DEPARTMENT OF MINES
SOUTH AUSTRALIA

REPORT ON KUMKAR DEPOSIT

Section 25, Hd. Moule

- S.A. Railways -

by

P.J. RUSS
GEOLOGIST
NON METALLIC MINERALS SECTION

CONTENTS

	PAGE
ABSTRACT	1
INTRODUCTION	1
PREVIOUS REPORT	2
TOPOGRAPHY, GEOLOGY	2
DIAMOND DRILLING	2
RESERVES	3
SUMMARY, CONCLUSIONS	3
APPENDIX	
Diamond drill hole logs, Hd. Moule, Section 25	

PLAN SECTIONS

Number	Title	Scale
66-1024	Kumkar Deposit, Section 25, Hd. Moule. Geological Plan.	1 inch = 100 feet.
66-1025	Geological Cross sections.	1 inch = 100 feet (horiz.) 1 inch = 12 feet (vert.)

Dept. Bk. No. 64/23
G.S. 3633
D.M. 375/64

9th February, 1967

DEPARTMENT OF MINES
SOUTH AUSTRALIA

Rept. Bk. No. 64/23
G.S. 3633
D.M. 375/64

REPORT ON KUNKAR DEPOSIT

Section 25, Hd. Moule

- S.A. Railways -

ABSTRACT

Diamond drilling has confirmed the presence of a further 110,000 cubic yds. of hard compact kunkar limestone suitable for rail ballast. Overburden amounts to 50,000 cubic yds.

INTRODUCTION

Kunkar suitable for rail ballast is being won from Section 25, Hd. Moule by Quarry Industries Ltd. To date 100,000 cubic yds. have been supplied for the Kevin-Ceduna railway.

The S.A. Railways Dept. require an additional 100,000 cubic yds. of ballast for Ceduna-Pt. Lincoln railway line reconstruction.

A geological investigation, including a plane table survey and diamond drilling conducted by Shackleton and Robinson (1964) indicated reserves of hard kunkar to be 300,000 cubic yds. over an area of 1200ft. x 1600ft.

During September, 1966, a stadia survey was made by surveyor S. Wills and the author to define the present working faces.

Diamond drilling took place from 27th October, 1966 to 1st November, 1966, to confirm the required 100,000 cubic yds. of rock. Drilling results are appended.

As the hard kunkar has already proved satisfactory as ballast, further laboratory testing was considered unwarranted.

PREVIOUS REPORT

SHACKLETON, W.G. and ROBINSON W.B. "Exploration for Kunkar Ballast." Dept. Mines, unpublished report No. 59/59. September, 1964.

TOPOGRAPHY, GEOLOGY

The site surveyed covers an area of approximately 40 acres; it is flat-lying and cleared of vegetation. Roughly one third of the area previously tested has been quarried.

A thin veneer of red sandy soil obscures much of the underlying kunkar, but there are small irregular rock outcrops

At the quarry faces three distinct kunkar layers may be observed as follows:-

... hard compact kunkar with numerous small black nodules.

... hard compact concretionary kunkar, but without the black nodules. Concretions pale red-brown and up to 1in. in diameter.

... soft porous sandy limestone.

Each layer is from 2 to 3 feet thick. The top two layers have proved suitable for rail ballast.

DIAMOND DRILLING

Six vertical diamond drill holes to test the thickness and quality of the limestone were drilled during the period

27th October, 1966, to 1st November, 1966. A total of 69ft.6ins. were drilled.

Overall core recovery was poor because of the unconsolidated or loosely consolidated nature of the sandy layers directly above and below the kunkar. Recovery within the limestone layer was reasonable.

The drill holes penetrated kunkar similar in nature and thickness to that observed in the quarry faces.

RESERVES

Within the larger shaded area shown on plan 66-1024 and extending easterly from the quarry, there are 110,000 cubic yds. of limestone suitable for ballast beneath 50,000 cubic yds. of sandy overburden. The average thickness of limestone suitable for ballast is 4 feet, while that of the overburden is 2 feet.

