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BUREAU OF MINERAL RESOURCES, GEOLOGY AND GEOPHYSICS

RECORD

Record 1986/35

Central Australian Seismic Survey
Northern Territory, 1985.



Operational Report

by

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B.R. Goleby, K.D. Wake-Dyster, C. Wright and E.H. Cherry

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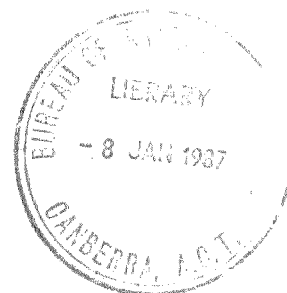
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The authors acknowledge the contributions from all members of the Seismic Party. A seismic party is a combined effort from each person and would not run without such teamship. Unfortunately all members can not be authors. However each should be recognized as a contributor to this document.

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ABSTRACT

The Explosion Seismology Section, Division of Geophysics, Bureau of Mineral Resources, Geology and Geophysics conducted a seismic, gravity and aeromagnetic survey in Central Australia, Northern Territory from July to November, 1985. The objectives of this multidisciplinary experiment were to investigate the structural evolution of the lithosphere in the Central Australian region with emphasis on the formation of the Ngalia and Amadeus Basins, and secondly to aid in the evaluation of the petroleum prospectivity of the basins.

486 km of 6-12 fold common mid-point (CMP) seismic reflection data were collected, from four traverses. The main traverse, T1, was a 420 km north-south orientated line running perpendicular to the strike of the tectonic units and crossing the main gravity anomalies. Traverses 2, 3 and 4 were small experimental lines designed to solve particular structural or geological problems, or to obtain some three dimensional information at specific locations. In addition, three expanding spreads of up to 36 km shot - receiver offset, a small constant offset experiment, and a tomographic experiment were conducted along with routine noise analysis and uphole shoots.

Seismic reflection data are currently being processed using BMR's DISCO Seismic Processing System. Gravity and airborne magnetic data are also being processed in-house. Final seismic results will not be available for some time. However preliminary stacks from some traverses and some of the experimental results are available and have been incorporated in this report.

INTRODUCTION

1.1 Introduction

Background

The concept behind this survey arose from a series of ACORP (Australian Continental Reflection Profiling) programs that were proposed by the LITSAC Committee (Lithospheric Transect Studies of the Australian Continent). These proposals are described by Moss & Goleby (1986). The Central Australian Seismic Survey was approved as part of the BMR program. The ACORP proposal involved over 1000 km of seismic profiling, lasting 8 months, and required industry to contribute half the operating cost. Unfortunately industry or state funding was not forthcoming, so the survey went ahead solely as a BMR survey.

Location

The survey area was centred some 250 km west of Alice Springs, Northern Territory, and bounded by the co-ordinates 22°S to 26°S and 131°E to 133°30'E (Fig 1).

The survey area covers the following 1:250,000 map sheets (Fig 2). NAPPERBY- Evans (1972); HERMANNSBURG- Quinlin & Forman (1968); HENBURY- Cook (1968); KULGERA- Stewart (1967); & AYERS ROCK- Forman (1965).

Adjacent map sheets that were useful include :

ALICE SPRINGS- Shaw & Wells (1983); LAKE AMADEUS- Cook (1968); MOUNT DOREEN- Wells (1972); MOUNT LIEBIG- Ranford (1969); & WOODROFFE- Major (1973).

Complete references to the BMR Explanatory Notes series for the geological maps are given in the references.

Topographical, geological, magnetic and gravity maps for each map sheet were available. Additional maps used were cadastral, Aboriginal reserves, Landsat image, photomosaic, and tourist maps. Recent large scale airphotographs (1:40,000) were available for most of the line, with most of photographs covering the difficult terrain available in colour.

Traverses

Four seismic traverses were recorded as part of the survey, identified as BMR-1985/1, BMR-1985/2, BMR-1985/3 and BMR-1985/4: hereafter referred to as Traverses T1, T2, T3, or T4 (Fig 1). Total CMP traverse length was 486 km, with an additional 22 km of line used as part of the experimental work, giving a total of 508 km of surveyed seismic line. Operational statistics for this survey are given in Appendix 1.

Operations: Commencement, Personnel and Vehicles

Recording and drilling commenced early July, 1985, and continued virtually uninterrupted until early November, 1985. There were four camp sites used, with a maximum camp to field travel time of 1 hour 30 mins. Camps were at most 3 hours 30 mins from Alice

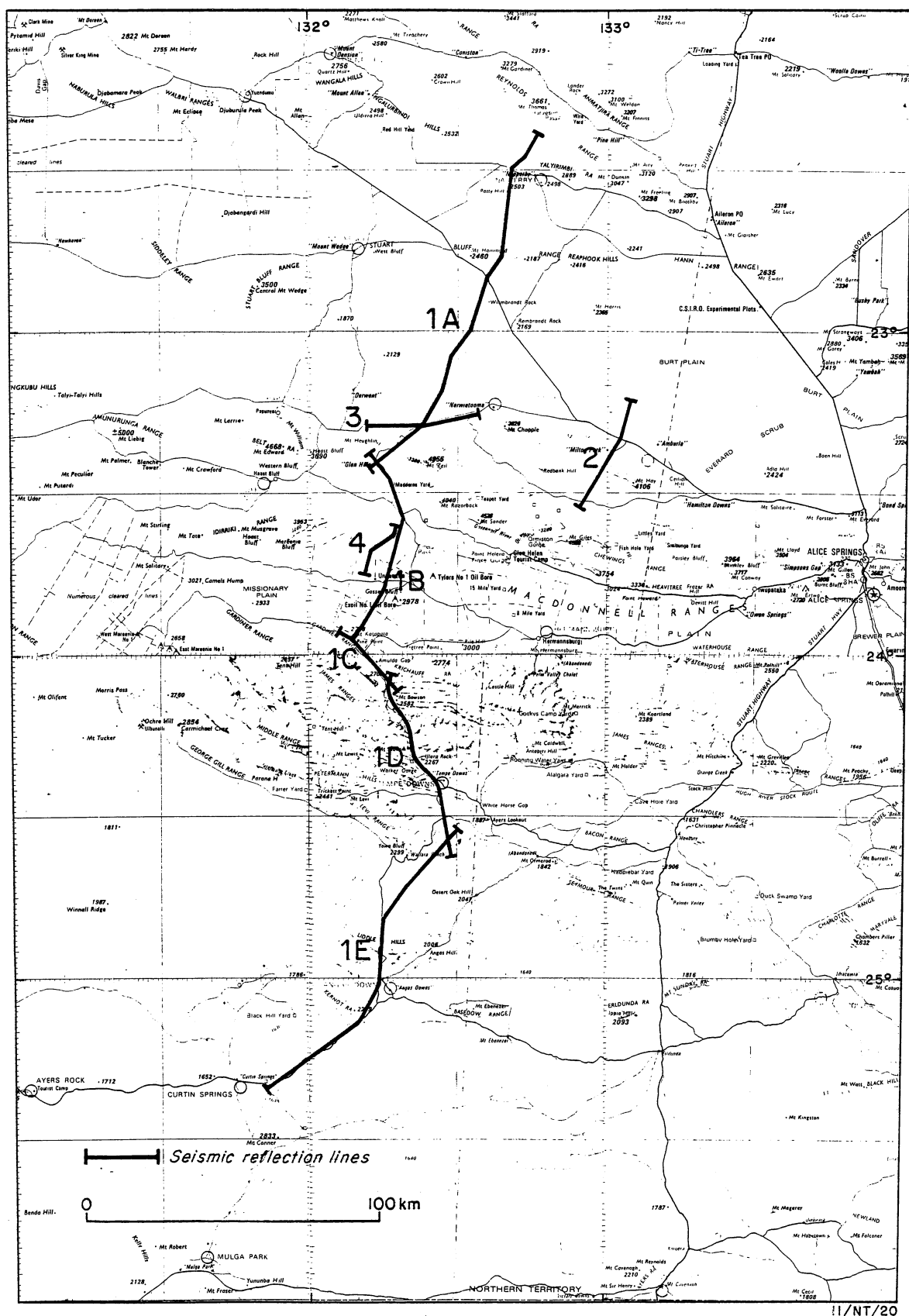


Figure 1. Locality map. Base reduced from 1:1,000,000 topographical maps of the region. BMR Traverses are marked.

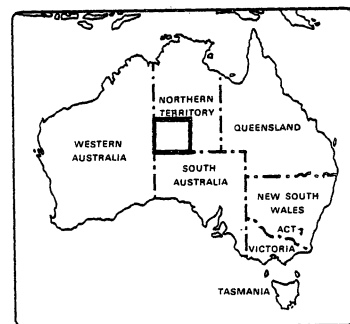
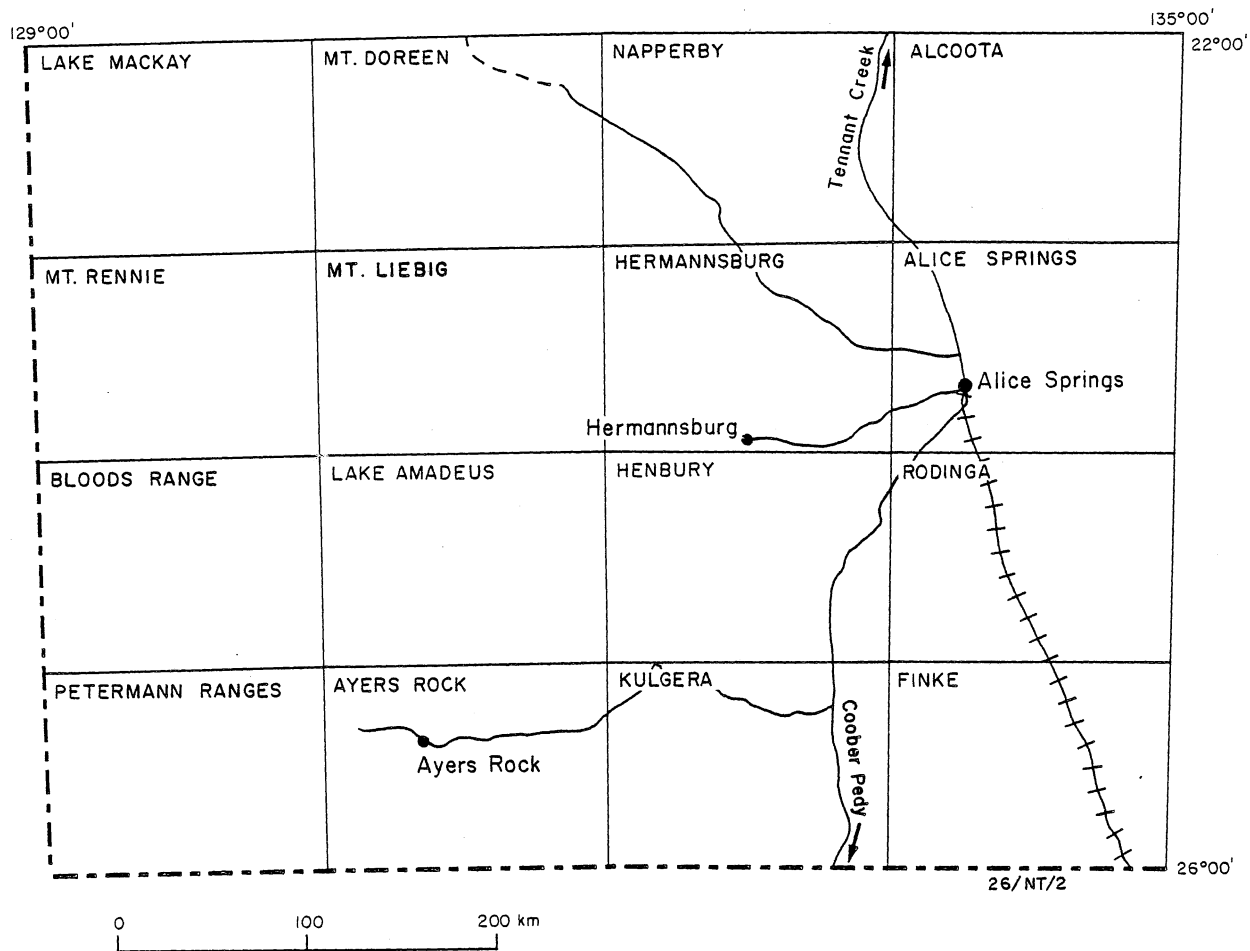


Figure 2. 1:250,000 Map sheets covering the survey area.

Springs, the only supply town in the region.

The three phases of acquisition (clearing, surveying and recording) operated from three separate parties. The Seismic Party consisted of 37 people on average, whilst the Surveying Party consisted of 6 people and the Bulldozer Party consisted of 5 people. Details of the personnel involved with the survey are given in Appendix 2.

Thirty-two vehicles and fifteen trailers were required for the Seismic Party, and are listed in Appendix 3. Vehicles for the Surveying and Bulldozing Party were supplied by the Australian Survey Office and Contractor respectively.

Climate

The region was experiencing its 2nd or 3rd season of drought. Grass was scarce, and the fire danger was high. The only rain occurred when the crew reached the sand dunes in the southern Amadeus Basin. The rain was light and lasted less than 1 day total, yet proved a godsend in hardening the dunes and thus allowing the vehicles to cross them. For the rest of the time the sun shone. The only complaint was the very cold nights during the first half of the survey, and the high temperatures towards the end of the survey. Dust and flies were an added minor nuisance during the latter half of the survey.

Water: Drilling and Drinking

Drilling and drinking water were never a problem, thanks to the cooperation of the local property owners in allowing use of water from specified bores. This was appreciated as the region was experiencing a drought and water was not to be wasted. Properties affected by the seismic traverses are shown in figure 3. The longest camp water run was about 1 hour round trip, and less for drilling. A 30 km section of the Areyonga Gorge was the only area in which it was difficult to obtain water for drilling. Here the problem was not water itself, as there was plenty close at hand, rather it was getting the tankers to the water (30km away) because of access problems. The same problem applied when drilling in the sand dune country at the southern end of the line, near Angus Downs Station.

Associated Geophysical Surveys

A seismic refraction profile, of 400 km length was recorded within the Arunta Block, in conjunction with the seismic reflection work. The refraction profile was coincident with T3. This experiment has been documented (Bracewell & Collins, 1986) and will be referred to only in conjunction with the seismic reflection experiments.

In addition, gravity observations were made and airborne magnetics and radiometrics were flown along all seismic traverses recorded. Details of these surveys are given later.

1.2 Objectives

The main objective of this multidisciplinary experiment was to investigate the structural evolution of the lithosphere in the

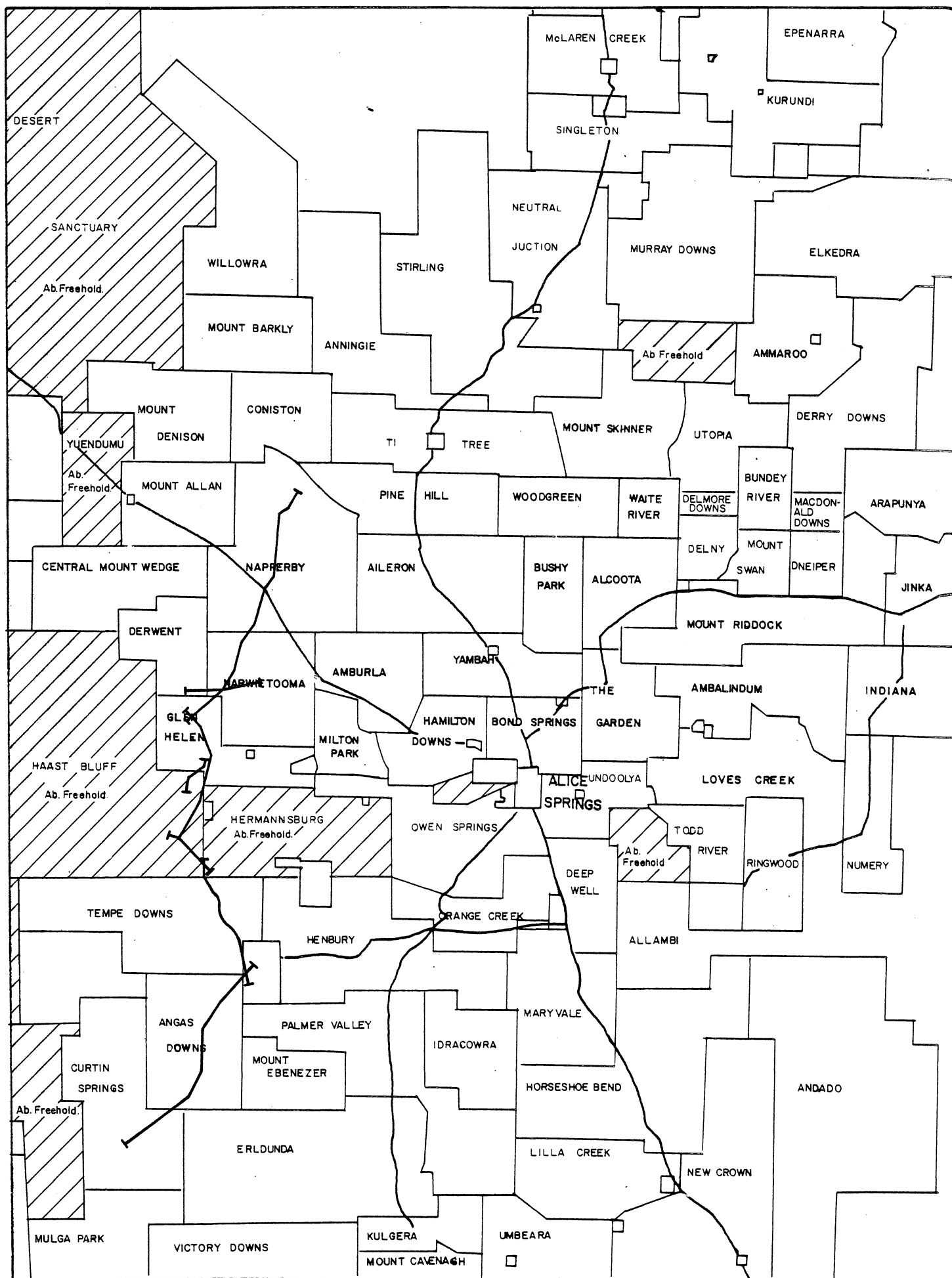


Figure 3. Pastoral and Aboriginal leases, Central Australia. Aboriginal leases are shaded. The BMR traverses are marked.

Central Australian region with emphasis on the formation of the Ngalia and Amadeus Basins, and hence to aid in the evaluation of their petroleum prospectivity.

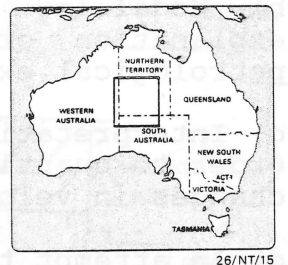
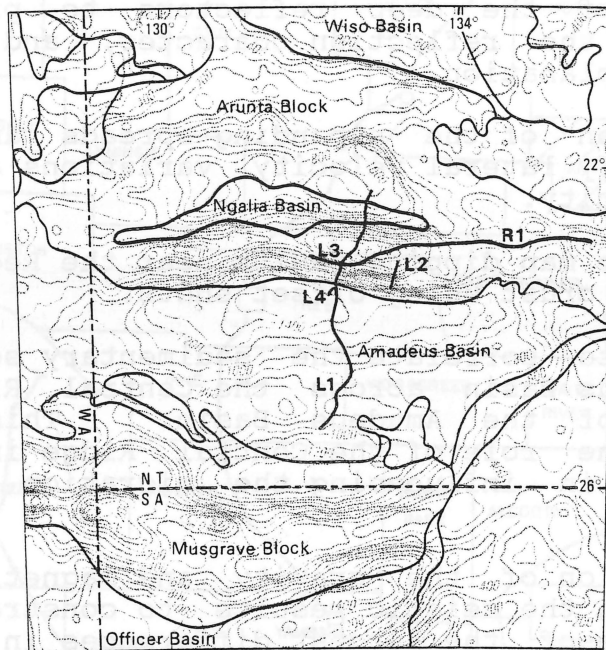
In addition to this main objective, the following topics were also to be studied using the seismic data.

- a) The imaging of the deep crust, in an attempt to understand the role of basement in determining the deformational history and evolution of the basins.
- b) Modelling of the deep reflectors to provide a physical explanation of the reflection character, and hence a possible petrological explanation.
- c) Interpretation of the expanding spreads and offset shots in order to quantify lateral velocity variations as well as vertical changes in velocity.
- d) An attempt to map dipping faults near the Redbank Zone boundary into the deeper crust using offset shots.
- e) An attempt to correlate the sedimentary sequences from the northern Amadeus Basin across the Central Ridge and into the southern part of the Amadeus Basin. This will assist in understanding the role of the Central Ridge in the evolution of the basin and in influencing the migration and maturation of petroleum.
- f) Interpretation of the gravity and magnetic information in conjunction with the seismic results to constrain models of basin evolution. Some of the largest differences in gravity anomalies seen on any continent exist between the basins and basement blocks (Fig 4). The interpretation of these anomalies in conjunction with the results of the seismic profiling will have an important bearing on the ideas on the formation of these intracontinental basin structures.
- g) Reprocessing of industry and old BMR seismic data to assist in correlation and interpretation of the shallow seismic data obtained from this survey.
- h) An analysis of sonic well logs and computed synthetic seismograms in conjunction with the shallow seismic data obtained from this survey to assist in interpreting and correlating the shallow seismic section.

1.3 Program

The BMR Program was to undertake the following field operations (Table 1).

- A) To record approximately 500 km of 6-12 fold CMP seismic data during the 4 month period July - November, 1985, for the objectives outlined in Section 1-2. The 500 km was broken up into 420 km of regional reconnaissance seismic profiling plus some 67 km of experimental seismic recording.
- B) To record a series of expanding spreads to obtain information about the velocity structure in the lower crust.



26/NT/15

0 300 km
Contour interval 100 $\mu\text{m.s}^{-2}$

Figure 4. Map showing seismic profiles, gravity contours and boundaries of the basins and blocks. L1 denotes the main N-S traverse. L2, L3, and L4 denote shorter supplementary traverses. R1 denotes the refraction profile.

Table 1

BMR Program Summary

Seismic Reflection Profiling

Traverse 1	(T1)	N-S	420km	83.3 m	GI	6+ fold
Traverse 2	(T2)	N-S	40km	83.3 m	GI	6+ fold
Traverse 3	(T3)	E-W	17km	83.3 m	GI	6+ fold
Traverse 4	(T4)	N-S	11km	80.0 m	GI	2+ fold

Seismic Refraction Profiling (Arunta Block)

Profile 1 (R1) E-W 400km 2.5 km spacing, 5 shot sites

Expanding Spreads (E1, E2 & E3)

E1 (T1)	Arunta Block	20 shots	36 km max offset
E2 (T3)	Arunta Block	19 shots	36 km max offset
E3 (T1)	Amadeus Basin	13 shots	25 km max offset

Constant Offset Shots (C1)

C1 (T2)	Arunta-Redbank	8 shots	24 km max offset
---------	----------------	---------	------------------

Tomographic Mapping

E1 (T1) into E2 (T3)	16 recorder sites
E2 (T3) into E1 (T1)	16 recorder sites

Gravity Survey

Station Spacing of 333 m along seismic Traverses (T)

Aeromagnetic Survey (M1, M2 & M3)

M1	150m elevation AGL	No horizontal offset
M2	150m elevation AGL	1000m horizontal offset (W or S)
M3	3000m elevation AGL	No horizontal offset

- C) To record additional experimental tests as required to obtain information about the structure of the region.
- D) To record a refraction tomographic survey in conjunction with the expanding spreads for mapping the three dimensional velocity structure of the upper basement within the Arunta Block.
- E) To record gravity values at an interval of 333m to assist in understanding the tectonic evolution of the region.
- F) To record an airborne magnetic survey along the seismic reflection traverses to assist in testing models for the evolution of the Ngalia and Amadeus Basins.
- G) To collect core samples where appropriate to assist the geologists in obtaining more information about the region in areas of no outcrop.

1.4 Pre-Survey Preparations

Communication with other BMR Divisions, particularly the Division of Continental Geology and with petroleum companies and their operators involved in the Amadeus Basin region commenced in late 1983, and resulted in the planning of a survey whose combined results would assist all workers attempting to understand the evolution and petroleum and mineral prospectivity of the region.

Shot point location maps at scales of 1:250,000 and 1:1,000,000 were produced at the BMR for the 1985 survey. These maps have been published (Johnstone *et.al.*, 1983), and were used, where possible, to assist in tying the BMR traverses to the existing seismic grid. Micro-fiche copies of the 1:250,000 maps are included in the above BMR Record.

Prior to commencing the field work, and apart from the standard survey preparation work, the BMR had to negotiate a contract with the local aboriginal communities through the Central Land Council (CLC) for the reconnaissance of the proposed traverses for identification of sacred sites. The negotiations took some 2 years before an acceptable contract was signed, and delayed the survey start time from 1984 to 1985.

Property owners were contacted during a reconnaissance trip in mid July 1984 (Section 3-2), and then formally by letter several months prior to the crew leaving Canberra. Each owner was then consulted prior to the party entering their property. Figure 3 shows the distribution of pastoral and aboriginal leases in the vicinity of the BMR traverses.

GEOLOGY

2.1 Regional Setting

Central Australian Geology is characterised by a series of east-west Late Proterozoic to Palaeozoic basins lying over a Proterozoic basement. The basins include the Wiso, Ngalia, Amadeus and Officer Basins. The Arunta Block separates the Wiso, Ngalia and Amadeus Basins while the Musgrave Block separates the Amadeus and Officer Basins. The main tectonic divisions are shown in figure 5.

Interest in the Amadeus and Ngalia Basins grew with the discovery of petroleum from two horizons during the mid 1960's, and research has continued ever since. The Mereenie Oil Field (discovered 1964) and the Palm Valley Gas Field (discovered 1965) are two of only a handful of proclaimed onshore petroleum fields in Australia. The area is a significant petroleum prospect for future discovery (Schroder & Gorter, 1984).

The deformation of the crust and mantle has been described by Forman and Shaw (1973), with this generating an interest in crustal modelling in this area. Several structural models have now been published using the gravity anomalies to model the basin structure (Anfiloff & Shaw, 1973; Mathur, 1976; Wellman, 1978). A comparison of these models is shown in figure 6. Current basin formation models (eg. thermal or stretching models) are not applicable to the central Australian region. This lead Lambeck (1983) to develop a mechanical model basin formation that assumes the region has been predominantly in compression for the last 1000 m.y..

2.2 Arunta Block Geology

The Arunta Block is a Proterozoic ensialic mobile belt situated within Central Australia (Fig 5). It covers some 200,000 square km. It has also been called the Arunta Complex and more recently the Arunta Inlier. The Arunta Block has been well documented by Shaw *et.al.*, (1984) and Stewart *et.al.*, (1984), and the summary of the geology has been prepared from their work.

The Arunta Block has undergone six recognized episodes of tectonic activity, the earliest event occurring prior to 1800 m.y., while the most recent is associated with the Alice Springs Orogeny of 300-400 m.y.. The Arunta Block has been subdivided into three tectonic provinces: Northern, Central and Southern (Fig 7).

The Northern Province consists of low grade metamorphosed sediments with minor volcanics and high grade metamorphics. Lithologic layering follows the general strike of the outline of the northern margin of the overlying east-west orientated Ngalia Basin. The Ngalia Basin lies wholly within the Northern Province (Fig 7).

Rocks from the Central Province have been metamorphosed to amphibolite and granulite facies. Lithological layering is complex, in contrast to the Northern Province. Small granite bodies formed during peak metamorphism. The five recognised

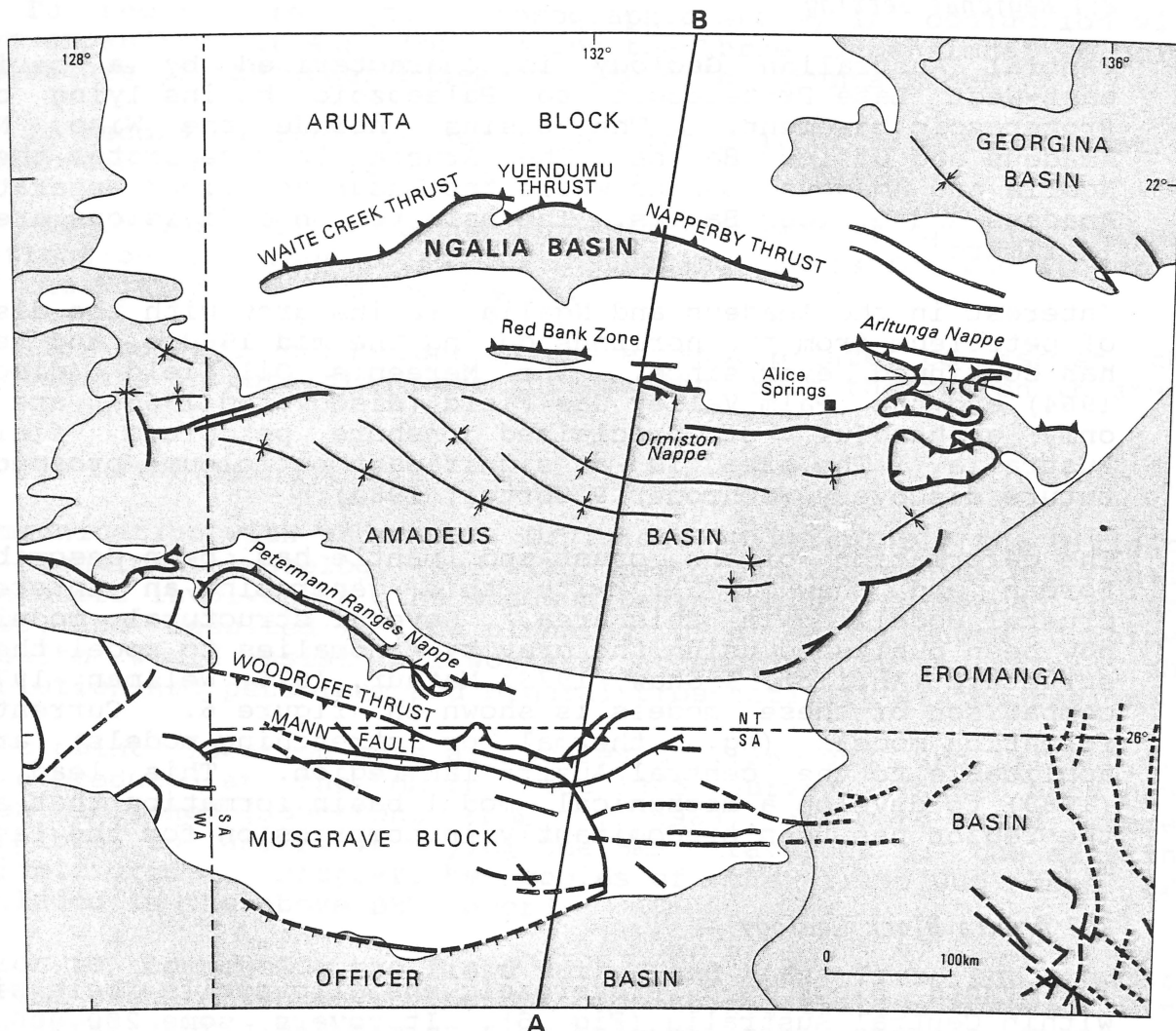


Figure 5. Tectonic setting, Central Australia (after Wells & Moss, 1983). Profile A-B refers to the computed gravity profile, Figure 6.

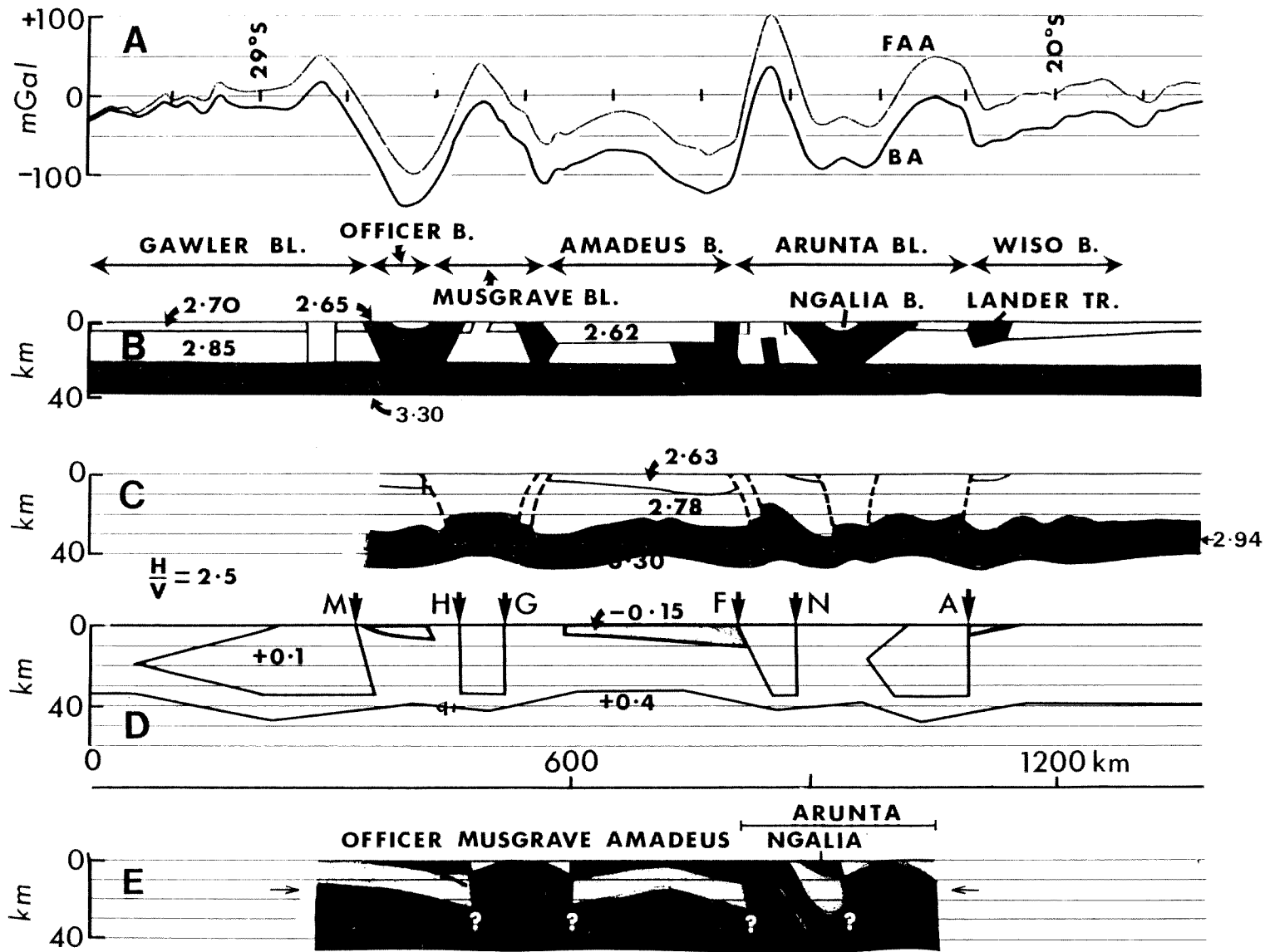


Figure 6. Observed gravity profiles and crustal models from the gravity data.

- A) shows the observed and computed gravity profiles. (Mathur, 19776).
- B) shows a model based on the above data.
- C) model based on gravity profile (Anfiloff & Shaw, 1973)
- D) model based on gravity profile (Wellman, 1978)
- E) compressional model for the central Australian region (Lambeck, 1983)

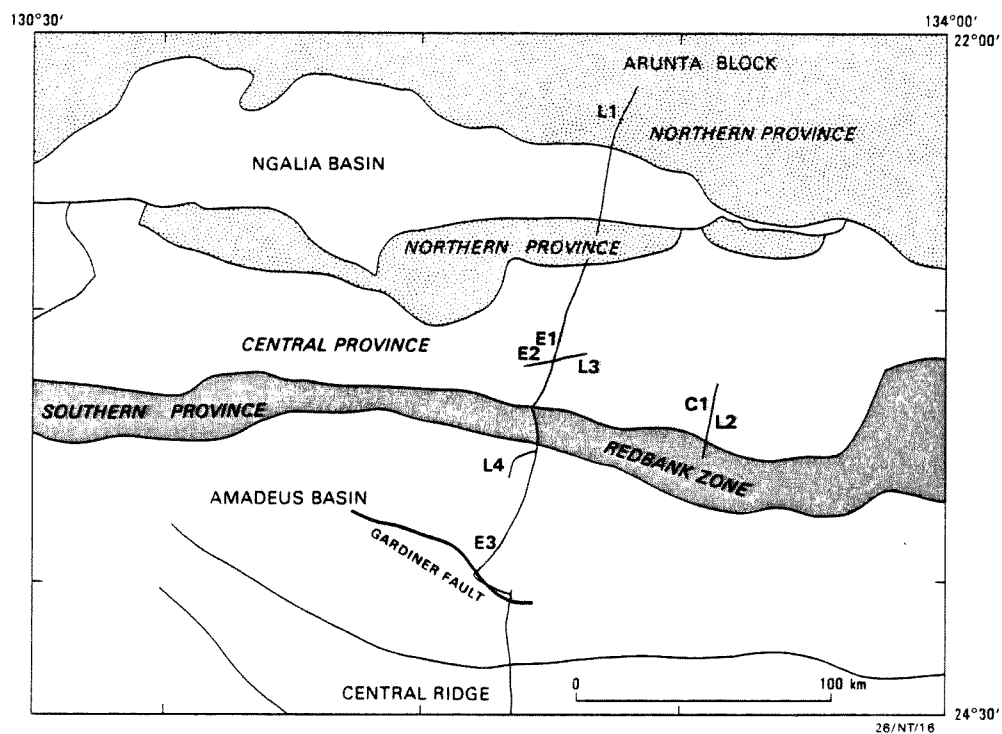


Figure 7. Subdivisions within the Arunta Block (modified from Shaw et.al., 1984).

deformational events from the north are also identified within the Central Province.

The Southern Province is, in contrast, characterized by gneiss and silicic metasediments, with abundant granitoids and dolerite dykes (Rb-Sr age, 897 Ma). Only the later four deformational events have been recognized; the Strangways Event (1800-1750 m.y.) is absent. The Alice Springs Orogeny (400-300 m.y.) produced extensive thrust faulting accompanied by greenschist facies regional metamorphism along the southern margin of the Arunta Block. The Southern Province has some similarities to the Musgrave Block to the south (Section 2-5). However radiometric dates suggest that the Musgrave Block was a separate mobile belt prior to becoming part of the Central Australian region.

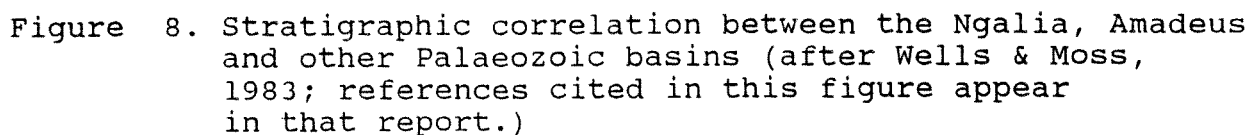
2.3 Ngalia Basin Geology

The Ngalia Basin is a small isolated basin located to the north of the Amadeus Basin, and is entirely enclosed within the Arunta Block (Fig 5). The basin is asymmetrical, with a faulted northern margin. The geology of the Ngalia Basin has been well described by Wells *et.al.* (1972) and Wells and Moss (1983), and the following description is based on their work. It covers approximately 16,000 square km, is 420 km in length, and 72 km in width. It contains shallow marine, glacial and continental sediments of Adelaidean (Late Proterozoic), Cambrian, Ordovician, and Carboniferous age. A simplified stratigraphic sequence for the Ngalia Basin is given in figure 8. Figure 9 shows a correlation between the deformation events identified within the Amadeus and Ngalia Basins. The maximum thickness of sediments is over 5000 m in the western area of the basin.

The basal unit of the Ngalia Basin is a quartzite (Vaughan Springs Quartzite) deposited on a long exposed Precambrian peneplain during the Adelaidean (Late Proterozoic). This first sedimentation is regarded as alluvial fan deposits, with several marine transgressions recorded within the sequence. The Vaughan Springs Quartzite is equivalent to the Amadeus Basins Heavitree Quartzite (Fig 8). Sedimentation stabilized with widespread deposition of shales and muds (Albinia Formation) in a shallow sea covering much of Central Australia.

