LAPINDO BRANTAS, INC.

Bandarpanji-1 Well Control Incident Report

Prepared By Ralph W Adams

3 April 2007

AGENDA

- Casing Program
- Lost Circulation
- Tripping Procedure
- Summary

Casing Program Summary

Casing	Drilling Program	Actual
30 "	Driven to 187 ft	Driven to refusal at 150 ft
20"	1237 ft with 12.8 ppg LOT	1192 ft with 13.0 ppg LOT
16"	3237 ft with 15.8 ppg LOT	2182 ft with 14.5 ppg LOT
13 3/8"	4537 ft with 16.1 ppg LOT	3580 ft with 16.4 ppg LOT
11/3/4"	6537 ft with 16.4 ppg LOT	Not required
9 5/8"	Set 10 to 15 ft into Kujung	Not run

26" Hole Section

- 30" casing driven to refusal prior to moving in the rig
- Drilled 8 ½" pilot hole to 1195 feet, 20" casing setting depth
- Opened hole to 26" ran and cemented 20" casing
- Drilled out and tested the casing shoe to a 13.0 ppg EMW Leak Off Test

20” Hole Section

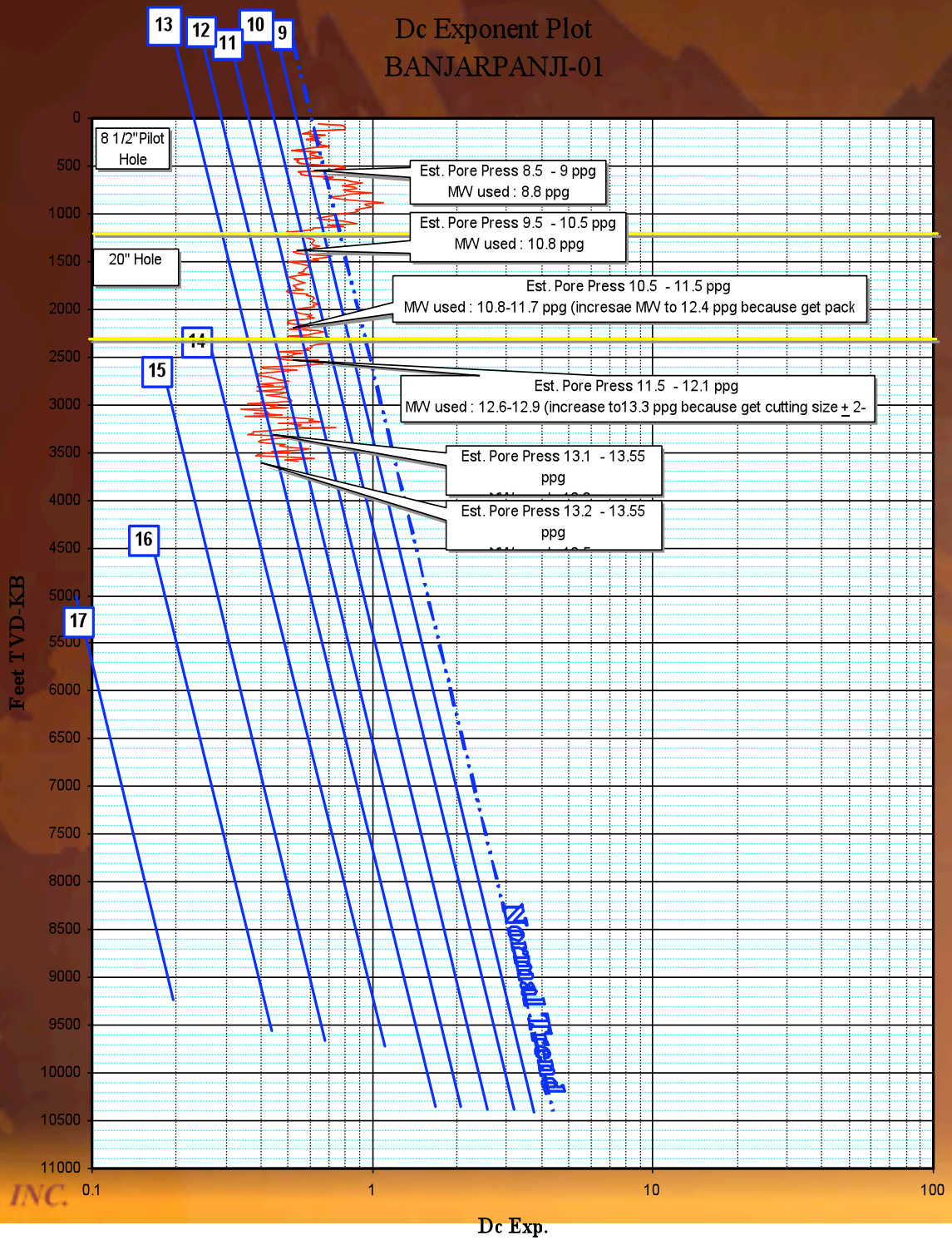
- Drilled with a 17 ½”x20” Bi-centered bit
- Drill out with 10.0 ppg mud, increased mud weight to 11.8 ppg due to gas peaks of up to 650 units and the Dc Exponent indicated an increase in formation pressure
- Increased mud weight to 12.4 ppg at 2304 ft due to sloughing shale (hole packed off making a connection)
- Set 16” liner due to insufficient Kick Tolerance, had to ream under gage hole
- Liner held up at 2182 ft, cemented liner 1055 ft higher than proposed depth in drilling program (had to squeeze liner lap and the shoe)
- Drilled out and tested the shoe to 14.5 ppg EMW Leak Off Test

