

CR 93 / 245

Asarco Australia Ltd.

Tennant Creek Project

Top End Joint Venture

Annual Report to the NT Department  
of Mines and Energy for the  
period ended December 31, 1992

by  
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1. Introduction

Asarco Gold Pty. Ltd. in joint venture with Top End Resources NL, holds an interest in 60 mineral claims forming nine groups within the Tennant Creek area. In addition to the mineral claims, Asarco holds five exploration licences (including two joint venture licences), which are subject to individual reporting and not covered by this report. Asarco holds a 69% equity and is the manager of the joint venture.

This report details the results of the work carried out on all the mineral claims at Tennant Creek which form the Top End Joint Venture, for the 12 month period ending December 31, 1992.

2. Tenements

The mineral claims which form the Top End Joint Venture are listed in Table 1 and shown on Figure 1. During 1992, applications for renewal were lodged for MCC 242 (Great Northern), MCC 262-264 plus 275-282 (Mint) and MCC 226-230 plus 233-236 (Mount Margaret). Renewal was not sought for MCC 241 (Great Northern) which also expired during the year.

TABLE 1.

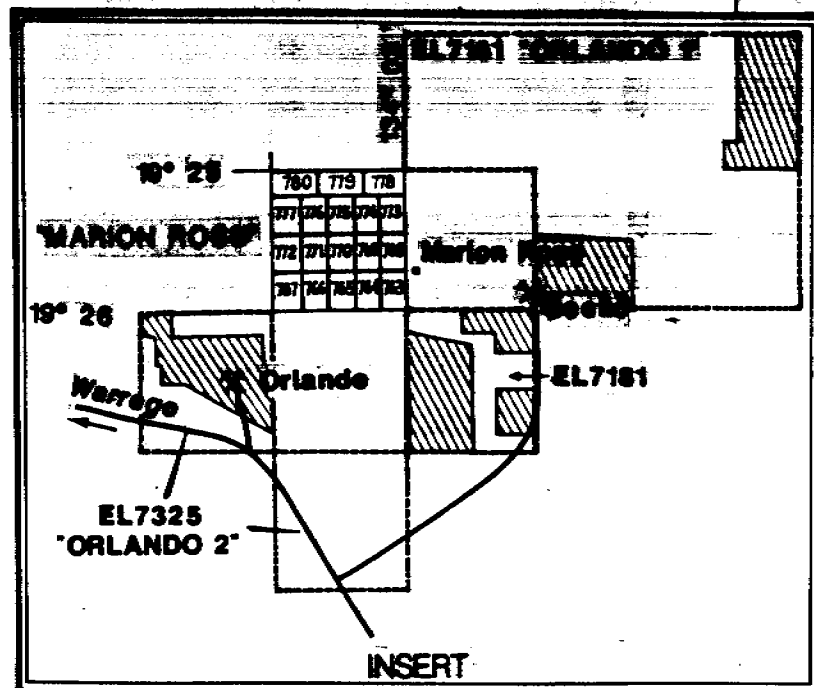
**TENNANT CREEK PROJECT**

**Schedule of Tenements**

	<u>No.</u>	<u>Area</u>	<u>Total Area</u>
Juno	EL 5304	6.50 km2	6.50 km2
Southern Cross	MC C219	20.00 ha	0.80 km2
	MC C220	20.00 ha	
	MC C221	20.00 ha	
	MC C222	20.00 ha	
Great Northern	MC C242	20.00 ha	0.20 km2
Mint	MC C262	20.00 ha	2.13 km2
	MC C263	18.60 ha	
	MC C264	20.00 ha	
	MC C275	20.00 ha	
	MC C276	20.00 ha	
	MC C277	20.00 ha	
	MC C278	20.00 ha	
	MC C279	20.00 ha	
	MC C280	20.00 ha	
	MC C281	18.25 ha	
	MC C282	16.50 ha	
Marion Ross	MC C763	17.50 ha	3.22 km2
	MC C764	17.50 ha	
	MC C765	17.50 ha	
	MC C766	17.50 ha	
	MC C767	17.50 ha	
	MC C768	17.50 ha	
	MC C769	17.50 ha	
	MC C770	17.50 ha	
	MC C771	17.50 ha	
	MC C772	17.50 ha	
	MC C773	17.50 ha	
	MC C774	17.50 ha	
	MC C775	17.50 ha	
	MC C776	17.50 ha	
	MC C777	17.50 ha	
	MC C778	20.00 ha	
	MC C779	20.00 ha	
	MC C780	20.00 ha	
Mary Lane	MC C866	18.00 ha	0.78 km2
	MC C867	20.00 ha	
	MC C868	20.00 ha	
	MC C869	20.00 ha	

