

# OPEN FILE

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## LIST OF PLANS

| Plan No.  | Title                                                       | Scale       |
|-----------|-------------------------------------------------------------|-------------|
| 1310-2    | Siddeley Range Drill Hole<br>Locations and Gravity Stations | 1:100,000   |
| 235100/38 | Ngalia Basin Location Map                                   | 1:1,000,000 |

1. SUMMARY

Exploration on E.L. 1310 continued intermittently throughout the year, with activity concentrated in the northern part of the licence. Fifteen kilometres of access tracks were bulldozed and graded in February. Twenty six line kilometres were cleared and surveyed in March and April for a gravity survey, which was carried out in June. Two rotary mud holes, totalling 380m, were drilled in July. Two further holes, precollared last year, were extended by diamond drilling with a total 144m of core.

Drilling encountered Mt. Eclipse Sandstone underlying a thick Tertiary sequence. No significant radioactivity was detected.

## 2. INTRODUCTION

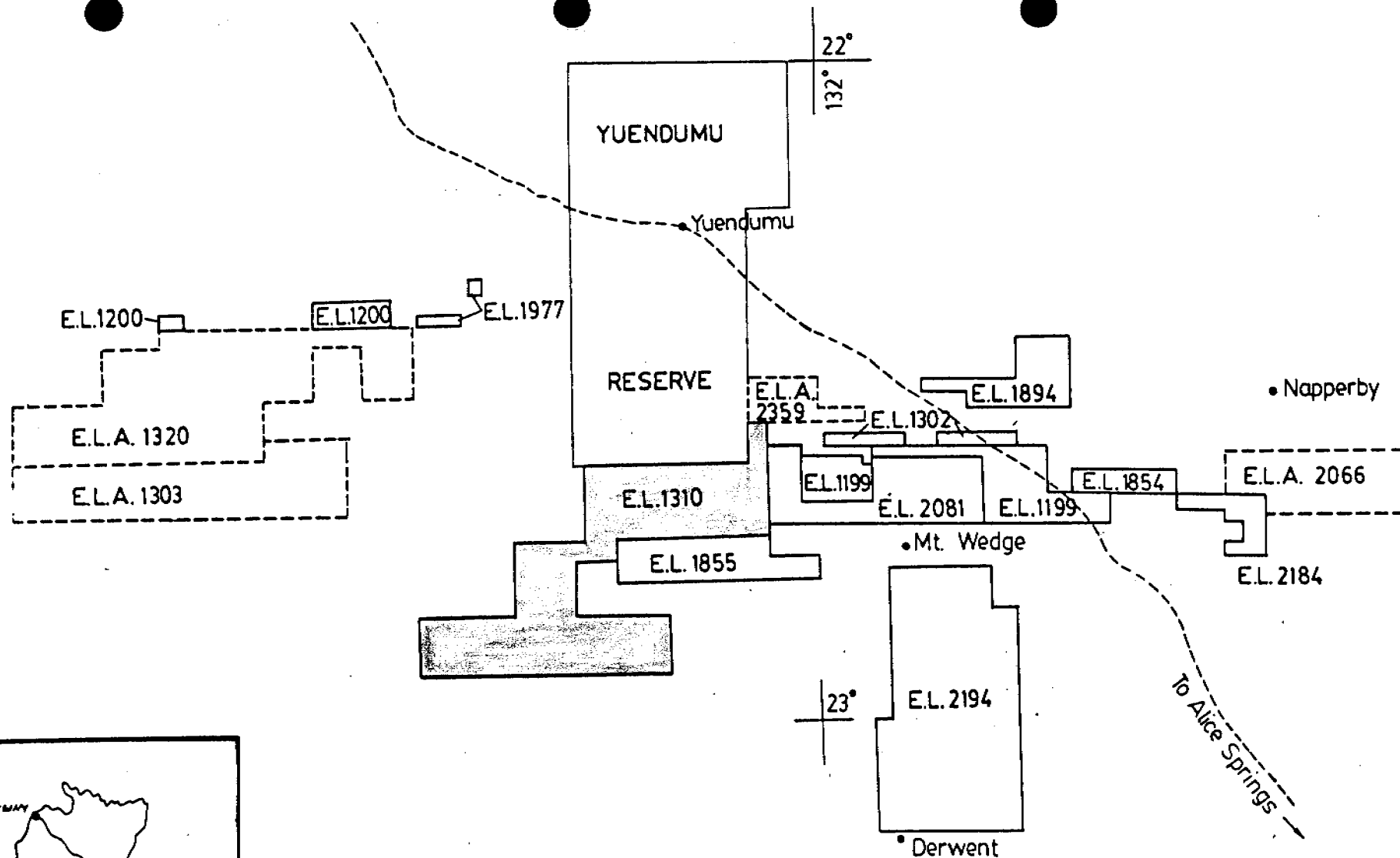
### 2.1 Location, Access and Physiography

Siddeley Range E.L. 1310 is located about 285 km by road northwest of Alice Springs, and is reached by travelling 180 km along the unsealed Yuendumu Beef Road from the Stuart Highway then via Mt. Wedge for 80 km, and then north along the Kerridy Road for 5 km.

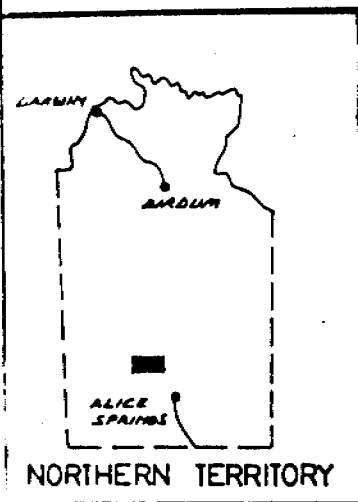
Access, which is reasonable within the E.L., is by means of the Kerridy Road, old E.L. access tracks, and about 15 km of track cleared for AGIP this year.

The physiography of the E.L. can be generally divided into two areas, separated by the Siddeley Range. The northern part consists mainly of aeolian/fluviol reddish brown sand plains, and an isolated flat-topped mesa, Djabangardi Hill, with numerous longitudinal sand Dunes in the vicinity of Siddeley Range, which is a linear strike ridge of Vaughan Springs Quartzite.

The southern portion of the E.L. is a natural drainage for the area, and consists dominantly of salt lakes.



N



|                          |                     |
|--------------------------|---------------------|
| Agip Australia Pty. Ltd. |                     |
| NGALIA BASIN             |                     |
| LOCATION MAP             |                     |
| No. 235100/38            |                     |
| Scale: 1:1,000,000       | Geologist: J. B. V. |
| Date: March 1980         | Drawn By: J. B. V.  |

## 2.2 Climate, Water Supply and Hydrology

The climate in the E.L. 1310 area is semi-arid continental, with an average annual rainfall of about 300mm. Rainfall is irregularly distributed throughout the year but tends mainly to fall in the period November-March.

Temperatures commonly exceed 40°C during the summer months and frosts can be expected from April-August.

Water in the area is obtained from shallow bores sunk on calcrete ridges. The water quality is generally good and originates from an aquifer of coarse grained, unconsolidated sands underlying the clacrete to a depth of about 14m.

A permanent spring, Oodnappina Waterhole, exists in the central part of the Siddeley Range.

## 2.3 Tenement Status

E.L. 1310, covering an area of 893 square kilometres, was initially granted to Yuendumu Mining Company NL on 31.10.78. Under a joint venture agreement tenure was transferred to AGIP in June 1979. Renewal of the licence, without reduction, was granted on 31.10.79 for a further 12 months.

### 3. PREVIOUS WORK

The area has been mapped by the BMR at a scale of 1:250,000 (Mt. Doreen Sheet, Wells, et. al. 1968).

A previous E.L. 454 covered most of the present extent of E.L. 1310 with the exception of the extreme south western-most portion. It was held by Central Pacific Minerals N.L. who investigated uranium mineralization in the Tertiary sequence.

Their investigations were concentrated south of E.L. 1300, mainly between Christmas and Currinya Bores, and consisted of a programme of shallow trenching, auger, and rotary drilling.

Gravity surveys were conducted over the northern half of the E.L. by Magellan Petroleum (unpublished reports) and by the Bureau of Mineral Resources in various unpublished memoirs and reports.

BMR Mount Doreen No. 11 rotary drill hole is located about 4.5 km south of Djabangardi Hill. This was drilled to a depth of 180m in a sequence considered by the BMR to be

entirely Cainozoic in age.

In 1977 and 1978 AGIP drilled holes YP15, 16, 17; YR1, 58 within the present E.L. 1310 boundary on its eastern margin.

In 1979, AGIP drilled holes SR1, 2, 3, 4, 5, 6, 7, 8 in the northern part of E.L. 1310. Four of these encountered Mt. Eclipse Sandstone beneath Tertiary sand and clay and were cased with PVC for future diamond coring. Weakly anomalous mineralization, confined to the Mt. Eclipse Sandstone, was detected in holes SR6 and SR7. Summary logs are given in Appendix I.

#### 4. GEOLOGY

##### 4.1 Regional Geology

The northern half of E.L. 1310 is located in the central part of the Ngalia Basin towards its southern margin. The southern portion of the E.L. is not situated within the Ngalia Basin, and extends over a Cainozoic basin on the Arunta Complex.

The Ngalia Basin is an east-west elongated, intracratonic depression within the Lower - Middle Proterozoic Arunta Complex. Sedimentation began with the deposition of the Vaughan Springs Quartzite during the Upper Proterozoic.

Marine and continental sedimentation continued into the Middle Palaeozoic, with the Mt. Eclipse Sandstone having been deposited in Upper Devonian-Lower Carboniferous times.

The Mt. Eclipse Sandstone consists of a synorogenic sequence up to 4,500m in thickness of non-marine, arkosic sandstone, with some interbedded shales, deposited in piedmont and sub-aerial deltaic environments.

Two major orogenic events have affected basin sediments. The first occurred after the deposition of the Ordovician Djagamara Formation, and uplifted the northern margin of the basin. This event resulted in a change from a restricted basin, marine-type environment to a continental environment of deposition for the Kerridy Sandstone and Mt. Eclipse Sandstone.

The second major orogenic event in the basin occurred during and after the deposition of the Mt. Eclipse Sandstone, and was responsible for major folding, thrusting and faulting of the sequence within the basin.

Uplifts of crystalline basement occurred to the north of the basin to become the main provenance for the Mt. Eclipse Sandstone which is the only unit in the basin known to contain high grade uranium mineralization. Low grade uranium concentrations dispersed through the crystalline basement were probably the original source of uranium in the Mt. Eclipse Sandstone.

Regional gravity maps indicate that a series of fault-bound, east-west ridges and valleys were formed during the first orogeny. Subsequently, deposition of Mt. Eclipse Sandstone resulted in the deposition of a thick fluvial sequence in

the valleys with thinner deposits on the ridges as the valleys became infilled.

## 4.2 E.L. Geology

### 4.2.1. Stratigraphy and Structure

In the E.L. area south of the Ngalia Basin, the geology consists of Arunta Complex overlain by a Cainozoic sequence.

The stratigraphic units distinguished within the northern half of E.L. 1310 include a Cainozoic sequence in excess of 180m thick, underlain by the Upper Devonian-Lower Carboniferous Mt. Eclipse Sandstone, which is unconformably underlain by Ordovician(?) Kerridy Sandstone, Proterozoic Mt. Doreen Formation and Vaughan Springs Quartzite.

### Cainozoic

This is divided into the following rock units.

|       |                                                                                                                 |
|-------|-----------------------------------------------------------------------------------------------------------------|
| Qr.   | Red-brown and limey sandy soils.                                                                                |
| Tc/Tg | Calcrete and massive gypsum.                                                                                    |
| Tgsc  | Plastic clay, green-grey, sandy, frequently gypsiferous with a trace of charcoal. Usually interbedded with Tch. |
| Tch   | Yellow to olive-grey and light brown coarse feldspathic sand, pebbly.                                           |
| Tbcs  | Olive-grey and light brown to red sandy clay to clayey sand.                                                    |
| Trfs  | Red-brown Sand with minor to major red clay matrix                                                              |
| Tlss  | Deep red-brown lateritic sandstone. Some laterite lenses T1.                                                    |
| Tga   | Massive crystalline gypsum near base of Tertiary                                                                |
| Tcl   | Grey Clay.                                                                                                      |
| Ta    | Yellow limonitic and kaolinitic clay.                                                                           |
| Trib  | Pyritic lignitic brown to black sand, olive and grey clay and lignite seams                                     |

This nomenclature is well established from previous investigations of the Cainozoic in the Ngalia Basin by AGIP.

The Cainozoic sequence is thickest in the west of the E.L. and thins towards the east. Hole SR 9 R in the west went to a total depth of 222m in Cainozoic sediments, and in the holes drilled in 1979 east of the Kerridy Road the thickness varies from 44-69m.

#### Palaeozoic

The Palaeozoic units encountered on E.L. 1310 are the Upper Devonian - Lower Carboniferous Mt. Eclipse Sandstone, and R8057

the possibly Ordovician Kerridy Sandstone.

