60NERD

89BA-151SX
c/w TRUCK
QUICK CONNECT

219x168

SHEET NUMBER	DRAWING NUMBER	REV
13 OF 27	F-33359-F-00-01	13

P-507
ORF FEED PUMP
DEAN 1.5 x 3 x 6 VERTICAL INLINE
MODEL # CNV 206 SERIES
RATED FOR 1090m³/D @ 190 kPa D.T. 105°C
c/w 7.5 H.P. @ 3600 RPM
3/60/600 TEFC MOTOR

V-102
ORF
HYDROMATION FDB-19P
1537 O.D x 1089 S/S
MAWP : 690 kPa @ 100°C
MDMT -29°C @ 690 kPa

60-150PSX-293
TO POP HEADER
SHEET 13 OF 27

60x33

SKID LIMITS

33-150IAX-339
INSTRUMENT AIR
SHEET 26 OF 27

33BA-153X

FCV-5074 S.S. TUBING C.S. PIPE
PCV-10201 S.S. TUBING C.S. PIPE
SDY-10202 S.S. TUBING C.S. PIPE
SDY-10203 S.S. TUBING C.S. PIPE
C.S. PIPE S.S. TUBING
SDY-10207
C.S. PIPE S.S. TUBING
SDY-10208

AE 1021 AT 1021 LEL DETECTION LSDH 1021 LAH 1021
AE 1022 AT 1022 H2S DETECTION LSDH 1022 LAH 1022

HIGH FAN EXF 1021
LOW FAN EXF 1022

89-150PSX-165 (FILTER BY PASS) 25 H

TA-102
AGITATOR
LIGHTNIN 72S5
5 HP,RPM 1747 3/60/600

TEST POINT "B" UPSTREAM OF ORF
33BA-153SX SAMPLE
33BA-153SX
HS 10210
219ø-150# INSPECTION
219x89
114-150PSX-163 (INLET)
21BA-153SX
114x89
89BA-151SX
89BA-151SX

PI 10205
21BA-153SX
27x33 NPT FARRIS 27CA23L SET @ 690 kPag LIQUID EXPANSION ORIFICE = 1.5 mm MAX = 51 m³/d
PSV 10204

30-50 kPa dP RESTRICTING ORIFICE
RO 10206
89-150# R.F. NORRISEAL RPB-250
CV 10207
EXISTING NEW
SY 10207 ASCO EF8320G202-24
FISHER 67 CFR
21NE
89-150PSX-167 (BACKWASH OUTLET)

SY 10203 ASCO EF8320G202-24
FISHER 67 CFR
21NE
CV 10203
33CH-153SX
33-150PSX-170 (GAS OUTLET)

NEW EXISTING

V-102 FILTER VALVE/PUMP SEQUENCE											
NO.	CYCLE	FLOW (m3/d)	CV 10201	CV 10202	CV 10203	CV 10207	CV 10208	MIXER	TIME	P-503	P-507
1	FILTRATION	375	O	·	O	·	·	OFF	12 HRS.	O	·
2	VENT	375	O	·	O	·	·	OFF	2 MIN.	·	O
3	AGITATION	O	·	·	·	·	O	ON	2 MIN.	·	·
4	BACKWASH #1	1090	·	·	·	O	O	ON	6 MIN.	·	O
6	DELAY ONE	O	·	·	·	·	·	ON	15 SEC.	·	·
7	DELAY TWO	O	·	·	·	·	·	OFF	15 SEC.	·	·
8	RINSE	1090	·	O	·	·	·	OFF	2 MIN.	·	O

NOTE:
O INDICATES VALVE IS OPEN;ALL OTHER VALVES ARE CLOSED
** RUN TIMES ACCORDING TO OPERATION, NOT ACTUAL.

27BA-153SX c/w QUILL FUTURE CHEMICAL INJ.
89CH-151SX
FUTURE TIE-IN TO TORR FILTER
89BA-151SX

ROSEMOUNT 208G3A22A1S5M5C6
PT 5072 PAL 5072 PI 5072
PI 5071
21BA-153SX 21NE 21BA-153SX
STAND MOUNTED
FC 5073
FY 5074
I/A 21 NE FISHER 67 CFR
HS 5070
P-507
89BA-151SX
21BA-153SX
114BA-151SX
48BA-153SX
114x89
89-150# F.F.
60x48
48-150# F.F.
25 H
89x60
114-150# BF 150 QR ALTA BASKET STRAINER
FIR 5073 FT 5073 FE 5073 FQI 5073
60 HALLIBURTON EZ-IN c/w MCII+ TOTALIZER
89-150# FISHER V200 c/w 1051-40 ACTUATOR & 3620J POSITIONER (F.C.)
FCV 5074

89-150PSX-166 (BACKWASH INLET)
89-150PSX-163
25 H

610ø MANWAY
114ø SIGHTGLASS
V-102
50 H
WEDGE WIRE CLEAN DISCHARGE PLENUM
114BA-151SX MEDIA DRAIN CONNECTION
dPAH 10209
SET @ 138 kPa
dPS 10209
21BA-153SX
33x21
33BA-153SX
TEST POINT "A" DOWNSTREAM OF ORF
89-150# R.F. NORRISEAL RPB-250
CV 10208
ASCO EF8320 G202-24 SY 10208
SY 10208
21NE FISHER 67 CFR
60BA-155SX (N.C.)
60-150PSX-169 (DRAIN)

RESTRICTING ORIFICE
RO 10200
SY 10201
114-150# R.F. NORRISEAL RPC-450
PCV 10201
FISHER 67 CFR
21NE
114BA-155SX
114CH-151SX
SY 10202
114-150PSX-164 (CLEAN WATER OUTLET)
EXISTING NEW
114-150# R.F. NORRISEAL RPC-450
CV 10202
ASCO EF8320G202-24
114x89
89-150PSX-168 (RECYCLE OUTLET)

114-150PSX-164
TO WATER DISPOSAL PUMP
SHEET 17 OF 27

25 H&T O/S UTILIDOR ONLY
13
33-150PSX-____
WATER TO VSEP PILOT PLANT
B-33359-F-00-05

114-150PSX-160
P-507 PUMP SUCTION
SHEET 10 OF 27

89-150PSX-167
V-102 OIL TO SLOP TANK T-700
SHEET 7 OF 27

SKID LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
14 OF 27	F-33359-F-00-01	13

P-502
DRAIN PUMP
TARBY BPC44-CDQ-AAA
1/2 HP @ 1750 RPM
3/60/600 X.P. MOTOR
81m /D @ 345 kPa 3

V-105
V.R.U SUCTION SCRUBBER
508 O.D. x 1600 S/S
DESIGN : 103 kPa

K-600
ROTARY BLOWER
SUTORBILT 4M
c/w 15 H.P. @ 3600 RPM
3/60/600 X.P. MOTOR
6966 STD m3/d @ 47 kPa DISCHARGE

114-150PSX-260
PLANT FLARE HEADER
SHEET 5 OF 27

114-150PSX-260
PLANT FLARE HEADER
SHEET 27 OF 27

114-150SPSX-270
VRU HEADER
SHEET 12 OF 27

SLOPE (DO NOT POCKET)

25H&ET

114-150SPSX-273
VAPOUR FROM IGF SKID
SHEET 11 OF 27

SLOPE (DO NOT POCKET)

25H&ET

60-150PSX-272

150SPSX
150PSX

SKID LIMITS

SKID LIMITS

60-150PSX-275

60BA-151SX (N.C.)

VRU/RECYCLE/SKIM BUILDING

33 x 48 NPT MERCER
SET @ 103 kPag
BLOCKED FLOW
ORIFICE = 1.5mm
MAX = 54 kg/HR
PSV 1055

48-150PSX-274

CCS DUAL SNAP
6900GE14
SET @ 130 kPa

PSH 6002
PSDH 6002
21 NE
PI 6001
HS 6000
21BA-153SX
21BA-153SX
TAH 6004
TI 6003
TSH 6004
CCS DUAL SNAP
6900TUE18
SET @ 163°C

K-600
STAND MOUNTED
21BA-153SX

SUPPLIED BY EAGLE
SUPPLIED BY DCEL

SPOOL PIECE
89x60
60CH-151SX
60BA-151SX

73-150PSX-271

SUPPLIED BY DCEL
SUPPLIED BY EAGLE

60ø SCREEN

114x60
114BA-151SX (C.S.O.)

PI 1052
PSLL 1056
PSLL 1056
21NE
21NE

V-105
TI 1051
LG 1050
LT 1053
LIR 1053
LAL 1053
LAH 1053
48 NPT MURPHY L1100
LSH 1054
LSDH 1054
27BA-153SX
27BA-153SX
33 NPT MURPHY

21BA-153SX
33BA-153SX SUPPLIED BY EAGLE
SUPPLIED BY DCEL

AE 5001
AT 5001
LEL DETECTION
LSDH 5001
LAH 5001

AE 5002
AT 5002
LEL DETECTION
LSDH 5002
LAH 5002

AE 5003
AT 5003
H2S DETECTION
LSDH 5003
LAH 5003

AE 5004
AT 5004
H2S DETECTION
LSDH 5004
LAH 5004

HIGH FAN
EXF 5001
EXF 5002
LOW FAN

27x33 NPT A.G.W.
951171MD
SET @ 690 kPag
BLOCKED FLOW
ORIFICE = 1.5mm
MAX = 51 m3/d
PSV 5021

33-150PSX-276

P-502

PI 5022
HS 5020
21BA-153SX

60-150PSX-207
DRAIN TO WATER STORAGE HEADER
SHEET 10 OF 27

60GL-151SX
60CH-151SX

60x27
33x27

21BA-153SX
33 NPT STRAINER
c/w 21BA-153SX (DRAIN)
33BA-153SX

33-150PSX-206

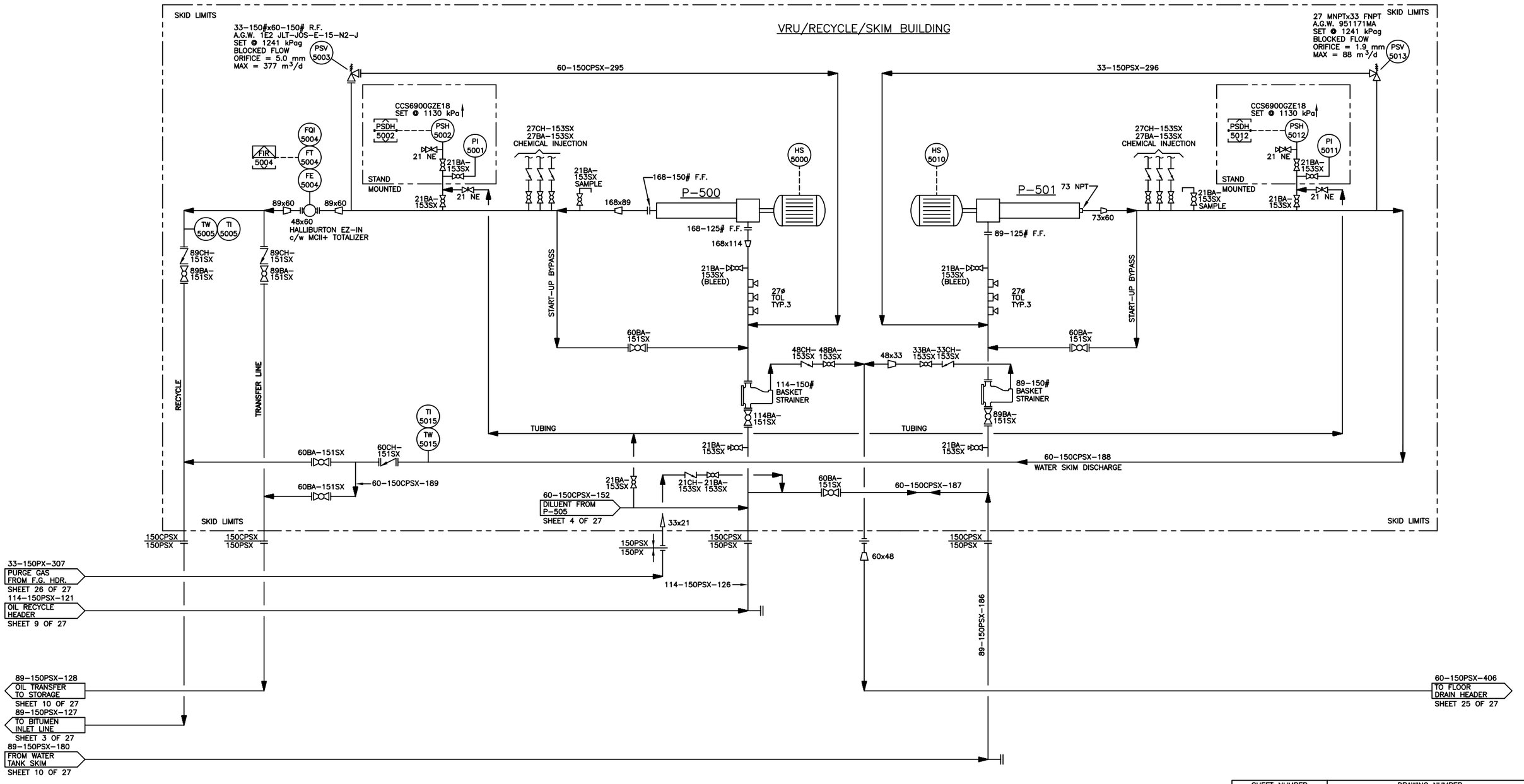
SKID LIMITS

SKID LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
15 OF 27	F-33359-F-00-01	13

P–500
RECYCLE PUMP
TARBY PROGRESSIVE CAVITY
MODEL # 205T022–CDF–AAA
RATED FOR 300M^3/D @ 900 kPa
c/w 7.5 H.P. @ 1150 RPM
3/60/600 X.P. MOTOR c/w VFD
DESIGN : 1241 kPa @ 148°C

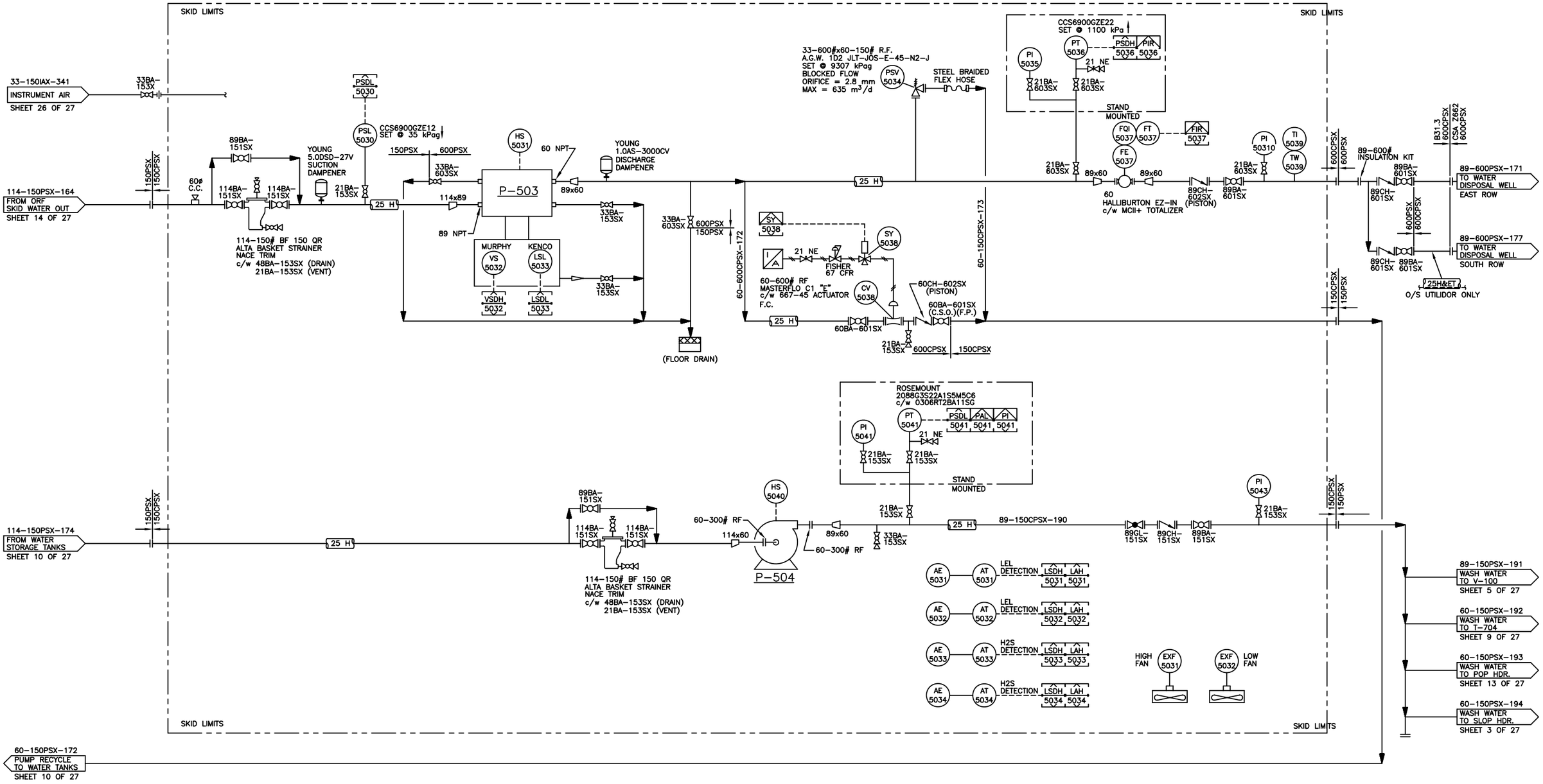
P–501
SKIM PUMP
TARBY PROGRESSIVE CAVITY
MODEL # 2TL6–CDF–AAA
RATED FOR 25M^3/D @ 900 kPa
c/w 2 H.P. @ 1150 RPM
3/60/600 X.P. MOTOR c/w VFD
DESIGN : 1241 kPa @ 148°C



SHEET NUMBER	DRAWING NUMBER	REV
16 OF 27	F–33359–F–00–01	13

P-503
PRODUCED WATER DISPOSAL PUMP
FMC PLUNGER
MODEL #M1422
RATED FOR 375M³/D @ 9000 kPa
c/w 60 H.P. @ 1200 RPM
3/60/600 TEFC MOTOR
DT: 105°C

P-504
WASH WATER PUMP
MYERS MV8-100S MULTISTAGE
338 m³/D @ 1045 kPa DIFFERENTIAL
c/w 7.5 H.P. @ 3450 RPM
3/60/600 X.P. MOTOR



SHEET NUMBER	DRAWING NUMBER	REV
17 OF 27	F-33359-F-00-01	13

T-710
SOURCE WATER STORAGE TANK
4648 O.D. x 9144 HIGH
159m3 (1000 bbl)
SERIAL # 1091

P-508
SOFTENER FEED PUMP
DEAN 1.5 x 3 x 8
MODEL # ph 2110
RATED FOR 500M 3/D @ 300 kPa
c/w 15 H.P. @ 3600 RPM
3/60/600 TEFC MOTOR
DT: 105°C

M-902
SOURCE WATER FILTER
FILTER SOLUTIONS
MODEL # FS-540-C/S-4F
457 I.D. x 1435 HIGH
DESIGN : 1034 kPag @ 204°C

33BA-153SX 33CH-153SX
PRV 71015
33 FNPT VACU-GUARD #1078
PRV 71016
33 NPT FISHER 627
33BA-153SX
150PSX 150PX
33-150PX-326
MAKE UP GAS FROM F.G. HDR.
SHEET 26 OF 27

4-20 ma GML FLUID LEVEL TRANSMITTER
LC 71001 LAH 71001 LAL 71001 LR 71001
LT 71001
89-150# BLIND
89-150# ENARDO 950 SERIES PRESSURE VACUUM RELIEF VALVE 4 oz PRESSURE/0.4 VAC.
LSDH 71002
LSH 71002 8978mm
60 NPT NORRISEAL 1001A-2SM60NELD
T-710
INSULATED TANK c/w METAL JACKET
50 H
SY 71004 ASCO EF8320 G202-24
FISHER 67 CFR
KIMRAY T12
TC 71003
KIMRAY 112 SMT
PRV 71006
PI 71005
SDV 71004
21NE
33BA-153X
KIMRAY 112 SMT
TCV 71003
PI 71007
PI 71011
KIMRAY T12
TSHH 71004
TI 71003
TW 71003
33-150PX-317
FUEL GAS FROM HEADER
SHEET 26 OF 27
21BA-153X
21CH-153X
21BA-153X
21BA-153X
PILOT GAS
21x14
33BA-153X
BE 71010
BZ 71010
FFSD 71017
114BA-155SX (DB&B)
33BA-153SX (DRAIN/PURGE GAS)
FROM P-513
OXYGEN SCAVENGER
D-33359-F-00-10
27CH-153X
27BA-153X c/w QUILL
60-150PX-240
P-506 START-UP BYPASS
SHEET 20 OF 27
60CH-151X
60BA-151X (C.S.O.)
60-150PX-245
BY-PASS TO T-711
SHEET 22 OF 27
610x914 M/W SPLIT
TBAmm LSL 71000
LSDL 71000
60 NPT NORRISEAL 1001A-2SM60MELR
89x60
60CH-151X
60BA-151X (C.S.O.)
25H&ET
O/S UTILIDOR ONLY
FISHER 912
PRV 71008
SY 71009 ASCO EF8320G202-24
89BA-151X c/w TRUCK QUICK CONNECT
168BA-151X
33BA-153X
BCS 71014
NAGY FQI-100 BURNER CONTROL SYSTEM
168-150PX-216
25H&ET
O/S UTILIDOR ONLY
SY 71012
I/A
21NE
FISHER 67 CFR
SY 71012 ASCO EF8320 G202-24
60BA-151X c/w MORIN ACTUATOR MODEL #MRP-025U-T-S080 (F.C.)
ESDV 71012
114x60
114-150PX-215
SOURCE WATER INLET FROM WELLS
6-4-96-11 W4M
7-5-96-11 W4M
9-5-96-11 W4M

SKID LIMITS
89BA-151X
114BA-151X
114BA-151X
114-150# BF 150 QR ALTA BASKET STRAINER NACE TRIM c/w 48BA-153X (DRAIN) 21BA-153X (VENT)
168x114
114x89 ECC. RED.
HS 5080
89-150# F.F.
P-508
PI 5081
21BA-153X
114x48
114-150PX-217
48-150# F.F.
89GL-151X
33BA-153X
DPI 9020
21BA-153X
21BA-153X
114BA-151X
114BA-151X
M-902
48BA-153X
114x89
89CH-151X
89BA-151X
89-150PX-218
SOURCE WATER TO WATER TREATMENT
SHEET 19 OF 27
LOCATED IN STEAM GENERATOR BUILDING
SKID LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
18 OF 27	F-33359-F-00-01	13

T-715
POTASSIUM PERMANGANATE
STORAGE TANK

P-514
POTASSIUM PERMANGANATE
PUMP

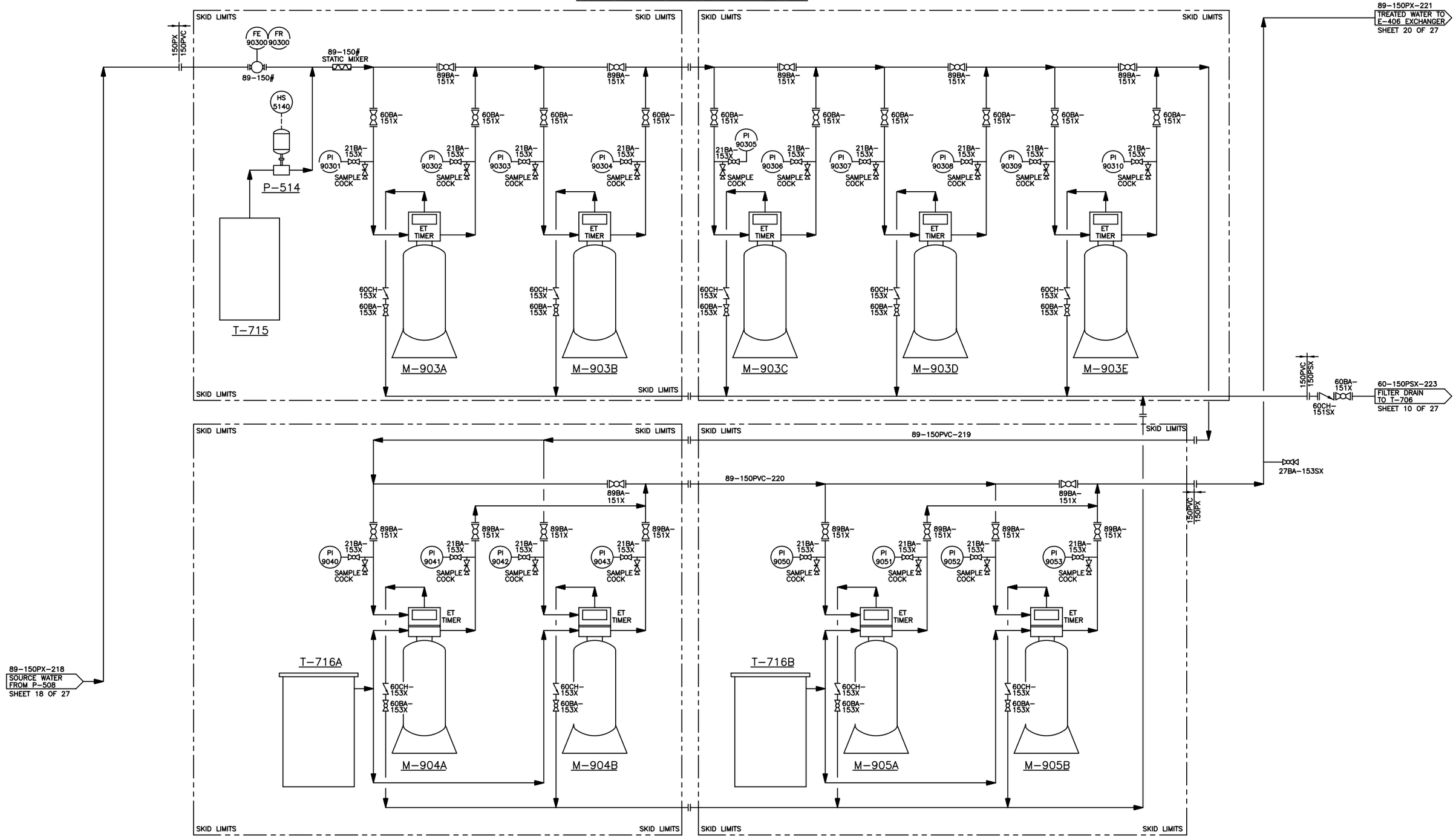
M-903 A/B/C/D/E
MANGANESE GREENSAND FILTERS
MODEL AMG36-2AFTS2-2 D
914 O.D. x 1829 HIGH
DESIGN : 690 kPa @ 38°C