Mount Otto	MC C870	20.00 ha	
	MC C871	20.00 ha	
	MC C872	20.00 ha	
	MC C873	20.00 ha	
	MC C874	18.00 ha	0.98 km2
Jubilee	MC C875	17.50 ha	
	MC C876	20.00 ha	
	MC C877	20.00 ha	
	EL 6196	6.00 km2	6.57 km2
International	MC C992	37.26 ha	
	MC C993	39.83 ha	
	MC C994	33.75 ha	1.10 km2
Eldorado North	MC C346	19.70 ha	0.19 km2
Great Bear	MC C223	13.52 ha	0.13 km2
Mount Margaret	MC C226	18.07 ha	
	MC C227	16.61 ha	
	MC C230	20.00 ha	
	MC C233	19.95 ha	
	MC C234	19.95 ha	
	MC C235	7.60 ha	
	MC C236	19.98 ha	1.22 km2
Gray Bluff	MC C878	20.00 ha	
	MC C879	20.00 ha	0.40 km2
Orlando	EL 7181	18.00 km2	
Orlando "2"	EL 7325	6.00 km2	
Peko	EL 7182	30.00 km2	54.00 km2

Total Project Area: 78.22 km2

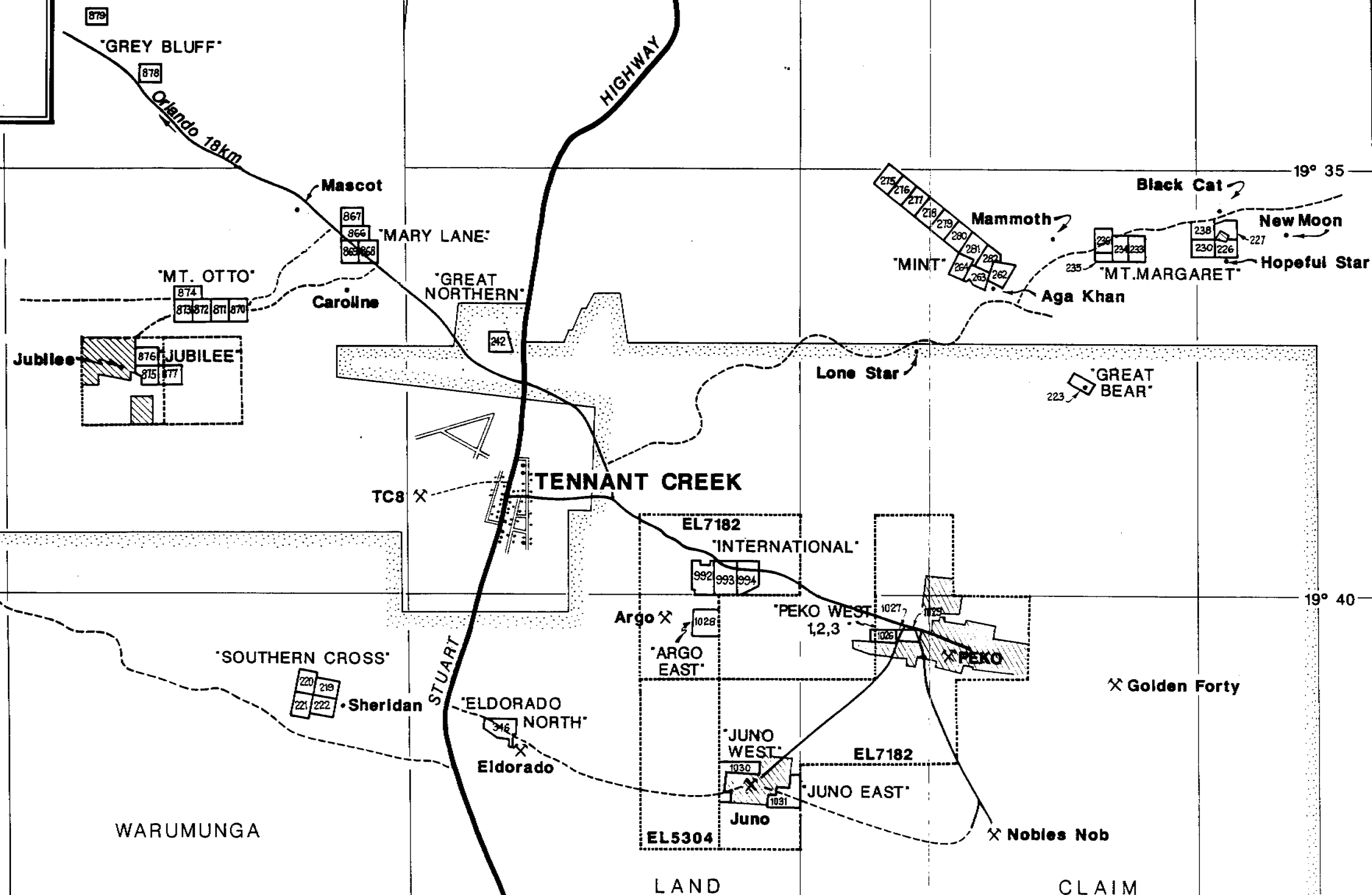


# ASARCO AUSTRALIA LIMITED TENNANT CREEK PROJECT TENEMENT LOCATION

0 5Km  
1 : 100,000

- Tenements included or to be included within the reformed joint venture
- Tenements held by others (aside from Top End Resources and Asarco)
- Significant gold producer
- Small gold producer
- Warumunga land claim

NOTE: MCC 1026 to MCC 1031 are under application.



3. Exploration Objectives and Previous Work

Exploration has been directed towards locating oxidised near surface gold deposits which may not have a strong magnetic signature and hence could have been overlooked by previous explorers. There are no prominent bulls-eye magnetic anomalies within the claims although several lower order anomalies exist which may reflect oxidised ironstones or alteration or stringer zones. The large chloritic alteration zone (M10) which lies below the Juno ore-body also contains significant gold values, and this style of deposit also represents a prime near surface exploration target.

