PR- Secus Mtn. 80(1)A

"Secus Mountain Coal Exploration"
1980

Shell Canada Resources Ltd.

C.L. # 4201-4219, 4743-4748

by: D.E. Bell

March 31, 1981

631

PR-Secus Mtn. 80(1)A

OPEN FILE

SECUS MOUNTAIN

COAL EXPLORATION

-1980-

Coal Licences 4201-4219 Inclusive and 4743-4748 Inclusive (26 total)

Peace River Land District, Northeast British Columbia

National Topographic Series 93 I/8 E & W (Narraway River),
93 I/7 E (Wapiti Pass)

Latitude and Longitude: 54 degrees, 22 minutes north
120 degrees, 23 minutes west

Owner: Shell Canada Resources Limited

Operator: Crows Nest Resources Limited

Consultant and Author: Dennis E. Bell, P. Geol. (Alberta)
Max Air Exploration Limited
P.O. Box 878
Jasper, Alberta, TOE 1EO

Field Work: June 9th through August 29, 1980

Submission Date: March 31, 1981

CNRL Coal Land Dispersion Maps HC-18 and HC-18A

PROFESSIONAL VERIFICATION OF REPORT

Entitled: Onion Lake Coal Exploration, 1980
Peace River Land District
Northeast British Columbia
B.C. Coal Licences 4220-4223 Inclusive and 4749 (5 total)

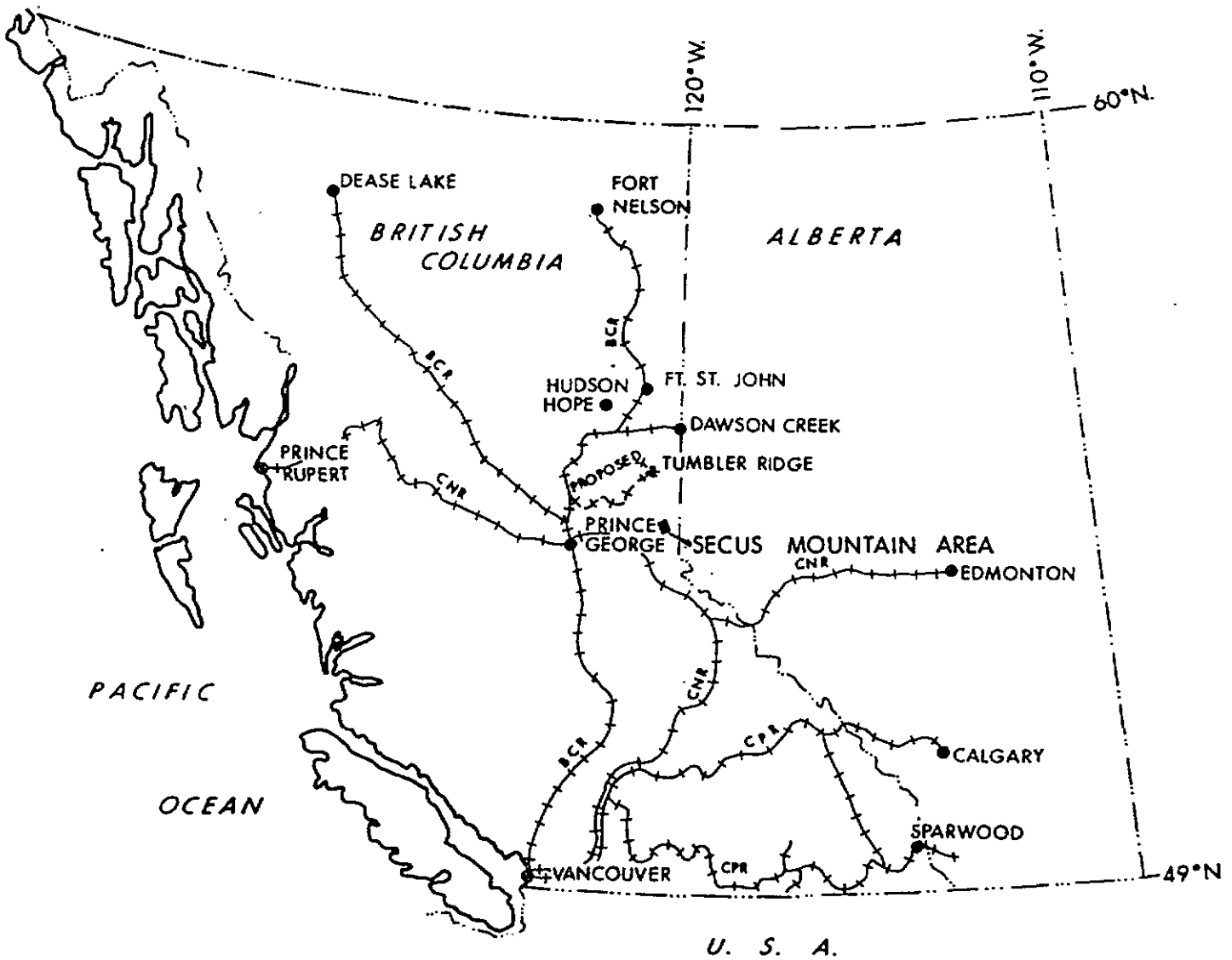
Mr. Dennis E. Bell carried out the 1980 geological field program on the Onion Lake, northeast British Columbia coal licences held by Shell Canada Resources Limited and operated by Crows Nest Resources Limited.

Dennis E. Bell, B.Sc., graduated in Geology from Dalhousie University in 1965. Since 1968 he has specialized in basic field mapping, structural interpretation, and exploration supervision in the coking coal belt of British Columbia and Alberta. He has worked on projects similar to this property for this Company and for such major coal companies as Manalta Coal Ltd., Luscar Ltd., Fording Coal Ltd., and Petro-Canada. Mr. Bell is registered as a Professional Geologist in the Association of Professional Engineers, Geologists, and Geophysicists of Alberta.

I consider the aforementioned geologist to be well qualified to have undertaken the responsibilities he was assigned for this project. I am satisfied that the attached report dated March 31, 1981, has been competently prepared and justly represents the information obtained from this project.

J. J. Crabb, P. Eng.

March 31, 1981



Crows Nest Resources Limited

EXPLORATION

SECUS MOUNTAIN

N.E B C

LOCATION MAP

FIGURE 1

AUTHOR A WHITE	SCALE	ENCLOSURE No
DATE 81 03 05	REVISED	DRAWING No AA-539
To Accompany		

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1.0 SUMMARY

During the field season of 1980, Crows Nest Resources Limited conducted a surface geological mapping program on a 40 km coal-bearing stretch in northeastern British Columbia. The area is called Secus (see'-kuss) Mountain after the high (2278 m) inner foothill of the same name. Cost was approximately $72,000.

Two mapping pairs, led by Dennis Bell, consultant, and Alan White, geologist, Crows Nest Resources, spent 32 days in the area, mapping on a base of 1:5,000. As the region has not been mapped by the Geological Survey of Canada on a 1:50,000 scale, the particular objective was to define and map the two known coal-containing formations - the Gething and the Commotion - as they wound sinuously along and up and down four of the inner foothills (of which Secus Mountain is one).

The Shell-Crows Nest licences are interlocked with older McIntyre Mines and Canadian Superior Exploration licences operated by Petro-Canada.

1.0 (continued)

This area is still wilderness, and the work was helicopter-supported. There are no usable trails into the region. The crew was based 35 km north of the north end of the area, staying as guests in Petro-Canada's Kinuseo Creek-Duke Mountain (Monkman) coal camp. No drilling or other equipment work was performed.

Nineteen contiguous 1:5,000 geologic map sheets have been prepared. A grid based on stereographic analysis of the trend of the formations has been established on these sheets. The baseline is 30 km long, and 31 evenly-spaced structural cross-sections have been prepared. These maps and sections form the foundation of this report.

With 1980's basic mapping program completed, Crows Nest is presently (March, 1981) planning its first two drill holes in the area. The only other drilling consists of six past diamond drill holes drilled by Petro-Canada. The results of this drilling were unavailable during the mapping, but it was known by the author from his past experience in the area that most of them did not penetrate the coal section of most interest. A continuation of 1980's detailed mapping is planned by a further two mapping pairs in 1981.

2.0 INTRODUCTION

2.1 Coal Land Tenure

25 licences (4201-4219 inclusive and 4743-4748 inclusive) composed the Secus Mountain 1980 project area. The area is named after an inner foothill of the same name, part of which is within the licences.

Based on the results of the 1980 work, the number of licences retained has been trimmed to 12:

Group 296	Licence numbers 4204, 4205, 4206, 4208, 4209
Group 297	Licence numbers 4218, 4219, 4743, 4744, 4745
Group 298	Licence numbers 4211, 4212

The following table entitled"B.C. Coal Licences Tenure Standing, March 19, 1981" contains details of tenure on the 2,944 hectares.

CROWS NEST RESOURCES LIMITED
EXPLORATION

B. C. COAL LICENCES
TENURE STANDING

BLOCK: SECUS MTN. PROJECT: YEAR: 1980
GROUP: #296, #297, #298 SECUS MTN. DATE: MARCH 19, 1981

PROJECT NAME	PROJECT LICS. TOTAL NO.	PROJECT AREA TOTAL AC/HA	BLOCK NAME	BLOCK LIC. TOTAL NO.	BLOCK AREA TOTAL AC/HA	GROUP NO.	GROUP LICS. TOTAL NO.	GROUP AREA TOTAL AC/HA	GROUP YEAR	LICENCE NO.	LICENCE LEGAL DESCRIPTION	LICENCE AREA TOTAL AC/HA	ACQ/ADM FEES YEAR	ACQ/ADM FEES $	RENTALS ANNUAL $	RENTALS TOTAL TO NEXT ANN $10^3	REQUIREMENT WORK EXPIRED $10^3	REQUIREMENT WORK CURRENT YEAR LIC. TOTAL	REQUIREMENT WORK CURRENT YEAR $	REQUIREMENT WORK PRE-FULFILMENT YEAR	REQUIREMENT WORK PRE-FULFILMENT $	REQUIREMENT WORK ANNIVERSARY DATE	BUDGET CURRENT YEAR AFE	BUDGET CURRENT YEAR $10^3	EXP TOTAL $10^3	POT. SHELL CLASS	COMMITMENTS, J. V. OTHER THAN B.C. GOV'T DESCRIPTION	REMARKS
SECUS MTN.	12	2944	SECUS MTN.	12	2944								78-79	250	14720	67	101	283	56,802	1%	56,890	DEC. 31			226	Y		
											NTS 93-I-8 BL.C																	
						296	5	1359	1	4204	63, 64, 73, 74 UNITS	302	78	50	6795	20	27,181	3	16,988	1%	27,679	DEC. 31				Y		WORK SUBMITTED IN 1980 $35,233
										4205	65, 66, 75, 76	302																
										4206	67, 68, 77, 78	302																
										4208	88, 89	151																
										4209	89, 90, 99, 100	302																
											NTS 93-I-8 BL.E																	
						297	5	1131	1	4218	29, 30, 39, 40	302	78	10	1510	4.5	6,040	3	3,775	1%	6,896	DEC. 31				Y		WORK SUBMITTED IN 1980 $27,457
										4219	49, 50	151	78	10	755	2.1	3,021	3	1,888	1%	3,447	DEC. 31						
										4743	NTS 93-I-7BL.J 41, 42, 51, 52	301	79	10	1505	3	2,258	2	3,763	1%	5,101	DEC. 31						
										4744	61, 62, 71, 72	301	79	10	1505	3	2,258	2	3,763	1%	5,101	DEC. 31						
										4745	82	76	79	10	380	0.7	570	2	950	1%	1,288	DEC. 31						
											NTS 93-I-8 BL.E																	
						298	2	454	1	4211	41, 42, 52	227	78	20	2270	6.8	9,080	3	5,675	1	7,383	DEC. 31				Y		WORK SUBMITTED IN 1980 $11,102
										4212	62, 71, 72	227																
																									71,992			1980
																									73,095			1978-1979

GENERAL REMARKS: FILL NECESSARY LINES AND COLUMNS ONLY; COAL DEVELOPMENT POTENTIAL IS "Y" (PRIME) UNLESS OTHERWISE STATED. LICENCES HELD BY SHELL CANADA RESOURCES LTD.- CNRL IS THE OPERATOR.

TABLE NO. 1

C0013A

2.2 Location, Geography, and Physiography

Secus Mountain is a long, rectangular area measuring approximately 31 km by 5 km and oriented southeast-northwest.

Some location descritions are:

1) Situated along the joining line of the Inner Foothills belt with the Front-Range Rockies belt between the Narraway River on the south and Red Deer Creek on the north in northeastern British Columbia.
2) Centered about latitude 54 degrees, 22 minutes north, longitude 120 degrees, 23 minutes west.
3) 132 km southwest from Grande Prairie, Alberta.
4) 150 km east-northeast from Prince George, British Columbia.
5) 90 km southeast from the proposed townsite of Tumbler Ridge.
6) From the south end of the area on the Narraway River it is 25 km along the coal belt to the Alberta border, and a further 55 km to McIntyre Mines' Smoky River mine.

Relief varies from 1190 m (3,907 ft.) on the Narraway at the southeast corner of the area, and rises to 2249 m (7378 ft.) at the peak of Mt. Belcourt.

2.2 (continued)

Physiographically, the area can be divided into four blocks, based on the drainages separating three relatively enormous inner foothills (from the north: Dumb Goat Peak, Mount Belcourt, and Secus Mountain) and one medium-size foothill (the last on the south), Mount Nekik. The coal formations underlie, generally, the west slopes of these foothills, and also some of the lower northeast-facing slopes of the opposing front-range Rockies (of which Meosin and Muinok Mountains are two).

In addition to often soaring, spectacular scenery, there is a variety of forest cover, from the low alluvial flats of the Narraway to the barren alpine zone on the upper slopes of each of the foothills (except for Nekik). Topography is typically Rocky Mountain-rugged.