M-904 A/B
PRIMARY WATER SOFTENERS
MODEL FAF630 ET
914 O.D. x 1829 HIGH
DESIGN : 690 kPa @ 38°C

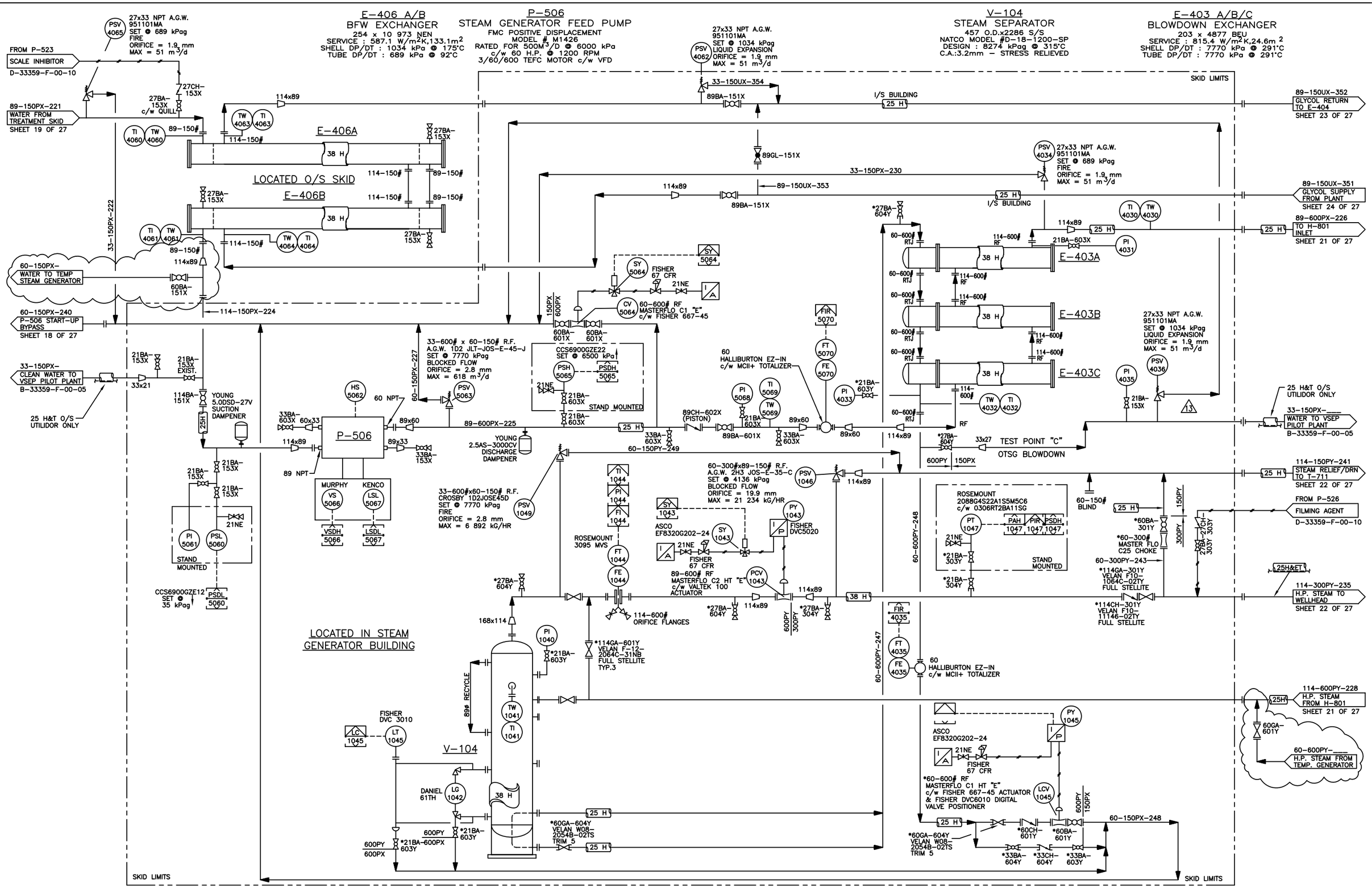
T-716 A/B
BRINE STORAGE TANKS
1067 O.D. x 1219 HIGH

M-905 A/B
POLISHING WATER SOFTENERS
MODEL FAF630 ET
914 O.D. x 1829 HIGH
DESIGN : 690 kPa @ 38°C

LOCATED IN STEAM GENERATOR BUILDING



SHEET NUMBER	DRAWING NUMBER	REV
19 OF 27	F-33359-F-00-01	13



SHEET NUMBER	DRAWING NUMBER	REV
20 OF 27	F-33359-F-00-01	13

BF-801
BLOWER FAN
TOSHIBA 50 H.P. 3600 RPM
3/60/600 TEFC MOTOR

H-801
STEAM GENERATOR
THERMOTICS
CRN. F6471.23
SERIAL NUMBER 5-1005E
(REFURBISHED BY TIW WESTERN INC.;2003)

SKID LIMITS

AE 8011 — AT 8011 — LEL DETECTION — LSDH 8011, LAH 8011
AT 8012 — FIRE DETECTION — LSDH 8012, LAH 8012

89-600PX-226 FROM E-403 OUTLET SHEET 22 OF 27 — 25 H — 600PX 1500PX — 89-1500# GRAYLOC

89CH-1504-V — 21GL-1503X — 89GL-1504-V

TI 80100 — TW 80100 — PI 80101 — 21NE — 21GL-1503X

TE 80102 — TW 80102 — 60-150UX-390 GLYCOL SUPPLY FROM HEADER SHEET 23 OF 27 — 25 H — 60GA-151X

DESIGN BY TIW - TBA

60-150UX-391 GLYCOL RETURN TO HEADER SHEET 22 OF 27 — 25 H — 60GL-151X

89-1500PX-226

BUILDING ROOF

FT 80103 — FE 80103 — 89-1500# BARBER FLOW NOZZLE — 80103
80104 — FY 80104 — I/P — 21NE — I/A — FISHER 67 CFR
FCV 80104 — 60-1500# FISHER 667-HPS c/w DVC5010 POSITIONER
89x60 — 89-1500# GRAYLOC — 21GL-1503X — 27GL-1503X

FT 80105 — FE 80105 — 89-1500# BARBER FLOW NOZZLE — 80105
80106 — FY 80106 — I/P — 21NE — I/A — FISHER 67 CFR
FCV 80106 — 60-1500# FISHER 667-HPS c/w DVC5010 POSITIONER
89x60 — 89-1500# GRAYLOC — 21GL-1503X — 27GL-1503X

ALLEN BRADLEY 802T-NP — 80123 — ZSO 80123

TE 80124 — 80124

80145 — PSLL 80145 — PI 80146 — FCV-80104/06 — TO VIEW PORTS
33-150IAX-340 INSTRUMENT AIR SHEET 26 OF 27 — 33BA-153X — 21NE — 21NE — S.S. TUBING C.S. PIPE — S.S. TUBING C.S. PIPE

MANUAL BUTTERFLY VALVE

TI 80110 — TW 80110 — PI 80109 — 21NE — 21GL-1503X — 89-1500# GRAYLOC
TI 80108 — TW 80108 — PI 80107 — 21NE — 21GL-1503X — 89-1500# GRAYLOC

14NE RAW GAS TO GRADE
AIC 80125 — PORTABLE OXYGEN ANALYZER

SY 80144 — SY 80144 — ASCO 8215G33 — 27-150PX-321
27ø FISHER Y600 — PCV 80138 — PI 80139 — 21NE — 21NE — SY 80140 — 27ø ITT K3A652 — SY 80141 — 27ø ITT K3A652 — PCV 80142 — 27ø FISHER S102D

PI 80111 — H-801

80127 — BE 80127 — 80126 — TE 80126

HS 80149 — BF-801

89PL-153X — 89PL-153X — 89PL-153X

TE 80113 — TYPE J T/C — 114x89

I/A — 21NE — PC 80122 — FISHER 4150 — FISHER 67 CFR
SY 80122 — ASCO EF 8320 G200 120V
PCV 80122 — 60-1500# FISHER 667-HPS

PI 80143 — 21NE — 27-150PX-319

168BU-153X

168ø PIPE TO O/S BLDG.

168ø-SAMPLE SEPARATOR — 21GL-1503X — 114x89 — 114x89 — 48x27 — 33x21 — 33x21

CALGON COOLING COIL — 21GL-1503X — 21GL-153X — DRIP TRAY — *NOT IN SERVICE*

60-150PX-229 — 60-1500# GRAYLOC — 25 H — 150PX 150PY — 60-1500PY-229 — 21GL-1503X — 21GL-1503X — 60GL-1504-V — 60CH-1504-V

114-150PX-297 PSV OUTLET TO T-711 SHEET 22 OF 27 — 25 H

SY 80137 — SY 80137 — ASCO 8215G33 — 33-150PX-320 — 60x33

60-150PSX-320 MAIN FUEL GAS BLOWDOWN SHEET 27 OF 27 — 150PSX 150PX

114-1500PY-228 H.P. STEAM TO V-104 SHEET 20 OF 27 — 25 H — 114-1500# GRAYLOC — 114GA-1504-V — 114CH-1504-V — 21GL-1503X

ROSEMOUNT 115 1GP9E12B1 — PT 80120 — 80120 — PI 80121 — 21NE — 21GL-1503X
80118 — UNITED ELECTRIC J6X-612 — PSLL 80118 — TI 80119 — TW 80119 — 21NE — 21GL-1503X
80117 — UNITED ELECTRIC J6X-612 — PSHH 80117 — 21NE — 21GL-1503X
PI 80136 — 21NE — 168x89
TE 80116 — TYPE J T/C

DRIP POT — DRAIN

PSV 80115 — 48-1500# RTJ x 73-300# RF SET @ 7549 kPag CROSBY HA-66C
PSV 80114 — 48-1500# RTJ x 73-300# RF SET @ 7769 kPag CROSBY HA-66C

LOCATED IN STEAM GENERATOR BUILDING
ROSEMOUNT 3095 MVS — TI 80148 — PI 80148 — FI 80148 — FT 80148 — FE 80148 — 89-150# SENIOR

UNITED ELECTRIC J6X-152 — PSLL 80130 — 80130 — PI 80129 — 21NE — 21NE
80131 — ZSC 80131 — ESDV 80131 — 60-150# MAXON #808S — SY 80131 — 89x60
UNITED ELECTRIC J6X-156 — PSHH 80132 — 80132 — 80133 — ZSC 80133 — ESDV 80133 — 60-150# MAXON #808S — SY 80133 — 21NE
60ø FISHER 298 TEK — PCV 80134 — PI 80135 — 21NE — 89x60

89-150PX-318 FUEL GAS FROM F.G. HEADER SHEET 26 OF 27 — 89PL-154V

SKID LIMITS — 27ø COOLING WATER — SKID LIMITS

O/S UTILIDOR ONLY — 25H&ET — 60-150PX-407 TO FLOOR DRAIN HEADER SHEET 25 OF 27

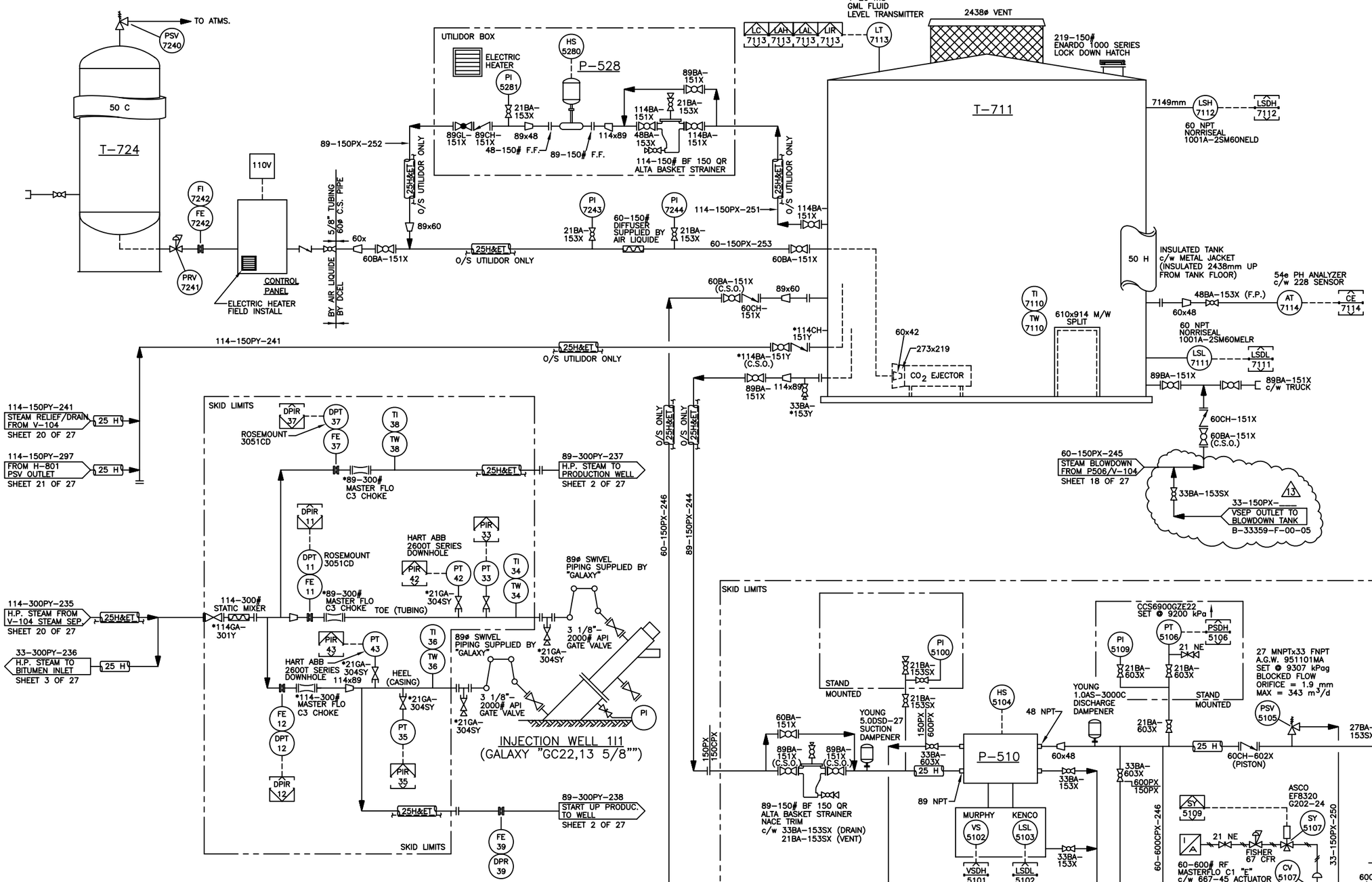
SHEET NUMBER	DRAWING NUMBER	REV
21 OF 27	F-33359-F-00-01	13

T-724
CO_2 STORAGE TANK
2210 O.D. x 10400 HIGH
DP/DT - TBA
DT: 107°C

P-528
STEAM TANK RECYCLE PUMP
DEAN 1.5 x 3 x 6 VERTICAL INLINE
MODEL # CNV 206 SERIES
RATED FOR 960m³/D @ 310 kPa D.T. 107°C
c/w 10 H.P. @ 3600 RPM
3/60/600 TEFC MOTOR

P-510
BLOWDOWN DISPOSAL PUMP
FMC PLUNGER
MODEL # M1212-D1
RATED FOR 200M³/D @ 9000 kPa
c/w 40 H.P. @ 1150 RPM
3/60/600 TEFC MOTOR

T-711
STEAM BLOWDOWN TANK
5258 O.D. x 7315 HIGH
159m³ (1000 bbl)
DT: 107°C



SHEET NUMBER	DRAWING NUMBER	REV
22 OF 27	F-33359-F-00-01	13

V-103
GLYCOL VERTICAL EXPANSION TANK
SIZE : 762ø x 2438mm S/S
DESIGN : 1034 kPa @ 204°C
MDMT : -29°C

P-511A/B
GLYCOL CIRCULATION PUMP
MODEL : PACO LF MODEL 15705
FLOW RATE : 770 m^3/d @ 350 kPa
ELECTRIC POWER : 3/60/600
MOTOR : 10 HP @ 3600 RPM TEFC

M-901
GLYCOL FILTER
MODEL : ROSEDALE 8-30-IP-2-175-CC
FLOW RATE : 10%
DESIGN : 1200 kPa @ 170°C/-29°C

H-802
GLYCOL HEATER
MODEL : PARKER XT-3900
OUTPUT : 3 E6 kJ/h
INLET/OUTLET TEMP. : 43°C/93°C
FLUID : 50 WT. % EG/WATER
FUEL : NATURAL GAS @ 340 kPa
FLOW RATE : 770 m^3/d
DESIGN : 1379 kPa @ 204°C

E-404
GLYCOL COOLER
EXCHANGER INDUSTRIES
MODEL # 1M10.182
OUTPUT DUTY: 6 E6 kJ/h
FAN MOTOR (2) 20 HP 3/60/600 TEFC
DESIGN : 689 kPa @ 121°C
C.A. : 1.6 mm

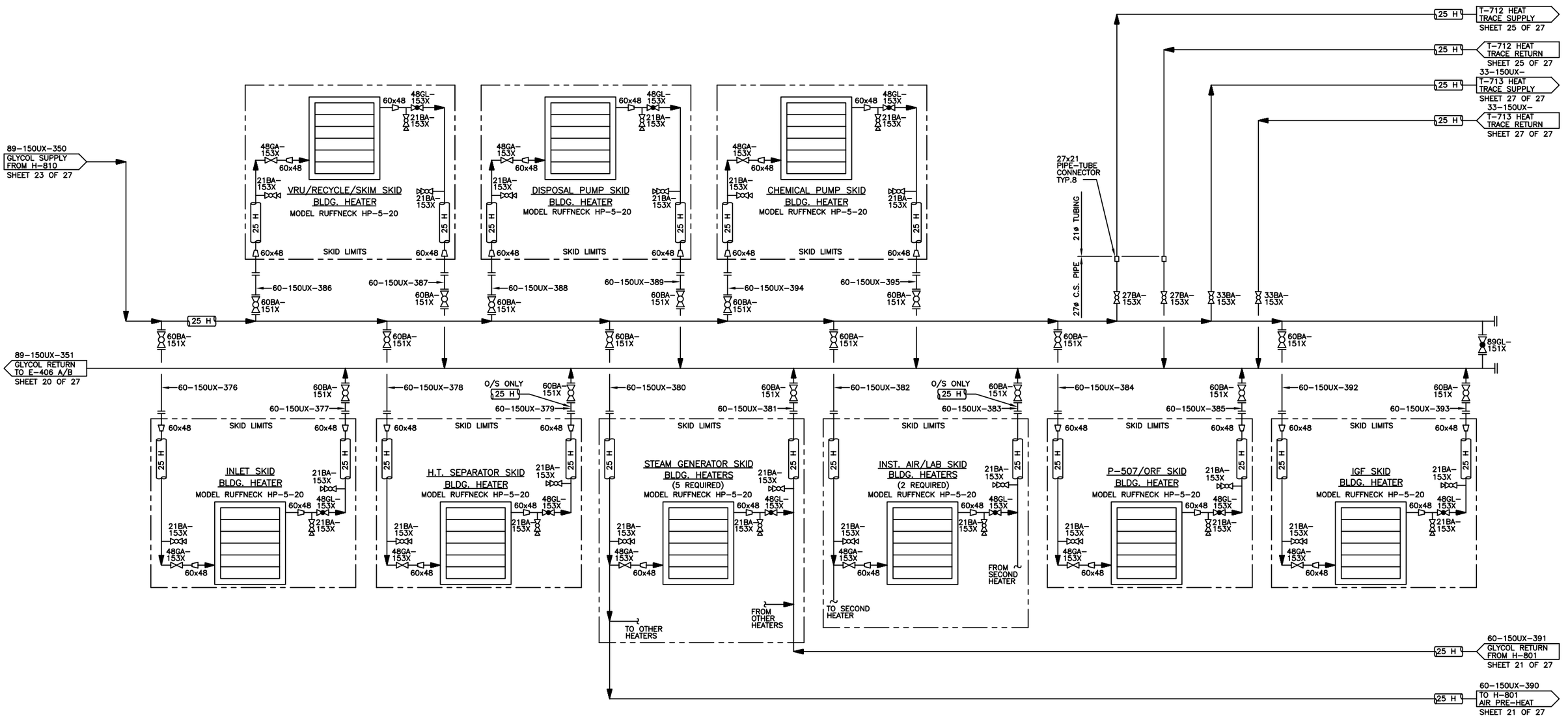
GLYCOL HEATING SKID

33 NPT FISHER 98H-16 PRV 1037 ATM
SKID LIMITS
27-150PX-323 BLANKET GAS FROM HEADER SHEET 26 OF 27
PRV 1030 33 NPT FISHER 627
PSV 1031 27x33 NPT FARRIS 27DA23-M20 SET @ 690 kPa
PI 1032 TI 1033 TW 1033 50 H V-103
48 NPT SOR 1510B LSH 1036 LSDH 1036 LG 1034 LSL 1035 LSDL 1035 48 NPT SOR 1510B
HIGH FAN EXF 5031
89-150UX-373 89ø TRUCK QUICK CONNECT 89BA-151X 33BA-153X
89GA-151X 89GA-151X (C.S.O.)
60-150UX-371 GLYCOL RETURN FROM INLET SKID SHEET 3 OF 27
89-150UX-365 GLYCOL RETURN FROM EXCHANGERS SHEET 6 OF 27
60x33
89-150UX-375
FY 5117 FISHER DVC 6020 I/P 5117
FCV 5117 60-150# FISHER V200-1051 ACT.40
21NE FISHER 67 CFR I/A
FQI 5116 FT 5116 5116
PI 5115 HS 5114 89-150UX-358 TI 5113 TW 5113
89-150UX-360 25 H
89BA-151UX (C.S.O.) 89x60 60-150# RF c/w 4-20 mA PREAMP
P-511B
89-150UX-361 GLY. SUPPLY HDR. TO EXCHANGERS SHEET 6 OF 27
60-150UX-370 GLY. SUPPLY HDR. TO E-400 SHEET 2 OF 27
PI 5112 HS 5111 TI 5110 TW 5110
P-511A
33 NPT DANIEL FE 9010 PI 9010
M-901
dPI 9012 14 NPT ORANGE 1201PG1C25L/50D
AE 8021 AT 8021 LEL DETECTION LSDH 8021 LAH 8021
33-150IAX-342 INSTRUMENT AIR SHEET 26 OF 27 33BA-153X
SKID LIMITS SKID LIMITS

CCS 604D51 DPS 80202 80202
H-802
CLEAN OUT
PI 80201 TW 80200 TI 80200
25 H
CLEAN OUT
BURNER
73x60 14 NPT ANTUNE HGP-A-2-16
PSH 80219 PI 80211 21BA-153X 60BA-153X
60 NPT HONEYWELL M916A1024 MBF-200 Q7230A1005 TCV 80206
HONEYWELL V5055C1000 V4055D1019
SDV 80218 O/S SDV 80207
HONEYWELL V5055B1069 V4055A1031 SDV 80209
14 NPT ANTUNE LGP-A-2-14 PSL 80214
ASCO 8214G33-NO BE 80216
ASCO 8040H8 SY 80212 PRV 80213 14 NPT MAXITROL 325-3-3/8-412 33BA-153X
PILOT GAS 33-150UX-357
WIZARD 4196B 0-150°C 0-103 kPa
PI 4047 TC 4045 TW 4045 TI 4046 TW 4046
FLAT SCREEN
89-150UX-356
89-150# FISHER V200-1051 ACT.40,3600 (FULL FLOW BYPASS)
TCV 4045 89GA-151X 33BA-153X 89GA-151X 89GL-151X
89-150UX-355
ACTUATOR FISHER 656 c/w 3582 POSITIONER
E-404 (LOCATED OFFSKID)
HS 4049 HS 4048
MURPHY VS-2EX VS 4044 VSDH 4044
MURPHY VS-2EX VS 4043 VSDH 4043
25 H

33x48 NPT KANKLE SET @ 1379 kPa PSV 80205
PI 80203
TIC 80206 TSH 80206 TSHH 80206
TE 80206 TE 80206 TW 80206 LSL 80208 WARRICK 3JB11A
MODEL RUFFNECK HP-5-20
48GA-153X 60x48 21BA-153X 60x48 48GL-153X 21BA-153X
25 H 25 H
150PX 150PSX
60-150PSX-294 POP HEADER TO STORAGE SHEET 13 OF 27
89-150UX-350 GLYCOL SUPPLY TO PLANT HEATERS SHEET 24 OF 27
STAT 80245 SD 80245 FLT 80245
TSH 80206 BURNER CONTROL SYSTEM
33 NPT FISHER 289H-4 SET @ 35 kPa PSV 80217
ATM
33 NPT MAXITROL 210E-2"-1022 PRV 80210
33 NPT FISHER S202H PRV 80215 PI 80216 21NE
89-150UX-352 GLYCOL RETURN FROM E-406 A/B SHEET 20 OF 27
60BA-153X
27x33 NPT CROSBY 951171MD SET @ 690 kPa PSV 4042
60-150PX-322 SWEET FUEL GAS FROM HEADER SHEET 26 OF 27
PI 4040 21BA-153X
TI 4041 TW 4041
25 H
33BA-153X (VENT) 114x89 114BA-151X
114BA-151X 114x89 33BA-153X DRAIN)

