CONFIDENTIAL

BP PETROLEUM DEVELOPMENT LTD., NORWAY

7/12-2 RE-ENTRY
DRILLING
COMPLETION REPORT

D-01

Compiled by S. Burrows

Approved by A.C. Slater

REPORT NO DRL/84/006

OCTOBER 1984

CIRCULATION LIST

STATOIL	2
NPD	2
CONOCO	2
PELICAN	2
SP EXPLORATION	2
BP LONDON, DRILLING	2
BP DYCE, DRILLING	1
BP LONDON, ULA PROJECT	1
BP OSLO, ULA PROJECT	1
BP STAVANGER	5
SPARE	3

TOTAL 23 copies

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APPENDICES

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SECTION 1 SUMMARY

1.1 GENERAL WELL DATA

1.2 SUMMARY OF OPERATIONS

1.1 GENERAL WELL DATA

Well name	:	7/12-2	
Well type	:	Re-entry	
Location	:	ED-50	57° 06' 41.11"N
			02° 50' 50.87"E
		UTM	490 761 m E
			6 329 941 m N
Licence number	:	019A	
Drilling rig	:	Dyvi Alpha	

Dates

On hire from	:	1500 hrs	20th March 1984
Commenced programme	:	2230 hrs	22nd March 1984
Capped well	:	2400 hrs	28th April 1984
Last anchor racked	:	1800 hrs	29th April 1984

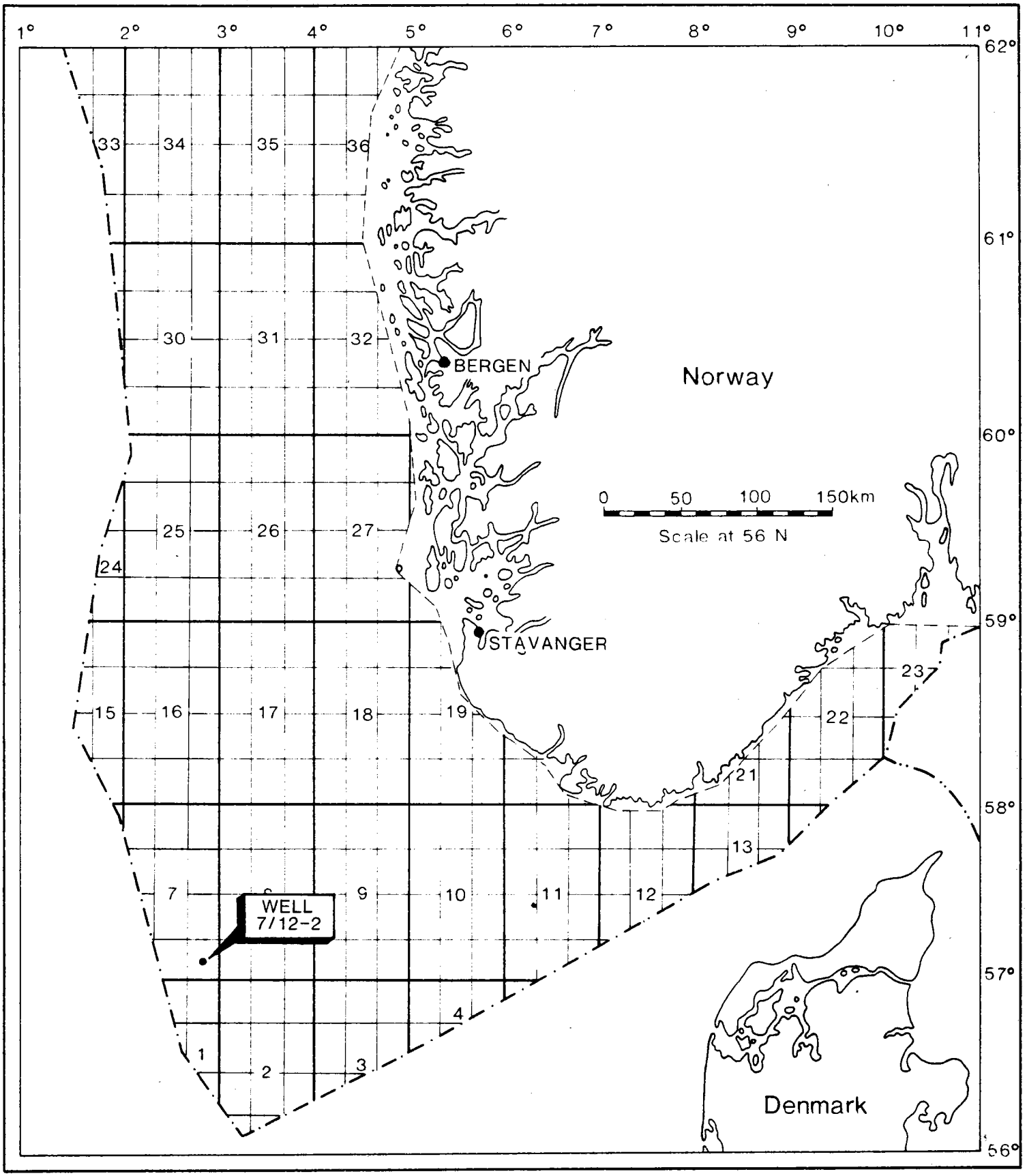
Depths

Water depth	:	71m L.A.T.
RTE above MSL	:	25m
RTE above wellhead datum	:	93.35m
Well Completion Status	:	Temporary abandoned

Abandonment Plugs

Cement plug No.1	3557m to 3515m
7" Bridge plug	3508m*
Cement plug no. 2	3512m to 3330m
Cement plug no. 3	3020m to 2919m
9 5/8" Bridge plug	2800m
9 5/8" Bridge plug	330m

* Wireline depth corresponding to 3512m drillers depth.



WELL 7/12-2 LOCATION MAP

Fig. 1

1.2 SUMMARY OF OPERATIONS

Well 7/12-2 was originally drilled and temporarily abandoned in 1976 by Conoco using the drilling rig Norskald. It was re-entered using the drilling rig Dyvi Alpha during the period 21st March 1984 to 29th April 1984.

The objective of the re-entry was to:-

a) Replace the 9 5/8" packoff with a modified item to facilitate the installation of the tie back equipment.

b) Check the pressure integrity of the 9 5/8" casing and 7" liner and confirm the extent of cement in the 9 5/8" annulus.

c) Perform reservoir stimulation and flow tests to evaluate the extent of the formation damage that occured during previous 7/12-2 DST's, and confirm the production capability of the well.

1.2.1 MOBILIZATION - TOWING

The rig Dyvi Alpha was released from well 7/12-4, at 15.00 hrs on 20.3.84, but did not receive the necessary approval to commence work on well 7/12-2 until 14.45 hrs on 21.3.84.

The rig arrived on 7/12-2 location and the first anchor dropped at 18.00 hrs on 21.3.84. Anchoring was completed and the rig positioned over well 7/12-2 by 18.30 hrs on 22.3.84 after a 17 1/2 hours delay due to waiting on weather.

Vessels "Active King" and "Normand Hunter" were utilised during the rig move and anchoring.

1.2.2 CLEAN OUT AND PRESSURE TEST CASING

Guidance was established using the special "Norsea" re-establishment tools assisted by the ROV. The corrosion cap was retrieved with 50 000 lbs overpull and the wellhead cleaned before running the BOP stack. The BOP stack had to be pulled because of a failed subsea BOP test and resulted in several days delay during which the BOP was repaired and eventually successfully pressure tested on the 7/12-2 wellhead.

The 9 5/8 casing was cleaned out and pressure tested to 5000 psi after each cement plug or bridge plug was drilled out. The liner owerlap was pressure tested to 5000 psi and drytested with no flow observed.

The 7" liner was cleaned out past the upper set of perforations at 3384m and the liner and perforations pressure tested to 5000 psi. The perforations were then dry tested with no flow observed.

The remaining plugs in the 7" liner were drilled out to a depth of 3561m to expose the lower set of perforations at 3525m. A cement plug was set across the lower perforations and a bridge plug set on top of the cement at 3508m.

CET and PAL logs were run in both 7" and 9 5/8 casing to evaluate the extent of cement in annulus and condition of casing. A VSP log was also run.

1.2.3 TESTING

The well was re-perforated and flowtested, the details of which are subject of a separate report.

1.2.4 ABANDONMENT

The well was plugged back in accordance with NPD regulations. The 9 5/8" seal assembly was retrieved and replaced by a 9 5/8" "Tie back" seal assembly which was pressure tested to 5000 psi. The BOP stack was pulled and a corrosion cap placed on the wellhead. The wellhead area was then filled with corrosion inhibitor (Cameron 530) and the seabed surveyed.

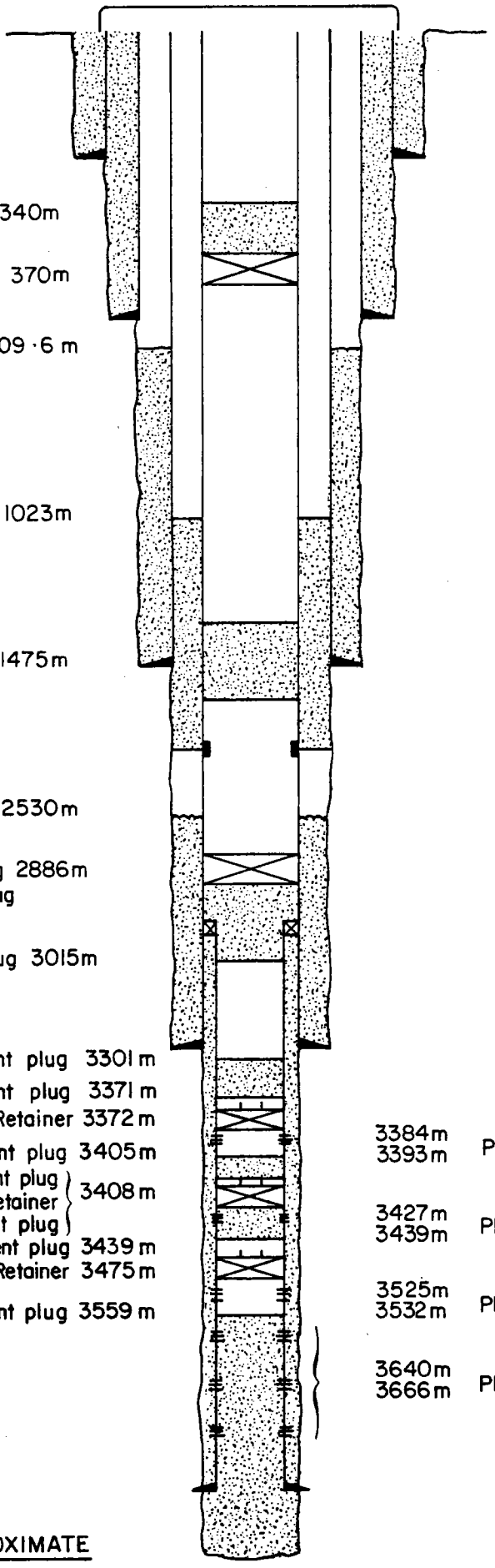
The anchors were recovered and the rig released from location at 1800 hrs on 29.4.84.

