

DEPARTMENT OF MINES AND ENERGY
SOUTH AUSTRALIA

Rept.Bk.No. 79/118

CHRYSTOPRASE AND MOSS AGATE DEPOSITS
MOUNT DAVIES, NORTH WEST PROVINCE
REPORT NO. 3 - MINING ACTIVITY,
1975-1978

GEOLOGICAL SURVEY

MINERAL RESOURCES SECTION

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D.M. No. 530/75

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INTRODUCTION

At the request of the Department of Aboriginal Affairs,
chrysoprase deposits near Mount Davies were mapped in June, 1975:
see Report No. 1, Conor (1976) and a condensed version, Conor
(in press).

Report No. 2, Olliver, (1977) contains a report by J.P. West
(Consultant) and the Departmental appraisal of these data.

Mining operations, mainly by bulldozer, have been undertaken
by the Pitjantjatjara community of the Pipalyatjara settlement
since Report No. 1.

This report records the observations of X.P. Sibenaler
(Geologist) in 1976 and 1977 and the author in August, 1978 who
both visited No. 1, No. 2 and No. 3 Mines during investigations to
locate underground water.

LOCATION

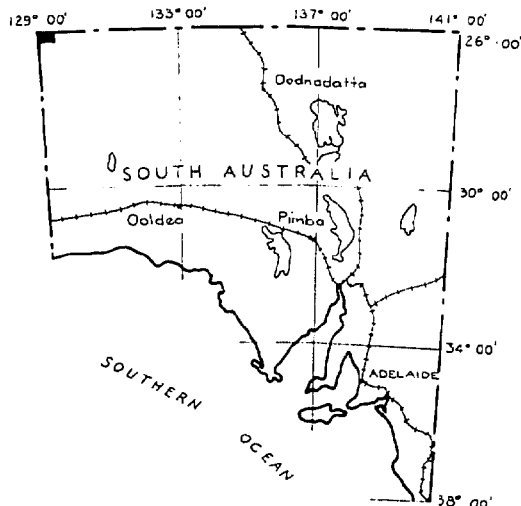
No. 1, No. 2 and No. 3 Mines are situated in the Kalka massif
(Scarface), 12 km northwest of Mount Davies, near the intersection
of the Western Australian, Northern Territory and South Australian
borders (see Fig. 1).

The workings, 200 km west from Amata along the Gun Barrel
Highway, are accessible by four wheel-drive vehicle.

TENURE

Under Section 88 (7) of the Community Welfare Act 1972,
the provisions of Mining Act 1971-1978 do not apply within the
North West Aboriginal Reserve. However, the provisions of the
Mines and Works Inspection Act, 1920-1978 apply to every mining
operations in the State.