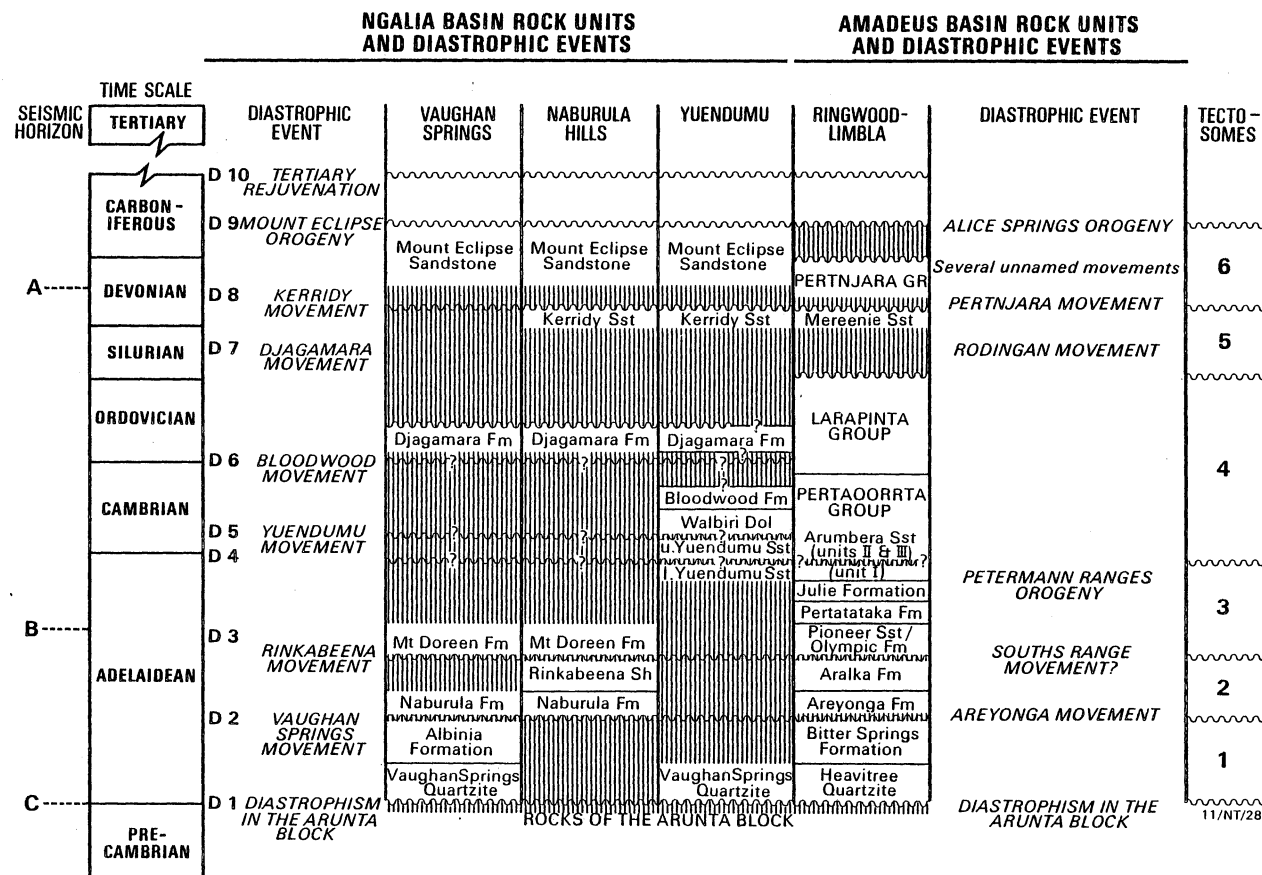
Local uplift and block faulting during the Adelaidean resulted in marine regression as well as defining the structural divisions of the basin, namely a raised central north-south ridge with easterly and westerly lobes. Erosion of several raised blocks to the west and central regions almost removed much of the recently deposited sediments. A period of glaciation and regression followed forming the Naburula Formation and Rinkabeena Shale, only to be terminated by minor uplift. Glaciation continued (Mount Doreen Formation) to be followed by a marine sedimentation (Wanapi Dolomite and Newhaven Shale Members). Continued deformation was responsible for the unconformity within the Yuendumu Sandstone. This deformation is thought to be related to the Petermann Ranges Orogeny, that occurred to the south of the Amadeus Basin (Fig 9).

By the early Palaeozoic, continued minor uplift had removed parts of the Yuendumu Sandstone in the central division before a major marine transgression swept across the region during the Cambrian and possibly into the Ordovician. The transgression deposited



		AMADEUS	NGALIA	GEORGINA	WISO	ADELAIDE GEOSYNCLINE
CARBONIFEROUS	upper	STEPHANIAN				
		WESTPHALIAN	?			
		NAMURIAN	⊕			
	lower	WISEAN	⊗			
		TOURNAISIAN	⊗			
DEVONIAN	FAMENNIAN	?	⊗	?	?	
	FRASNIAN	PERTNJARA GROUP		Dulcie Sandstone	Lake Surprise Sandstone	
	GIVETIAN					
	EIFELIAN	Mereenie Sandstone		Dulcie Sandstone and Cravens Peak beds	?	
	EMSIAN					
	SIEGENIAN		Kerridy Sandstone			
	GEDINNIAN					
SILURIAN						
	ASHGILLIAN					
	CARADOCIAN					
	LLANDEILIAN					
	LLANVIRNIAN	Carmichael Sandstone		Ethabuka Sandstone		
ORDOVICIAN		Stokes Siltstone		Mithaka Fm		
		Stairway Sandstone		Carlo Formation	unit 4 Hanson River beds	
		Horn Valley Siltstone		Nora Formation	unit 3 Hanson River beds	
	ARENIGIAN			Coolibah Fm		
				Kelly Creek Fm		
TREMA-DOCIAN	WARENDIAN	Pacoota Sandstone	⊗	Djagamara Formation	unit 2 Hanson River beds	
	DATSONIAN			Kelly Creek Fm		
				Tomahawk beds	unit 1 Hanson River beds	
	PAYNTONIAN					
	FRANCONIAN	Goyder Fm				
CAMBRIAN	upper	IDAMEAN				
		MINDYALLAN		Arrinthrunga Fm		LAKE FROME GROUP
		BOOMERANGIAN		Arthur Creek beds		
	middle	UNDILLAN		Marqua beds		
		FLORAN				
	TEMPLETONIAN	Shannon Formation		Sandover beds	Point Wakefield bds	Wirrálpa Limestone
			Bloodwood Fm			
	ORDIAN	Giles Creek Dol	Walbiri Dolomite	Hay River Fm	Lothari Hill Sst	
		Chandler Limestone		(Huckitta)(Hay River)	Hooker Creek Fm	Billy Creek Formation
					Montejinni Lst	
lower		Todd River Dolomite		Unnamed dol		Ajax Limestone
				Red Heart Dol		
		upper Arumbera Sandstone (units II & III)	upper Yuendumu Sandstone (unit II)	Mount Baldwin Fm		Parachilna Fm
						Uratanna Formation
				Adam Sh		

Figure 9. Correlation of deformation events observed in the Ngalia and Amadeus Basins (after Wells & Moss, 1983).



thick clastic and carbonate sequences (Bloodwood Formation and Walbiri Dolomite, Cambrian; Djagamara Formation, Ordovician). Many of the old fault systems were reactivated during a Petermann Ranges Orogeny equivalent (Fig 9).

Late Cambrian uplift stopped sedimentation, and uplifted the northern margin and resulted in erosion of some of the sequence. Late Ordovician uplift forced the sea out for the last time. Continental sands (Kerridy Sandstone) accumulated on the eroded land surface, only to be partly eroded along with underlying sediments during the Middle Devonian. Further continental sedimentation (Mount Eclipse Sandstone) was the last major deposition prior to the Late Carboniferous deformation (Mount Eclipse Orogeny). This deformation created the present day northern margin structure with its tight folds and thrusts, as well as the broad synclinal structure.

2.4 Amadeus Basin Geology

The Amadeus Basin is an asymmetric, elongated basin some 800 km in length and covering some 155,000 square kilometres. The basin is bounded to the north by the Arunta Block (Section 2.2) and by the Musgrave-Mann Block (Section 2.5) to the south. The eastern and western margins are obscured by recent sediments. This brief geological description is based on the work of Wells *et al.*, (1970), Schroder & Gorter, (1984) and Jackson *et al.* (1984).

The basin is an intracratonic depression, containing Late Proterozoic and some Palaeozoic sediments. The sedimentary section reaches a maximum thickness of some 14 km along the northern margin of the basin. A stratigraphic sequence is shown in figure 10. The first sedimentation within the basin began in the Late Proterozoic (Adelaidean) with the deposition of the Heavitree and Dean Quartzites on a stable epicontinental shelf. Carbonates, evaporites (including salt) and clastics of the Bitter Springs Formation were then deposited as the sea shallowed. This unit also contains the only known interbedded volcanics within the basin, and contains both source and reservoir rocks and is regarded as a petroleum prospect within the basin. The first episode of uplift then followed, with the onset of the Areyonga Movement (Fig 9). This movement paralleled the current easterly trend of the basin. A period of paralic (paralic to continental in the south) deposition followed (Areyonga Formation), terminating at a second episode of uplift referred to as the Souths Range Movement. Shallow marine sandstones and shales were deposited to the south of the basin (Winnall Beds), while carbonates and marine clastics were deposited to the north (Julie Formation, Pertatataka Formation, Fig 10). These two areas were apparently separated by a hinge line or central ridge at this time. Deposition in the south ceased with the Petermann Ranges Orogeny, when a large portion of this area was unlifted and overfolded during the late Proterozoic or early Cambrian. The Bitter Springs salt acted as the decollement surface for the thrusting and overfolding.

The Petermann Ranges Orogeny did not affect the northern sub-basin. This uplift created the source for further deposition, with molasse sediments (Ayers Rock, The Olgas) to the south and deltaic sediments to the north. Continental sedimentation continued in the west (Cleland Sandstone), while shallow marine

AGE	GROUP	FORMATION			OROGENY
		SOUTHWEST	CENTRAL	NORTHEAST	
LATE DEVONIAN	PERTNJARA		Brewer Conglomerate		Alice Springs
			Hermannsburg Sandstone		
			Parke Siltstone		
EARLY DEVONIAN					Pertnjara
SILURIAN			Mereenie Sandstone		
LATE ORDOVICIAN	LARAPINTA	Carmichael Sandstone			Rodingan
		Stokes Siltstone		Rodingan Erosion	
		Stairway Sandstone			
EARLY ORDOVICIAN		Horn Valley Siltstone			
		Pacoota Sandstone			
CAMBRIAN	PERTAOORRTA		Goyder Formation		
			Petermann Sst		
				Jay Creek Lst	Shannon Fm
			Deception Fm		
		Cleland Sandstone	Illara Sst	Hugh River Shale	Giles Creek Dolomite
			Tempe Fm		
				Chandler Formation	
			Namatjira Fm		Todd River Dolomite
		Mount Currie Conglomerate	Arumbera Sandstone		
PROTEROZOIC					Petermann Range
		Maurice Formation		Julie Formation	
		Sir Frederick Conglomerate & Ellis Sandstone	Winnall Beds	Pertatataka Formation	
				Pioneer Sandstone/ Olympic Formation	Souths Range
		Carnegie & Boord Formation	Inindia Beds	Aralka Formation	
				Areyonga Formation	
					Areyonga
		Pinnyinna Beds		Bitter Springs Formation	
		Dean Quartzite		Heavitree Quartzite	
			Arunta Complex		

Figure 10. Amadeus Basin stratigraphy (Kennard & Nicoll, 1986)

sediments were deposited to the east (Shannon, Giles Creek and Chandler Formations). A series of transgressions then followed each other, through the Late Cambrian (Goyder Formation) and Early Ordovician (Horn Valley Siltstone). The transgression came from the north, and resulted in a widespread shallow open shelf environment (Pacoota Sandstone, from barrier bars; Stairway Sandstone, and Stokes Formation both from muds and silts). The Pacoota Sandstone and Stairway Sandstone are the major petroleum reservoir beds within the Amadeus Basin. Sedimentation was brought to a close with the deposition of a regressive unit of sands, during the early Silurian. The thickness of the Cambro-Ordovician (Larapinta Group) is about 2600 m at the northern margin.

The Rodingan Movement, initially responsible for the regressive sands within the early Silurian, also subjected the Amadeus Basin to large vertical movements of between 1000 and 3000 m of uplift, causing erosion and peneplanation (Fig 10). Arid conditions prevailed with the large deserts providing the source for the Mereenie Sandstone (Silurian? - Devonian).

A late Devonian massive uplift of the Arunta Block and overlying Proterozoic and Palaeozoic sediments at the northern margin saw great volumes of molasse (Pertnajara Group) deposited against a new mountain chain (MacDonnell Ranges) in a foredeep environment (Fig 10). The Brewer Conglomerate reaches 3000 m against the northern margin, thinning rapidly southwards.

Most of the folding took place during the late Devonian to early Carboniferous with the Alice Springs Orogeny. This Orogeny resulted in the formation of the Arltunga and Ormiston Nappes.

The Amadeus Basin has been relatively stable since the Carboniferous with minor uplift, tilting and folding during the Tertiary. Extensive erosion has left many of the synclines breached to the Proterozoic.

2.5 Musgrave Block Geology

The Musgrave-Mann Block is a large Proterozoic inlier, straddling the Northern Territory and South Australian border (Fig 5). There has been no detailed regional study of the geology of the Musgrave Block. The following summary of the geology is based on Mathur & Shaw (1982), Thompson (1976), and Webb (1985).

The older basement rocks of the Musgrave-Mann Block consist largely of deformed igneous and high grade metamorphic rocks including granulite, migmatite and granite. Dates from these rocks indicate an age of metamorphism of about 1650 m.y., which has been correlated with the Kimban Orogeny of the Gawler Craton. Overlying these are well banded granulite, the end product of a period of metamorphism and deformation. Rb/Sr ages from gneisses of granulite facies metamorphism date this deformation and metamorphism at 1300-1400 m.y..

Uplift, erosion, and deep crustal fracturing followed a period of granite intrusion at 1100 m.y.. The deep crustal faulting episode is referred to as the Musgravian Orogenic Cycle, and allowed intrusion of ultra-mafic complexes, dated at 1050 m.y.. These intrusions, the Giles Complex and Mount Woodroffe Norite occurred

as a result of the Musgravian Orogeny, and are part of the younger basement rocks.

The region was then uplifted, the granulites being pushed to the surface, as major reverse faulting associated with major crustal dislocations occurred. This period of deformation is associated with movement on the Woodroffe Thrust Zone and Mann Fault Zone along the northern margin. These structural features trend east-west and are recognized by zones of mylonite dipping to the south, from 30 degrees to very steeply. The gravity features of the Musgrave are directly related to these crustal faults.

This complex is overlain by a sedimentary and volcanic sequence; the volcanics are generally lavas and flows. This is in turn unconformably overlain by the Adelaidean Amadeus Basin sediments. The northern Musgrave Block has many similarities with the southern Arunta Block, particularly the Redbank Zone.

FIELD OPERATIONS

3.1 General

Four 6-12 fold CMP seismic reflection traverses were recorded, with a total length of 486 km. T1 was recorded as a regional line, while T2 and T3 were small exploratory lines recorded to obtain information about the third dimension or specific structural features. T4 was a short line, recorded in conjunction with Magellan Petroleum N.L., and designed to look at the structure of the northern margin of the Amadeus Basin. General spread and recording parameters for all traverses are given in Appendix 4.

Progress was in general good, considering the topography and access problems of the region. Elevations ranged from 550 m south of the Stuart Bluff Ranges and 480 m near Lake Amadeus (Fig 1) to over 1000 m in the MacDonnell Ranges / Brewer Conglomerate region.

Long travelling times were encountered throughout because of the nature of the terrain. Long detours because of a scarcity of roads or tracks added time to travelling. This, although tiresome for the crew did not warrant bulldozing long access tracks in a country extremely sensitive to damage.

All major problems that did occur were related to drilling. These are discussed in detail in Section 3-7. Minor problems arose in DFS-IV breakdowns and in positioning seismic cables and geophones in rugged areas on T1, particularly within the MacDonnell Range and the Gardiner and James Ranges (Fig 1).

3.2 Reconnaissance

Reconnaissance on all traverses was carried out in July 1984. M.J. Sexton and B.R. Goleby (Officers from the Explosion Seismology Group, Division of Geophysics, BMR) made use of an offer from a BMR geological party in the field at that time to use their facilities and to be guided around the region. A previously chosen route was investigated as well as two alternative routes. The preferred route was selected and most property owners consulted and suitable camping sites located. Information was also obtained about water access and availability of local bulldozing and grader operators.

3.3 Australian Survey Office Airphoto Flight

The Australian Survey Office, Canberra Branch, was able to arrange at short notice a special large-scale colour airphoto flight of the main seismic traverse. This was flown in April 1985, 2 months prior to the survey commencing. The airphotos proved valuable in positioning the traverse for both the Central Land Council (CLC) and the bulldozer party, in locating traverse access, confirming final camp sites, and recording survey location and CLC restricted area positions.

3.4 Central Land Council Reconnaissance

The Central Land Council (CLC) was provided with the final

traverse location, marked on the airphotographs for them to reconnoitre the route, looking for Aboriginal sacred sites that the seismic traverse could destroy or interfere with. Where such a problem arose, they recommended an alternative route. The initial negotiations between the CLC and the BMR commenced in 1983, but were held in limbo till late 1984 when BMR re-opened its negotiations. The final contract was signed in February 1985, after a series of complicated negotiations. Field reconnaissance commenced in April 1985, and was found to be very quick and efficient. CLC cleared and or recommended deviations well in advance of the survey parties. All deviations were acceptable, within the objectives of the survey. Sites near the approved traverse were marked on the airphotos with instructions as to approach and access.

3.5 Bulldozing

A contract bulldozer from Brisbane was used to clear heavy vegetation, construct creek crossings and make access tracks where required. The bulldozer selected (Appendix 2) was a Caterpillar D7G, rated at 200HP, and fitted with an angled blade 4.26 m wide, and rippers. The bulldozer commenced work mid May 1985. The machine was extremely reliable with down time less than 2 days during the entire survey. The operator was competent, undertaking several major earth moving jobs that allowed a continuous seismic traverse; these included the construction of a road across Lake Lewis (a salt lake to the south of the Stuart Bluff Ranges, Fig 1), that was able to take the rigs and tankers, and a road over the Brewer Conglomerate, a task that was previously tried by the contractors for Magellan Petroleum's Harajaka Seismic Survey, but was unsuccessful.

Local graders was hired on four occasions to improve the access along the traverse on the scrubby flat country on Narwietooma, Napperby and Milton Park Stations and the Missionary Plain, to repair damage to existing roads created by the BMR vehicles, or re-create access roads once usable but now overgrown. The early start of the bulldozer prevented the problems that the South-Eastern Queensland Seismic Survey had the previous year (1984), with loss of recording and drilling time when these crews had to wait for the bulldozer to clear the line. (Wake-Dyster & Johnstone, 1985).

The bulldozer crew worked from a small party of 5, comprising operator, assistant operator (and cook), BMR supervisor, field hand, and a Technical Officer from the Australian Survey Office (ASO).

3.6 Surveying

Surveying was done initially by a contract crew arranged by the Australian Survey Office (ASO) and later by the Canberra Branch of the ASO supplemented by staff from the N.S.W. Branch Office (Appendix 2). Traverses were flagged from ground identification of the approved seismic traverses drawn on the airphotographs. The bulldozer party was responsible for the flagging and subsequent clearing of traverse, road access and where selected, camp site construction. A independent survey party, followed the bulldozer, pegging the line at the required interval, levelling, and then traversing with a theodolite and electronic distance

measuring equipment to obtain accurate shot-point and geophone locations. Pegging interval information is given for each traverse in Appendix 5.

The surveyors provided Australian Map Grid (AMG) co-ordinates for traverse bends and endpoints, and elevations referenced to the Australian Height Datum (AHD). Bendpoint information is given in Appendices 6 through 13, as part of the traverse geometry definition information.

3.7 Drilling and Explosives

Five Mayhew drilling rigs from BMR were used for the entire survey. Holes were generally drilled to 40 m depth, which was generally below the weathering in the Arunta Block, and over most parts of the Amadeus and Ngalia Basins. There were regions where weathering was known to exceed 60 m, and in units like the Brewer Conglomerate may be hundreds of metres deep. A 40 m hole was chosen as being a good compromise between drilling time and acceptable seismic data quality.

Drilling Problems

Drilling problems were the main difficulty encountered during the survey. They could be divided into two types: bad drilling conditions and rig and tanker access problems (rig access problems are problems in not being able to move a rig and tanker from one shot point to the next).

Rig access problems were restricted to the sand dune and sandy areas. These only occurred at the southern end of the traverse, on the northern portion of the Angus Downs Station, between the Liddle Hills and Ayers Lookout (Fig 1), and within the Areyonga Gorge (T1D between Areyonga and Tempe Downs Homestead, Fig 1); these problem areas comprised less than 10% of the total traverse. A local bulldozer was used to move the rigs and tankers across the worst sand areas in the Areyonga Gorge section. Fortunately, light rain fell just prior to reaching the sand dunes on Angus Downs Station. Otherwise a bulldozer would have been used to move all vehicles, or this section would have been abandoned. The seismic traverse then ran along an old road from Angus Downs Station to the end of the traverse and avoided further such problems.

There were two types of bad drilling: hard rock drilling and gravel or sand drilling. In places the rock was so hard that 40 m holes were difficult, so the hole depth was typically 4.5 m into the hard rock. This was not a problem seismically as we were well below the weathering, and into fresh rock. Such problems occurred on the Arunta Block, particularly on Napperby Station to the north of the Ngalia Basin (Patty Hill, Fig 1), and on Glen Helen Station between Mt Heughlin and Madderns Yard (northern portion T1B, Fig 1).

The second and far more serious problem was drilling in coarse river gravels. River gravels occurred in many places along the traverse as the traverse had to follow existing river valleys to get through the rugged country. Particularly bad areas were, within the Brewer Conglomerate outcrop (T4 and T1B equivalent, Fig 1), and the Areyonga and Illara Creeks (Areyonga Gorge) region

through the Gardiner and James Ranges (northern portion T1D, Fig 1). Holes were as deep as the local conditions allowed.

In most places it was extremely difficult getting started and was like 'drilling into a pack of marbles'. The worst portion was near the surface where the boulders were able to move around. Once the bit had got down a fair way (say 4m) there was less movement, but the random shape and position of the boulders caused the bit to deviate wildly. It was luck and patience to get a hole established, and a credit to the BMR drill crews for being able to drill in these areas; where contract drillers have worked and although successful, took much longer for fewer holes, at great cost to the clients (L. Roe, Magellan Petroleum, *pers. comm.*).

A technique that proved helpful was to 'hand dig' a pit and try to get as long a piece of PVC pipe into the ground below the rig as far as possible before starting drilling. Once this was bedded in, drilling started, and as the bit went down the PVC pipe was hammered down with the bit.

The cost to rigs and equipment when drilling in the river gravels was high. For the Brewer Conglomerate stretch, a \$1000.00 tungsten roller button bit was chewed up per hole on average, as well as damaging pipe and subjecting the rig to excessive vibration and movement.

Explosives

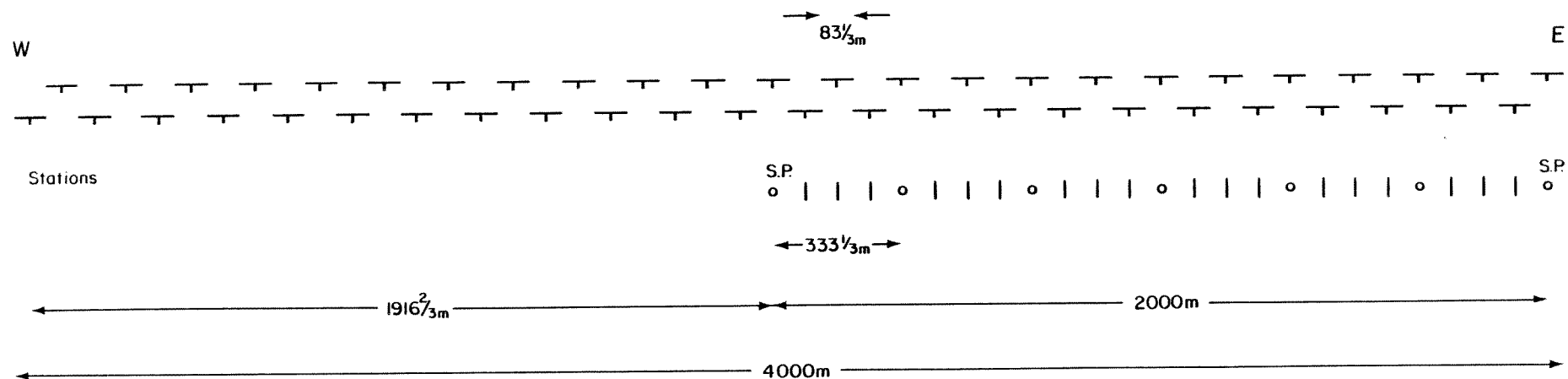
ICI's "Anzite Blue" was the explosive used during the survey; either 8.2kg or 12.3kg charge sizes were used during routine production recording. Detonators were sealed with silastic then taped in to prevent misfires which had been a problem on previous surveys. Information which has come to hand since the survey indicates that ammonium nitrate based explosives are not reliable when exploded at water depths approaching 30 m. This may be the cause of misfires in previous years. Additional experimental recordings that used large charge sizes were the three expanding spreads (1.5 tonnes each) and the constant offset shots on T2 (8 x 82kg shots).

3.8 Seismic Recording

Central Australian seismic recording techniques were obtained from a noise analysis experiment conducted prior to commencing acquisition, and confirmed using uphole shoots and charge size comparisons as the survey crossed the different geological domains. Final acquisition parameters varied little from those used on the 1984 BMR Southeast Queensland Project (Wake-Dyster & Johnstone, 1985).

A DFS IV (Texas Instruments) digital acquisition system was used to record multi-fold common mid-point (CMP) data using 48 channels (traces) at a station interval of 83.3m. Individual acquisition parameters are given for each traverse in Appendix 5. Parameters did vary but on average sixteen geophones per trace were laid out along the line at 5 m intervals. Shots were fired on trace 25 with trace number 1 to the north or east. Station numbers increased towards the north or east. Trace 25 was used for uphole times. Standard 52-pair cable was used. Figure 11 shows a typical reflection spread layout.

TYPICAL REFLECTION SPREAD LAYOUT



48 Traces
 16 Geophones per trace
 Single hole
 Trace no. 1 to East
 Shot on trace 25

$83\frac{1}{3}\text{ m}$ Group interval
 5m Geophone interval

26/55

Figure 11. Typical spread layout.

Recording of the expanding spreads was integrated with the normal production shots. Expanding spread recording arrangements are documented in Tables 2 to 4, while the tomography experiment and the constant offset experiment recorder positions are given in Tables 5 and 6 respectively.

Noise Analysis:

a conventional noise analysis was conducted during the first week of the survey. As there was a good deal of existing survey information already available for the Amadeus and Ngalia Basins, the only unknown area was the Arunta Block. The survey was started within the Arunta Block just south of the Ngalia Basin to get some data on the Arunta, prior to recording in the Ngalia Basin. This gave time to evaluate the results before returning to the Arunta Block.

The Noise Analysis consisted of the following tests:

- a) Centre shot, trace 48 shot, trace 1 shot and half spread offset recorded by 48 bunched geophone arrays at 83.3 m spacing.
- b) Uphole shots, at depths of 60, 50, 40, 30, 20 and 10 m.
- c) Charge size comparisons of 4, 8, 12 and 16 kg shots detonated at 40 m.

Results from a) above were played back at different filter settings looking for reflection signal characteristics and ground roll and noise characteristics. Final acquisition parameters for the Arunta Block were chosen from the results of these tests. The data tapes were sent back to Canberra and processed using the DISCO software. The parameters determined in Canberra confirmed the choice made in the field (Appendix 4).

Traverse 1 (T1):

T1 was positioned to cross both a) major structural features within the Amadeus and Ngalia Basins and in the Arunta Block and b) the major gravity anomalies (Fig 4).

T1 was a north-south line, 420 km in length, starting to the north of the Ngalia Basin and just south of the Reynolds Range (Fig 1). The seismic traverse crosses the eastern portion of the Ngalia Basin, near Napperby Homestead, and the Southern and Central provinces of the Arunta Block near Narwietooma Station, and Glen Helen Station (Fig 1). The northern margin of the Amadeus Basin was crossed 14 km west of Tylers Pass, in one of three places where it was possible to cross the MacDonnell Range and Brewer Conglomerate. This route was also used by the Amadeus Joint Venturers, Magellan Petroleum and Pancontinental Petroleum, in their 1984 Harajaka Seismic Survey. The route over the northern part of the Amadeus Basin traversed the Missionary Plain west of Gosses Bluff and part of the Haasts Bluff and Hermannsburg Aboriginal settlements (Figs 1 & 3). From here southwards, the seismic traverse followed the only available route through the Gardiner, James and George Gill Ranges (Fig 1). This route followed the Areyonga and Illara Creeks southwards from Areyonga

Table 2
Expanding Reflection Spread
TRAVERSE 1, Arunta Block

Shotpoints and Spread Configurations

Shot Number	Shot Point Number	Spread Trace 48	Location Trace 1	Charge size Kg	Offset Distance, Km
1	7445	7835	- 7882	168	32.5 - 36.4
2	7468	7812	- 7859	131	28.7 - 32.6
3	7491	7789	- 7836	107	24.8 - 28.7
4	7514	7766	- 7813	86	21.0 - 24.9
5	7537	7743	- 7790	70	17.2 - 21.1
6	7560	7720	- 7767	57	13.3 - 17.3
7	7583	7697	- 7744	45	9.5 - 13.4
8	7606	7674	- 7721	33	5.7 - 9.6
9	7629	7651	- 7698	21	1.8 - 5.8
10	7652*	7628	- 7675	12	-2.0 - 1.9
11	7675	7605	- 7652	21	-5.8 - -1.9
12	7698	7582	- 7629	33	-9.6 - -5.8
13	7721	7559	- 7606	45	-13.5 - -9.6
14	7744	7536	- 7583	57	-17.3 - -13.4
15	7767	7513	- 7560	70	-21.2 - -17.3
16	7790	7490	- 7537	86	-25.0 - -21.1
17A	7801	7479	- 7526	98	-26.8 - -22.9
17B	7824	7456	- 7503	119	-30.7 - -26.7
18	7836	7444	- 7491	131	-32.6 - -28.8
19	7859	7421	- 7468	168	-36.5 - -32.6

Note 1. Shot 7652, marked '*' is the centre shot of the expanding spread and is also the intersection point for T1 and T3.

2. Charge sizes are rounded to the nearest 1 kg.

3. Shot 17 was to be at 7813 into a spread at 7467 to 7514. However a bore nearby prevented using this shotpoint. Two shots were recorded in its place spanning the subsurface that would have been covered by shot 7813. These new shots, 7801 and 7824 have been called shot 17A and 17B, since they subsequently combine to make shot 17 in later processing.

Table 3
Expanding Reflection Spread
TRAVERSE 1, Missionary Plain

Shotpoints and Spread Configurations

Shot Number	Shot Point Number	Spread Trace 48	Location Trace 1	Charge size Kg	Offset Distance, Km	
1	6801	6572	-	6525	86	19.1 - 22.9
2	6779	6572	-	6525	70	17.2 - 21.2
3	6756	6595	-	6548	57	13.4 - 17.3
4	6733	6618	-	6571	45	9.6 - 13.5
5	6710	6641	-	6594	33	5.7 - 9.7
6	6687	6664	-	6617	20	1.9 - 5.8
7	6664*	6688	-	6641	12	-2.0 - 1.9
8	6641	6710	-	6663	20	-5.7 - -1.8
9	6618	6733	-	6686	33	-9.6 - -5.7
10	6595	6756	-	6709	45	-13.5 - -9.6
11	6572	6779	-	6732	57	-17.3 - -13.4
12	6549	6802	-	6755	70	-21.1 - -17.2
13	6527	6826	-	6779	86	-24.9 - -20.9

Note 1. Shot 6664, marked '*' is the centre shot.

2. Charge sizes are rounded to the nearest 1 kg.

3. Shot number 1, shot point 6801, should have been recorded into a spread 6502 - 6549. However, the position of the end of the line against the Gardiner Range prevented laying out this spread, so the shot was recorded by the most southerly spread possible.

Table 4
Expanding Reflection Spread
TRAVERSE 3, Arunta Block

Shotpoints and Spread Configurations

Shot Number	Shot Point Number	Spread Trace 48	Location Trace 1	Charge size Kg	Offset Distance, Km
1	3001	3391	- 3438	168	32.5 - 36.4
2	3024	3368	- 3415	131	28.7 - 32.6
3	3047	3345	- 3392	107	24.8 - 28.7
4	3070	3322	- 3369	86	21.0 - 24.9
5	3093	3299	- 3346	70	17.2 - 21.1
6	3116	3276	- 3323	57	13.3 - 17.3
7	3139	3253	- 3300	45	9.5 - 13.4
8	3162	3230	- 3277	33	5.7 - 9.6
9	3185	3207	- 3254	21	1.8 - 5.8
10	3208*	3184	- 3231	12	-2.0 - 1.9
11	3231	3161	- 3208	21	-5.8 - -1.9
12	3254	3138	- 3185	32	-9.6 - -5.8
13	3277	3115	- 3162	45	-13.5 - -9.6
14	3300	3092	- 3139	57	-17.3 - -13.4
15	3323	3069	- 3116	70	-21.2 - -17.3
16	3346	3046	- 3093	86	-25.0 - -21.1
17	3369	3023	- 3070	107	-28.8 - -24.9
18	3392	3000	- 3047	131	-32.6 - -28.8
19	3415	2977	- 3024	168	-36.5 - -32.6

Note 1. Shot 3208, marked '*' is the centre shot and intersection point for T3 and T1.

2. Charge sizes are rounded to the nearest 1 kg.

Table 5

Tomography Experiment Layout

Seismic Recorder Positions along T3,
Recording T1 Expanding Spread Shots (Table 2).

2967	
2990	
3013	
3036	
3059	
3082	
3105	3208 (2 instruments, one at SP 3208 T3,
3311	and one at SP 7652 T1)
3334	
3357	
3380	
3403	
3426	
3449	

Seismic Recorder Positions along T1,
Recording T3 Expanding Spread Shots (Table 4).

7411	
7434	
7457	
7480	
7503	
7526	
7549	
7652	(2 instruments, one at SP 3208 T3,
7755	and one at SP 7652 T1)
7778	
7801	
7824	
7847	
7870	
7893	

Table 6

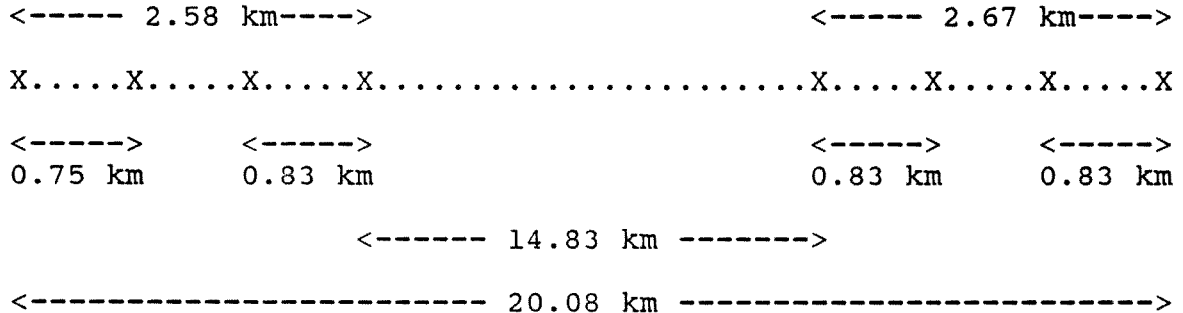
Traverse 2 Constant Offset Shots

Shot Point Number	Spread Location Trace 48 - Trace 1			Charge Kg	Offset Distance, km
2600	2000	-	2094	82	24.9 - 21.0
2636	2036	-	2130	82	24.9 - 21.0
2672	2072	-	2166	82	24.9 - 21.0
2708	2108	-	2202	82	24.9 - 21.0
2744	2144	-	2238	82	24.9 - 21.0
2780	2180	-	2274	82	24.9 - 21.0
2816	2216	-	2310	82	24.9 - 21.0
2852	2252	-	2346	82	24.9 - 21.0

Location of (8) Refraction Recorders on Traverse 2,
Recording routine and offset shots

2404	2822
2422	2842
2446	2866
2466	2886

Layout of Refraction Recorders.



Aboriginal Settlement to Tempe Downs Station. The traverse then headed across country through Angus Downs Station to meet the old Wallera Ranch road (near the Liddle Hills, Fig 1), and then followed this road south to the Ayers Rock Road (Lassiter Highway) prior to crossing the eastern end of Lake Amadeus. T1 finished 1 km east of the Mt Conner - Mulga Park Station junction, on Curtin Springs Station.

T1 was recorded between July and November 1985, with a break in the middle when recording of T2 and T3 was carried out. T1 was pegged at a station spacing of 83.33m (Appendix 5). By virtue of the terrain, T1 was far from straight, having four bowties (Fig 1). Each bowtie was labelled alphabetically commencing with 'A' to the north and ending with 'E' to the south. Processing maintained this nomenclature. Details of all acquisition parameters are given in Appendix 5. The shot interval was 333.33m, giving a 6 fold common mid-point (CMP) gather. In many places the fold varied with the crookedness of the traverse, reaching 12-18 fold around small bends, and dropping to single fold through some of the gorges. A 20s record length, 2 ms sample rate was used on T1A, but was increased to 24s, with 2 ms sampling for the rest of T1.

In addition, two expanding spreads were recorded: one on the Missionary Plain within the Amadeus Basin (Fig 1), and the other on the Arunta Block centered on the intersection point of T1 and T3. Details of shot and spread configurations for these expanding spreads are given in Tables 2 & 3. A tomography experiment was also recorded in conjunction with the expanding spread experiment. Recorder positions for this are given in Table 5.

Traverse 2 (T2):

T2 is a north-south line (Fig 1), of 40 km located within the Central and Southern (Redbank Deformed Zone) tectonic provinces of the Arunta Block. The object of this line was to attempt to map the boundary between the central and southern zones of the Arunta Block into the deep crust, and to see if other faults could be mapped to the north of this boundary. The traverse started just within the Redbank Deformed Zone (Shaw *et al.*, 1984) and headed north to finish within the Central Province. The traverse was situated on Milton Park and Amburla Stations, and crossed the Tanami Road near the Milton Park Station turnoff.

T2 was pegged at a station interval of 41.66 m (Appendix 5) as a need was seen for better coverage in an attempt to map the major faults into the deep crust. However, in order to complete the survey in the allowed time, it was felt that the additional time required to record the higher station density would be excessive, so T2 was recorded with an 83.3 m station spacing. Acquisition then continued as if it was pegged at 83.33 m, but keeping the station numbers as they were originally numbered. 20s record length at 2 ms sample rate was used to record a 6 fold CMP section over the 40 km of traverse.

In addition, eight shots with station offset of 21-25km were recorded in an attempt to map the faults at depth. Details of recorder positions are given in Table 6.

Traverse 3 (T3):

T3 is an east-west line (Fig 1) of 40 km length located on Narwietooma Station and crosses T1 near Dashwood Creek. This line served as both a cross traverse to T1 and as a three dimensional expanding spread. It also coincided with the seismic refraction profile, and was used in the refraction tomography experiment.

T3 was pegged at a station spacing of 83.33m (Appendix 5), and was recorded as part of three separate experiments. The traverse was centred on T1. The central 14 km was recorded as a conventional 6 fold CMP traverse, to 20 s at a 2 ms sample rate. The entire 40 km of traverse were used for the T3 expanding spread (Table 4). Sites on T3 were used to record the expanding spread shots from T1 as part of the tomography experiment (Table 5).

Traverse 4 (T4):

T4 is a tie/reconnaissance line of 12 km length located just to the south of the northern margin of the Amadeus Basin, on the Haasts Bluff Aboriginal Settlement (Figures 1 & 3). It linked T1 with the Amadeus Joint Venturers Harajaka Seismic Survey Line HJ-4, and also was designed to provide information on the structure at the northern margin, and on a potential closure within the Percoota Sandstone, the main petroleum reservoir in the basin.

T4 was pegged at an initial station interval of 40 m (Appendix 5), but because of the cost of drilling in this region (Section 3-7), the station spacing was doubled to 80 m and recorded as an 80 m, 2 fold CMP, 20 s, 2 ms survey. Several of the holes were water tamped and stayed open allowing for additional shots to be recorded, increasing the fold over portions of the traverse. The traverse was initially to have been recorded when recording T1. However the rapid depletion of the entire stock of quality drill bits over some 6 km, and the forthcoming recording within the Areyonga Gorge necessitated the postponement of recording T4 until more bits could be imported. The traverse was recorded at the end of the survey.

3.9 Gravity

Gravity observations were taken at 333m intervals along all the 1985 traverse lines. Readings were also taken at bend points, or permanent markers along the traverses. Gravity ties were made to stations within the Australian National Gravity Network with isogal stations at the towns or settlements of Alice Springs, Papunya, Hermannsburg, and Henbury. Operational details for the gravity survey are presented in Appendix 14.

3.10 Computing

The BMR field processing system (Taylor *et al.*, *in prep*) was used during the survey. The main purpose of the system was to produce brute stacks in the field as data were acquired, and, as a secondary role, to store all information needed for future processing. Brute stack sections were produced at several locations along the traverses, but a lack of reflections in the shallow section generally prevented any interesting sections from being obtained. The system, although not limited to the first 4

seconds, was difficult to use for processing longer sections. In addition, changes in software since the previous year still had some minor bugs that prevented full use of the system. Static, edit, move-out and amplitude corrections were applied to the data that were processed. However it was generally impossible to pick a velocity function from the data. A typical processing sequence adopted on the survey is shown in Table 7.

The system was also used to store line file information, such as shotpoint, station, shot depths, uphole time, elevations and bend points. A package of reformatting programs was written to link the field seismic data formats to the DISCO seismic data formats and job files for later use on that system. This package was very successful in eliminating geometry and coding errors, and made further geometry specification error free. It was also successfully used to assist in administration, enabling an up to date record of expenditure to be maintained.

Table 7

Processing sequence for the seismic sections using the
BMR field processing system

1. Demultiplexing.
2. Geometry definition.
3. Trace editing.
4. Field statics corrections.
5. Velocity analyses.
6. Spherical divergence correction.
7. Brute stack.

PRELIMINARY RESULTS

Preliminary seismic sections (processed on the DISCO system) have been produced, and are briefly discussed. A typical DISCO processing sequence used is shown in Table 8. Details on the interpretation of the results will be published elsewhere. Appendix 15 gives a list of all tapes used on this survey and their contents.

