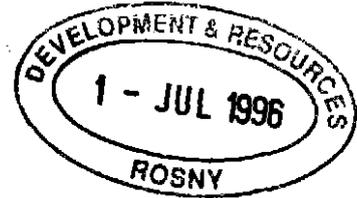


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96-3888

EL 1/88

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MICROFILMED
FICHE No.014013 -

SHITTIM #1A

WELL RE-ENTRY PROGRAM

for

GREAT SOUTHLAND MINERALS Pty Ltd

APPENDIX TO ORIGINAL
STRATIGRAPHIC SLIMHOLE DRILLING PROGRAM
DATED 14 DECEMBER 1994

96-3888

SHITTIM 1A - WELL RE-ENTRY PROGRAMME
-EL 1/88 - GREAT SOUTHLAND MINERALS

AMG REFERENCE POINTS ADDED

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1. INTRODUCTION

1.1 Background Summary

Shittim #1 stratigraphic drillhole at Variety Bay on Bruny Island was cored to a depth of 1021 metres between January and July 1995. Gas was encountered below a 580 metre dolerite sill, and increased through the Woody Island Formation into 130 metres of Truro Tillite. Drilling was suspended at this point while blowout prevention equipment was being mobilised. The HQ casing was cemented to a depth of 181 metres, with a plug being set 4 metres below the casing shoe and the hole cemented to surface.

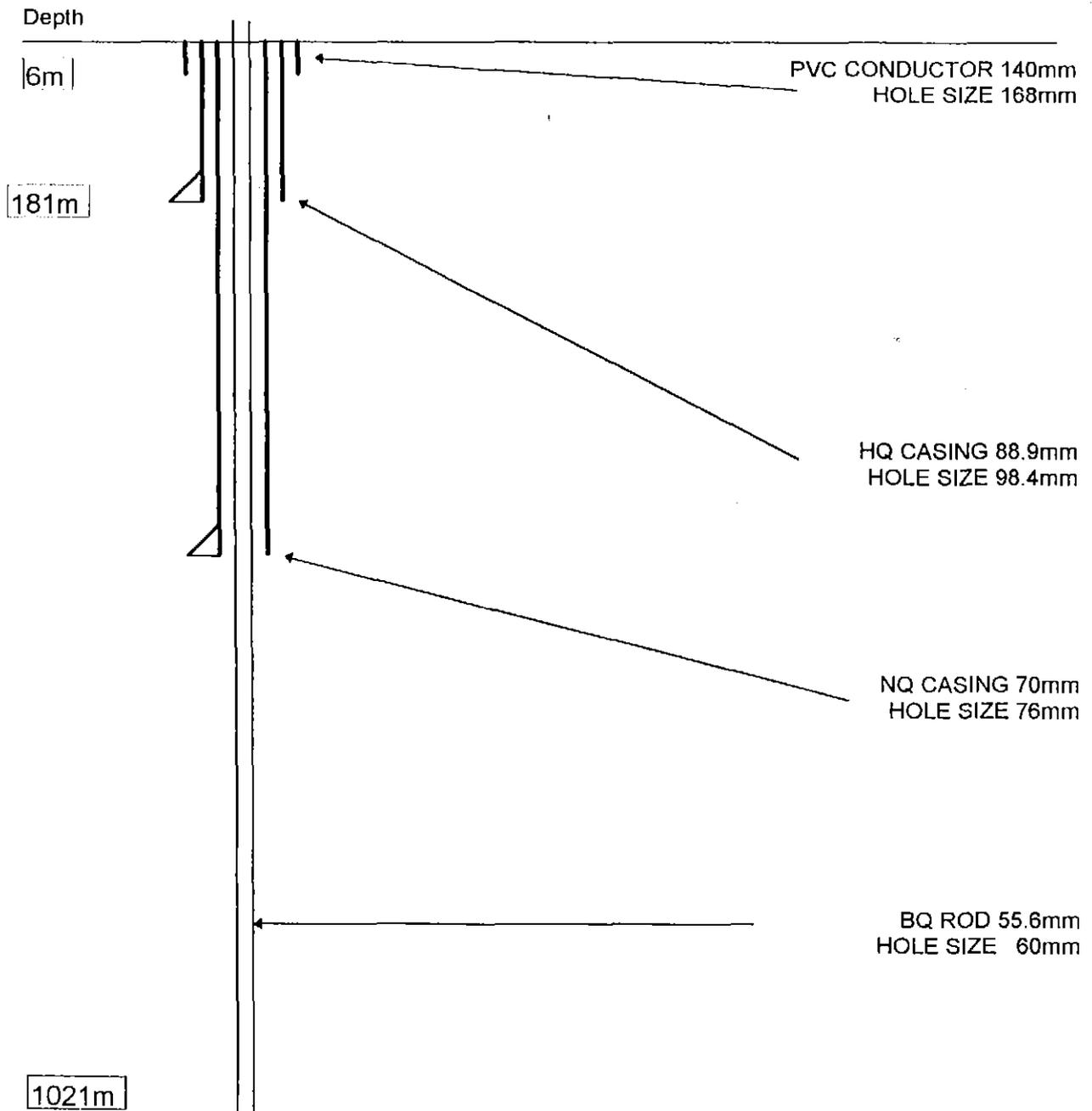
Detailed reports covering Shittim #1 and other holes drilled recently on North Bruny Island can be found in the Annual Report of Great Southland Minerals Pty Ltd dated March 1996.

1.2 Well Data Summary

State:	Tasmania
Location:	North Bruny Island
Municipality:	Kingborough
Licence No:	EL 1/88
Well Name:	Shittim 1A
Coordinates:	533,930 E 5,216,000 N
Elevation:	25m ASL
Datum:	Footclamps
Drill Rig:	Longyear 44
Original Spud Date:	January 1995
Planned Depth:	1200m
Depth Drilled:	1021m
Current Status:	Drilling suspended July 1995 due to the presence of gas. Hole plugged at 185m and cemented to collar August 1995

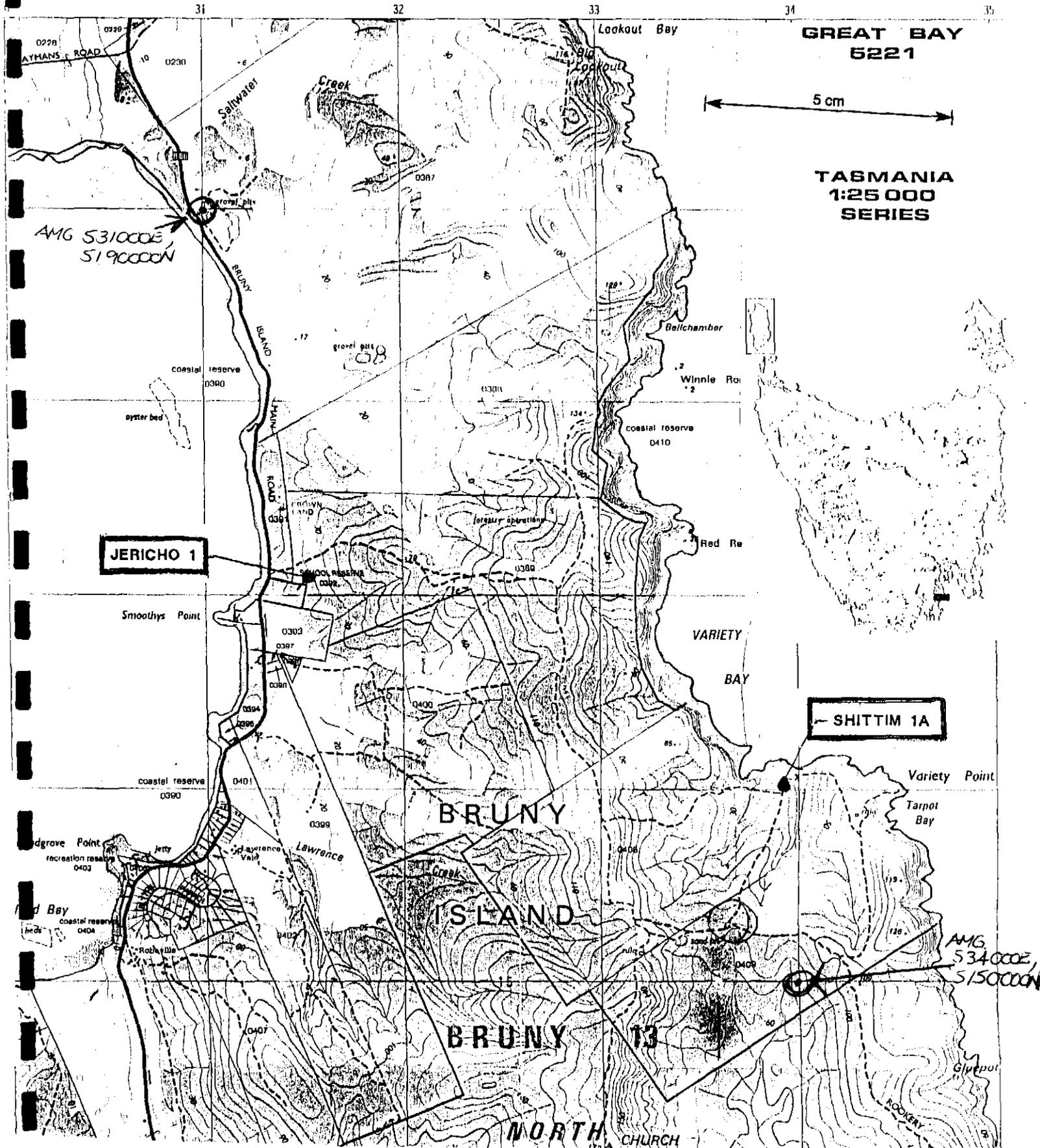
A Well Diagram showing hole sizes and depths is included overleaf.

SHITTIM 1A WELL DIAGRAM



LOCATION MAP

AMG REFERENCE POINTS ADDED



1.4 Current Program

This report is intended to cover the remaining work necessary to complete the original stratigraphic targets for Shittim #1, while at the same time ensuring that any gas which may be encountered is safely controlled. The main aims of this Re-entry and Completion Program are therefore twofold:

1. Complete core drilling to basement, or until unconformity is reached.
2. Record details of any gas shows, including sampling and analysis.