WELL N° 7/12-2 TEMPORARY ABANDONMENT SKETCH

Fig.2

PRIOR TO RE-ENTRY

NOTE: All depths B.R.K.B. (RKB to MSL 25m)



96m

30" Casing shoe. 158·5m

Cement plug 370 - 340m

EZSV Bridge plug @ 370m

20" Casing shoe. 480·4m

Estimated T.O.C. – 609·6 m

Estimated T.O.C 1023m

Cement plug 1550 - 1475m

13 3/8" Casing shoe. 1516·7m

DV. Tool. 1809m.

Estimated T.O.C. 2530m

Baker 'N' Bridge plug 2886m and top of Cement plug

Top Liner hanger. 2967·8m

Bottom of Cement plug 3015m

9 5/8" Casing shoe 3093·7m

Top of Cement plug 3301m

Bottom of Cement plug 3371m

Halliburton EZSV Retainer 3372m

Top of Cement plug 3405m

Bottom of Cement plug / Halliburton EZSV Retainer / Top of Cement plug 3408m

Bottom of Cement plug 3439m

Halliburton EZSV Retainer 3475m

Top of Cement plug 3559m

3384m 3393m PERFORATIONS (Open)

3427m 3439m PERFORATIONS (Squeezed)

3525m 3532m PERFORATIONS (Open)

3640m 3666m PERFORATIONS (Cemented)

7" Liner shoe 3675 m

T.D. 3675·9m

ALL DEPTHS APPROXIMATE

NOV. 1983
DR. NO. 8547

SECTION 2 TIME UTILIZATION

2.1 DRILLING DIARY

2.2 TIME ANALYSIS

2.3 SUMMARY OF DOWNTIME DUE TO EQUIPMENT

2.1 DRILLING DIARY

DATE	DAY NO	DEPTH	DESCRIPTION
20.3.84	1	-	Released from 7/12-4 location 1500 hrs. Awaiting approval for new location.
21.3.84	2	-	Awaiting approval for new location. Moved rig from 7/12-4 to 7/12-2 location and layed anchors 5, 1, 8, 3 and 2. W.O.W.
22.3.84	3	-	W.O.W. layed anchors 7, 4 and 6. Positioned rig. Established guide lines and retrieved corrosion cap.
23.3.84	4	-	Jetted wellhead, ran and tested BOP stack to 7500 psi.
24.3.84	5	350	Tested 9 5/8 seal assembly to 2000 psi. Attempted to test casing without success. RIH 8½" bit and cleaned out casing to top of cement at 350m. Disconnected LMRP and W.O.W.
25.3.84	6	350	W.O.W. Landed LMRP and tested. RIH and set 9 5/8" packer at 96m. Attempted to test 9 5/8" seal assembly without success. POOH and picked up L.H.D.C.
26.3.84	7	350	RIH 9 5/8 seal assembly running and testing tool and attempted to pressure test seal assembly without success. Attempted to recover 9 5/8 seal assembly without success. Cleaned wellhead area with rotary wire brush and jetting sub.

DATE	DAY NO	DEPTH	DESCRIPTION
27.3.84	8	350	Recovered 9 5/8" seal assembly. Brushed and jetted wellhead. Ran new 9 5/8" seal assembly. Attempted to test 9 5/8" seal assembly without success.
28.3.84	9	350	W.O.W. Pulled BOP stack. Attempted to test BOP stack without success. Changed out ram shaft seals and ram blocks on upper pipe rams. Attempted to pressure test without success.
29.3.84	10	350	Repairing and pressure testing BOP stack.
30.3.84	11	350	Repairing and pressure testing BOP stack.
31.3.84	12	350	Repairing and pressure testing BOP stack.
01.4.84	13	350	Repaired and pressure tested BOP stack successfully. Ran and installed BOP stack.
02.4.84	14	733	Tested BOP stack to 7500 psi. Pressure tested 9 5/8" seal assembly to 5000 psi. Tested 9 5/8" casing to 5000 psi. RIH 8½" bit and drilled out cement to 370m. Pressure tested casing to 5000 psi. Attempted to circulate - plugged bit POOH. RIH 8½" bit to 370m and displace hole to mud at 1.48 SG. Drilled bridge plug at 370m and pushed remains to 733m.
3.4.84	15	2333	Cleaned out casing to 1495m. Pressure tested casing to 5000 psi. Cleaned out casing to 2333m.

DATE	DAY NO	DEPTH	DESCRIPTION
4.4.84	16	2969	Cleaned out casing to bridge plug at 2883m Pressure tested casing to 5000 psi. Drilled out bridge plug and cleaned out casing to top of 7" liner at 2969m. Pressure tested casing to 5000 psi. POOH.
5.4.84	17	3306	RIH 5 7/8" bit and cleaned out 7" liner to 3306m. Pressure test liner and casing to 5000 psi. POOH.
6.4.84	18	3306	RIH 8½" bit and scraper and cleaned to top of liner at 2969m. POOH. RIH 9 5/8" packer to 2868m and displace string with 70 bbls sea water. Set packer and pressure test liner overlap to 3250psi. Dry tested liner overlap for 15 minutes. POOH packer. RIH 5 7/8" bit.
7.4.84	19	3411	Drilled out cement and bridge plugs to 3411m. Tested perforations at 3384m to 5000 psi for 10 minutes. POOH. RIH 5 7/8" bit and 7" casing scraper and cleaned liner. POOH. RIH 7" packer.
8.4.84	20	3524	RIH 7" packer to 3200m. Displaced 140 bbls of seawater. Set packer and pressure tested to 4000 psi. Dry tested perforations with 1300 psi drawdown for 15 minutes. POOH. RIH 5 7/8" bit and drilled cement retainers and cement to 3524m.
9.4.84	21	3476	Washed and reamed to top of cement plug at 3561m. POOH. RIH OEDP and set cement plug from 3559m to 3476m. POOH to 3476m and reverse circulate. POOH. RIH 5 7/8" bit.

DATE	DAY NO	DEPTH	DESCRIPTION
10.4.84	22	3447	RIH 5 7/8" bit to 3557m. No indication of cement. POOH. RIH OEDP to 3557m and set cement plug no. 1 from 3557m to 3450m. POOH to 3447m and reverse circulate. POOH.
11.4.84	23	3515	RIH 5 7/8" bit and 7" casing scraper and dress cement to 3515m. Circulated and conditioned mud. Pressure tested casing to 5000 psi. POOH. Rigged up Schlumberger and ran junk basket and gauge ring. Attempted to pass 3497m without success. Rigged down Schlumberger.
12.4.84	24	3508	RIH 5 7/8" bit and 7" casing scraper and worked to 3515m. POOH. Rigged up Schlumberger and ran junk basket and gauge ring to 3513m. Set bridge plug at 3508.5m. Ran CET log.
13.4.84	25	3508	Ran log 1 7" CET to 3508m. log 2 9 5/8" CET to 2969m. log 3 7" PAL to 3270m. log 4 9 5/8" PAL to 2969m.
14.4.84	26	3508	Rigged down Schlumberger. Tested BOP stack to 7500 psi. Rigged up Schlumberger and ran VSP log. Hung up at 3200m. Rigged down Schlumberger. RIH 5 7/8" bit and 7" scraper and tagged bridge plug at 3512m.
15.4.84	27	3508	Circulated and conditioned mud to 1.52 SG. POOH to 870m. Lost electrical power to drawworks.

DATE	DAY NO	DEPTH	DESCRIPTION
16.4.84	28	3508	Repaired electrical fault. POOH. Rigged up Schlumberger and logged VSP from 3350m. Rigged down Schlumberger. Dummy run on landing string.
17.4.84	29	3508	RIH DST tubulars and pressure flexed string to 6500 psi. POOH. RIH 5 7/8" bit and conditioned mud.
18.4.84	30	3508	Conditioned mud and POOH. RIH DST string.
19.4.84	31	3508	RIH and landed DST string. Ran GR log for depth corrolation and POOH DST string to space out. Tested DST string and landed in wellhead.
20.4.84	32	3508	Ran GR log for depth corrolation. Pressure tested surface equipment. Opened PCT and fired perforating guns. Released perforating guns. Flowed well for Initial Flow Period.
21.4.84	33	3508	RIH and logged PLT production log. Flowed well for production log. RIH with MUST and flowed well for Main Flow Period.
22.4.84	34	3508	Closed in well for Main Shut in Period. Reverse circulated contents of DST and killed well.

DATE	DAY NO	DEPTH	DESCRIPTION
23.4.84	35	3508	Unseated packer and attempted to bullhead contents below packer without success. POOH. Attempted to test BOP without success - 9 5/8" seal assembly leaked. RIH OEDP to bottom and reverse circulated string contents. Circulated and conditioned mud to 1.58 SG.
24.4.84	36	3508	POOH to 2219m. RIH 9 5/8" packer and set at 1188m. Back off from packer and POOH. Attempted to retrieve seal assembly without success. Retrieved seal assembly with LH string. Brushed wellhead area. Ran and set new 9 5/8" seal assembly and pressure tested to 1000 psi.
25.4.84	37	3508	Pressure tested BOP stack to 7500 psi. RIH and unseated 9 5/8" packer. POOH. RIH overshot and retrieved perforating guns. POOH.
26.4.84	38	2870	RIH OEDP to 3512m and circulated and conditioned mud. Set cement plug No. 2 from 3512m to 3330m. Reverse circulated out at 3300m POOH to 3020m and set cement plug No. 3 from 3020 to 2869m. Reverse circulated out at 2820m. POOH. RIH 8½" bit and scraper.
27.4.84	39	330	RIH and tagged top of cement at 2919m with 15000 lbs. POOH. Rigged up Schlumberger and ran junk basket and gauge ring. Set 9 5/8" bridge plug at 2800m. Rigged down Schlumberger. RIH to layout pipe. POOH and laid out pipe. Rigged up Schlumberger and set bridge plug at 330m. Rigged down Schlumberger.

DATE	DAY NO	DEPTH	DESCRIPTION
28.4.84	40	-	Recovered 9 5/8" seal assembly. Jetted wellhead and displaced riser to seawater. Ran 9 5/8" "tie-back" seal assembly and pressure tested to 5000 psi. Pulled BOP stack. Installed corrosion cap and circulated wellhead to corrosion inhibitor.
29.4.84	41	-	Cut and recovered guide lines. Surveyed seabed. Recovered anchors - last anchor racked 1800 hrs.