SHEET NUMBER	DRAWING NUMBER	REV
23 OF 27	F-33359-F-00-01	13

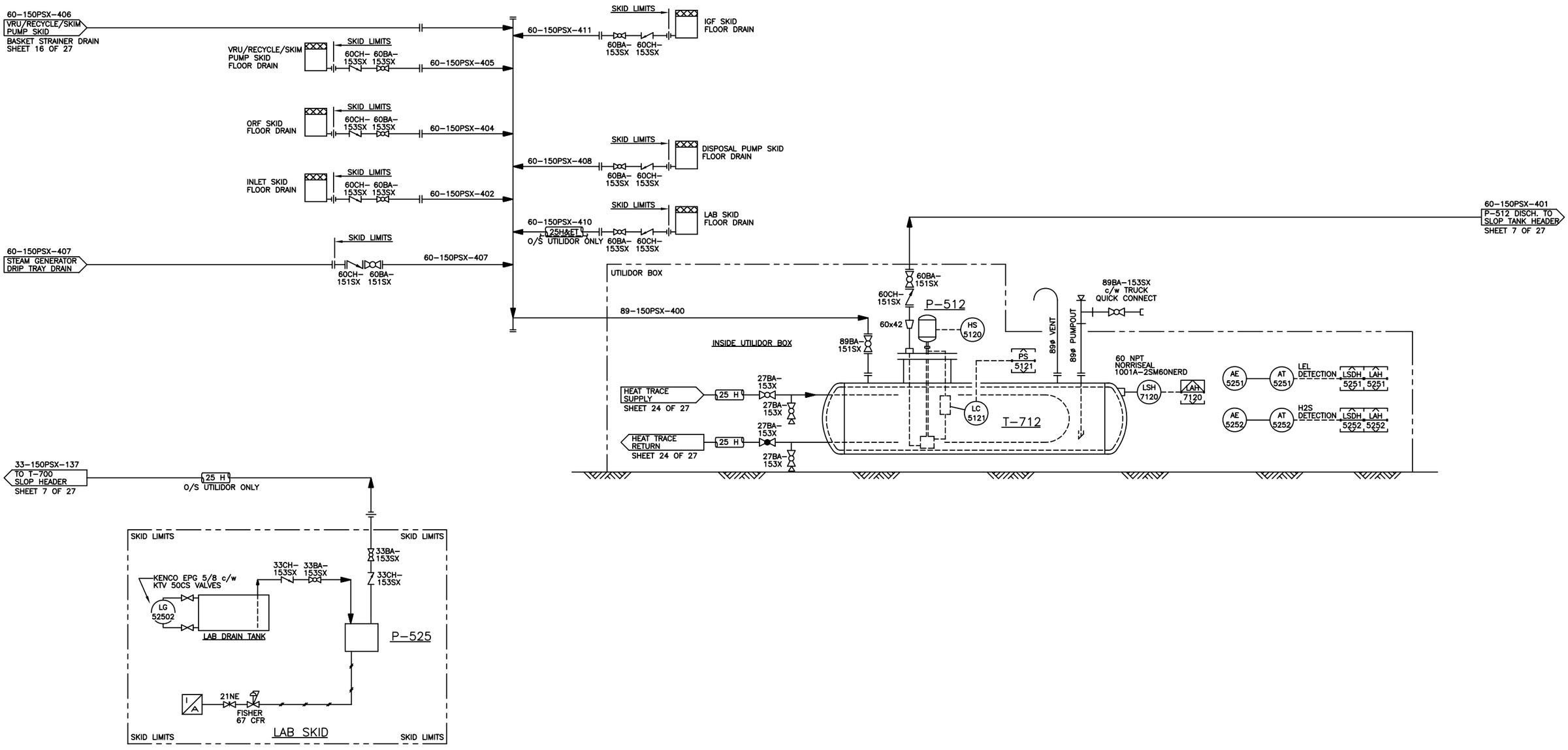


SHEET NUMBER	DRAWING NUMBER	REV
24 OF 27	F-33359-F-00-01	13

P-525
DRAIN PUMP
WILDEN AIR OPERATED DIAPHRAGM
MODEL 01-2669

P-512
DRAIN PUMP
AURORA 530-A1 1.25 x 1.5 x 9B
3 HP @ 1750 RPM
3/60/600 XP MOTOR
109m 3/d, 241 kPag MAX

T-712
DRAIN TANK
914 I.D. x 2438 S/S
VOLUME: 1.8m3
DOUBLE WALLED



SHEET NUMBER	DRAWING NUMBER	REV
25 OF 27	F-33359-F-00-01	13

K–601A/B
INSTRUMENT AIR COMPRESSOR
QUINCY QTD–10–200
RATED 934 l/min. @ 689 kPa
1206 kPag MAX. PRESSURE
c/w 10 h.p. @ 1800 rpm
3/60/600 TEFC MOTOR

E–407A/B
BELT GUARD AFTERCOOLER

V–106
WET AIR RECEIVER
757 LITRES

M–906
PRE–FILTER
0.01 MICRON
COALESCING TYPE
c/w AUTO DRAIN

M–907
HEATLESS DRYER
XEBEC XM 065P
RATED 1839 l/min. @ 689 kPa
–40°C DEWPOINT

M–908
AFTER FILTER
0.01 MICRON
COALESCING TYPE

33–150PX–330
MAKE–UP GAS TO IGF SKID
SHEET 11 OF 27

PRV 18
27x33 NPT
FISHER S–402
FISHER 627
33–150PX–329
GARAGE FUEL GAS
60x33
33BA–153X

PRV 14
27x33 NPT
FISHER S–402
FISHER 627
33–150PX–327
OFFICE BUILDING #1 FUEL GAS
60x33
33BA–153X

60–150PX–326
MAKE–UP GAS TO T–710
SHEET 18 OF 27

60–150PX–325
MAKE–UP GAS TO 114–150SPSX–277
SHEET 4 OF 27

60–150PX–324
FUEL GAS TO M–900 PILOT
SHEET 27 OF 27

33–150PX–332
FUEL GAS TO P–509 SKID HTR
SHEET 27 OF 27

27–150PX–323
BLANKET GAS V–103
SHEET 23 OF 27

60–150PX–322
FUEL GAS TO H–802 BURNER
SHEET 23 OF 27

89–150PX–318
FUEL GAS TO STEAM GENERATOR
SHEET 21 OF 27

33–150PX–317
FUEL GAS TO T–710 BURNER
SHEET 18 OF 27

33–150PX–315
F.G. TO T–705/T–706 BLOWCASE
SHEET 10 OF 27

33–150PX–313
F.G. TO T–703/704 BLOWCASE
SHEET 9 OF 27

33–150PX–310
FUEL GAS TO T–701 BURNER
SHEET 8 OF 27

33–150PX–308
FUEL GAS TO T–700 BURNER
SHEET 7 OF 27

33–150PX–307
PURGE GAS TO VRU /RECYC./SKIM SKID
SHEET 16 OF 27

33–150PX–306
VRU MAKE–UP GAS
SHEET 9 OF 27

33–150PX–305
BLANKET GAS TO V–100
SHEET 5 OF 27

89–150PX–302
FUEL GAS HEADER FROM V–101
SHEET 3 OF 27

SKID LIMITS

INSTRUMENT AIR/LAB SKID

PSV 6013
E–407B
HS 6012
K–601B
PSV 6011
HS 6010
E–407A
K–601A
PSV 9070
M–907
PSV 1061
ROSEMOUNT 2088G3S22A1S5M5C6 c/w 0306RT2BA11SG
PT 1060
PAH 1060
PAL 1060
V–106
M–906
M–908
60x27
60BA–153X
60x33
60–150IAX–335

33–150IAX–345
INSTRUMENT AIR
SHEET 11 OF 27

33–150IAX–344
INSTRUMENT AIR TO T–710 AREA

33–150IAX–343
INSTRUMENT AIR TO T–700/701 AREA

33–150IAX–342
INSTRUMENT AIR TO GLYCOL HEAT SKID
SHEET 23 OF 27

33–150IAX–341
INSTRUMENT AIR TO DISPOSAL SKID
SHEET 17 OF 27

33–150IAX–340
INSTRUMENT AIR TO STEAM GENERATOR
SHEET 2 OF 27

33–150IAX–339
INSTRUMENT AIR TO OIL REMOVAL FILTER
SHEET 14 OF 27

33–150IAX–338
INSTRUMENT AIR TO H.T. SEP. SKID
SHEET 5 OF 27

33–150IAX–337
INSTRUMENT AIR TO INLET SKID
SHEET 3 OF 27

33–150IAX–
INSTRUMENT AIR TO VSEP PILOT
B–33359–F–00–05
13

SHEET NUMBER	DRAWING NUMBER	REV
26 OF 27	F–33359–F–00–01	13

P-509
DRAIN PUMP
TARBY BPC44-CDQ-AAA
1/2 HP @ 1750 RPM
3/60/600 X.P. MOTOR
81m³/D @ 345 kPa

T-713
FLARE KNOCKOUT DRUM
1219ø x 2438 S/S
INTERNALLY COATED
DOUBLED WALLED

K-602
ROTARY BLOWER
DAYTON 4C130
1.5 HP @ RPM
3/60/600 TEFC MOTOR

M-900
FLARE STACK
114ø x 19 812 HIGH
MACTRONIC

114-150PSX-260
PLANT FLARE HEADER
SHEET 15 OF 27

60-150PSX-320
FUEL BLOWDOWNS FROM H-801
SHEET 21 OF 27
25H&ET
o/s UTILIDOR ONLY

33-150PX-332
FUEL GAS TO P-509 SKID HTR
SHEET 26 OF 27
33BA-153X

60-150PX-324
FUEL GAS TO M-900 PILOT
SHEET 26 OF 27

60-150PSX-266
P-509 DISCHARGE TO SKIM TANK
SHEET 10 OF 27
25H&ET
o/s UTILIDOR ONLY

27x33 NPT A.G.W.
951171MD
SET @ 690 kPag
BLOCKED FLOW
ORIFICE = 1.5mm
MAX = 51 m³/d

PSV 5091
PI 5092
HS 5090
21BA-153SX
60GL- 151SX
60CH- 151SX
60x27
33-150PSX-267
21BA-153SX
33x27
CATADYNE HEATER
33BA-153SX
UTILIDOR HOUSING
P-509
33 NPT STRAINER
c/w 21BA-153SX (DRAIN)

25H&ET
o/s UTILIDOR ONLY
33CH-153SX

60ø NPT NORRISEAL 1001A
LSHH 7131
LSH 7131
LSL 7131
LSLL 7131
LSDHH 7131
LSDH 7131
LSDL 7131
LSDLL 7131
LG 7130

SLOPE TO T-713
25H&ET
o/s UTILIDOR ONLY
168x114
T-713
MANWAY
33-150PSX-265
89ø TRUCK QUICK CONNECT
89x60
60BA-151SX (N.C.)
60BA-151SX

33-150UX-
T-713 HEAT TRACE SUPPLY
SHEET 24 OF 27
25 H
33-150UX-
T-713 HEAT TRACE RETURN
SHEET 24 OF 27
25 H

33 NPT FISHER 627
PRV 9000
PI 9001
21 NE
60x33
33BA-153X
33BA-153X
33 NE
168ø
114ø

UTILIDOR BOX
33BA-153SX
89BA-151SX
33BA-153SX
114BA-151SX (F.P.)
114BA-151SX (F.P.)
168x114
o/s UTILIDOR ONLY
25H&ET
SLOPE
114-150PSX-261
ANNULUS MONITOR
114-150ø FLAME ARRESTOR ENARDO MODEL 7084/D-C4R HEAT TRACE
K-602
BE 9003
BZ 9003
BCS 9003
ELECTRONIC IGNITION SYSTEM

SHEET NUMBER	DRAWING NUMBER	REV
27 OF 27	F-33359-F-00-01	13

T-721
SCALE INHIBITOR DRUM

T-714
OXYGEN SCAVENGER DRUM

P-523
SCALE INHIBITOR PUMP
mROY H HYDRAULICALLY ACTUATED
5-50 L/DAY @ 1379 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

P-513
OXYGEN SCAVENGER PUMP
mROY H HYDRAULICALLY ACTUATED
5-50 L/DAY @ 1379 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

T-719/720
POLYMER DRUM

T-723
FILMER DRUM

P-521/522
POLYMER PUMP
mROY H HYDRAULICALLY ACTUATED
5-50 L/DAY @ 1379 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

P-527
PUSH WATER PUMP
mROY A DUPLEX METERING
19.2 GALLONS/HR @ 1379 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

P-526
FILMER PUMP
mROY D LOW FLOW
5.72 L/DAY @ 6895 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

T-717
DEMULSIFIER TANK
750 GALLONS POLYETHYLENE

T-718
REVERSE DEMULSIFIER TANK
750 GALLONS POLYETHYLENE

P-519
DEMULSIFIER PUMP
mROY H HYDRAULICALLY ACTUATED
15-50 L/DAY @ 1379 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

P-520
DEMULSIFIER PUMP
mROY H HYDRAULICALLY ACTUATED
15-50 L/DAY @ 1379 kPa
c/w 1/3 H.P. 115/1/60 X.P. MOTOR

SKID LIMITS

FUTURE
FUTURE
PSV
PI

T-721
LI 72100
27ø NPT FLEX HOSE 27x21
27BA-153X
21BA-153X
21BA-153X
21ø STRAINER
HS 52300
PSV 52302
PI 52301
21NE
P-523
21CH-153X
21BA-153X

T-714
LI 71400
27ø NPT FLEX HOSE 27x21
27BA-153X
21BA-153X
21BA-153X
21ø STRAINER
HS 51300
PSV 51302
PI 51301
21NE
BPCV 51303
P-513
21CH-153X
21BA-153X

T-720
LI 72000
27ø NPT FLEX HOSE 27x21
27BA-153X
21BA-153X
21BA-153X
21ø STRAINER
HS 52200
PSV 52202
PI 52201
21NE
P-522
21CH-153X
21BA-153X

T-719
LI 71900
27ø NPT FLEX HOSE 27x21
27BA-153X
21BA-153X
21BA-153X
21ø STRAINER
HS 52100
PSV 52102
PI 52101
21NE
P-521
21CH-153X
21BA-153X

T-723
LI 72300
27ø NPT FLEX HOSE 27x21
27BA-153X
21BA-153X
21BA-153X
21ø STRAINER
HS 52600
PSV 52602
PI 52601
21NE
P-526
21CH-153X
21BA-153X

T-718
M/W
60BA-153X
21BA-153X
PSV 52002
HS 52000
PI 52001
21NE
21ø STRAINER
P-520
21CH-153X
21BA-153X

T-717
M/W
FILL CONNECTIONS O/S SKID
60BA-153X
21BA-153X
PSV 51902
HS 51900
PI 51901
21NE
21ø STRAINER
P-519
21CH-153X
21BA-153X

27x21
27-150# STATIC MIXER
27x21
27-150# STATIC MIXER

PI 52705
21NE
DISCHARGE DAMPENER
FE 52704
PSV 52703
21BA-153X
21CH-153X
21BA-153X
21BA-153X

PI 52702
21NE
DISCHARGE DAMPENER
FE 52701
PSV 52700
21BA-153X
21CH-153X
21BA-153X
21BA-153X
P-527

21ø SCALE INHIBITOR TO E-406A
F-33359-F-00-01 SHEET 20 OF 27

21ø OXYGEN SCAVENGER TO T-710
F-33359-F-00-01 SHEET 18 OF 27

21ø REVERSE DEMUL. TO INLET SKID
F-33359-F-00-01 SHEET 3 OF 27

21ø REVERSE DEMULSIFIER TO INLET SKID
F-33359-F-00-01 SHEET 3 OF 27

27ø POLYMER/WATER MIX TO H2O STG.
F-33359-F-00-01 SHEET 6 OF 27

27ø POLYMER/WATER MIX TO INLET SKID
F-33359-F-00-01 SHEET 3 OF 27

21ø PUSH WATER FROM T-705
F-33359-F-00-01 SHEET 10 OF 27

21ø FILMER AGENT TO STEAM TO WELL
F-33359-F-00-01 SHEET 20 OF 27

SKID LIMITS

NO.	REVISION	PROJ. No.	BY	DATE	CHK.	DATE
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.						
.						
.						
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1	POST CONSTRUCTION ISSUE	33359	CT	04.04.29		
0	ISSUED FOR APPROVAL	33359	CT	03.06.10		

PERMIT STAMP:

GENERAL NOTES:

1. "POST CONSTRUCTION DRAWINGS" ARE GENERATED FROM CONSTRUCTION CHANGE INFORMATION PROVIDED TO BOWER DAMBERGER ROLSETH ENGINEERING LTD. BY THE OWNER'S FIELD SUPERVISORS AND OR HIRED CONTRACTORS. ANY CHANGES NOT DOCUMENTED WILL NOT APPEAR ON THE DRAWINGS AND, THEREFORE, THE DRAWING MAY NOT BE AN ACCURATE REPRESENTATION OF THE CONSTRUCTED FACILITY.
2. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND OR EXCAVATION IT SHALL BE THE RESPONSIBILITY OF THE OWNERS REPRESENTATIVE TO VERIFY THE LOCATION AND STATUS OF ANY PIPING, ELECTRICAL, EQUIPMENT OR BUILDINGS.
3. ANY REVISIONS MADE TO EXISTING STRUCTURE, PIPING OR ELECTRICAL ON A FACILITY NOT DESIGNED BY BOWER DAMBERGER ROLSETH ENGINEERING LTD. IS A REPRESENTATION OF WHAT EXISTS AND MUST BE VERIFIED BY THE OWNER.

	BY	DATE
DRN.	CT	03.12.11
CHK.		
APP'D.		
L.S.D.	10-33-95-12 W4M	

bdr
Bower Damberger Rolseth Engineering Ltd.

DEER CREEK Energy Limited

JOSLYN PHASE #1 DEMONSTRATION FACILITY
CHEMICAL INJECTION FLOWSHEET

SCALE	DRAWING NUMBER	REV
N/A	D-33359-F-00-10	1

APPENDIX 7/B2:

Facilities

P&IDs: PAD 204

LEGEND

	GATE VALVE (GA)
	BALL VALVE (BA)
	PLUG VALVE (PL)
	NEEDLE VALVE (NE)
	GLOBE VALVE (GL)
	CHECK VALVE (CH)
	BUTTERFLY VALVE (BU)
	SOCKET WELD VALVE
	SCREWED VALVE
	FLANGED VALVE
	CONTROL VALVE WITH DIAPHRAGM ACTUATOR
	CONTROL VALVE WITH PISTON ACTUATOR
	PRESSURE REGULATOR
	SOLENOID VALVE
	ANGLE CHOKE
	INLINE CHOKE
	DIAPHRAGM
	Y–STRAINER
	PRESSURE SAFETY VALVE
	ORIFICE METER RUN
	TURBINE METER OR POSITIVE DISPLACEMENT METER
	VORTEX METER
	SPECTACLE BLIND, OPEN (CLOSED)
	CHANGE IN PIPE SIZE
	INLINE STRAINER
	RESTRICTING ORFICE

	INSULATION (H–HOT, C–COLD)
	INSULATION & HEAT TRACE
	PROCESS PIPING
	PNEUMATIC SIGNAL
	CAPILLARY TUBING
	ELECTRICAL SIGNAL
	HYDRAULIC SIGNAL
	ELECTROMAGNETIC/SONIC SIGNAL
	SOFTWARE OR DATA LINK
A.O.	AIR TO OPEN (FAIL CLOSED)
A.C.	AIR TO CLOSE (FAIL TO OPEN)
C.S.O.(C)	CAR SEAL OPEN (CLOSED)
E.S.D.	EMERGENCY SHUTDOWN
F.P.	FULL PORT
R.P.	REGULAR PORT
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
S.R.	SPRING RETURN
	SPEC BREAK
	SUPPLIED BY OTHERS
	TIE IN NUMBER
	TIE IN LOCATIONS
P/I	PNEUMATIC TO CURRENT
I/P	CURRENT TO PNEUMATIC
I/A	INSTRUMENT AIR
ST	STEAM TRAP

	LOCALLY MOUNTED INSTRUMENT
	MOUNTED ON MAIN CONTROL ROOM PANEL
	LOCAL PANEL MOUNTED INSTRUMENT
	PROGRAMMABLE LOGIC CONTROL SYSTEM
	PROGRAMMABLE LOGIC CONTROL SYSTEMS ACCESSIBLE TO OPERATOR
	AUX. PROGRAMMABLE LOGIC CONTROL SYSTEMS ACCESSIBLE TO OPERATOR
ACV	ANALYTIC CONTROL VALVE
AE	ANALYTIC ELEMENT
AIC	ANALYTIC INDICATING CONTROLLER
AT	ANALYTIC TRANSMITTER
AIT	ANALYTIC INDICATING TRANSMITTER
BDV	BLOWDOWN VALVE
BCS	BURNER CONTROL STATUS
BE	BURNER ELEMENT
BZ	BURNER IGNITOR
CV	CONTROL VALVE
dPI	DIFFERENTIAL PRESSURE INDICATOR
dPS	DIFFERENTIAL PRESSURE SWITCH
dPT	DIFFERENTIAL PRESSURE TRANSMITTER
ESDV	EMERGENCY SHUTDOWN VALVE
FA	FLOW ALARM (H–HIGH, L–LOW)
FC	FLOW CONTROLLER
FCV	FLOW CONTROL VALVE
FDSD	FIRE DETECTION SHUTDOWN
FSD	FLOW SHUTDOWN (H–HIGH, L–LOW)
FE	FLOW ELEMENT
FFSD	FLAME FAILURE SHUTDOWN
FI	FLOW INDICATOR
FIC	FLOW INDICATOR CONTROL
FIR	FLOW INDICATOR RECORDER
FR	FLOW RECORDER
FS	FLOW SWITCH (H–HIGH, L–LOW)
FQI	FLOW QUANTITY INDICATOR
FT	FLOW TRANSMITTER
FIT	FLOW INDICATOR TRANSMITTER
FY	FLOW TRANSDUCER
HIC	HAND INDICATING CONTROLLER
HR	HAND RECORDER
HS	HAND SWITCH
HY	HAND TRANSDUCER
H2S	H2S GAS DETECTION
H2ST	H2S GAS DETECTION TRANSMITTER
LA	LEVEL ALARM (H–HIGH, L–LOW)
LC	LEVEL CONTROLLER
LCV	LEVEL CONTROL VALVE
LEL	COMBUSTIBLE GAS DETECTION
LELT	COMBUSTIBLE GAS DETECTION TRANSMITTER
LG	LEVEL GAUGE
LI	LEVEL INDICATOR
LIC	LEVEL INDICATOR CONTROLLER
LR	LEVEL RECORDER
LIR	LEVEL INDICATOR RECORDER
LS	LEVEL SWITCH (H–HIGH, L–LOW)

LSD	LEVEL SHUTDOWN (H–HIGH, L–LOW)
LT	LEVEL TRANSMITTER
LIT	LEVEL INDICATOR TRANSMITTER
LY	LEVEL TRANSDUCER
ME	MOISTURE ELEMENT
MI	MOISTURE INDICATOR
PA	PRESSURE ALARM (H–HIGH, L–LOW)
PC	PRESSURE CONTROLLER
PCV	PRESSURE CONTROL VALVE
PDM	POSITIVE DISPLACEMENT METER
PI	PRESSURE INDICATOR
PIC	PRESSURE INDICATOR CONTROLLER
PIR	PRESSURE INDICATOR RECORDER
PIT	PRESSURE INDICATOR TRANSMITTER
PR	PRESSURE RECORDER
PRV	PRESSURE REGULATING VALVE
PS	PRESSURE SWITCH (H–HIGH, L–LOW)
PSD	PRESSURE SHUTDOWN (H–HIGH, L–LOW)
PSV	PRESSURE SAFETY VALVE
PT	PRESSURE TRANSMITTER
PVB	PRESSURE VACUUM BREATHER
PY	PRESSURE TRANSDUCER
RO	RESTRICTING ORIFICE
SAV	SOLENOID ACTUATED VALVE
SC	SURGE CONTROLLER
SCV	SURGE CONTROL VALVE
SDV	SHUTDOWN VALVE
TA	TEMPERATURE ALARM (H–HIGH, L–LOW)
TC	TEMPERATURE CONTROLLER
TCV	TEMPERATURE CONTROL VALVE
TE	TEMPERATURE ELEMENT
TI	TEMPERATURE INDICATOR
TIC	TEMPERATURE INDICATOR CONTROLLER
TR	TEMPERATURE RECORDER
TIR	TEMPERATURE INDICATOR RECORDER
TS	TEMPERATURE SWITCH (H–HIGH, L–LOW)
TSD	TEMPERATURE SHUTDOWN (H–HIGH, L–LOW)
TT	TEMPERATURE TRANSMITTER
TIT	TEMPERATURE INDICATOR TRANSMITTER
TW	THERMO WELL
TY	TEMPERATURE TRANSDUCER
VI	VIBRATION INDICATOR
VR	VIBRATION RECORDER
VS	VIBRATION SWITCH
VSD	VIBRATION SHUTDOWN
VSDH	VIBRATION SHUTDOWN HIGH
VT	VIBRATION TRANSMITTER
VIT	VIBRATION INDICATOR TRANSMITTER
XVPI	VALVE POSITION INDICATOR
XVPS	VALVE POSITION SWITCH
ZS	LIMIT SWITCH (O–OPEN;C–CLOSED)
.	.
.	.
.	.

