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GROUND MAGNETIC SURVEY

ON THE

ROSEBUD - GATOR PROJECT

PERSHING CO., NEVADA

ZONGE

6000B751

GROUND MAGNETIC SURVEY

ON THE

ROSEBUD - GATOR PROJECT

PERSHING CO., NEVADA

FOR

SANTA FE PACIFIC GOLD INC.

DATA ACQUISITION

ISSUE DATE:Tuesday, June 10, 1997

ZONGE JOB #9724

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GROUND MAGNETIC SURVEY
ON THE
ROSEBUD JV, GATOR GRID

INTRODUCTION

A Ground magnetic survey was performed by Zonge Geosciences, Inc., on the Rosebud JV, Gator Grid in Pershing County, Nevada for Santa Fe Pacific Gold Inc. The project is located in unsurveyed T.34 N., R. 30 E. and is covered on the Sulfur NV USGS 7.5 minute topographic map. The survey was conducted during the period 30 April to 2 May, 1997. Ground Magnetic data were acquired on 26 lines oriented N-S, for a total of approximately 19.3 line-miles of data acquisition. This survey was conducted by Kambiz Moezzi, Geophysical Crew Chief for Zonge Geosciences, Inc., under Zonge job number 9724.

This report covers data acquisition, instrumentation and processing.

INSTRUMENTATION

Data were acquired using a total-field magnetometer which is integrated with a GPS receiver and data-logger. Total field magnetic data were acquired with a GEM Systems GSM-19 Overhauser-effect magnetometer. The GSM-19 magnetometer has a resolution of 0.01 nT and an accuracy of 0.2 nT over the operating range. The magnetometer is integrated with a Trimble Navigation Pro-XR GPS receiver. Total field measurements are made at two second intervals and input in real-time to the GPS data-logger where they are recorded with the GPS position and time. A second GSM-19 was operated as a base station magnetometer which recorded data at 5 second intervals. The clocks in the field and base instruments were synchronized daily prior to data acquisition.

The GPS data are differentially corrected in post-processing using regional GPS base stations. A base station located in Tonopah, NV operated by the Bureau of Land Management (BLM) was used for this survey. The system provides sub-meter accuracies under standard operating conditions.

DATA ACQUISITION

Magnetic data were acquired along existing lines spaced 400' apart. Base line and lines of sight were surveyed in by Zonge personnel. All magnetic data are recorded in Universal Transverse Mercator (UTM, Zone 11) coordinates. The grid location was defined by SFPG personnel on field maps at a scale of 1:24,000. The grid origin was identified and placed in the field by Zonge personnel by inspection. Appendix A contains survey statistics for the lines.

Total field magnetic measurements and GPS positions were acquired at 2 second intervals. This corresponds to a down-line station spacing of approximately 5 to 20 feet depending on terrain. A total of 15,765 measurements were recorded. The base station magnetometer was located at 14,834,420N, 1,181,900E UTM Ft (Zone 11).

DATA QUALITY

Data quality for this survey was good. Data quality is monitored by the operator during acquisition. A control point is established and read twice daily to check the reliability of the diurnal corrections. Variation of the diurnally-corrected control point data taken at the beginning and end of each day averaged 3 nT, with a maximum variation of 4 nT on 02 May, 1997. Appendix B contains control point data .

No cultural features of significance were noted in the survey area, however, bad or contaminated data points have been removed from the data set.

DATA PROCESSING

Magnetic and GPS raw data are processed to produce differential GPS corrections, then corrected for diurnal variations. The files were then edited to identify and remove spurious data. The edited corrected total field magnetic data were combined into an XYZ file and a datum of 52,800 nT subtracted.

The data were gridded with a minimum curvature gridding algorithm, interpolated to a grid cell size of 15 feet. The resulting grid was smoothed with two passes of a Hanning filter and contoured using linear contour intervals of 5, 20, 100 nT.

A reference value of 52,800 nT was used for the base station magnetometer. This value was determined from the International Geomagnetic Reference Field (IGRF). A total magnetic field intensity of 52,814.48 nT, an inclination of 65.02° and a declination of 15.96° was used for this survey.

Reduction to the north magnetic pole and calculation of derivatives are made using a Two-Dimensional Fast Fourier Transform (FFT) algorithm developed and commercially available from Geosoft Ltd. of Toronto, Ontario Canada.

DATA PRESENTATION

Data are presented as stacked profiles and color contour maps of the total magnetic field at a scale of 1"=200' (1:2,400). Stacked profiles were generated from the corrected total field data with a vertical scale of 300 nT per centimeter and a profile base level of -100 nT. Also included is a color contour map of the magnetic field reduced to the north magnetic pole and calculated first vertical derivative. All plots are located in the back pockets of this report along with a line and base station location map at a scale of 1"=1000'.