17 ½" Hole Section

- Drilled with a 14 ½" x 17 1/2" Bi-centered bit
- Drilled out with 12.3 ppg SOBM increased mud weight to 13.3 ppg by 2578 ft due to sloughing shale and hole conditions
- Had to terminate operations for 18 days to replace mud pups and shale shakers.
- Drilled to 3995 where mud weight had to be increased to 13.8 ppg due to positive SIT.
- Had meeting with Partners were it was agreed to set casing based on sloughing Shale and Dc Exponent which confirmed increase in pressure
- Ran and cemented 13 3/8" casing at 3580 ft, 957 ft higher than proposed in drilling program.
- Drilled Out and tested the 13 3/8" shoe to 16.4 ppg EMW Leak Off Test

Sloughing Shale

Dc Exponent Plot
BANJARPANJI-01



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14" Hole Section

- The 16.4 ppg LOT on the 13 3/8" shoe at 3580 ft was the same as predicted LOT for the 11 ¾" liner that was to be set at 6537 ft
- MCN proposed to eliminate the running of the 11 ¾" liner if the LOT was in excess of 16.2 ppg in their Management Change Letter of May 2nd
- The 11 ¾" liner was not required based on the LOT result and to eliminate problems with running and cementing the 9 5/8" casing due to the small annular clearances.

12 ¼" Hole Section

- The 14.2 ppg mud weight was increased to 14.6 due to gas units and to 14.7 due to 760 units of trip gas at 4290 ft.
- Partners agreed to set casing 10 to 20 feet into Kujung, as specified in the drilling program, at a meeting for testing the well on May 2 while drilling at 8040 ft.
- Drilled to 8750 ft (213 ft below proposed top of Kujung) with 14.7 ppg mud
- Mud weight was sufficient as there were 4 wiper trips to shoe for rig repairs and 3 bit trips with no hole problems
- Ran logs and VSP survey to determine depth to top of Kujung but VSP results were inconclusive.
- Top of Kujung was estimated to be between 8800 and 9600 ft based on VSP log interpretation

12 ¼" Hole Section

- Determined maximum drilling depth with 14.7 ppg mud to be 9400 ft. Notified partners of plan to drill into Kujung as was agreed in the meeting or to a maximum depth of 9400 ft
- Drilled to 9010 ft performed SIT results negative
- At 9225 ft the H_2S monitor at the shakers recorded 25 ppm of H_2S but there was no limestone in the samples so the assumption was made that it was a false alarm.
- Drilled to 9283 ft, circulated for samples without seeing any evidence of the Kujung,
- Drilled ahead, **lost total circulation at 9297 ft on May 27th at 12:57 pm**