2.2 TIME ANALYSIS

A total of 41 days were spent on the re-entry. The well commenced on 20.3.84 with the Tow from well 7/12-4 and was completed by 29.4.84. Total time is devided as follows:-

a) Productive - Mooring
Clean out operations
Formation testing

b) Non Productive - Repairs and Maintenance
Weather Delays
Others

As indicated by the Rig Time Distribution Summary, the total productive time amounted to 81.5% of the total time, and actual clean out operations amounted to 66.8% of total time.

Repair and maintenance was the main cause of non productive time at 13.5% with a total non productive time of 18.5% of total time.

RIG TIME DISTRIBUTION SUMMARY

		DURATION		% AGE OF TOTAL
		HOURS	DAYS	
A.	PRODUCTIVE TIME			
1.	MOORING			
	Towing and Anchor handling	11.5	0.5	1.2
2.	CLEAN OUT OPERATIONS			
	Prepare to spud/abandon	70.5	2.9	7.2
	Drilling	35	1.5	3.7
	Reaming/Washing	16.5	0.7	1.8
	Tripping	171	7.1	17.7
	Circulation and Conditioning	50	2.1	5.2
	Run/Pull BOP	43	1.8	4.5
	Cementing	3.5	0.1	0.3
	BOP Testing	47.5	2.0	5.0
	Wireline Logging	52	2.2	5.5
	Wellhead work	99.5	4.1	10.2
	Others	54.5	2.3	5.7
	Sub total	643.0	26.8	66.8
3.	FORMATION TESTING	130	5.4	13.5
B.	NON PRODUCTIVE TIME			
1.	Repairs and Maintenance	129.5	5.4	13.5
2.	Weather Delays	24	1.0	2.5
3.	Others (awaiting approval)	25	1.0	2.5
	Sub total	178.5	7.4	18.5
	TOTALS	963	40.1	100.0

BP TIME ANALYSIS for the Month of...MARCH.... 1984 Well:-.7/12-2..... Rig:-.DYVI.ALPHA....

Code	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1.1	Moving																					6½	5										11½
1.2	Prep to Spud																						12½										12½
1.3	Abandon																																
1.4	Other																																
2.1	Drill																																
2.2	Trip																								6½	1							7½
2.3	Ream/wash																									2							2
2.4	Underream																																
2.5	Hole Open																																
2.6	Circulate																								½								½
2.7	Survey																																
2.8	Run/Pull BOP																							13				1	10				24
2.9	Casing																																
2.10	Cementing																																
2.11	BOP Test																							6		1		4	2		3		16
2.12	Leakoff																																
2.13	Slp/out Line																																
2.14	Well Control																																
2.15	Other																						½	5	12	7½	24	19					68
3.1	Circ for Smpl																																
3.2	Coring																																
3.3	W/L Logging																																
3.4	Testing																																
3.5	Other																																
4.1	Rig Rep.Surf																																
4.2	Rig Rep.S/Sea																									3			10	24	21	24	82
4.3	Hanging off																									2							2
4.4	W.O.W.																					14½	6		5	1½			2				22
4.5	Other																				9	16											25
	Total																				9	24	24	24	24	24	24	24	24	24	24	24	273

BP TIME ANALYSIS for the Month of...APRIL.... 1984 Well:-..7/12-2..... Rig:-.DYVI.ALPHA....

Code	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total
1.1	Moving																																-
1.2	Prep to Spud																																-
1.3	Abandon																										15	22	3	18			58
1.4	Other																																-
2.1	Drill		5	6½	9½	3½		3½	7																								35
2.2	Trip		6½	6	7½	11½	20½	17	11½	18½	13½	13	12		6	2½	2½	4	5½				3½	3								163½
2.3	Ream/wash			8½	1	3		1	1																								14½
2.4	Underream																																-
2.5	Hole Open																																
2.6	Circulate		1½	1½	2	4	½	1½		3½	6½	3	1½		1	2½		4	5					3½	3		5						49½
2.7	Survey																																-
2.8	Run/Pull BOP	12																											7				19
2.9	Casing																																-
2.10	Cementing									1½	2																						3½
2.11	BOP Test	2	8½				½								7½									5	1	7							31½
2.12	Leakoff																																-
2.13	Slp/out Line						1		½		1		½					1									½	1					5½
2.14	Well Control																																-
2.15	Other		2½	1½	4	1	1½	1	4	½	1	8	7											1	18	17	3½	½	8½				80½
3.1	Circ for Smpl																																-
3.2	Coring																																-
3.3	W/L Logging												3	24	9½		15½																52
3.4	Testing																4	15	13½	14½	24	24	24	11									130
3.5	Other																																-
4.1	Rig Rep.Surf					1										19	2			9½								½					32
4.2	Rig Rep.S/Sea	10																															10
4.3	Hanging off																																-
4.4	W.O.W.																																-
4.5	Other																												5½				5½
	Total	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	18			690

7/12-2 RE-ENTRY - TIME DEPTH CURVE

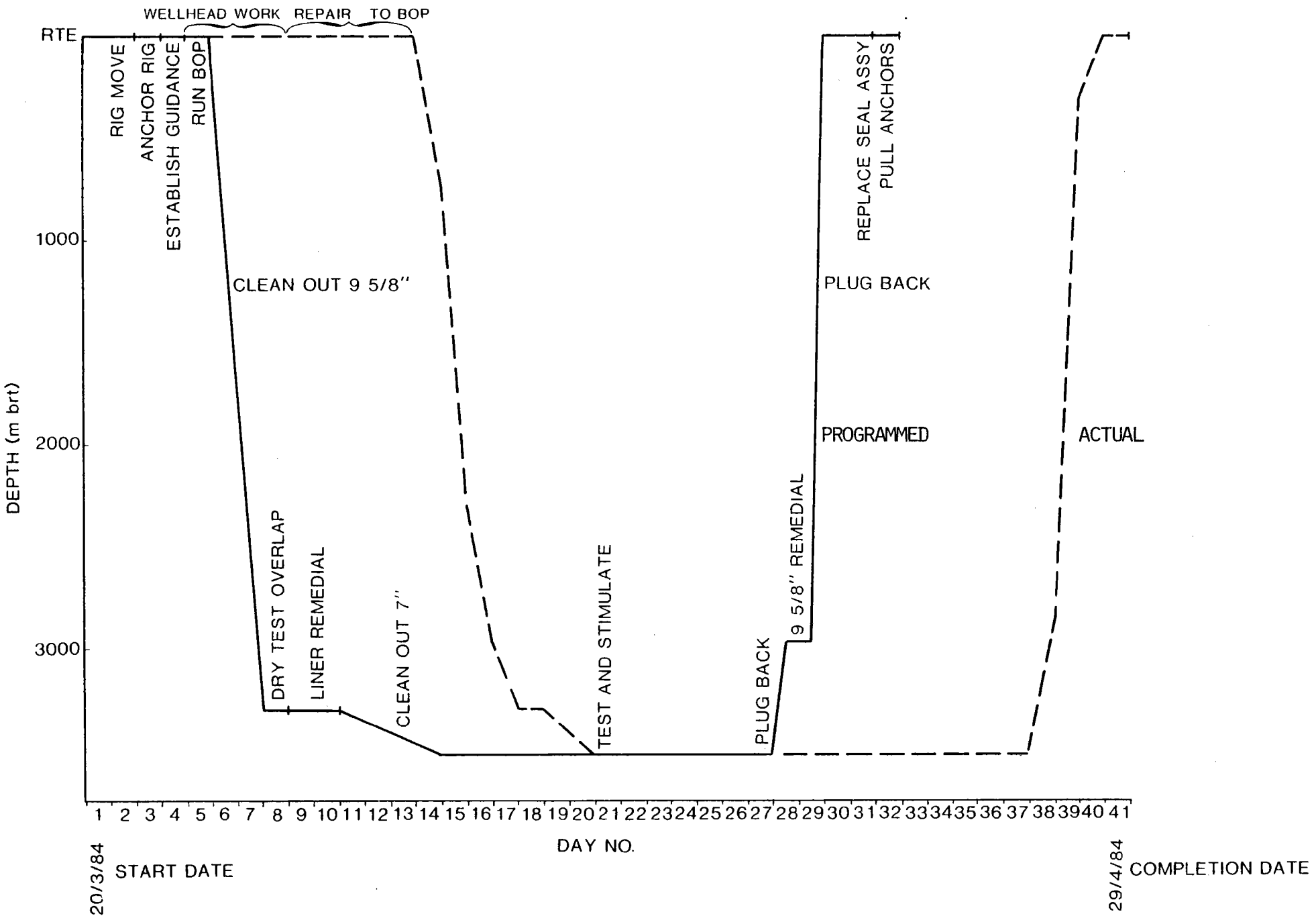


FIG. 3

DRWG. NO. 9459

SECTION 2.3 SUMMARY OF DOWNTIME DUE TO EQUIPMENT

DAY NO	HOURS LOST	EQUIPMENT	COMMENTS
6	3	TV cable	Repaired damage to cable.
9	10	BOP	Replaced leaking ram shaft seal and ram block.
10	24	BOP	Replaced bonnet sal, ram shaft seal and repaired locking plate.
11	21	BOP	Repaired and replaced seals.
12	24	BOP	Repaired and replaced seals.
13	10	BOP	Replaced seals.
17	1	Kelly	Changed out.
27	19	Drawworks	Lost electrical power-traced fault.
28	2	Drawworks	Traced fault and bypassed.
31	9½	Drawworks	Lost electrical power-repaired fault in SCR system.
39	½	Drawworks	Burst water hose on drawworks brake-repaired same.