2.3 ACCESS

The two pairs of the mapping crew stayed as guests in the Petro-Canada Monkman Pass coal camp, 35 km north of the north end of the area. Round trip time by Jet Ranger to Mt. Nekik at the south end of the area is 40 minutes.

Two older seismic lines cross the length of the property, one in the Nekik block, and the other on the south slope of Mt. Belcourt in the block of the same name.

At present there is no road access in the area within several miles of any part of the property. The area is perhaps Crows Nest Resources' most-wilderness project area. Flying weather is frequently marginal at best.

The Petro-Canada area camp is 158 km southwest up the Redwillow River valley from Grande Prairie, Alberta, the natural service center. The turn-off is at Beaverlodge, Alberta, 37 km west from Grande Prairie on the highway to Dawson Creek, B.C. The drive is 2-1/2 hours in dry weather, the last 6 km on 40 kmh single lane gravel road.

2.4 Environment

Secus Mountain has the harsh climate characteristic of the western Rockies of Northeastern British Columbia. Snow can be expected on the ground to late May. Mapping in 1980 stopped on August 24th, when the winter's snowline descended to 1450 meters. High winds, sometimes preventing landings, and -4 degrees Celsius were a common morning condition. There were only two days during the summer the crew was not wearing jackets and gloves.

The year-round mining climate and situation would be similar to that presently experienced at McIntyre Mines' Smoky River operation to the southeast, and the proposed Quintette-Sukunka mining areas to the northwest.

3.0 WORK DONE

3.1 Summary of Previous Work

It is notable that the Geological Survey of Canada has not mapped that portion of northeastern British Columbia containing Secus Mountain on a 1:50,000 scale. More often than not on coal properties elsewhere such a base exists. Therefore, exploration had to commence with preliminary mapping to identify mappable units and to define the approximate positions of prospective coal seams in the stratigraphic succession.

The 1979 1:50,000 regional geologic map (HJ-21C, see enclosures) has been in the Crows Nest file. This report's 1:50,000 index and compilation map (enclosures) has the same information, refined as to unit placement and detail.

Pacific Petroleum, the predecessor of Petro-Canada, contract mapped the Shell-CNRL licences as well along with theirs in 1978. It theoretically is a 1:5,000 scale but with little concept and ground coverage. CNRL's 1979 Geological Report by Georgia Hoffman is a packaging of this work for submission with little further comments.

3.1 (continued)

Petro-Canada has also done six diamond drill holes on its portion of the Secus Mountain area, but five of them were positioned and drilled such that they did not penetrate the most prospective section. The sixth hole did indeed penetrate (and find coal in) this section.

Downhole geophysical logs of these holes became valuable to Crows Nest Resources after the mapping period. This new information, however, fits well into CNRL's interpretation.

3.2 Scope and Objective of 1980 Exploration

With 1:50,000 and 1:25,000 reconnaissance mapping in hand, the 1980 Secus Mountain geologic mapping program was intended to provide detail mapping on a 1:5,000 scale. This would allow the construction of detail 1:5,000 cross-sections, which could then be used for planning of two 1981 diamond drill holes.

In addition, such mapping was to be oriented towards structural setting, as there were known structural questions within the area. A further problem to be resolved was the question of how to divide the total rock section available into mappable units; there existed a 10 km stretch of the property in which no previous workers, including the Geological Survey of Canada, had succeeded in recognizing or mapping the units as they occur elsewhere in the area. This was the problem that led Petro-Canada to miss the most prospective part of the section in five of its six past holes.

3.3 Work Done in 1980

The structural problems have been refined in detail, and the unit-recognition problems have been overcome. Two drill sites for 1981 have been selected, both of which will test the part of the section that surface mapping shows contains the thickest coal and which Petro-Canada did penetrate in one hole. At the end of 1981 Crows Nest will thus have information from a total of eight holes in the area, three of which (one Petro-Canada and two Crows Nest) will have checked the best-known horizon for coal, and five of which (all Petro-Canada) provide good information on almost all other parts of the total section.

A successful and on-schedule completion of the 1980 program is due to average weather conditions and a good effort from the support staff.

3.4 Costs of Work Done in 1980

Detailed costs of the 1980 Secus Mountain geologic program are contained in the Application to Extend Term of Licence on the following six pages. The figures have been apportioned to three groupings of the licences, reflecting those parts of the total area which Crows Nest has decided to keep for 1981, based on the mapping in this report.

Total cost of the 1980 program is calculated to be $71,992.

RENT: $5,655

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

APPLICATION TO EXTEND TERM OF LICENCE

I, BOLTON AGNEW (Name) agent for SHELL CANADA RESOURCES LTD. (Name)

P.O. Box 100 (Address) Calgary, Alberta T2P 2H5 (Address)

187621

Valid FMC No. 187621

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). 4218, 4219, 4743, 4744, 4745, Five licences in the Peace River Land District - 1131 hectares

for a further period of one year.

2. Property name Secus Mountain, N.E. B.C.

3. I am allowing the following Coal Licence(s) No(s). to forfeit 4213, 4214, 4216, 4217, 4747, 4748

4. I have performed, or caused to be performed, during the period June 1 to December 31, 19 80, work to the value of at least $ 27,657

on the location of coal licence(s) as follows:

CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
Geological mapping	4218,4219,4743,4744,4745	$ 23,564
Surveys: Geophysical	—	—
Geochemical	—	—
Other	—	—
Road construction	—	—
Surface work	—	—
Underground work	—	—
Drilling	—	—
Logging, sampling, and testing	—	—
Reclamation	—	—
Other work (specify)	—	—
Off-property costs	to date	4,093

5. I wish to apply $ 27,657 of this value of work on Coal Licence(s) No(s). 4218, 4219, 4743, 4744, 4745; application to group these licences is filed concurrently.

N/A 6. I wish to pay cash in lieu of work in the amount of $ — on Coal Licence(s) No(s).

7. The work performed on the location(s) is detailed in the attached report entitled Secus Mountain Coal Property N.E. B.C. - Geological Report 1980 will be submitted in ninety days.

1980 - 12 - 22 (Date)

(Signature)

LAND SUPERVISOR (Position)

(FORMS AND REPORT TO BE SUBMITTED IN DUPLICATE)

CATEGORY OF WORK

GEOLOGICAL MAPPING Yes ☒ No ☐

		Area (Hectares)	Scale	Duration
Reconnaissance				
Detail:	Surface	2500	1 : 500	38 man-days
	Underground			
*Other (specify)				
			Total Cost	$ 23,564

GEOPHYSICAL/GEOCHEMICAL SURVEYS Yes ☐ No ☒

Method
Grid
Topographic
*Other (specify)

Total Cost $ —

ROAD CONSTRUCTION Yes ☐ No ☒

Length Width
On Licence(s) No(s).
Access to

Total Cost $ —

SURFACE WORK Yes ☐ No ☒

	Length	Width	Depth	Cost
Trenching				
Seam Tracing				
Crosscutting				
*Other (specify)				

Total Cost $ —

UNDERGROUND WORK Yes ☐ No ☒

	No. of Adits	Maximum Length	No. of Holes	Total Metres	Cost
Test Adits					
*Other workings					

Total Cost $ —

DRILLING Yes ☐ No ☒

		Hole Size	No. of Holes	Total Metres	Cost
Core:	Diamond				
	Wireline				
Rotary:	Conventional				
	Reverse circulation				
*Other (specify)					

Contractor
Where is the core stored?

Total Cost $ —

LOGGING, SAMPLING AND TESTING Yes ☐ No ☒

Lithology:	Drill samples	☐	Core samples	☐	Bulk samples	☐
Logs:	Gamma-neutron	☐	Density	☐		
*Other (specify)						
Testing:	Proximity analysis	☐	FSI	☐	Washability	☐
	Carbonization	☐	Petrographic	☐	Plasticity	☐
*Other (specify)						

OTHER WORK (specify details) Cost

Total Cost	$ —
On-property costs	23,564
Off-property costs	4,093
Total Expenditures	$ 27,657

1980 - 12 - 22
(Date)

(Signature)

MANAGER - ACCOUNTING, CNRL
(Position)

*A full explanation of other work is to be included.

RENT: $6,795.00

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

APPLICATION TO EXTEND TERM OF LICENCE

I, BOLTON AGNEW (Name) agent for SHELL CANADA RESOURCES LIMITED (Name)

P.O. Box 100 (Address) Calgary, Alberta T2P 2H5 (Address)

Valid FMC No. 187621

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). 4204, 4205, 4206, 4208, 4209, 5 Licences in the Peace River Land District - 1359 hectares

for a further period of one year.

2. Property name Secus Mountain, N.E. B.C.

3. I am allowing the following Coal Licence(s) No(s). to forfeit 4201, 4202, 4203, 4207, 4210, 4215, 4746,

4. I have performed, or caused to be performed, during the period January 1, 1980 to December 31, 19 980, work to the value of at least $ 33,233 on the location of coal licence(s) as follows:

CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
Geological mapping	4204,4205,4206,4208,4209	$ 28,314
Surveys: Geophysical	—	—
Geochemical	—	—
Other	—	—
Road construction	—	—
Surface work	—	—
Underground work	—	—
Drilling	—	—
Logging, sampling, and testing	—	—
Reclamation	—	—
Other work (specify)	—	—
Off-property costs	To date	4,919

5. I wish to apply $ 33,233 of this value of work on Coal Licence(s) No(s). 4204, 4205, 4206, 4208, 4209; application to group these licences is filed concurrently.

n/A 6. I wish to pay cash in lieu of work in the amount of $ — on Coal Licence(s) No(s).

7. The work performed on the location(s) is detailed in the attached report entitled Secus Mtn. Coal Property N.E. B.C. - Geological Report 1980 will be submitted in ninety days.

1980 - 12 - 22 (Date)

(Signature)

LAND SUPERVISOR (Position)

(FORMS AND REPORT TO BE SUBMITTED IN DUPLICATE)

CATEGORY OF WORK

GEOLOGICAL MAPPING Yes ☒ No ☐

		Area (Hectares)	Scale	Duration
Reconnaissance				
Detail:	Surface	2500	1 : 5,000	44 man-days
	Underground			
*Other (specify)				
			Total Cost	$ 28,314

GEOPHYSICAL/GEOCHEMICAL SURVEYS Yes ☐ No ☒

Method
Grid
Topographic
*Other (specify)

Total Cost $ —

ROAD CONSTRUCTION Yes ☐ No ☒

Length ..... Width .....
On Licence(s) No(s).
Access to

Total Cost $ —

SURFACE WORK Yes ☐ No ☒

	Length	Width	Depth	Cost
Trenching				
Seam Tracing				
Crosscutting				
*Other (specify)				

Total Cost $ —

UNDERGROUND WORK Yes ☐ No ☒

	No. of Adits	Maximum Length	No. of Holes	Total Metres	Cost
Test Adits					
*Other workings					

Total Cost $ —

DRILLING Yes ☐ No ☒

		Hole Size	No. of Holes	Total Metres	Cost
Core:	Diamond				
	Wireline				
Rotary:	Conventional				
	Reverse circulation				
*Other (specify)					

Contractor
Where is the core stored?

Total Cost $ —

LOGGING, SAMPLING AND TESTING Yes ☐ No ☒

Lithology:	Drill samples	☐	Core samples	☐	Bulk samples	☐
Logs:	Gamma-neutron	☐	Density	☐		
*Other (specify)						
Testing:	Proximity analysis	☐	FSI	☐	Washability	☐
	Carbonization	☐	Petrographic	☐	Plasticity	☐
*Other (specify)						

OTHER WORK (specify details) —

Cost

Total Cost $ —

To Date On-property costs	28,314
Off-property costs	4,919
Total Expenditures	$ 33,233

1980 - 12 - 22
(Date)

M.W.S. Kamboli
(Signature)

MANAGER - ACCOUNTING, CNRL
(Position)

*A full explanation of other work is to be included.

RENT: $2,270

Province of British Columbia
Ministry of Energy, Mines and Petroleum Resources

APPLICATION TO EXTEND TERM OF LICENCE

I, Bolton Agnew (Name) agent for Shell Canada Resources Limited (Name)

P.O. Box 100 (Address) Calgary, Alberta T2P 2H5 (Address)

Valid FMC No. 187621

hereby apply to the Minister to extend the term of Coal Licence(s) No(s). 4211 & 4212

Two licences in the Peace River Land District - 454 hectares

for a further period of one year.

2. Property name Secus Mountain, N.E. B.C.

3. I am allowing the following Coal Licence(s) No(s). to forfeit N/A

4. I have performed, or caused to be performed, during the period January 1, 1980 to December 31, 1980, work to the value of at least $ 11,102 on the location of coal licence(s) as follows:

CATEGORY OF WORK	Licence(s) No(s).	Apportioned Cost
Geological mapping	4211, 4212	$ 9,459
Surveys: Geophysical	—	—
Geochemical	—	—
Other	—	—
Road construction	—	—
Surface work	—	—
Underground work	—	—
Drilling	—	—
Logging, sampling, and testing	—	—
Reclamation	—	—
Other work (specify)	—	—
Off-property costs	to date	1,643

5. I wish to apply $ 11,102 of this value of work on Coal Licence(s) No(s). 4211 & 4212

Application to group these licences is filed concurrently.

N/A 6. I wish to pay cash in lieu of work in the amount of $ — on Coal Licence(s) No(s).

7. The work performed on the location(s) is detailed in the attached report entitled

Secus Mtn. Coal Property N.E. B.C. - Geological Report 1980

will be submitted in ninety days.