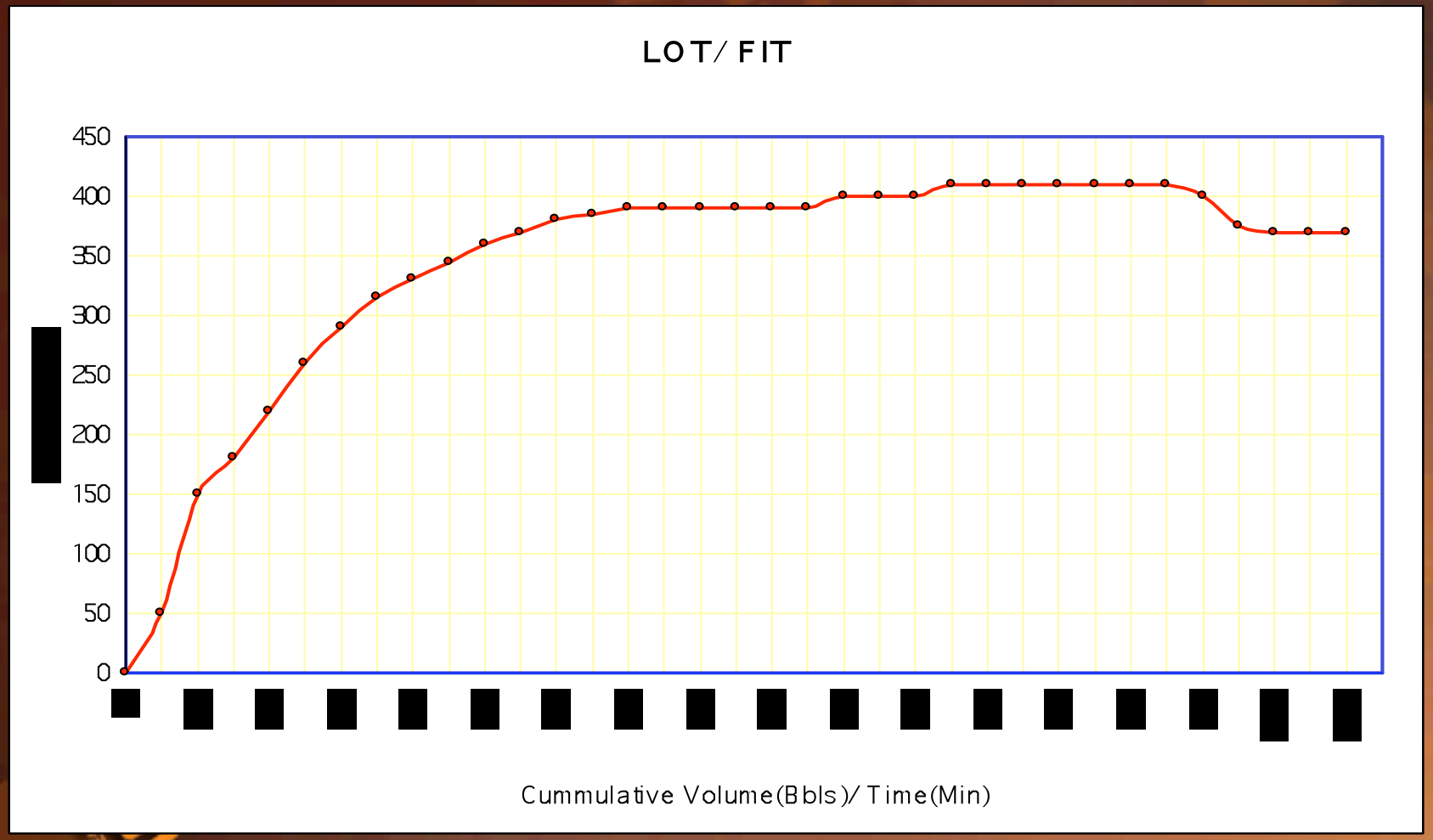
Drilling Operations Observations

- Drilling program is detailed and covers all the potential problems and the mitigation action required
- The Well Control section of the Drilling program specifies the well should be shut in if there is a kick and that a “Hard Shut In” is acceptable and the well should be killed with the Drillers Method.
- The selection of the casing setting depths were dictated by mud weights and hole conditions and were within Kick Tolerance criteria
- The LOT for the 13 3/8” shoe a valid LOT and it is sufficient to justify not setting the 11 ¾” Liner.

Casing Program

- The setting depths were determined by mud weight, hole conditions and Kick Tolerance and all casing setting depths were optimized
- The proposed by MCN to eliminate the 11 ¾" liner if the LOT was over 16.2 ppg was based on sound drilling engineering principles and operational concerns
- The 16.4 ppg LOT for the 13 3/8" shoe is a good LOT and is not subject to any subjective decisions

13 3/8" Casing LOT



Casing Program

- The decision to extend the 9 5/8" casing seat to a maximum depth of 9400 ft was a good decision because:

- The 14.7 ppg mud weight instead of the predicted 15.6 ppg mud weight provided sufficient Kick Tolerance to drill to the deeper depth provided there were no increase in mud weight
- To be able to test the open hole interval below the shoe it requires the 9 5/8" casing to be set into the Kujung formation

Kick Tolerance Comparison

Casing	Mud Wt (ppg)	Max Depth (ft)	Gain (bbls)	MAASP (psi)
9 5/8”	15.6	5,700	0	149
9 5/8”	14.7	9,400	8	316

Lost Circulation Operations Summary

Time	Activity	PVT	Change	Cum	Mud Pumped	Depth
12:00	Drilling at 9291 ft	682				
12:20	Partial losses at 9293	675	-7	-7		
12:49	Total Losses at 9297	658	-17	-24		
12:57	Shut in Pump	532	-126	-150		
13:03	Pump down Drill Pipe			-150		
13:24	SIP	322	-210	-360	222.5	
13:59	Preparing to pump LCM	348	27	-333		
13:59	Pump 75.8 bbl LCM	348		-333		
14:24	Pump 145.6 bbl mud SIP	200	-148	-481	221.4	
14:50	Pulled 4 stands	204	4	-477		8917
19:11	Transfer mud to Active	209		-477		
19:30	Finish	418		-477		
21:45	Start POH	418		-477		
22:19	Pulled 2 stds on trip tank	418		-477		8723