The essential details included in the original Stratigraphic Slimhole Drilling Program for Shittim #1 as submitted to Tasmania Development and Resources in December 1994 remain valid, and this document is seen as an Appendix to that Program.

The main areas of additional information covered in this document are as follows:

- Revised geological prognosis.
- Details of blowout prevention equipment to be installed, including updated testing and safety procedures.
- Mudlogging services and reports to be provided.

Major activities to be carried out in completing this program are as listed below:

1. Install and test BOP equipment, including choke and kill lines.
2. Drill out cemented casing with NQ rods (76mm hole).
3. Core through cement plug below casing and circulate mud to hole.
4. Drill out plug to NQ and connect with existing NQ string at about 400m.
5. Continue coring BQ (60mm hole, 36mm core) from 1021 metres to basement.

A Gantt chart showing estimated durations for these activities is shown overleaf.

GREAT SOUTHLAND MINERALS - SHITTIM #1A RE-ENTRY

ID	Activity	Duration	Week 1			Week 2			Week 3			Week 4			Week 5			Week 6										
			M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
1	Excavate Wellhead, Cellar and Flare Pit	2d			■																							
2	Install & concrete in new surface casing assembly	3d						■	■																			
3	Mobilise Drill Rig and associated equipment	4d								■	■	■	■															
4	Nipple up BOP stack, choke and kill lines	1d																										
5	Pressure Test BOP and casing	1d																										
6	Drill out cement to 180m with NQ rods (75mm)	6d																										
7	Pressure test casing and establish max. allowable pressure	1d																										
8	Drill out plug to 185m with BQ rods (60mm)	1d																										
9	Observe and if necessary kill well with weighted mud	3d																										
10	Redrill plug to NQ size and run down to existing rods at 400m	2d																										
11	Run in BQ rods and re-condition mud to bottom of hole	1d																										
12	Recommence wireline coring from 1021m to basement	10d																										
13	Evaluate drilling results and decide on further action	8d																										

GREAT SOUTHLAND MINERALS P/L
 SHITTIM #1A RE-ENTRY
 Date: 25/6/96

Critical 
 Noncritical 

Progress 
 Milestone 

Summary 
 Rolled Up 

345007

2. ENVIRONMENTAL MANAGEMENT

Great Southland Minerals Pty Ltd is committed to conducting its business with the desire to protect the natural environment. The company plans and manages its operations to ensure minimum impact on the environment. It will continue to meet all industry environmental standards and obligations. In applying this policy, activities will be governed by the APEA Code of Environmental Practice - Onshore.

The company will maintain an active rehabilitation program to restore land disturbed by exploration activities and will respond quickly and effectively if accidental pollution or environmental damage occurs.

Shittim 1A is located on the pastoral property 'Murrayfield', which is owned by Hazell Bros Farms. Robert Hazell has been advised of our intentions to recommence drilling at Shittim 1A, and we will continue to keep him advised of our operational plans.

Re-mobilisation of drilling equipment at Shittim 1A will occupy the same locations as previously, and will not result in any further disturbance to the site. The wellhead, mud pits and flare pit will be re-excavated as before. The only additional work planned is to re-instate the small dam on the creek east and downstream of the drillsite so that the low level spillway pipe can be safely closed in the unlikely event of accidental spillage.

3. GEOLOGY

3.1 Well Prognosis - prepared by Dr. Clive Burrett, Chief Geologist, GSM

The hole Shittim #1A at Variety Bay, North Bruny Island was drilled by the Company to a depth of 1021m in 1995 but was stopped due to technical difficulties.

A prognosis for this well was originally prepared by Dr. David Leaman of Leaman Geophysics.

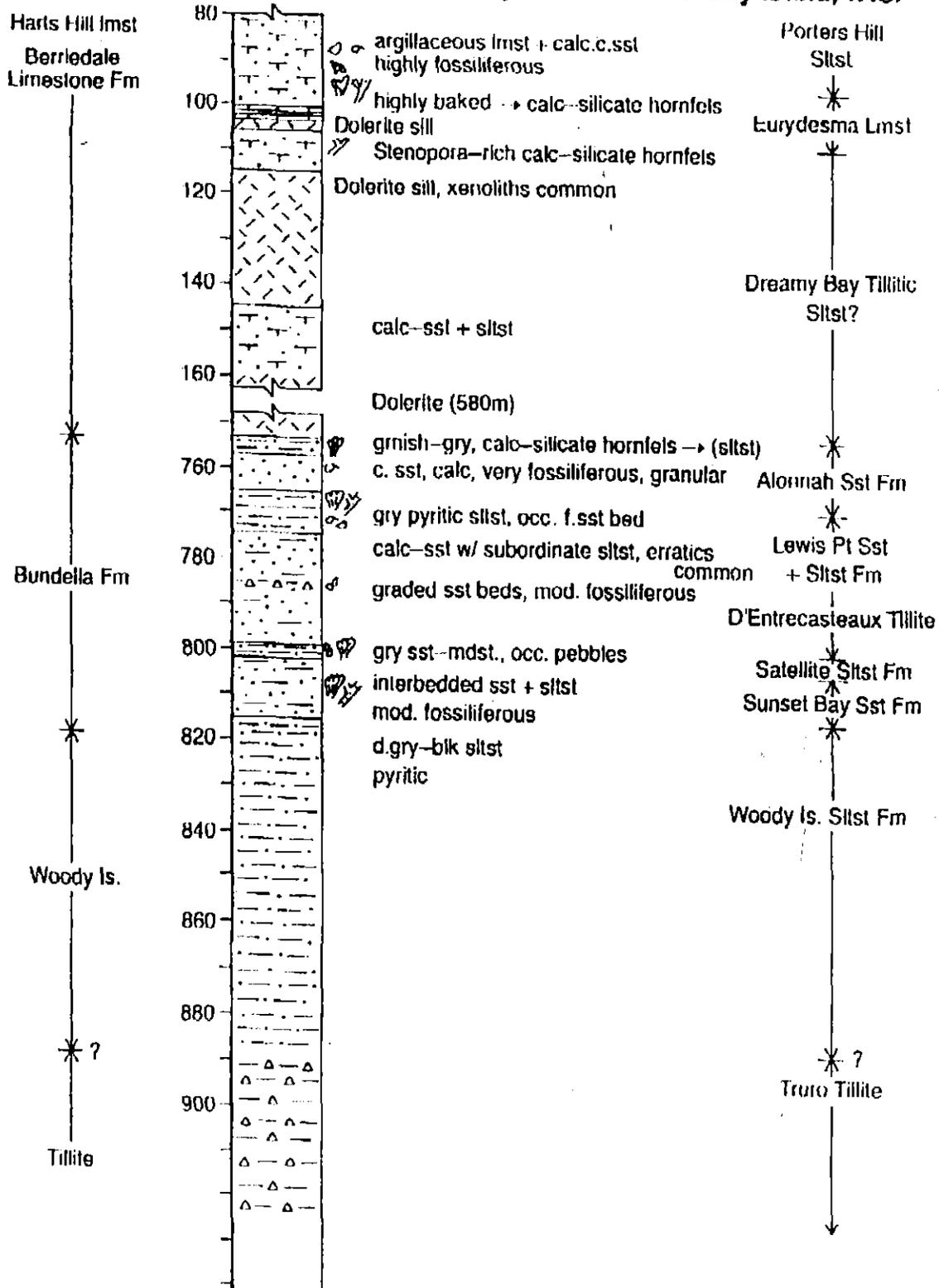
We now intend to re-enter this hole and drill to and into pre-Parameener rocks. Stratigraphic summaries of the hole to 1021m are attached.

The hole was stopped after drilling through 133m of Truro Tillite correlate. The thickness of the tillite in Tasmania varies greatly from zero to 400m. We may therefore expect to drill a further thickness of between 1m and 270m before encountering the pre-Parameener unconformity. We have no way of predicting the nature of the pre-Parameener rocks; they may be Precambrian quartzite, Precambrian dolomite, Ordovician limestone or shales, Cambrian volcanics or Devonian granites. This hole will provide much needed information of the nature of pre-Parameener 'basement' on Bruny Island.