1980 - 12 - 22 (Date)

(Signature)

LAND SUPERVISOR (Position)

(FORMS AND REPORT TO BE SUBMITTED IN DUPLICATE)

CATEGORY OF WORK

GEOLOGICAL MAPPING Yes ☒ No ☐

		Area (Hectares)	Scale	Duration
Reconnaissance				
Detail:	Surface	1,500	1 : 5,000	14 man-days
	Underground			
*Other (specify)				
			Total Cost	$ 9,459

GEOPHYSICAL/GEOCHEMICAL SURVEYS Yes ☐ No ☒

Method
Grid
Topographic
*Other (specify)

Total Cost $ —

ROAD CONSTRUCTION Yes ☐ No ☒

Length Width
On Licence(s) No(s).
Access to

Total Cost $ —

SURFACE WORK Yes ☐ No ☒

	Length	Width	Depth	Cost
Trenching				
Seam Tracing				
Crosscutting				
*Other (specify)				
			Total Cost	$ —

UNDERGROUND WORK Yes ☐ No ☒

	No. of Adits	Maximum Length	No. of Holes	Total Metres	Cost
Test Adits					
*Other workings					
				Total Cost	$ —

DRILLING Yes ☐ No ☐

		Hole Size	No. of Holes	Total Metres	Cost
Core:	Diamond				
	Wireline				
Rotary:	Conventional				
	Reverse circulation				
*Other (specify)					
Contractor					
Where is the core stored?					
				Total Cost	$

LOGGING, SAMPLING AND TESTING Yes ☐ No ☐

Lithology:	Drill samples	☐	Core samples	☐	Bulk samples	☐
Logs:	Gamma-neutron	☐	Density	☐		
*Other (specify)						
Testing:	Proximity analysis	☐	FSI	☐	Washability	☐
	Carbonization	☐	Petrographic	☐	Plasticity	☐
*Other (specify)						

OTHER WORK (specify details) Cost

Total Cost	$
To date On-property costs	9,459
Off-property costs	1,643
Total Expenditures	$ 11,102

1980 - 12 - 22
(Date)

(Signature)

MANAGER - ACCOUNTING, CNRL
(Position)

*A full explanation of other work is to be included.

4.0 GEOLOGY

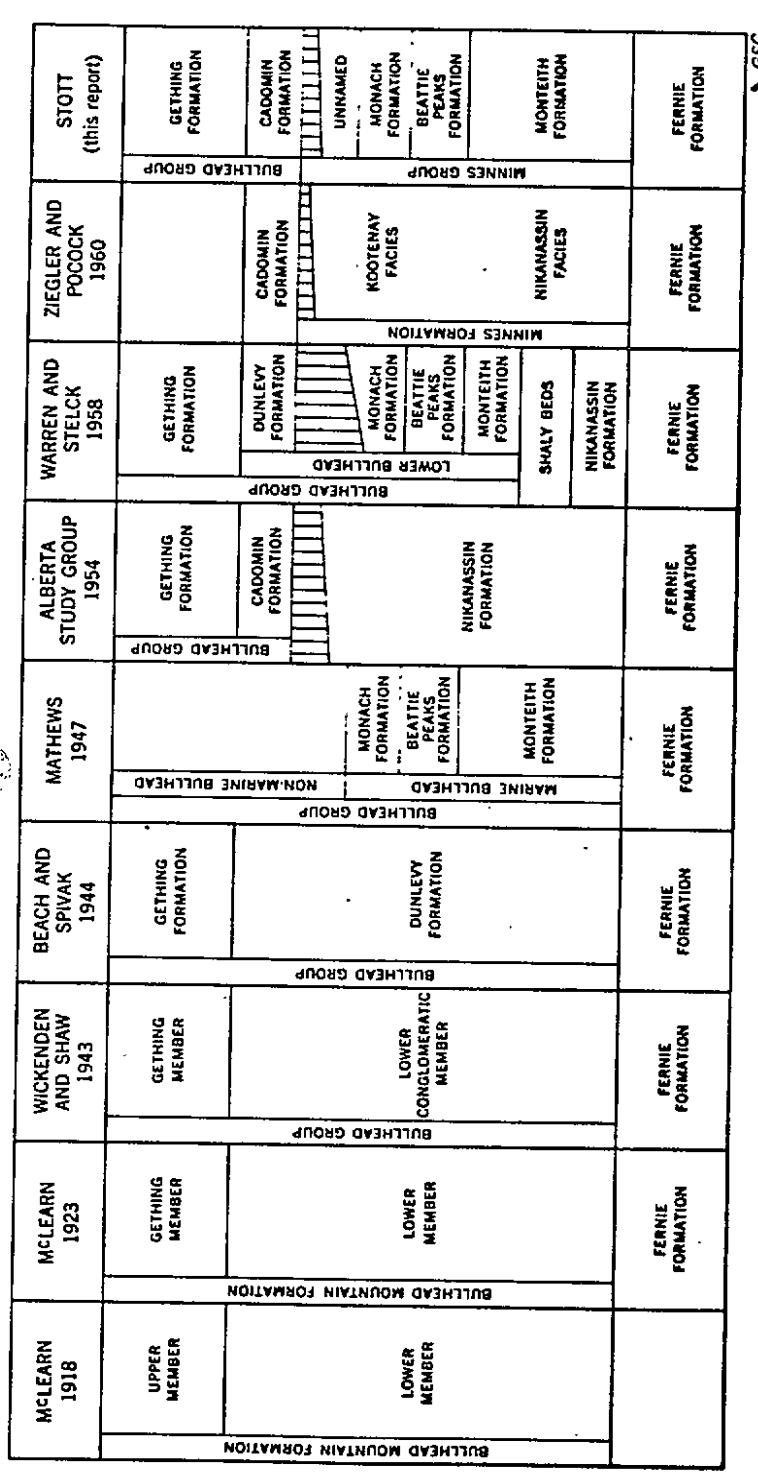
4.1 Regional Geology

A problem encountered in planning exploration on the Secus Mountain, Onion Lake, and Five Cabin Creek properties was that there existed no Geological Survey of Canada detail 1:50,000 geologic maps covering that portion of the coking coal belt in northeastern British Columbia. The G.S.C. has done detail work to the northwest up the belt, as have other coal exploration companies, but distance and facies changes have confused identification of mappable units in this region.

The generally accepted nomenclature is that of the Survey's Stott (Bulletin 152, 1968) dividing the section of interest into the Bullhead and Minnes Groups, with further subidivisions into formations and members. This is as reproduced on the two following pages in formational diagrams of both groups.

The Petro-Canada staff has fit its intensive Duke Mountain drilling into this nomenclature and also used it for its six drill holes of previous years in the Secus Mountain area.

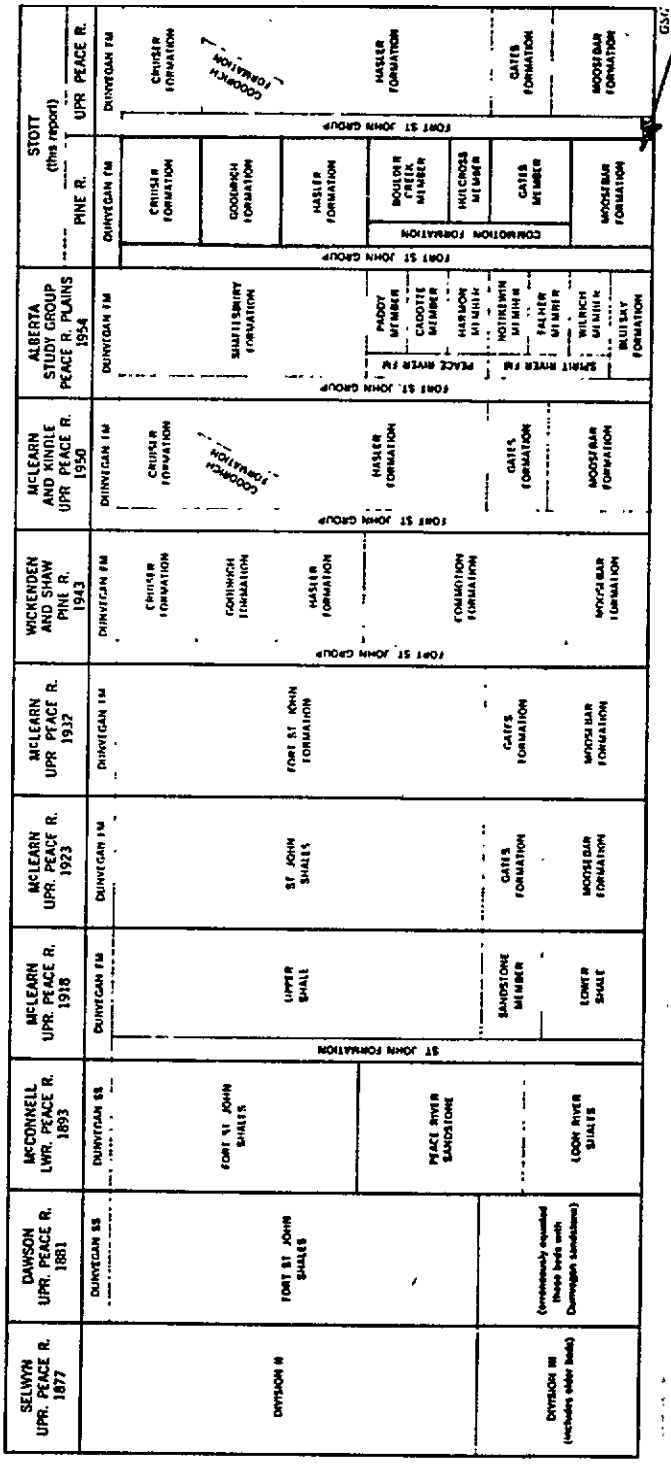
FORMATIONAL DIAGRAM
LOWER CRETACEOUS SERIES
BULLHEAD & MINNES GROUP



This nomenclature (Stott, Geological Survey of Canada Bulletin 152) is used in this report and on all maps and sections.

FIG. 2

FORMATIONAL DIAGRAM
UPPER/LOWER CRETACEOUS SERIES
FORT ST. JOHN GROUP



This Pine River nomenclature (Stott, Geological Survey of Canada Bulletin 152) is used in this report and on all maps and sections.

FIG. 3

Nomenclature of Fort St. John Group

4.1 (continued)

The 1980 Crows Nest mapping crew decided to continue this nomenclature, to fit in with the work of G.S.C. and Petro-Canada as Crows Nest and Petro-Canada may continued to exchange some parts of their information in the future. The Secus Mountain area in particular is one logical mining area, but it is divided into intertwined fashion between the two companies.

The 1980 mapping crew divided the total section yet further into units mappable through all three Crows Nest properties and throughout the Petro-Canada licences (including the Duke Mountain Block). Should Petro-Canada institute a detailed mapping program on any of its properties in this region of northeast British Columbia (it has not done so in the past, including within the Duke Mountain block), continuity between the companies exploring and developing in the same belt can be maintained.

The Onion Lake and Secus Mountain 1:50,000 compilation maps (enclosures) and 1:25,000 compilation maps were constructed by overlaying the 1:5,000 grids on the topography, and placing the formations and members as measured on these grids from the 1:5,000 maps and sections.

4.2 Stratigraphy

Minnes, Bullhead, and lower Fort St. John Group strata in the region stretching from Secus Mountain through Onion Lake and Five Cabin Creek contain an unusually high proportion of conglomerate. Identification and mappability of the two target units, the Gething Formation in the Bullhead Group and the Gates Member of the Commotion Formation of the Fort St. John Group, has been hindered by the vastly increased footages of conglomerate they contain, compared to the remainder of the better-studied part of the coal belt to the northwest (which also contains the type section for the nomenclature).

In fact, not only the Gates and Gething contain many thick conglomerates, but the Minnes, Cadomin, and Boulder Creek also contain unusually thick units of conglomerate. This character is unique to this part of the coal belt, and Stott treats it with some attention in his 1968 bulletin.

The most noticeable conglomerate thicknesses have been centered around Mt. Belcourt, one of the four foothills in the Secus area. To the northwest, at Onion Lake and Five Cabin Creek, the total mass of conglomerate is less and it has less effect on the mappability of the standard nomenclature, but the number of conglomerate occurrences remains high.

4.2 (continued)

Secus Mountain itself, situated right next to Mt. Belcourt, has a long, striking west slope composed of dip-slope units of conglomerates, deeply incised by small canyons and gorges, all of it basically exposed and barren. The general concept and question of how to divide and follow the conglomerates has thus become known in the local mapping trade as "the Secus Mountain conglomerates."

The effect of the conglomerates has been to defeat identification of the standard formations and members, to the point that over the years various crews making quick geological examinations with the idea of locating drill sites to prospect the Gething and Gates ended up often by drilling a completely wrong formation.

The problem is mostly centered along the part of the belt containing Five Cabin Creek, Onion Lake, and Secus Mountain, which are all located along the innermost line of inner foothills. Those properties situated along the outer side of the inner foothills (i.e. the Duke Mountain Block of Petro-Canada, as well as the Belcourt and Saxon properties of Denison Mines) on the east flank of the Wapiti Anticline have less conglomerate.

4.2 (continued)

The Geological Survey maintains an active interest in "the Secus Mountain Conglomerates", and the crew was visited for one day by one of their geologists (D. Gibson), who wished to see the division of the units by the crew.

Since the mapping was completed and the 1:5,000 maps and structural cross-sections finished in November of 1980, the logs (drill core and geophysical) of the six Petro-Canadian holes at Secus Mountain have been acquired by Crows Nest. The positions and altitudes of the holes have never been surveyed (this will be done in 1981), but the author can see that they fit the sections closely, and therefore the basic interpretation and conception of the stratigraphy are valid.

4.2.1 The Stratigraphic Section

As it appeared that an academic style of mapping by the Geological Survey and reconnaissance-level mapping by coal company geologists had not in the past produced a workable division of units in the stratigraphic section, Crows Nest Resources' 1980 crew decided instead, as it was the first crew on the west side of the Wapiti Anticline to do detail mapping, to use a different approach.

The concept was to concentrate instead on building up a structural framework containing the whole of the sequence from Minnes up through Boulder Creek, and while so doing to attempt to divide the total section into smaller and smaller units, eventually sandwiching possible coal horizons into smaller and smaller spaces.

