

1985/55. The Mt Read drill hole (MR1) through the central volcanic sequence-
White Spur Formation contact near Howards Road, western Tasmania

K.D. Corbett

INTRODUCTION

A proposal for a stratigraphic drill hole through the western margin of the Mt Read Volcanics on the SW flank of Mt Read was first submitted in October 1981. The hole was drilled in February-March 1984, to a total depth of 108 m. During site preparation, a shallow costean was bulldozed across the contact nearby to provide a better exposure and some surface information on the contact's attitude.

GEOLOGY AND REASON FOR DRILL HOLE

A major contact between a volcano-sedimentary sequence of tuff, shale and greywacke to the west (now called the White Spur Formation - Corbett and Lees, in prep.) and a central volcanic sequence of massive feldspar-phyric rhyolitic tuff occurs along the western flanks of Mt Read from Williamsford to the North Henty Fault near Howards Road (fig. 1). The only exposure of this contact was on a four-wheel drive track on a spur north of Howards Road, where the nature of the contact was ambiguous. An early interpretation of the contact (Corbett, 1981) was that it represented a fault scarp in the "western sequence" against which the central volcanic sequence was deposited, i.e. the CVS was younger. However, further mapping in the area suggested the contact might be a normal sedimentary one, with the western sequence overlying the central sequence. The relationship is of regional significance in determining the stratigraphic position of the central volcanic sequence, which hosts the Hercules and Rosebery orebodies along strike to the north.

RESULTS

The costean showed a contact dipping west at about 40°, with a basal breccia-agglomerate overlying massive homogeneous feldspar-phyric crystal-vitric tuff. The drill hole, located some 170 m west of the contact and angled at 60° towards it, intersected the contact at 56 m (fig. 2), indicating that the contact had either flattened to be sub-horizontal or had actually risen due to the presence of a topographic high. The hole clearly demonstrated that the western sequence was younger and was resting on a probable erosion surface developed on the central sequence.

Of particular interest was the occurrence, in the coarse lower part of the younger sequence, of clasts of pyrite, pyrite-chert, hematite, galena and pyritised calcic schistose rock. These clasts indicate weathering of an exhalative sulphide deposit. Other clasts include quartz-feldspar porphyry, feldspar porphyry, fine-grained felsic volcanic rocks, vitric tuff, shale and pumice, the latter probably representing juvenile material related to the eruption which may have triggered the mass-flow which deposited the younger unit.

General descriptions of the sequences involved are given in Corbett (1984) and Corbett and Lees (in prep.)

REFERENCES

- CORBETT, K.D. 1981. Stratigraphy and mineralization in the Mt Read Volcanics, western Tasmania. *Economic Geology* 76:209-230.

2/7

CORBETT, K.D. 1984. Geological maps and summary of Cambrian stratigraphic units and relationships in the Henty River-Williamsford area. *Unpubl. Rep. Dep. Mines Tasm.* 1984/84.

CORBETT, K.D.; LEES, T.C. in prep. Revised stratigraphy and tectonics of the Mt Read Volcanics and associated Cambrian sequences in the Rosebery-Henty River area, western Tasmania. *Aust. J. Earth Sciences* (submitted).

[28 November 1985]

GEOLOGY OF THE HENTY RIVER-WILLIAMSFORD AREA

(PRELIMINARY EDITION)

K. D. CORBETT 1984

- QUATERNARY**
- Qal Alluvium
 - Qpm Pleistocene moraine
- CARBONIFEROUS-JURASSIC**
- P-J Permo-Carboniferous beds and Jurassic dolerite
- SILURO-DEVONIAN**
- S-D Eldon Group undifferentiated
- ORDOVICIAN**
- Ogl Gordon Limestone (under superficial cover in most areas)
- LATE CAMBRIAN-EARLY ORDOVICIAN**
- Oc Ocs Owen Conglomerate and correlates including upper sandstone unit,
Onc Ocv lower Newton Creek Sandstone Member, basal volcaniclastic conglomerate.