South of the present quarrying area there is an additional 27,000 cubic yds. of kunkar within the area bounded by drill holes 1, 2, 6, 7. Sandy overburden here amounts to 10,000 cubic yards.

SUMMARY, CONCLUSIONS

... Five diamond drill holes located to the east of the present quarry have confirmed the presence of 110,000 cubic yards of kunkar suitable for rail ballast.

... A sixth hole, located some 200 yards northerly from the quarry, penetrated only 1ft.11ins. of kunkar.

... In the southwest sector, withinthe area bound by holes 1, 2, 6 and 7, there are 27,000 cubic yds. of kunkar available for quarrying beneath an overburden of 10,000 cubic yds.

... Extension of the workings to the south and to the east of their present limits will permit recovery of rock of similar quality to that currently being won.

P.J. RUSS
GEOLOGIST
NON METALLIC MINERALS SECTION

PJR:SNA
9.2.1967

APPENDIX

Diamond Drill Hole Logs

Section 25, Md. Moule

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project: Kunkar Limestone, Moule **DM.** 375/64

Bore No.: 1A **Bore Serial No. DD.** 655/67

Hundred: Moule **Section:** 25 **Plan Reference:** 66-1024

Co-ordinates: **R.L. of Collar:**

Bearing: **Depressed:** Vertical **Driller:** K. Kay

Date Drilling commenced: 27.10.1966 **Date Drilling Completed:** 28.10.66

LOG

DEPTH From Ft. Ins.	DEPTH To Ft. Ins.	Core Recovered Ft. Ins.		
0 0	1 7	6	*	Kunkar, concretionary limestone nodules black, ¼" diameter; matrix, sandy, slightly leached.
1 7	2 4	8	*	Kunkar, concretionary limestone, nodules black and pale red-brown up to ¼" diameter, matrix hard compact but with occasional sandy patches.
2 4	3 4	9	*	"
3 4	4 1	9	*	"
4 1	5 4	1 2	*	"
5 4	6 4	11	*	Kunkar, hard compact limestone with pale red-brown concretions.
6 4	8 6	2 0	*	Kunkar 12" hard compact limestone with pale red-brown concretions. 12" sandy finely porous limestone.
8 6	12 6	10		Kunkar, sandy finely porous limestone.

* Suitable for rail ballast.

Core Recovery Overall 60%

Bore logged by: P.J. Russ

Date: December, 1966

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project: Kunkar Limestone, Houle DM. 375/64

Bore No.: 2A Bore Serial No. DD: 660/67

Hundred: Houle Section: 25 Plan Reference: 66-1024

Co-ordinates: R.L. of Collar:

Bearing: Depressed: Vertical Driller: N. Key

Date Drilling commenced: 30.10.1966 Date Drilling Completed: 30.10.66

LOG

DEPTH From Ft. Ins.	DEPTH To Ft. Ins.	Core Recovered Ft. Ins.	
0 0	1 9	4	* Kunkar, hard, compact concretionary limestone, nodules, black up to¾" diameter, numerous.
1 9	2 3	3	* Kunkar, as above.
2 3	3 3	11	* Kunkar 9" as above.
			* 2" hard compact concretionary limestone, but with fewer nodules, both black and pale red-brown.
3 3	5 6	1 10	* Kunkar 12" hard compact concretionary limestone with black and red-brown nodules.
			10" sandy porous limestone.
5 6	10 0	1 10	Kunkar Limestone, sandy porous limestone.

* Suitable as rail ballast.

Core Recovery Overall 52%

Bore logged by: F.J. Ruse

Date: December, 1966

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project: Kunkar Limestone, Moule — DM. 375/64

Bore No.: 3A — Bore Serial No. DD: 661/67

Hundred: Moule — Section: 25 — Plan Reference: 66-1024

Co-ordinates: — R.L. of Collar:

Bearing: — Depressed: vertical — Driller: N. Kay

Date Drilling commenced: 30.10.1966 — Date Drilling Completed: 30.10.1966

LOG

DEPTH From Ft. Ins.	DEPTH To Ft. Ins.	Core Recovered Ft. Ins.	
0 0	5 0	8	* Kunkar, massive compact concretionary pale brown limestone. Nodules black up to ½" diameter. Occasional solution cavities associated with nodules.
5 0	6 6	6	* Kunkar, as above.
6 6	7 0	6	Kunkar, loose limestone nodules.
7 0	12 0	8	Kunkar, sandy porous limestone.