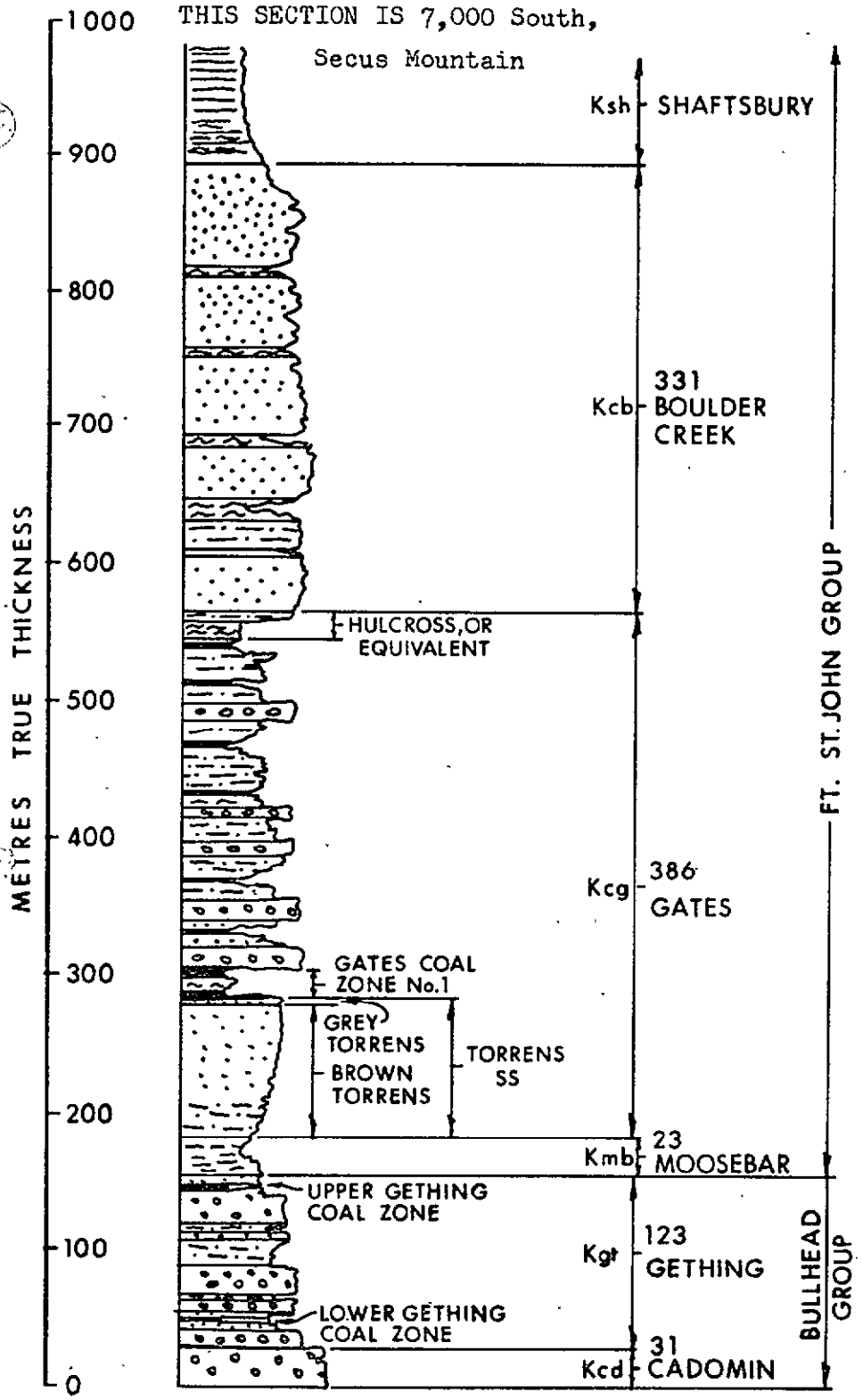
This entailed leaving aside most notions of academic interest, (such as paleoenvironments and unconformities), and also leaving aside the notion that particular coal beds should be followed. As coal beds are usually recessive and unexposed, the problem came to be to find identifiable units close by in the section.

4.2.1 (continued)

The mapping was thus carried out from the point of view of the most basic principle: if enough exposures are looked at, and each exposure is compared to all others on the most fundamental geological points such as grain size, bedding characteristics, and so on, then eventually it would be possible to follow certain (and also probably prominent) units close to the coal horizons and so locate drill sites no matter what the discussions on the formal nomenclature would have to say concerning the identify and origin of the units. In other words, the whole problem could be by-passed.

Being able to separate and follow the prominent units in the total stratigraphic section became, then, essentially the study of "the Secus Mountain Conglomerates". The stratigraphic descriptions following the next couple of pages of the stratigraphic section are oriented to this question.

The two pages of stratigraphic section are meant to be used by the reader for six different locations: four within the Secus Mountain area, and one each at Onion and Five Cabin Creek. The nomenclature remains the same, but the reader must substitute the appropriate thickness for each location from the table. The sketch presented is for the 7,000 South structural cross-section on the west slope of Secus Mountain itself.



Marine : shales, siltstones, some minor sandstone and pebbles ; recessive.

Non-marine : sandstones, minor conglomerates, siltstones, mudstones, sometimes coaly, relatively prominent

Marine shale

Sandstones, conglomerates, siltstones, mudstones, coal. Neither prominent nor recessive.

Sandstone ; particularly prominent and distinctive ; transitional marine to non-marine environment.

Grey marine shale ; very recessive

Non-marine sandstones and conglomerates, minor siltstones, mudstones, coal ; often prominent.

Non-marine massive conglomerates, minor coarse sandstones ; extremely prominent

— COAL

— SHALE

— SANDSTONE

— CONGLOMERATES

— SANDSTONE, SILTSTONE MUDSTONE INTERBEDDED

Crows Nest Resources Limited
EXPLORATION
N.E. BRITISH COLUMBIA

FIG. 4
STRATIGRAPHIC SECTION

AUTHOR D.E. BELL	SCALE 1:10 000	ENCLOSURE No.
DATE 81 03	REVISED	DRAWING No. AA-534
To Accompany		

UNIT		Kcd		Kgt		Kmb		Kcg		Kbc		Torrens ss*		TOTALS	
SECUS MOUNTAIN	7,000 S	31		123		23		386		331		50		894	
	000 N/S	77		104		23		396		204		51		804	
	4,000 N	SAXON THRUST PLATE: T = Top Plate (Dumb Goat); B = Bottom Plate (Whatley)													
		T	B	T	B	T	B	T	B	T	B	T	B	T	B
		152	165	260	184	23	23	435	-	77	-	43	79	947	-
	9,000 N	96		58		23		362		61		64		600	
ONION LAKE		36		100		30		Top Missing		Missing		Gray 6.5 Brown 166		-	
FIVE CABIN CREEK															

TABLE NO. 2

* NOTE: Torrens sandstone figures include Transition Beds

4.2.2 Stratigraphic Descriptions

4.2.2.1 Minnes Group

The Minnes Group is the term used for any section stratigraphically beneath the Cadomin Formation, the base of the overlying Bullhead Group. Minnes strata throughout this portion of northeastern British Columbia have not been mapped in detail, and the group is undivided.

The Minnes Group is composed of a sequence of both marine and non-marine sediments; often coal or coaly beds occur, but they are rarely thicker than one or two meters, and seem to have little extent laterally.

The nature of the Minnes section immediately beneath the Cadomin at any particular location is often different from the last. At Onion Lake there are massive, thick conglomerates beneath the Cadomin; along the 30 km of Setus it varies from conglomerates to interbedded sandstones, siltstones, and shales, with coal often showing up.

4.2.2.2 Cadomin Formation

The 1980 Crows Nest Resources crew used a definition of the Cadomin somewhat different than that used by both past coal company workers and the Geological Survey. It was found that by restricting the name to a particular conglomerate within the overall succession, it was possible to divide the question of "the Secus Mountain Conglomerates" into Minnes conglomerates, Cadomin conglomerates, and Gething conglomerates.

The problem has been that if the geologist includes all thick massive conglomerates in the Cadomin, he will have almost no Gething before the Moosebar is encountered. Georgia Hoffman, in her 1979 "Onion Lake Coal Property", states that "the Cadomin is ... unusually thick ... in the Onion Lake area". Also, in regard to the Cadomin-Gething part of the problem, she states "mapping problems ... indicate that a more consistent unit for this area is the Bullhead Group as a whole". The trouble is that if all conglomerates are called Cadomin, then there is very little left to call Gething, and the Gething is what is supposed to be drilled as it contains coal.

4.2.2.2 (continued)

Crows Nest Resources' crew restricts the name Cadomin to a unit mostly conglomeratic which stands apart in a set of fundamental mapping characteristics from all other conglomerates within the Minnes-Bullhead-Fort St. John succession. The conglomerate must be light-gray weathering, ring hard to the pick, be so tough that the rock breaks off through the pebbles, cobbles, and boulders, rather than around them, and must always form the basic backbone for the whole succession (Minnes to Boulder Creek) in the topography and structure.

In addition, it must contain particular shades of rosey pink, a jade-like green, and a particular smooth, light gray in the constituents. Cadomin sandstones contain these particular colours, within the sand grain sizes. This character of the Cadomin is the same, in the author's view, as he has seen in the Cadomin from the Alberta town of Cadomin north through the coking coal belt as far as the Peace River. It is very like the Cadomin anywhere through the Luscar and McIntyre Mines properties.

4.2.2.2 (continued)

All section below this unit, including conglomerates, is called Minnes. The conglomerates tend to be less tough, browner in overall aspect, slightly less topographically prominent, and they do not ever contain the pink and green constituents.

The top of the Cadomin is taken at that centimeter where the tough, light-gray, massive conglomerate or sandstone gives way to something softer and browner; it may be a conglomerate or a sandstone, but it will be much browner, pebbles and cobbles can be more easily extracted, and the pick hits with a thud.

4.2.2.3 Gething Formation

In addition to colour and hardness, Gething conglomerates bear another relation to the Cadomin beds beneath: whatever the average largest constituent size in the Cadomin, the Gething will have similarly large sizes, but always slightly smaller. For example, if the Gething has boulders to 20 cm in length, expect 25 cm in the Cadomin beneath.

Up to half of the Gething at any point along the length of the region can be expected to be conglomerate, occuring in one or more massive, prominent units. Gething cliffs can often be followed for several kilometers at a time.

It would appear that in the stretch covering Five Cabin Creek all the way southeast through Secus, there may be expected to be only two coal zones - an upper and a lower - within the Gething. The crew did not find any place where it seemed there could be room for more than that, and each of these zones probably contains no more than a meter or two each. (The lately-acquired Petro-Canada drill logs from Secus are now known to bear this out.)

The Gething is thus judged to be less prospective at this point, and therefore the first drilling on these properties by Crows Nest Resources will be aimed at the Gates Member of the Commotion, lying some distance above.

4.2.2.4 Moosebar Formation

The Moosebar Formation is notable mostly because of its very characteristic recessive effect on the topography. It is thicker in the Sukunka area to the northwest, is thinning southwards towards Onion Lake, where it is 30 m, and is thinnest in the Secus area. At Secus the crew used 23 m for the Moosebar in constructing the cross-sections, as the actual marine beds in two complete exposures (complete exposures of the Moosebar are almost unheard of, and warrant special examination anytime) were that thickness. The exposure measured at Onion Lake (in The Gorge) is the only other complete exposure known in the region.

Coal crews through the years have followed "the Moosebar recession" in the topography, and through Crows Nest Resources licences the effect remains.

4.2.2.5 Commotion Formation

The Commotion Formation is divisible into a coal-bearing Gates Member, a marine Hulcross Member overlying the Gates, and then the Boulder Creek Member, an often-coaly sandstone unit.

4.2.2.5 (continued)

The Hulcross was found to be almost non-identifiable in the Secus area (it was found near the peak of Mt. Belcourt). A section this high has not been identified in the Onion Lake area, but it is thick at Five Cabin Creek and thickens northwestward.

Mapping was generally stopped in the base of the Boulder Creek, as there is no prospective coal known above the Gates.

4.2.2.5.1 Gates Member, Commotion Formation

The Gates Member is perhaps the most consistent in thickness of all the units between Secus Mountain area and Onion Lake; the range appears to be 362 to 435 m. It is composed of alternating sequences of conglomerates, sandstones, siltstones, mudstones, and coal beds. As a general rule the coal seams, while remaining numerous, get uninterestingly thinner towards the top of the member. Individual conglomerate units, while massive and often prominent, are thinner and more well-bedded than Gething and Cadomin conglomerates. The constituents remain the same, but at smaller diameters. The crew found that it could not distinguish between Gates conglomerates individually, but it could generally differentiate them from Gething conglomerates.

4.2.2.5.1.1 Torrens Submember, Gates Member, Commotion Formation

The Torrens Submember consists of an extremely distinctive sandstone occurring at the bottom of the Gates. It is the most prominent unit in the succession besides the Cadomin. Typically, the top five or ten meters of Torrens may be followed for kilometers at a stretch. The upper unit within the Torrens is a hard gray sandstone, which overlies and is always thinner than the underlying softer brown main part of the unit. The brown sandstones have an extremely distinctive weathering which etches out a particular cross-bedding. The sequence from Moosebar through the Torrens and into the coal above is very reminiscent of the Weary Ridge - Moose Mountain - coal member sequence in southeast British Columbia.

The combination of distinctive topography, distinctive outcrop and distinctive colouring make the Torrens an ideal marker.

4.2.2.5.1.2 Transition Beds, Gates Member, Commotion Formation

The Transition Beds are both part real outcrop and part a notion of conception. The name is applied by the crew to those beds which are "transitional" or "passage" from the marine Moosebar into the terrestial cross-bedded Torrens sandstones above.

They are composed of very evenly-bedded siltstones and very fine sandstones, which grade upwards into the Torrens. The cross-bedding and increased grain sizes appear imperceptibly. Nothing else in the sequence is as evenly bedded.

This unit is quite recessive, and always forms the gentler ground where the Moosebar is rising up to the Torrens prominence above. It is not included in the Moosebar as that name is reserved for the striking moosebar topographic recession.

4.2.2.5.1.3 Gates Coal Zone No. 1, Gates Member, Commotion Formation

Mapping (and the logs of the Petro-Canada holes) shows that the thickest coal in the Gates may be found in the 20 to 30 meters above the Torrens Sandstone. In places the coal lies directly on top of it. Sometimes there is one thick bed (estimated at 14 m at one ridge on Mt. Belcourt); more often there are two or more thinner beds.

