DEPARTMENT OF MINES
SOUTH AUSTRALIA

GEOLOGICAL SURVEY
MINERAL RESOURCES DIVISION

TALC DEPOSIT

Section 6275, Hd. Talunga, Co. Adelaide
M.L.3483

A.J. Loechel

by

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MINERAL RESOURCES DIVISION

Rept.Bk.No. 72/228
G.S. No. 4992
D.M. No. 1318/69

27th November, 1972.

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PLAN ACCOMPANYING THE REPORT

No.	Title	Scale
S 10045	Talc deposit Section 6275 Hd. Talunga. Locality plan.	1" to 40 chain
S 10046	Talc deposit Section 6275 Hd. Talunga. Sketch plan of workings.	Not to scale.

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ABSTRACT

Feldspar grit in a parcel of talc has caused difficulty in grinding. Petrological examination of four preliminary samples showed the feldspar to vary both in abundance and grain size. Both of these parameters may affect the grinding behaviour.

Further systematic sampling is recommended.

INTRODUCTION

Talc workings on M.C. 3483 were inspected on 17/10/72 at the request of the leaseholder who had encountered problems with marketting of material because of the reported presence of grit which caused difficulty in grinding.

Several hundred tons of talc had previously been supplied to the same miller without complaint.

Four samples were taken from the deposit and one from adjacent abandoned workings at sites shown on the accompanying plans (S10045, 10046) and submitted to the Australian Mineral Development Laboratories (AMDEL) for examination. The AMDEL report is attached as Appendix 1.

GEOLOGICAL SETTING

The deposit is located in a belt of meta sediments of the Adelaide System in which numerous talc bodies have developed as a result of metasomatic action (Dickinson et al., 1951). Deposits near Gumeracha are the largest but smaller bodies occur intermittently for a distance of several miles to the north.

The talc is coarse grained and foliaceous and is characterised by the presence of feldspar which occurs as disseminated grains.

TALC DEPOSIT

The workings occupy sloping ground on the southern bank of a tributary of the River Torrens and comprise a shallow cutting which bifurcates at the southern end as shown on the accompanying sketch plan (S10046).

Talc was won from the western branch to a maximum depth of about 25 feet before the talc body began to pinch out and the floor became too narrow. No grinding problems were reported with this material.

Workings were then extended to the eastern branch and at present have a maximum depth of about 15 feet. The floor is approximately at the same level as the western branch.

A parcel of talc taken from the central portion of the eastern branch was free of grit, but the last parcel of about 60 tons taken from both edges of the eastern cut contained sufficient grit to affect the grinding process.

Samples were taken from the floor of the cuttings as shown on the accompanying plan (S10046).

Petrological examination showed variation in the proportions of plagioclase feldspar from place to place within each sample and variation in the grain size of feldspar in the samples.

Results are summarised in table 1 below:-

Sample	Location	Talc %	Feldspar %	Grain Size*	Behaviour
265/72	East cut S.W. Wall	60-70	30	4	Objection
266/72	East cut centre	70-80	20-30	1	No objection
267/72	East cut N.E. Wall	80	20	2	Objection
268/72	W. cut	60-70	30-40	3	No objection
269/72	Sec. 6274	80-85	15-20	5	Not used

* Grain size rated in order of increasing size.

Table 1. Comparison of talc samples.

The results appear somewhat incompatible. Sample A268/72 from the western cut was from the margin of the worked out body which was the only accessible portion of these workings because of the presence of water. While high in grit it may not be representative of the talc extracted.

Samples A265/72 (high in grit) and A267/72 (low in grit) both represent portions of the parcel to which objection was made. The petrological investigation showed some variation in abundance of grit in individual samples and it is likely that the grit in the last parcel came from a particular pocket in the body, probably along the south western wall which is in contact with country rock. On the other hand the north eastern wall of the cut is still in the talc body.

A further factor to be considered is that earlier production was from the near surface zone where feldspar was likely to be weathered to kaolin.

The operator recorded the presence of an auger drill hole in the floor of the cut near the location of sample A266/72 which penetrated talc to the full depth of 50'. Several other holes have been drilled from the surface around the workings.