4.1 Reflection Results

All field data have been demultiplexed, edited and are now stored on demultiplexed tapes in DISCO internal format. All traverses have been processed to preliminary stack stage. Further processing will be continued when detailed statics correction calculations have been completed for all traverses. Statics problems are severe in Central Australia due to very deep and variable weathering. Velocity determination is difficult due to an absence of clear shallow reflections. A DISCO refraction statics package is currently being used to calculate more accurate shot and receiver statics values. A second refraction statics package will be tried on a portion of the traverse to evaluate the success of the DISCO module. Velocity analysis is complicated because of the high surface velocities (up to 5000 m/s at the surface) and low fold and offset variation and hence the small moveout on the record sections. Analysis of the expanding spreads and the refraction profile will assist in obtaining a bulk crustal velocity function from the appropriate areas.

A general description of the survey has already been published by Wright *et.al.* (1986) and Goleby *et.al.* (1986b), while a detailed look at parts of T1 has been described by Goleby *et.al.*, (1986a). From an initial inspection of the reflection results, a great variation in the data quality, both in the shallow sedimentary sequence, and in the deep crustal data is apparent. This variation is attributed to two factors; a) bad surface conditions and associated weathering effects and b) a lack of reflections in some areas due to either steep dips of the sediments or a lack of sediments. A line drawing of T1 is shown in figure 12.

Suprisingly, the deep data obtained over the metamorphic and granite terrains of the Arunta Block to the north, and the subcropping Musgrave Block in the south is very good, while deep reflections are conspicuously missing from the northern Amadeus Basin section. The most remarkable feature of figure 12 is the band of northerly dipping reflections at the very north of the section at times between 4 and 10 seconds. These reflections die out near the Reynolds Range (Fig 1, and Fig 12), and are replaced by shallower, relatively flat reflections. This pattern suggests that the thrusting in this area involved the entire crust. Similar strong reflections are observed at the southern end of the traverse, and the sedimentary cover appears to be thin (1.5 km maximum), in contrast to earlier geological interpretations (Wells *et.al.*, 1970; Lambeck, 1983). The character of the deep crustal reflections from the Arunta and the Musgrave Blocks is markedly different from that obtained from the Eromanga and Southeast Queensland Seismic Surveys (Wake-Dyster *et.al.*, 1986), where a thick sedimentary cover is the norm.

Table 8

Processing sequence for the seismic sections using the
BMR DISCO processing system

1. Demultiplexing
2. Geometry definition.
3. Resampling, trace editing and spherical divergence correction.
4. Field statics application.
5. Shot gathering.
6. Filter and wavelet deconvolution tests.
7. Brute stack using field NMO, filters, scaling.
8. Velocity analyses.
9. Residual statics computations (where possible).
10. Trace muting determination.
11. Preliminary final stack with residual or refraction statics corrections, revised velocities, trace muting and scaling.
12. Time-variant band-pass filtering.
13. Time-variant scaling.

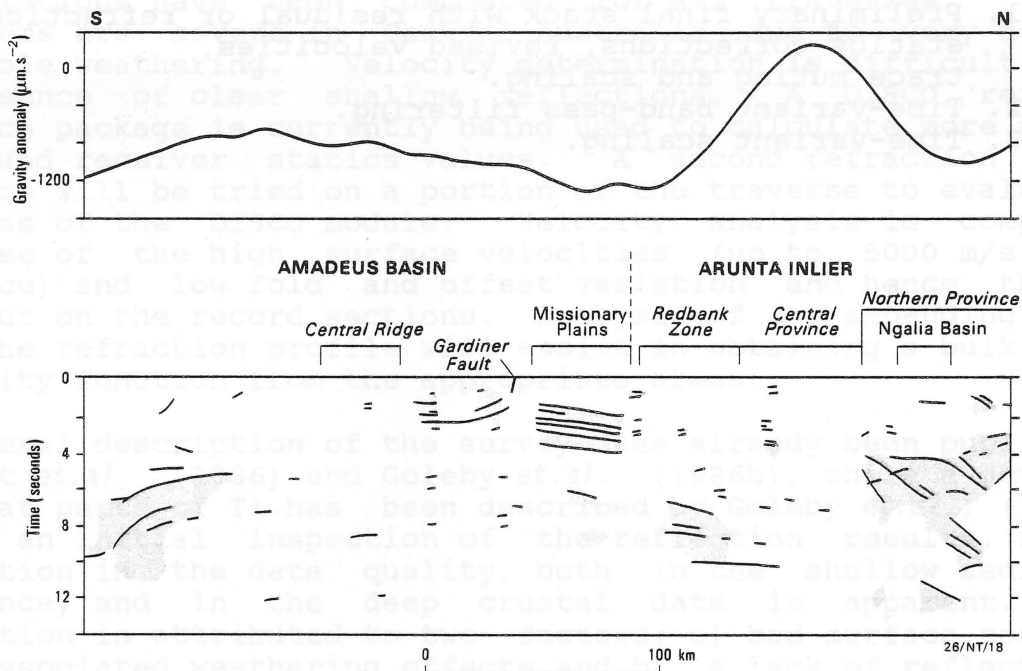


Figure 12. Line drawing of prominent reflection events, seen on T1. The observed gravity is plotted above the line diagram. Vertical exaggeration is 3:1.

The northern part of T1A, north of the Ngalia Basin has been studied in detail, concentrating on the reflection characteristics, the frequency content and waveform variations over a space of several shots (Goleby *et.al.*, 1986a). Reflections are strong and of very high frequency, though an interpretation has yet to be carried out. A preliminary stack for this segment is shown in figure 13, and shows a CMP stack and a line drawing, with a single shot record superimposed.

4.2 Experimental Results

Processing efforts have been restricted to the three expanding spreads. Figure 14 shows a display of the Missionary Plain expanding spread. Maximum offset for this spread was 25 km (Table 3). The Amadeus Basin is at least 11 km thick in this region, and high quality reflection events are apparent for most of the sequence. Clear S wave signals are observed, with some P to S or S to P conversion probably involved (Wright *et.al.*, 1986). The constant offset shots have been displayed, but still have to be analysed. The tomographic experiment results are being processed by a PhD student from Flinders University, Mr S. Sugiharto. This work is being jointly supervised by BMR and Flinders University. Initial results suggest lateral heterogeneity or anisotropy with P wave velocities in the upper basement in the range 5.6 to 6.2 km/s, and S wave velocities of about 3.3 km/s on average. Further work on the statics corrections within the region needs to be done to successfully interpret the tomographic results.

4.3 Refraction Results

The seismic refraction experiment has been described by Bracewell and Collins (1986). Initial results indicate P wave velocities near the surface that vary between 4.0 and 5.5 km/s, and increase rapidly to about 6.2 km/s at about 1 km depth. These results are shown in figure 15. A weak refracted arrival with an apparent velocity of 7.2 km/s occurs at offsets greater than 220km, and is attributed to a velocity boundary at a depth of about 31 km. This boundary is probably the base of the reflecting zone seen at about 10 s below some parts of the Arunta Block (Figure 12). Arrivals signifying mantle velocities of 8 km/s have not been observed. Later arrivals at offsets between 200 and 240 km may be wide-angle reflections from the crust-mantle boundary at about 55 km depth. Strong S wave arrivals are observed with apparent velocities between 3.4 and 3.9 km/s.

4.4 Gravity Results

1757 new gravity measurements were read during the survey (section 3.9). The data were collected by staff of the Potential Fields Section, BMR, and are currently being processed by that group. Details of the gravity survey are given in Appendix 14. The expected gravity profile for T1 is shown in figures 6 and 12. The gravity will later be used to constrain structural models derived from the seismic data.

4.5 Airborne Magnetic Results

Three airborne magnetic flights were flown along all traverses (Table 1). The two low level flights were flown to get a three

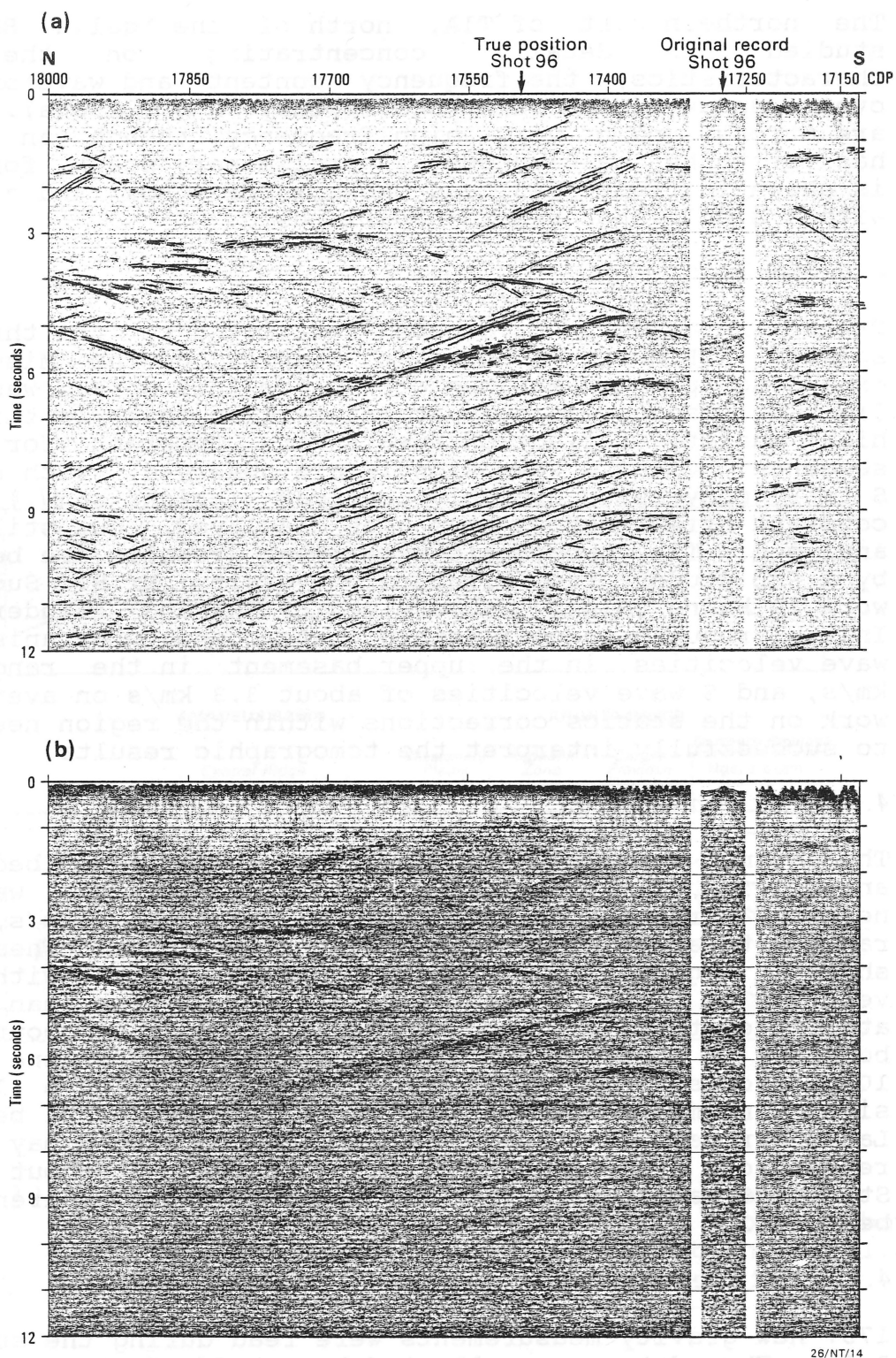


Figure 13. Preliminary stacked seismic section, T1A, northern portion, Arunta Block. North is at the left of the section. Shot record 96 is superimposed on both the seismic section and line drawing to illustrate the preservation of the reflected signals with stacking.

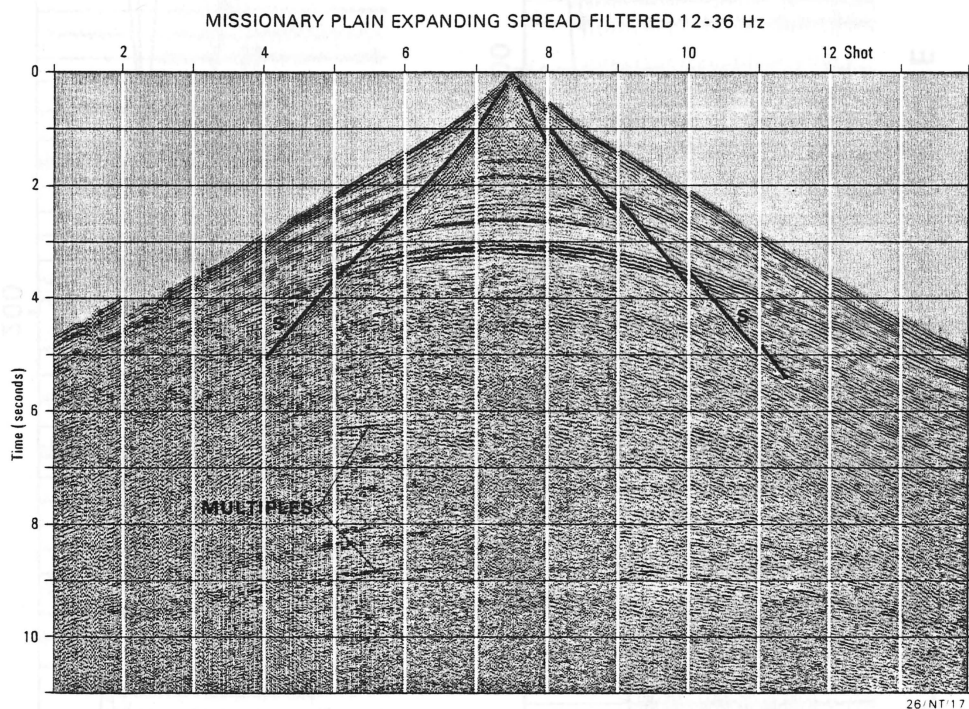


Figure 14. The Missionary Plain Expanding Spread. Prominent P & S arrivals were obtained on this experiment. The leftmost shot appears offset because the spread could not be placed at the correct position. See text.

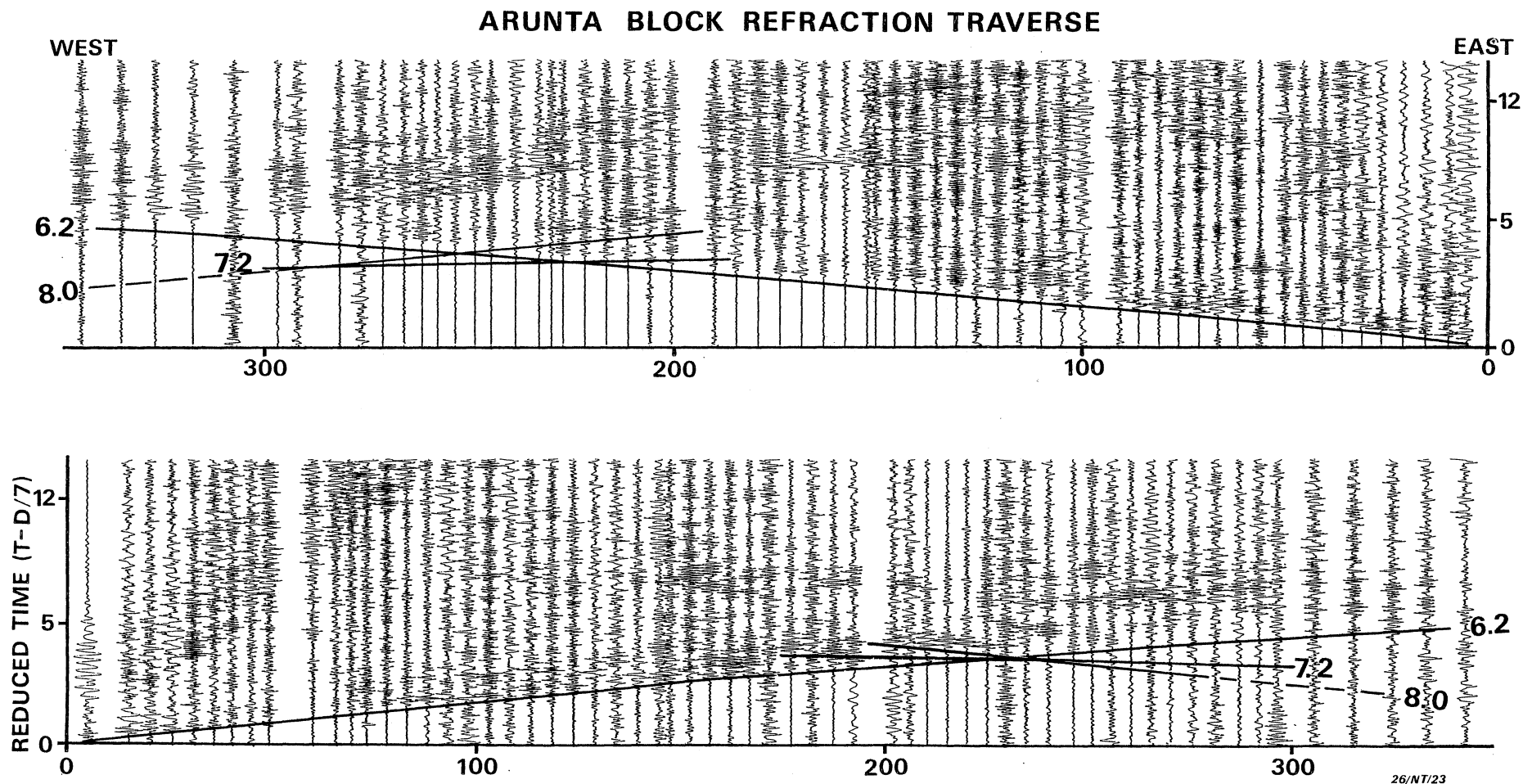


Figure 15. Preliminary refraction section, Arunta Block.

dimensional standard airborne profile, while the high altitude flight was flown as a check on any upward continuation modelling, thus enabling an accurate magnetic basement and lower crustal magnetic effect to be modelled. The results will be used to constrain the structural models derived from the seismic data.

ACKNOWLEDGEMENTS

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APPENDIX 1

Operational Statistics

Drilling commenced (noise tests)	3-07-1985
(production)	3-07-1985
Recording commenced (noise tests)	3-07-1985
(production)	4-07-1985
Drilling completed	14-11-1985
Recording completed	14-11-1985
Total line kilometres	508 km
Number of lines recorded	4
Total number of recording days worked	70
Recording days lost:	
Due to campshifts	7
Due to adverse weather	0
Due to absence of loaded shot holes	14
Due to instrument breakdown	2
CMP fold	6-12
Total number of shots	1692
Average number production shots/recording day	23.3
Average surface coverage/recording day	7.4 km
Maximum number production shots in one day	47
Explosives used (including expanding spread, refraction shooting, and uphole shoots)	21,000 kg
Detonators used (as above)	2500
Average charge/production shot	10.0 kg
Total number of rig days worked	405
Rig days lost (x 5):	
Due to campshifts	40
Due to adverse weather	0
Due to equipment breakdowns and maintenance	10
Due to waiting for bulldozer or line pegging	0

APPENDIX 2

PERSONNEL, 1985 Seismic Survey

BMR, Division of Geophysics

Principal Investigators:	B.R. Goleby	
	C. Wright	
Party Leader:	B.R. Goleby	(June-Oct)
	K.D. Wake-Dyster	(Sept-Nov)
	M.J. Sexton	(May-June)
Drill Supervisor:	E.H. Cherry	
Party Clerk:	J.A. Somerville	
Geophysicists:	D.W. Johnstone	(July, Aug)
	C. Wright	(July-Aug, Oct-Nov)
	J.H. Leven	(July-Aug)
	F.J. Taylor	(Sept)
	S.P. Mathur	(Sept-Oct)
Technical Officers (Engineering):	G. Jennings	(July, Sept-Nov)
	J. Whatman	(July-Sept)
Technical Officers (Science):	D. Pfister	(July-Sept)
	G. Price	(May-Nov)
Drillers:	T. Shanahan	
	E. Lodwick	
	A. Maher	
	G. Brandon	
	D. Eaton	
Field Assistants:	R.D.E. Cherry	
	A.C. Takken	
	S. Howard	
Mechanics:	J. Keyte	
	A. Crawford	
	D. Fayle	(Casual)
Wages Hands:	20	(Casual)

Australian Survey Office, Canberra Office

Surveyor:	J. Wenborn	(June-Aug, Nov)
	T. Quinn	(Aug-Sept)
	G. Bush	(Sept-Nov)
Technical Officers (Surveying):	B. Calaby	(April-June)
	J. Lee	(June-Aug)
	P. Davies	(June-Nov)
Chainmen:	4	(Casual)

Contract Bulldozer

Operator	P. Beven	(May-Sept)
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APPENDIX 3

VEHICLES, 1985 Seismic Survey

Recording truck	1 x International D1610 3 ton 4 x 4
Workshop trucks	2 x International D1610 3 ton 4 x 4
Flat-top trucks	1 x International D1610 3 ton 4 x 4
	2 x Mercedes 3 ton 4 x 4
Explosives truck	1 x International Acco
Computer truck	1 x International Acco
Water tankers	1 x International D1610 3 ton 4 x 4
	1 x Mercedes 3 ton 4 x 4
Drilling rigs	5 x Mayhew 1000/Mack 6 x 6 trucks
Drill water tankers	5 x Mack R875, 6 x 6, 1900 gallon
Shooting truck	1 x Toyota, tray top, 4 x 4
Personnel carriers	5 x Toyota Troop Carriers, 4 x 4
Geophone carriers	3 x V8 Jeep, 4 x 4
Stores trucks	1 x Jeep 6 cyl., 4 x 4
	1 x V8 Jeep, 4 x 4
Pre-loading truck	1 x Toyota, tray top, 4 x 4
Office caravan	1 x 4 wheel
Kitchen vans	2 x 4 wheel
Ablutions vans	2 x 4 wheel
Stores trailers	2 x 4 wheel
Generator trailers	1 x 4 wheel
	1 x 2 wheel
Drill trailers	2 x 4 wheel
Drill mechanics trailer	1 x 4 wheel
Water trailers	2 x 2 wheel, 200 gallon
Welding trailer	1 x 2 wheel

APPENDIX 4

Spread and recording parameters

Spread length	4 km
Number of channels	48
Geophone station interval	83.33 m
CMP fold	6-12
Number of geophones/trace	16
Geophone pattern (GSC-20D)	in-line
Geophone spacing in line	5.0 m
DFS IV instrument settings:	
Recording mode	Digital
Format	SEG-B
Number of input channels:	
Data	48
Auxiliary	4
Tape	9 track, 1600 bpi PE, 0.5 inch
Record length	(production) 20 or 24 s
	(experimental work) 39 s
Sample rate	2 ms
Gain constant	42 dB
Input filters - production:	
lo-cut	8 Hz, 36 dB/oct
hi-cut	124 Hz, 72 dB/oct
Notch filter	out
Reproduce module settings - production:	
Defloat mode : galvo level	15
hi-cut	90 Hz
lo-cut	12 Hz
AGC mode : galvo level	15
hi-cut	60 Hz
lo-cut	12 Hz
Trip sensitivity	36 dB
Trip delay	1.0 s

APPENDIX 5

Traverse Acquisition Parameters

Traverse 1

Orientation	N-S
Length (Total)	420 km
Station Spacing - pegged	83.33 m
- recorded	83.33 m
Shot Spacing (nominal)	333.33 m
Record Length - Traverse 1A	20 s
- Traverse 1B,C,D,E	24 s
- Expanding Spreads	39 s
Sample Rate	2 ms

Traverse 1A

Length	133 km
First Station	7408
Last Station	9000
First Shot	7408
Last Shot	9000
Number of shots	523

Traverse 1B

Length	73 km
First Station	6525
Last Station	7407
First Shot	6525
Last Shot	7407
Number of shots	240

Traverse 1C

Length	29 km
First Station	6176
Last Station	6524
First Shot	6180
Last Shot	6524
Number of shots	89

Traverse 1D

Length	66 km
First Station	5380
Last Station	6175
First Shot	5380
Last Shot	6174
Number of shots	221

Traverse 1E

Length	119 km
First Station	3946

Last Station	5379
First Shot	3948
Last Shot	5379
Number of shots	359

Traverse 2

Orientation	N-S
Length	40 km
First Station	2000
Last Station	2968
First Shot	2024
Last Shot	2968
Number of total shots	154
Station Spacing - pegged	41.67 m
- recorded	83.33 m
Shot Spacing (nominal)	333.33 m
Record Length - CMP	20 s
- Offset Shots	39 s
Sample Rate	2 ms

Traverse 3

Orientation	E-W
Length - CMP	14 km
- Expanding Spread	36 km
First Station	2970
Last Station	3480
First Shot - CMP	3120
- Expanding Spread	3001
Last Shot - CMP	3268
- Expanding Spread	3415
Number of total shots	71
Station Spacing - pegged	83.33 m
- recorded	83.33 m
Shot Spacing (nominal)	333.33 m
Record Length - CMP	20 s
- Expanding Spreads	39 s
Sample Rate	2 ms

Traverse 4

Orientation	N-S
Length	12 km
First Station	4000
Last Station	4292
First Shot	4004
Last Shot	4292
Number of total shots	35
Station Spacing - pegged	40.00 m
- recorded	80.00 m
Shot Spacing (nominal)	960.00 m
Record Length - CMP	24 s
Sample Rate	2 ms

APPENDIX 6

Traverse 1A

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of this Appendix.

*JOB	CAREP	1A	BRG	GEOMETRY INFO. LINE 1A
*CALL	LINE	STATIONS		
LOCN	7408	LXY	215455.	7409627.
LOCN	7417	LXY	215915.	7410220.
LOCN	7444	LXY	217563.	7411750.
LOCN	7453	LXY	218055.	7412316.
LOCN	7479	LXY	218941.	7414295.
LOCN	7497	LXY	219840.	7415498.
LOCN	7618	LXY	228193.	7421176.
LOCN	7634	LXY	229213.	7422041.
LOCN	7651	LXY	230084.	7423162.
LOCN	7653	LXY	230175.	7423301.
LOCN	7669	LXY	230884.	7424432.
LOCN	7670	LXY	230925.	7424504.
LOCN	7677	LXY	231204.	7425017.
LOCN	7678	LXY	231247.	7425088.
LOCN	7707	LXY	232520.	7427143.
LOCN	7708	LXY	232564.	7427214.
LOCN	7754	LXY	234564.	7430487.
LOCN	7755	LXY	234608.	7430557.
LOCN	7784	LXY	235908.	7432595.
LOCN	7785	LXY	235960.	7432661.
LOCN	7813	LXY	237594.	7434327.
LOCN	7814	LXY	237633.	7434400.
LOCN	7825	LXY	238009.	7435237.
LOCN	7826	LXY	238044.	7435312.
LOCN	7872	LXY	239748.	7438748.
LOCN	7873	LXY	239767.	7438829.
LOCN	7914	LXY	240375.	7442192.
LOCN	7915	LXY	240392.	7442273.
LOCN	7944	LXY	240868.	7444643.
LOCN	7945	LXY	240882.	7444726.
LOCN	7963	LXY	241065.	7446215.
LOCN	7964	LXY	241079.	7446297.
LOCN	7972	LXY	241227.	7446947.
LOCN	7973	LXY	241265.	7447021.
LOCN	7983	LXY	241727.	7447715.
LOCN	7984	LXY	241775.	7447783.
LOCN	8014	LXY	243501.	7449593.
LOCN	8015	LXY	243552.	7449659.
LOCN	8049	LXY	245038.	7452073.
LOCN	8050	LXY	245085.	7452141.
LOCN	8099	LXY	247230.	7455617.
LOCN	8100	LXY	247272.	7455689.
LOCN	8152	LXY	248516.	7459842.
LOCN	8153	LXY	248540.	7459921.
LOCN	8204	LXY	249769.	7463991.
LOCN	8205	LXY	249793.	7464071.

LOCN	8252	LXY	250931.	7467820.
LOCN	8253	LXY	250955.	7467899.
LOCN	8293	LXY	251927.	7471091.
LOCN	8294	LXY	251951.	7471171.
LOCN	8342	LXY	253118.	7474998.
LOCN	8343	LXY	253151.	7475075.
LOCN	8370	LXY	254415.	7476936.
LOCN	8371	LXY	254461.	7477006.
LOCN	8418	LXY	256600.	7480287.
LOCN	8419	LXY	256645.	7480358.
LOCN	8427	LXY	256938.	7480957.
LOCN	8428	LXY	256968.	7481035.
LOCN	8433	LXY	257078.	7481436.
LOCN	8434	LXY	257094.	7481518.
LOCN	8465	LXY	257277.	7484096.
LOCN	8466	LXY	257282.	7484179.
LOCN	8512	LXY	257562.	7488003.
LOCN	8513	LXY	257568.	7488086.
LOCN	8560	LXY	257853.	7491993.
LOCN	8561	LXY	257859.	7492076.
LOCN	8603	LXY	258159.	7495567.
LOCN	8604	LXY	258150.	7495649.
LOCN	8707	LXY	257106.	7504171.
LOCN	8708	LXY	257115.	7504254.
LOCN	8722	LXY	257377.	7505391.
LOCN	8723	LXY	257397.	7505472.
LOCN	8750	LXY	258349.	7507511.
LOCN	8751	LXY	258370.	7507592.
LOCN	8792	LXY	258739.	7510989.
LOCN	8793	LXY	258750.	7511072.
LOCN	8812	LXY	259321.	7512549.
LOCN	8813	LXY	259364.	7512620.
LOCN	8816	LXY	259542.	7512796.
LOCN	8817	LXY	259604.	7512852.
LOCN	8827	LXY	260305.	7513302.
LOCN	8828	LXY	260375.	7513348.
LOCN	8837	LXY	260980.	7513791.
LOCN	8838	LXY	261053.	7513832.
LOCN	8848	LXY	261824.	7514149.
LOCN	8849	LXY	261896.	7514190.
LOCN	8875	LXY	263646.	7515469.
LOCN	8876	LXY	263697.	7515535.
LOCN	9000	LXY	268719.	7524568.
ELEV	7408			

676.680	674.400	674.360	674.570	675.360	675.350	674.810	673.860
673.020	672.530	671.610	671.060	670.400	669.970	669.880	668.920
668.200	668.230	667.470	666.780	666.070	665.780	665.030	663.660
663.530	662.910	662.880	662.040	661.420	660.750	660.250	659.670
659.300	659.070	658.780	658.770	658.700	658.590	658.520	658.090
657.960	657.420	657.210	656.940	656.670	656.560	656.580	656.160
655.770	655.570	655.280	654.960	654.690	654.290	653.890	653.530
653.260	652.980	652.800	652.540	652.240	651.920	651.800	651.500
651.200	650.990	650.860	650.580	650.390	650.200	649.960	649.720
649.400	649.200	648.940	648.800	648.730	648.590	648.550	648.240
648.020	647.640	647.330	647.150	647.100	647.010	647.070	646.920
646.700	646.500	646.220	646.000	646.080	645.650	645.370	645.240
645.100	644.660	644.570	644.180	644.010	643.710	643.510	643.290
643.230	642.610	642.400	642.220	642.000	642.070	642.410	642.840
642.440	641.940	641.550	641.280	640.820	640.260	640.240	640.060
640.020	639.690	639.490	639.160	638.960	638.610	638.530	638.520

638.280	638.690	639.030	638.860	639.150	639.290	637.880	636.900
636.410	636.000	635.790	635.600	635.330	635.200	634.840	634.690
634.600	634.780	634.760	634.430	634.260	634.230	634.090	633.720
633.130	632.730	633.100	633.560	633.190	632.350	631.900	632.990
634.240	633.130	631.320	630.710	630.660	633.460	631.120	629.650
629.430	629.670	629.490	629.290	629.060	629.140	629.000	628.220
630.660	629.610	628.360	628.070	627.660	627.100	626.760	627.220
627.460	628.910	626.820	625.850	625.610	625.770	625.820	625.470
625.210	625.040	624.900	624.650	624.370	624.330	624.370	624.290
623.820	623.690	623.290	623.220	622.670	622.370	622.220	621.980
621.660	621.530	621.190	620.820	620.390	620.080	619.940	619.860
619.990	619.780	619.530	619.030	618.710	618.550	618.460	618.520
618.140	617.620	617.450	617.020	616.540	616.280	616.040	616.060
616.640	616.180	615.760	615.700	615.180	614.640	614.210	613.880
613.720	613.150	613.000	612.780	612.690	612.800	612.670	612.550
612.410	612.280	612.040	611.960	611.400	611.060	610.810	610.540
610.300	610.150	609.820	609.670	609.550	609.460	609.340	609.600
609.680	609.120	608.640	608.160	607.680	607.410	607.120	607.000
606.940	606.780	607.020	607.350	607.520	607.250	606.990	606.740
605.670	605.100	604.930	604.880	605.020	604.910	604.520	604.290
603.990	603.750	603.740	603.740	604.270	603.990	603.570	603.260
602.920	602.780	602.720	602.590	602.050	601.540	601.200	600.790
600.590	600.620	600.560	600.350	599.890	599.800	599.920	600.920
602.040	601.330	600.340	599.700	599.320	599.110	598.740	598.350
598.340	598.260	597.830	597.500	597.520	597.670	597.280	596.660
596.280	595.930	595.640	595.400	595.210	594.920	594.730	594.500
594.210	593.840	593.540	593.380	593.350	593.240	592.980	592.790
592.770	592.660	592.390	592.180	592.030	591.890	591.770	591.850
592.280	591.340	591.040	591.380	591.090	591.690	591.210	590.880
590.460	590.350	590.090	589.910	589.900	589.610	589.130	589.020
588.750	588.550	588.650	588.530	588.330	588.110	588.030	588.030
587.970	588.000	588.040	588.080	587.790	587.440	587.090	586.920
586.830	586.710	586.290	586.190	586.100	585.890	585.630	585.220
585.360	584.870	585.050	584.440	584.640	584.290	583.400	584.090
583.600	583.290	583.110	582.810	582.870	582.720	582.200	582.250
582.220	582.100	582.020	581.580	581.590	581.350	581.170	581.090
580.810	580.340	580.010	580.140	579.910	579.980	579.820	579.630
579.550	579.590	579.700	579.720	579.080	578.800	578.490	578.180
578.010	578.080	578.480	578.720	578.750	578.750	578.710	578.250
577.790	577.340	577.050	576.800	576.500	576.210	576.000	575.660
575.410	575.260	575.250	575.510	576.010	576.030	576.000	575.890
575.390	575.000	574.690	574.320	574.120	573.910	573.800	573.730
573.860	573.990	574.270	574.460	574.090	573.750	573.630	573.460
573.150	572.670	572.380	572.310	572.580	572.810	572.940	572.400
572.010	571.510	571.060	570.850	570.700	570.540	570.390	570.270
570.250	570.130	570.110	570.030	570.010	569.900	569.880	569.810
569.770	569.700	569.700	569.620	569.810	570.190	570.330	570.200
569.660	569.160	569.080	569.120	569.170	569.180	569.020	568.840
568.680	568.470	568.280	568.250	568.290	568.570	569.040	568.740
567.890	567.680	567.560	567.100	566.630	566.360	566.270	566.310
566.610	566.350	565.840	565.760	565.660	565.350	565.260	565.270
565.200	565.070	564.960	564.910	564.800	564.730	564.630	564.520
564.470	564.380	564.320	564.210	564.190	564.310	564.800	564.470
564.150	564.160	564.450	565.610	564.980	563.780	563.570	563.750
564.180	564.370	563.690	563.390	563.060	562.760	562.670	562.600
562.600	562.720	562.670	562.190	562.180	562.270	562.120	562.290
562.330	562.120	561.660	561.450	561.440	561.630	561.280	561.490
561.540	561.370	561.330	561.600	561.880	561.700	561.370	561.350
561.260	561.060	560.900	560.520	560.430	560.260	559.960	559.800
559.890	559.580	559.530	559.980	560.170	559.620	560.000	560.230

559.610	559.320	559.500	559.350	559.470	558.970	558.260	558.580
559.430	559.760	558.910	559.630	558.700	559.210	559.240	558.440
557.770	557.610	557.750	557.970	558.920	558.650	559.200	559.050
559.500	558.980	558.520	558.760	558.790	558.500	558.510	558.620
558.430	558.320	558.460	558.550	558.560	558.700	558.320	558.530
558.050	558.050	558.140	558.070	557.640	557.430	558.610	558.090
557.680	558.280	558.710	558.550	558.760	559.110	558.380	558.980
558.990	558.660	558.060	558.860	559.370	559.720	558.300	558.380
558.980	559.520	559.270	559.300	559.280	559.170	559.090	559.240
558.490	558.470	558.720	559.460	559.370	559.870	559.880	560.010
559.320	559.350	559.720	559.080	561.850	560.770	559.510	559.250
558.610	557.400	556.940	556.520	556.640	556.190	556.910	556.350
556.370	555.040	554.360	556.540	555.960	555.940	555.750	554.930
555.300	555.110	554.830	554.200	552.250	551.570	552.590	554.410
556.490	559.760	560.430	561.250	561.840	561.950	563.230	562.540
560.870	559.780	560.990	562.350	561.400	561.110	561.250	563.120
560.720	561.440	561.840	561.590	562.610	560.280	559.670	560.340
561.710	560.050	559.850	559.850	560.360	561.170	561.390	560.750
559.940	560.540	559.920	559.800	560.150	561.200	562.510	562.190
560.860	559.990	559.960	559.960	560.330	560.110	560.430	559.630
559.500	559.360	559.800	560.040	560.460	560.050	559.690	559.720
560.700	562.660	563.620	562.690	562.620	562.010	562.370	563.470
564.010	563.420	563.030	562.510	561.650	561.410	562.600	562.520
564.320	560.950	559.860	560.060	561.330	559.990	558.930	558.190
558.040	558.790	557.680	556.570	556.490	555.330	555.620	555.150
553.800	553.060	553.020	553.620	553.380	552.520	552.290	553.490
554.160	553.970	554.870	555.580	555.930	556.180	556.150	556.300
556.470	556.820	557.240	557.640	558.040	558.040	557.970	558.310
558.560	558.900	559.230	559.290	559.280	559.450	558.630	559.010
559.910	559.620	559.540	559.680	560.060	560.530	559.560	558.480
557.610	556.900	556.200	555.660	556.130	555.030	554.940	556.040
555.890	555.710	555.580	555.570	555.650	555.780	555.740	556.460
555.640	555.970	555.750	555.820	555.890	556.440	556.980	557.310
557.610	557.680	557.690	557.190	556.680	556.910	557.440	557.280
557.370	557.310	557.760	558.150	558.160	558.370	558.660	558.640
558.810	559.110	558.950	558.930	559.100	559.080	559.420	559.540
559.580	559.820	560.070	560.510	560.850	561.220	560.910	560.920
560.940	561.540	561.910	561.960	562.090	562.260	562.530	562.640
563.050	563.250	563.200	563.290	564.020	564.300	564.710	564.920
564.450	564.520	564.540	564.670	564.910	565.170	565.720	565.390
565.410	565.680	566.020	565.880	566.140	566.260	566.480	566.690
567.210	567.700	567.500	567.530	567.970	568.310	568.480	567.890
567.740	569.130	568.790	568.620	568.600	568.630	568.620	568.720
568.920	569.120	569.210	569.240	569.560	569.350	569.410	569.530
569.660	569.750	570.040	570.230	570.450	570.710	570.800	570.690
570.910	570.740	570.690	570.760	571.000	571.260	571.380	571.440
571.760	572.000	572.150	572.340	572.510	572.680	572.950	573.180
573.300	573.490	573.650	573.880	574.150	574.320	574.510	574.700
574.880	574.820	574.820	574.960	575.200	575.420	575.440	575.450
575.810	575.950	576.420	576.810	576.790	576.920	577.180	577.560
577.890	577.980	578.360	578.830	579.150	579.020	579.170	579.620
579.790	579.780	579.800	580.220	580.290	580.440	580.610	580.770
580.880	580.890	581.130	581.320	581.440	581.730	581.830	582.010
581.850	581.870	582.060	582.150	582.430	582.310	582.340	582.560
582.750	582.810	583.240	583.320	583.220	582.960	582.950	583.220
584.100	583.610	583.560	583.400	583.360	583.430	583.550	583.990
584.080	584.190	584.240	584.460	584.610	584.810	585.030	585.070
585.260	585.530	585.790	586.090	586.250	586.240	586.150	586.340
586.520	586.930	587.410	587.250	586.890	586.890	586.890	587.080
587.210	587.340	587.540	587.770	587.850	587.880	587.970	588.170