No further seam or zone designations have been made above this lowermost No. 1 Zone, as in the 1980 season the crew did not conduct more than a few traverses to describe the Gates to that level of detail. This can be done as drilling and future work progresses. Any drilling will be placed to end in the Torrens, and so the seams above the No. 1 Zone can be catalogued at the same time.

4.2.2.5.1.4 First Gates Conglomerate, Gates Member, Commotion Formation

Very often there is a somewhat prominent Gates conglomerate forming a massive unit above the Coal Zone No. 1. It is often mappable through a kilometer at a time, and forms a convenient top to the recessive coal zone. It has been mapped where appropriate.

4.2.2.5.2 Boulder Creek Member, Commotion Formation

The Boulder Creek is a prominent sandstone unit above the Gates. The contact (where the Hulcross is not present) is drawn at the beginning of hard, generally gray-weathering, massive, often pebbly sandstone.

The Boulder Creek can often also be followed through many kilometers, and forms the cap on the mapping. Only once was its top mapped, although often it can be seen from the air to be giving away to Shaftesbury shales.

4.3 Geological Structure

The Crows Nest Resources-operated areas in the Five Cabin Creek-Onion Lake-Secus Mountain region of northeastern British Columbia were licenced because of their possibility of containing considerable mileage of the two known prospective formations, the Gething and the Commotion.

The region is approximately 90 km in length. To cover this distance in 64 days of field season, counting all time lost to mobilization and demobilization, weather in a northern Rocky Mountain climate, and incidental losses, the two mapping pairs decided to take a structural approach to the mapping, treating the belt as a whole. This meant acquring actual, measured thickness on the formations and their parts individually. In this manner, drilling with reasonable expectations of being at about the right sites could be planned for the future with no extra effort - the proper positions would become revealed.

Efforts were concentrated in the beginning at traverses across the formations, from Minnes up to Boulder Creek. As the units became clearer, they were extended longitudinally. In this fashion, by chain-measuring selected good exposures across the sequence, and then rapidly following their longitudinal extensions in the topography, the thicknesses for the formations and their parts as expressed in the cross-sections became apparent.

4.3 (continued)

There is a natural rhythm apparent in the thickening and thinning of the formations along the belt.

In the latter part of the season, efforts were directed at refining the sections in the lower part of the Gates, so that the excellent Torrens marker can be used as a guide for the Gates Coal Zone No. 1 immediately above it.

4.3.1 Structural Setting

It may appear while examining the 32 structural cross-sections that the geology through the 31 km of Secus Mountain has been over-simplified and drawn as too layer-cake; this is not so. The Wapiti Anticline's west flank is amazingly regular, almost unbelievably so considering that it is part of the inner foothills.

The only major disruption is the Saxon Thrust, but exposure is so good that it does not present a problem.

Along the long southwest side of the property, the Rockies' front-range thrust limits the extent of Cretaceous rock. The crew did not pay quite so much attention to the position of this thrust through all of the 31 km, as through much of it the Boulder Creek forms the cap to the sequence.

Along the long northeastern side of the belt, the Torrens easily defines the most-prospective section of the Gates, and the Moosebar and Cadomin box in the Gething. The Gething can be penetrated in entirety by single holes no deeper than 200 m along its entire length, from Five Cabin Creek through Secus Mountain. The Moosebar recession forms an excellent drill platform.

4.3.1 (continued)

Much of the valley bottom land lining and separating the four major foothills of the Secus area (from the north: Dumb Goat Peak, Mt. Belcourt, Secus Mountain, and Nekik Mountain) hides the sequence, and study of the sections will show considerable space for which there is room for undiscovered structure and variation.

For 1981 Crows Nest Resources has decided to concentrate on three smaller areas in the region. This will allow for examination of these problems in detail. There is certainly much more detail mapping to be done.

On many of the sections, there may be seen no need for further mapping - the space available is filled by known units. On others, however, there is room which must be filled by more section, repeated section, or changing structure.

4.3.1 (continued)

Most of the unexplained space the author feels will be found to be taken up by firstly a distorted zone extending about 1 km northeast from the front-range thrust, and secondly by the subtle changes caused by the overall en echelon nature of the entire belt, as shown by the advances and recessions of the front-range thrust nearby.

The Petro-Canada 1:25,000 maps account for the extra space by drawing in single thrusts where necessary. The interpretation presented by the Crows Nest Resources crew accounts for most of it by stating that it is mostly illusory, and the illusion lies in the subtle-by-the-kilometer changes in strike and dip inherent in very large en echelon folds such as the Wapiti Anticline, which runs for over 100 km. This interpretation would account for the flattening and curving seen in the Cadomin on the Narraway River at the south end of Nekik Mountain, and the same feature in the Boulder Creek on the north bank of Belcourt Creek in the 11,000 South - 13,000 South area opposite the south end of Secus Mountain.

4.3.2 Stereographic Analysis

507 bedding attitudes (strikes and dips) were plotted by computer in scatter diagrams and contour pole plots. Since the whole of the Secus Mountain area is located on the west flank of the Wapiti Anticline, and as the westerly dips are very regular (at least in a broad sense), the use of average strike and average dip direction in setting a grid for the area is especially effective. Drill placement and core interpretation should be relatively easy.

The attitudes were run in six sets: primary division was based on the drainage round the four major foothills - Dumb Goat Peak, Mount Belcourt, Secus Mountain, and Nekik Mountain. The Dumb Goat block was divided further into two sets: the upper plate of the Saxon Thrust, with the name Dumb Goat left on, and the lower plate, named Whatley after Whatley Creek. None of the Crows Nest licences are in the Whatley block.

A final set was run combining all five blocks. The average strike computed in this final set, 326 degrees, was used as baseline, and the average dip of 33 degrees gives the average dip for mining throughout the 31 km length of the area.

4.3.2 (continued)

The individual average dips for each block, however, were used in constructing the cross-sections within the block. These are stated on the sections.

The table following lists the average attitudes, and the twelve pages following are copies of the stereoplots.

TABLE NO. 3

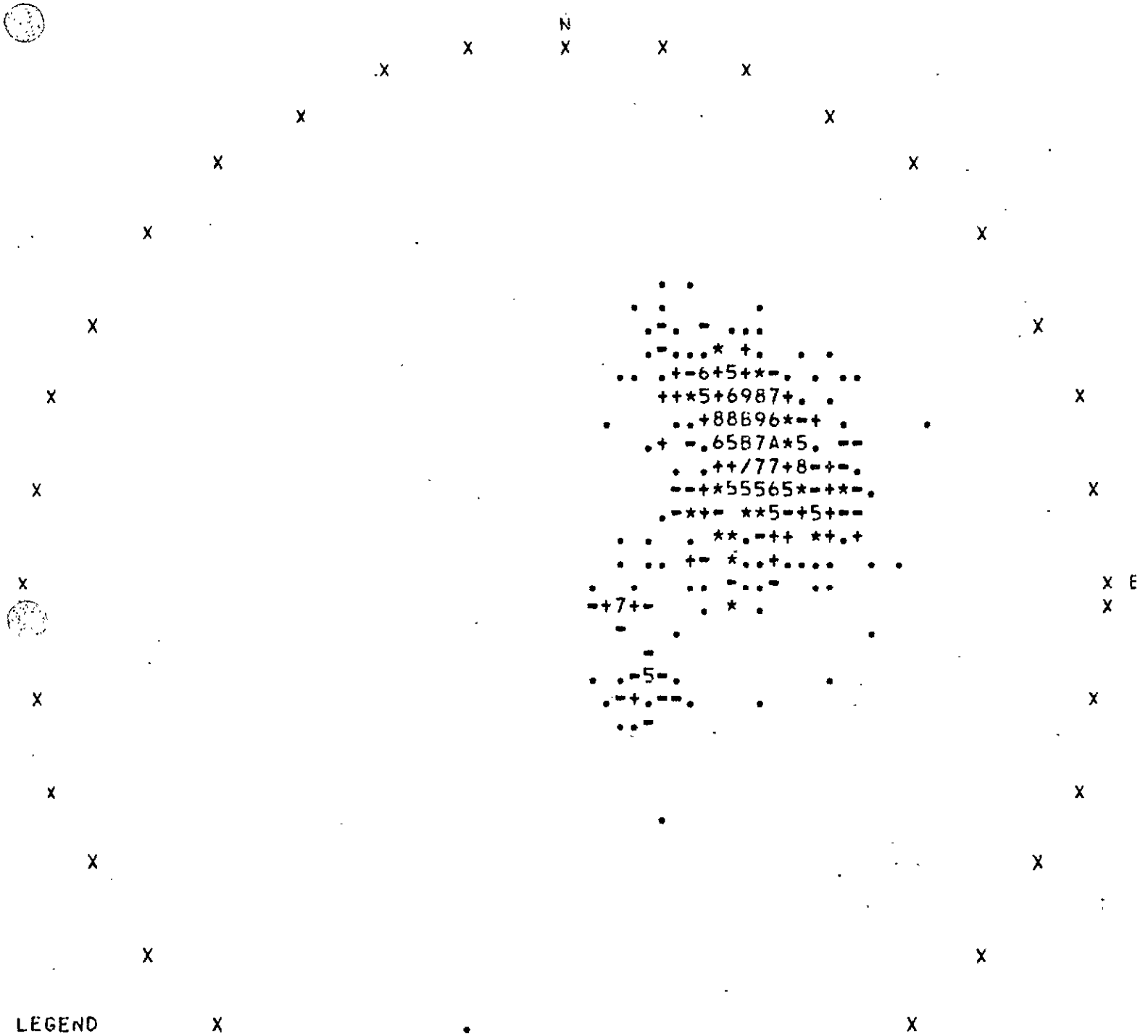
Secus Mountain Area Average Bedding Attitudes

Block		No. of Attitudes	Average Strike	Average Dip
WTLY	Whatley	65	327	40 SW
DBGT	Dumb Goat	92	313	41 SW
BLCT	Belcourt	81	322	37 SW
SCUS	Secus	143	331	31 SW
NKIK	Nekik	126	339	22 SW
COMBINED		507	326	33 SW

STEREO 8021559 -- SECUS MOUNTAIN 1980 BEDDING ATTITUDES.

TRAVERSE - WTLY,DBGT,BLCT,SCUS,NKIK

507 ORIGINAL POLES



LEGEND

.	1	POLE
-	2	
+	3	
*	4	
-9	5,6,7,8,9	
-Z	10,11,...	

MEAN VECTOR = 32.45/ 235.85

SCATTER DIAGRAM
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 5

STEREO 8021559 -- SECUS MOUNTAIN 1980 BEDDING ATTITUDES.