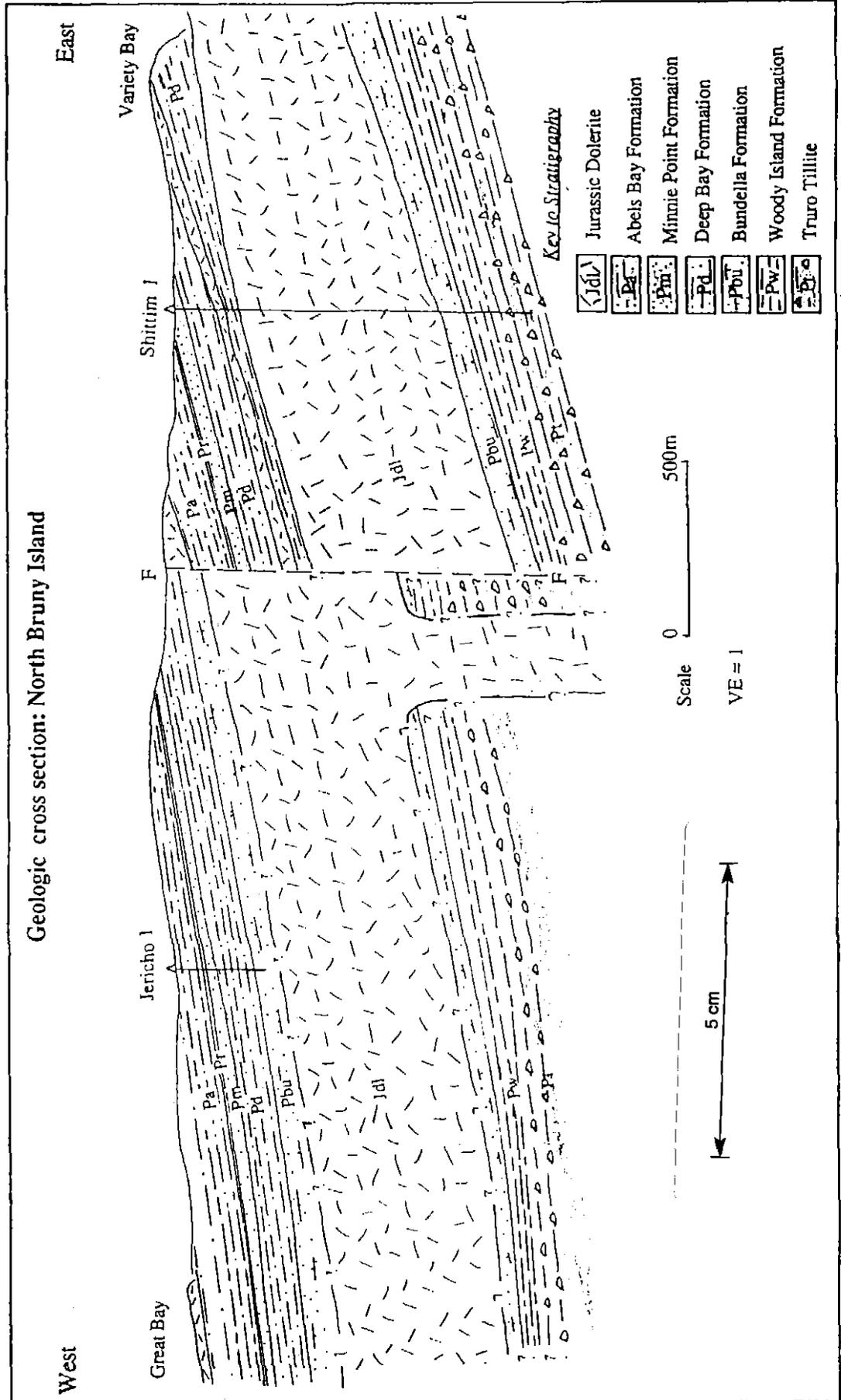
Gas was encountered in increasing quantities from 850m onwards after a hot wire gas detector was installed. A sample of the gas analysed by the Central Science Laboratory at the University of Tasmania was found to be methane. From recent discussions with experienced drilling engineers we are convinced that the hot wire records (summarised in the attached figure) are at least qualitatively correct, are not measuring any gas other than natural methane (or C3-C6) and record the presence of increasing levels of methane from 850m to 1021m. This increasing gas necessitated increased mud weights to 9.6 lb/gal at 1021m. We expect that high levels of gas will be encountered and that levels will increase downwards to the unconformity. The gas (or gases) will be monitored using the latest industry-standard equipment.

We plan to collect samples of the gas for detailed analysis and for both carbon and deuterium isotope analysis.

Core Summary - Shittim #1 Bruny Island, TAS.



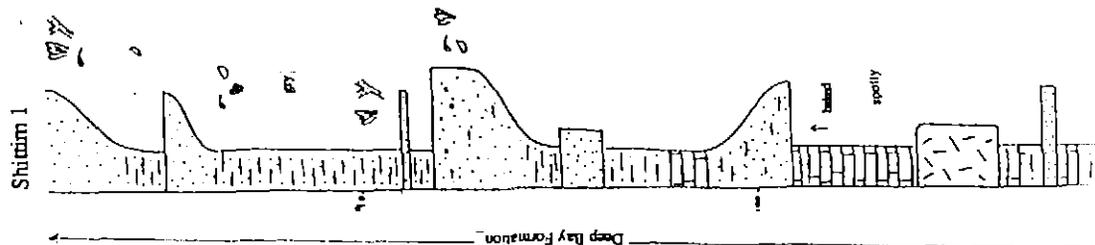
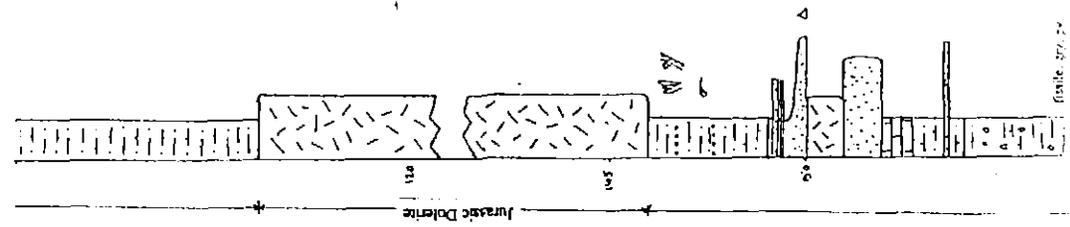
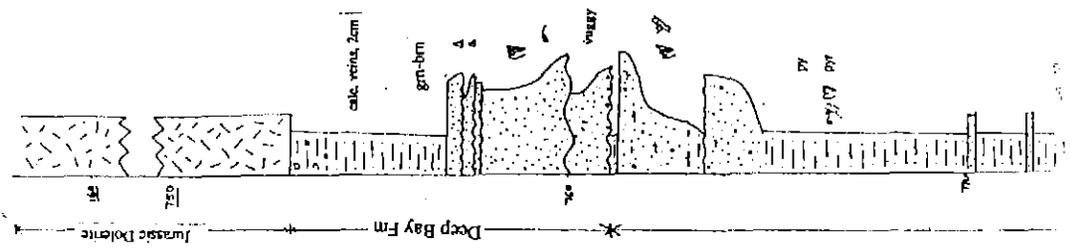
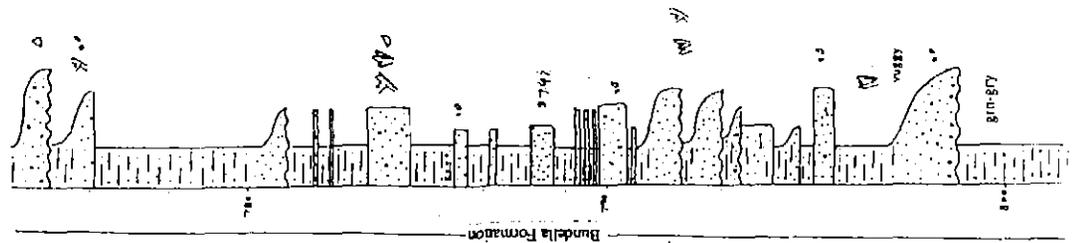
compiled by Trent Woods

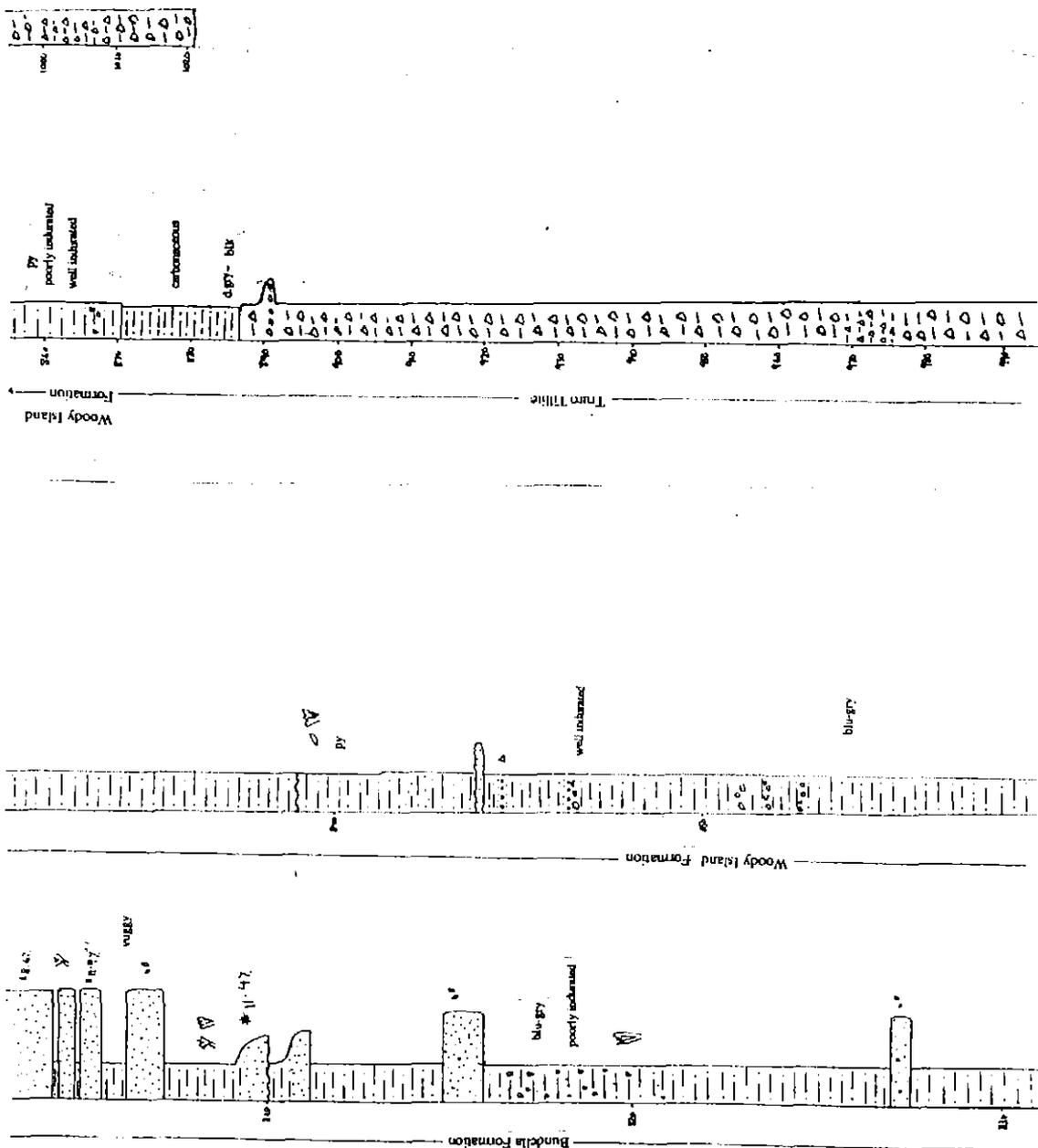


from T. Woods

Figure 5.2 Interpreted geologic cross section across North Bruny Island. See figure 1.1b for cross-section location.