The Mt. Eclipse Sandstone is classified on the basis of geochemical facies as follows: -

|       |                                                                                                                                                                                                                                                                                               |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Cs/Cf | Silcrete, with minor ferricrete.                                                                                                                                                                                                                                                              |
| Pzp   | Pallid zone Mt. Eclipse Sandstone, underlying Cs or Cf. Heavily kaolinised, with rare limonite.                                                                                                                                                                                               |
| Pmo   | Mottled red facies (oxidised). Red facies with reduzate mottles; limonite, haematite, chlorite, kaolinite.                                                                                                                                                                                    |
| Pmf   | Mottled red facies (fresh). Red facies with reduzate mottles; haematite, chlorite, and feldspar.                                                                                                                                                                                              |
| Pro   | Red facies (oxidised). With limonite, haematite, kaolinite.                                                                                                                                                                                                                                   |
| Prf   | Red facies (fresh). With haematite and feldspar.                                                                                                                                                                                                                                              |
| Pto   | Transitional red to white facies (oxidised).<br>With haematite, limonite, chlorite, kaolinite.<br>Intercalated red (or red mottled) and reduzate facies. The term is reserved for use when the scale of the interbanding is too fine for division into the respective facies to be practical. |
| Ptf   | Fresh transitional facies. With chlorite, haematite, pyrite, carbonaceous matter and feldspar.                                                                                                                                                                                                |
| Pwo   | White facies (oxidised). With kaolinite and limonite.                                                                                                                                                                                                                                         |

Pwf            White reduzate facies (fresh). With pyrite,  
                 carbon and minor chlorite, and fresh feldspar.

The geochemical facies is dominantly mottled, with some red facies. In holes SR6R, SR7R a white weathered sequence has been logged between the silcrete - pallid zone, and the mottled sequence; this has probably been altered from mottled facies during the period of formation of the silcrete and is not thought to represent an original reduzate facies.

The Mt. Eclipse Sandstone in E.L. 1310 is generally a micaceous, arkosic, haematitic, chloritic, and medium - coarse grained sandstone beneath the Tertiary alteration, containing some shale - siltstone units which have an intersected width of up to 33m, (hole SR7R).

The dip, structure and thickness of Mt. Eclipse Sandstone in the E.L. are largely conjectural. Regional gravity traverses indicate the presence of a "basement" ridge trending

WNW-ESE underlying SR8R and the YP17 group of holes.

Another basement ridge probably occurs to the south of this, trending E-W and plunging towards the east, in the vicinity of Djabangardi Hill. Between these two basement ridges, there is the possibility of a reasonably thick pile of Mt. Eclipse Sandstone infilling the sub-basin in the vicinity of holes SR6R and SR7R.

Kerridy Sandstone, of tentative Ordovician age, lies unconformably beneath Mt. Eclipse Sandstone (Wells, et. al. 1968). Within the E.L., it occurs as a shallow-dipping outcrop on Djabangardi Hill, a flat-topped mesa. The only drill hole known to have intersected Kerridy Sandstone was hole SR4R.

Kerridy Sandstone in the E.L. is a quartzose, siliceous, micaceous and dark reddish brown sandstone, containing some interbedded shale - siltstone; it is considerably less arkosic than Mt. Eclipse Sandstone.

#### Proterozoic

Within the E.L., the following formations of probable Adelaidean age are present: -

- Puq      Mt. Doreen Formation, represented by dolomitic greyish olive green to dusky yellow mudstone - siltstone. Intersected in holes SR2R and SR5R.
- Puv      Vaughan Springs Quartzite, a very hard pink to grey quartzite which forms prominent strike ridges in the area. Intersected in hole SR9R

There are several outcrops of pre-Adelaidean granite on the western side of Siddeley Range.

#### 4.2.2. Mineralization

Weakly anomalous radioactivity was detected within Mt. Eclipse Sandstone during the exploration programme in holes SR6, SR8; YP16, YP17, YP18; YR58. Radioactive mineralization in the E.L. is confined to the Mt. Eclipse Sandstone, the only unit in the Ngalia Basin known to contain significant deposits of uranium. The Tertiary calcrete horizon is generally weakly radioactive, although within E.L. 1310 no radioactive calcrete was discovered.

## 5. EXPLORATION ACTIVITIES

### 5.1 Organisation

Throughout the year a permanent base-camp was maintained near Witchetty bore, some 60 road km from E.L. 1310. During the drilling programme, however, AGIP and contract personnel operated from a temporary fly-camp located 16 km north and 7 km east of Yanduch bore. Both camps were co-ordinated and supplied by a regional exploration office in Alice Springs.

Field work was carried out by one geologist and a field assistant under the supervision of a senior geologist.

### 5.2 Drilling

A total of 524m in 4 holes was drilled on E.L. 1310 during the 1980 programme. Two holes totalling 380m were drilled by rotary mud methods using a tractor-mounted Gryphen rig. Two holes totalling 144m were diamond drilled using a Foxmobile B40 rig.

Drilling was carried out in 2 periods; from 31.7.80 to 5.8.80 and from 12.9.80 to 16.9.80. The contractor was Rockdril Contrators Pty. Ltd. of Brisbane. Water for the

operation was obtained from Yanduch and Christmas bores.

The diamond coring extended holes SR6 and SR7, which had been previously rotary drilled and cased with PVC during the 1979 programme. Both holes intersected mottled Mt. Eclipse Sandstone. The rotary holes SR9 and SR10 penetrated a thick Tertiary overburden to Mt. Eclipse Sandstone and pre-Mt. Eclipse basement. SR10 was cased with 100mm PC for possible future extension.

Summary logs are given in Appendix I.

### 5.3 Geophysical Downhole Logging

A total of 799m was logged for natural gamma. A portable S.I.E. T450 instrument, operated by AGIP personnel, was used for the rotary holes. The diamond holes were logged under contract by Geoex Pty. Ltd., using a Gearhart-Owen 3200 truck-mounted instrument.

### 5.4 SSSSGravity Survey

A gravity survey was carried out in conjunction with the NTGS over part of the E.L. to extend work previously done in the Ngalia Basin by Magellan Oil Pty. Ltd. and by AGIP and the NTGS in 1979.

Readings were taken at 0.5 km intervals along 2 north-south

R8057

lines. These lines overlap into the adjoining E.L.'s 1855 and 2359. Where possible, lines followed existing tracks through the E.L. All stations were surveyed and levelled and tied to the regional base station at Central Mt. Wedge airstrip.

Map 1310-2 shows the location of gravity stations for the 1980 survey. Gravity profiles are given in Appendix IV.

6. EXPENDITURE

A statement of the expenditure on E.L. 1310 for the 12 month period from November 1979 to October 1980, inclusive, follows: -

|                      |    |        |
|----------------------|----|--------|
| Labour               | \$ | 6,733  |
| Purchases            |    | 2,382  |
| Services             |    | 19,695 |
| Miscellaneous        |    | 687    |
| Sundry Costs         |    | 427    |
| Alice Springs Office |    |        |
| Costs                |    | 1,659  |
|                      |    | -----  |
|                      | \$ | 31,583 |
|                      |    | -----  |

7. REFERENCES

Agip Australia Pty. Ltd., 1979: Annual Report for E.L. 1310  
- Siddeley Range. Rpt. Agip Australia  
Pty. Ltd. (unpubl.)

Agip Australia Pty. Ltd., 1979: Annual Report for E.L. 1199  
- Yungarra and E.L. 1302 - Cassidy  
Bore. Rpt. Agip Australia Pty. Ltd.  
(unpub.)

Wells, et al., 1968; Mt. Doreen NT, 1:250,000  
Geological Series SF 52-12  
ND NOTES. Bur. Min. Resour.  
Geol. Geoph. Aust.

Bureau of Mineral Resources, 1972: Mt. Doreen, N.T.  
1:250,000 Geological Series SF  
52 - 12. Bur. Min. Resour. Geol.  
Geoph. Aust.

APPENDIX I  
DRILL HOLE SUMMARIES

Rotary Drill Hole Summaries

Hole No. SR1R

Co-ordinates 4100N 68100E

Commenced 27.8.79

Completed 27.8.79

Drilled Depth 4m

Probed Depth Not probed.

Summary Log

0-2 Soil Qr.

2-4 Tertiary (Hole not scheduled for completion  
in this year's drilling programme).

Mineralization

None detected.

Hole No. SR2R

Co-ordinates 13600N 90900E

Commenced 1.9.79

Completed 3.9.79

Drilled Depth 173m

Probed Depth 170m

Summary Log

0-6 Soil Qr.

6-159 Tertiary

159-173 Mt. Doreen Formation; mudstone - siltstone,  
dolomitic/calcareous.

Mineralization

None detected.

Hole No. SR3R

Co-ordinates 17600N 90300E

Commenced 3.9.79

Completed 4.9.79

Drilled Depth 173m

Probed Depth 173.6m

Summary Log

|         |                                                                 |
|---------|-----------------------------------------------------------------|
| 0-2     | Soil Qr.                                                        |
| 2-104   | Tertiary                                                        |
| 104-109 | Silcrete - ferricrete                                           |
| 109-113 | Pallid zone                                                     |
| 113-119 | Mt. Eclipse Sandstone, weathered, mottled,<br>Pmo.              |
| 119-173 | Mt. Eclipse Sandstone, weathered to fresh,<br>mottled, Pmo-Pmf. |

Mineralization

None detected.

Hole No. SR4R

Co-ordinates 18800N 84900E

Commenced 9.9.79

Completed 10.9.79

Drilled Depth 137m

Probed Depth 136.7m

Summary Log

|         |                   |
|---------|-------------------|
| 0-3     | Soil Qr.          |
| 3-106   | Tertiary          |
| 106-137 | Kerridy Sandstone |

Mineralization

None detected.

Hole No. SR5R

Co-ordinates 16000N 84000E

Commenced 10.9.79

Completed 11.9.79

Drilled Depth 149m

Probed Depth 117.2m

Summary Log

0-3 Soil Qr.

3-137 Tertiary

137-149 Mt. Doreen Formation

Mineralization

None detected.

Hole No. SR6RD

Co-ordinates 18300N 93800E

Rotary

Commenced 11.9.79

Completed 12.9.79

Drilled Depth 141m

Probed Depth 141.3m

Diamond

Commenced 12.9.80

Completed 14.9.80

Drilled Depth 218.5m

Probed Depth 216.9m

Summary Log

0-3 Soil, Qr.

|          |                                 |
|----------|---------------------------------|
| 3-64     | Tertiary                        |
| 64-75    | Silcrete                        |
| 75-87    | Mt. Eclipse Sandstone, Pwo-Pzp  |
| 87-218.5 | Mt. Eclipse Sandstone, Pmo-Pmf. |

Mineralization

None detected.

Hole No. SR7RD

Co-ordinates 17900N 97800E

Rotary

|                    |                    |
|--------------------|--------------------|
| Commenced 12.9.79  | Completed 13.9.79  |
| Drilled Depth 144m | Probed Depth 70.7m |

Diamond

|                      |                   |
|----------------------|-------------------|
| Commenced 15.9.80    | Completed 16.9.80 |
| Drilled Depth 210.5m | Probed Depth 204m |

Summary Log

|          |                                |
|----------|--------------------------------|
| 0-3      | Soil, Qr.                      |
| 3-44     | Tertiary                       |
| 44-47    | Silcrete                       |
| 47-61    | Pallid zone, Pzp.              |
| 61-82    | Mt. Eclipse Sandstone, Pwo-Pzp |
| 82-210.5 | Mt. Eclipse Sandstone, Pmf.    |

Mineralization

None detected.

Hole No. SR8R

Co-ordinates 22500N 10110E

Commenced 13.9.79

Completed 14.9.79

Drilled Depth 137m

Probed Depth 134.5m

Summary Log

|        |                                   |
|--------|-----------------------------------|
| 0-2    | Soil Qr.                          |
| 2-69   | Tertiary                          |
| 69-98  | Silcrete - pallid zone, Cs - Pzp. |
| 98-137 | Mt. Eclipse Sandstone, Pro-Prf.   |

Mineralization

None detected.

Hole No. SR9R ✓

Co-ordinates 2000N 65200E

Commenced 31.7.80

Completed 1.9.80

Drilled Depth 246m

Probed Depth 246m

Summary Log

|         |                                                |
|---------|------------------------------------------------|
| 0-8     | Calcrete and calcareous sand                   |
| 8-88    | Tertiary sand and clay                         |
| 88-94   | Silcrete                                       |
| 94-114  | Carbonaceous shale and coal, probably Tertiary |
| 114-222 | Quartz sandstone and coal, probably Tertiary   |
| 222-246 | Vaughan Springs Quartzite                      |

Mineralization

None detected.

Hole No. SR10R J

Co-ordinates 12300N 94900E

Commenced 4.8.80

Completed 5.8.80

Drilled Depth 134m

Probed Depth 132m

Summary Log

|         |                                 |
|---------|---------------------------------|
| 0-4     | Soil Qr.                        |
| 4-28    | Calcrete and calcareous sand    |
| 28-112  | Tertiary                        |
| 112-114 | Silcrete                        |
| 114-120 | Pallid Zone                     |
| 120-126 | Massive gypsum                  |
| 126-128 | Mt. Eclipse Sandstone, Pmf-Prf. |

Mineralization

None detected

APPENDIX II  
LITHOLOGICAL LOGS

GEOEX

PTY. LTD.