Previous exploration by Asarco has identified a number of geochemical anomalies, either through surface lag sampling or vacuum drilling to bedrock. Preliminary rotary air blast drilling at Jubilee, Mt Otto and Mary Lane failed to intersect economic mineralization, but the anomalies are not fully tested. Reverse circulation drilling of ironstones and alteration systems has intersected economic widths and grade of gold mineralization at Memsahib, and sub-economic but highly encouraging intercepts at the Mount Margaret, International and Mint prospects.

Work on the Southern Cross claims has been frozen pending resolution of the Mt Samuel Sacred Site Application. These claims are on the highly productive Juno Line, and work prior to the Sacred Sites application identified numerous geochemical anomalies and outcropping gold-bearing ironstones.



4. Geology and Mineralization

The mineral claims cover rocks of the Carraman Formation, part of the Warramunga Group, a sequence of siltstone, greywacke, shale and tuff of Lower Proterozoic age. These sediments have been folded around east-west axes and are cross cut by several major north westerly trending faults (Figure 2).

The gold (-copper) mineralization at Tennant creek is associated with magnetite rich ironstone bodies surrounded by an envelope of chlorite, talc and dolomite alteration. Above the water table these bodies may be oxidised to hematite as at Nobles Nob hence may not have a strong magnetic signature.

There is a strong regional structural and stratigraphic control on the known mineralization in this area with most of the major past producers forming well defined lines oriented sub-parallel to the regional cleavage (Figure 3). Almost all of Asarco's mineral claims lie within these lines, and most show evidence of past prospecting or mining activity. Production is only recorded however from two blocks, at Southern Cross and Memsahib.