TRAVERSE - WTLY,DBGT,BLCT,SCUS,NKIK

507 ORIGINAL POLES

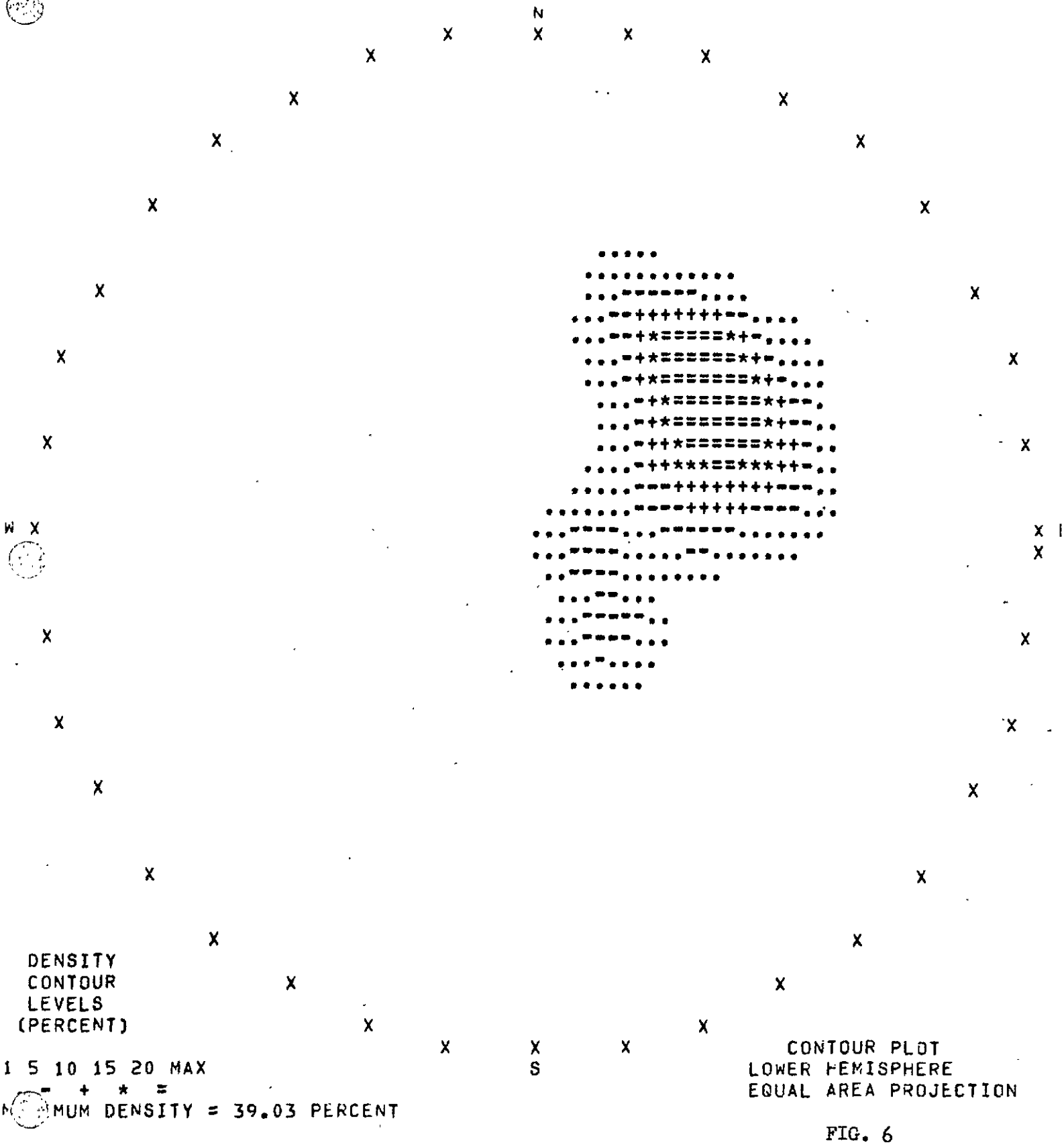
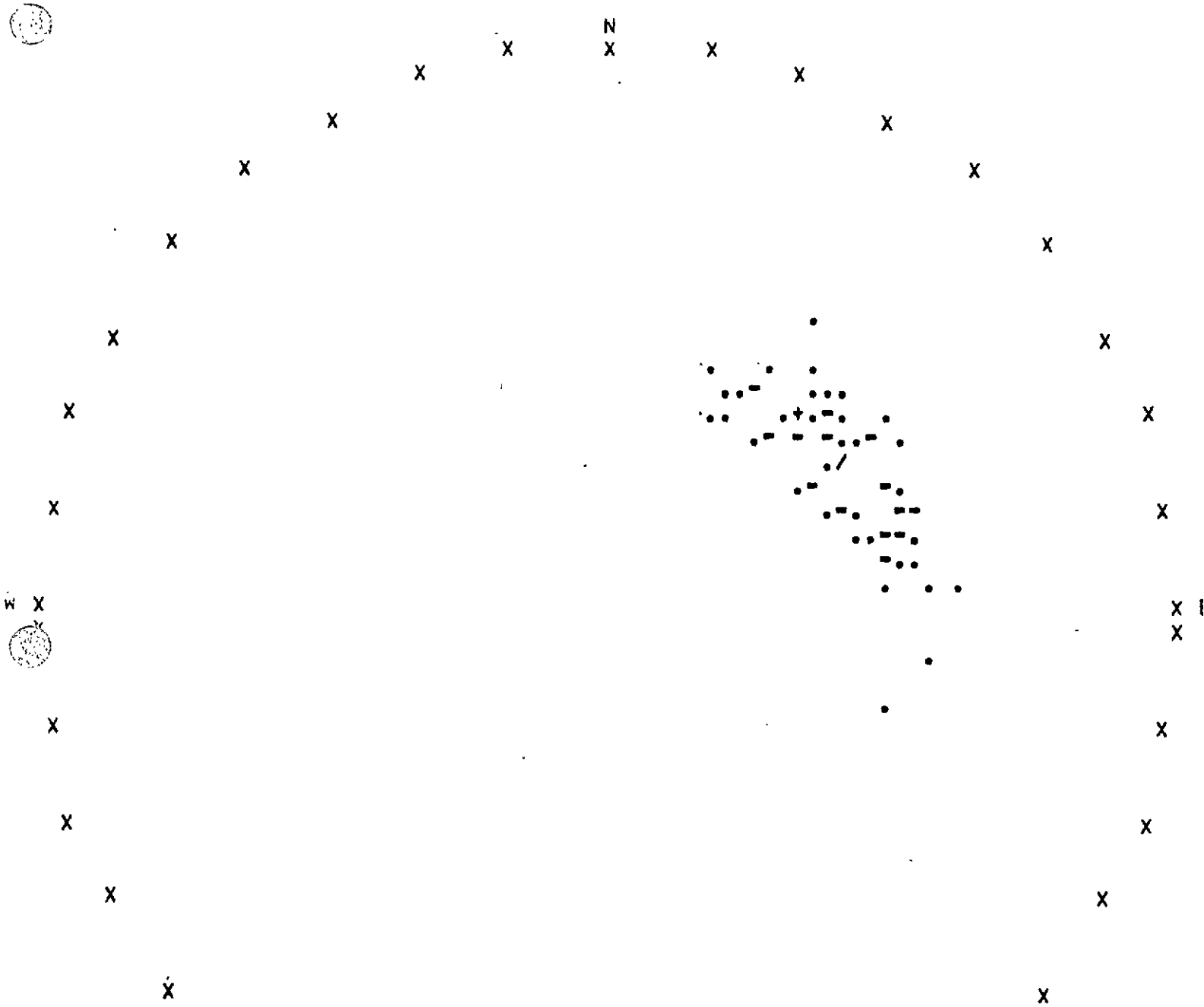


FIG. 6

STEREO 8021559 -- SECUS MOUNTAIN 1980 BEDDING ATTITUDES.

TRAVERSE - WTLY

65 ORIGINAL POLES



LEGEND

.	1 POLE
-	2
+	3
*	4
5-9	5,6,7,8,9
A-Z	10,11,...

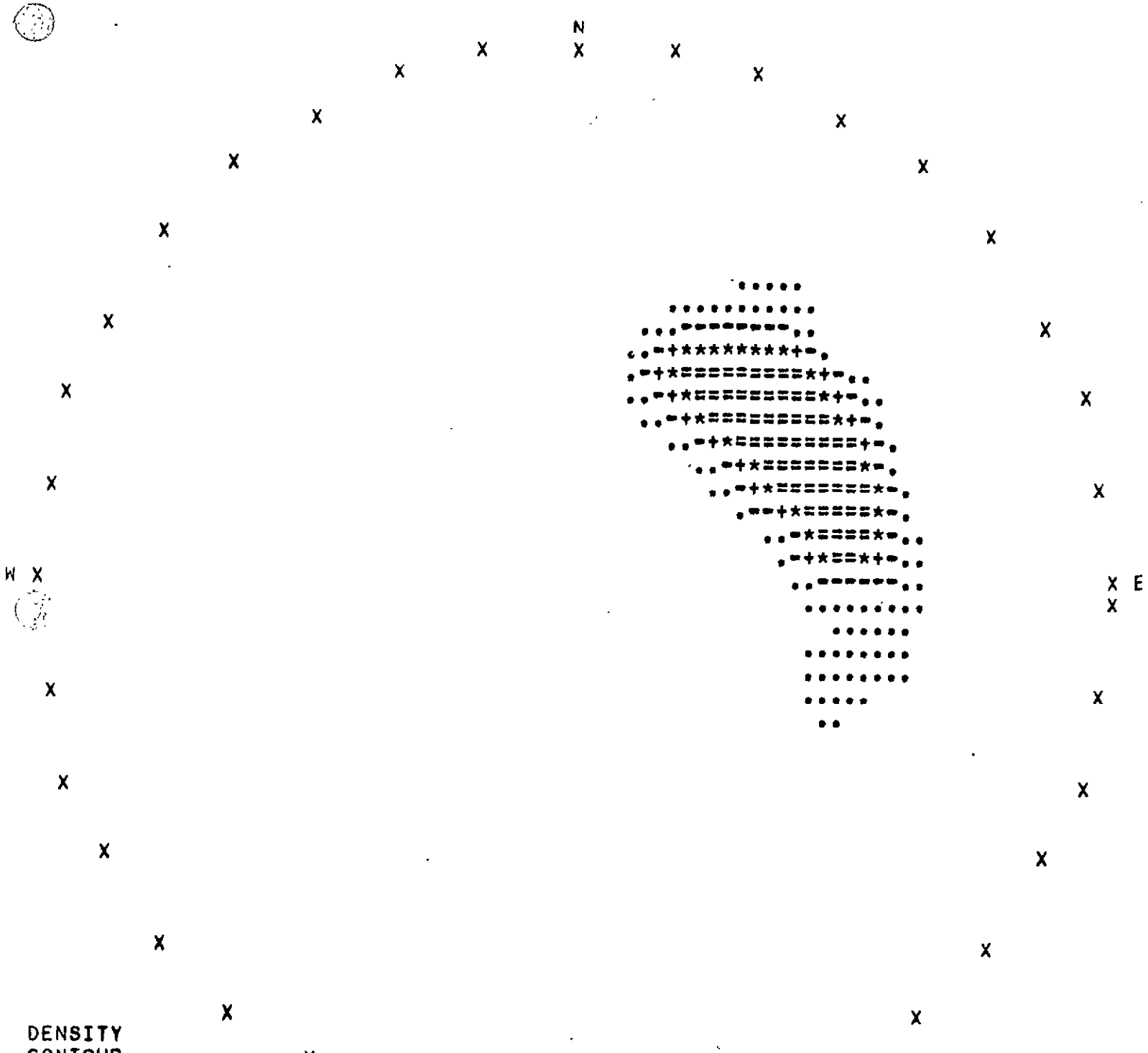
MEAN VECTOR = 40.43/ 236.58

SCATTER DIAGRAM
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 7

TRAVERSE - WTLY

65 ORIGINAL POLES



DENSITY CONTOUR LEVELS (PERCENT)

1 5 10 15 20 MAX

. - + * =

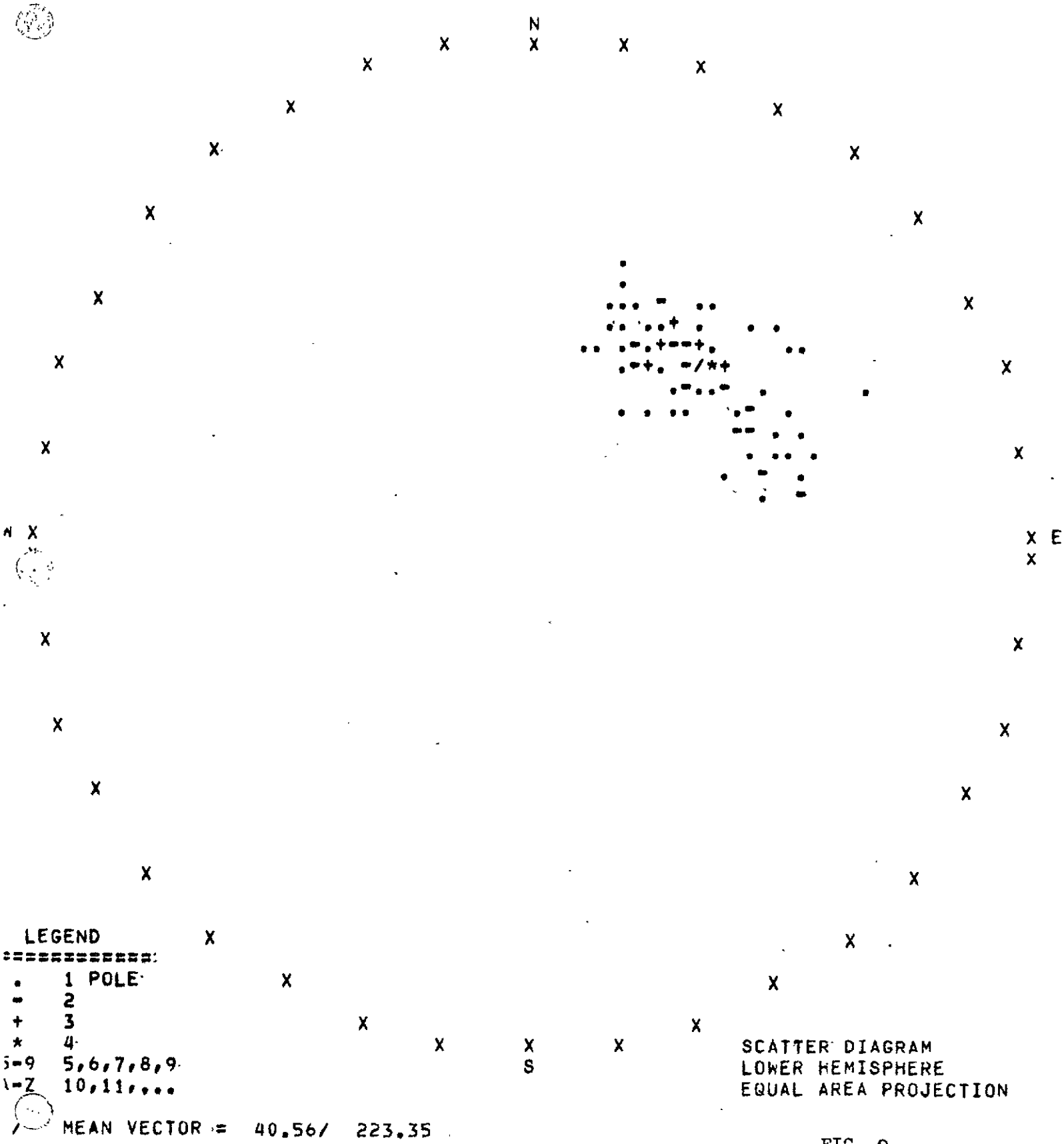
MAXIMUM DENSITY = 42.36 PERCENT

CONTOUR PLOT
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 8

TRAVERSE - DBGT

92 ORIGINAL POLES



LEGEND

.	1 POLE
-	2
+	3
*	4
5-9	5,6,7,8,9
A-Z	10,11,...