TOTAL 124 HOURS LOST TIME

SECTION 3 ENGINEERING

3.1 BIT RECORDS

3.2 BOTTOM HOLE ASSEMBLIES

3.3 ELECTRIC LOGGING SUMMARY

3.4 DRILLING FLUID SUMMARY

3.5 TIE BACK WELLHEAD EQUIPMENT

3.1 BIT RECORD

NO.	SIZE	MAKE	TYPE	JETS	DEPTH OUT	FEET M	HOURS	M/HR	ACCUM DRLG. HOURS	WT 1000 LBS.	R P M	VERT DEV.	PUMP PRESS	PUMP OPER-ATION	S P M	MUD WT	GRADE				REMARK
1	8 1/2"	SMITH	L4HJ	OPEN	2969	214	18	12	18	20	100	0	900	S	75	148	8	6	1/8	BT	Bridge plug and CMT
2	5 7/8"	HTC	W7R2J	OPEN	3306	46	3½	13	31	15	60	0	1435	S	62	148	3	8	I	BT	"
3	8 1/2"	SMITH	SDGH	OPEN	3306	— S C R A P E R R U N —															Rerun 7/12-2 SLR
4	5 7/8"	HTC	R4	OPEN	3411	69	3½	20	51	10	60	0	1500	S	60	148	2	6	1/16	BT	Teeth Sev broken
5	5 7/8"	HTC	R4	OPEN	3561	29	7	4	55	18	60	0	1400	S	50	148	2	8	1/8	BT	CR+CMT Shank worn
6	5 7/8"	HTC	R4	OPEN	3561	— C L E A N O U T C E M E N T —							1500	S	50	152	1	2	I	BT	
R6	5 7/8"	HTC	R4	OPEN	3515	— C L E A N O U T C E M E N T —							1500	S	50	148	2	6	I	BT	Cone-locked
7	5 7/8"	HTC	R4	OPEN	3515	— C H E C K T R I P —							1500	S	50	148	2	4	I	BT	
R7	5 7/8"	HTC	R4	OPEN	3512	— C H E C K T R I P T A G B. P. —							—	—	—	152					
R7	5 7/8"	HTC	R4	OPEN	3512	— C O N D T I O N I N G T R I P —							1500	S	60	152					
8	8 1/2"	SMITH	S21	OPEN	— C E M E N T T A G —												1	1	I	-	Returning to town

SECTION 3.2 BOTTOM HOLE ASSEMBLIES

A. Inside 9 5/8" casing

BIT-JS-NBS-3 x 6½" DC-SS-6 x 6½" DC-SS-DP.

B. Inside 7" casing

BIT-JS-BS-SS-3 x 4 3/4" DC-SS-18 x 4 3/4" DC-DP

All stabalizers were the non rotating blade type to prevent possible damage to casing during clean out operations.

SECTION 3.3 ELECTRIC LOGGING SUMMARY

3.3.1 - LOGS RUN

RUN NO.	DATE	LOG	SIZE (inch)	INTERVAL (m brt)
1A	11.4.84	JB/Gauge Ring	7	2970 - 3497
2B	12.4.84	JB/Gauge Ring	7	2970 - 3513
2A	12.4.84	Bridge plug	7	3508
3A	12.4.84	CET	7	2970 - 3509
3B	13.4.84	CET	9 5/8	Sea bed - 2970
3A	13.4.84	PAL	7	2970 - 3270
3B	13.4.84	PAL	9 5/8	Sea bed - 2970
4A	16.4.84	VSP	7 and 9 5/8	Sea bed - 3350
5A	19.4.84	GR/CCL Correlation	7	3225 - 3300
6B	20.4.84	GR/CCL Correlation	7	3225 - 3300
7A	21.4.84	PLT	7	3400 - 3450
8C	27.4.84	JB/Gauge Ring	9 5/8	Sea bed - 2830
8B	27.4.84	Bridge plug	9 5/8	2800
9C	27.4.84	Bridge plug	9 5/8	330

3.3.2 CET LOG RESULTS

The CET log was run to evaluate the extent of cement behind the 7" and 9 5/8" casing. The results of the CET were also processed to give an internal diameter caliper which was used to evaluate the extent of corrosion on the casing when read in conjunction with the PAL tool results.

The 7" CET indicated a reasonable cement bond up to approximately 3260m, patchy cement up to 3100m (9 5/8 shoe) and virtually no cement between 7" and 9 5/8" overlap.

The 9 5/8" CET showed good cement to approximately 2875m, patchy cement up to 2650 and virtually nothing up to 1800m (DV). Patchy to good cement bond was then indicated from 1800m to 1225m.

The cement between 9 5/8" and 13 3/8" casing is therefore confirmed to extend approximately 290m above the 13 3/8" casing shoe.

3.3.3 PAL LOG RESULTS

The PAL log was run to give a qualitive result of outer and inner casing corrosion when read in conjuction with the CET caliper log results.

The 7" PAL indicate minor corrosion on the outer diameter of the liner with the inside diameter within expected mill tolerances showing no internal wear.

The 9 5/8" PAL indicated the casing to be generally in good condition but with some corrosion noted on the outside of the casing at approximately 1200m, 1580m and 2885m. Each of these depths appear to correspond to an interface between mud and cement in the annulus.

Three joints of casing at 915m depth were found to be heavily worn on the inside diameter, but the CET indicated the bore of the casing to be less than that expected of 47 lbs/ft. The casing is most likely to be 53.5 lbs/ft at this depth which is also the point of crossover from S-95 to N-80 grade 9 5/8" casing.

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3.4 DRILLING FLUID SUMMARY

BP Norway, 7/12-2, Reentry

C O N T E N T S

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W E L L S U M M A R Y

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W E L L S U M M A R Y

Mud Type: CMC/Ligno

The Dyvi Alpha arrived on the 7/12-2 location on March 22, 1984. A total of ten days were spent carrying out seal assembly and working on BOP's.

Six cement plugs and six bridge plugs were drilled out using a CMC bentonite mud, treated with Spersene.

After some old mud was incorporated into the system, the mud was treated heavily for cement contamination. The hole was circulated until the mud weight stabilized at 1.48 s.g. A cement plug was displaced on bottom, but failed to set up, a second plug was displaced and dressed off to 3515m.

Schlumberger was then run in the hole, but the tool hung up at 3497m, 18m off bottom. The mud was further conditioned for lower fluid loss, and improved gel strengths. Problems were experienced throughout the logging programme, which were possibly due to high B.H.T. However, each time B.U. was circulated, there were no indications of high temp gelation, or settling of barite and drill solids.

Before testing, the mud system was conditioned with XP-20. Testing was completed without problems, and a temporary abandonment prog carried out. The mud retained in the hole was pre-treated with Magco 101 inhibitor, and Dowcide G (Bacteriacide).

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BP Norway, 7/12-2 - Reentry

DAILY OPERATIONS LOG

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BP Norway, 7/12-2 - Reentry

DAILY OPERATIONS LOG

22th March 1984 Arrived on location, run ancohors and guide liners.

23th March 1984 Ran riser and BOP. Test choke and kill lines. Pre-hydrated 500 bbls gel slurry.

24th March 1984 Test seal assembly and csg. W.O.W.

25th March 1984 Run csg scraper to top of cement plug at 350 m. Ran packer and re-tested seal assembly.

26th March 1984 Attemt to release and retrieve seal assembly.

27th March 1984 Changed seal assembly. Negative test, prepare to pull stack.

28th March 1984 Pull stack and work on same.

29th March 1984 Work on BOP's.

30th March 1984 Work on BOP's.

Cont'd....

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BP Norway, 7/12-2 - Reentry

31st March 1984 Work on BOP's.

1st April 1984 Run riser and BOP stack.

2nd April 1984 RIH to 340 m. Drill cement. Displace hole to 1.48 s.g. mud. Drill bridge plug, RIH pushing bridge plug ahead. Hung up at 1188 m, displace to 1.48 s.g. mud.

3rd April 1984 RIH to 1188 m. Circ. B.U. Dump old mud. Wash and ream from 1188 m to 1495 m T.O.C. Circ. B.U. RIH to 2333 m. Mud highly contaminated with cement.

4th April 1984 After cleaning and circ hole, drill bridge plug at 2883 m. Test csg. Drill cement to top of liner at 2969 m. POOH. Treating mud for cement contamination.

5th April 1984 RIH. Drill cement from 2969 m to 3015 m. Wash down to 3306 m. Circ. out gas. Test csg and POOH. Mud system heaving contaminated with cement.

6th April 1984 POOH. RIH with csg scraper. POOH. RIH with packer. Test csg. POOH and RIH with 5 7/8" bit.

Cont'd....

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BP Norway, 7/12-2 - Reentry

7th March 1984 — Drill cement and bridge plug. Wash down to 3411. Circ. B.U. test csg to 5000 psi. Run csg scraper. POOH.

8th March 1984 — RIH. Drill cement and 3 bridge plugs.

9th March 1984 — Wash down to 3561 m. POOH. RIH and displace cement plug. RIH and dress off cement plug.

10th March 1984 — RIH. Unable to tag cement plug. Mix and displace 2nd plug.

11th March 1984 — RIH with bit and scraper. Dress cement to 3515 m. Circ and condition mud to 1.48 s.g. Test csg. POOH. Run Schlumberger tool, hung up at 3497 m. Added 300 bbls of low fluid loss mud to active system.

12th March 1984 — RIH. Tag bottom, no fill. Rig up Schlumberger and log.

13th March 1984 — Logging. Run bridge plug.

14th March 1984 — Logging. Test BOP's. Logging, unable to reach bottom. RIH with scraper, no fill. Mud at B.U. in excelent condition, no sign of temp gelation or settling. Reduced fluid loss as requested.

Cont'd....

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15th March 1984 Circ and WT up mud to 1.52 s.g. POOH. Rig down for repairs.

16th March 1984 Logging.

17th March 1984 M.I.R.U. Tool plugged while reversing out. POOH.

18th March 1984 Conditioned mud with XP-20 for temp stability. RIH with D.S.T.

19th March 1984 Testing.

20th March 1984 Testing.

21st March 1984 Testing.

22nd March 1984 Completed D.S.T. test. Kill well. Unseated packer to pull test string.

23rd March 1984 POOH with test string. Test BOP's, no test. RIH to WT up mud to 1.58 s.g.

, Cont'd....

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24th March 1984 Set Hurricane packer. Replace BOP seal assembly. Good test.

25th March 1984 Retrived hurricane packer. Trip with overshot. Retrived perforating gums. Raise Vis and YP and treat with Corrosin Inhibitor Magco 101 and Dowcide G.

26th March 1984 Circ mud. Set cement plugs. RIH and tag.

27th March 1984 Set bridge plugs.

28th March 1984 Set new seal assemly Pull riser and BOP.

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BP Norway, 7/12-2, Reentry

TOTAL MATERIAL CONSUMPTION

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BP Norway, 7/12-2, Reentry

TOTAL MATERIAL CONSUMPTION

PRODUCT	UNIT SIZE	QUANTITY	UNIT COST	TOTAL COST
Barite	m.t.	359	$ 148.90	$ 53 455.10
Bentonite	m.t.	28	$ 405.56	$ 11 355.68
Caustic Soda	25 kg/sx	60	$ 22.05	$ 1 323.00
Soda Ash	40 kg/sx	15	$ 22.81	$ 342.15
CMC HV	25 kg/sx	66	$ 68.30	$ 4 507.80
Spersene	25 kg/sx	215	$ 21.90	$ 4 708.50
Staflo	25 kg/sx	1	$ 198.50	$ 198.50
SAPP	kg/sx	10	$ 93.31	$ 933.10
Lime	40 kg/sx	8	$ 10.30	$ 82.40
XP-20	25 lb/sx	30	$ 33.76	$ 1 012.80
Dowcide G	50 kg/sx	3	$ 243.50	$ 730.50
Magco 101	55 gal/drm	8	$ 618.50	$ 4 948.00
			TOTAL	$ 83 597.53

Mud transfered from 7/12-4 Abandonment
Total 450 Bbls at $ 22.13 per Bbl =$ 9 960.73

TOTAL COST $ 93 558.26

Mud made 1146 Bbls

As mud which was in the hole had to be treated, it is impossible to work out a cost per bbl.

