60001803

Mining District File Summary Sheet

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Monthly Progress Reports, 1996
AUTHOR	Owen R; Dixon R; Johnson G; Clayton R Booth B; Brown A; Fudge T; Gray D; Hartman S Hilbert S; Kaufman R; Miller C; Stilwell J; Summers A; Wallant D; Wilkes L; Hogan D; Walker P; Gillespie C; Dixon R Dunstan J Jenkins F; Young J Kortemeier C; Leftwich T Maley P Muerhoff C; Faust B. Piterd F; Parratt, R
DATE OF DOC(S)	1996-1997
MULTI_DIST Y / N? Additional Dist_Nos:	
QUAD_NAME	Sulphur 7½'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Rosebud Joint Venture; South Ridge; South Dozer Hill; North Dozer Hill; Pinon Mill; Hecla Mining Co.; GP Claims; North Dozer; Gator; Santa Fe Pacific Gold JV; Oscar; Target 4; White Alps; Dreamland; North Equinox; Wild Rose South; Rosebud Peak School Bus Canyon; Dozer Hill
COMMODITY If not obvious	gold; silver
NOTES	Monthly property reports; assays; geology; handwritten notes; correspondence; mine maps; costs; cross section; budgets 164p.

Keep docs at about 250 pages if no oversized maps attached
(for every 1 oversized page (>11x17) with text reduce
the amount of pages by ~25)

	Initials	Date
SS:	DP	7/30/08
DB:		
SCANNED:		

Revised: 1/22/08

Mo. Reports

6000 1803 4016

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM ⇒ Albq. File
CPK ⇒ Reno Monthly R. C., C. M. ⇒ Hecla Mining Co.

To: R. W. Owen
From: R. L. Dixon
Date: January 9, 1997
Subject: Monthly Progress Report - Rosebud Joint Venture - Pershing and Humboldt Counties, Nevada, December 1996

Drilling:

1. **Targets:** Late 1996 RC and core drilling tested four areas:
   a. proximal to the Rosebud deposit with three vertical holes (96-369, 96-370, and 96-373). The top 500 feet of each core hole was RC pilot drilled.
   b. the hanging wall of the Rosebud Shear on the northwest side of a suspected intrusion, tested with two deep vertical RC holes (96-371 and 96-372).
   c. the contact of the Dozer Rhyolite with one angle RC hole (96-374).
   d. the pediment on the western mouth of Rosebud Canyon with two vertical RC holes (96-375 and 96-376).

2. Drilling Results Summary:

DH No.	Target	Angle/Type D	Gold Mineralization	Interval	Host Rock	T.D.
96-369	S. Dozer Hill	vertical/RC,core	10' @ 0.158 opt Au	564'-574'	U. Brady And.	1,145'
			6' @ 0.072 opt Au	628'-634'	" " "	
96-370	N. Dozer Hill	vertical/RC,core	5' @ 0.060 opt Au	1,100'-1,105	Surge Tuff	1,131'
			5' @ 0.097 opt Au	1,120'-1,125	Auld Lange Syne	
96-371	HW Rosebud Shear	vertical/RC	5' @ 0.113 opt Au	1,325'-1,330	L. Bud Tuff (?)	1,560'
			15' @ 0.060 opt Au	1,315'-1,330	" " "	
96-372	HW Rosebud Shear	vertical/RC	no significant min.			1,600'
96-373	S. Dozer Hill	vertical/RC,core	5' @ 0.091 opt Au	685'-690'	Brady And.	1,174'
			20' @ 0.113 opt Au	800'-820'	" "	
			10' @ 0.172 opt Au	810'-820'	" "	
			Note: bottom of hole, 915'-1,174' is being logged and split at this			
			writing.			
-65	180°					
96-374	Dozer Rhy. contact	angle/RC	no significant min.			500'
96-375	Rosebud Can. ped.	vertical/RC	no significant min.			600'
96-376	Rosebud Can. ped.	vertical/RC	no significant min.			940'
8 DH's					Total Footage	8,650'

Site-9

Rosebud JV Exploration Budget:

The attached spread sheet shows that SFPG spent $352,423 of the budgeted $345,000 for exploration at Rosebud in 1996, resulting in a small carryover to 1997. The actual 1996 expenditure, $352,423, leaves a balance of $647,577 ($1,000,000 - $352,423 = $647,577) to be spent by SFPG at Rosebud before July 24, 1997, to reach $1 million of 100 percent SFPG-funded exploration. Between July 25, 1997, and December 31, 1997, another $1 million will be spent on Rosebud exploration but will be shared 2/3-1/3 by SFPG-Hecla.

1997 Rosebud Exploration Program:

The next few weeks are being utilized to formulate a **Strategic Plan** for 1997 Rosebud exploration. It is anticipated that exploratory drilling will resume on the Rosebud Project by late-February.

ROSEBUD JV 1996 EXPLORATION DRILLING RESULTS:						
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			20' @ 0.113 opt Au	800'-820'	" "	
			10' @ 0.172 opt Au	810'-820'	" "	
			5' @ 0.119 opt Au	920'-925'	L. Surge Tuff	
			15' @ 0.173 opt Au	980'-995'	" " "	
96-374	Dozer Rhy. contact	angle/RC -65, 180°	no significant min.			500'
96-375	Rosebud Can. ped.	vertical/RC	no significant min.			600'
96-376	Rosebud Can. ped.	vertical/RC	no significant min.			940'
8 DH's					Total Footage	8,650'

HECLA MINING COMPANY

January 13, 1996

MEMORANDUM TO: George Johnson

FROM: Ron Clayton

SUBJECT: Monthly Progress Report
Rosebud Project - December 1996

Attached is the December, 1996 Monthly Progress Report for the Rosebud Project.

RC/dm

c: Bill Booth
Arthur Brown
Tom Fudge
Don Gray
Scott Hartman
Stan Hilbert
Roger Kauffman
Cindy Miller
John Stilwell
Al Summers
Douglas Wollant
LeRoy Wilkes SFPG
Dave Hogan SFPG
Phil Walker SFPG
Roy Owens SFPG

RICH DIXON
CURTIS KORTEMEIER
RADU CONELEA

FYI

PERSONNEL AND SAFETY

Staff

During the month, three salary positions were filled: chief engineer, surveyor, and clerk. Total number of salary employees at month end was 22. Two hourly employees were hired and two terminated during the month, leaving 34 hourly employees at month end. Total employment is 56.

Safety

December was a good month for safety. There were no MSHA reportables. There were two first aids: a miner received a smashed thumb from a rock which fell while he was bolting, and a piece of dirt washed under a miners contact lens while he was showering. Initial mine rescue training began in December and should be complete in January, with a few new men scheduled to be added during the month of February.

Operations

The existing decline extension was driven 412 feet. In addition, the stope 21 access was driven 33 feet and the stope 22 access was driven 15 feet. A total of 460 feet of decline was driven in the extension.

The #2 decline was driven a total of 411 feet. A 69-foot muckbay was completed and a primer magazine was driven 36 feet, for a total footage in the #2 decline of 516 feet. A fault area was encountered and 14 sets of steel were installed in the main heading.

Other

The administration office relocated from Winnemucca to the mine site at month end.

GEOLOGY

Resource / Reserves

Gold models for the North and East Zones were 75% complete at months' end. The revised resource and reserve model for the entire Rosebud Deposit will be completed by January 15, 1997.

Michael Hester (Independent Mine Consultants, Inc.) performed an audit of the Rosebud resource model at the request of Santa Fe Pacific Gold.

Development / Pre-production

The first test of the South Zone mineralogic model occurred as the decline #1 extension 'skimmed' the edge of 0.10 Au opt mineralization in the South Zone (as planned), as determined by the geologic and mineralogic models. Analytical results returned to date show excellent correlation to the block model with the first two rounds assaying 0.235 Au opt and 0.104 Au opt. This material is being stockpiled in anticipation of the material handling test batch to be shipped to SFPG in February.

Refinement of the South Zone mine plan continued in December.

Geologic mapping and sampling continued in the decline #1 extension and in decline #2 and are currently up-to-date.

A site was chosen and cat work completed in preparation for a test core hole at the planned location of the North Zone ventilation bore hole.

Exploration

The BLM inspected the remaining two outstanding exploration Notice of Intent (NOI) areas which were permitted by Hecla prior to the joint-venture. The BLM judged the reclamation to be satisfactory and issued closure notices.

SFPG's December exploration monthly report is attached.

Other

- Two days were spent meeting with Francis Pitard (sampling consultant) and metallurgical personnel from SFPG's Pinon mill.
- The evaluation of the Far East area continued in December.
- Charlie Muerhoff and Kurt Allen attended the corporate exploration meeting in Coeur d'Alene.

ENGINEERING

Mine Planning

South stope design work continued through the month. Stopes eleven, twelve, thirteen, fourteen, twenty-three and twenty-five were modified, resulting in some new panel orientations or access locations.

Detailed ACAD construction drawing templates were prepared for the two main decline headings, showing all primary and secondary headings, miscellaneous cut-outs, etc.

Work began on preparation of a detailed mine development schedule for the first and second quarter of 1997.

Other

1. Underground mine escape maps were produced for posting at various site locations.
2. A new borehole site was tentatively chosen based on geology, topography and underground ventilation constraints. Plans were laid to drill a core hole at the proposed new site.
3. Richard Appling reported for work as the chief engineer on December 3rd. Graydon Kennedy reported for work as the surveyor on December 9th.

CONSTRUCTION MANAGEMENT

Construction Activity

Concrete work was completed for miscellaneous pads, bollards, propane tank saddles and propane vaporizer pad. At the central plant, the permanent changeover to line power was completed and the 1,000 kW gen-set, leased to provide temporary power for Portal No. 1, was removed. All remaining mechanical and electrical work at the central plant was completed.

At the shop/warehouse/dry complex, the building was enclosed and the steel, siding and trim were completed; the overhead crane was set in place. Minor concrete work included several curbs, a transformer pad, and floor drains. The block work in the dry and warehouse areas commenced and was about 90 percent complete at the end of the month. The electrical subcontractor began installing conduit and wiring, and installed the 500 KVA transformer to supply power to the buildings. The mezzanine support steel and platework above the dry was installed. About half of the Hecla procured equipment arrived on site.

The backfill plant is substantially complete and ready for hand over to operations. Several worn out components identified during the initial checkout of the plant were replaced. A roof was constructed over the van and the doors were installed.

The potable water system including the storage tank was chlorinated and flushed, and the water treatment plant was installed. The plant capacity was modified to reduce the flow through the RO (reverse osmosis) unit to allow the throughput to better match the minimum operating requirements to allow proper flushing of the RO membranes. The plant was modified and operational in early January.

The septic tank and leach field were completed. Hookups for water, septic, and electrical to the administration building, women's dry trailer, and mine rescue trailer were completed. The administration building was completed and ready for occupancy at the end of December. The core shed building was completed.

Sierra Pacific Power completed installation of the 60 KV transmission line and substation, and energized the system on December 5 (five days ahead of schedule). Several minor items remain to be installed. Site electrical work continued on the connections from the overhead distribution to the wells, buildings and trailers, truck scale, central plant and microwave system.

Installation of the digital microwave system was completed for Winnemucca Mountain and the communications building, and the PBX was operational at the administration building. Six outside (Nevada Bell) lines were activated to site; an additional six lines will be activated in January to meet the remaining communications needs. Wiring of the telephone and computer systems was completed in the administration building; final connection of local area networks in the administration building along with the telephone and computer networks for the women's dry trailer offices, mine rescue trailer and shop complex, was completed in early January. All installations required for the business system were completed (the business system was operational at site by the end of December).

Fencing was completed for the explosives storage area, the communications building, and the mine water storage pond. Work began on the perimeter fence.

Approximately two to three days were lost due to weather. Some work continued between Christmas and New Years. Flooding in Reno affected the delivery of some equipment, but the schedule was not adversely impacted.

Detail Design and Procurement

Activity at M3 Engineering included support for construction. Minor modifications to designs were required due to the procurement of alternative equipment which will help reduce lead times.

Schedule

The major area remaining is the shop complex. Of the Hecla procured equipment, delivery of the lockers for the dry has the potential to impact schedule. Arrangements have been made to expedite delivery from the factory. Delivery of vendor supplied items is being evaluated to

determine impact to schedule, and the availability of trades due to the large number of construction projects in the area continues to be a concern.

PROCESS

Meeting between Hecla representatives and the Pinon mill processing team continued. The main focus is to devise the plans for the flow of material from Rosebud to Twin Creeks and initial campaign testing design. This planning process is expected to continue through the end of the year.

SCHEDULE AND BUDGET

Construction of the site surface plant continues to be on schedule. Longer than expected lead times for mechanical equipment in the shop/dry/warehouse building will likely delay completion of construction to late February 1997. This date is however, within the budgeted schedule. Development in the #2 decline was again slower than scheduled due to worse than anticipated ground conditions. Additional steel sets were installed while crossing another fault zone. The #2 decline was approximately one month behind schedule at the end of the December. Ground conditions have improved in January and additional delays are not expected. Advance in the #1 decline was approximately three weeks ahead of schedule at the end of the month.

Areas of concern with regard to schedule are now confined to the # 2 Decline which is not on the critical path for initial production.

Project expenditures for December totaled $3,660,569, $532,175 more than budget for the month. JV Year to date (6/1/96 - 12/31/96) project expenditures totaled $11,028,853, $5,788,425 less than the approved budget. Surface plant construction is currently forecast to be $1,600,000 less than budget. Billings and payments to contractors are lagging completion of work approximately 90 days. The project has committed costs in addition to the above expenditures of approximately $2,000,000 for surface plant construction and $1,000,000 for mine equipment.

Attachments

CONFIDENTIAL

DRAFT

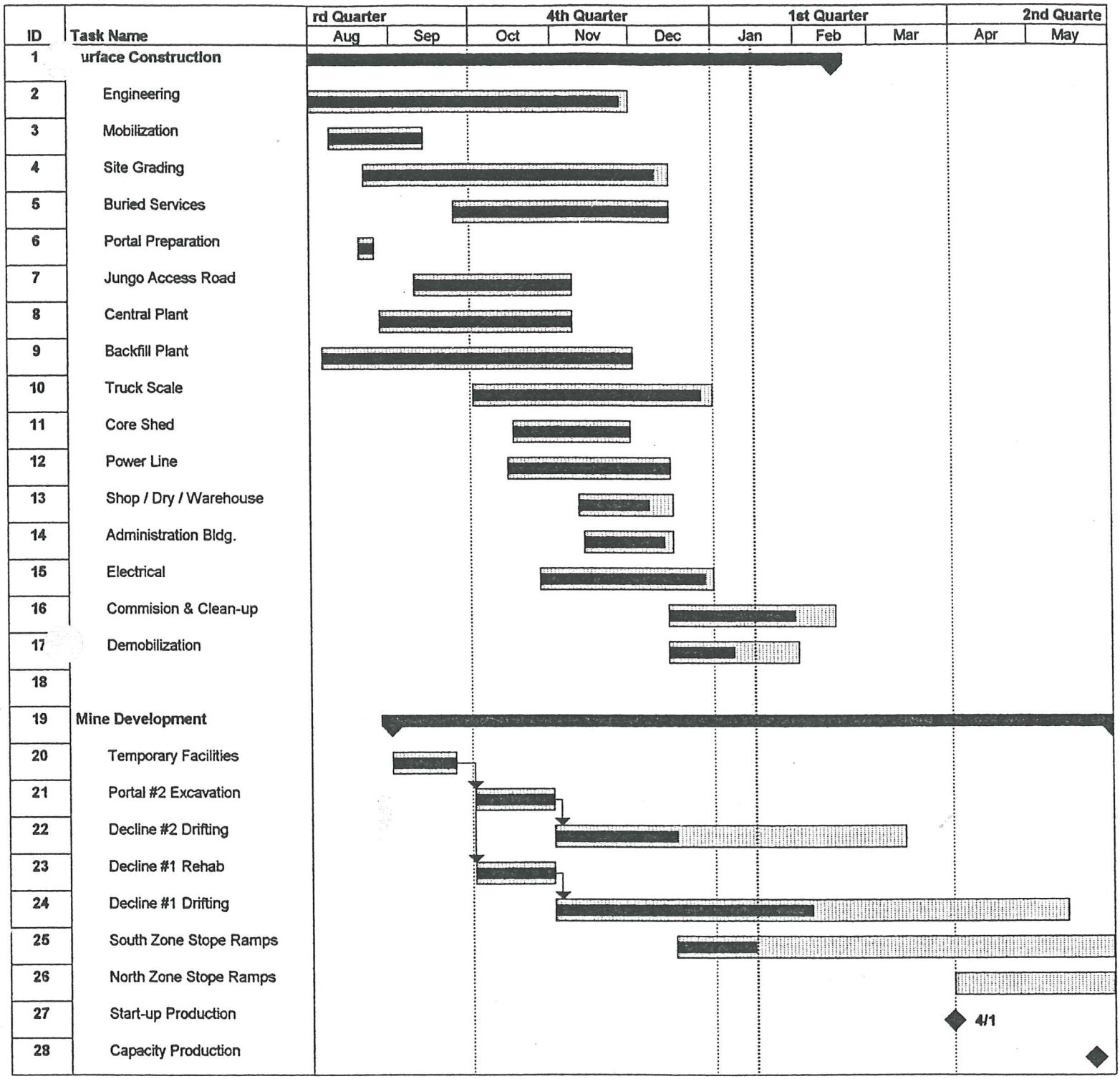
The Rosebud Mining Company, LLC
Hecla Mining Company, Operator
Site Capital Spending Summary
(LLC Agreement Basis of Accounting)

December 1996	MONTH			YEAR TO DATE			*INCEPTION TO DATE		
Area	Actual	Budget	Variance	Actual	Budget	Variance	Actual	Budget	Variance
Mine production	--	--	--	--	--	--	--	--	--
Mine development	328,796	475,142	146,346	1,185,512	1,339,426	153,914	1,185,512	1,339,426	153,914
Mine equipment	1,335,983	881,524	(454,459)	3,450,772	4,481,476	1,030,704	3,450,772	4,481,476	1,030,704
Trucking and site processing	5,552	9,150	3,598	21,444	43,288	21,844	21,444	43,288	21,844
Milling costs	--	--	--	--	--	--	--	--	--
Site and general administration	60,769	212,667	151,898	804,571	1,103,990	299,419	804,571	1,103,990	299,419
Engineering	25,192	30,051	4,859	138,106	182,595	44,489	138,106	182,595	44,489
Geology	15,255	24,590	9,335	167,746	137,908	(29,838)	167,746	137,908	(29,838)
Warehouse inventory	--	--	--	--	400,000	400,000	--	400,000	400,000
Property taxes	5,037	--	(5,037)	5,037	--	(5,037)	5,037	--	(5,037)
Net proceed taxes	--	--	--	--	--	--	--	--	--
Mine descretionary	--	--	--	--	--	--	--	--	--
Sustaining capital	--	--	--	--	--	--	--	--	--
Construction	1,883,985	1,495,270	(388,715)	5,255,665	9,128,595	3,872,930	5,255,665	9,128,595	3,872,930
Total Capital Spending	$3,660,569	$3,128,394	($532,175)	$11,028,853	$16,817,278	$5,788,425	$11,028,853	$16,817,278	$5,788,425
Exploration Costs	$350,787	$60,346	($290,441)	$350,787	$345,000	($5,787)	$350,787	$345,000	($5,787)

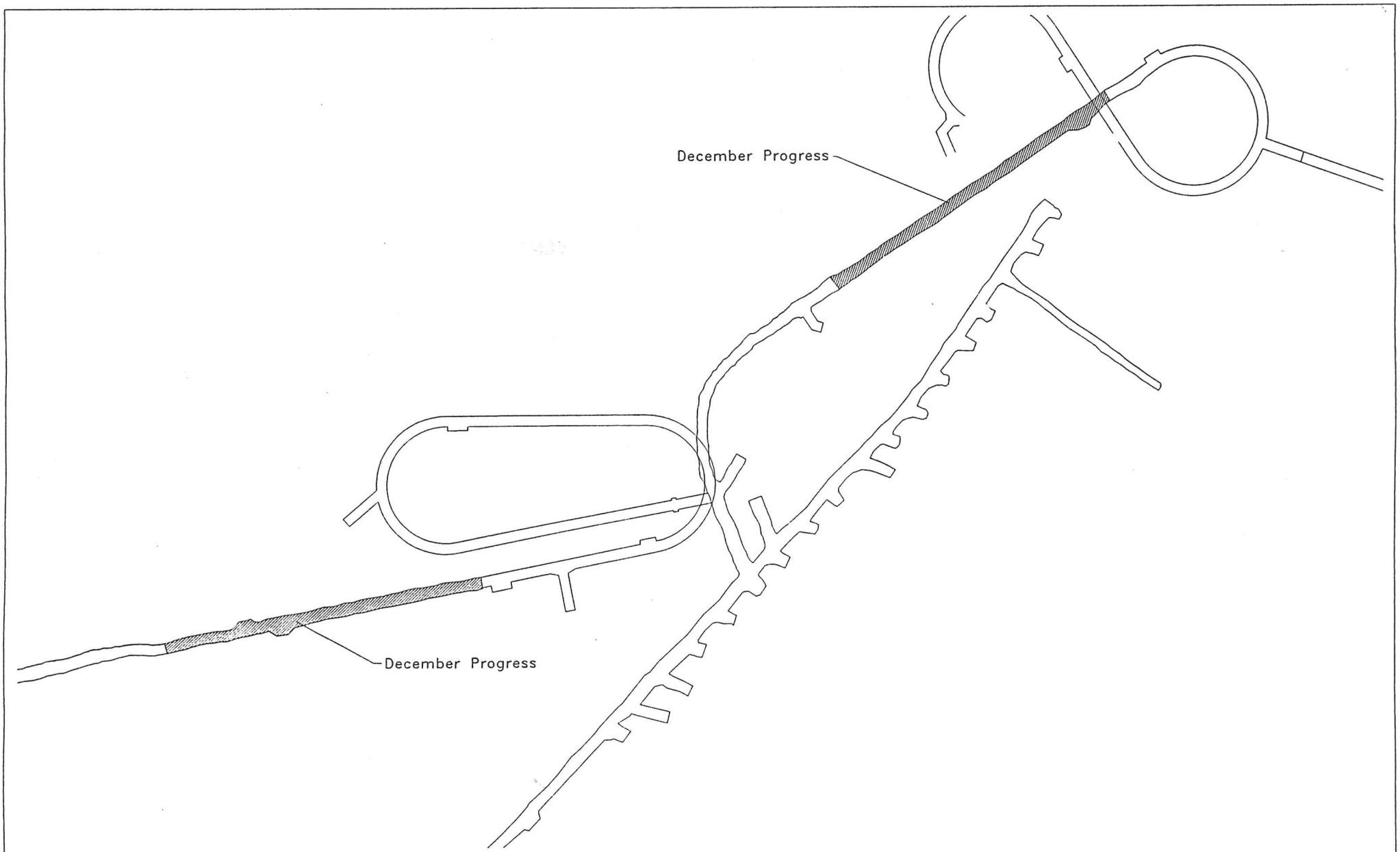
*Inception to date of L.L.C. is September 7, 1996

Reconciliation:			
Total capital spending from above	3,660,569	11,028,853	11,028,853
Capitalized costs at September 6, 1996	--	16,342,180	16,342,180
Reimbursed capital costs for June 1996	--	(218,124)	(218,124)
Reimbursed capital costs for July 1996	--	(388,572)	(388,572)
Reimbursed capital costs for August 1996	--	(558,660)	(558,660)
Total per schedule	3,660,569	26,205,677	26,205,678
Deferred development (G/L 0401)	(194,322)	15,013,745	15,013,745
Construction in progress (G/L 0405)	3,854,891	11,191,933	11,191,933
Total per general ledger	3,660,569	26,205,678	26,205,678
Net reconciling amount	--	--	--

Rosebud Mine Construction & Development



ID	Task Name
1	urface Construction
2	Engineering
3	Mobilization
4	Site Grading
5	Buried Services
6	Portal Preparation
7	Jungo Access Road
8	Central Plant
9	Backfill Plant
10	Truck Scale
11	Core Shed
12	Power Line
13	Shop / Dry / Warehouse
14	Administration Bldg.
15	Electrical
16	Commision & Clean-up
17	Demobilization
18	
19	Mine Development
20	Temporary Facilities
21	Portal #2 Excavation
22	Decline #2 Drifting
23	Decline #1 Rehab
24	Decline #1 Drifting
25	South Zone Stope Ramps
26	North Zone Stope Ramps
27	Start-up Production
28	Capacity Production



REVISION	DATE	DESCRIPTION	BY	APP'D	APP'D

REVISION	DATE	DESCRIPTION	BY	APP'D	APP'D

REFERENCE

TOLERANCES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED, ARE: (PLUS OR MINUS) NON ACCUMULATIVE

MACHINING	.010"
STRUCTURAL	1/16"
ALL OTHERS	1/32"

APPROVALS

	DATE
	DATE
	DATE
	DATE
APPROVED FOR CONSTRUCTION	DATE

ENGINEER	
DRAWN BY	
CHECKED BY	
APPROVED BY	
APPROVED BY	
DATE	
SCALE 40 Scale	

Rosebud Mine
Monthly Progress Map
December 1996

Hecla MINING COMPANY
Rosebud Mine

REVISION NO. △

DRAWING NO.

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM ⇒ Albq. File
CPK ⇒ Reno Monthly R. C., C. M. ⇒ Hecla Mining Co.

To: R. W. Owen
From: R. L. Dixon
Date: January 9, 1997
Subject: Monthly Progress Report - Rosebud Joint Venture - Pershing and Humboldt Counties, Nevada, December 1996

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Santa Fe Pacific Gold Corporation

Interoffice Correspondence

To: Dave Hogan

Date: January 3, 1997

From: Bill Faust

Subject: Albuquerque Engineering December 1996 Report

Copy to: Ron Clayton

Rosebud

Westec completed a rough draft of an engineering assessment of the Jungo Road. They have been provided feedback and are finalizing the report. It should be completed by January 6th.

Ore Reserves were reviewed for the Rosebud Mine at their office on December 12th. IMC did not have any major concerns after the review.

The final road maintenance agreement for the Jungo Road was provided to Mike McCormick, Humboldt County District Attorney. It is slated to be reviewed at the January 6, 1997 county commissioner's meeting.

In related road matters, NDOT is attempting to put the "bite" on Santa Fe by forcing them to upgrade not only State Road 789 but also the access ramps to I-80 from the Lone Tree Mine. In our defense, I am preparing several different looks at the tax revenues SFPG will generate. The increased traffic from ore haulage should generate sufficient revenue for road maintenance.

January Projections

- A set of bid documents for Jungo Road upgrades will be completed.

- A January 6, 1997 meeting of the Humboldt County Commissioners will address the maintenance contract for Jungo Road and clear the way for obtaining permits to haul ore on the Jungo Road.

- Ore reserves will be completed and audited by January 20, 1997.

Santa Fe Pacific Gold Corp. - Twin Creeks

Internal Correspondence

To: Jim Sigurdson **Date: January 3, 1997**

From: Greg McMillen

Subject: December 1996 Monthly Report

Rosebud Activities

Engineering activities at Rescan are nearing completion. Engineering man-hours applied to the project currently total 4,050 with an estimated 560 hours of engineering detail activity remaining. This would place the final engineering cost at $215,610 which is 22% more than the original September 5 estimate of $175,550. The greater than estimated engineering costs is primarily a result of September 19 decision to add a predryer to the refurbished Juniper kiln and then placing a building around that system. A memo describing these additional engineering efforts was published by Ken Major on December 31 and is attached .

Major equipment purchases are nearing completion with $724,131 spent which is 1.2% greater than planned for the specified equipment. An itemized table of the major expenditures is attached. The greater than planned expense is due primarily to the unplanned inclusion of a heating system for the Piñon mill which totaled $67,839.

Commitments for construction activities currently total $ 365,876 which is 17% greater than planned. The greater than planned expenses are due the unplanned requirements of coating the Caro's acid containment area and insulating the two new strip solution tanks.

Construction activities for the month of December included pouring concrete in new Kiln and Caro's acid containment areas.

A meeting was held with John Todd, Roy Norcross and Paul Reynolds of Degussa on December 12 to review cyanide destruction test work that has been conducted by Degussa on a sample of Rosebud CIL tailings. The results of the test work indicated that a molar ratio of H_2O_2:CN_{wad} of about 2.0 was required to adequately detoxify Rosebud CIL tailings using a conventional 'Low Yield' Caro's acid reactor . Typically a low

yield reactor will produce 40% H_2SO_5 from mixing equimolar amounts 93% H2SO4 and 70% H2O2. A 'high yield' or cooled reactor has been developed by Degussa that will improve the yield of Caro's acid to about 78% H_2SO_5. Because of the enhanced yield of the cooled reactor, a molar ratio of H_2O_2:CN_{wad} of just 1.25 will effectively detoxify the Rosebud tailings. The use rates of hydrogen peroxide for both the high and low yield Caro's acid indicate that the Rosebud ore is fairly clean and that most of the oxidant is being consumed through the oxidation of cyanide. Unfortunately the high residual cyanide levels required for the processing of Rosebud ore translate into very high use costs for Caro's acid which would be $3.50/Ton for the high yield reactor and $4.70/Ton for the low yield reactor.
Quite obviously these detoxification costs are not acceptable and the decision has been made to convert the existing 40' Piñon mill grinding thickener to a tailings wash thickener. With this configuration, Rosebud CIL pulp will be washed , thickened and discharged to tails at 50% solids and about 200 ppM CN_{wad}. The cost for detoxifying this process stream is expected to be about $0.80/Ton if high yield Caro's acid is used. In addition to the reduction in detoxification cost, about 0.8 #NaCN/Ton ore will be directly reclaimed to either the mill or to the dump leach process.

A third draft of 'Initial Rosebud Processing Campaign Sapling' was completed and forwarded to Hecla representatives on December 20. If the contents of this draft document are acceptable, a finalized document will be completed in mid January.

Attachments: Table of Major Equipment Expenditures
Rosebud Project - Projected Engineering Man-hours

Copy : Phil Walker, Jim Dunstan

Rosebud - Piñon Mill Modifications
Major Equipment Expenditures
Updated December 4, 1996

Equipment	Expended	Budget	Variance	Cumm. Variance
Kiln Rebuild w/preheater	$ 312,020	$338,100	$ 26,080	$ 26,080
Retorts (2)	$ 92,100	$107,000	$ 14,900	$ 40,980
Induction Furnace	$ 21,482	$ 20,000	$ (1,482)	$ 39,498
Zinc Feeders	$ 7,860	$ -	$ (7,860)	$ 31,638
Boiler	$ 39,028	$ 65,000	$ 25,972	$ 57,610
Heat Exchangers	$ 15,000	$ 15,600	$ 600	$ 58,210
Strip Vessel	$ 44,895	$ 57,000	$ 12,105	$ 70,315
Wash Water Pump	$ 3,299	$ 3,500	$ 201	$ 70,516
Barren Pumps (2)	$ 6,051	$ 7,000	$ 949	$ 71,465
Filter Feed Pumps (2)	$ 4,741	$ 7,500	$ 2,759	$ 74,224
Dilute Caustic pump	$ 2,790	$ -	$ (2,790)	$ 71,434
Dilute Acid Pump	$ 5,464	$ -	$ (5,464)	$ 65,970
Zinc Pumps (2)	$ 4,601	$ -	$ (4,601)	$ 61,369
Sump Pump - Kiln Area	$ 4,330	$ 5,000	$ 670	$ 62,039
Acid Wash Transfer Pump	$ 4,771	$ 6,000	$ 1,229	$ 63,268
Quench Carb. Transfer Pump	$ 3,921	$ 3,500	$ (421)	$ 62,847
Cyclone OF 2 Stage Sampler	$ 16,424	$ 13,860	$ (2,564)	$ 60,283
Strip Soln. Samplers (2)	$ 3,040	$ 10,000	$ 6,960	$ 67,243
Acid Wash Vessel	$ 24,491	$ 6,300	$ (18,191)	$ 49,052
Water Softener	$ 6,237	$ -	$ (6,237)	$ 42,815
Building Heaters	$ 67,839	$ -	$ (67,839)	$ (25,024)
MCC and I/O Panel	$ 33,747	$ 50,000	$ 16,253	$ (8,771)
Total	$ 724,131	$715,360	$ (8,771)	-1.2%

Construction Activities

Contract Area	Committed	Budget	Variance	Cumm. Variance
Kiln Containment	$ 135,942	$134,000	$ (1,942)	$ (1,942)
Caro's Acid Containment	$ 49,894	$ 50,000	$ 106	$ (1,836)
Coat Caro's Acid Cont.	$ 30,000	$ -	$ (30,000)	$ (31,836)
Fab. Strip Soln Tanks	$ 106,670	$117,500	$ 10,830	$ (21,006)
Fab. Tranport Water Tank	$ 13,370	$ 11,000	$ (2,370)	$ (23,376)
Insulate Strip Soln. Tanks	$ 30,000	$ -	$ (30,000)	$ (53,376)
Total	$ 365,876	$312,500	$ (53,376)	-17.1%

Engineering Costs

Rescan Invoice #	Date	Amount	Cummulative	Budget - Cumm. Total
96227(Scoping Study)	9/30/96	$ 22,711	$ 22,711	$ 175,550
96245 (Scoping Study)	10/31/96	$ 2,609	$ 25,319	$ 175,550
96258 (Detail Engineering)	10/31/96	$ 10,153	$ 35,472	$ 165,397
96281 (Detail Engineering)	11/15/96	$ 29,901	$ 65,373	$ 135,497
96307 (Detail Engineering)	12/18/96	$ 89,645	$ 155,018	$ 45,852

Santa Fe Pacific Gold Corporation

Internal Correspondence

To:	**Tim Leftwich**	**Date:**	**January 3, 1996**
From:	**John Young**	**Subject:**	**Permit Status-Pinon Mill and Haul Road**

Pinon Mill and Tailings Facility Modifications

Air Quality Permit

Construction is underway. Approval from NDEP has been delayed. It is now expected on February 28, 1997. Installation of equipment can commence after this date. Ore processing for the new plant is on schedule for April 8, 1997.

Water Pollution Control Permit

Approval has been granted to process Rosebud ore from NDEP.

Construction is underway for the carbon handling facility changes.

Additional Tailings Capacity

The design for the 10 ft. lift has been submitted to NDEP. Permit preparation is underway. The new event pond is under construction. Even with some weather delay, the pond is still expected to be in service prior to spring run off.

Wick drains will also be installed in the existing impoundment to consolidate and reduce the permeability of the tails, and reduce the hydraulic head on the liner system. Engineering design and permitting is underway . Installation is still scheduled to begin in May 1997. The estimated date for completion of the new 10 ft. lift is July 12, 1997.

The above steps will increase the capacity of the existing impoundment to allow for continued use until approximately June 1998. Preliminary feasibility studies are being conducted to determine how additional tailings will be handled. The best option at this time is to construct a new impoundment in either Section 28 or 29. Both areas are described in the EIS for that purpose. The current schedule shows that engineering will be complete in May 1997. Permitting

will commence immediately. Construction is scheduled to take 270 days with the completion and subsequent use of the new facility to begin on May 29, 1998.

Haul Road Permitting

The review process with BLM is ongoing. Additional impact assessments were included in the Twin Creeks EIS to minimize the issues to be dealt with in a Rosebud EA.

Humboldt County will require a maintenance agreement for our use of the Jungo road. Rich Haddock is negotiating that agreement with the District Attorney. Approval of that agreement is expected on January 6. BLM has indicated they are planning using the public meeting for approval of the agreement to suffice as scoping for the federal EA. BLM feels that our use of the Jungo road is a local issue and their involvement is minimal, as long as public sentiment supports our plan. This should expedite the approval process from BLM.

No change is expected in the schedule for approval ore from last month.

cc: Ron Clayton/Hecla
Dave Hogan
Roy Wilkes
Pat Maley
Phil Walker
Bill Faust
Clyde Gillespie
File-Rose/Permits

Filename:JAN97RPT.DOC

TO: RICHARD DIXON
FM: MIKE BRADY
SUBJECT: Rosebud Mine Geophysical Data

A search of the Winnemucca offices of Hecla Mining Co. revealed extensive geophysical maps regarding the Rosebud Project, Nevada. All of the maps are now in your Reno office. Most of this data was generated by Lac when they had the property under lease from Equinox.