SR6RD

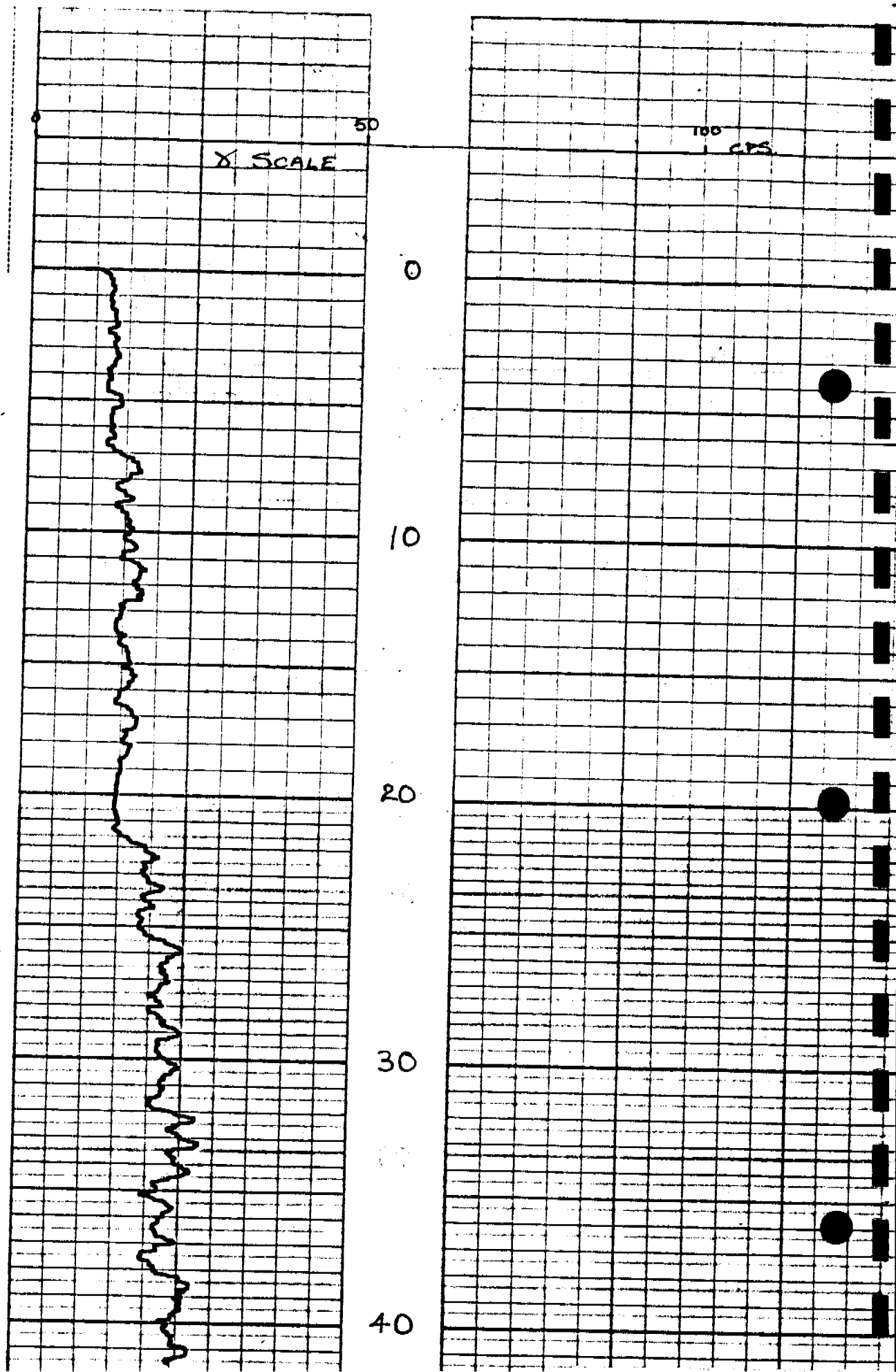
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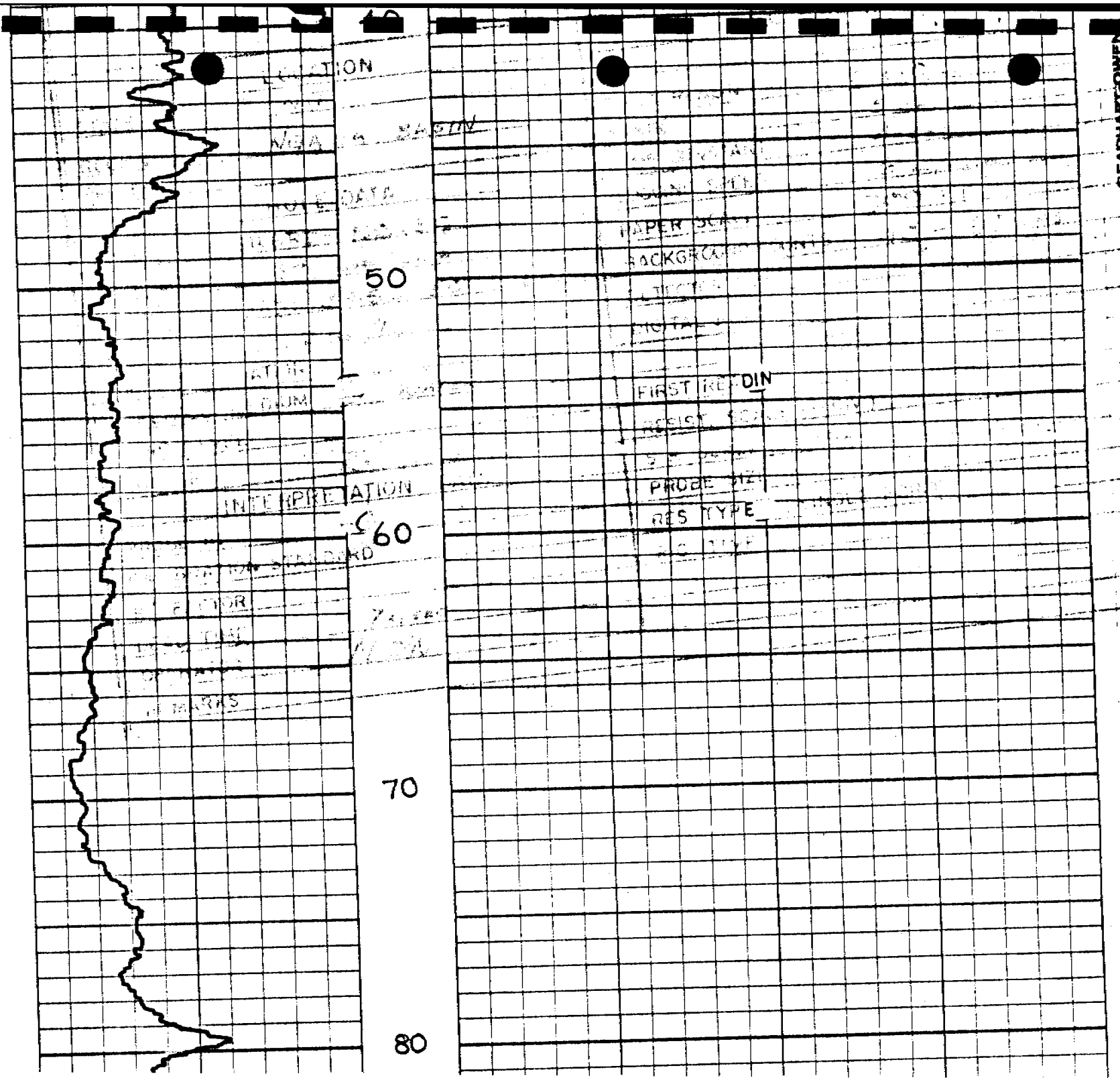
DATE 14.9.80

|                      |                       |                        |             |
|----------------------|-----------------------|------------------------|-------------|
| LOCATION             |                       | GAMMA RAY              |             |
| STATE                | N.T.                  |                        |             |
| REGION               | NGALIA BASIN          | FIRST-READING          | 216.0 m     |
| PROJECT              |                       | RANGE                  | 5 cpo       |
| HOLE DATA            |                       | TIME CONSTANT          | 4 sec       |
| HOLE N°              | SR6RD-NQ, BQ          | LOGGING SPEED          | 6 m/min     |
| HOLE SIZE            | BQ ROD SIZE           | PAPER-SCALE            | 200         |
| CASING               | NQ: 143.5m BQ: 216.9m | BACKGROUND COUNTS      | 40 - 60 cps |
| T.D.                 | 216.9m                | DETECTOR SIZE          | 1" x 5/4"   |
| SURFACE ELEVATION    |                       | DIGITAL READ OUT       |             |
| BOREHOLE MEDIUM      | WATER                 | ELECTRIC               |             |
| FLUID LEVEL          |                       | FIRST READING          |             |
| DRILLER              | ROCKDRILL             | RESIST. SCALE (Ω/DIV.) |             |
| INTERPRETATION DATA  |                       | S.P. SCALE (MV/DIV.)   |             |
| PROBE N°             | 0                     | PROBE SIZE             |             |
| CALIBRATION STANDARD |                       | RES. TYPE SINGLE POINT |             |
| 'K' FACTOR           |                       | RIG TIME               |             |
| DEAD TIME            | 74 sec                |                        |             |
| OPERATOR             | M. ON.                |                        |             |
| REMARKS              |                       |                        |             |