588.350	588.590	589.080	589.850	590.260	589.740	589.630	589.670
589.780	589.900	590.050	590.190	590.570	590.580	590.740	590.850
591.000	591.080	591.300	591.320	591.460	591.630	591.700	592.020
592.170	592.320	592.390	592.680	592.890	593.150	593.540	593.410
593.550	593.690	593.780	593.790	593.980	593.970	594.060	594.590
594.900	594.920	595.070	595.300	595.520	595.590	595.770	596.070
596.300	596.300	596.330	596.480	596.530	596.960	597.060	597.040
596.990	597.040	597.090	597.550	597.080	597.010	597.080	597.610
599.880	604.290	602.850	602.570	602.710	603.190	604.310	606.870
608.410	609.050	607.400	606.660	607.710	610.990	613.750	614.510
616.140	616.940	616.480	618.430	617.840	612.380	611.490	610.420
610.800	611.590	610.270	608.640	605.230	603.820	603.180	603.170
603.180	603.190	603.190	603.400	603.590	603.530	603.570	603.720
604.080	604.460	604.580	604.470	604.280	604.260	604.320	604.390
604.500	604.680	605.010	605.400	605.750	605.780	605.790	605.810
606.000	606.140	606.350	606.440	606.530	606.790	606.940	607.080
607.260	607.420	607.630	607.800	607.990	608.210	608.510	608.680
608.970	609.220	609.520	609.780	610.080	610.340	610.670	610.940
611.230	611.550	611.870	612.170	612.590	612.880	613.220	613.430
613.750	614.050	614.350	614.590	614.890	615.180	615.460	615.720
616.080	616.320	616.690	616.980	617.330	617.560	617.880	618.170
618.510	618.760	619.040	619.190	619.390	619.510	619.780	622.920
620.610	620.820	621.040	621.260	621.390	621.540	621.630	621.820
621.950	622.140	622.330	622.590	622.820	623.160	623.530	623.920
624.050	624.330	624.700	624.940	625.190	625.580	625.730	625.970
626.270	626.450	626.620	626.770	626.810	627.010	627.090	627.230
627.340	627.490	627.620	627.760	627.910	628.160	628.280	628.510
628.590	628.910	629.190	629.520	629.810	630.040	630.340	630.640
630.930	631.280	631.590	631.970	632.330	632.640	633.030	633.280
633.550	633.840	634.100	634.390	634.700	634.930	635.160	635.370
635.610	635.940	636.290	636.650	636.960	637.200	637.490	637.790
638.130	638.380	638.680	638.820	639.120	639.380	639.750	640.040
640.410	640.810	641.120	641.510	641.870	642.200	642.410	642.660
642.900	643.160	643.410	643.630	643.930	644.200	644.370	644.480
644.590	644.710	644.770	645.180	646.050	646.170	646.990	646.080
646.270	646.480	646.680	646.850	647.070	647.250	647.500	647.700
648.940	648.190	648.410	648.670	649.040	649.320	649.500	649.710
650.080	650.290	650.430	650.640	650.820	651.080	651.350	651.750
652.220	652.880	653.170	653.600	653.790	653.880	653.460	654.200
654.450	654.150	654.300	654.520	654.630	654.890	654.100	654.390
654.300	654.030	654.230	654.580	654.740	655.420	654.870	654.980
655.150	655.970	656.470	655.830	656.850	656.290	657.510	657.700
657.090	657.510	657.390	658.350	658.070	657.800	657.050	657.370
658.170	658.430	658.090	658.270	658.990	658.610	659.250	659.580
660.630	661.310	661.430	661.570	662.000	661.430	662.010	662.420
662.910	663.420	664.620	665.880	663.930	663.600	663.390	662.770
662.550	662.160	663.230	663.680	664.150	664.450	665.380	665.720
666.630	667.370	667.770	668.590	669.350	670.150	670.350	670.590
671.380	672.640	670.900	670.860	671.230	672.740	676.690	671.410
669.710	669.670	671.250	672.220	673.220	673.930	675.010	676.840
678.740	681.320	677.820	676.280	677.430	678.010	678.900	679.530
680.810	681.240	680.350	678.690	678.130	679.680	681.180	683.070
684.590	682.910	682.940	683.370	683.900	685.160	685.390	686.030
686.920	687.760	687.920	688.780	689.440	690.310	691.150	691.940
692.680	693.590	693.980	695.310	696.610	696.950	698.410	700.000
700.740	700.940	700.980	700.540	700.150	699.550	699.010	698.630
698.010	697.670	697.250	696.790	696.510	695.870	695.520	694.980
694.750	694.400	693.800	693.430	693.060	692.570	692.050	691.550
691.220	690.900	690.610	690.320	690.130	689.990	689.730	689.560
689.180	688.950	688.550	688.210	688.040	687.950	687.920	687.870

687.910 687.920 687.940 688.060 688.370 688.670 688.910 689.150
 689.350 689.730 690.150 690.640 691.100 691.460 691.920 692.320
 692.950 693.760 694.690 695.630 696.640 697.740 699.080 700.260
 701.090

CMP

*CALL PATTERN 24

PSTAT 8383

1 8407

48 8360

*CALL PATTERN 47

PSTAT 8360

1 8407

48 8360

*CALL PATTERN 9000

PSTAT 8407

1 8407

48 8360

*CALL PATTERN 5004

PSTAT 8411

1 8407

48 8360

*CALL PATTERN 20

PSTAT 8492

1 8512

48 8465

*CALL PATTERN 26

PSTAT 8559

1 8585

48 8538

*CALL PATTERN 22

PSTAT 8581

1 8603

48 8556

*CALL PATTERN 18

PSTAT 8982

1 9000

48 8953

*CALL PATTERN 16

PSTAT 8984

1 9000

48 8953

*CALL PATTERN 14

PSTAT 8986

1 9000

48 8953

*CALL PATTERN 12

PSTAT 8988

1 9000

48 8953

*CALL PATTERN 10

PSTAT 8990

1 9000

48 8953

*CALL PATTERN 8

PSTAT 8992

1 9000

48 8953

*CALL PATTERN 6

PSTAT 8994

1 9000

48	8953	
*CALL	PATTERN	4
PSTAT	8996	
1	9000	
48	8953	
*CALL	PATTERN	2
PSTAT	8998	
1	9000	
48	8953	
*CALL	PATTERN	23
PSTAT	8353	
1	8376	
48	8329	
*CALL	PATTERN	28
PSTAT	8316	
1	8344	
48	8297	
*CALL	PATTERN	25
PSTAT	8259	
1	8284	
48	8237	
*CALL	PATTERN	27
PSTAT	7428	
1	7455	
48	7408	
*CALL	PATTERN	31
PSTAT	7424	
1	7455	
48	7408	
*CALL	PATTERN	39
PSTAT	7416	
1	7455	
48	7408	
*CALL	PATTERN	43
PSTAT	7412	
1	7455	
48	7408	
*CALL	PATTERN	345
PSTAT	7491	
1	7836	
48	7789	
*CALL	PATTERN	299
PSTAT	7514	
1	7813	
48	7766	
*CALL	PATTERN	253
PSTAT	7537	
1	7790	
48	7743	
*CALL	PATTERN	391
PSTAT	7468	
1	7859	
48	7812	
*CALL	PATTERN	437
PSTAT	7445	
1	7882	
48	7835	
*CALL	PATTERN	207
PSTAT	7560	
1	7767	

48	7720	
*CALL	PATTERN	161
PSTAT	7583	
1	7744	
48	7697	
*CALL	PATTERN	5082
PSTAT	7822	
1	7740	
48	7693	
*CALL	PATTERN	5078
PSTAT	7818	
1	7740	
48	7693	
*CALL	PATTERN	115
PSTAT	7606	
1	7721	
48	7674	
*CALL	PATTERN	69
PSTAT	7629	
1	7698	
48	7651	
*CALL	PATTERN	5023
PSTAT	7675	
1	7652	
48	7605	
*CALL	PATTERN	5069
PSTAT	7698	
1	7629	
48	7582	
*CALL	PATTERN	5115
PSTAT	7721	
1	7606	
48	7559	
*CALL	PATTERN	5161
PSTAT	7744	
1	7583	
48	7536	
*CALL	PATTERN	5207
PSTAT	7767	
1	7560	
48	7513	
*CALL	PATTERN	5253
PSTAT	7790	
1	7537	
48	7490	
*CALL	PATTERN	5275
PSTAT	7801	
1	7526	
48	7479	
*CALL	PATTERN	5321
PSTAT	7824	
1	7503	
48	7456	
*CALL	PATTERN	5345
PSTAT	7836	
1	7491	
48	7444	
*CALL	PATTERN	5391
PSTAT	7859	
1	7468	

48	7421				
*CALL	PATTERN	72			
PSTAT	8436				
1	8508				
48	8461				
*CALL	SOURCE	1	48	IN-PER	
SHOT	1	9000	0.0	0.0	9000
SHOT	2	8998	0.0	4.0	2
SHOT	3	8996	0.0	3.0	4
SHOT	4	8994	0.0	4.0	6
SHOT	5	8992	0.0	3.0	8
SHOT	6	8990	0.0	-1.0	10
SHOT	7	8988	0.0	3.0	12
SHOT	8	8986	0.0	3.0	14
SHOT	9	8984	0.0	3.0	16
SHOT	10	8982	0.0	3.0	18
SHOT	11	8980	0.0	3.0	20
SHOT	12	8978	0.0	3.0	22
SHOT	13	8976	0.0	3.0	24
SHOT	14	8972	0.0	3.0	24
SHOT	15	8968	0.0	3.0	24
SHOT	16	8964	0.0	4.0	24
SHOT	17	8960	0.0	3.0	24
SHOT	18	8956	0.0	5.0	24
SHOT	19	8952	0.0	0.0	24
SHOT	20	8948	0.0	4.0	24
SHOT	21	8944	0.0	0.0	24
SHOT	22	8940	0.0	0.0	24
SHOT	23	8936	0.0	3.0	24
SHOT	24	8932	0.0	4.0	24
SHOT	25	8928	0.0	6.0	24
SHOT	26	8924	0.0	5.0	24
SHOT	27	8920	0.0	5.0	24
SHOT	28	8916	0.0	-1.0	24
SHOT	29	8912	0.0	-2.0	24
SHOT	30	8908	0.0	2.0	24
SHOT	31	8904	0.0	0.0	24
SHOT	32	8900	0.0	6.0	24
SHOT	33	8896	0.0	-1.0	24
SHOT	34	8892	0.0	-2.0	24
SHOT	35	8888	0.0	1.0	24
SHOT	36	8884	0.0	-2.0	24
SHOT	37	8880	0.0	0.0	24
SHOT	38	8878	0.0	3.0	24
SHOT	39	8876	0.0	3.0	24
SHOT	40	8874	0.0	2.0	24
SHOT	41	8872	0.0	3.0	24
SHOT	42	8870	0.0	3.0	24
SHOT	43	8868	0.0	1.0	24
SHOT	44	8864	0.0	1.0	24
SHOT	45	8860	0.0	4.0	24
SHOT	46	8858	0.0	4.0	24
SHOT	47	8856	0.0	4.0	24
SHOT	48	8854	0.0	5.0	24
SHOT	49	8852	0.0	0.0	24
SHOT	50	8850	0.0	5.0	24
SHOT	51	8848	0.0	-1.0	24
SHOT	52	8846	0.0	-1.0	24
SHOT	53	8844	4.0	1.0	24
SHOT	54	8842	0.0	9.0	24

SHOT	55	8840	0.0	2.0	24
SHOT	56	8838	-4.0	1.0	24
SHOT	57	8836	0.0	-1.0	24
SHOT	58	8834	0.0	1.0	24
SHOT	59	8832	0.0	1.0	24
SHOT	60	8830	0.0	1.0	24
SHOT	61	8828	0.0	1.0	24
SHOT	62	8826	0.0	1.0	24
SHOT	63	8824	0.0	1.0	24
SHOT	64	8822	0.0	2.0	24
SHOT	65	8820	0.0	1.0	24
SHOT	66	8818	0.0	0.0	24
SHOT	67	8816	0.0	0.0	24
SHOT	68	8814	0.0	0.0	24
SHOT	69	8812	0.0	1.0	24
SHOT	70	8810	0.0	3.0	24
SHOT	71	8808	10.0	3.0	24
SHOT	72	8806	-15.0	3.0	24
SHOT	73	8804	0.0	0.0	24
SHOT	74	8800	0.0	2.0	24
SHOT	75	8798	0.0	3.0	22
SHOT	76	8796	0.0	3.0	24
SHOT	77	8794	0.0	3.0	24
SHOT	78	8792	0.0	0.0	24
SHOT	79	8790	0.0	4.0	24
SHOT	80	8788	0.0	4.0	24
SHOT	81	8786	0.0	5.0	24
SHOT	82	8784	0.0	5.0	24
SHOT	83	8780	0.0	5.0	24
SHOT	84	8776	0.0	5.0	24
SHOT	85	8772	0.0	5.0	24
SHOT	86	8768	0.0	5.0	24
SHOT	87	8764	0.0	6.0	24
SHOT	88	8760	0.0	5.0	24
SHOT	89	8758	0.0	5.0	24
SHOT	90	8756	0.0	5.0	24
SHOT	91	8752	0.0	5.0	24
SHOT	92	8750	0.0	0.0	24
SHOT	93	8748	0.0	4.0	24
SHOT	94	8746	0.0	5.0	24
SHOT	95	8744	0.0	4.0	24
SHOT	96	8742	0.0	5.0	24
SHOT	97	8740	0.0	5.0	24
SHOT	98	8736	0.0	4.0	24
SHOT	99	8732	0.0	4.0	24
SHOT	100	8730	0.0	4.0	24
SHOT	101	8728	0.0	4.0	24
SHOT	102	8726	0.0	4.0	24
SHOT	103	8724	0.0	4.0	24
SHOT	104	8722	0.0	5.0	24
SHOT	105	8720	0.0	5.0	24
SHOT	106	8718	0.0	5.0	24
SHOT	107	8716	0.0	4.0	24
SHOT	108	8714	0.0	5.0	24
SHOT	109	8712	0.0	5.0	24
SHOT	110	8710	0.0	5.0	26
SHOT	111	8708	0.0	4.0	24
SHOT	112	8706	0.0	5.0	24
SHOT	113	8704	0.0	5.0	24
SHOT	114	8702	0.0	4.0	24

SHOT	115	8700	0.0	5.0	24
SHOT	116	8696	0.0	6.0	24
SHOT	117	8692	0.0	5.0	24
SHOT	118	8688	0.0	5.0	24
SHOT	119	8684	0.0	5.0	24
SHOT	120	8680	0.0	5.0	24
SHOT	121	8676	0.0	5.0	24
SHOT	122	8672	0.0	5.0	24
SHOT	123	8668	0.0	5.0	24
SHOT	124	8664	0.0	5.0	24
SHOT	125	8660	0.0	5.0	24
SHOT	126	8656	0.0	5.0	24
SHOT	127	8652	0.0	4.0	24
SHOT	128	8644	0.0	4.0	24
SHOT	129	8640	0.0	4.0	24
SHOT	130	8636	0.0	4.0	24
SHOT	131	8632	0.0	4.0	24
SHOT	132	8628	0.0	4.0	24
SHOT	133	8624	0.0	4.0	24
SHOT	134	8620	0.0	4.0	24
SHOT	135	8616	0.0	4.0	24
SHOT	136	8612	0.0	4.0	24
SHOT	137	8604	0.0	6.0	24
SHOT	138	8600	0.0	4.0	24
SHOT	139	8596	0.0	4.0	24
SHOT	140	8592	0.0	4.0	24
SHOT	141	8589	-10.0	4.0	22
SHOT	142	8584	-5.0	5.0	24
SHOT	143	8581	-2.0	0.0	22
SHOT	144	8572	-12.0	5.0	24
SHOT	145	8568	4.0	5.0	24
SHOT	146	8559	14.0	5.0	26
SHOT	147	8556	0.0	5.0	24
SHOT	148	8552	0.0	0.0	24
SHOT	149	8548	4.0	0.0	24
SHOT	150	8544	4.0	0.0	24
SHOT	151	8540	1.0	0.0	24
SHOT	152	8536	1.0	0.0	24
SHOT	153	8532	2.0	0.0	24
SHOT	154	8528	1.0	0.0	24
SHOT	155	8524	1.0	0.0	24
SHOT	156	8520	1.0	0.0	24
SHOT	157	8516	1.0	0.0	24
SHOT	158	8512	1.0	0.0	24
SHOT	159	8508	0.0	0.0	24
SHOT	160	8504	0.0	0.0	24
SHOT	161	8500	0.0	1.0	24
SHOT	162	8496	1.0	0.0	24
SHOT	163	8492	0.0	0.0	20
SHOT	164	8488	0.0	0.0	24
SHOT	165	8484	1.0	0.0	24
SHOT	166	8480	1.0	0.0	24
SHOT	167	8476	0.0	0.0	24
SHOT	168	8472	2.0	0.0	24
SHOT	169	8468	2.0	0.0	24
SHOT	170	8464	2.0	0.0	24
SHOT	171	8460	1.0	0.0	24
SHOT	172	8456	1.0	0.0	24
SHOT	173	8452	0.0	0.0	24
SHOT	174	8448	2.0	0.0	24

SHOT	175	8444	2.0	0.0	24
SHOT	176	8440	2.0	0.0	24
SHOT	177	8436	0.0	5.0	24
SHOT	178	8436	2.0	0.0	72
SHOT	179	8432	0.0	4.0	24
SHOT	180	8428	0.0	3.0	24
SHOT	181	8424	0.0	-2.0	24
SHOT	182	8420	-3.0	0.0	24
SHOT	183	8416	0.0	0.0	24
SHOT	184	8412	0.0	0.0	24
SHOT	185	8411	0.0	0.0	5004
SHOT	186	8408	0.0	0.0	24
SHOT	187	8407	0.0	0.0	9000
SHOT	188	8404	0.0	0.0	24
SHOT	189	8400	0.0	0.0	24
SHOT	190	8396	0.0	0.0	24
SHOT	191	8392	0.0	0.0	24
SHOT	192	8388	0.0	0.0	24
SHOT	193	8384	0.0	4.0	24
SHOT	194	8383	0.0	0.0	24
SHOT	195	8383	-14.0	-3.0	24
SHOT	196	8383	-14.0	-3.0	24
SHOT	197	8383	-14.0	-3.0	24
SHOT	198	8383	-14.0	-3.0	24
SHOT	199	8383	-14.0	-3.0	24
SHOT	200	8383	7.0	6.0	24
SHOT	201	8383	2.0	-10.0	24
SHOT	202	8383	2.0	20.0	24
SHOT	203	8383	7.0	20.0	24
SHOT	204	8380	0.0	4.0	24
SHOT	205	8376	0.0	2.0	24
SHOT	206	8372	0.0	0.0	24
SHOT	207	8368	0.0	0.0	24
SHOT	208	8364	0.0	4.0	24
SHOT	209	8360	0.0	0.0	47
SHOT	210	8360	0.0	4.0	24
SHOT	211	8356	0.0	4.0	24
SHOT	212	8353	0.0	-2.0	23
SHOT	213	8350	0.0	0.0	22
SHOT	214	8350	0.0	15.0	14
SHOT	215	8348	0.0	3.0	20
SHOT	216	8346	0.0	4.0	24
SHOT	217	8344	0.0	3.0	20
SHOT	218	8342	0.0	0.0	22
SHOT	219	8340	0.0	1.0	24
SHOT	220	8338	0.0	3.0	24
SHOT	221	8336	0.0	0.0	24
SHOT	222	8334	0.0	0.0	24
SHOT	223	8332	0.0	3.0	24
SHOT	224	8328	0.0	4.0	24
SHOT	225	8324	0.0	3.0	24
SHOT	226	8320	0.0	3.0	24
SHOT	227	8316	0.0	0.0	28
SHOT	228	8312	0.0	4.0	24
SHOT	229	8308	0.0	4.0	24
SHOT	230	8304	3.0	2.0	24
SHOT	231	8300	0.0	4.0	24
SHOT	232	8296	0.0	4.0	24
SHOT	233	8292	0.0	4.0	24
SHOT	234	8288	0.0	0.0	24

SHOT	235	8284	0.0	4.0	24
SHOT	236	8280	0.0	4.0	24
SHOT	237	8276	0.0	4.0	24
SHOT	238	8272	0.0	4.0	24
SHOT	239	8268	0.0	4.0	24
SHOT	240	8264	0.0	4.0	24
SHOT	241	8259	0.0	4.0	25
SHOT	242	8256	0.0	4.0	24
SHOT	243	8252	0.0	4.0	24
SHOT	244	8248	0.0	6.0	24
SHOT	245	8244	0.0	4.0	24
SHOT	246	8240	0.0	3.0	24
SHOT	247	8236	0.0	4.0	24
SHOT	248	8232	0.0	4.0	24
SHOT	249	8227	0.0	4.0	23
SHOT	250	8224	0.0	4.0	24
SHOT	251	8220	0.0	3.0	24
SHOT	252	8216	3.0	4.0	24
SHOT	253	8212	0.0	4.0	24
SHOT	254	8208	0.0	4.0	24
SHOT	255	8208	0.0	-3.0	24
SHOT	256	8204	0.0	4.0	24
SHOT	257	8199	0.0	4.0	25
SHOT	258	8195	0.0	4.0	25
SHOT	259	8192	0.0	5.0	24
SHOT	260	8188	0.0	4.0	24
SHOT	261	8184	0.0	4.0	24
SHOT	262	8180	0.0	4.0	24
SHOT	263	8176	0.0	0.0	24
SHOT	264	8172	0.0	4.0	24
SHOT	265	8168	0.0	4.0	24
SHOT	266	8164	0.0	4.0	24
SHOT	267	8160	0.0	4.0	24
SHOT	268	8156	0.0	4.0	24
SHOT	269	8152	0.0	4.0	24
SHOT	270	8148	0.0	3.0	24
SHOT	271	8144	0.0	4.0	24
SHOT	272	8140	0.0	4.0	24
SHOT	273	8136	0.0	4.0	24
SHOT	274	8132	0.0	4.0	24
SHOT	275	8129	0.0	5.0	20
SHOT	276	8123	0.0	0.0	25
SHOT	277	8119	0.0	6.0	25
SHOT	278	8116	0.0	5.0	24
SHOT	279	8112	0.0	4.0	24
SHOT	280	8110	0.0	4.0	24
SHOT	281	8108	0.0	4.0	24
SHOT	282	8106	0.0	5.0	24
SHOT	283	8104	0.0	4.0	24
SHOT	284	8102	0.0	4.0	24
SHOT	285	8100	0.0	6.0	24
SHOT	286	8098	0.0	4.0	24
SHOT	287	8096	0.0	4.0	24
SHOT	288	8094	0.0	4.0	24
SHOT	289	8092	0.0	4.0	24
SHOT	290	8090	0.0	4.0	22
SHOT	291	8084	0.0	3.0	24
SHOT	292	8080	0.0	4.0	24
SHOT	293	8076	0.0	0.0	24
SHOT	294	8072	0.0	4.0	24

SHOT	295	8068	0.0	4.0	24
SHOT	296	8064	0.0	0.0	24
SHOT	297	8060	0.0	0.0	28
SHOT	298	8056	0.0	4.0	24
SHOT	299	8052	0.0	0.0	24
SHOT	300	8048	0.0	4.0	24
SHOT	301	8044	0.0	4.0	24
SHOT	302	8040	0.0	4.0	24
SHOT	303	8036	0.0	4.0	24
SHOT	304	8028	0.0	7.0	24
SHOT	305	8024	0.0	4.0	24
SHOT	306	8020	0.0	5.0	24
SHOT	307	8016	0.0	4.0	24
SHOT	308	8014	-17.0	4.0	24
SHOT	309	8012	0.0	5.0	24
SHOT	310	8010	0.0	5.0	24
SHOT	311	8007	0.0	0.0	25
SHOT	312	8006	0.0	5.0	24
SHOT	313	8004	0.0	4.0	24
SHOT	314	8000	0.0	4.0	24
SHOT	315	7996	0.0	-1.0	24
SHOT	316	7994	0.0	4.0	24
SHOT	317	7992	0.0	4.0	24
SHOT	318	7990	0.0	4.0	24
SHOT	319	7988	0.0	4.0	24
SHOT	320	7986	0.0	4.0	24
SHOT	321	7984	0.0	4.0	24
SHOT	322	7982	0.0	4.0	24
SHOT	323	7980	0.0	4.0	24
SHOT	324	7978	0.0	4.0	24
SHOT	325	7977	0.0	4.0	25
SHOT	326	7974	0.0	3.0	24
SHOT	327	7972	0.0	4.0	24
SHOT	328	7970	0.0	3.0	24
SHOT	329	7968	0.0	0.0	24
SHOT	330	7966	0.0	3.0	24
SHOT	331	7964	0.0	3.0	24
SHOT	332	7962	0.0	4.0	24
SHOT	333	7960	0.0	0.0	24
SHOT	334	7958	0.0	0.0	24
SHOT	335	7956	0.0	3.0	24
SHOT	336	7954	0.0	0.0	24
SHOT	337	7952	0.0	3.0	24
SHOT	338	7948	0.0	3.0	24
SHOT	339	7944	0.0	0.0	24
SHOT	340	7940	0.0	4.0	24
SHOT	341	7936	0.0	4.0	24
SHOT	342	7932	0.0	0.0	24
SHOT	343	7928	0.0	0.0	24
SHOT	344	7924	0.0	0.0	24
SHOT	345	7920	0.0	0.0	24
SHOT	346	7916	0.0	4.0	24
SHOT	347	7912	0.0	0.0	24
SHOT	348	7908	0.0	0.0	24
SHOT	349	7904	0.0	0.0	24
SHOT	350	7900	0.0	0.0	24
SHOT	351	7896	0.0	0.0	24
SHOT	352	7892	0.0	0.0	24
SHOT	353	7888	0.0	0.0	24
SHOT	354	7884	0.0	0.0	24

SHOT	355	7882	0.0	0.0	24
SHOT	356	7880	0.0	0.0	24
SHOT	357	7878	0.0	0.0	24
SHOT	358	7876	0.0	0.0	24
SHOT	359	7874	0.0	0.0	24
SHOT	360	7872	0.0	0.0	24
SHOT	361	7870	0.0	0.0	24
SHOT	362	7868	0.0	0.0	24
SHOT	363	7866	0.0	0.0	24
SHOT	364	7864	0.0	0.0	24
SHOT	365	7862	0.0	0.0	24
SHOT	366	7860	0.0	0.0	24
SHOT	367	7859	0.0	0.0	5391
SHOT	368	7856	0.0	4.0	24
SHOT	369	7852	0.0	0.0	24
SHOT	370	7848	0.0	0.0	24
SHOT	371	7844	0.0	0.0	24
SHOT	372	7840	0.0	4.0	24
SHOT	373	7836	0.0	0.0	24
SHOT	374	7836	0.0	0.0	5345
SHOT	375	7832	0.0	3.0	24
SHOT	376	7828	0.0	3.0	24
SHOT	377	7824	0.0	4.0	24
SHOT	378	7824	0.0	0.0	5321
SHOT	379	7822	0.0	0.0	5082
SHOT	380	7820	0.0	0.0	24
SHOT	381	7818	0.0	0.0	5078
SHOT	382	7816	0.0	0.0	24
SHOT	383	7814	0.0	0.0	22
SHOT	384	7810	0.0	3.0	24
SHOT	385	7808	0.0	3.0	24
SHOT	386	7806	0.0	0.0	24
SHOT	387	7804	0.0	3.0	24
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SHOT	389	7801	0.0	0.0	24
SHOT	390	7801	0.0	0.0	5275
SHOT	391	7801	0.0	0.0	5275
SHOT	392	7800	0.0	0.0	24
SHOT	393	7796	0.0	0.0	24
SHOT	394	7794	0.0	0.0	24
SHOT	395	7792	0.0	3.0	24
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SHOT	397	7788	0.0	0.0	24
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SHOT	400	7782	0.0	0.0	24
SHOT	401	7780	0.0	0.0	24
SHOT	402	7778	0.0	0.0	24
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SHOT	406	7768	0.0	0.0	24
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HOLE	490	36	34
HOLE	491	40	0

HOLE	492	38	36
HOLE	493	40	33
HOLE	494	40	37
HOLE	495	32	30
HOLE	496	40	33
HOLE	497	23	23
HOLE	498	40	35
HOLE	499	40	32
HOLE	500	25	30
HOLE	501	32	33
HOLE	502	36	33
HOLE	503	36	32
HOLE	504	40	0
HOLE	505	32	30
HOLE	506	34	32
HOLE	507	32	32
HOLE	508	34	28
HOLE	509	15	23
HOLE	510	21	29
HOLE	511	12	20
HOLE	512	27	30
HOLE	513	15	20
HOLE	514	27	0
HOLE	515	27	28
HOLE	516	22	23
HOLE	517	15	18
HOLE	518	9	9
HOLE	519	9	10
HOLE	520	18	22
HOLE	521	9	14
HOLE	522	6	10
HOLE	523	13	13

*END

- Notes 1. DISCO uses three programs to define the geometry for a seismic line; LINE, PATTERN and SOURCE.
There are many different options to define the geometry of a line using these programs, however for the 1985 Seismic Survey, a consistent method was used and it is that which is described below.
2. LINE defines the location of the bendpoints along the seismic line, the elevations of each of the receiver stations and whether to create CMP entries.
The format for defining the bendpoints is :
LOCN 7408 LXY 215455. 7409627
where:
LOCN means that you are defining absolute stations.
7408 is the station number.
LXY means that the following are absolute X any Y positions for the station 7408.
215455. is the AMG X coordinate.
7409627. is the AMG Y coordinate.
The format for defining the elevations is :
ELEV 7408
where:
ELEV means that you are defining elevations.
7408 is the station number.

followed by the elevation values commencing at 7408 and incrementing by 1 until finished. There are 8 elevations defined per line.

The format for defining CMP's is:

CMP where:

CMP creates CMP positions in the geometry.

3. PATTERN defines the various shot receiver patterns recorded; the pattern of each shot enabling that shots geometry to be created.

The format for PATTERN is

PATTERN 24

PSTAT 8383

1 8407

48 8360

where:

PATTERN 24 identifies a pattern code '24' referring to a unique spread geometry pattern.

The values for PSTAT, 1 and 48 define the shot (PSTAT) and spread (Channel 1 to Channel 48) positions.

In the example, a shot at 8383, with channel 1 at 8407 and channel 48 at 8360 is interpreted as a spread with no gap and consecutive station numbers; because only 1 and 48 have been defined. All shots with this pattern code have the same relative geometry.

4. SOURCE defines the shot and hole parameters for each shot.

The format for defining the shot point parameters is:

SHOT 1 9000 2.0 0.0 72

where:

SHOT means that you are defining shot point data.

and the next 5 values are

Shot sequence number (unique per traverse),

Actual shotpoint number,

Parallel offset of shot from peg, and

Perpendicular offset of shot from peg,

Pattern code for that shot.

The format for defining the hole parameters is:

HOLE 1 32 19

where:

HOLE means that you are defining hole data.

and the next 3 values are

Shot sequence number (unique per traverse),

Hole depth, and

Uphole time.

APPENDIX 7

Traverse 1B

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB	CAREP	1B	BRG	GEOMETRY INFO. LINE 1B
*CALL	LINE	STATIONS		
LOCN	6525	LXY	207251.57348286.	
LOCN	6551	LXY	207973.37350330.	
LOCN	6557	LXY	208153.47350797.	
LOCN	6581	LXY	208946.77352634.	
LOCN	6602	LXY	209823.87354149.	
LOCN	6603	LXY	209863.57354223.	
LOCN	6647	LXY	211351.77357576.	
LOCN	6667	LXY	212251.77358982.	
LOCN	6674	LXY	212617.27359437.	
LOCN	6720	LXY	215009.37362435.	
LOCN	6769	LXY	217554.17365632.	
LOCN	6775	LXY	217856.17366030.	
LOCN	6776	LXY	217906.37366097.	
LOCN	6799	LXY	219039.77367644.	
LOCN	6800	LXY	219073.27367716.	
LOCN	6828	LXY	219125.47370050.	
LOCN	6881	LXY	219009.17374467.	
LOCN	6882	LXY	219012.67374550.	
LOCN	6900	LXY	219449.67375985.	
LOCN	6919	LXY	219914.87377499.	
LOCN	6920	LXY	219926.97377582.	
LOCN	6936	LXY	219997.47378913.	
LOCN	6937	LXY	220036.97378986.	
LOCN	6940	LXY	220171.97379196.	
LOCN	6941	LXY	220212.37379268.	
LOCN	6946	LXY	220366.17379637.	
LOCN	6953	LXY	220439.97380216.	
LOCN	6958	LXY	220551.47380618.	
LOCN	6967	LXY	220425.07381357.	
LOCN	6979	LXY	220475.47382356.	
LOCN	7014	LXY	222034.27384822.	
LOCN	7021	LXY	222461.97385218.	
LOCN	7025	LXY	222685.87385465.	
LOCN	7033	LXY	223164.47385930.	
LOCN	7036	LXY	223292.07386145.	
LOCN	7040	LXY	223489.57386413.	
LOCN	7053	LXY	223580.47387493.	
LOCN	7060	LXY	223444.77388060.	
LOCN	7068	LXY	223756.97388649.	
LOCN	7070	LXY	223704.87388808.	
LOCN	7074	LXY	223618.27389128.	
LOCN	7123	LXY	222841.57393056.	
LOCN	7153	LXY	222309.67395499.	
LOCN	7170	LXY	221991.07396917.	
LOCN	7171	LXY	221980.47397000.	
LOCN	7227	LXY	221965.77401647.	

LOCN	7234	LXY	221886.87402204.				
LOCN	7236	LXY	221751.87402301.				
LOCN	7237	LXY	221742.87402384.				
LOCN	7242	LXY	221822.67402793.				
LOCN	7253	LXY	221485.97403614.				
LOCN	7262	LXY	221233.67404321.				
LOCN	7267	LXY	220938.67404615.				
LOCN	7273	LXY	220702.37405057.				
LOCN	7280	LXY	220492.57405576.				
LOCN	7281	LXY	220436.67405637.				
LOCN	7285	LXY	220162.37405824.				
LOCN	7296	LXY	219667.17406582.				
LOCN	7302	LXY	219354.97406958.				
LOCN	7306	LXY	219279.37407283.				
LOCN	7310	LXY	219161.17407595.				
LOCN	7328	LXY	218313.57408833.				
LOCN	7334	LXY	217940.17409164.				
LOCN	7371	LXY	216150.97411679.				
LOCN	7385	LXY	215166.17412306.				
LOCN	7392	LXY	214788.97412750.				
LOCN	7407	LXY	213905.57413636.				
ELEV	6525						
738.13	733.70	731.44	730.04				
ELEV	6529						
729.05	727.96	727.43	726.30	725.01	724.32	723.26	722.38
721.52	721.18	722.57	720.41	720.43	720.26	720.27	719.33
720.93	721.65	722.42	723.04	723.28	723.40	723.85	722.84
723.19	723.84	725.50	725.96	728.51	729.30	728.80	729.67
730.06	730.78	730.41	732.52	731.26	731.74	732.34	732.77
732.52	733.74	733.61	733.46	733.03	733.40	734.63	733.99
733.78	734.50	735.82	737.00	738.24	737.09	737.48	738.36
738.43	739.76	741.12	742.79	743.64	745.63	746.11	746.87
747.97	748.67	748.39	748.43	749.03	749.97	751.21	762.67
754.32	757.05	758.85	758.14	758.87	760.99	761.66	763.47
767.13	769.71	766.70	764.61	765.24	764.81	764.62	765.70
767.16	770.21	772.14	775.11	775.76	777.57	779.45	780.96
783.16	781.57	781.05	780.94	780.16	778.84	777.62	776.28
ELEV	6633						
774.73	773.63	772.76	771.38	770.54	770.36	770.51	771.18
771.95	772.39	773.13	774.66	776.96	780.42	784.42	784.39
783.18	781.98	781.80	782.10	782.14	782.32	781.28	780.50
779.46	778.92	777.84	777.80	778.31	778.91	779.99	782.07
782.91	784.80	786.79	786.19	786.36	787.05	787.61	788.30
789.57	791.25	792.29	792.49	792.40	792.01	791.95	792.36
792.24	791.33	790.97	790.82	789.49	788.38	787.63	786.47
785.77	784.86	784.19	782.43	780.55	779.02	778.02	776.83
775.92	776.04	776.27	778.40	780.75	781.10	780.94	780.55
781.05	780.13	778.82	779.04	780.39	782.01	779.81	779.22
779.92	779.47	779.24	779.06	778.73	779.39	779.27	778.47
777.09	775.17	774.71	773.11	772.44	770.55	769.41	768.66
767.25	765.88	764.76	763.87	763.17	762.49	761.83	761.11
760.54	760.14	759.56	758.98	758.74	758.56	757.95	757.02
756.36	755.54	754.82	754.22	754.35	753.49	752.90	752.71
753.12	753.32	751.49	748.64	747.33	745.43	744.07	743.02
742.02	743.63	742.64	741.05	739.86	740.57	741.84	743.94
746.31	744.82	743.12	742.12	741.13	741.97	743.52	744.88
743.22	740.42	738.95	737.51	736.04	734.77	733.47	732.09
730.86	729.93	729.28	729.31	728.74	728.85	727.31	727.05
727.22	726.88	727.24	726.53	726.76	726.24	726.45	
ELEV	6800						

727.43	725.14	722.99	720.09	717.45	716.8	716.95	718.26
718.23	718.41	718.21	718.51	721.03	721.9	722.28	722.78
722.11	721.24	722.39	724.09	726.68	732.60	721.62	722.23
723.30	723.69	724.31	725.58	733.56	733.73	735.13	735.90
736.66	737.78	738.60	739.43	739.95	740.87	741.43	742.08
743.98	743.86	744.39	745.29	746.01	746.85	747.63	746.78
743.75	744.23	749.78	747.95	748.45	751.28	753.95	757.11
758.93	760.24	761.75	762.46	763.68	764.81	766.19	767.35
768.56	769.79	771.11	772.13	773.72	774.76	776.08	777.16
778.09	778.42	779.64	780.72	782.45	783.48	785.17	786.29
787.53	788.66	789.94	791.32	792.95	794.14	795.61	797.01
798.18	799.48	800.54	801.59	803.05	804.25	805.52	806.75
808.24	810.65	814.06	816.08	817.75	810.86	803.97	805.05
805.89	806.93	807.52	808.69	818.23	832.31	844.19	830.41
823.14	836.86	853.44	852.93	838.67	834.57	836.03	838.04
847.50	850.41	854.47	847.23	849.71	851.92	854.29	856.43
859.05	860.88	864.41	866.15	869.36	871.99	872.09	874.50
879.89	881.54	884.56	887.55	891.06	900.00	922.70	942.20
973.60	978.90	971.20	957.90	942.90	926.70	913.70	902.50
894.50	889.23	885.06	882.52	880.57	877.51	875.58	872.93
871.84	869.64	867.84	866.49	865.00	862.90	860.78	858.83
857.85	856.23	858.77	853.55	851.30	849.99	848.26	846.76
844.97	843.76	842.43	841.56	840.32	839.87	839.33	838.38
837.53	836.08	835.59	834.35	834.21	833.88	831.26	829.79
828.03	826.78	826.04	825.07	824.07	822.58	821.47	820.71
819.22	819.52	818.09	816.89	815.13	814.16	813.27	812.78
812.24	811.26	809.73	808.23	807.73	807.63	807.57	806.40
804.90	805.09	804.00	803.42	802.55	802.26	800.95	799.90
799.20	798.32	796.86	796.65	795.87	795.19	793.61	792.70
791.97	791.42	790.25	789.40	787.85	786.54	785.26	783.83
782.55	785.69	778.31	780.16	779.24	778.32	777.65	776.59
775.83	774.38	773.93	772.96	772.55	779.55	772.98	768.79
768.06	767.52	767.22	772.28	771.11	764.13	759.32	758.09
757.28	757.16	756.61	755.91	755.80	754.41	755.22	755.40
754.92	753.96	753.65	751.82	751.75	750.93	750.93	749.37
748.96	748.12	748.12	748.19	747.78	746.78	745.64	744.98
744.91	744.26	743.10	742.70	741.24	740.44	740.04	738.89
738.89	738.33	740.65	742.38	738.10	737.31	736.35	735.40
735.04	734.59	734.62	735.26	735.42	735.73	735.96	735.71
735.32	734.52	733.43	732.67	732.41	732.14	731.59	731.77
731.70	730.97	733.05	745.21	743.30	734.63	728.87	727.82
724.17	721.58	719.82	717.95	716.48	715.50	714.52	713.97
713.60	713.40	713.33	712.93	712.83	712.58	712.65	712.33
711.98	711.59	711.40	711.11	711.36	711.56	711.40	711.36
711.32	711.28	710.63					
ELEV	7155						
710.60	710.110	711.030	710.770	710.870	711.090	711.350	711.570
711.840	712.010	712.330	712.450	712.800	712.980	713.380	713.600
713.950	714.340	714.610	715.050	715.460	715.860	716.380	717.230
718.970	718.720	718.680	718.770	718.700	718.320	718.330	718.480
719.250	719.510	720.230	720.790	721.480	722.360	722.960	721.380
721.110	721.310	721.670	721.490	721.630	722.060	722.300	722.770
723.480	723.370	724.200	724.170	724.740	725.450	725.910	725.800
725.280	725.390	726.940	729.610	727.710	726.590	727.300	727.240
727.730	728.530	731.860	733.830	731.890	732.650	733.490	734.070
734.330	734.930	735.810	734.310	734.120	734.120	735.380	735.260
736.510	735.040	733.730	732.360	732.190	731.740	732.310	730.240
728.640	727.550	723.400	728.460	730.760	728.720	729.580	731.500
732.700	733.840	735.180	734.910	733.730	733.530	733.260	732.480
732.170	732.610	732.670	733.860	732.880	731.510	730.980	730.450

732.440	730.640	728.080	726.920	724.170	722.380	724.920	721.550
717.550	718.210	716.640	717.980	720.270	720.610	722.680	727.510
732.510	731.100	732.700	730.200	726.100	718.800	714.230	710.970
710.180	711.360	713.690	712.410	711.300	714.420	709.620	702.980
700.020	696.980	693.330	689.010	686.380	691.990	695.590	698.470
695.320	688.360	680.250	672.420	670.750	669.180	668.120	667.300
666.840	666.100	665.600	665.230	664.800	664.110	664.580	665.430
665.470	663.930	660.760	662.760	664.310	664.780	664.820	662.820
664.520	661.020	661.280	660.850	660.770	659.760	659.440	658.640
658.340	658.710	659.530	663.520	662.840	662.000	662.340	661.300
662.930	664.980	676.110	673.110	664.740	664.980	665.320	665.430
664.980	662.840	665.390	665.390	664.880	665.460	664.610	666.400
665.740	666.550	666.980	666.530	665.930	665.470	665.530	665.480
666.170	665.420	665.190	665.180	665.610	666.310	667.250	667.560
668.340	669.220	670.160	671.050	671.880	672.620	673.400	673.920
674.060	674.160	674.000	673.740	673.040	672.570	671.740	670.890
671.320	671.310	668.370	667.680	667.270	666.720	664.450	663.000
663.770	662.970	661.990	661.500	661.090			