Pump Data Filling The Hole

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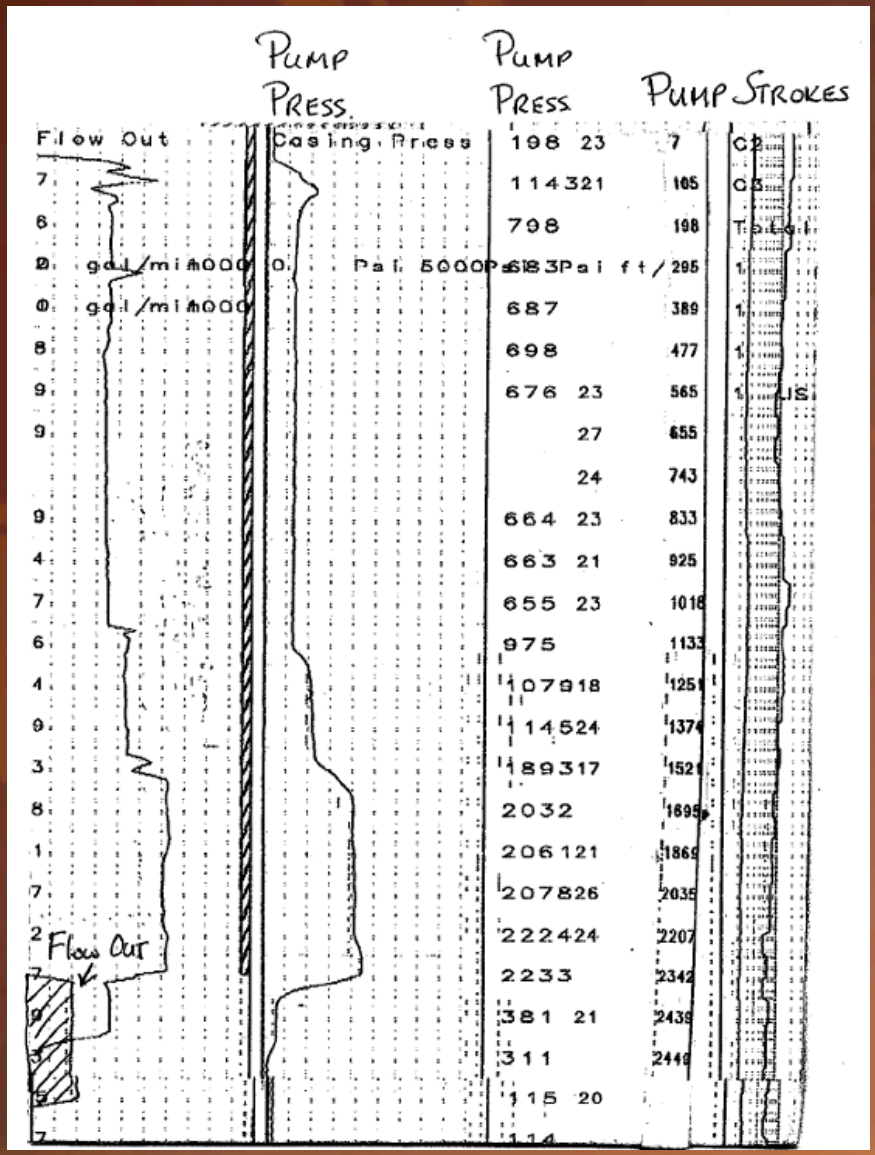
Operation	Min	Strokes	SPM	BPM	Cum	PVT	Cum	Press	Delta P
Start Pumping	1	105	105	9.5	9	-3	-3	1143	945
	2	198	93	8.4	17.8	-8.8	-11.8	798	-345
	3	295	97	8.7	26.6	-8.7	-20.5	693	-105
	4	389	94	8.5	35.0	-3.9	-24.4	687	-6
	5	477	88	7.9	43.0	-5.7	-30.1	698	11
	6	565	88	7.9	50.9	-10	-40.1	676	-22
	7	655	90	8.1	59.0	-5.1	-45.2	672	-4
	8	743	88	7.9	66.9	-15.1	-60.3	668	-4
	9	833	90	8.1	75.0	-11.9	-72.2	664	-4
	10	925	92	8.3	83.3	-14.5	-86.7	663	-1
	11	1010	85	7.7	91.0	-11.3	-98	655	-8

Pump Data Filling the Hole

Operation	Min	Strokes	SPM	BPM	Cum	PVT	Cum	Press	Delta P
	12	1132	122	11.0	102.0	-13.8	-111.8	975	320
	13	1252	120	10.8	112.8	-13.9	-125.7	1079	104
	14	1374	122	11.0	123.8	-14.4	-140.1	1145	66
	15	1520	146	13.2	136.9	-14.5	-154.6	1893	748
	16	1695	175	15.8	152.7	-9.4	-164	2032	139
	17	1869	174	15.7	168.4	-11.4	-175.4	2061	29
	18	2035	166	15.0	183.3	-12.5	-187.9	2078	17
	19	2207	172	15.5	198.8	-12.6	-200.5	2224	146
Hole Filled Up	20	2342	135	12.2	211.0	-9.5	-210	2233	9
	21	2439	97	8.7	219.7	-8.1	-218.1	381	-1852
	22	2449	10	0.9	220.6	-4.4	-222.5	115	-266