COST BASED ON MAGCOBAR'S CURRENT PRICE LIST.

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BP Norway, 7/12-2 - Reentry

DAILY MATERIALS CONSUMPTION

DAILY MATERIALS CONSUMPTION

WELL 7/12-2 PAGE 1

DATE	DEPTH	BARITE	BENTONITE	CAUSTIC	SODA ASH	CMC HV	SPERSENE	STAFLO	SAPP	LIME	XP-20				DAILY MUD COST	REMARKS
22.03	-															Arrived on location.Set anchors.
23.03	-	44	7		5	5										
24.03	-															
25.03	-															
26.03	-															
27.03	-															
28.03	-															
29.03	-															
30.03	-															
31.03	-															
01.04	-	4		13			15	1								
02.04	1210	50														
03.04	2333	50	9	11		3	28									
04.04	2969	63					8									
05.04	3306	4			3	7	7		10	4						
06.04	3306															
07.04	3411	4			3		20									
08.04	3414			2	2		4			4						
09.04	3476	20		2			3									
10.04	3476	12	4	15	1	5	31									
11.04	3515	4														
12.04	3516	4				9										
13.04	3516															
14.04	3516	4				5	23									
15.04	3512															
16.04	3512															
17.04	3512	20														
18.04	3512	11		13		20	61				30					
19.04	3512															
20.04	3512															
21.04	3512															

DAILY MATERIALS CONSUMPTION

WELL 7/12-2

PAGE 2

DATE	DEPTH	BARITE	BENTONITE	CAUSTIC	SODA ASH	SPERSENE	CMC HV	XC POLY	DOWCIDE G	MAGCO 101					DAILY MUD COST	REMARKS
22.04	3512	25	5	4	1	15	12									
23.04	3512	15	3													
24.04	3512															
25.04	3512	10														
26.04	3512							3	3	8						
27.04	3512	15														
28.04	0															

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BP Norway, 7/12-2, Reentry

DAILY MUD PROPERTIES

DAILY MUD PROPERTIES

Well : 7/12-2

PAGE 1

DATE	DEPTH	WT.	VIS SEC.	CORR. 115°F PV	CORR. 115°F YP	GELS 0	GELS 10	pH BECK ☐ STRIP ☐	FLUID LOSS 100 PSI API	FLUID LOSS 500 PSI 300°F HT-HP	CL ☐ CACL ☐ NACL ☐	ALKALINITY PF	ALKALINITY PM	ALKALINITY MF	CA ppm	RETORT % OIL	RETORT % SOL	RETORT % WATER	V.G. METER READING @ 115° 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		TOTAL MUD COST
22.03		MIXING	UD																								
23.03		1.48	78																								
24.03		1.48	78																								
25.03		1.48	78																								
26.03		1.48	78																								
27.03		1.48	78																								
28.03		1.48	78																								
29.03		1.34	38	6	5	4	12	8.5	46	N/A	13,500	.1	.4	.4	800												
30.03		1.41	44	6	22	12	18	9.0	35	N/A	11,000	.1	.4	.4	480												
31.03		1.41	41	8	14	11	17	9.0		N/A																	
01.04		1.10	100	15	23	14	94	13.0	6.4	N/A	30,000	2.8		5.8													
02.04	1210	1.48	56	13	29	14	30	10.3	15.0	N/A	13,000	.3	2.5	1.0	160												
03.04	2333	1.50	46	14	18	14	38	12.0	13.0	N/A	11,500	1.7	6.5	2.9	200	0	17	83							20		
04.04	2969	1.48	48	13	19	10	40	12.0	12.3	N/A	11,500	1.6	7.0	3.5	260	0	17	83							20		
05.04	3306	1.48	47	13	16	16	50	12.0	19.0	N/A	10,500	2.0	8.0	3.0	160	0	18	82							20		
06.04	3306	1.48	47	13	16	16	50	12.0	19.0	N/A	10,500	2.0	8.0	3.0	160	0	18	82							20		
07.04	3411	1.48	45	12	15	8	46	11.8	18.0	N/A	10,500	1.9	8.0	3.5	180	0	18	82							20		
08.04	3414	1.48	43	11	14	10	41	11.0	20.0	N/A	11,000	0.7	5.5	1.6	80	0	18	82							20		
09.04	3476	1.48	44	11	15	10	40	11.0	21.0	N/A	11,000	0.7	5.1	1.4	80	0	18	82							20		
10.04	3476	1.52	40	14	9	6	28	11.5	16.8	N/A	10,500	0.9	8.0	1.9	80	0	18	82							20		
11.04	3515	1.48	46	12	7	6	16	11.5	11.0	N/A	9,500	1.3	8.0	2.7	120	0	18	82							22.5		
12.04	3516	1.48	56	16	12	4	18	11.3	10.5	N/A	9,500	1.3	8.0	2.8	80	0	18	82							22.5		
13.04	2200	1.48	56	16	12	4	18	11.3	10.5	N/A	9,500	1.3	8.0	2.8	80	0	18	82							22.5		
14.04	3516	1.52	47	19	7	3	16	11.5	8.5	N/A	11,000	1.2	6.0	2.1	TR	0	19	81							22.5		
15.04	3512	1.52	47	19	7	3	16	11.5	8.5	N/A	11,000	1.2	6.0	2.1	TR	0	19	81							22.5		
16.04	3512	1.52	42	13	7	2	14	11.5	8.8	N/A	11,000	1.2	5.6	2.6	40	0	19	81							20		
17.04	3512	1.56	54	19	10	4	22	11.8	9.4	N/A	11,000	0.8	4.4	2.3	50	0	20	80							17.5		
18.04	3512	1.53	42	17	6	2	3	11.5	7.2	N/A	11,000	0.9	3.8	2.8	150	0	19	81							17.5		

DATE SPUD: DATE T.D.: COST:

DAILY MUD PROPERTIES

Well : 7/12-2

PAGE 2

DATE	DEPTH	WT.	VIS SEC.	CORR. 115°F PV	CORR. 115°F YP	GELS 0	GELS 10	pH BECK ☐ STRIP ☐	FLUID LOSS 100 PSI API	FLUID LOSS 500 PSI 300 °F HT-HP	CL ☐ CACL ☐ NACL ☐	ALKALINITY PF	ALKALINITY PM	ALKALINITY MF	CA ppm	RETORT % OIL	RETORT % SOL	RETORT % WATER	V.G. METER READING @ 115° 600 R.P.M.	300 R.P.M.	200 R.P.M.	100 R.P.M.	6 R.P.M.	3 R.P.M.	Bbl CEC		TOTAL MUD COST
19.04	3512	1.51	45																								
20.04	3512	1.51	45																								
21.04	3512	1.52	46																								
22.04	3512	1.52	45	16	7	2	7	11.5	7.6	N/A	12,000	.9	3.0	2.1	100	0	19	81							17.5		
23.04	3512	1.58	40	15	6	2	3	11.5	8.0	N/A	13,000	.6	2.4	2.2	100	0	21	79							17.5		
24.04	3512	1.58	40	15	6	2	3	11.5	8.0	N/A	13,000	.6	2.4	2.2	100	0	21	79							17.5		
25.04	3512	1.57	40	13	4	1	3	11.5	7.5	N/A	13,500	.5	2.6	1.8	160	0	21	79							17.5		
26.04	3512	1.58	44	18	10	3	14	11.5	8.2	N/A	13,000	.6	2.6	2.3	120	0	20	80							17.5		
27.04	3512	1.58	44																								
28.04	3512	1.58	44																								

DATE SPUD: DATE T.D.: COST:

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BP Norway, 7/12-2, Reentry

MUD VOLUME DATA

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• MUD VOLUME DATA •

COMP: ...BP.NORWAY..... CONTR: DYVI OFFSHORE...

WELL: 7/12-2 RIG: DYVI ALPHA.....

DATE	HOLE SIZE	DEPTH	MUD WT.	VISC.	BBL'S OF HOLE DRLD	1. HOLE VOLUME	2. ACTIVE PIT VOL	1+2=3. TOTAL CIRC. VOL.	5. VOLUME ADDED Mud Made	6. MUD LOSSES			7. CUM. LOSS	8. MUD IN STORAGE	3+8 TOTAL VOL.	DAILY COST	TOTAL COST
										HOLE	SURFACE	TOTAL LOSS					
22.03	MIXING											0	0	425	425		
23.03			1.48	78			620		500			0	0	305	925		
24.03			1.48	78			620		165			0	0	470	1090		
25.03			1.48	78			620					0	0	470	1090		
26.03			1.48	78			620					0	0	470	1090		
27.03			1.48	78			620					0	0	470	1090		
28.03			1.48	78			620					0	0	470	1090		
29.03			1.34	38			700		80			0	0	470	1170		
30.03			1.41	44			700					0	0	470	1170		
31.03			1.41	41			700					0	0	470	1170		
01.04			1.10	100			670				95	95	95	405	1075		
02.04		1210	1.48	56		400	350	750			100	100	195	477	1227		
03.04		2333	1.50	46		608	432	1040	175			0	195	581	1621		
04.04		2969	1.48	48		774	370	1144			217	217	412	260	1404		
05.04		3306	1.48	47		811	422	1233	4		10	10	422	282	1515		
06.04		3306	1.48	47		811	422	1233				0	422	282	1515		
07.04		3411	1.48	45		873	400	1273				0	422	282	1555		
08.04		3414	1.48	43		807	430	1237			58	58	480	260	1497		
09.04		3476	1.48	44		803	470	1273	20		63	63	543	181	1454		
10.04		3476	1.52	40		803	452	1255	171				543	370	1625		
11.04		3515	1.48	46		928	459	1387			50	50	593	110	1497		
12.04		3516	1.48	56		891	420	1311	6		6	6	599	186	1497		
13.04		2200	1.48	56		891	420	1311				0	599	186	1497		
14.04		3516	1.52	47		891	410	1301	10		20	20	619	186	1487		
15.04		3512	1.52	47		891	410	1301					619	120	1421		

Magcobar DRESSER

DRESSER NORWAY A.S.

• MUD VOLUME DATA •

COMP:..... CONTR:.....

WELL:..... RIG:.....