VALVE DESIGNATIONS

114 BA 6 0 1 S X

- 114 — VALVE SIZE
- BA — VALVE TYPE
  - BA–BALL
  - BSF–BASKET STRAINER
  - BU–BUTTERFLY
  - CH–CHECK
  - GA–GATE
  - GL–GLOBE
  - NE–NEEDLE
  - PL–PLUG
  - YSF–Y STRAINER
- 6 — RATING
  - 1–150 CLASS
  - 3–300 CLASS
  - 6–600 CLASS
  - 9–900 CLASS
  - 15–1500 CLASS
  - 25–2500 CLASS
- 0 — BODY STYLE MODIFIER
- 1 — END CONNECTIONS
  - 1–RF FLANGED
  - 2–RTJ FLANGED
  - 3–THREADED
  - 4–SW
  - 5–BW
  - 6–MxF (NPT)
  - 7–FF FLANGED
  - 8–CLAMP
  - 9–SWxTHRD
- S — SOUR
- X — TEMPERATURE SERVICE
  - V – BELOW –45°C
  - W – –45°C TO –29°C
  - X – –29°C TO 121°C
  - Y – 121°C TO 200°C
  - Z – ABOVE 200°C

BODY STYLE MODIFIER

	0	1	2	3	4	5
BALL	R.P. FLOATING	F.P. FLOATING	R.P. TRUNNION	F.P. TRUNNION		
BUTTERFLY	RUBBER LINED NON–LUGGED	RUBBER LINED LUGGED	TFE SEATED NON–LUGGED	TFE SEATED LUGGED	METAL SEATED NON–LUGGED	METAL SEATED LUGGED
CHECK	R.P. SWING	F.P. SWING	WAFER TYPE SWING	PISTON TYPE	PISTON TYPE WAFER	
GATE	R.P. WEDGE	FLEX WEDGE	F.P. SLAB	R.P. SLAB		
GLOBE	STD. BODY	ANGLE BODY	"Y" BODY			
NEEDLE	THREADED BONNET METAL SEAT	THREADED BONNET SOFT SEAT	OS&Y BONNET METAL SEAT	OS&Y BONNET SOFT SEAT	GAUGE VALVE THREADED BONNET METAL SEAT	GAUGE VALVE THREADED BONNET SOFT SEAT
PLUG	REGULAR PATTERN	SHORT PATTERN	JACKET			
BASKET STRAINER	ALTA					
"Y" STRAINER	ALTA					

LINE NUMBERING SYSTEM

114 – 600 C PS W – 121

LINE SIZE (mm OD)	PRIMARY PRESSURE RATING	LINE MATERIAL CODE	PIPING SYSTEM CODE	TEMP. INDEX	LINE NUMBER

PRIMARY PRESSURE RATING

CLASS	RATING
150	ANSI 150#
300	ANSI 300#
600	ANSI 600#
900	ANSI 900#
1500	ANSI 1500#
2500	ANSI 2500#

LINE MATERIAL CODE

COATED PIPING	C
FIBRE GLASS	F
STAINLESS STEEL	S

PIPING SYSTEM CODE

SERVICE	SYMBOL
INSTRUMENT AIR	IA
PROCESS PIPING (ANIS B31.3 CODE)	
– SWEET PROCESS HYDROCARBONS, CAUSTIC, PROCESS DRAINS, AND VENT SYSTEMS	P
– SOUR PROCESS HYDROCARBONS, CAUSTIC, SOUR LIQUIDS, HYDROCARBONS, AND WATER, PROCESS DRAINS, AND VENT SYSTEMS	PS

TEMPERATURE INDEX

SERVICE	SYMBOL
BELOW –45°C	V
–45°C TO –29°C	W
–29°C TO 121°C	X
121°C TO 200°C	Y
ABOVE 200°C	Z

NO.	REVISION	PROJ. No.	BY	DATE	CHK.	
10	POST CONSTRUCTION ISSUE	33500	HL	06.09.13	CT	06.09.22
9	JULY 2006 HAZOP GENERAL REVISIONS	64297	CT	06.07.23		
8	GENERAL REVISIONS	43581	CT	06.03.06		
7	D.C.E.L. VALVE TAGGING REVISIONS	43581	GC	06.01.04		
6	GENERAL REVISIONS	43581	KN	06.01.04	CT	06.01.04
5	CASING GAS TAKE–OFF POINT ON PRODUCERS REVISED	43581	CT	05.09.20		
4	ISSUED FOR CONSTRUCTION	43581	CT	05.06.20	RDB	05.06.10

GENERAL NOTES:

1. "POST CONSTRUCTION DRAWINGS" ARE GENERATED FROM CONSTRUCTION CHANGE INFORMATION FORWARDED TO THE ENGINEERING BY ROLSETH ENGINEERING LTD. OR THE OWNER'S REPRESENTATIVE OR CONSTRUCTION CONTRACTORS. ANY CHANGES NOT DOCUMENTED WILL NOT APPEAR ON THE DRAWINGS AND THEREFORE THE DRAWING MAY NOT BE AN ACCURATE REPRESENTATION OF THE CONSTRUCTED FACILITY.
2. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY, IT SHALL BE THE RESPONSIBILITY OF THE OWNERS REPRESENTATIVE TO VERIFY THE LOCATION AND STATUS OF ANY PIPING, ELECTRICAL EQUIPMENT OR BUILDINGS.
3. ANY REVISIONS MADE TO EXISTING EQUIPMENT, PIPING OR ELECTRICAL ON A FACILITY NOT DESIGNED BY B.D.R. ENG. LTD. IS ONLY SHOWN AS A REPRESENTATION OF WHAT EXISTS AND MUST BE VERIFIED BY THE OWNER.

	BY	DATE
DRN.	CT	04.02.20
CHK.	RDB	05.06.10
APP'D.		
L.S.D.	15–32–95–12 W4M	

Bower Damberger Rolseth Engineering Ltd.

DEER CREEK Energy Limited

JOSLYN PHASE #2

WELLPAD #204 MECHANICAL FLOWSHEET

SHEET NUMBER	DRAWING NUMBER	REV
1 OF 14	F–43581–F–00–01	10

60ø HILTAP QUICK CONNECT–STEAM
204–P05–115 60GA–311Z 27NE 204–P05–116
204–P05–117 89GA–311Z
O/S UTILIDOR 51 H&T
89x60
60ø HILTAP QUICK CONNECT–STEAM 60GA–311Z 27NE 204–P05–113 204–P05–114
300PZ 300PSY
89GA–311Z 204–P05–118
60ø HILTAP QUICK CONNECT–STEAM 60GA–311SY 27NE 204–P05–119 204–P05–120
89–300PZ–111
204–P05–101 33BA–309Z
33BA–309Z 204–P05–112
204–P05–111 60GA–311Z
"BLUE SKY" 60–300# RF WILLIS CC20HT MANUAL CHOKE
89–300PZ–135 (CASING)
204–P05–102 21NE
89ø SWIVEL PIPING
204–P05–110 60GA–311Z
3 1/8"– 2000# API GATE VALVE 204–P05–103
3 1/8"– 2000# API GATE VALVE 204–P05–109
ESP CABLE
FIBRE OPTIC
ESP MOTOR TEMPERATURE
TIR P0506 TT P0506
TIR P0505 TT P0505
ESP INTAKE TEMPERATURE
204–P05–108 33GA–1503Z
204–P05–105
204–P05–104 21GA–1503Z
2 1/16"– 2000# API GATE VALVE
204–P05–127 60GA–311Z
2 1/16"– 2000# API GATE VALVE 204–P05–107
5
89ø SWIVEL PIPING
89x60
204–P05–106
PSDH P0508 PAH P0508 PIR P0508
PT P0508 3051CG4 ROSEMOUNT
204–P05–122 21NE
204–P05–123 21NE
204–P05–121 21NE
BUBBLE GAS (INSTRUMENT)
C.S. TUBING
PC P0509
PT P0509 204–P05–126 21NE
PIR P0509 PC P0509
ROSEMOUNT 3051CG4
ICF–ID–PUF (THERMOCASE ENCLOSURE)
BUBBLE GAS (PUMP INTAKE)
21NE 204–P05–125
SAV P0509
21NE 204–P05–124
33–300PZ–158 BUBBLE GAS
O/S UTILIDOR 51 H&T
204–I05–110 33GA–309Z
204–I05–111 60GA–311Z
"BLUE SKY" 60–300# RF WILLIS CC20HT MANUAL CHOKE
89ø SWIVEL PIPING
3 1/8"– 2000# API GATE VALVE 204–I05–114
21NE 204–I05–113
3 1/8"– 2000# API GATE VALVE 204–I05–107
3 1/8"– 2000# API GATE VALVE 204–I05–109
89ø SWIVEL PIPING
2 1/16"– 2000# API GATE VALVE 204–I05–108
ICF–ID–PUF (THERMOCASE ENCLOSURE)
PSDH I0507 PAH I0507 PIR I0507
PT I0507 ROSEMOUNT 3051CG4
21NE 204–I05–106
TUBING C.S.
204–I05–105 21NE
21NE 204–I05–103
33x21
FUTURE GAS LIFT 33BA–309Z 204–I05–112
300PZ 300PX 33CH–304Z
204–I05–101 33BA–309X
33BA–309X 204–I05–145
204–I05–104 33GA–309Z
204–I05–HZ
INJECTION WELL #5
(GC22 13 5/8" 2000#)
204–P05–HZ
PRODUCTION WELL #5
(GC–22 13 5/8" 2000#)
I/S UTILIDOR 38 H 89–300PSY–111 GROUP SHEET 5
I/S UTILIDOR 51 H 89–300PZ–177 STEAM TO LONG STRING SHEET 5
I/S UTILIDOR 38 H 89–300PZ–176 STEAM TO SHORT STRING SHEET 5
60–300PSY–135 ANNULUS GAS SHEET 5

60ø HILTAP QUICK CONNECT–STEAM
204–P04–115 60GA–311Z 27NE 204–P04–116
204–P04–117 89GA–311Z
O/S UTILIDOR 51 H&T
89x60
60ø HILTAP QUICK CONNECT–STEAM 60GA–311Z 27NE 204–P04–113 204–P04–114
300PZ 300PSY
204–P04–119 60GA–311SY 27NE 204–P04–120
51 H&T O/S UTILIDOR
89GA–311Z 204–P04–118
89–300PZ–110
204–P04–101 33BA–309Z
33BA–309Z 204–P04–112
204–P04–111 60GA–311Z
"BLUE SKY" 60–300# RF WILLIS CC20HT MANUAL CHOKE
89–300PZ–134 (CASING)
204–P04–102 21NE
89ø SWIVEL PIPING
204–P04–110 60GA–311Z
3 1/8"– 2000# API GATE VALVE 204–P04–103
3 1/8"– 2000# API GATE VALVE 204–P04–109
ESP CABLE
FIBRE OPTIC
ESP MOTOR TEMPERATURE
TIR P0406 TT P0406
TIR P0405 TT P0405
ESP INTAKE TEMPERATURE
204–P04–108 33GA–1503Z
204–P04–105
204–P04–104 21GA–1503Z
2 1/16"– 2000# API GATE VALVE
204–P04–127 60GA–311Z
2 1/16"– 2000# API GATE VALVE 204–P04–107
5
89ø SWIVEL PIPING
89x60
204–P04–106
PSDH P0408 PAH P0408 PIR P0408
PT P0408 ROSEMOUNT 3051CG4
ICF–ID–PUF (THERMOCASE ENCLOSURE)
204–P04–122 21NE
204–P04–123 21NE
204–P04–121 21NE
BUBBLE GAS (INSTRUMENT)
C.S. TUBING
PC P0409
PT P0409 204–P04–126 21NE
PIR P0409 PC P0409
ROSEMOUNT 3051CG4
ICF–ID–PUF (THERMOCASE ENCLOSURE)
BUBBLE GAS (PUMP INTAKE)
21NE 204–P04–125
SAV P0409
21NE 204–P04–124
33–300PZ–157 BUBBLE GAS
O/S UTILIDOR 51 H&T
204–I04–110 33GA–309Z
204–I04–111 60GA–311Z
"BLUE SKY" 60–300# RF WILLIS CC20HT MANUAL CHOKE
INSTRUMENT COIL & FIBRE OPTIC ONLY APPLIES TO 204–I04–HZ
204–I04–114 3 1/8"– 2000# API GATE VALVE
89ø SWIVEL PIPING
21NE 204–I04–113
3 1/8"– 2000# API GATE VALVE 204–I04–107
3 1/8"– 2000# API GATE VALVE 204–I04–109
89ø SWIVEL PIPING
2 1/16"– 2000# API GATE VALVE 204–I04–108
ICF–ID–PUF (THERMOCASE ENCLOSURE)
PSDH I0407 PAH I0407 PIR I0407
PT I0407 ROSEMOUNT 3051CG4
21NE 204–I04–106
TUBING C.S.
204–I04–105 21NE
21NE 204–I04–103
33x21
FUTURE GAS LIFT 33BA–309Z 204–I04–112
300PZ 300PX 33CH–304Z
204–I04–101 33BA–309X
33BA–309X 204–I04–145
204–I04–104 33GA–309Z
204–I04–HZ
INJECTION WELL #4
(GC22 13 5/8" 2000#)
204–P04–HZ
PRODUCTION WELL #4
(GC–22 13 5/8" 2000#)
60–300PX–146 FUEL GAS HEADER SHEET 3
I/S UTILIDOR 38 H 89–300PSY–110 GROUP SHEET 5
I/S UTILIDOR 51 H 89–300PZ–175 STEAM TO LONG STRING SHEET 5
I/S UTILIDOR 38 H 89–300PZ–174 STEAM TO SHORT STRING SHEET 5
60–300PSY–134 ANNULUS GAS SHEET 5

SHEET NUMBER	DRAWING NUMBER	REV
2 OF 14	F–43581–F–00–01	10

204-P03-HZ
PRODUCTION WELL #3
(GC-22 13 5/8" 2000#)

60ø HILTAP QUICK CONNECT-STEAM
204-P03-115 60GA-311Z 27NE
204-P03-116
204-P03-117 89GA-311Z
O/S UTILIDOR 51 H&T
89x60
60ø HILTAP QUICK CONNECT-STEAM
60GA-311Z 27NE 204-P03-113
204-P03-114
300PZ
300PSY
60ø HILTAP QUICK CONNECT-STEAM
60GA-311SY 27NE 204-P03-119
204-P03-120
O/S UTILIDOR 51 H&T
89GA-311Z 204-P03-118
89-300PZ-111
204-P03-101 33BA-309Z
33BA-309Z 204-P03-112
204-P03-111 60GA-311Z
"BLUE SKY" 60-300# RF WILLIS CC20HT MANUAL CHOKE
89-300PZ-133 (CASING)
204-P03-102 21NE
89ø SWIVEL PIPING
204-P03-110 60GA-311Z
3 1/8"-2000# API GATE VALVE 204-P03-103
3 1/8"-2000# API GATE VALVE 204-P03-109
ESP CABLE
FIBRE OPTIC
ESP MOTOR TEMPERATURE
TIR P0306
TT P0306
TIR P0305
TT P0305
ESP INTAKE TEMPERATURE
204-P03-108 33GA-1503Z
204-P03-105
204-P03-104 21GA-1503Z
2 1/16"-2000# API GATE VALVE
204-P03-107
204-P03-127 60GA-311Z
204-P03-106
5
89ø SWIVEL PIPING
89x60
PSDH P0308 PAH P0308 PIR P0308
PT P0308 3051CG4 ROSEMOUNT
ICF-ID-PUF (THERMOCASE ENCLOSURE)
204-P03-122 21NE
204-P03-123 21NE
204-P03-121 21NE
BUBBLE GAS (INSTRUMENT)
C.S. TUBING
PC P0309
PT P0309
204-P03-126 21NE
PIR P0309 PC P0309
ROSEMOUNT 3051CG4
ICF-ID-PUF (THERMOCASE ENCLOSURE)
BUBBLE GAS (PUMP INTAKE)
21NE 204-P03-124
SAV P0309
21NE 204-P03-125
O/S UTILIDOR 51 H&T
204-I03-110 33GA-309Z
204-I03-111 60GA-311Z
"BLUE SKY" 60-300# RF WILLIS CC2OHT MANUAL CHOKE
33-300PZ-156 BUBBLE GAS
ICF-ID-PUF (THERMOCASE ENCLOSURE)
3 1/8"-2000# API GATE VALVE 204-I03-114
89ø SWIVEL PIPING
PSDH I0307 PAH I0307 PIR I0307
21NE 204-I03-113
3 1/8"-2000# API GATE VALVE 204-I03-107
3 1/8"-2000# API GATE VALVE 204-I03-109
PT I0307 ROSEMOUNT 3051CG4
21NE 204-I03-106
TUBING C.S.
89ø SWIVEL PIPING
204-I03-105 21NE
2 1/16"-2000# API GATE VALVE 204-I03-108
21NE 204-I03-103
33x21
FUTURE GAS LIFT 33BA-309Z 204-I03-112
300PZ 300PX
33CH-304Z 204-I03-101 33BA-309X
204-I03-104 33GA-309Z
33BA-309X 204-I03-145
60-300PX-146 FUEL GAS HEADER SHEET 2

204-I03-HZ
INJECTION WELL #3
(GC22 13 5/8" 2000#)

I/S UTILIDOR 38 H — 89-300PSY-109 GROUP — SHEET 6
I/S UTILIDOR 51 H — 89-300PZ-173 STEAM TO LONG STRING — SHEET 6
I/S UTILIDOR 38 H — 89-300PZ-172 STEAM TO SHORT STRING — SHEET 6
60-300PSY-133 ANNULUS GAS — SHEET 6

204-P02-HZ
PRODUCTION WELL #2
(GC-22 13 5/8" 2000#)

60ø HILTAP QUICK CONNECT-STEAM
204-P02-115 60GA-311Z 27NE
204-P02-116
204-P02-117 89GA-311Z
O/S UTILIDOR 51 H&T
89x60
60ø HILTAP QUICK CONNECT-STEAM
60GA-311Z 27NE 204-P02-113
204-P02-114
300PZ
300PSY
204-P02-119 60GA-311SY 27NE
60ø HILTAP QUICK CONNECT-STEAM
204-P02-120
51 H&T O/S UTILIDOR
89GA-311Z
89-300PZ-110
204-P02-101 33BA-309Z
33BA-309Z 204-P02-112
204-P02-111 60GA-311Z
"BLUE SKY" 60-300# RF WILLIS CC20HT MANUAL CHOKE
89-300PZ-132 (CASING)
204-P02-102 21NE
89ø SWIVEL PIPING
204-P02-110 60GA-311Z
3 1/8"-2000# API GATE VALVE 204-P02-103
3 1/8"-2000# API GATE VALVE 204-P02-109
ESP CABLE
FIBRE OPTIC
ESP MOTOR TEMPERATURE
TIR P0206
TT P0206
TIR P0205
TT P0205
ESP INTAKE TEMPERATURE
204-P02-108 33GA-1503Z
204-P02-105
204-P02-104 21GA-1503Z
2 1/16"-2000# API GATE VALVE
204-P02-107
204-P02-127 60GA-311Z
204-P02-106
5
89ø SWIVEL PIPING
89x60
PSDH P0208 PAH P0208 PIR P0208
PT P0208 ROSEMOUNT 3051CG4
204-P02-122 21NE
204-P02-123 21NE
204-P02-121 21NE
BUBBLE GAS (INSTRUMENT)
C.S. TUBING
PC P0209
PT P0209
204-P02-126 21NE
PIR P0209 PC P0209
ROSEMOUNT 3051CG4
ICF-ID-PUF (THERMOCASE ENCLOSURE)
BUBBLE GAS (PUMP INTAKE)
21NE 204-P02-124
SAV P0209
21NE 204-P02-125
O/S UTILIDOR 51 H&T
204-I02-110 33GA-309Z
204-I02-111 60GA-311Z
"BLUE SKY" 60-300# RF WILLIS CC2OHT MANUAL CHOKE
33-300PZ-155 BUBBLE GAS
INSTRUMENT COIL & FIBRE OPTIC ONLY APPLIES TO 204-I04-HZ
ICF-ID-PUF (THERMOCASE ENCLOSURE)
204-I02-114 3 1/8"-2000# API GATE VALVE
89ø SWIVEL PIPING
PSDH I0207 PAH I0207 PIR I0207
21NE 204-I02-113
3 1/8"-2000# API GATE VALVE 204-I02-107
3 1/8"-2000# API GATE VALVE 204-I02-109
PT I0207 ROSEMOUNT 3051CG4
21NE 204-I02-106
TUBING C.S.
89ø SWIVEL PIPING
204-I02-105 21NE
2 1/16"-2000# API GATE VALVE 204-I02-108
21NE 204-I02-103
33x21
FUTURE GAS LIFT 33BA- 204-I02-112
300PZ 300PX
33CH-304Z 204-I02-101 33BA-309X
204-I02-104 33GA-309Z
33BA-309X 204-I02-145
60-300PX-146 FUEL GAS HEADER SHEET 4

204-I02-HZ
INJECTION WELL #2
(GC22 13 5/8" 2000#)

I/S UTILIDOR 38 H — 89-300PSY-108 GROUP — SHEET 6
I/S UTILIDOR 51 H — 89-300PZ-171 STEAM TO LONG STRING — SHEET 6
I/S UTILIDOR 38 H — 89-300PZ-170 STEAM TO SHORT STRING — SHEET 6
60-300PSY-132 ANNULUS GAS — SHEET 6

SHEET NUMBER	DRAWING NUMBER	REV
3 OF 14	F-43581-F-00-01	10

60ø HILTAP QUICK CONNECT–STEAM
204–P01–115
60GA– 311Z
27NE
204–P01–116
204–P01–117
89GA–311Z
O/S UTILIDOR
51 H&T
89x60
60ø HILTAP QUICK CONNECT–STEAM
60GA– 311Z
27NE
204–P01–113
204–P01–114
300PZ
300PSY
O/S UTILIDOR
51 H&T
60GA–311SY
204–P01–119
27NE
204–P01–120
89GA–311Z
204–P01–118
89–300PZ–111
204–P01–101
33BA–309Z
33BA–309Z
204–P01–112
204–P01–111
60GA–311Z
"BLUE SKY"
60–300# RF
WILLIS CC2OHT
MANUAL CHOKE
89–300PZ–131
(CASING)
204–P01–102
21NE
89ø SWIVEL
PIPING
204–P01–110
60GA–311Z
3 1/8"–
2000# API
GATE VALVE
204–P01–103
3 1/8"–
2000# API
GATE VALVE
204–P01–109
ESP CABLE
FIBRE OPTIC
ESP MOTOR
TEMPERATURE
TIR
P0106
TT
P0106
TIR
P0105
TT
P0105
ESP INTAKE
TEMPERATURE
204–P01–108
33GA–1503Z
204–P01–105
204–P01–104
21GA–1503Z
2 1/16"–
2000# API
GATE VALVE
204–P01–127
60GA–311Z
2 1/16"–
2000# API
GATE VALVE
204–P01–107
5
PSDH
P0108
PIR
P0108
PAH
P0108
ICF–ID–PUF
(THERMOCASE
ENCLOSURE)
PT
P0108
3051CG4
ROSEMOUNT
89ø SWIVEL
PIPING
89x60
204–P01–106
204–P01–122
21NE
204–P01–123
21NE
204–P01–121
21NE
BUBBLE GAS (INSTRUMENT)
C.S.
TUBING
PC
P0109
PT
P0109
204–P01–126
21NE
PIR
P0109
PC
P0109
ROSEMOUNT
3051CG4
ICF–ID–PUF
(THERMOCASE
ENCLOSURE)
BUBBLE GAS (PUMP INTAKE)
21NE
204–P01–125
21NE
204–P01–124
SAV
P0109
O/S UTILIDOR
51 H&T
204–I01–110
33GA–309Z
204–I01–111
60GA–311Z
"BLUE SKY"
60–300# RF
WILLIS CC2OHT
MANUAL CHOKE
33–300PZ–154
BUBBLE GAS
ICF–ID–PUF
(THERMOCASE
ENCLOSURE)
3 1/8"–
2000# API
GATE VALVE
204–I01–114
89ø SWIVEL
PIPING
21NE
204–I01–113
3 1/8"–
2000# API
GATE VALVE
204–I01–107
3 1/8"–
2000# API
GATE VALVE
204–I01–109
PSDH
I0107
PAH
I0107
PIR
I0107
PT
I0107
ROSEMOUNT
3051CG4
89ø SWIVEL
PIPING
21NE
204–I01–106
204–I01–105
21NE
TUBING
C.S.
2 1/16"–
2000# API
GATE VALVE
204–I01–108
21NE
204–I01–103
33x21
FUTURE GAS LIFT
33BA–309Z
204–I01–112
300PZ
300PX
33CH–
304Z
204–I01–101
33BA–309X
204–I01–104
33GA– 309Z
33BA–309X
204–I01–145
60–300PX–146
FUEL GAS
HEADER
SHEET 3

204–P01–HZ
PRODUCTION WELL #1
(GC–22 13 5/8" 2000#)

204–I01–HZ
INJECTION WELL #1
(GC22 13 5/8" 2000#)