CAMBRIAN SEQUENCES

NORTH OF HENTY FAULT ZONE

DUNDAS GROUP "ROSEBERY GROUP"

- DRc Conglomerate
- DRq Quartzwacke-siltstone-mudstone sequences
- DRdl Dolomite-siltstone-sandstone
- DRv Felsic volcanics, including quartz-feldspar porphyry
- DRu Undifferentiated greywacke-mudstone-conglomerate-tuff sequences

- CC Secondary carbonate and/or chert bodies

- Eg Gabbro

HOWARDS ROAD VOLCANO-SEDIMENTARY SEQUENCE

- HRl Felsic tuff and agglomerate, with minor siltstone
- HRl Felsic lava, quartz-feldspar-phyric
- HRs Greywacke, siltstone, minor tuff
- HRu Undifferentiated

CENTRAL VOLCANIC SEQUENCE

- CVi Felsic intrusives with possible lavas
- CVl Felsic lavas, mainly feldspar-phyric
- CVp Felsic pyroclastics, mainly feldspar-phyric
- CVs Bedded shale-sandstone-tuff units
- CVt Bedded tuff-agglomerate units
- CVq Quartz-phyric tuff, agglomerate
- Eb Mafic dykes
- CVu Undifferentiated

BETWEEN NORTH AND SOUTH HENTY FAULTS

- HFs Greywacke, mudstone, with minor conglomerate(c)
- HFl Felsic tuff
- HFa Andesitic volcanics-pyroclastics, lavas
- Hfb Basaltic to intermediate volcanics-lavas, pyroclastics
- Eq Quartzwacke-siltstone sequence west of Zeehan Highway
- Eg Gabbro
- Eums Serpentinite and ultramafic rocks

SOUTH AND EAST OF HENTY FAULT ZONE

TYNDALL GROUP

- Tgl Lavas-quartz-feldspar-phyric
- TGp Pyroclastics-quartz-feldspar-phyric
- TGu Undifferentiated-includes volcaniclastic conglomerate

CENTRAL VOLCANIC SEQUENCE

- CVl Felsic lavas, dominantly feldspar-phyric
- CVp Felsic pyroclastics
- CVs Siltstone-sandstone-minor tuff lenses
- CVa Andesitic volcanics-lavas, intrusives, pyroclastics
- CVqfp Quartz-feldspar porphyry

BRADSHAW'S ROAD VOLCANO-SEDIMENTARY SEQUENCE

- BRl Vitric tuff, vitric-crystal tuff, siltstone, sandstone
- BRs Dominantly siltstone and greywacke
- BRi Felsic porphyry intrusives

- Geological boundary-approximate, inferred, concealed.
- - - - - ? - - - - - Fault - approximate, inferred.
- f / f / f Bedding - facing unknown, facing known, vertical, overturned.
- f / Layering in igneous rock - dipping, vertical
- [] Cleavage - dipping, vertical.
- Road or major 4-wheel drive track
- Other track
- * Prospect
- Fossil locality
- X / X Foldaxis-syncline, anticline