TIME	HOLE SIZE	DEPTH	MUD WT.	VISC.	BBL'S OF HOLE DRLD	1. HOLE VOLUME	2. ACTIVE PIT VOL	1+2=3. TOTAL CIRC. VOL.	5. VOLUME ADDED	6. MUD LOSSES			7. CUM. LOSS	8. MUD IN STORAGE	3+8 TOTAL VOL.	DAILY COST	TOTAL COST
										DUMP	HOLE	TOTAL LOSS					
16.00		3512	1.52	42		890	340	1230			71	71	690	120	1350		
17.04		3512	1.56	54		820	250	1070	10			0	690	290	1360		
18.04		3512	1.53	42		800	275	1075				15	705	270	1345		
19.04		3512	1.51	45		620	320	940				5	710	400	1340		
20.04		3512	1.51	45		620	305	925				120	830	295	1220		
21.04		3512	1.52	46		620	305	925				0	830	295	1220		
22.04		3512	1.52	45		815	170	985	5			0	830	240	1225		
23.04		3512	1.58	40		810	280	1090				55	885	190	1280		
24.04		3512	1.58	40		850	175	1025				65	950	190	1215		
25.04		3512	1.57	40		890	125	1015				10	960	190	1205		
26.04		3512	1.58	44		730	255	985				155	1115	65	1050		
27.04		3512	1.58	44		184	150	334		651		651	1766	65	399		
28.04		3512	1.58	44		0	140			209		209	1975	50	190		

3.5 TIE BACK WELLHEAD EQUIPMENT

The standard 9 5/8" seal assembly was removed from the wellhead and replaced with a 9 5/8" "tie-back" seal assembly in accordance with the manufacturers installation procedures. The seals on the 9 5/8" "tie-back" seal assembly were subsequently pressure tested to 5000 psi.

The installation of the "tie-back" seal assembly facilitates the installation of the 13 3/8" and 9 5/8" tie back tools which both seal on sealing surfaces of the seal assembly.

The status of the wellhead is shown in the Wellhead Details sketch, Fig. 5.

SECTION 4 ABANDONMENT

4.1 WELL ABANDONMENT

4.2 ABANDONMENT PLUGS

4.1 WELL ABANDONMENT

The well was plugged and temporarily abandoned in accordance with NPD Regulations.

Prior to drill stem testing the well, the cement retainer at 3475m was drilled out and the 7" liner cleaned out to 3561m. A cement plug was then set from 3557m to 3450m and dressed off to 3515m. A bridge plug was set on top of the cement plug at 3512m.

After testing was completed, the well was plugged back with cement from the bridge plug at 3512m to 3330m to isolate the perforations in the 7" liner. Cement was then set across the liner overlap from 3020m to 2919m and bridge plugs set in the 9 5/8" casing at 2800m and 330m.

4.2 ABANDONMENT PLUGS

4.2.1 Cement Plugs

PLUG NO	INTERVAL (m brt) FROM	TO	PLUG DETAILS
1	3557	3515	59 sxs G neat cement + fresh water + D28 SLR at 0.6 gal/sx at 1.90 SG slurry weight.
2	3512	3330	118 sxs G neat cement + fresh water + D28 SLR at 0.58 gal/sx at 1.90 SG slurry weight.
3	3020	2919	168 sxs G neat cement + fresh water + D28 SLR at 0.16 gal/sx at 1.90 SG slurry weight.

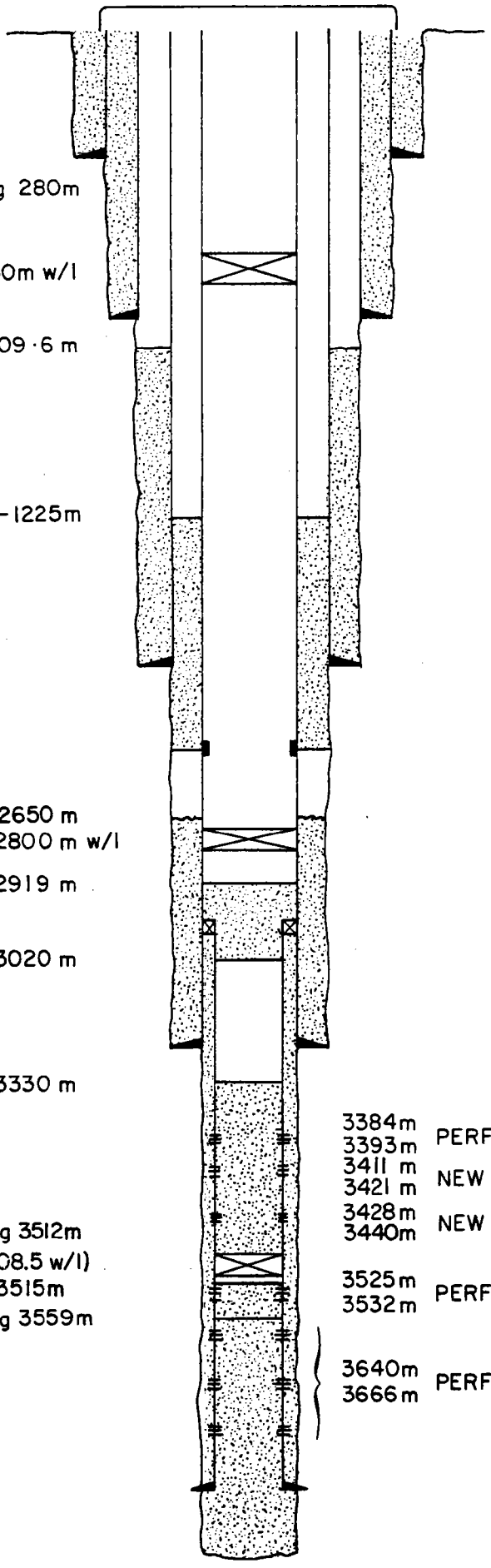
4.2.2 Bridge plugs

PLUG NO	DEPTH (m brt) W/L	DRILLERS	TYPE
1	3508.5	3512	7" Baker model 'N'
2	2800	-	9 5/8" Baker model 'N'
3	330	-	9 5/8" Baker model 'N'

WELL N° 7/12-2 TEMPORARY ABANDONMENT – ACTUAL

Fig.4

NOTE: All depths B.R.K.B. (RKB to MSL 25m)



96m

30" Casing shoe. 158·5m

Top of Cement plug 280m

Bridge plug 330m w/l

20" Casing shoe. 480·4m

Estimated T.O.C. – 609·6 m

Actual T.O.C. – 1225m

13 3/8" Casing shoe. 1516·7m

DV. Tool. 1809m.

Actual T.O.C. – 2650 m

Bridge plug 2800 m w/l

Top of Cement plug 2919 m

Top Liner hanger. 2967·8m

Bottom of Cement plug 3020 m

9 5/8" Casing shoe 3093·7m

Top of Cement plug 3330 m

3384m
3393m PERFORATIONS

3411 m
3421 m NEW PERFORATIONS

3428m
3440m NEW PERFORATIONS

Bottom of Cement plug 3512m

Bridge plug 3512m(3508.5 w/l)

Top of Cement plug 3515m

Bottom of Cement plug 3559m

3525m
3532m PERFORATIONS

3640m
3666m PERFORATIONS

7" Liner shoe 3675 m

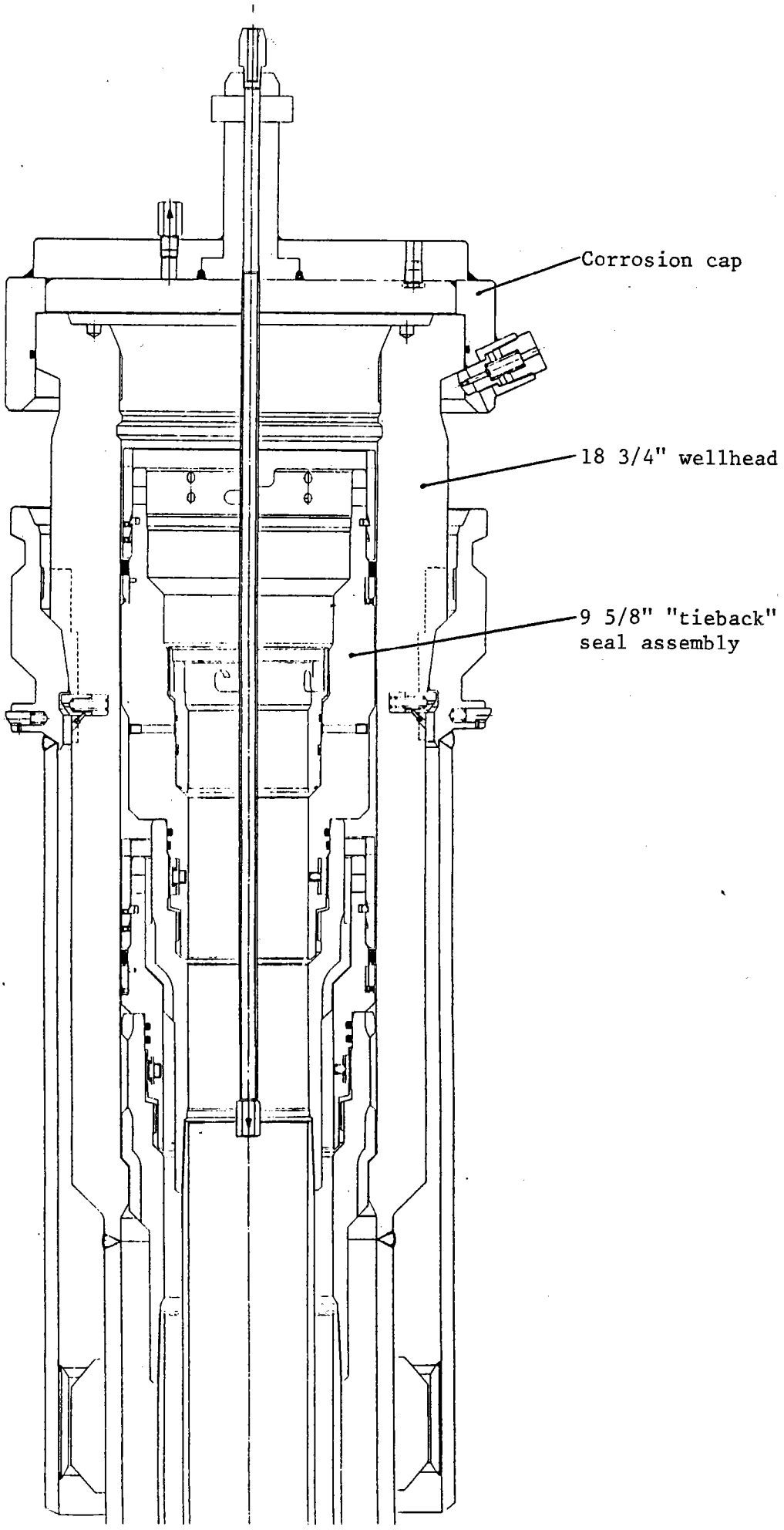
T.D. 3675·9m

ALL DEPTHS APPROXIMATE

NB. DRILLERS DEPTHS 3.5m DEEPER THAN WIRELINE DEPTHS.