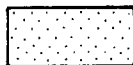
LOCALITY



LEGEND

NICKELIFEROUS JASPER

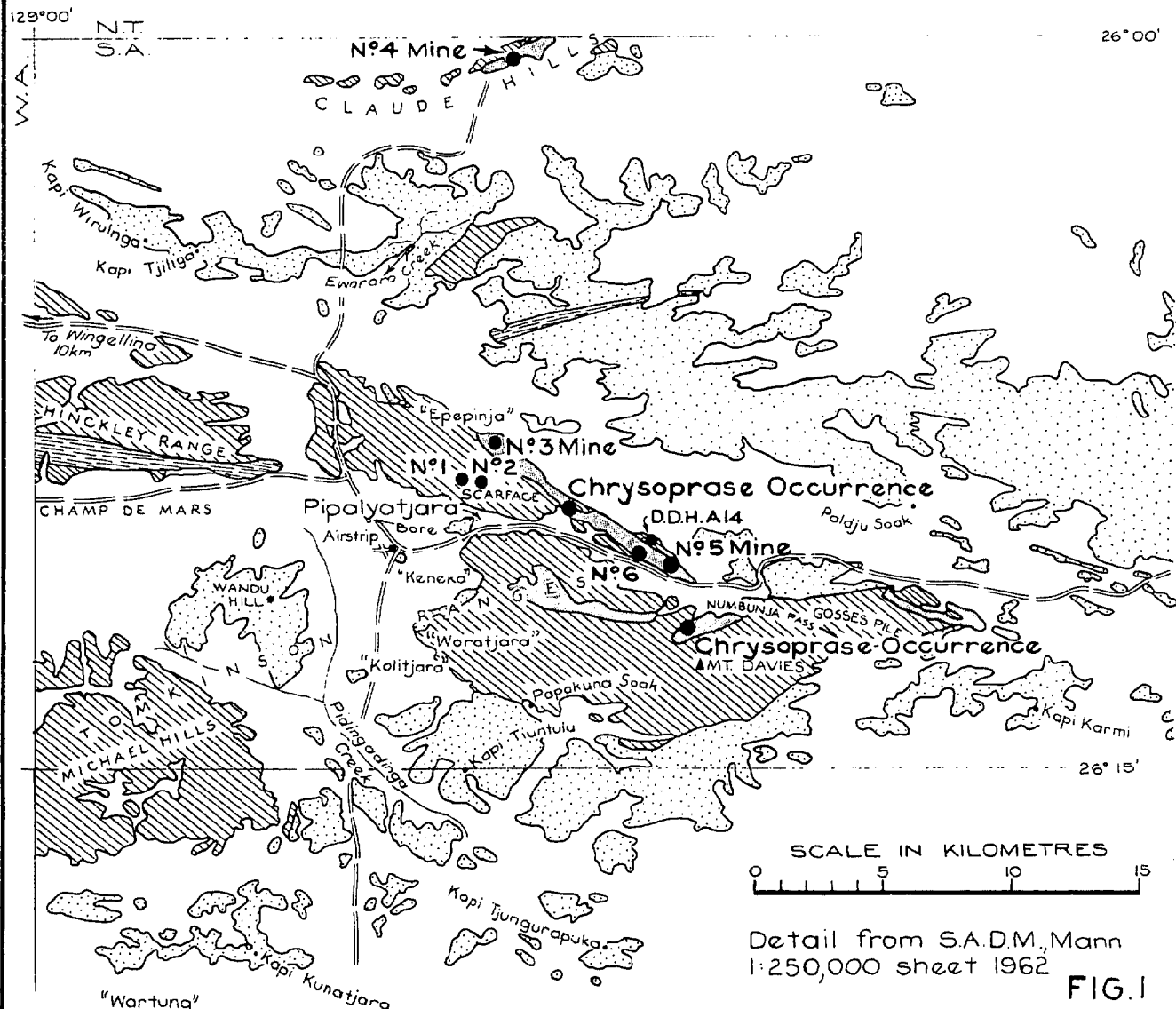
Associated with green clays and magnesite and in places veined by chalcedony and chrysoprase. (Weathering products of Giles Complex).



FAULT ZONE

GILES COMPLEX of basic and ultramafic intrusions.

MUSGRAVE-MANN METAMORPHICS
High grade gneisses and granulites.



Detail from S.A.D.M., Mann
1:250,000 sheet 1962

FIG.1

ENVIRONMENT AND RESOURCE DIVISION	DEPARTMENT OF MINES — SOUTH AUSTRALIA	Scale : 1:250,000
Compiled: C.H. CONOR	MT. DAVIES CHRYSOPRASE DEPOSITS	Date : 22 nd JULY 1975
Drn. A.G.R. Ckd	REGIONAL GEOLOGY AND LOCATION OF DEPOSITS	Drg. No. S14246
W.R.		



PLATE 1. Kalka massif (Scarface) - August 1978

View northwards from the alluvial plain. The track on the left leads to No. 1 Mine behind the white spoil at upper left. The track on the right leads to No. 2 Mine mainly obscured in valley.