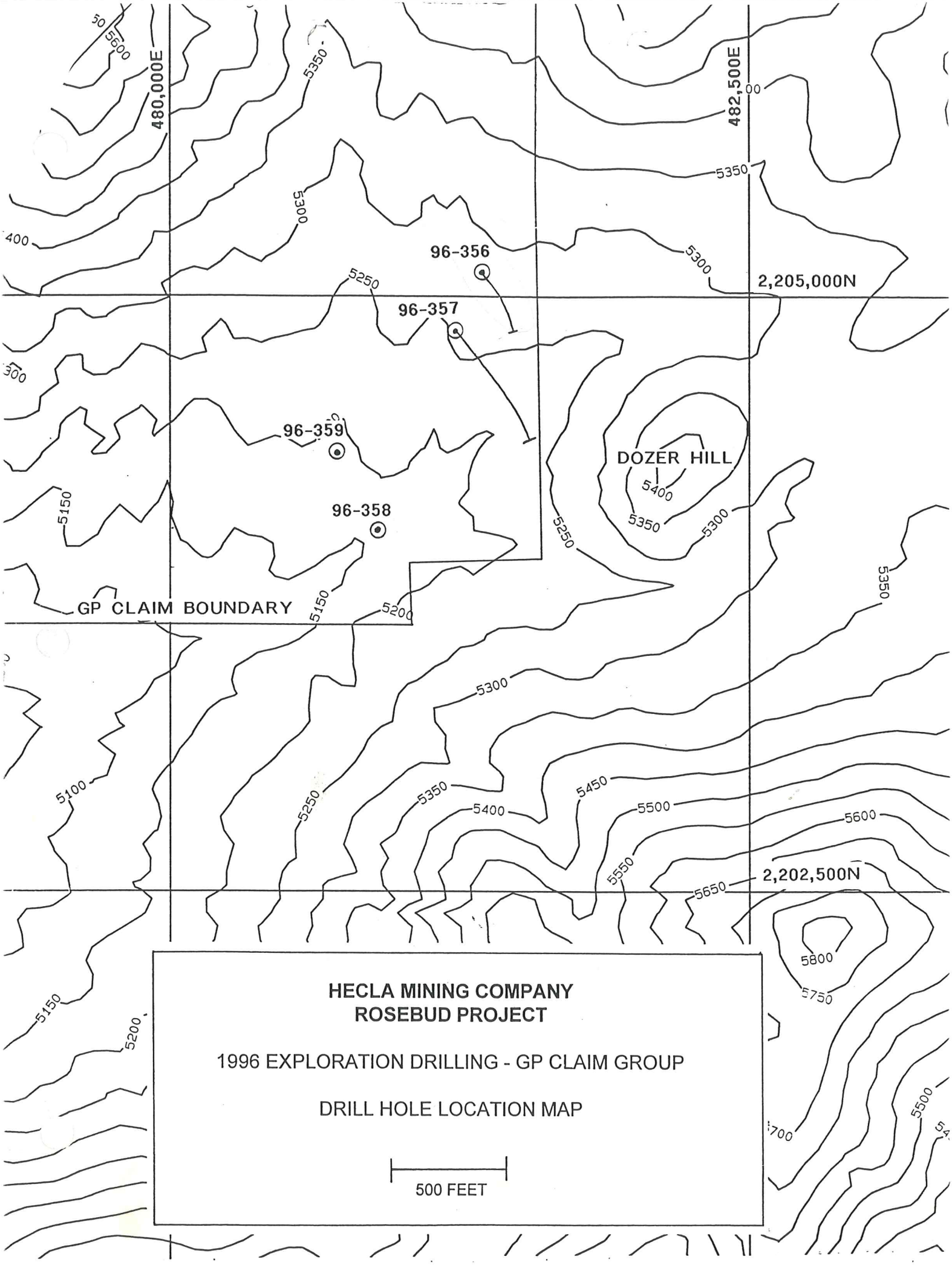
There is essentially no raw data, only maps that display the information gathered. Also, no summary reports were located. I have attempted to locate some of the raw data and reports by the following:

1) called Don Cameron, geologist in Hecla's main Coeur d'Alene, Idaho office. Don doesn't recall seeing any of the data in Coeur d'Alene but he will make a search and get back to us regarding his progress. To date I have not heard from him. (1-208-769-4100)

2) talked with Bob Thomas, previous District Geologist with Lac who was in charge of the Rosebud Project. Said that C.L. Ludwig (Chris) was the Lac geophysicist who directed the use of geophysics at the project and that he presently lives in the Denver area but he did not have a phone number and/or address.

3) called Frank Fritz, Consulting geophysicist in Denver who knows Chris Ludwig and gave me his phone number (1-303-470-6134). He also stated that Marsha Walker also consults as a geophysicist and that she worked on the project for Lac. Ms Walker lives in the Denver area. (1-303-837-1081).

4) called both Chris Ludwig and Marsha Walker and both were out so I left a message requesting a return call. To date I have not heard from either.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HECLA MINING COMPANY
ROSEBUD PROJECT
1996 EXPLORATION DRILLING - GP CLAIM GROUP
DRILL HOLE LOCATION MAP
500 FEET

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM ⇒ Albq. File
RWO, FJJ, CPK ⇒Reno Monthly
RC, CVM ⇒ Hecla Mining Co.

To: F. J. Jenkins, Jr.
From: R. L. Dixon
Date: November 25, 1996
Subject: Monthly Progress Report - Rosebud Joint-Venture, Pershing and Humboldt Counties, Nevada, November 1996

SUMMARY:

1. Rosebud exploration drilling began on November 21 with initial focus in the Dozer Hill area. To date, two RC pilot holes have been drilled and cased to 500 feet in preparation for core drilling through the target zones identified at Dozer Hill. Across the Rosebud Shear to the northwest, a 1600-foot vertical RC hole is testing the northern flank of an altered intrusion, perhaps responsible for Rosebud gold-silver mineralization. At least four other drill holes will test targets in close proximity to the Rosebud deposit. Seven drill holes are scheduled for this late-1996 program. Success with any of these initial holes probably will trigger offsetting holes to track the mineralization.

2. A search of Hecla files and archives disclosed numerous geophysical maps but no tapes or discs of raw geophysical surveys. Several telephone calls to personnel involved in geophysical surveys for Lac Minerals so far have not been successful in locating raw data. It may be necessary for a consulting geophysicist to review previous surveys solely on the basis of paper copies.

3. Re-logging of core hole RL-89 revealed volcanic stratigraphy that correlates well with SFPG's measured surface section. It now appears that Hecla's LBT unit correlates well with the lower Brady Andesite. This dense and impermeable andesite flow seems to have localized migrating ore solutions.

4. The Rosebud core shed should be ready for occupancy by mid-December. Electrical service for overhead lighting and heating needs to be installed, and shelving for core must be constructed.

5. A physical inventory of Rosebud diamond drill core has been completed. Selective re-logging of key core holes will continue into 1997.

1. Rosebud exploration drilling began November 21 with a 500-foot cased, vertical pilot hole at Site 16 (SF96-369, see attached DH location map). Sites 16 and 17 are designed to test an ore zone that lies above the South Ridge Fault (see attached 500-scale cross section). SF96-369 will be core drilled from 500 feet to a T.D. of approximately 1000 feet. Site 17 may not be drilled until 1997, because of time and budgetary constraints.

Site 1, SF96-370, was RC pilot drilled and cased to 500 feet and is a down-plunge test of the North Ore Zone. It will be core drilled from 500 feet to an approx. T.D. of 1100 feet. The attached 500-scale cross section shows the tentative relationships of SF96-370 and SF96-371 (Site 4), drilled from the hanging wall of the Rosebud Shear. Site 2 will be drilled this year if good mineralization is intersected in SF96-370.

SF96-371 (Site 4) is a vertical RC hole to test the northwest side of a highly altered igneous body (progenitor of ore?) and is planned for a 1600 foot T.D
In other words, this drill hole will test for bilateral symmetry of gold-silver mineralization around the suspected intrusion.

Site 5 , shown on the attached cross section with 96-356 and SF96-370, will be another test of the northwest side of the intrusion flanking Dozer Hill and perhaps is fault-bounded. 96-356 contained 10 feet that assayed 0.357 opt Au from 1340 feet to 1350 feet. This intercept was within the aforementioned intrusion and structurally was just above the South Ridge Fault.

Site 7 is a vertical test of possible Bud tuffs in the vicinity of a very fine-grained, sulfide-bearing intrusion between strands of the Rosebud Shear. It is scheduled for an 800 foot T.D.

Site 9, shown on the same conceptual cross section as Site 7, is a southward-directed angle-hole to test reseptive host rocks along an upward-flaring intrusion of Dozer Rhyolite.

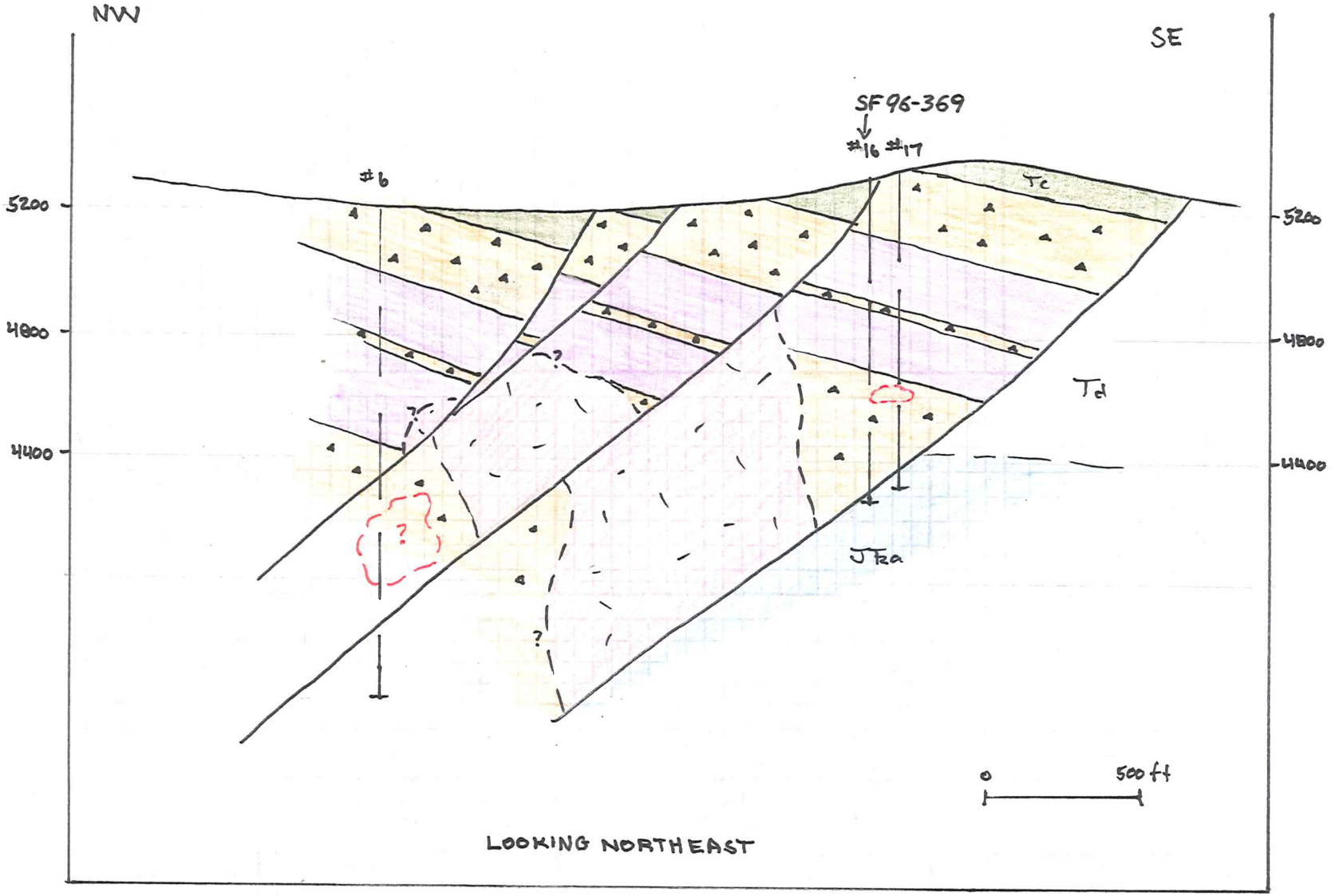
2. After being unable to find any geophysical raw data, we probably will have to use paper copies of maps of previous Lac surveys. A consulting geophysicist will be hired to review the entire package.

3. The attached Stratigraphic Correlation Chart, Version 3, exhibits good agreement between RL-89 (a core hole on north Dozer Hill) and the volcanic section measured on South Ridge. As previously mentioned, the lower Brady Andesite may have acted as an aquaclude that "ponded" ore solutions in underlying porous and permeable Bud Tuffs (= structural-stratigraphic trap).

4. See Suumary page.

5. All surviving Rosebud core holes have been inventoried, palletized, and are ready for transport to inside storage. Select drill holes have been pulled and logged in areas near current drilling. Because there is enough core to fill two core sheds the size of the new facility, excess core will be stored in cargo containers and in the one good semi-trailer.

Richard L. Dixon
attachments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SF96-369
#16 #17
#6
5200
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4400
Tc
Td
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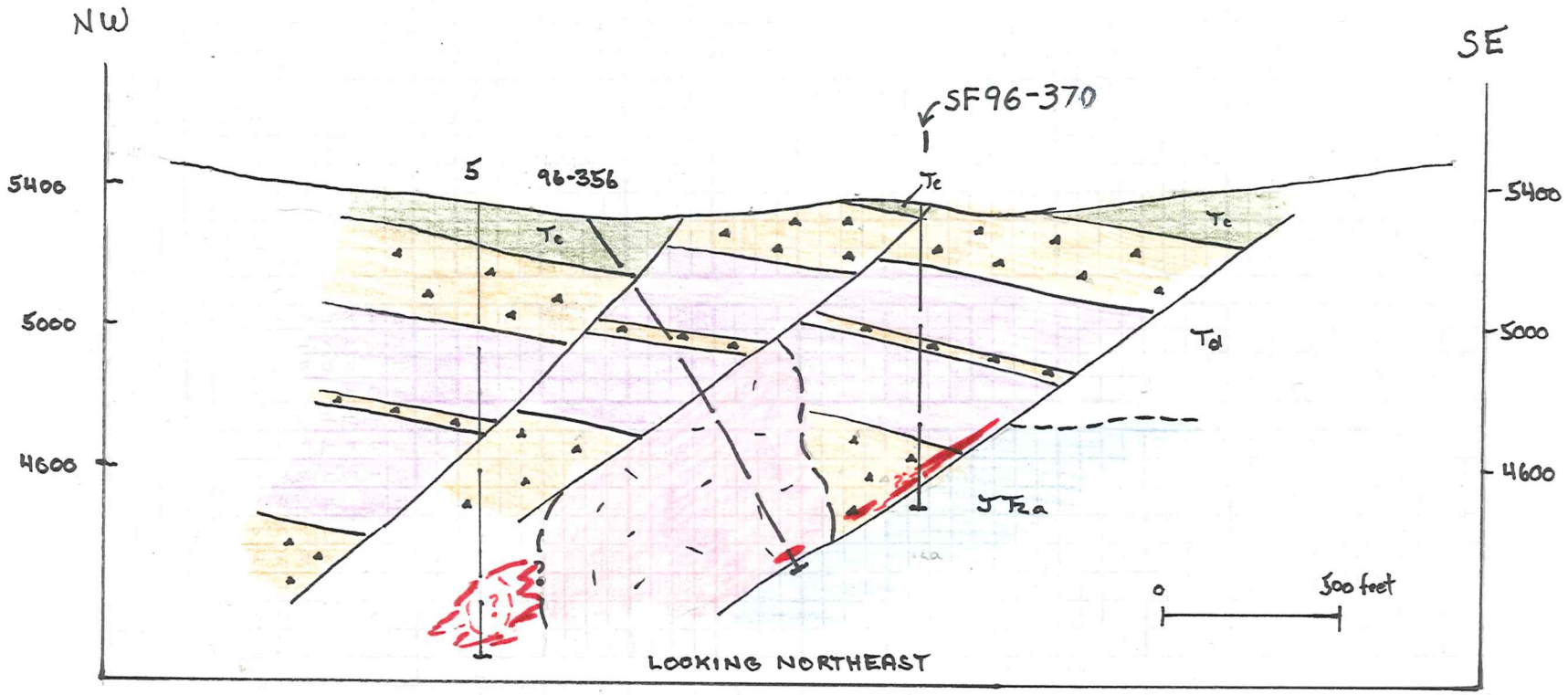
500 ft
LOOKING NORTHEAST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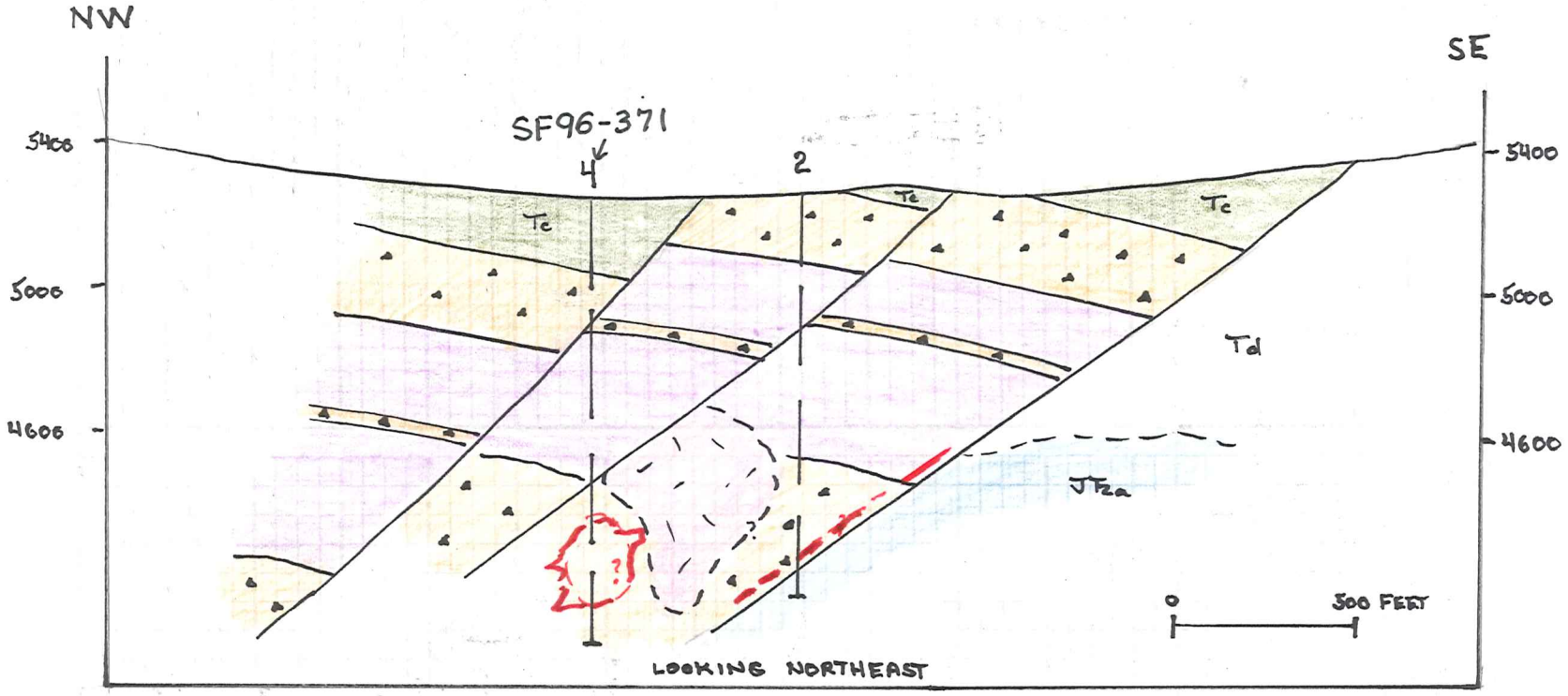
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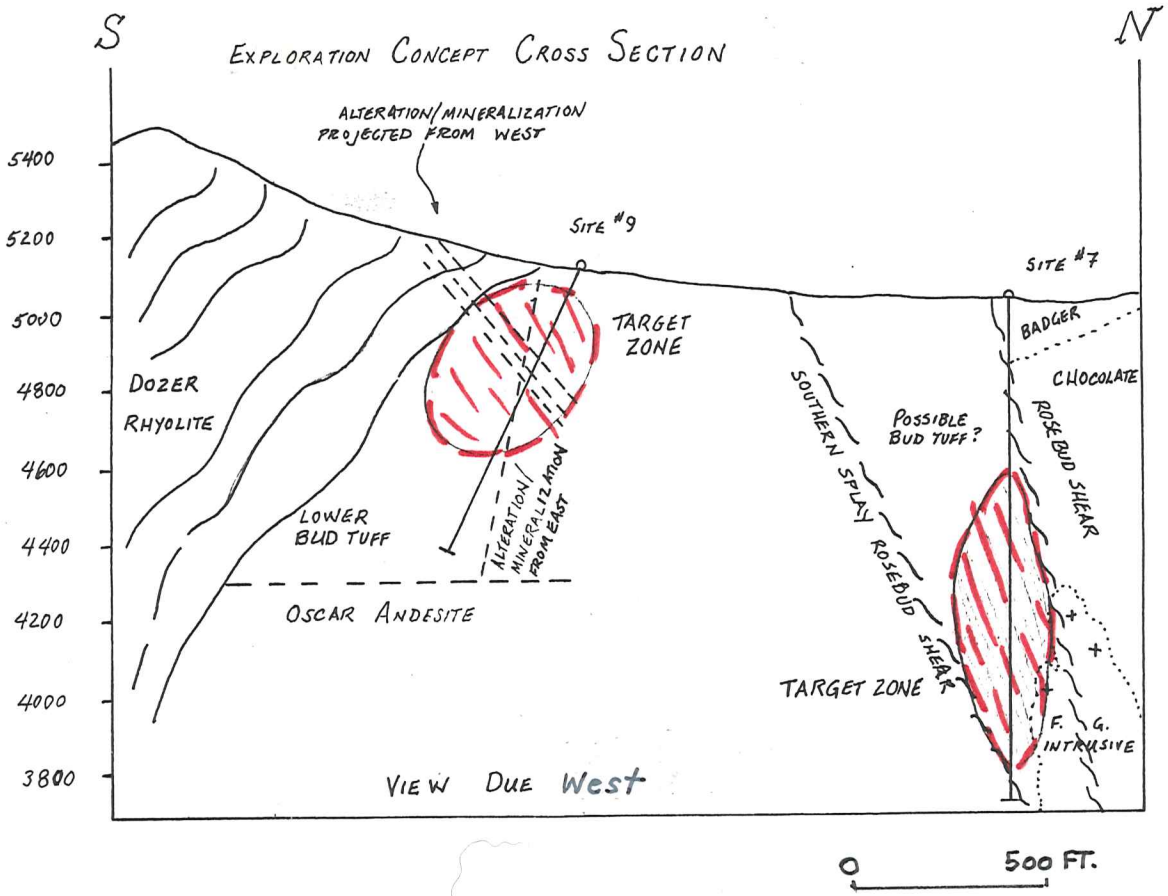
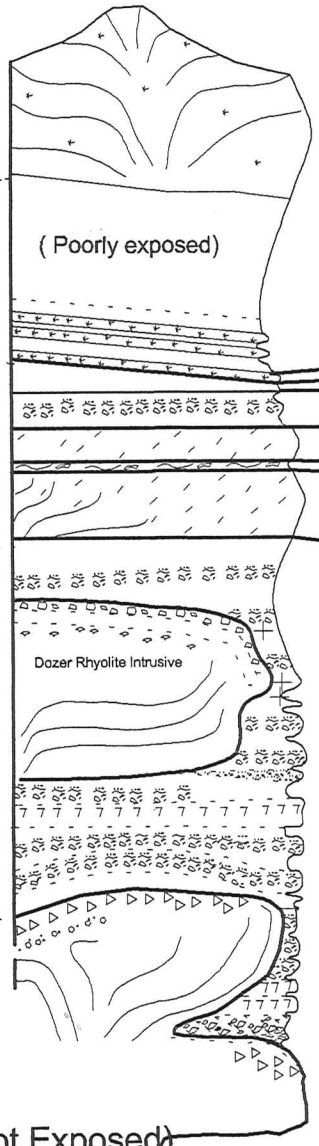

S
N
EXPLORATION CONCEPT CROSS SECTION
ALTERATION/MINERALIZATION PROJECTED FROM WEST
5400
5200
5000
4800
4600
4400
4200
4000
3800
SITE #9
SITE #7
TARGET ZONE
DOZER RHYOLITE
LOWER BUD TUFF
ALTERATION/ MINERALIZATION FROM EAST
OSCAR ANDESITE
SOUTHERN SPLAY ROSEBUD SHEAR
POSSIBLE BUD TUFF?
BADGER
CHOCOLATE
ROSEBUD SHEAR
TARGET ZONE
F. G. INTRUSIVE
VIEW DUE West
0
500 FT.

SFPG Composite Measured Section South Ridge



2750

Chocolate Porphyritic Lava >300' thick

Medium gray, dense, flow banded, sparsely porphyritic pheno andesite. Contact poorly exposed. Lower contact appears uncfm. Flow foliation discordant w bedding.

2500

Chocolate Tuffs >300' thick

Non-welded lithic tuffs w Chocolate frags.

2250

Marker Porphyries >125' thick

Thin 5- 30' glomeroporphyritic lava flows

2000

Upper Bud Tuff >150' thick

Tan, brown, white, and red poorly sorted lithic tuff breccias

1750

Upper Brady Andesite:(see below) 90' thick

Brady Tuff: Mottled xtal lithic tuff. 26.5' thick

Lower Brady Andesite 184.7' Thick

1500

Pale green to dark purple very fine grained pheno-andesite. Conspicuously flow bnded on mm to cm scale. 5% amphibole to 2mm

1250

Lower Bud Tuff >1000' Thick

Heterolithic non-welded tuffs.
Largely pink rhyolite dominant clasts
Local phyllite chips from bsmnt.

1000

750

Local medium brown pumice rich moderately welded ash flow tuff

500

Coarse lithic tuffs contain pink flow banded rhyoliteclasts. Tuffs are deformed near contact.

Dozer Rhyolite (Upper laminated member)

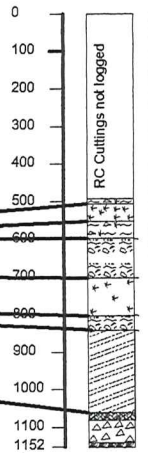
250

Pale tan, white to pinkish flow banded rhyolite.Locally spherulitic especially near contact. Well developed monolithic autobreccia within 100'feet of contact.

0

Dozer Rhyolite (Lower granular member)

RL-89c



Chocolate non-welded lithic tuff. Lithics coarsely porphyritic.
Chocolate porphyry with glomeroporphyritic plagioclase
Chocolate lithic tuffs. Possible correlary with 3' WAFT

Bud Tuffs: Lithics non-porphyritic. Pumiceous.

Marker porphyry. Correlates to Hecla Bud Marker Bed.
Mod coarsely porphyritic. Must be considered as Upper Brady equivalent, although it appears more porphyritic.

Bud Tuffs: Lithics non-porphyritic. Pumiceous.

Lower Brady Andesite: Correlates to Hecla LBT of Mine Sequence. Weakly porphyritic Planar flow foliation. Very fine grained groundmass. When altered, relatively hematite and leucoxene rich: mafic(?)

ORE ZONE: Missing. Consumed for Metallurgy.
SOUTH RIDGE (?) FAULT: Silicified Hydrothermal Breccia.
Mesozoic Basement: Sheared Auld Lang Syne group.

SFPG Rosebud JV

Stratigraphic Correlation
RL-89c &
Measured Section
Ver. 3

Pershing Co. NV
R. L. Dixon, C. P. Kortemeier

NK 11-10-06c
Date: 11/10/96

C:\WYDATA\ROSEBUD\DRAWINGS\rl89diag.vcd 11/25/1996

FACSIMILE

Rosebud Project
Operations
58 Miles West of Winnemucca (UPS)
501 South Bridge Street (Mail)
Winnemucca, NV 89445
Phone: (702) 427-7753
Fax: (702) 427-7781

To: Ron Clayton

Of: Winnemucca

Fax: (702) 623-6967

From: Rich Dixon

 # Pages: (including this cover) 3

Date: 12/04/96 3:55pm.

If you do not receive legible copies of all pages, please call back as soon as possible

Santa Fe Pacific Gold Co.

Rosebud Field Office WGB

Internal Memo

To: Rosebud JV Management Committee & Distribution

From: R.L. Dixon **Date: November 7, 1996**

C.P. Kortemeier

Re: Proposed 1996 work program

The following work program is submitted as per the Rosebud JV agreement. Santa Fe Pacific Gold Corp. proposes to drill approximately 4 reverse circulation drill holes and 3 core holes during November and December of 1996. Approximately 17 drill sites will be staked. Drill targets will be continuously re-prioritized based on the results and costs of earlier holes. Drill targets and individual drill lengths will be adjusted so that we stay within the $345,000 total budget as presented in August 1996. If we experience significant cost under-runs relative our estimates, the program will be expanded so that all committed moneys are spent. If we experience cost over-runs, the program will be similarly trimmed back so that no more than the approved budget is spent.

The site locations are shown on the accompanying map. Sites with solid circles are currently planned to be drilled. Site numbers on the location map are keyed to the site numbers on the accompanying spreadsheet listing planned depth.:

Although 3 targets have been identified on the GP Claims and are subject to terms of the N.L. Degerstrom agreement, current plans are to drill only one (site 5) during this campaign.

A total of 3 core holes are planned with 1500' of pilot drilling and 1700' of coring. The 4 planned RC holes will total 4200'. in drill holes is anticipated to be completed by December 31, 1996. Direct drilling costs and assaying are expected to be: $179,480.

Drill rigs are scheduled to arrive on the property Nov. 15, 1996

Distribution:

Santa Fe Pacific Gold

Roy Wilkes
R.L. Parratt
R.W. Owen
F. J. Jenkins

Hecla Mining Co.

Michael White
Ron Clayton
Charlie Muerhoff

Rosebud JV Preliminary Drilling Plan 11/7/96

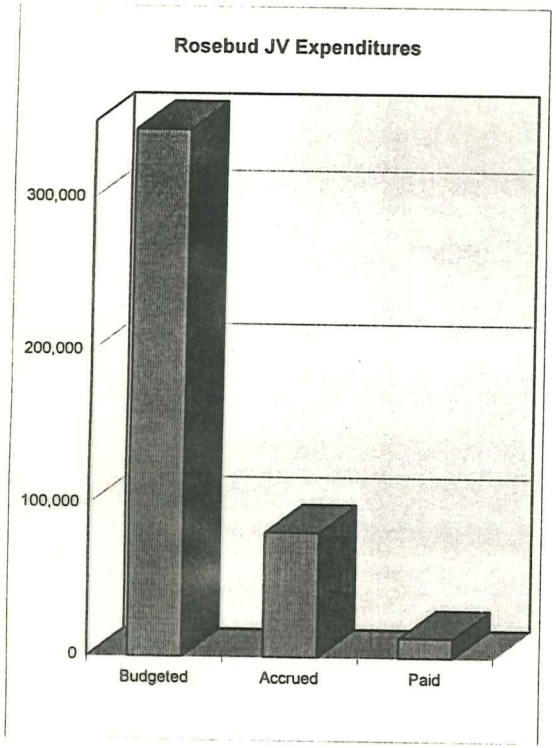
Priority	Site #	X Feet	Y Feet	Azimuth	Angle	Depth	RC Feet	Core Feet	RC Cost $15.70	Core Cost $43.70	Total Cost per hole
1	1	482,225	2,204,670	N/A	-90	1,100	500	600	7,850	26,220	34,070
2	3	482,350	2,204,770	N/A	-90	1,100	500	600	7,850	26,220	34,070
4	4	481,830	2,205,380	N/A	-90	1,500	1,500	0	23,550	0	23,550
5	5	481,220	2,205,260	N/A	-90	1,600	1,600	0	25,120	0	25,120
8	7	479,020	2,203,080	N/A	-90	1,300	1,300	0	20,410	0	20,410
7	374— 9	479,100	2,201,910	180	-65	800	800	0	12,560	0	12,560
3	17	481,995	2,204,150	N/A	-90	1,000	500	500	7,850	21,850	29,700
Cumulative Totals						**8,400**	**6,700**	**1,700**	**105,190**	**74,290**	**$179,480**

Rosebud Joint Venture NK 11-10-06c

Project Manager: R. L. Dixon
Project Geo.s : C.P. Rottemeier

AFE # J0926

11/18/96



SUB-TOTALS BY CATEGORY	Paid	Accrued	Budgeted*	+/(-)
Land	0			
2/3 of Filing Fees	0	45,000	45,200	
Land Subtotal	0	45,000	45,200	200
Salary and Expense	21,455	57,975	70,800	
Geology	11,839	16,989	23,900	6,911
Surface Geochemistry	0	0	29,500	29,500
Mineralogy	0	800	0	(800)
Geophysics	0	0	13,000	13,000
Surveying	0	0	2,700	2,700
Environmental	0	0	6,200	6,200
Dirtwork	0	5,400	5,000	(400)
Drilling Sub Total*	933	933	122,440	121,507
Mud (included in drill)*	0	0	0	0
Contract Labor	0	0	8,600	8,600
Reverse Circulation	0	0	81,280	81,280
Core (including mud)	0	0	32,560	32,560
Drilling Misc.	933	933	0	(933)
*Drill Hole abandonment**	0	0	0	0
Drill Assaying	0	0	22,392	22,392
Reclamation	0	0	3,000	3,000
Contingency/Round-off			868	
AFE TOTAL $	12,772	82,097	345,000	204,010

Budgeted	345,000
Accrued	82,097
Paid	12,772

The Rosebud Mining Company LLC
P.O. Box 2610
Winnemucca, Nv. 89446
Phone (702) 623-6912
Fax (702) 623-6967
Hecla Mining Company - Manager for Mining

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM⇒ Albq. File
RWO, FJJ, CPK ⇒ Reno Monthly
RC, CVM ⇒ Hecla Mining Co.

To: F. J. Jenkins, Jr.
From: R. L. Dixon
Date: October 29, 1996
Subject: Monthly Progress Report - Rosebud Joint-Venture, Pershing and Humboldt Counties, Nevada - October 1996

SUMMARY:

1. Rosebud exploration targeting is being finalized for RC drilling to begin within the next week or so, depending on rig availability. An RC rig with a 1,500 foot depth capability has been requested.

2. A joint Hecla-SFPG surface geologic field trip at Rosbud on October 2, 1996, was very useful in building a fuller understanding of the volcanic stratigraphy, structure, and alteration associated with the gold deposit.

3. Diamond drill core stored in two trailers and outside under tarps has been re-stacked on pallets and is being inventoried. Once the premanent core storage building is completed, this core will be moved inside. Meanwhile, selective drill holes and critical intervals are being examined jointly by Hecla and SFPG personnel to reconcile stratigraphic differences.

4. Preliminary testing with the portable PIMA analyzer has yielded information on the alteration mineral assemblages present at Dozer Hill and over the Rosebud deposit.

5. Digitizing of geologic and geochemical (Au-Ag) data in the vicinity of the Rosebud deposit is nearly complete and will be an integral part of the drill targeting process. Separate layers containing surface geology, structure, alteration, and Au-Ag in soils and rocks are now available.

6. The south end of the Rosebud geology trailer being used as a temporary core and RC chip logging facility.

7. R. Dixon and C. Kortemeier attended the SFPG Annual Exploration Meeting in Winnemucca on October 30, 1996.

1. Sixteen (16) drill holes were selected during the initial targeting process. These drill holes are mainly in close proximity to the Rosebud deposit and will be reviewed in Reno on November 4.

2. A joint Hecla-SFPG field trip on October 2 helped to reconcile some of the differences in Rosebud stratigraphic interpretation and nomenclature. The attached Figure from CPK's monthly report illustrates the current stratigraphic correlations and shows where details remain to be worked out. It is anticipated that core relogging and examination of underground geology will resolve the remaining differences. A full understanding of Rosebud volcanic stratigraphy is fundamental to success of the exploration program.

3. An inventory of diamond drill holes stored in trailers and under tarps at Rosebud is nearly complete. Individual drill holes have been stacked on pallets for easy transport by forklift to the core shack, when finished. Meanwhile select intervals of key core holes near Dozer Hill are being relogged for stratigraphic and alteration information. CPK has relogged RL-89 and RL-91.

4. CPK has run an orientation survey with the portable PIMA analyzer on altered samples from above the Rosebud deposit and has found four mineral assemblages. These are: alunite +/- illite, chlorite mixed with illite, illite replacing chlorite, and kaolinite. The attached page from CPK's October Monthly Report provides additional details of the PIMA work.

5. Digitized geologic and geochemical data was useful for selecting drill sites around Dozer Hill. M. Brady's 500-scale geologic map, in particular, has been helpful in understanding Rosebud surface geology.

6. The Rosebud geology trailer is being used as an interim logging facility and offers good protection from inclimate weather. The core storage building is supposed to be completed by mid-November.

7. RLD and CPK attended the SFPG Annual Exploration Meeting in Winnemucca on October 30, 1996. It offered explanations of corporate exploration policies and strategies. The re-emphasis on domestic gold exploration was very well received by the attendees.

Richard L. Dixon

two attachments

SFPG Composite
Measured Section
South Ridge

Hecla schematic
Stratigraphic Section
Mine Area

2750

Chocolate Porphyritic Lava >300' thick

Medium gray, dense, flow banded, sparsely porphyritic pheno andesite. Contact poorly exposed. Lower contact appears uncfm. Flow foliation discordant w bedding.

2500

Chocolate Tuffs >300' thick

Non-welded lithic tuffs w Chocolate frags.

2250

Marker Porphyries >125' thick

Thin 5- 30' glomeroporphyritic lava flows

2000

Upper Bud Tuff >150' thick

Tan, brown, white, and red poorly sorted lithic tuff breccias

1750

Upper Brady Andesite:(see below) 90' thick

Brady Tuff: Mottled xtal lithic tuff. 26.5' thick

Lower Brady Andesite 184.7' Thick

Pale green to dark purple very fine grained pheno-andesite. Conspicuously flow bnded on mm to cm scale. 5% amphibole to 2mm

1500

1250

Lower Bud Tuff >1000' Thick

Heterolithic non-welded tuffs.
Largely pink rhyolite dominant clasts
Local phyllite chips from bsmnt.

1000

750

Local medium brown pumice rich moderately welded ash flow tuff

500

Coarse lithic tuffs contain pink flow banded rhyoliteclasts. Tuffs are deformed near contact.