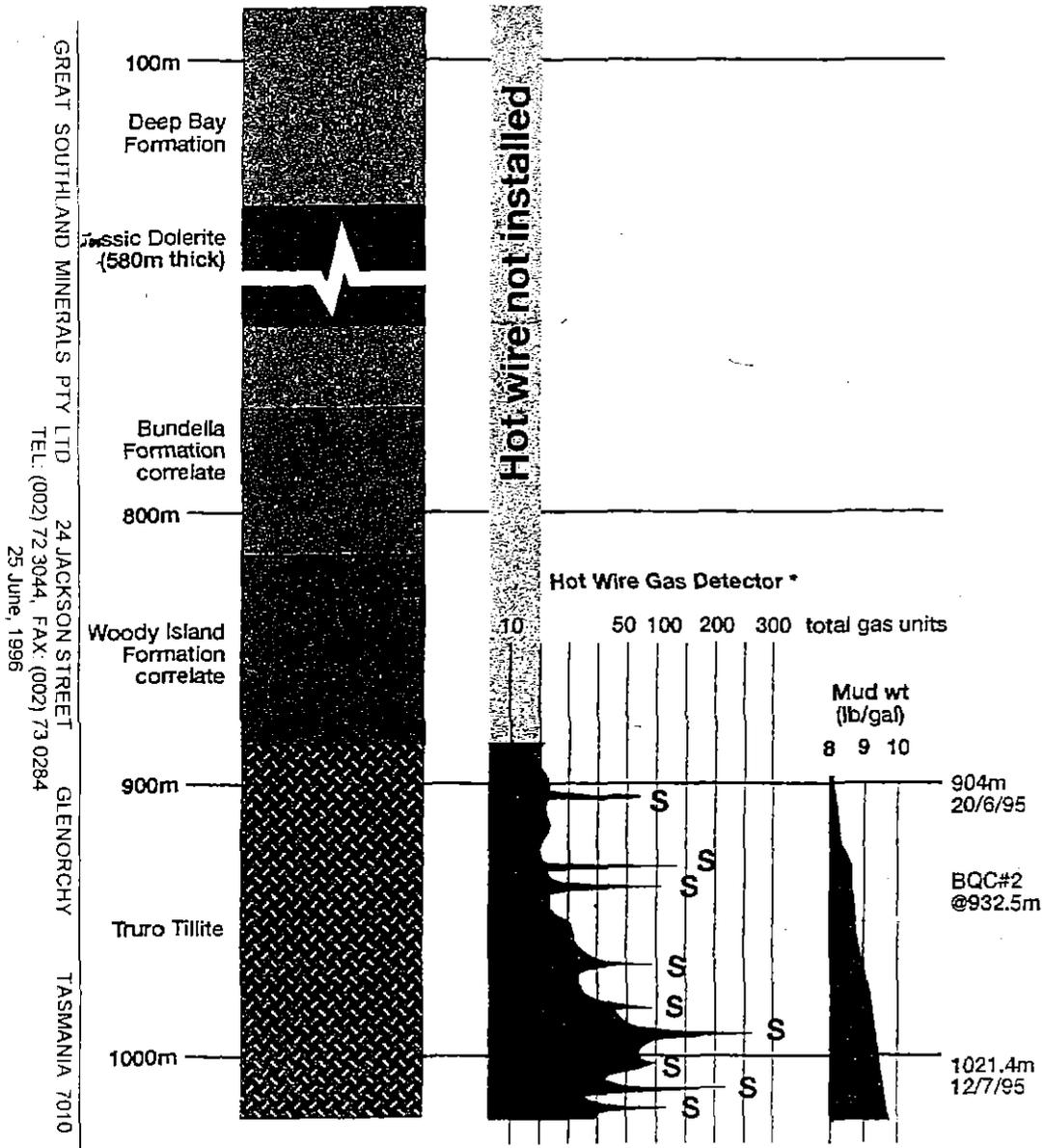
APPENDIX I: Detailed stratigraphic logs



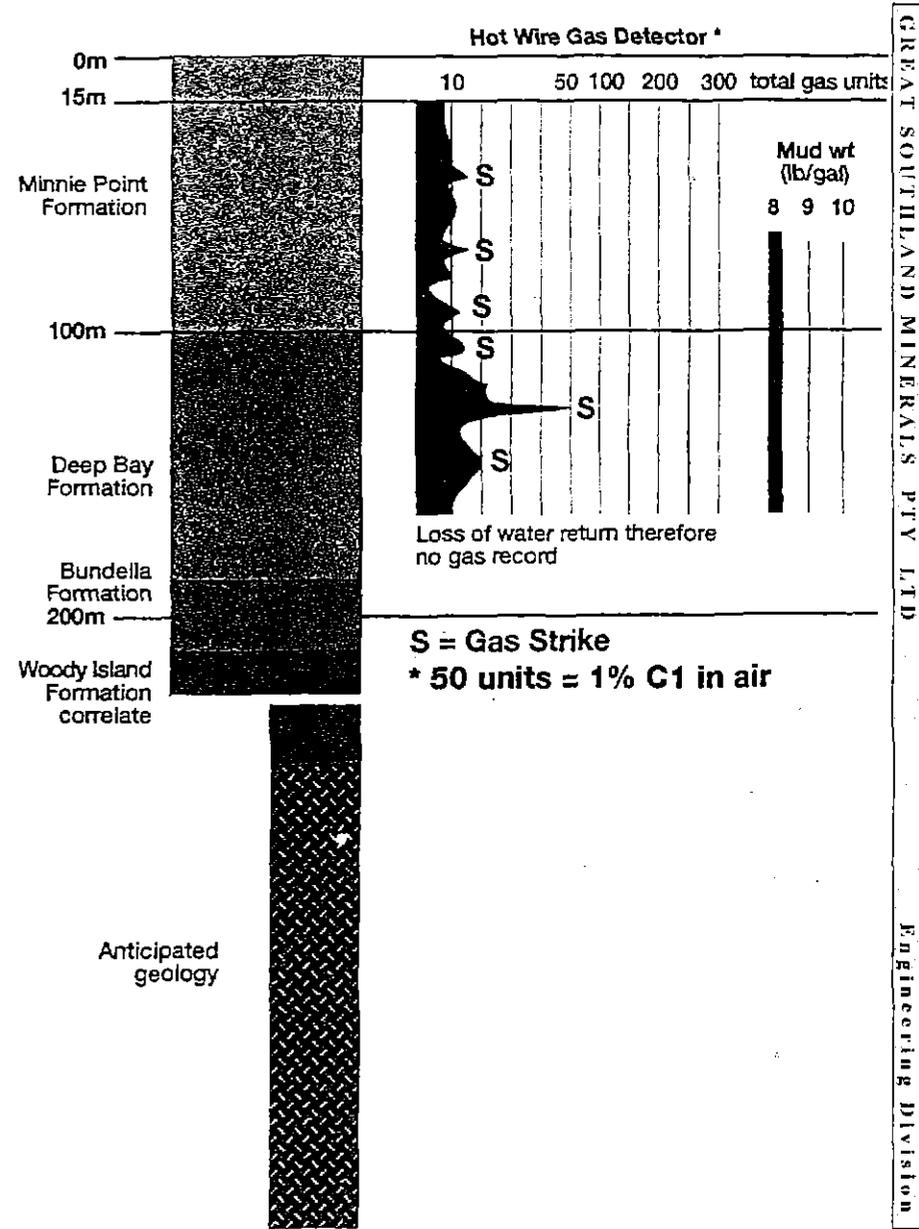


Shittim #1 well log, North Bruny Island

Jericho #1 well log, North Bruny Island



S = Gas Strike
* 50 units = 1% C1 in air



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25 June, 1996
GLENNORCHY TASMANIA 7010 12

GREAT SOUTHLAND MINERALS PTY LTD
Engineering Division

345014

4. FORMATION EVALUATION

4.1 Mudlogging

Mudlogging services will be provided throughout the remaining drilling of the well. Full mudlogging services will commence immediately after drilling out the cement plug at 185m.

The basic mudlogging services provided will include:

(a) Gas Detection

- total gas
- chromatographic analysis
- running of calibration gases

(b) Monitoring Drilling Parameters

- rate of penetration
- depth
- weight on bit/ hydraulic pressure
- speed of rotation
- pump rate
- calculation of lag time
- pit level monitoring

4.2 Formation Sampling and Analysis

Drill core will be recovered continuously from 1021m. This core will be logged on site, wrapped in plastic sheathing and stored in metal core trays before being transported to 24 Jackson Street, Glenorchy.

Samples will be tested by AMDEL Laboratories in Adelaide for hydrocarbons and other geochemical analysis as required. Potential reservoir rocks will be tested for porosity and permeability.

4.3 Wireline Logs & Drill Stem Testing

There is a difficulty in obtaining equipment suitable for use in BQ (60mm) size holes, and hence our approach to running electric logs and DST's will depend on equipment availability and a cost/ benefit assessment after evaluation of drilling results.

Another alternative we have considered is to wedge off at 800m and re-drill to basement with NQ (76mm) in order to allow a full range of tests to be carried out. A decision on this option will be made before abandoning the hole.

If a decision is made to proceed with Drill Stem Testing, a separate testing program will be issued.

5. DRILLING PROGRAM

All drilling operations will be carried out by our preferred drilling contractor, Gomick Drilling Pty Ltd, with additional technical support being provided by Gerard Nicot of Oil Finder Australia Pty Ltd.

5.1 Objectives

As outlined in the Introduction and Geological Prognosis, the main objectives to be met in re-entry of Shittim are:

- to complete coring through the Truro Tillite to basement and
- measurement and sampling of gases previously encountered.

5.2 Drilling Summary

A pre-spud safety meeting will be held prior to starting operations on site.

After the wellhead has been secured, the following program will be commenced:

- Nipple up and pressure test BOP stack as per testing and safety procedures.
- Drill out cement to 180m in NQ size (76mm) and pressure test casing.
- Mix drilling fluid to 9.6 ppg.
- Drill out remaining cement and plug to 185m in BQ (60mm) size.
- Observe well and monitor for gas kicks.
- If well is flowing, kill the well as per established procedure, then continue:
- Redrill cement and plug from 180m in NQ size (76mm).
- Carry out pressure integrity test as per testing and safety procedures.
- Run in hole to around 400m, conditioning the mud weight as required.
- Suspend string on top of stuck NQ casing at around 400m.
- Run in hole with BQ drill rods and continue wireline coring from 1021m.
- When basement is reached, condition hole for DST or wireline log if required.
- Evaluate drilling results.
- Establish plug and abandon program as required.