GAMMA RAY

S. P.





LOCATION

NEA 4 24510

DATA

50

INTERPRETATION

60

70

70

80

PAPER 30

BACKGROUND

FIRST READING

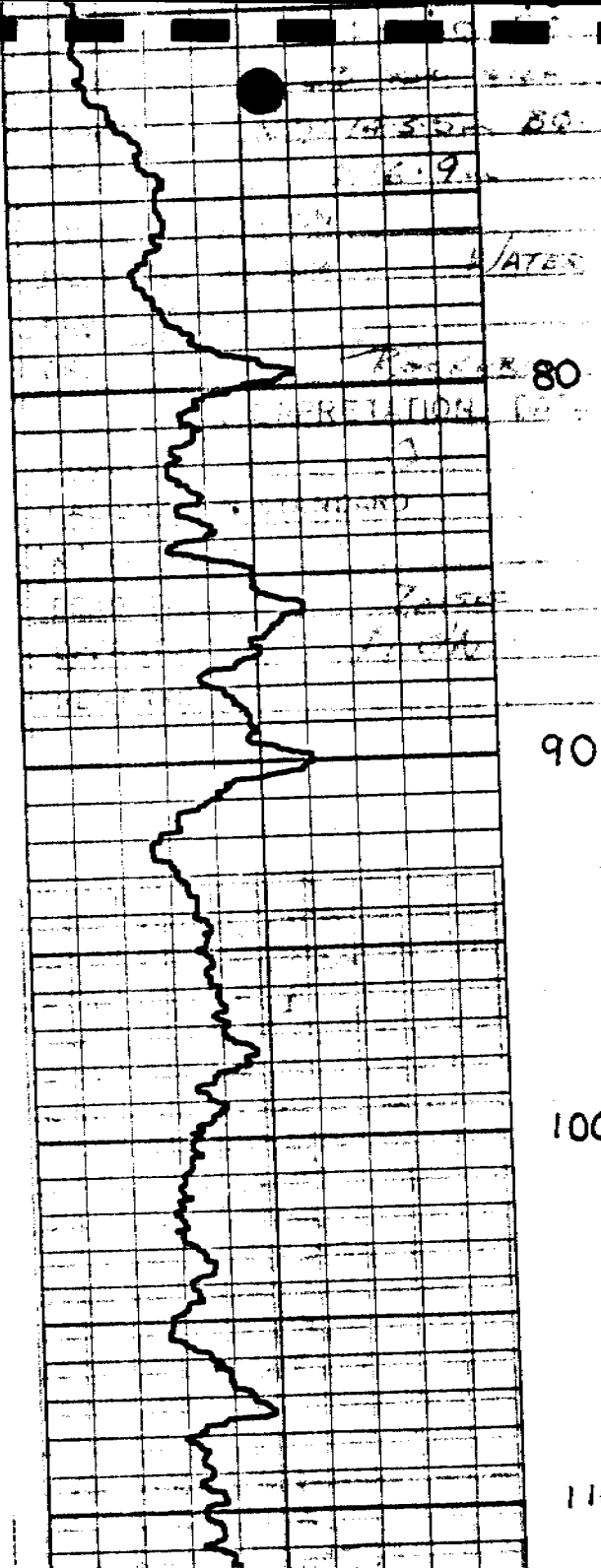
PROBE 12

RES TYPE

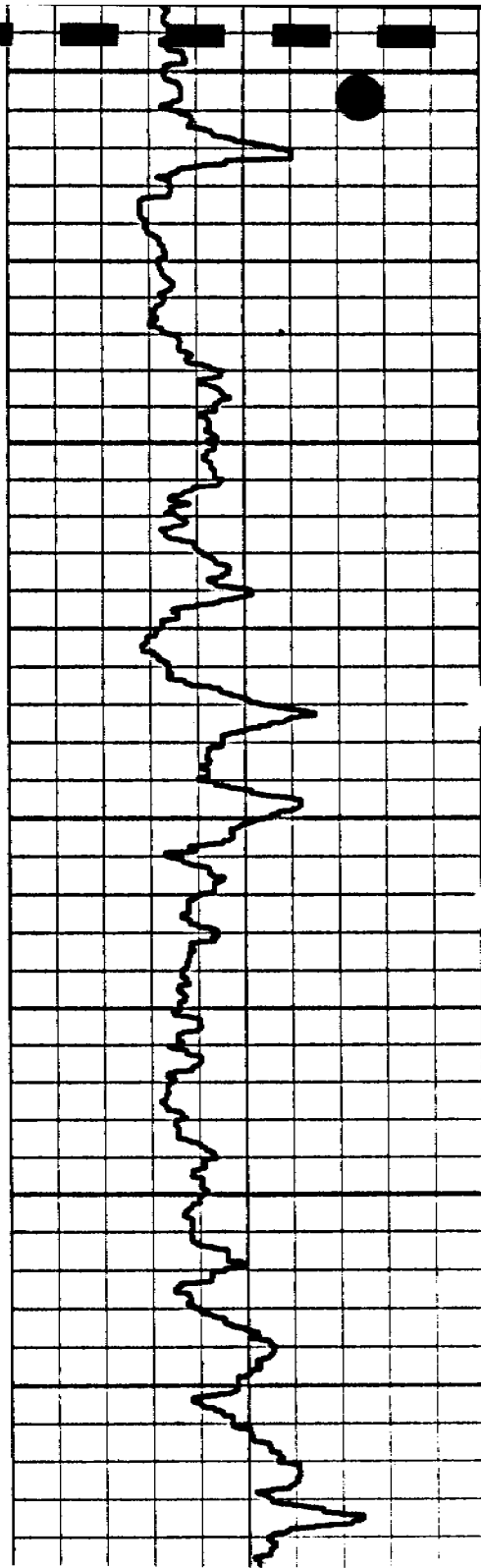
GEARHART-OWEN

API X METRIC

PART NO. 15-1652-11



|             |  |
|-------------|--|
| STAGE       |  |
| WATER COUNT |  |
| FOR SIZE    |  |
| READ OUT    |  |
| READING     |  |
| WET. SCALE  |  |
| SCALE       |  |
| WIDE SIDE   |  |
| TYPE        |  |
| TIME        |  |



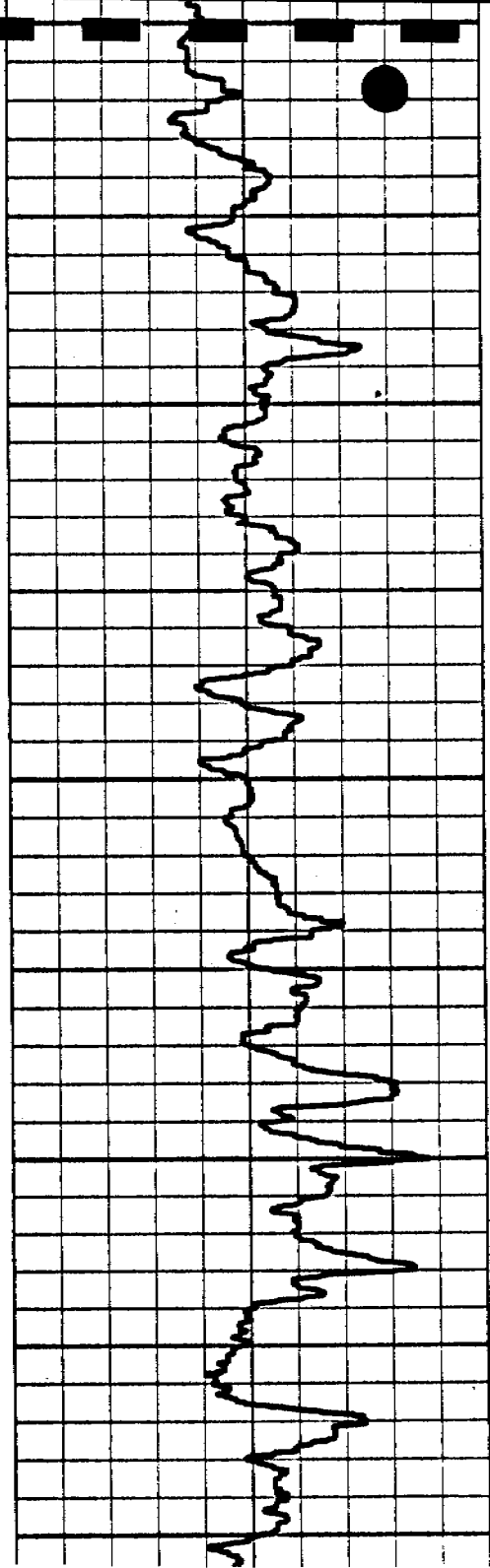
110

120

130

140

150



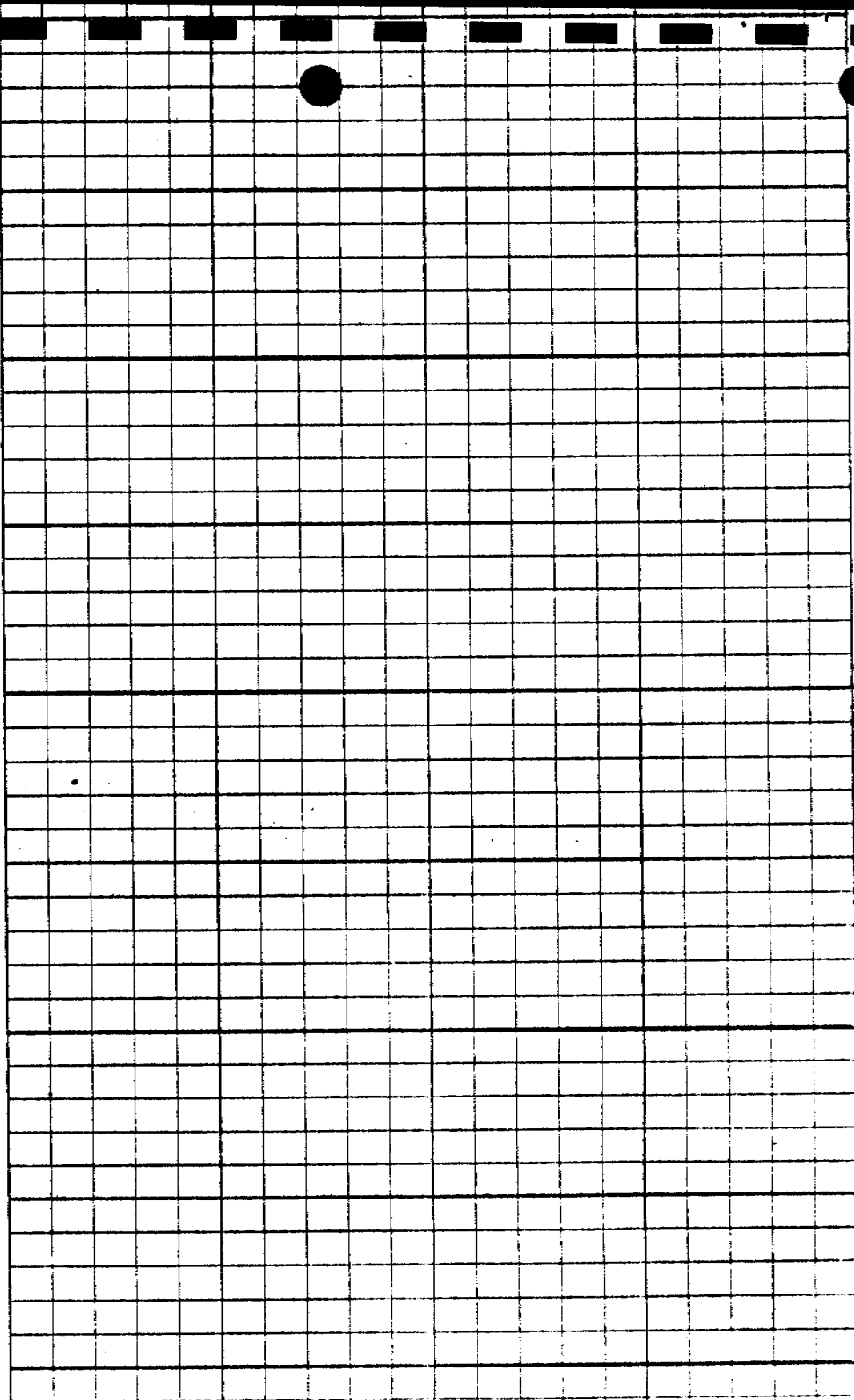
140

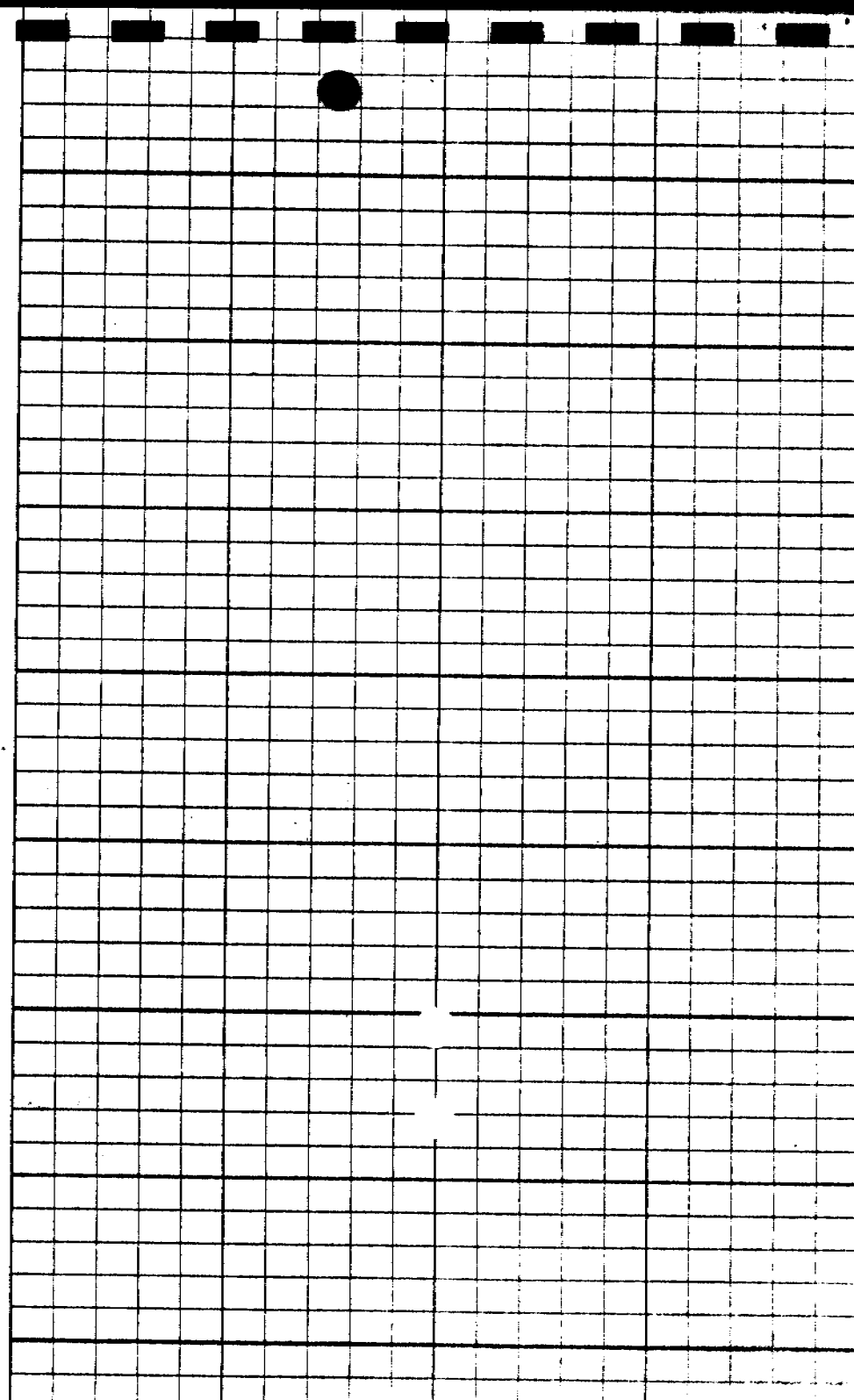
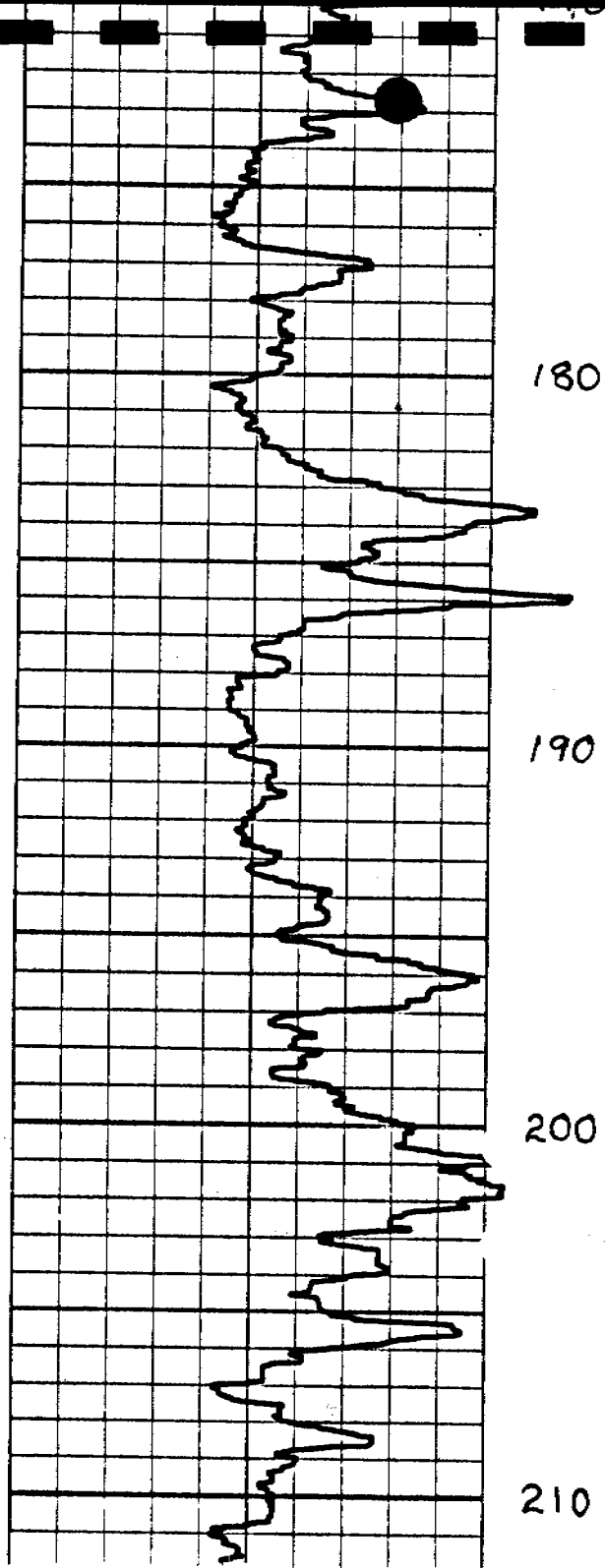
150

