

LEGEND

- ROCK SAMPLE LOCATION ○ 52846 (Au (ppb))
○ (Au duplicate)
- CONTOURS (200M INTV.) 5100
- STREAMS
- SWAMPS
- GRID LINE
- ROAD

GEOLOGICAL BRANCH
ASSESSMENT REPORT

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FIG. 9



PLACER DOME INC.	
DRAWN: KE	-BOGG NORTH GRID 1990- ROCK SAMPLE LOCATIONS
DATE: NOV. 26 / 90	
SCALE: 1:5000	



LEGEND

ROCK SAMPLE LOCATION	○ 52727 (Au (ppb), Cu (%), Ag (ppm)) (Au duplicate)
CONTOURS (200 M INTV.)	—— 5100
STREAMS	——>
SWAMPS	——> >
GRID LINE	——+——
ROAD	——+——

LOGICAL BRANCH
ASSESSMENT REPORT

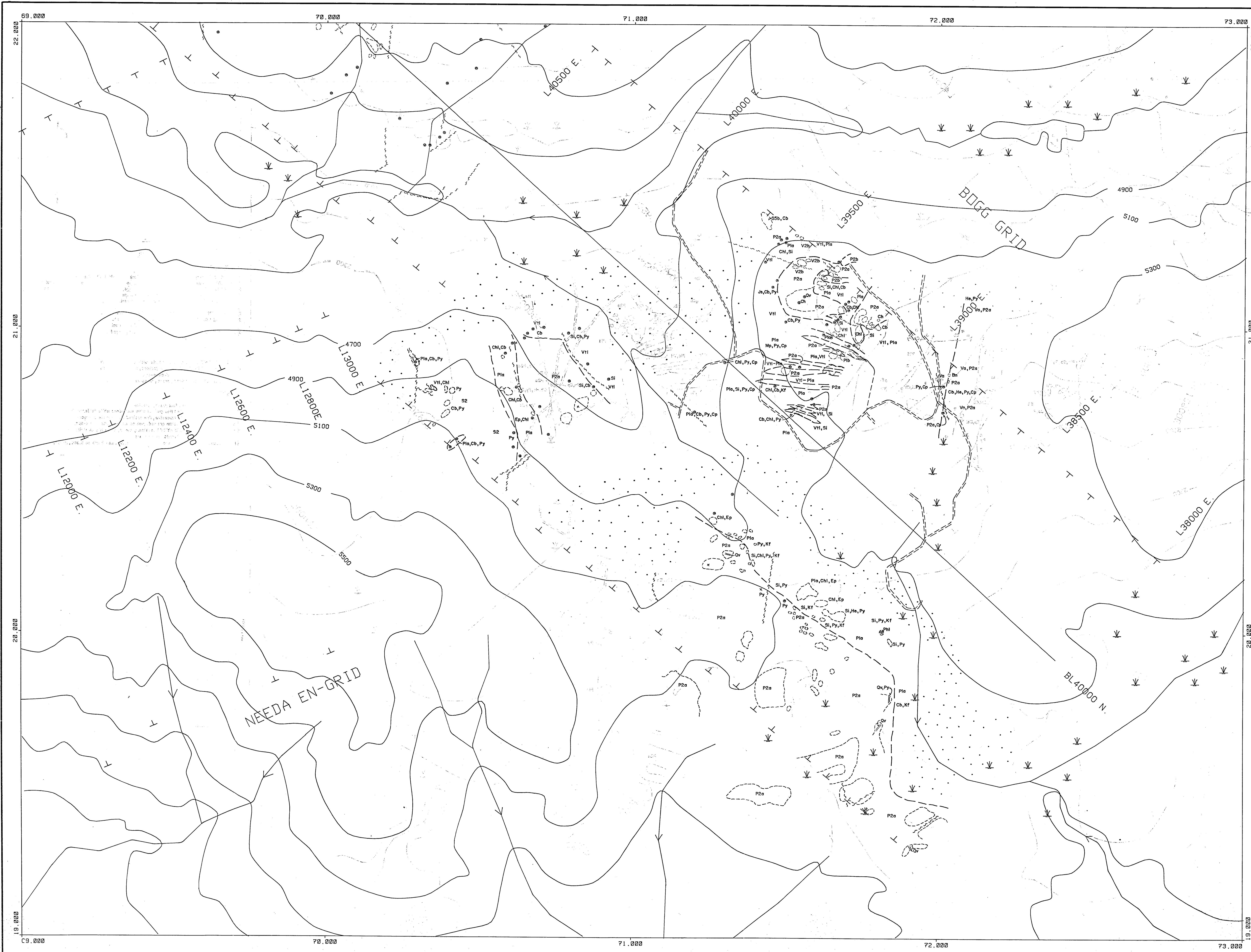
20,610

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FIG. 8

0 200 400 600
METRES

PLACER DOME INC.	
DRAWN: KE	-BOGG SOUTH GRID 1990- ROCK SAMPLE LOCATIONS
DATE: NOV. 27 / 90	
SCALE: 1" = 5000'	



LEGEND

ROCK UNITS

- SEDIMENTARY**
- S1 MUDSTONE: very fine grained, dark grey to black, interbedded with siltstone.
 - S2 SILTSTONE: fine grained, dark to light grey, micaceous litharenite in composition, massive.
 - S3 SANDSTONE: medium grained, light to medium grey, feldspathic litharenite to arenite in composition, may contain some mudstone or siltstone fragments.
 - S4a LIMESTONE: finely crystalline, light grey to greenish grey, clean, interbedded with mudstones and siltstones.
 - S4b LIMESTONE: bluish grey to dark grey, finely crystalline, high mudstone content.
 - S5a COARSE GRAINED SEDIMENTS, GREYWACKE: fine to medium grained matrix, medium grained rounded clasts of S1 and V11 rock units.
 - S5b DEBRIS FLOW: fine to medium grained matrix, large fragments of S3 and S4b, poorly sorted.
- VOLCANIC**
- V11 FELSIC TUFF: fine grained matrix with subangular to angular felsic fragments
 - V6i AGGLOMERATIC BASALT: fine grained, heterolithic, red-brown oxidized surface, Eocene-age
 - V6 ANDESITE: fine grained, green, massive.
- PLUTONIC**
- P1a DIORITE: fine grained, dark green, massive.
 - P1b PORPHYRIC DIORITE: fine grained with subhedral white feldspar phenocrysts
 - P1c HORNBLENDE DIORITE: massive, fine grained, hornblende phenocrysts, rare quartz fragments.
 - P2a K-SPAR PORPHYRY: medium grained, pinkish white matrix with k-spar, quartz phenocrysts.
 - P2b BIOTITE-K-SPAR PORPHYRY: medium grained, white to pink white matrix with quartz and biotite phenocrysts
 - P1i PYROXENE DYKES: medium to coarse grained, greenish black to black, minor.

MINERALIZATION

- Bn BORNITE
- Cp CHALCOPYRITE
- Po PYRRHOTITE
- Py PYRITE

ALTERATION MINERALS

- Cb CARBONATE
- Ch CHLORITE
- Ch ChERT
- Ep EPIDOTE
- Hs HEMATITE
- Js JASPER
- Kf K-SPAR
- Mp MARIPOSITE
- Qv QUARTZ VEIN / STOCKWORK
- Sh SHEELLITE
- Si SILICA

- FAULT / SHEAR
- GEOLOGIC CONTACT, INFERRED
- OUTCROP
- SUBCROP
- CONTOUR 5100
- STREAMS
- SWAMPS
- OVERBURDEN
- ROAD

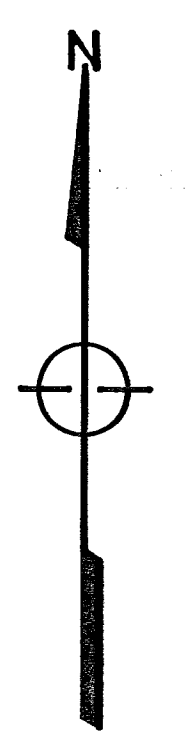
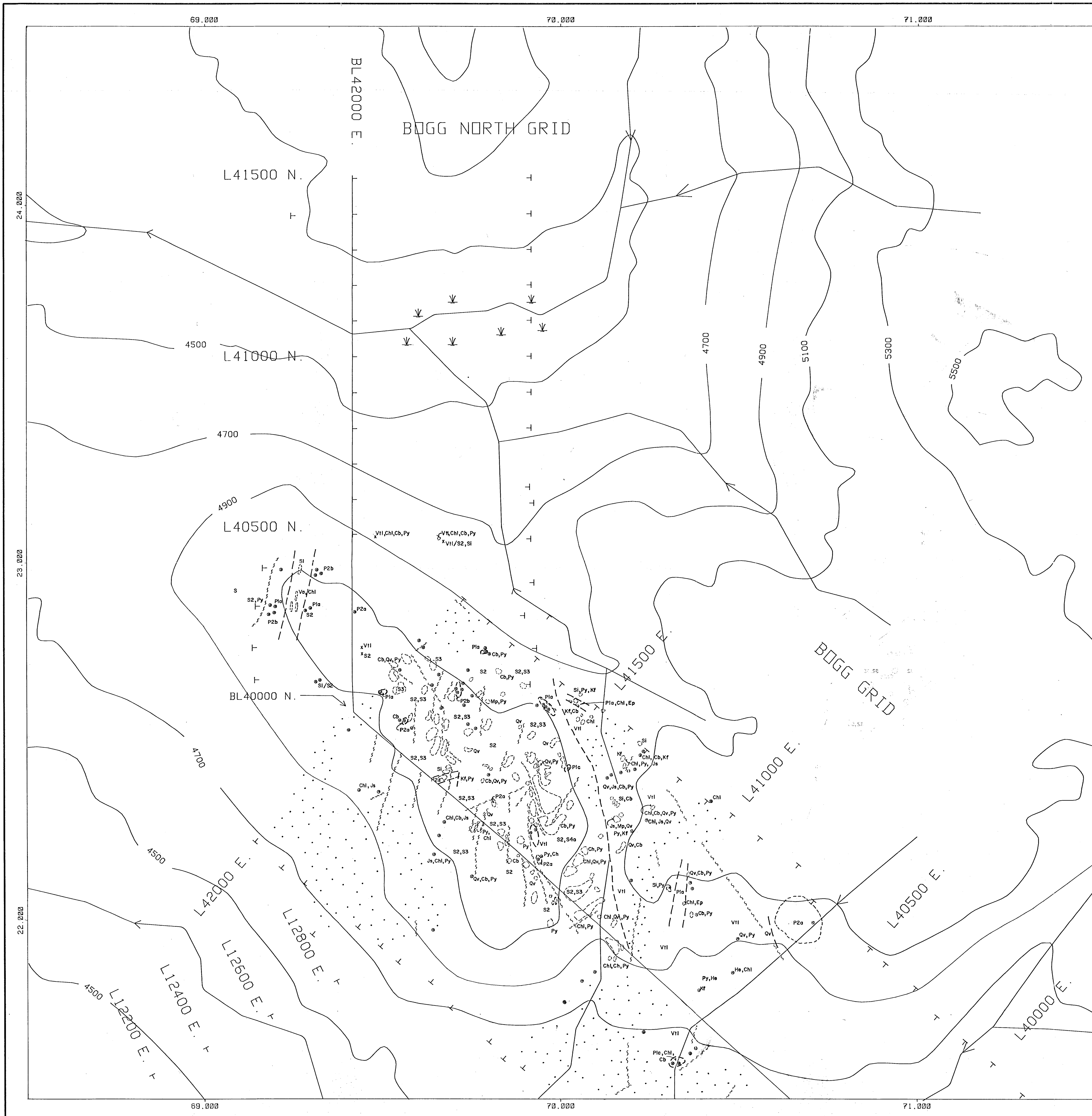
GEOLOGICAL BRANCH
ASSESSMENT REPORT