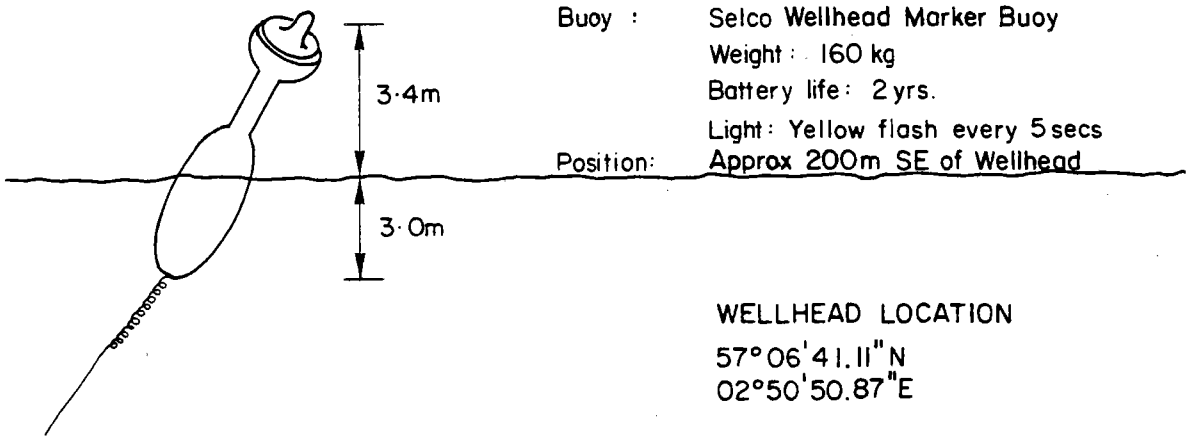
JAN. 1984
DR NO 8637

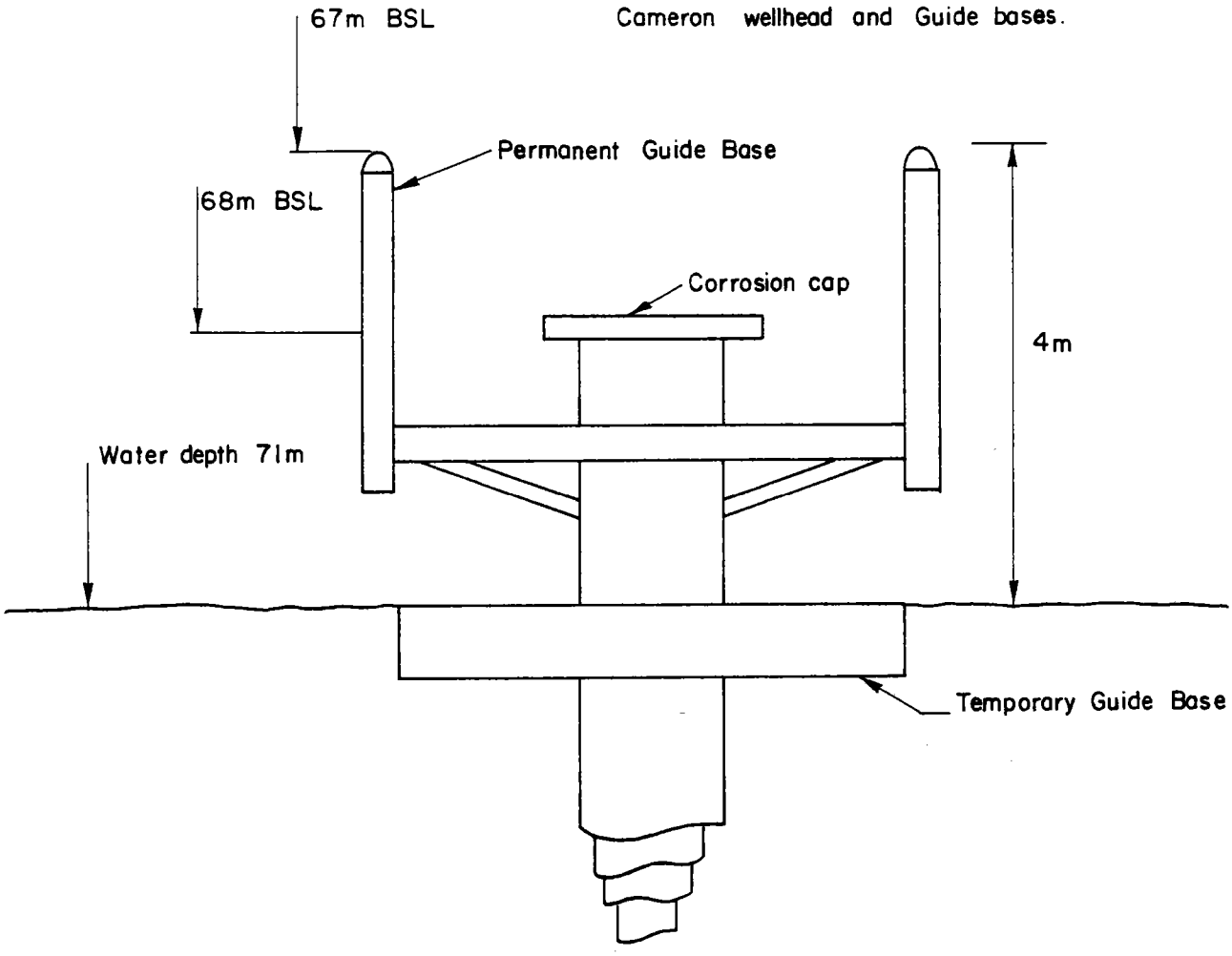
WELLHEAD DETAILS FIG 5



SCHEMATIC OF WELL 7/12-2 TEMPORARY ABANDONED

Fig. 6





SECTION 5 SUPPLY AND TRANSPORTATION SUMMARY

5.1 Materials

5.2 Personnel

5.3 Standby Boats

5. SUPPLY AND TRANSPORTATION SUMMARY

5.1 MATERIALS

Supply boats were run from Tananger to the rig for the majority of the supply boat runs. An extra run was made from Tananger to Aberdeen then to the rig, by the Balder Fosna to pick up testing equipment.

Vessels	Trips	Purpose of Vessels
Active Queen	1	Supply
Active King	6	Supply
Siddis Sailor	4	Supply
Norman Hunter		Tow
TS 61 Force		Tow/Anchorhandling

SUPPLY BOAT DETAILS

	Active King	Active Queen	Siddis Sailor
Ship owner	AMOS*	AMOS*	O.H. Meling & Co.
Brake horsepower	7040 BHP	8160 BHP	3100 BHP
Deck Cargo Capacity	800 MT	800 MT	500 MH
Bulk Capacity	6000 cuft	6000 cuft	4250 cuft
Maximum Speed	16,5 knots	16,5 knots	12 knots
Cruising Speed	12 knots	12 knots	10 knots
Time to location	12 hours	12 hours	14 hours

* Active Marine Offshore Services

Rig move : 7/12-4 - 7/12-2
Towing vessel : Norman Hunter
Standby vessel : Seaguard

5.2 PERSONNEL

All personnel to the rig were carried from Forus by helicopter.

Helicopter Flights

Aircraft	: Skorsky S-61
Number of return trips	: 27 (3 per week plus 10 ad hoc)
Total passengers to rig	: 222
Average passengers/flight	: 8
Flight time, one way	: 1,4 hrs

5.3 STANDBY BOATS

Vessel	Days
Seaguard	For the whole period excl. crewchange day.

SECTION 6 COST CONTROL

6.1 Expenditure Summary

6.2 AFE

6.3 Final well cost

6.1 WELL EXPENDITURE SUMMARY

The approved AFE for 7/12-2 re-entry was based on a 32 days programme which included 3 days rig move and rig location and 12 days testing.

Total AFE cost	NOK 32.5 million
Total Actual cost (as of 31.8.84)	NOK 32.25 million

Actual duration of the re-entry was 41 days, an overrun of 9 days. This was due to additional work necessary in replacing the 9 5/8" seal assembly, and repairs carried out on the BOP stack.

The additional cost of the 9 days overrun was offset against the cost saving of not requiring to stimulate the reservoir as intended. The actual testing period was therefore reduced from 12 to 7 days.

BP PETROLEUM DEVELOPMENT (NORWAY) Form AFE2a

6.2 AUTHORISATION FOR EXPENDITURE

DRILLING ACTIVITIES

AFE NO UL 19-1/91910-0020 Date August 1984

[******] Original [ ] Amendment No:- 0

Start Date End March 1984 Completion Date April 84

Licence No	Type of well
019A	Workover
Well Number	**Drilled Depth**
7 / 12- 2	3559m
Operator	**Rig**
BP PET. DEV. (NORWAY)	Dyvi Alpha
BP Interest	**Rig Rate**
57.5 %	$ 34500 /DAY
	Exchange Rates
	US$ -NOK 7.800
	UKL -NOK 11.100
	Other-NOK 0.000

	This AFE	DAYS Prev AFE	Total AFE
Site Prep & Move in.....	3	0	3
Drilling & Completion...	10	0	10
Testing.....	12	0	12
Abandon or Suspend.....	7	0	7
Certification or Contingency..	0	0	0
TOTAL.....	32	0	32

Financial Data
AFE in 000'S of
US$
NOK *
UKL
Other

		Total Cost This AFE	Prev AFE	Total AFE
42000	Site & Rig Preparation.	401	0	401
43000	Rig Operating Charges..	8,965	0	8,965
44000	Materials.....	2,927	0	2,927
46000	Equipment & Services...	9,215	0	9,215
47000	Transport.....	4,165	0	4,165
SUB TOTAL	DIRECT COSTS.....	25,673	0	25,673
48000	Admin/Overheads & NOFO	3,377	0	3,377
TOTAL	Excld.Contingency....	29,050	0	29,050
	Contingency	3,450		3,450
TOTAL	Incld.Contingency....	32,500	0	32,500

Prepared by : Originator..... Dated 27/8/84

Reviewed by : Drlg.Supt. ..... Dated 27/8/84

Submitted by : Ops. Mngr. ..... Dated 20/9/84

	Participant	Cost Sharing Basis	Share in 000's	Approved by	Date
1	BP Pet. Dev.- N	57.50%	18687		26.9.84
2	Conoco - N	10.00%	3250		
3	Pelican	5.00%	1625		26.9.84
4	Statoil	12.50%	4063		
5	S.P. Expl	15.00%	4875		26.9.84