MEAN VECTOR = 40.56/ 223.35

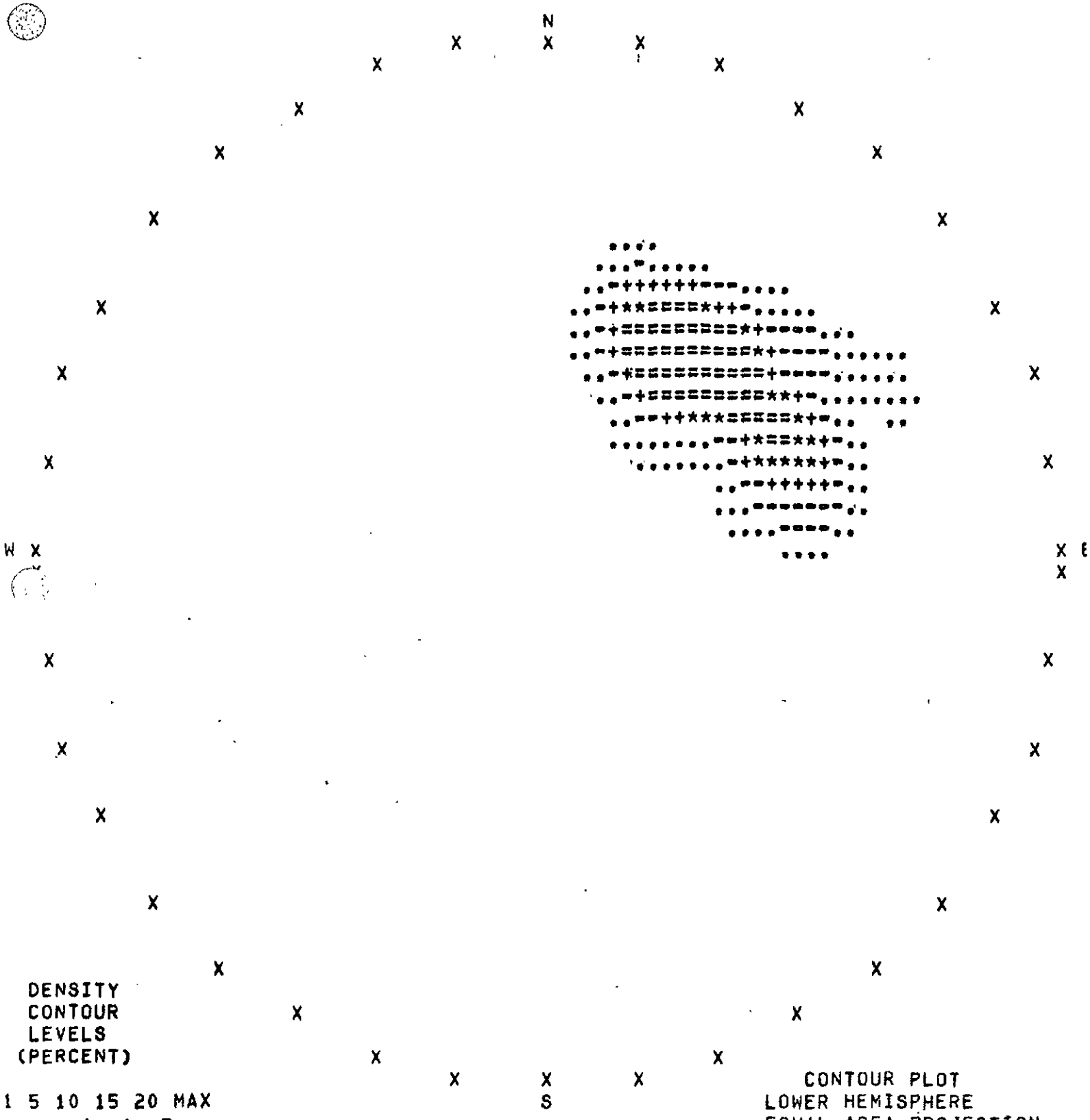
SCATTER DIAGRAM
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 9

STEREO 8021559 -- SECUS MOUNTAIN 1980 BEDDING ATTITUDES.

TRAVERSE - DBGT

92 ORIGINAL POLES



DENSITY CONTOUR LEVELS (PERCENT)

1 5 10 15 20 MAX

. - + * =

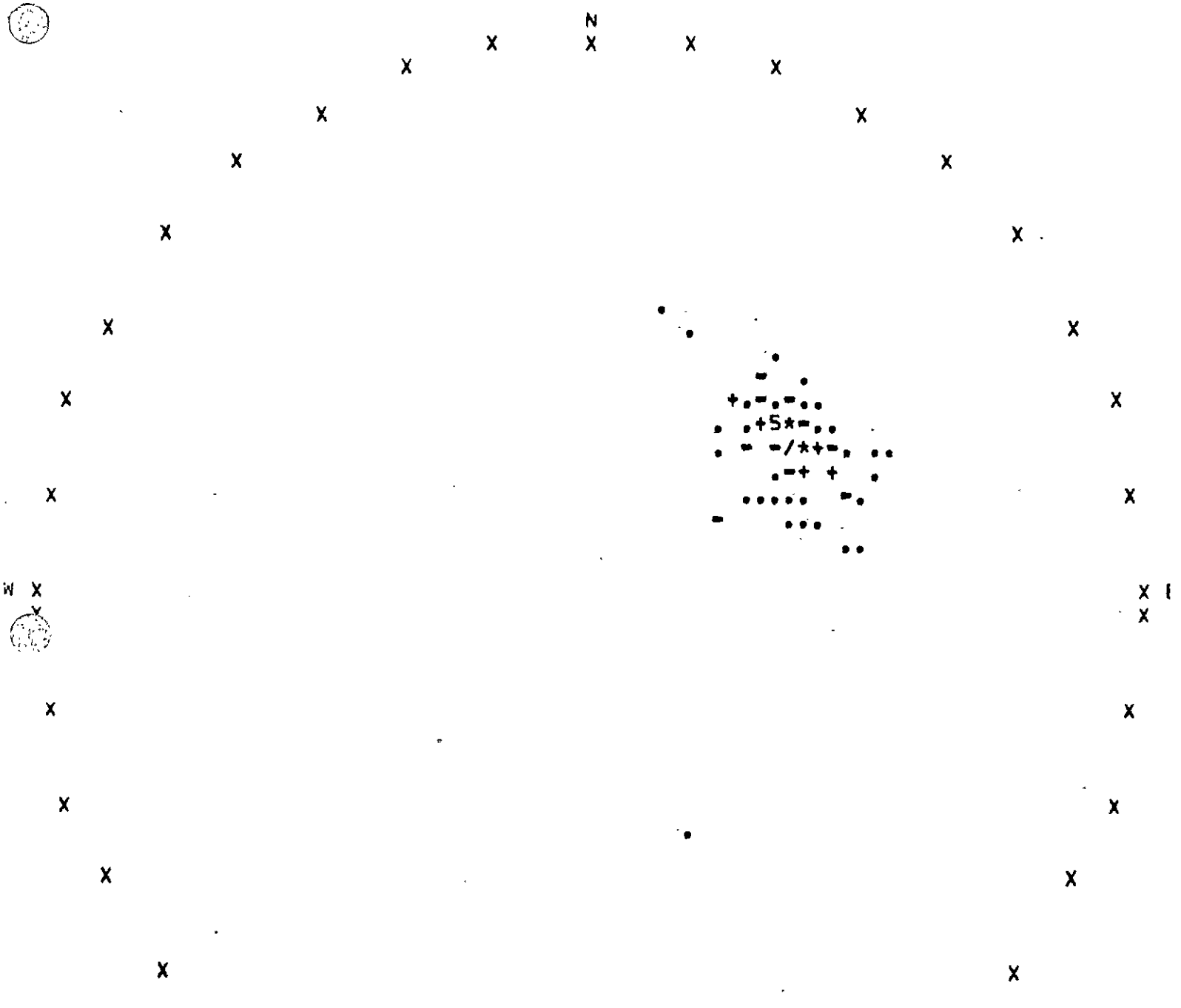
MAXIMUM DENSITY = 55.88 PERCENT

CONTOUR PLOT
LOWER HEMISPHERE
EQUAL AREA PROJECTION

Fig. 10

TRAVERSE - BLCT

81 ORIGINAL POLES



LEGEND

.	1	POLE
-	2	
+	3	
*	4	
5-9	5,6,7,8,9	
A-Z	10,11,...	

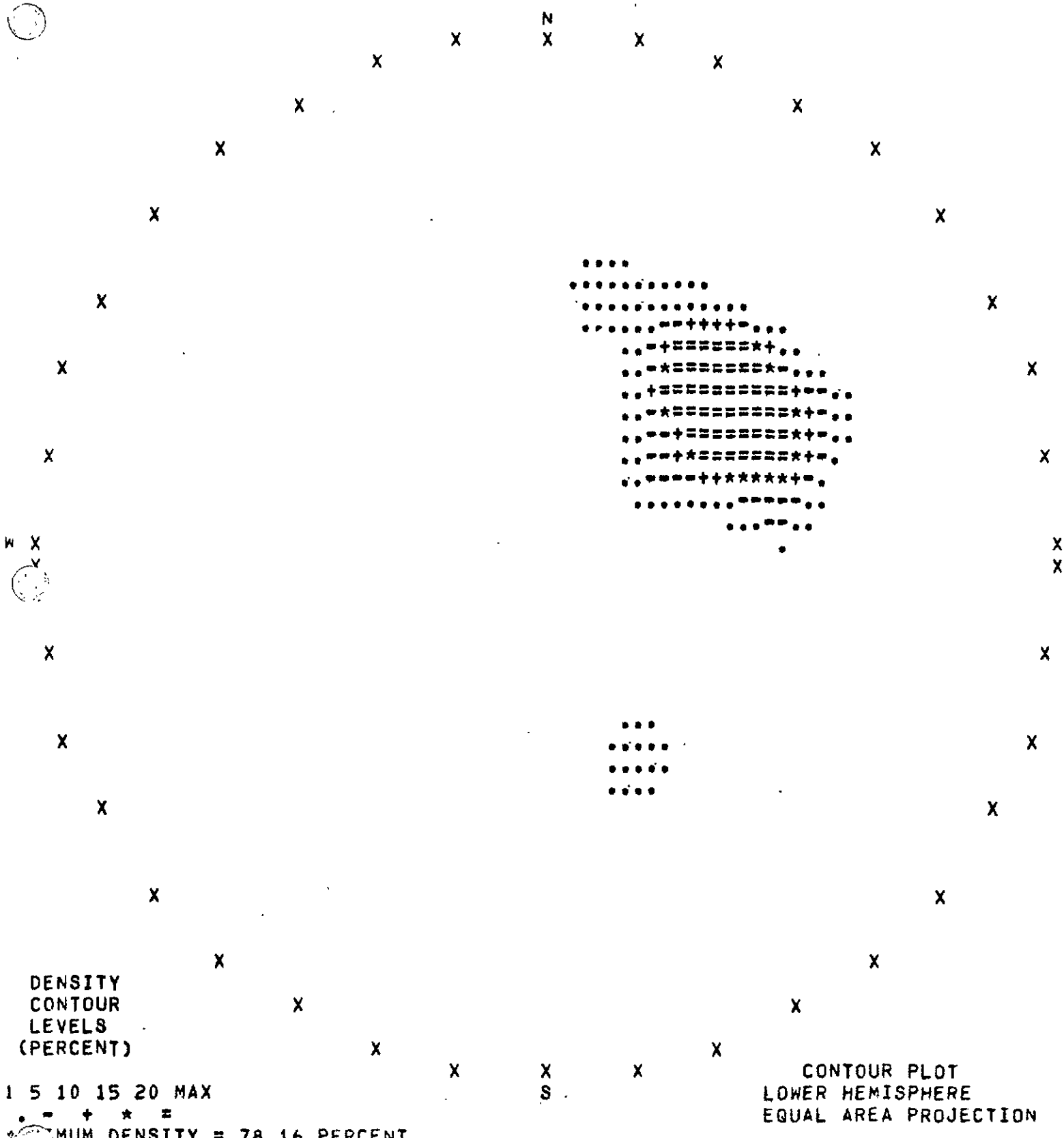
MEAN VECTOR = 37.26/ 231.66

SCATTER DIAGRAM
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 11

TRAVERSE - BLCT

81 ORIGINAL POLES



DENSITY CONTOUR LEVELS (PERCENT)

1 5 10 15 20 MAX

. - + * =

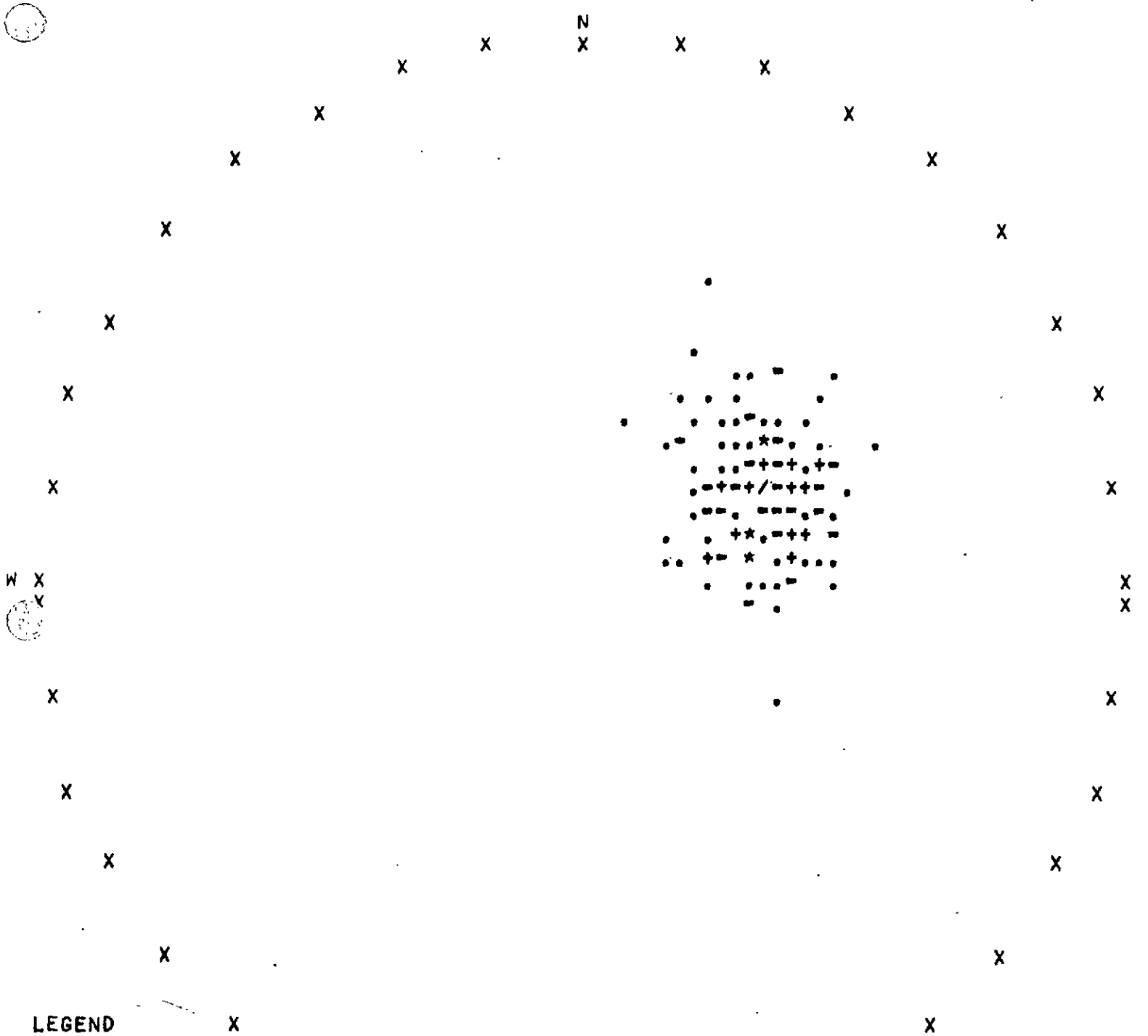
MAXIMUM DENSITY = 78.16 PERCENT

CONTOUR PLOT
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 12

TRAVERSE - SCUS

143 ORIGINAL POLES



LEGEND

.	1 POLE
-	2
+	3
*	4
5-9	5,6,7,8,9
A-Z	10,11,...

