

WELL VELOCITY SURVEY

For

EXOIL-MAGELLAN

EAST MEREENIE NO. 2

NORTHERN TERRITORY, AUSTRALIA

Surveyed by

UNITED GEOPHYSICAL CORPORATION

PARTY 155

27th October, 1964



EXOIL-MAGELLAN  
EAST MEREENIE NO. 2

Check shots in conjunction with a Schlumberger sonic log were taken in East Mereenie No. 2 Well located in the Northern Territory at Latitude  $24^{\circ}02'47''$  South and Longitude  $131^{\circ}38'50''$  East by United Geophysical Corporation's Party 155 on October 27, 1964.

Shots were recorded at depths from 2300 feet to 4850 feet using a Schlumberger truck and cable to lower the geophone and measure the depths. The hole was cased to a depth of 2378 feet. A pressure sensitive geophone was used to record the breaks through United Geophysical type 1-38B amplifiers. A 12 trace reflection spread was recorded on each shot. Two shots using larger charges were taken for the purpose of obtaining a normal reflection record and were recorded on magnetic tape and paper using wide band filtering.

The top 12 traces on the records are the reflection spread. The time break and uphole are on trace number 4. The spiking which appears on the time break trace does not interfere with picking the time break. The top trace of the bottom 4 traces is the reference geophone trace and the other three traces are the well geophone traces recorded with low, medium, and high sensitivity.

Differences in time between shots taken on the east and west sides of the well may be attributed to well slant. The sonic log plot which was tied to the check shot survey at 3920 feet below datum falls between the values recorded from the two different sides of the well.

Data pertaining to the well survey have been forwarded to United Geophysical's Technical Services Department, Pasadena, California, U.S.A. where a synthetic seismogram will be prepared.