60–300PX–146
FUEL GAS
HEADER
SHEET 11

I/S UTILIDOR
38 H
89–300PSY–107
GROUP
SHEET 7

I/S UTILIDOR
51 H
89–300PZ–169
STEAM TO
LONG STRING
SHEET 7

I/S UTILIDOR
38 H
89–300PZ–168
STEAM TO
SHORT STRING
SHEET 7

60–300PSY–131
ANNULUS GAS
SHEET 7

SHEET NUMBER	DRAWING NUMBER	REV
4 OF 14	F–43581–F–00–01	10

BLDG. LIMITS

BLDG. LIMITS

204-P05-142
33BA-309SY

204-P05-143
33BA-309SY

204-I05-130
89GA-311SY

204-I05-129
27NE

51 H

38 H

204-I05-128
89GA-311SY
27NE

204-I05-127

204-I05-126
33GA-309Z

64 H

114-300PZ-176

204-P05-145
33BA-309SY

38 H

204-P05-133
33BA-309SY

204-P05-140
33BA-309SY

204-P05-139
33BA-309SY

204-P05-132
60GL-301SY

60CH-
301SY

204-P05-137
89BA-301SY

89CH-
301SY

204-P05-141
89BA-301SY

89CH-
301SY

89-300PSY-118

TI
I0501

TW
I0501

PI
I0502

204-I05-118
27GA-309Z

204-I05-125
114GA-311Z

114x89

204-I05-122
89GA-311Z

204-I05-124
21NE

204-I05-123
89GL-301Z

300PZ
300PSY

89-300PZ-

204-P05-HZ
PRODUCTION WELL #5
204-I05-HZ
INJECTION WELL #5

204-P05-131
33BA-309SY

204-P05-136
33BA-309SY

60ø 300#
ROSEMOUNT
3051CD3

dPIR
P0507

DPT
P0507

FE
P0507

60ø 300#
ANSI ORIFICE
FLANGE

204-P05-129
60GL-301SY

204-P05-130
60BA-301SY

60CH-
301SY

60-300PSY-115

204-I05-117
89GA-311Z

INSULATION
KIT

204-I05-119
89GL-301Z

204-I05-116
27GA-309Z

204-I05-120
27GA-309Z

89ø 300#
ROSEMOUNT
3095 MFCC

FE
I0504

FT
I0504

TW
I0504

TE
I0504

PAH
I0504

PIR
I0504

TIR
I0504

FIR
I0504

89ø 300#
ROSEMOUNT
3095 MFCC

FE
I0503

FT
I0503

TW
I0503

TE
I0503

PAH
I0503

PIR
I0503

TIR
I0503

FIR
I0503

25 H

38 H

204-P05-135
89GL-301SY

INSULATION
KIT

204-I05-115
89GL-301Z

INSULATION
KIT

204-I05-121
89GA-311Z

38 H

38 H

38 H

TIR
P0504

TT
P0504

TW
P0504

ROSEMOUNT
644HAK6M

TIR
P0502

TT
P0502

TW
P0502

ROSEMOUNT
644HAK6M

PAH
P0501

PIR
P0501

PT
P0501

ROSEMOUNT
3051CG4

204-P05-128
33ø PGI
ROOT VALVE
MPSWxFLANGE

PIR
P0503

PAH
P0503

PT
P0503

ROSEMOUNT
3051CG4

204-P05-134
33ø PGI
ROOT VALVE
MPSWxFLANGE

204-P05-127
60BA-301SY

INSULATION
KIT

204-P04-133
33BA-309SY

204-P04-140
33BA-309SY

204-P04-139
33BA-309SY

204-P04-132
60GL-301SY

60CH-
301SY

204-P04-137
89BA-301SY

89CH-
301SY

204-P04-141
89BA-301SY

89CH-
301SY

89-300PSY-119

TI
I0401

TW
I0401

PI
I0402

204-I04-118
27GA-309Z

204-I04-125
114GA-311Z

114x89

204-I04-122
89GA-311Z

204-I04-124
21NE

204-I04-123
89GL-301Z

300PZ
300PSY

89-300PZ-175

204-P04-HZ
PRODUCTION WELL #4
204-I04-HZ
INJECTION WELL #4

204-P04-131
33BA-309SY

204-P04-136
33BA-309SY

60ø 300#
ROSEMOUNT
3051CD3

dPIR
P0407

DPT
P0407

FE
P0407

60ø 300#
ANSI ORIFICE
FLANGE

204-P04-129
60GL-301SY

204-P04-130
60BA-301SY

60CH-
301SY

60-300PSY-128

204-I04-117
89GA-311Z

204-I04-116
27GA-309Z

204-I04-121
89GA-311Z

204-I04-120
27GA-309Z

89ø 300#
ROSEMOUNT
3095 MFCC

FE
I0404

FT
I0404

TW
I0404

TE
I0404

PAH
I0404

PIR
I0404

TIR
I0404

FIR
I0404

89ø 300#
ROSEMOUNT
3095 MFCC

FE
I0403

FT
I0403

TW
I0403

TE
I0403

PAH
I0403

PIR
I0403

TIR
I0403

FIR
I0403

25 H

38 H

204-P04-135
89GL-301SY

INSULATION
KIT

204-I04-115
89GL-301Z

INSULATION
KIT

204-I04-119
89GL-301Z

38 H

38 H

38 H

TIR
P0404

TT
P0404

TW
P0404

ROSEMOUNT
644HAK6M

TIR
P0402

TT
P0402

TW
P0402

ROSEMOUNT
644HAK6M

PAH
P0401

PIR
P0401

PT
P0401

ROSEMOUNT
3051CG4

204-P04-128
33ø PGI
ROOT VALVE
MPSWxFLANGE

PIR
P0403

PAH
P0403

PT
P0403

ROSEMOUNT
3051CG4

204-P04-134
33ø PGI
ROOT VALVE
MPSWxFLANGE

204-P04-127
60BA-301SY

INSULATION
KIT

219-300PSY-100
GROUP HEADER
SHEET 6

89-300PSY-113
TEST HEADER
SHEET 6

273-300PZ-165
STEAM
HEADER
SHEET 6

168-300PSY-130
ANNULUS HEADER
SHEET 6

204-I04-130
89GA-311SY

204-I04-129
27NE

204-I04-128
89GA-311SY
27NE

204-I04-127

114-300PZ-174

89-300PSY-111
GROUP
SHEET 2

89-300PZ-177
STEAM TO
LONG STRING
SHEET 2

89-300PZ-176
STEAM TO
SHORT STRING
SHEET 2

60-300PSY-135
ANNULUS GAS
SHEET 2

89-300PSY-110
GROUP
SHEET 2

89-300PZ-175
STEAM TO
LONG STRING
SHEET 2

89-300PZ-174
STEAM TO
SHORT STRING
SHEET 2

60-300PSY-134
ANNULUS GAS
SHEET 2

BLDG. LIMITS

BLDG. LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
5 OF 14	F-43581-F-00-01	10

BLDG. LIMITS

BLDG. LIMITS

219-300PSY-100
GROUP HEADER
SHEET 5

89-300PSY-113
TEST HEADER
SHEET 5

273-300PZ-165
STEAM HEADER
SHEET 5

168-300PSY-130
ANNULUS HEADER
SHEET 5

219-300PSY-100
GROUP HEADER
SHEET 7

89-300PSY-113
TEST HEADER
SHEET 7

273-300PZ-165
STEAM HEADER
SHEET 7

168-300PSY-130
ANNULUS HEADER
SHEET 7

51 H
38 H
64 H
38 H

114-300PZ-172
114-300PZ-170

204-I03-130 89GA-311SY
204-I03-129 27NE
204-I03-128 89GA-311SY
27NE
204-I03-127

204-I02-130 89GA-311SY
204-I02-129 27NE
204-I02-128 89GA-311SY
27NE
204-I02-127

204-P03-133 33BA-309SY
204-P03-140 33BA-309SY
204-P03-139 33BA-309SY
204-P03-132 60GL-301SY
60CH-301SY
204-P03-137 89BA-301SY
89CH-301SY
204-P03-141 89BA-301SY
89CH-301SY
89-300PSY-120
TI I0301
TW I0301
PI I0302
204-I03-118 27GA-309Z
204-I03-125 114GA-311Z
114x89
204-I03-122 89GA-311Z
204-I03-124 21NE
204-I03-123 89GL-301Z
300PZ
300PSY
89-300PZ-

204-P03-HZ
PRODUCTION WELL #3
204-I03-HZ
INJECTION WELL #3

204-P03-131 33BA-309SY
204-P03-136 33BA-309SY
60ø 300# ROSEMOUNT 3051CD3
dPIR P0307
DPT P0307
FE P0307
60ø 300# ANSI ORIFICE FLANGE
60ø HILTAP
204-P03-129 60GL-301SY
204-P03-130 60BA-301SY
60CH-301SY
89x60
60-300PSY-129
204-I03-117 89GA-311Z
INSULATION KIT
204-I03-119 89GL-301Z
204-I03-116 27GA-309Z
204-I03-120 27GA-309Z
PAH I0304
PIR I0304
TIR I0304
FIR I0304
PAH I0303
PIR I0303
TIR I0303
89ø 300# ROSEMOUNT 3095 MFCC
FE I0304
FT I0304
TW I0304
TE I0304
FE I0303
FT I0303
TW I0303
TE I0303
204-P03-135 89GL-301SY
INSULATION KIT
204-I03-115 89GL-301Z
INSULATION KIT
204-I03-121 89GA-311Z
TIR P0304
TT P0304
TW P0304
ROSEMOUNT 644HAK6M
TIR P0302
TT P0302
TW P0302
ROSEMOUNT 644HAK6M
PAH P0301
PIR P0301
PT P0301
ROSEMOUNT 3051CG4
204-P03-128 33ø PGI ROOT VALVE MPSWxFLANGE
PIR P0303
PAH P0303
PT P0303
ROSEMOUNT 3051CG4
204-P03-134 33ø PGI ROOT VALVE MPSWxFLANGE
204-P03-127 60BA-301SY
INSULATION KIT
25 H
38 H
38 H
38 H
38 H

204-P02-133 33BA-309SY
204-P02-140 33BA-309SY
204-P02-139 33BA-309SY
204-P02-132 60GL-301SY
60CH-301SY
204-P02-137 89BA-301SY
89CH-301SY
204-P02-141 89BA-301SY
89CH-301SY
89-300PSY-121
TI I0201
TW I0201
PI I0202
204-I02-118 27GA-309Z
204-I02-125 114GA-311Z
114x89
204-I02-122 89GA-311Z
204-I02-124 21NE
204-I02-123 89GL-301Z
300PZ
300PSY
89-300PZ-171

204-P02-HZ
PRODUCTION WELL #2
204-I02-HZ
INJECTION WELL #2

204-P02-131 33BA-309SY
204-P02-136 33BA-309SY
60ø 300# ROSEMOUNT 3051CD3
dPIR P0207
DPT P0207
FE P0207
60ø 300# ANSI ORIFICE FLANGE
204-P02-129 60GL-301SY
204-P02-130 60BA-301SY
60CH-301SY
60-300PSY-144
204-I02-117 89GA-311Z
204-I02-121 89GA-311Z
204-I02-116 27GA-309Z
204-I02-120 27GA-309Z
PAH I0204
PIR I0204
TIR I0204
FIR I0204
PAH I0203
PIR I0203
TIR I0203
FIR I0203
89ø 300# ROSEMOUNT 3095 MFCC
FE I0204
FT I0204
TW I0204
TE I0204
FE I0203
FT I0203
TW I0203
TE I0203
204-P02-135 89GL-301SY
INSULATION KIT
204-I02-115 89GL-301Z
INSULATION KIT
204-I02-119 89GL-301Z
TIR P0204
TT P0204
TW P0204
ROSEMOUNT 644HAK6M
TIR P0202
TT P0202
TW P0202
ROSEMOUNT 644HAK6M
PAH P0201
PIR P0201
PT P0201
ROSEMOUNT 3051CG4
204-P02-128 33ø PGI ROOT VALVE MPSWxFLANGE
PIR P0203
PAH P0203
PT P0203
ROSEMOUNT 3051CG4
204-P02-134 33ø PGI ROOT VALVE MPSWxFLANGE
204-P02-127 60BA-301SY
INSULATION KIT
25 H
38 H
38 H
38 H
38 H

89-300PSY-109
GROUP
SHEET 3

89-300PZ-173
STEAM TO LONG STRING
SHEET 3

89-300PZ-172
STEAM TO SHORT STRING
SHEET 3

60-300PSY-133
ANNULUS GAS
SHEET 3

89-300PSY-108
GROUP
SHEET 3

89-300PZ-171
STEAM TO LONG STRING
SHEET 3

89-300PZ-170
STEAM TO SHORT STRING
SHEET 3

60-300PSY-132
ANNULUS GAS
SHEET 3

BLDG. LIMITS

BLDG. LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
6 OF 14	F-43581-F-00-01	10

BLDG. LIMITS

BLDG. LIMITS

219-300PSY-100
GROUP HEADER
SHEET 6

89-300PSY-113
TEST HEADER
SHEET 6

273-300PZ-165
STEAM HEADER
SHEET 6

168-300PSY-130
ANNULUS HEADER
SHEET 6

51 H

38 H

64 H

38 H

204-I01-130
89GA-311SY

204-I01-129
27NE

204-I01-128
89GA-311SY
27NE

204-I01-127

114-300PZ-168

219-300PSY-100
GROUP HEADER
SHEET 8

89-300PSY-113
TEST HEADER
SHEET 10

273-300PZ-165
STEAM HEADER
SHEET 12

168-300PSY-130
ANNULUS HEADER
SHEET 9

204-P01-133
33BA-309SY

204-P01-140
33BA-309SY

204-P01-139
33BA-309SY

204-I01-125
114GA-311Z

1P1-133
33BA-309SY

1P1-140
33BA-309SY

1P1-139
33BA-309SY

204-P01-132
60GL-301SY
60CH-301SY

204-P01-137
89BA-301SY
89CH-301SY

204-P01-141
89BA-301SY
89CH-301SY

TI I0101
TW I0101

PI I0102

204-I01-118
27GA-309Z

114x89

89-300PSY-122

1P1-132
60GL-301SY
60CH-301SY

1P1-137
89BA-301SY
89CH-301SY

1P1-141
89BA-301SY
89CH-301SY

89-300PSY-123

204-P01-HZ
PRODUCTION WELL #1

204-I01-HZ
INJECTION WELL #1

89-300PZ-169

204-I01-122
89GA-311Z

204-I01-124
21NE

204-I01-123
89GL-301Z

300PZ
300PSY

204-P01-131
33BA-309SY

204-P01-136
33BA-309SY

1P1-131
33BA-309SY

1P1-136
33BA-309SY

60ø 300#
ROSEMOUNT
3051CD3

dPIR P0107
DPT P0107
FE P0107

60ø 300#
ANSI ORIFICE
FLANGE

dPIR 1P605
DPT 1P605
FE 1P605

60ø 300#
ROSEMOUNT
3051CD3

60ø 300#
ANSI ORIFICE
FLANGE

21NE

204-P01-130
60BA-301SY
60CH-301SY

60ø HILTAP

204-I01-115
89GL-301Z

INSULATION KIT

204-I01-116
27GA-309Z

204-I01-119
89GL-301Z

INSULATION KIT

204-I01-120
27GA-309Z

1P1-129
60GL-301SY

1P1-130
60BA-301SY
60CH-301SY

60-300PSY-162

204-P01-129
60GL-301SY

60-300PSY-145

PAH I0104
PIR I0104
TIR I0104
FIR I0104

89ø 300#
ROSEMOUNT
3095 MFCC

FE I0104
FT I0104
TW I0104
TE I0104

PAH I0103
PIR I0103
TIR I0103
FIR I0103

89ø 300#
ROSEMOUNT
3095 MFCC

FE I0103
FT I0103
TW I0103
TE I0103

25 H

38 H

25 H

38 H

204-P01-135
89GL-301SY

INSULATION KIT

204-I01-117
89GA-311Z

204-I01-121
89GA-311Z

1P1-135
89GL-301SY

INSULATION KIT

38 H

38 H

TIR P0104
TT P0104
TW P0104

ROSEMOUNT
644HAK6M

TIR P0102
TT P0102
TW P0102

ROSEMOUNT
644HAK6M

TIR 1P604
TT 1P604
TW 1P604

ROSEMOUNT
644HAK6M

TIR 1P602
TT 1P602
TW 1P602

ROSEMOUNT
644HAK6M

PAH P0101
PIR P0101

PIR P0103
PAH P0103

PAH 1P601
PIR 1P601

PIR 1P603
PAH 1P603

204-P01-128
33ø PCI
ROOT VALVE
MPSWxFLANGE

PT P0103

ROSEMOUNT
3051CG4

204-P01-134
33ø PCI
ROOT VALVE
MPSWxFLANGE

PT P0101

ROSEMOUNT
3051CG4

1P1-128
33ø PCI
ROOT VALVE
MPSWxFLANGE

PT 1P603

ROSEMOUNT
3051CG4

1P1-134
33ø PCI
ROOT VALVE
MPSWxFLANGE

PT 1P601

ROSEMOUNT
3051CG4

204-P01-127
60BA-301SY

INSULATION KIT

1P1-127
60BA-301SY

INSULATION KIT

89-300PSY-107
GROUP
SHEET 4

89-300PZ-169
STEAM TO LONG STRING
SHEET 4

89-300PZ-168
STEAM TO SHORT STRING
SHEET 4

60-300PSY-131
ANNULUS GAS
SHEET 4

BLDG. LIMITS

89-300PSY-112
GROUP FROM PH. 1 WELLPAIR
F-43581-F-00-04

38 H

60-300PSY-136
ANN. GAS FROM PH. 1 WELLPAIR
F-43581-F-00-04

25 H

BLDG. LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
7 OF 14	F-43581-F-00-01	10

E-401
GROUP CONDENSOR
3.84x12.19x 4RF
DUTY : 16667 kw
c/w (2) 29.83 kw FAN MOTORS
3/60/480
DESIGN : 1379 kPa @ 200°C/-40°C

CHEMICAL INJECTION
33CH-303SY
ONE C/W HASTELLOY QUILL
204-E401-118,119,120.
33BA-103SX C/W QUILL
119 120 118

219-300PSY-100
GROUP HEADER
SHEET 7
51 H
204-E401-117
33BA-309SY
(LOCATED AT THE 4:00 POSITION NO QUILL)

204-E401-116
33BA-304SY
33-300PSY-127
SAMPLE TO E-405
SHEET 10
33BA-309SY

STATUS
PI 21
204-E401-122
33BA-309SY
89-300PSY-178
FROM WELLHEADS
SHEET 12
25 H&T
204-E401-101
89BA-321SY
89CH-301SY
33BA-309SY
33BA-309SY
89BA-301SY
89CH-301SY
33BA-309SY
219x89
33BA-309SY

204-E401-102
219BA-321SY
219CH-301SY
219-300PSY-102
38 H
219-300PSY-101
GROUP HEADER
SHEET 9

SKID LIMITS
SKID LIMITS

ESD
I/A
SAV 40107
204-E400-110
21NE
FISHER 67CFR
TEMPORARY
XVPO 40107
XVPC 40107
XVPI 40107
FCV 40107
204-E401-103
219BA-321SY
c/w BETTIS CBA 930SR80-11-CW
(F.C.)

204-E401-106
89BA-111SX
(C.S.O.)
204-E401-105
60BA-311SY
(C.S.O.)
PSV 40106
60-300# x 89-150#
CROSBY 2H3JOS-E-35-N2-J
ORFICE : 0.785 in²
FIRE
MAX. CAP. : 3932 KG./HR.
SET @ 1379 kPag
25 H&T
89-150PSX-143
TO POP
SHEET 14

25 H&T
ATM.
76
89ø
168ø DRIP POT BY 114mm DEEP
24
DRAIN 27ø NPT COUPLING c/w PLUGT
48-MNPT x 73-FNPT
FARRIS-27GA46-M70
SET @ 1379 kPag
PSV 10303
25 H&T
38 H

204-E401-104
60BA-301SY
60ø TRUCK QUICK CONNECT
33GL-304Z
201-E401-114
O/S ONLY
25 H&T
33x21
21-300PZ-
STEAM SUPPLY
SHEET 12
21GL-314Z
VELAN
W8076Z-02TS

TC 40105
TY 40105
FISHER DVC546
I/P
I/A
202-E401-123
21NE
67CFR

TI 40101
TW 40101
202-E401-110
33BA-309SY
(VENT)
TCV 40105
33GL-304Z
201-E401-114
(TYP.3)
219-300#

E-401

33GA-309SY
(DRAIN)
STEAM TO CONDENSER HEATING COIL
114-300#
219x114
202-E401-109
33BA-309SY
(DRAIN)
HS 40103
202-E401-112
VS 40104
VSDH 40104
33GL-304Z
201-E401-114
(TYP.3)

202-E401-107
60BA-301SY
TRUCK QUICK CONN.
TI 40102
TW 40102

TC 40105
TT 40105
ROSEMOUNT 644HAK6M5
TW 40105

204-E401-108
219BA-321SY
38 H
33BA-309SY

SHEET NUMBER	DRAWING NUMBER	REV
8 OF 14	F-43581-F-00-01	10

E-400
GAS/GLYCOL EXCHANGER
CPL 30-80
DUTY : 409 kw
HOT SIDE : 1500 kPag/200°C
COLD SIDE : 1500 kPag/200°C

P-500
CASING PUMP MPP
BORNEMANN TWIN SCREW MW 7T.3ZK-33
120 m /hr , 2000 kPag
93.25 kw @ 1800 RPM VFD
3/60/480

BLDG. LIMITS

219-300PSY-101
GROUP HEADER
SHEET 8

168-300PSY-130
ANNULUS HEADER
SHEET 7

89-300PSY-126
BYPASS SEPARATOR
SHEET 10

168-300PSY-106
TO GROUP HDR.
SHEET 10

60-150PSX-141
TO POP HEADER
SHEET 14

21-300PX-153
PURGE GAS
TO STRAINER
SHEET 10

89-300PSY-181
TO 89-300PSY-116
SHEET 10

89-300PSY-191
GLYCOL SUPPLY
F-43581-F-00-03
SHEET 3

89-300PSY-193
GLYCOL RETURN
F-43581-F-00-03
SHEET 3

21-600PZ-
STEAM TO P-500
SHEET 12

60-300PSY-151

60-150PSX-163

168-300PSY-106

168-300PSY-105

168-300PSY-104

168-300PSY-103

33-300PSY-164

33-300PX-200

204-E400-134
168BA-301SY
38 H

204-E400-104
168BA-311SY
204-E400-103
204-E400-102
168BA-311SY
33BA-304SY
204-E400-136
25 H

204-E400-137
33BA-304SY
89BA-101SY
204-E400-101
89CH-301SY

219x168

XVPI 40012
ESDV 40012
33BA-301SY
c/w EL-O-MATIC
MODEL #ESA65-G/A/L2-LT
(F.C.)

168CH-301SY

SAV 40012 ASCO
67CFR FISHER
204-E400-107
21NE

204-E400-108
21NE

TCV 50005

204-E400-109
33BA-309SY
PI 40006

33-300#
FISHER D BODY c/w
667 ACTUATOR
(F.C.)

168BA-311SY
c/w BETTIS
CBA 7255R80-11
(F.C.)

FCV 40013
XVPI 40013
XVPO 40013
XVPC 40013
TOP WORKS
DXP-L21 GSEB

STATUS P-500 40013
204-E400-110
21NE
FISHER 67CFR
SAV 40013

168BSF-301SY
204-E400-111
48BA-303SY
(S.R.)
204-E400-112
168BA-321SY
27NE
204-E400-113
204-E400-114
27NE
dPI 40011
204-E400-115
21BA-303SY
(S.R.)

204-E400-116
21NE
300PSY
21CH-303SY
300PX
21BA-303Y
204-E400-138

STATUS PC 50002
I/A
21NE
FISHER 67CFR
I/P

38 H

33BA-309SY

89BA-301SY
89CH-301SY
89GL-301SY

204-E400-119
168GL-301SY

ROSEMOUNT 3051CD3
204-P500-101
33BA-309SY
dPT 40005
dPIR 40005
dPAH 40005
33BA-309SY
204-P500-102

204-E400-122
168BA-311SY
204-P500-104
168BA-321SY
204-P500-103
60BA-301SY
CAUSTIC WASH CONNECTION (OUTSIDE)

TIR TC TAH TSDH TAL 40004
TT 40004
TW 40004
ROSEMOUNT 644HAK6M
PI 40007
202-P500-105
33BA-309SY

204-E400-121
33BA-311SY
(C.S.O.)
60BA-111SX
(C.S.O.)
204-E400-120

PSV 40012

204-E400-135
60BA-301SY
CAUSTIC WASH CONNECTION (OUTSIDE)

TI 40008
TW 40008

168x89
89ø-300# RF
316 L S.S.
E-400
168x89
89ø-300# RF
316 L S.S.
89ø-300# RF
316 L S.S.

204-E400-124
27BA-309X
PI 40009
204-E400-125
89BA-301X

TI 40010
TW 40010

204-E400-126
27BA-309X
PI 40001
TI 40002
TW 40002

25 H

21x33 NPT
CROSBY 951170MA
ORFICE : 0.074 in²
THERMAL
MAX. CAP. : 7159 Kg./HR.
SET @ 1500 kPag

PSV 40003
204-E400-132
33BA-314X
(C.S.O.)
204-E400-127
21BA-314X
(C.S.O.)

TC 40004
TY 40004 FISHER DVC6020
204-E400-139
21NE
FISHER 67CFR
I/P
TCV 40004
60ø-300# FISHER V200
C/W 40-1052(F.O.)
204-E400-133
89BA-301X
204-E400-130
89BA-301X
27BA-309X
89x60
89x60
204-E400-129
89GL-301X
204-E400-131

P-500 BEARING TEMP.'S
TIR TC TAH TSDH 50011
TT 50011
TE 50011
202-P500-106
HS 50001
273x168
TIR TC TAH TSDH 50012
TT 50012
TE 50012
TIR TC TAH TSDH 50013
TT 50013
TE 50013
TIR TC TAH TSDH 50014
TT 50014
TE 50014
ROSEMOUNT 3144PD TYP.

P-500
273x168
273-300#
273-300#
33BA-309SY
202-P500-108

ROSEMOUNT 3051TG3
PT 50002
202-P500-109
33BA-309SY

PIR 50002
PC 50002
PSDL 50002
PAH 50002
PAL 50002
PSDH 50002
PAH 50002

MECHANICAL SEAL LEAK DETECTION POT
LSH 50009
LSDH 50009

202-P500-110
33BA-301SY
TW 50005
TT 50005
ROSEMOUNT 3144PD
TIR TC TAH TSDH 50005

25 H
60BA-301SY
33BA-303SY
PCV 50008
60ø FISHER D
c/w 657-45 ACTUATOR
60BA-301SY
25 H
60BA-301SY
TUBING
TUBING
21BA-304SY

MAGNETROL TDL-1200-ROO
LSDL 50004
LSL 50004
PSDH 50003
PIR 50003
PT 50003
ROSEMOUNT TG3

48-300# x 60-150#
CROSBY 1.5F2JLT-JOS-E-35-S-N2-J
ORFICE : 0.307 in
FIRE
MAX. CAP. : 38 756 Kg/HR
SET @ 2500 kPag

PSV 50006
202-P500-113
60BA-111SX
(C.S.O.)
202-P500-112
48BA-311SY
(C.S.O.)