Filling the Hole Strip Chart



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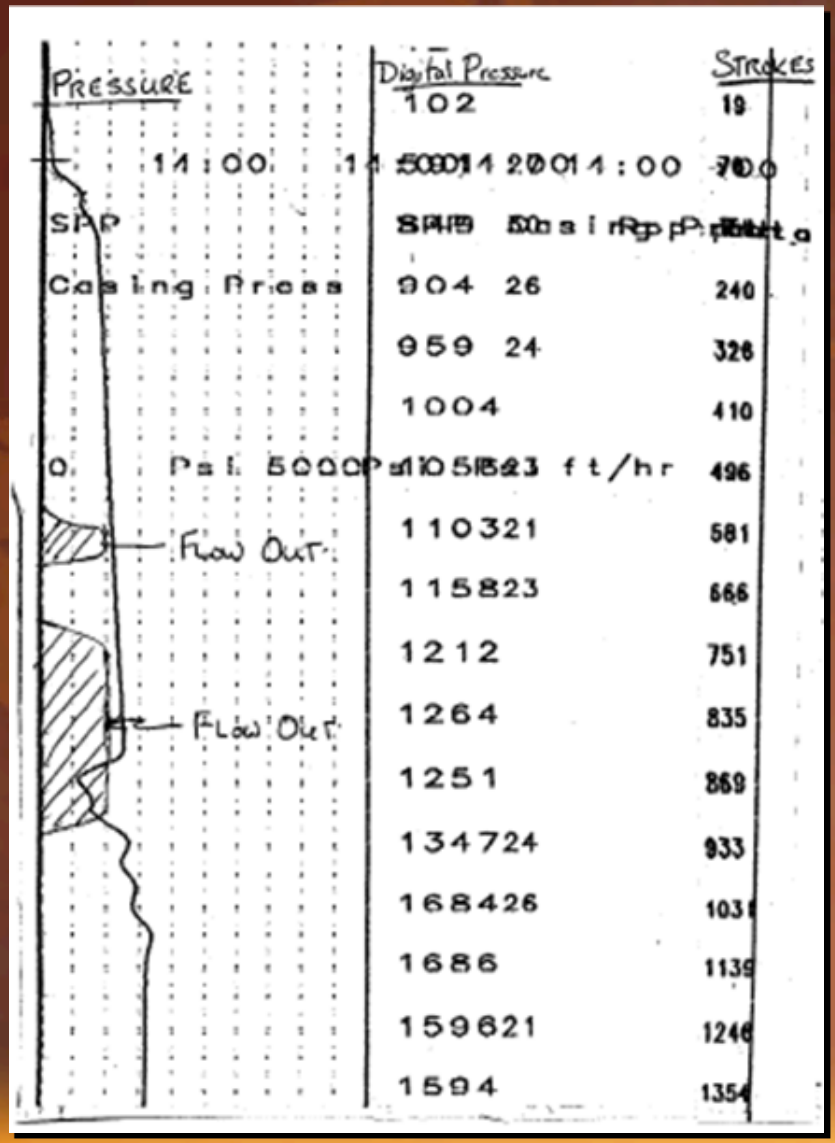
Pump Data Pumping LCM Pill

Min	Strokes	SPM	BPM	Cumm	PVT	Cum	Press	Delta P
1	19	19	1.7	1.7	1.3	1.3	42	
2	79	60	5.4	7.1	1.2	2.5	102	60
	90			8.1			102	0
3	156	77	6.9	15.0	0.4	2.9	500	398
4	240	84	7.6	22.6		2.9	849	349
5	326	86	7.7	30.4	-0.4	2.5	904	55
6	410	84	7.6	37.9	-0.6	1.9	959	55
7	496	86	7.7	45.7	-0.9	1	1004	45
8	581	85	7.7	53.3		1	1056	52
9	666	85	7.7	61.0		1	1103	47
10	751	85	7.7	68.7		1	1212	109
11	835	84	7.6	76.2		1	1264	52
12	869	34	3.1	79.3	-0.3	0.7	1251	-13
13	933	64	5.8	85.0	-3.2	-2.5	1347	96

Pump Data Pumping LCM Pill

Min	Strokes	SPM	BPM	Cum	PVT	Cum	Press	Delta P
14	1031	98	8.8	93.9	-8.2	-10.7	1684	337
15	1139	108	9.7	103.6	-6.3	-17	1686	2
16	1246	107	9.6	113.2	-7.2	-24.2	1596	-90
17	1354	108	9.7	123.0	-4.4	-28.6	1590	-6
18	1462	108	9.7	132.7	-6.3	-34.9	1585	-5
19	1571	109	9.8	142.5	-5	-39.9	1584	-1
20	1680	109	9.8	152.3	-9.4	-49.3	1590	6
21	1787	107	9.6	162.0	-6.3	-55.6	1596	6
22	1895	108	9.7	171.7	-10.1	-65.7	1597	1
23	2004	109	9.8	181.5	-6.9	-72.6	1585	-12
24	2117	113	10.2	191.7	-8.8	-81.4	1552	-33
25	2230	113	10.2	201.9	-11.3	-92.7	1526	-26
26	2341	111	10.0	211.9	-5.7	-98.4	1491	-35
27	2450	109	9.8	221.7	-6.5	-104.9	1459	-32
28	2453				-7.6	-112.5	190	