GEOLOGICAL SETTING

Mount Davies is located near the western end of the Musgrave Block where the Mann Range gives way to the Hinckley and Tomkinson Ranges. The high ground is composed of gneiss of granulite facies metamorphic grade which is host to the Giles Complex, a series of layered gabbroic and olivine gabbroic intrusives, (see Figure 1, adapted from MANN, Thomson et al., 1972). Topography is controlled by major west-north-westerly trending faults and shears, which disrupt both granulites and the Giles Complex.

Nickeliferous ochre and jasper have formed in laterite which has developed in places over the more olivine-rich phases of the Giles Complex. The jasper contains veins of white to translucent chalcedony, chalcedony with manganese or iron-oxide dendrites (moss agate), and less commonly green nickeliferous chalcedony (chrysoprase).

MINING ACTIVITY SINCE JUNE 1975

No. 1 Mine

A steep track has been bulldozed up the southern face of the Kalka massif to the visible No. 1 Mine and beyond to No. 2 Mine (Plate 1).

A northerly facing open cut has been bulldozed to a depth of 12 m at the site of the pits recorded in 1975 with a trench, extending southwards (Plate 2). The area of workings and dumps is approximately 200 m long by 50 m wide.

Massive jasper, veined with chrysoprase generally 1-2 cm and rarely up to 5 cm thick, is exposed in the southern wall and ochreous clay in the northern wall of the trench. (Plate 3). The base of the weathered profile was not reached.

Fragments of chrysoprase are expected to be scattered through the waste dumps.

The partial collapse of the trench, 4-5 m wide, is the



PLATE 2 Mount Davies Chrysoprase, No. 1 Mine - August, 1978

View southwards with access track to the settlement of Pipalyatjara on the plains upper left. Partly collapsed open cut, approximately east-west, is 12 m deep. Track on far left to No. 2 Mine.

Note: For scale a man is located on floor of cut at left below settlement.



PLATE 3 Mount Davies Chrysoprase, No. 1 Mine - August, 1978

Southern wall of jasper with light coloured
chrysoprase - chalcedony veins. Ochreous clay
on northern wall at right.

apparent reason for the halt to mining.

The unsafe condition of the workings was reported to the Chief Inspector of Mines in September 1978.

No. 2 Mine

Three benches, up to 60 m long and totalling 10 m vertically, have been bulldozed along the hill slope (Plate 4). Mainly montmorillonitic clay and magnesite are exposed with little sign of chrysoprase as the chalcedonic veins are white or only pale green.

No. 3 Mine

Numerous shallow trenches 1-4 m deep extending over about 100 m by 40 m (Plate 4) have been bulldozed over the site of the small pits recorded in 1975. The country rock is mainly hard jasper with some veins of poor quality chrysoprase. The quantity and quality of the chrysoprase was insufficient to justify further work.

PRODUCTION

High quality chrysoprase reputedly filling three 200 l drums, was mined using a bulldozer purchased by the Department of Aboriginal Affairs. This parcel, estimated to weigh 750 kg, was contracted to an overseas buyer.

CONCLUSIONS

Veins of chrysoprase within the weathered jasper profile overlying ultrabasic intrusives of the Giles Complex near Mount Davies have been mined by bulldozer since mid-1975.

Production of an estimated 750 kg of high quality chrysoprase was reported from No. 1 Mine, which is now unsafe. Further mining has been jeopardised by indiscriminant bulldozing.

There is no evidence of high quality chrysoprase at No. 2 and No. 3 Mines.



PLATE 3 Mount Davies Chrysoprase, No. 1 Mine - August, 1978

Southern wall of jasper with light coloured
chrysoprase - chalcedony veins. Ochreous clay
on northern wall at right.

The use of high capital equipment is not justified unless sufficient chrysoprased worth at least \$50 per kg is available.

CHHC:GU



C.H.H. Conor

Geologist.

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