160

170

180





PART NO. 15-1652-11

API X METRIC

200

210

CALIBRATION:

100 CAL.

ZERO CPS

R6RD

GEOEX

PTY. LTD.

SR 7 RD

## LOGGING DATA

DATE 16.9.80

|                      |                       |                        |              |
|----------------------|-----------------------|------------------------|--------------|
| LOCATION             |                       | GAMMA RAY              |              |
| STATE                | N.T.                  |                        |              |
| REGION               | NGALIA BASIN          | FIRST READING          | 204.0 m      |
| PROJECT              | SIDDELEY RANGE        | RANGE                  | 5 cps        |
| HOLE DATA            |                       | TIME CONSTANT          | 4 sec        |
| HOLE NO.             | SR 7 RD               | LOGGING SPEED          | 6 m/min      |
| HOLE SIZE            | 80 ROD SIZE           | PAPER SCALE            | 200:1        |
| CASING               | NQ: 144.3m 80: 204.9m | BACKGROUND COUNTS      | 10-30 cps    |
| T.D.                 | 204.9 m               | DETECTOR SIZE          | 1" x 3/4"    |
| SURFACE ELEVATION    |                       | DIGITAL READ OUT       |              |
| BOREHOLE MEDIUM      | WATER                 | ELECTRIC               |              |
| FLUID LEVEL          |                       | FIRST READING          |              |
| DRILLER              | ROCKDRIL              | RESIST. SCALE (Ω/DIV.) |              |
| INTERPRETATION DATA  |                       | S.P. SCALE (MV/DIV.)   |              |
| PROBE NO.            | 0                     | PROBE SIZE             |              |
| CALIBRATION STANDARD |                       | RES. TYPE              | SINGLE POINT |
| 'K' FACTOR           |                       | RIG TIME               |              |
| DEAD TIME            | 7 msec                |                        |              |
| OPERATOR             | M.O'N.                |                        |              |
| REMARKS              |                       |                        |              |

GAMMA RAY

S. F.

RESISTIVITY

50  
0 SCALE

100  
CPS

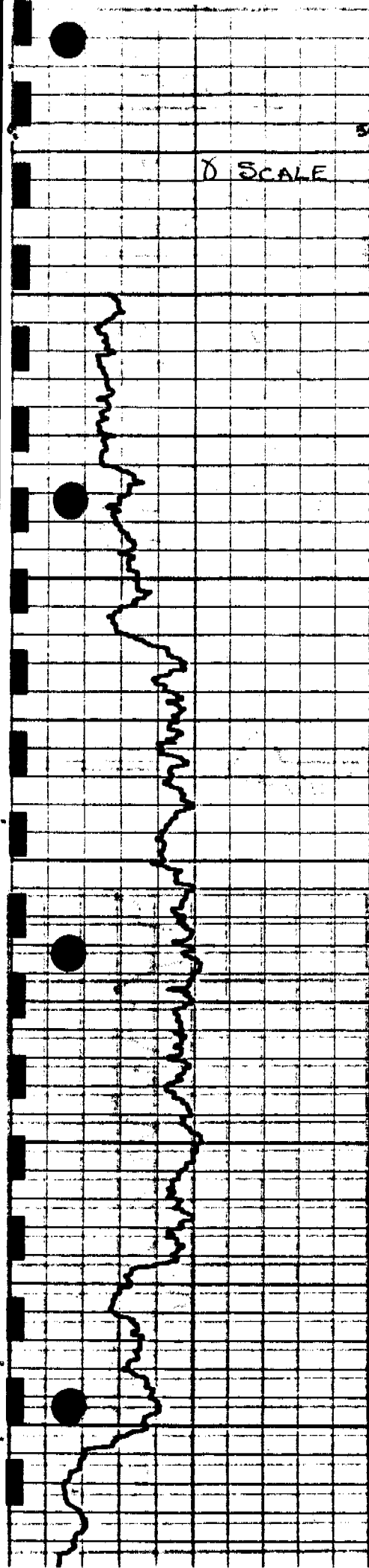
0

10

20

30

40



40

50

## 60 LOGGING DATA

STATE \_\_\_\_\_ LOCATION \_\_\_\_\_  
 REGION \_\_\_\_\_ BASIN \_\_\_\_\_  
 PROJECT \_\_\_\_\_ RANGE \_\_\_\_\_  
 HOLE DATA  
 HOLE NO. \_\_\_\_\_  
 HOLE TYPE \_\_\_\_\_  
 Casing \_\_\_\_\_  
 I.D. \_\_\_\_\_  
 SURFACE ELEVATION \_\_\_\_\_  
 BOREHOLE MEDIUM \_\_\_\_\_  
 Casing Level \_\_\_\_\_  
 DRILLER \_\_\_\_\_  
 INTERPRETATION \_\_\_\_\_  
 PROBE NO. \_\_\_\_\_  
 CALIBRATION STANDARD \_\_\_\_\_  
 K FACTOR \_\_\_\_\_  
 DEAD TIME \_\_\_\_\_  
 OPERATOR \_\_\_\_\_  
 COMMENTS \_\_\_\_\_

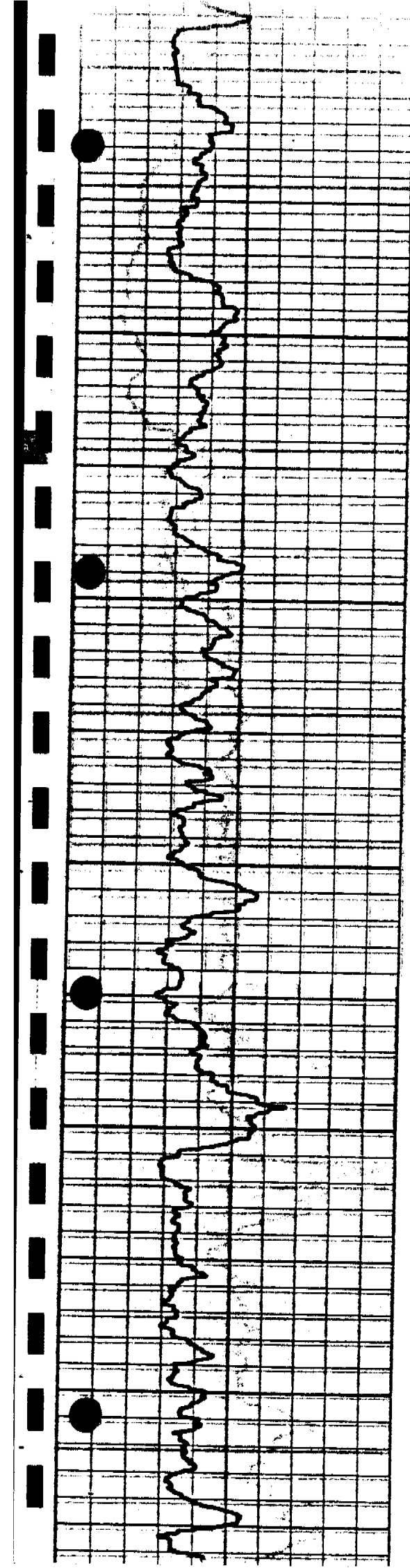
90

## GAMMA RAY

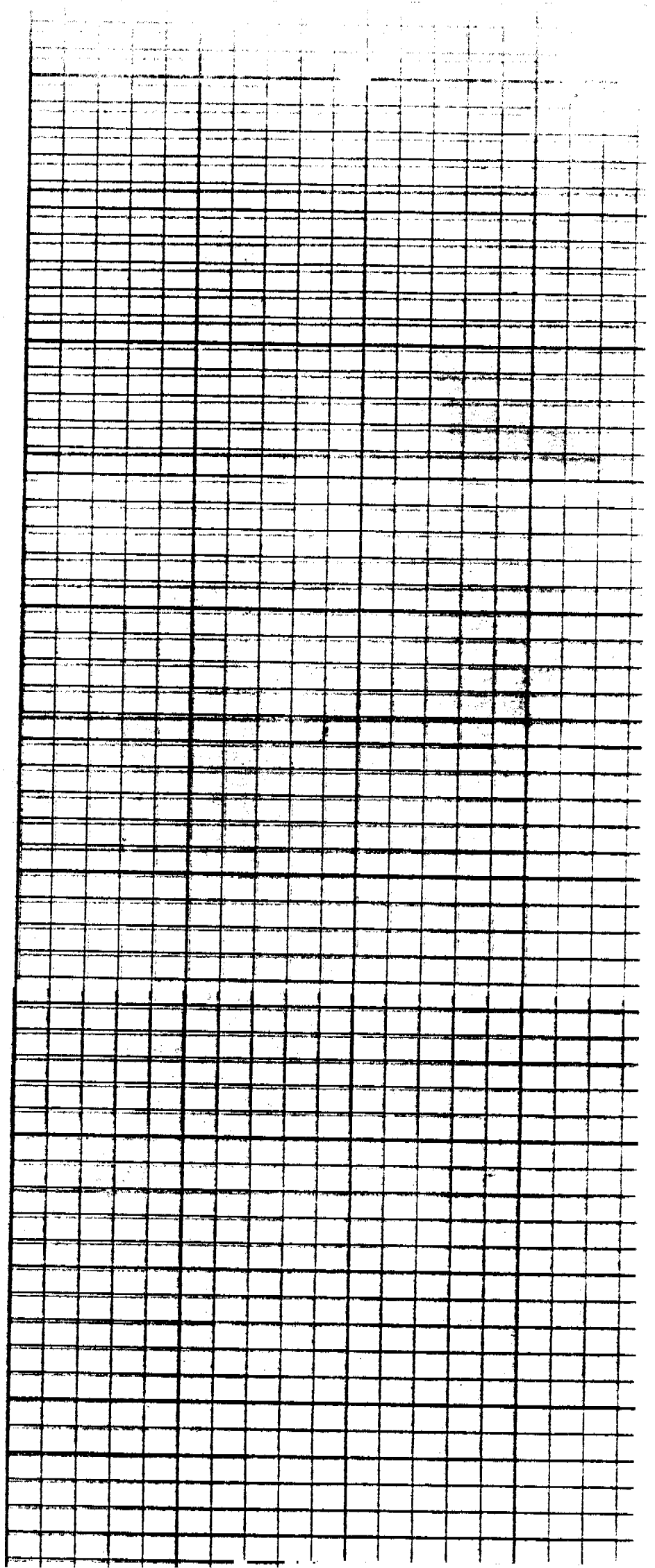
FIRST READING \_\_\_\_\_  
 RANGE \_\_\_\_\_  
 TIME CONSTANT \_\_\_\_\_  
 LOGGING SPEED \_\_\_\_\_  
 RANGE SCALE \_\_\_\_\_  
 DETECTOR SIZE \_\_\_\_\_  
 DETECTOR TYPE \_\_\_\_\_