5.3 Depth Control and Deviation

Drill pipe will be stripped out of hole to change drill rod size NQ/BQ/NQ/BQ. All stripped depths will be checked against the pipe tally and the logged depth. Any major discrepancies will be reported and adjusted accordingly.

A BQ hole survey will be carried out to confirm that present deviation is within tolerance, and again during final coring operation if necessary.

5.4 Drilling Fluids Program

NQ Section

Drill out Cement Drill with water to clean hole

Drill out Plug Use NaCl or KCl

Properties:

Density	9.6 ppg
PH	9.5-10
Solids	Minimum
KCl	100 lb/bbl

Open Hole Section NaCl or KCl and Polymer

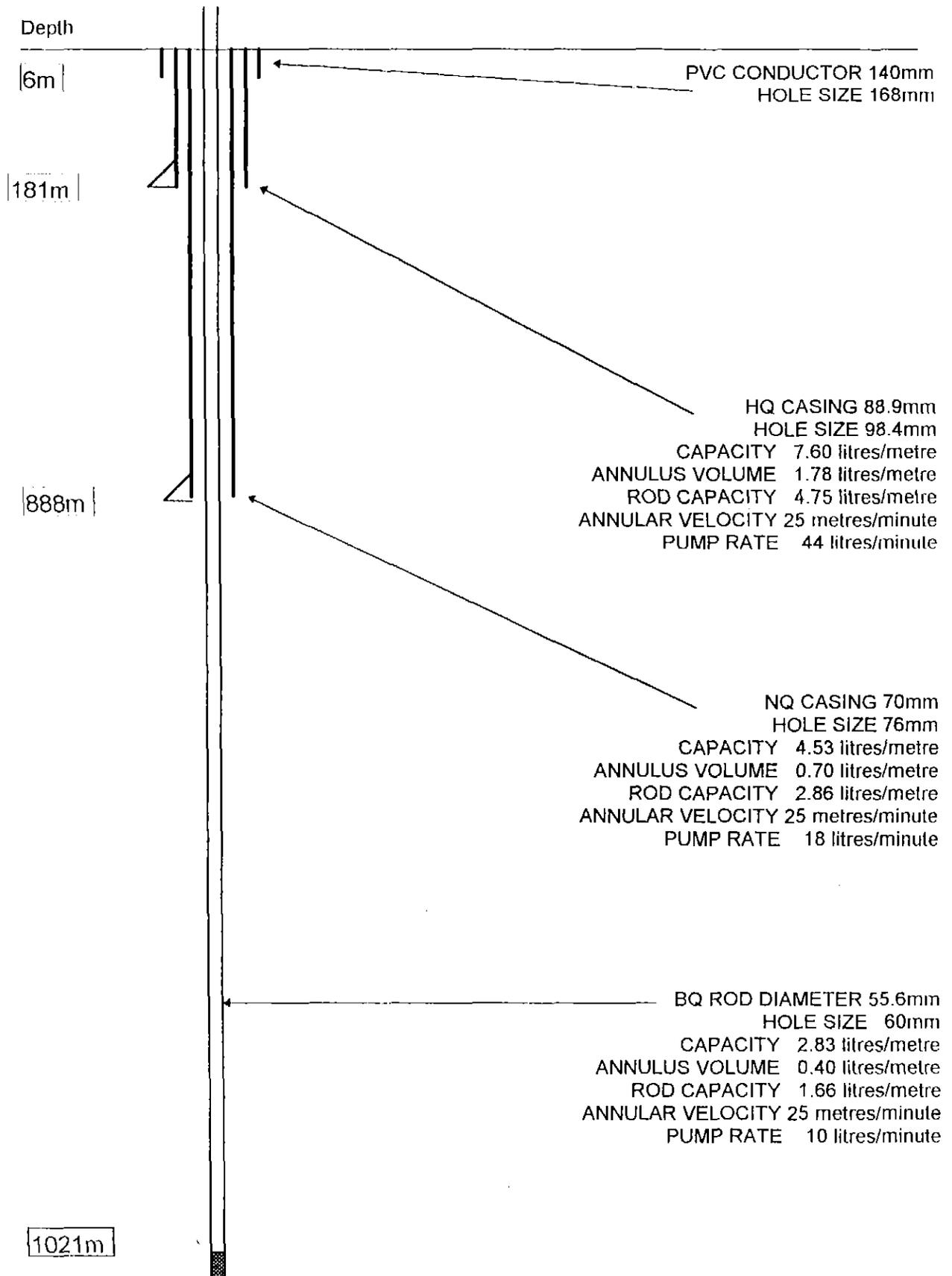
Properties:

Density	9.6 ppg
PH	9.5-10
Fluid Loss	5-8 cc
Plastic Viscosity	8-15 cp
Yield Point	13-18
Solids	Minimum
KCl	100 lb/bbl

Mud is mixed in a 5000 litre tank fitted with a high speed hydraulically driven stirrer, and then transferred to CGI holding tanks.

All mud engineering problems will be referred to either Baroid Australia or Baker Hughes for advice.

**SHITTIM 1A
WELL DIAGRAM**



6. WELLHEAD ARRANGEMENT

6.1 Existing Status of Casing

There appears to be a lack of recorded information in relation to cementing of the surface conductor and HQ casing. The casing shoe is at a depth of 181m which is 22m into a 580m thick dolerite sill. It is believed that centralisers were not installed around the casing, although the casing was apparently rotated during the cementing operation, which should have assisted in achieving a uniform annulus of cement around the casing. Cement slurry of a consistency equal to that being pumped was reported at the surface before the cementing operation ceased.

A cellar was excavated and keyed into the surface rock to a depth of about 3-4m before pouring a base containing some 3 cu. m of concrete around the casing.

An attempt was made in October 1995 to weld off a 3000 psi API 6B flange to the top of the HQ casing, but apparently hairline fractures appeared during testing of the BOP assembly at 1000 psi. With no containment of tensile and bursting pressures and limited support for the BOP stack, this outcome is not surprising.

6.2 Wellhead Detail

The wellhead has been re-designed for a pressure of 3000 psi using 100NB Schedule 80 pressure pipe welded to a machined sleeve around the top of the HQ casing. This assembly will be concreted in place and dowelled into the existing foundation to provide a gravity anchor for the 13 tonne uplift resulting from a design containment pressure of 3000 psi. The flange and BOP stack will also be properly supported off this foundation. See the attached sketch overleaf for details.

SHUTTIN #1 WELL HEAD

Design pressure 3000 psi.

D. Tanner
30.5.96

Scale 1:5

5 cm

API 3B 6B flange bored out to 115mm ID and bevelled for welding. Weld ground flush

New concrete Well Head foundation

Nom 100 Dia. Sched. 80 pipe; 114mm OD, 87mm ID

4-#20 bars welded to pipe

4-#18 bars grouted into existing concrete

Full strength field butt weld

Seal weld after fitting sleeve

Machined sleeve to fit HQ casing 114mm OD, 87mm ID, 700mm long

HQ casing: Nom. 89mm OD, 78mm ID

Existing concrete cap

6.3 Blowout Prevention Equipment

The following equipment was supplied and tested by Wisco International , Houston, Texas, USA in September 1995:

BOP	HYDRIL 4-1/16" GKS 5000 Annular Preventer with 4-1/16" 5M flange, complete with replacement element and seal kit. P/N 45931, S/N 63820
Drilling Spool	4-1/16" x 2" 5M Drilling Spool.
Choke Manifold	2" 3M Choke Manifold fitted with pressure gauge, dual choke lines and diverter connected to 6" surge tank.
Kill Line	2" 3M Kill Line fitted with gate valve and check valve.
Flanges	4-1/16" 5M Socket Weld Flanges
Accumulator	NL Shaffer 3 Station Koomey Unit with 11 gallon accumulator bottle, hydraulic tank, regulator gauges, BOP connection hose and duplex charging pump driven by Kohler engine and control unit. Model No. GED 1000053S, S/N 12483.
Chiksan Hoses	2" 3M Chiksan Hoses with hammer unions for connection to kill line and choke line.

Further descriptive information for this equipment is provided in the Appendix.

We are currently in the process of identifying supply of 4" Pipe Rams and Blind Rams for Slimhole applications, in the event that we encounter a significant increase in the occurrence of hydrocarbons, most likely gas. However, we believe that the Hydril Annular Preventer on its own will adequately cover our limited requirements for re-entry of Shittim.

A sketch showing layout of this equipment is attached, and includes for connection of the choke surge chamber to a flare pit downwind of the drillsite.

7. TESTING AND SAFETY PROCEDURES

All operations will be under the direct control of qualified personnel holding current BOP and Well Control Certificates. Gomick Drilling P/L General Manager David Tanner and Senior Driller Dale Roberts have recently been examined under the auspices of the London based International Well Control Forum after attending a Well Control course at Curtin University in Perth run by the Oil Drilling Contractors Association of Australia. Copies of their certificates will be forwarded when received.

7.1 BOP Testing Procedures

- (a) Following nipping up of the BOP, the Annular Preventer, Choke Manifold, Kill valves, stand pipe and swivel will be tested to 250 psi and 1500 psi. All tests will be conducted using water.
- (b) At intervals not exceeding 7 days after drilling below surface casing, a pressure test of BOP's and manifold equipment will be carried out using a cup tester.
- (c) The Annular Preventer and Accumulator are to be operated daily.
- (d) Safety drills will be carried out periodically at the discretion of the Supervisor.

7.2 Pressure Integrity Test

The Pressure Integrity Test provides a safe method of testing the casing and determining the amount of pressure or equivalent mud weight that the wellbore can withstand without fracturing and losing returns. All pressure integrity tests will be conducted using a small output pump with a pressure gauge. a graduated tank will be used to provide accurate volumetric measurements. The mud weight will be uniform in the wellbore. A pressure integrity test form will be used to record all data as accurately as possible.