202-P500-111
21BA-309SY
(SAMPLE)
202-P500-116
33BA-309SY
(SAMPLE)

21CH-304SY
300PSY
150PSX
21BA-304SY
202-P500-118
168CH-301SY
202-P500-114
168BA-301SY

168BA-301SY
c/w EL-O-MATIC
ESA350-4/A/L2-LT
(F.C.)
(MULTIPORT VALVE)
FCV 50007
XVPI 50007
XVPO 50007
XVPC 50007
TOP WORKS
DXP-L21 GSEB
SAV 50007
FISHER 67CFR
202-P500-115
21NE
P-500 STATUS 50007

33-300# x 60-150#
CROSBY 1D2JLT-JOS-E-25-D
ORFICE : 0.11 in²
FIRE
MAX. CAP. : 10 624 kg/HR
SET @ 1500 kPag

PSV 40012
204-E400-120

BLDG. LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
9 OF 14	F-43581-F-00-01	10

V-100
TEST SEPARATOR
762 O.D. x 2438 S/S
DESIGN: 3792 kPa @ 200°C
C.A. = 3.2mm

E-405
SAMPLE LINE COOLER
KETEMA LP
168ø x 1454 LONG
DESIGN SHELL/TUBE: 3482 kPag @ 225°C

P-501
SAMPLE BOX DRAIN PUMP

BLDG. LIMITS

168-300PSY-106
GROUP HEADER
SHEET 9

89-300PSY-113
TEST HEADER
SHEET 7

38 H

204-V100-102,103,104.
33BA-309SY
C/W QUILL

204-V100-101
33BA-309SY
(LOCATED AT THE 4:00 POSITION NO QUILL)

102
103
104

CHEMICAL INJECTION

33CH-303SY
(TYP.)

ONE C/W HASTELLOY QUILL

204-V100-134
60BA-111SX
(C.S.O.)

204-V100-133
33BA-311SY
(C.S.O.)

PSV 10001

33-300# x 60-150#
CROSBY 1D2JLT-JOS-E-35-N2-J
ORFICE : 0.11 in²
FIRE
MAX. CAP. : 16 208 Kg./HR.
RESET @ 3482 kPag

PIR 10008
TIR 10008
PT 10008
FT 10008
FE 10008
TW 10008

204-V100-132
27BA-309SY

60ø-300#

204-V100-135
21NE

204-V100-136
21NE

33-150PSX-142

150PSX
300PSY

204-V100-119
33GL-309SY

60-300PSY-140

PC 10006
I/A
204-V100-137
21NE
FISHER 67CFR
I/P
PY 10006
FISHER DVC 6020

60ø-300#
FISHER V200
c/w 1052 ACT. 40
(F.C.)
PCV 10006

60CH-301SY

60BA-301SY
204-V100-138

27BA-309SY
204-V100-139

60BA-301SY
204-V100-140

25 H

168-300PSY-106
GROUP HEADER
SHEET 12

204-V100-142
89BA-301SY

89-300PSY-126
TO P-500 SUCTION
SHEET 9

89BA-301SY
204-V100-141

89-300# BLIND

SKID LIMITS

60-150PSX-137
TO POP HEADER
SHEET 14

21-300PX-153
PURGE GAS TO STRAINER
SHEET 9

89ø HILTAP

89GL-301SY

204-V100-105
89BA-301SY
(CORROSION MONITORING)

89x60

89-300PSY-181
FROM P-500 SUCT.
SHEET 9

89-300# BLIND

204-V100-106
89BA-301SY

204-V100-112
33BA-304SY

25 H

114x60

33-300#

204-V100-113
27BA-309SY

33BA-309SY
204-V100-114

33-300#

33BA-309SY
PT 10006

ROSEMOUNT 3051CG4

PC 10006
PIR 10006
PSDH 10006
PAHH 10006

LSH 10002
LSDH 10002
60ø NPT NORRISEAL 1005E
114-300#

33BA-309SY

25 H

33-300PSY-127
SAMPLE FROM GROUP HEADER
SHEET 8

204-V100-143
33BA-309SY
(VENT)

204-V100-144
33BA-309SY
(DRAIN)

21-600PZ-
STEAM TO E-405
SHEET 12

(S.R.)
33BA-309SY
204-V100-107

204-V100-108
33BA-309SY

33CH-303SY

300PSY
300PX

FIR 10011

TI 10003
TW 10003

33-300#

51H

PI
21BA-303X
204-V100-111

FE 10011
FT 10011
33 NPT HALLIBURTON c/w MCII TOTALIZR

33 NPT
PRV 10012

204-V100-110
33BA-303X

33BA-303X
204-V100-109

LAH 10005
LIR 10005
LC 10005
LT 10005
ROSEMOUNT 3051L

204-V100-115
89BA-301SY

204-V100-116
33BA-304SY

33-300PSY-152

V-100

204-V100-148
27NE

33ø HILTAP QUICK CONNECT-STEAM

33GA-314Z
204-V100-147

204-V100-124
21BA-103SY
(S.R.)

204-V100-123
27NE

204-V100-122

dPI 10010

27NE

89BA-301SY
204-V100-149

89BSF-301SY

33BA-303SY
204-V100-121

FIR 10004
FQI 10004
89ø-300# AGAR OW-201/3" CUT METER

89x48

89x48

FIR 10009
FE 10009
48ø-300# PROMASS 83F50-AABSAANABBAQ

33BA-309SY

33-300PSY-125

33-300PSY-124

204-V100-125
33BA-304SY

LC 10005

204-V100-126
21NE

FISHER 67CFR
I/P
LY 10005
FISHER DVC 6020

89ø HILTAP
27NE

89CH-301SY

204-V100-128
60BA-301SY

204-V100-127
60BA-301SY

89-300PSY-114

LCV 10005
89ø-300# FISHER V200 c/w 1052 ACT. 40 (F.C.)

89BA-301SY
204-V100-129

204-V100-130
89BA-301SY

89CH-301SY

38 H

204-V100-131
89BA301SY

89GL-301SY

SKID LIMITS

89-300PSY-116
TO T-701/702
SHEET 13

33BA-304SY

33-300PSY-192
GLYCOL SUPPLY
F-43581-F-00-03
SHEET 3

204-E405-105
33GA-304X

33GA-304SY

60x33

E-405

SAMPLE BOX c/w VENT HOOD, VENTED O/S BLDG.

204-E405-101
33BA-304SY
(S.R.)

48x33

204-E405-102
21BA-309SY

48x33

204-E405-103
33BA-304SY
(S.R.)

33BA-309SX TYP.2

60x33

204-E405-104
33GL-304X

33-300PX-194
GLYCOL RETURN
F-43581-F-00-03
SHEET 3

60BA-103SX
204-P501-104

204-V100-143
33BA-303X

60-300PX-146
FUEL GAS HEADER
SHEET 4

SKID LIMITS

21BA-304SY

60-300PX-146
FUEL GAS HEADER
SHEET 11

48-300PSY-207
GLYCOL FLOOR DRN
F-43581-F-00-03
SHEET 2

25 H&T

SKID LIMITS

25 H

48-300PSY-206

204-P501-102
21NE

204-P501-101
48BA-304SY

48CH-304SY

48x21

60x21

60-150PSX-205

25 H

204-P501-103
60BA-103SX

P-501

(FLOOR DRAIN)

BLDG. LIMITS

203-V100-148
27NE

33ø HILTAP QUICK CONNECT-STEAM

SHEET NUMBER	DRAWING NUMBER	REV
10 OF 14	F-43581-F-00-01	10

BLDG. LIMITS

BLDG. LIMITS

21x33 NPT
CROSBY 951170MA
ORFICE : 0.074 in²
BLOCKED FLOW
MAX. CAP. : 543 Kg./HR.
SET @ 1379 kPag

PSV 13

204-01-11-106
33BA-113X
C.S.O.

33-150PX-159

ATM.

SKID LIMITS

33 NPT
FISHER 627

PRV 11

PI 12

204-01-11-105
21BA-113X
C.S.O.

204-01-11-104
27NE

60x33

60x33

300PX
150PX

60BA-303X
204-01-11-101

60BA-303X
204-01-11-103

204-01-11-102
33NE

300PX
150PX

SKID LIMITS

33-150PX-149
T-701 BURNER GAS
SHEET 13

33-150PX-150
T-702 BURNER GAS
SHEET 13

60-300PX-148

33-300# x 60-150#
CROSBY 1D2J0S-E-35-5
ORFICE : 0.11 in²
FIRE
MAX. CAP. : 2452 Kg/HR.
SET @ 4378 kPag

PSV 8

204-01-11-108
60BA-111X
(C.S.O.)

204-01-11-107
33BA-311X
(C.S.O.)

60-150PX-161

ATM.

SKID LIMITS

PIR 9
PAL 9
PSDH 9
PC 9

ROSEMOUNT
3051CG4

PT 9

204-01-11-109
21NE

PC 9

I/A

204-01-11-110
21NE

FISHER
67CFR

I/P

PY 9

FISHER
DVC 6010

204-01-11-111
60BA-601X

300PX
600PX

PCV 9

60-600#
FISHER ET c/w 45-667 ACTUATOR
(F.C.)

27BA-603X
204-01-11-113

FIR 7

FT 7

FE 7

60ø-600#
VORTEX METER
ROSEMOUNT
8800CF020

ESD 6

I/A

204-01-11-114
21NE

FISHER
67CFR

SAV 6

89ø-600
INSUL. KIT

89x60

PI 15

204-01-11-115
21NE

89BA-601X
c/w BETTIS ACTUATOR
MODEL #CBA520SR80-11
(F.C.)

ESDV 6

XVPS 6

XVPI 6

XVPI 6

SKID LIMITS

60-300PX-146
FUEL GAS
HEADER
SHEET 10

204-01-11-112
60BA-301X

89-600PX-146
FUEL GAS FROM
PIPELINE

SKID LIMITS

60-300PX-147
FUEL GAS TO
PH.1 WELLPAIR
F-43581-F-00-04

SKID LIMITS

BLDG. LIMITS

BLDG. LIMITS

SHEET NUMBER	DRAWING NUMBER	REV
11 OF 14	F-43581-F-00-01	10

BLDG. LIMITS

168–300PSY–106
GROUP HEADER
SHEET 10

25 H

273–300PZ–165
STEAM HEADER
SHEET 7

CHEMICAL INJECTION

ONE C/W HASTELLOY QUILL

137 138 139 33CH–303SY
204–01–12–136,137,138.
33BA–309SY C/W QUILL

33BA–309SY (LOCATED AT THE
204–01–12–135 4:00 POSITION NO QUILL)

PIR 18
PAH 18
PAL 18
PSDH 18

PT 18 ROSEMOUNT 3051CG4

204–01–12–134
33ø PGI ROOT VALVE MPSWxFLANGE

ESD 5

I/A

204–01–12–133
21NE

FISHER 67CFR

SAV 5

TOP WORKS DXP–L21 GNEB

XVPS 5 ESDV 5

XVPI 5 XVPA 5

168BA–321SY
c/w EL–O–MATIC ACTUATOR
MODEL #ESA1600–4/A/L2–LT
(F.C.)

204–01–12–131
168BA–321SY

168CH–301SY

168ø–300 INSUL. KIT

33BA–309SY
204–01–12–132

33ø HILTAP QUICK CONNECT–STEAM

204–01–12–130
33BA–309SY

PI 22

204–01–12–129
33BA–309SY

33ø HILTAP QUICK CONNECT–STEAM

204–01–12–128
27 NE

204–01–12–127
33GA–304SY

38 H&T

89–300PSY–185
EMERGENCY BACK FLUSH TO T–701
SHEET 13

INSULATION KIT

89CH–301SY

204–01–12–126
89GL–301SY
(C.S.C.)

38 H

168–300PSY–106
GROUP HEADER
F–33500–F–00–06

204–01–12–125
89GL–301Z

I/S UTILIDOR

51 H

89–300PSY–178
TO GROUP HEADER
SHEET 8

300PZ 300PSY

TIR 20

FT 20 FE 20 TE 20 TW 20

89–300# ROSEMOUNT 3095MFCC LOCAL READOUT

21–600PZ–
STEAM TO E–405
SHEET 10

21–600PZ–
PRE–HEAT STEAM TO P–500
SHEET 9

204–01–12–101
33GA–304Z

89–300PZ–167

25 H

PI 17

204–01–12–113
21GA–309Z

I/S UTILIDOR

51 H

89GA–311Z
204–01–12–114

204–01–12–115
89GA–311Z

204–01–12–116
89GA–311Z

204–01–12–117
89GA–311Z

204–01–12–118
89GA–311Z

204–01–12–119
89GA–311Z

89x60

60ø HILTAP QUICK CONNECT–STEAM TO WELLPAIRS

27NE 204–01–12–120

27NE 204–01–12–121

27NE 204–01–12–122

27NE 204–01–12–123

27NE 204–01–12–124

219ø 25 H 219–150PZ–187

ATM. O/S BUILDING

324ø DRIP POT

114–300# x 168–150#
CROSBY 4P6JOS–E–45–D
ORFICE : 6,38 in²
MAX. CAP. 96 725 Kg/HR
SET @ 4136 kPa

PSV 4

76 H

PIR 3 PC 3 PAL 3 PAH 3 PSDH 3

PC 3

ROSEMOUNT 3051CG4 PT 3

204–01–12–106
33ø PGI ROOT VALVE MPSWxFLANGE

I/A

204–01–12–107
21NE

FISHER 67CFR

PY 3 VALTEK XL

I/P

300PZ 600PZ

273x168

PCV 3

168ø–600# RF WILLIS CC60HT c/w VALTEK VL ACTUATOR (F.C.)

FAL 2 FIR 2

FT 2 FE 2

168ø–600# ROSEMOUNT 8800CF060 VORTEX METER

ESD 1

I/A

204–01–12–109
21NE

FISHER 67CFR

SAV 1 ASCO

PI 16

204–01–12–110
21GA–609Z

168ø–600 INSUL. KIT

33GA–609Z
204–01–12–108

168BA–631Z
c/w BETTIS ACTUATOR
MODEL #G2011SR3–11 G2
(F.C.)

ESDV 1 XVPS 1

XVPI 1 XVPA 1

TOP WORKS DXP–L21 GNEB

168GA–611Z
204–01–12–111

89–600PZ–179

25 H&T

"BLUE SKY"

89–600# RF WILLIS CC20HT MANUAL CHOKE

89GA–611Z
204–01–12–112

64 H

168–600PZ–165
STEAM HEADER FROM PIPELINE
F–33500–F–00–07
SHEET 20

51 H

114–300PZ–166
STEAM TO PHASE 1 WELLPAIR
F–43581–F–00–04

SHOP RUN

33–150SIAX–220
INSTRUMENT AIR SUPPLY
F–43581–F–00–03
SHEET 4

204–01–12–101
33GA–304Z

273–300# STATIC MIXER

33GL–304SY

33ø BUILDING WASH DOWN HOSE

309Z

33ø HILTAP QUICK CONNECT–STEAM

204–01–12–103
33GA–304Z

27 NE 204–01–12–102

89CH–301Z

204–01–12–104
89GA–311Z

38 H

204–01–12–105
114GA–311Z

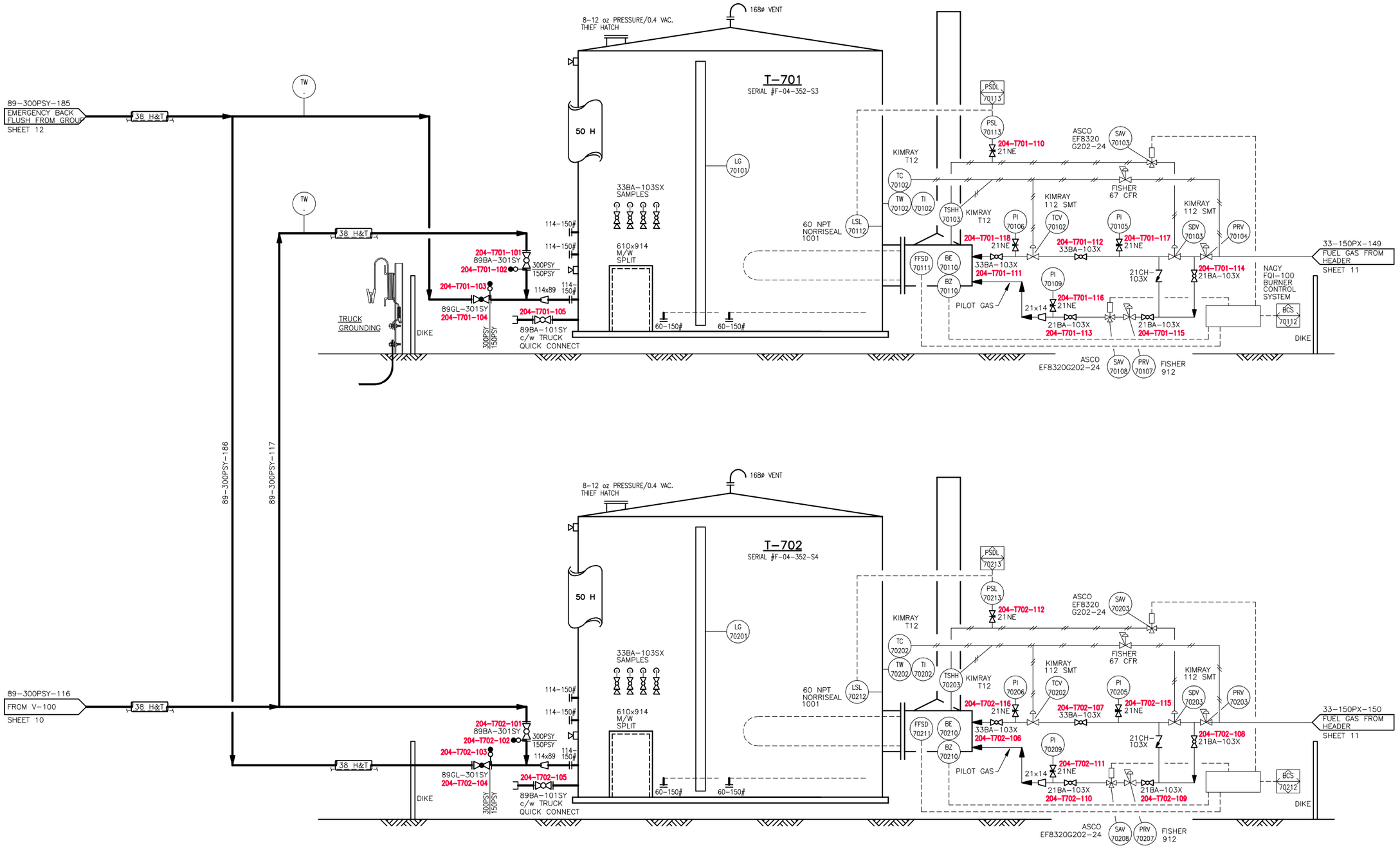
25 H

BLDG. LIMITS

BLDG. LIMITS

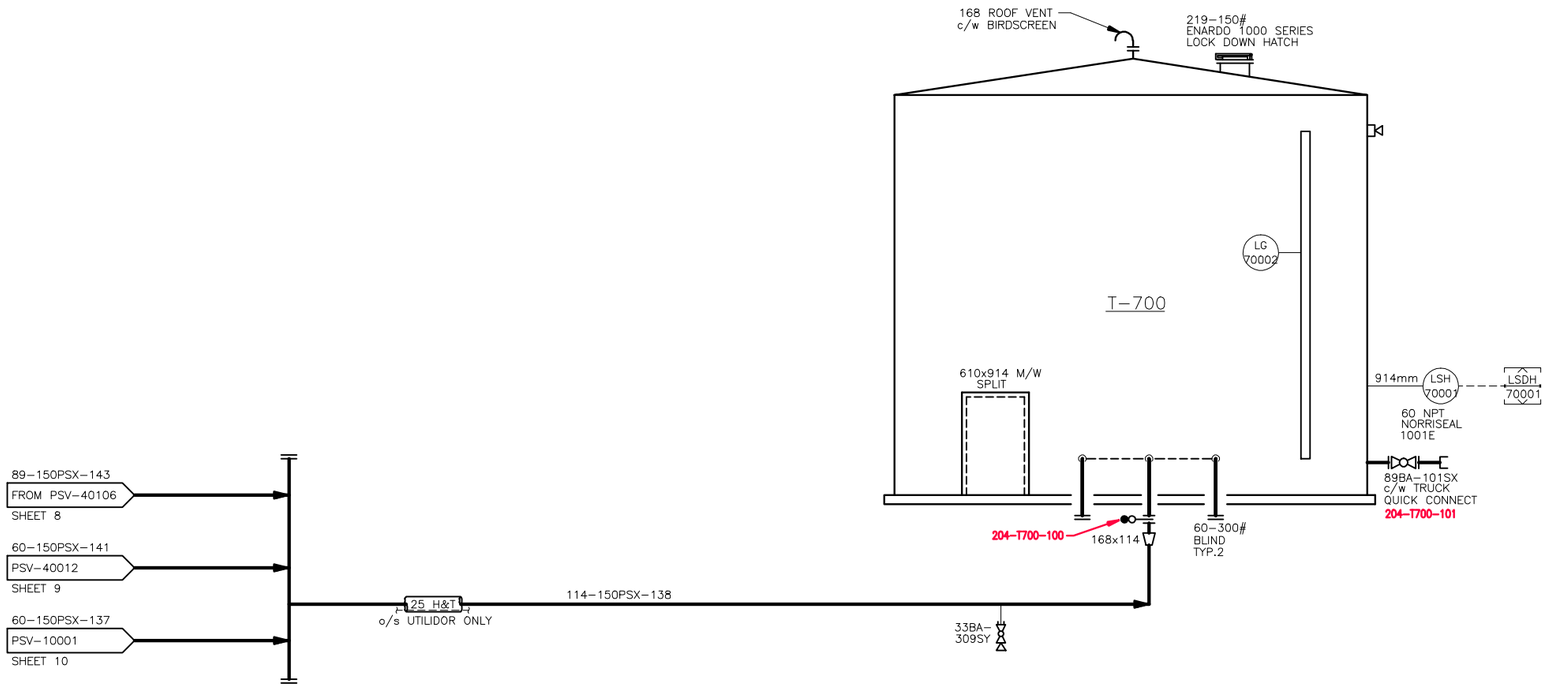
SHEET NUMBER	DRAWING NUMBER	REV
12 OF 14	F–43581–F–00–01	10

T-701/702
EMERGENCY BACK FLUSH TANKS
4648 O.D. x 7315 HIGH
119m^3 (750bbl)
c/w 500 000 BTU/HR BURNER
(RE-LOCATED FROM MSAR PROJECT)



SHEET NUMBER	DRAWING NUMBER	REV
13 OF 14	F-43581-F-00-01	10

T-700
POP TANK
4724 O.D. x 4877 HIGH
80m3 (500BBL)

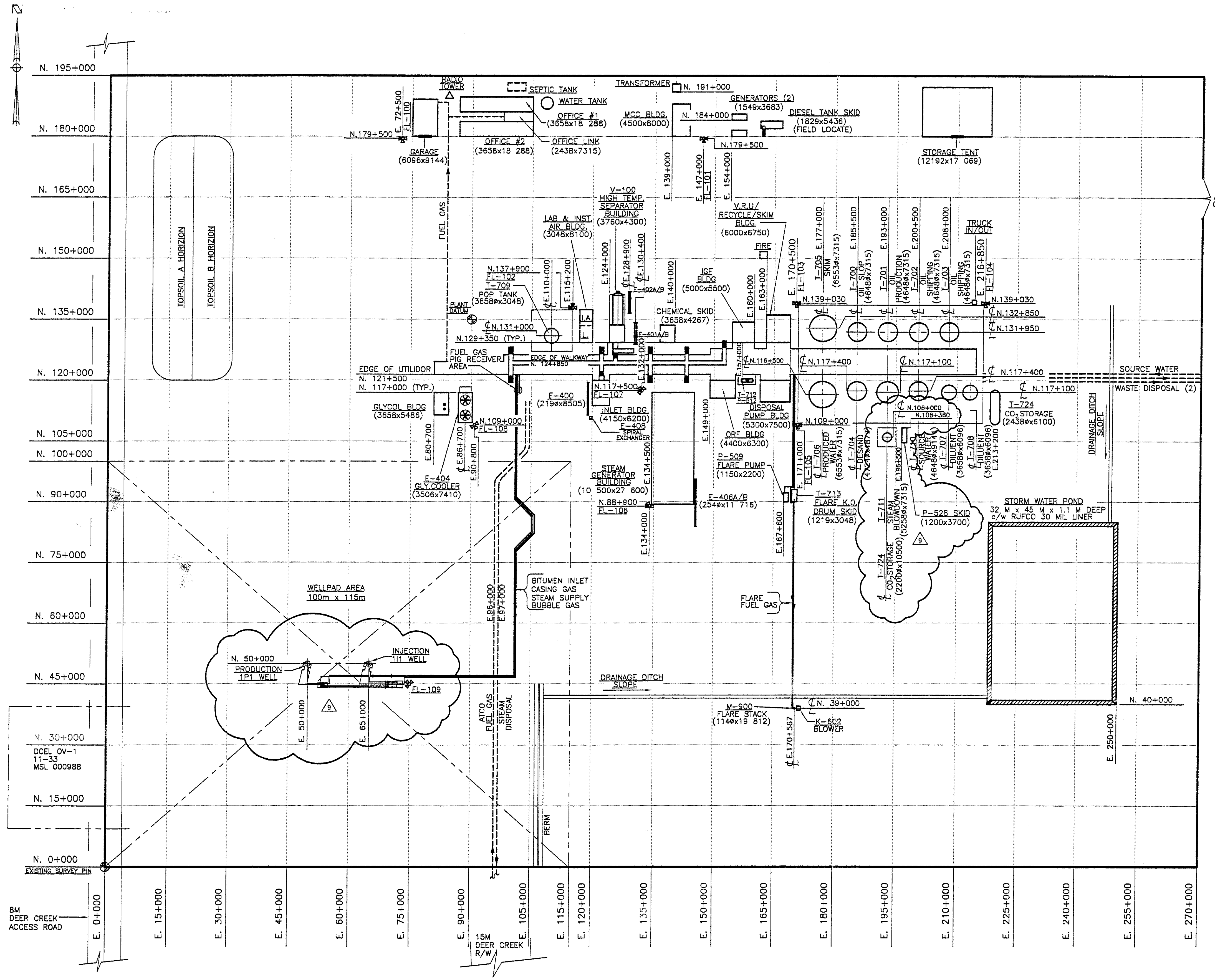


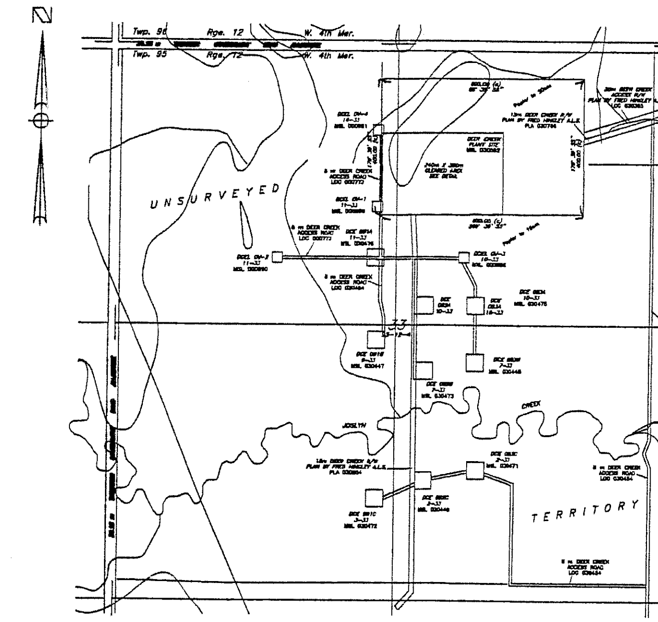
SHEET NUMBER	DRAWING NUMBER	REV
14 OF 14	F-43581-F-00-01	10

APPENDIX 7/C:

Facilities

Facilities plot





LOCATION PLAN
NTS

NOTE:
- PLANT DATUM IS AT COORDINATES N.135+000 & E.90+000 HAVING AN ASSUMED ELEVATION OF 340+000.ALL COORDINATES & ELEVATIONS ARE TO BE REFERENCED BACK TO THIS POINT.