Pump LCM Pill Strip Chart



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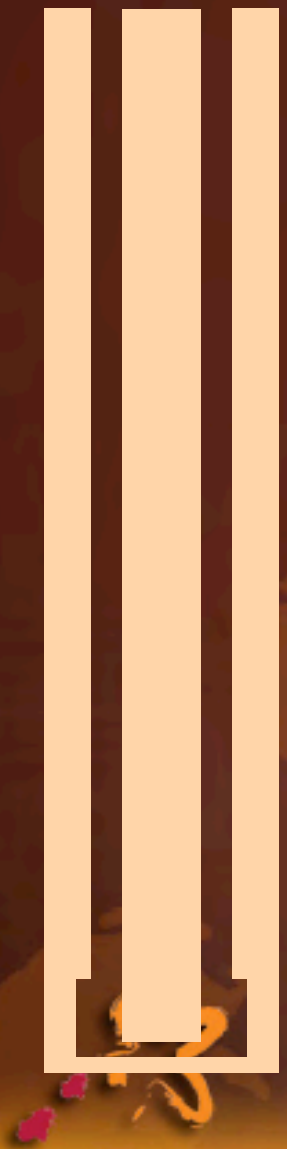
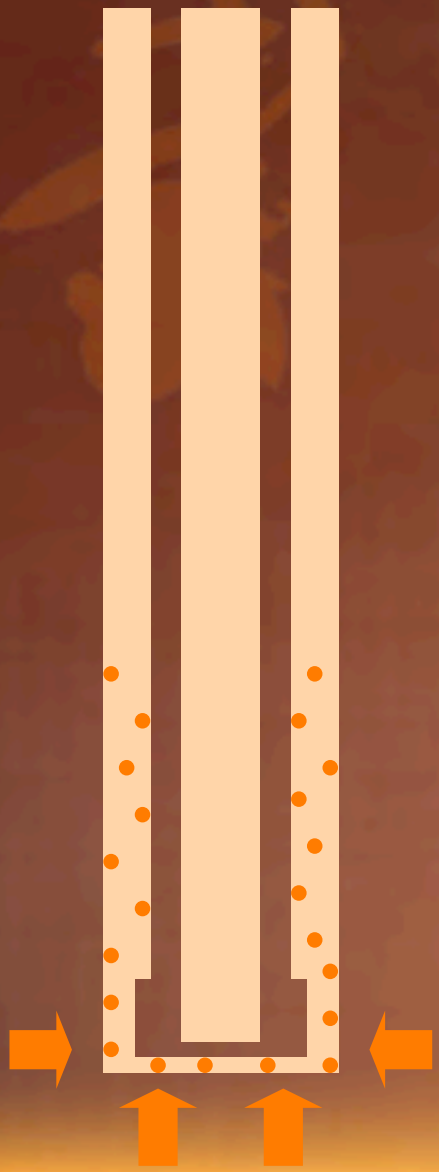
Kick Origin

- Influx of a minimum of 131 bbls of gas and water came into well when the fluid level dropped in the annulus after losing circulation which is supported by:
  - All fluids swabbed into the well while POH were displaced back into the formation by pumping an excessive amount of mud
  - Pump pressure declined slowly while pumping first 91 bbls filling the hole
  - Took 8.1 bbls to fill drill pipe while annulus was static which confirms there was lighter mud in the annulus

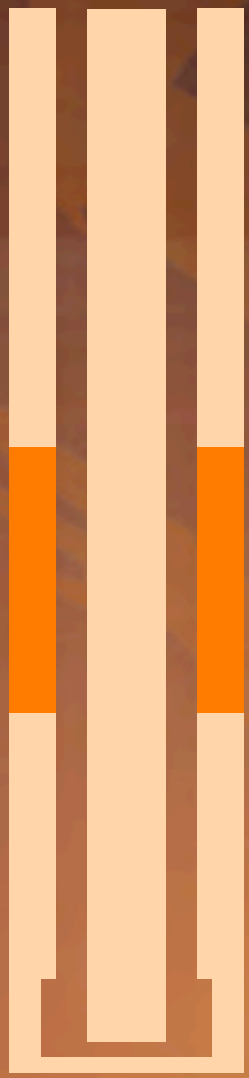
Wellbore before Lost Circulation

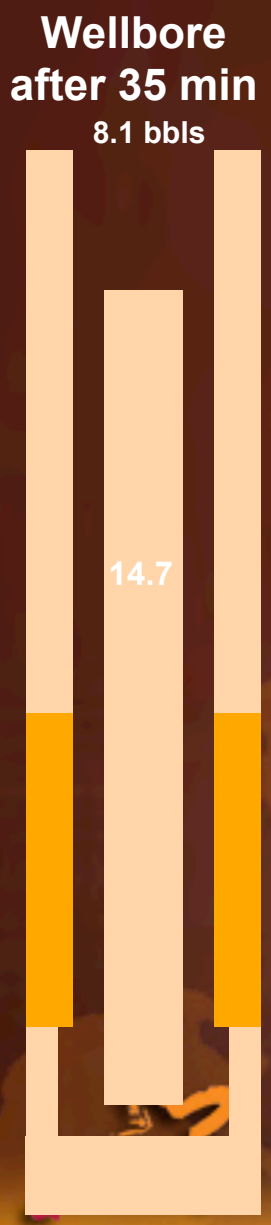


Wellbore after Lost Circulation



Wellbore after Filling the Hole





CALCULATIONS

Depth to Fluid = 8.1 bbls / 0.0178 bbls/ft = 455 ft

Estimated Bottom Hole Pressure = (9297 – 455) ft x 14.7 ppg x 0.052 = 6758.8 psi

Equivalent Mud Weight = 6758.8 / (9297 x 0.052) = 13.98 ppg

Height of Influx (8.5ppg) = [(9297 x 14.7) – 6758.8/0.052] / 6.2 = 1078.9 ft

Bbls of Influx = 1078.9 ft x 0.1215 bbl/ft = 131 bbls

Calculation of Influx Volume

The annulus remained static so the the amount of influx is dependent on the formation pressure as follows:

Formation Pressure in EMW (ppg)	14	13.8	13.6
Formation Pressure (psi)	6768	6672	6575
Influx Height (ft)	1049.7	1349.6	1649.5
Influx Volumn (bbls)	127.5	164	200

* Based on an influx of water with a weight of 8.5 ppg

Tripping Operations

- The trip commenced without circulating bottoms up because there were no losses or gains for almost 9 hours after losing circulation, (influx was not detected).
- The attempt to pump out of the hole was aborted because there was insufficient mud to continue pumping out of the hole
- The method used was to pull 5 to 7 stands with the well swabbing (6 to 10 bbls) and then pump over 3 times as much mud resulted in a net loss of 203.7 bbls when the well started to flow so the Kujung was not the source of the initial flow.