Procedure:

Drilling out the shoe and 5 metres of cemented plug, circulate to normalise drilling fluid and test as follows:

- Pull into the casing and fill the hole. Stop pumps and close the annular preventer and kelly cock.
- Begin pumping down the annular at no more than 10 litres per minute. Record and graphically plot the casing pressure versus the volume pumped.
- Terminate the test at a pressure limit of 1500 psi or at the point where the pressure versus volume plot ceases to be a straight line, whichever occurs first.
- Record the instantaneous shut in pressure and trapped pressure for 15 minutes at 1 minute intervals or until it levels off, whichever occurs first.
- Bleed off into the graduated suction tank and record fluid volume recovered, then open the annular preventer.

9. COMMUNICATIONS AND REPORTING

All communications to the Operator and third parties will take place through Great Southland Minerals Pty Ltd Head Office at 24 Jackson Street, Glenorchy, Tasmania:

Jason Slot
Managing Director
Great Southland Minerals Pty Ltd
PO Box 101
GLENORCHY, TAS 7010
Telephone: (002) 72 3044
Facsimile: (002) 73 0284

Daily operations reports and geological reports covering 00 to 2400 Hours will be transmitted to the Glenorchy office by 0800 Hours the following day. A verbal afternoon status report will be made daily at 1500 Hours.

A weekly summary report will be transmitted to Mineral Resources Division of TDR on the following Monday of each week.

9. RIG SPECIFICATION

Current details of major plant and equipment items to be used on site are summarised below. Further information which is still valid was provided with the original Program submitted for Shittim 1A in December 1994.

LONGYEAR 44 DRILL RIG DESCRIPTION

DRILL:	Skid-mounted Longyear 44 Hydraulic Chuck Diamond Drill with hydraulic jacking rams and full weatherproof enclosure.
MOTOR:	Detroit 3-53 water cooled 3 cylinder diesel 83 hp @ 2800 rpm.
MAST:	3-Section 9m rod pull length with stacking rack and hydraulic mast raising cylinder.
WIRELINE HOIST:	Hydraulic drum hoist with 1500m capacity of 6mm non-rotating cable Maximum line pull 5kN.
AUXILIARY POWER:	30 KVA Genset driven by Perkins 4108 diesel.
DRILL FLUIDS PUMP:	FMC 50 hp Bean Pump delivering 190 litres/min @ 10,000 kPa.
RIG DIMENSIONS:	Collapsed for transport: 6m long x 2.5m wide x 3.5m high x 10 Tonne
OTHER DETAILS:	See Appendix

SHITTIM # 1A
GENERAL SITE PLAN

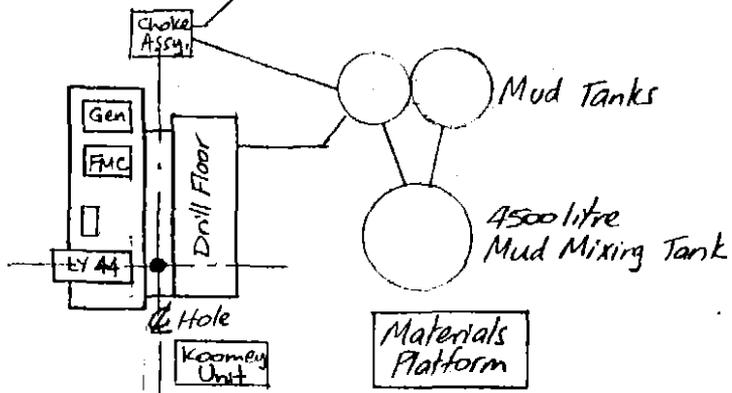
Scale 1:250

5 cm



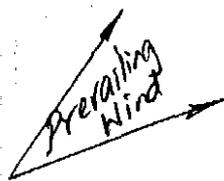
Slope

Flare Pit



Containers

Containers



Slope

3848

345026



TYPE GKS ANNULAR BLOWOUT PREVENTER/STRIPPER

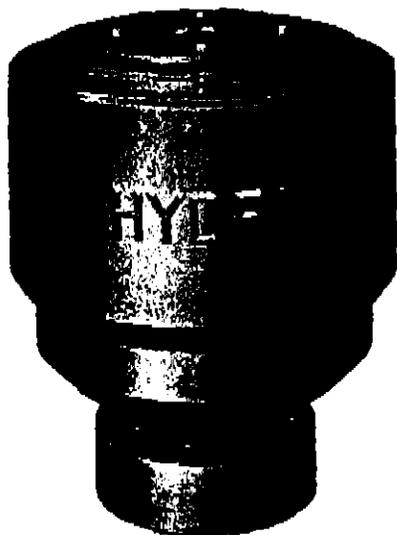


Figure 94
Exterior View of 2³/₁₆"-10,000 and
4¹/₁₆"-5000 and 10,000 psi GKS
BOP/Stripper

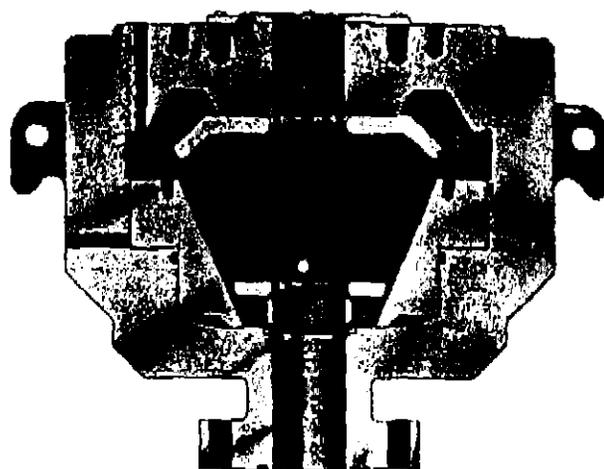


Figure 95
Cross-Section of 2³/₁₆"-10,000 and
4¹/₁₆"-5000 and 10,000 psi GKS

OPERATION OF THE GKS

The GKS Annular BOP/Stripper is an annular BOP with particular application to workover operations. This BOP/Stripper is especially applicable for stripping, snubbing, stuffing, and wireline operations. The packing unit will seal off around any diameter within the bore or seal off the open hole to rated working pressure.

Hydraulic pressure applied to the closing chamber raises the piston squeezing the packing unit into a sealing engagement. Closing pressure should be proportionally reduced as well pressure is increased. Optimum packing unit life will be realized by using the lowest closing pressure required to effect a seal. Initial closing pressures are in Table 22. The GKS BOP is self opening, thus it reopens when all closing pressure is released.

When two GKS BOPs are used one above the other, as in a lubricator installation, higher closing pressure will be required to close the lower unit. The pressure required will equal the normal closing pressure plus the amount of pressure above the packing unit.

The GKS BOP has a screwed head. The top and bottom connections of the 2"-3000 and 2"-5000 are furnished with API 2³/₈" OD external upset female tubing thread. The 2³/₁₆"-10,000, 4¹/₁₆"-5000 and 4¹/₁₆"-10,000 BOPs are provided with an

API studded top connector and API flanged bottom connector.

STRIPPING

Stripping, snubbing and stuffing pipe and tubing can be rotated and tool joints or tubing connections can be safely stripped through the sealed off GKS packing unit. The closing pressures should be low enough to permit a slight leakage of drilling/completion fluid as the tool joint or tubing connection passes through the closed packing unit. This fluid lubricates the packing unit to minimize wear.

As a larger diameter connection passes through the closed packing unit it expands. The hydraulic pressure surge caused by the packing unit expansion should be controlled by a responsive pressure regulator valve. Better pressure surge control may be achieved with the application of an accumulator to the closing line. Precharge the accumulator to one-half the required closing pressure. Controlling the rate of stripping connections through the unit will allow a pressure regulator valve to more effectively limit pressure surges.

TESTING/PISTON STROKE MEASUREMENT

Routine functional testing of the GKS BOP can be carried out with long packing unit life if proper operating procedures are followed. Table 22 gives the closing pres-

sure (psi) required to establish initial seal off in GKS blowout preventers. The pressures given in these tables are guidelines. Maximum packing unit life will be obtained by using the lowest closing pressure that will effect a seal.

To obtain maximum packing unit life, use the recommended closing pressure and test pipe diameter. For example, on a GKS 4¹/₁₆"-5000 BOP, use 450 psi on 3¹/₂" drill pipe to establish initial seal off. Reduction of closing pressure after stabilization of test pressure reduces rubber stress and increases packing unit life.

The piston stroke has a direct correlation to the condition of the packing unit. Hydril Annular Blowout Preventers are equipped with a drilled passage in the head of the BOP through which piston stroke can be measured. The condition of the packing unit can be determined by measuring the piston stroke on a new packing unit, using the appropriate test pipe diameter, and taking subsequent measurements each time the BOP is tested. The remaining life of the packing unit is proportional to the amount of piston stroke left.

If full stroke of the piston is reached before a seal is obtained, the packing unit should be replaced since any further increases of closing pressure will not cause it to seal off.