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FIG. 6

PLACER DOME INC.	
DRAWN NEM/GAD	BOGG SOUTH GRID 1990
DATE 31/10/90	GEOLOGY
SCALE 1:5000	
NO.	PLATE



LEGEND

ROCK UNITS

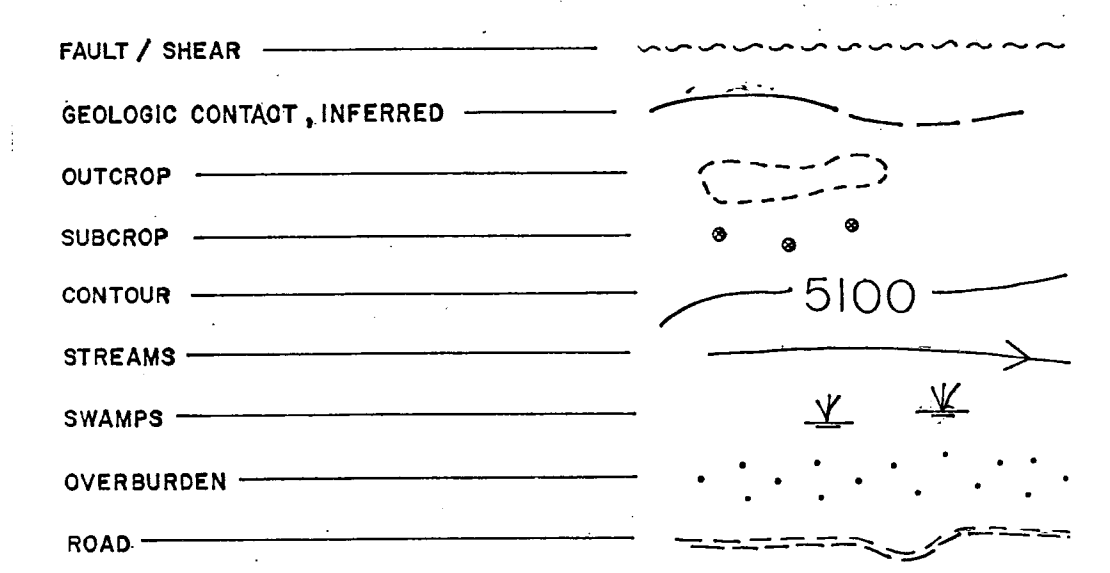
- SEDIMENTARY**
- S1 MUDSTONE: very fine grained, dark grey to black, interbedded with siltstone.
 - S2 SILTSTONE: fine grained, dark to light grey, feldspathic litharenite in composition, massive.
 - S3 SANDSTONE: medium grained, light to medium grey, feldspathic litharenite to arenite in composition, may contain some mudstone or siltstone fragments.
 - S4a LIMESTONE: finely crystalline, light grey to greenish grey, clean, interbedded with mudstones and siltstones.
 - S4b LIMESTONE: bluish grey to dark grey, finely crystalline, high mudstone content.
 - S5a COARSE GRAINED SEDIMENTS, GREYWACKE: fine to medium grained matrix, medium grained rounded clasts of S1 and V7I rock units.
 - S5b DEBRIS FLOW: fine to medium grained matrix, large fragments of S3 and S4b, poorly sorted.
- VOLCANIC**
- V7I FELSIC TUFF: fine grained matrix with subangular to angular felsic fragments
 - V7I AGGLOMERATIC BASALT: fine grained, heterolithic, red-brown oxidized surface, Eocene-age
 - Va ANDESITE: fine grained, green, massive.
- PLUTONIC**
- Plc DIORITE: fine grained, dark green, massive.
 - P2b PORPHYRITIC DIORITE: fine grained with subhedral white feldspar phenocrysts
 - P2a HORNBLende DIORITE: massive, fine grained, hornblende phenocrysts, rare quartz fragments.
 - P2a K-SPAR PORPHYRY: medium grained, pinkish white matrix with k-spar, quartz phenocrysts.
 - P2b BIOTITE-K-SPAR PORPHYRY: medium grained, white to pink white matrix with quartz and biotite phenocrysts.
 - Plc PYROXENE DYKES: medium to coarse grained, greenish black to black, minor.

MINERALIZATION

- Bn BORNITE
- Cp CHALCOPYRITE
- Po PYRRHOTITE
- Py PYRITE

ALTERATION MINERALS

- Cb CARBONATE
- Ch CHLORITE
- Ch CHERT
- Ep EPIDOTE
- He HEMATITE
- Js JASPER
- Kf K-SPAR
- Mp MARIPOSITITE
- Qv QUARTZ VEIN / STOCKWORK
- Sh SHEELITE
- Si SILICA



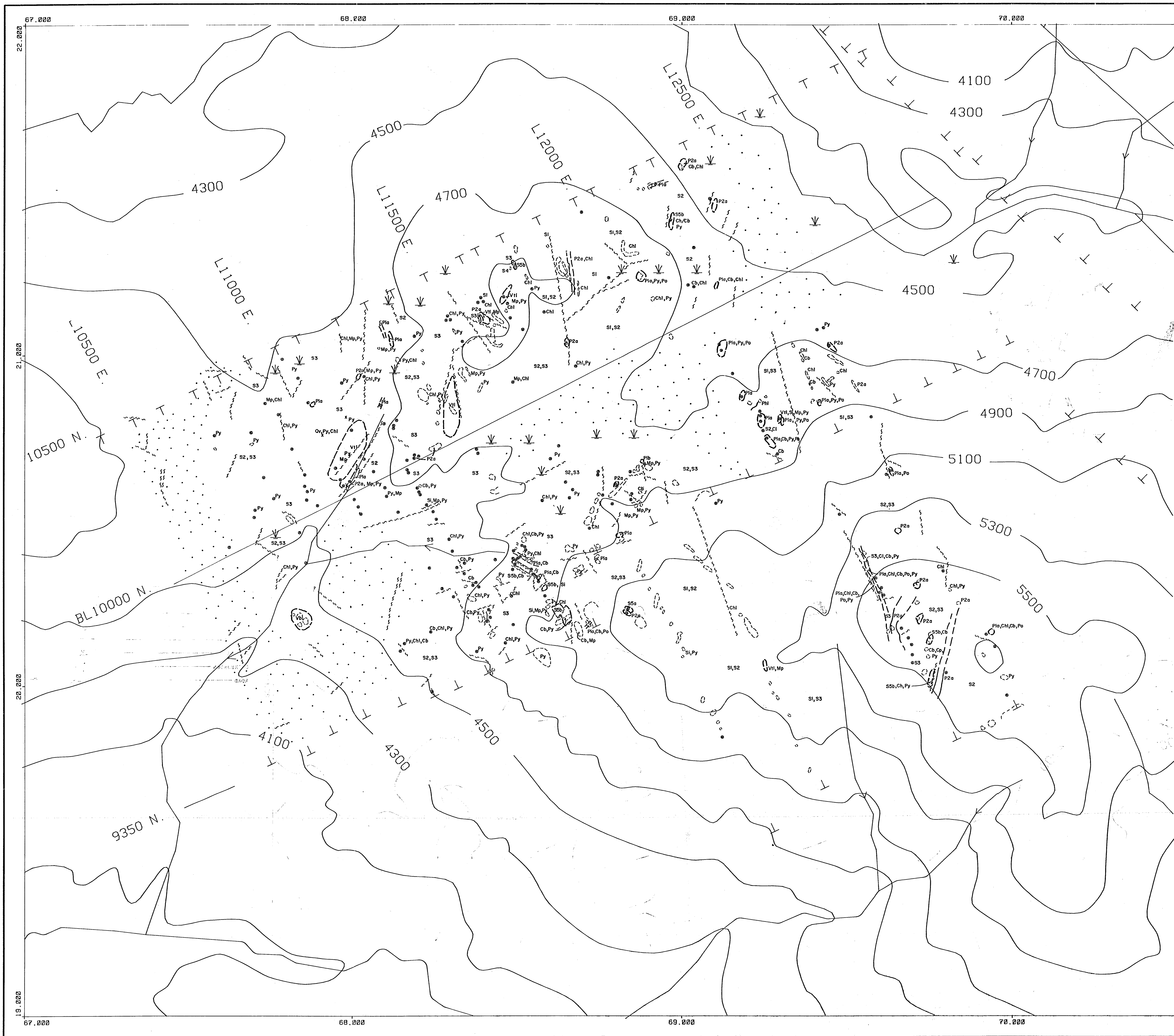
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FIG. 5

PLACER DOME INC.	
DRAWN GAD/NEA	BOGG NORTH 1990
DATE 31/10/90	GEOLOGY
SCALE 1:5000	
NO.	PLATE



LEGEND

ROCK UNITS

- SEDIMENTARY**
- S1 MUDSTONE: very fine grained, dark grey to black, interbedded with siltstone.
 - S2 SILTSTONE: fine grained, dark to light grey, feldspathic litharenite in composition, massive.
 - S3 SANDSTONE: medium grained, light to medium grey, feldspathic litharenite to arenite in composition, may contain some mudstone or siltstone fragments.
 - S4a LIMESTONE: finely crystalline, light grey to greenish grey, clean, interbedded with mudstones and siltstones.
 - S4b LIMESTONE: bluish grey to dark grey, finely crystalline, high mudstone content.
 - S5a COARSE GRAINED SEDIMENTS, GREYWACKE: fine to medium grained matrix, medium grained rounded clasts of S1 and V1 rock units.
 - S5b DEBRIS FLOW: fine to medium grained matrix, large fragments of S3 and S4b, poorly sorted.
- VOLCANIC**
- V1 FELSIC TUFF: fine grained matrix with subangular to angular felsic fragments
 - V1a AGGLOMERATIC BASALT: fine grained, heterolithic, red-brown oxidized surface, Escabe-egg
 - V1b ANDESITE: fine grained, green, massive.
- PLUTONIC**
- P1a DIORITE: fine grained, dark green, massive.
 - P1b PORPHYRITIC DIORITE: fine grained with subhedral white feldspar phenocrysts
 - P1c HORNBLENDE DIORITE: massive, fine grained, hornblende phenocrysts, rare quartz fragments.
 - P2a K-SPAR PORPHYRY: medium grained, pinkish white matrix with k-spar, quartz phenocrysts.
 - P2b BIOTITE-K-SPAR PORPHYRY: medium grained, white to pink white matrix with quartz and biotite phenocrysts.
 - P1i PYROXENE DYKES: medium to coarse grained, greenish black to black, minor.