Trip Out of the Hole

- Could not match pump rate to pipe pulling speed to pump out of the hole
- Well swabbed while pulling out of the hole which was offset by pumping excessive mud into the formation every 5 to 7 stands
- The kick was not the result of the fluid swabbed while pulling pipe because the active system had a net loss of 203.7 bbls when the well started to flow

Trip Summary

Time	Activity	PVT	Change	Dis	Pumped	Cum PVT
23:15	Start POH	551				
23:17	POH 1 Stands	551				0
23:58	POH 4 stands	556	5	2.8		7.8
0:53	Pump out 4 stands	483 *	-73	2.8	107.2	-102.2
1:12	Pull 2 stands	486	3	1.4		-97.8
1:17	Pump	470	-16		15.0	-113.8
1:42	Pull 3 stands	473	3	2.1		-108.7
1:56	Pump	439	-34		28.6	-142.7
2:47	Pull 7 stands	444	6	4.9		-131.8
3:00	Pump	418	-26		32.9	-157.8
3:40	Pull 5 stands	447 **	29	3.5		-148.3
3:58	Pump	408	-39		33.8	-187.3
4:32	Pull 5 stands	411	3	3.5		-180.8
4:44	Pump	372	-39		33.8	-219.8
5:23	Pull 6 stands	378	6	4.2		-209.6

Trip Summary (cont)

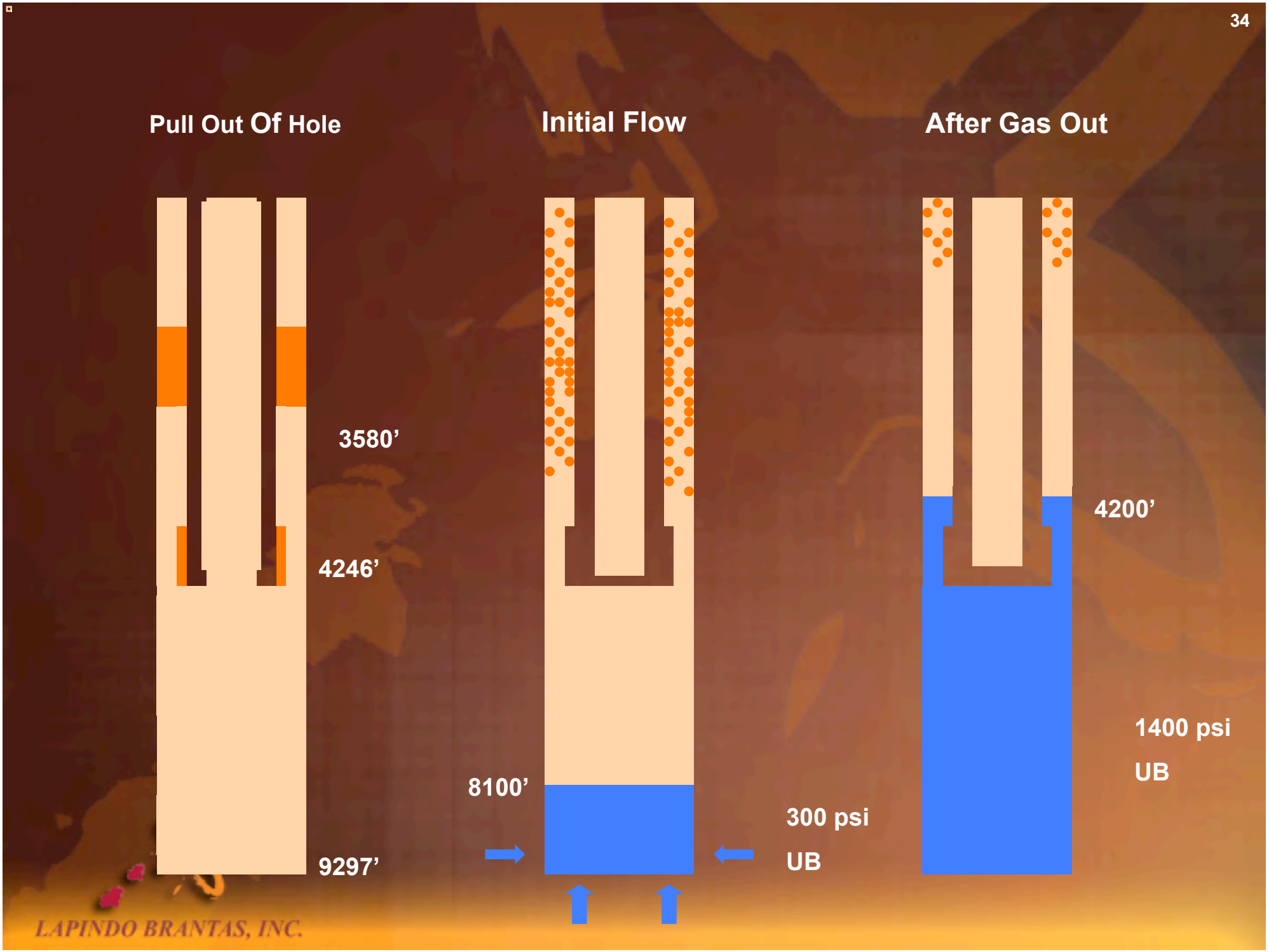
Time	Activity	PVT	Change	Dis	Pumped	Cum PVT
5:40	PUMP	339	-39		33.9	-248.6
6:17	Pull 7 stands	344	5	4.9		-238.7
6:25	Pull 2 stands, well flowing	377	34	1.4		-203.3
6:56	Pump, pull 1 stand	469	92	0.7	42.3	-110.6
7.03	Pump, pull 1 stand	450	-19	0.7	25.0	-128.9
7:19	Call Co Man	453	3		34.2	-125.9
7:53	SIW	819	366		124.5	240.1
8:14	Final PVT reading	1074	255			495.1
	Bleed off Gas					
8:17	Pump Mud	1045	29		25.4	
8:24	Bleed off Gas, Transfer mud	851				
8:59	Pump Mud	817	33		52.5	
	Bleed off Pressure, Well Dead	929				
9:13	Circulate	800			93	