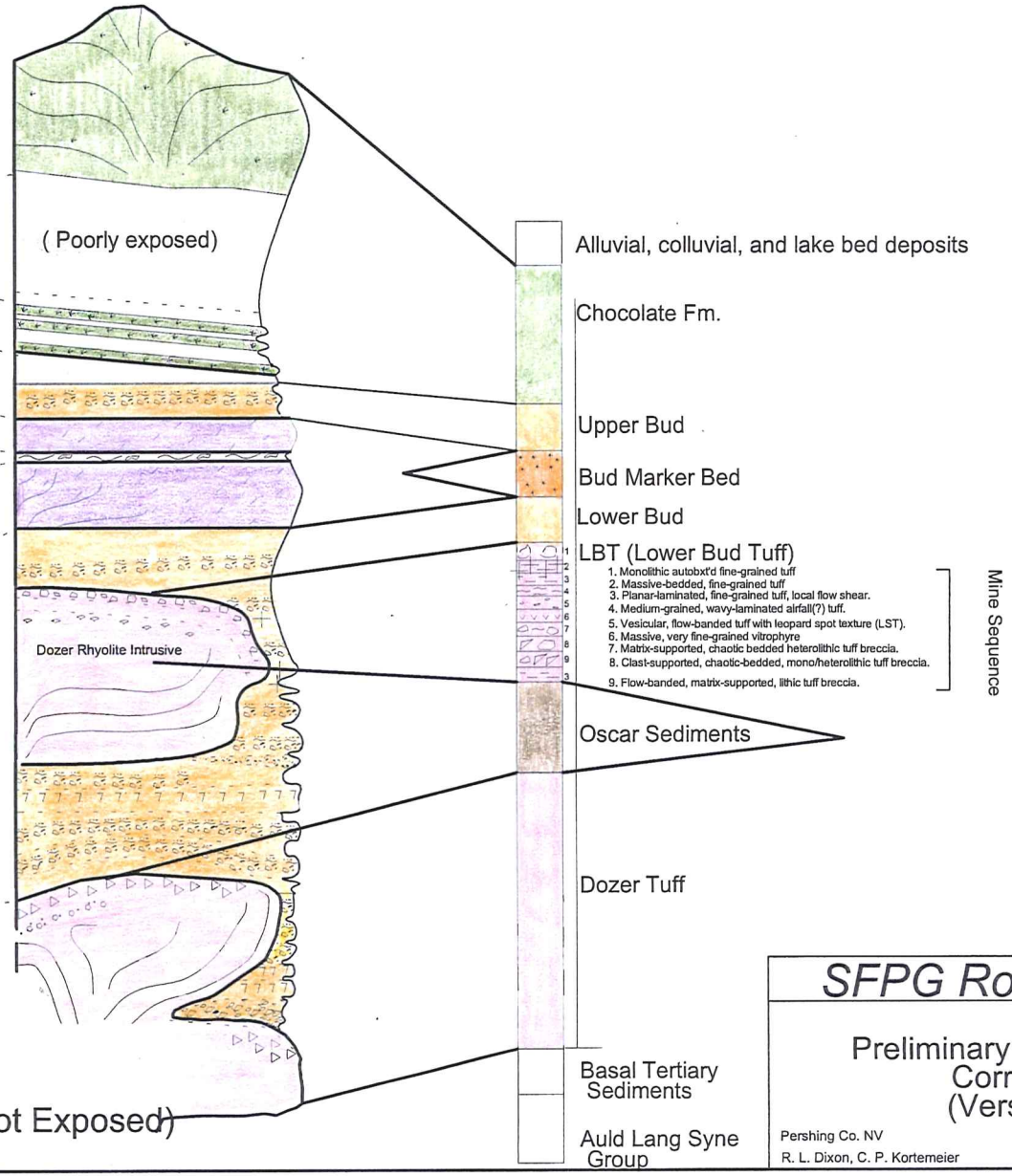
Dozer Rhyolite (Upper laminated member)

250

Pale tan, white to pinkish flow banded rhyolite.Locally spherulitic especially near contact. Well developed monolithic autobreccia within 100'feet of contact.

0

Dozer Rhyolite (Lower granular member)



SFPG Rosebud JV

Preliminary Stratigraphic Correlation (Version 2)

Pershing Co. NV
R. L. Dixon, C. P. Kortemeier

NK 11-10-06c
Date: 9/26/96

Alteration/Mineralization

The orientation survey with the PIMA reveals that we have essentially 4 mineral assemblages forming a zoned alteration pattern at Rosebud. They are

- Alunite +/- illite: these samples came from high up on the South Ridge fault and are probably associated with boiling >600' above the ore body (see Figure 2)

- Chlorite admixed with illite in varying amounts. Based on hand specimen inspection a clear paragenesis between chlorite and illite cannot yet be determined (see Figure 3).

- Illite with greater proximity to hydrothermal conduits appears to replace chlorite giving the rocks a bleached white appearance not matter what there original prolith composition (see Figure 4).

- Kaolinite has been detected in several areas from drill core to outcrops in the face of the new portal. In the relatively few samples so far identified it has been confined to pure cross cutting veinlets of white clay (see Figure 5)

I believe that the PIMA surveying to date has shown that we have a broad range of alteration minerals present at Rosebud. Detailed surveying should be able to establish the relationships of the various alteration assemblages to mineralization. The volumetric dominance of the illite/chlorite and illite facies is consistent with Rosebud mineralization being from near neutral fluids in a low sulfur hydrothermal system.

Presence of alunite at higher elevations in hydrothermal conduits (i.e. the South Ridge Fault) is probably indicative of boiling. The transition between alunite and illite takes place along the South Ridge Fault approximately 750' above the mineralized main ore body. Recognizing spatial relationships such as this may have some important exploration repercussions. Continued alteration facies mapping with the PIMA is indicated.

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM ⇒ Albq. File
RWO, FJJ, CPK ⇒ Reno Monthly
R. C., C. M. ⇒ Hecla Mining Co.

To: F. J. Jenkins, Jr.
From: R. L. Dixon
Date: September 26, 1996
Subject: Monthly Progress Report - Rosebud Joint-Venture, Pershing and Humboldt Counties, Nevada - September 1996

SUMMARY:

1. The Rosebud JV agreement between Hecla Mining Company and Santa Fe Pacific Gold Corporation was signed finally on September 6, 1996, after an extended due diligence and negotiating period. Under terms of the LLC agreement, SFPG will spend $345,000 on exploration by the end of 1996.

2. The principal exploration activities during September were ongoing surface stratigraphic measurements and comparisons with the underground ore host rocks, continuing search of project archives, a Reno review by the Project Services Group of geochemical and geophysical data on computer discs, and digitizing of the most recent surface geologic mapping. The above outlined tasks are being performed in preparation for approximately 6,400 feet of RC drilling, probably starting in late-October, 1996.

3. Re-logging of selective core holes drilled proximally to the Rosebud deposit for detailed volcanic stratigraphic and structural information will begin by mid-October. A permanent core and RC cutting logging and storage facility is planned but likely will not be completed until the end of the current year. A portion of the geology trailer probably will be used as a temporary core logging location. RC chip logging by microscope can be done in the geology trailer.

4. The Rosebud JV Exploration trailer was opened and cleaned on Septem-ber 24, in anticipation of moving office furnishings on-site within the next ten days. The electric power is "on", but restroom facilities and telephone service need to be installed soon.

5. SFPG personnel working at Rosebud will be taking the MSHA-approved 32-hour underground mine safety training course offered at Fernley, Nevada, on October 7-10, 1996. An additional 8 hours of training at the Rosebud Mine will be required to complete the 40-hour course, and 8 hours of refresher training will be needed annually to maintain certification.

6. 6,400 feet of RC drilling (6-8 holes) is planned for Rosebud in 1996.

Report Text:

1. After a one and one-half month extension, final details were resolved and the Rosebud Joint-Venture Agreement with Hecla Mining Company was signed on September 6, 1996. SFPG will spend $345,000 on Exploration in 1996, including overhead and $45,200 for SFPG's two-thirds of the claim maintenance fees. A much larger exploration program, costing SFPG $1.32 million, is budgeted for 1997.

2. Surface stratigraphic measurements and descriptions of the volcanic rocks at Rosebud were undertaken during the past month. C. Kortemeier's attached Monthly Activity Report details that work and presents a tentative correlation chart linking SFPG's and Hecla's volcanic stratigraphy. It is obvious that that there still are differences to be resolved, especially in what exact rocks host the Rosebud orebodies. Pursuant to that goal, we will be taking the Hecla geologists on a surface tour on October 2, to offer our thoughts and to point out our findings. Furthermore, we plan to revisit the Rosebud underground workings and to re-examine the ore host horizons with the ribs cleaned. The comprehensive understanding of Rosebud volcanic stratigraphy and the mutual recognition and agreement by all workers are fundamental necessities to successful exploration at Rosebud. Additional stratigraphic studies, including areas north of the Rosebud Shear, are planned for October.

C. Kortemeier has initiated an alteration study of Rosebud. For this purpose he has ordered re-prints of Rosebud color aerial photography , has acquired the PIMA unit to conduct on-site determinations, and has begun collecting samples for petrographic analysis.

The 500-scale geologic mapping of M. Brady (1995) is being digitized by G. Leibler onto the project topographic base. Various other geologic maps done for Lac Minerals may be digitized after they are scrutinized and field-checked by SFPG personnel. The same screening process and quality control applies to previous geochemical and geophysical surveys. The Reno Project Services Group currently is merging files of geochemical and geophysical data on computer discs in order that the information can be easily scanned and selectively printed.

3. Re-logging of intact core holes drilled close to the Rosebud orebody will be done to derive stratigraphic, structural, and alteration characteristics. Unfortunately, this exercise was made more complicated recently when there was a mishap with one of two core storage trailers. A trailer completely filled with core fell on its side after it was relocated! It will be necessary to cut open

the trailer and to salvage as much core as possible. To facilitate this process and the eventual movement of core to permanent storage, one hundred wooden pallets will be delivered to Rosebud next week. Geotemp labor under a geologist's supervision will be used to systematically unload the core and to stack it on pallets. Then the re-logging of select core holes will begin. Both SFPG geologists and M. Brady will be engaged in this re-logging. The porch of the geology trailer will serve as a temporary core logging location.

4. Outfitting of the Rosebud geology trailer is under way and is utilizing surplus office furniture from other SFPG sources. C. Matton is bringing a truck load of office furnishings to Rosebud next week. Restroom fixtures and telephone service still need to be acquired and connected.

5. Any SFPG personnel assigned to Rosebud need to have the MSHA-approved 40 hours of underground mine safety training. Many of us will take 32 hours of training in Fernley on October 7-10, and will receive the remaining 8 hours from Hecla at Rosebud.

6. By this time next month, targets near Rosebud will have been selected for 6,400 feet of RC drilling scheduled for 1996. The above mentioned prework comprises the bases for target selection in the immediate vicinity of the Rosebud deposit. Depending on rig availability, Rosebud drilling should begin in late October or early November.

Richard L. Dixon

attachments

TO: RICHARD DIXON
FM: MIKE BRADY
SUBJECT: ROSEBUD MINE, NEVADA
DATE: September 12, 1996

To date my experience at the Rosebud Project has been to complete a district scale geologic map, compile a summary of the known exploration targets on the property and then supervise a reverse circulation drill program. My total involvement has aggregated approximately 4-5 months for Hecla.

Santa Fe has now invited my participation in the further exploration of the property. As an initial step I was requested to outline some exploration ideas as well as to offer some areas that I believe justify additional study. In summary the following comments are therefore presented.

General

Reconnaissance district scale mapping has broadly established geologic relationships in the general vicinity. Considerable improvement is still possible regarding the age of the Dozer Tuff, relative ages of the Rosebud Shear and South Ridge Fault, origin of the Badger Formation, a confirmation of the various rhyolite intrusives depicted in the district and various other geologic relationships. When a compilation of the known target areas on the property was completed it was obvious that alteration is widespread and that past exploration (including sampling, geophysics and drilling) has been extensive but largely unsuccessful.

The total data base of past exploration work at Rosebud is nearly overwhelming at first impression. I believe that all of this information is of value but I would recommend that studies now should be focused on the details of the Rosebud orebody and not the exploration potential of the district. Specifically I believe that the following questions remain to be answered:

1) What exactly is the Rosebud orebody? Is it a replacement zone in the volcanic sediments, a fluid breccia chimney, a vein or deposition at a structural intersection?

2) What are the mineral zonations within the orebody? Do the gangue and ore mineral suites vary from top to bottom within the deposit in a fashion that would aid in understanding its genesis?

3) What are the alteration zonation patterns outside of the orebody? I believe that this becomes very important to determine if blind drilling of a +1,500 feet target is contemplated.

4) What are the controls for mineralization? I presently assume a combination of favorable host, proximity to east-west trending structure and along the margins of a rhyolite intrusive are important criteria but these are assumed variables that should more closely examined.

5) How do the other known zones of mineralization (North and East Orebodies and the mineralization intersected in hole 96-356) relate to each other? Could they be faulted pieces of originally one zone of mineralization or do they represent separate depositional sites?

My suggestion is in summary to focus initially on the deposit details and not the over all exploration potential of the district.

Work Programs

Some of the activities that could be completed now include:

1) review all of the underground mapping for accuracy and completeness. Additional work may be required.

2) re-log the core holes that penetrate the area of the main orebody using a uniform stratigraphic terminology. This step will require that all of the core first be located and organized into permanent storage.

3) complete an alteration and mineral zonation study of the main orebody and surrounding periphery. Samples could be obtained from both the underground workings and the core holes.

4) using a computer, compile all of the geologic, alteration and assay data for a block of 500 ft x 500 ft x 500 ft that surrounds the main orebody. Use this data base to plot out features of potential interest.

5) continue the same procedure above for the other known zones of mineralization in the general vicinity.

6) locate and assemble in a perminant storage all of the chip trays for the completed reverse circulation holes on the property. A re-logging effort can then continue for those holes located north, south and east of Dozer Hill as a first priority.

Although these work programs are considered important, they are mainly time consuming and not that expensive. If major expenditures are required as a result of the terms of the joint-venture agreement, the following might be considered:

1) contact Hecla's consulting geophysicist, Joe Anzman in Denver (1-303-741-5433) regarding the availability of airborne magnetics over the district. If it is not available at suitable detail and coverage, conduct a separate survey. (est $20,000)

2) assemble all of the completed IP data for a detailed re-interpretation. I know of 4 IP anomalies on the Rosebud Property (Dozer Hill, Valley, North Equinox and Dreamland). The Dozer Hill anomaly is possibly related to the main Rosebud Deposit but a detailed interpretation might yield a more specific signature. If the detailed IP data is not available, consider reproducing it with additional lines in the field. (est. maximum $20,000-40,000)

3) drill a vertical core hole at 480,500E; 2,205,000N approximately 1,800 feet northwest of the top of Dozer Hill. The northwest flank of a sub-cropping rhyolite intrusive, the basal base surge sequence and an east-west trending mineralized vein all project into the area creating an interesting exploration target. No core holes are present in the area (only a few reverse circulation holes) and the stratigraphic information that would be gained from a core hole at this site would be helpful. The total depth of the proposed hole would be roughly 1,700 feet. (est. $75,000-80,000)

4) from the underground workings drill a series of horizontal core holes (possibly 3, spaced at 300 foot intervals) on a northwest bearing to intersect the footwall of the Rosebud Shear. This is highly prospective ground that essentially remains untested by the surface drilling. (est. $100,000-150,000).

RB$1 ....xls

ROSEBUD JOINT VENTURE 1996

Created: 8/21/96
Print Date: 8/22/96

Breakdown By Month

Cost Category	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
SFPG Salaries & Exp	70,800									17,700	17,700	17,700	17,700	70,800
Land	45,200									45,200				45,200
Surveying	2,700										1350	1350		2,700
Environmental	6,200									4,000	2,200			6,200
Drafting/Database	2,500									2,000	500			2,500
Contract Geol. Lbr	17,200									4,300	4,300	4,300	4,300	17,200
Geology Misc.	4,200									1,050	1,050	1,050	1,050	4,200
Surface Geochem Labor	6,000									3,000	2,000	1,000		6,000
Rock Geochemistry	23,500									9,000	8,000	6,000	500	23,500
Geophysical Consult.	5,000									5,000				5,000
Regional Geophysics	42,904											42,904		42,904
Dirtwork	5,000										5,000			5,000
Drill site Geology	8,600										3,000	4,000	1,600	8,600
Reverse Circ. Drilling	81,280										20,000	40,000	21,280	81,280
Assaying	18,752											10,000	8,752	18,752
Check Assays	1,296												1,296	1,296
Drill Site Reclamation	3,000												3,000	3,000
Round-off	868												868	868
	345,000	0	0	0	0	0	0	0	0	91,250	65,100	128,304	60,346	345,000

Project Summary Data Sheet

PROJECT NAME: ROSEBUD JV

LOCATION: Pershing and Humboldt Counties, Nevada
Country: USA
Office: Reno
Exploration Project Management Team: Jenkins / Dixon

EXPLORATION CONCEPT / MODEL: Epithermal gold-silver

Target Type: Volcanic-hosted structurally controlled high-grade gold-silver mineralization. Underground targets.

Potential size: 500,000 to 1.0 million troy ounces Au, plus substantial Ag content.

Potential shape, tons/grade: Proven South Zone at Rosebud is an elongate orebody at structural intersection. Approximate dimensions are 200' X 1350' X 50' with 1 million tons grading 0.50 oz./ton Au and 7.0 oz./ton Ag. Other blind orebodies occurring in the area are the North, East, and Far East.

Anticipated Metallurgical Process: Sulfide ore to be trucked to Twin Creeks, milled and run through CIL circuit, carbon stripped, and dore produced.

Anticipated Engineering/Mine Process: Rosebud will be an underground cut-and-fill mine using waste rock to backfill stopes.

FEATURES OF EXPLORATION SIGNIFICANCE: Tertiary volcano-tectonic trough with caldera development and gold-silver mineralization associated with ring fracture system,numerous structural intersections with mineralized breccias, locally strong bleaching in the form of sericitic and argillic alteration, associated pathfinder element geochemical anomalies. Rosebud is a zone of "blind" high-grade gold-silver orebodies.

Geology: Extensive geologic mapping in the district from 1981 to 1995. Mapping at scales from 1 inch = 1 mile down to 1 inch = 100 feet. Most recently mapped at scale of 1 inch = 500 feet (1995).

Geochemistry: Widespread soil surveys for Au, Ag, As, Sb, and Se. Recent multi-element geochemical study of underground drill holes on edges of South Zone to develop vectoring tool for finding more ore. Select surface rock-chip geochemistry.

Project Summary Data Sheet : **Rosebud JV** continued-

Geophysics: Detailed ground magnetics, IP, and resistivity surveys, contracted by Lac Minerals.

Drilling: Approximately 370 drill holes property-wide but locally very focused surface drilling. For example, the Rosebud Soth Zone orebody has 143 surface drill holes followed by 131 underground drill holes on 25-foot centers.

Lithology: Kamma Mountain volcanics of Miocene age are the hosts for gold-silver mineralization and consist of flows, pyroclastics, and epi-clastic rocks of quartz latitic to rhyolitic composition. The LBT unit, a fine-grained water lain and air fall tuff, is thought to host most of the South Zone orebody. Other orebodies are hosted by the underlying Dozer Rhyolite, which is a fine-grained, siliceous ash flow tuff showing weak banding.

Structure: Regionally Rosebud lies along the north ring fracture of a 3 - 4 mile diameter resurgent dome of Tertiary age. More local structural controls for Rosebud-type deposits appear to be the intersections of east-west trending listric faults with north-striking and east-dipping volcanic beds. Other structural elements are believed to have influenced ore emplacement, including high-angle faults with northwest and northeast orientations.

Alteration and Mineralization: Locally intense sericitic and argillic alteration can hamper identification of wallrock lithologies. Gold and silver mineralization occurs with silica flooding, as discrete veins, vein stockworks, and as tectonic and hydrothermal breccias. This gold-silver mineralization is the quartz-sericite-adularia type and generally has low total sulfide content (± 4%).

PROJECT STAGE: Discovery and Discovery Follow-Up.

LAND OWNERSHIP:

Size: 772 unpatented lode mining claims on BLM land. 15,440 acres, or about 24.1 square miles. 95 claims being capitalized against the Rosebud operation, leaving 677 claims for exploration (note: $67,700 in annual fees to BLM).

Commitments: SFPG will fund $12.5 million in project development costs. SFPG will fund first $1 million of exploration, thereafter will be responsible for 2/3 of all exploration expenditures. Exploration and development costs will be $1 million annually, unless decided otherwise by JV Management Committee. SFPG will contribute the Scossa area to the JV. See terms outlined in Letter of Intent, dated May 24, 1996.

SFPG Ownership %: -0-, earning in to 50%

Project Summary Data Sheet: Rosebud JV continued-

ASSESSMENT OF OTHER CRITICAL FACTORS:

Social/Political: Addressed in 1995 BLM Environmental Assessment*
Cultural**: " " " "
Environmental: " " " "
Health and Safety: " " " "
Financial: See above SFPG commitments to earn 50%.
Notes: *1995 Environmental Assessment will have to be amended because of decision not to mill ore on-site. **More cultural surveys needed with expanded Plan of Operations.

PROPOSED 1997 EXPLORATION PROGRAM:

Work Planned Jan. 1 - July 24, 1997: Drill test 4 - 5 targets with 22 RC holes and 2 core holes, totaling 19,200 feet. Very selective geophysical and geochemical surveys.

Budget:.....$655,000

Surveying:	4,500
Environmental	30,000
Geology:	125,488
Geophysics and Geochemistry:	35,080
Dirtwork:	8,500
Drilling: (22 RC DH's and 2 Core DH's)	391,092
Reclamation:	6,660
Contingency:	53,680
	$655,000

Work Planned July 25 - Dec. 31, 1997: Discovery follow-up drilling on 2 - 3 discoveries with estimated 42 RC holes and 4 core holes, totaling 36,800 feet. Limited geophysical and geochemical surveys and modeling over discoveries.

Budget: **$1,000,000**

Land:	67,700
Surveying:	4,500
Geology:	61,824
Geophysics and Geochemistry:	50,540
Dirtwork:	11,900
Drilling: (42 RC DH's and 4 Core DH's)	734,718
Reclamation:	8,360
Contingency:	60,458
July 25 - Dec. 31, 1997 Grand Total	**$1,000,000**
Shared 2/3-1/3 with Hecla, SFPG's share=	**667,000**

SFPG's Total Expenditure 1997 = $655,000+667,000= $1,322,000

PROJECT: Rosebud Exploration 1996 LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon
Geologists: C.P. Kortemeier
BUDGET DETAIL: August 24, 1996 to December 31, 1996

LAND:

Land Payments:						
$0					$ 0	0.00%
					0	0.00%
				Sub Tl $	0	0.00%
Land Filing Fees and Acquisition Costs:						
SFPM Land Labor & Expenses						
0 SFPM landmn dys @	$255 /dy + Exp	$65.00 /dy			$ 0	0.00%
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy			0	0.00%
0 Drafting man dys @	$100 /dy				0	0.00%
Contract Land Labor & Expenses:						
0 Survey'g Crew dys @	$800 /dy (incl. expenses)				0	0.00%
Filing Fees:						
0 Claims @ $200.00 /claim					45,200	13.10%
				Sub Tl $	45,200	13.10%

SURVEYING:

SFPM Surveying Labor & Expenses:						
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy			$ 0	0.00%
0 Drafting man dys @	$100 /dy				0	0.00%
Contract Surveying Labor & Expenses:						
6 Days @ $450.00 /day					2,700	0.78%
			dys			
Surveying Miscellaneous:						0.00%
				Sub Tl $	2,700	0.78%

ENVIRONMENTAL:

SFPM Environmental Labor & Expenses:						
0 Drill Sup man dys @	$150 /dy + Exp	$65.00 /dy			$ 0	0.00%
0 Drafting man dys @	$100 /dy				0	0.00%
Environmental Permits:					720	0.21%
Environmental Misc (Drafting, Airphotos, Maps, Etc.):					5,480	1.59%
Biological Inventory:					0	0.00%
Cultural Inventory:					0	0.00%
Environmental Assessment (Report Writing):					0	0.00%
Environmental Audit:					0	0.00%
				Sub Tl $	6,200	1.80%

GEOLOGY:

SFPM Geology Labor & Expenses:						
RLD 53 SFPG On-site Mgr dys @	$400 /dy + Exp	$104.00 /dy			$ 26,712	7.74%
CPK 29 Geologist man dys	$316 /dy + Exp	$104.00 /dy			12,180	3.53%
0 Computer man dys @	$0 /dy				0	0.00%
Contract Geology Labor & Expenses:						
MB 40 Contrct Labr dys @	$300 /dy + Exp	$130.00 /dy			17,200	4.99%
Aircraft Support:						
0 Hrs Helicopter @	$425 /Hr				0	0.00%
Aerial Photography:					0	0.00%
Drafting (Map & Overlay Compilation):					2,500	0.72%
Geology Miscellaneous (Literature Searches & Data Compilation):					4,200	1.22%
				Sub Tl $	62,792	18.20%

SURFACE GEOCHEMISTRY:

SFPM Surface Geochemistry Labor & Expenses:									
	1,722	Samples @	30	Samples/dy for	57	Tt man dys			
RLD	27	Staff geoman dys @		$400 /dy + Exp	$104.00	/dy	$	13,608	3.94%
CPK	30	Staff geoman dys @		$316 /dy + Exp	$104.00	/dy		9,480	2.75%
	0	Computer man dys @		$150 /dy				0	0.00%
Contract Surface Geochemistry Labor & Expenses:									
	24	Compilation Labr dys @		$250 /dy + Exp	$0.00	/dy		6,000	1.74%
Surface Trace-Element Geochemistry:									
	0	Samples @	$39.00	/Whole Rock				0	0.00%
	1,722	Samples @	$13.65	/Au, Ag, As, Sb, Se, Ba				23,500	6.81%
							Sub Tt $	52,588	15.24%

MINERALOGY:

Microprobe:	0	Samples @	$0.00	/Sample			0	0.00%
Isotope Analyses:	0	Samples @	$0.00	/Sample			0	0.00%
Polished & Thin Sections:	100	Samples @	$20.00	/Sample			0	0.00%
Miscellaneous:							0	0.00%
X-Ray Analyses:	0	Samples @	$0.00	/Sample			0	0.00%
Fluid Inclusions:	20	Samples @	$65.00	/Sample			0	0.00%
Age Dating:	5	Samples @	$400.00	/Sample			0	0.00%
						Sub Tt $	0	0.00%

GEOPHYSICS:

Geophysical Consulting:								
CSL	11	Man dys @		$450 /dy + Exp		/dy	$ 5,000	1.45%
	0	Drafting man dys @		$100 /dy			0	0.00%
	0	Computer man dys @		$150 /dy			0	0.00%
Airborne EM:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
_233 Grd Magnetics:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
_234 Ground VLF:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
_235 Ground IP/Resistivity:								
	1	setups @	$8,000.00	/setup	(4,000' x 6,000')		8,000	2.32%
_236 CSAMT:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
_237 Remote Sensing:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
_238 Geophysical Miscellaneous:								
_239 Airborne Magnetics:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
						Sub Tt $	13,000	3.77%

DIRT WORK:

_010 & _020 FPM Dirtwork Labor & Expenses:								
	0	Drill Sup man dys @		$150 /dy + Exp	$65.00	/dy	$ 0	0.00%
_261 Contract Dirtwork Labor & Expenses:								
	0	Hrs Transport @		$55.00 /hr			0	0.00%
	59	Hrs Dozer @		$85.00 /hr			5,000	1.45%
	0	Hrs Grader @		$85.00 /hr			0	0.00%
	0	Hrs Pickup @		$14.00 /hr			0	0.00%
	0	Hrs Labor @		$12.00 /hr			0	0.00%
	0	Hrs Water Rds @		$50.00 /hr			0	0.00%
						Sub Tt $	5,000	1.45%

DRILLING:

_010 & _020 SFPM Drilling Labor & Expenses:								
CPK	21	Staff geoman dys @	$316	/dy + Exp	$104.00	/dy	$ 8,820	2.56%
	0	Drafting man dys @	$100	/dy			0	0.00%
	0	Computer man dys @	$150	/dy			0	0.00%
_270 Mud:								
_271 Contract Geology Labor & Expenses:								
MB	20	Contrct Labr dys @	$300	/dy + Exp	$130.00	/dy	8,600	2.49%
_272 Reverse Circulation:								
	0	Drill - Rev, angle, max TD		1,200	ft			
	8	Drill holes @	800	ft/hole	for			
	300	Ft/dy for	21	Drill dys				
	6,400	Tt drill footage @	$12.70	/ft			81,280	23.56%
_273 Mud Rotary:								
	0	Drill - Rev, angle, max TD		1,200	ft			
	0	Drill holes @	800	ft/hole	for			
	200	Ft/dy for	0	Drill dys				
	0	Tt drill footage @	$6.00	/ft			0	0.00%
_274 Core:								
	1	Drill - Core, angle, max TD		2,000	ft			
	1	Drill holes @	800	ft/hole	for			
	80	Ft/dy for	10	Drill dys				
	800	Tt drill footage @	$40.70	/ft *(mud products included)			32,560	9.44%
_275 Auger:								
	0	Soil Auger, max TD	50	ft				
	0	Drill Holes @	15	ft/hole for				
	20	Holes/dy for	0	Drill dys				
	0	Tt drill footage @	$50.00	/hole (incl. Au,Ag,As,Sb,Hg,Cu,Pb & Zn)			0	0.00%
_276 Drill Trace-Element Geochemistry: Sample Intervals in feet								
	5	1,440 samples @	$14.65	/Au & trace elementsprep & Au			21,096	6.11%
		144 samples @	$9.00	Check assays			1,296	0.38%
_278 Drilling Miscellaneous (Including office rental.):							0	0.00%
_279 Drill Hole Abandonment:							0	0.00%
						Sub Tt	$ 153,652	44.54%

RECLAMATION:

_010 & _020 SFPM Dirtwork Labor & Expenses:								
	0	Drill Sup man dys @	$150	/dy + Exp	$65.00	/dy	$ 0	0.00%
_283 Drill Site Reclamation:								
	0	Hrs Transport @	$55.00	/hr			0	0.00%
	35	Hrs Dozer @	$85.00	/hr			3,000	0.87%
	0	Hrs Grader @	$85.00	/hr			0	0.00%
	0	Hrs Pickup @	$14.00	/hr			0	0.00%
	0	Hrs Labor @	$12.00	/hr			0	0.00%
	0	Hrs Water Rds @	$50.00	/hr			0	0.00%
_283 Abandoned Mines Reclamation:							0	0.00%
	0	Hrs Transport @	$55.00	/hr			0	0.00%
	0	Hrs Dozer @	$85.00	/hr			0	0.00%
	0	Hrs Pickup @	$14.00	/hr			0	0.00%
	0	Hrs Labor @	$12.00	/hr			0	0.00%
						Sub Tt	$ 3,000	0.87%

ROUND OFF:

Sub Tt $ 868 0.25%

TOTAL BUDGET:

0 $ 345,000 100.00%

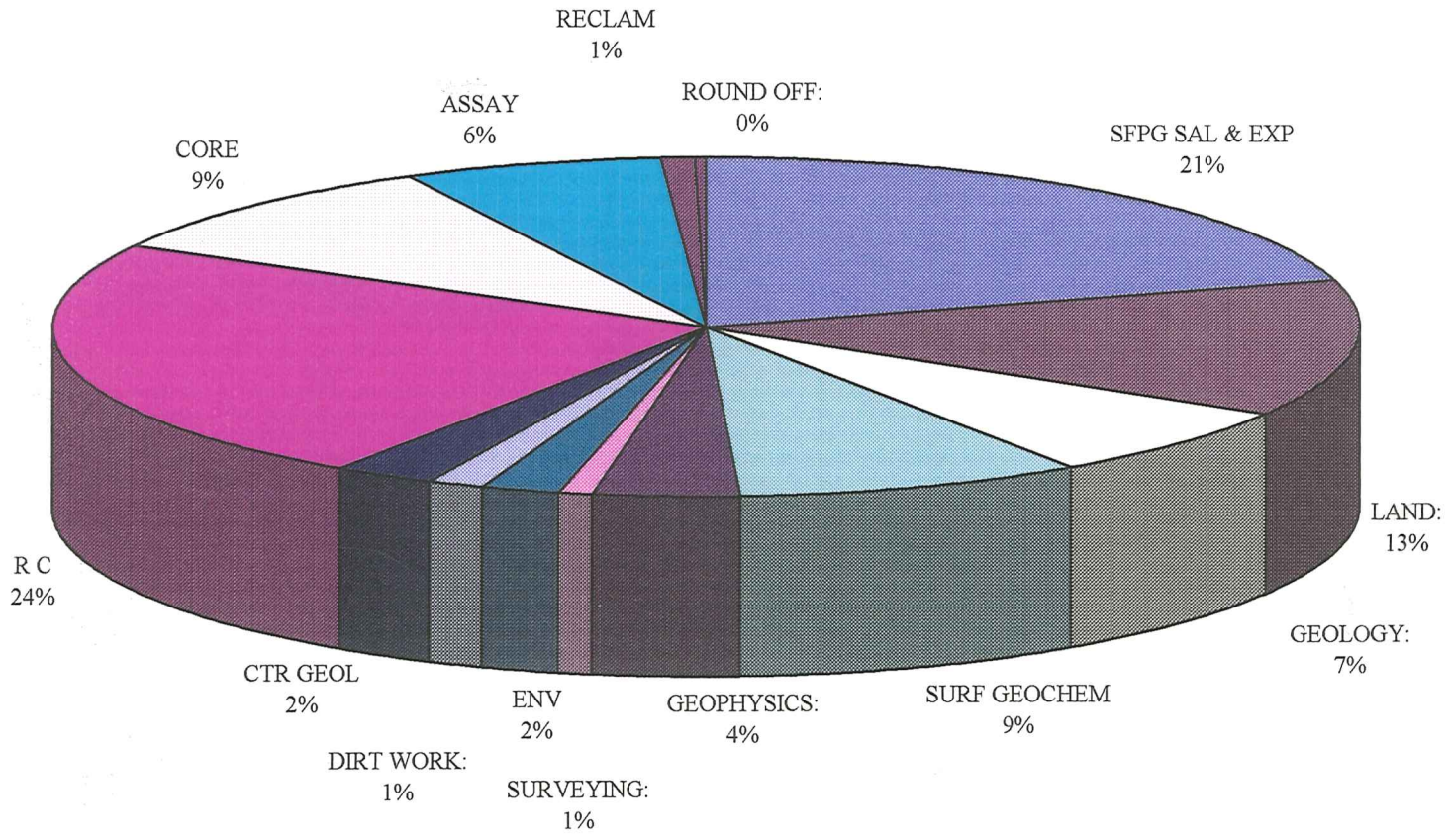
PROJECT: Rosebud Exploration LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: . R.L. Dixon

0

BUDGET DETAIL: August 24, 1996 to December 31, 1996

PROPOSED BUDGET 1996			ACTUAL EXP	ESTIMATED EXP				CURRENT EST PROJECT TOTAL	
SFPG SALARIES & EXPENSES:									
11.27% GEOLOGY	82 mandys	$ 38,892							
6.69% S GEOCHEM	57 mandys	23,088							
0.00% LAND	0 mandys	0							
2.56% DRILLING	21 mandys	8,820							
0.00% SURVEYNG	0 mandys	0							
0.00% COMPUTR	0 mandys	0							
20.52% Sub Tt	160 mandys	$ 70,800	0	0				0	0.00%
LAND:									
0.00% PAYMENTS:		$ 0	0	0	0	0	0	0	0.00%
13.10% FILING FEES & ACQUISITION:		45,200	0	0	0	0	0	0	0.00%
13.10% Sub Tt Land:		$ 45,200	0	0	0	0	0	0	0.00%
DIRECT WORK:									
6.93% GEOLOGY:		$ 23,900	0	0	0	0	0	0	0.00%
8.55% SURFACE GEOCHEMISTRY:		29,500	0	0	0	0	0	0	0.00%
0.00% MINERALOGY:		0	0	0	0	0	0	0	0.00%
3.77% GEOPHYSICS:		13,000	0	0	0	0	0	0	0.00%
0.78% SURVEYING:		2,700	0	0	0	0	0	0	0.00%
1.80% ENVIRONMENTAL:		6,200	0	0	0	0	0	0	0.00%
1.45% DIRT WORK:		5,000	0	0	0	0	0	0	0.00%
DRILLING:									
0.00% *Mud		*0*	0	0	0	0	0	*0*	
2.49% *Contr Geol Labr & Exp*		*8,600*	0	0	0	0	0	*0*	*0.00%*
23.56% *Reverse Circ*		*81,280*	0	0	0	0	0	*0*	*0.00%*
0.00% *Mud Rotary*		*0*	0	0	0	0	0	*0*	*0.00%*
9.44% *Core (*inclusive)*		*32,560*	0	0	0	0	0	*0*	*0.00%*
0.00% *Auger (incl. labor & analy)*		*0*	0	0	0	0	0	*0*	*0.00%*
6.49% *Drill Geochem. (incl MET)*		*22,392*	0	0	0	0	0	*0*	*0.00%*
0.00% *Drilling Misc (inc. rentals)*		*0*	0	0	0	0	0	*0*	*0.00%*
0.00% * *Drill Hole Abandonment*		*0*	0	0	0	0	0	*0*	*0.00%*
41.98% *Sub Total Drilling:*		*144,832*	*0*	*0*	*0*	*0*	*0*	*0*	*0.00%*
0.87% RECLAMATION:		$ 3,000	0	0	0	0	0	0	0.00%
0.25% ROUND OFF:		868	0	0	0	0	0	0	0.00%
66.38% AFE SUB TOTAL		$229,000	$0	$0	$0	$0	$0	$0	0.00%
100.00% TOTAL EXPENDITURES:		$345,000	$0	$0	$0	$0	$0	$0	0.00%