* Suitable as rail ballast

Core Recovery Overall 19%

Bore logged by: P.J. Russ

Date: December, 1966

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project: Kunkar Limestone, Houle — DM.: 375/64

Bore No.: 4A — Bore Serial No. DD: 662/67

Hundred: Houle — Section: 25 — Plan Reference: 66-1024

Co-ordinates: — R.L. of Collar:

Bearing: — Depressed: Vertical — Driller: N. Kay

Date Drilling commenced: 31.10.1966 — Date Drilling Completed: 31.10.1966

LOG

DEPTH From Ft. Ins.	DEPTH To Ft. Ins.	Core Recovered Ft. Ins.	
0 0	2 8	9	* Kunkar, hard, compact concretionary limestone, concretions black, up to ¼" diameter; matrix, pale red-brown, occasional solution cavities.
2 8	3 8	10	* Kunkar, as above.
3 8	5 0	1 4	* Kunkar 10" as above 6" as above, but with fewer concretions.
5 0	6 2	1 2	* Kunkar, hard compact concretionary limestone, concretions few.
6 2	12 6	3 0	Kunkar 2'2" sandy, porous red-brown limestone. 10" soft, friable, sandy limestone.

* Suitable as rail ballast.

Core Recovery Overall 53%

Bore logged by: P.J. Russ

Date: December, 1966

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project: Kunkar Limestone, Moule — DM. 373/64

Bore No.: 5A — Bore Serial No. DD:636/67

Hundred: Moule — Section: 25 — Plan Reference: 66-1024

Co-ordinates: — R.L. of Collar:

Bearing: — Depressed: Vertical — Driller: N. Ray

Date Drilling commenced: 28.10.1966 — Date Drilling Completed: 28.10.1966

LOG

DEPTH From Ft. Ins.	DEPTH To Ft. Ins.	Core Recovered Ft. Ins.		
0 0	2 6	1 0	*	Kunkar, hard, compact concretionary limestone; nodules black up to ¼" diameter; occasional pale red-brown nodules.
2 6	3 8	1 0	*	Kunkar, as above.
3 8	4 6	4	*	Kunkar, as above, but matrix porous, sandy.
4 6	5 1	7	*	Kunkar 2" concretionary limestone, matrix sandy, porous. 5" compact concretionary limestone nodules black, and pale red-brown.
5 1	6 0	10	*	Kunkar, compact, concretionary limestone, nodules black, and pale red-brown.
6 0	12 6	5 6		Kunkar, sandy, finely porous limestone.

* Suitable as rail ballast.

Core Recovery Overall 58%

Bore logged by: P.J. Ruse — Date: December, 1966

DEPARTMENT OF MINES, ADELAIDE

DIAMOND DRILL LOG

Project: Kunkar Limestone — DM. 375/64

Bore No.: 6A — Bore Serial No. DD: 663/67

Hundred: Moule — Section: 25 — Plan Reference: 66-1024

Co-ordinates: — R.L. of Collar:

Bearing: — Depressed: Vertical — Driller: N. Kay

Date Drilling commenced 1.11.1966 — Date Drilling Completed: 1.11.1966

LOG

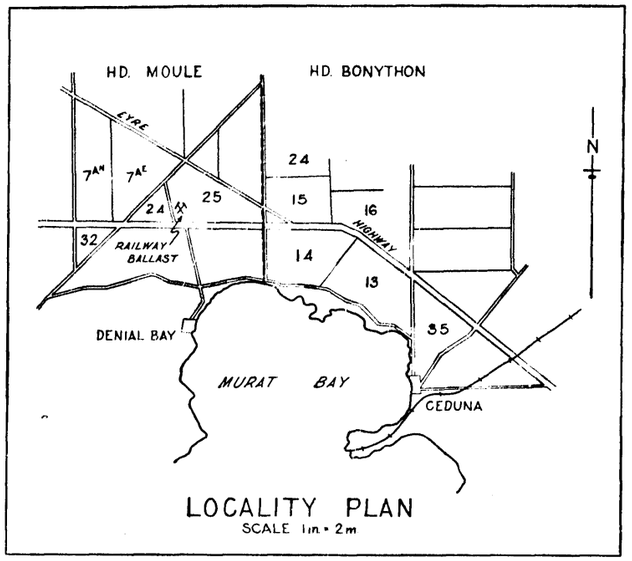
DEPTH From Ft. Ins.	DEPTH To Ft. Ins.	Core Recovered Ft. Ins.	
0 0	5 0	1 8	* Kunkar, hard, compact, concretionary; nodules black up to ½" thick with associated solution cavities. Matrix pale red-brown. 6" loose nodules at 4'6"-5'.
5 0	6 0	1 0	Kunkar * 3" as above. 9" sandy pale red-brown porous limestone.
6 0	10 0	2 2	Kunkar 1'3" sandy pale red-brown porous limestone. 11" soft friable sandy limestone.

* Suitable as rail ballast.

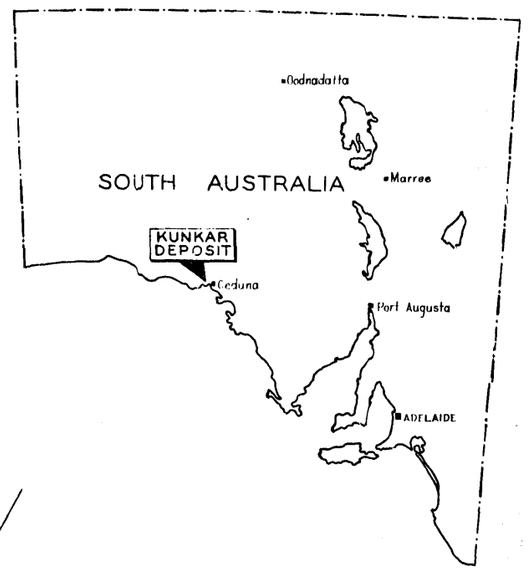
Core Recovery Overall 48%

Bore logged by: F.J. Tuss

Date: December, 1966



LOCALITY PLAN
SCALE 1in. = 2m



LEGEND

- Kunkar outcrop
- 14 Δ 5'1" — Survey Station (with thickness of kunkar suitable for railway ballast)
- Quarry faces as at 23/9/66
- 3A 1'2" — Additional Diamond Drill Holes (drilled Oct 1966)
- 1000 — Contours (5ft. intervals - arbitrary datum)
- Fence
- Track
- G — G' — Section
- Area over which volume calculated