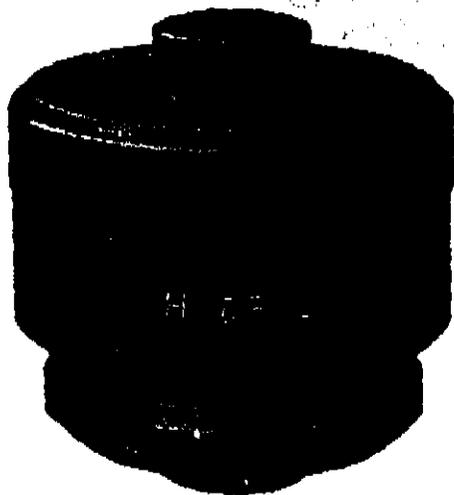


Figure 96
Exterior View of 2"-3000
and 5000 psi GKS

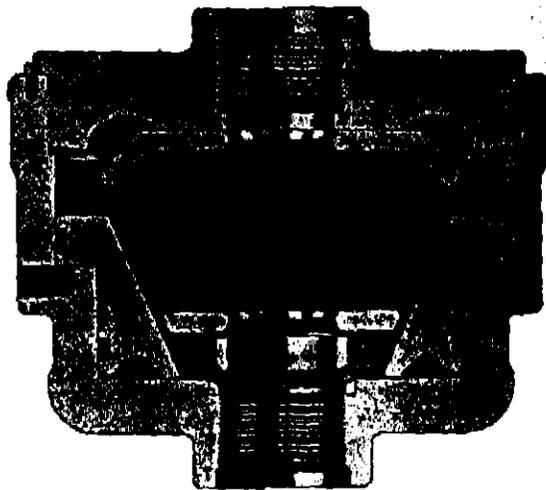


Figure 97
Cross-Section of 2"-3000
and 5000 GKS

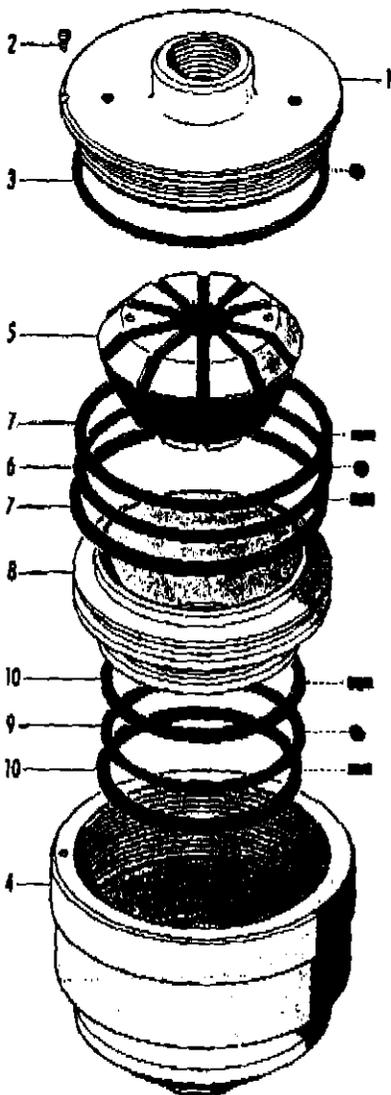


Figure 98
Exploded View of GKS BOP/Stripper

TABLE 22
INITIAL CLOSING PRESSURES (PSI)
FOR GKS BOP/STRIPPER

Pipe OD Inches	2-3000, 2-5000	2 1/2" 10,000	4 1/2"-5000 4 1/2"-10,000
	—		450
	—		525
	—		675
	500		800
	650		875
	700		950
	1150		1200

Note: For maximum service life of the Hydril Packing Unit, the closing pressures shown in the table above should be used. Higher pressures (never to exceed 1500 psi) will provide slightly faster closing speeds, but will reduce packing unit life. Test closures should be made to realize optimum packing unit life.

TABLE 23
ENGINEERING AND PHYSICAL DATA—
GKS BOP/STRIPPER

Size and Working Pressure Refng. psi	Full Open Bore	Height	Body Diameter	Weight (Lbs.)	Piston Stroke, Inches	U.S. Gallons For Full Piston Stroke
	2 1/4"		12 1/2"		1 1/2"	
	2 3/4"		13 1/2"		1 3/4"	
	2 7/8"		17 1/2"		1 3/4"	
	4 1/4"		23 1/2"		2 1/2"	
	4 1/2"		28"		2 1/2"	

TABLE 24
PARTS LIST—HYDRIL GKS
BOP/STRIPPER

Item No.	Part Name	Qty. All Sizes
	Stripper Head	
	Cap Screw	
	Head O-Ring	
	Stripper Body	
	Packing Unit	
	Upper Piston O-Ring	
	Upper Backup Ring	
	Piston	
	Lower Piston O-Ring	
	Lower Backup Ring	

HOW TO ORDER THE GKS BOP

Specify the following:

1. Type: GKS
2. Nominal Size
3. Bore Size
4. Working Pressure
5. Connector
 - a. Top
 - b. Bottom
6. Packing Unit Material: Natural Rubber or Nitrile Rubber

345028

5372

BOP CONTROL SYSTEMS

ENGINE OPERATED WORKOVER BOP CONTROL UNITS

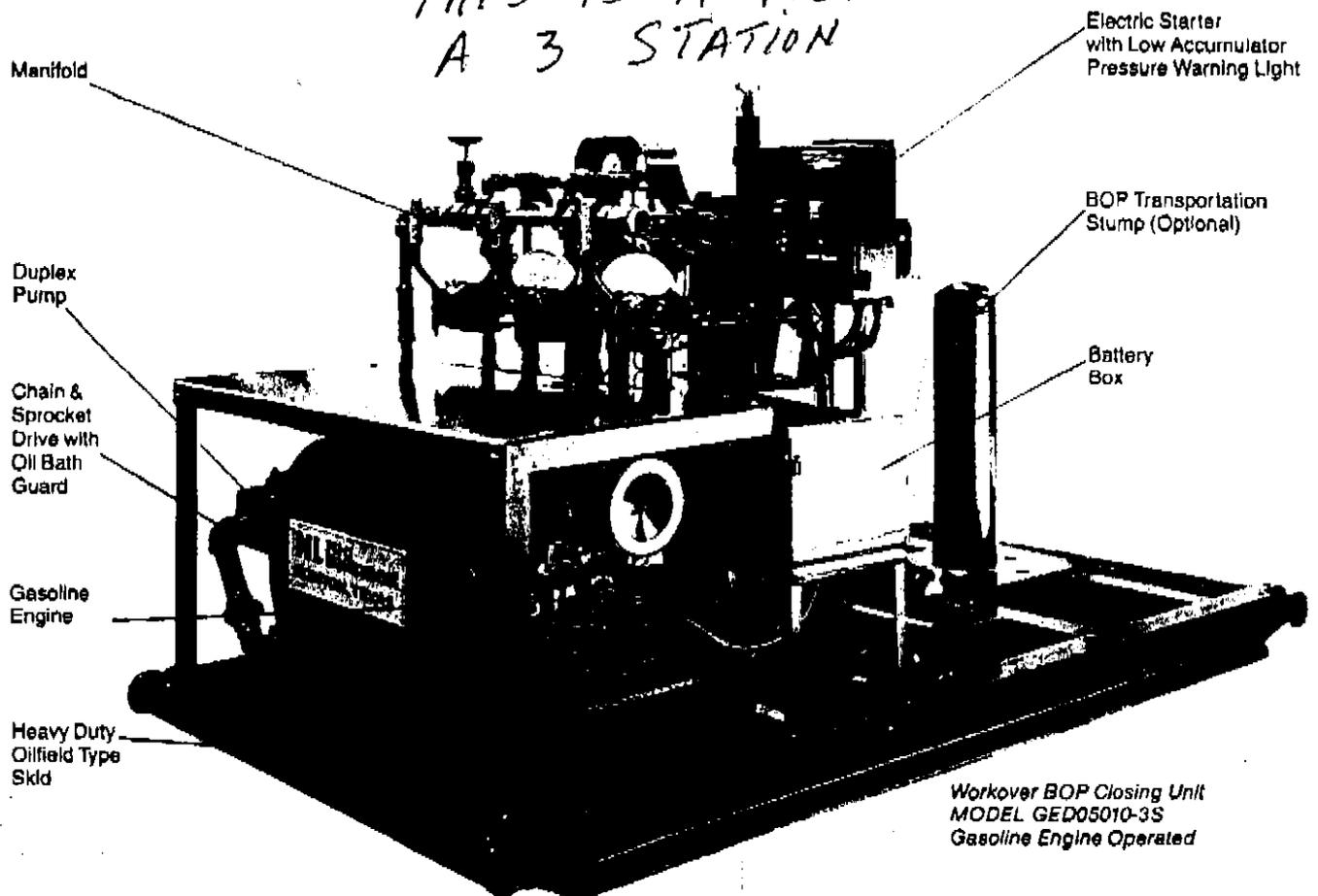
NL Rig Equipment gasoline and diesel engine operated workover BOP closing units are completely self contained. They require no additional energy source. Each engine is equipped with a 12v battery powered electric starter. An automatic pressure switch shuts off the engine at 3000 psi. When the operating pressure drops to 2700 psi, a flashing red light indicates low accumulator pressure.

To restart the engine, open the unloader valve and turn the ignition key. When the engine reaches operating speed, close the unloader valve. The engines drive a

duplex pump through a continuously lubricated chain and sprocket drive. The duplex pump is equipped with a suction strainer to provide long service, even with contaminated fluid.

All units are furnished with the following standard equipment: 11-gallon bladder type accumulator bottles, a 100-gallon fluid reservoir and a heavy duty oilfield type skid. The 11-gallon accumulator bottles are 3000 psi W.P. and are capable of being repaired in the field. The reservoir is equipped with vent, fill, drain and inspection ports.