MINERALIZATION

- Bn BORNITE
- Cp CHALCOPYRITE
- Po PYRRHOTITE
- Py PYRITE

ALTERATION MINERALS

- Cb CARBONATE
- Ch CHLORITE
- Ch CHERT
- Ep EPIDOTE
- Hc HEMATITE
- Jc JASPER
- Kt K-SPAR
- Mp MARIPOSITE
- Ov QUARTZ VEIN / STOCKWORK
- Sh SHEELITE
- Sl SILICA

- FAULT / SHEAR
- GEOLOGIC CONTACT, INFERRED
- OUTCROP
- SUBCROP
- CONTOUR
- STREAMS
- SWAMPS
- OVERBURDEN
- ROAD

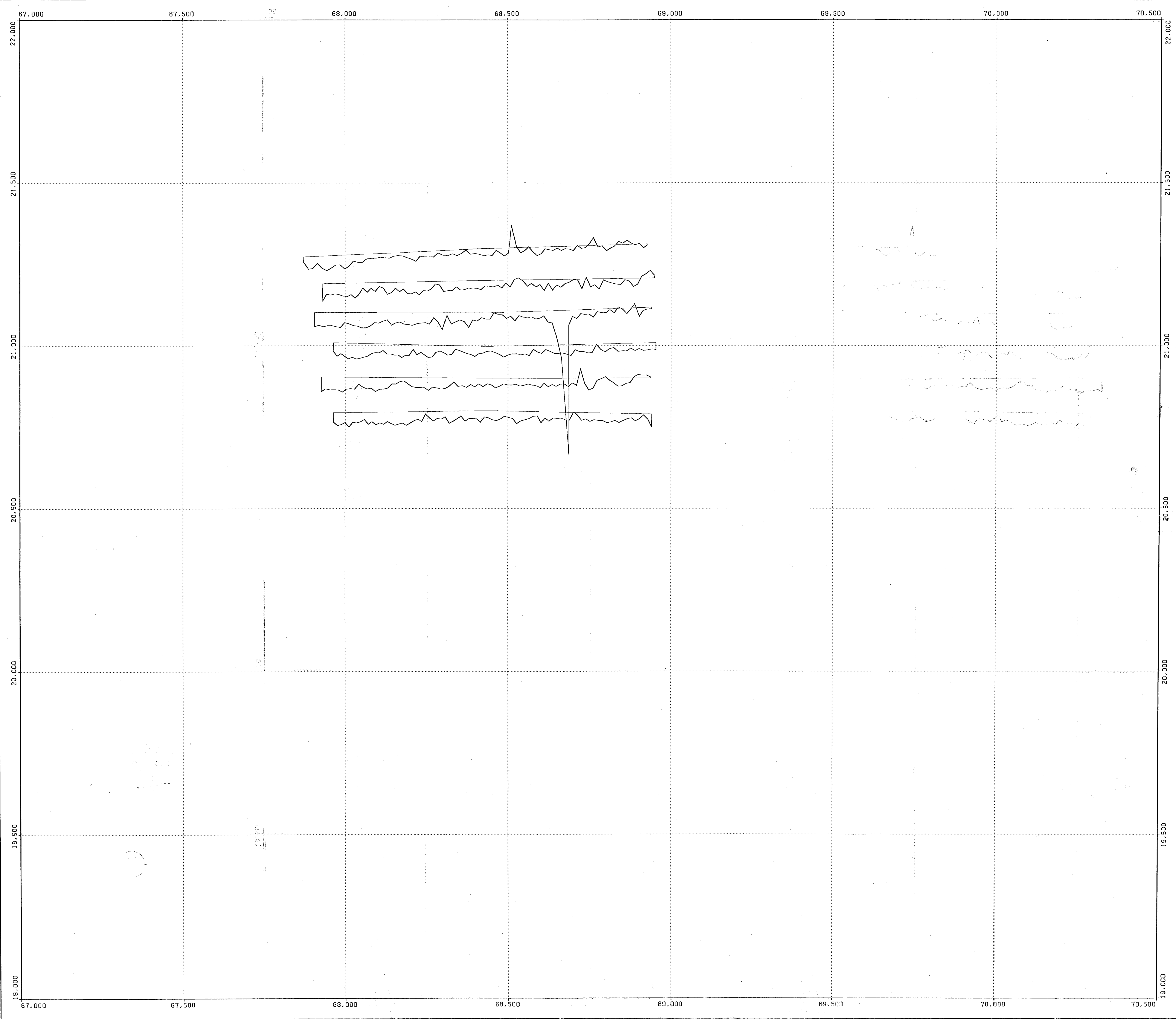
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FIG. 4

PLACER DOME INC.	
DRAWN GAD/NEA	NEEDA EN-GRID 1990
DATE 31/10/90	GEOLOGY
SCALE 1:5000	
NO.	PLATE



NEEDA PROJECT - TOPEN GRID
 STACKED MAGNETIC PROFILES
 UNITS = NANOTESLAS

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 3EXPL/NEEDA/GP
 FIELD FILE
 MAG TOPEN.MAGS.UTH
 SCALE: 50.0 UNITS / CM
 BASE LEVEL: 57600
**GEOLOGICAL BRANCH
 ASSESSMENT REPORT**

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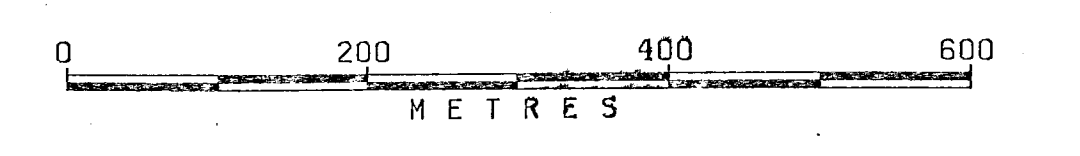
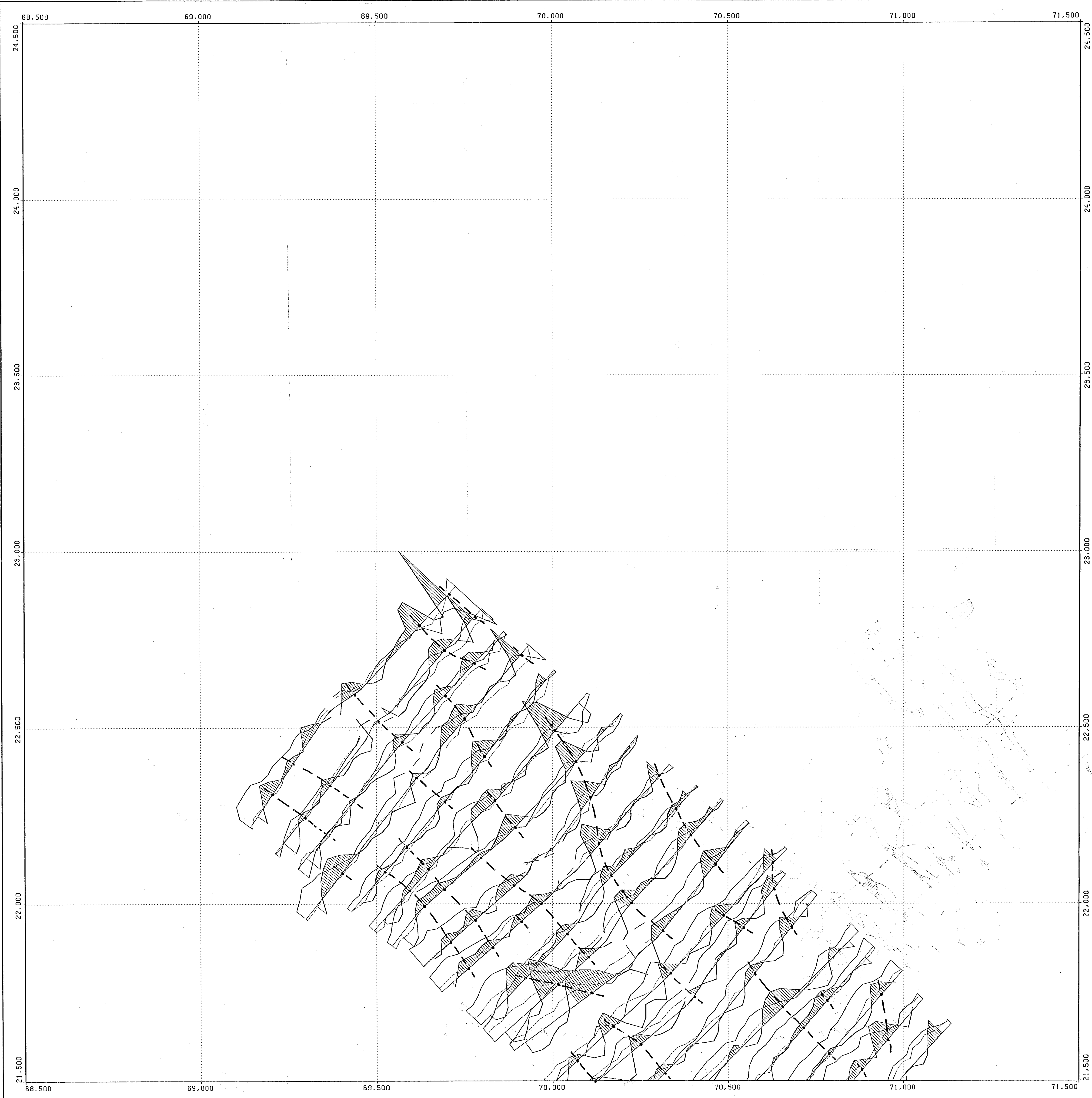


FIG. 15

DRAWN		RNC		NEEDA PROJECT - TOPEN GRID	
DATE 90:11:09				STACKED MAGNETIC PROFILES	
SCALE 1:5000					
NO.				PLATE	



BOGG PROJECT - NORTH GRID
 STACKED VLF PROFILES

LIGHT LINE = QUADRATURE
 MEDIUM LINE = IN-PHASE
 DARK LINE = FRASER FILTER

--- CONDUCTOR AXES

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 2EXPL/BOGG/GP

FIELD	FILE
IP	BOGGS.IPS.UTM
SCALE:	30.0 UNITS / CM
BASE LEVEL:	0.0
IP	BOGGS.IPS.UTM
SCALE:	30.0 UNITS / CM
BASE LEVEL:	0.0
FRASER FILTER APPLIED	
QD	BOGGS.QDS.UTM
SCALE:	30.0 UNITS / CM
BASE LEVEL:	0.0

GEOLOGICAL BRANCH
 ASSESSMENT REPORT

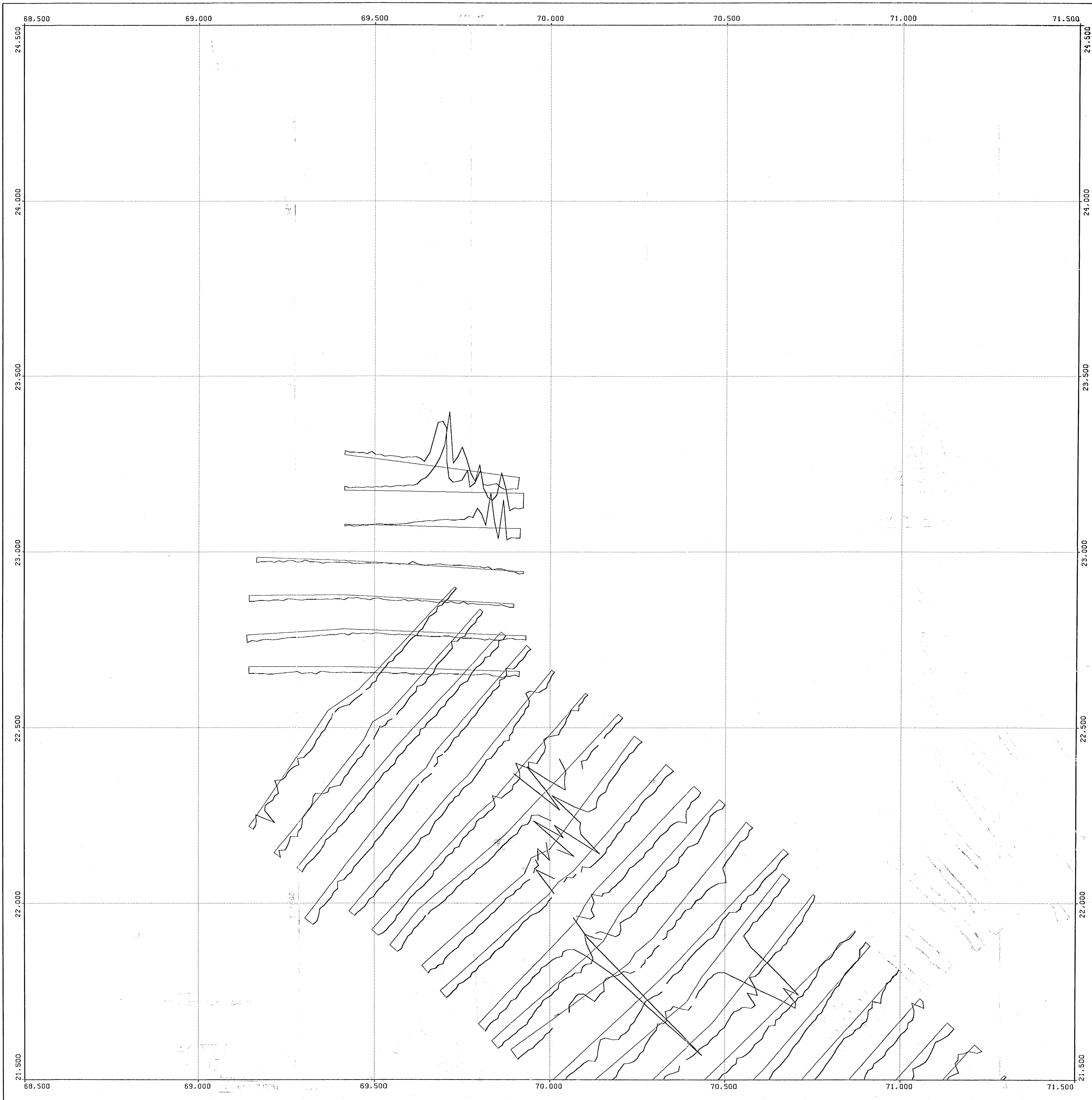
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FIG. 16