Rosebud Exploration Budget 1996
$345,000



PROJECT: Rosebud Exploration 1997a LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: . R.L. Dixon
Geologists: C.P. Kortemeier
BUDGET DETAIL: Jan. 1, 1997 to July 24, 1997

LAND:

Land Payments:						
$0					$ 0	0.00%
					0	0.00%
				Sub Tl $	0	0.00%
Land Filing Fees and Acquisition Costs:						
SFPM Land Labor & Expenses						
0 SFPM landmn dys @	$255 /dy + Exp	$65.00 /dy			$ 0	0.00%
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy			0	0.00%
0 Drafting man dys @	$100 /dy				0	0.00%
Contract Land Labor & Expenses:						
0 Survey'g Crew dys @	$800 /dy (incl. expenses)				0	0.00%
Filing Fees:						
0 Claims @ $200.00 /claim					0	0.00%
				Sub Tl $	0	0.00%

SURVEYING:

SFPM Surveying Labor & Expenses:						
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy			$ 0	0.00%
0 Drafting man dys @	$100 /dy				0	0.00%
Contract Surveying Labor & Expenses:						
10 Days @ $450.00 /day					4,500	0.69%
			dys			
Surveying Miscellaneous:						0.00%
				Sub Tl $	4,500	0.69%

ENVIRONMENTAL:

SFPM Environmental Labor & Expenses:						
0 Drill Sup man dys @	$150 /dy + Exp	$65.00 /dy			$ 0	0.00%
0 Drafting man dys @	$100 /dy				0	0.00%
Environmental Pemits:					0	0.00%
Environmental Misc (Drafting, Airphotos, Maps, Etc.):					0	0.00%
Biological Inventory:					0	0.00%
Cultural Inventory:					30,000	4.58%
Environmental Assessment (Report Writing):					0	0.00%
Environmental Audit:					0	0.00%
				Sub Tl $	30,000	4.58%

GEOLOGY:

SFPM Geology Labor & Expenses:							
RLD	127 SFPG On-site Mgr dys @	$400 /dy + Exp	$104.00 /dy		$	64,008	9.77%
CPK	44 Geologist man dys	$316 /dy + Exp	$104.00 /dy			18,480	2.82%
	0 Computer man dys @	$0 /dy				0	0.00%
Contract Geology Labor & Expenses:							
MB	90 Contrct Labr dys @	$300 /dy + Exp	$130.00 /dy			38,700	5.91%
Aircraft Support:							
	0 Hrs Helicopter @	$425 /Hr				0	0.00%
Aerial Photography:						0	0.00%
Drafting (Map & Overlay Compilation):						4,000	0.61%
Geology Miscellaneous (Literature Searches & Data Compilation):						300	0.05%
					Sub Tl $	125,488	19.16%

SURFACE GEOCHEMISTRY:

SFPM Surface Geochemistry Labor & Expenses:								
733	Samples @	30	Samples dy for		24	Tt man dys		
24	Staff geoman dys @		$316 dy + Exp	$104.00 /dy			$ 10,080	1.54%
0	Drafting man dys @		$100 /dy				0	0.00%
0	Computer man dys @		$150 /dy				0	0.00%
Contract Surface Geochemistry Labor & Expenses:								
0	Compilation Labr dys @		$250 /dy + Exp	$0.00 /dy				0.00%
Surface Trace-Element Geochemistry:								
0	Samples @	$39.00	/Whole Rock				0	0.00%
733	Samples @	$13.65	/Au, Ag, As, Sb, Se, Ba				10,000	1.53%
						Sub Tt $	20,080	3.07%

MINERALOGY:

Microprobe:	0	Samples @	$0.00	/Sample		0 0.00%
Isotope Analyses:	0	Samples @	$0.00	/Sample		0 0.00%
Polished & Thin Sections:	100	Samples @	$20.00	/Sample		0 0.00%
Miscellaneous:						0 0.00%
X-Ray Analyses:	0	Samples @	$0.00	/Sample		0 0.00%
Fluid Inclusions:	20	Samples @	$65.00	/Sample		0 0.00%
Age Dating:	5	Samples @	$400.00	/Sample		0 0.00%
					Sub Tt $	0 0.00%

GEOPHYSICS:

Geophysical Consulting:							
0	Man dys @		$450 /dy + Exp	/dy		$ 0	0.00%
0	Drafting man dys @		$100 /dy			0	0.00%
0	Computer man dys @		$150 /dy			0	0.00%
Airborne EM:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Grd Magnetics:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Ground VLF:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Ground IP Resistivity:							
1	setups @	$15,000.00	/setup	(4,000' x 6,000')		15,000	2.29%
CSAMT:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Remote Sensing:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Geophysical Miscellaneous:							
Airborne Magnetics:							
0	ln mi @	$0.00	/ln mi			0	0.00%
					Sub Tt $	15,000	2.29%

DIRT WORK:

_010 & _020 FPM Dirtwork Labor & Expenses:							
0	Drill Sup man dys @		$150 /dy + Exp	$65.00 /dy		$ 0	0.00%
_261 Contract Dirtwork Labor & Expenses:							
0	Hrs Transport @		$55.00 /hr			0	0.00%
100	Hrs Dozer @		$85.00 /hr			8,500	1.30%
0	Hrs Grader @		$85.00 /hr			0	0.00%
0	Hrs Pickup @		$14.00 /hr			0	0.00%
0	Hrs Labor @		$12.00 /hr			0	0.00%
0	Hrs Water Rds @		$50.00 /hr			0	0.00%
					Sub Tt $	8,500	1.30%

DRILLING:

SFPM Drilling Labor & Expenses:								
CPK	59	Staff geoman dys @	$316	/dy + Exp	$104.00	/dy	$ 24,780	3.78%
	0	Drafting man dys @	$100	/dy			0	0.00%
	0	Computer man dys @	$150	/dy			0	0.00%
Mud:								
Contract Geology Labor & Expenses:								
MB	20	Contrct Labr dys @	$300	/dy + Exp	$130.00	/dy	8,600	1.31%
Reverse Circulation:								
	0	Drill - Rev. angle, max TD		1,200 ft				
	22	Drill holes @	800	ft/hole for				
	300	Ft/dy for	59	Drill dys				
	17,600	Tt drill footage @	$12.70	/ft			223,520	34.13%
Mud Rotary:								
	0	Drill - Rev. angle, max TD		1,200 ft				
	0	Drill holes @	800	ft/hole for				
	200	Ft/dy for	0	Drill dys				
	0	Tt drill footage @	$6.00	/ft			0	0.00%
Core:								
	1	Drill - Core, angle, max TD		2,000 ft				
	2	Drill holes @	800	ft/hole for				
	80	Ft/dy for	20	Drill dys				
	1,600	Tt drill footage @	$40.30	/ft *(mud products included)			64,480	9.84%
Auger:								
	0	Soil Auger, max TD	50	ft				
	0	Drill Holes @	15	ft/hole for				
	20	Holes/dy for	0	Drill dys				
	0	Tt drill footage @	$50.00	/hole (incl. Au,Ag,As,Sb,Hg,Cu,Pb & Zn)			0	0.00%
Drill Trace-Element Geochemistry: Sample Intervals in feet								
	5	3,840 samples @	$14.65	/Au & trace elementsprep & Au			56,256	8.59%
		384 samples @	$9.00	Check assays			3,456	0.53%
Drilling Miscellaneous							10,000	1.53%
Drill Hole Abandonment:							0	0.00%
						Sub Tt $	391,092	59.71%

RECLAMATION:

_010 & _020 SFPM Dirtwork Labor & Expenses:								
	0	Drill Sup man dys @	$150	/dy + Exp	$65.00	/dy	$ 0	0.00%
_283 Drill Site Reclamation:								
	0	Hrs Transport @	$55.00	/hr			0	0.00%
	60	Hrs Dozer @	$85.00	/hr			5,100	0.78%
	0	Hrs Grader @	$85.00	/hr			0	0.00%
	60	Hrs Pickup @	$14.00	/hr			840	0.13%
	60	Hrs Labor @	$12.00	/hr			720	0.11%
	0	Hrs Water Rds @	$50.00	/hr			0	0.00%
_283 Abandoned Mines Reclamation:							0	0.00%
	0	Hrs Transport @	$55.00	/hr			0	0.00%
	0	Hrs Dozer @	$85.00	/hr			0	0.00%
	0	Hrs Pickup @	$14.00	/hr			0	0.00%
	0	Hrs Labor @	$12.00	/hr			0	0.00%
						Sub Tt $	6,660	1.02%

ROUND OFF:

Sub Tt $ 53,680 8.20%

TOTAL BUDGET:

0 $ 655,000 100.00%

PROJECT: Rosebud Exploration 1997a LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: R.L. Dixon

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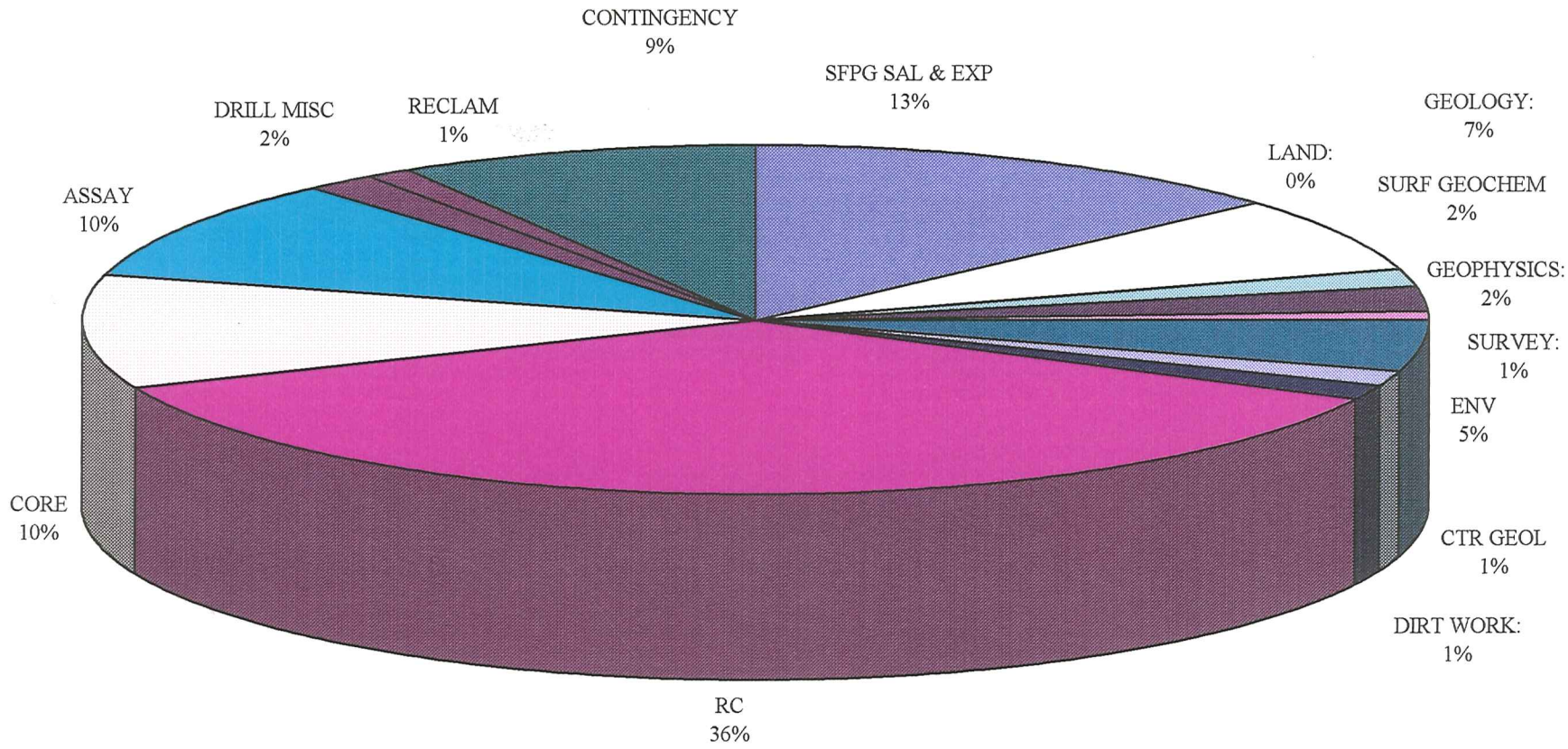
BUDGET DETAIL: Jan. 1, 1997 to July 24, 1997

PROPOSED BUDGET 1997			ACTUAL EXP	ESTIMATED EXP				CURRENT EST PROJECT TOTAL	
SFPG SALARIES & EXPENSES:									
12.59% GEOLOGY	171 mandys	$ 82,488							
1.54% SURF GEOC	24 mandys	10,080							
0.00% LAND	0 mandys	0							
3.78% DRILLING	59 mandys	24,780							
0.00% SURVEYNG	0 mandys	0							
0.00% COMPUTR	0 mandys	0							
17.92% Sub Tt	254 mandys	$ 117,348	0	0				0	0.00%
LAND:									
0.00% PAYMENTS:		$ 0	0	0	0	0	0	0	0.00%
0.00% FILING FEES & ACQUISITION:		0	0	0	0	0	0	0	0.00%
0.00% Sub Tt Land:		$ 0	0	0	0	0	0	0	0.00%
DIRECT WORK:									
6.56% GEOLOGY:		$ 43,000	0	0	0	0	0	0	0.00%
1.53% SURFACE GEOCHEMISTRY:		10,000	0	0	0	0	0	0	0.00%
0.00% MINERALOGY:		0	0	0	0	0	0	0	0.00%
2.29% GEOPHYSICS:		15,000	0	0	0	0	0	0	0.00%
0.69% SURVEYING:		4,500	0	0	0	0	0	0	0.00%
4.58% ENVIRONMENTAL:		30,000	0	0	0	0	0	0	0.00%
1.30% DIRT WORK:		8,500	0	0	0	0	0	0	0.00%
DRILLING:									
0.00% *Mud*		*0*	0	0	0	0	0	*0*	
1.31% *Contr Geol Labr & Exp*		*8,600*	0	0	0	0	0	*0*	*0.00%*
34.13% *Reverse Circ*		*223,520*	0	0	0	0	0	*0*	*0.00%*
0.00% *Mud Rotary*		*0*	0	0	0	0	0	*0*	*0.00%*
9.84% *Core (*inclusive)*		*64,480*	0	0	0	0	0	*0*	*0.00%*
0.00% *Auger (incl. labor & analy)*		*0*	0	0	0	0	0	*0*	*0.00%*
9.12% *Drill Geochem. (incl MET)*		*59,712*	0	0	0	0	0	*0*	*0.00%*
1.53% *Drilling Misc*		*10,000*	0	0	0	0	0	*0*	*0.00%*
0.00% * *Drill Hole Abandonment*		*0*	0	0	0	0	0	*0*	*0.00%*
55.93% *Sub Total Drilling:*		*366,312*	*0*	*0*	*0*	*0*	*0*	*0*	*0.00%*
1.02% RECLAMATION:		$ 6,660	0	0	0	0	0	0	0.00%
8.20% ROUND OFF:		53,680	0	0	0	0	0	0	0.00%
82.08% AFE SUB TOTAL		$537,652	$0	$0	$0	$0	$0	$0	0.00%
100.00% TOTAL EXPENDITURES:		$655,000	$0	$0	$0	$0	$0	$0	0.00%

Rosebud Exploration Budget 1997A
$655,000



PROJECT: Rosebud Exploration 1997B LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: R.L. Dixon
Geologists: C.P. Kortemeier
BUDGET DETAIL: Jan. 1, 1997 to July 24, 1997

LAND:

Land Payments:							
$67,700						$ 67,700	6.77%
						0	0.00%
					Sub Tl $	67,700	6.77%
Land Filing Fees and Acquisition Costs:							
SFPM Land Labor & Expenses							
0 SFPM landmn dys @	$255	dy + Exp	$65.00	/dy		$ 0	0.00%
0 Surveyor man dys @	$150	dy + Exp	$65.00	/dy		0	0.00%
0 Drafting man dys @	$100	dy				0	0.00%
Contract Land Labor & Expenses:							
0 Survey'g Crew dys @	$800	dy (incl. expenses)				0	0.00%
Filing Fees:							
0 Claims @ $200.00 /claim						0	0.00%
					Sub Tl $	0	0.00%

SURVEYING:

SFPM Surveying Labor & Expenses:							
0 Surveyor man dys @	$150	dy + Exp	$65.00	/dy		$ 0	0.00%
0 Drafting man dys @	$100	dy				0	0.00%
Contract Surveying Labor & Expenses:							
10 Days @ $450.00 /day						4,500	0.45%
				dys			
Surveying Miscellaneous:							0.00%
					Sub Tl $	4,500	0.45%

ENVIRONMENTAL:

SFPM Environmental Labor & Expenses:							
0 Drill Sup man dys @	$150	dy + Exp	$65.00	/dy		$ 0	0.00%
0 Drafting man dys @	$100	dy				0	0.00%
Environmental Pemits:						0	0.00%
Environmental Misc (Drafting, Airphotos, Maps, Etc.):						0	0.00%
Biological Inventory:						0	0.00%
Cultural Inventory:						0	0.00%
Environmental Assessment (Report Writing):						0	0.00%
Environmental Audit:						0	0.00%
					Sub Tl $	0	0.00%

GEOLOGY:

SFPM Geology Labor & Expenses:							
RLD 106 SFPG On-site Mgr dys @	$400	dy + Exp	$104.00	/dy		$ 53,424	5.34%
0 Geologist man dys	$316	dy + Exp	$104.00	/dy		0	0.00%
0 Computer man dys @	$0	dy				0	0.00%
Contract Geology Labor & Expenses:							
0 Contrct Labr dys @	$300	dy + Exp	$130.00	/dy		0	0.00%
Aircraft Support:							
0 Hrs Helicopter @	$425	Hr				0	0.00%
Aerial Photography:						0	0.00%
Drafting (Map & Overlay Compilation):						4,000	0.40%
Geology Miscellaneous (Literature Searches & Data Compilation):						4,400	0.44%
					Sub Tl $	61,824	6.18%

SURFACE GEOCHEMISTRY:

SFPM Surface Geochemistry Labor & Expenses:

	1.099	Samples @	30	Samples/dy for	37	Tt man dys			
CPK	37	Staff geoman dys @	$316	/dy - Exp	$104.00	/dy	$	15,540	1.55%
	0	Drafting man dys @	$100	/dy				0	0.00%
	0	Computer man dys @	$150	/dy				0	0.00%

Contract Surface Geochemistry Labor & Expenses:

	0	Compilation Labr dys @	$250	/dy - Exp	$0.00	/dy			0.00%

Surface Trace-Element Geochemistry:

	0	Samples @	$39.00	/Whole Rock				0	0.00%
	1.099	Samples @	$13.65	/Au, Ag, As, Sb, Se, Ba				15,000	1.50%
							Sub Tt $	30,540	3.05%

MINERALOGY:

Microprobe:	0	Samples @	$0.00	/Sample				0	0.00%
Isotope Analyses:	0	Samples @	$0.00	/Sample				0	0.00%
Polished & Thin Sections:	100	Samples @	$20.00	/Sample				0	0.00%
Miscellaneous:								0	0.00%
X-Ray Analyses:	0	Samples @	$0.00	/Sample				0	0.00%
Fluid Inclusions:	20	Samples @	$65.00	/Sample				0	0.00%
Age Dating:	5	Samples @	$400.00	/Sample				0	0.00%
							Sub Tt $	0	0.00%

GEOPHYSICS:

Geophysical Consulting:

	0	Man dys @	$450	/dy - Exp		/dy	$	0	0.00%
	0	Drafting man dys @	$100	/dy				0	0.00%
	0	Computer man dys @	$150	/dy				0	0.00%
Airborne EM:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Grd Magnetics:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Ground VLF:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Ground IP, Resistivity:									
	1	setups @	$15,000.00	/setup	(4,000' x 6,000')			20,000	2.00%
CSAMT:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Remote Sensing:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Geophysical Miscellaneous:									
Airborne Magnetics:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
							Sub Tt $	20,000	2.00%

DIRT WORK:

_010 & _020 FPM Dirtwork Labor & Expenses:

	0	Drill Sup man dys @	$150	/dy - Exp	$65.00	/dy	$	0	0.00%

_261 Contract Dirtwork Labor & Expenses:

	0	Hrs Transport @	$55.00	/hr				0	0.00%
	140	Hrs Dozer @	$85.00	/hr				11,900	1.19%
	0	Hrs Grader @	$85.00	/hr				0	0.00%
	0	Hrs Pickup @	$14.00	/hr				0	0.00%
	0	Hrs Labor @	$12.00	/hr				0	0.00%
	0	Hrs Water Rds @	$50.00	/hr				0	0.00%
							Sub Tt $	11,900	1.19%

DRILLING:

SFPM Drilling Labor & Expenses:									
CPK	77	Staff geoman dys @	$316	/dy + Exp	$104.00	/dy	$	32,340	3.23%
	0	Drafting man dys @	$100	/dy				0	0.00%
	0	Computer man dys @	$150	/dy				0	0.00%
Mud:									
Contract Geology Labor & Expenses:									
MB	75	Contrct Labr dys @	$300	/dy + Exp	$130.00	/dy		32,250	3.23%
Reverse Circulation:									
	0	Drill - Rev. angle, max TD		1,200	ft				
	42	Drill holes @	800	ft/hole	for				
	300	Ft/dy for	112	Drill dys					
	33,600	Tt drill footage @	$12.70	/ft				426,720	42.67%
Mud Rotary:									
	0	Drill - Rev. angle, max TD		1,200	ft				
	0	Drill holes @	800	ft/hole	for				
	200	Ft/dy for	0	Drill dys					
	0	Tt drill footage @	$6.00	/ft				0	0.00%
Core:									
	1	Drill - Core, angle, max TD		2,000	ft				
	4	Drill holes @	800	ft/hole	for				
	80	Ft/dy for	40	Drill dys					
	3,200	Tt drill footage @	$40.30	/ft	*(mud products included)			128,960	12.90%
Auger:									
	0	Soil Auger, max TD	50	ft					
	0	Drill Holes @	15	ft/hole for					
	20	Holes/dy for	0	Drill dys					
	0	Tt drill footage @	$50.00	/hole (incl. Au,Ag,As,Sb,Hg,Cu,Pb & Zn)				0	0.00%
Drill Trace-Element Geochemistry: Sample Intervals in feet									
	5	7,360 samples @	$14.65	/Au & trace elementsprep & Au				107,824	10.78%
		736 samples @	$9.00	Check assays				6,624	0.66%
Drilling Miscellaneous								0	0.00%
Drill Hole Abandonment:								0	0.00%
							Sub Tt $	734,718	73.47%

RECLAMATION:

_010 & _020 SFPM Dirtwork Labor & Expenses:									
	0	Drill Sup man dys @	$150	/dy + Exp	$65.00	/dy	$	0	0.00%
_283 Drill Site Reclamation:									
	0	Hrs Transport @	$55.00	/hr				0	0.00%
	80	Hrs Dozer @	$85.00	/hr				6,800	0.68%
	0	Hrs Grader @	$85.00	/hr				0	0.00%
	60	Hrs Pickup @	$14.00	/hr				840	0.08%
	60	Hrs Labor @	$12.00	/hr				720	0.07%
	0	Hrs Water Rds @	$50.00	/hr				0	0.00%
_283 Abandoned Mines Reclamation:								0	0.00%
	0	Hrs Transport @	$55.00	/hr				0	0.00%
	0	Hrs Dozer @	$85.00	/hr				0	0.00%
	0	Hrs Pickup @	$14.00	/hr				0	0.00%
	0	Hrs Labor @	$12.00	/hr				0	0.00%
							Sub Tt $	8,360	0.84%

ROUND OFF:

	Sub Tt $	60,458	6.05%

TOTAL BUDGET:

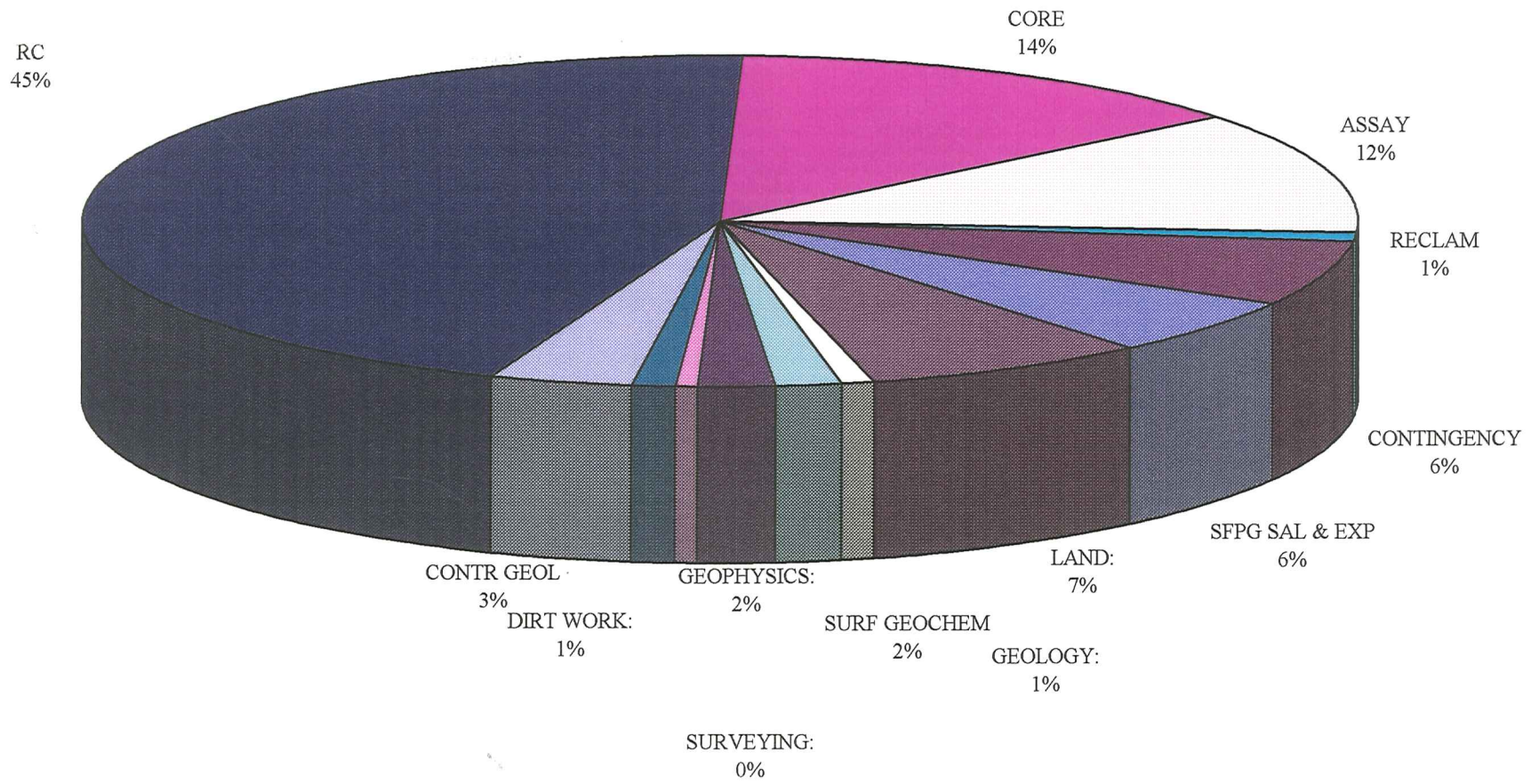
$	1,000,000	100.00%

PROJECT: Rosebud Exploration 1997B LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: R.L. Dixon

0
BUDGET DETAIL: Jan. 1, 1997 to July 24, 1997

PROPOSED BUDGET 1997			ACTUAL EXP	ESTIMATED EXP				CURRENT EST PROJECT TOTAL	
SFPG SALARIES & EXPENSES:									
5.34% GEOLOGY	106 mandys	$ 53,424							
1.55% SURF GEOC	37 mandys	15,540							
0.00% LAND	0 mandys	0							
3.23% DRILLING	77 mandys	32,340							
0.00% SURVEYNG	0 mandys	0							
0.00% COMPUTR	0 mandys	0							
10.13% Sub Tl	220 mandys	$ 101,304	0	0				0	0.00%
LAND:									
6.77% PAYMENTS:		$ 67,700	0	0	0	0	0	0	0.00%
0.00% FILING FEES & ACQUISITION:		0	0	0	0	0	0	0	0.00%
6.77% Sub Tl Land:		$ 67,700	0	0	0	0	0	0	0.00%
DIRECT WORK:									
0.84% GEOLOGY:		$ 8,400	0	0	0	0	0	0	0.00%
1.50% SURFACE GEOCHEMISTRY:		15,000	0	0	0	0	0	0	0.00%
0.00% MINERALOGY:		0	0	0	0	0	0	0	0.00%
2.00% GEOPHYSICS:		20,000	0	0	0	0	0	0	0.00%
0.45% SURVEYING:		4,500	0	0	0	0	0	0	0.00%
0.00% ENVIRONMENTAL:		0	0	0	0	0	0	0	0.00%
1.19% DIRT WORK:		11,900	0	0	0	0	0	0	0.00%
DRILLING:									
0.00% *Mud		*0*	0	0	0	0	0	*0*	
3.23% *Contr Geol Labr & Exp*		*32,250*	0	0	0	0	0	*0*	*0.00%*
42.67% *Reverse Circ*		*426,720*	0	0	0	0	0	*0*	*0.00%*
0.00% *Mud Rotary*		*0*	0	0	0	0	0	*0*	*0.00%*
12.90% *Core (*inclusive)*		*128,960*	0	0	0	0	0	*0*	*0.00%*
0.00% *Auger (incl. labor & analy)*		*0*	0	0	0	0	0	*0*	*0.00%*
11.44% *Drill Geochem. (incl MET)*		*114,448*	0	0	0	0	0	*0*	*0.00%*
0.00% *Drilling Misc*		*0*	0	0	0	0	0	*0*	*0.00%*
0.00% *Drill Hole Abandonment*		*0*	0	0	0	0	0	*0*	*0.00%*
70.24% *Sub Total Drilling:*		*702,378*	*0*	*0*	*0*	*0*	*0*	*0*	*0.00%*
0.84% RECLAMATION:		$ 8,360	0	0	0	0	0	0	0.00%
6.05% ROUND OFF:		60,458	0	0	0	0	0	0	0.00%
83.10% AFE SUB TOTAL		$830,996	$0	$0	$0	$0	$0	$0	0.00%
100.00% TOTAL EXPENDITURES		$1,000,000	$0	$0	$0	$0	$0	$0	0.00%

Rosebud Exploration Budget 1997B
$1,000,000

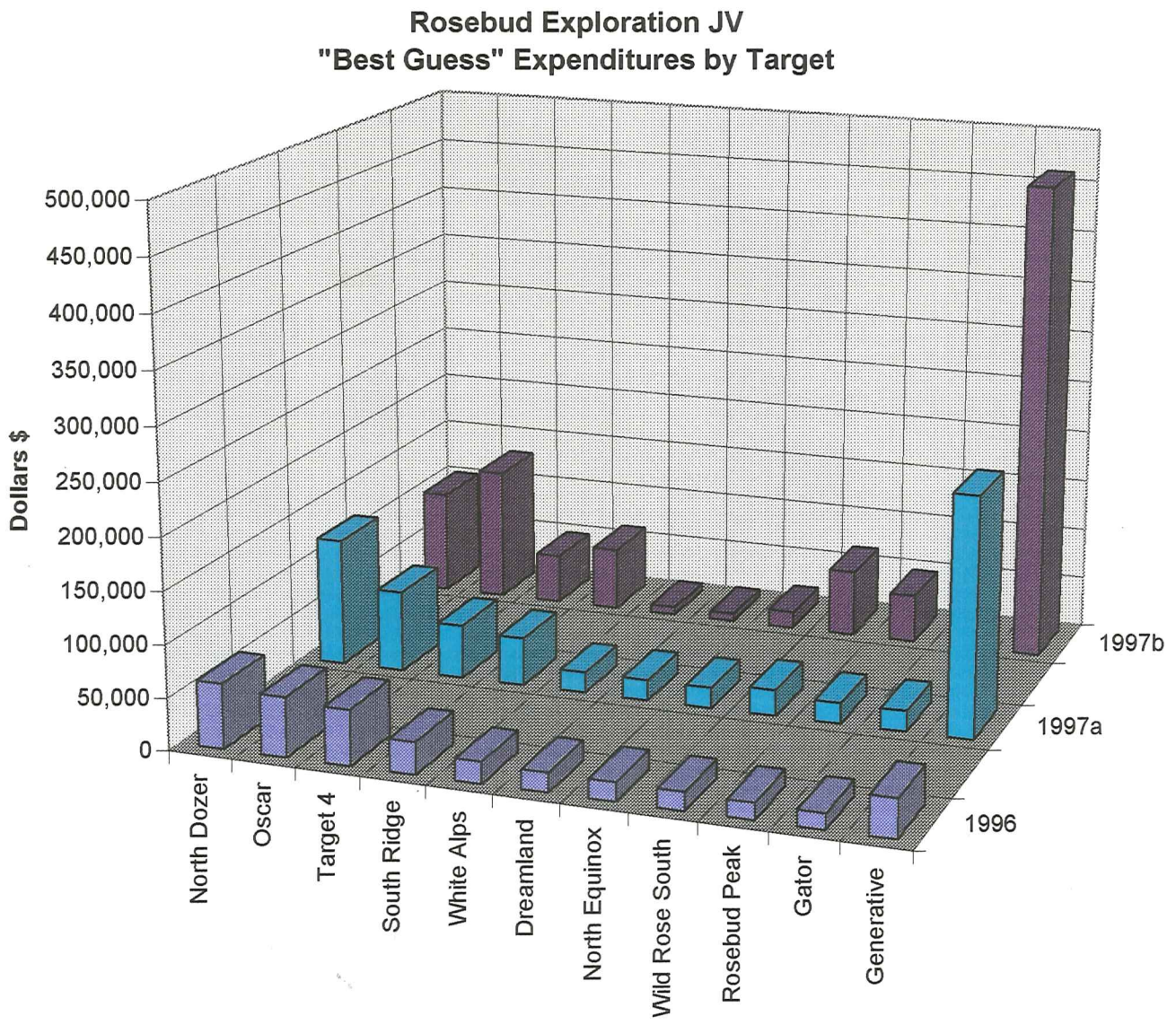


		1996		1997a		1997b
1 **North Dozer**						
	Land	4,250		0		6,154
	Surveying	270		410		410
	Environmental	620		2,727		0
	Geology (Labor)	10,428		12,000		5,000
	Geophysics	0		0		0
	Surface Geochem	0		0		0
	Dirt Work	2,000		5,000		4,000
	Drilling 3 C, 1Core	42,281	4 RC, 1C	95,333	8 RC	80,000
	Reclamation	1,900		2,800		2,500
	Contingency	325		4,919		3,000
Subtotal		*62,074*		*123,189*		*101,064*
2 **Oscar**						
	Land	4,250		0		6,154
	Surveying	270		410		410
	Environmental	620		2,727		0
	Geology (Labor)	10,428		15,360		10,000
	Geophysics	0		0		0
	Surface Geochem	0		0		0
	Dirt Work	2,000		3,000		5,000
	Drilling 3 RC	37,944	4 RC	50,492	10 RC	100,000
	Reclamation	1,100		1,500		3,000
	Contingency	325		4,919		5,000
Subtotal		*56,937*		*78,408*		*129,564*
3 **Target 4**						
	Land	4,250		0		6,154
	Surveying	270		410		0
	Environmental	620		2,727		0
	Geology (Labor)	10,428		12,000		10,000
	Geophysics	0		0		0
	Surface Geochem	10,000		5,000		0
	Dirt Work	1,000		1,000		1,000
	Drilling 2 RC	25,246	2 RC	25,246	2 RC	25,000
	Reclamation	910		1,000		1,000
	Contingency	325		4,919		5,000
Subtotal		*53,049*		*52,302*		*48,154*
4 **South Ridge**						
	Land	4,250		0		6,154
	Surveying	270		410		410
	Environmental	620		2,727		0
	Geology (Labor)	10,428		12,000		7,000
	Geophysics	8,000		0		0
	Surface Geochem	7,000		0		0
	Dirt Work	0		700		2,000
	Drilling	0	2 RC	25,246	4 RC	40,000
	Reclamation	0		500		800
	Contingency	325		4,919		5,000
Subtotal		*30,893*		*46,502*		*61,364*

5 **White Alps**					
	Land	4,250	0		6,154
	Surveying	270	410		410
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		1,000
	Geophysics	0	0		0
	Surface Geochem	5,000	0		0
	Dirt Work	0	0		0
	Drilling	0	0		0
	Reclamation	0	0		0
	Contingency	0	4,919		0
Subtotal		*20,568*	*20,056*		*7,564*
6 **Dreamland**					
	Land	4,250	0		6,154
	Surveying	270	410		410
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		1,000
	Geophysics	0	0		0
	Surface Geochem	3,000	0		0
	Dirt Work	0	0		0
	Drilling	0	0		0
	Reclamation	0	0		0
	Contingency	325	4,919		0
Subtotal		*18,893*	*20,056*		*7,564*
7 **North Equinox**					
	Land	4,250	0		6,154
	Surveying	270	410		0
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		10,000
	Geophysics	0	0		0
	Surface Geochem	2,000	0		0
	Dirt Work	0	0		0
	Drilling	0	0		0
	Reclamation	0	0		0
	Contingency	325	4,919		0
Subtotal		*17,893*	*20,056*		*16,154*
8 **Wild Rose South**					
	Land	4,250	0		6,154
	Surveying	270	410		410
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		10,000
	Geophysics	0	0		0
	Surface Geochem	1,500	5,000		0
	Dirt Work	0	0		2,000
	Drilling	0	0	4 RC	40,000
	Reclamation	0	0		800
	Contingency	325	4,919		5,000
Subtotal		*17,393*	*25,056*		*64,364*

9 **Rosebud Peak**						
	Land		4,250			6,154
	Surveying		270		410	410
	Environmental		620		2,727	0
	Geology (Labor)		10,428		12,000	10,000
	Geophysics		0		0	0
	Surface Geochem		0		0	0
	Dirt Work		0		0	
	Drilling		0		0	2 RC 25,000
	Reclamation		0		0	0
	Contingency		325		4,919	5,000
Subtotal			*15,893*		*20,056*	*46,564*
10 **Gator**						
	Land		4,250		0	6,154
	Surveying		270		410	410
	Environmental		620		2,727	0
	Geology (Labor)		9,342		12,000	10,000
	Geophysics		0		0	0
	Surface Geochem		0		0	0
	Dirt Work		0		0	1,500
	Drilling		0		0	3 RC 33,000
	Reclamation		0		0	1,000
	Contingency		325		4,919	5,000
Subtotal			*14,807*		*20,056*	*57,064*
11 **Generative**						
	Land		0		0	6,154
	Surveying		270		410	410
	Environmental		0		2,727	0
	Geology (Labor)		8,835		12,000	15,000
	Geophysics		0		15,000	20,000
	Surface Geochem		0		10,000	15,000
	Dirt Work		1,230		6,000	10,000
	Drilling	2 RC	24,940	0 RC, 1 C	175,207	7 RC, 4C 383,016
	Reclamation		1,000		3,000	6,000
	Contingency		325		4,919	5,000
Subtotal			*36,600*		*229,263*	*460,580*
Project Total			**345,000**		**655,000**	**1,000,000**

	1996	1997a	1997b
North Dozer	*62,074*	*123,189*	*101,064*
Oscar	*56,937*	*78,408*	*129,564*
Target 4	*53,049*	*52,302*	*48,154*
South Ridge	*30,893*	*46,502*	*61,364*
White Alps	*20,568*	*20,056*	*7,564*
Dreamland	*18,893*	*20,056*	*7,564*
North Equinox	*17,893*	*20,056*	*16,154*
Wild Rose South	*17,393*	*25,056*	*64,364*
Rosebud Peak	*15,893*	*20,056*	*46,564*
Gator	*14,807*	*20,056*	*57,064*
Generative	*36,600*	*229,263*	*460,580*


Rosebud Exploration JV
"Best Guess" Expenditures by Target
Dollars $
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
North Dozer
Oscar
Target 4
South Ridge
White Alps
Dreamland
North Equinox
Wild Rose South
Rosebud Peak
Gator
Generative
1997b
1997a
1996

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM ⇒ Albq. File
RWO, FJJ, CPK ⇒ Reno Monthly
R. C., C. M. ⇒ Hecla Mining Co.