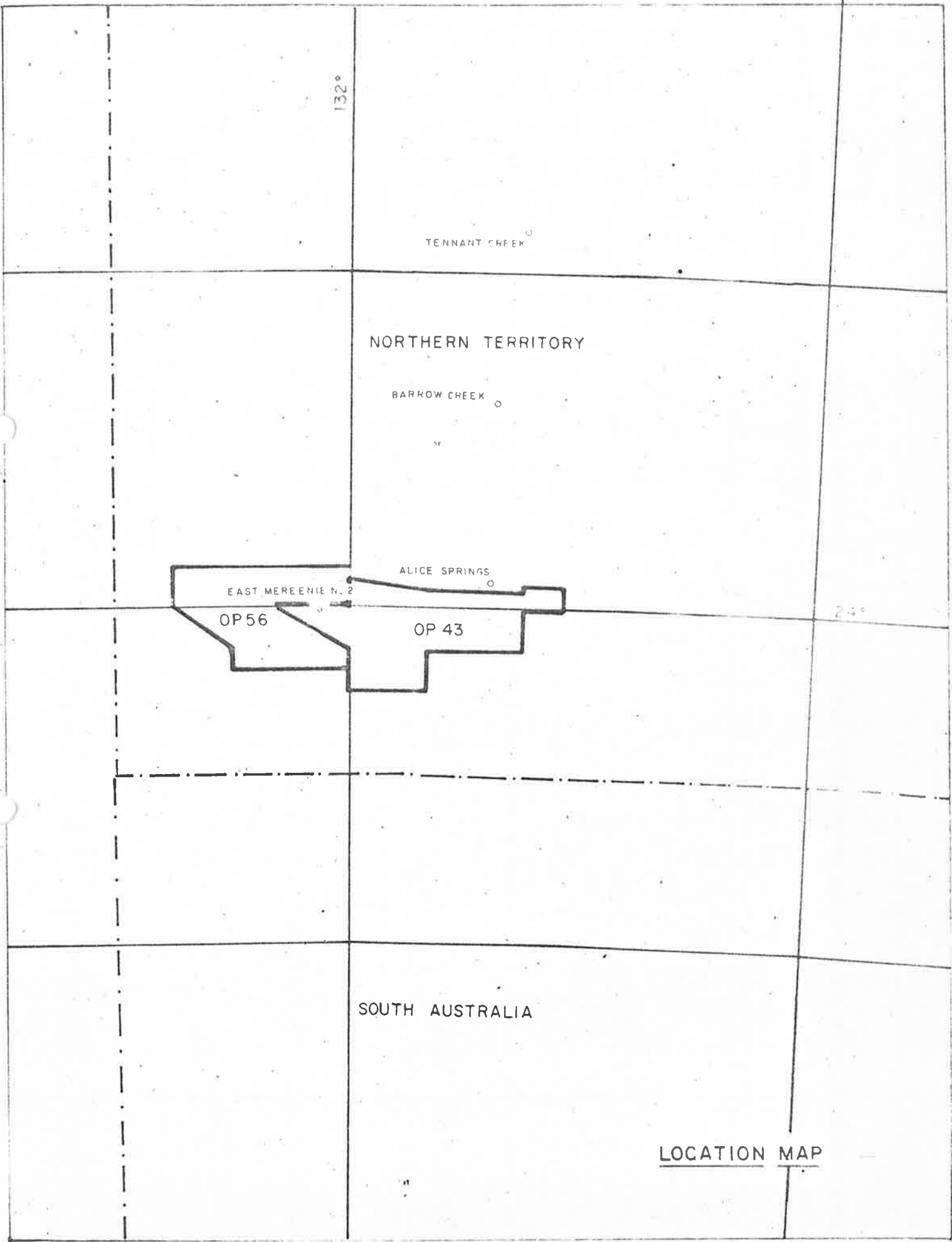
Submitted by,

United Geophysical Corporation

W. H. Doughty

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Enclosures: Location Plot  
Survey Plot  
Computation Sheet  
Well Velocity Curves



132°

TENNANT CREEK

NORTHERN TERRITORY

BARROW CREEK

ALICE SPRINGS

EAST MEREENIE N. 2

OP 56

OP 43

24°

SOUTH AUSTRALIA

LOCATION MAP



SHOT POINT C

A  
B

650'

REFLECTION SPREAD

X - - - - X - EAST-MERENIE NO. 2  
NO 12 REFERENCE GEOPHONE

1650' FROM NO. 12 TO NO. 1

150'

650'

F  
E

# SURVEY PLAT

VELOCITY SURVEY  
for

EXOIL - MAGELLAN  
by

PARTY, 155 UNITED GEOPHYSICAL CORP.

Scale : 1 inch = 200 feet

Date : 27 OCTOBER, 1964

COMPANY: EXOIL-MAGELLAN  
WELL: EAST MURRENIE NO. 2

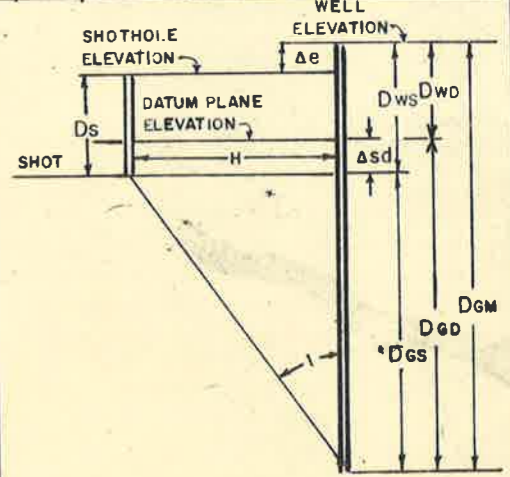
OF 43

LOCATION: LATITUDE: 24° 02' 47" S  
LONGITUDE: 131° 38' 50" E

SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	SHOT HOLE	ELEVATION	DISTANCE	ELEVATION	
A	2365	645W				E	2374	650E																						KELLY BUSH	2380'
B	2364	650W				F	2371	645E																						ROTARY TBL	
C	2363	645W																												DERRICK FL	
D	2380	645E																												GROUND	2360'