DRAWN RHC		PLACER DOME INC.	
DATE 90:11:15		BOGG PROJECT - NORTH GRID	
SCALE 1:5000		STACKED VLF PROFILES	
NO.		PLATE	



BOGG PROJECT - NORTH GRID
 STACKED MAGNETIC PROFILES
 UNITS = NANOTESLAS

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 8EXPL/BOGG/GP

—	FIELD	FILE
—	MAG	BOGGN.MAGS.UTM
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	BASE LEVEL:	57700
—	MAG	BOGG3.MAGS.UTM
	SCALE:	200 UNITS / CM
	BASE LEVEL:	57700

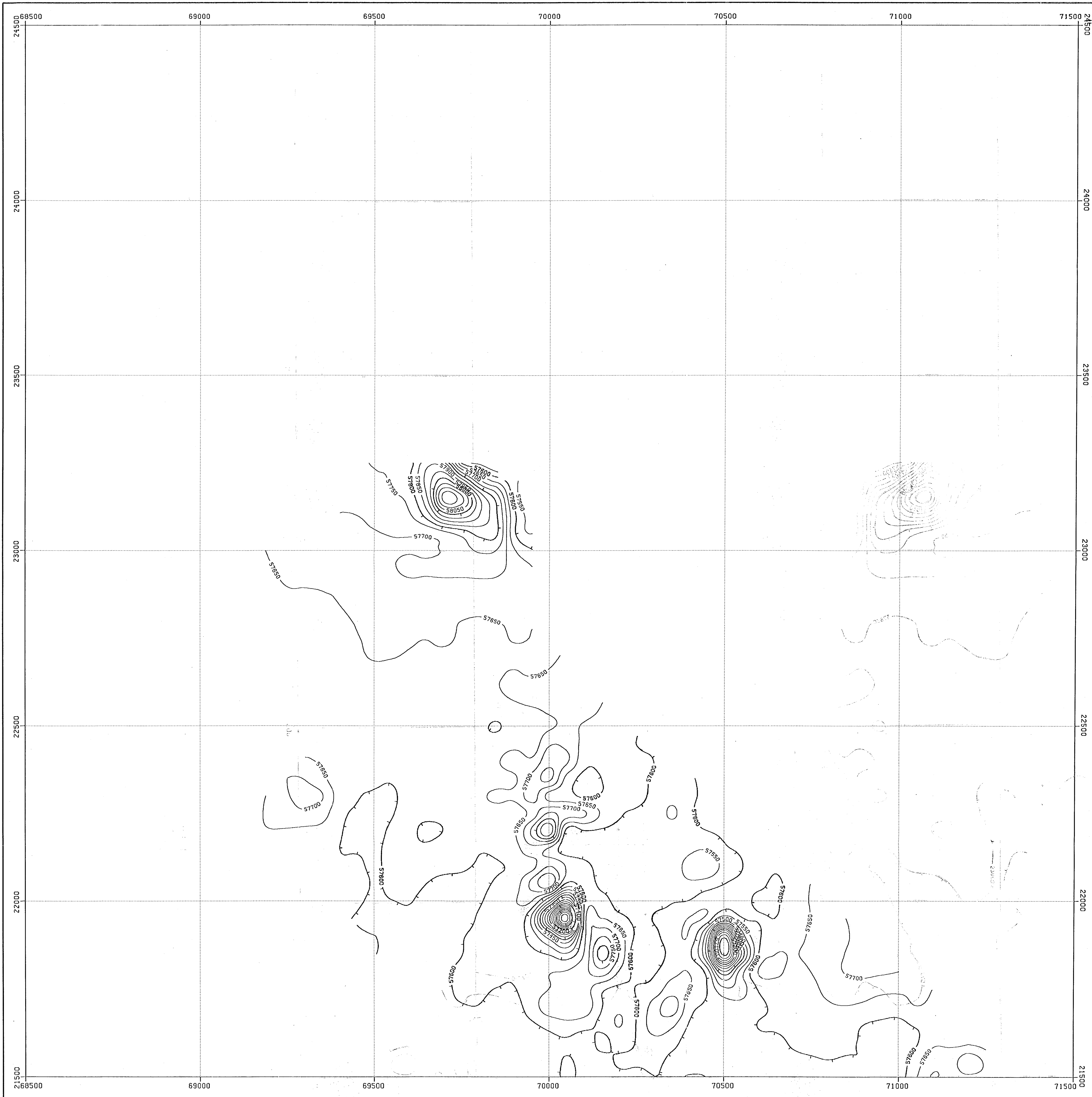
GEOLOGICAL BRANCH
 ASSESSMENT REPORT

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FIG. 17

DRAWN RNC		PLACER DOME INC.	
DATE 90:11:15		BOGG PROJECT - NORTH GRID	
SCALE 1:5000		STACKED MAGNETIC PROFILES	
NO.			PLATE



BOGG PROJECT - NORTH GRID
 CONTOURED MAGNETIC DATA
 UNITS = NANOTESLAS

DATA PLOTTED ON THIS MAP:
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 FIELD FILE
 CONTOURS: MAG BOGG.GRD.UTM

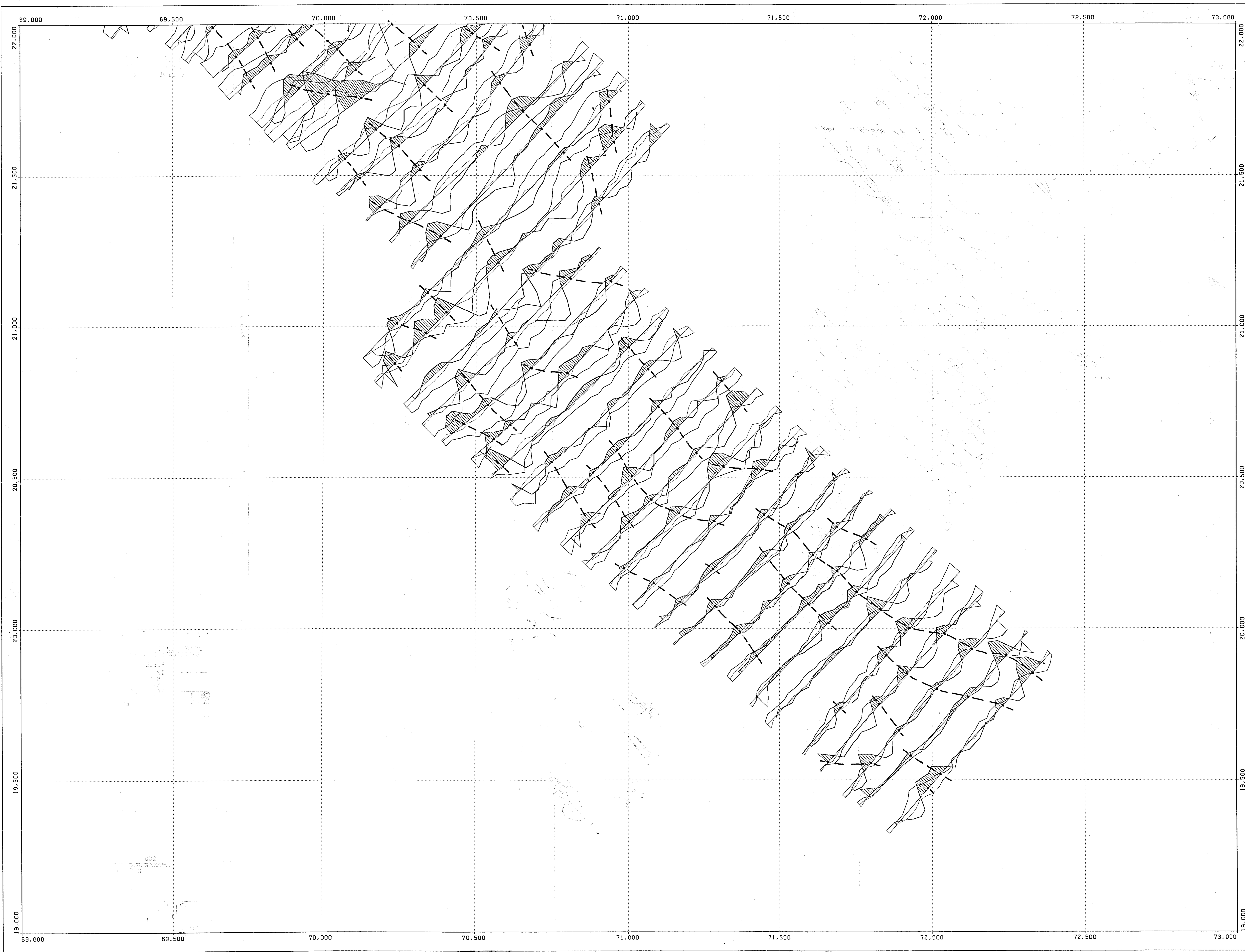
GEOLOGICAL BRANCH
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FIG. 18

DRANN		RNC		BOGG PROJECT - NORTH GRID	
DATE 90:11:15				CONTOURED MAGNETIC DATA	
SCALE 1:5000					
NO.				PLATE	



BOGG PROJECT - SOUTH GRID
 STACKED VLF PROFILES

LIGHT LINE = QUADRATURE
 MEDIUM LINE = IN-PHASE
 DARK LINE = FRASER FILTER

--- CONDUCTOR AXES

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 8EXPL/BOGG/GP

FIELD	FILE
IP	BOGGS_IPS_UTM
SCALE:	30.0 UNITS / CM
BASE LEVEL:	0.0
IP	BOGGS_IPS_UTM
SCALE:	30.0 UNITS / CM
BASE LEVEL:	0.0
	FRASER FILTER APPLIED
OD	BOGGS_ODS_UTM
SCALE:	30.0 UNITS / CM
BASE LEVEL:	0.0