Currency in 000's of
USS
NOK *
UKL
Other

Code	Item	Days	Site Prep and Move 3	Drill to TD incl Logs 10	Test incl a 7" Liner 12	Abandon or Suspend 7	Contingency or Certifi -cation 0	Total 32
100	Rig Rate(AFE)		766	2691	3229	1856	0	8543
101	Rig Site Survey		0	0	0	0	0	0
102	Tow/Anchor Handling		75	0	0	75	0	150
103	Marker Buoys		45	0	0	0	0	45
104	Mobilisation		0	0	0	0	0	0
105	Riser Tension Analysis		49	0	0	0	0	49
106	Site Preparation/Rig Positioning		181	0	0	0	0	181
107	Anchor Chain Hire		0	0	0	0	0	0
108	Anchor Hire		0	0	0	0	0	0
109	Mooring Analysis		0	0	0	0	0	0
110	Guide Bases		0	37	0	0	0	37
111	Wellhead Bodies		0	0	0	0	0	0
112	20" or 18-5/8" Wellhead Equipment		0	0	0	0	0	0
113	13-3/8" Wellhead Equipment		0	50	0	0	0	50
114	9-5/8" Wellhead Equipment		0	392	0	0	0	392
115	7" Wellhead Equipment		0	0	0	0	0	0
116			0	0	0	0	0	0
117			0	0	0	0	0	0
118			0	0	0	0	0	0
119			0	0	0	0	0	0
120	30" Conductor & 24-1/2" Casing		0	0	0	0	0	0
121	20" or 18 5/8" Casing		0	0	0	0	0	0
122	13 3/8" Casing		0	0	0	0	0	0
123	9 5/8" Casing		0	0	0	0	0	0
124	7" Casing/Liner		0	0	0	0	0	0
125	30" & 24-1/2" Casing Accessories		0	0	0	0	0	0
126	20" or 18-5/8" Casing Accessories		0	0	0	0	0	0
127	13-3/8" Casing Accessories		0	0	0	0	0	0
128	9-5/8" Casing Accessories		0	0	0	0	0	0
129	7" Casing Accessories		0	0	0	0	0	0
130	Rock Bits		0	86	0	0	0	86
131	Diamond Bits		0	0	0	0	0	0
132	Core Heads		0	0	0	0	0	0
133	Plugs and Packers		0	74	0	0	0	74
134	Drilling Consumables		0	131	0	0	0	131
135	Mud Chemicals		0	546	0	0	0	546
136	Cement and Additives		0	0	0	120	0	120
137	Fuel Oil		132	441	530	309	0	1412
138	Lubricants		7	25	30	17	0	80
139			0	0	0	0	0	0
140	Contract Payments Mud Engineering		9	31	37	22	0	100
141	Casing Running		0	0	0	0	0	0
142	Cement Services		21	76	120	67	0	284
143	Mud Logging		18	60	72	42	0	192
144	Turbine Drilling		0	0	0	0	0	0
145	Directional Drilling & Survey		0	0	0	0	0	0
146	Fishing		0	0	0	0	0	0
147	Diving and Underwater TV		60	199	239	139	0	636
148	Wire Line Logging		0	440	749	308	0	1498
149	Velocity Calibration		0	491	0	0	0	491
150	Testing - Drillstem,Production		0	13	2691	0	0	2704
151	Core Barrel Rental/Operator		0	0	0	0	0	0
152	Core Analysis		0	0	0	0	0	0
153	Sampling and Fluid Analysis		0	218	0	0	0	218
154	Inspection Services		0	0	0	0	0	0
155	Communications Rig		23	77	92	54	0	246

Currency in 000's of
USS
NOK *
UKL
Other

Code	Item	Days	Site Prep and Move 3	Drill to TD incl Logs 10	Test incl a 7" Liner 12	Abandon or Suspend 7	Contingency or Certification 0	Total 32
156	Catering and Accommodation		0	50	78	3	0	130
157	Drilling Fluid Equipment Hire		0	89	0	0	0	89
158	Contract Payment Acidisation/Frac.		0	0	1794	0	0	1794
159	Drill String Tool Rental		0	59	170	0	0	229
160	Completion Tubing		0	0	0	0	0	0
161	Completion Tubing Accessories		0	0	0	0	0	0
162	Completion Downhole Safety Valves		0	0	0	0	0	0
163	Completion Packers		0	0	0	0	0	0
164	Completion Perforating Fluid		0	0	0	0	0	0
165	Completion Perforating		0	0	429	0	0	429
166	Completion Tubing Running		0	0	0	0	0	0
167	Completion Wireline Operations		0	0	0	0	0	0
168	Completion Xmas Trees		0	0	0	0	0	0
169	Abandonment/Suspension/Site Clearance		0	0	0	0	0	0
			0	0	0	0	0	0
			0	0	0	0	0	0
			0	0	0	0	0	0
			0	0	0	0	0	0
174	Aircraft(Helicopters,Fixed Wing)		167	558	669	390	0	1784
175	Transportation (Supply Vessels/Trucks)		135	450	540	315	0	1440
176	Standby Vessels		60	200	240	140	0	640
177	Anti-Pollution Vessels		0	0	0	0	0	0
			0	0	0	0	0	0
179	Insurance		22	74	89	52	0	237
180	Mobile Drilling Tool Charges		0	0	0	0	0	0
181	Underreaming (tool rental,operator,arms)		0	0	0	0	0	0
182	Waste Disposal		1	4	5	3	0	14
183	Demobilisation		0	0	0	0	0	0
184	General Services		11	64	98	25	0	198
185	Transport General(+ Mat. Moves)		27	90	108	63	0	287
186	Contract Supervision		0	0	0	0	0	0
187	Weather Forecasting		2	6	7	4	0	18
188	Certification-Materials/Service		25	0	0	0	0	25
189	Certification - Crew		0	0	0	0	0	0
190	Forward Base Cost		0	0	0	0	0	0
191	Additional Equipment Rental		0	334	0	0	0	334
	SUB TOTAL		1837	8054	12014	4005	0	25910
	Contingency		231	903	1735	581	0	3450
173	NOPO South		0	100	0	0	0	100
	INDIRECT COSTS		0	0	0	0	0	0
170	Supply Base Operations		0	0	0	0	0	0
171	Supervision/Costs incl Contract Supervsn		0	0	0	0	0	0
172	Local Office Costs & Overhead Allocation		285	950	1140	665	0	3040
	Total Direct & Indirect		2353	10007	14889	5251	0	32500

6.3 7/12-2 RE-ENTRY-FINAL WELL COST

Currency in '000 of NOK

COST CODE		AFE	Actual Expenditure per 31st August 1984
42003	Rig Positioning	331	103
42005	Site Surveys	-	-
42006	Location Marking	45	39
42008	Rig Mobilisation Fee	-	-
42009	Rig Demobilisation Fee	-	-
42012	Rig Certification	25	-
42013	Regulation Inspection	-	-
42016	Crew Certification	-	-
43000	Rig Hire	8542	10141
43100	Additional Equipment Rental	423	146
43200	Crew Charges (* In 43000)	-	-
43400	Maintenance of Rig (43000)	-	-
44010	Casing	-	-
44020	Accessories	-	15
44030	Rock Bits	86	61
44031	Diamond Bits	-	-
44040	Wellhead Fittings and Associate	479	600
44050	Crossover and Valves	-	50
44060	General Materials	131	53
44100	Mud Chemicals	546	368
44300	Cement and Chemicals	120	339
44420	Core Heads	-	-
44430	Plugs and Packers	74	35
44500	Fuel and Lubricants	1491	1338
46000	Cementing Services	284	1357
46010	Sub Sea Intervention	636	549
46020	Wireline Logging	1988	3285
46021	Log Evaluation (* In 46020)	-	-
46030	Testing - Downhole Equipment (In 46030)	2704	3322
46040	Mud Logging	192	251
46050	Geological Evaluation (* In 46160)	-	-

Currency in '000 of NOK

COST CODE		AFE	Actual Expenditure per 31st August 1984
46060	Mud Engineering	99	127
46070	Coring	-	-
46090	General Services	198	51
46100	Casing Cutting	-	-
46110	Casing Running	-	-
46120	Turbo Drilling	-	-
46130	Under Reaming	-	-
46140	Well Frac. and Stimulation	2223	-
46150	Directional Services	-	-
46160	Fluid and Core Analysis	218	-
46170	Communication	245	208
46210	Fishing Service	-	-
46220	Technical Assistance	49	73
46300	Contract Supervision	-	-
46310	Additional Catering	131	157
46320	Weather Forecasting	19	21
46350	Tool Rentals	229	1086
46400	Forward Base	-	-
47000	Supply Vessels	1440	1679
47100	Standby Vessels	640	748
47500	Helicopters	1784	1879
47550	Fixed Wing Aircraft (* In 47500)	-	-
47600	Materials Movement	301	111
47700	Transport - General (* In 47600)	-	16
	SUB TOTAL DIRECT COSTS	25673	28208
48000	Admin/Overheads & NOFO	3377	4042
TOTAL	Excluding contingency	29050	32250
	Contingency	3450	-
GRAND TOTAL Including Contingency		32500	32250

APPENDIX I

PERSONNEL

BP REPRESENTATIVES ONBOARD

A. C. Slater	-	Drilling Superintendent
F. E. Lintott	-	Drilling Supervisor
E. J. Hinterlang	-	Drilling Supervisor
M. Hedge	-	Assistant Drilling Supervisor
N. A. Sutherland	-	Assistant Drilling Supervisor
N. H. Lilleløkken	-	Assistant Drilling Supervisor
A. Asbjørnsen	-	Marine Representative (Rigmove)
K. Vasseljen	-	Petroleum Engineer
A. Crowther	-	Petroleum Engineer
M. Neill	-	Petroleum Engineer
A. Maw	-	Surveyor

APPENDIX II

LIST OF CONTRACTORS

CONTRACTORS

Drilling Contractor	-	Dyvi Offshore A/S
Supply Vessels	-	I/S Stavanger Offshore
	-	Solstad Rederi
Helicopter Service	-	Helikopter Service A/S
Mud Engineering	-	Dresser Norway A/S Magcobar
Mud Logging	-	Geoservice
Cementing Services	-	Dowell
RCV	-	Sub Sea Dolphin A/S
Electric Logging	-	Schlumberger Inland Services Inc.
Slim hole tools	-	Odfjell Drilling
Weather-Reporting	-	Værvarslinga på Vestlandet
Satellite Communication	-	Elektrisk Bureau A/S
Point to Point MF Communications	-	Skanti Radio A/S
Surface Testing	-	Flopetrol
Down hole Testing	-	Dowell Schlumberger
	-	Geovann
	-	Sperry Sun
Rig Positioning	-	Hunting Surveys A/S
Standby Vessel	-	Seabrokers A/S