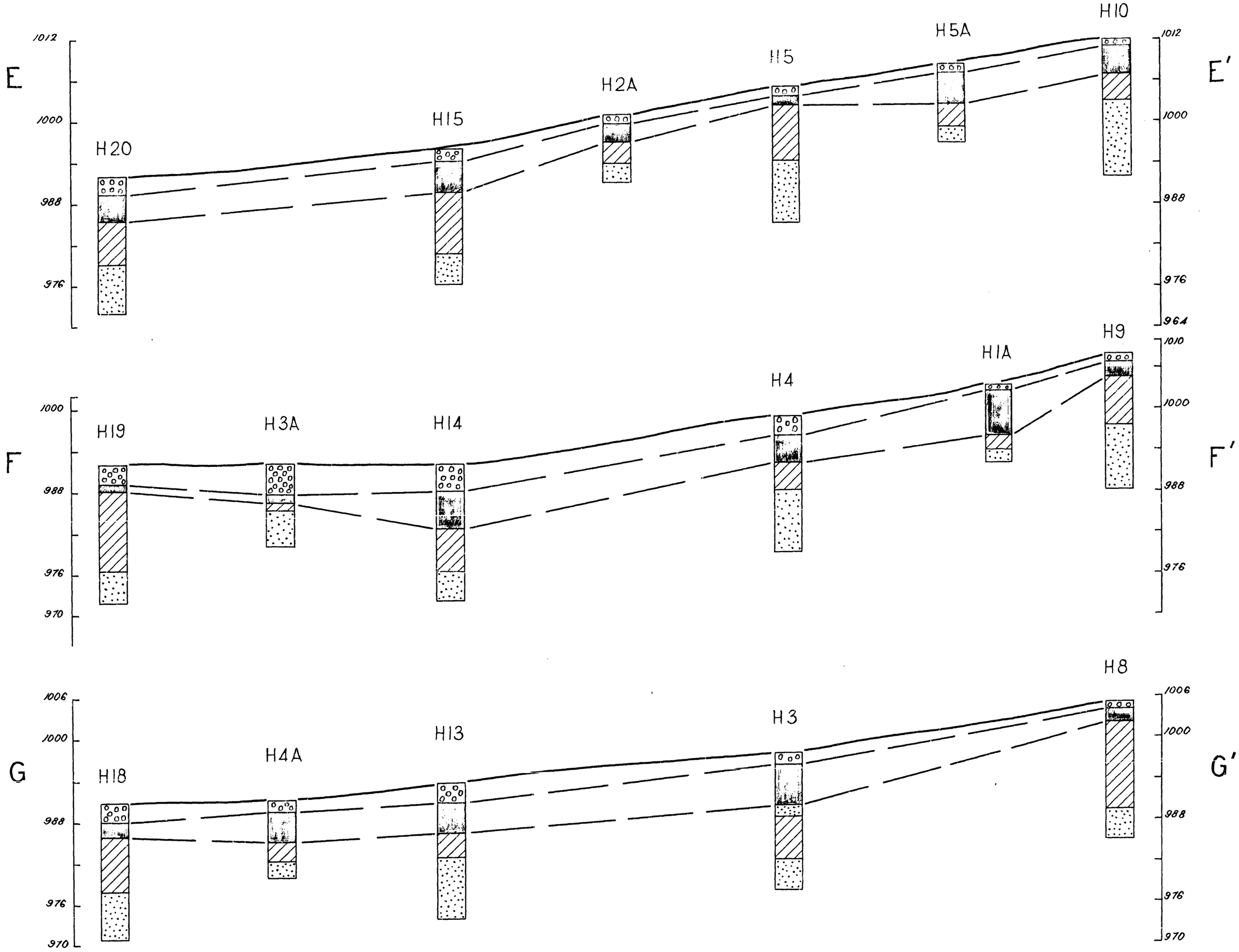
For geological sections refer to plan N° 66-1025

Plane table survey by B Frost
For previous survey see plans N° 64-432 and 64-726

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KUNKAR DEPOSIT
SEC. 25 HD. MOULE
GEOLOGICAL PLAN
S.A. RAILWAYS

		Drn. P.J.R	SCALE 1 inch = 100 feet
		Tcd. R.H.	66-1024
		Ckd.	Dc6
Director of Mines		Exd.	DATE 6-12-66



LEGEND

- Kunkar rubble
- Hard compact kunkar suitable for ballast
- Sandy friable kunkar
- Sand
- H4A Diamond Drill Hole

Scales:- Horizontal - 1 inch = 100 feet
Vertical - 1 inch = 12 feet
For geological plan refer to plan N° 66/1024

DEPARTMENT OF MINES — SOUTH AUSTRALIA

KUNKAR DEPOSIT
SECTION 25 HD. MOULE
GEOLOGICAL CROSS-SECTIONS
S.A. RAILWAYS

		Drn. P.J.R.	SCALE: As shown
		Tcd. R.H.	66-1025 Dc6
		Ckd.	
Director of Mines		Encl.	DATE. 2 12 66