GEOLOGICAL BRANCH
 ASSESSMENT REPORT

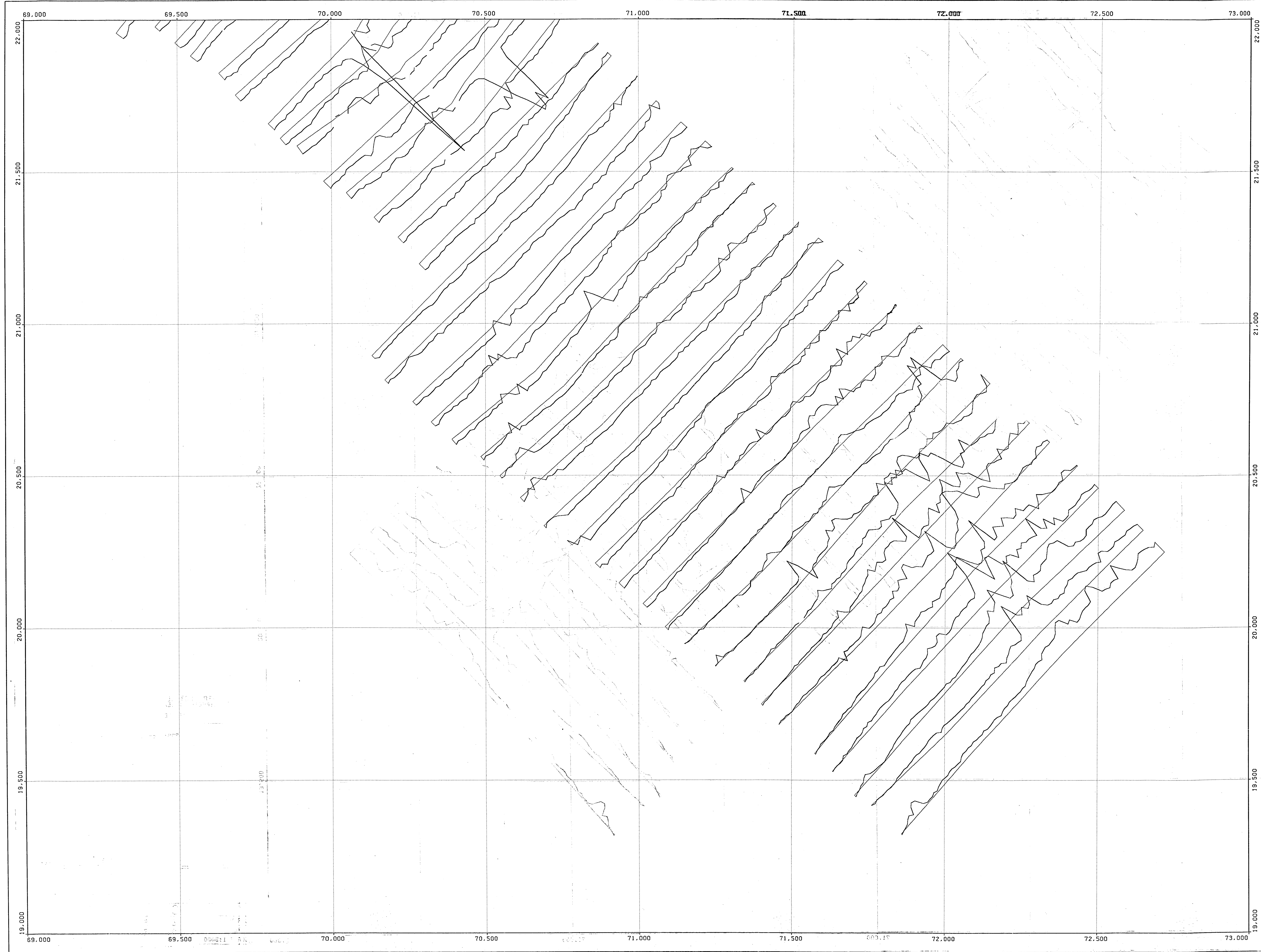
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FIG. 19

DRAWN		RWC	
DATE 90:11:15			
SCALE 1:5000			
NO.	PLATE		

PLACER DOME INC.
 BOGG PROJECT - SOUTH GRID
 STACKED VLF PROFILES



BOGG PROJECT - SOUTH GRID
 STACKED MAGNETIC PROFILES
 UNITS = NANOTESLAS

DATA PLOTTED ON THIS MAP:
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 FIELD FILE
 MAG BOGGS.MAGS.UTM
 SCALE: 200 UNITS / CM
 BASE LEVEL: 57700

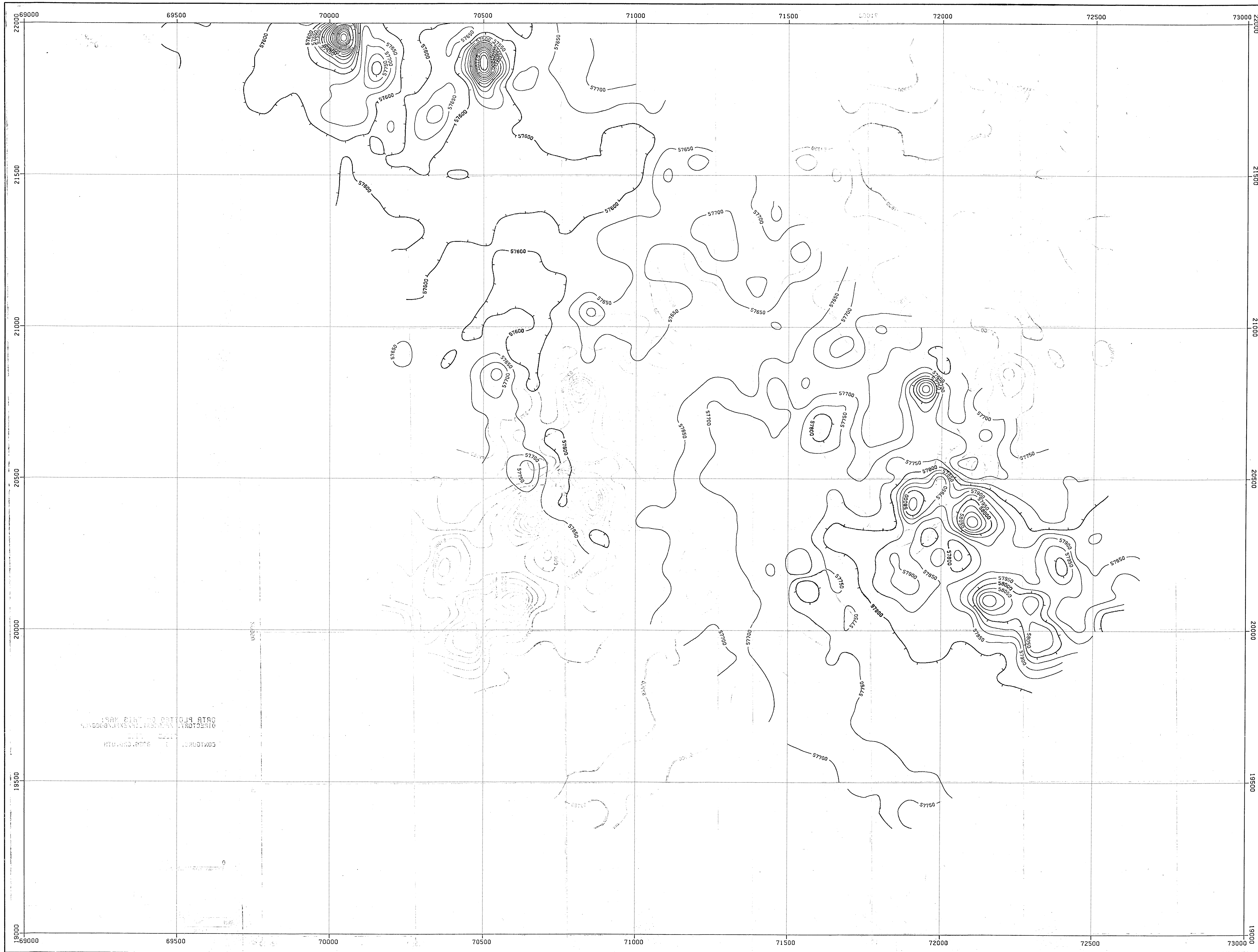
GEOLOGICAL BRANCH
 ASSESSMENT REPORT

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FIG. 20

DRAWN RWC		PLACER DOME INC.	
DATE 90:11:15		BOGG PROJECT - SOUTH GRID	
SCALE 1:5000		STACKED MAGNETIC PROFILES	
NO.			PLATE



BOGG PROJECT - SOUTH GRID
 CONTOURED MAGNETIC DATA
 UNITS = NANOTESLAS

DATA PLOTTED ON THIS MAP:
 DIRECTORY: /PLACER1_IP/EXPL/BOGG/GP
 FIELD FILE
 CONTOURS: MAG BOGG.GRD.UTM

DATA PLOTTED ON THIS MAP:
 DIRECTORY: /PLACER1_IP/EXPL/BOGG/GP
 FIELD FILE
 CONTOURS: MAG BOGG.GRD.UTM

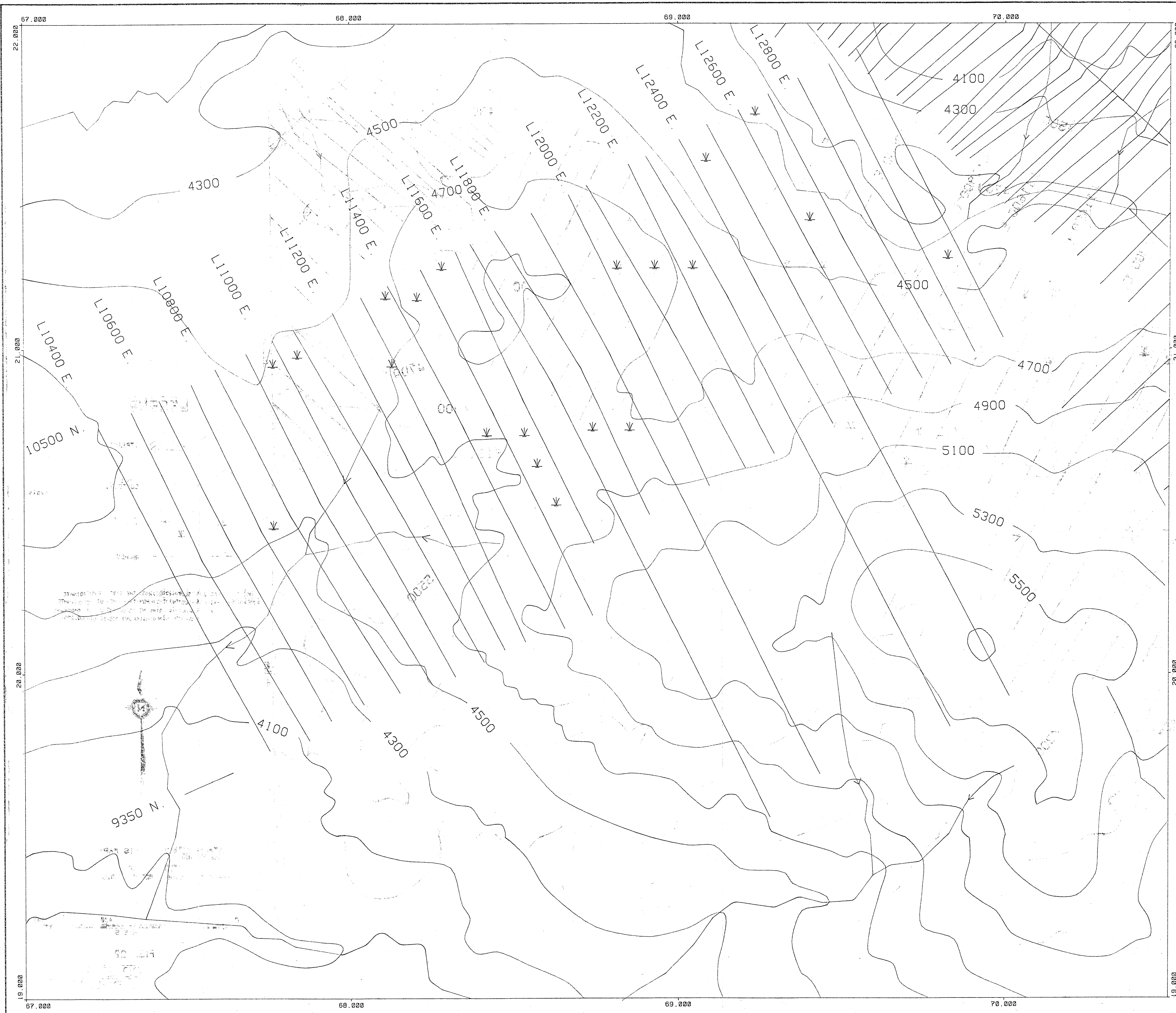
GEOLOGICAL BRANCH
 ASSESSMENT REPORT

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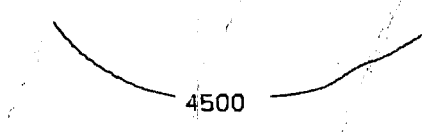
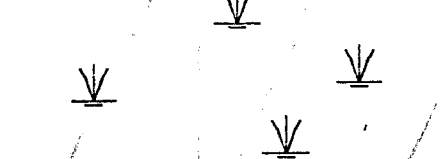
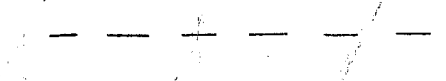


FIG. 21

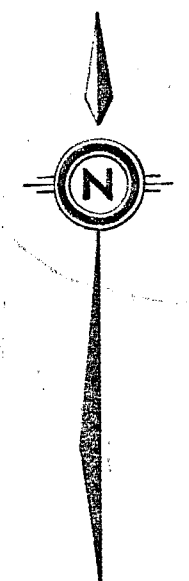
DRAWN RWC		BOGG PROJECT - SOUTH GRID	
DATE 90:11:15		CONTOURED MAGNETIC DATA	
SCALE 1:5000			
NO.		PLATE	



LEGEND

-  STREAMS
-  CONTOURS (200 Ft. intervals)
-  SWAMPS
-  ROADS

600,000 m. HAS BEEN SUBTRACTED FROM THE EAST UTM COORDINATE.
 5,700,000 m. HAS BEEN SUBTRACTED FROM THE NORTH UTM COORDINATE.
 I.e. (Map coordinates 60,000 E, 20,000 N, represent
 real UTM coordinates 660,000 E, 5,720,000 N.)