To: F. J. Jenkins, Jr.
From: R. L. Dixon
Date: September 26, 1996
Subject: Monthly Progress Report - Rosebud Joint-Venture, Pershing and Humboldt Counties, Nevada - September 1996

SUMMARY:

1. The Rosebud JV agreement between Hecla Mining Company and Santa Fe Pacific Gold Corporation was signed finally on September 6, 1996, after an extended due diligence and negotiating period. Under terms of the LLC agreement, SFPG will spend $345,000 on exploration by the end of 1996.

2. The principal exploration activities during September were ongoing surface stratigraphic measurements and comparisons with the underground ore host rocks, continuing search of project archives, a Reno review by the Project Services Group of geochemical and geophysical data on computer discs, and digitizing of the most recent surface geologic mapping. The above outlined tasks are being performed in preparation for approximately 6,400 feet of RC drilling, probably starting in late-October, 1996.

3. Re-logging of selective core holes drilled proximally to the Rosebud deposit for detailed volcanic stratigraphic and structural information will begin by mid-October. A permanent core and RC cutting logging and storage facility is planned but likely will not be completed until the end of the current year. A portion of the geology trailer probably will be used as a temporary core logging location. RC chip logging by microscope can be done in the geology trailer.

4. The Rosebud JV Exploration trailer was opened and cleaned on Septem-ber 24, in anticipation of moving office furnishings on-site within the next ten days. The electric power is "on", but restroom facilities and telephone service need to be installed soon.

5. SFPG personnel working at Rosebud will be taking the MSHA-approved 32-hour underground mine safety training course offered at Fernley, Nevada, on October 7-10, 1996. An additional 8 hours of training at the Rosebud Mine will be required to complete the 40-hour course, and 8 hours of refresher training will be needed annually to maintain certification.

6. 6,400 feet of RC drilling (6-8 holes) is planned for Rosebud in 1996.

Report Text:

1. After a one and one-half month extension, final details were resolved and the Rosebud Joint-Venture Agreement with Hecla Mining Company was signed on September 6, 1996. SFPG will spend $345,000 on Exploration in 1996, including overhead and $45,200 for SFPG's two-thirds of the claim maintenance fees. A much larger exploration program, costing SFPG $1.32 million, is budgeted for 1997.

2. Surface stratigraphic measurements and descriptions of the volcanic rocks at Rosebud were undertaken during the past month. C. Kortemeier's attached Monthly Activity Report details that work and presents a tentative correlation chart linking SFPG's and Hecla's volcanic stratigraphy. It is obvious that that there still are differences to be resolved, especially in what exact rocks host the Rosebud orebodies. Pursuant to that goal, we will be taking the Hecla geologists on a surface tour on October 2, to offer our thoughts and to point out our findings. Furthermore, we plan to revisit the Rosebud underground workings and to re-examine the ore host horizons with the ribs cleaned. The comprehensive understanding of Rosebud volcanic stratigraphy and the mutual recognition and agreement by all workers are fundamental necessities to successful exploration at Rosebud. Additional stratigraphic studies, including areas north of the Rosebud Shear, are planned for October.

C. Kortemeier has initiated an alteration study of Rosebud. For this purpose he has ordered re-prints of Rosebud color aerial photography , has acquired the PIMA unit to conduct on-site determinations, and has begun collecting samples for petrographic analysis.

The 500-scale geologic mapping of M. Brady (1995) is being digitized by G. Leibler onto the project topographic base. Various other geologic maps done for Lac Minerals may be digitized after they are scrutinized and field-checked by SFPG personnel. The same screening process and quality control applies to previous geochemical and geophysical surveys. The Reno Project Services Group currently is merging files of geochemical and geophysical data on computer discs in order that the information can be easily scanned and selectively printed.

3. Re-logging of intact core holes drilled close to the Rosebud orebody will be done to derive stratigraphic, structural, and alteration characteristics. Unfortunately, this exercise was made more complicated recently when there was a mishap with one of two core storage trailers. A trailer completely filled with core fell on its side after it was relocated! It will be necessary to cut open the trailer and to salvage as much core as possible. To facilitate this process and the eventual movement of core to permanent storage, one hundred

wooden pallets will be delivered to Rosebud next week. Geotemp labor under a geologist's supervision will be used to systematically unload the core and to stack it on pallets. Then the re-logging of select core holes will begin. Both SFPG geologists and M. Brady will be engaged in this re-logging. The porch of the geology trailer will serve as a temporary core logging location.

4. Outfitting of the Rosebud geology trailer is under way and is utilizing surplus office furniture from other SFPG sources. C. Matton is bringing a truck load of office furnishings to Rosebud next week. Restroom fixtures and telephone service still need to be acquired and connected.

5. Any SFPG personnel assigned to Rosebud need to have the MSHA-approved 40 hours of underground mine safety training. Many of us will take 32 hours of training in Fernley on October 7-10, and will receive the remaining 8 hours from Hecla at Rosebud.

6. By this time next month, targets near Rosebud will have been selected for 6,400 feet of RC drilling scheduled for 1996. The above mentioned prework comprises the bases for target selection in the immediate vicinity of the Rosebud deposit. Depending on rig availability, Rosebud drilling should begin in early November.

Richard L. Dixon

attachments

UTM FILE: ROSEBUD NK-11-10-06C
cc: RLP, GLM ⇒ Albq. File
RWO, FJJ, CPK ⇒ Reno Monthly

To: F. J. Jenkins, Jr.
From: R. L. Dixon
Date: August 27, 1996
Subject: Monthly Progress Report - Rosebud Joint-Venture, Pershing and Humboldt Counties, Nevada - August 1996

SUMMARY:

1. A tentative Rosebud JV budget for 1996 and 1997 has been prepared (see attachment). Plans call for an SFPG $345,000 exploration expenditure for the remainder of 1996, and a total SFPG outlay of $1.32 million for 1997. SFPG will spend the first $1 million of exploration before a 2/3-1/3 : SFPG/Hecla division of funding is achieved.

2. A Rosebud JV meeting with Hecla Mining Co. was held August 16, 1996, in Winnemucca to discuss details of the Rosebud agreement. The discussions included the 1996-1997 exploration program, haulage road routes, permitting activities, and problems with the metallurgical process for gold-silver recovery. SFPG exploration representatives attended only the first hour of the day-long meeting.

3. Ken Sageser, Ron Parratt, Roy Owen, Robin Hendrickson, and Fred Jenkins visited the Rosebud property surface and underground on August 22, during a four day tour of SFPG's Northern Nevada mines and development projects. The crosscut through the high- grade portion of the South Zone orebody was seen by many for the first time. Until recently, this underground area had been flooded while pump station repairs were being performed.

4. Gary Massingill toured the Rosebud area on August 14, and gave his insightful perspective of the structural geology and volcanic stratigraphy, based largely on geologic mapping in the Kamma Mountains by him in the late-1980's for Lac Minerals.

5. The review of Hecla's files and archives of previous geologic mapping, geochemical sampling, and geophysical surveys is continuing. In addition, useful information from SFPG's Helicopter Recon of the Kamma Mountains in 1992, is available and will be incorporated into the database.

6. Detailed stratigraphic measurements and lithologic descriptions of the Rosebud volcanic section have been initiated by C. Kortemeier and R. Dixon. The purpose of this work is to reconcile surface and under ground geology and for assistance in determining precise offsets on the South Ridge Fault, the Rosebud Shear, and related structures.

TEXT:

1. The proposed Rosebud 1996-1997 exploration budget was reviewed in detail by SFPG and Hecla personnel in Winnemucca on August 21, 1996 (see attachment). It was mutually agreed that rather than drill a single core hole in 1996, the funds would be used for an airborne radiometric survey. Elsewhere, radiometrics have been useful in outlining zones of potassic alteration or potassium-rich rocks (e.g., Mesquite). The Rosebud South Zone orebody is overlain by Dozer Hill, an area of conspicuous bleaching and potassic (?) alteration.

2. The West Hall at the Winnemucca Convention Center was the site of a lively Rosebud JV Meeting on Friday, August 16, 1996. The first topic of discussion was the 1996-1997 JV Exploration Budget. Whereas the bottom-line numbers remained the same, $345,000 for 1996 and $1.32 million for SFPG in 1997, several attendees requested specifics regarding work priorities. While not included in the general handout for the meeting, Reno Exploration had already prioritized tasks to be accomplished in 1996 and 1997. At the request of Mr. R. Wilkes, anticipated exploration expenditures were calculated for each project target. That budgetary change is reflected in the attached 1996-1997 Rosebud JV Budget. According to Charlie Muerhoff (verbal communication, August 27, 1996), Hecla Mining Co. has approved the aforementioned budget.

3. Ken Sageser, Ron Parratt, Roy Owen, Robin Hendrickson, and Fred Jenkins toured the Rosebud property on August 22, 1996. A brief overview of Rosebud surface geology was provided by Mike McCulla, Rich Dixon, and Curt Kortemeier. Charlie Muerhoff and Kurt Allen of Hecla hosted a tour of the freshly pumped underground workings, where a crosscut through the South Zone orebody was visited. Others SFPG field trip attendees were SkipMcIntosh, Steve Green, and Greg Hill. Later the same afternoon, highly bleached Dozer Hill and silicified exposures of the South Ridge Fault were tour stops. The tour ended on an optimistic note with the growing excitement over exploration possibilites in the district.

4. Gary Massingill lead a tour for SFPG geologists to Rosebud on August 14, 1996. The emphasis was on structural geology. Gary had done regional geologic mapping in the district for Lac Minerals in 1988, and passed along many interesting thoughts and observations. A traverse was made along the length of South Ridge to its terminus with Rosebud Canyon. SFPG personnel in attendance were Fred Jenkins, Mike McCulla, Rich Dixon, and Curtis Kortemeier.

5. The review of previous Rosebud geologic, geochemical, and geophysical data in Hecla's files is continuing. Hecla's digitized topography for Rosebud will serve as the base for digitizing previous geologic mapping, geochemical sampling, and geophysical surveys. The various layers of data thus generated will be evaluated, field checked,and edited, if necessary, before acceptance and application by the Rosebud exploration program. In other words, we will utilize the best of previous work and make additions and/or modifications, where necessary.

6. Detailed stratigraphic measurements and descriptions are deemed crucial to understanding host rock relationships at Rosebud and will be the primary focus during the next few weeks. C. Kortemeier's attached Monthly Report very nicely outlines what has been done to date and what our approach will be.

Special thanks are extended to the SFPG Rosebud Geologic Team Members who labored long and unselfishly to complete the Due Diligence Study of the Rosebud Deposit. Team members were Dave Caldwell, Radu Conelea, Fred Jenkins, Richard Dixon, William Matlack, Mike McCulla, W. Skip McIntosh, and Dan Taylor. David Caldwell, Mike McCulla, and W. Skip McIntosh, in particular, produced the final report and are very deserving of our gratitude.

Richard L. Dixon

attachments

Rosebud JV. NK 11-10-06c
Monthly Reports & Meetings
cc: RLP, SFPG =>Albq File
RWO, SFPG =>Monthly Gnl File
FJJ, SFPG => Ren
RLD, SFPG=> Field Copy

SANTA FE PACIFIC GOLD, INC.
Western Great Basin District
MONTHLY ACTIVITY REPORT

To: F. J. Jenkins By: C.P. Kortemeier

Month: July, 6/25/96 - 7/23/96 Date: 8/27/96

DETAILED PROJECT WORK

Rosebud JV Pershing Co. NV (NK 11-10-06c) Since starting with the project I have been striving to catch-up on the considerable amount of work that has been done on the project.

Stratigraphy

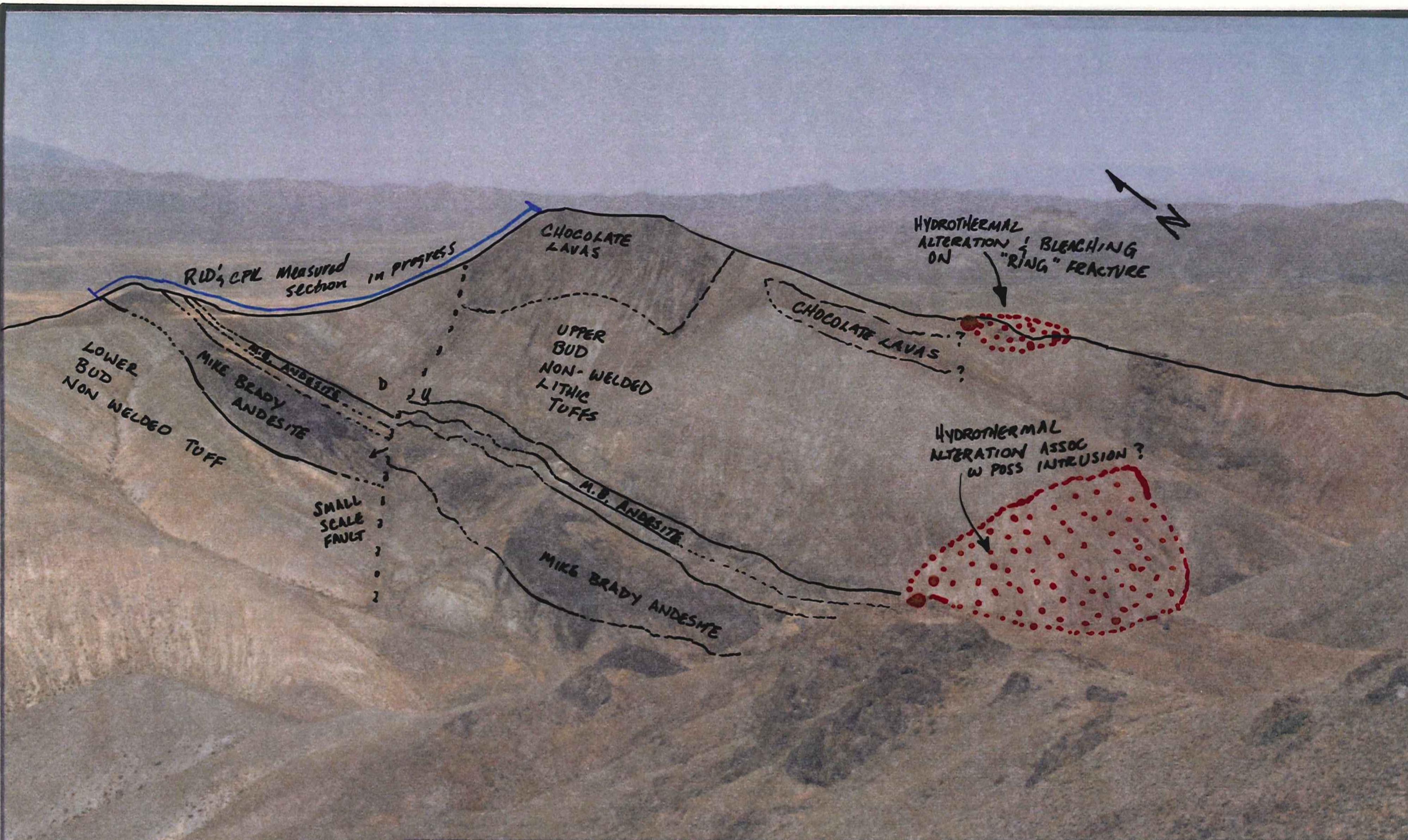
Over the years there have been many attempts to understand and develop a working volcanic stratigraphy for the area. To date there is no consensus on that stratigraphy, particularly how the underground units fit into the surface generated stratigraphies. Our approach has been to measure section as exposed in South Ridge and Big Chocolate Mtn. to:

1. force ourselves to become familiar with the variability within units.
2. document the actual thickness of units, making comparisons to drilling easier.
3. pay special attention to contacts, and how units may be defined as unambiguously as possible.
4. Identify the surface equivalent of the Unit 7 (LST: leopard skin tuff) host rock for high grade mineralization underground.

This work is currently ongoing and approximately 1 day will be required to complete the section from the saddle east to Big Chocolate Mtn. (see oblique photo and overlay). I would estimate another 3-5 days (field time) will be required to complete South Ridge. I believe that it will be advisable to measure an additional section south of Rosebud Canyon and also another section north of the Rosebud Shear. A working stratigraphic column will be included in next month's report.

With three complete sections measured we should be well oriented with lithologic variability, the extent of thickness changes and other facies changes.

W/



Oblique Photo Big Chocolate Mtn South Ridge & the Chocolate Mtn
showing select Geologic Features

Rosebud SX
Pershing Co. NV
NK-11-10-06 CPK 8/96

Santa Fe Mining Inc.

Alteration/Mineralization

My impressions of alteration and mineralization at Rosebud are at this point very superficial.

I have been struck by the relative amount of argillic alteration (both volume and intensity) and relative paucity of silicification. Bleaching is the most common surface manifestation of alteration. The original rock colors at least for some of the units is surprisingly dark, therefore it seems that underestimation of the degree of alteration may be a problem.

There appear to be at least two distinct generations of sulfide precipitation associated with mineralization. The earliest(?) is medium to coarse grained sub to euhedral brassy pyrite(and marcasite?). Crystals range in size from 1 to 2 mm. This generation of pyrite occurs a disseminations throughout the rock and locally in vein-like aggregates and clots. Locally these sulfide aggregates exhibit a peculiar rhombic habit, perhaps pseudomorphing calcite that was dissolving simultaneously with sulfide precipitation. This generation of pyrite does not seem associated with macroscopically detectable silicification.

The other generation of sulfides are sub to anhedral, very fine-grained, (< 0.1 mm) and are found with the local silica veins, vein breccias and the matrix of hydrothermal breccias. Review of the cross-cut sampling data left me with the impression that gold grade and degree of silicification due not correlate very well. The same is probably true to an extent for sulfide content and gold grade.

The argillic alteration would appear to be an excellent candidate for study using the PIMA. Currently argillic alteration is not subdivided on a consistent basis. Hecla workers frequently mention sericite (based on textural basis?). Curt Allen did show us a reported dickite vein in the cross-cut that was remarkably pearlescent (sericitic?).

I would recommend bringing the PIMA unit in and analyzing a suite of drill and surface samples (no less than 100-200 samples) to determine whether there is a significant variation in the type of argillic alteration present on the property. We would attempt to determine whether a particular argillic alteration facies (or degree of crystallinity) is positively correlated to gold grade. This work should be started as soon as it is practical (after measuring section).

Attachments: Oblique photo
Photo overlay with select geologic features

PROJECT: Rosebud Exploration 1996 LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon
Geologists: C.P. Kortemeier
BUDGET DETAIL: August 24, 1996 to December 31, 1996

LAND:

Land Payments:							
$0						$ 0	0.00%
						0	0.00%
					Sub Tl	$ 0	0.00%
Land Filing Fees and Acquisition Costs:							
SFPG Land Labor & Expenses							
0 SFPG landmn dys @	$255 /dy + Exp	$65.00 /dy				$ 0	0.00%
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy				0	0.00%
0 Drafting man dys @	$100 /dy					0	0.00%
Contract Land Labor & Expenses:							
0 Survey'g Crew dys @	$800 /dy (incl. expenses)					0	0.00%
Filing Fees:							
Reimburse Hecla for previously paid fees						45,200	13.10%
					Sub Tl	$ 45,200	13.10%

SURVEYING:

SFPG Surveying Labor & Expenses:							
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy				$ 0	0.00%
0 Drafting man dys @	$100 /dy					0	0.00%
Contract Surveying Labor & Expenses:							
6 Days @	$450.00 /day					2,700	0.78%
			dys				
Surveying Miscellaneous:							0.00%
					Sub Tl	$ 2,700	0.78%

ENVIRONMENTAL:

SFPG Environmental Labor & Expenses:							
0 Drill Sup man dys @	$150 /dy + Exp	$65.00 /dy				$ 0	0.00%
0 Drafting man dys @	$100 /dy					0	0.00%
Environmental Pemits:						720	0.21%
Environmental Misc (Drafting, Airphotos, Maps, Etc.):						5,480	1.59%
Biological Inventory:						0	0.00%
Cultural Inventory:						0	0.00%
Environmental Assessment (Report Writing):						0	0.00%
Environmental Audit:						0	0.00%
					Sub Tl	$ 6,200	1.80%

GEOLOGY:

SFPG Geology Labor & Expenses:							
RLD	53 SFPG On-site Mgr dys @	$400 /dy + Exp	$104.00 /dy			$ 26,712	7.74%
CPK	29 Geologist man dys	$316 /dy + Exp	$104.00 /dy			12,180	3.53%
	0 Computer man dys @	$0 /dy				0	0.00%
Contract Geology Labor & Expenses:							
MB	40 Contrct Labr dys @	$300 /dy + Exp	$130.00 /dy			17,200	4.99%
Aircraft Support:							
0 Hrs Helicopter @	$425 /Hr					0	0.00%
Aerial Photography:						0	0.00%
Drafting (Map & Overlay Compilation):						2,500	0.72%
Geology Miscellaneous (Literature Searches & Data Compilation):						4,200	1.22%
					Sub Tl	$ 62,792	18.20%

SURFACE GEOCHEMISTRY:

SFPG Surface Geochemistry Labor & Expenses:									
	1,722	Samples @	30	Samples/dy for		57	Tt man dys		
RLD	27	Staff geoman dys @		$400 /dy + Exp	$104.00 /dy			$ 13,608	3.94%
CPK	30	Staff geoman dys @		$316 /dy + Exp	$104.00 /dy			9,480	2.75%
	0	Computer man dys @		$150 /dy				0	0.00%
Contract Surface Geochemistry Labor & Expenses:									
	24	Compilation Labr dys @		$250 /dy + Exp	$0.00 /dy			6,000	1.74%
Surface Trace-Element Geochemistry:									
	0	Samples @	$39.00	/Whole Rock				0	0.00%
	1,722	Samples @	$13.65	/Au, Ag, As, Sb, Se, Ba				23,500	6.81%
							Sub Tt $	52,588	15.24%

MINERALOGY:

Microprobe:	0	Samples @	$0.00	/Sample			0	0.00%
Isotope Analyses:	0	Samples @	$0.00	/Sample			0	0.00%
Polished & Thin Sections:	0	Samples @	$20.00	/Sample			0	0.00%
Miscellaneous:							0	0.00%
X-Ray Analyses:	0	Samples @	$0.00	/Sample			0	0.00%
Fluid Inclusions:	0	Samples @	$65.00	/Sample			0	0.00%
Age Dating:	0	Samples @	$400.00	/Sample			0	0.00%
						Sub Tt $	0	0.00%

GEOPHYSICS:

Geophysical Consulting:									
CSL	11	Man dys @		$450 /dy + Exp		/dy		$ 5,000	1.45%
	0	Drafting man dys @		$100 /dy				0	0.00%
	0	Computer man dys @		$150 /dy				0	0.00%
Regional airborne geophysics (to be determined)									
	0	ln mi @	$0.00	/ln mi				34,904	10.12%
Grnd Magnetics:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Ground VLF:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Ground IP/Resistivity:									
	1	setups @	$8,000.00	/setup	(4,000' x 6,000')			8,000	2.32%
CSAMT:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Remote Sensing:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
Geophysical Miscellaneous:									
Airborne Magnetics:									
	0	ln mi @	$0.00	/ln mi				0	0.00%
							Sub Tt $	47,904	13.89%

DIRT WORK:

SFPG Dirtwork Labor & Expenses:								
	0	Drill Sup man dys @		$150 /dy + Exp	$65.00 /dy		$ 0	0.00%
Contract Dirtwork Labor & Expenses:								
	0	Hrs Transport @		$55.00 /hr			0	0.00%
	59	Hrs Dozer @		$85.00 /hr			5,000	1.45%
	0	Hrs Grader @		$85.00 /hr			0	0.00%
	0	Hrs Pickup @		$14.00 /hr			0	0.00%
	0	Hrs Labor @		$12.00 /hr			0	0.00%
	0	Hrs Water Rds @		$50.00 /hr			0	0.00%
						Sub Tt $	5,000	1.45%

DRILLING:

SFPG Drilling Labor & Expenses:

CPK	21	Staff geoman dys @	$316	/dy + Exp	$104.00	/dy	$ 8,820	2.56%
	0	Drafting man dys @	$100	/dy			0	0.00%
	0	Computer man dys @	$150	/dy			0	0.00%
Mud:		Including in drilling footage cost						

Contract Geology Labor & Expenses:

MB	20	Contrct Labr dys @	$300	/dy + Exp	$130.00	/dy	8,600	2.49%

Reverse Circulation:

0	Drill - Rev, angle, max TD	1,200	ft		
8	Drill holes @	800	ft/hole for		
300	Ft/dy for	21	Drill dys		
6,400	Tt drill footage @	$11.00	/ft	70,400	20.41%

Mud Rotary:

0	Drill - Rev, angle, max TD	1,200	ft		
0	Drill holes @	800	ft/hole for		
200	Ft/dy for	0	Drill dys		
0	Tt drill footage @	$6.00	/ft	0	0.00%

Core:

1	Drill - Core, angle, max TD	2,000	ft		
0	Drill holes @	800	ft/hole for		
80	Ft/dy for	0	Drill dys		
0	Tt drill footage @	$39.00	/ft *(mud products included)	0	0.00%

Auger:

0	Soil Auger, max TD	50	ft		
0	Drill Holes @	15	ft/hole for		
20	Holes/dy for	0	Drill dys		
0	Tt drill footage @	$50.00	/hole (incl. Au,Ag,As,Sb,Hg,Cu,Pb & Zn)	0	0.00%

Drill Trace-Element Geochemistry: Sample Intervals in feet

5	1,280	samples @	$14.65	/Au & trace elementsprep & Au	18,752	5.44%
	144	samples @	$9.00	Check assays	1,296	0.38%
Drilling Miscellaneous (Including office rental.):					0	0.00%
Down Hole deviation survey						
	6,400	feet @	$0.70	Downhole survey	4,480	1.30%
Drill Hole Abandonment:						
	6,400	feet @	$1.00	Abantonite	6,400	1.86%

RECLAMATION:

Sub Tt $ 118,748 34.42%

SFPG Dirtwork Labor & Expenses:

	0	Drill Sup man dys @	$150	/dy + Exp	$65.00	/dy	$ 0	0.00%

Drill Site Reclamation:

0	Hrs Transport @	$55.00	/hr	0	0.00%
35	Hrs Dozer @	$85.00	/hr	3,000	0.87%
0	Hrs Grader @	$85.00	/hr	0	0.00%
0	Hrs Pickup @	$14.00	/hr	0	0.00%
0	Hrs Labor @	$12.00	/hr	0	0.00%
0	Hrs Water Rds @	$50.00	/hr	0	0.00%
				0	0.00%
0	Hrs Transport @	$55.00	/hr	0	0.00%
0	Hrs Dozer @	$85.00	/hr	0	0.00%
0	Hrs Pickup @	$14.00	/hr	0	0.00%
0	Hrs Labor @	$12.00	/hr	0	0.00%

Sub Tt $ 3,000 0.87%

ROUND OFF:

Sub Tt $ 868 0.25%

TOTAL BUDGET:

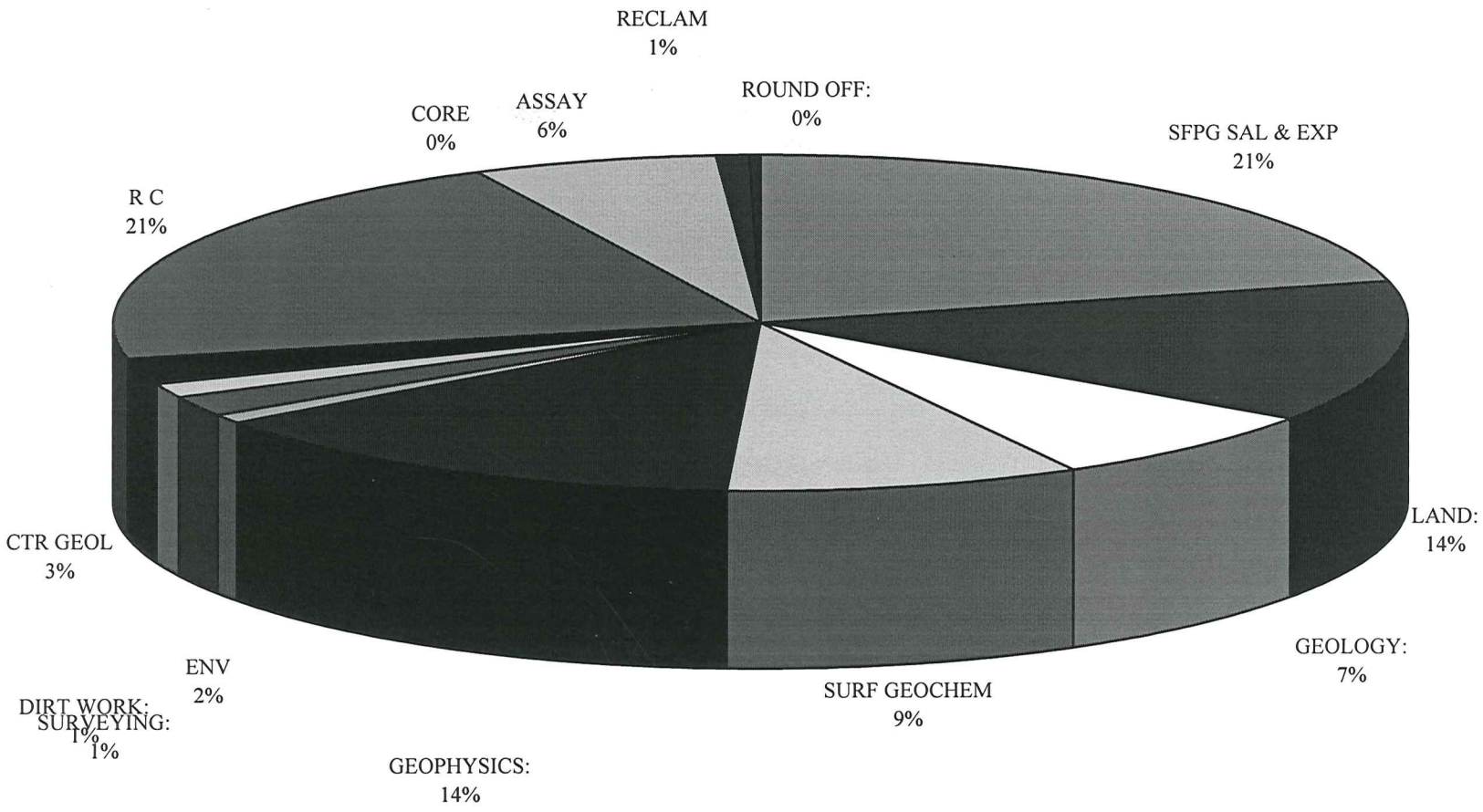
$ 345,000 100.00%

PROJECT: Rosebud Exploration LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon

0
BUDGET DETAIL: August 24, 1996 to December 31, 1996

PROPOSED BUDGET 1996			ACTUAL EXP	ESTIMATED EXP	CURRENT EST PROJECT TOTAL
SFPG SALARIES & EXPENSES:					
11.27% GEOLOGY	82 mandys	$ 38,892			
6.69% S GEOCHEM	57 mandys	23,088			
0.00% LAND	0 mandys	0			
2.56% DRILLING	21 mandys	8,820			
0.00% SURVEYNG	0 mandys	0			
0.00% COMPUTR	0 mandys	0			
20.52% Sub Tt	160 mandys	$ 70,800			0.00%
LAND:					
0.00% PAYMENTS:		$ 0			0.00%
13.10% FILING FEES & ACQUISITION:		45,200			0.00%
13.10% Sub Tt Land:		$ 45,200			0.00%
DIRECT WORK:					
6.93% GEOLOGY:		$ 23,900			0.00%
8.55% SURFACE GEOCHEMISTRY:		29,500			0.00%
0.00% MINERALOGY:		0			0.00%
13.89% GEOPHYSICS:		47,904			0.00%
0.78% SURVEYING:		2,700			0.00%
1.80% ENVIRONMENTAL:		6,200			0.00%
1.45% DIRT WORK:		5,000			0.00%
DRILLING:					
0.00% *Mud*		*0*			
2.49% *Contr Geol Labr & Exp*		*8,600*			*0.00%*
20.41% *Reverse Circ*		*70,400*			*0.00%*
0.00% *Mud Rotary*		*0*			*0.00%*
0.00% *Core (*inclusive)*		*0*			*0.00%*
0.00% *Auger (incl. labor & analy)*		*0*			*0.00%*
5.81% *Drill Geochem.*		*20,048*			*0.00%*
0.00% *Drilling Misc (inc. rentals)*		*0*			*0.00%*
1.30% *Downhole Surveying*		*4,480*			*0.00%*
1.86% *Drill Hole Abandonment*		*6,400*			*0.00%*
31.86% *Sub Total Drilling:*		*109,928*			*0.00%*
0.87% RECLAMATION:		$ 3,000			0.00%
0.25% ROUND OFF:		868			0.00%
66.38% DIRECT WORK SUB		$229,000			0.00%
100.00% TOTAL EXPENDITURES:		$345,000			0.00%

Rosebud Exploration Budget 1996
$345,000



ROSEBUD JOINT VENTURE 1996

Created: 8/21/96
Print Date: 8/28/96

Breakdown By Month

Cost Category	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
SFPG Salaries & Exp	70,800									17,700	17,700	17,700	17,700	70,800
Land	45,200									45,200				45,200
Surveying	2,700										1350	1350		2,700
Environmental	6,200									4,000	2,200			6,200
Drafting/Database	2,500									2,000	500			2,500
Contract Geol. Lbr	17,200									4,300	4,300	4,300	4,300	17,200
Geology Misc.	4,200									1,050	1,050	1,050	1,050	4,200
Surface Geochem Labor	6,000									3,000	2,000	1,000		6,000
Rock Geochemistry	23,500									9,000	8,000	6,000	500	23,500
Geophysical Consult.	5,000									5,000				5,000
Regional Geophysics	42,904											42,904		42,904
Dirtwork	5,000										5,000			5,000
Drill site Geology	8,600										3,000	4,000	1,600	8,600
Reverse Circ. Drilling	81,280										20,000	40,000	21,280	81,280
Assaying	18,752											10,000	8,752	18,752
Check Assays	1,296												1,296	1,296
Drill Site Reclamation	3,000												3,000	3,000
Round-off	868												868	868
	345,000	0	0	0	0	0	0	0	0	91,250	65,100	128,304	60,346	345,000