CMP

*CALL PATTERN 9000

PSTAT 7407

1 7407

48 7360

*CALL PATTERN 3

PSTAT 7404

1 7407

48 7360

*CALL PATTERN 7

PSTAT 7400

1 7407

48 7360

*CALL PATTERN 11

PSTAT 7396

1 7407

48 7360

*CALL PATTERN 15

PSTAT 7392

1 7407

48 7360

*CALL PATTERN 19

PSTAT 7388

1 7407

48 7360

*CALL PATTERN 23

PSTAT 7384

1 7407

48 7360

*CALL PATTERN 24

PSTAT 7380

1 7404

48 7357

*CALL PATTERN 25

PSTAT 7331

1 7356

48 7309

*CALL PATTERN 28

PSTAT 7120

1 7148

48 7101

*CALL PATTERN 74

PSTAT	7058	
1	7132	
48	7085	
*CALL	PATTERN	65
PSTAT	7059	
1	7124	
48	7077	
*CALL	PATTERN	57
PSTAT	7059	
1	7116	
48	7069	
*CALL	PATTERN	59
PSTAT	7056	
1	7115	
48	7068	
*CALL	PATTERN	47
PSTAT	7056	
1	7103	
48	7056	
*CALL	PATTERN	63
PSTAT	7052	
1	7115	
48	7068	
*CALL	PATTERN	35
PSTAT	7052	
1	7087	
48	7040	
*CALL	PATTERN	33
PSTAT	6953	
1	6986	
48	6939	
*CALL	PATTERN	43
PSTAT	6940	
1	6983	
48	6936	
*CALL	PATTERN	39
PSTAT	6802	
1	6841	
48	6794	
*CALL	PATTERN	31
PSTAT	6798	
1	6829	
48	6782	
*CALL	PATTERN	27
PSTAT	6796	
1	6823	
48	6776	
*CALL	PATTERN	32
PSTAT	6540	
1	6572	
48	6525	
*CALL	PATTERN	36
PSTAT	6536	
1	6572	
48	6525	
*CALL	PATTERN	40
PSTAT	6532	
1	6572	
48	6525	
*CALL	PATTERN	44

PSTAT	6528				
1	6572				
48	6525				
*CALL	PATTERN	299			
PSTAT	6527				
1	6826				
48	6779				
*CALL	PATTERN	253			
PSTAT	6549				
1	6802				
48	6755				
*CALL	PATTERN	115			
PSTAT	6618				
1	6733				
48	6686				
*CALL	PATTERN	161			
PSTAT	6595				
1	6756				
48	6709				
*CALL	PATTERN	207			
PSTAT	6572				
1	6779				
48	6732				
*CALL	PATTERN	69			
PSTAT	6641				
1	6710				
48	6663				
*CALL	PATTERN	5023			
PSTAT	6687				
1	6664				
48	6617				
*CALL	PATTERN	5069			
PSTAT	6710				
1	6641				
48	6594				
*CALL	PATTERN	5115			
PSTAT	6733				
1	6618				
48	6571				
*CALL	PATTERN	5161			
PSTAT	6756				
1	6595				
48	6548				
*CALL	PATTERN	5207			
PSTAT	6779				
1	6572				
48	6525				
*CALL	PATTERN	5229			
PSTAT	6801				
1	6572				
48	6525				
*CALL	SOURCE	1	48	IN-PER	
SHOT	1	7407	0.0	0.0	9000
SHOT	2	7404	0.0	0.0	3
SHOT	3	7400	0.0	0.0	7
SHOT	4	7396	0.0	0.0	11
SHOT	5	7392	-4.0	0.0	15
SHOT	6	7388	0.0	0.0	19
SHOT	7	7384	0.0	0.0	23
SHOT	8	7380	0.0	0.0	24

SHOT	9	7376	0.0	0.0	24
SHOT	10	7372	-5.0	0.0	24
SHOT	11	7368	0.0	0.0	24
SHOT	12	7364	0.0	0.0	24
SHOT	13	7360	0.0	0.0	24
SHOT	14	7355	0.0	0.0	24
SHOT	15	7352	0.0	0.0	24
SHOT	16	7348	-14.0	0.0	24
SHOT	17	7344	0.0	0.0	24
SHOT	18	7341	-9.0	0.0	24
SHOT	19	7336	-16.0	0.0	24
SHOT	20	7331	0.0	3.0	25
SHOT	21	7324	4.0	0.0	24
SHOT	22	7320	0.0	6.0	24
SHOT	23	7316	0.0	6.0	24
SHOT	24	7312	0.0	7.0	24
SHOT	25	7306	0.0	5.0	24
SHOT	26	7304	0.0	0.0	24
SHOT	27	7299	-17.0	0.0	24
SHOT	28	7296	0.0	-2.0	24
SHOT	29	7292	0.0	5.0	24
SHOT	30	7288	0.0	-7.0	24
SHOT	31	7284	0.0	2.0	24
SHOT	32	7280	0.0	-2.0	24
SHOT	33	7276	0.0	-10.0	24
SHOT	34	7272	0.0	-2.0	24
SHOT	35	7268	0.0	5.0	24
SHOT	36	7264	0.0	3.0	24
SHOT	37	7260	0.0	5.0	24
SHOT	38	7256	0.0	5.0	24
SHOT	39	7252	0.0	4.0	24
SHOT	40	7247	0.0	4.0	24
SHOT	41	7244	0.0	-1.0	24
SHOT	42	7240	0.0	-1.0	24
SHOT	43	7236	0.0	-2.0	24
SHOT	44	7232	0.0	8.0	24
SHOT	45	7228	0.0	4.0	24
SHOT	46	7224	0.0	0.0	24
SHOT	47	7220	0.0	0.0	24
SHOT	48	7216	0.0	4.0	24
SHOT	49	7212	0.0	0.0	24
SHOT	50	7208	0.0	0.0	24
SHOT	51	7204	0.0	-2.0	24
SHOT	52	7200	0.0	0.0	24
SHOT	53	7196	0.0	0.0	24
SHOT	54	7192	0.0	0.0	24
SHOT	55	7188	0.0	0.0	24
SHOT	56	7184	0.0	0.0	24
SHOT	57	7176	0.0	0.0	24
SHOT	58	7172	0.0	0.0	24
SHOT	59	7168	0.0	0.0	24
SHOT	60	7164	0.0	0.0	24
SHOT	61	7160	0.0	0.0	24
SHOT	62	7155	0.0	2.0	24
SHOT	63	7152	0.0	0.0	24
SHOT	64	7148	0.0	0.0	24
SHOT	65	7144	0.0	0.0	24
SHOT	66	7140	0.0	0.0	24
SHOT	67	7136	0.0	0.0	24
SHOT	68	7132	0.0	0.0	24

SHOT	69	7128	0.0	0.0	24
SHOT	70	7120	0.0	0.0	28
SHOT	71	7120	0.0	4.0	24
SHOT	72	7116	0.0	0.0	24
SHOT	73	7112	0.0	0.0	24
SHOT	74	7108	0.0	0.0	24
SHOT	75	7104	0.0	16.0	24
SHOT	76	7100	0.0	0.0	24
SHOT	77	7097	0.0	0.0	24
SHOT	78	7088	0.0	0.0	24
SHOT	79	7068	0.0	0.0	24
SHOT	80	7064	0.0	6.0	24
SHOT	81	7059	0.0	2.0	65
SHOT	82	7059	0.0	4.0	57
SHOT	83	7059	0.0	0.0	47
SHOT	84	7058	0.0	0.0	74
SHOT	85	7056	0.0	-4.0	59
SHOT	86	7056	0.0	2.0	47
SHOT	87	7056	0.0	0.0	35
SHOT	88	7052	0.0	-8.0	63
SHOT	89	7052	12.0	0.0	35
SHOT	90	7052	0.0	0.0	35
SHOT	91	7035	0.0	0.0	47
SHOT	92	7032	0.0	4.0	35
SHOT	93	7030	0.0	0.0	47
SHOT	94	7028	0.0	7.0	35
SHOT	95	7026	0.0	12.0	63
SHOT	96	7026	0.0	8.0	47
SHOT	97	7024	0.0	7.0	35
SHOT	98	7020	0.0	0.0	35
SHOT	99	7016	0.0	3.0	35
SHOT	100	7012	0.0	0.0	35
SHOT	101	7008	0.0	5.0	35
SHOT	102	7004	0.0	5.0	35
SHOT	103	7000	0.0	0.0	35
SHOT	104	6996	0.0	3.0	35
SHOT	105	6992	0.0	0.0	35
SHOT	106	6988	0.0	3.0	35
SHOT	107	6984	0.0	-2.0	35
SHOT	108	6980	0.0	0.0	35
SHOT	109	6976	0.0	0.0	35
SHOT	110	6972	0.0	0.0	35
SHOT	111	6968	0.0	0.0	35
SHOT	112	6964	0.0	2.0	35
SHOT	113	6960	0.0	-2.0	35
SHOT	114	6956	0.0	-2.0	35
SHOT	115	6953	0.0	0.0	33
SHOT	116	6953	-5.0	0.0	25
SHOT	117	6940	0.0	0.0	35
SHOT	118	6940	-7.0	0.0	43
SHOT	119	6936	0.0	2.0	35
SHOT	120	6932	8.0	0.0	35
SHOT	121	6928	0.0	2.0	35
SHOT	122	6924	0.0	0.0	35
SHOT	123	6919	40.0	7.0	35
SHOT	124	6916	0.0	0.0	35
SHOT	125	6912	0.0	0.0	35
SHOT	126	6907	0.0	0.0	35
SHOT	127	6900	8.0	0.0	43
SHOT	128	6900	0.0	0.0	35

SHOT	129	6896	0.0	0.0	35
SHOT	130	6892	0.0	3.0	35
SHOT	131	6888	0.0	0.0	35
SHOT	132	6884	0.0	0.0	35
SHOT	133	6880	0.0	3.0	35
SHOT	134	6876	0.0	0.0	35
SHOT	135	6872	0.0	0.0	35
SHOT	136	6868	0.0	3.0	35
SHOT	137	6864	0.0	0.0	35
SHOT	138	6860	0.0	0.0	35
SHOT	139	6856	0.0	3.0	35
SHOT	140	6852	0.0	0.0	35
SHOT	141	6848	0.0	0.0	35
SHOT	142	6844	0.0	0.0	35
SHOT	143	6840	0.0	0.0	35
SHOT	144	6836	0.0	0.0	35
SHOT	145	6832	0.0	0.0	35
SHOT	146	6828	0.0	-2.0	35
SHOT	147	6824	0.0	0.0	35
SHOT	148	6820	0.0	3.0	35
SHOT	149	6816	0.0	0.0	35
SHOT	150	6812	0.0	0.0	35
SHOT	151	6804	0.0	0.0	43
SHOT	152	6803	0.0	0.0	35
SHOT	153	6803	-4.0	0.0	24
SHOT	154	6802	0.0	0.0	39
SHOT	155	6802	-5.0	0.0	35
SHOT	156	6801	0.0	0.0	5229
SHOT	157	6800	0.0	0.0	35
SHOT	158	6800	-15.0	0.0	24
SHOT	159	6798	0.0	0.0	31
SHOT	160	6796	0.0	0.0	27
SHOT	161	6794	0.0	3.0	24
SHOT	162	6792	0.0	3.0	24
SHOT	163	6790	0.0	3.0	24
SHOT	164	6788	0.0	3.0	24
SHOT	165	6784	0.0	0.0	24
SHOT	166	6780	0.0	0.0	24
SHOT	167	6779	0.0	0.0	5207
SHOT	168	6776	0.0	0.0	24
SHOT	169	6772	0.0	0.0	24
SHOT	170	6768	0.0	0.0	24
SHOT	171	6764	0.0	0.0	24
SHOT	172	6760	0.0	0.0	24
SHOT	173	6756	0.0	3.0	24
SHOT	174	6756	0.0	0.0	5161
SHOT	175	6752	0.0	0.0	24
SHOT	176	6748	0.0	3.0	24
SHOT	177	6744	0.0	0.0	24
SHOT	178	6740	0.0	0.0	24
SHOT	179	6736	0.0	0.0	24
SHOT	180	6733	0.0	0.0	5115
SHOT	181	6732	0.0	0.0	24
SHOT	182	6728	0.0	0.0	24
SHOT	183	6724	0.0	0.0	24
SHOT	184	6716	0.0	3.0	24
SHOT	185	6712	0.0	3.0	24
SHOT	186	6710	0.0	0.0	5069
SHOT	187	6708	0.0	0.0	24
SHOT	188	6704	0.0	3.0	24

SHOT	189	6700	0.0	3.0	24
SHOT	190	6696	0.0	0.0	24
SHOT	191	6692	0.0	0.0	24
SHOT	192	6688	0.0	0.0	24
SHOT	193	6687	0.0	0.0	5023
SHOT	194	6684	0.0	0.0	24
SHOT	195	6680	0.0	0.0	24
SHOT	196	6676	0.0	0.0	24
SHOT	197	6672	0.0	0.0	24
SHOT	198	6668	0.0	0.0	24
SHOT	199	6664	0.0	2.0	24
SHOT	200	6660	0.0	0.0	24
SHOT	201	6656	0.0	0.0	24
SHOT	202	6652	0.0	0.0	24
SHOT	203	6648	0.0	0.0	24
SHOT	204	6644	0.0	0.0	24
SHOT	205	6641	0.0	0.0	69
SHOT	206	6640	0.0	0.0	24
SHOT	207	6636	0.0	0.0	24
SHOT	208	6632	0.0	0.0	24
SHOT	209	6628	0.0	0.0	24
SHOT	210	6624	0.0	0.0	24
SHOT	211	6620	0.0	0.0	24
SHOT	212	6618	0.0	0.0	115
SHOT	213	6616	0.0	6.0	24
SHOT	214	6612	0.0	3.0	24
SHOT	215	6608	0.0	3.0	24
SHOT	216	6604	0.0	-3.0	24
SHOT	217	6600	0.0	2.0	24
SHOT	218	6596	0.0	2.0	24
SHOT	219	6595	0.0	0.0	161
SHOT	220	6592	0.0	2.0	24
SHOT	221	6588	0.0	2.0	24
SHOT	222	6584	0.0	0.0	24
SHOT	223	6580	0.0	0.0	24
SHOT	224	6576	0.0	0.0	24
SHOT	225	6572	0.0	0.0	24
SHOT	226	6572	0.0	0.0	207
SHOT	227	6568	0.0	0.0	24
SHOT	228	6563	0.0	0.0	24
SHOT	229	6560	0.0	0.0	24
SHOT	230	6556	0.0	0.0	24
SHOT	231	6552	0.0	0.0	24
SHOT	232	6549	0.0	0.0	253
SHOT	233	6548	0.0	0.0	24
SHOT	234	6544	0.0	0.0	28
SHOT	235	6540	0.0	2.0	32
SHOT	236	6536	0.0	2.0	36
SHOT	237	6532	0.0	3.0	40
SHOT	238	6528	0.0	2.0	44
SHOT	239	6527	0.0	0.0	299
SHOT	240	6525	0.0	2.0	47
HOLE	1	9	8		
HOLE	2	9	7		
HOLE	3	9	8		
HOLE	4	9	8		
HOLE	5	9	9		
HOLE	6	13	10		
HOLE	7	22	17		
HOLE	8	18	11		

HOLE	9	18	13
HOLE	10	23	12
HOLE	11	23	14
HOLE	12	18	12
HOLE	13	23	19
HOLE	14	15	18
HOLE	15	15	18
HOLE	16	9	9
HOLE	17	18	16
HOLE	18	9	16
HOLE	19	6	21
HOLE	20	6	11
HOLE	21	9	10
HOLE	22	13	14
HOLE	23	9	18
HOLE	24	18	12
HOLE	25	9	9
HOLE	26	9	11
HOLE	27	9	8
HOLE	28	9	9
HOLE	29	9	14
HOLE	30	9	10
HOLE	31	18	11
HOLE	32	9	9
HOLE	33	13	10
HOLE	34	14	12
HOLE	35	14	11
HOLE	36	9	8
HOLE	37	9	10
HOLE	38	9	9
HOLE	39	9	9
HOLE	40	9	10
HOLE	41	14	11
HOLE	42	9	10
HOLE	43	9	7
HOLE	44	18	11
HOLE	45	9	9
HOLE	46	9	8
HOLE	47	9	8
HOLE	48	18	11
HOLE	49	12	11
HOLE	50	9	9
HOLE	51	9	9
HOLE	52	12	9
HOLE	53	9	10
HOLE	54	12	13
HOLE	55	9	7
HOLE	56	9	7
HOLE	57	27	19
HOLE	58	9	7
HOLE	59	9	10
HOLE	60	9	7
HOLE	61	27	17
HOLE	62	27	20
HOLE	63	40	30
HOLE	64	40	44
HOLE	65	36	33
HOLE	66	40	36
HOLE	67	40	37
HOLE	68	40	39

HOLE	69	36	31
HOLE	70	40	29
HOLE	71	40	29
HOLE	72	36	30
HOLE	73	40	29
HOLE	74	40	29
HOLE	75	40	40
HOLE	76	40	25
HOLE	77	40	20
HOLE	78	40	30
HOLE	79	14	9
HOLE	80	9	9
HOLE	81	18	15
HOLE	82	22	16
HOLE	83	14	10
HOLE	84	32	18
HOLE	85	40	28
HOLE	86	40	29
HOLE	87	40	27
HOLE	88	36	20
HOLE	89	27	17
HOLE	90	32	18
HOLE	91	40	19
HOLE	92	13	9
HOLE	93	13	9
HOLE	94	13	12
HOLE	95	27	18
HOLE	96	14	11
HOLE	97	13	10
HOLE	98	18	10
HOLE	99	18	9
HOLE	100	40	8
HOLE	101	40	29
HOLE	102	40	36
HOLE	103	40	31
HOLE	104	21	13
HOLE	105	14	10
HOLE	106	40	30
HOLE	107	36	24
HOLE	108	18	16
HOLE	109	32	23
HOLE	110	40	21
HOLE	111	21	11
HOLE	112	40	27
HOLE	113	40	23
HOLE	114	40	27
HOLE	115	40	27
HOLE	116	36	23
HOLE	117	26	24
HOLE	118	32	26
HOLE	119	36	30
HOLE	120	18	16
HOLE	121	14	14
HOLE	122	18	14
HOLE	123	21	15
HOLE	124	23	14
HOLE	125	18	14
HOLE	126	13	13
HOLE	127	32	20
HOLE	128	40	20

HOLE	129	40	19
HOLE	130	23	16
HOLE	131	27	18
HOLE	132	32	19
HOLE	133	36	19
HOLE	134	32	17
HOLE	135	32	18
HOLE	136	22	14
HOLE	137	40	21
HOLE	138	40	20
HOLE	139	40	23
HOLE	140	31	18
HOLE	141	40	20
HOLE	142	32	19
HOLE	143	40	27
HOLE	144	40	28
HOLE	145	40	27
HOLE	146	40	29
HOLE	147	40	22
HOLE	148	32	21
HOLE	149	40	22
HOLE	150	18	13
HOLE	151	30	20
HOLE	152	40	21
HOLE	153	40	22
HOLE	154	40	20
HOLE	155	40	20
HOLE	156	40	0
HOLE	157	40	25
HOLE	158	38	29
HOLE	159	40	29
HOLE	160	40	28
HOLE	161	40	29
HOLE	162	40	30
HOLE	163	40	30
HOLE	164	40	30
HOLE	165	40	30
HOLE	166	40	30
HOLE	167	40	0
HOLE	168	40	29
HOLE	169	40	29
HOLE	170	40	29
HOLE	171	40	26
HOLE	172	40	27
HOLE	173	40	30
HOLE	174	40	0
HOLE	175	40	30
HOLE	176	40	30
HOLE	177	40	30
HOLE	178	40	26
HOLE	179	40	26
HOLE	180	40	0
HOLE	181	40	27
HOLE	182	40	26
HOLE	183	40	26
HOLE	184	40	26
HOLE	185	40	27
HOLE	186	40	0
HOLE	187	40	24
HOLE	188	40	24

HOLE	189	40	26
HOLE	190	40	25
HOLE	191	40	25
HOLE	192	40	24
HOLE	193	40	0
HOLE	194	40	23
HOLE	195	40	25
HOLE	196	40	24
HOLE	197	40	24
HOLE	198	40	24
HOLE	199	40	24
HOLE	200	40	20
HOLE	201	40	21
HOLE	202	40	20
HOLE	203	40	22
HOLE	204	40	20
HOLE	205	40	0
HOLE	206	40	21
HOLE	207	40	20
HOLE	208	35	19
HOLE	209	40	22
HOLE	210	40	21
HOLE	211	40	22
HOLE	212	40	0
HOLE	213	40	20
HOLE	214	40	19
HOLE	215	40	20
HOLE	216	40	22
HOLE	217	40	21
HOLE	218	40	20
HOLE	219	40	0
HOLE	220	40	19
HOLE	221	40	20
HOLE	222	40	20
HOLE	223	40	20
HOLE	224	32	18
HOLE	225	36	23
HOLE	226	40	0
HOLE	227	40	23
HOLE	228	12	12
HOLE	229	32	24
HOLE	230	13	10
HOLE	231	40	43
HOLE	232	40	0
HOLE	233	40	35
HOLE	234	10	10
HOLE	235	40	20
HOLE	236	40	19
HOLE	237	18	11
HOLE	238	27	13
HOLE	239	40	0
HOLE	240	13	11
*END			

APPENDIX 8

Traverse 1C

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB	CAREP	1C	BRG	GEOMETRY INFO. LINE 1C			
*CALL	LINE	STATIONS					
LOCN	6176	LXY	225085.	7331049.			
LOCN	6189	LXY	224243.	7331732.			
LOCN	6200	LXY	223531.	7332310.			
LOCN	6207	LXY	223056.	7332649.			
LOCN	6210	LXY	222832.	7332760.			
LOCN	6216	LXY	222446.	7333078.			
LOCN	6233	LXY	221344.	7333969.			
LOCN	6240	LXY	220881.	7334324.			
LOCN	6249	LXY	220335.	7334839.			
LOCN	6257	LXY	219907.	7335350.			
LOCN	6290	LXY	218406.	7337656.			
LOCN	6316	LXY	217224.	7339473.			
LOCN	6317	LXY	217164.	7339529.			
LOCN	6332	LXY	216166.	7340284.			
LOCN	6339	LXY	215812.	7340747.			
LOCN	6342	LXY	215641.	7340929.			
LOCN	6356	LXY	214725.	7341654.			
LOCN	6366	LXY	214284.	7342361.			
LOCN	6379	LXY	213536.	7343145.			
LOCN	6397	LXY	212679.	7344378.			
LOCN	6415	LXY	211719.	7345531.			
LOCN	6428	LXY	210947.	7346291.			
LOCN	6430	LXY	210812.	7346389.			
LOCN	6453	LXY	209412.	7347700.			
LOCN	6469	LXY	208412.	7348583.			
LOCN	6491	LXY	206760.	7349379.			
LOCN	6492	LXY	206688.	7349421.			
LOCN	6500	LXY	206119.	7349770.			
LOCN	6501	LXY	206053.	7349813.			
LOCN	6517	LXY	204930.	7350540.			
LOCN	6524	LXY	204441.	7350857.			
ELEV	6176						
670.17							
ELEV	6177						
661.83	665.83	658.99	653.25	649.90	647.40	648.09	648.52
651.62	650.29	653.49	655.74	654.58	652.23	650.14	648.83
650.09	649.09	648.82	649.51	648.18	647.57	648.29	648.51
648.11	648.24	650.82	648.56	650.19	649.61	650.66	649.91
648.45	646.58	645.41	644.79	643.94	644.21	644.47	643.91
642.92	642.40	642.11	643.98	644.01	643.31	642.03	642.92
642.82	641.92	642.65	643.43	644.53	645.29	646.09	647.60
648.58	646.88	645.24	640.51	645.88	647.70	649.35	649.87
649.59	649.68	650.85	647.60	648.60	649.67	650.55	650.41
650.21	648.60	647.36	646.61	646.37	647.64	649.18	650.61
650.39	651.54	654.48	654.43	655.67	655.98	655.46	656.07
658.38	656.44	656.75	657.97	658.43	658.25	657.77	657.16

657.33	657.04	657.28	659.19	659.26	659.67	660.19	660.42
661.33	661.39	661.99	662.35	662.24	662.69	663.58	664.23
666.00	666.81	666.90	664.91	664.81	664.53	664.71	665.13
665.62	665.81	665.75	666.15	666.32	666.79	666.87	667.25
668.04	668.62	669.53	671.60	671.30	671.19	671.79	670.47
669.78	671.89	672.86	673.10	672.75	672.30	672.09	673.06
673.69	673.11	673.45	674.44	674.87	674.31	673.84	673.92
674.51	675.18	675.75	677.09	677.69	678.55	679.51	679.90
680.16	680.60	682.05	681.35	681.77	683.46	684.40	685.63
686.99	688.26	689.90	691.41	691.00	688.99	687.53	685.25
683.40	683.94	683.88	683.78	684.38	685.08	686.23	686.86
686.26	685.77	689.10	692.53	696.40	697.49	696.75	696.66
697.46	696.60	694.92	689.07	691.96	694.54	695.22	694.45
695.52	695.03	696.82	696.11	695.95	693.67	691.50	691.97
692.48	693.55	695.42	696.79	698.85	699.78	699.78	700.84

ELEV 6393

703.80	704.55	703.31	704.40	703.99	702.91	702.63	703.71
707.21	708.22	708.43	709.02	708.26	706.59	704.38	703.95
705.41	707.39	709.80	710.89	711.20	710.52	709.59	708.46
708.85	707.95	706.56	705.26	707.50	706.94	706.42	705.59
705.07	705.08	705.03	705.43	705.39	706.30	706.16	708.64
709.08	710.41	710.84	711.42	710.92	711.33	711.30	712.42
713.00	713.51	714.30	714.65	714.88	714.76	714.37	715.01
715.59	716.81	717.47	718.51	718.51	718.10	718.56	718.17
717.57	717.10	716.28	716.14	716.77	716.78	717.17	717.32
717.10	716.02	716.24	716.58	716.61	714.90	717.41	717.90
718.69	719.13	719.88	720.23	721.06	721.36	722.48	723.46
723.83	724.28	726.32	730.39	734.48	733.98	733.07	736.68
736.33	738.33	736.50	733.76	732.85	731.70	731.01	731.35
732.38	733.94	732.48	732.35	735.76	738.35	735.83	733.96
735.65	735.72	736.23	738.35	739.36	737.94	735.51	735.27
736.41	738.55	739.92	738.42	736.83	737.14	737.00	737.40
737.59	737.79	738.41	738.24				

CMP

*CALL PATTERN 9000

PSTAT 6524

1 6524

48 6477

*CALL PATTERN 1

PSTAT 6523

1 6524

48 6477

*CALL PATTERN 4

PSTAT 6520

1 6524

48 6477

*CALL PATTERN 8

PSTAT 6516

1 6524

48 6477

*CALL PATTERN 12

PSTAT 6512

1 6524

48 6477

*CALL PATTERN 16

PSTAT 6508

1 6524

48 6477

*CALL PATTERN 19

PSTAT 6505

1	6524				
48	6477				
*CALL	PATTERN	24			
PSTAT	6500				
1	6524				
48	6477				
*CALL	PATTERN	25			
PSTAT	6420				
1	6445				
48	6398				
*CALL	PATTERN	27			
PSTAT	6196				
1	6223				
48	6176				
*CALL	PATTERN	31			
PSTAT	6192				
1	6223				
48	6176				
*CALL	PATTERN	35			
PSTAT	6188				
1	6223				
48	6176				
*CALL	PATTERN	40			
PSTAT	6183				
1	6223				
48	6176				
*CALL	PATTERN	43			
PSTAT	6180				
1	6223				
48	6176				
*CALL	SOURCE	1	48	IN-PER	
SHOT	1	6524	0.0	16.0	9000
SHOT	2	6523	0.0	16.0	1
SHOT	3	6520	0.0	0.0	4
SHOT	4	6516	0.0	0.0	8
SHOT	5	6512	0.0	16.0	12
SHOT	6	6508	0.0	0.0	16
SHOT	7	6505	0.0	0.0	19
SHOT	8	6500	0.0	0.0	24
SHOT	9	6496	0.0	0.0	24
SHOT	10	6492	0.0	0.0	24
SHOT	11	6488	0.0	15.0	24
SHOT	12	6484	0.0	16.0	24
SHOT	13	6480	0.0	0.0	24
SHOT	14	6476	0.0	18.0	24
SHOT	15	6472	0.0	0.0	24
SHOT	16	6468	0.0	0.0	24
SHOT	17	6464	0.0	0.0	24
SHOT	18	6460	0.0	0.0	24
SHOT	19	6456	0.0	0.0	24
SHOT	20	6452	0.0	2.0	24
SHOT	21	6448	0.0	0.0	24
SHOT	22	6444	0.0	5.0	24
SHOT	23	6440	0.0	-2.0	24
SHOT	24	6436	0.0	-2.0	24
SHOT	25	6432	0.0	-3.0	24
SHOT	26	6428	0.0	-5.0	24
SHOT	27	6424	0.0	-4.0	24
SHOT	28	6420	0.0	0.0	25
SHOT	29	6416	0.0	0.0	24

SHOT	30	6412	0.0	0.0	24
SHOT	31	6408	0.0	0.0	24
SHOT	32	6404	0.0	-2.0	24
SHOT	33	6400	0.0	-4.0	24
SHOT	34	6397	-5.0	-4.0	24
SHOT	35	6392	0.0	7.0	24
SHOT	36	6388	0.0	-4.0	24
SHOT	37	6384	0.0	-6.0	24
SHOT	38	6380	0.0	-4.0	24
SHOT	39	6376	0.0	-4.0	24
SHOT	40	6371	10.0	-4.0	24
SHOT	41	6368	0.0	-4.0	24
SHOT	42	6364	0.0	0.0	24
SHOT	43	6360	0.0	-2.0	24
SHOT	44	6356	0.0	0.0	24
SHOT	45	6352	0.0	7.0	24
SHOT	46	6348	0.0	16.0	24
SHOT	47	6344	0.0	0.0	24
SHOT	48	6340	0.0	0.0	24
SHOT	49	6336	0.0	0.0	24
SHOT	50	6332	0.0	-4.0	24
SHOT	51	6328	0.0	0.0	24
SHOT	52	6324	0.0	0.0	24
SHOT	53	6320	0.0	0.0	24
SHOT	54	6316	0.0	0.0	24
SHOT	55	6311	0.0	16.0	24
SHOT	56	6308	0.0	0.0	24
SHOT	57	6304	0.0	0.0	24
SHOT	58	6300	0.0	0.0	24
SHOT	59	6296	0.0	0.0	24
SHOT	60	6292	0.0	0.0	24
SHOT	61	6288	0.0	0.0	24
SHOT	62	6284	0.0	0.0	24
SHOT	63	6280	0.0	0.0	24
SHOT	64	6276	0.0	0.0	24
SHOT	65	6272	0.0	0.0	24
SHOT	66	6268	0.0	0.0	24
SHOT	67	6264	0.0	0.0	24
SHOT	68	6260	0.0	-3.0	24
SHOT	69	6256	0.0	7.0	24
SHOT	70	6252	0.0	15.0	24
SHOT	71	6248	-7.0	5.0	24
SHOT	72	6244	0.0	0.0	24
SHOT	73	6240	0.0	-1.0	24
SHOT	74	6235	0.0	0.0	24
SHOT	75	6232	0.0	0.0	24
SHOT	76	6228	0.0	0.0	24
SHOT	77	6224	0.0	0.0	24
SHOT	78	6220	0.0	0.0	24
SHOT	79	6216	0.0	0.0	24
SHOT	80	6212	0.0	0.0	24
SHOT	81	6208	0.0	0.0	24
SHOT	82	6203	0.0	0.0	24
SHOT	83	6200	0.0	-11.0	24
SHOT	84	6196	0.0	0.0	27
SHOT	85	6192	0.0	0.0	31
SHOT	86	6188	0.0	0.0	35
SHOT	87	6183	20.0	0.0	40
SHOT	88	6180	-3.0	0.0	43
SHOT	89	6180	3.0	0.0	43

HOLE	1	23	18
HOLE	2	32	19
HOLE	3	40	20
HOLE	4	23	12
HOLE	5	27	13
HOLE	6	40	20
HOLE	7	40	21
HOLE	8	22	14
HOLE	9	27	14
HOLE	10	22	15
HOLE	11	22	16
HOLE	12	40	21
HOLE	13	27	20
HOLE	14	32	20
HOLE	15	23	15
HOLE	16	20	17
HOLE	17	13	20
HOLE	18	23	19
HOLE	19	23	20
HOLE	20	27	25
HOLE	21	27	20
HOLE	22	31	25
HOLE	23	23	21
HOLE	24	40	29
HOLE	25	32	22
HOLE	26	40	30
HOLE	27	40	32
HOLE	28	36	38
HOLE	29	32	30
HOLE	30	40	31
HOLE	31	40	29
HOLE	32	40	31
HOLE	33	40	25
HOLE	34	40	24
HOLE	35	9	11
HOLE	36	40	33
HOLE	37	36	21
HOLE	38	39	30
HOLE	39	40	30
HOLE	40	27	24
HOLE	41	18	11
HOLE	42	40	30
HOLE	43	18	17
HOLE	44	17	18
HOLE	45	18	21
HOLE	46	36	35
HOLE	47	23	20
HOLE	48	23	21
HOLE	49	40	26
HOLE	50	40	29
HOLE	51	17	19
HOLE	52	40	31
HOLE	53	40	31
HOLE	54	40	31
HOLE	55	36	27
HOLE	56	36	25
HOLE	57	36	21
HOLE	58	18	18
HOLE	59	18	20
HOLE	60	27	18

HOLE	61	40	22
HOLE	62	40	22
HOLE	63	27	16
HOLE	64	27	18
HOLE	65	27	19
HOLE	66	40	27
HOLE	67	40	25
HOLE	68	40	25
HOLE	69	40	26
HOLE	70	40	30
HOLE	71	34	21
HOLE	72	18	12
HOLE	73	18	17
HOLE	74	30	16
HOLE	75	27	18
HOLE	76	18	10
HOLE	77	23	11
HOLE	78	18	13
HOLE	79	40	24
HOLE	80	40	22
HOLE	81	40	20
HOLE	82	40	21
HOLE	83	23	15
HOLE	84	9	11
HOLE	85	23	12
HOLE	86	18	14
HOLE	87	4	8
HOLE	88	27	13
HOLE	89	14	12
*END			

APPENDIX 9

Traverse 1D

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB *CALL	CAREP LINE	1D STATIONS	BRG	GEOMETRY INFO. LINE 1D
LOCN	5380	LXY	247211.37280450.	
LOCN	5414	LXY	245992.27283009.	
LOCN	5458	LXY	244434.87286329.	
LOCN	5459	LXY	244397.97286404.	
LOCN	5478	LXY	243621.77287785.	
LOCN	5498	LXY	242834.97289255.	
LOCN	5506	LXY	242627.67289889.	
LOCN	5527	LXY	242134.87291568.	
LOCN	5566	LXY	241251.57294697.	
LOCN	5601	LXY	240392.97297486.	
LOCN	5618	LXY	239508.67298593.	
LOCN	5642	LXY	238099.67300013.	
LOCN	5661	LXY	236985.37301139.	
LOCN	5670	LXY	236457.27301672.	
LOCN	5677	LXY	236009.77302047.	
LOCN	5704	LXY	234245.17303444.	
LOCN	5721	LXY	233209.67304412.	
LOCN	5726	LXY	232976.67304751.	
LOCN	5730	LXY	232684.97304896.	
LOCN	5735	LXY	232742.57305302.	
LOCN	5738	LXY	232714.07305545.	
LOCN	5745	LXY	232454.17306065.	
LOCN	5747	LXY	232426.97306234.	
LOCN	5758	LXY	231592.47306608.	
LOCN	5763	LXY	231186.77306677.	
LOCN	5764	LXY	231200.47306748.	
LOCN	5766	LXY	231350.27306814.	
LOCN	5768	LXY	231427.47306960.	
LOCN	5771	LXY	231387.67307200.	
LOCN	5774	LXY	231419.77307445.	
LOCN	5775	LXY	231424.67307528.	
LOCN	5777	LXY	231400.17307692.	
LOCN	5779	LXY	231493.47307828.	
LOCN	5780	LXY	231515.17307907.	
LOCN	5782	LXY	231498.87308070.	
LOCN	5783	LXY	231464.07308135.	
LOCN	5787	LXY	231176.77308298.	
LOCN	5788	LXY	231097.67308305.	
LOCN	5793	LXY	230748.27308516.	
LOCN	5794	LXY	230669.57308540.	
LOCN	5800	LXY	230303.87308870.	
LOCN	5806	LXY	230276.47309357.	
LOCN	5813	LXY	230324.27309938.	
LOCN	5824	LXY	230473.57310843.	
LOCN	5827	LXY	230536.07311085.	
LOCN	5828	LXY	230559.37311165.	

LOCN	5838	LXY	230867.47311940.
LOCN	5839	LXY	230892.27312019.
LOCN	5842	LXY	230923.97312267.
LOCN	5843	LXY	230886.97312331.
LOCN	5847	LXY	230636.97312552.
LOCN	5848	LXY	230578.67312611.
LOCN	5851	LXY	230430.77312813.
LOCN	5852	LXY	230410.57312888.
LOCN	5857	LXY	230451.97313303.
LOCN	5858	LXY	230424.87313376.
LOCN	5876	LXY	229536.37314585.
LOCN	5877	LXY	229562.27314649.
LOCN	5888	LXY	230170.57315335.
LOCN	5889	LXY	230190.47315413.
LOCN	5893	LXY	230221.47315745.
LOCN	5894	LXY	230194.77315816.
LOCN	5902	LXY	229728.47316292.
LOCN	5903	LXY	229658.77316335.
LOCN	5907	LXY	229350.97316464.
LOCN	5912	LXY	228943.67316552.
LOCN	5913	LXY	228873.27316590.
LOCN	5917	LXY	228634.77316823.
LOCN	5918	LXY	228599.87316892.
LOCN	5925	LXY	228615.07317482.
LOCN	5930	LXY	228685.87317894.
LOCN	5933	LXY	228696.27318146.
LOCN	5934	LXY	228652.17318214.
LOCN	5936	LXY	228543.37318349.
LOCN	5938	LXY	228584.97318510.
LOCN	5939	LXY	228573.57318590.
LOCN	5941	LXY	228514.77318750.
LOCN	5942	LXY	228514.37318835.
LOCN	5943	LXY	228502.77318916.
LOCN	5945	LXY	228447.27319077.
LOCN	5948	LXY	228203.67319135.
LOCN	5950	LXY	228170.57319303.
LOCN	5951	LXY	228180.87319383.
LOCN	5953	LXY	228129.97319543.
LOCN	5957	LXY	227955.37319831.
LOCN	5958	LXY	227946.27319906.
LOCN	5959	LXY	227974.77319995.
LOCN	5960	LXY	227992.17320076.
LOCN	5964	LXY	227999.47320418.
LOCN	5966	LXY	227906.57320561.
LOCN	5967	LXY	227928.17320640.
LOCN	5968	LXY	227883.47320709.
LOCN	5969	LXY	227826.77320769.
LOCN	5973	LXY	227631.07321044.
LOCN	5974	LXY	227572.17321104.
LOCN	5975	LXY	227526.37321176.
LOCN	5976	LXY	227515.87321257.
LOCN	5977	LXY	227546.57321333.
LOCN	5978	LXY	227557.27321416.
LOCN	5979	LXY	227539.77321495.
LOCN	5980	LXY	227507.57321578.
LOCN	5981	LXY	227509.37321665.
LOCN	5982	LXY	227504.57321746.
LOCN	5983	LXY	227451.87321815.
LOCN	5984	LXY	227386.77321865.
LOCN	5985	LXY	227314.97321906.