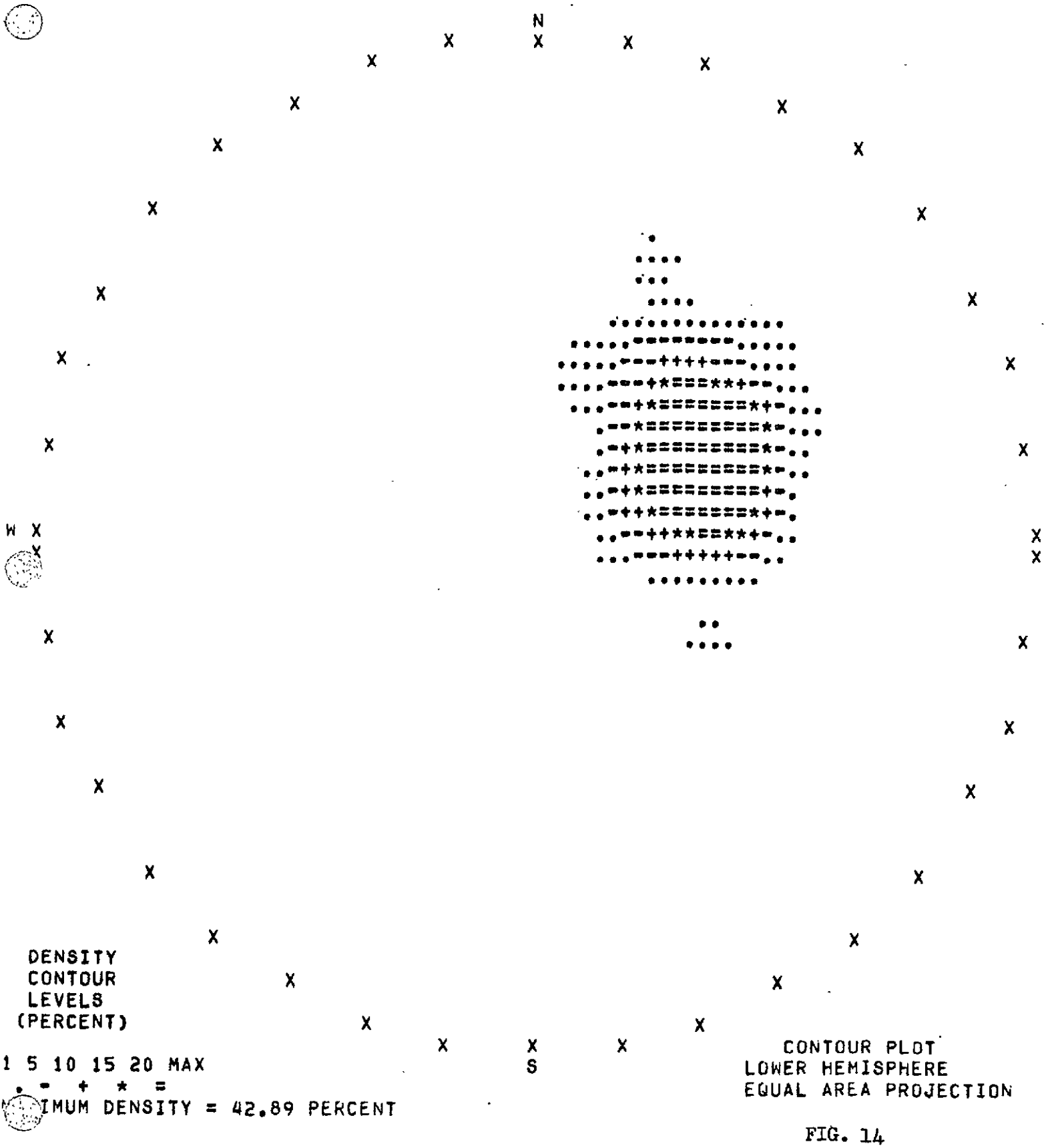
SCATTER DIAGRAM
LOWER HEMISPHERE
EQUAL AREA PROJECTION

MEAN VECTOR = 30.88/ 240.64

FIG. 13

TRAVERSE - SCUS

143 ORIGINAL POLES



DENSITY CONTOUR LEVELS (PERCENT)

1 5 10 15 20 MAX

. - + * =

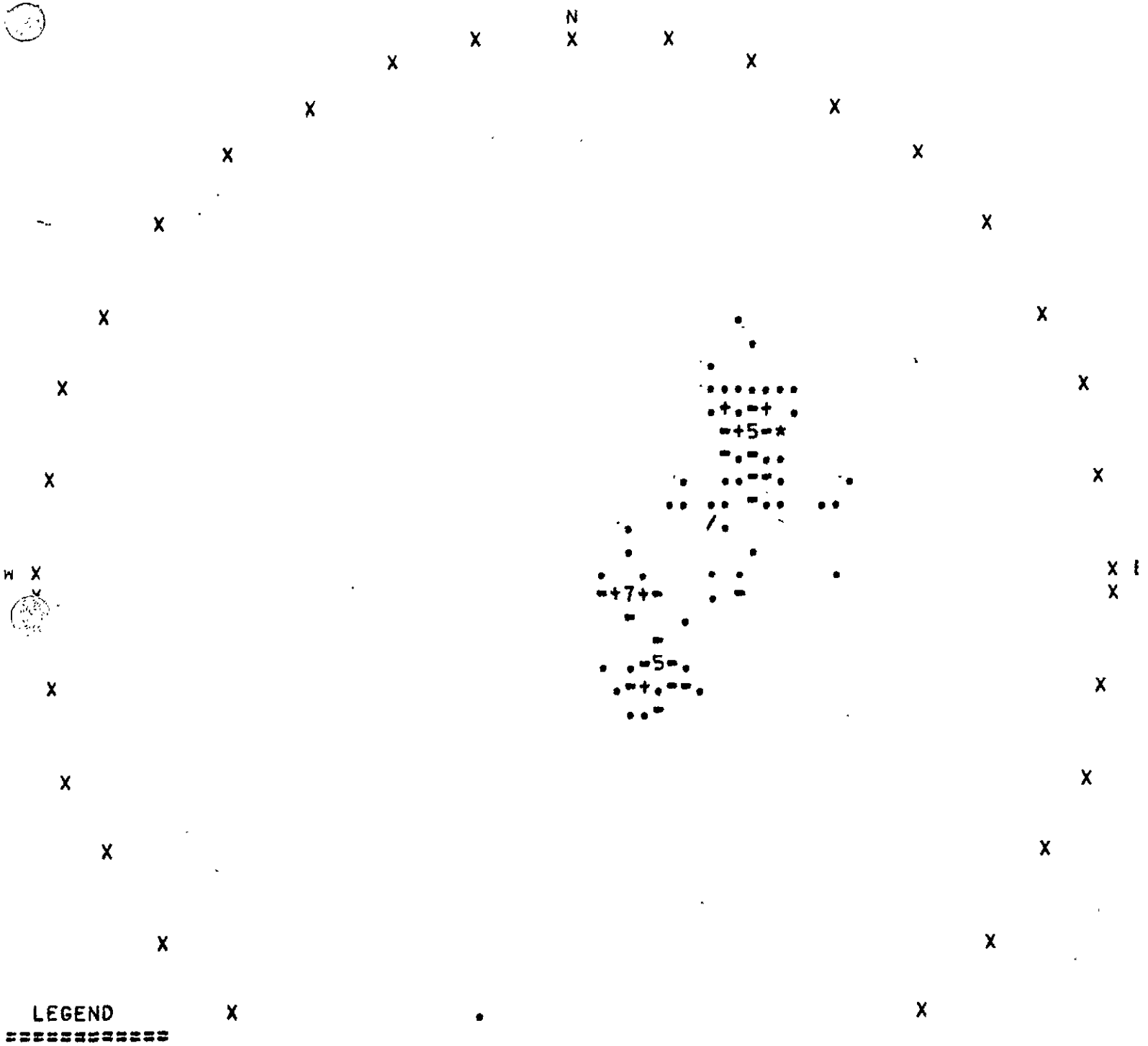
MAXIMUM DENSITY = 42.89 PERCENT

CONTOUR PLOT
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 14

TRAVERSE - NKIK

126 ORIGINAL POLES



LEGEND

.	1 POLE
-	2
+	3
*	4
5-9	5,6,7,8,9
A-Z	10,11,...

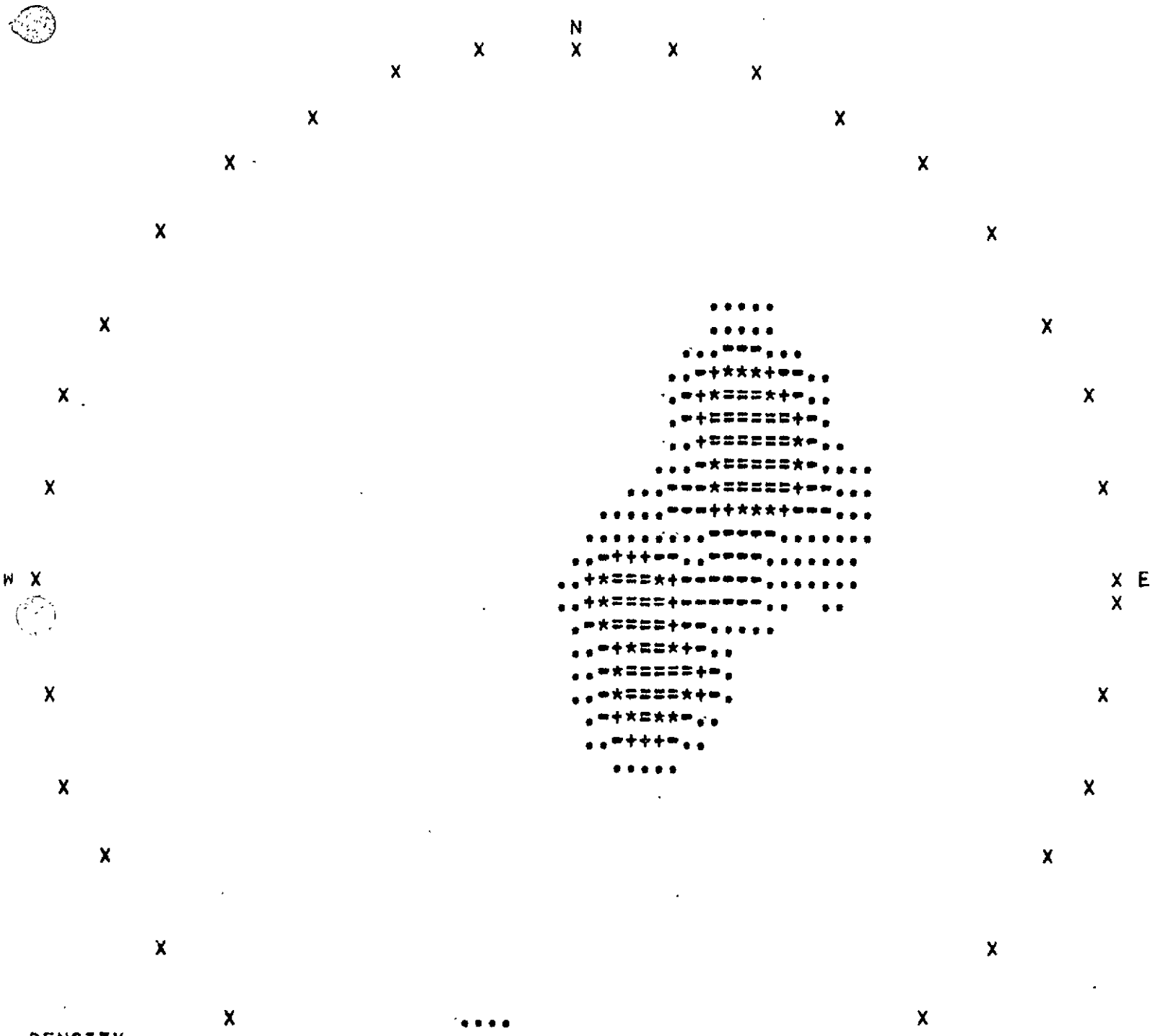
MEAN VECTOR = 21.79/ 248.52

SCATTER DIAGRAM
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 15

TRAVERSE - NKIK

126 ORIGINAL POLES



DENSITY CONTOUR LEVELS (PERCENT)

1 5 10 15 20 MAX

. - + * =

MAXIMUM DENSITY = 41.59 PERCENT

CONTOUR PLOT
LOWER HEMISPHERE
EQUAL AREA PROJECTION

FIG. 16

5.0 BIBLIOGRAPHY

Hoffman, Georgia, 1979: "1979 Geological Report, Secus Mountain Coal Property"; internal Crows Nest Resources Limited, filed in B.C. Ministry of Energy, Mines and Petroleum Resources