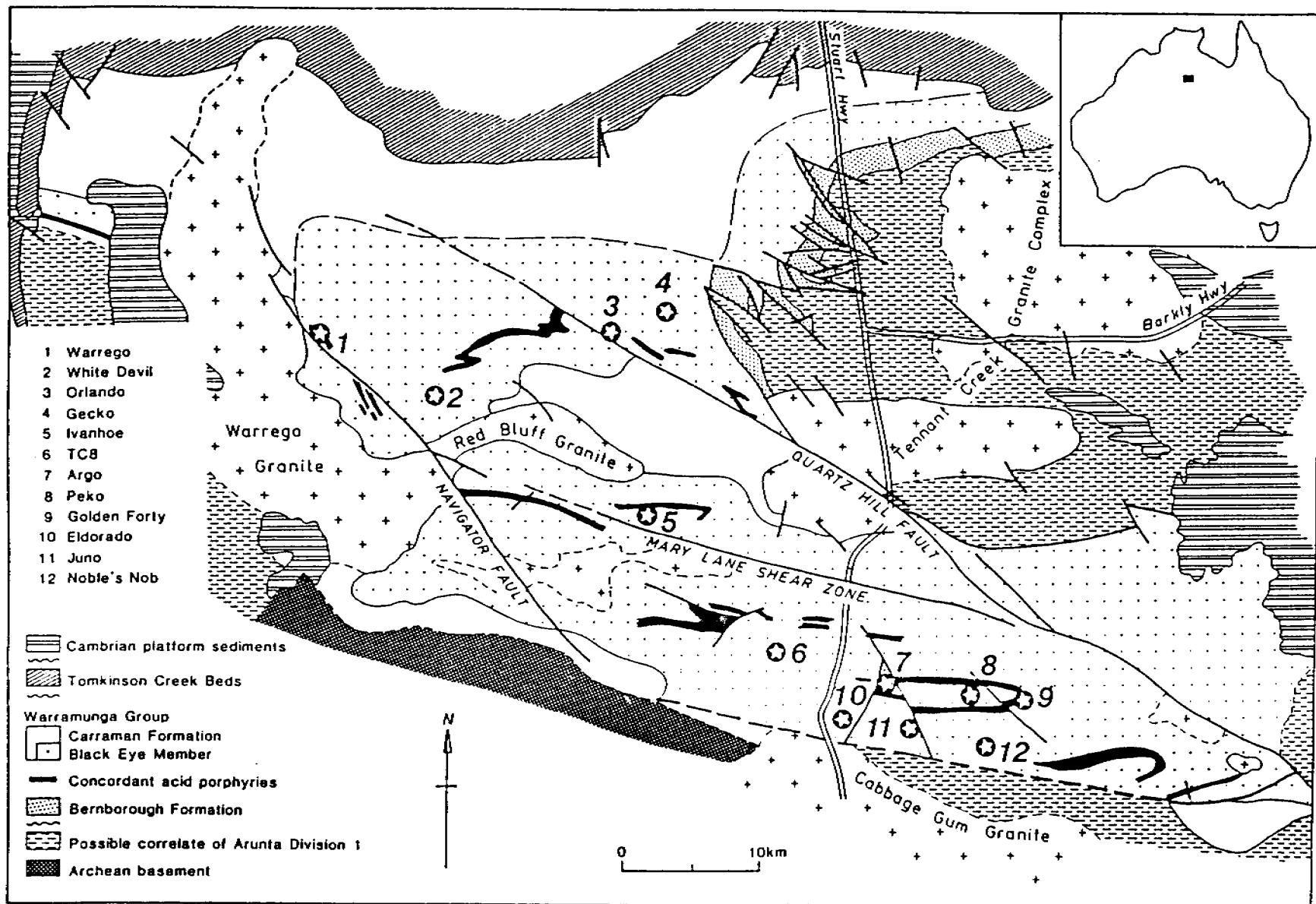
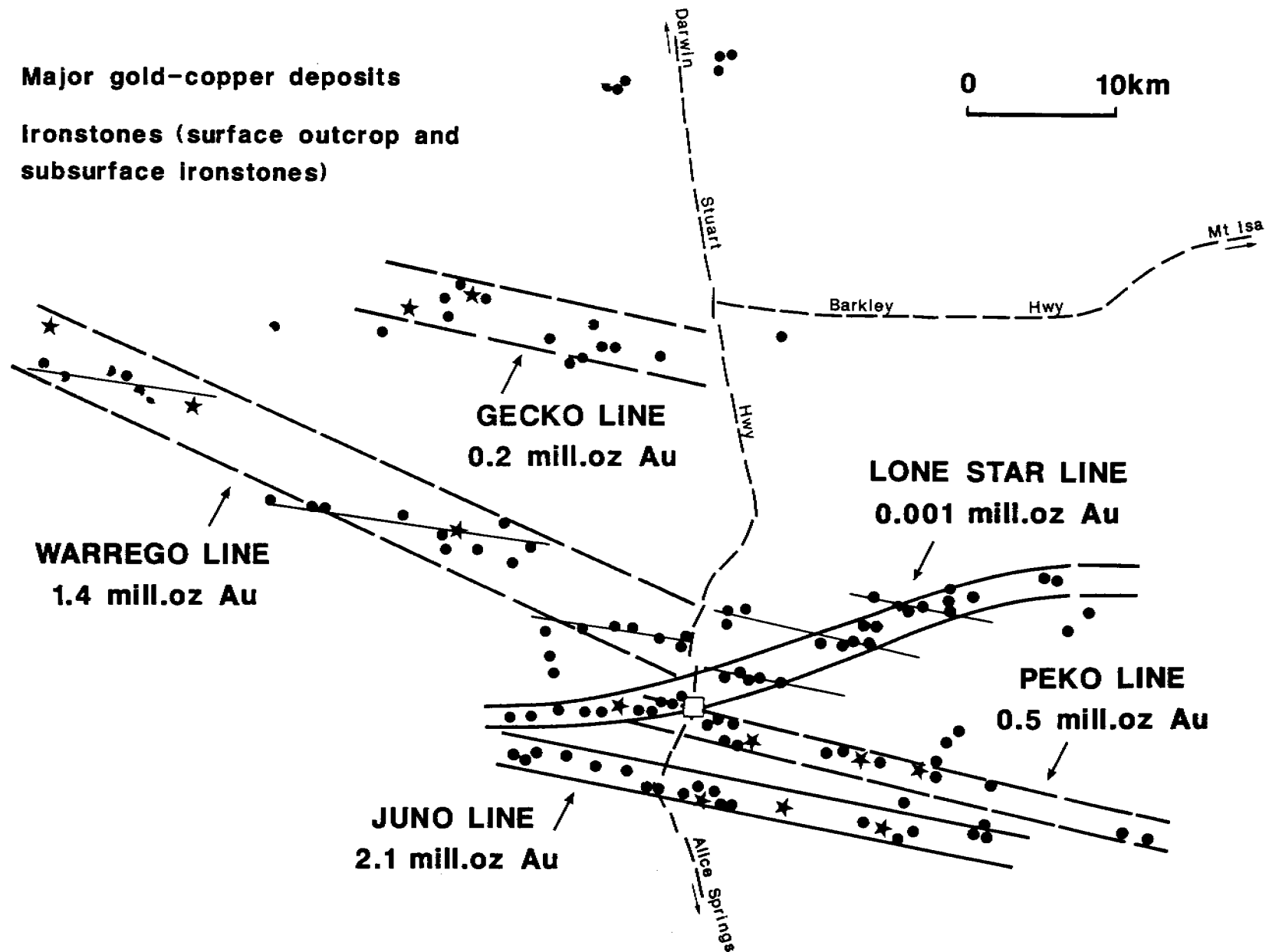


Figure 2.

- ★ Major gold-copper deposits
- Ironstones (surface outcrop and subsurface ironstones)



## TENNANT CREEK

Figure 3.

5. Work Done

Work during 1992 comprised a thorough review and re-appraisal of all of Asarco's tenements in the Tennant Creek district. Following this review it was decided to seek a joint venture partner to accelerate the exploration and possible future development of the project. Data reviews have been conducted by a number of major companies active in the Tennant Creek field, with offers of joint venture participation received from two parties. Discussions are continuing with these companies and it is expected that an agreement will be finalized shortly. The incoming partner will commence a detailed exploration programme immediately following the signing of an agreement.



C. Paterson