

the incoming of sands which pinchout, or are truncated over the crest of the 2/3 - 1 structure.

There are no indications on the seismic of any significant changes in the pre Oligocene section between 2/3 - 1 and 2/5 - 2. This section was thoroughly tested in our former well where all reservoirs were wet, and as this proposed location is further downdip there is no justification for testing it again: hence the well will bottom within the Oligocene.

Structure:

The proposed well is located to intersect the main prospects approximately at or downdip from the spillpoint in the 2/3 - 1 structure. The precise position of the spillpoint is dependant on the north-western extent of the main NW-SE fault which cuts the structure, see Enclosure 2.

Drilling and Casing Programme:

The well will be drilled using Odeco's semi-submersible rig, 'Ocean Traveler', in a floating position. The casing programme will be:

<u>Hole Size</u>	<u>Casing</u>	<u>From</u>	<u>To</u>	<u>Grade Wt.</u>	<u>Thread</u>
		10ft. above ML			
36"	30"	approx. 275ft.	110' BML	1" WT	30" CIW Conn.
26"	20"	"	"	1000 ft. 94lbs. H-40	20" CIW Conn.
17½"	13¾"	"	"	1000 ft. 68lbs. J-55	Buttress
17½"	13¾"	1000 ft.	2200 ft.	61lbs. J-55	ST&C
17½"	13¾"	2200 ft.	3500 ft.	68lbs. J-55	ST&C
* 9¾"	7"	275 ft.	6400 ft. (1)	29lbs. N-80	LT&C

(1) Wt. and Grade due to availability.

* Drill Shoe and cement with 12½" Bit.

Cementing Programme:

<u>Casing</u>	<u>No. of Sxs.</u>	<u>Type of Cement</u>
OK 30"	650	Construction + 2% Calcium Chloride mixed with sea water
OK 20"	925	Construction + 8% Gel tailed in with
	400	Construction + 2% CaCl ₂ mixed with fresh water
OK 13¾"	1300	Class B + 8% Gel & Nec. retarder tailed with
	750	Class B neat & Nec retarder
OK 7"	750	Class B and nec retarder

Well Head Equipment:

<u>Size</u>	<u>Type</u>	<u>Drawing No.</u>
CIW	30" x 20" x 13 $\frac{3}{8}$ " x 9 $\frac{5}{8}$ "* x 7"	Sub sea system

* optional

BOP Equipment:

From	To	Size	W.P.	Type
0	1000 ft.	None		
1000 ft.	3500 ft.	20"	2000 lbs.	Hydril
3500 ft.	6400 ft.	13 $\frac{5}{8}$ "	5000 lbs.	Shaffer - 1 double 1 single
				Hydril

The control equipment at the wellhead will be installed and tested before drilling out the 20" and each subsequent string of casing. The BOP's will be tested at regular intervals in accordance with good oilfield practice.

Mud Programme:

0- 120 ft.	Drill with Sea Water. After finishing hole, displace sea water with 300 barrels of pre-yielded gel mud (viscosity 60-80) Use fresh water gel mud if the fresh water is available. Make a short trip (do not pull bit out of hole) and spot another 300 bbls of gel mud.
120 - 1000	Drill with Sea Water-Have pits full of gel mud to spot while drilling in the event the hole gets sticky or tight. After finishing hole, displace sea water with 500 barrels of gel mud. Make short trip up into 30" casing and circulate 30" casing out with sea water. Go back in hole and spot another 500 bbls of gel mud.
1000 - 2500	Drill with sea water-gel mud - no special control on water-loss. Maintain viscosity 40-50 sec. Mud wt. 9.0-9.5.
2500 - 3000	Mud Wt. 9.5-10.0 lbs. Have water-loss down to 15cc. by 3000. Start adding some chemical and caustic to give good filter cake - maintain viscosity at approx. 50 sec. with addition of pre-yielded bentonite.

- 3000 - 3500 Mud wt. 10.0 - 10.5. Have water loss down to 10cc. by 3500. Maintain viscosity in approx. 50 range. Spot approx. 25 sx. of fine tuf plug on conditioning trip to log. Be sure hole is clean of gumbo before attempting log.
- 3500 - 4000 Raise mud wt. from 10.5 to 11.5 in this interval lower water loss to 8cc. Control drill at a rate not exceeding 100 feet/hour. Add diesel and detergent as needed.
- 4000 - 6400 Raise mud wt. from 11.5 to 12.0 lbs. by 4500 ft. Maintain to TD unless forced higher keep viscosity in 50 range. Keep water loss in 7-8cc. range. Control drill until out of the gumbo at a rate not to exceed 100/hour circulate out drilling breaks below 5000 ft.

Abnormal Pressure and Lost Circulation Zones:

Possible abnormal pressure zone at a depth of 4200 ft. as seen in No. 1 well. This zone required 11.3 lbs. mud in the No. 1 well which is the reason for having 11.5 lbs. mud when going through this section. The pay section at approximately 5200 ft. is abnormal (slightly) (BHP approx. 2675 psi) and requires approximately 12.0 lbs mud to give sufficient overbalance for drilling. No lost circulation anticipated.

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Formation Logging :

A Geoservices hydrocarbon and sample logging unit will be in operation during all phases of the drilling when mud returns are obtained. Gas samples will be obtained and analyzed as needed. All samples will be given standard examination to determine age, lithology, porosity, grain size, fluorescence and hydrocarbon stain in a standard solvent.

Ditch cuttings will be collected at 10-foot intervals, unless drilling conditions or geological evaluation warrant otherwise. Samples will be bagged for trading with other companies and three washed samples bagged in plastic bags for lithological and palaeontological use by Murphy and to provide a sample for the Norwegian Geological Survey.

Samples of all fluids obtained by testing will be collected for analysis wherever possible.

Coring :

Cores may be taken in prospective reservoirs when conditions are suitable and coring is authorized by the operator's technical representative.

Sidewall cores may be taken where reservoir samples or lithological details are required.

Testing Programme :

DSTs may be run in open hole when conditions are favourable. DSTs may be run through perforations in casing as necessary, weather permitting.

Wire line tests may be run where hole conditions seem suitable for sampling potential hydrocarbon bearing reservoirs.

Logging :

Schlumberger logs will be run at TD and at each casing point ; they may be run at other times when warranted for formation evaluation.

Sonic / Caliper / Gamma and IES logs and Laterolog 7 will be run throughout, commencing before setting the 20" casing. Microlaterolog and Formation Density log will be run over intervals with potential reservoirs. Neutron logs may be run over intervals where hydrocarbons may be present. Temperature and/or cement bond logs will be run after setting casing. Log scales will be 1 : 500 and 1 : 200.

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A well velocity calibration survey will be made at TD.

Should testing through casing be necessary, perforation record logs and Gamma Ray/Neutron and casing collar locator logs will be run.

Deviation :

Directional readings will be taken at about 500-foot intervals. Deviation should be limited to :

- 1°	at	500 ft.
- 2°	at	1,000 ft.
- 3°	at	5,000 ft.
- 4°	at	6,000 ft.

General Policy :

First hydrocarbon shows are expected in the Miocene. Policy will be to drill through the Quaternary and Pliocene as quickly as possible to the top of the Miocene. Indications of hydrocarbons in the Miocene and Oligocene may be checked by taking conventional cores if drilling conditions allow ; significant shows will be sampled by sidewall cores if no conventional cores have been taken. Wire line tests may be made if necessary to evaluate before running 9 5/8" casing.

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PWT/SN.