ECOLOGICAL BRANCH
 ASSESSMENT REPORT

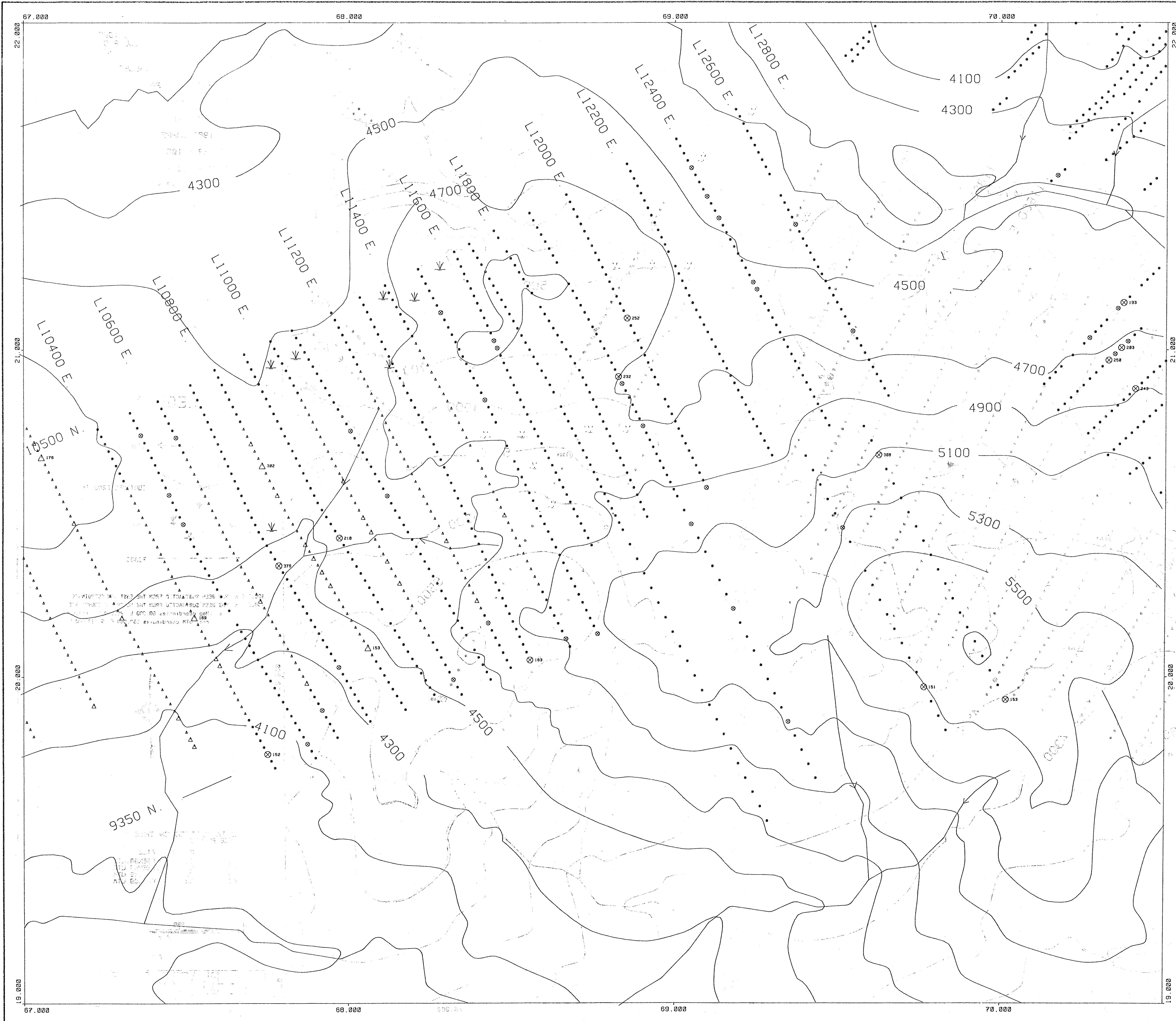
DATA PLOTTED ON THIS MAP:
 SEE PLOTLEG
 FIELD FILE
 LINE BOG-EN90.DIG

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FIG. 22

DRAWN NEM		PLACER DOME INC.	
DATE 31/10/90		NEEDA EN-GRID 1990	
SCALE 1:5000			
NO.		PLATE	



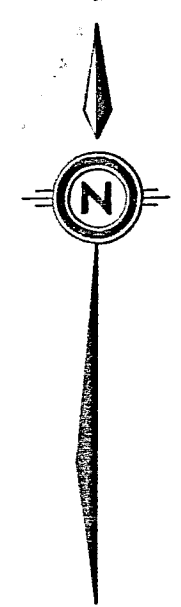
NEEDA EN-GRID 1990
COPPER SYMBOL PLOT

- 1990 COPPER VALUES
- COPPER (100 PPM
 - ⊙ COPPER 100 - 150 PPM
 - ⊗ COPPER) 150 PPM
- 1989 COPPER VALUES
- ▲ COPPER (100 PPM
 - △ COPPER 100 - 150 PPM
 - △ COPPER) 150 PPM

LEGEND

- STREAMS
- CONTOURS (200 Ft. Intervals)
- SWAMPS
- ROADS

600,000 m. HAS BEEN SUBTRACTED FROM THE EAST UTM COORDINATE.
5,700,000 m. HAS BEEN SUBTRACTED FROM THE NORTH UTM COORDINATE.
i.e. (Map coordinates 60,000 E, 20,000 N, represent
real UTM coordinates 660,000 E, 5,720,000 N.)



DATA PLOTTED ON THIS MAP:
SEE FILE

POINTS:	FIELD	FILE
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CU	80GSSEN90	UTA
CU	ENGR1089	UTA
CU	ENGR1089	UTA



FIG. 23

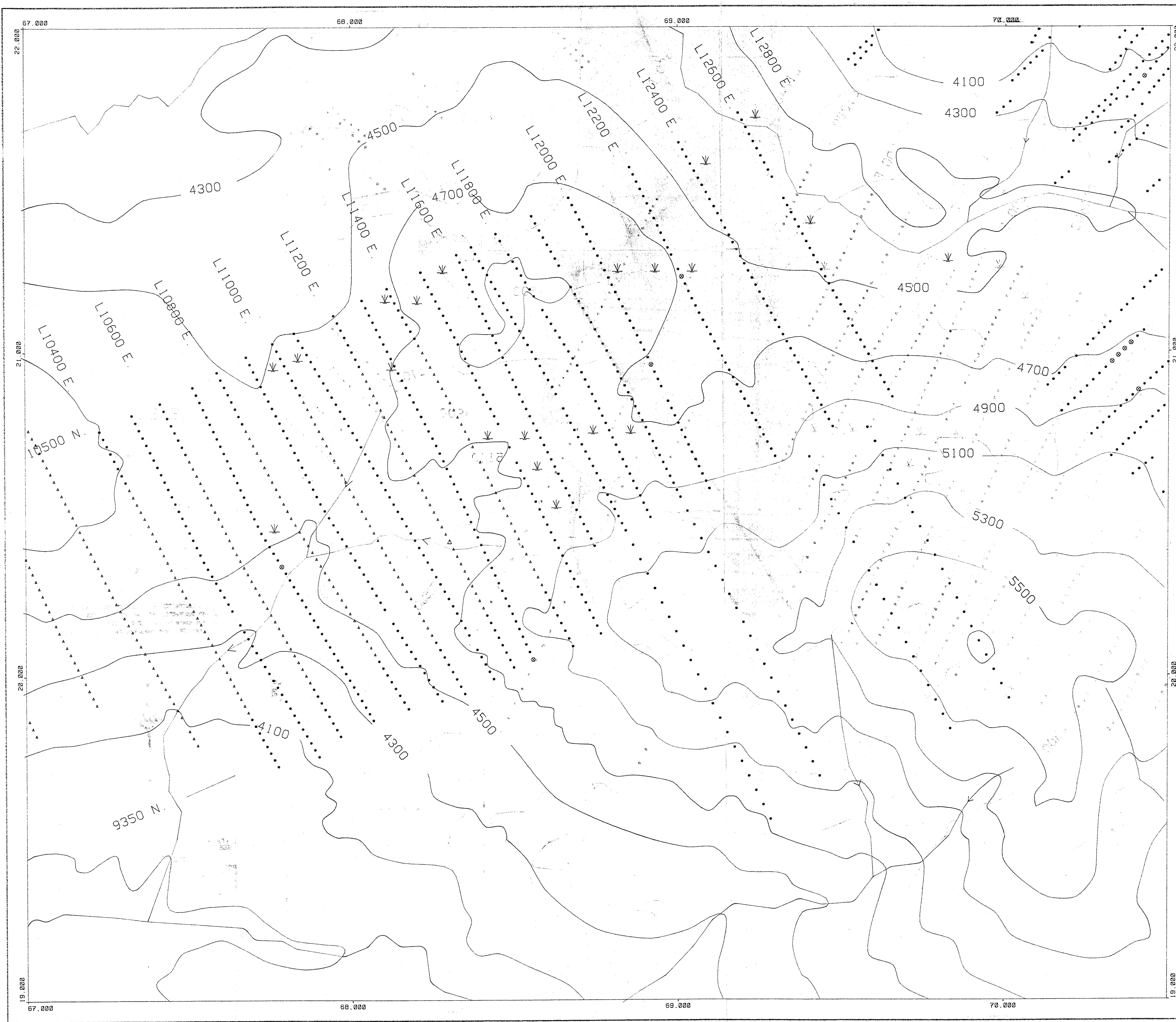
PLACER DOME INC.

NEEDA EN-GRID 1990
COPPER SYMBOL PLOT

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BIOLOGICAL RANGE
 ASSESSMENT REPORT

DRAWN	NEA	NO.	PLATE
DATE	14/11/98		
SCALE	1:5000		



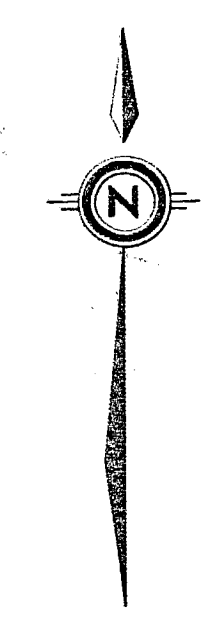
NEEDA EN-GRID 1990
LEAD SYMBOL PLOT

- 1990 LEAD VALUES
- LEAD (30 PPA
 - ⊙ LEAD 30 - 50 PPA
 - ⊗ LEAD (50 PPA
- 1989 LEAD VALUES
- ▲ LEAD (30 PPA
 - △ LEAD 30 - 50 PPA
 - △ LEAD (50 PPA

LEGEND

- STREAMS
- CONTOURS (200 Ft. Intervals)
- SWAMPS
- ROADS

600,000 m. HAS BEEN SUBTRACTED FROM THE EAST UTM COORDINATE.
5,700,000 m. HAS BEEN SUBTRACTED FROM THE NORTH UTM COORDINATE.
i.e. (Map coordinates 60,000 E. 20,000 N. represent
real UTM coordinates 660,000 E. 5,720,000 N.)