BOWER DAMBERGER ROLSETH ENGINEERING LTD.
FEB 25 2004
FOR INFORMATION ONLY
NOT FOR CONSTRUCTION

NO.	REVISION	PROJ. No.	BY	DATE	CHK.	DATE
9	T-724 TANK/P-528 SKID ADDITION/WELLHEAD AREA UPDATED	33359	CT	04.02.02	RDB	04.02.04
8	ISSUED FOR CONSTRUCTION	33359	CT	04.01.20	RDB	04.01.19

PERMIT STAMP:

GENERAL NOTES:

1. [illegible] ARE GENERATED FROM [illegible] FORWARDED TO BOWER [illegible] LTD. BY THE OWNER'S FIELD [illegible] CONTRACTORS. ANY CHANGES [illegible] NOT APPEAR ON THE DRAWINGS AND THEREFORE THE DRAWING MAY NOT BE AN ACCURATE REPRESENTATION OF THE CONSTRUCTED FACILITY.
2. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION AND OR EXCAVATION IT SHALL BE THE RESPONSIBILITY OF THE OWNERS REPRESENTATIVE TO VERIFY THE LOCATION AND STATUS OF ANY PIPING, ELECTRICAL, EQUIPMENT OR BUILDINGS.
3. ANY REVISIONS MADE TO EXISTING EQUIPMENT, PIPING OR ELECTRICAL ON A FACILITY NOT DESIGNED BY B.D.R. ENG. LTD. IS ONLY SHOWN AS A REPRESENTATION OF WHAT EXISTS AND MUST BE VERIFIED BY THE OWNER.

	BY	DATE
DRN.	CT	03.06.23
CHK.	RDB	04.01.19
APP'D.		
L.S.D.	10-33-95-12 W4M	

bdr
Bower Damberger Rolseth Engineering Ltd.

DEER CREEK Energy Limited

JOSLYN PHASE #1 DEMONSTRATION FACILITY
PLOT PLAN

SCALE	DRAWING NUMBER	REV
1:500	D-33359-A-00-01	9

APPENDIX 7/D:

Facilities

Major Equipment Listing

JOSLYN PHASE I, HEAVY OIL FACILITY

MAJOR EQUIPMENT LISTING Rev. 2

Equipment	Status
High Temperature Separator Package	New
Inlet Heat Exchanger	New
Inlet Header/Fuel Gas Separator Building Package	New
Lab/Air Compressor Package	New
Recycle/Skim/Diluent/Chemical Injection Pumps, VRU Blower & KO Bldg. Pkg.	New
Hydromation Deep Bid Filtration Unit	DCEL Stock
Filter Skid Building Package	New
Produced Water Disposal/Blow Down/ORF Feed/Softener Feed Pumps Package	New
BFW Exchanger	New
BFW Pump Package	New
Steam Separator Exchanger	New
Water Softening Package	New
Steam Separator Package	New
Steam Generator (50 mmbtu/hr)	DCEL Stock
Glycol Heater Pkg.	New
Glycol Air Cooler	New
Chemical Pump Building Package	New
CO2 Storage Bullet and Refrigeration Unit	Rental
Oil Production Tank (119 m^3)	DCEL Stock
Two (2) Oil Shipping Tanks (119 m^3)	DCEL Stock
Source Water Tank (159 m^3)	DCEL Stock
Slop Tank (119 m^3)	DCEL Stock
Desand Tank, Cone-bottom (119 m^3)	New
Two (2) Produced Water Tanks (236 m^7)	New
Two (2) Diluent Storage Tank (63 m^3)	DCEL Stock
Steam Blow Down Tank (119 m^3)	DCEL Stock
Chemical Storage tanks c/w Secondary Containment	New
Pop Tank (32 m^3)	New
Floor Drain Pump System	New
Pipe Rack	New
Tank Farm Dike	New
Office #1/ Septic System	New
Office #2	DCEL Stock
Garage	New
Storage Tent	New
Two (2) Power Generators c/w Diesel Drivers	New
MCC / Control Building	New

APPENDIX 7/E1:

Facilities

Process description

Joslyn Phase 1, Heavy Oil Facility

Brian Harll
Aug 2005

Phase 1: Joslyn Plant Overview

The plant at Joslyn Creek includes not only equipment intended for steam generation and injection, but also equipment to handle production of oil, sour gas, and water from a well pair located at 11-33-95-12W4M. Included in the design are water disposal pipelines, a source water pipeline, a fuel gas pipeline, an oil processing facility, a steam generation facility, glycol utility system, and liquid storage tanks. Phase 1 is a pre-commercial phase, designed to run on a 24 hour, 365 days a year basis, and although small scale in nature, the plant at Joslyn Creek is focused on optimizing design, operating, and production parameters.

The oil recovery technique being utilized in Phase 1 is Steam Assisted Gravity Drainage (SAGD-Figure1). Two horizontal wells are drilled, one 5 m above the other. Steam injected into the reservoir through the upper well (injector) heats and mixes with the oil, reducing its viscosity to the point where it drains down through the reservoir and is pumped to the surface through the lower well (producer). In order for the technique to be successful, high quality steam must be continuously injected into the reservoir. Joslyn Creek Phase 1 is designed to inject steam into the well pair and process the returns. The returns (emulsion), made up of a combination of water, oil, and gas has to be separated before it is useful. Once separated, gas is flared, oil is blended and trucked away to a sales facility at Hardisty, and the water is de-oiled and disposed of.

Source Water

Source water for steam generation is provided via pipeline from a number of source water wells. Dual 4" plastic pipes, approx 10.3 km in total length, run directly from the plant to the source water well located at 6-4-96-11W4M. Here, the pipeline branches off into laterals connecting source water wells 9-5, 8-5, 7-5, and 5-4. Originally, additional source water was planned to be drawn from the Ells River, but due to area resident objection, this plan was not integrated. From the source or supply wells, the water flows through an ESD valve into the source water storage tank (T-710). Run Time on, pressure, and totalized flow measurements are captured at each source water well and sent to the plant via a SCADA system. Historically, source water usage for Phase 1 has been higher than originally estimated and so an additional meter at inlet would be a valuable addition.

Before this water can be pumped through the steam generator, it must be treated and filtered so that it meets the input requirements for the boiler: hardness less than 1 ppm, total dissolved salts (TDS) less than 5000 ppm, and pH between 7.5-8.5. Oxygen scavenger, a chemical designed to remove dissolved oxygen, is added to the source water stream before it enters the supply tank. This chemical minimizes pitting and corrosion potential. From the source water supply tank the water is boosted to 300 kPag by a

softener feed pump (P-508), then passes through a source water filter (M-902). Here, the feed water (60 ppm hardness, 2.7 ppm iron) has Potassium Permanganate (T-715) pumped into the stream and then it passes through a static mixer before reaching the Greensand Filters.

Water Treatment: Greensand Filters (M-903 A-E), Primary Softeners (M-904A/B), and Polishing Water Softeners (M-905 A/B)

The AMG 36" Manganese Greensand filters are designed to remove excess iron from the water while the softeners are designed to remove hardness from the water. Water is considered "hard" if it contains a lot of calcium or magnesium dissolved in it. Hard water can cause major problems such as scaling on the inside of the steam generator tubes and heat exchanger tubes. Calcium and magnesium precipitate out of the water forming scale which hinders heat conduction and flow through the pipes. Phase 1 has five Manganese Greensand units in a parallel configuration which remove iron by adding potassium permanganate upstream of the filters. The potassium permanganate acts as an oxidant, forcing the iron out of the solution. Now, iron-free water from the greensand filters, pass through two water softening systems: Primary Water Softeners, and Polishing Water Softeners. Both systems are equipped with brine storage tanks for regeneration.

The Primary Softeners are designed to remove the hardness from the water and this is achieved with a sodium zeolite medium. This medium consists of a bed of small plastic beads covered with sodium ions. As the water flows past the sodium ions, sodium ions are replaced with the calcium and magnesium ions. Eventually, the beads have exchanged all of the sodium and are saturated with calcium and magnesium and at this point water softening is discontinued, the softener is taken offline, and softener regeneration is initiated. Regeneration involves soaking the zeolite in a stream of sodium ions or brine that is pumped in from the brine tank. The brine displaces all of the calcium and magnesium that has built up in the zeolite and replaces it again with sodium. Deer Creek's Phase 1 facility has two primary softener units and they are configured in a duplex alternation system. One unit produces soft water until it needs to be regenerated and then alternates to the other stand by unit.

The Polishing Softeners serve as insurance since they remove any residual hardness remaining after the Primary units. They operate in the same way by alternating between an online and stand-by unit but do not need to regenerate quite as frequently due reduced amount of softening. Backwash water from the greensand filters, and softeners are pumped to the water shipping tank (T-703) and then trucked off the lease to a NewAlta facility for waste processing. The softened and iron free water is now pre-heated in two sets of exchangers before entering the steam generator.

Pre-Heat: Boiler Feed Water Heat Exchangers (E-406 A/B), Blow Down Heat Exchangers (E-403 A/B/C)

A heat exchanger is a device for transferring heat from one fluid to another. Two fluids are separated and never mix inside the heat exchanger. For efficiency, they are designed to maximize surface area of the boundary between the two fluids, while minimizing resistance to fluid flow through the exchanger. The BFW exchangers (E-406 A/B) and the BD exchangers (E-403 A/B/C) are all shell and tube design (see Figure 2) consisting of a shell (a large tube) with a series of smaller tubes inside of it. A fluid passes through the smaller tubes while another fluid (shell-side) rushes over the smaller tubes either heating or cooling the fluid within, based on the temperature of the respective fluids. In the boiler feed water exchangers (E-406), feed water (tube-side fluid) is heated from 10 °C by glycol (the shell-side fluid) to 72 °C. From here, it gets boosted in pressure from 300 kPag to 4860 kPag by the steam generator feed pump (P-506), then travels through the blow down heat exchangers. The BD exchangers (E-403) heat the feed water (tube-side fluid) from 72 °C to 113 °C using a different shell-side fluid then the BFW exchangers. As mentioned earlier, the E-403 exchangers use glycol while the E-406 exchangers use the blow down liquid at 180 °C from the separator (V-104) as the shell-side medium. This is a very effective use of energy and just one example of how the Phase 1 plant is designed to be energy efficient. After passing through the greensand filters, the softeners, and two sets of heat exchangers, the feed water is now ready to enter the steam generator.

Steam Generation: Once-Through Horizontal Steam Generator (H-801)

In a once-through boiler, feed water is pumped into a single pass of tubes and exits as superheated steam. As this feed water passes through the tubes it is first heated to saturation temperature and then transformed into steam. This steam is then superheated as it passes through the remainder of each tube. The feed water is heated, evaporated, and superheated in one passage through the unit as shown in Figure 3. Inside the boiler, many tubes are mounted in parallel and are joined by headers thus providing a common inlet for feed water and a common outlet for steam. The economizer section, found in the stack of the generator, is the first section feed water enters and it is designed to recover the "waste heat" from the boiler's hot stack gases. The evaporator section of the boiler is next and here, water changes phase into steam. The last section in the boiler is the superheating section which further heats the steam. Since feed water enters the boiler as water and leaves as superheated steam, any solids remaining in the feed water, either suspended or dissolved, will form deposits on the OTSG tubing or exit the system in the blow down stream. To reduce this deposition, feed water is treated and filtered upstream of the steam generator.

Joslyn Phase 1 uses the greensand filters, softeners, and chemical injection to meet the input requirements of the steam generator.

To accommodate the varied steam demands for start-up, normal operation, and design optimization, OTSGs are simple in that the only control variable is the amount of feed water being supplied. Deer Creek Energy has installed a 50 MMBTU/hr steam generator and a smaller unit (22 MMBTU/hr) currently utilized in alternative fuel experiment (MSAR). Considering the sizes of each boiler and a steam quality of 80%, these two boilers can produce a maximum of about 400 m3 and 170m3 CWE (Cold Water Equivalent) dry steam respectively. Either generator or a combination of both can be used in the Phase 1 plant in order to achieve required steam injection rates. Boiler turndown is the ratio between full boiler output and the boiler output when operating at low fire. Typical boiler turndown is 4:1. Considering the sizes of each boiler, a steam quality of 80%, and a turndown ratio of 4:1, the 50MMBTU/hr and the 22 MMBTU/hr boilers can produce a minimum of 100 m3 and 45 m3 CWE steam respectively before cycling off. These two boilers have been able to meet the changing steam demands for Phase 1. Ideally, no steam should have to be vented to the atmosphere (Blue-Sky), but the plant does have the ability if conditions dictate. Output from the steam generators is high pressure wet steam at 264 °C and 4860 kPag. Steam Assisted Gravity Drainage requires dry steam so this boiler output must go through the steam separator (V-104-Figure 4) before being injected down-hole.

Steam Separator (V-104) (Figure 4)

Of the total fluid fed into the steam generator, 80 wt % is converted into dry steam suitable for injection and the remaining 20 wt % known as steam blow down is made up of condensate, dissolved salts and other contaminants. The steam separator (V-104) splits theses two streams: one stream made up of dry steam and the other, steam blow down. Baffle plates arranged inside the vessel catch entrained moisture as it passes through. Heavy droplets fall to the bottom of the separator carrying impurities with them. The liquid in the bottom of the vessel (blow down liquid), still considerably hot at 80 °C, passes through the blow down heat exchangers (403's) as the shell-side heating fluid, before entering the blow down tank (T-711). Off the top of the separator, 100% quality dry steam at 199 °C and 1380 kPag flows into a line going to the injection well head where it is injected down-hole. From the storage tank, BD liquid travels through a blow down disposal pump (P-510) where it is boosted to 1960 kPag before moving out through disposal pipeline to wells dedicated to the disposal of steam blow down liquid. Before disposal however, $C0_2$ required for pH neutralization, is pumped into T-711 from the $C0_2$ storage bullet (T-724).

Blow down Water Disposal

The blow down water disposal pipeline consists of 2" steel main line with a HDPE liner running from the plant to a junction located on the south boundary of sec 17-95-12W4M. From there, laterals extend to include 4-16, 5-16, 7-13 and 15-12 disposal well bores. Like the source water wells, these blow down disposal wells have SCADA systems and time on, disposal rate, wellhead pressure, and totalized flow measurements are gathered and sent to the plant.

Summary (Boiler Feed water → Injection)

Source water from nearby water wells travels via a pipeline to the facility and into a tank. The water is then sent through a bag filter, a water softening system, and then is boosted in pressure by the steam generator feed pump, preheated in the BFW and BD exchangers, and then converted to steam in the steam generator.

Inlet : Heat Exchangers E-400, E-408

In addition to the steam injection demands, Phase 1 is also capable of processing the returns. Oil, gas, and water from the producer flow together through an ESD valve and then are cooled from 165 °C through an a pair of heat exchangers (Heat Exchanger E-400, Heat Exchanger E-408). These heat exchangers differ from the other exchangers discussed earlier in that, they are intended to cool rather then heat the inlet emulsion transferring heat to the glycol which is at a temperature lower than the inlet emulsion. Heat exchanger E-400 is a shell and a tube type while E-408 is a spiral type design. This spiral exchanger however, was recently removed from the inlet skid and is being used with the MSAR alternative fuel experiment. Diluent can be added either upstream or downstream of these exchangers .After the emulsion is cooled in the exchangers, diluent at 10 °C and XX API is added to further cool and raise the specific gravity from about 8 API to approximately 12 API. After this, the emulsion flows through a static mixer before entering the High Temperature Separator (HTS V-100).

Emulsion Processing: Oil Transport Specifications & High Temperature Separator

The HTS is a 3 phase separator designed to remove contaminants (gas, water, and solids) from crude oil so that transport requirements are met. Each of the three phases are separated and metered in the separator skid. In order to produce oil suitable for transport, it must be treated to achieve a final blend of 0.5% or less BS&W (Basic Sediment & Water), and have a gravity measurement between 12-14 API. On an average day, 45 m3 of oil, and 125 m3 or water is expected from the HTS oil and water outlets

respectively (FT-10018, FT-10020). Diluent addition is based on 20-25 % wt bitumen so 10-15 m3/ day of diluent is needed to bring the gravity to an acceptable number. The separator's design rate is 827 kPag @ 165 °C.

Specification oil: 0.5 % BS&W and 12-14 API

Oil that meets or is close enough to transport specifications from the oil dump off the high temperature separator is level controlled to an oil production tank (T-701). Here, small amounts of water will separate from the oil. The lighter oil will overflow into the oil shipping tank (T-702). Oil from the shipping tank is trucked away at regular intervals for processing at the Hardisty facility.

Off spec oil Slop Tank

Off specification oil from the separator is diverted to the slop tank (T-700). The HTS can be produced to any tank with the manifold system in place. Fluid can even be moved from tank to tank or from a particular tank (i.e. Slop tank) back through the separator via the recycle pump (P-500).

High Temperature 3 Phase Separator (V-100)

The high temperature separator (see Figure 5) is a complex vessel and an essential component in the Phase 1 process. The HTS utilizes gravity to separate the lighter components from the heavier ones. Designed so that flow through the separator is horizontal, water droplets coalesce and fall out perpendicular to flow. If gravity alone was responsible then this process would take an extremely long time but chemicals are added to accelerate the process. Demulsifier chemicals reduce surface tension around the water droplets such that when they collide they coalesce. Coalescing elements enlarge water droplets which allow water to drop through the oil faster due their greater mass. The emulsion is hot coming in and temperature affects viscosity which in-turn affects the rate at which emulsified water can coalesce and separate. For convenience, 5 sample taps are strategically placed across the front of the separator with an AGAR probe unit enabling the operators to see into the vessel and identify the oil/water interface. The AGAR probe is made of two basic components: antenna and the power supply. By measuring the energy absorption of the fluid surrounding the antenna, the interface detector senses the water concentration in an emulsion regardless of fluid density, viscosity, temperature, pressure or pH. The sample taps are used to determine where in the vessel the interface between water and oil exists and to test both the water and the oil. A 4/5 interface for example, therefore represents a situation in the treater with water showing in the 4^{th} sample tap and oil showing in the 5^{th} sample tap. This interface can grow depending on the inlet emulsion, chemicals present and heat, creating a "rag layer". This layer, also known as pad build up is common to heavier crudes. This rag layer is stripped or removed from the

system by using an internal pipe that extends across the vessel and is located slightly higher than the water/oil interface at three specified heights. This fluid can then be piped back into the treater as recycle. Another component of the high temperature separator at Phase 1 is the Desand System.

Desand System and Desand Tank (T-704)

Heavier solids like sand fall out of the emulsion and settle to the bottom of the vessel. The bottom of the vessel is equipped every 1.5 m with a desand station or sand jet. These jets collect to a desand pan and exits into the external desand manifold. When a desand valve is opened, a vacuum is created which causes sand, solids, and water to discharge from around the pan and into the manifold. From the manifold, this debris flows to the desand tank (T-704). The tank is cone bottomed and complete with a skim float system and wash rings. Any water or oil that accumulates in the tank can be skimmed back into the facility process (front end).

Produced Water Treatment: De-Oiling

From the separator, produced gas is directed to the flare knockout drum and burned. Produced oil is cooled through the sales oil exchangers and then either shipped or recycled to the front end for further treatment. Before being disposed of, produced water from the separator is cooled through the water dump exchangers, then de-oiled and treated so it meets BS&W (basic sediment and water) and salt specifications. Water carries sand, silt, dissolved salts and various other constituents with it so removal is very important. The Phase 1 Joslyn plant has equipment designed specifically for the proper handling and disposal of produced water. Water, with about 200 ppm oil from the separator, is leveled controlled to the skim tank and from there, small amounts of oil will separate from the water as a function of retention time. The water then enters the IGF or Induced Gas Floatation unit for further oil removal.

IGF (Induced-Floatation units)

The IGF is used to remove a large portion of free oil from produced water. These systems use gas bubble attachment to float and lift oil and solids particles from the produced water. The froth created by gas bubbles is then skimmed from the flotation unit and pumped with the skimmed oil pumps (P-518 A/B) to the slop tank (T-700). The resulting water from the IGF, containing about 20 ppm oil, is pumped into the produced water storage tank (T-706) with the IGF discharge recycle pumps (P-517 A/B). Any oil that separates out in the skim or produced water storage tanks is drawn off the top through skim floats and

pumped via a skim pump (P-501) back into the HTS for processing. Water in the skim tank (T-705) is now pumped with the ORF feed pump (P-507) directly into the ORF or Oil Removal Filter unit.

ORF (Oil Removal Filter Unit)

The final oil removal is carried out in the ORF system. The water is pumped by the water booster pump or ORF feed pump (P-507) into the top of the vessel and flows through the walnut shell filter media and out the bottom of the vessel. The walnut shells have a natural affinity for oil droplets, and are retained on the media surface. Once the nut shell media is saturated with oil, it is fluidized using a backwash mechanism, and circulated out of the vessel through a scrub pump. The scrub pump "shears" the oil off the media and separates it from the system. The media is pumped back into the vessel and is once again placed into service. Water out the bottom of the vessel should now be almost free of oil. The filtered water flows to the water disposal pump where it is boosted to disposal pressure (P-503) and directed into the produced water disposal pipeline. Oil from the walnut shell media recovered from a backwash, is directed to the slop tank (T-700).

Produced Water Disposal

The produced water disposal mainline, consisting of 3"steel with a HDPE liner runs from the Joslyn Phase 1 facility to a well located at 05-04-96-11W5M. Along the way, a 3" steel branch includes the well 14-36 and from 14-36, a 4" steel pipe with no liner connects to a well at 11-36. Also included in the 3" steel pipe are wells at 14-20, and 03-29. Total length of the produced water disposal system is approx 9.2km. The produced water disposal wells, all except 14-20, are equipped with SCADA capabilities.

<u>Chemical Treatment</u>

Chemical injection is extremely important. Phase 1 has a chemical injection pump building with storage tanks and drums of a number of chemicals from caustics and clarifiers, to polymers and reverse demulsifiers. Chemicals are used in all areas of the plant involving water, from the treatment of the boiler feed water before steam generation, to the treatment of both produced water and blow down water before disposal. Chemicals are also used to increase the rate of oil and water separation or treat emulsion. A list of typical chemicals used for these purposes are listed below. Due to the vast differences in characteristics of crude oils produced and production treatment systems used, a chemical treatment plan is usually formulated on an individual field basis.

- Caustic
- Clarifier
- Demulsifier
- O2 Scavenger
- Polymer
- Reverse Demulsifier

Source water Treatment

Oxygen scavenger, potassium permanganate, and scale inhibitor are injected into various points in the steam generator feed water. O2 scavenger is added directly to the source water tank (T-710) to remove oxygen and therefore reduce the risk of corrosion and pitting. Potassium Permanganate designed to remove iron is added before the greensand filters and a filming agent is injected into the dry steam pipeline before injection.

Emulsion treatment

To enable the produced oil to meet BS&W (basic sediment and water) and salt specifications, all water must be separated from the oil. The high temperature separator does this assisted by gravity but chemicals are added to increase the rate of oil and water separation. Demulsifier and reverse demulsifier are added on either side of inlet heat exchangers to the emulsion before it enters the separator. These chemicals are surface active, specifically targeting the emulsion, with a component attracted to the water phase and another attracted to the oil phase. This allows the chemical to penetrate and disrupt the emulsifying film, thus breaking the emulsion.

Produced Water and Blow Down Water Treatment: Chemicals

Phase 1 has disposal pipelines for the disposal of the steam blow down liquid and the disposal of produced water from the separator. These streams need to be treated before they meet disposal requirements. As far as the steam blow down liquid, only $C0_2$ is added to neutralize pH. Produced water, on the other hand, requires a number of chemicals to be added before it can be disposed of. One of the

more recent chemical injection plans at the Joslyn facility has polymer, surfactant and RBw being added to the produced water stream leaving the separator. These chemicals remove oil and water soluble organics, reduce turbidity or cloudiness, and remove small particles of matter that can plug up disposal systems. Regardless of the chemical used, and where along the process it is injected the aim, as far as chemical treatment, is to produce oil suitable for transport and to produce clear effluent water suitable for disposal or re-use.

Utilities

Utilities at the Joslyn facility include a glycol heating/cooling system, a fuel gas system, vapor recovery/flare system, a pressure relief system, an air compressor, a laboratory, diesel fired electrical generation systems, and office building and a shop. The pipe racks are covered by a utilidor system which helps protect the pipes from freezing.

Glycol Heating / Cooling System

A 50/50 wt % ethylene glycol/water mix is supplied to the various process heat exchangers as the cooling medium. After the glycol has been heated in the process exchangers, it will flow through a glycol heater. The heated glycol is used in building heaters and piping heat tracing. The glycol is then cooled in the boiler feed water exchanger, then further cooled to 43°C in an air cooler. The cool glycol is then pumped back through the process exchangers completing the circuit.