LOCN	5986	LXY	227247.97321960.				
LOCN	5987	LXY	227193.97322023.				
LOCN	5988	LXY	227142.07322091.				
LOCN	5989	LXY	227086.27322151.				
LOCN	5991	LXY	226929.17322219.				
LOCN	5992	LXY	226858.77322268.				
LOCN	5993	LXY	226793.17322317.				
LOCN	5995	LXY	226630.67322373.				
LOCN	5996	LXY	226550.07322394.				
LOCN	5997	LXY	226466.47322410.				
LOCN	5998	LXY	226388.97322436.				
LOCN	6000	LXY	226246.07322532.				
LOCN	6003	LXY	226001.37322587.				
LOCN	6007	LXY	225897.87322905.				
LOCN	6008	LXY	225885.47322986.				
LOCN	6009	LXY	225889.67323069.				
LOCN	6030	LXY	225294.97324716.				
LOCN	6056	LXY	223389.87325750.				
LOCN	6075	LXY	221979.97326472.				
LOCN	6080	LXY	222113.07326867.				
LOCN	6088	LXY	222517.67327397.				
LOCN	6092	LXY	222597.57327710.				
LOCN	6094	LXY	222543.27327862.				
LOCN	6097	LXY	222321.97327973.				
LOCN	6100	LXY	222180.67328178.				
LOCN	6103	LXY	221962.97328292.				
LOCN	6107	LXY	221639.07328368.				
LOCN	6110	LXY	221389.67328350.				
LOCN	6112	LXY	221238.87328411.				
LOCN	6113	LXY	221220.27328493.				
LOCN	6119	LXY	221294.67328977.				
LOCN	6122	LXY	221284.97329227.				
LOCN	6132	LXY	221199.67330057.				
LOCN	6144	LXY	221512.07330955.				
LOCN	6150	LXY	221650.17331436.				
LOCN	6152	LXY	221684.87331599.				
LOCN	6157	LXY	221978.77331895.				
LOCN	6159	LXY	222078.57332028.				
LOCN	6163	LXY	222315.47332263.				
LOCN	6167	LXY	222534.57332514.				
LOCN	6172	LXY	222800.87332835.				
LOCN	6175	LXY	222970.57333019.				
ELEV	5380						
535.13	536.27	535.94	537.48	543.71			
ELEV	5385						
540.60	536.77	543.47	531.87	529.54	527.15	525.67	525.21
525.84	527.73	529.33	530.88	532.52	534.59	536.90	540.17
542.53	540.30	537.87	535.56	534.00	535.09	537.63	537.48
537.81	536.84	534.67	532.84	534.42	537.52	533.00	533.60
528.20	526.02	524.73	526.37	523.08	521.18	520.92	519.44
517.79	516.68	516.31	515.75	515.10	514.03	513.70	512.93
ELEV	5433						
511.39	511.22	510.39	509.75	509.43	509.15	509.13	509.45
510.87	510.60	508.59	508.43	513.25	509.55	511.66	510.86
511.10	511.32	512.70	516.25	522.23	522.84	518.13	513.91
510.79	521.85	525.81	510.43	503.37	502.13	502.79	502.91
500.81	499.59	499.58	499.75	499.65	499.98	500.22	501.97
505.34	502.26	501.12	500.96	502.16	506.35	504.13	502.01
501.68	502.02	501.68	501.34	501.62	501.63	502.23	503.60
504.72	505.23	506.74	506.90	506.44	506.80	510.33	508.85

509.54	513.65	510.98	509.48	509.86	509.94	509.90	510.13
511.18	512.64	511.32	513.23	511.76	508.59	508.20	508.01
507.57	507.42	507.16	507.45	506.95	506.75	506.34	505.63
504.95	504.48	504.42	504.23	503.65	502.86	502.96	503.13
504.77	510.86	509.15	504.83	504.72	504.33	504.31	504.67
504.91	504.98	504.81	505.17	505.52	505.29	505.12	504.68
504.37	509.50	508.78	506.39	506.48	509.27	510.65	508.56
509.17	510.39	514.41	515.43	516.61	516.15	514.47	515.39
519.45	517.99	518.93	520.92	523.99	526.48	520.37	517.56
514.70	512.23	510.31	510.40	508.09	507.80	508.01	507.50
509.39	509.90	509.72	510.11	511.28	508.43	509.51	509.86
510.28	509.65	510.10	510.75	510.87	510.90	510.97	510.73
510.96	510.98	510.89	510.88	510.33	510.08	509.43	509.63
509.68	509.25	509.40	509.74	510.68	510.96	510.50	510.91
511.65	511.45	512.21	514.49	513.46	514.30	519.71	516.42
515.92	519.11	517.86	518.67	518.66	518.67	516.85	514.66
514.09	512.10	511.66	511.81	511.75	512.10	512.25	512.33
513.02	512.99	513.30	514.94	514.78	514.87	514.89	514.62
514.78	514.78	514.67	513.93	513.89	514.21	514.60	514.70
514.14	514.12	514.80	515.45	515.40	517.49	518.47	520.55
522.49	523.94	525.10	523.22	520.45	517.44	514.86	515.38
513.42	513.87	514.52	514.31	514.18	513.09	510.94	511.18
ELEV	5673						
511.07	511.39	511.43	511.52	516.79	515.04	516.86	517.64
518.87	517.79	522.73	518.64	522.45	518.72	518.04	517.05
516.71	516.85	517.42	517.63	519.68	520.01	520.64	520.83
521.41	521.30	520.64	520.62	520.93	521.93	526.10	525.62
522.55	521.07	520.51	520.43	520.36	520.33	520.55	520.55
521.45	521.41	521.56	521.93	522.26	522.62	522.56	523.04
522.89	523.34	522.50	521.04	520.74	517.84	517.30	517.95
520.99	520.78	521.46	521.48	521.44	521.71	521.55	522.47
524.74	525.46	525.62	526.07	528.27	530.12	529.71	530.23
531.08	533.19	534.77	535.13	535.32	536.05	537.53	538.70
538.46	539.02	539.79	540.78	541.28	541.17	541.46	541.97
542.59	543.18	543.92	546.40	546.50	546.42	545.03	543.36
541.23	537.66	537.80	533.87	537.68	535.61	538.39	538.10
538.28	538.81	538.70	539.59	540.32	541.34	539.41	538.79
540.63	541.73	543.62	544.29	545.82	550.36	550.74	552.18
553.61	555.99	557.74	556.51	554.59	552.77	551.67	549.61
548.50	546.93	545.53	544.21	544.23	543.97	543.42	544.46
544.80	544.73	544.89	545.29	545.36	545.62	545.34	545.65
545.64	546.25	545.84	545.82	545.71	545.97	546.12	546.22
546.58	545.26	545.75	547.00	540.65	538.75	541.24	545.99
549.11	548.74	549.03	550.49	550.37	550.62	549.31	547.20
542.52	536.78	536.44	536.62	536.16	536.52	536.75	536.84
536.83	536.93	537.65	538.05	537.53	538.12	539.31	541.27
541.83	540.53	543.01	552.46	552.17	551.97	552.10	546.84
545.43	548.99	552.91	553.25	552.72	552.55	552.87	553.30
552.99	553.08	553.39	555.09	556.07	555.65	554.80	554.27
550.46	548.84	549.76	549.00	549.93	549.82	551.09	551.73
552.96	554.00	553.46	554.50	554.18	554.63	555.01	555.43
556.17	556.79	557.42	557.69	557.79	557.09	552.09	549.65
551.42	550.94	552.60	553.02	553.36	553.59	553.65	553.81
ELEV	5913						
553.91	554.66	554.87	555.25	554.89	555.31	555.21	555.32
555.45	555.14	554.44	553.18	553.94	555.00	556.39	556.78
556.42	555.75	554.03	556.48	557.83	559.70	558.60	558.01
559.07	560.36	558.96	558.12	560.20	563.12	562.67	563.21
564.39	567.26	566.94	565.29	562.23	561.28	561.11	561.39
563.16	563.87	565.09	566.40	568.52	568.12	570.61	573.25

579.92	584.43	585.26	586.04	587.52	589.68	600.85	602.29
602.62	598.55	597.19	599.62	599.91	598.88	598.22	598.28
596.92	598.35	598.92	600.56	601.73	602.79	603.97	605.58
608.15	609.92	607.18	605.71	604.31	602.85	601.73	600.94
600.25	594.62	594.24	594.24	594.17	592.04	589.98	588.01
586.15	585.20	585.31	594.22	583.52	581.94	582.73	584.50
585.07	586.39	586.03	588.65	597.80	593.88	591.18	588.71
586.67	585.87	585.82	587.34	585.92	584.56	583.37	582.81
585.65	586.47	587.22	588.40	589.25	589.36	590.96	589.55
589.53	589.58	586.73	585.66	588.94	589.50	590.44	591.35
591.84	592.16	587.20	590.00	592.92	594.41	595.42	596.42
596.19	596.29	596.88	598.08	600.27	600.17	600.81	605.62
602.44	600.88	599.07	598.01	597.66	598.52	597.71	597.86
598.68	597.44	598.12	597.07	596.35	596.08	596.49	597.23
596.87	596.27	593.88	593.49	593.24	593.18	593.89	593.90
594.16	593.89	594.16	594.76	594.75	595.10	595.83	596.06
596.89	600.03	599.86	597.75	596.83	597.28	598.40	597.96
597.87	598.86	599.06	598.93	599.13	598.90	599.18	599.43
600.49	599.56	601.36	603.29	601.27	608.16	606.43	602.82
604.01	604.31	604.91	606.79	606.50	605.96	610.29	608.76
608.28	612.47	613.65	613.81	614.52	614.84	615.92	616.08
616.42	609.98	615.73	615.03	615.12	614.34	615.42	615.72
616.34	617.07	617.66	616.75	616.97	617.42	617.95	618.45
619.34	620.03	621.50	622.45	622.53	620.87	623.93	623.24
ELEV	6153						
623.04	623.66	623.94	624.54	625.16	624.53	626.04	626.35
630.25	632.42	633.54	635.08	636.01	636.97	638.05	638.61
640.42	642.33	644.32	646.86	650.04	654.46	664.27	

CMP

*CALL	PATTERN	1
PSTAT	6174	
1	6175	
48	6128	
*CALL	PATTERN	2
PSTAT	6173	
1	6175	
48	6128	
*CALL	PATTERN	3
PSTAT	6172	
1	6175	
48	6128	
*CALL	PATTERN	8
PSTAT	6167	
1	6175	
48	6128	
*CALL	PATTERN	11
PSTAT	6164	
1	6175	
48	6128	
*CALL	PATTERN	35
PSTAT	6136	
1	6171	
48	6124	
*CALL	PATTERN	24
PSTAT	6032	
1	6056	
48	6009	
*CALL	PATTERN	17
PSTAT	5923	
1	5940	

48	5893	
*CALL	PATTERN	40
PSTAT	5840	
1	5880	
48	5833	
*CALL	PATTERN	36
PSTAT	5840	
1	5876	
48	5829	
*CALL	PATTERN	32
PSTAT	5840	
1	5872	
48	5825	
*CALL	PATTERN	28
PSTAT	5840	
1	5868	
48	5821	
*CALL	PATTERN	16
PSTAT	5780	
1	5796	
48	5749	
*CALL	PATTERN	80
PSTAT	5720	
1	5800	
48	5753	
*CALL	PATTERN	72
PSTAT	5720	
1	5792	
48	5745	
*CALL	PATTERN	9000
PSTAT	5780	
1	5780	
48	5733	
*CALL	PATTERN	5008
PSTAT	5780	
1	5772	
48	5725	
*CALL	PATTERN	5016
PSTAT	5780	
1	5764	
48	5717	
*CALL	PATTERN	5024
PSTAT	5780	
1	5756	
48	5709	
*CALL	PATTERN	5032
PSTAT	5780	
1	5748	
48	5701	
*CALL	PATTERN	64
PSTAT	5720	
1	5784	
48	5737	
*CALL	PATTERN	56
PSTAT	5720	
1	5776	
48	5729	
*CALL	PATTERN	48
PSTAT	5720	
1	5768	

48	5721	
*CALL	PATTERN	27
PSTAT	5668	
1	5695	
48	5648	
*CALL	PATTERN	47
PSTAT	5580	
1	5627	
48	5580	
*CALL	PATTERN	26
PSTAT	5575	
1	5601	
48	5554	
*CALL	PATTERN	22
PSTAT	5569	
1	5591	
48	5544	
*CALL	PATTERN	14
PSTAT	5569	
1	5583	
48	5536	
*CALL	PATTERN	6
PSTAT	5569	
1	5575	
48	5528	
*CALL	PATTERN	23
PSTAT	5552	
1	5575	
48	5528	
*CALL	PATTERN	31
PSTAT	5396	
1	5427	
48	5380	
*CALL	PATTERN	39
PSTAT	5388	
1	5427	
48	5380	
*CALL	PATTERN	44
PSTAT	5383	
1	5427	
48	5380	

*CALL	SOURCE	1	48	IN-PER	
SHOT	1	6174	0.0	0.0	1
SHOT	2	6173	0.0	0.0	2
SHOT	3	6172	0.0	0.0	3
SHOT	4	6167	0.0	0.0	8
SHOT	5	6164	0.0	0.0	11
SHOT	6	6161	0.0	0.0	11
SHOT	7	6156	0.0	0.0	11
SHOT	8	6152	0.0	-50.0	11
SHOT	9	6148	0.0	-20.0	11
SHOT	10	6143	-30.0	-10.0	11
SHOT	11	6140	0.0	0.0	11
SHOT	12	6136	0.0	0.0	35
SHOT	13	6132	0.0	40.0	35
SHOT	14	6128	0.0	-2.0	35
SHOT	15	6124	0.0	5.0	35
SHOT	16	6120	0.0	0.0	35
SHOT	17	6116	-41.0	0.0	35
SHOT	18	6112	0.0	0.0	35

SHOT	19	6110	0.0	4.0	35
SHOT	20	6104	0.0	0.0	35
SHOT	21	6100	0.0	0.0	35
SHOT	22	6096	0.0	-2.0	35
SHOT	23	6092	0.0	0.0	35
SHOT	24	6088	0.0	0.0	35
SHOT	25	6084	0.0	2.0	35
SHOT	26	6080	0.0	40.0	35
SHOT	27	6076	0.0	4.0	35
SHOT	28	6072	0.0	0.0	35
SHOT	29	6068	0.0	0.0	35
SHOT	30	6064	0.0	0.0	35
SHOT	31	6060	0.0	0.0	35
SHOT	32	6056	0.0	0.0	35
SHOT	33	6052	0.0	0.0	35
SHOT	34	6048	0.0	0.0	35
SHOT	35	6044	0.0	3.0	35
SHOT	36	6040	0.0	0.0	35
SHOT	37	6038	0.0	0.0	35
SHOT	38	6036	0.0	0.0	35
SHOT	39	6034	0.0	0.0	35
SHOT	40	6032	0.0	0.0	24
SHOT	41	6030	0.0	0.0	24
SHOT	42	6028	0.0	0.0	24
SHOT	43	6026	0.0	0.0	24
SHOT	44	6024	4.0	0.0	24
SHOT	45	6022	0.0	0.0	24
SHOT	46	6020	0.0	7.0	24
SHOT	47	6018	0.0	0.0	24
SHOT	48	6017	0.0	0.0	24
SHOT	49	6012	0.0	0.0	24
SHOT	50	6008	0.0	0.0	24
SHOT	51	6004	0.0	3.0	24
SHOT	52	6000	0.0	0.0	24
SHOT	53	5996	0.0	2.0	24
SHOT	54	5992	0.0	5.0	24
SHOT	55	5988	0.0	0.0	24
SHOT	56	5984	0.0	6.0	24
SHOT	57	5980	0.0	0.0	24
SHOT	58	5976	0.0	3.0	24
SHOT	59	5972	0.0	-2.0	24
SHOT	60	5968	0.0	0.0	24
SHOT	61	5964	0.0	4.0	24
SHOT	62	5960	0.0	0.0	24
SHOT	63	5956	-4.0	5.0	24
SHOT	64	5952	0.0	0.0	24
SHOT	65	5948	0.0	-2.0	24
SHOT	66	5944	0.0	0.0	24
SHOT	67	5940	0.0	5.0	24
SHOT	68	5936	0.0	0.0	24
SHOT	69	5933	0.0	3.0	24
SHOT	70	5928	0.0	0.0	24
SHOT	71	5923	0.0	11.0	24
SHOT	72	5923	-45.0	11.0	17
SHOT	73	5920	0.0	50.0	24
SHOT	74	5912	0.0	2.0	24
SHOT	75	5908	0.0	0.0	24
SHOT	76	5903	0.0	3.0	24
SHOT	77	5902	0.0	0.0	24
SHOT	78	5898	0.0	6.0	24

SHOT	79	5896	0.0	4.0	24
SHOT	80	5894	0.0	-2.0	24
SHOT	81	5892	0.0	3.0	24
SHOT	82	5888	0.0	-1.0	24
SHOT	83	5886	0.0	6.0	24
SHOT	84	5882	0.0	6.0	24
SHOT	85	5880	0.0	0.0	24
SHOT	86	5878	0.0	4.0	24
SHOT	87	5876	0.0	0.0	24
SHOT	88	5872	0.0	3.0	24
SHOT	89	5870	0.0	3.0	24
SHOT	90	5868	0.0	3.0	24
SHOT	91	5866	0.0	0.0	24
SHOT	92	5864	0.0	3.0	24
SHOT	93	5861	0.0	0.0	24
SHOT	94	5860	0.0	0.0	24
SHOT	95	5840	0.0	-15.0	40
SHOT	96	5840	0.0	-15.0	36
SHOT	97	5840	0.0	-15.0	32
SHOT	98	5840	0.0	-20.0	28
SHOT	99	5840	0.0	-20.0	24
SHOT	100	5836	0.0	0.0	24
SHOT	101	5832	0.0	0.0	24
SHOT	102	5828	0.0	0.0	24
SHOT	103	5824	0.0	0.0	24
SHOT	104	5820	0.0	0.0	24
SHOT	105	5816	0.0	0.0	24
SHOT	106	5812	0.0	2.0	24
SHOT	107	5810	0.0	0.0	24
SHOT	108	5808	0.0	4.0	24
SHOT	109	5806	0.0	4.0	24
SHOT	110	5804	0.0	7.0	24
SHOT	111	5802	0.0	7.0	24
SHOT	112	5800	0.0	5.0	24
SHOT	113	5798	0.0	5.0	24
SHOT	114	5796	0.0	5.0	24
SHOT	115	5794	0.0	0.0	24
SHOT	116	5792	0.0	2.0	24
SHOT	117	5790	0.0	12.0	24
SHOT	118	5788	-20.0	0.0	24
SHOT	119	5786	0.0	0.0	24
SHOT	120	5784	0.0	0.0	24
SHOT	121	5782	0.0	5.0	24
SHOT	122	5780	20.0	7.0	24
SHOT	123	5780	15.0	7.0	16
SHOT	124	5780	10.0	7.0	8
SHOT	125	5780	0.0	7.0	9000
SHOT	126	5780	0.0	20.0	5008
SHOT	127	5780	5.0	20.0	5016
SHOT	128	5780	10.0	20.0	5024
SHOT	129	5780	15.0	20.0	5032
SHOT	130	5720	0.0	20.0	80
SHOT	131	5720	0.0	15.0	72
SHOT	132	5720	10.0	-10.0	64
SHOT	133	5720	0.0	-10.0	56
SHOT	134	5720	0.0	-15.0	48
SHOT	135	5720	0.0	-20.0	40
SHOT	136	5720	0.0	0.0	32
SHOT	137	5716	0.0	0.0	24
SHOT	138	5712	0.0	0.0	24

SHOT	139	5708	0.0	0.0	24
SHOT	140	5705	0.0	0.0	24
SHOT	141	5700	0.0	0.0	24
SHOT	142	5696	0.0	0.0	24
SHOT	143	5692	0.0	0.0	24
SHOT	144	5688	0.0	-2.0	24
SHOT	145	5684	0.0	0.0	24
SHOT	146	5680	0.0	0.0	24
SHOT	147	5676	0.0	50.0	24
SHOT	148	5668	0.0	-90.0	27
SHOT	149	5668	0.0	-90.0	24
SHOT	150	5664	0.0	-50.0	24
SHOT	151	5660	0.0	45.0	24
SHOT	152	5656	10.0	4.0	24
SHOT	153	5652	0.0	0.0	24
SHOT	154	5648	0.0	0.0	24
SHOT	155	5644	0.0	0.0	24
SHOT	156	5640	0.0	0.0	24
SHOT	157	5636	0.0	0.0	24
SHOT	158	5632	0.0	0.0	24
SHOT	159	5628	0.0	0.0	24
SHOT	160	5624	0.0	0.0	24
SHOT	161	5620	0.0	0.0	24
SHOT	162	5616	0.0	0.0	24
SHOT	163	5612	0.0	-40.0	24
SHOT	164	5608	0.0	-4.0	24
SHOT	165	5604	0.0	-10.0	24
SHOT	166	5600	0.0	-45.0	24
SHOT	167	5600	0.0	-45.0	16
SHOT	168	5580	0.0	-20.0	47
SHOT	169	5580	0.0	-12.0	40
SHOT	170	5580	0.0	-5.0	32
SHOT	171	5580	0.0	1.0	24
SHOT	172	5575	0.0	12.0	26
SHOT	173	5572	0.0	2.0	24
SHOT	174	5569	0.0	0.0	22
SHOT	175	5569	0.0	15.0	14
SHOT	176	5569	0.0	12.0	6
SHOT	177	5557	0.0	12.0	22
SHOT	178	5552	0.0	0.0	23
SHOT	179	5548	0.0	0.0	24
SHOT	180	5544	0.0	-6.0	24
SHOT	181	5540	0.0	0.0	24
SHOT	182	5536	0.0	-2.0	24
SHOT	183	5532	0.0	0.0	24
SHOT	184	5528	0.0	-2.0	24
SHOT	185	5524	0.0	0.0	24
SHOT	186	5520	0.0	0.0	24
SHOT	187	5516	0.0	0.0	24
SHOT	188	5511	0.0	0.0	24
SHOT	189	5507	0.0	0.0	24
SHOT	190	5504	0.0	0.0	24
SHOT	191	5500	0.0	0.0	24
SHOT	192	5496	0.0	0.0	24
SHOT	193	5492	0.0	0.0	24
SHOT	194	5488	0.0	0.0	24
SHOT	195	5484	0.0	0.0	24
SHOT	196	5480	0.0	5.0	24
SHOT	197	5476	0.0	0.0	24
SHOT	198	5472	0.0	0.0	24

SHOT	199	5468	0.0	0.0	24
SHOT	200	5464	0.0	0.0	24
SHOT	201	5461	0.0	0.0	24
SHOT	202	5455	0.0	1.0	24
SHOT	203	5452	0.0	2.0	23
SHOT	204	5448	0.0	0.0	24
SHOT	205	5444	0.0	3.0	24
SHOT	206	5440	0.0	12.0	24
SHOT	207	5436	0.0	4.0	24
SHOT	208	5431	0.0	0.0	24
SHOT	209	5428	0.0	0.0	24
SHOT	210	5424	0.0	0.0	24
SHOT	211	5419	0.0	0.0	24
SHOT	212	5415	0.0	2.0	24
SHOT	213	5412	0.0	0.0	24
SHOT	214	5408	-4.0	0.0	24
SHOT	215	5404	0.0	3.0	24
SHOT	216	5399	0.0	0.0	28
SHOT	217	5396	0.0	0.0	31
SHOT	218	5392	0.0	0.0	35
SHOT	219	5388	0.0	0.0	39
SHOT	220	5383	0.0	0.0	44
SHOT	221	5380	5.0	2.0	47
HOLE	1	40	30		
HOLE	2	40	28		
HOLE	3	23	19		
HOLE	4	40	19		
HOLE	5	23	14		
HOLE	6	23	20		
HOLE	7	18	13		
HOLE	8	12	23		
HOLE	9	36	29		
HOLE	10	17	13		
HOLE	11	7	7		
HOLE	12	13	10		
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HOLE	14	33	19		
HOLE	15	40	23		
HOLE	16	40	22		
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HOLE	18	23	11		
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HOLE	20	9	6		
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HOLE	31	34	20		
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HOLE	33	40	28		
HOLE	34	36	21		
HOLE	35	40	20		
HOLE	36	23	18		
HOLE	37	40	21		

HOLE	38	27	18
HOLE	39	40	21
HOLE	40	32	20
HOLE	41	40	21
HOLE	42	40	20
HOLE	43	27	19
HOLE	44	40	22
HOLE	45	40	21
HOLE	46	40	22
HOLE	47	32	12
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HOLE	71	10	19
HOLE	72	4	20
HOLE	73	9	48
HOLE	74	13	13
HOLE	75	13	15
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HOLE	77	40	23
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HOLE	81	13	22
HOLE	82	13	17
HOLE	83	7	19
HOLE	84	40	20
HOLE	85	27	19
HOLE	86	40	21
HOLE	87	40	17
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HOLE	89	40	28
HOLE	90	40	30
HOLE	91	40	20
HOLE	92	40	22
HOLE	93	40	25
HOLE	94	40	30
HOLE	95	40	30
HOLE	96	36	30
HOLE	97	27	29

HOLE	98	40	31
HOLE	99	40	31
HOLE	100	40	21
HOLE	101	40	29
HOLE	102	36	29
HOLE	103	17	23
HOLE	104	40	29
HOLE	105	40	31
HOLE	106	40	31
HOLE	107	40	31
HOLE	108	19	29
HOLE	109	27	26
HOLE	110	40	24
HOLE	111	36	20
HOLE	112	32	14
HOLE	113	27	13
HOLE	114	18	10
HOLE	115	36	19
HOLE	116	27	18
HOLE	117	18	10
HOLE	118	9	7
HOLE	119	13	8
HOLE	120	13	10
HOLE	121	15	13
HOLE	122	36	23
HOLE	123	18	20
HOLE	124	36	19
HOLE	125	36	20
HOLE	126	27	0
HOLE	127	36	0
HOLE	128	18	0
HOLE	129	36	0
HOLE	130	32	0
HOLE	131	36	0
HOLE	132	18	0
HOLE	133	27	0
HOLE	134	18	0
HOLE	135	11	33
HOLE	136	36	24
HOLE	137	18	14
HOLE	138	10	12
HOLE	139	14	18
HOLE	140	32	19
HOLE	141	34	20
HOLE	142	36	28
HOLE	143	14	15
HOLE	144	14	14
HOLE	145	18	19
HOLE	146	14	15
HOLE	147	14	30
HOLE	148	9	89
HOLE	149	9	90
HOLE	150	18	30
HOLE	151	20	29
HOLE	152	20	22
HOLE	153	18	19
HOLE	154	15	19
HOLE	155	13	17
HOLE	156	20	21
HOLE	157	13	20

HOLE	158	10	19
HOLE	159	9	13
HOLE	160	6	10
HOLE	161	22	20
HOLE	162	27	22
HOLE	163	32	42
HOLE	164	27	18
HOLE	165	40	21
HOLE	166	23	49
HOLE	167	12	48
HOLE	168	40	25
HOLE	169	40	21
HOLE	170	40	20
HOLE	171	35	18
HOLE	172	14	27
HOLE	173	18	19
HOLE	174	23	14
HOLE	175	18	21
HOLE	176	18	20
HOLE	177	27	26
HOLE	178	21	17
HOLE	179	18	18
HOLE	180	23	29
HOLE	181	40	33
HOLE	182	22	27
HOLE	183	18	20
HOLE	184	40	29
HOLE	185	40	29
HOLE	186	23	20
HOLE	187	40	32
HOLE	188	36	23
HOLE	189	40	29
HOLE	190	32	21
HOLE	191	40	27
HOLE	192	27	21
HOLE	193	25	19
HOLE	194	40	25
HOLE	195	10	11
HOLE	196	40	27
HOLE	197	40	27
HOLE	198	40	27
HOLE	199	32	18
HOLE	200	32	19
HOLE	201	27	12
HOLE	202	40	29
HOLE	203	36	28
HOLE	204	31	29
HOLE	205	9	7
HOLE	206	18	20
HOLE	207	27	20
HOLE	208	40	29
HOLE	209	32	21
HOLE	210	36	29
HOLE	211	32	21
HOLE	212	40	38
HOLE	213	40	39
HOLE	214	36	33
HOLE	215	40	40
HOLE	216	40	42
HOLE	217	40	30

HOLE	218	40	33
HOLE	219	40	33
HOLE	220	40	31
HOLE	221	40	31
*END			

APPENDIX 10

Traverse 1E

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB	CAREP	1E	BRG	GEOMETRY INFO. LINE 1E
*CALL	LINE	STATIONS		
LOCN	3946	LXY	184893.87191753.	
LOCN	3948	LXY	185057.57191785.	
LOCN	3953	LXY	185436.57191959.	
LOCN	3959	LXY	185812.97192289.	
LOCN	3972	LXY	186444.17193170.	
LOCN	3979	LXY	186804.67193629.	
LOCN	3987	LXY	187288.57194089.	
LOCN	4005	LXY	188469.47195015.	
LOCN	4047	LXY	191224.97197177.	
LOCN	4051	LXY	191497.27197370.	
LOCN	4073	LXY	193088.47198284.	
LOCN	4081	LXY	193637.27198662.	
LOCN	4087	LXY	193973.27199034.	
LOCN	4093	LXY	194227.37199465.	
LOCN	4133	LXY	195620.77202495.	
LOCN	4137	LXY	195773.97202792.	
LOCN	4160	LXY	196846.87204381.	
LOCN	4164	LXY	197077.17204623.	
LOCN	4167	LXY	197283.77204764.	
LOCN	4219	LXY	201114.47206796.	
LOCN	4246	LXY	203088.97207877.	
LOCN	4247	LXY	203156.47207926.	
LOCN	4267	LXY	204425.27209008.	
LOCN	4301	LXY	206687.77210836.	
LOCN	4332	LXY	208600.37212463.	
LOCN	4386	LXY	212027.07215384.	
LOCN	4399	LXY	212891.97216037.	
LOCN	4446	LXY	216018.57218399.	
LOCN	4447	LXY	216057.67218471.	
LOCN	4475	LXY	216984.07220614.	
LOCN	4519	LXY	218439.87223981.	
LOCN	4568	LXY	220054.97227734.	
LOCN	4598	LXY	221043.77230031.	
LOCN	4633	LXY	221193.37232946.	
LOCN	4678	LXY	221631.87236672.	
LOCN	4679	LXY	221627.97236754.	
LOCN	4695	LXY	221364.27238062.	
LOCN	4696	LXY	221339.87238141.	
LOCN	4698	LXY	221284.47238298.	
LOCN	4699	LXY	221268.07238380.	
LOCN	4707	LXY	221186.57239042.	
LOCN	4716	LXY	221157.57239792.	
LOCN	4717	LXY	221162.87239874.	
LOCN	4724	LXY	221275.07240447.	
LOCN	4734	LXY	221186.67241276.	
LOCN	4749	LXY	221006.77242513.	

LOCN	4751	LXY	221023.67242679.				
LOCN	4757	LXY	221003.87243179.				
LOCN	4763	LXY	221033.57243679.				
LOCN	4765	LXY	221022.27243858.				
LOCN	4809	LXY	221703.37247462.				
LOCN	4835	LXY	222105.87249593.				
LOCN	4849	LXY	222403.37250721.				
LOCN	4914	LXY	223784.57255961.				
LOCN	4922	LXY	224083.07256558.				
LOCN	4929	LXY	224285.97257105.				
LOCN	4950	LXY	224682.27258810.				
LOCN	4980	LXY	225955.67260963.				
LOCN	5023	LXY	227780.57264049.				
LOCN	5061	LXY	229013.17266968.				
LOCN	5074	LXY	229861.07267643.				
LOCN	5095	LXY	231247.67268712.				
LOCN	5137	LXY	233758.77271152.				
LOCN	5153	LXY	234655.17272140.				
LOCN	5191	LXY	237017.57274250.				
LOCN	5243	LXY	240242.97277146.				
LOCN	5259	LXY	241068.07278194.				
LOCN	5268	LXY	241499.97278808.				
LOCN	5279	LXY	242147.57279457.				
LOCN	5292	LXY	242900.27280236.				
LOCN	5321	LXY	244627.17281928.				
LOCN	5337	LXY	245610.07282830.				
LOCN	5379	LXY	248213.07285171.				
ELEV	3946						
482.00	482.18	483.01	483.94	484.78	485.18	485.83	484.88
483.64	483.55	483.53	483.69	484.20	484.54	484.66	484.26
483.65	483.59	484.25	484.69	484.83	484.59	484.89	484.41
483.97	483.38	482.39	482.24	482.66	482.62	481.87	481.94
481.66	481.62	481.38	481.89	482.15	481.47	480.71	480.90
481.16	482.75	483.18	482.58	481.49	480.31	480.16	480.87
481.11	481.41	481.08	479.79	479.45	479.68	480.42	481.37
483.13	483.49	483.27	482.69	480.73	480.48	481.01	480.94
480.62	479.99	479.87	479.79	479.08	478.82	478.89	479.02
479.19	478.86	478.12	478.07	478.12	477.75	477.68	478.05
478.04	477.56	477.45	477.37	477.10	477.04	476.92	476.50
476.56	476.53	476.42	476.33	476.46	476.46	476.53	476.57
476.95	477.85	478.77	479.68	480.60	481.20	481.40	481.06
480.21	479.40	481.18	482.85	483.42	483.67	483.92	483.56
482.97	482.52	481.91	481.02	480.81	481.30	481.77	481.69
481.24	480.36	479.68	480.68	482.27	483.28	483.88	483.27
482.35	480.93	479.63	478.94	478.18	478.02	478.50	479.16
479.39	479.62	479.94	479.73	479.86	479.75	478.87	477.56
476.68	475.98	475.61	475.47	476.41	476.83	476.08	476.19
475.57	475.82	475.94	476.58	476.42	475.64	476.13	476.28
475.90	475.05	474.71	475.62	476.42	477.27	477.36	476.67
476.50	476.97	477.02	476.65	476.23	476.01	476.24	476.29
476.12	476.63	476.85	477.09	477.00	476.90	476.47	476.11
477.19	478.53	478.42	478.41	475.82	476.03	475.77	476.15
475.92	476.05	477.00	476.67	477.15	478.61	478.75	479.54
479.65	479.39	477.75	476.99	477.11	477.36	477.81	477.70
478.13	477.31	475.25	475.34	476.05	475.87	476.24	477.35
478.29	478.78	478.97	479.76	479.69	479.59	477.99	476.51
475.71	474.01	473.64	473.26	472.98	472.50	471.99	471.96
471.78	471.86	472.24	472.04	471.97	472.11	472.00	472.29
472.16	472.76	472.80	473.28	472.12	472.13	472.31	472.68
473.02	474.22	472.47	471.31	471.66	472.14	473.51	474.41

474.76	474.11	475.92	476.66	475.84	475.92	475.41	474.63
473.40	473.16	474.33	475.72	476.54	477.48	478.29	478.39
478.23	478.12	477.26	476.30	475.40	475.52	474.57	474.31
474.21	472.81	472.99	473.65	475.31	474.56	475.39	476.21
478.04	478.07	478.16	480.01	479.77	481.48	482.08	481.73
482.87	483.31	482.65	482.65	483.05	483.56	484.25	484.41
485.03	485.86	485.72	486.66	487.14	487.87	487.35	487.41
488.62	491.08	493.39	494.18	488.04	484.48	482.81	484.15
488.07	492.81	494.50	490.95	493.35	493.90	488.10	485.85
483.41	481.41	479.45	479.41	478.20	477.40	478.21	477.51
477.55	478.51	481.63	485.79	480.59	480.92	481.44	482.46
484.20	482.92	482.22	481.60	481.36	481.06	480.81	480.44
480.70	480.79	481.47	484.02	478.98	478.35	478.30	478.71
480.13	482.74	482.19	481.35	479.04	478.40	478.79	478.69
480.88	478.96	478.21	478.12	478.61	480.80	480.21	479.55
481.44	479.24	479.24	481.99	478.44	477.88	478.78	478.55
478.40	480.15	484.16	478.86	479.65	478.76	478.84	478.13
478.10	478.19	478.75	479.03	480.15	480.03	484.82	481.87
483.66	484.04	485.36	486.57	482.27	481.18	481.07	481.19
481.94	482.04	482.97	484.28	484.51	484.48	485.35	487.30
487.27	486.70	486.17	486.33	487.55	488.11	487.85	489.06
489.76	489.72	489.73	489.22	489.46	489.71	489.97	488.74
487.48	487.35	487.35	488.04	486.89	486.94	487.09	487.17
489.89	489.78	486.85	486.79	487.29	490.43	488.72	490.11
490.17	491.36	489.77	490.79	489.85	491.30	491.62	491.46
491.10	491.50	491.60	492.42	492.43	494.00	492.80	492.93
493.91	494.97	494.64	495.54	495.78	496.11	496.96	497.15
496.84	496.84	494.39	493.67	493.74	494.10	494.07	494.02
495.15	496.24	497.96	498.45	500.72	499.49	497.01	498.35
499.60	502.12	504.28	504.31	502.89	503.99	502.24	503.80
505.23	506.02	507.71	512.15	513.85	513.77	513.59	512.53
511.27	510.04	508.63	507.17	505.08	503.63	502.73	501.88
500.74	501.90	501.40	500.25	500.27	501.29	499.74	497.89
497.24	497.23	496.85	496.21	496.04	496.62	496.54	496.01
497.58	499.93	500.84	501.63	500.66	499.57	499.97	500.67
501.43	503.39	502.36	500.59	501.16	501.02	500.79	500.72
501.14	500.60	499.04	498.72	498.67	498.70	498.90	499.23
500.10	499.81	499.70	499.82	499.78	499.95	500.52	
ELEV	4505						
500.89	501.33	501.80	502.43	502.94	503.83	504.39	505.14
505.63	506.71	507.02	507.30	507.94	508.53	509.45	508.93
508.98	509.83	510.31	509.83	508.96	507.42	507.50	508.53
510.00	509.66	508.95	509.12	510.24	510.58	509.51	508.68
508.08	507.64	507.58	507.75	507.72	508.00	507.85	507.80
507.62	507.87	508.48	508.90	509.02	507.34	506.34	506.39
506.28	506.59	506.79	506.90	507.36	507.67	508.53	508.92
508.64	508.74	508.94	509.47	510.16	515.79	518.56	518.83
515.81	515.24	515.28	515.31	515.47	516.52	518.17	519.16
520.80	521.63	522.56	522.22	521.84	521.99	522.46	522.92
521.35	519.62	519.74	520.53	523.07	522.43	523.57	523.64
524.37	525.34	526.85	528.78	530.25	532.13	530.46	530.06
528.25	528.41	527.46	523.51	521.35	520.69	520.78	520.06
518.61	517.72	517.41	517.35	517.94	518.70	517.19	517.97
519.02	518.66	518.34	518.34	518.76	518.41	518.57	518.82
519.07	519.22	519.03	519.51	519.64	520.19	520.30	520.81
521.16	521.04	521.40	521.68	521.50	521.32	521.56	522.06
522.89	525.55	524.16	523.92	524.20	524.76	525.37	526.03
526.92	527.72	528.36	529.29	529.28	529.75	530.50	531.00
531.36	532.60	532.11	531.99	531.98	532.41	532.36	532.47
532.60	532.89	534.07	534.92	535.25	534.29	533.65	533.29

532.75	532.65	532.65	532.65	532.62	532.70	533.64	533.30
532.16	531.80	531.32	531.29	531.05	531.36	531.35	531.53
531.91	532.04	532.49	532.62	532.99	533.49	533.89	534.28
534.66	535.06	535.03	535.62	535.67	536.16	536.85	538.50
539.33	539.91	539.88	538.69	538.85	538.81	538.85	540.05
ELEV	4713						
540.02	540.49	539.93	539.46	538.70	538.92	539.13	539.58
539.91	540.56	540.19	541.34	541.17	541.23	541.64	542.01
542.59	543.06	543.30	543.53	543.89	544.23	544.98	546.05
547.16	549.19	551.48	551.50	552.32	552.78	553.02	553.78
555.13	556.51	559.22	562.75	565.82	569.78	566.66	562.70
560.58	559.07	560.17	558.03	556.95	555.67	555.71	555.45
555.35	554.32	555.76	571.50	579.48	576.40	568.08	560.26
556.84	553.01	553.91	551.96	549.86	548.59	548.95	548.23
547.09	545.67	544.35	543.41	542.25	541.15	539.96	539.17
538.56	537.88	537.29	537.27	536.76	536.12	535.95	535.66
535.41	535.16	535.32	534.71	534.51	534.19	534.04	533.44
533.13	532.96	534.18	532.06	531.55	531.20	530.92	530.64
532.59	530.54	530.85	531.28	532.09	534.27	533.12	533.05
533.07	533.09	533.52	533.17	532.34	530.15	529.57	526.64
525.11	524.33	523.53	525.30	519.67	519.48	519.59	520.55
516.90	516.71	516.97	515.75	517.42	515.57	515.31	514.79
515.40	516.67	514.77	514.76	515.24	514.14	514.89	516.49
516.95	516.47	517.69	514.00	512.63	512.52	513.36	515.22
516.77	514.96	515.14	513.91	514.68	515.72	515.96	515.16
517.01	518.18	516.96	516.69	517.26	518.01	519.79	521.77
523.07	523.48	524.59	525.02	525.82	525.48	525.58	526.13
524.82	524.50	525.40	524.42	522.06	520.88	520.28	518.93
518.05	518.28	521.56	519.16	517.48	516.68	515.33	515.39
516.60	517.81	518.98	519.93	521.07	522.22	522.93	524.93
526.97	529.45	529.55	528.67	528.46	528.53	528.82	531.75
531.61	538.13	532.41	531.42	530.68	530.05	530.96	531.61
533.57	534.63	532.66	531.91	535.07	531.71	532.91	534.42
535.88	537.04	537.34	542.39	538.77	538.04	541.32	540.88
538.28	537.25	536.82	543.18	539.68	542.21	542.76	539.30
537.82	536.26	535.99	536.54	540.76	543.90	543.37	538.78
ELEV	4953						
537.18	536.94	538.02	539.54	544.11	541.93	543.55	544.12
541.39	537.92	536.92	537.24	538.33	537.23	535.82	534.26
533.25	536.54	534.91	533.16	536.58	533.53	536.44	531.90
531.01	533.09	532.91	533.24	531.16	530.31	531.69	529.60
530.29	530.54	530.69	529.95	529.47	530.62	532.92	531.88
541.87	532.33	533.08	529.86	529.76	531.27	528.57	526.90
527.42	527.54	529.35	529.13	529.70	530.44	530.00	529.86
530.24	531.52	531.62	531.08	532.24	531.21	530.94	530.83
535.58	531.78	531.44	531.40	531.25	534.32	531.69	534.74
533.26	531.40	532.50	531.45	530.53	531.68	534.48	532.56
531.23	531.04	535.81	530.39	532.45	530.64	528.78	529.90
528.05	526.77	525.64	529.23	529.42	528.23	532.17	532.57
529.59	527.62	529.32	527.78	527.36	530.67	529.77	529.49
527.04	527.67	525.80	526.41	524.70	523.91	523.90	525.23
524.19	526.02	527.31	525.02	525.41	525.14	525.02	525.01
526.69	527.22	524.57	527.78	526.65	528.84	528.41	527.79
529.74	529.21	528.50	530.10	528.21	525.21	523.90	522.96
522.49	523.12	524.61	524.18	527.24	531.20	527.03	528.97
529.07	526.62	525.09	525.35	526.32	528.82	530.66	526.49
524.11	522.19	521.84	522.74	519.82	518.71	518.26	518.19
519.23	523.61	521.58	525.58	523.64	522.40	521.44	521.54
521.22	520.31	520.10	519.56	522.80	521.22	519.84	518.88
520.90	519.43	519.17	519.04	518.74	518.46	518.43	519.26