DATA PLOTTED ON THIS MAP:
SEE PLTLEG

POINTS:	FIELD	FILE
POINTS:	PB	BOGSEN90.UTA
POINTS:	PB	BOGSEN90.UTA
POINTS:	PB	ENGR1089.UTA
POINTS:	PB	ENGR1089.UTA

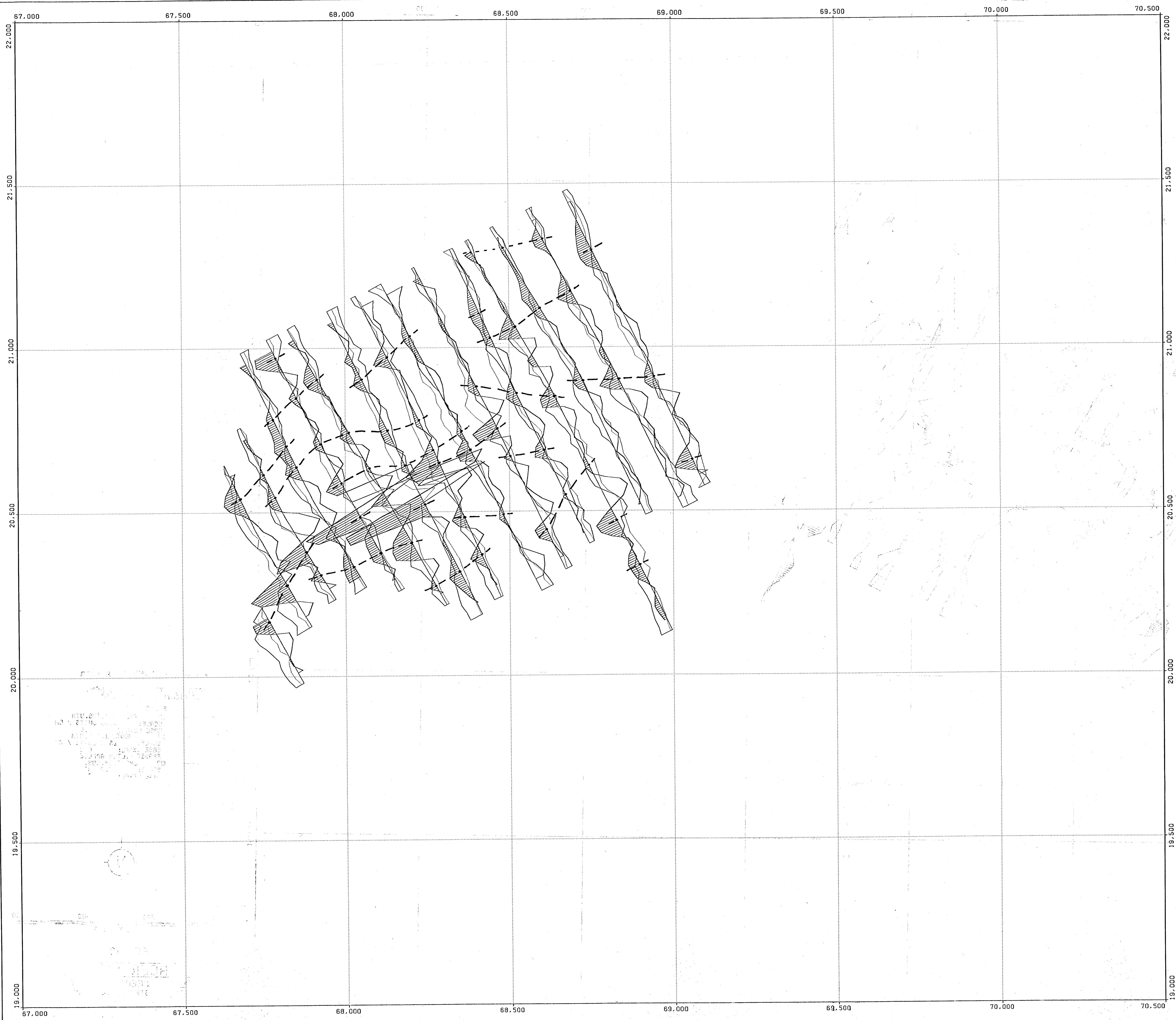
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FIG. 24

DRAWN NEA		PLACER DOME INC.	
DATE 14/11/90		NEEDA EN-GRID 1990	
SCALE 1:5000		LEAD SYMBOL PLOT	
NO.		PLATE	

LOGICAL BRANCH
ASSESSMENT REPORT



NEEDA PROJECT - EN GRID
 STACKED VLF PROFILES - CUTLER

LIGHT LINE = QUADRATURE
 MEDIUM LINE = IN-PHASE
 DARK LINE = FRASER FILTER

--- CONDUCTOR AXES

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 8EXPL/NEEDA/GP

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---	BASE LEVEL:	0.0
---	IP	ENCUTLER.IPS.UTM
---	SCALE:	25.0 UNITS / CM
---	BASE LEVEL:	0.0
---	FRASER FILTER APPLIED	
---	00	ENCUTLER.OOS.UTM
---	SCALE:	25.0 UNITS / CM
---	BASE LEVEL:	0.0