PROJECT: Rosebud Exploration 1997a LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon
Geologists: C.P. Kortemeier
BUDGET DETAIL: Jan. 1, 1997 to July 24, 1997

LAND:

Land Payments:							
$0						$ 0	0.00%
						0	0.00%
					Sub Tt	$ 0	0.00%
Land Filing Fees and Acquisition Costs:							
SFPG Land Labor & Expenses							
0	SFPG landmn dys @	$255 /dy + Exp	$65.00 /dy			$ 0	0.00%
0	Surveyor man dys @	$150 /dy + Exp	$65.00 /dy			0	0.00%
0	Drafting man dys @	$100 /dy				0	0.00%
Contract Land Labor & Expenses:							
0	Survey'g Crew dys @	$800 /dy (incl. expenses)				0	0.00%
Filing Fees:							
0	Claims @ $200.00 /claim					0	0.00%
					Sub Tt	$ 0	0.00%

SURVEYING:

SFPG Surveying Labor & Expenses:							
0	Surveyor man dys @	$150 /dy + Exp	$65.00 /dy			$ 0	0.00%
0	Drafting man dys @	$100 /dy				0	0.00%
Contract Surveying Labor & Expenses:							
10	Days @ $450.00 /day					4,500	0.69%
				dys			
Surveying Miscellaneous:							0.00%
					Sub Tt	$ 4,500	0.69%

ENVIRONMENTAL:

SFPG Environmental Labor & Expenses:							
0	Drill Sup man dys @	$150 /dy + Exp	$65.00 /dy			$ 0	0.00%
0	Drafting man dys @	$100 /dy				0	0.00%
Environmental Pemits:						0	0.00%
Environmental Misc (Drafting, Airphotos, Maps, Etc.):						0	0.00%
Biological Inventory:						0	0.00%
Cultural Inventory:						30,000	4.58%
Environmental Assessment (Report Writing):						0	0.00%
Environmental Audit:						0	0.00%
					Sub Tt	$ 30,000	4.58%

GEOLOGY:

SFPG Geology Labor & Expenses:							
RLD	127	SFPG On-site Mgr dys @	$400 /dy + Exp	$104.00 /dy		$ 64,008	9.77%
CPK	44	Geologist man dys	$316 /dy + Exp	$104.00 /dy		18,480	2.82%
	0	Computer man dys @	$0 /dy			0	0.00%
Contract Geology Labor & Expenses:							
MB	90	Contrct Labr dys @	$300 /dy + Exp	$130.00 /dy		38,700	5.91%
Aircraft Support:							
	0	Hrs Helicopter @	$425 /Hr			0	0.00%
Aerial Photography:						0	0.00%
Drafting (Map & Overlay Compilation):						4,000	0.61%
Geology Miscellaneous (Literature Searches & Data Compilation):						300	0.05%
					Sub Tt	$ 125,488	19.16%

SURFACE GEOCHEMISTRY:

SFPG Surface Geochemistry Labor & Expenses:								
733	Samples @	30	Samples/dy for		24	Tt man dys		
24	Staff geoman dys @		$316 /dy + Exp	$104.00 /dy			$ 10,080	1.54%
0	Drafting man dys @		$100 /dy				0	0.00%
0	Computer man dys @		$150 /dy				0	0.00%
Contract Surface Geochemistry Labor & Expenses:								
0	Compilation Labr dys @		$250 /dy + Exp	$0.00 /dy			0	0.00%
Surface Trace-Element Geochemistry:								
0	Samples @	$39.00	/Whole Rock				0	0.00%
733	Samples @	$13.65	/Au, Ag, As, Sb, Se, Ba				10,000	1.53%
						Sub Tt $	20,080	3.07%

MINERALOGY:

Microprobe:	0	Samples @	$0.00	/Sample	0	0.00%
Isotope Analyses:	0	Samples @	$0.00	/Sample	0	0.00%
Polished & Thin Sections:	100	Samples @	$20.00	/Sample	0	0.00%
Miscellaneous:					0	0.00%
X-Ray Analyses:	0	Samples @	$0.00	/Sample	0	0.00%
Fluid Inclusions:	20	Samples @	$65.00	/Sample	0	0.00%
Age Dating:	5	Samples @	$400.00	/Sample	0	0.00%
				Sub Tt $	0	0.00%

GEOPHYSICS:

Geophysical Consulting:							
0	Man dys @		$450 /dy + Exp	/dy		$ 0	0.00%
0	Drafting man dys @		$100 /dy			0	0.00%
0	Computer man dys @		$150 /dy			0	0.00%
Airborne EM:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Grd Magnetics:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Ground VLF:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Ground IP/Resistivity:							
1	setups @	$15,000.00	/setup	(4,000' x 6,000')		15,000	2.29%
CSAMT:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Remote Sensing:							
0	ln mi @	$0.00	/ln mi			0	0.00%
Geophysical Miscellaneous:							
Airborne Magnetics:							
0	ln mi @	$0.00	/ln mi			0	0.00%
					Sub Tt $	15,000	2.29%

DIRT WORK:

_010 & _020 FPM Dirtwork Labor & Expenses:							
0	Drill Sup man dys @		$150 /dy + Exp	$65.00 /dy		$ 0	0.00%
_261 Contract Dirtwork Labor & Expenses:							
0	Hrs Transport @		$55.00 /hr			0	0.00%
100	Hrs Dozer @		$85.00 /hr			8,500	1.30%
0	Hrs Grader @		$85.00 /hr			0	0.00%
0	Hrs Pickup @		$14.00 /hr			0	0.00%
0	Hrs Labor @		$12.00 /hr			0	0.00%
0	Hrs Water Rds @		$50.00 /hr			0	0.00%
					Sub Tt $	8,500	1.30%

DRILLING:

SFPG Drilling Labor & Expenses:									
CPK	59	Staff geoman dys @	$316	/dy + Exp	$104.00	/dy	$	24,780	3.78%
	0	Drafting man dys @	$100	/dy				0	0.00%
	0	Computer man dys @	$150	/dy				0	0.00%
Mud:									
Contract Geology Labor & Expenses:									
MB	20	Contrct Labr dys @	$300	/dy + Exp	$130.00	/dy		8,600	1.31%
Reverse Circulation:									
	0	Drill - Rev, angle, max TD		1,200	ft				
	22	Drill holes @	800	ft/hole	for				
	300	Ft/dy for	59	Drill dys					
	17,600	Tt drill footage @	$11.70	/ft	Including downhole surveying			205,920	31.44%
Mud Rotary:									
	0	Drill - Rev, angle, max TD		1,200	ft				
	0	Drill holes @	800	ft/hole	for				
	200	Ft/dy for	0	Drill dys					
	0	Tt drill footage @	$6.00	/ft				0	0.00%
Core:									
	1	Drill - Core, angle, max TD		2,000	ft				
	2	Drill holes @	800	ft/hole	for				
	80	Ft/dy for	20	Drill dys					
	1,600	Tt drill footage @	$39.30	/ft	'(hole survey & mud products included)			62,880	9.60%
Auger:									
	0	Soil Auger, max TD	50	ft					
	0	Drill Holes @	15	ft/hole for					
	20	Holes/dy for	0	Drill dys					
	0	Tt drill footage @	$50.00	/hole	(incl. Au,Ag,As,Sb,Hg,Cu,Pb & Zn)			0	0.00%
Drill Trace-Element Geochemistry: Sample Intervals in feet									
	5	3,840 samples @	$14.65	/Au & trace elementsprep & Au				56,256	8.59%
		384 samples @	$9.00	Check assays				3,456	0.53%
Drilling Miscellaneous								10,000	1.53%
Drill Hole Abandonment:		@ $1.00/Ft						19,200	2.93%
							Sub Tt $	391,092	59.71%

RECLAMATION:

SFPG Dirtwork Labor & Expenses:									
	0	Drill Sup man dys @	$150	/dy + Exp	$65.00	/dy	$	0	0.00%
Drill Site Reclamation:									
	0	Hrs Transport @	$55.00	/hr				0	0.00%
	60	Hrs Dozer @	$85.00	/hr				5,100	0.78%
	0	Hrs Grader @	$85.00	/hr				0	0.00%
	60	Hrs Pickup @	$14.00	/hr				840	0.13%
	60	Hrs Labor @	$12.00	/hr				720	0.11%
	0	Hrs Water Rds @	$50.00	/hr				0	0.00%
Abandoned Mines Reclamation:								0	0.00%
	0	Hrs Transport @	$55.00	/hr				0	0.00%
	0	Hrs Dozer @	$85.00	/hr				0	0.00%
	0	Hrs Pickup @	$14.00	/hr				0	0.00%
	0	Hrs Labor @	$12.00	/hr				0	0.00%
							Sub Tt $	6,660	1.02%

CONTINGENCY:

							Sub Tt $	53,680	8.20%

TOTAL BUDGET:

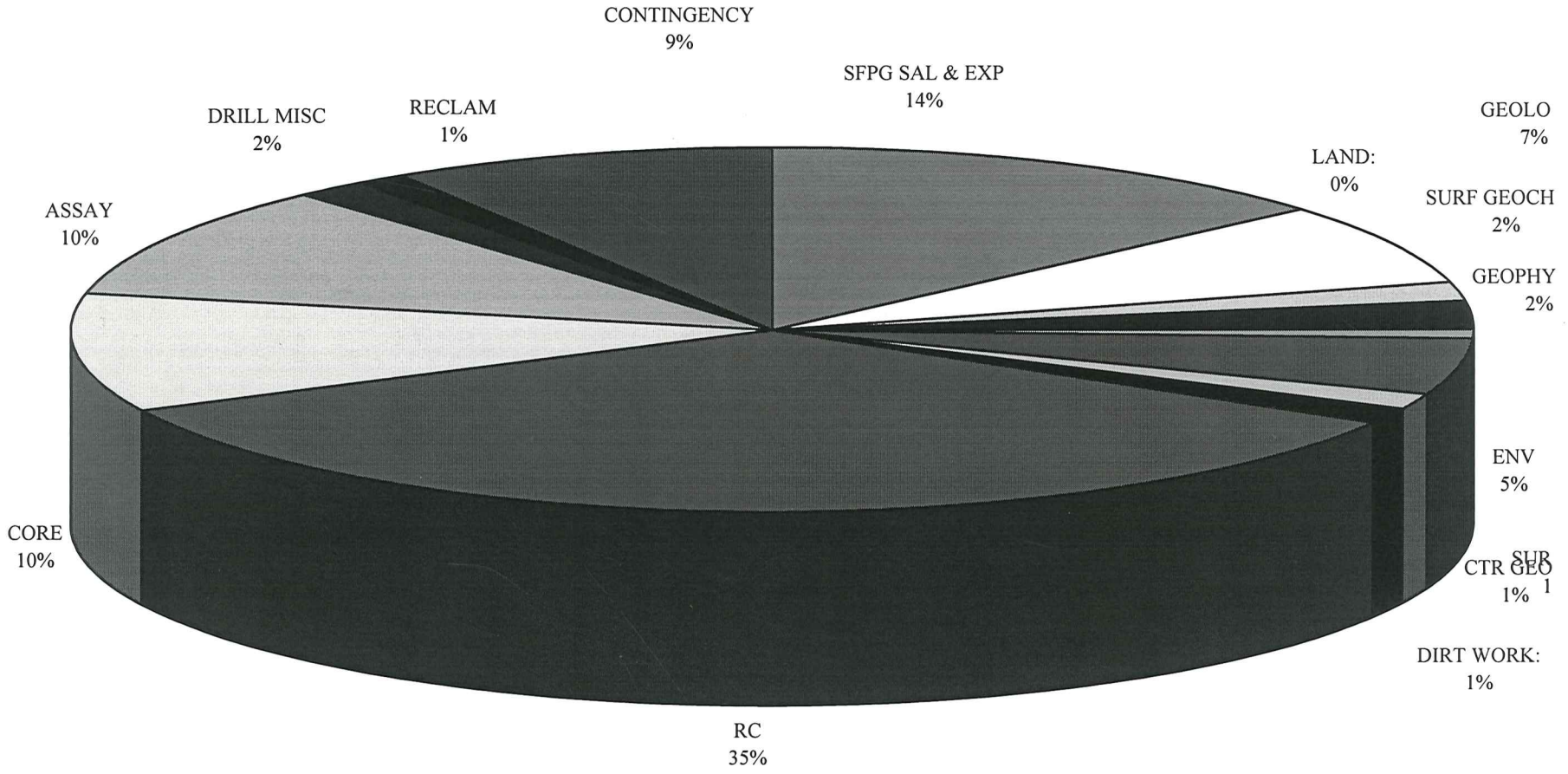
						0	$	655,000	100.00%

PROJECT: Rosebud Exploration 1997a LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon

0
BUDGET DETAIL: Jan. 1, 1997 to July 24, 1997

PROPOSED BUDGET 1997a			ACTUAL EXP	ESTIMATED EXP	CURRENT EST PROJECT TOTAL
SFPG SALARIES & EXPENSES:					
12.59% GEOLOGY	171 mandys	$ 82,488			
1.54% SURF GEOC	24 mandys	10,080			
0.00% LAND	0 mandys	0			
3.78% DRILLING	59 mandys	24,780			
0.00% SURVEYNG	0 mandys	0			
0.00% COMPUTR	0 mandys	0			
17.92% Sub Tt	254 mandys	$ 117,348			0.00%
LAND:					
0.00% PAYMENTS:		$ 0			0.00%
0.00% FILING FEES & ACQUISITION:		0			0.00%
0.00% Sub Tt Land:		$ 0			0.00%
DIRECT WORK:					
6.56% GEOLOGY:		$ 43,000			0.00%
1.53% SURFACE GEOCHEMISTRY:		10,000			0.00%
0.00% MINERALOGY:		0			0.00%
2.29% GEOPHYSICS:		15,000			0.00%
0.69% SURVEYING:		4,500			0.00%
4.58% ENVIRONMENTAL:		30,000			0.00%
1.30% DIRT WORK:		8,500			0.00%
DRILLING:					
0.00% *Mud*		*0*			
1.31% *Contr Geol Labr & Exp*		*8,600*			*0.00%*
31.44% *Reverse Circ*		*205,920*			*0.00%*
0.00% *Mud Rotary*		*0*			*0.00%*
9.60% *Core (*inclusive)*		*62,880*			*0.00%*
0.00% *Auger (incl. labor & analy)*		*0*			*0.00%*
9.12% *Drill Geochem. (incl MET)*		*59,712*			*0.00%*
1.53% *Drilling Misc*		*10,000*			*0.00%*
2.93% *Drill Hole Abandonment*		*19,200*			*0.00%*
55.93% *Sub Total Drilling:*		*366,312*			*0.00%*
1.02% RECLAMATION:		$ 6,660			0.00%
8.20% CONTINGENCY:		53,680			0.00%
82.08% DIRECT WORK SUB		$537,652			0.00%
100.00% TOTAL EXPENDITURES:		$655,000			0.00%

Rosebud Exploration Budget 1997A
$655,000



ROSEBUD JOINT VENTURE 1997A

Created: cpk 8/21/96
Print Date: 8/28/96

Breakdown By Month

Cost Category	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
SFPG Salaries & Exp	117,348	16,764	16,764	16,764	16,764	16,764	16,764	16,764						117,348
Land	0													0
Surveying	4,500					3,000	1,500							4,500
Environmental	30,000	10,000	20,000											30,000
Drafting/Database	4,000		1,000	1,000			1,000	1,000						4,000
Contract Geol. Lbr	38,700	5,529	5,529	5,529	5,529	5,529	5,529	5,529						38,700
Geology Misc.	300					100	100	100	**1997 b subject to Hecla participation**					300
Surface Geochem Labor	0									see accompanying sheet				0
Rock Geochemistry	10,000	3,000	3,000	3,000	1,000									10,000
Geophysical Consult.	0													0
Ground Geophysics	15,000		5,000	10,000										15,000
Dirtwork	8,500		3,000	5,500										8,500
Drill site Geology	8,600			6,000	2,600									8,600
Reverse Circ. Drilling	205,920		50,000	50,000	50,000	50,000	5,920							205,920
Core Drilling	62,880			40,000	22,880									62,880
Assaying	59,712			5,000	10,000	25,000	19,712							59,712
Drilling Miscellaneous	10,000		2,000	2,000	2,000	2,000	2,000							10,000
Drill Hole Abandonment	19,200				5,000	5,000	5,000	4,200						19,200
Drill Site Reclamation	6,660					5,000	1,660							6,660
Contingency	53,680	7,669	7,669	7,669	7,669	7,669	7,669	7,669						53,680
	655,000	42,961	113,961	152,461	123,441	120,061	66,853	35,261	0	0	0	0	0	655,000

PROJECT: Rosebud Exploration 1997B LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon
Geologists: C.P. Kortemeier
BUDGET DETAIL: July 25, 1997 to December 31, 1997

LAND:

Land Payments:							
$67,700						$ 67,700	6.77%
						0	0.00%
					Sub Tl	$ 67,700	6.77%
Land Filing Fees and Acquisition Costs:							
SFPG Land Labor & Expenses							
0 SFPG landmn dys @	$255 /dy + Exp	$65.00 /dy				$ 0	0.00%
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy				0	0.00%
0 Drafting man dys @	$100 /dy					0	0.00%
Contract Land Labor & Expenses:							
0 Survey'g Crew dys @	$800 /dy (incl. expenses)					0	0.00%
Filing Fees:							
0 Claims @	$200.00 /claim					0	0.00%
					Sub Tl	$ 0	0.00%

SURVEYING:

SFPG Surveying Labor & Expenses:							
0 Surveyor man dys @	$150 /dy + Exp	$65.00 /dy				$ 0	0.00%
0 Drafting man dys @	$100 /dy					0	0.00%
Contract Surveying Labor & Expenses:							
10 Days @	$450.00 /day					4,500	0.45%
			dys				
Surveying Miscellaneous:							0.00%
					Sub Tl	$ 4,500	0.45%

ENVIRONMENTAL:

SFPG Environmental Labor & Expenses:							
0 Drill Sup man dys @	$150 /dy + Exp	$65.00 /dy				$ 0	0.00%
0 Drafting man dys @	$100 /dy					0	0.00%
Environmental Pemits:						0	0.00%
Environmental Misc (Drafting, Airphotos, Maps, Etc.):						0	0.00%
Biological Inventory:						0	0.00%
Cultural Inventory:						0	0.00%
Environmental Assessment (Report Writing):						0	0.00%
Environmental Audit:						0	0.00%
					Sub Tl	$ 0	0.00%

GEOLOGY:

SFPG Geology Labor & Expenses:							
RLD 106 SFPG On-site Mgr dys @	$400 /dy + Exp	$104.00 /dy				$ 53,424	5.34%
0 Geologist man dys	$316 /dy + Exp	$104.00 /dy				0	0.00%
0 Computer man dys @	$0 /dy					0	0.00%
Contract Geology Labor & Expenses:							
0 Contrct Labr dys @	$300 /dy + Exp	$130.00 /dy				0	0.00%
Aircraft Support:							
0 Hrs Helicopter @	$425 /Hr					0	0.00%
Aerial Photography:						0	0.00%
Drafting (Map & Overlay Compilation):						4,000	0.40%
Geology Miscellaneous (Literature Searches & Data Compilation):						4,400	0.44%
					Sub Tl	$ 61,824	6.18%

SURFACE GEOCHEMISTRY:

SFPG Surface Geochemistry Labor & Expenses:									
	1,099	Samples @	30	Samples/dy for		37	Tt man dys		
CPK	37	Staff geoman dys @		$316 /dy + Exp	$104.00 /dy			$ 15,540	1.55%
	0	Drafting man dys @		$100 /dy				0	0.00%
	0	Computer man dys @		$150 /dy				0	0.00%
Contract Surface Geochemistry Labor & Expenses:									
	0	Compilation Labr dys @		$250 /dy + Exp	$0.00 /dy				0.00%
Surface Trace-Element Geochemistry:									
	0	Samples @	$39.00	/Whole Rock				0	0.00%
	1,099	Samples @	$13.65	/Au, Ag, As, Sb, Se, Ba				15,000	1.50%
							Sub Tt	$ 30,540	3.05%

MINERALOGY:

Microprobe:	0	Samples @	$0.00	/Sample	0 0.00%
Isotope Analyses:	0	Samples @	$0.00	/Sample	0 0.00%
Polished & Thin Sections:	0	Samples @	$20.00	/Sample	0 0.00%
Miscellaneous:					0 0.00%
X-Ray Analyses:	0	Samples @	$0.00	/Sample	0 0.00%
Fluid Inclusions:	0	Samples @	$65.00	/Sample	0 0.00%
Age Dating:	0	Samples @	$400.00	/Sample	0 0.00%
					Sub Tt $ 0 0.00%

GEOPHYSICS:

Geophysical Consulting:								
	0	Man dys @		$450 /dy + Exp	/dy		$ 0	0.00%
	0	Drafting man dys @		$100 /dy			0	0.00%
	0	Computer man dys @		$150 /dy			0	0.00%
Airborne EM:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
Grd Magnetics:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
Ground VLF:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
Ground IP/Resistivity:								
	1	setups @	$15,000.00	/setup	(4,000' x 6,000')		20,000	2.00%
CSAMT:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
Remote Sensing:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
Geophysical Miscellaneous:								
Airborne Magnetics:								
	0	ln mi @	$0.00	/ln mi			0	0.00%
						Sub Tt	$ 20,000	2.00%

DIRT WORK:

SFPG Dirtwork Labor & Expenses:								
	0	Drill Sup man dys @		$150 /dy + Exp	$65.00 /dy		$ 0	0.00%
Contract Dirtwork Labor & Expenses:								
	0	Hrs Transport @		$55.00 /hr			0	0.00%
	140	Hrs Dozer @		$85.00 /hr			11,900	1.19%
	0	Hrs Grader @		$85.00 /hr			0	0.00%
	0	Hrs Pickup @		$14.00 /hr			0	0.00%
	0	Hrs Labor @		$12.00 /hr			0	0.00%
	0	Hrs Water Rds @		$50.00 /hr			0	0.00%
							Sub Tt $ 11,900	1.19%

DRILLING:

SFPG Drilling Labor & Expenses:

CPK	77	Staff geoman dys @	$316	/dy + Exp	$104.00	/dy	$ 32,340	3.23%
	0	Drafting man dys @	$100	/dy			0	0.00%
	0	Computer man dys @	$150	/dy			0	0.00%

Mud:

Contract Geology Labor & Expenses:

MB	75	Contrct Labr dys @	$300	/dy + Exp	$130.00	/dy	32,250	3.23%

Reverse Circulation:

0	Drill - Rev, angle, max TD	1,200	ft		
42	Drill holes @	800	ft/hole	for	
300	Ft/dy for	112	Drill dys		
33,600	Tt drill footage @	$12.70	/ft		426,720 42.67%

Mud Rotary:

0	Drill - Rev, angle, max TD	1,200	ft		
0	Drill holes @	800	ft/hole	for	
200	Ft/dy for	0	Drill dys		
0	Tt drill footage @	$6.00	/ft		0 0.00%

Core:

1	Drill - Core, angle, max TD	2,000	ft		
4	Drill holes @	800	ft/hole	for	
80	Ft/dy for	40	Drill dys		
3,200	Tt drill footage @	$40.30	/ft	*(mud products included)	128,960 12.90%

Auger:

0	Soil Auger, max TD	50	ft		
0	Drill Holes @	15	ft/hole	for	
20	Holes/dy for	0	Drill dys		
0	Tt drill footage @	$50.00	/hole	(incl. Au,Ag,As,Sb,Hg,Cu,Pb & Zn)	0 0.00%

Drill Trace-Element Geochemistry: Sample Intervals in feet

5	7,360 samples @	$14.65	/Au & trace elementsprep & Au	107,824 10.78%
	736 samples @	$9.00	Check assays	6,624 0.66%

Drilling Miscellaneous 0 0.00%

Drill Hole Abandonment: 0 0.00%

Sub Tt $ 734,718 73.47%

RECLAMATION:

SFPG Dirtwork Labor & Expenses:

	0	Drill Sup man dys @	$150	/dy + Exp	$65.00	/dy	$ 0	0.00%

Drill Site Reclamation:

0	Hrs Transport @	$55.00	/hr	0 0.00%
80	Hrs Dozer @	$85.00	/hr	6,800 0.68%
0	Hrs Grader @	$85.00	/hr	0 0.00%
60	Hrs Pickup @	$14.00	/hr	840 0.08%
60	Hrs Labor @	$12.00	/hr	720 0.07%
0	Hrs Water Rds @	$50.00	/hr	0 0.00%

Abandoned Mines Reclamation: 0 0.00%

0	Hrs Transport @	$55.00	/hr	0 0.00%
0	Hrs Dozer @	$85.00	/hr	0 0.00%
0	Hrs Pickup @	$14.00	/hr	0 0.00%
0	Hrs Labor @	$12.00	/hr	0 0.00%

Sub Tt $ 8,360 0.84%

CONTINGENCY

Sub Tt $ 60,458 6.05%

TOTAL BUDGET:

$ 1,000,000 100.00%

PROJECT: Rosebud Exploration 1997B LOCATION: Pershing Co. NV UTM NO. NK-11-10-06c
PROJECT Manager: , R.L. Dixon

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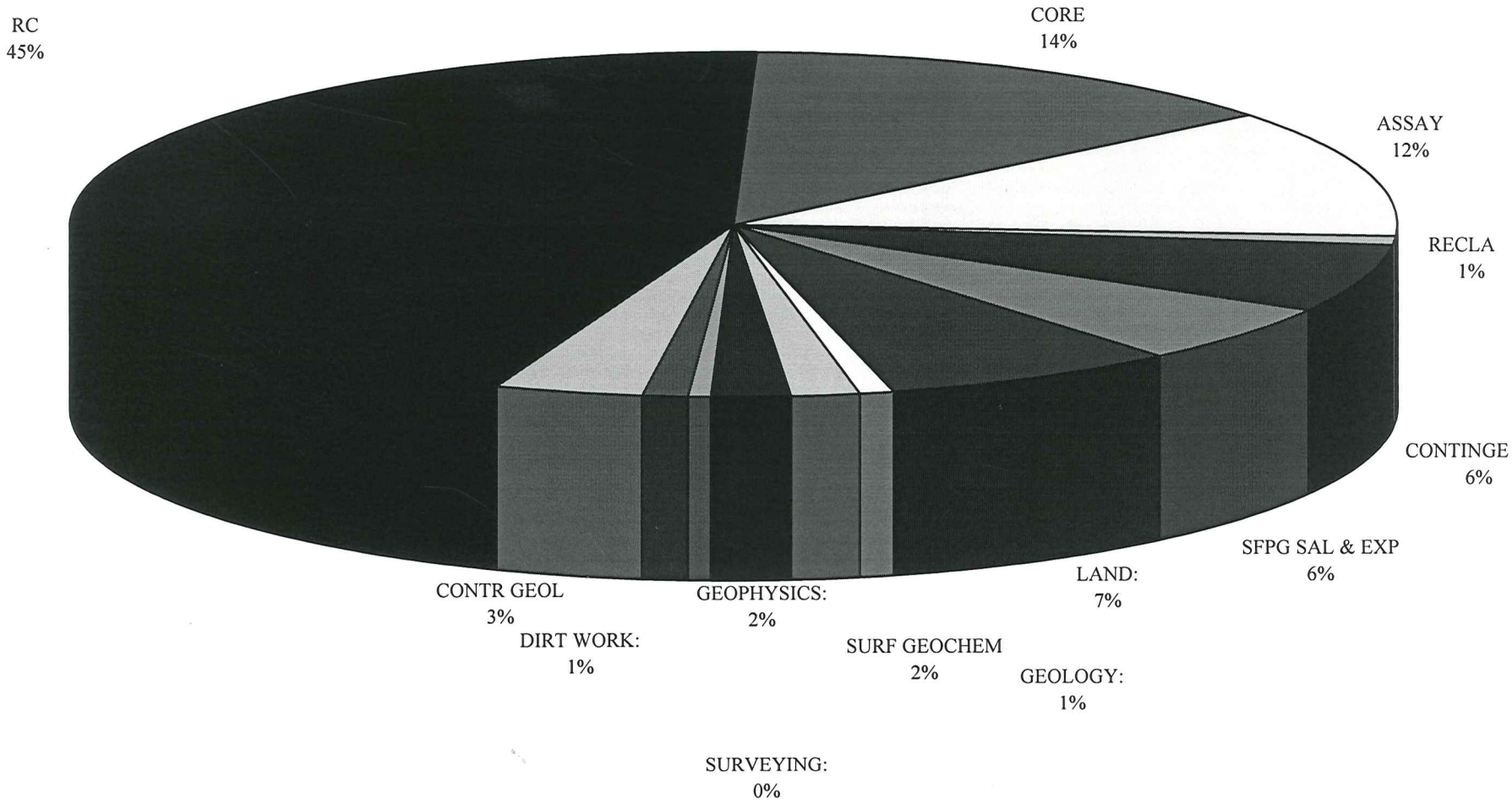
BUDGET DETAIL: July 25, 1997 to December 31, 1997

PROPOSED BUDGET 1997B			ACTUAL EXP	ESTIMATED EXP	CURRENT EST PROJECT TOTAL
SFPG SALARIES & EXPENSES:					
5.34% GEOLOGY	106 mandys	$ 53,424			
1.55% SURF GEOC	37 mandys	15,540			
0.00% LAND	0 mandys	0			
3.23% DRILLING	77 mandys	32,340			
0.00% SURVEYNG	0 mandys	0			
0.00% COMPUTR	0 mandys	0			
10.13% Sub Tt	220 mandys	$ 101,304			0.00%
LAND:					
6.77% PAYMENTS:		$ 67,700			0.00%
0.00% FILING FEES & ACQUISITION:		0			0.00%
6.77% Sub Tt Land:		$ 67,700			0.00%
DIRECT WORK:					
0.84% GEOLOGY:		$ 8,400			0.00%
1.50% SURFACE GEOCHEMISTRY:		15,000			0.00%
0.00% MINERALOGY:		0			0.00%
2.00% GEOPHYSICS:		20,000			0.00%
0.45% SURVEYING:		4,500			0.00%
0.00% ENVIRONMENTAL:		0			0.00%
1.19% DIRT WORK:		11,900			0.00%
DRILLING:					
0.00% *Mud*		*0*			
3.23% *Contr Geol Labr & Exp*		*32,250*			*0.00%*
42.67% *Reverse Circ*		*426,720*			*0.00%*
0.00% *Mud Rotary*		*0*			*0.00%*
12.90% *Core (*inclusive)*		*128,960*			*0.00%*
0.00% *Auger (incl. labor & analy)*		*0*			*0.00%*
11.44% *Drill Geochem. (incl MET)*		*114,448*			*0.00%*
0.00% *Drilling Misc*		*0*			*0.00%*
0.00% * *Drill Hole Abandonment*		*0*			*0.00%*
70.24% *Sub Total Drilling:*		*702,378*			*0.00%*
0.84% RECLAMATION:		$ 8,360			0.00%
6.05% CONTINGENCY		60,458			0.00%
83.10% DIRECT WORK SUB		$830,996			0.00%
100.00% TOTAL EXPENDITURES		$1,000,000			0.00%
SFPG share		667000			

Rosebud Exploration Budget 1997B
$1,000,000



ROSEBUD JOINT VENTURE 1997B

Created: cpk 8/21/96
Print Date: 8/27/96

This budget is based on the following plan:

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Breakdown By Month

Cost Category	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
SFPG Salaries & Exp	101,304								20,261	20,261	20,261	20,261	20,261	101,304
Land	67,700										67,700			67,700
Surveying	4,500											4,500		4,500
Environmental	0													0
Drafting/Database	4,000											2,000	2,000	4,000
Contract Geol. Lbr	0													0
Geology Misc.	4,400								1,000	1,000	1,000	1,000	400	4,400
Surface Geochem Labor	0													0
Rock Geochemistry	15,000		**See Previous sheet**						5,000	5,000	5,000			15,000
Geophysical Consult.	0													0
Ground Geophysics	20,000								20,000					20,000
Dirtwork	11,900									5,000	5,000	1,900		11,900
Drill site Geology	32,250								8,600	8,600	8,600	6,450		32,250
Reverse Circ. Drilling	426,720								98,400	98,400	98,400	98,400	33,120	426,720
Core Drilling	128,960								60,000	60,000	8,960			128,960
Assaying	114,448									20,000	30,000	40,000	24,448	114,448
Drilling Miscellaneous	0													0
Drill Hole Abandonment	0													0
Drill Site Reclamation	8,360											5,000	3,360	8,360
Contingency	60,458								12,092	12,092	12,092	12,092	12,092	60,458
	1,000,000	0	0	0	0	0	0	0	######	230,352	######	191,602	95,680	1,000,000

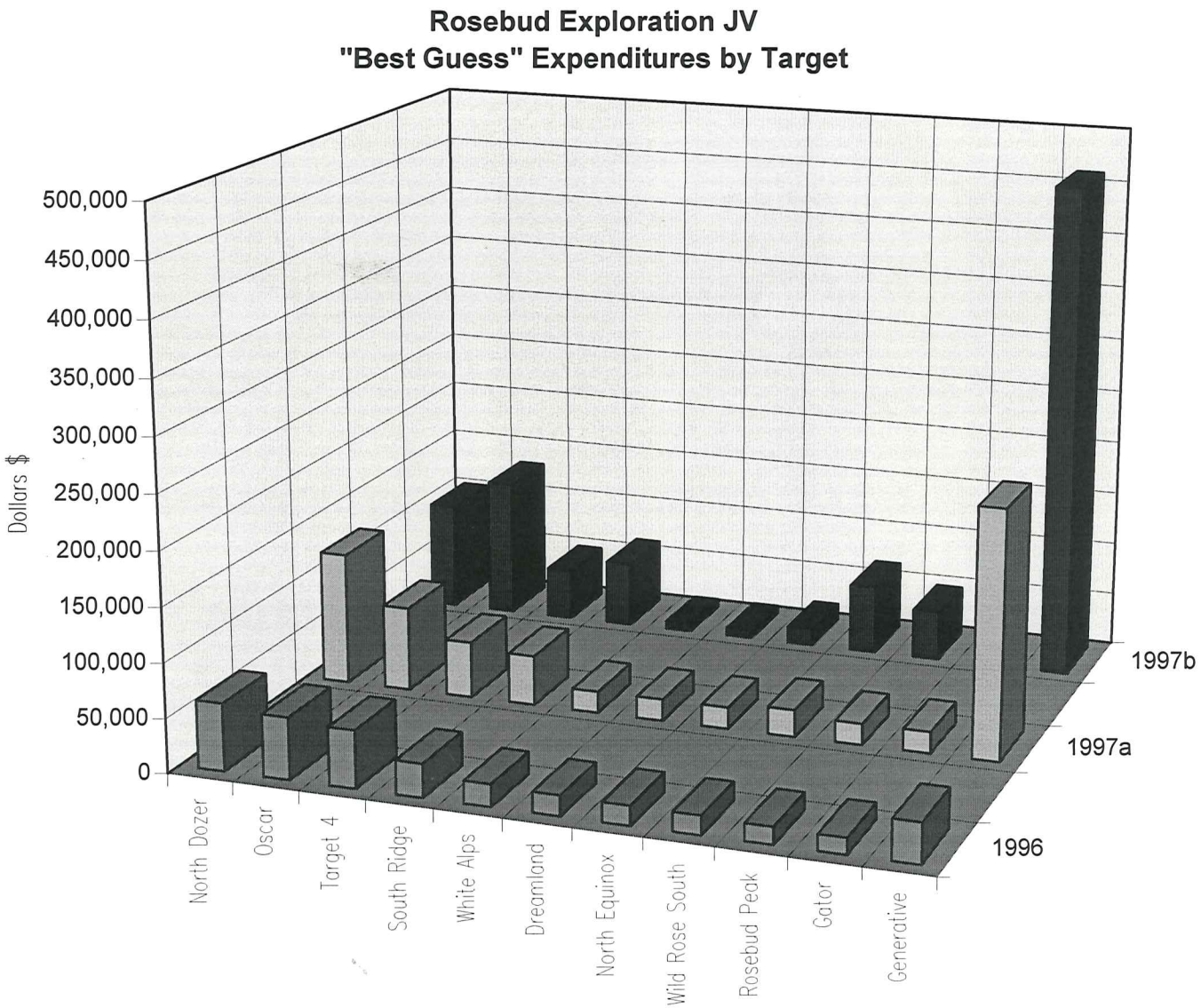
Item Breakdown 1
2

			1996		1997a		1997b
1 **North Dozer**							
	Land		4,250		0		6,154
	Surveying		270		410		410
	Environmental		620		2,727		0
	Geology (Labor)		10,428		12,000		5,000
	Geophysics		0		0		0
	Surface Geochem		0		0		0
	Dirt Work		2,000		5,000		4,000
	Drilling	, 1Core	42,281	4 RC, 1C	95,333	8 RC	80,000
	Reclamation		1,900		2,800		2,500
	Contingency		325		4,919		3,000
Subtotal			*62,074*		*123,189*		*101,064*
2 **Oscar**							
	Land		4,250		0		6,154
	Surveying		270		410		410
	Environmental		620		2,727		0
	Geology (Labor)		10,428		15,360		10,000
	Geophysics		0		0		0
	Surface Geochem		0		0		0
	Dirt Work		2,000		3,000		5,000
	Drilling	3 RC	37,944	4 RC	50,492	10 RC	100,000
	Reclamation		1,100		1,500		3,000
	Contingency		325		4,919		5,000
Subtotal			*56,937*		*78,408*		*129,564*
3 **Target 4**							
	Land		4,250		0		6,154
	Surveying		270		410		0
	Environmental		620		2,727		0
	Geology (Labor)		10,428		12,000		10,000
	Geophysics		0		0		0
	Surface Geochem		10,000		5,000		0
	Dirt Work		1,000		1,000		1,000
	Drilling	2 RC	25,246	2 RC	25,246	2 RC	25,000
	Reclamation		910		1,000		1,000
	Contingency		325		4,919		5,000
Subtotal			*53,049*		*52,302*		*48,154*
4 **South Ridge**							
	Land		4,250		0		6,154
	Surveying		270		410		410
	Environmental		620		2,727		0
	Geology (Labor)		10,428		12,000		7,000
	Geophysics		8,000		0		0
	Surface Geochem		7,000		0		0
	Dirt Work		0		700		2,000
	Drilling		0	2 RC	25,246	4 RC	40,000
	Reclamation		0		500		800
	Contingency		325		4,919		5,000
Subtotal			*30,893*		*46,502*		*61,364*