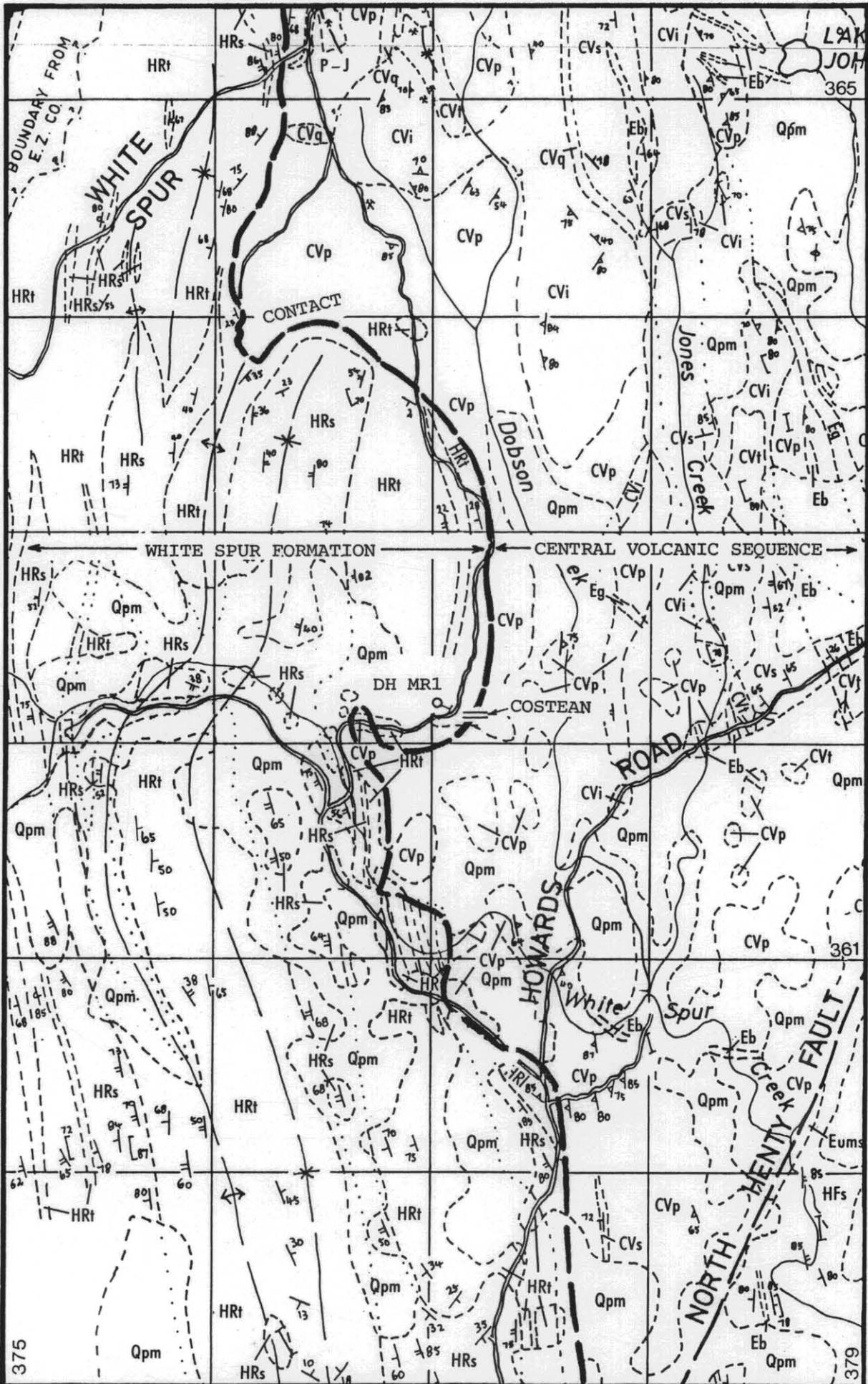
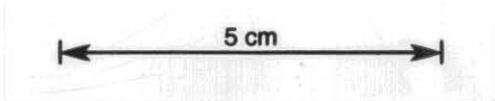