*NOTE : OURS IS A 2 STATION
THIS IS A PICTURE OF
A 3 STATION*

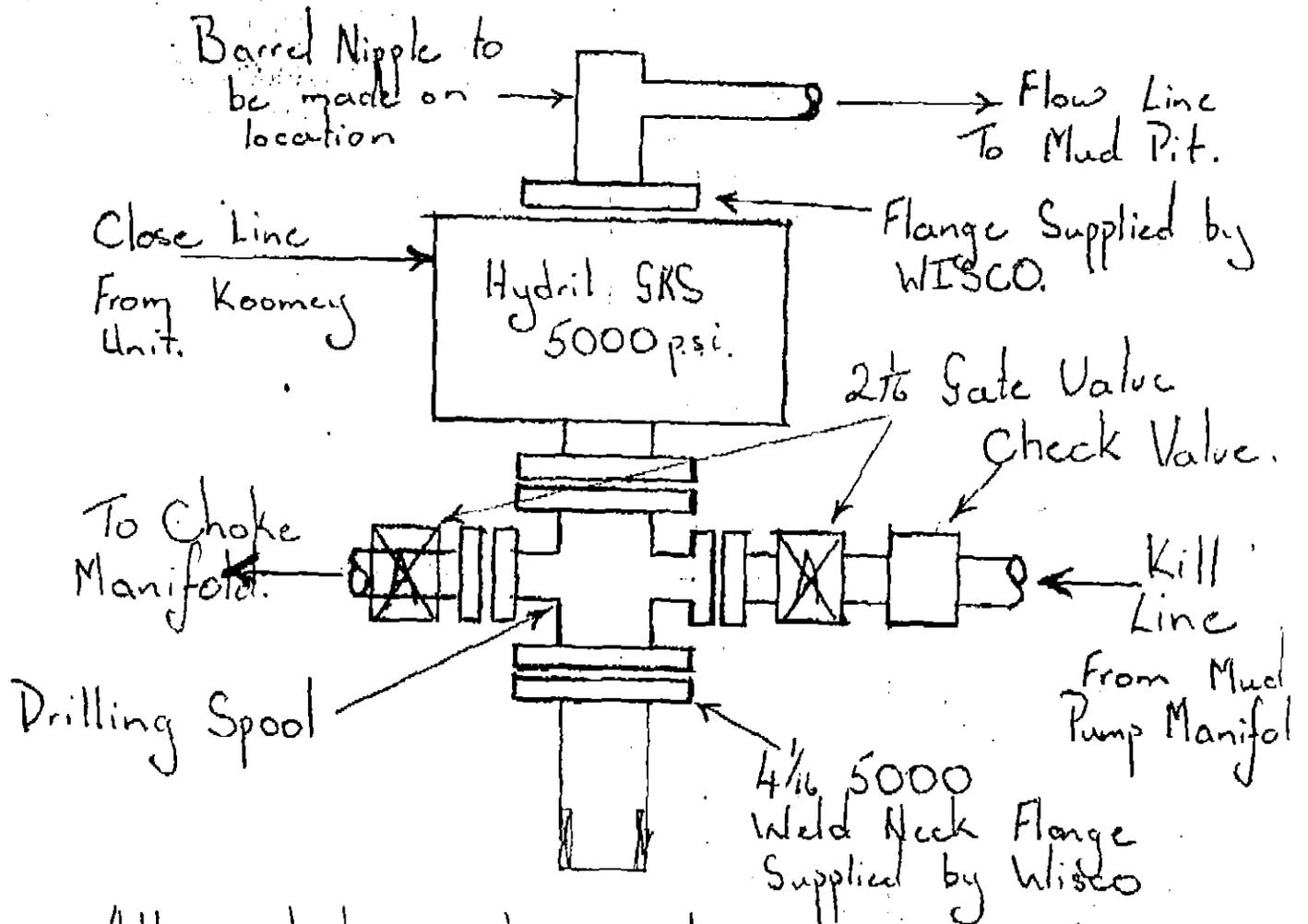


*Workover BOP Closing Unit
MODEL GED05010-3S
Gasoline Engine Operated*

**ENGINE OPERATED ACCUMULATOR/PUMP UNITS FOR WORKOVER BOP CONTROL
(GED GASOLINE AND DED DIESEL)**

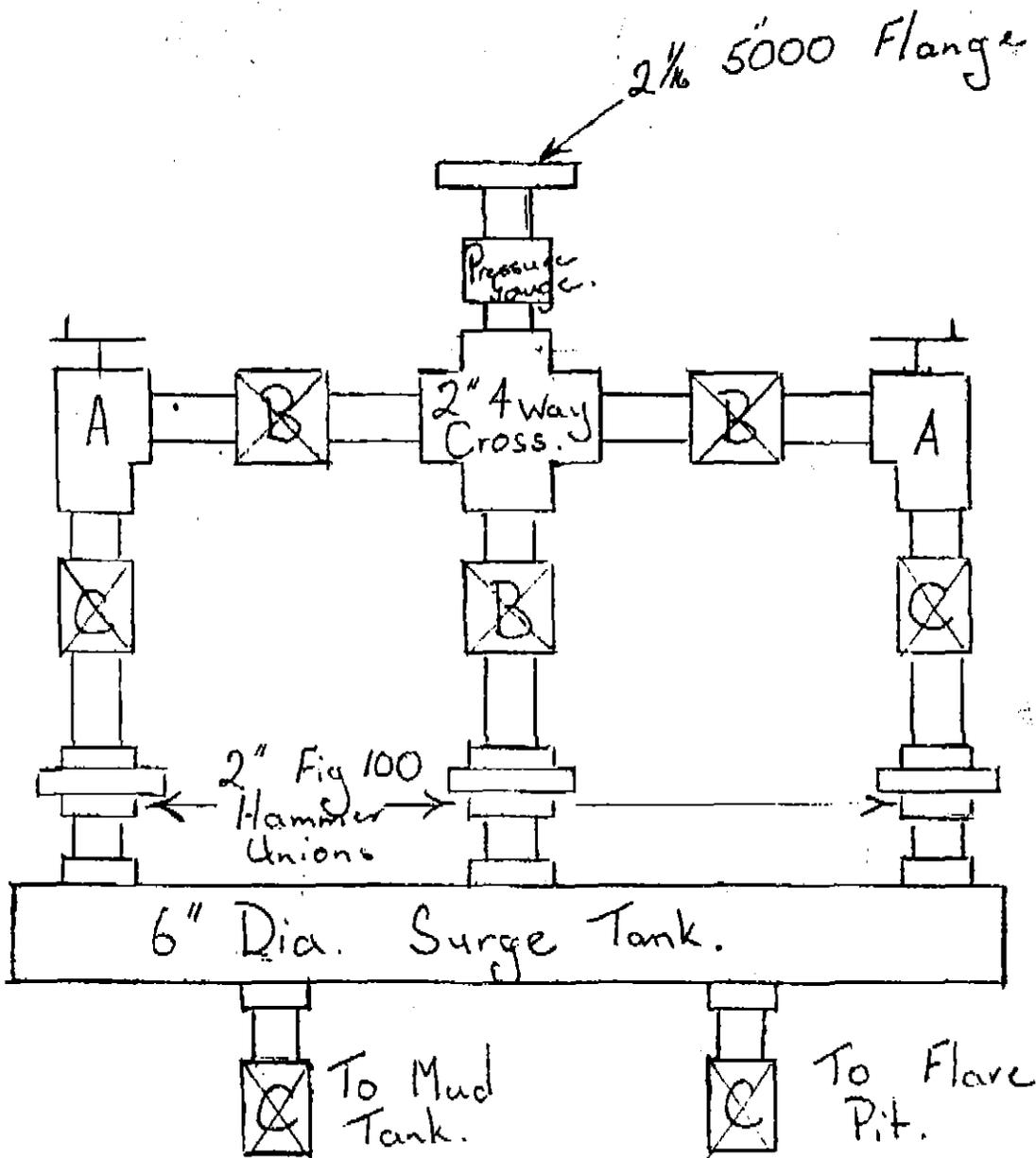
Model Number	Reservoir Capacity Gallons	Maximum No. of Valves	Approximate Overall Dimensions & Weights							
			WIDTH		DEPTH		HEIGHT		WEIGHT	
			Inches	mm	Inches	mm	Inches	mm	Lbs	kg
GED12040-3S	100	3	68	1727	56	1422	78	1981	2720	1234
DED12020-3S	100	3	68	1727	56	1422	78	1981	2200	998

Well Head



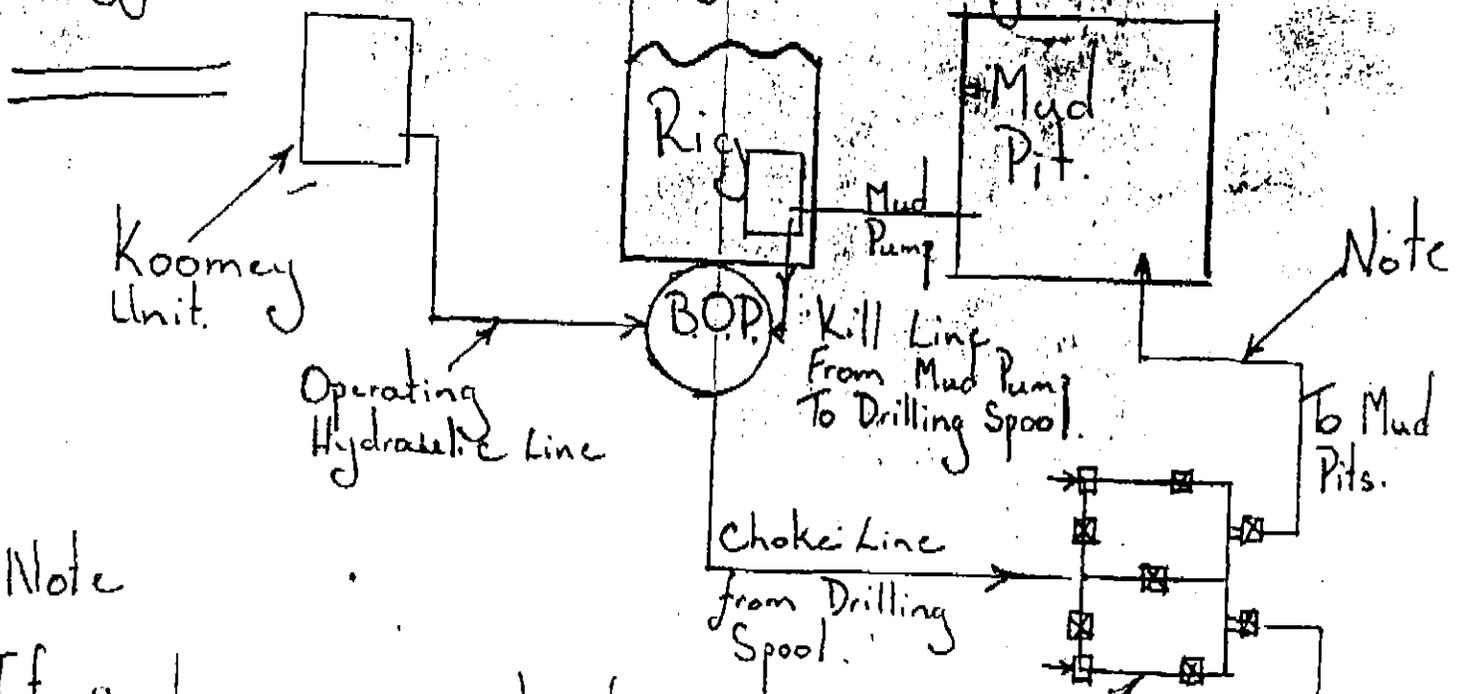
All studs, nuts and ring gaskets to be supplied by WISCO.

2" 3000psi. Choke Manifold.



- A - Adjustable Choke.
- B - 3000psi. 2 1/2" Gate Valves.
- C - 500psi. 2" Ball Valves.

Suggested Diverter System Layout



Note

If a large amount of Gas Cut mud is to be circulated from the well a Poor Boy Gas Buster should be added to this line.

This can be simply made.