Digital data files are included on a 3.5" floppy diskette in the back cover of the report. See the file named READ.ME on the data disk for a detailed description of contents.

Respectfully submitted,

Curtis P. Kortemeier
Senior Geologist

PRODUCTION LOG

29 APRIL - 02 MAY 1997

4/29 Mobe Reno to Rosebud:170 miles. Survey grid.

4/30 No Production.

5/01 Leave at 5:00 a.m. Read lines:

000E	000N	4000N
100E	4000N	000N
200E	000N	4000N
300E	4000N	000N
400E	000N	4000N
500E	4000N	000N
600E	000N	4000N
700E	4000N	000N
800E	000N	4000N
900E	4000N	000N
1000E	000N	2400N
1100E	000N	4000N
1000E	40000N	2400N
1200E	4000N	000N
1300E	000N	4000N
1400E	4000N	000N

Return at 5:30 p.m.

5/02 Leave at 5:00 a.m. Read lines:

1500E	000N	4000N
1600E	4000N	000N
1700E	000N	4000N
1800E	4000N	000N
1900E	000N	4000N
2000E	4000N	000N
2100E	000N	4000N
2200E	4000N	000N
2300E	4000N	000N
2400E	000N	4000N
2500E	4000N	000N

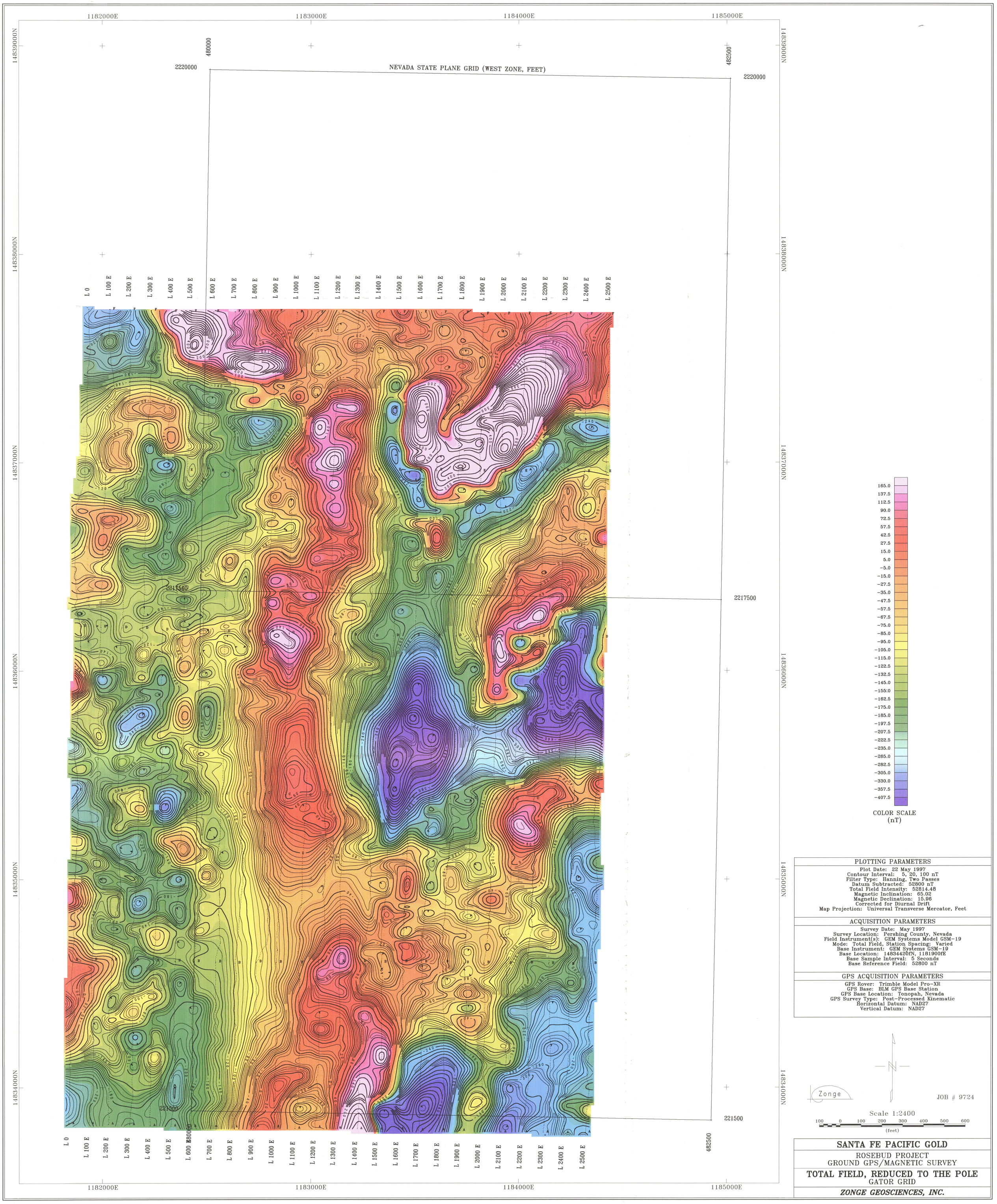
Return at 2:30 p.m. Met with Bob K (SFPG). Demobe to Reno 170 miles