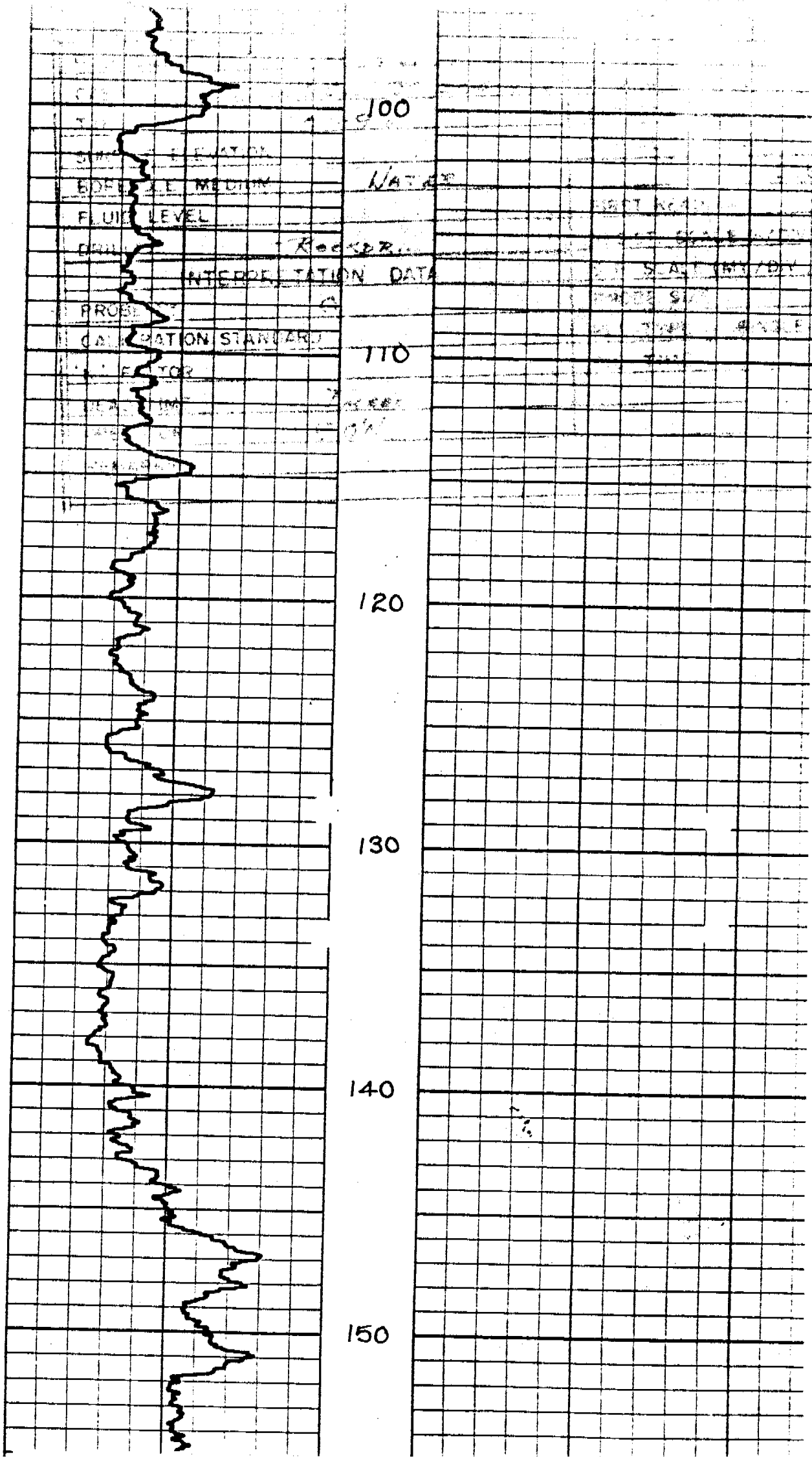
## ELECTRIC

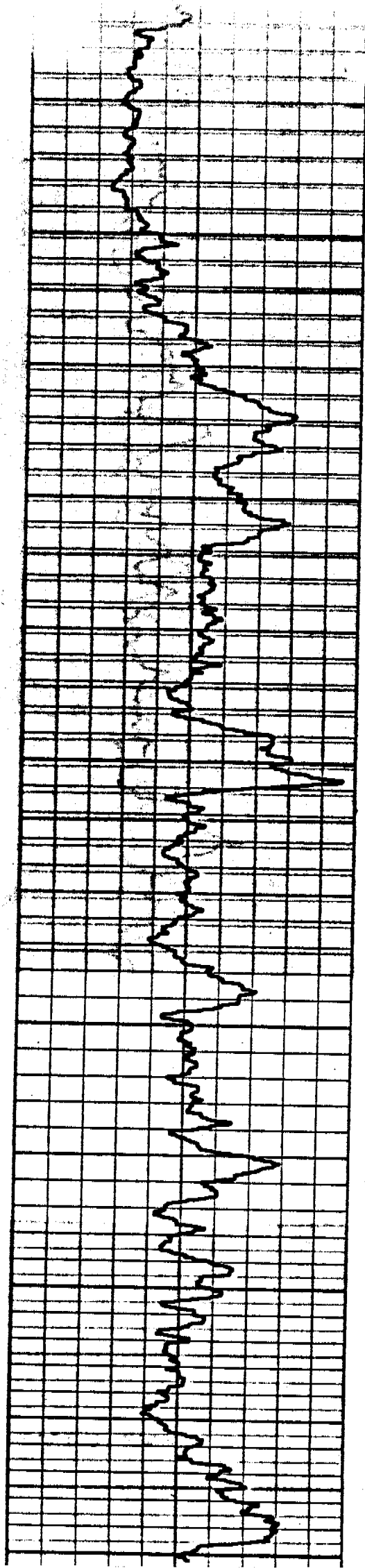
FIRST READING \_\_\_\_\_  
 RESIST SCALE (OHM) \_\_\_\_\_  
 S.P. RESISTANCE (OHM) \_\_\_\_\_  
 PROBE SIZE \_\_\_\_\_  
 RES. TYPE \_\_\_\_\_  
 RES. TIME \_\_\_\_\_



60  
70  
80  
90  
100  
110







140

150

150

160

170

160

150

140

170

180

190

# LOGGING DATA

180

|                      |                |
|----------------------|----------------|
| STATE                | LOCATION       |
| REGION               | NEALIA BASIN   |
| PROJECT              | SIDSELEY RANGE |
| HOLE DATA            |                |
| HOLE NO.             | 190            |
| HOLE SIZE            | 2 1/4 IN       |
| CASING               | 2 1/4 IN       |
| T.D.                 | 204.9          |
| SURFACE ELEVATION    |                |
| BOREHOLE BOTTOM      | WATER          |
| FLUID LEVEL          |                |
| DRILLER              | ROCKWELL       |
| INTERPRETATION DATA  |                |
| PROBE NO.            | 200            |
| CALIBRATION STANDARD |                |
| K FACTOR             |                |
| DEAD TIME            |                |
| OPERATOR             | D. J. A.       |
| REMARKS              |                |

|                       |              |
|-----------------------|--------------|
| TIME READING          |              |
| TIME CONSTANT         |              |
| LOGGING SPEED         |              |
| LOG SCALE             |              |
| BATTERY VOLTS         |              |
| DETECTOR SIZE         |              |
| DIGITAL READ OUT      |              |
| ELECTRIC              |              |
| FIRST READING         |              |
| RESIST. SCALE (K/DIV) |              |
| S.P. SCALE (MV/DIV)   |              |
| PROBE SIZE            |              |
| RES. TYPE             | SINGLE POINT |
| RIG TIME              |              |

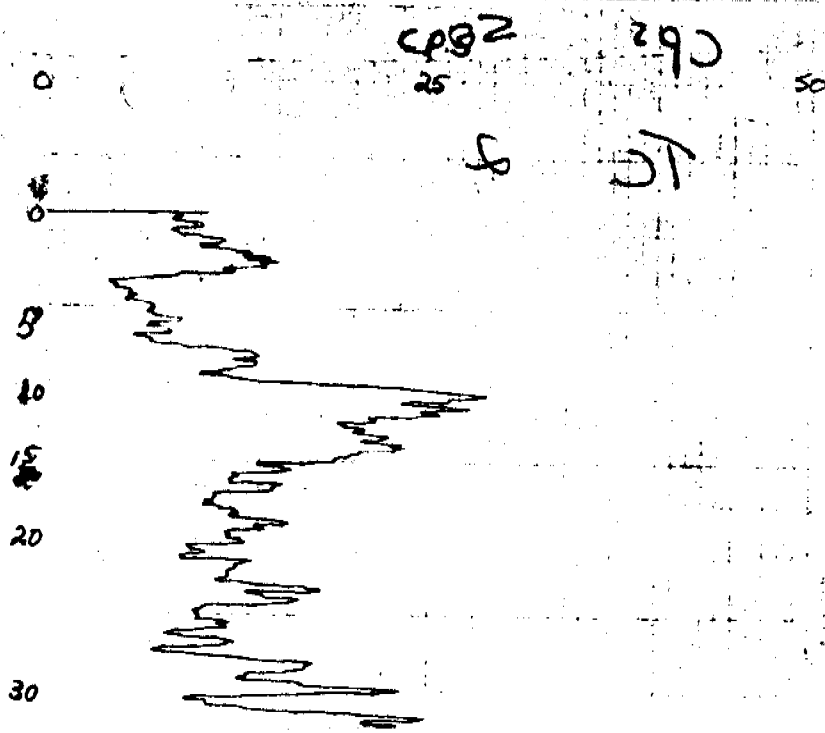
8 CALIBRATION:

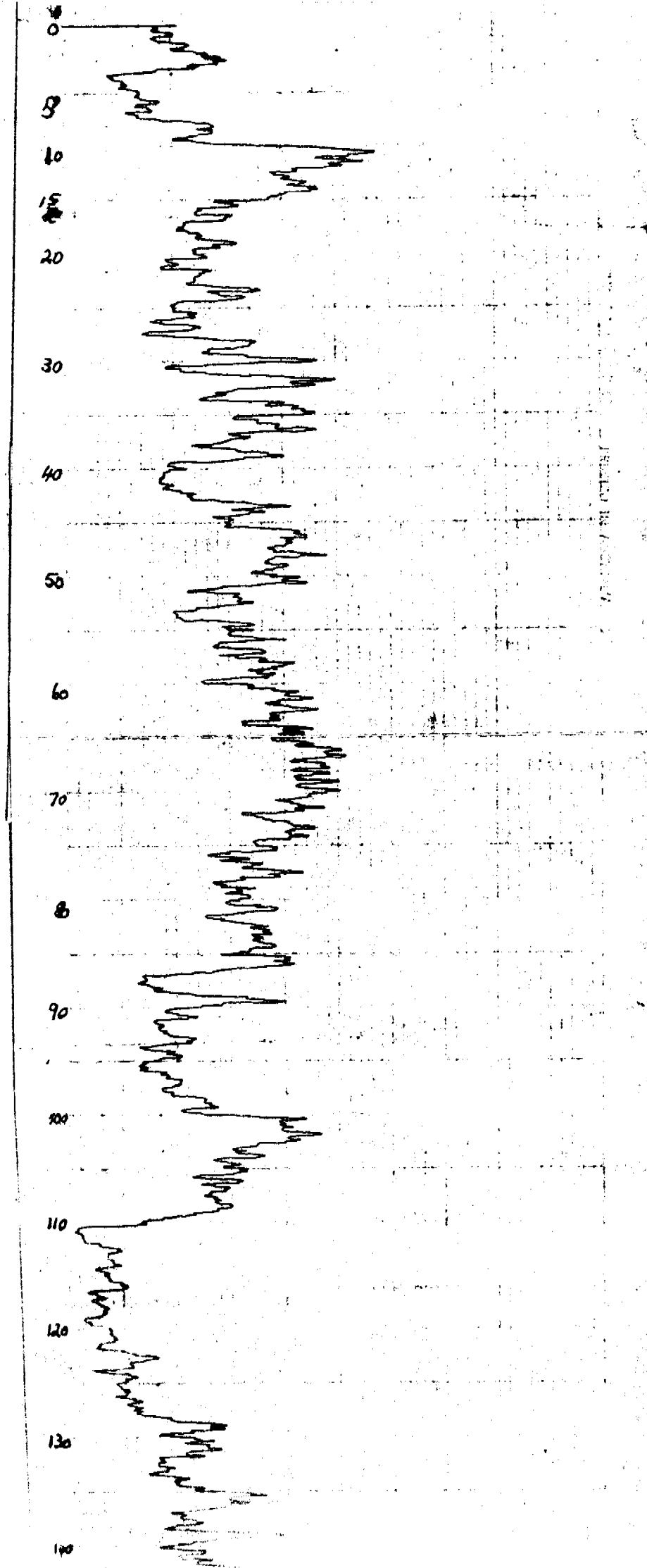
100 CAL

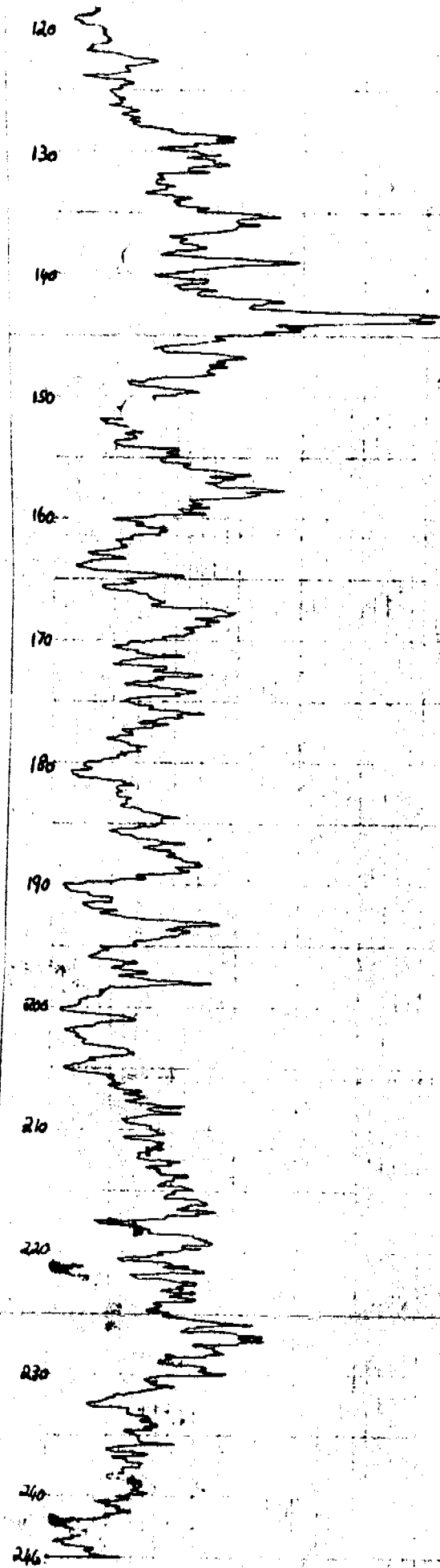
ZERO CURS

TRD

|                                    |                       |                 |            |           |
|------------------------------------|-----------------------|-----------------|------------|-----------|
| AGIP NUCLEARE<br>AUSTRALIA PTY LTD |                       | HOLE SR9R       |            |           |
| GAMMA LOGGING                      |                       |                 |            |           |
| PROJECT                            | Siddeley Range        | HOLE TYPE       | ROTARY     |           |
| HOLE NO.                           | SR9R                  | CONTRACTOR      | Rock DRILL |           |
| LOCATION                           |                       | DRILLED DEPTH   | 246m       |           |
| ELEVATION                          |                       | DATE COMPLETED  | 1/8/80     |           |
| DATE                               | 1/8/80                | CASING          | P.V.C NONE |           |
| LOGGED DEPTH                       | 246m                  | BOREHOLE MEDIUM | WATER      |           |
| OPERATOR                           | SHANNON + SENI        | FLUID LEVEL     | 4.7        |           |
| UNIT                               | SIE T450              | VERTICAL SCALE  | 1:500      |           |
| REMARKS                            | Logged through Rod's. |                 |            |           |
| EQUIPMENT DATA                     |                       |                 |            |           |
| PROBE NO.                          | TYPE                  |                 |            |           |
| STANDARD CPS.                      | CALIBRATION CPS.      |                 |            |           |
| "K" FACTOR                         | DEAD TIME             |                 |            |           |
| LOGGING DATA                       |                       |                 |            |           |
| DEPTH                              |                       | SPEED M./MIN.   | T.C. SECS. | RANGE FSD |
| FROM                               | TO                    |                 |            |           |
| 0                                  | 246m                  | 10m PER MIN     | 2          | 50        |
|                                    |                       |                 |            |           |
|                                    |                       |                 |            |           |
|                                    |                       |                 |            |           |
|                                    |                       |                 |            |           |
|                                    |                       |                 |            |           |







SR9R

APPENDIX III  
DOWNHOLE GEOPHYSICAL LOGS

APPENDIX IV  
CORRECTED GRAVITY PROFILES



LEGEND

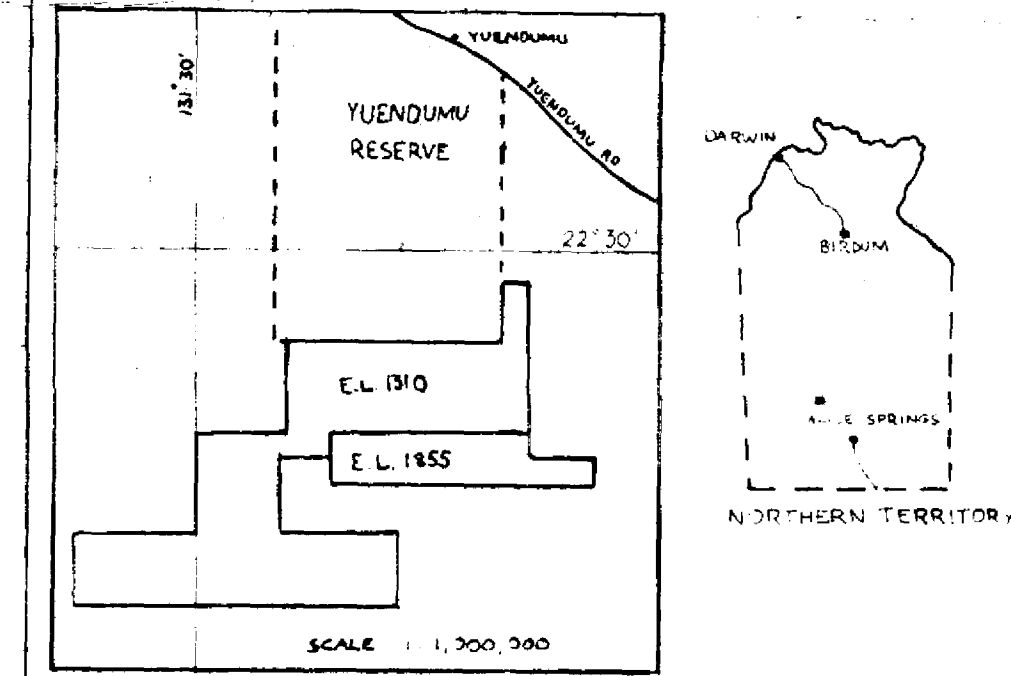
- DRILL HOLE
- + GRAVITY STATION - 1980 SURVEY

- TRACK
- × BORE LOCATION
- △ CAMP
- EXTENT OF OUTCROP
- DRILL ACCESS ROAD - FEB 1980

GEOLOGY

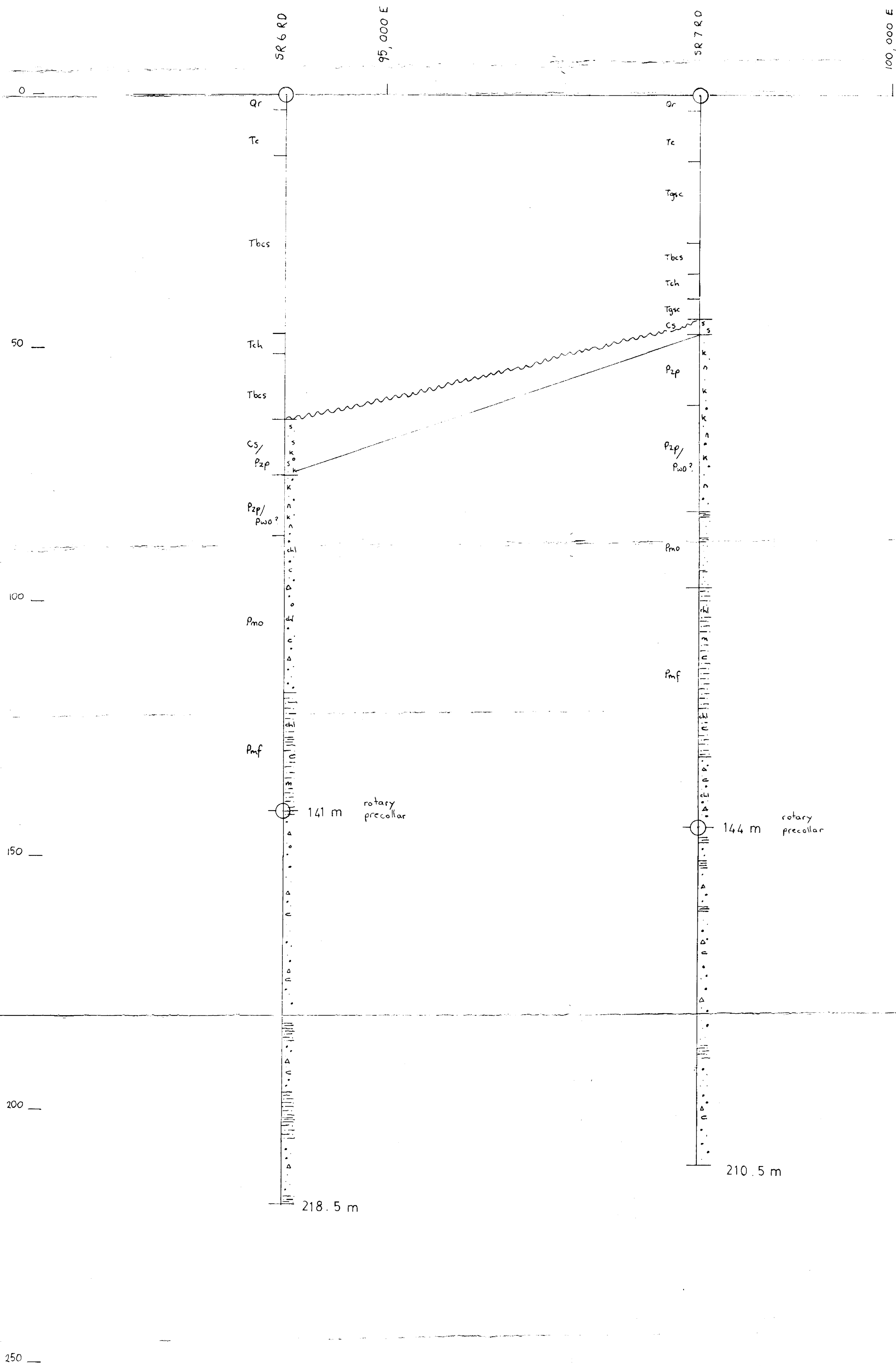
- 30° DIP SLOPE
- 30° STRIKE AND DIP
- [Pav] KERRIDY SANDSTONE
- [Pg] VAUGHAN SPRINGS QUARTZITE
- [Opg] GRANITE

LOCATION DIAGRAM



|                                                   |           |                   |
|---------------------------------------------------|-----------|-------------------|
| AgipNuclear Australia Pty Ltd                     |           | Sydney - N.S.W.   |
| PROJECT SIDDELEY RANGE & YANDUCH BORE             |           |                   |
| TITLE DRILL HOLE LOCATION and 1980 GRAVITY SURVEY |           |                   |
| Geologist                                         | L. SPARKE |                   |
| Drawing No                                        | 1310 - 2  | Scale 1:100,000   |
| Date                                              | SEPT 1979 | Drawn By S. BRYAN |

0280/236

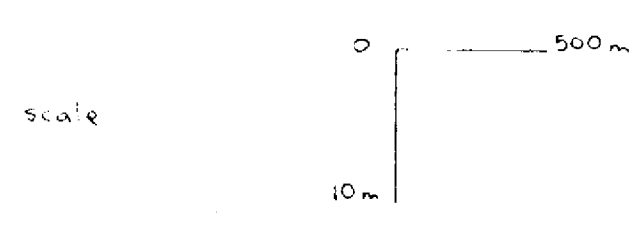


- S siltcrete
- k kaolin
- chl chlorite
- m mica
- n limonite
- c hematite
- Δ feldspar
- o pebbles
- . fine-medium sandstone
- coarse sandstone
- shale
- siltstone

- Qr Quaternary  
red brown sandy soil
- Tc Tertiary  
siltcrete
- Tbs grey, brown + red  
sandy clay
- Tgsc plastic greenish-grey  
sandy clay
- Tch yellow, grey + brown  
coarse feldspathic sand