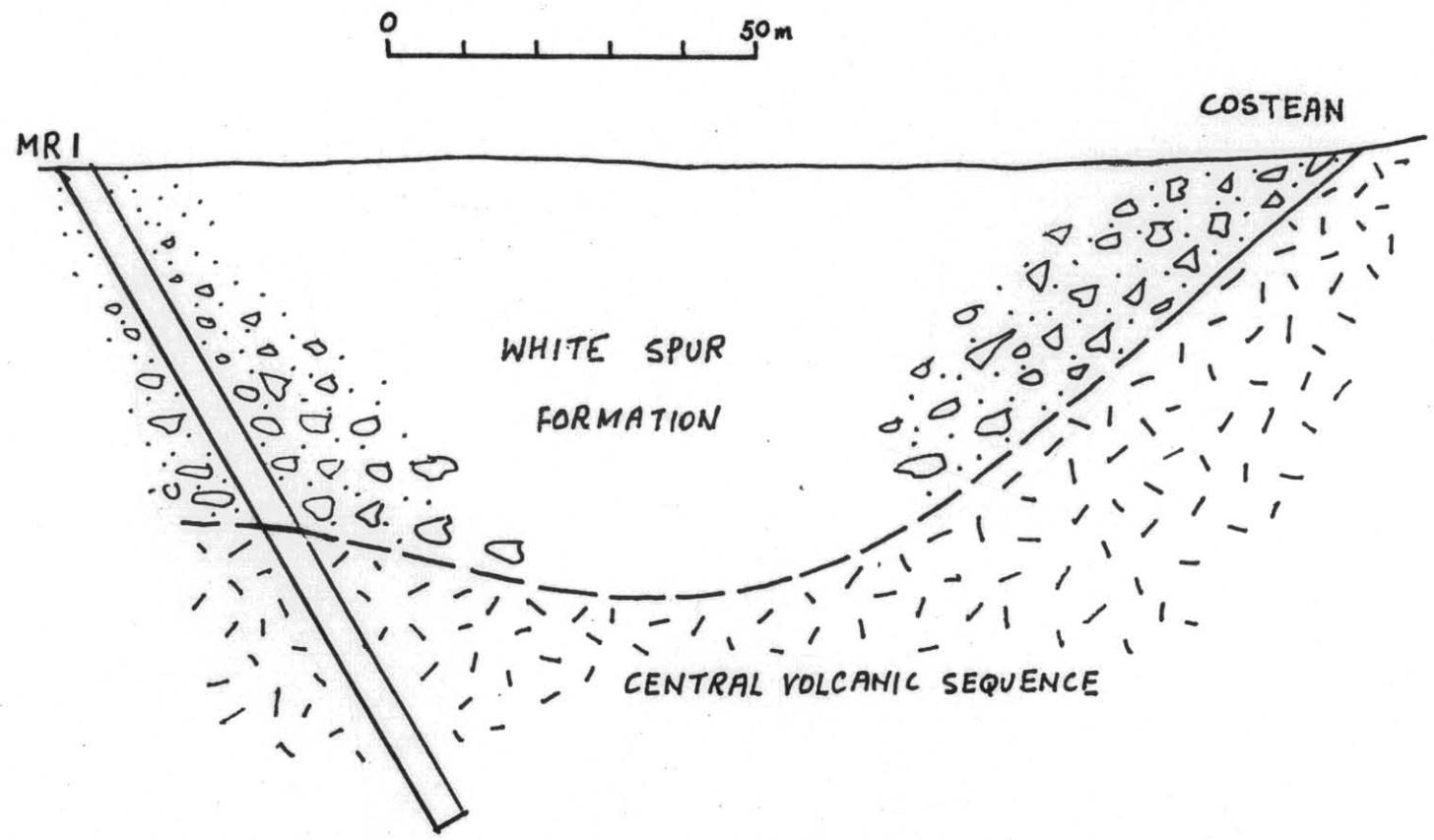
Figure 1. Geology of the Mt Read Drill Hole area (after Corbett, 1984).
Scale = 1:25 000



TASMANIA DEPARTMENT OF MINES GEOLOGICAL SURVEY BRANCH		DIAMOND DRILL CORE RECORD			HOLE No. MR1 REF. No.		SHEET No. 1 of 3			
PROJECT: MT READ VOLCANICS AND ASSOCIATED SEQUENCES OBJECTIVE: To determine nature and attitude of contact between White Spur Formation and Central Volcanic Sequence PROPOSED BY: K. Corbett LOGGED BY: K. Corbett June 1984 LOCATION: SW flank of Mt Read, near Howards Road MAP SHEET: TYNDALL 8014-III GEOL. ATLAS: MURCHISON 51 A.M.G. CO-ORDS: 377043 mE 5362227 mN COLLAR R.L.: 609.8 TOTAL DEPTH: 108.72 m COLLAR DIP: -60° AZIMUTH: 110° M DATE COMMENCED: 13.2.84 DATE COMPLETED: 16.3.84 DRILL RIG: Longyear 38 DRILL CREW: C. Mitchell					SUMMARY GEOLOGICAL LOG					
		From (m)	To (m)	ROCK DESCRIPTION						
		0	30	Vitric-lithic tuff, coarsening downwards. Coarse lithic tuff-breccia, shale clasts at least 800 mm long. Clasts of pyrite to 60 mm, smaller clasts of hematite, galena, schistose rock, as well as various volcanic clasts and pumice. (EDH). Massive feldspar-phyric crystal-vitric tuff, greenish-grey to splotchy pink and green. Upper contact abrupt, with 20 mm thick quartz vein, but no evidence shearing. No obvious mineralisation.						
		30	56							
		56	108.72							
HOLE SIZE: HQ 0 to 51.6 m NQ 51.6 to 109 m to m to m to m		HOLE CONDITION AFTER COMPLETION: Clean								
SURVEY DATA		INSTRUMENT:								
DEPTH	INCLINATION		AZIMUTH		COMMENTS					
	As read	Dip	As read, °M	°A.M.G.						
					Not surveyed					
SUMMARY GEOCHEMICAL DATA (g/t unless specified)										
	From	To	Length	Rec. (%)						
REPORT REFERENCE: Unpublished Report Tasmania Department of Mines 1985/55. OTHER COMMENTS:										