Cuttings from the drill holes should be examined and clean faces in the excavation should be systematically sampled prior to further extraction to define areas of high grit content.

There is evidence that talc from the walls of the body should be avoided.

A sample from bagged talc (A269/72) left from earlier production in the workings in Section 6274 showed less feldspar although the grain size is larger.

Systematic sampling of these workings should be carried out before any attempt is made to reopen them.

CONCLUSIONS AND RECOMMENDATIONS

Disseminated feldspar in the most recent parcel of talc won from the deposit has caused difficulty in grinding. All previous production was acceptable.

Petrological examination of four samples from the workings showed the feldspar grit to vary both in abundance and grain size and it is suggested that grinding ability is effected by both of these parameters.

There is evidence that feldspar grit is more abundant on the margins of the talc body.

Further systematic sampling is recommended to define the portions of the talc body which have a low grit content.

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MNH:CMH
27th November, 1972.

REFERENCE

Dickinson, S.B., Whittle, A.W.G., Stillwell, F.L., and Edwards, A.B., 1951. Gumeracha Talc Deposits in Geol. Surv. S. Aust. Bull. 26.

APPENDIX 1

AMDEL REPORT MT 1/1/110

EVALUATION OF SOUTH AUSTRALIAN TALCS

STAGE II

PROGRESS REPORT NO. 2

Investigation report by; Dr. R. Davy & M.D. Ware

X-ray Diffraction of Feldspar by; Dr. R.H. Brown

Officer in charge, Materials Technology Section:
Dr. G.C.F. Powell

6th November, 1972.

SUMMARY

All samples examined are composed of talc and plagioclase with minor rutile, zircon and iron oxide in some samples.

From the mineralogical investigation it would appear that all samples are similar with however, variations in the grain size of the feldspar, which may account for the fact that sample A265/72 is unsatisfactory for grinding although with sample A267/72 the correlation fails as this sample would appear to be of better quality than the acceptable material.

1. INTRODUCTION

Following the rejection of a consignment of talc from the Birdwood area, by a company who beneficiated the raw material by grinding for sale to consumers, a number of samples were collected by the S.A. Department of Mines representing material from areas which had in the past been mined and was regarded as acceptable in quality and from those areas where the unacceptable material had been recently mined. These, together with a sample from an old open-cut in the immediate vicinity which could possibly be used as a substitute, were forwarded to Amdel for examination.

All specimens were thin sectioned and examined under the optical microscope. One sample was examined by x-ray diffraction to confirm the feldspar composition.

2. MINERALOGICAL REPORT

All specimens are composed of talc (70-90%), plagioclase (20-30%), rutile, with very rare zircon (A266/72) and iron oxide (A268/72). The plagioclase is a mixture of andesine with albite. The last formed, seen in some grains to be replacing an early formed andesine, is albite.

The proportion of plagioclase vary from place to place within the thin sections. Sample A268/72, representing the material formerly mined and acceptable has possibly the highest feldspar content although the grain size is considerably smaller than in A265/72.

Sample A266/72 has the smallest feldspar grain size (mode 0.3-0.4 mm) while A267/72 has the next smallest. The former is acceptable material, the latter is unacceptable, according to the user, although aggregate grains in sample A266/72 are larger than A265/72 and A267/72.

Sample A269/72 is composed of coarse talc and fairly coarse feldspar, although the proportion of the latter material is small.