Fuel gas system

A 15.3 km fuel gas pipeline exists running from an ATCO meter station to the plant and it provides the plant with sweet, dry ATCO gas. This gas is used in the facility in numbers of places for a number of different reasons. The gas, entering the facility at 10°C and 1035 kPag, is heated in a fuel gas line heater and then flows, through an ESD valve, pressure control valve, and into a fuel gas scrubber (V-101). Any liquids that separate out in the fuel gas scrubber are level controlled to the produced water tank (T-706). Dry fuel gas from the scrubber enters a fuel gas header where it splits and is used in various places throughout the facility. The steam generator, glycol heater, fuel gas line heater, blanket gas system, IGF unit, office, garage, and flare pilot are all consumers of fuel gas. Casing gas from the injector, gas that separates out of the emulsion in HTS, and gas from the Vapor Recovery Unit (VRU: V-105) are directed to Flare Knockout Drum (T-713).

Vapor Recovery and Flare Systems

Vapors from the knockout drum will feed a vapor recovery blower VRU (K-600). The blower will boost the tank vapors into the facility flare header which will flow to an above ground flare knockout drum (T-713) and then to a flare stack (M-900) complete with an automatic electric igniter. Any liquids that collect in the VRU knockout drum are pumped automatically with the VRU drain pump (V-502) into the skim tank (T-705).

Tank Farm

The Phase 1 pre-commercial plant requires a number of storage tanks. The larger tanks are all located in a tank farm complete with impervious liner and concrete containment dike. Smaller tanks for chemicals are in the laboratory or throughout the plant at the skid where they are being utilized. The water and oil tanks are complete with piping to allow the contents of any tank to be pumped via the recycle pump (P-500) to any of the other tanks, or into the HTS. The tanks are interconnected and if a tank fills to 2 meters from the top, they spill into the next tank via overflow lines. Water that separates out in the bottom of the tanks is pumped back into the separator via a recycle pump (P-500). All tanks are insulated and complete with blanket gas. Any vapors of the top of the tanks are sent to the vapor recovery unit. All the storage tanks included in the Phase 1 design and their maximum capacity is listed below. Maximum product storage temperature is 90°C.

- T-700 Slop Tank 119 m3
- T-701 Oil Production Tank 119m3
- T-702 Oil Shipping Tank 119m3
- T-703 Water Shipping Tank 119m3
- T-704 Desand Tank 79m3
- T-705 Skim Tank 238m3
- T-706 Produced Water Tank 238m3
- T-707 Diluent Tank 64m3
- T-708 Diluent Tank 64m3
- T-709 Pop Tank 32m3
- T-710 Source Water Tank 159m3
- T-711 Blowdown Tank 159m3

We have examined the surface equipment at Phase 1 Joslyn Creek plant in some detail. Although emphasis was on the components of the system involved in the steam generation, boiler feed water

treatment, emulsion treating, and the disposal of blow down and produced water, we did touch on the other integral systems at work. Chemicals present in the plant, where they are used, and for what purpose was covered. The extensive utility system was examined. Fuel gas enters the facility through and pipeline and is used throughout. We traced the glycol system, where it is heated and cooled and what equipment it is utilized in. The vapor recovery unit was described and finally, the important storage tanks were discussed, what purpose they served and how they fit into the overall system. Basically, a fairly detailed description of all the major components of Joslyn Creek Phase 1 facility and how those components work and relate to one another is provided here. Together, these systems, and a dedicated staff have not only proved that SAGD is an effective means to recover bitumen, but so much has been learned and is still being learned about improvements and innovations for future operations.

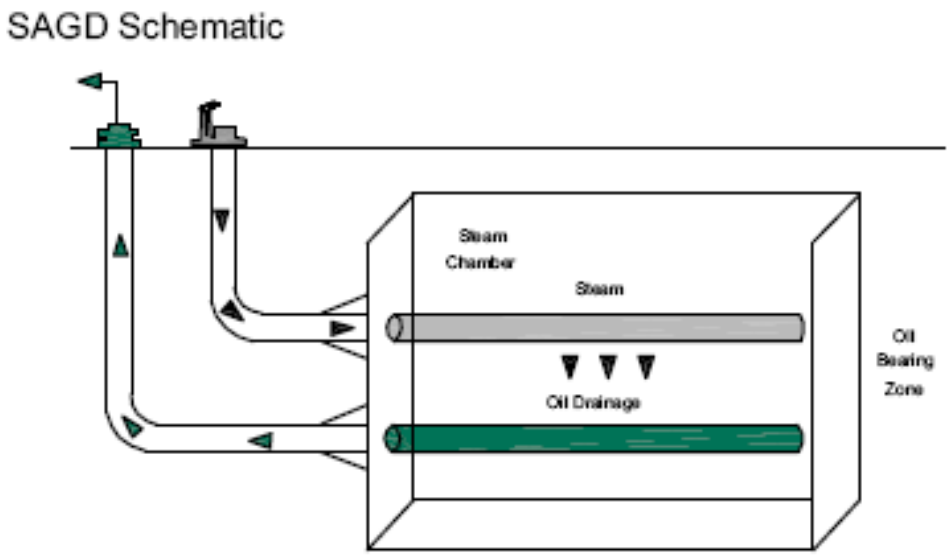


Figure 1: Steam Assisted Gravity Drainage Schematic

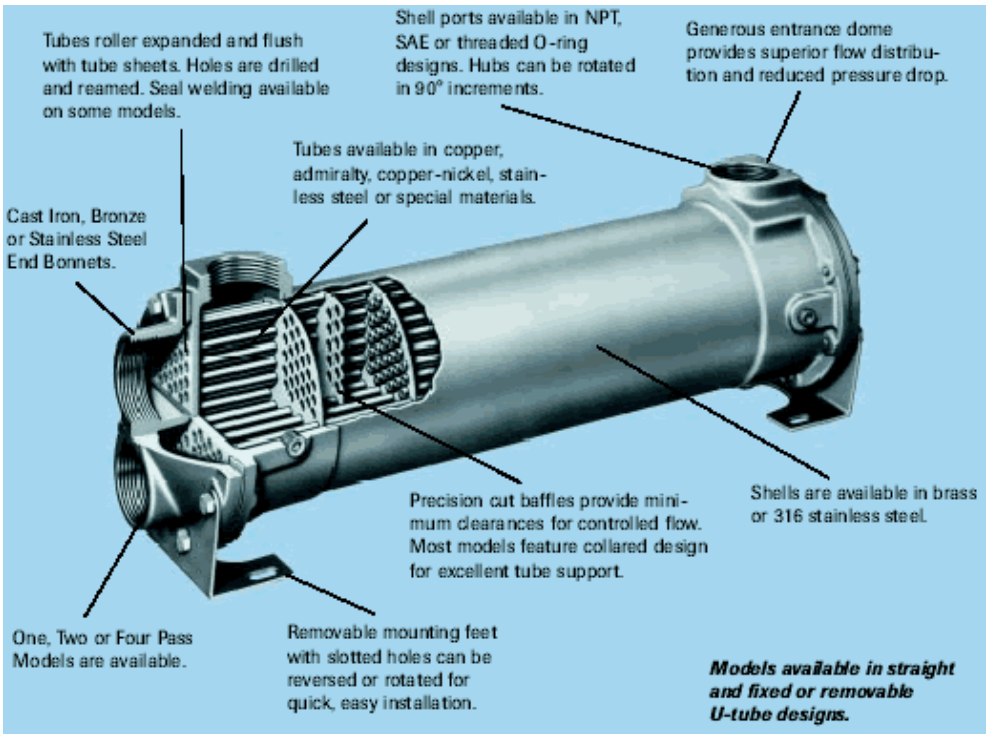


Figure 2: Typical Shell and Tube design Heat Exchanger

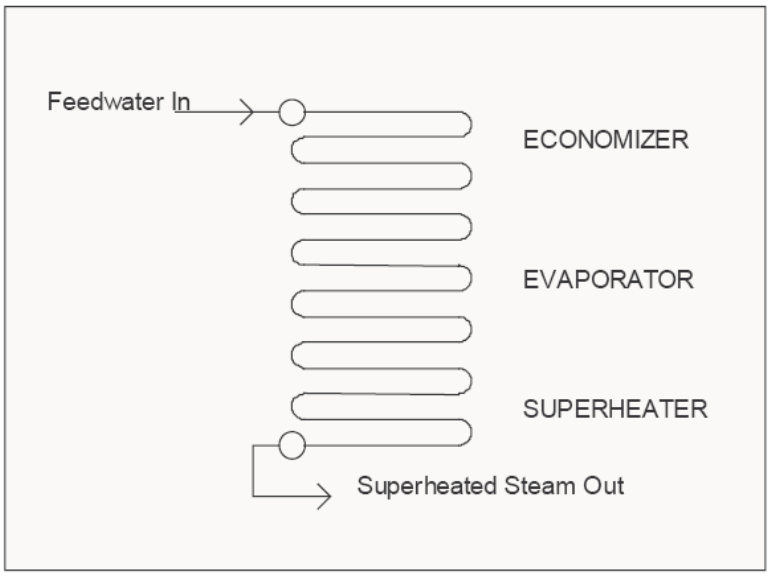


Figure 3: Once Through Steam Generator

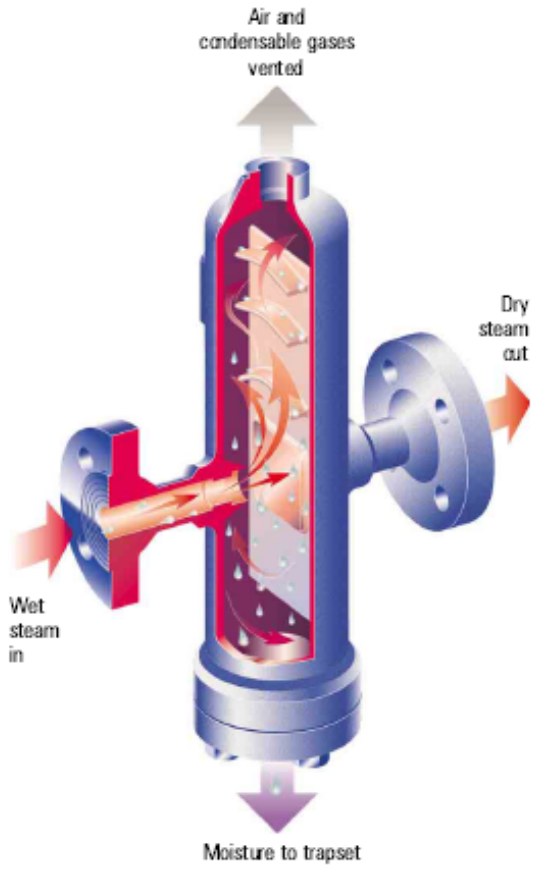


Figure 4: Typical Steam Separator

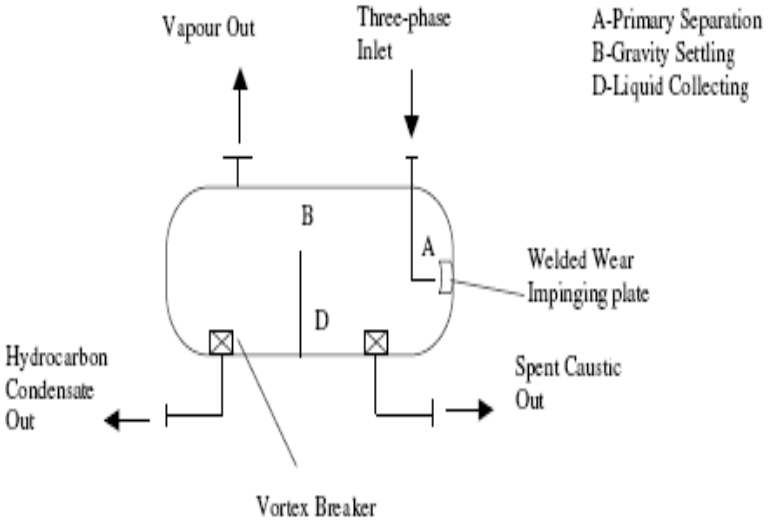


Figure 5: Typical Horizontal 3 Phase Separator

APPENDIX 7/E2:

Facilities

Pilot overall description

JOSLYN PHASE I, HEAVY OIL FACILITY
AFE # 053-0311

Design Basis Memorandum Rev. 2

Prepared For

DEER CREEK Energy Limited

No	Revision	By	Date	Appr.	Date	Client	Date
0	Issued for approval	NAG	July 8, 2003	STA	July 8, 2003		
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1.0 Introduction

1.1 Project Description

Deer Creek Energy Limited (DCEL) intends to install a demonstration facility to inject steam and produce oil, sour gas, and water from a well pair located at 11-33-95-12 W4M.

The project consists of wellhead pipelines, processing facility, steam generation facility, liquid storage tanks, glycol utility system, and instrument air system. Other pipelines and down hole pumps associated with the project are not included in this scope.

1.2 Project Objectives

To provide a well designed sour oil production facility:

- To enable DCEL to inject steam into the well pair and process the returns during startup;
- To enable DCEL to produce oil from the production well and inject steam into the injection well during regular operation;
- To enable DCEL to process sour oil, water and gas and associated sand and fines during regular facility operation;
- To meet a schedule that enables the facility to be online by the end of March 2004.

1.3 Operations Criteria

The system will be designed to run on a 24 hour, 365 days a year basis. Oil emulsion will be received from the production well. Processed oil will be trucked to a different facility for refining.

Source water for steam generation will be provided via pipeline. Produced water and steam blow down water will exit the facility via pipeline.

Fuel gas will be provided to the facility via pipeline. Solution gas will be captured from the process and burned in a flare stack.

2.0 Design Basis

2.1 Site Conditions

LSD:	11-33-95-12 W4M
Location:	Aprox. 50 km NW of Fort McMurray, AB
Maximum ambient temperature:	32 Celsius
Minimum ambient temperature:	-41 Celsius
Altitude:	338 m.a.s.l.
Rainfall:	1/25 year, 24 hour, 83 mm
Maximum Average Wind Velocity:	90 km/hr

2.2 Fluid Parameters

Inlet Oil	-	125 m^3/d
Inlet Water	-	375 m^3/d
Inlet Gas	-	250 m^3/d @ std. conditions
Inlet Oil API	-	8.2
Inlet Water S.G.	-	1.05
Inlet Gas S.G.	-	1.00
H_2S in Gas	-	2%
Inlet Sand	-	0.3% vol. oil
Design Inlet Pressure	-	800 kPag
Design Inlet Temperature	-	165°C
Diluent Usage	-	30 to 50 m^3/d
Source Water Usage	-	470 m^3/day
Separator Outlet Oil Quality	-	0.5% BS&W
Sales Oil Quality	-	<0.5% BS&W
Separator Oil API	-	12.4 to 14
Separator Outlet Water Quality	-	200 ppm oil in water
Produced Water Quality Upstream of Oil Filter	-	50 ppm oil in water
Produced Water Quality Downstream of Oil Filter	-	5 ppm oil in water
Steam Generator Discharge Quality	-	80%
Injected Steam Quality	-	95%
Steam Generator Feed Water Hardness	-	<1ppm
Steam Generator Feed Water TDS	-	<5000 ppm
Steam Generator Feed Water pH	-	7.5 to 8.5
Steam Generator Operating Pressure	-	4800 kPag
Steam Injection Pressure at Wellhead	-	1900 kPag

Produced Water Disposal Pressure at Wellhead	-	1500 kPag
Steam Blow Down Disposal Pressure at Wellhead	-	1500 kPag
Fuel Gas Pressure	-	689 kPag
Fuel Gas Temperature	-	10°C

2.3 Storage

Produced Oil	-	18 hours, based on 125 m^3/d oil, 30m^3/d diluent
Sales Oil	-	36 hours, based on 125 m^3/d oil, 30m^3/d diluent
Produced Water	-	15 hours, assumes tank operates ½ full.
Blow Down Water	-	15 hours, assumes tank operates ½ full.
Source Water	-	8 hours
Diluent	-	100 hours, based on 30m^3/d rate

2.4 Process Description

2.4.1 Inlet

Sour oil, gas, and water will flow from the production wellhead through an inlet emergency shutdown (ESD) valve and through an inlet heat exchanger. The inlet heat exchanger cools the inlet emulsion by cross exchanging heat with a glycol cooling loop. Note that two (2) inlet exchangers are provided for this purpose, a shell and tube type and a spiral type. The cooled emulsion is mixed with a diluent to lower the density of the bitumen to 12.4 API. This emulsion and diluent flow through a static mixer into the high temperature three (3) phase separator.

2.4.2 High Temperature 3 Phase Separator

The high temperature separator provides separation for the inlet emulsion. Each of the three (3) phases are separated and metered in the separator skid. The sour gas is back pressured controlled to the flare system. The water is cooled by heat exchange with a glycol water mix then level controlled to a skim tank. The oil and diluent is cooled in a heat exchanger cooled by glycol then level controlled to the oil production tank. The separator will be complete with a manual desand system.

2.4.3 Oil Storage

Oil from the high temperature separator will be level controlled to an oil production tank. Here, small amounts of water will separate from the oil. The lighter oil will overflow into two (2) oil shipping tanks. Oil from the shipping tanks will be trucked away at regular intervals for processing at a nearby facility.

Off specification oil from the separator can be diverted to the slop tank. This can occur during start up, during a change in the chemical injection program, or from drawing the "rag" layer off the separator oil/water liquid interface.

The separator can dump to any of the three (3) oil tanks or the slop tank. The tanks can be operated in series or parallel or any other combination as the operators can change the sequence via manual tank farm valves. If the tanks are operated in series, a tank will fill to 2 meters then spill into the next tank via the overflow line. Any water that separates out in the bottom of the tanks will be pumped back into the separator via a recycle pump.

2.4.4 Produced Water

Water from the high temperature separator will be level controlled to the skim tank. Here, small amounts of oil will separate from the water. The water phase will be pumped to an induced gas flotation (IGF) unit for further oil removal. The resulting outlet water from the unit will contain approximately 20 ppm oil. The oil separated out in the IGF unit will be pumped to the slop tank. The water from the IGF will be pumped into a second storage tank. Water from the second tank will be pumped to a filter skid for final oil removal. Any oil that separates out in the skim or produced water storage tanks will be drawn off the top through skim floats and pumped via a skim pump back into the high temperature separator for processing. If necessary, the skim can also be directed to the slop tank.

The filter skid contains a walnut shell filter vessel. The water is pumped by the water booster pump into the top of the vessel and flows through the walnut shell filter media and out the bottom of the vessel. The filtered water flows to the water disposal pump where it is boosted to disposal pressure and into the produced water disposal pipeline. Periodically the water injection is stopped and the filter bed is back washed to remove the build up of oil. The backwash stream is directed the skim tank.

2.4.9 Glycol System

A 50/50 wt.% ethylene glycol mix will be supplied to various process heat exchangers as the cooling medium. After the glycol has been heated in the process exchangers, it will flow through a glycol heater. The heated glycol will be used in building heaters and piping heat tracing. The glycol is then cooled in the boiler feed water exchanger, then further cooled to 43°C in an air cooler. The cool glycol is then pumped back through the process exchangers completing the circuit.

2.4.10 Fuel Gas

A DCEL pipeline transporting sweet, dry ATCO gas will supply fuel gas for the facility. The gas will be heated in a fuel gas line heater, then flow through an ESD valve, pressure control valve, and into a fuel gas separator. Gas from the separator will be metered and flow to a fuel gas header for use in the facility. The steam generator, glycol heater, fuel gas line heater, blanket gas system, office, garage, and flare pilot gas are consumers of fuel gas. Any liquids that separate out in the fuel gas scrubber will be level controlled to the produced water tank.

2.4.11 Vapor Recovery and Flare Systems

Tank vapors will free flow to a vapor recovery header and on to an above ground vapor recovery knock out drum. Vapors from the knockout drum will feed a vapor recovery (VRU) blower. The blower will boost the tank vapors into the facility flare header which will flow to an above ground flare knockout drum. The vapors from the knockout drum will flow to a flare stack complete with an automatic electric igniter. Any liquids that collect in the VRU knockout drum will be pumped automatically into the produced water tank. Liquid that accumulates in the flare knockout drum will be removed by truck. Both vessels will be equipped with high level alarms to protect against liquid carry over.

2.4.12 Chemical Injection

A chemical injection pump building c/w storage tanks and drums will be supplied. Demulsifier, reverse demulsifier, and polymer will be injected into various points in the oil production process. Oxygen scavenger, potassium permanganate, and scale inhibitor will be injected into various points in the steam generator feed water. A filming agent will be injected into the dry steam pipeline.

In addition to the chemical pumps listed above, a CO_2 storage bullet will be included in the design. CO_2 will be flow controlled into the steam blow down tank to lower the PH of the water prior to disposal.

2.4.13 Pressure Relief

2.4.5 Desand Tank

Water and sand from the high temperature separator desand outlet line flows to the desand tank. The tank is cone bottomed and complete with skim float system and wash rings. Any water or oil that accumulates in the tank can be skimmed back into the facility process. The facility wash water header connects to the wash rings and is used to slurry the sand to aid in unloading into a vacuum truck.

2.4.6 Tank Farm

All the storage tanks are located in a tank farm complete with impervious liner and concrete containment dike. The water and oil tanks are complete with piping to allow the contents of any tank to be pumped via the recycle pump to any of the other tanks, or into the high temperature separator.

All tanks will be insulated and complete with blanket gas and a vapor recovery header. Maximum product storage temperature is 90°C.

2.4.7 Diluent System

Diluent will be trucked into the facility and off loaded into two (2) diluent storage tanks. The diluent will be pumped from the tanks into the inlet emulsion via the diluent pump. The diluent tanks will be complete with VRU header and blanket gas.

2.4.8 Steam Generation

Source water from nearby source water wells or the Ells River will flow via a pipeline to the facility. The water will flow through an ESD valve and a flow meter and into the source water storage tank. The water will be pumped from the tank through a bag filter and into a low pressure water softening system. The water from the softening system will be boosted in pressure by the steam generator feed pump, preheated in the BFW and steam separator exchangers then converted to steam in the steam generator. The steam generator will produce approximately 80 wt.% steam that will flow through a steam separator vessel. Water that separates out in the separator vessel will be level controlled through the steam separator exchanger to the steam blow down tank or directly into the disposal pipeline. The dry steam will be pressure controlled into a line going to the injection well head. Water collected in the steam blow down tank will be pumped into a pipeline going to disposal wells dedicated to disposing of the steam blow down liquid. Producing wet steam and blowing down the liquids as described above is effective in removing most of the impurities from the steam, which are introduced with the source water.

Gas pressure safety valves will relieve into the flare header.

Steam pressure safety valves will relieve to the steam blow down tank.

Liquid pressure safety valves will relieve to the pop tank

2.4.14 General

The site will be graded level to permit installation of all equipment. Steel pipe piles will be driven on site, cut to elevation and foundation steel welded on top. The pipe rack will be pre-fabricated as modules shipped to site to be bolted together and connected to the skids with pre-fabricated spools. The skids and modules will be mounted on the piles and foundation steel.

The pipe rack will be covered by a utilidor to prevent freezing. Glycol heaters will supply building and utilidor heat. The utilidor internal temperature will be maintained at approximately 60°C.

Pipes not enclosed in the utilidor will be insulated and heat traced as freeze protection.

Building floor drains will drain to the rack then to an above ground vessel. The vessel will be pumped out automatically on level control to the slop tank.

An air compressor and laboratory will be mounted on a single skid with a building and divider wall to keep vapors from the lab entering the air compressor building.

Electrical equipment including the MCC, main control panel, and UPS will be housed in its own skidded building. All mounting of electrical gear and inter-wiring will be completed in Calgary prior to shipping to the field.

An office trailer will house the HMI computer, three (3) operator desks, furnace room, washroom, and a senior operator office. The office trailer will be pre-fabricated and set on a pipe pile foundation. Also, an office from Deer Creek stock will be installed.

A garage sized to house spare equipment, work bench, and pick-up truck is included. The garage is pre-fabricated and set on a pipe pile foundation. A large storage tent is also included.

- National Building Code

5.1.5 Environmental

- Environmental Protection and Enhancement Act (EPEA)

5.2 Abbreviations and Definitions

The abbreviations and definitions below have been listed in order of first use within the document wherever possible.

°C	Degrees Celsius
°F	Degrees Fahrenheit
ANSI	American National Standards Institute
BPD	Barrels per Day
BS&W	Basic Sediment & Water
CFM	Cubic feet per minute
Ckt	Circuit
cP	Centipoise
cSt	Centistoke
CSA	Canadian Standards Association
CT	Current Transformer
c/w	Complete with
DBM	Design Basis Memorandum
EPF	Early Production Facility
FVNR	Full Voltage Non-Reversing
HID	High Intensity
HL	Hazardous Location
HMI	Human Machine Interface
Hp	Horsepower
Hz	Hertz (frequency)
IFA	Issued for Approval
IFB	Issued for Bid
IFC	Issued for Construction
IPCIT	Internal Pipeline Construction Inspection Tool
ka	Kilo-amps
kPa	Kilopascal
kPag	Kilopascal Gauge Pressure
kVa	Kilo Volt-amps
kV	Kilo-volts
LBV	Line Block Valve
LEL	Lower Explosive Limit
LUX	Lumens per square foot
m^3/day	Cubic meters per day

MAWP	Maximum Allowable Working Pressure
MCC	Motor Control Center
mm	Millimeter
m/s	Meters/Second
MVa	Mega Volt-amps
NGR	Neutral Ground Resistor
PFD	Process Flow Diagram
ph	Phase
PLC	Programmable Logic Controller
psig	Pounds per square inch gauge pressure
PT	Potential Transformer
Q.C.	Quality Control
RPO	Request for Purchase Order
RSView	Rockwell Software HMI Station
RTU	Remote Transmission Unit
SCADA	Supervisory Control and Data Acquisition system
SLC	Allen Bradley PLC model
SSNRV	Soft Start Non-Reversing
UPS	Un-interruptable Power Supply
Vac	Voltage – Alternating current
Vdc	Voltage – Direct Current
VFD	Variable Frequency (speed) Drive

Where applicable, CSA standard abbreviations will be used for all instrumentation.