TASMANIA DEPARTMENT OF MINES GEOLOGICAL SURVEY BRANCH		DIAMOND DRILL CORE GEOLOGICAL RECORD						HOLE No.	MR1	SHEET No. 2 of 3		
INTERVAL		REC. (%)	Core lift	Core loss	Depth (m)	Graphic Log	Min	DESCRIPTION	SPECIMEN			
From (m)	To (m)								Number	Depth	Prep'n	
0	5.2							Bleached, slightly weathered, whitish hard vitric-lithic tuff.				
5.2	14.5							Hard grey vitric-lithic tuff; scattered to fairly abundant lithic clasts to 40 mm across, mainly of fine-grained felsic volcanics, some of dark shale. Also fairly abundant pumice-like clasts (some sericitic, some chloritic). Some feldspar and quartz crystals in matrix. Suggestion of downwards-coarsening.				
14.5	20							Large clasts of black shale-siltstone begin to appear, up to 200 mm across. Rock becomes more fragmental - now a lithic-vitric-crystal tuff.				
20	31							Rock is now a lithic breccia, with abundant clasts 10-150 mm across. Clasts mostly fine-grained felsic volcanic rocks, some grey fine sandstone and shale, vitric tuff, feldspar-porphry, quartz-feldspar porphyry. Irregular pumice clasts persist. Clasts vary from angular to rounded. Weathered patch due to several weathered joints at 23.5 m. Small (15 mm) hematite clast at 30.5 m.				
31	55.84							Coarse breccia. Clast of laminated siltstone 800 mm long at beginning, with very irregular edges - obviously a transported raft. Several clasts of massive pyrite to 30 mm long at 36 m. Some weathered patches, particularly near some joints. Some clasts have completely weathered out, leaving holes. Pyrite films on some joint surfaces. Pyrite clast 60 mm across at 38.3 m show deformed primary banding on one side, and contains small lenses of chert. At about 38.9 m there is a 30 mm hematite clast, also 60 mm pyrite-hematite clast and several small (<10 mm) hematite and pyrite clasts. A clast of pale foliated schistose rock (50 x 15 mm) occurs at 40.2 m; has abundant disseminated pyrite in a partly calcareous matrix, with a rim of brown metallic mineral (hematite or sphalerite) all around it. Clast of grey fine-grained pyrite-rich rock, 40 mm across, at 41.1 m; another at 41.3 m. Two small pyrite clasts at 42 m. Large quartz-albite(?) vein 20 mm across at 42.1 m. Scattered hematite-pyrite clasts beyond this. Another hematitic carbonate-rich clast (40 mm) at 43.4 m. Small clast (7 mm) with galena and pyrite at 52.5 m; another of pyrite-chert rock. Small clast (5 mm) with galena at 53.6 m. Small pyritic clasts persist to contact. Breccia becomes somewhat weathered and soft for metre or so above contact; core is broken, yellowish, with clayey zones on joints.				
55.84	108.72 (BOH)							Massive uniform feldspar-phyric crystal-vitric tuff of Central Volcanic Sequence. Contact marked by 20 mm thick quartz vein but no evidence of shearing or faulting. Some pyrite in the slightly weathered underlying tuff for 3-4 mm below quartz vein. Colour of tuff grades from greenish-grey to splotchy pink and green at about 73 m, mainly due to growth of fine secondary albite(?); becomes slightly pinker down to end of hole. Scattered small lithic clasts but no primary bedding features. Few thin chlorite-albite-quartz veins. No obvious mineralisation.				

TASMANIA DEPARTMENT OF MINES GEOLOGICAL SURVEY BRANCH		DIAMOND DRILL HOLE PLOT			HOLE No. MT READ 1	
					REF. No.	SHEET No. 3 of 3
A.M.G. CO-ORDS:	377043 5362227	mE mN	COLLAR RL: TOTAL DEPTH:	609.8 108.7 m	COLLAR DIP: AZIMUTH:	-60° 110° M
					SCALE 1:	(Bar scale must be shown)



CROSS-SECTION THROUGH MRI AND COSTEAN