RECORD NO.	SHOT HOLE NO.	DGM	Tos	Tc	Ds	Δe	Dws	Δsd	Dgs	H	TAN I	Cos I	T	GRADE	Tgs	Δsd/Vi	Tgd	Dgd	ΔDgd	ΔTgd	Vi INTERVAL VELOCITY	Va AVERAGE VELOCITY
1	D	2390			149	0	149	-31	2241	645	0.2872	0.9610	0.177	G	0.171	-0.003	0.168	2210				
2	A	2390			149	15	164	-16	2226	645	0.2876	0.9605	0.170	F	0.163	-0.001	0.162	2210				
3	E	4850			149	6	155	-25	4695	650	0.1384	0.9906	0.342	P	0.342	-0.002	0.339	4670				
4	B	4850			149	16	165	-15	4685	650	0.1307	0.9905	0.337	F	0.334	-0.001	0.333	4670				
5	F	4850			149	9	158	-22	4692	645	0.1374	0.9907	0.339	P	0.336	-0.002	0.334	4670				
6	F	4000			118	9	127	-53	3873	645	0.1665	0.9861	0.290	G	0.286	-0.004	0.282	3820				
7	B	4000			149	16	165	-15	3835	650	0.1694	0.9860	0.282	F	0.278	-0.001	0.277	3820				
8	F	3000			98	9	107	-73	2893	645	0.2229	0.9760	0.223	F	0.218	-0.006	0.212	2820				
9	B	3000			149	16	165	-15	2835	650	0.2226	0.9785	0.214	F	0.209	-0.001	0.208	2820				
10			no good																			
11	B	2300			149	16	165	-15	2135	650	0.3044	0.9566	0.154	F	0.157	-0.001	0.156	2120				
12	E																					
13	C		Regular Reflection records																			

Rearranged in order of increasing depths



- DWD = KELLY ELEVATION MINUS DATUM ELEVATION
- DGM = SEISMOMETER DEPTH BELOW KELLY ELEVATION
- TOS = TIME TO OFFSET GEOPHONE
- Tc = TIME CORRECTION (FROM REFLECTION, REFRACTION, OR UPHOLE TIME)
- Ds = DEPTH OF SHOT
- Δe = KELLY ELEVATION MINUS SHOTHOLE ELEVATION
- Dws = Ds + Δe
- Δsd = Dws - Dwd
- Dgs = DGM - Dws
- H = HORIZONTAL DISTANCE, WELL TO SHOTHOLE
- TAN I = H/Dgs
- T = WELL SEISMOMETER TIME FROM TIME BREAK
- Tgs = T Cos I
- TGD = Tgs + Δsd/Vi = VERTICAL TRAVEL TIME, WELL SEISMOMETER TO DATUM PLANE
- DGD = DGM - DWD = VERTICAL DISTANCE, WELL SEISMOMETER TO DATUM PLANE
- Vi = INTERVAL VELOCITY = ΔDgd/ΔTgd
- Va = AVERAGE VELOCITY = DGD/TGD

DATUM = 2200 ft above S.L.  
V = 12,100 feet per sec.  
SURVEYED FOR:  
SURVEYED BY: UNITED GEOPHYSICAL  
COMPUTED BY:  
DATE SURVEYED: OCTOBER 27, 1964

CASING: 2380'  
WEATHERING:  
DATUM VELOCITY:

TIME IN SECONDS

6

7

8

9

10

AVERAGE VELOCITY (ft./sec.)

INTERVAL VELOCITIES (ft./sec.)

Stokes	$\frac{1905}{.144} = 13,220$	$\frac{1013}{.075} = 13,520$ (Extrapolated)
Upper Stairway	$\frac{2918}{.219} = 13,320$	$\frac{174}{.010} = 17,400$
Middle Stairway	$\frac{3092}{.225} = 13,500$	$\frac{378}{.027} = 14,000$
Lower Stairway	$\frac{3470}{.256} = 13,550$	$\frac{222}{.014} = 15,860$
Horn Valley	$\frac{3692}{.270} = 13,670$	$\frac{213}{.016} = 13,310$
Upper Pacoota	$\frac{3905}{.286} = 13,650$	$\frac{565}{.037} = 15,270$
Middle Pacoota	$\frac{4470}{.323} = 13,840$	$\frac{270}{.016} = 16,890$
	$\frac{4740}{.339} = 13,970$	