520.28	522.19	516.24	516.22	519.04	516.09	517.15	515.64
516.50	516.09	516.14	518.36	514.28	515.52	515.42	514.57
514.06	513.36	513.55	513.54	515.48	513.10	513.36	511.94
513.19	512.17	512.70	512.33	514.69	512.06	519.91	512.95
512.12	512.72	514.60	513.95	512.35	512.26	512.55	512.94
512.14	511.55	513.24	515.95	513.47	513.70	516.51	515.26
514.68	513.25	513.70	520.14	516.91	515.01	520.54	515.13
ELEV	5193						
515.29	514.41	517.12	516.69	514.96	514.66	514.22	513.97
513.59	513.77	513.79	514.05	514.91	516.36	518.13	519.31
520.12	520.02	521.49	523.41	522.64	525.09	519.09	517.70
518.00	517.62	517.21	516.88	517.03	517.31	518.03	518.98
520.29	519.63	519.16	519.85	520.66	520.96	521.73	522.64
523.84	525.06	526.99	529.53	532.25	528.79	528.53	528.59
529.71	532.44	542.00	536.79	537.96	535.95	535.20	534.37
535.20	534.04	533.77	533.74	533.96	534.12	534.42	534.91
535.94	537.96	544.55	544.63	545.95	546.81	545.81	546.21
545.55	545.76	548.50	547.62	544.78	542.73	544.75	546.91
543.78	543.53	544.95	543.96	546.88	541.93	544.15	540.44
540.90	543.10	544.13	546.56	552.69	549.59	547.07	546.71
546.91	548.09	549.45	551.54	551.05	549.53	550.99	553.98
555.16	560.52	553.09	550.47	550.80	550.20	549.18	549.23
549.94	551.33	552.05	551.23	551.40	549.59	546.98	545.81
545.64	545.63	546.06	546.81	547.86	548.46	550.55	547.17
551.57	553.97	548.73	544.59	539.41	537.36	536.57	535.00
533.68	533.10	533.43	532.92	531.85	532.02	533.19	535.13
533.74	529.70	528.68	529.01	530.51	534.59	530.37	529.31
528.58	530.02	531.15	532.96	527.87	525.06	523.19	521.54
520.30	519.39	518.82	518.27	517.66	517.82	518.09	518.94
520.29	521.98	525.90	533.62	536.71	523.92	524.84	530.55
527.15	525.06	522.57	523.03	524.56	529.01	532.65	531.35
525.11	523.54	526.00					

CMP

*CALL PATTERN 9000

PSTAT 5379

1 5379

48 5332

*CALL PATTERN 3

PSTAT 5376

1 5379

48 5332

*CALL PATTERN 7

PSTAT 5372

1 5379

48 5332

*CALL PATTERN 11

PSTAT 5368

1 5379

48 5332

*CALL PATTERN 17

PSTAT 5362

1 5379

48 5332

*CALL PATTERN 19

PSTAT 5360

1 5379

48 5332

*CALL PATTERN 23

PSTAT 5356

1 5379

48	5332				
*CALL	PATTERN	24			
PSTAT	5352				
1	5376				
48	5329				
*CALL	PATTERN	21			
PSTAT	5215				
1	5236				
48	5189				
*CALL	PATTERN	16			
PSTAT	4780				
1	4796				
48	4749				
*CALL	PATTERN	8			
PSTAT	4780				
1	4788				
48	4741				
*CALL	PATTERN	32			
PSTAT	4760				
1	4792				
48	4745				
*CALL	PATTERN	143			
PSTAT	4010				
1	4153				
48	4106				
*CALL	PATTERN	28			
PSTAT	4060				
1	4088				
48	4041				
*CALL	PATTERN	29			
PSTAT	3964				
1	3993				
48	3946				
*CALL	PATTERN	33			
PSTAT	3960				
1	3993				
48	3946				
*CALL	PATTERN	37			
PSTAT	3956				
1	3993				
48	3946				
*CALL	PATTERN	41			
PSTAT	3952				
1	3993				
48	3946				
*CALL	PATTERN	45			
PSTAT	3948				
1	3993				
48	3946				
*CALL	SOURCE	1	48	IN-PER	
SHOT	1	5379	0.0	0.0	9000
SHOT	2	5376	0.0	-2.0	3
SHOT	3	5372	0.0	0.0	7
SHOT	4	5368	0.0	0.0	11
SHOT	5	5362	0.0	0.0	17
SHOT	6	5360	0.0	0.0	19
SHOT	7	5356	0.0	2.0	23
SHOT	8	5352	0.0	0.0	24
SHOT	9	5348	0.0	-20.0	24
SHOT	10	5344	0.0	0.0	24

SHOT	11	5340	0.0	0.0	24
SHOT	12	5336	0.0	0.0	24
SHOT	13	5332	0.0	0.0	24
SHOT	14	5328	0.0	0.0	24
SHOT	15	5325	0.0	0.0	24
SHOT	16	5320	0.0	0.0	24
SHOT	17	5316	0.0	0.0	24
SHOT	18	5312	0.0	0.0	24
SHOT	19	5308	0.0	0.0	24
SHOT	20	5304	0.0	0.0	24
SHOT	21	5300	0.0	0.0	24
SHOT	22	5296	0.0	0.0	24
SHOT	23	5292	0.0	-2.0	24
SHOT	24	5288	0.0	0.0	24
SHOT	25	5284	0.0	0.0	24
SHOT	26	5280	0.0	0.0	24
SHOT	27	5276	0.0	4.0	24
SHOT	28	5273	0.0	0.0	23
SHOT	29	5269	12.0	-8.0	24
SHOT	30	5264	0.0	0.0	24
SHOT	31	5260	0.0	0.0	24
SHOT	32	5256	0.0	0.0	24
SHOT	33	5252	0.0	0.0	24
SHOT	34	5248	0.0	1.0	24
SHOT	35	5244	0.0	-3.0	24
SHOT	36	5240	0.0	0.0	24
SHOT	37	5235	0.0	0.0	24
SHOT	38	5232	0.0	0.0	24
SHOT	39	5228	0.0	0.0	24
SHOT	40	5224	0.0	0.0	24
SHOT	41	5220	0.0	0.0	24
SHOT	42	5216	0.0	0.0	24
SHOT	43	5215	0.0	0.0	21
SHOT	44	5208	0.0	0.0	24
SHOT	45	5204	0.0	2.0	24
SHOT	46	5200	0.0	0.0	24
SHOT	47	5196	0.0	0.0	24
SHOT	48	5192	0.0	0.0	24
SHOT	49	5187	0.0	0.0	24
SHOT	50	5184	0.0	2.0	24
SHOT	51	5181	0.0	0.0	24
SHOT	52	5176	0.0	0.0	24
SHOT	53	5172	0.0	-4.0	24
SHOT	54	5168	0.0	0.0	24
SHOT	55	5164	0.0	0.0	24
SHOT	56	5160	0.0	0.0	24
SHOT	57	5156	0.0	0.0	24
SHOT	58	5152	0.0	0.0	24
SHOT	59	5147	0.0	0.0	24
SHOT	60	5144	0.0	0.0	24
SHOT	61	5140	0.0	0.0	24
SHOT	62	5136	0.0	0.0	24
SHOT	63	5132	0.0	0.0	24
SHOT	64	5128	0.0	0.0	24
SHOT	65	5124	0.0	0.0	24
SHOT	66	5120	0.0	0.0	24
SHOT	67	5117	0.0	0.0	24
SHOT	68	5112	0.0	0.0	24
SHOT	69	5107	0.0	0.0	24
SHOT	70	5104	0.0	0.0	24

SHOT	71	5100	0.0	0.0	24
SHOT	72	5096	0.0	0.0	24
SHOT	73	5092	0.0	0.0	24
SHOT	74	5088	0.0	0.0	24
SHOT	75	5084	0.0	-20.0	24
SHOT	76	5080	0.0	0.0	24
SHOT	77	5076	0.0	40.0	24
SHOT	78	5072	0.0	20.0	24
SHOT	79	5068	0.0	0.0	24
SHOT	80	5064	0.0	0.0	24
SHOT	81	5060	0.0	0.0	24
SHOT	82	5056	0.0	0.0	24
SHOT	83	5052	0.0	18.0	24
SHOT	84	5048	0.0	-20.0	24
SHOT	85	5043	0.0	0.0	24
SHOT	86	5039	0.0	0.0	24
SHOT	87	5036	0.0	-5.0	24
SHOT	88	5032	0.0	0.0	24
SHOT	89	5028	0.0	0.0	24
SHOT	90	5023	0.0	0.0	24
SHOT	91	5020	0.0	0.0	24
SHOT	92	5016	8.0	0.0	24
SHOT	93	5012	0.0	-5.0	24
SHOT	94	5008	0.0	0.0	24
SHOT	95	5004	0.0	0.0	24
SHOT	96	5000	0.0	0.0	24
SHOT	97	4996	0.0	0.0	24
SHOT	98	4992	0.0	0.0	24
SHOT	99	4988	0.0	0.0	24
SHOT	100	4984	0.0	0.0	24
SHOT	101	4981	0.0	0.0	24
SHOT	102	4976	0.0	0.0	24
SHOT	103	4972	0.0	0.0	24
SHOT	104	4968	0.0	0.0	24
SHOT	105	4964	0.0	0.0	24
SHOT	106	4960	0.0	11.0	24
SHOT	107	4956	0.0	35.0	24
SHOT	108	4952	0.0	2.0	24
SHOT	109	4948	0.0	0.0	24
SHOT	110	4944	0.0	0.0	24
SHOT	111	4940	0.0	-65.0	24
SHOT	112	4936	0.0	25.0	24
SHOT	113	4932	0.0	40.0	24
SHOT	114	4928	0.0	12.0	24
SHOT	115	4924	0.0	0.0	24
SHOT	116	4920	0.0	0.0	24
SHOT	117	4916	0.0	0.0	24
SHOT	118	4912	0.0	0.0	24
SHOT	119	4908	0.0	0.0	24
SHOT	120	4904	0.0	0.0	24
SHOT	121	4900	0.0	0.0	24
SHOT	122	4895	0.0	0.0	24
SHOT	123	4893	0.0	0.0	24
SHOT	124	4888	0.0	0.0	23
SHOT	125	4884	0.0	0.0	24
SHOT	126	4880	0.0	0.0	24
SHOT	127	4876	12.0	0.0	24
SHOT	128	4872	0.0	0.0	24
SHOT	129	4868	0.0	0.0	24
SHOT	130	4864	0.0	0.0	24

SHOT	131	4860	0.0	0.0	24
SHOT	132	4856	0.0	6.0	24
SHOT	133	4852	0.0	-2.0	24
SHOT	134	4847	0.0	0.0	24
SHOT	135	4844	0.0	0.0	24
SHOT	136	4840	0.0	0.0	24
SHOT	137	4836	0.0	0.0	24
SHOT	138	4832	0.0	45.0	24
SHOT	139	4827	7.0	0.0	24
SHOT	140	4824	0.0	-6.0	24
SHOT	141	4820	0.0	0.0	24
SHOT	142	4816	0.0	0.0	24
SHOT	143	4812	0.0	0.0	24
SHOT	144	4808	0.0	-3.0	24
SHOT	145	4804	0.0	3.0	24
SHOT	146	4800	3.0	0.0	24
SHOT	147	4796	0.0	0.0	24
SHOT	148	4792	0.0	0.0	24
SHOT	149	4788	0.0	0.0	24
SHOT	150	4784	0.0	0.0	24
SHOT	151	4780	0.0	3.0	24
SHOT	152	4780	0.0	-12.0	16
SHOT	153	4780	0.0	-4.0	8
SHOT	154	4780	0.0	15.0	9000
SHOT	155	4760	0.0	-10.0	32
SHOT	156	4760	0.0	-4.0	24
SHOT	157	4756	0.0	0.0	24
SHOT	158	4752	0.0	0.0	24
SHOT	159	4748	0.0	0.0	24
SHOT	160	4744	0.0	0.0	24
SHOT	161	4740	0.0	0.0	24
SHOT	162	4736	0.0	0.0	24
SHOT	163	4732	0.0	0.0	24
SHOT	164	4728	0.0	3.0	24
SHOT	165	4724	0.0	0.0	24
SHOT	166	4720	0.0	-3.0	24
SHOT	167	4716	0.0	0.0	24
SHOT	168	4712	0.0	0.0	24
SHOT	169	4708	0.0	0.0	24
SHOT	170	4704	0.0	0.0	24
SHOT	171	4700	0.0	0.0	24
SHOT	172	4696	0.0	0.0	24
SHOT	173	4692	-12.0	0.0	24
SHOT	174	4688	0.0	2.0	24
SHOT	175	4684	0.0	0.0	24
SHOT	176	4680	0.0	0.0	24
SHOT	177	4676	0.0	0.0	24
SHOT	178	4672	0.0	0.0	24
SHOT	179	4668	0.0	0.0	24
SHOT	180	4664	0.0	0.0	24
SHOT	181	4660	0.0	-1.0	24
SHOT	182	4656	0.0	4.0	24
SHOT	183	4652	0.0	4.0	24
SHOT	184	4648	0.0	-4.0	24
SHOT	185	4644	0.0	-4.0	24
SHOT	186	4640	0.0	0.0	24
SHOT	187	4636	0.0	0.0	24
SHOT	188	4632	0.0	4.0	24
SHOT	189	4628	0.0	0.0	24
SHOT	190	4624	0.0	0.0	24

SHOT	191	4620	0.0	-5.0	24
SHOT	192	4616	0.0	-4.0	24
SHOT	193	4612	0.0	3.0	24
SHOT	194	4608	0.0	3.0	24
SHOT	195	4604	0.0	0.0	24
SHOT	196	4600	0.0	-4.0	24
SHOT	197	4596	0.0	0.0	24
SHOT	198	4592	0.0	-2.0	24
SHOT	199	4588	0.0	0.0	24
SHOT	200	4584	0.0	-2.0	24
SHOT	201	4580	0.0	0.0	24
SHOT	202	4576	0.0	0.0	24
SHOT	203	4572	0.0	0.0	24
SHOT	204	4568	0.0	-20.0	24
SHOT	205	4564	0.0	0.0	24
SHOT	206	4560	0.0	0.0	24
SHOT	207	4556	0.0	3.0	24
SHOT	208	4552	0.0	0.0	24
SHOT	209	4548	0.0	0.0	24
SHOT	210	4544	0.0	3.0	24
SHOT	211	4540	0.0	0.0	24
SHOT	212	4536	0.0	0.0	24
SHOT	213	4532	0.0	3.0	24
SHOT	214	4528	0.0	0.0	24
SHOT	215	4524	0.0	0.0	24
SHOT	216	4520	0.0	5.0	24
SHOT	217	4516	0.0	5.0	24
SHOT	218	4512	0.0	5.0	24
SHOT	219	4508	0.0	0.0	24
SHOT	220	4504	0.0	3.0	24
SHOT	221	4500	0.0	0.0	24
SHOT	222	4496	0.0	2.0	24
SHOT	223	4492	0.0	-2.0	24
SHOT	224	4488	0.0	2.0	24
SHOT	225	4484	0.0	3.0	24
SHOT	226	4480	0.0	2.0	24
SHOT	227	4476	0.0	3.0	24
SHOT	228	4472	0.0	0.0	24
SHOT	229	4468	0.0	3.0	24
SHOT	230	4465	0.0	0.0	24
SHOT	231	4460	0.0	3.0	24
SHOT	232	4456	0.0	0.0	24
SHOT	233	4452	0.0	3.0	24
SHOT	234	4448	0.0	2.0	24
SHOT	235	4444	0.0	3.0	24
SHOT	236	4440	0.0	3.0	24
SHOT	237	4436	0.0	2.0	24
SHOT	238	4433	0.0	0.0	24
SHOT	239	4428	0.0	3.0	24
SHOT	240	4424	0.0	0.0	24
SHOT	241	4420	0.0	0.0	24
SHOT	242	4416	0.0	0.0	24
SHOT	243	4412	0.0	0.0	24
SHOT	244	4408	0.0	4.0	24
SHOT	245	4404	0.0	0.0	24
SHOT	246	4400	0.0	3.0	24
SHOT	247	4396	0.0	0.0	24
SHOT	248	4392	0.0	-2.0	24
SHOT	249	4388	0.0	-2.0	24
SHOT	250	4384	0.0	4.0	24

SHOT	251	4380	0.0	2.0	24
SHOT	252	4376	0.0	3.0	24
SHOT	253	4372	0.0	0.0	24
SHOT	254	4368	0.0	0.0	24
SHOT	255	4364	0.0	0.0	24
SHOT	256	4360	0.0	5.0	24
SHOT	257	4356	0.0	5.0	24
SHOT	258	4352	0.0	-10.0	24
SHOT	259	4352	-10.0	-10.0	16
SHOT	260	4343	0.0	0.0	24
SHOT	261	4340	0.0	0.0	24
SHOT	262	4336	0.0	0.0	24
SHOT	263	4331	0.0	0.0	24
SHOT	264	4328	-7.0	0.0	24
SHOT	265	4320	10.0	-2.0	24
SHOT	266	4316	0.0	0.0	24
SHOT	267	4312	0.0	2.0	24
SHOT	268	4309	0.0	0.0	24
SHOT	269	4304	0.0	0.0	24
SHOT	270	4300	0.0	0.0	24
SHOT	271	4296	0.0	0.0	24
SHOT	272	4292	0.0	0.0	24
SHOT	273	4288	0.0	4.0	24
SHOT	274	4283	0.0	0.0	24
SHOT	275	4280	0.0	0.0	24
SHOT	276	4276	0.0	0.0	24
SHOT	277	4272	0.0	-8.0	24
SHOT	278	4270	0.0	0.0	24
SHOT	279	4264	0.0	0.0	24
SHOT	280	4260	0.0	0.0	24
SHOT	281	4256	0.0	-2.0	24
SHOT	282	4252	0.0	0.0	24
SHOT	283	4248	0.0	-4.0	24
SHOT	284	4244	0.0	0.0	24
SHOT	285	4240	0.0	0.0	24
SHOT	286	4236	0.0	0.0	24
SHOT	287	4232	0.0	0.0	24
SHOT	288	4228	0.0	0.0	24
SHOT	289	4224	0.0	0.0	24
SHOT	290	4220	0.0	0.0	24
SHOT	291	4216	-25.0	-7.0	24
SHOT	292	4212	0.0	0.0	24
SHOT	293	4208	0.0	-5.0	24
SHOT	294	4204	0.0	0.0	24
SHOT	295	4200	0.0	0.0	24
SHOT	296	4196	7.0	0.0	24
SHOT	297	4192	0.0	0.0	24
SHOT	298	4188	0.0	0.0	24
SHOT	299	4184	0.0	0.0	24
SHOT	300	4180	0.0	0.0	24
SHOT	301	4176	0.0	0.0	24
SHOT	302	4172	0.0	0.0	24
SHOT	303	4167	0.0	0.0	24
SHOT	304	4164	0.0	-4.0	24
SHOT	305	4160	0.0	-4.0	24
SHOT	306	4156	4.0	0.0	24
SHOT	307	4152	0.0	0.0	24
SHOT	308	4148	0.0	0.0	24
SHOT	309	4140	0.0	0.0	24
SHOT	310	4136	0.0	20.0	24

SHOT	311	4131	0.0	0.0	24
SHOT	312	4128	0.0	0.0	24
SHOT	313	4124	0.0	0.0	24
SHOT	314	4120	0.0	0.0	24
SHOT	315	4116	0.0	0.0	24
SHOT	316	4112	0.0	0.0	24
SHOT	317	4108	0.0	0.0	24
SHOT	318	4104	0.0	0.0	24
SHOT	319	4100	0.0	0.0	24
SHOT	320	4096	0.0	0.0	24
SHOT	321	4092	0.0	0.0	24
SHOT	322	4088	0.0	0.0	24
SHOT	323	4084	0.0	0.0	24
SHOT	324	4080	0.0	0.0	24
SHOT	325	4076	0.0	-5.0	24
SHOT	326	4072	0.0	0.0	24
SHOT	327	4068	0.0	-10.0	24
SHOT	328	4064	0.0	0.0	24
SHOT	329	4060	0.0	0.0	28
SHOT	330	4056	0.0	0.0	24
SHOT	331	4052	0.0	0.0	24
SHOT	332	4048	0.0	0.0	24
SHOT	333	4044	0.0	0.0	24
SHOT	334	4040	0.0	0.0	24
SHOT	335	4036	0.0	0.0	24
SHOT	336	4032	0.0	0.0	24
SHOT	337	4028	0.0	0.0	24
SHOT	338	4024	0.0	0.0	24
SHOT	339	4020	0.0	0.0	24
SHOT	340	4016	0.0	0.0	24
SHOT	341	4012	0.0	0.0	24
SHOT	342	4010	0.0	0.0	143
SHOT	343	4008	0.0	0.0	24
SHOT	344	4004	0.0	0.0	24
SHOT	345	4000	0.0	0.0	24
SHOT	346	3996	0.0	0.0	24
SHOT	347	3996	0.0	0.0	24
SHOT	348	3992	0.0	0.0	24
SHOT	349	3988	0.0	0.0	24
SHOT	350	3984	0.0	0.0	24
SHOT	351	3980	0.0	0.0	24
SHOT	352	3976	0.0	0.0	24
SHOT	353	3972	0.0	0.0	24
SHOT	354	3968	0.0	0.0	24
SHOT	355	3964	0.0	0.0	29
SHOT	356	3960	0.0	0.0	33
SHOT	357	3956	0.0	0.0	37
SHOT	358	3952	0.0	0.0	41
SHOT	359	3948	0.0	0.0	45
HOLE	1	40	27		
HOLE	2	27	22		
HOLE	3	18	13		
HOLE	4	23	19		
HOLE	5	36	22		
HOLE	6	40	27		
HOLE	7	40	25		
HOLE	8	32	24		
HOLE	9	18	40		
HOLE	10	32	29		
HOLE	11	32	28		

HOLE	12	36	30
HOLE	13	24	19
HOLE	14	32	31
HOLE	15	13	12
HOLE	16	39	23
HOLE	17	40	30
HOLE	18	36	27
HOLE	19	32	29
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HOLE	36	36	27
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HOLE	40	32	27
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HOLE	66	40	32
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HOLE	71	40	39

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HOLE	76	36	33
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HOLE	78	40	44
HOLE	79	20	20
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HOLE	89	23	21
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HOLE	103	36	30
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HOLE	115	40	23
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HOLE	137	36	19
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HOLE	169	33	24
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HOLE	184	18	16
HOLE	185	40	28
HOLE	186	40	30
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HOLE	188	34	30
HOLE	189	40	30
HOLE	190	32	30
HOLE	191	15	23

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HOLE	194	18	23
HOLE	195	36	25
HOLE	196	40	29
HOLE	197	40	29
HOLE	198	40	31
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HOLE	206	27	22
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HOLE	217	40	34
HOLE	218	40	36
HOLE	219	40	36
HOLE	220	32	31
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HOLE	223	32	28
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HOLE	245	40	31
HOLE	246	40	34
HOLE	247	27	30
HOLE	248	40	38
HOLE	249	40	34
HOLE	250	40	23
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HOLE	289	36	22
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HOLE	295	40	27
HOLE	296	36	27
HOLE	297	40	25
HOLE	298	40	24
HOLE	299	40	24
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HOLE	306	33	23
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HOLE	309	24	15
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HOLE	314	40	29
HOLE	315	32	23
HOLE	316	40	29
HOLE	317	40	27
HOLE	318	36	27
HOLE	319	40	30
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HOLE	327	32	33
HOLE	328	28	26
HOLE	329	28	26
HOLE	330	32	37
HOLE	331	40	36
HOLE	332	20	23
HOLE	333	33	27
HOLE	334	36	28
HOLE	335	40	27
HOLE	336	40	29
HOLE	337	32	24
HOLE	338	40	30
HOLE	339	34	25
HOLE	340	32	23
HOLE	341	9	10
HOLE	342	40	0
HOLE	343	36	24
HOLE	344	36	26
HOLE	345	19	19
HOLE	346	32	23
HOLE	347	3	10
HOLE	348	34	20
HOLE	349	8	10
HOLE	350	36	26
HOLE	351	40	28
HOLE	352	15	11
HOLE	353	40	28
HOLE	354	40	29
HOLE	355	32	23
HOLE	356	40	30
HOLE	357	32	21
HOLE	358	32	27
HOLE	359	27	15
*END			

APPENDIX 11

Traverse 2

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB	CAREP	2	BRG	GEOMETRY INFO. LINE 2				
*CALL	LINE	STATIONS						
LOCN	2000	LXY	287065.	7396186.				
LOCN	2080	LXY	288460.	7399213.				
LOCN	2081	LXY	288477.	7399251.				
LOCN	2134	LXY	289408.	7401254.				
LOCN	2135	LXY	289426.	7401292.				
LOCN	2154	LXY	289776.	7402002.				
LOCN	2155	LXY	289794.	7402039.				
LOCN	2178	LXY	290233.	7402891.				
LOCN	2179	LXY	290252.	7402928.				
LOCN	2192	LXY	290533.	7403391.				
LOCN	2193	LXY	290554.	7403428.				
LOCN	2200	LXY	290692.	7403684.				
LOCN	2201	LXY	290712.	7403721.				
LOCN	2217	LXY	290996.	7404324.				
LOCN	2218	LXY	291013.	7404362.				
LOCN	2240	LXY	291325.	7405224.				
LOCN	2241	LXY	291341.	7405263.				
LOCN	2252	LXY	291544.	7405674.				
LOCN	2253	LXY	291559.	7405712.				
LOCN	2263	LXY	291659.	7406117.				
LOCN	2264	LXY	291670.	7406157.				
LOCN	2289	LXY	292004.	7407144.				
LOCN	2290	LXY	292022.	7407181.				
LOCN	2299	LXY	292182.	7407521.				
LOCN	2300	LXY	292201.	7407558.				
LOCN	2420	LXY	294485.	7412006.				
LOCN	2421	LXY	294505.	7412042.				
LOCN	2498	LXY	296204.	7414764.				
LOCN	2499	LXY	296222.	7414801.				
LOCN	2580	LXY	297183.	7418037.				
LOCN	2581	LXY	297194.	7418077.				
LOCN	2594	LXY	297338.	7418599.				
LOCN	2595	LXY	297350.	7418639.				
LOCN	2601	LXY	297437.	7418873.				
LOCN	2602	LXY	297458.	7418909.				
LOCN	2621	LXY	297870.	7419586.				
LOCN	2622	LXY	297891.	7419622.				
LOCN	2702	LXY	299588.	7422490.				
LOCN	2703	LXY	299607.	7422528.				
LOCN	2968	LXY	301630.	7433382.				
ELEV	2000							
	683.610	682.500	681.870	681.510	680.980	680.380	680.010	679.480
	678.830	678.400	678.180	677.900	677.720	677.370	676.970	676.900
	676.700	676.460	676.180	676.140	676.300	676.500	676.280	675.940
	675.800	675.460	675.170	674.940	674.670	674.320	674.100	673.970
	673.730	673.720	673.400	672.930	672.470	672.310	672.130	671.920

671.730	671.530	671.370	671.180	671.110	671.140	671.070	671.000
671.020	670.940	670.500	670.690	670.510	670.290	670.220	669.810
669.870	669.700	669.530	669.310	668.850	668.320	667.910	667.630
667.440	667.260	666.980	666.780	666.510	666.390	666.220	666.070
665.900	665.730	665.560	665.380	665.170	664.980	664.820	664.720
664.490	664.370	664.160	664.060	663.940	663.830	663.660	663.510
663.360	663.280	663.080	662.970	662.820	662.730	662.550	662.370
662.240	662.110	661.970	661.820	661.640	661.540	661.380	661.240
661.100	660.950	660.860	660.690	660.580	660.400	660.220	660.050
659.920	659.900	659.770	659.620	659.490	659.080	659.070	658.940
658.950	658.890	658.850	658.680	658.560	658.500	658.470	658.220
658.170	657.950	657.690	657.430	657.570	657.270	657.420	657.120
656.980	656.960	656.920	656.900	657.000	656.960	656.770	656.680
656.550	656.530	656.210	655.980	656.620	655.510	655.320	655.190
655.000	655.000	654.870	654.780	654.530	654.560	654.450	654.440
654.470	654.610	654.430	654.210	654.090	653.990	653.850	653.650
653.620	653.670	653.440	653.130	652.870	652.680	652.490	652.270
652.060	651.910	651.780	651.660	651.450	651.290	651.140	650.990
650.810	650.730	650.630	650.530	650.310	650.160	650.090	649.980
649.950	649.740	649.670	649.660	649.520	649.380	649.260	649.090
648.990	648.740	648.580	648.470	648.270	648.220	648.080	647.970
647.890	647.790	647.650	647.670	647.510	647.430	647.360	647.250
647.200	647.070	647.030	646.870	646.760	646.740	646.520	646.430
646.200	646.030	645.880	645.710	645.620	645.540	645.360	645.260
645.140	644.980	644.820	644.700	644.560	644.450	644.360	644.200
644.140	644.000	643.870	643.830	643.600	643.460	643.280	643.220
642.970	643.330	643.480	643.490	643.460	643.360	642.380	642.680
640.620	641.760	642.790	642.660	642.680	642.900	642.740	642.790
642.660	642.650	642.510	642.610	642.630	642.700	642.690	642.580
642.570	642.530	642.430	642.330	642.290	642.320	642.280	642.080
642.100	642.010	641.960	642.830	642.180	641.970	641.810	641.670
641.660	641.570	641.440	641.250	641.260	641.110	641.100	640.810
640.780	640.770	640.660	640.750	640.390	640.560	640.160	640.070
640.140	640.100	640.050	639.990	639.950	639.920	639.860	639.820
639.780	639.770	639.650	639.600	639.560	639.500	639.490	639.580
639.390	640.800	639.450	639.310	639.200	639.140	639.130	638.980
638.960	638.960	638.960	639.170	639.460	639.130	638.680	638.650
638.630	638.640	638.610	638.640	638.600	638.560	638.570	638.360
638.150	637.950	637.780	637.800	637.670	637.570	637.440	637.300
637.200	637.060	637.000	636.910	636.810	636.680	636.560	636.430
636.330	636.090	635.920	635.830	635.670	635.480	635.350	635.190
635.050	635.000	634.920	634.880	634.840	634.760	634.760	634.640
634.510	634.580	634.500	634.360	634.300	634.270	634.170	634.130
634.070	633.980	633.920	633.870	633.800	633.690	633.500	633.550
633.440	633.380	633.320	633.300	633.230	633.220	633.220	633.055
633.000	632.950	632.870	632.780	632.740	632.700	632.640	632.580
632.530	632.470	632.330	632.230	632.120	631.990	631.930	631.780
631.660	631.560	631.440	631.370	631.270	631.120	631.000	630.940
630.920	630.800	630.740	630.680	630.640	630.550	630.480	630.420
630.370	630.320	630.270	630.220	630.180	630.140	630.110	630.070
630.040	629.960	629.870	629.800	629.720	629.630	629.550	629.480
629.420	629.360	629.310	629.280	629.260	629.220	629.190	629.180
629.160	629.140	629.130	629.130	629.130	629.150	629.160	629.140
629.140	629.130	629.100	629.070	629.070	629.070	629.060	629.060
629.060	629.070	629.120	629.170	629.240	629.230	629.290	629.320
629.420	629.630	629.640	629.430	629.230	629.140	628.700	628.910
628.790	628.410	628.220	628.020	627.990	627.920	627.790	627.800
627.820	627.880	627.890	627.910	627.930	628.220	628.710	628.960
629.040	628.750	628.500	628.390	628.280	628.260	628.180	628.050
628.160	628.160	628.320	628.590	628.750	628.820	628.990	629.140

629.400	629.460	629.410	629.420	629.410	629.640	629.940	630.300
630.630	630.910	630.990	631.050	631.330	631.610	631.820	632.020
632.230	632.570	632.830	633.130	633.540	633.850	634.140	634.270
634.480	634.720	634.970	635.270	635.620	636.030	636.370	636.630
637.000	637.270	637.570	637.910	638.270	638.510	638.810	639.110
639.430	639.850	640.250	640.700	641.160	641.600	642.040	642.550
643.070	643.470	643.880	644.410	644.910	645.370	645.520	645.780
646.310	646.510	646.890	647.300	647.760	648.150	648.490	648.850
649.180	649.610	650.070	650.570	651.420	652.210	653.050	653.830
654.500	655.650	656.250	655.160	650.950	646.950	643.620	642.340
642.460	642.140	641.370	640.440	639.650	638.950	638.360	637.880
637.260	636.700	636.170	635.590	634.900	634.200	633.660	633.310
632.870	632.430	632.110	631.870	631.670	631.280	631.070	630.640
630.430	630.090	629.750	629.250	628.730	628.280	627.700	627.070
626.440	626.060	625.820	625.720	625.620	625.640	625.660	625.650
625.620	625.640	625.690	625.780	625.790	625.880	625.870	625.900
625.860	625.920	625.950	625.930	625.870	625.980	625.960	625.940
625.880	625.730	625.600	625.470	625.380	625.290	625.080	624.920
624.670	624.540	624.330	624.080	623.860	623.770	623.670	623.570
623.420	623.270	623.130	622.990	622.850	622.710	622.660	622.580
622.430	622.310	622.210	622.060	621.930	621.820	621.700	621.510
621.350	621.170	620.870	620.580	620.230	619.960	619.710	619.430
619.200	618.920	618.590	618.250	617.980	617.690	617.430	617.140
616.940	616.760	616.580	616.380	616.170	615.970	615.740	615.470
615.220	615.010	614.780	614.610	614.380	614.250	614.080	613.800
613.570	613.420	613.320	613.100	612.870	612.690	612.490	612.350
612.190	612.080	611.960	611.740	611.500	611.340	611.140	610.930
610.690	610.600	610.380	610.090	609.840	609.690	609.600	609.430
609.200	608.980	608.710	608.460	608.290	608.210	608.060	607.870
607.580	607.410	607.200	607.000	606.870	606.710	606.460	606.260
606.150	606.070	606.030	605.900	605.850	605.720	605.550	605.370
605.160	604.920	604.700	604.520	604.430	604.380	604.330	604.220
604.160	604.050	603.980	603.910	603.860	603.830	603.840	603.830
603.930	604.000	604.170	604.220	604.230	604.210	604.260	604.240
604.170	604.160	604.150	604.120	604.160	604.230	604.200	604.240
604.240	604.160	604.200	604.220	604.220	604.260	604.250	604.250
604.220	604.020	603.820	603.570	603.410	603.350	603.270	603.310
603.370	603.440	603.400	603.370	603.320	603.200	603.030	602.890
602.630	602.520	602.390	602.240	602.130	601.900	601.680	601.480
601.400	601.350	601.350	601.380	601.490	601.620	601.720	601.770
601.780	601.640	601.460	601.370	601.260	601.210	601.170	601.180
601.180	601.150	601.110	601.130	601.080	601.080	601.140	601.260
601.200	601.210	601.210	601.180	601.150	601.160	601.130	601.150
601.120	601.110	601.130	601.130	601.090	601.070	601.070	601.100
601.000	600.820	600.850	600.820	600.820	600.830	600.810	600.800
600.620	600.510	600.400	600.310	600.240	600.170	600.140	600.130
600.100	600.080	600.040	600.060	600.020	599.990	599.960	599.880
599.840	599.880	599.830	599.790	599.660	599.580	599.610	599.590
599.600	599.420	599.330	599.290	599.330	599.600	599.860	600.130
600.050	599.950	599.930	599.850	599.770	599.620	599.490	599.420
599.360	599.330	599.320	599.260	599.260	599.310	599.360	599.360
599.360	599.350	599.390	599.410	599.410	599.340	599.280	599.230
599.070	599.010	599.000	599.190	599.400	599.400	599.350	599.350
599.260	599.160	599.130	599.110	599.060	599.170	599.230	599.210
599.180	599.180	599.160	599.180	599.140	599.100	599.130	598.970
598.830	598.860	598.840	598.940	598.930	598.920	598.900	598.790
598.770							

CMP
 *CALL PATTERN 70
 PSTAT 2024

1	2094	
48	2000	
*CALL	PATTERN	62
PSTAT	2032	
1	2094	
48	2000	
*CALL	PATTERN	54
PSTAT	2040	
1	2094	
48	2000	
*CALL	PATTERN	48
PSTAT	2048	
1	2096	
48	2002	
*CALL	PATTERN	2
PSTAT	2092	
1	2094	
48	2000	
*CALL	PATTERN	22
PSTAT	2104	
1	2126	
48	2032	
*CALL	PATTERN	52
PSTAT	2120	
1	2142	
48	2048	
*CALL	PATTERN	
PSTAT	2138	
1	2158	
48	2064	
*CALL	PATTERN	9000
PSTAT	2140	
1	2140	
48	2046	
*CALL	PATTERN	24
PSTAT	2160	
1	2182	
48	2088	
*CALL	PATTERN	14
PSTAT	2260	
1	2274	
48	2180	
*CALL	PATTERN	10
PSTAT	2428	
1	2428	
48	2334	
*CALL	PATTERN	26
PSTAT	2684	
1	2710	
48	2616	
*CALL	PATTERN	30
PSTAT	2688	
1	2718	
48	2624	
*CALL	PATTERN	16
PSTAT	2952	
1	2968	
48	2874	
*CALL	PATTERN	8
PSTAT	2960	

1	2968				
48	2874				
*CALL	PATTERN	5506			
PSTAT	2600				
1	2094				
48	2000				
*CALL	SOURCE	1	48	IN-PER	
SHOT	1	2024	0.0	0.0	70
SHOT	2	2032	1.0	0.0	62
SHOT	3	2040	0.0	0.0	54
SHOT	4	2048	0.0	0.0	48
SHOT	5	2056	0.0	-20.0	48
SHOT	6	2064	0.0	0.0	48
SHOT	7	2072	0.0	0.0	48
SHOT	8	2080	0.0	0.0	48
SHOT	9	2088	0.0	0.0	48
SHOT	10	2092	0.0	0.0	2
SHOT	11	2096	0.0	0.0	48
SHOT	12	2104	0.0	0.0	22
SHOT	13	2112	0.0	0.0	22
SHOT	14	2120	0.0	0.0	52
SHOT	15	2128	0.0	0.0	22
SHOT	16	2138	0.0	-4.0	20
SHOT	17	2140	0.0	0.0	9000
SHOT	18	2144	0.0	-5.0	22
SHOT	19	2152	0.0	-5.0	22
SHOT	20	2160	0.0	0.0	24
SHOT	21	2168	0.0	0.0	22
SHOT	22	2176	0.0	-5.0	22
SHOT	23	2184	0.0	0.0	22
SHOT	24	2188	0.0	-7.0	9000
SHOT	25	2192	0.0	-5.0	22
SHOT	26	2196	0.0	-5.0	22
SHOT	27	2200	0.0	-5.0	22
SHOT	28	2208	0.0	0.0	22
SHOT	29	2216	0.0	-5.0	22
SHOT	30	2224	0.0	-5.0	22
SHOT	31	2232	0.0	-5.0	22
SHOT	32	2236	0.0	-5.0	9000
SHOT	33	2240	0.0	-5.0	22
SHOT	34	2248	2.0	0.0	22
SHOT	35	2260	0.0	-5.0	14
SHOT	36	2264	0.0	0.0	22
SHOT	37	2272	0.0	-4.0	22
SHOT	38	2280	0.0	0.0	22
SHOT	39	2284	0.0	-7.0	9000
SHOT	40	2288	0.0	-5.0	22
SHOT	41	2296	0.0	-7.0	22
SHOT	42	2304	0.0	-5.0	22
SHOT	43	2312	0.0	-4.0	22
SHOT	44	2320	15.0	-5.0	22
SHOT	45	2328	0.0	0.0	22
SHOT	46	2332	0.0	-35.0	9000
SHOT	47	2336	0.0	0.0	22
SHOT	48	2344	0.0	0.0	22
SHOT	49	2352	0.0	0.0	22
SHOT	50	2360	0.0	0.0	22
SHOT	51	2368	0.0	0.0	22
SHOT	52	2376	0.0	0.0	22
SHOT	53	2380	5.0	0.0	9000