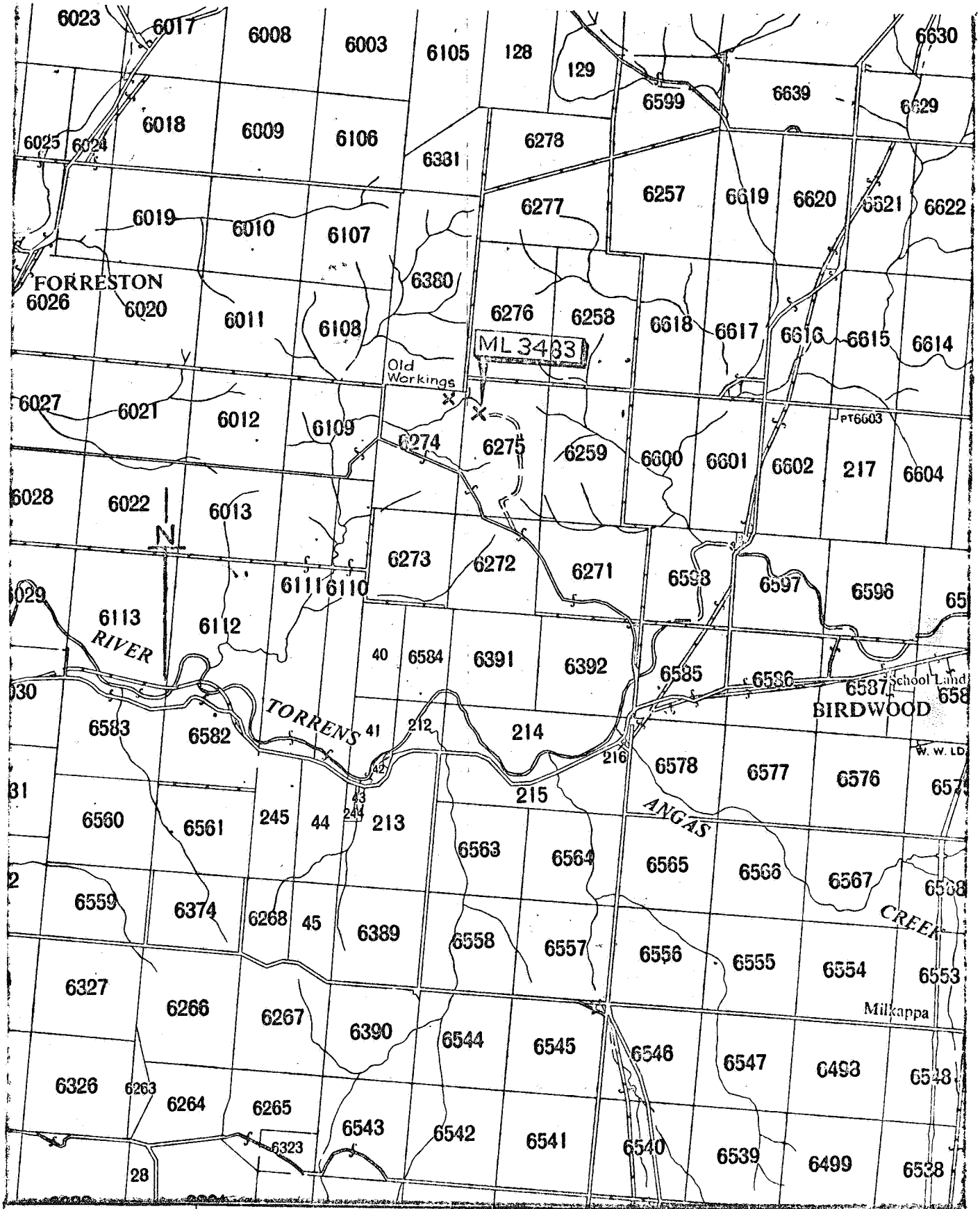
Table 1 gives the approximate mineralogy of the samples.