5 **White Alps**					
	Land	4,250	0		6,154
	Surveying	270	410		410
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		1,000
	Geophysics	0	0		0
	Surface Geochem	5,000	0		0
	Dirt Work	0	0		0
	Drilling	0	0		0
	Reclamation	0	0		0
	Contingency	0	4,919		0
Subtotal		*20,568*	*20,056*		*7,564*
6 **Dreamland**					
	Land	4,250	0		6,154
	Surveying	270	410		410
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		1,000
	Geophysics	0	0		0
	Surface Geochem	3,000	0		0
	Dirt Work	0	0		0
	Drilling	0	0		0
	Reclamation	0	0		0
	Contingency	325	4,919		0
Subtotal		*18,893*	*20,056*		*7,564*
7 **North Equinox**					
	Land	4,250	0		6,154
	Surveying	270	410		0
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		10,000
	Geophysics	0	0		0
	Surface Geochem	2,000	0		0
	Dirt Work	0	0		0
	Drilling	0	0		0
	Reclamation	0	0		0
	Contingency	325	4,919		0
Subtotal		*17,893*	*20,056*		*16,154*
8 **Wild Rose South**					
	Land	4,250	0		6,154
	Surveying	270	410		410
	Environmental	620	2,727		0
	Geology (Labor)	10,428	12,000		10,000
	Geophysics	0	0		0
	Surface Geochem	1,500	5,000		0
	Dirt Work	0	0		2,000
	Drilling	0	0	4 RC	40,000
	Reclamation	0	0		800
	Contingency	325	4,919		5,000
Subtotal		*17,393*	*25,056*		*64,364*

9 **Rosebud Peak**						
	Land		4,250	0		6,154
	Surveying		270	410		410
	Environmental		620	2,727		0
	Geology (Labor)		10,428	12,000		10,000
	Geophysics		0	0		0
	Surface Geochem		0	0		0
	Dirt Work		0	0		
	Drilling		0	0	2 RC	25,000
	Reclamation		0	0		0
	Contingency		325	4,919		5,000
Subtotal			*15,893*	*20,056*		*46,564*
# **Gator**						
	Land		4,250	0		6,154
	Surveying		270	410		410
	Environmental		620	2,727		0
	Geology (Labor)		9,342	12,000		10,000
	Geophysics		0	0		0
	Surface Geochem		0	0		0
	Dirt Work		0	0		1,500
	Drilling		0	0	3 RC	33,000
	Reclamation		0	0		1,000
	Contingency		325	4,919		5,000
Subtotal			*14,807*	*20,056*		*57,064*
# **Generative**						
	Land		0	0		6,154
	Surveying		270	410		410
	Environmental		0	2,727		0
	Geology (Labor)		8,835	12,000		15,000
	Geophysics		0	15,000		20,000
	Surface Geochem		0	10,000		15,000
	Dirt Work		1,230	6,000		10,000
	Drilling	2 RC	24,940	0 RC, 1 C	175,207	7 RC, 4C	383,016
	Reclamation		1,000	3,000		6,000
	Contingency		325	4,919		5,000
Subtotal			*36,600*	*229,263*		*460,580*
Project Total			**345,000**	**655,000**		**1,000,000**

	1996	1997a	1997b
North Dozer	*62,074*	*123,189*	*101,064*
Oscar	*56,937*	*78,408*	*129,564*
Target 4	*53,049*	*52,302*	*48,154*
South Ridge	*30,893*	*46,502*	*61,364*
White Alps	*20,568*	*20,056*	*7,564*
Dreamland	*18,893*	*20,056*	*7,564*
North Equinox	*17,893*	*20,056*	*16,154*
Wild Rose South	*17,393*	*25,056*	*64,364*
Rosebud Peak	*15,893*	*20,056*	*46,564*
Gator	*14,807*	*20,056*	*57,064*
Generative	*36,600*	*229,263*	*460,580*


Rosebud Exploration JV
"Best Guess" Expenditures by Target
Dollars $
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
North Dozer
Oscar
Target 4
South Ridge
White Alps
Dreamland
North Equinox
Wild Rose South
Rosebud Peak
Gator
Generative
1997b
1997a
1996

ROSEBUD JOINT VENTURE 1997B

Created: cpk 8/21/96
Print Date: 8/27/96

SFPG SHARE OF EXPENDITURES
AS PER EARN-IN AGREEMENT

Breakdown By Month

Cost Category	Total	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
SFPG Salaries & Exp	101,304								20,261	20,261	20,261	20,261	20,261	101,304
Land	67,700										67,700			67,700
Surveying	4,500											4,500		4,500
Environmental	0													0
Drafting/Database	4,000											2,000	2,000	4,000
Contract Geol. Lbr	0													0
Geology Misc.	4,400								1,000	1,000	1,000	1,000	400	4,400
Surface Geochem Labor	0													0
Rock Geochemistry	15,000		**See Previous sheet**						5,000	5,000	5,000			15,000
Geophysical Consult.	0													0
Ground Geophysics	20,000								20,000					20,000
Dirtwork	11,900									5,000	5,000	1,900		11,900
Drill site Geology	32,250								8,600	8,600	8,600	6,450		32,250
Reverse Circ. Drilling	426,720								98,400	98,400	98,400	98,400	33,120	426,720
Core Drilling	128,960								60,000	60,000	8,960			128,960
Assaying	114,448									20,000	30,000	40,000	24,448	114,448
Drilling Miscellaneous	0													0
Drill Hole Abandonment	0													0
Drill Site Reclamation	8,360											5,000	3,360	8,360
Contingency	60,458								12,092	12,092	12,092	12,092	12,092	60,458
	1,000,000	0	0	0	0	0	0	0	225,352	230,352	257,012	191,602	95,680	1,000,000
SFPG Share	**0.67**								**0.67**	**0.67**	**0.67**	**0.67**	**0.67**	**0.67**
	670000								150986	154336	172198	128374	64,106	670000

Western District Monthly Report
Monthly Reports General
cc: RLP, SFPG =>Albq File
RWO, SFPG => Monthly Genl File
FJJ, SFPG => Reno UTM File

SANTA FE PACIFIC GOLD, INC.
Western Great Basin District
MONTHLY ACTIVITY REPORT

To: Fred J. Jenkins

By: C.P. Kortemeier

Month: November, 11/1/96 to 11/25/96

Date: 11/25/96

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COMPETITOR ACTIVITY ..... Page 2
DETAILED PROJECT WORK
Rosebud JV Pershing Co. NV (NK 11-10-06C) ..... Page 3

EXECUTIVE SUMMARY

Highlights for the Month of November include:

- Relogging of selected holes in Dozer Hill orebody.
- Tentative correlation of mine sequence with surface geology.
- Database error checking.
- Construction of conceptual exploration cross-sections for planned drilling.
- Logging and plotting of pilot holes for Dozer Hill targets.
- Continuing PIMA alteration study.
- Re-assembled Golden Eagle data and presented to Newmont.

GENERAL ACTIVITIES

Chargeable time in November for the Rosebud JV equals 176 hours. Two days were spent gathering and presenting Golden Eagle data to Newmont. We still require 8 hours of on-site training to complete the mandatory MSHA 40 hours for new miners.

Rosebud JV. NK 11-10-06c
Monthly Reports & Meetings
cc: RLP, SFPG =>Albq File
RWO, SFPG =>Monthly Gnl File
FJJ, SFPG => Reno
RLD, SFPG=> Field Copy

COMPETITOR ACTIVITIES

Newmont has been shown Golden Eagle data. Battle Mountain Gold and Echo Bay Mining have been contacted and will be shown the data in the near future. Gary Simmons and Bruce Hanson have contacted Eldorado Resources about Golden Eagle as well.

Core drilling is apparently going around the clock at Sulfur. No word as to results yet.

J.D. Welsh is evaluating re-opening the NE Ridge leach pads at the old Borealis site. He is rumored to have some interest in the Purdy Peak (along the Cerro Duro trend at Borealis) resource as well. Possible exploration drilling is being considered. Welsh's deal must be with John Whitney as Echo Bay has dropped their claims.

Echo Bay apparently has Dave Bowden and Tony Eng on retainer doing Winnemucca based exploration.

Rosebud JV. NK 11-10-06c
Monthly Reports & Meetings
cc: RLP, SFPG =>Albq File
RWO, SFPG =>Monthly Gnl File
FJJ, SFPG => Ren
RLD, SFPG=> Field Copy

SANTA FE PACIFIC GOLD, INC.
Western Great Basin District
MONTHLY ACTIVITY REPORT

To: F. J. Jenkins

By: C.P. Kortemeier

Month: November, 11/1/96 to 11/25/96

Date: 11/25/96

DETAILED PROJECT WORK

Rosebud JV Pershing Co. NV (NK 11-10-06c) The emphasis of the project is switching from gathering baseline information to supporting drilling on the targets recently identified.

Stratigraphy

Understanding of the stratigraphy remains an important aspect of our work. Establishing a stratigraphy that we can trust will enable us to determine:

- Lithologic control on ore formation, if any.
- Stratigraphic displacement on South Ridge Fault, stratigraphic displacement on Rosebud Shear.

Having this knowledge will assist us when looking for offsets of the known orebody and testing exploration areas that are similar in their geologic setting.

Figure 1 shows the re-logged core hole RL-89c correlated with the measured section on surface. The basis of the correlation is the Chocolate Fm./Bud Tuff contact. This contact was agreed on by both Hecla and SFPG workers during our field trip together. For comparison purposes, RL-89c was aligned with the stratigraphic column until this contact was horizontal.

Using this guide, Hecla's LBT unit is now seen to correlate well with the lower Brady Andesite. The possible lithologic control on ore formation is that mineralizing fluids may have ponded underneath the impermeable massive andesite and be hosted in the brecciated base of the flow or in immediately underlying tuffs and volcanic breccias.

The marker porphyry may correlate to the upper Brady andesite as shown, or may simply not crop out on the surface. Unfortunately the marker porphyry is not a good match for the Brady Andesite from a hand-specimen basis.

Total thickness of the Brady (upper, lower, and intervening tuff) and the LBT, as interpreted by Hecla, are the same at approximately 300'.

Exploration

White Alps: Pima sampling has continued on a time available basis. An additional eight samples have been collected from White Alps. Spectra have been measured and they confirm the presence of alunite at White Alps. Detailed analysis of the spectra has not yet been completed.

During the sampling traverse it was confirmed that the White Alps silicification dips to the south and that the existing drilling should have tested the target. Drill results have not been checked nor have the cuttings been re-logged. PIMA sampling should be performed on the cuttings of drill holes in this area to test the vertical zoning. If drilling did not get out of the alunitic facies, it is possible that a viable target still exists at depth. Our ability to spot check drill holes has been severely hampered by lack of adequate storage of core and cuttings.

School Bus Canyon: During assembly of the data base and preliminary geochemical maps, our attention was drawn to the very strong anomaly in School Bus canyon. About 10 stream sediment samples were shown all above 1000 ppb Au and plotted as over-limits. The consistency of the anomaly as well as its strength raised suspicions. The sample locations and identities have been verified. They are in fact stream sediment samples from the arroyo that drains the School Bus placer. The original assay certificates have not yet been located to verify the values. These samples were assayed at GSI with whom SFPG has had some problems in the past, the possibility of a units conversion problem has not yet been ruled out. It is also possible that the assay were made on panned concentrates. This possibility has not yet been ruled out either.

Gator Target: Gator geology and geochemical maps have been reviewed in the Hecla offices. Our database will be checked to make sure that we have all of the geochemistry for this area. A field trip will be made as soon as possible allowing for drilling, and weather conditions.

Drilling

Dozer Hill Target: To date, two RC pilot holes have been completed on the Dozer Hill target (see Figure 2). PSF 96-369 has been drilled to a depth of 500' from site 16. PSF 96-370, located at site 1, has been drilled to a depth of 500' also. According to Field Operations, we can expect 1 or 2 core rigs immediately after the Thanksgiving holiday. The holes will then be completed to a depth of approximately 1100'.

The cuttings 96-369 from have been logged and the geology plotted on 1"=50' working cross-sections. 96-370 has been logged to a depth of 380'.

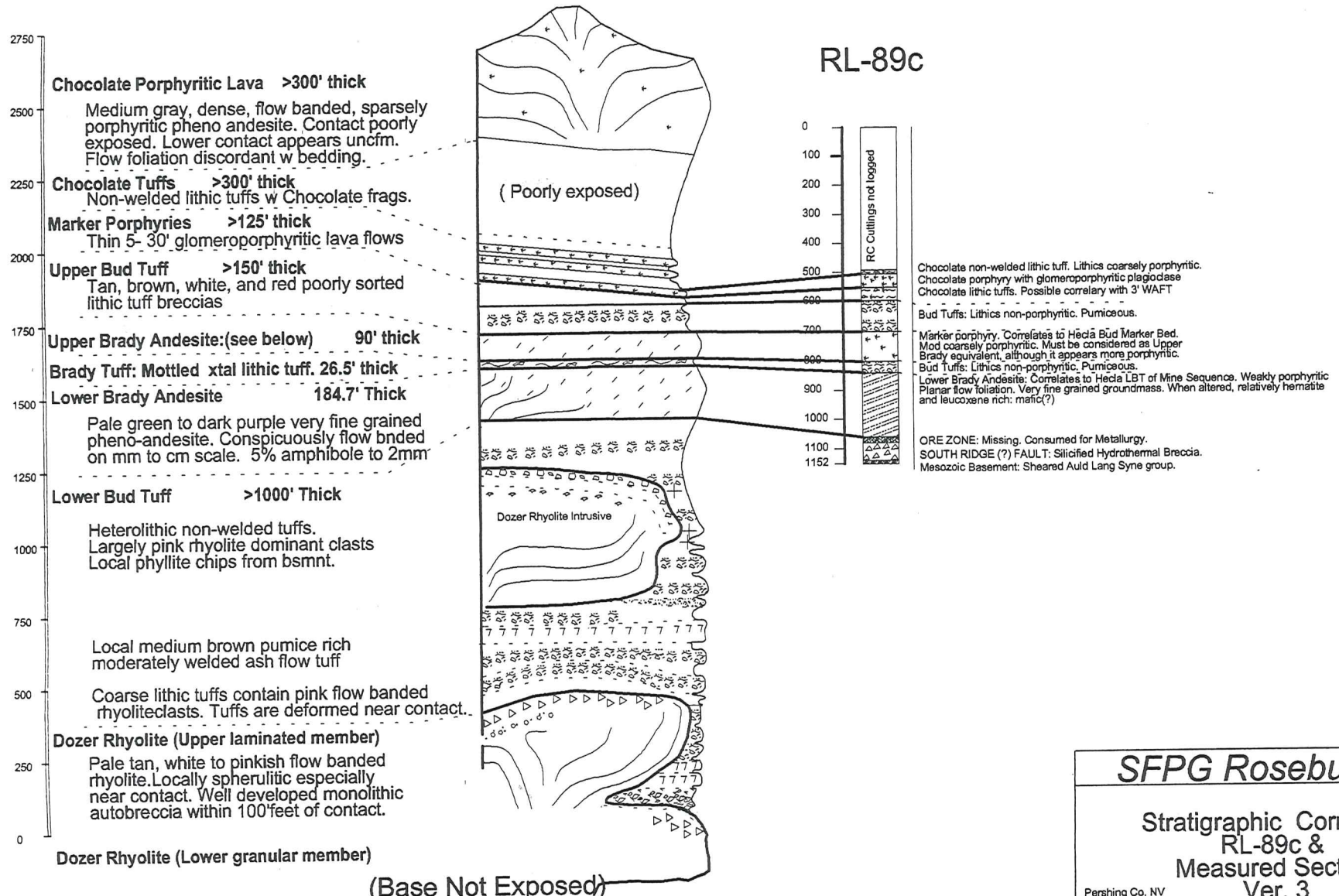
North Rosebud Shear/Intrusive target: Figure 3 shows a conceptual north-south cross section across sites #7 and #9 and depicts the possible relationship to mineralization that we are attempting to test. Drilling from site 7 will attempt to test the south western extent of Mike Brady's hypothesized intrusive at the point where it may be mineralizing the wedge of Tertiary strata caught-up between two splays of the Rosebud Shear.

Dozer Contact Target: Drilling from site 9 is targeted to test the northern contact of the Dozer Rhyolite with underlying lower Bud tuff, Oscar related tuffs and graywackes, or the TCS unit (Tertiary carbonaceous sediments). South Ridge has two sets of mine workings that prospect along generally east-westerly trending mineralization. This mineralization might be leakage from mineralization that is hosted in porous lithologies and ponded against the overlying Dozer rhyolite.

Relogging of RL-292 approximately 600' northeast of site 9 confirms the presence of presence of porous host lithologies (both lower Bud and TCS). It did not intercept any significant hydrothermal alteration but was drilled only to 305'.

Cuttings for RS-10 have not yet been located. That hole is approximately 450' north-northwest of site 9 and angled to the west-southwest. With its position, angle and bearing it would not have tested the target that we envision for site 9.

SFPG Composite Measured Section South Ridge



SFPG Rosebud JV

Stratigraphic Correlation
RL-89c &
Measured Section
Ver. 3

Pershing Co. NV
R. L. Dixon, C. P. Kortemeier

NK 11-10-06c
Date: 11/10/96

FIGURE 1

C:\MYDATA\ROSEBUD\DRAWINGS\rl89deg.vcd 11/25/1996

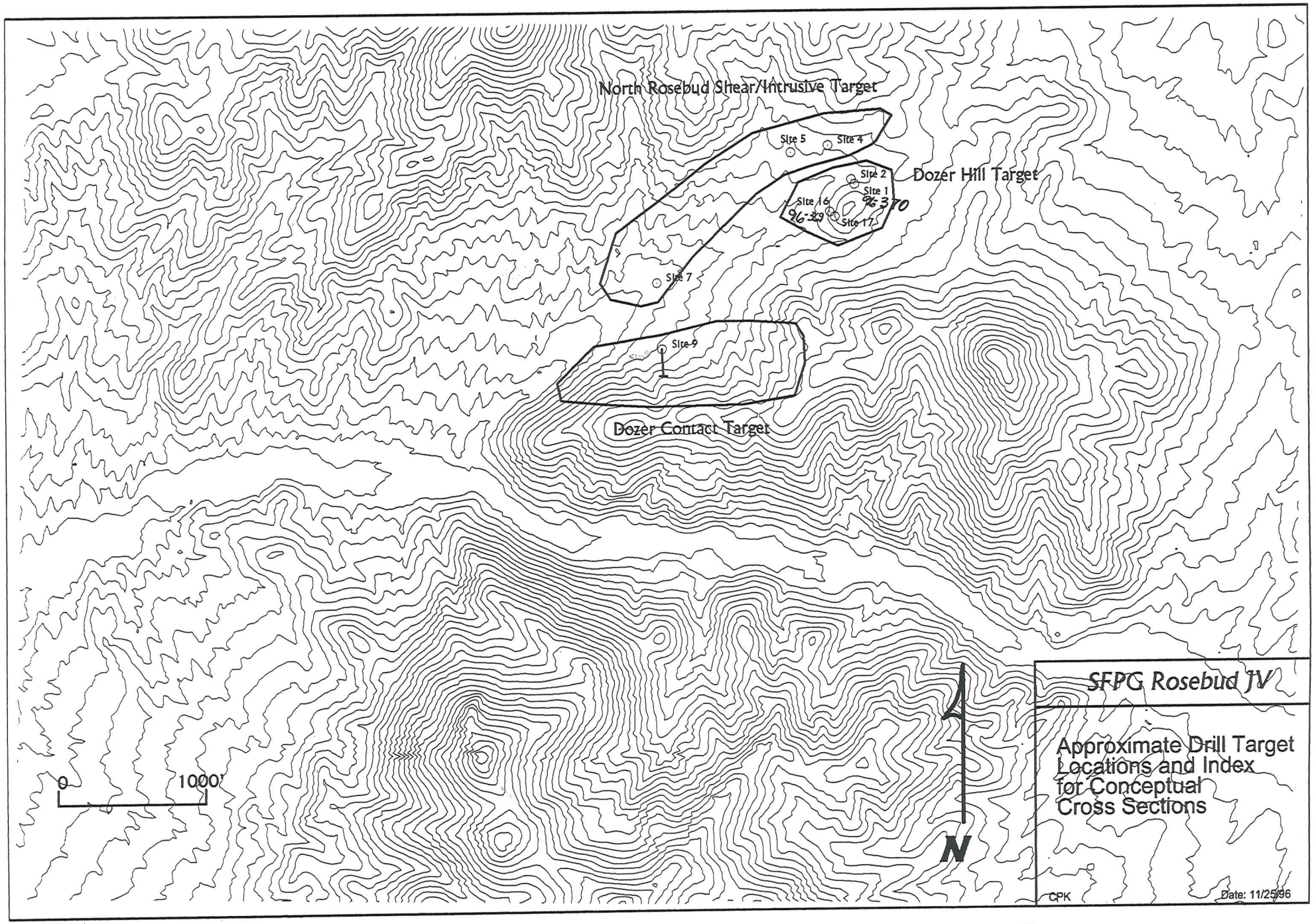

North Rosebud Shear/Intrusive Target
Site 5
Site 4
Site 2
Site 1
Dozer Hill Target
Site 16
96-370
96-39
Site 17
Site 7
Site 9
Dozer Contact Target
0
1000'
N
SFPG Rosebud JV
Approximate Drill Target Locations and Index for Conceptual Cross Sections
CPK
Date: 11/25/96

FIGURE 2

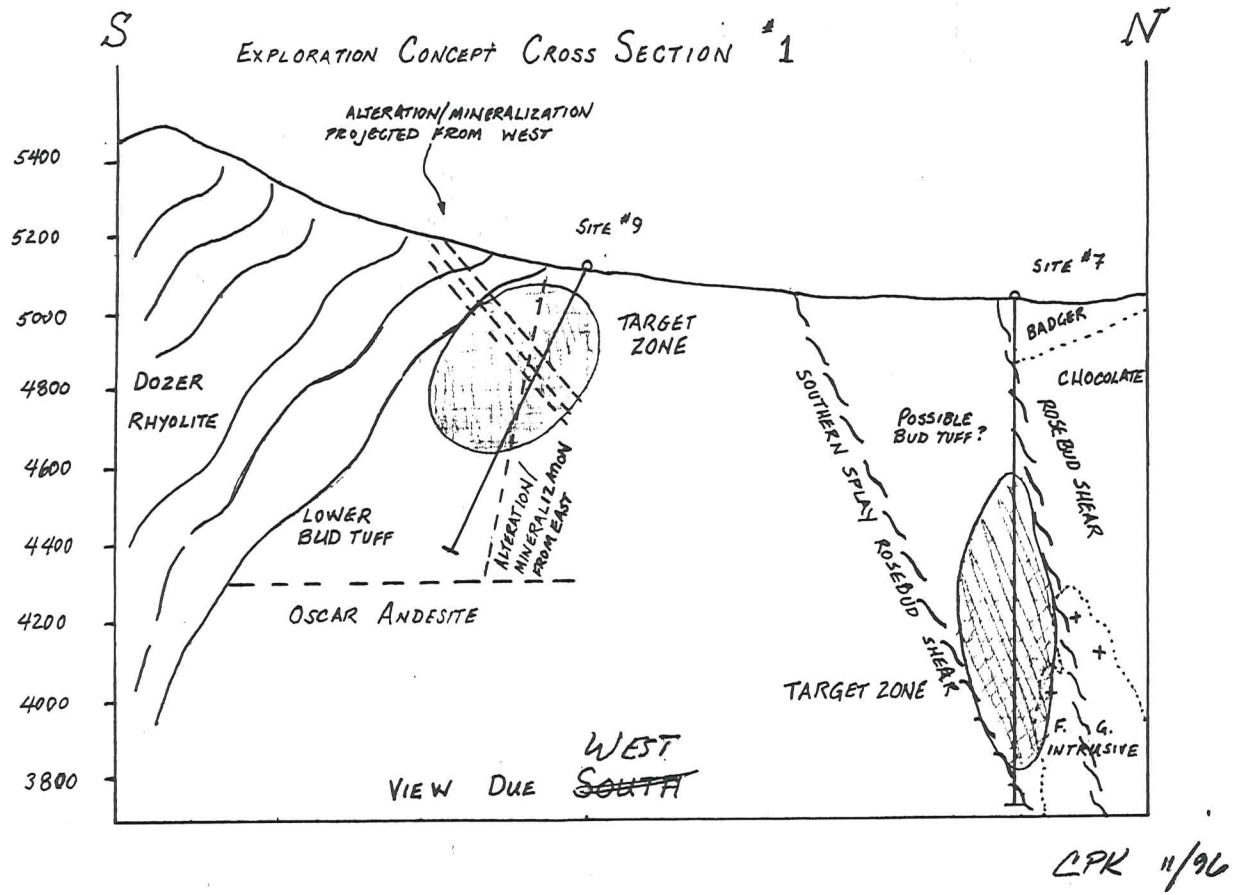
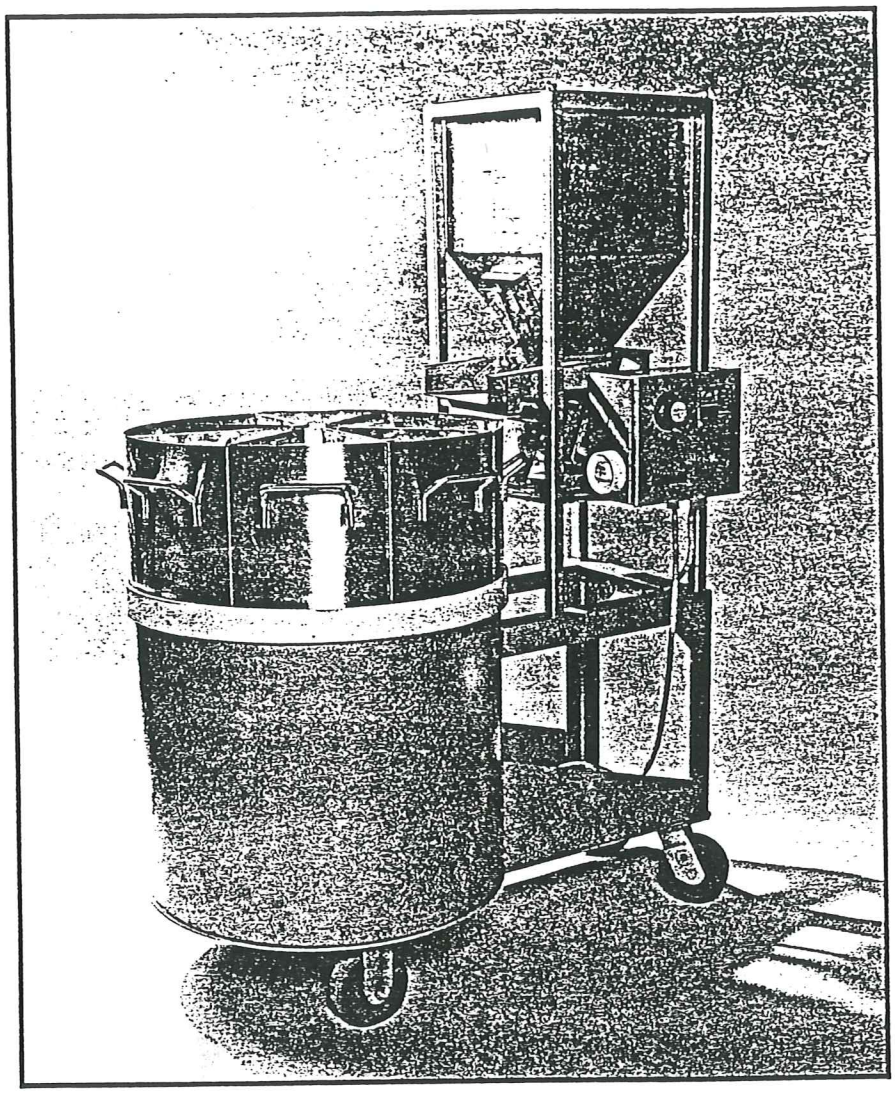

S
EXPLORATION CONCEPT CROSS SECTION #1
N
ALTERATION/MINERALIZATION PROJECTED FROM WEST
5400
5200
5000
4800
4600
4400
4200
4000
3800
SITE #9
SITE #7
TARGET ZONE
BADGER
CHOCOLATE
DOZER RHYOLITE
POSSIBLE BUD TUFF?
ROSEBUD SHEAR
SOUTHERN SPLAY ROSEBUD SHEAR
LOWER BUD TUFF
ALTERATION/MINERALIZATION FROM EAST
OSCAR ANDESITE
TARGET ZONE
F. G. INTRUSIVE
VIEW DUE WEST ~~SOUTH~~
CPK 11/96

FIGURE 3



ESSA
Australia

ESSA ROTARY SAMPLE DIVIDERS

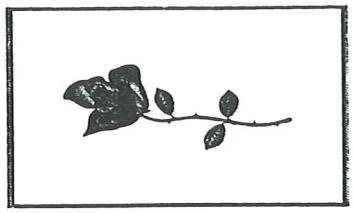
These units are ideal for accurately reducing the volume of sample material without compromising precision.

All units consist of stainless steel feed hopper, vibrating feeder and a set of sample buckets rotating in a turntable.

Samples can be divided into a number of equal portions for duplicate testing or, using the flow through system, only the required samples are retained and the remaining material flows through to reject.

Standard units are available in sizes ranging from 1500cc to 200 litres live volume.

MEMO TO: George Johnson HMC
Gene Pierson HMC
Charles Muerhoff HMC
Jim Sigurdson SFPG
Greg McMillen SFPG
Dave Hogan SFPG
Fred Jenkins SFPG



FROM: Ron Clayton

Rosebud Project

DATE: 8/12/96

SUBJECT: **Study of the Heterogeneity of Gold & Silver at the Rosebud Project**

Please find attached the **"Study of The Heterogeneity of Gold and Silver at the Rosebud Project"**, August 7, 1996, prepared by Francis F. Pitard, Francis Pitard Sampling Consultants.

Mr. Pitard has provided services to the Rosebud Project periodically since early 1994 concerning sampling and sampling equipment including process sampling for the on-site mill. We have scheduled a date for Mr. Pitard to visit the Winnemucca area on October 22, 1996 and are in the process of coordinating a tour of the Pinon mill with Jim Sigurdson. Unfortunately this is the earliest date Mr. Pitard is available.

Regarding the attached report, Mr. Pitard has made recommendations based on his conclusions of the Heterogeneity Study data and results and his previous experience with the Rosebud Project and other gold ore bodies. I feel these recommendations should be reviewed and strongly considered for incorporation into our procedures for operation and settlement.

Should you have any questions regarding the report please contact either Charlie Muerhoff at Rosebud or Gene Pierson at the Hecla Office in Coeur d'Alene, Id.

cc: Pudge Johnson TWC
Jack Stillwell HMC

COPY

SAMPLING
ANALYSIS
QA-QC AUDITING
MATERIAL BALANCING
STATISTICAL PROCESS CONTROL

FRANCIS PITARD
SAMPLING CONSULTANTS

14710 TEJON STREET • BROOMFIELD, COLORADO 80020 • (303) 451-7893 • FAX (303) 280-1396

STUDY OF THE HETEROGENEITY OF GOLD AND SILVER AT THE ROSEBUD PROJECT

August 7, 1996

Prepared for

Hecla Mining Company
Rosebud Project
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Winnemuca, Nevada 89445

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Francis F. Pitard, Author

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FAX: 303-280-1396 ◻ E-MAIL: fpsc@aol.com

ABSTRACT

The sampling characteristics of gold and silver at the Rosebud Project have been determined. The study which has been performed for many deposits around the world, uses the principles of the Sampling Theory as applied to the exploration and ore grade control of precious metals. [1]

Taking these sampling characteristics into consideration, appropriate sampling nomographs for the field sampling, metallurgical testing, and laboratory subsampling may be recommended.

Sampling nomographs are used to optimize sampling protocols for core drilling, reverse circulation drilling, blasthole sampling, mill sampling, and laboratory subsampling. It can also be used in assessing the validity and reliability of past sampling protocols used by others on the same type of material.

The present study is an essential preliminary document to assess the validity of past feasibility studies, and present sampling protocols used at the Hecla Mining Company - Rosebud Project. The possible consequences of using sampling and subsampling protocols affected by large sampling errors are discussed.

A few recommendations are given for the sampling of material made mainly of large clay lumps, for the determination of the moisture content of a shipment of ore.

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INTRODUCTION

The objective of this report is to provide a guideline to the geologist, miner, metallurgist, chemist, geostatistician, or whoever will be involved with the Rosebud Project, in sampling and subsampling requirements. It is a detailed review of observations, conclusions, and recommendations following a heterogeneity test initiated by Mr. Charles V. Muerhoff, Chief Geologist at the Rosebud Project.

For this report to be of any practical help to the Rosebud Project personnel, it covers the subject of interest in a comprehensive way. So, the reader may understand the limitations of the present study, and also proceed with the recommendations with more confidence.

In this report, we will mainly emphasize the **Fundamental Error FE (i.e., error generated by sample and subsample weights)** and the **Grouping and Segregation Error GE (i.e., error generated by gold segregation and the way samples and subsamples are split).** It is, however, beyond the scope of this report to cover all the other sources of sampling errors that will be mainly generated by the selected sampling equipment. These other sampling errors should be the object of on-site longer involvement of Francis Pitard Sampling Consultants. Indeed, many things can go wrong in the practical implementation of sampling protocols at the mine, the mill, the plant, and the laboratory, especially with the statistical correctness of all sampling devices and the way they are installed and maintained (i.e., delimitation biases, extraction biases, preparation biases, weighting biases, interpolation errors, selection of the appropriate sampling mode, etc...): Refer to [1] and [2]. The feasibility stage is the best time to perform such investigation, since sampling requirements are the insurance policy for the success and optimization of the entire project. However, even after the project has started, it is never too late to proceed with such essential training.

The enclosed heterogeneity test is only a good starting point, for selecting appropriate sampling protocols. As a matter of fact, this heterogeneity test is a prerequisite for the validation of most present sampling protocols. However, it has its limitations: It is still up to the exploration geologist or the metallurgist to use his or her common sense, if new mineralized areas show coarser gold, or gold clusters. In such a case, it is necessary to proceed with a new heterogeneity test, and update sampling protocols for this peculiar area of the deposit. **In other words, have enough vision not to take a recommended sampling protocol for granted, as the project advances.**

CONCLUSIONS

- The heterogeneity of both gold and silver are severe, but representative of an average gold deposit. Therefore, all sampling protocols must be carefully optimized, and complied with.

- The Fundamental Error FE (i.e., Sampling error generated by sample and subsample weights) can easily be controlled if management makes a commitment to minimize it. Failure to make such a commitment will result in many sources of invisible dollar losses and the impossibility of achieving reasonable reconciliation between the geological model, the mine, and the plant.

- Always remember this rule of thumb: There are 8 major kinds of sampling errors addressed in the Sampling Theory [1]. For gold, the most important sampling error is the Fundamental Error. If you don't have good control of the Fundamental Error, it is an open door for at least

four other sampling errors to become magnified, and three of these errors are bias generators. So, let's take the following recommendations seriously.

- For 30-gram fire assays, which use very finely pulverized material, a substantial amount of the gold may be liberated. In such case, it is necessary to optimize your sampling protocols with the nomograph illustrated in figure 2.

- For metallurgical testing, finely pulverized plant feed and tailings, and commercial settlements, you should optimize your sampling protocol with the nomograph illustrated in figure 3.

- As shown in figure 2, assuming gold particles can get as large as 700 μ, it is necessary to perform a metallic screen assay on 600-gram samples. Failure to do this at the mine for ore grade control will result in ore grade misclassification.

- For commercial settlement purpose, you must use the nomograph shown in figure 3. Always assuming gold particles can get as large as 700μ , it is necessary to perform a metallic screen assay on 6000-gram samples.

- As shown in figure 4, for exploration and ore grade control, a material crushed to about 95% minus 1/4 inch can be safely split to about 10000 grams, which makes sampling protocols relatively simple and easy to implement.

RECOMMENDATIONS

- One HQ half core, split using a press instead of a diamond saw, can be crushed to 95% minus ¼ inch, and split to a 10000-gram sample. The 10000-gram sample must be crushed to 95% minus 24 mesh in a large LM5 Labtechnics laboratory pulverizer, for a short time, no longer than 45 seconds, in order to minimize smearing. Then, split a 600-gram sample by using a ESSA rotary splitter. Pulverize the 600-gram sample in an enclosed ring and puck laboratory pulverizer such as a LM1 Labtechnics, for a short time, no longer than 45 seconds, in order to minimize smearing.