APPENDIX A (Survey Statistics)

Line #	#pts	X-min	X-max	Y-min	Y-max	Length
line 0	699	1181833	1181941	14833830	14837740	3910
line 100	672	1181932	1182063	14833830	14837740	3910
line 200	666	1182028	1182137	14833820	14837730	3910
line 300	535	1182130	1182240	14833820	14837730	3910
line 400	588	1182227	1182338	14833820	14837730	3910
line 500	549	1182329	1182429	14833810	14837730	3920
line 600	623	1182425	1182535	14833810	14837730	3920
line 700	567	1182524	1182641	14833810	14837730	3920
line 800	622	1182623	1182737	14833810	14837720	3910
line 900	601	1182725	1182839	14833810	14837730	3920
line 1000	635	1182823	1182934	14833810	14837720	3910
line 1100	553	1182922	1183034	14833800	14837720	3920
line 1200	581	1183019	1183135	14833810	14837720	3910
line 1300	551	1183120	1183230	14833800	14837720	3920
line 1400	632	1183224	1183334	14833800	14837720	3920
line 1500	558	1183319	1183430	14833800	14837720	3920
line 1600	551	1183422	1183533	14833800	14837720	3920
line 1700	571	1183518	1183631	14833790	14837720	3930
line 1800	571	1183617	1183736	14833790	14837720	3930
line 1900	604	1183716	1183832	14833790	14837710	3920
line 2000	633	1183816	1183935	14833790	14837710	3920
line 2100	678	1183911	1184032	14833780	14837710	3930
line 2200	685	1184018	1184132	14833780	14837710	3930
line 2300	623	1184119	1184234	14833780	14837710	3930
line 2400	612	1184217	1184330	14833780	14837710	3930
line 2500	605	1184320	1184434	14833780	14837710	3930
Total points	15765			Cumulative length		101910
				Line miles		19.30114

APPENDIX B (Control Point Data)

Date	Am reading	Pm reading	Delta
1-May	52780	52778	2
2-May	52779	52783	4
		X bar	3
		Std Dev	1.41



PLOTTING PARAMETERS

Plot Date: 22 May 1997
Contour Interval: 5, 20, 100 nT
Filter Type: Hanning, Two Passes
Datum Subtracted: 52800 nT
Total Field Intensity: 52814.48
Magnetic Inclination: 65.02
Magnetic Declination: 15.96
Corrected for Diurnal Drift
Map Projection: Universal Transverse Mercator, Feet

ACQUISITION PARAMETERS

Survey Date: May 1997
Survey Location: Pershing County, Nevada
Field Instrument(s): GEM Systems Model GSM-19
Mode: Total Field, Station Spacing: Varied
Base Instrument: GEM Systems GSM-19
Base Location: 14834420fN, 1181900fE
Base Sample Interval: 5 Seconds
Base Reference Field: 52800 nT

GPS ACQUISITION PARAMETERS

GPS Rover: Trimble Model Pro-XR
GPS Base: BLM GPS Base Station
GPS Base Location: Tonopah, Nevada
GPS Survey Type: Post-Processed Kinematic
Horizontal Datum: NAD27
Vertical Datum: NAD27

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Scale 1:2400

100 0 100 200 300 400 500 600
(feet)