SHOT	54	2384	0.0	0.0	22
SHOT	55	2392	0.0	0.0	22
SHOT	56	2400	0.0	0.0	22
SHOT	57	2408	-40.0	0.0	22
SHOT	58	2416	-40.0	0.0	22
SHOT	59	2424	0.0	0.0	22
SHOT	60	2428	0.0	0.0	10
SHOT	61	2432	0.0	0.0	22
SHOT	62	2436	0.0	0.0	22
SHOT	63	2440	0.0	0.0	22
SHOT	64	2448	0.0	0.0	22
SHOT	65	2456	0.0	0.0	22
SHOT	66	2464	0.0	0.0	22
SHOT	67	2468	0.0	0.0	22
SHOT	68	2472	0.0	0.0	22
SHOT	69	2476	0.0	0.0	9000
SHOT	70	2480	0.0	0.0	22
SHOT	71	2484	0.0	0.0	22
SHOT	72	2488	0.0	0.0	22
SHOT	73	2492	0.0	0.0	22
SHOT	74	2496	0.0	0.0	22
SHOT	75	2500	0.0	0.0	22
SHOT	76	2504	0.0	7.0	22
SHOT	77	2508	0.0	5.0	22
SHOT	78	2512	0.0	7.0	22
SHOT	79	2516	0.0	2.0	22
SHOT	80	2520	0.0	3.0	22
SHOT	81	2524	0.0	5.0	9000
SHOT	82	2532	0.0	0.0	22
SHOT	83	2536	0.0	0.0	22
SHOT	84	2540	0.0	0.0	22
SHOT	85	2544	0.0	0.0	22
SHOT	86	2552	0.0	0.0	22
SHOT	87	2560	0.0	0.0	22
SHOT	88	2568	0.0	0.0	22
SHOT	89	2572	0.0	0.0	9000
SHOT	90	2576	0.0	0.0	22
SHOT	91	2584	0.0	0.0	22
SHOT	92	2592	0.0	-7.0	22
SHOT	93	2600	0.0	-17.0	22
SHOT	94	2600	0.0	0.0	5506
SHOT	95	2608	0.0	0.0	14
SHOT	96	2616	0.0	1.0	22
SHOT	97	2620	0.0	0.0	9000
SHOT	98	2624	0.0	-3.0	22
SHOT	99	2632	0.0	0.0	22
SHOT	100	2636	0.0	0.0	5506
SHOT	101	2640	0.0	3.0	22
SHOT	102	2648	0.0	0.0	22
SHOT	103	2656	0.0	0.0	22
SHOT	104	2664	0.0	0.0	22
SHOT	105	2672	0.0	0.0	22
SHOT	106	2672	0.0	0.0	5506
SHOT	107	2680	0.0	-4.0	22
SHOT	108	2684	0.0	0.0	26
SHOT	109	2688	0.0	0.0	30
SHOT	110	2692	0.0	0.0	26
SHOT	111	2696	0.0	0.0	22
SHOT	112	2700	0.0	0.0	22
SHOT	113	2704	0.0	0.0	22

SHOT	114	2708	0.0	-3.0	22
SHOT	115	2708	0.0	0.0	5506
SHOT	116	2712	0.0	-3.0	22
SHOT	117	2716	0.0	-3.0	22
SHOT	118	2720	0.0	-4.0	22
SHOT	119	2724	0.0	-4.0	22
SHOT	120	2728	0.0	-4.0	22
SHOT	121	2736	0.0	0.0	22
SHOT	122	2744	0.0	-9.0	22
SHOT	123	2744	0.0	0.0	5506
SHOT	124	2752	0.0	0.0	22
SHOT	125	2760	0.0	0.0	22
SHOT	126	2768	0.0	0.0	22
SHOT	127	2776	0.0	0.0	22
SHOT	128	2780	0.0	0.0	5506
SHOT	129	2784	0.0	0.0	22
SHOT	130	2792	0.0	0.0	22
SHOT	131	2800	0.0	0.0	22
SHOT	132	2808	0.0	0.0	22
SHOT	133	2816	0.0	-5.0	22
SHOT	134	2816	0.0	0.0	5506
SHOT	135	2824	0.0	0.0	22
SHOT	136	2832	0.0	0.0	22
SHOT	137	2840	0.0	0.0	22
SHOT	138	2848	0.0	0.0	22
SHOT	139	2852	0.0	0.0	5506
SHOT	140	2856	0.0	0.0	22
SHOT	141	2864	0.0	0.0	22
SHOT	142	2872	0.0	0.0	22
SHOT	143	2880	0.0	0.0	22
SHOT	144	2888	0.0	0.0	22
SHOT	145	2896	0.0	0.0	22
SHOT	146	2904	0.0	0.0	22
SHOT	147	2912	0.0	-4.0	22
SHOT	148	2920	0.0	-3.0	22
SHOT	149	2928	0.0	-3.0	22
SHOT	150	2936	0.0	-3.0	22
SHOT	151	2944	0.0	-3.0	22
SHOT	152	2952	0.0	-3.0	16
SHOT	153	2960	0.0	-3.0	8
SHOT	154	2968	0.0	0.0	9000
HOLE	1	18	18		
HOLE	2	36	24		
HOLE	3	40	30		
HOLE	4	32	27		
HOLE	5	40	31		
HOLE	6	40	30		
HOLE	7	40	29		
HOLE	8	40	30		
HOLE	9	40	30		
HOLE	10	36	23		
HOLE	11	25	27		
HOLE	12	15	19		
HOLE	13	27	19		
HOLE	14	20	19		
HOLE	15	40	31		
HOLE	16	40	32		
HOLE	17	40	35		
HOLE	18	40	31		
HOLE	19	40	33		

HOLE	20	40	32
HOLE	21	40	31
HOLE	22	40	36
HOLE	23	40	30
HOLE	24	40	32
HOLE	25	36	28
HOLE	26	40	30
HOLE	27	8	15
HOLE	28	40	30
HOLE	29	40	30
HOLE	30	40	32
HOLE	31	40	30
HOLE	32	40	32
HOLE	33	40	32
HOLE	34	40	29
HOLE	35	40	32
HOLE	36	36	29
HOLE	37	11	11
HOLE	38	15	14
HOLE	39	36	28
HOLE	40	23	17
HOLE	41	40	36
HOLE	42	36	29
HOLE	43	40	31
HOLE	44	18	16
HOLE	45	13	10
HOLE	46	9	13
HOLE	47	13	13
HOLE	48	40	39
HOLE	49	40	31
HOLE	50	40	32
HOLE	51	40	32
HOLE	52	40	34
HOLE	53	40	38
HOLE	54	40	33
HOLE	55	40	33
HOLE	56	27	26
HOLE	57	40	33
HOLE	58	40	34
HOLE	59	38	37
HOLE	60	40	34
HOLE	61	40	36
HOLE	62	40	31
HOLE	63	40	38
HOLE	64	40	32
HOLE	65	40	36
HOLE	66	40	33
HOLE	67	40	38
HOLE	68	40	23
HOLE	69	40	36
HOLE	70	36	36
HOLE	71	40	40
HOLE	72	40	38
HOLE	73	40	30
HOLE	74	32	29
HOLE	75	38	32
HOLE	76	22	20
HOLE	77	40	32
HOLE	78	40	33
HOLE	79	0	20

HOLE	80	18	18
HOLE	81	12	12
HOLE	82	18	14
HOLE	83	36	28
HOLE	84	40	33
HOLE	85	38	37
HOLE	86	40	30
HOLE	87	40	33
HOLE	88	40	33
HOLE	89	40	34
HOLE	90	40	35
HOLE	91	15	13
HOLE	92	22	10
HOLE	93	9	18
HOLE	94	9	0
HOLE	95	13	10
HOLE	96	13	11
HOLE	97	18	14
HOLE	98	23	19
HOLE	99	27	20
HOLE	100	57	0
HOLE	101	27	22
HOLE	102	13	9
HOLE	103	13	9
HOLE	104	9	5
HOLE	105	9	8
HOLE	106	9	0
HOLE	107	25	18
HOLE	108	32	24
HOLE	109	40	33
HOLE	110	40	30
HOLE	111	40	30
HOLE	112	40	32
HOLE	113	40	30
HOLE	114	40	32
HOLE	115	29	0
HOLE	116	40	30
HOLE	117	40	30
HOLE	118	38	29
HOLE	119	36	28
HOLE	120	40	30
HOLE	121	40	29
HOLE	122	40	30
HOLE	123	36	0
HOLE	124	40	28
HOLE	125	40	28
HOLE	126	40	30
HOLE	127	40	32
HOLE	128	42	0
HOLE	129	40	32
HOLE	130	40	33
HOLE	131	40	32
HOLE	132	40	32
HOLE	133	40	33
HOLE	134	32	0
HOLE	135	40	32
HOLE	136	40	29
HOLE	137	40	32
HOLE	138	40	30
HOLE	139	45	0

HOLE	140	40	30
HOLE	141	40	30
HOLE	142	40	32
HOLE	143	40	36
HOLE	144	40	32
HOLE	145	32	30
HOLE	146	40	30
HOLE	147	40	31
HOLE	148	40	33
HOLE	149	23	26
HOLE	150	40	34
HOLE	151	40	34
HOLE	152	40	38
HOLE	153	40	33
HOLE	154	40	35
*END			

APPENDIX 12

Traverse 3

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB	CAREP	3	BRG	GEOMETRY INFO. LINE 3
*CALL	LINE	STATIONS		
LOCN	2970	LXY	211095.	7421045.
LOCN	2996	LXY	212873.	7422285.
LOCN	3000	LXY	213199.	7422356.
LOCN	3002	LXY	213365.	7422372.
LOCN	3003	LXY	213448.	7422380.
LOCN	3046	LXY	217029.	7422560.
LOCN	3097	LXY	221275.	7422780.
LOCN	3145	LXY	225271.	7422989.
LOCN	3146	LXY	225355.	7422994.
LOCN	3190	LXY	229017.	7423201.
LOCN	3207	LXY	230432.	7423287.
LOCN	3208	LXY	230515.	7423286.
LOCN	3210	LXY	230681.	7423277.
LOCN	3211	LXY	230764.	7423264.
LOCN	3212	LXY	230846.	7423250.
LOCN	3213	LXY	230927.	7423232.
LOCN	3215	LXY	231084.	7423176.
LOCN	3216	LXY	231161.	7423142.
LOCN	3217	LXY	231235.	7423104.
LOCN	3218	LXY	231308.	7423064.
LOCN	3220	LXY	231444.	7422967.
LOCN	3221	LXY	231511.	7422917.
LOCN	3230	LXY	232066.	7422413.
LOCN	3231	LXY	232134.	7422365.
LOCN	3233	LXY	232275.	7422276.
LOCN	3234	LXY	232353.	7422246.
LOCN	3235	LXY	232431.	7422218.
LOCN	3236	LXY	232510.	7422191.
LOCN	3238	LXY	232677.	7422179.
LOCN	3239	LXY	232759.	7422192.
LOCN	3240	LXY	232841.	7422205.
LOCN	3241	LXY	232923.	7422222.
LOCN	3242	LXY	233062.	7422250.
LOCN	3243	LXY	233080.	7422279.
LOCN	3244	LXY	233152.	7422320.
LOCN	3245	LXY	233224.	7422362.
LOCN	3278	LXY	235505.	7423900.
LOCN	3279	LXY	235574.	7423946.
LOCN	3281	LXY	235718.	7424030.
LOCN	3282	LXY	235791.	7424070.
LOCN	3284	LXY	235950.	7424121.
LOCN	3285	LXY	236031.	7424143.
LOCN	3289	LXY	236354.	7424223.
LOCN	3290	LXY	236436.	7424239.
LOCN	3294	LXY	236764.	7424301.
LOCN	3295	LXY	236846.	7424318.

LOCN	3297	LXY	237007.	7424361.
LOCN	3298	LXY	237087.	7424385.
LOCN	3344	LXY	240737.	7425558.
LOCN	3345	LXY	240817.	7425583.
LOCN	3441	LXY	248441.	7428014.
LOCN	3442	LXY	248520.	7428040.
LOCN	3480	LXY	251539.	7429000.
ELEV	2970			

619.300	618.450	617.900	617.600	617.300	616.500	616.200	615.700
615.450	614.700	614.100	613.850	613.900	613.750	613.800	613.750
614.000	613.850	614.000	614.100	614.200	614.150	614.200	614.300
614.300	614.300	615.120	614.750	614.850	614.800	615.190	615.530
615.830	616.140	616.500	616.700	616.730	616.800	616.840	616.860
617.270	617.650	617.950	617.930	617.930	617.650	618.380	618.570
618.570	618.760	618.880	618.790	618.760	618.970	619.090	619.240
619.300	619.370	619.550	619.660	619.720	619.890	620.140	620.580
620.830	621.110	621.180	621.670	622.090	622.490	622.720	623.040
623.120	623.260	623.240	623.280	623.100	622.920	622.890	622.670
622.540	622.800	623.010	623.690	624.710	626.390	626.640	626.570
625.910	625.320	624.690	624.260	623.600	623.840	623.510	623.880
623.950	624.180	624.080	624.390	624.320	625.260	625.020	625.300
625.130	625.560	624.990	624.910	624.560	624.880	624.880	625.320
625.300	625.710	625.360	625.630	625.200	625.330	625.020	625.390
625.420	625.920	625.070	625.060	625.320	625.790	624.800	624.510
624.610	624.510	624.940	624.480	624.360	625.500	625.220	625.160
625.780	625.300	625.670	625.340	625.850	625.490	625.950	626.000
625.840	625.560	625.830	625.060	624.870	624.150	624.080	623.750
624.150	623.990	624.420	624.550	624.540	623.490	623.640	623.520
624.400	623.780	623.290	623.050	623.260	622.790	622.920	622.550
622.470	621.840	621.450	621.080	621.180	621.820	620.990	620.690
620.620	620.530	620.440	620.380	620.350	620.140	620.030	619.600
619.460	619.440	619.330	619.170	619.010	618.880	618.790	618.710
618.780	618.940	619.020	618.380	618.850	618.630	618.630	618.260
617.740	617.810	617.930	618.030	617.680	617.370	617.180	617.310
617.490	617.080	616.560	616.040	615.990	615.680	615.720	615.590
615.770	616.140	616.490	616.810	617.310	615.650	614.590	613.750
613.290	613.420	613.070	612.940	612.670	613.330	613.770	614.130
613.930	613.310	612.280	612.070	611.680	611.500	611.270	611.360
611.620	611.790	612.870	612.620	613.150	614.010	613.520	612.230
612.440	611.810	612.010	611.850	611.930	612.170	612.530	612.740
612.780	612.380	609.390	612.380	611.950	612.050	611.980	612.400
612.990	613.640	614.140	615.020	615.290	614.030	612.860	612.260
612.670	612.910	612.580	612.070	612.370	612.550	613.660	612.550
611.880	611.040	611.200	610.650	610.850	610.580	610.520	610.370
610.590	610.230	610.220	610.000	610.010	609.690	609.600	609.440
609.210	609.040	608.960	608.790	608.590	608.420	608.260	608.010
608.010	607.750	607.410	607.210	607.010	606.700	606.790	606.650
606.660	605.990	606.940	606.280	606.350	606.130	606.040	605.820
605.740	605.650	605.680	605.460	605.430	605.370	605.210	605.040
604.980	604.660	604.590	604.490	604.840	605.600	604.500	603.330
602.980	602.990	602.970	603.170	604.120	604.070	602.850	602.410
602.570	601.910	601.650	601.670	602.080	602.630	603.040	601.860
601.300	601.280	601.060	600.740	600.560	600.510	600.460	599.940
599.800	599.640	599.460	599.220	599.160	598.790	598.360	597.800
597.880	597.620	597.290	597.040	596.950	596.700	596.490	596.490
596.220	596.090	595.610	595.520	595.360	594.960	594.890	594.780
595.040	595.000	595.220	595.090	594.290	594.080	593.630	593.250
593.310	592.800	592.510	592.440	592.380	592.190	592.130	592.110
592.090	592.070	592.090	592.420	592.510	591.950	591.830	591.790
592.040	592.060	591.640	591.590	591.630	591.730	591.930	591.620

591.540	591.600	591.420	591.230	591.240	591.330	591.360	591.350
591.560	591.780	591.620	591.520	591.650	591.690	591.700	591.840
591.950	591.920	592.150	592.480	592.910	593.120	593.250	593.130
592.960	592.940	592.840	592.800	592.780	592.470	592.490	592.450
592.470	592.510	592.710	592.890	593.140	593.370	593.370	593.120
593.060	592.980	593.000	593.090	593.270	593.340	593.560	593.520
593.580	593.600	593.540	593.330	593.420	593.390	593.400	593.540
593.440	593.450	593.390	593.470	593.540	593.700	593.840	593.950
594.310	594.310	594.420	594.480	594.740	594.780	594.870	594.860
594.670	594.310	594.390	594.420	594.290	594.100	593.930	593.950
593.850	593.690	593.620	593.410	593.250	593.280	593.250	593.070
592.990	592.780	592.680	592.610	592.550	592.310	592.200	

CMP

*CALL PATTERN 24

PSTAT 3120

1 3144

48 3097

*CALL PATTERN 25

PSTAT 3227

1 3252

48 3205

*CALL PATTERN 26

PSTAT 3248

1 3274

48 3227

*CALL PATTERN 5391

PSTAT 3415

1 3024

48 2977

*CALL PATTERN 5345

PSTAT 3392

1 3047

48 3000

*CALL PATTERN 5299

PSTAT 3369

1 3070

48 3023

*CALL PATTERN 5253

PSTAT 3346

1 3093

48 3046

*CALL PATTERN 5207

PSTAT 3323

1 3116

48 3069

*CALL PATTERN 5161

PSTAT 3300

1 3139

48 3092

*CALL PATTERN 5115

PSTAT 3277

1 3162

48 3115

*CALL PATTERN 5069

PSTAT 3254

1 3185

48 3138

*CALL PATTERN 5023

PSTAT 3231

1 3208

48	3161	
*CALL	PATTERN	69
PSTAT	3185	
1	3254	
48	3207	
*CALL	PATTERN	115
PSTAT	3162	
1	3277	
48	3230	
*CALL	PATTERN	161
PSTAT	3139	
1	3300	
48	3253	
*CALL	PATTERN	209
PSTAT	3116	
1	3325	
48	3278	
*CALL	PATTERN	253
PSTAT	3093	
1	3346	
48	3299	
*CALL	PATTERN	299
PSTAT	3070	
1	3369	
48	3322	
*CALL	PATTERN	345
PSTAT	3047	
1	3392	
48	3345	
*CALL	PATTERN	391
PSTAT	3024	
1	3415	
48	3368	
*CALL	PATTERN	437
PSTAT	3001	
1	3438	
48	3391	

*CALL	SOURCE	1	48	IN-PER	
SHOT	1	3001	0.0	0.0	437
SHOT	2	3024	0.0	0.0	391
SHOT	3	3047	0.0	0.0	345
SHOT	4	3070	0.0	0.0	299
SHOT	5	3093	0.0	0.0	253
SHOT	6	3116	0.0	0.0	209
SHOT	7	3120	0.0	0.0	24
SHOT	8	3124	0.0	0.0	24
SHOT	9	3128	0.0	0.0	24
SHOT	10	3132	0.0	0.0	24
SHOT	11	3136	0.0	0.0	24
SHOT	12	3139	0.0	0.0	161
SHOT	13	3140	0.0	-4.0	24
SHOT	14	3144	0.0	0.0	24
SHOT	15	3148	0.0	0.0	24
SHOT	16	3152	0.0	0.0	24
SHOT	17	3156	0.0	0.0	24
SHOT	18	3160	0.0	0.0	24
SHOT	19	3162	0.0	0.0	115
SHOT	20	3164	0.0	0.0	24
SHOT	21	3168	0.0	0.0	24
SHOT	22	3172	0.0	0.0	24

SHOT	23	3176	0.0	0.0	24
SHOT	24	3180	0.0	0.0	24
SHOT	25	3184	0.0	0.0	24
SHOT	26	3185	0.0	0.0	69
SHOT	27	3188	0.0	0.0	24
SHOT	28	3192	0.0	0.0	24
SHOT	29	3194	0.0	0.0	24
SHOT	30	3196	0.0	0.0	24
SHOT	31	3198	0.0	0.0	24
SHOT	32	3200	0.0	0.0	24
SHOT	33	3202	0.0	0.0	24
SHOT	34	3204	0.0	0.0	24
SHOT	35	3206	0.0	0.0	24
SHOT	36	3208	0.0	0.0	24
SHOT	37	3210	0.0	0.0	24
SHOT	38	3212	0.0	0.0	24
SHOT	39	3214	0.0	0.0	24
SHOT	40	3216	0.0	-1.0	24
SHOT	41	3218	0.0	-2.0	24
SHOT	42	3220	0.0	0.0	24
SHOT	43	3222	0.0	0.0	24
SHOT	44	3224	0.0	0.0	24
SHOT	45	3226	0.0	0.0	24
SHOT	46	3227	0.0	-2.0	25
SHOT	47	3230	0.0	0.0	24
SHOT	48	3231	0.0	0.0	5023
SHOT	49	3232	-40.0	0.0	24
SHOT	50	3234	0.0	0.0	24
SHOT	51	3236	0.0	0.0	24
SHOT	52	3238	0.0	0.0	24
SHOT	53	3240	0.0	0.0	24
SHOT	54	3242	0.0	0.0	24
SHOT	55	3244	0.0	0.0	24
SHOT	56	3246	0.0	0.0	24
SHOT	57	3248	0.0	0.0	26
SHOT	58	3250	0.0	0.0	24
SHOT	59	3252	0.0	0.0	24
SHOT	60	3254	0.0	0.0	5069
SHOT	61	3256	0.0	0.0	24
SHOT	62	3260	0.0	0.0	24
SHOT	63	3264	0.0	0.0	24
SHOT	64	3268	0.0	0.0	24
SHOT	65	3277	0.0	0.0	5115
SHOT	66	3300	0.0	0.0	5161
SHOT	67	3323	0.0	0.0	5207
SHOT	68	3346	0.0	0.0	5253
SHOT	69	3369	0.0	0.0	5299
SHOT	70	3392	0.0	0.0	5345
SHOT	71	3415	0.0	0.0	5391
HOLE	1	40	0		
HOLE	2	40	0		
HOLE	3	40	0		
HOLE	4	40	0		
HOLE	5	40	0		
HOLE	6	40	0		
HOLE	7	40	33		
HOLE	8	40	37		
HOLE	9	40	33		
HOLE	10	40	35		
HOLE	11	40	33		

HOLE	12	40	0
HOLE	13	40	33
HOLE	14	32	24
HOLE	15	40	33
HOLE	16	40	32
HOLE	17	40	30
HOLE	18	40	31
HOLE	19	40	0
HOLE	20	36	29
HOLE	21	40	33
HOLE	22	40	33
HOLE	23	40	32
HOLE	24	40	33
HOLE	25	40	32
HOLE	26	40	0
HOLE	27	40	30
HOLE	28	40	30
HOLE	29	40	30
HOLE	30	40	30
HOLE	31	40	30
HOLE	32	40	30
HOLE	33	40	33
HOLE	34	40	30
HOLE	35	40	30
HOLE	36	40	30
HOLE	37	40	30
HOLE	38	40	30
HOLE	39	40	30
HOLE	40	40	34
HOLE	41	40	33
HOLE	42	40	30
HOLE	43	40	30
HOLE	44	40	30
HOLE	45	40	30
HOLE	46	40	30
HOLE	47	40	30
HOLE	48	40	0
HOLE	49	40	32
HOLE	50	40	30
HOLE	51	40	32
HOLE	52	40	33
HOLE	53	40	30
HOLE	54	40	30
HOLE	55	40	30
HOLE	56	40	30
HOLE	57	40	30
HOLE	58	40	30
HOLE	59	40	31
HOLE	60	40	0
HOLE	61	40	29
HOLE	62	40	31
HOLE	63	40	31
HOLE	64	40	30
HOLE	65	40	0
HOLE	66	40	0
HOLE	67	40	0
HOLE	68	40	0
HOLE	69	40	0
HOLE	70	40	0
HOLE	71	40	0

*END

APPENDIX 13

Traverse 4

DISCO Geometry Definition Job File

Format and column descriptions are given at the bottom of Appendix 6.

*JOB	CAREP	4	BRG	GEOMETRY INFO. LINE 4				
*CALL	LINE	STATIONS						
LOCN	4000	LXY	215788.	7374976.				
LOCN	4081	LXY	216475.	7378145.				
LOCN	4117	LXY	215369.	7379583.				
LOCN	4127	LXY	216507.	7379948.				
LOCN	4131	LXY	216623.	7380056.				
LOCN	4137	LXY	216705.	7380278.				
LOCN	4144	LXY	216524.	7380475.				
LOCN	4151	LXY	216634.	7380732.				
LOCN	4161	LXY	216969.	7380952.				
LOCN	4259	LXY	220488.	7382682.				
LOCN	4264	LXY	220687.	7382707.				
LOCN	4265	LXY	220713.	7382733.				
LOCN	4292	LXY	221291.	7383647.				
ELEV	4000							
785.83	786.52	787.32	787.98	788.72	789.48	790.38	791.11	
791.94	792.67	793.58	794.49	795.36	796.31	797.14	797.84	
798.85	799.53	800.35	800.96	802.18	802.78	803.32	804.02	
804.92	805.52	806.14	806.74	807.88	808.65	809.48	810.23	
810.55	811.55	811.97	812.92	813.75	814.76	815.63	816.48	
816.68	819.25	820.45	821.92	822.84	823.40	824.21	825.19	
825.30	826.76	827.55	828.92	830.31	831.55	832.85	834.64	
836.15	837.63	838.61	840.01	841.35	842.71	843.76	845.56	
851.44	857.33	863.53	871.78	874.92	873.36	869.67	865.36	
866.08	875.38	882.92	881.61	875.14	867.84	858.21	856.68	
857.14	857.48	857.70	859.68	860.63	861.67	863.1	864.31	
865.28	866.5	868.13	870.02	869.48	869.44	869.77	870.74	
871.99	872.69	874.66	877.39	877.04	878.52	878.99	879.83	
880.83	881.47	882.26	882.64	883.57	884.29	885.48	888.23	
893.41	890.92	895.58	894.63	895.5	895.58	897.64	899.99	
901.95	905.63	916.35	928.08	939.72	950.59	960.55	969.55	
976.16	984.36	996.88	1006.53	1011.75	1017.39	1020.99	1018.49	
1016.46	1019.55	1004.92	993.53	988.1	976.81	963.41	950.2	
936.67	931.17	928.87	927.37	925.25	923.75	922.22	921.16	
920.42	919.43	918.07	916.9	915.52	913.99	912.72	911.66	
910.22	909.71	908.73	907.77	906.86	906.19	904.85	904.02	
902.87	902.65	901.57	900.99	900.03	899.4	898.21	897.41	
896.42	895.4	894.25	893.14	892.28	891.58	890.54	889.79	
888.69	887.92	886.62	886.11	885.42	884.52	883.53	883.12	
882.26	881.27	880.68	880.22	878.68	878.65	878.02	878.65	
876.74	875.21	875.59	874.94	874.07	873.21	872.62	871.35	
871.45	871.01	870.35	869.20	869.18	868.8	867.97	867.2	
866.23	866.16	865.64	865.0	865.8	866.64	865.97	865.14	
861.78	864.11	863.75	862.1	860.43	859.93	858.39	857.21	
855.09	855.29	854.56	853.89	852.83	852.69	852.07	851.47	
850.92	850.42	849.45	849.06	848.14	847.77	846.77	845.96	
846.18	846.07	845.4	845.49	844.82	844.42	844.29	844.19	

844.13	843.8	843.35	844.49	842.61	841.25	840.21	838.52
837.73	837.48	836.78	836.08	835.58	835.58	834.95	834.35
834.55	834.25	834.28	834.48	832.68	831.78	830.79	830.19
829.39	828.49	827.88	827.08	826.68	826.38	825.88	824.97
824.97	824.47	823.49	822.78	822.21			

CMP

*CALL PATTERN 9000

PSTAT 4292

1 4292

48 4198

*CALL PATTERN 24

PSTAT 4268

1 4292

48 4198

*CALL PATTERN 48

PSTAT 4244

1 4292

48 4198

*CALL PATTERN 72

PSTAT 4220

1 4292

48 4198

*CALL PATTERN 64

PSTAT 4172

1 4236

48 4142

*CALL PATTERN 56

PSTAT 4120

1 4176

48 4082

*CALL PATTERN 76

PSTAT 4120

1 4196

48 4102

*CALL PATTERN 40

PSTAT 4080

1 4120

48 4026

*CALL PATTERN 66

PSTAT 4028

1 4094

48 4000

*CALL PATTERN 90

PSTAT 4004

1 4094

48 4000

*CALL SOURCE 1 48 IN-PER

SHOT 1 4292 0.0 3.0 9000

SHOT 2 4268 0.0 0.0 24

SHOT 3 4268 0.0 0.0 24

SHOT 4 4268 0.0 0.0 24

SHOT 5 4268 0.0 0.0 24

SHOT 6 4268 0.0 0.0 24

SHOT 7 4268 0.0 0.0 24

SHOT 8 4268 0.0 0.0 24

SHOT 9 4244 0.0 0.0 48

SHOT 10 4220 0.0 -11.0 48

SHOT 11 4220 0.0 -11.0 72

SHOT 12 4196 0.0 1.0 48

SHOT 13 4196 0.0 1.0 72

SHOT	14	4196	0.0	1.0	72
SHOT	15	4196	0.0	1.0	48
SHOT	16	4196	0.0	1.0	48
SHOT	17	4196	0.0	1.0	48
SHOT	18	4196	0.0	1.0	48
SHOT	19	4196	0.0	1.0	48
SHOT	20	4196	0.0	1.0	48
SHOT	21	4172	0.0	1.0	48
SHOT	22	4172	0.0	1.0	72
SHOT	23	4172	0.0	1.0	64
SHOT	24	4148	0.0	0.0	48
SHOT	25	4148	0.0	0.0	72
SHOT	26	4120	0.0	3.0	56
SHOT	27	4120	0.0	3.0	76
SHOT	28	4100	40.0	0.0	48
SHOT	29	4080	0.0	3.0	40
SHOT	30	4080	0.0	3.0	64
SHOT	31	4052	0.0	0.0	48
SHOT	32	4052	0.0	0.0	72
SHOT	33	4028	0.0	1.0	66
SHOT	34	4028	0.0	1.0	66
SHOT	35	4004	0.0	1.0	90
HOLE	1	27	12		
HOLE	2	40	29		
HOLE	3	30	20		
HOLE	4	23	21		
HOLE	5	19	19		
HOLE	6	15	15		
HOLE	7	4	7		
HOLE	8	1	4		
HOLE	9	40	31		
HOLE	10	40	32		
HOLE	11	23	21		
HOLE	12	40	26		
HOLE	13	40	25		
HOLE	14	40	27		
HOLE	15	30	21		
HOLE	16	25	18		
HOLE	17	20	15		
HOLE	18	15	11		
HOLE	19	10	9		
HOLE	20	5	7		
HOLE	21	27	19		
HOLE	22	10	9		
HOLE	23	12	14		
HOLE	24	35	23		
HOLE	25	10	8		
HOLE	26	27	21		
HOLE	27	27	22		
HOLE	28	20	11		
HOLE	29	23	17		
HOLE	30	23	18		
HOLE	31	31	19		
HOLE	32	31	16		
HOLE	33	27	17		
HOLE	34	2	8		
HOLE	35	30	18		
*END					

APPENDIX 14

Operational details, Gravity Survey

1. The survey was done over two periods, the first from August, 17 to September 10: the second from October, 21 to November, 18.
2. 1757 new stations were read.
3. BMR gravity meter, La Coste G132 was used for the first half of the survey, and BMR gravity meter, La Coste G20 was used for the last last of the survey.
4. The survey was tied to the following base stations:

Station	Value	Lat	Long	Elev,m
8090.0135 Alice Springs, Dept. of Transport.	9786394.0	24 48.4	133 53.9	543.00
6792.1214 Hermannsburg, Namajarra Monument	9786341.6	23 56.2	132 48.0	597.23
6792.9215 Papunya, Airport Windsock.	9786452.8	23 14.5	131 53.9	617.63
8090.1037 Henbury, AirportWindsock.	9787693.3	24 35.0	133 13.5	426.00

5. All stations were seismic shot-point or geophone locations and levels were optically obtained to third-order standard.
6. Gravity observers were H. Reith (Aug-Sept) and J. Williams (Oct-Nov), both from the Potential Fields Section, Division of Geophysics, BMR.

APPENDIX 15

Tape Logs, 1985 Seismic Survey

Traverse Tapes

Traverse	Field Tapes	Shot Points
Noise Analysis	85/010	N.A.
1	85/011 - 85/024, 85/034 - 85/080.	9000-3948, Expanding Spread E1, Expanding Spread E2.
2	85/025 - 85/030	2012-2968, Offset Shots.
3	85/031 - 85/033	3120-3268, Expanding Spread E3.
4	85/081 - 85/082	4292-4004.

Tape Details

Tape Number	Traverse Number	Files	Shotpoint Range	Description
85/010	Noise Anal.	1-3, 4-5, 6-18.		8'sec Ones. Daily Tests, Shots.
85/011	1A	19-21, 22-23, 24-47, 48-49, 50-55.	8436-8528 8532-8552	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/012	1A	56-58, 59-61, 62-82, 83-85, 86-92.	8566-8644 8652-8676	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/013	1A	93-95, 96-104.	8680-8706	8'sec Ones. Shots.
85/014	1A	118-120, 121-122, 123-152.	8708-8784	8'sec Ones. Daily Tests, Shots.
85/015	1A	153-155, 156-158, 159-174, 175-176, 177-191.	8786-8800 8804-8832	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.

85/016	1A	192-194, 195-220.	8834-8896	8'sec Ones. Shots.
85/017	1A	221-223, 224-225, 226-257.	8900-9000	8'sec Ones. Daily Tests, Shots.
85/018	1A	258-260, 261-262, 263-287, 288-289, 290-293.	8436-8346 8350-8340	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/019	1A	294-296, 297-327.	8338-8224	8'sec Ones. Shots.
85/020	1A	329-331, 332-333, 334-353, 354-355, 356-365.	8220-8148 8144-8110	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/021	1A	366-368, 369-373, 374-375, 376-400.	8108-8100 8098-8010	8'sec Ones. Shots, Daily Tests, Shots.
85/022	1A	401-403, 404-405, 406-435.	8007-7940	8'sec Ones. Daily Tests, Shots.
85/023	1A	436-438, 439-445, 446-447, 448-470.	7936-7912 7908-7844	8'sec Ones. Shots, Daily Tests, Shots.
85/024	1A	471-473, 474-480, 481-482, 483-503.	7840-7816 7814-7768	8'sec Ones. Shots, Daily Tests, Shots.
85/025	2	1-3, 4-6, 7-19, 20-21, 22-33.	2024-2096, 2600 2104-2188, 2636,2672	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/026	2	34-36, 37-38, 39-56.	2168-2284, 2708,2744,2780	8'sec Ones. Daily Tests, Shots.
85/027	2	57-59, 60-61, 62-80, 81-82, 83-90.	2264-2376, 2816,2852 2384-2432	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.

85/028	2	91-93, 94-124.	2436-2584	8'sec Ones. Shots.
85/029	2	125-127, 128-135, 136-137, 138-159.	2592-2640 2648-2768	8'sec Ones. Shots, Daily Tests, Shots.
85/030	2	160-162, 163-170, 171-172, 173-189.	2776-2832 2840-2968	8'sec Ones. Shots, Daily Tests, Shots.
85/031	3	1-3, 4-5, 6-46.	3120-3174, 3415, 3392, 3369, 3346, 3323, 3300, 3277, 3254.	8'sec Ones. Daily Tests, Shots.
85/032	3	47-49, 50-54, 55-56, 57-79.	3176-3188, 3231 3192-3234, 3185	8'sec Ones. Shots, Daily Tests, Shots.
85/033	3	80-82, 83-99, 100-101, 102-105.	3236-3268, 3162, 3139, 3116, 3093 3070, 3047, 3024, 3001	8'sec Ones. Shots, Daily Tests, Shots.
85/034	1A	504-506, 507-509, 510-511, 512-527.	7491, 7514, 7537 7764-7720, 7468, 7445, 7560, 7583	8'sec Ones. Shots, Daily Tests, Shots,
85/035	1A	528-530, 531-532, 533-559.	7716-7624, 7822, 7818, 7606, 7629	8'sec Ones. Daily Tests, Shots.
85/036	1A	560-562, 563-564, 565-583.	7620-7576, 7652, 7675, 7698, 7721, 7744, 7767	8'sec Ones. Daily Tests, Shots.
85/037	1A	584-586, 587-597, 598-599, 600-613.	7566-7528 7524-7498,	8'sec Ones. Shots, Daily Tests, Shots.

85/038	1A	614-616, 617-639, 640-641, 642-645.	7496-7454, 7801,7836 7859-7448	8'sec Ones. Shots, Daily Tests, Shots.
85/039	1A	646-648, 649-658.	7446-7408	8'sec Ones. Shots.
	1B	659-677.	7407-7336	Shots.
85/040	1B	678-680, 681-682, 683-687, 688-689, 690-701, 702-703, 704-715.	7331-7312 7306-7264 7260-7216	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots, Daily Tests, Shots.
85/041	1B	716-718, 719-724, 725-726, 727-749.	7212-7192 7188-7097	8'sec Ones. Shots, Daily Tests, Shots.
85/042	1B	750-752, 753-756, 757-775, 776-777, 778-782.	7088-7026 7024-7008	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/043	1B	783-785, 786-805, 806-807, 808-809, 810-811.	7004-6932 CSTL C & B	8'sec Ones. Shots, Daily Tests, Shots, Daily Tests.
85/044	1B	812-814, 815-838.	6928-6836	8'sec Ones. Shots.
85/045	1B	839-841, 842-847, 848-849, 850-866.	6832-6812 6804-6784, 6527, CSTL A	8'sec Ones. Shots, Daily Tests, Shots.
85/046	1B	867-869, 870-872, 873-874, 875-894.	6780-6772 6768-6700, 6549,6618,6595	8'sec Ones. Shots, Daily Tests, Shots.
85/047	1B	895-897, 898 899-900, 901-920.	CSTL E 6696-6608, 6572,6641,6687	8'sec Ones. Shots, Daily Tests, Shots.
85/048	1B	921-923, 924-929,	6628-6608	8'sec Ones. Shots,

		930-931, 932-947.	6604-6560, 6710, 6733, 6756, CSTL C	Daily Tests, Shots.
85/049	1B	948-950, 951-961,	6556-6525, 6779, 6801	8'sec Ones. Shots,
	1C	962-963, 964-976.	6524-6480	Daily Tests, Shots.
85/050	1C	977-979, 980-997, 998-999, 001-006.	6476-6408 6404-6384	8'sec Ones, Shots, Daily Tests, Shots.
85/051	1C	7-9, 10-34.	6380-6284	8'sec Ones. Shots.
85/052	1C	35-37, 38-39, 40-64.	6280-6183	8'sec Ones. Daily Tests, Shots.
85/053	1C	65-67, 68-69,	6180	8'sec Ones. Shots,
	1D	70-73, 74-75, 76-81, 82-90.	6174, 6173 6172-6140	Daily Tests, Shots, Daily Tests, Shots.
85/054	Test			8'sec Ones.
85/055	Test			8'sec Ones.
85/056	Test			8'sec Ones.
85/057	1D	197-199 200-201 202-212, 213-214, 215-226.	6136-6096 6092-6048	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/058	1D	227-229, 230-245, 246-247, 248-254.	6044-6008 6004-5980	8'sec Ones. Shots, Daily Tests, Shots.
85/059	1D	255-257, 258-262, 263-264, 265-283.	5976-5960 5956-5894	8'sec Ones. Shots, Daily Tests, Shots.
85/060	1D	284-286, 287-288, 289-313.	5892-5824	8'sec Ones. Daily Tests, Shots.
85/061	1D	314-316, 317-321, 322, 323-330,	5820-5808 5806-5792	8'sec Ones. Shots, Daily Tests, Shots,

		331-332, 333-343.	5790-5780	Daily Tests, Shots.
85/062	1D	344-346, 347-368, 369-370, 371-373.	5780-5676 5668-5664	8'sec Ones. Shots, Daily Tests, Shots.
85/063	1D	374-376, 377-392, 393-394, 395-403.	5660-5600 5600-5569	8'sec Ones. Shots, Daily Tests, Shots.
85/064	1D	404-406, 407-431.	5569-5464	8'sec Ones. Shots.
85/065	1D	432-434, 435-436, 437-438, 439-448, 449-450, 451-459. 460-462.	5461-5455 5452-5414 5412-5380 5379-5372	8'sec Ones. Shots, Daily Tests, Shots, Daily Tests, Shots. Shots.
85/066	1E	463-465, 466-490,	5368-5273	8'sec Ones. Shots.
85/067	1E	491-493, 494-496, 497-498, 499-520.	5269-5260 5256-5172	8'sec Ones. Shots, Daily Tests, Shots.
85/068	1E	521-523, 524-548.	5168-5072	8'sec Ones. Shots.
85/069	1E	549-551, 552-553, 554-577.	5068-4976	8'sec Ones. Daily Tests, Shots.
85/070	1E	578-581, 582-583, 584-595, 596-597, 598-608.	4968-4924 4920-4880	8'sec Ones. Daily Tests, Shots, Daily Tests, Shots.
85/071	1E	609-611, 612-630, 631-632, 633-638.	4876-4804 4800-4780	8'sec Ones. Shots, Daily Tests, Shots.
85/072	1E	639-641, 642-665.	4780-4684	8'sec Ones. Shots.
85/073	1E	666-668, 669-674, 675-676, 677-694.	4680-4660 4656-4588	8'sec Ones. Shots, Daily Tests, Shots.
85/074	1E	695-697, 698-721.	4584-4492	8'sec Ones. Shots.

85/075	1E	722-724, 725-726, 727-750.	4488-4396	8'sec Ones. Daily Tests, Shots.
85/076	1E	751-753, 754-770, 771-772, 773-780.	4392-4328 4320-4292	8'sec Ones. Shots, Daily Tests, Shots.
85/077	1E	781-783, 784-808.	4288-4192	8'sec Ones. Shots.
85/078	1E	809-811, 812-814, 815-816, 817-837.	4188-4180 4176-4096	8'sec Ones. Shots, Daily Tests, Shots.
85/079	1E	838-840, 841-861, 862-863.	4092-4012	8'sec Ones. Shots, Daily Tests.
85/080	1E	864-866, 867-883.	4008-3948	8'sec Ones. Shots.
85/081	4	884-886, 887-890, 891-913.	4292-4172	8'sec Ones. Daily Tests, Shots.
85/082	4	914-916, 917-918, 919-920, 921-930.	4148 4120-4004	8'sec Ones. Shots, Daily Tests, Shots.