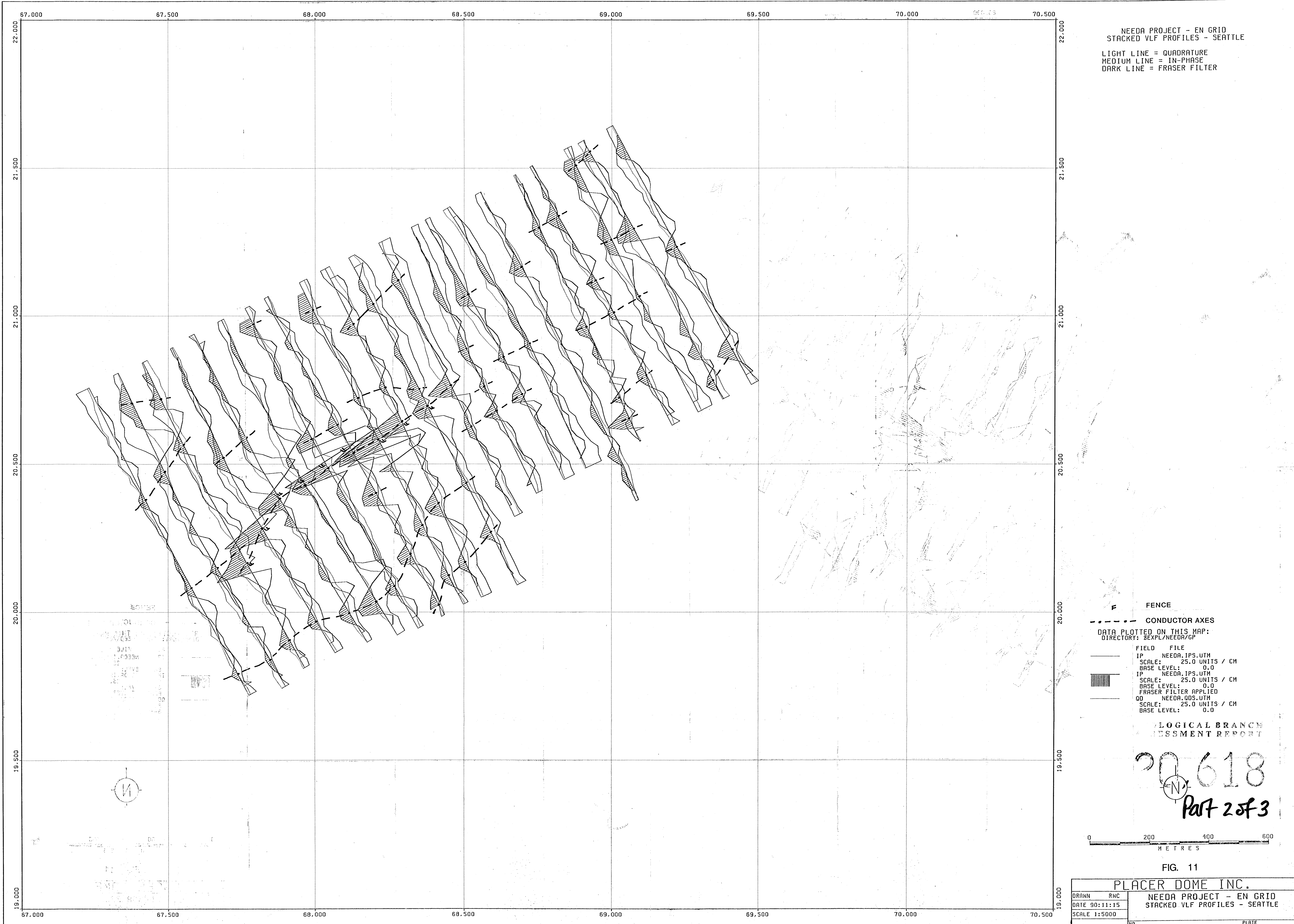
PLACER BRANCH
 GROUND REPORT

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FIG. 10

PLACER DOME INC.	
DRANN RNC	NEEDA PROJECT - EN GRID
DATE 90:11:15	STACKED VLF PROFILES - CUTLER
SCALE 1:5000	
NO.	PLATE



NEEDA PROJECT - EN GRID
 STACKED VLF PROFILES - SEATTLE

LIGHT LINE = QUADRATURE
 MEDIUM LINE = IN-PHASE
 DARK LINE = FRASER FILTER

FENCE

CONDUCTOR AXES

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 8EXPL/NEEDA/GP

FIELD FILE
 IP: NEEDA.IPS.UTM
 SCALE: 25.0 UNITS / CM
 BASE LEVEL: 0.0

IP: NEEDA.IPS.UTM
 SCALE: 25.0 UNITS / CM
 BASE LEVEL: 0.0
 FRASER FILTER APPLIED

QD: NEEDA.QDS.UTM
 SCALE: 25.0 UNITS / CM
 BASE LEVEL: 0.0

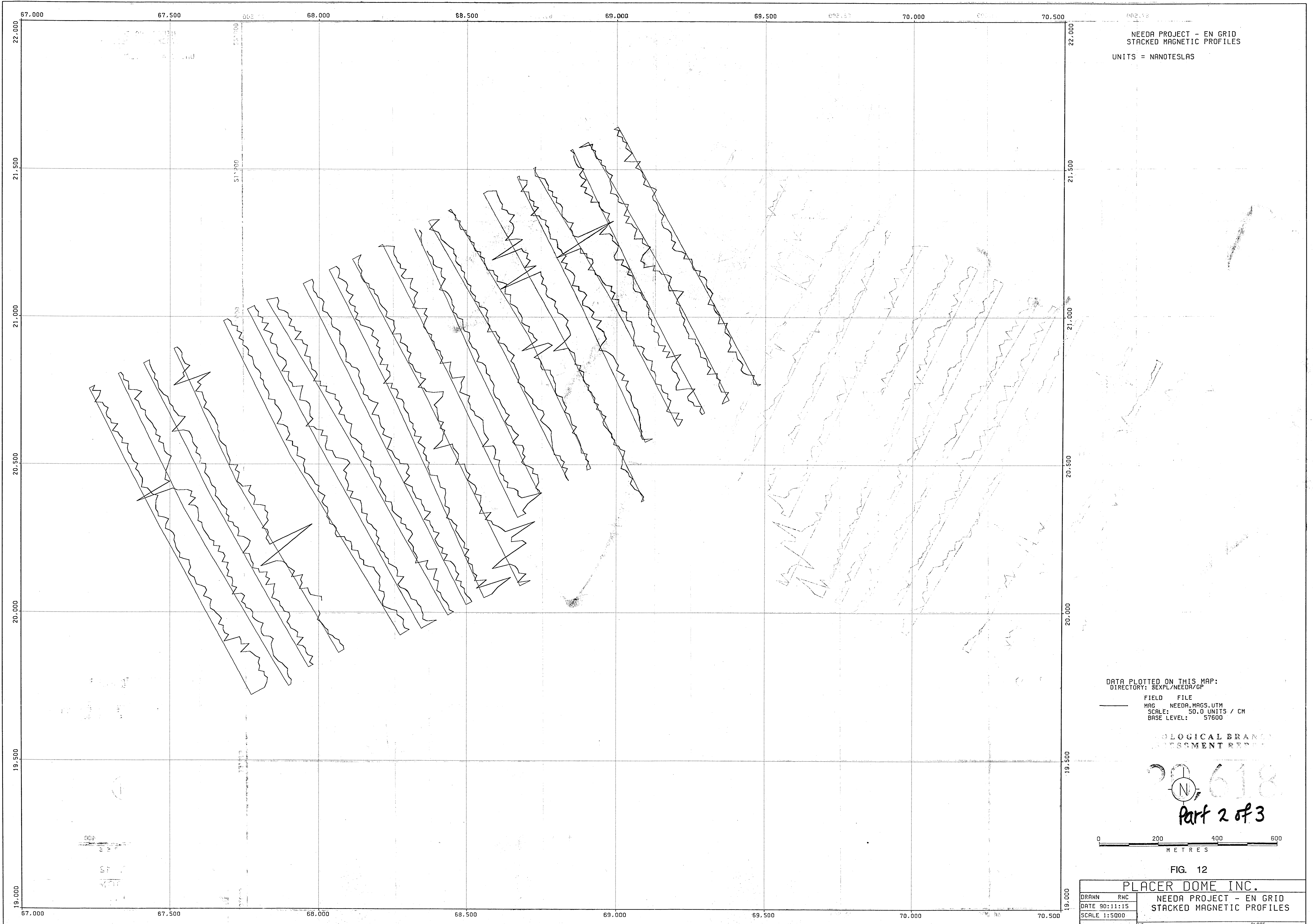
LOGICAL BRANCH
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FIG. 11

DRAWN RNC		PLACER DOME INC.	
DATE 90:11:15		NEEDA PROJECT - EN GRID	
SCALE 1:5000		STACKED VLF PROFILES - SEATTLE	
NO.			PLATE



NEEDA PROJECT - EN GRID
 STACKED MAGNETIC PROFILES
 UNITS = NANOTESLAS

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 8EXPL/NEEDA/GP
 FIELD FILE
 MAG NEEDA.MAGS.UTM
 SCALE: 50.0 UNITS / CM
 BASE LEVEL: 57600

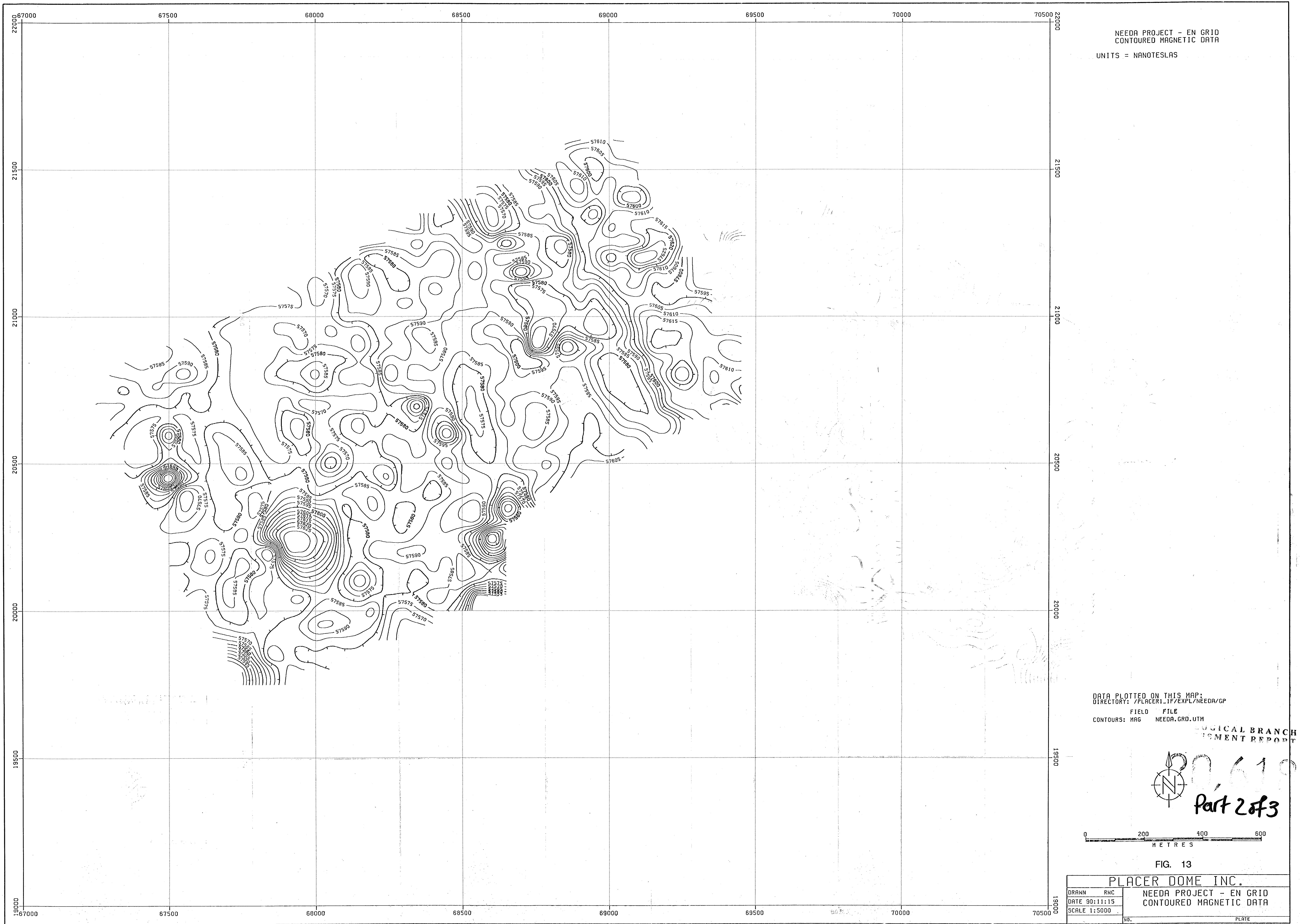
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FIG. 12

DRAWN		RAC		PLACER DOME INC.	
DATE 90:11:15				NEEDA PROJECT - EN GRID	
SCALE 1:5000				STACKED MAGNETIC PROFILES	
NO.				PLATE	



NEEDA PROJECT - EN GRID
 CONTOURED MAGNETIC DATA
 UNITS = NANOTESLAS

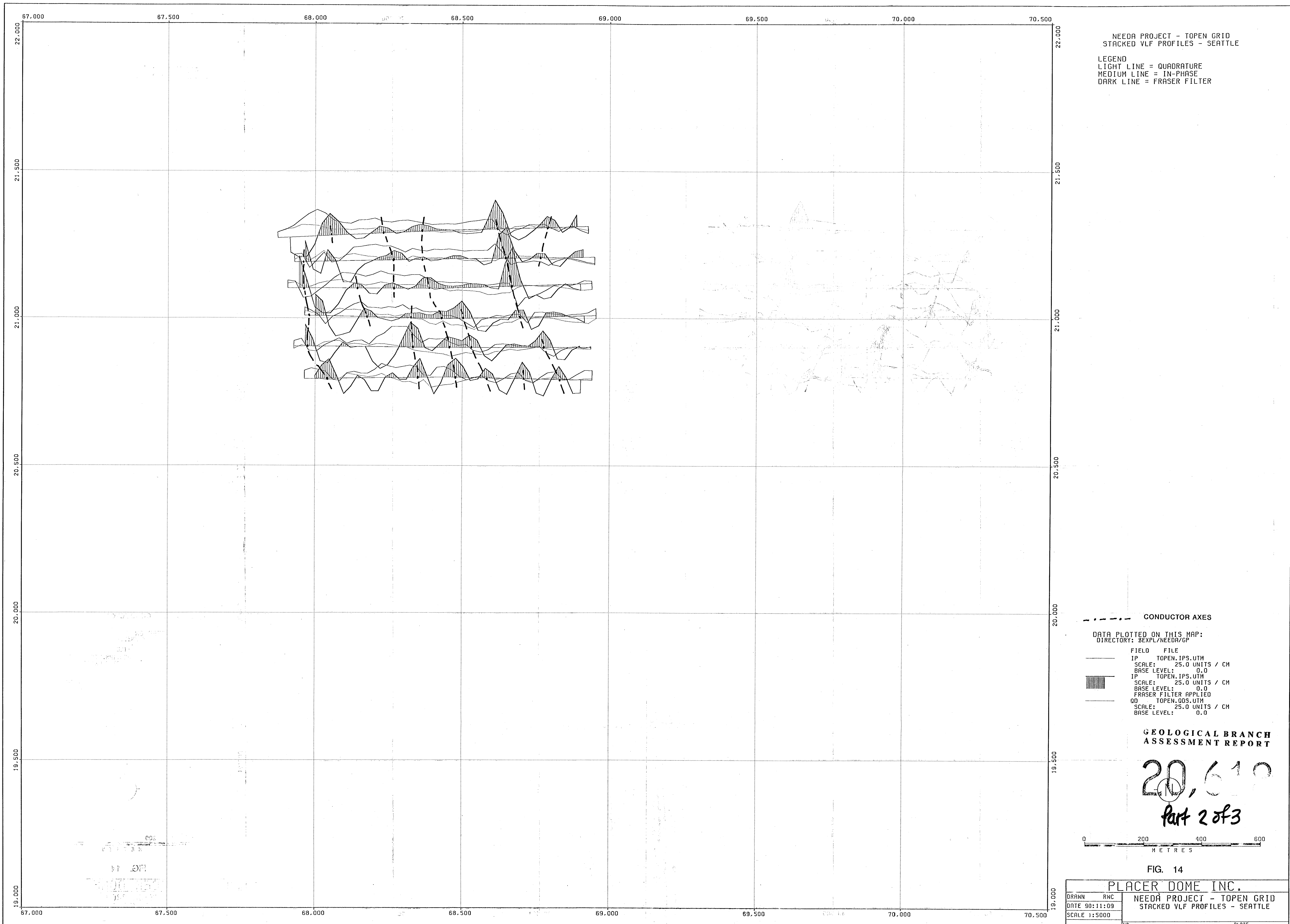
DATA PLOTTED ON THIS MAP:
 DIRECTORY: /PLACER1_LIF/EXPL/NEEDA/GP
 FIELD FILE
 CONTOURS: MAG NEEDA.GRD.UTM

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FIG. 13

DRAWN RNC		PLACER DOME INC.	
DATE 90:11:15		NEEDA PROJECT - EN GRID	
SCALE 1:5000		CONTOURED MAGNETIC DATA	
NO.		PLATE	



NEEDA PROJECT - TOPEN GRID
 STACKED VLF PROFILES - SEATTLE

LEGEND
 LIGHT LINE = QUADRATURE
 MEDIUM LINE = IN-PHASE
 DARK LINE = FRASER FILTER

--- CONDUCTOR AXES

DATA PLOTTED ON THIS MAP:
 DIRECTORY: 8EXPL/NEEDA/GP

FILE	TOPEN.IPS.UTM
IP	SCALE: 25.0 UNITS / CM
	BASE LEVEL: 0.0
FILE	TOPEN.IPS.UTM
IP	SCALE: 25.0 UNITS / CM
	BASE LEVEL: 0.0
	FRASER FILTER APPLIED
FILE	TOPEN.OBS.UTM
IP	SCALE: 25.0 UNITS / CM
	BASE LEVEL: 0.0

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FIG. 14

PLACER DOME INC.

DRANN	RWC	NEEDA PROJECT - TOPEN GRID
DATE	90:11:09	STACKED VLF PROFILES - SEATTLE
SCALE	1:5000	
NO.		PLATE