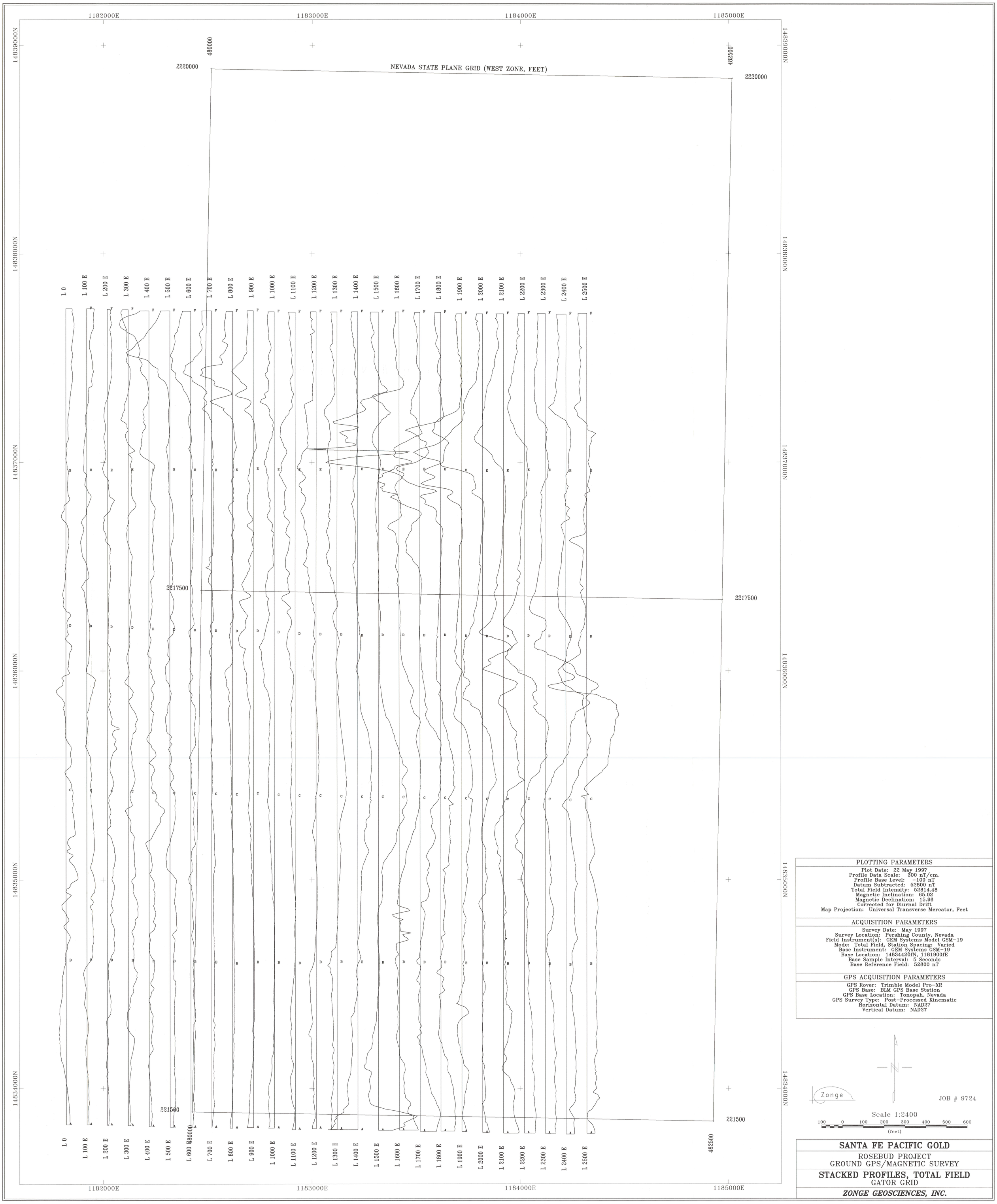
SANTA FE PACIFIC GOLD

ROSEBUD PROJECT
GROUND GPS/MAGNETIC SURVEY

TOTAL FIELD, REDUCED TO THE POLE

GATOR GRID

ZONGE GEOSCIENCES, INC.



PLOTTING PARAMETERS
Plot Date: 22 May 1997 Profile Data Scale: 300 nT/cm. Profile Base Level: -100 nT Datum Subtracted: 52800 nT Total Field Intensity: 52814.48 Magnetic Inclination: 65.02 Magnetic Declination: 15.96 Corrected for Diurnal Drift Map Projection: Universal Transverse Mercator, Feet

ACQUISITION PARAMETERS
Survey Date: May 1997 Survey Location: Pershing County, Nevada Field Instrument(s): GEM Systems Model GSM-19 Mode: Total Field, Station Spacing: Varied Base Instrument: GEM Systems GSM-19 Base Location: 14834420fN, 1181900fE Base Sample Interval: 5 Seconds Base Reference Field: 52800 nT

GPS ACQUISITION PARAMETERS
GPS Rover: Trimble Model Pro-XR GPS Base: BLM GPS Base Station GPS Base Location: Tonopah, Nevada GPS Survey Type: Post-Processed Kinematic Horizontal Datum: NAD27 Vertical Datum: NAD27