Initial Flow

- The influx of 131 bbls of water and gas that occurred when the well lost circulation was in the annulus
- The use of OBM masked the influx as the gas goes into solution in the OBM
- The gas will stay in solution (which it behaves as a liquid) until the hydrostatic head in the annulus is less than the bubble point at this time the gas expands rapidly displacing the mud above it out of the hole

Initial Flow

- As the gas displaces the mud out of the annulus the Kujung becomes under balanced and starts to contribute
- The active system gained 171 bbls of mud before the dry gas hit surface. This means the gas started expanding at a depth of about 1400 ft.
- The Kunjung would be under balanced by a minimum of 300 psi when the dry gas reached the surface


Pull Out Of Hole
3580’
4246’
9297’
Initial Flow
8100’
300 psi
UB
After Gas Out
4200’
1400 psi
UB
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Shut In Well Status

- The well was not shut in until the active mud system had gained a minimum of 475 bbls of mud which resulted in a column of 3325 ft of water from the Kujung in the open hole.
- The SICP based on a 13.98 ppg BHP and an influx of 475 bbls water should of been approximately 725 psi
- The SICP of 450 psi confirms the formation fractured when the well was shut in

Well Killing Operations

- Well was killed by bleeding dry gas from annulus and filling annulus with 14.7 ppg mud
- SICP deceased from 450 to 339 psi after filling annulus with 25.4 bbls mud, to 260 psi after filling annulus with 54.5 bbls mud and then bled to 0 psi
- Circulated well with partial returns (50 to 60%) mud weight cut to 8.6 ppg (water) on bottoms up
- Attempt to move pipe, drill pipe stuck
- Gas and water broached to surface around location approximately 20 hours after shutting the well in
- Pumped 100bbls LCM pill and over displaced with 16.0 ppg mud initial pressure 1200 psi decreased to 900 psi with no effect on water flow

Well Killing Operation

- Injection Test, 2.5 bpm at 370 psi, pumped 50 bbls 15.8 ppg cement slurry and over displaced with mud. Final pump pressure 760 psi. WOC 12.5 hours
- Pumped 100 bbl 15.8 ppg cement slurry and over displaced with mud. Final pump pressure 325 psi. WOC 4 hours
- Repeated Injection Test, 1 bpm at 1000 psi so cancelled plug no 3
- Ran free point backed off drill pipe at 2980 ft
- Large cracks started appearing on location by pipe racks
- P&A well with two cement plugs and moved rig off location

Fracture Depth

- The short period of time between shutting the well in and the gas and water broaching to surface plus the original orientation of the surface blow holes adds validity to the flow path being an pre existing fault plane.
- The fault plane could have been sealing while it was drilled but it was opened up by the severe earthquake less than 24 hours before shutting the well.
- The amount of gain prior to shutting the well in means the formation from 6800 ft to the 13 3/8" casing shoe was exposed to pressures in excess to the 16.4 ppg fracture gradient
- The depth of the fracture is estimated to at a depth between 6123 ft and the bit

Summary

- The Drilling Program and the changes to the Casing Program were not the cause of the well control incident
- There was an influx of at least 131 bbls of gas and water when the lost circulation occurred. The amount of influx was increqsed by filling the hole through the drill pipe
- This influx was not circulated up prior to commencing the trip and remained in the annulus
- The gas went into solution in the OBM and did not migrate significantly during the 9 hours mixing mud volume and preparing to trip.

Summary

- The plan to pump out of the hole was aborted because they pumped an excessive amount of mud while pulling pipe
- The well swabbed fluid every time they pulled pipe but this was offset by pumping an excessive amount of mud every few stand which resulted in a net loss of 238.7 bbls in the mud pits. Calc pipe displacement was less than 35 bbls.
- The commencement of the initial flow of 171 bbls was the result of the rapid expansion of the gas breaking out of solution.

Summary

- The additional 304 bbls came from the Kujung as the well was under balanced by 300 psi when the gas expansion forced the 171 bbls of mud out of the annulus
- The well fractured when the well was shut as the SICP was 950 psi less than the calculated SICP
- Well appeared to of bridged off somewhere between the bit and 6123 ft (the base of the shale section) based on Well Killing operations and pressures
- The large gain (approx 475 bbls) prior to shutting the well in meant the formation from 6400 ft to the 13 3/8" shoe at 3580 ft was exposed to pressures in excess of the fracture gradient
- The well Killing Operations confirms the fracture depth to be some where below bit as there was no communication between drill string and flow path during kill operations