3. DISCUSSION

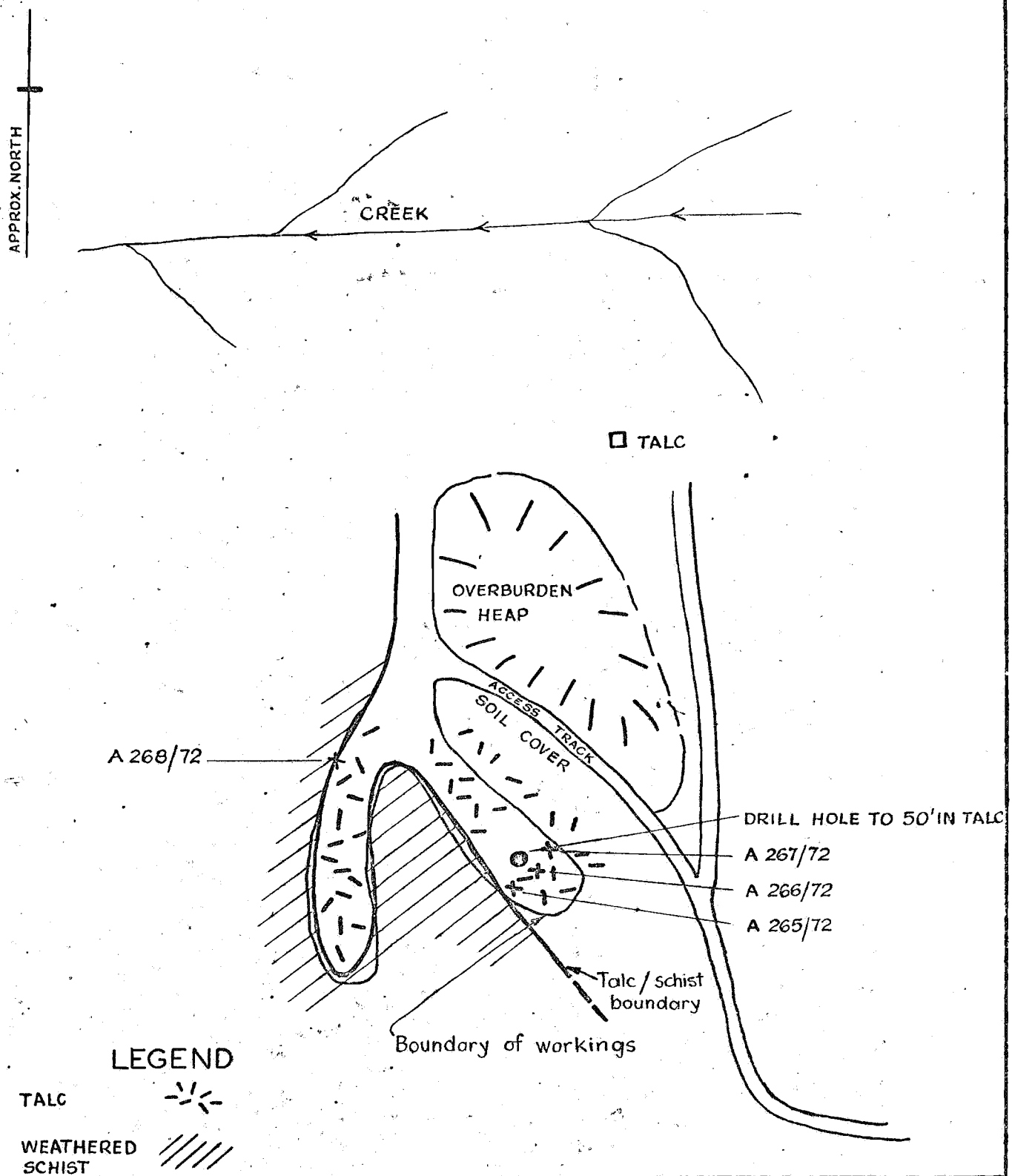
There are apparently no reasons, from the thin section evidence as to why some samples are acceptable while others are not, however, it would appear that grinding ability is a factor of the size of individual grains of feldspar and not aggregate grains or overall content. This would then infer that samples A268/72, A266/72 and A267/72 would be acceptable while samples A265/72 and A269/72 are unacceptable.

TABLE 1: MINERALOGY

Sample	Talc	Feldspar
A265/72	60-70	30
A266/72	70-80	20-30
A267/72	80	20
A268/72	60-70	30-40
A269/72	80-85	15-20



	DEPARTMENT OF MINES – SOUTH AUSTRALIA	Scale: 1 in rep 40 chains
Compiled: M.N.H.	TALC DEPOSIT	Date: 24 Nov 1972
Drn. A.F. | Ckd.	ML 3483 SEC 6275 HD. TALUNGA	Drg. No.
	LOCALITY PLAN	10045 Ha 8



	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale: *Not to scale*
Compiled: M.N.H.	TALC DEPOSIT	Date: 23 NOV. 1972
Drn. DWW Ckd. A.F.	M.L.3483 SEC.6275 HD. TALUNGA	Drg. No.
	SKETCH PLAN OF WORKINGS	S10046 Ha8

300—6.72 C5552