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JOB # 9724

Scale 1:2400

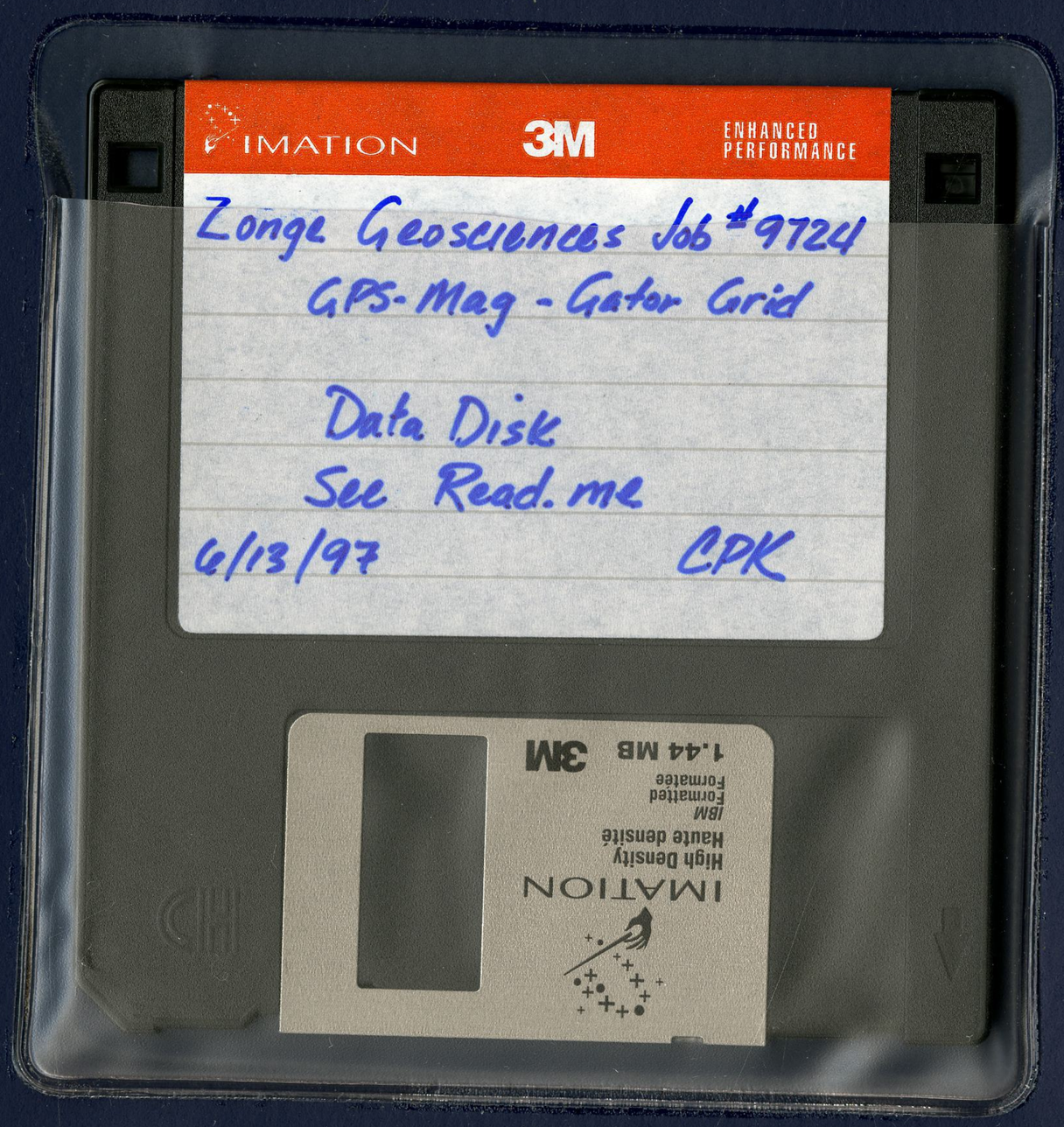
100 0 100 200 300 400 500 600
(feet)

SANTA FE PACIFIC GOLD

ROSEBUD PROJECT
GROUND GPS/MAGNETIC SURVEY

STACKED PROFILES, TOTAL FIELD
GATOR GRID

ZONGE GEOSCIENCES, INC.


IMATION
3M
ENHANCED PERFORMANCE
Zonge Geosciences Job #9724
GPS-Mag - Gator Grid
Data Disk
See Read.me
6/13/97
CPK
1.44 MB
3M
IBM
Formatted
Formatée
High Density
Haute densité