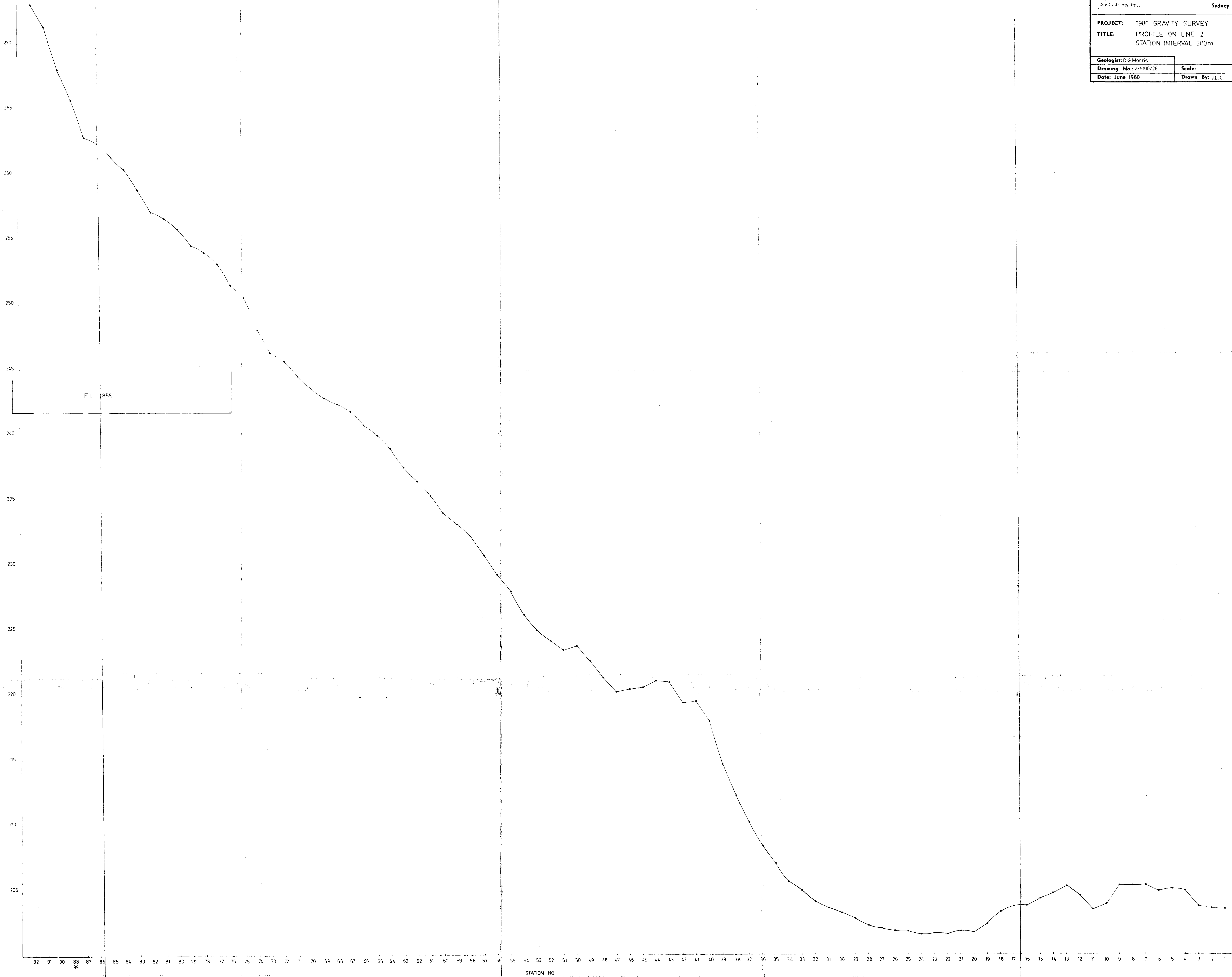
- Cs Mt Eclipse Sandstone  
siltcrete zone
- Psp pallid zone
- Pso weathered redoxite facies
- Pmo weathered mottled facies
- Pmf fresh mottled facies

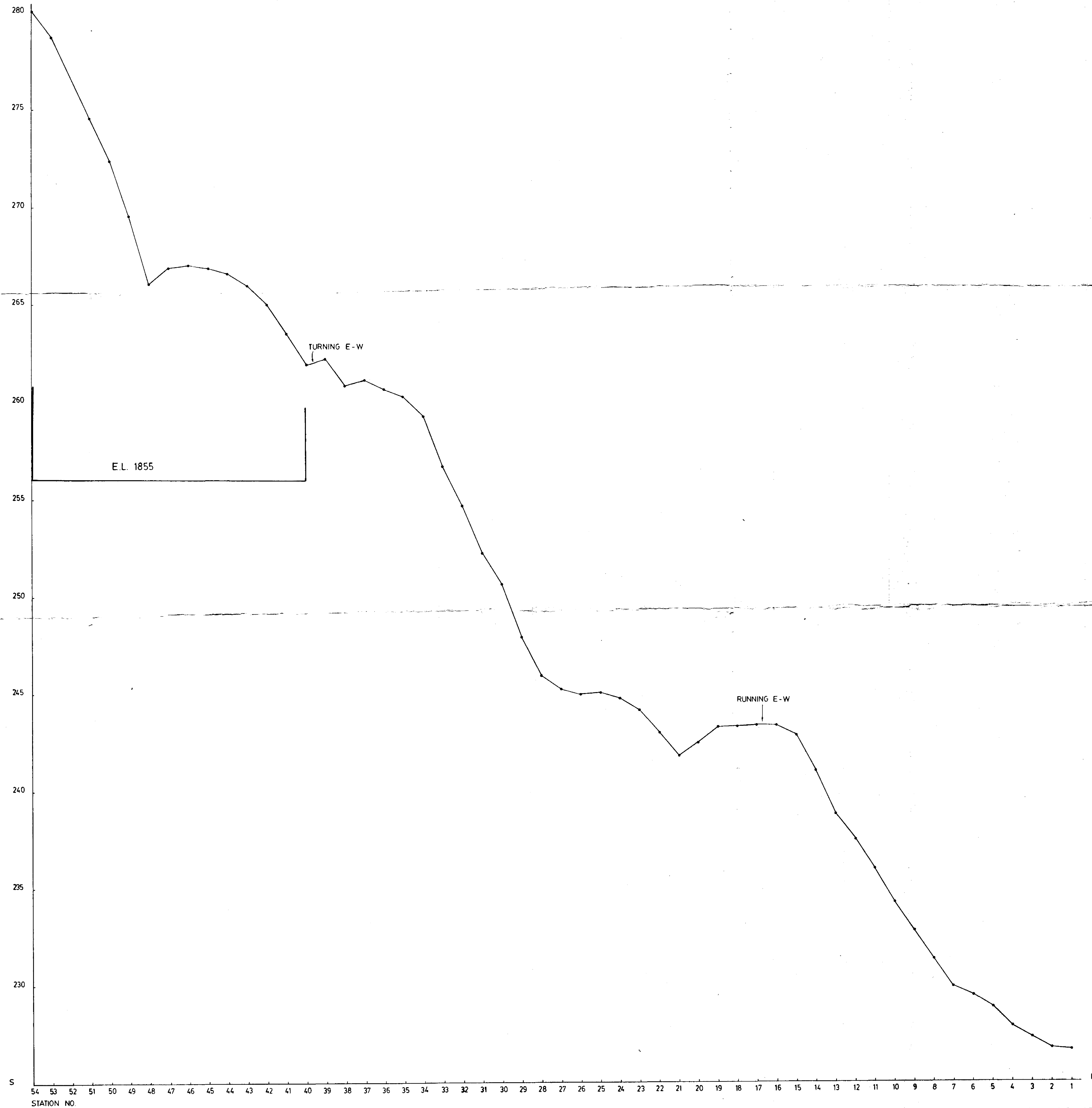
Agip Australia Pty Ltd  
E L 1310 Siddeley Range  
Section through holes SR 6 RD and SR 7 RD



088/276

|                                                    |                  |
|----------------------------------------------------|------------------|
| PROJECT: 1980 GRAVITY SURVEY                       |                  |
| TITLE: PROFILE ON LINE 2<br>STATION INTERVAL 500m. |                  |
| Geologist: D.G. Morris                             |                  |
| Drawing No.: 235/100/26                            | Scale:           |
| Date: June 1980                                    | Drawn By: J.L.C. |





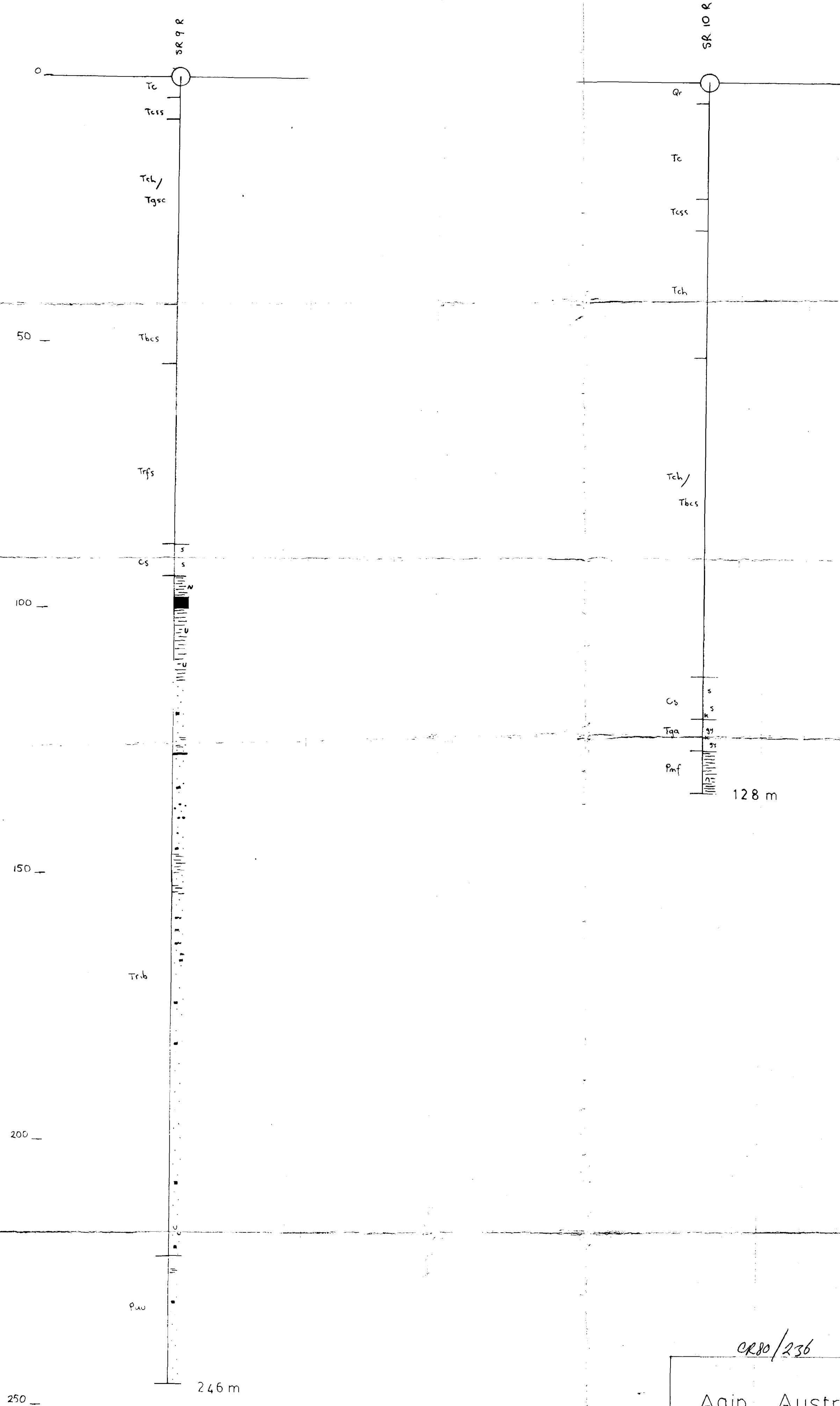
**Agip Australia Pty. Ltd.**

1980 GRAVITY SURVEY  
 PROFILE ON LINE 1  
 STATION INTERVAL 500m.

GEOLOGIST: D.G. Morris  
 DRAWN BY: J.L.C.  
 DATE: June 1980

SCALE:  
 DRAWING NO: 235100/25

0280/236



CR80/236

Agip Australia Pty Ltd

EL 1310 Siddeley Range

Sections for holes SR 9 R and SR 10 R

scale 0 10m 1:500

- S S
- K K
- gy gy
- U U
- py
- N N
- m m
- cl
- li
- cs
- fs
- sh

silcrete

kaolin

gypsum

limonite

pyrite

carbon

mica

clay pellets

lignite

coarse sandstone

fine-medium sandstone

shale

- Ar
- Tc
- Tcss
- Tch
- Tgsc
- Tbs
- Trfs
- Tga
- Trlb

Quaternary

red-brown sandy soil

Tertiary

calcrete

calcareous sand

yellow, grey + brown coarse feldspathic sand

plastic greenish-grey sandy clay

grey, red + brown sandy clay

red-brown sand

massive crystalline gypsum

pyritic lignitic brown, black + grey sand, clay + lignite

- Cs
- Pmf
- Puo

Mt Eclipse Sandstone

silcrete zone

mottled facies

Adelaidean?

Vaughan Springs Quartzite