- The same protocol can be used for blasthole sampling and for reverse circulation drilling.

- For exploration and ore grade control, I recommend the use of 600-gram analytical subsamples for systematic metallic screen assay, using a 65-mesh screen. Then use fire assay on both fractions with gravimetric finish.

- For material balancing, or commercial settlement purpose, I recommend the use of 6000-gram analytical subsamples for systematic metallic screen assay, using a 100-mesh screen. Then use fire assay with gravimetric finish for the feed, and atomic absorption finish for the tailings.

- If your customer uses samples from the cyclone overflow and tailings to conclude a settlement price for your shipment, he must be using correctly designed, well maintained and cleaned sampling stations. Furthermore, sampling intervals for these sampling stations must be optimized with variographic experiments. Also, no outliers must be rejected for adjusting material balance without a serious justification. And, 6000-gram samples must be used for metallic screen assays. Also, weightometers must be calibrated every two weeks and you should have evidence of deviations from good calibration on control charts. As far as gold locked up in the mills is concerned, I am afraid there is nothing you can do about it. Differences between your estimates and theirs should be equitably split after each party shows good practices. I will help you on all this during my October visit of inspection.

STUDY OF THE HETEROGENEITY CARRIED BY GOLD AND SILVER IN THE ROSEBUD ORE

IMPORTANT REMARKS

Mineralogical observations on ore surrounding the zone of interest reveals the presence of coarse gold particles up to 350μ , or even 700μ , therefore you must remain cautious and be conservative with your sampling protocols.

The following heterogeneity test concentrates attention on the coarsest fragments of a material crushed to about minus ½ inch. This is done for two reasons:

1. It is demonstrated in the Sampling Theory that for a given stage of comminution, the behavior of the coarsest fragments dictates what the sample weight should be [1]. There is a small approximation made in the theory in order to simplify the test: It is a minor approximation that should be tested with a screen fractions analysis during the heterogeneity test. Results from the following table show that the simplified version of the heterogeneity test was valid, but we must remain cautious with conservative protocols because there is a factor of 5.1 between the richest and poorest size fractions: As long as the gold content of various size fractions does not change by a factor of at least 5, the following simplified version of the test is valid. Such a 5.1 factor is rare, and suggests great sampling difficulties created by segregation: Metallic screen assays are a must.

Size Fraction	Size fraction weight	Gold content of the test fraction	Gold content of other size fractions
+ ½ inch	86.59 Kg		1.215 opt
- ½ inch + ¼ inch	68.30 Kg	1.41 opt	2.443 opt
-1/4 inch +10 mesh	52.25 Kg		3.397 opt
-10 mesh +24 mesh	17.92 Kg		6.256 opt
-24 mesh +65 mesh	18.66 Kg		5.645 opt
-65 mesh	7.84 Kg		6.201 opt

2. We selected a comminution stage with a top fragment size about 1 cm because it is often the size of the largest fragments in a preliminary sampling stage such as the product coming out of a laboratory jaw crusher, blasthole material, reverse circulation material, etc... Also, experience proves that preliminary sampling stages performed on such products often introduce the most damaging Fundamental Error.

CONCLUSION #1: The validity of the enclosed test is not altered by the gold distribution in the various size fractions, but it is borderline, which is very rare. As shown in the above table, the gold content varies by a factor of 5.1 between size fractions likely to be the object of a sampling stage, which would most certainly create frequent complications due to segregation.

Large amount of gold remains on the +100 mesh size fraction of the metallic screen assays. As a result, two important conclusions can be reached:

CONCLUSION #2: When the material is pulverized very fine, a substantial amount of gold particles may liberate, creating nearly unsolvable segregation problems.

CONCLUSION #3: For all very important samples, such as samples used for settlement price with your clients, you must use metallic screen assays using a large sample, or large money losses will take place because of a negative skewness affecting your estimated gold content.

DESCRIPTION OF THE HETEROGENEITY TEST

1. A 252-Kg composite was prepared. The complete description of the procedure for collecting this composite is given in Appendix 1.
2. The composite was dried overnight, at 105°C.
3. The composite was crushed to minus ¾ inch with a jaw crusher.
4. The entire composite was screened through ½ inch, ¼ inch, 10 mesh, 24 mesh, and 65 mesh screens.
5. The size fractions were weighed and recorded.
6. The -1/2 inch and +1/4 inch fraction was spread on a clean surface, and the heterogeneity test performed on it.
7. From this size fraction, 100 samples were collected, made of 30 fragments each. Fragments were collected one by one at random.
8. Each sample was pulverized directly in an enclosed ring pulverizer to about 95% minus 150 mesh.
9. The 100 samples were assayed for gold (gravimetric finish). All the assay results are listed in Appendix 1.
10. The +1/2 inch, the -1/4 inch +10 mesh, and the -10 mesh +24 mesh fractions were crushed to minus 10 mesh.
11. A 8000-gram sample was split out from each size fraction.
12. Each 8000-gram subsample was pulverized to minus 150 mesh.
13. Eight replicate 1000-gram metallic screen assays were performed for gold analysis, using a 100-mesh screen. The entire +100 mesh fraction was assayed by fire assay with gravimetric finish. The -100 mesh fraction was assayed four times using 30-gram analytical subsamples.
15. All results were sent to FPSC.

Remarks:

- The test is done in such a way that only the sampling Fundamental Error FE is involved in the test (i.e., Error depending on sample weight, and particle size).

- The variability between samples is voluntarily kept quite large by using a limited number of fragments, so the Analytical Error remains negligible.
- Someone may ask: "Is combining several core intercepts together creating an artificial heterogeneity in the composite?" The answer is yes, but during exploration, a single intercept often contains such different materials, and the feed to the mill most certainly will. So, the test is indeed slightly conservative because of all this, but this is what it should be.

A FEW DEFINITIONS FOR THOSE NOT FAMILIAR WITH THE SAMPLING THEORY

The **Fundamental Error** is generated by Constitution Heterogeneity which consists of the average difference in gold content between individual fragments. So, this error depends on the sample weight, the maximum size of fragments for a given state of comminution, the expected average gold content of the lot from which the sample is selected, the degree of liberation of the gold particles, the shape and density of the fragments, etc... The heterogeneity test intends to predict this error in a given sampling protocol.

The **Grouping and Segregation Error** is generated by small scale Distribution Heterogeneity which consists of the average difference in gold content between groups of fragments (i.e., increments) collected at very small intervals. So, this error depends on the Fundamental Error (The larger the Fundamental Error, the larger the Grouping and Segregation Error is likely to be), the stage of segregation of the material on a small scale, and the number of increments making up one sample (The more increments per sample, the less the Grouping and Segregation Error).

CALCULATION OF A SAMPLING NOMOGRAPH TO BE USED WHEN GOLD IS NOT LIBERATED

We know from the sampling Theory [1], how to calculate the variance of the Fundamental Error.

$$s^2_{FE} = \left[\frac{1}{M_S} - \frac{1}{M_L} \right] Cd^3$$

where M_S is the sample weight in a given sampling stage. C is a Sampling Constant characteristic of gold in a certain ore, which needs to be calculated: It is the objective of this study. d is the maximum fragment size involved in a routine sampling stage. d is defined as the size opening of a sieve that would retain no more than 5% of the fragments by weight. M_L is the weight of the lot from which the sample is collected.

Because the fraction from which the 100 subsets were collected was made of a very large number of fragments, the Sampling Theory demonstrates that we calculate the sampling Constant with the following simplified formula:

$$C = \frac{s^2_{ai}}{X^2} \times p \times D$$

where p is the number of fragments per subset (i.e., p = 30).
s^2_{ai} is the variance of the 100 gold assays a_i.
X is the average gold content of the 100 assays a_i.
D is the average density of the fragments assumed to be 2.23.

$$C_{Au} = \frac{12.6255}{(1.41)^2} \times 2.23 \times 30 = 425$$

$$C_{Ag} = \frac{79.576}{(4.1)^2} \times 2.23 \times 30 = 317$$

CONCLUSION #4: The Sampling Constant of gold is quite high, but representative of an average gold deposit. The sampling constant for silver is unusually high. Everything that follows in this report is based on the sampling constant for gold which is the highest. Therefore, if the sampling protocol is good for gold, it is conservative for silver.

We know from the Sampling Theory that $C = f \times g \times c \times \sqrt{do/d}$ where f is a fragment shape factor, g is a fragment size distribution factor, c is a mineralogical factor, do is the liberation size of gold, and d is the maximum fragment size for a given sampling stage.

We also know that f, g, c, and do, don't vary very much from one value of d to another. So, for convenience, let's assume that these factors are constant and write:

$f \times g \times c \times \sqrt{do} = K$

$C = K / \sqrt{d}$

Now, we calculate K from the results of our test:

$K = C\sqrt{d} = 425\sqrt{1.05} = 435$

Remark: When calculating the average fragment size of 1.05cm used in the test, do your calculations using volume of large and small fragments. It leads to a far more accurate average size.

Then, we calculate the value of C for different values of d:

d in centimeter	d in inch and mesh	Sampling Constant C
5	2 inch	195
2.54	1 inch	273
1.27	½ inch	389
1.05		425
0.635	¼ inch	546
0.335	6 mesh	751
0.17	10 mesh	1056
0.10	16 mesh	1377
0.071	24 mesh	1635
0.03	48 mesh	2514
0.0212	65 mesh	2979
0.0106	150 mesh	4223

With these values, it becomes easy to calculate the useful nomograph illustrated in figure 1, which is characteristic of the Rosebud gold ore used for the heterogeneity test.

Important remark: Because of conclusion #2, this nomograph should not be used after the material has been pulverized very fine, and a substantial amount of gold has been liberated. In such a case, we must use another approach which is the object of the next section.

RECOMMENDED SAMPLING NOMOGRAPHS TO BE USED WHEN A LARGE AMOUNT OF THE GOLD IS LIBERATED

After the sample has been pulverized to about 95% minus 100 microns, several new problems may occur:

1. Gold particles start to have a different behavior from the other particles, especially as far as segregation and smearing are concerned.
2. When pulverizing the material, all rocks do comminute very well, except the largest gold particles. As a result the nomograph illustrated in figure 1 is no longer reliable.

For these reasons, the Sampling Theory [1] demonstrates that the gold particles play an overwhelming role, and it is the size of the largest gold particles that rule the sampling protocol. You may use the following formula which has been mathematically derived:

$$s^2_{FE} = \left[\frac{1}{M_S} - \frac{1}{M_L}\right] \frac{0.8}{a_L} d^3_{Au}$$

where 0.8 is a constant derived for liberated gold, d_{Au} is the estimated size of the largest gold particles, and a_L is the estimated average gold content expressed as part of one.

In order to make things easy, two nomographs were calculated using the above formula. They are illustrated in figures 2 and 3.

You should use the nomograph shown in figure 2 for exploration drilling and ore grade control. In this nomograph, we assumed a Fundamental Error $2s_{FE}$ of ± 32% in relative value is the maximum value above which you shall not go, at the 95% level of confidence.

You should use the nomograph shown in figure 3 for metallurgical testings and material balancing. In this nomograph, we assumed a Fundamental Error $2s_{FE}$ of ± 10% in relative value is the maximum value above which you shall not go, at the 95% level of confidence.

RECOMMENDED SAMPLING PROTOCOLS FOR EXPLORATION AND ORE GRADE CONTROL

Core samples should be carefully separated by lithologies. Take your time to do your log and take pictures. If you want to save one half core, which I do not recommend for gold, make sure you use a press instead of a diamond saw. The water cooling the saw is a source of losses for gold trapped in fractures.

Crush the core sample, say about 10 Kg, to 95% minus ¼ inch, which leads to point C in figure 4. Pulverize the entire sample in a Labtechnics LM5 enclosed laboratory mill (See Appendix 2)

for only 45 seconds in order to minimize the smearing of gold: It can be done by 5000-gram increments. At this stage, the material should be about 95% minus 710μ. (i.e., Point D in figure 4). You should verify this by performing a few tests, because hardness of ore may drastically vary from one deposit to another. Recover all the material carefully from the grinding bowl, with a metallic brush if necessary, and feed it to an automated rotary ESSA splitter (See Appendix 3), to obtain a 600-gram sample (i.e., Point E in figure 4).

The entire 600-gram sample, **which is perfectly segregated by layers** (Do not attempt to homogenize that sample: You will fail.), must be fed to a ring and puck Labtechnics LM1 pulverizer and ground for only 45 seconds in order to minimize gold smearing.

Metallic screen assays that you performed during the Heterogeneity Test all show a tremendous enrichment of gold in the +100 mesh size fraction. Therefore, it is not unreasonable to think that at that size already, some gold has been liberated and does not easily get ground fine. As a result, in figure 2, I assumed the coarsest gold particles can get as large as 700μ . As indicated in that figure, systematic metallic screen assays using 600-gram samples become a must. And, always on figure 2, if you use a 212μ screen (65 mesh) for the metallic screen assays, you should have a safe protocol. Of course, fire assay the entire +65 mesh size fraction, with gravimetric finish. As illustrated in figure 2, a 20-gram sample from the minus 212μ fraction is sufficient: I suggest you keep using 30-gram fire assays.

You may apply the same sampling protocol for reverse circulation drilling (Starting at point B in figure 4), and also for blasthole samples at the mine (Starting on point A in figure 4).

RECOMMENDED SAMPLING PROTOCOL FOR TRUCKS AND FOR COMMERCIAL SETTLEMENTS

First, because of the size of the large fragments in trucks, it should be clearly understood that it is not possible to perform precise sampling of each 26-ton truck. However, for a full batch of about 27000 tons, we should accumulate enough samples, the average of which should indeed be very precise: This is the objective of this chapter.

Let's work with figure 5 first. Assuming we collect one **random** 10-Kg single increment in one truck, and composite increments from 10 trucks, we should obtain a 100-Kg sample or point B. In order to well represent the coarse fragments, collect the **single** 10-Kg shovel full at **random**: Adjust the size of the shovel if necessary. Place the increment in a plastic bag and close it immediately. After you have 10 increments, empty them in a container and weigh the container. Dry the sample in a ventilated room regulated at 110°C. Weigh the container again after drying and cooling. Note the moisture content.

Crush the 100-Kg composite sample to minus ¼ inch using a jaw crusher, and split a 10-Kg sample using a rotary Essa divider or its equivalent (Point D).

Pulverize the entire 10-Kg sample, using 5-Kg increments, in a LM5 Labtechnics pulverizer or its equivalent, to 95% minus 24 mesh (Point E). Split a 600-gram sample using the rotary Essa divider, and perform a metallic screen assay using a 100-mesh screen. Fire assay the entire +100 mesh fraction, and two 30-gram samples from the -100 mesh fraction as suggested in figure 3.

After you shipped a full 27000-ton batch to your customer, you will have prepared and assayed 104 composite samples. Average all results. The variance you see at point B in figure 5 is then

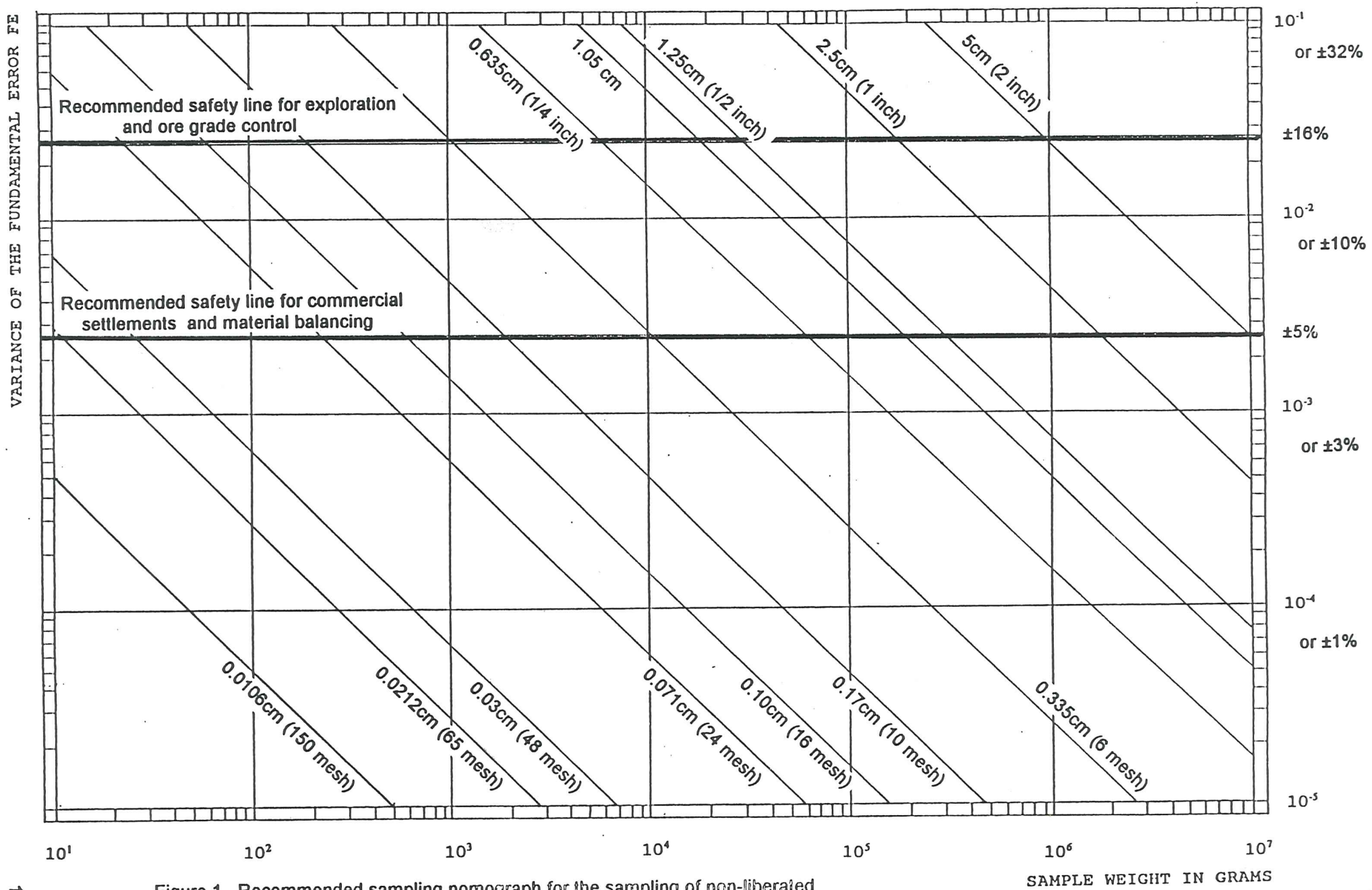

Figure 1. Recommended sampling nomograph for the sampling of non-liberated gold in the Rosebud Project.

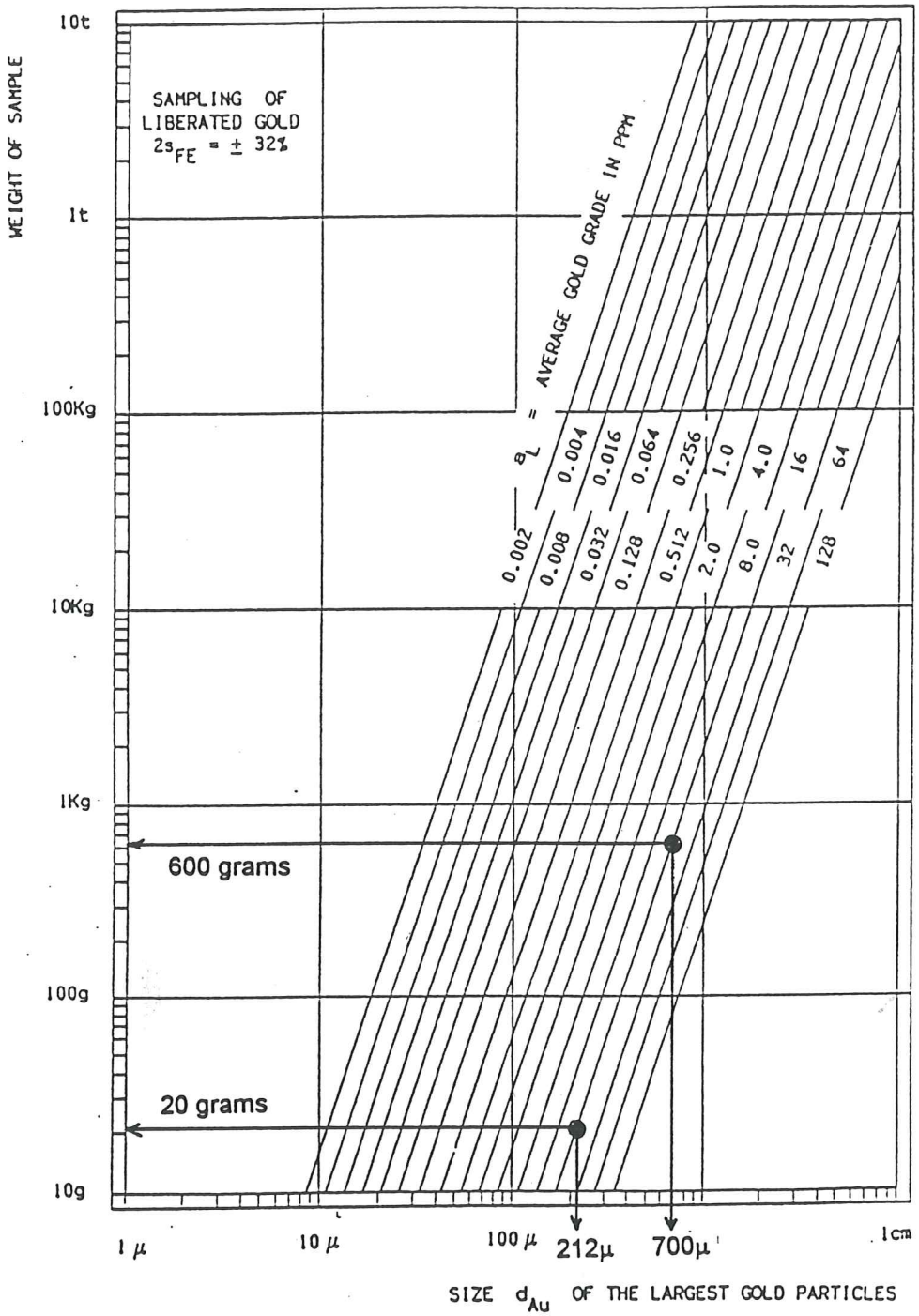

Figure 2. Recommended sampling nomograph for the sampling of liberated gold in finely pulverized pulps, for exploration and ore grade control programs.

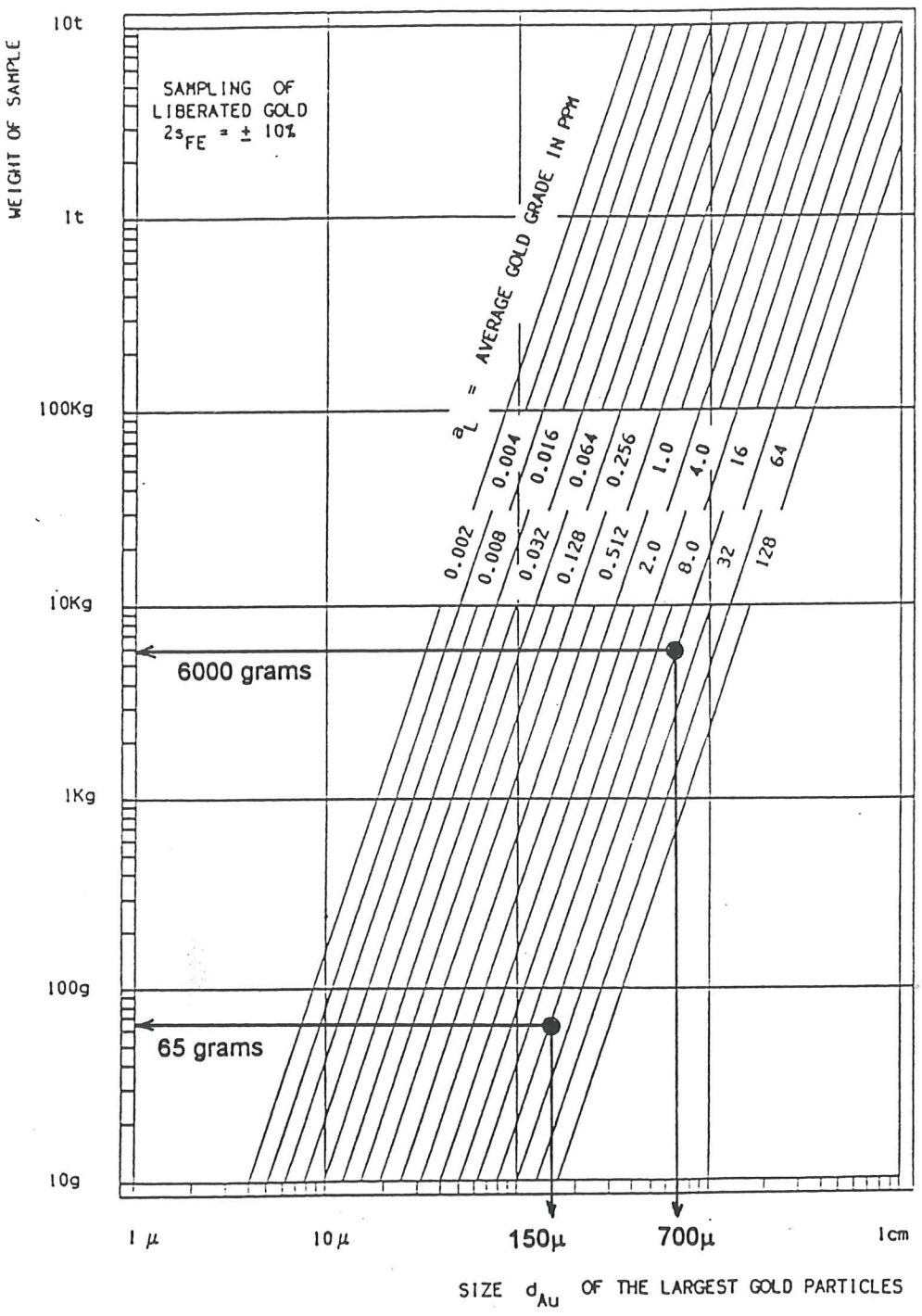

Figure 3. Recommended sampling nomograph for the sampling of liberated gold in finely pulverized pulps, for metallurgical testing, process control, and material balancing.

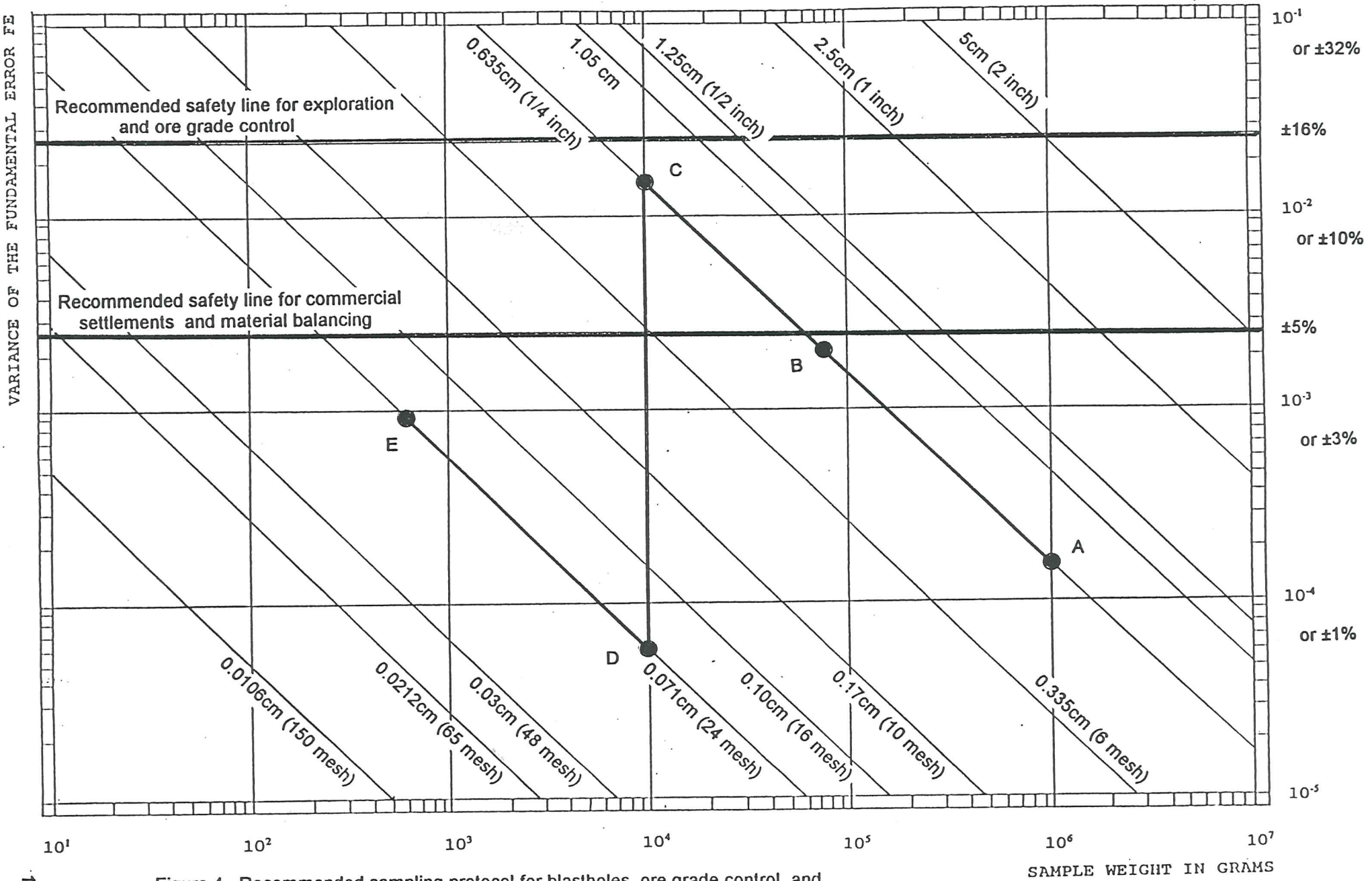

Figure 4. Recommended sampling protocol for blastholes, ore grade control, and exploration at the Rosebud Project

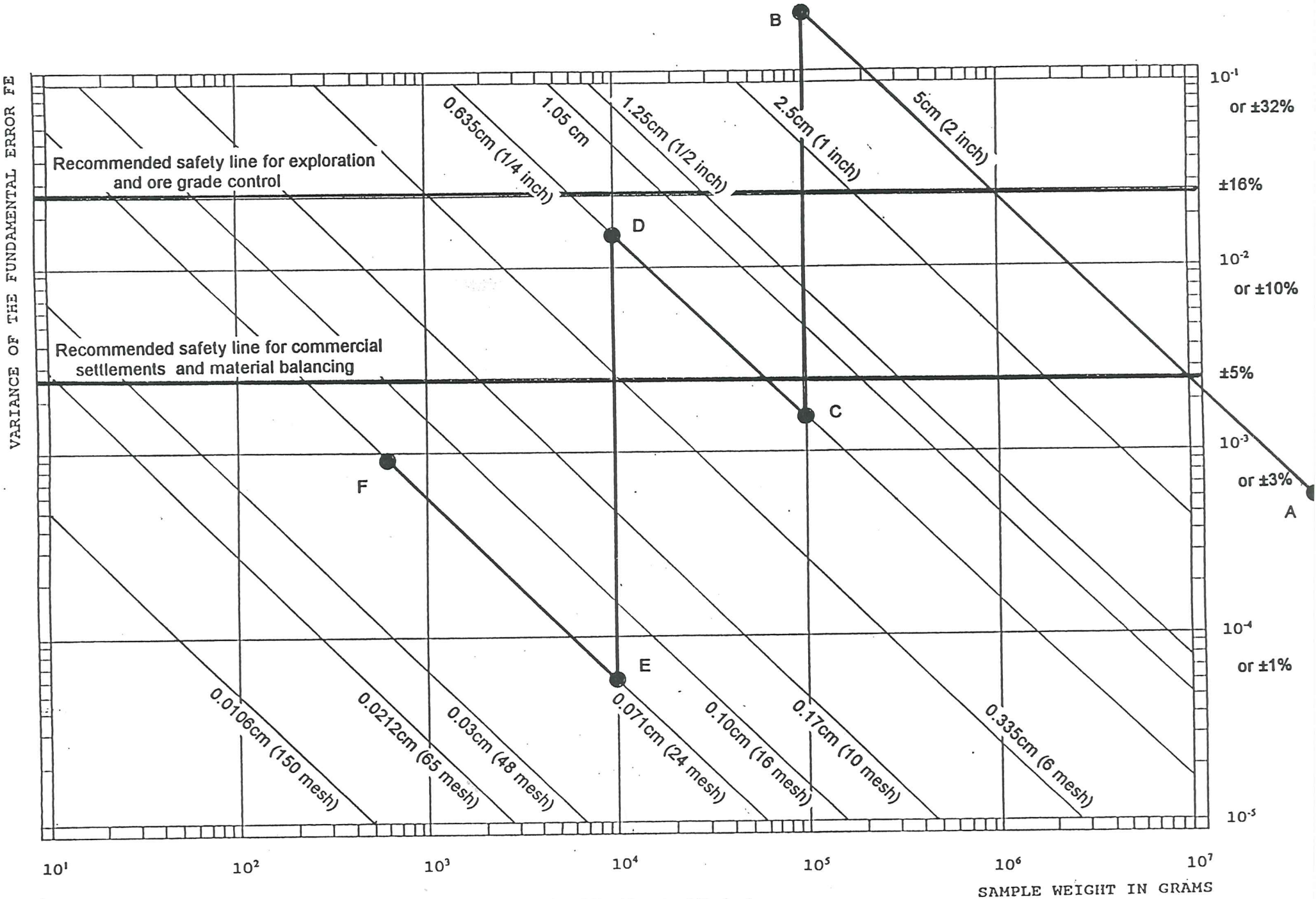

Figure 5. Recommended sampling protocol for trucks at the Rosebud Project

divided by 104, which roughly corresponds with the recommended safety line for commercial settlements. At this stage the gold content of the shipment is known with a relative error of ± 5% at the 68% level of confidence. Anything less, is likely to lead to money losses for the Hecla Mining Company.

You may notice that a 6000-gram sample is recommended in figure 3: For a 27000-ton batch you would have screened 104 x 600 = 62400 grams, therefore you are very safe. The main error is the sampling of the trucks, and you don't want a major error anywhere else in the protocol.

Also average your 104 moisture measurements, and make an histogram of the 104 measurements.

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[2] F.F. Pitard - Exploration of the "Nugget Effect". Geostatistics for the Next Century. An International Forum in Honor of Michel David's Contribution to Geostatistics, Montreal, 1993. Edited by Roussos Dimitrakopoulos, McGill University. Kluwer Academic Publishers, Boston.

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(702) 623-6912 fax (702) 623-6967

APPENDIX 1

Mr. Francis Pitard
Francis Pitard Sampling Consultants
14710 Tejon Street
Broomfield, Colorado 80020

July 30, 1996

Dear Mr. Pitard,

Enclosed are the data pertaining to the heterogeneity study of the Rosebud Deposit ores. The samples have been collected, prepared, and analyzed as per your recommendations, dated November 1, 1995. I sincerely apologize for my tardiness in sending you this data; I had been waiting for the installation of a suitable ring pulverizer at the assay lab before proceeding with the sample preparation. I hope you will still find time in the near future to analyze this data and report your conclusions and recommendations.

Enclosed is a summary of the alteration and mineralization of the material collected, the sample collection and preparation procedure, the analytical results for the 100 samples taken from the -½ inch +¼ inch fraction, and the results from the metallic screen assays. A copy of the analytical data is also enclosed on disk for your convenience. For your evaluation, the average in-situ density of the material collected for this study is 2.23g/cm^3.

I am somewhat disturbed by the difference between the average gold grade of the 100 hand-picked samples (1.355 opt) versus the average gold grade of the metallic screen assays (2.436 opt) for the same size fraction (-½ inch +¼ inch). The only thing that comes to mind is the extreme friable nature of our material, as clays comprise a significant portion of the ore-host material. Previous work has shown us a component of the gold mineralization occurs within clay stringers/stockwork, which are a product of hydrothermal alteration. Upon spreading the -½ inch +¼ inch fraction out for the sample selection, we noticed a large amount (±15%) of the material appeared as if it should have passed through the ¼ inch screen. The lab personnel assured us the screening was done to rigorous standards, but the material broke apart with subsequent handling (e.g., returning the sample to a tray, dumping the sample into the bin, etc.). Our observations and experience substantiate this, as rock "fragments" are often held together by clays and therefore are easy to break down into smaller fragments. Since the metallic screen results indicate the higher gold grades are contained within the -10 mesh to +65 mesh

range, it appears to me the hand-picked samples were possibly biased on the low side since we did not include the fine material as we randomly selected the fragments to comprise our samples. Or is this an unfair comparison?

On a somewhat related subject, we are currently trying to evaluate the best approach for taking moisture samples at the production site. Given the high amount of clay inherent to our material (which is preferentially wetter than the "competent" rock), how can we best acquire an accurate sample from any given lot to represent the moisture in that lot? Due to the pending joint venture arrangement with Santa Fe Pacific Gold that calls for ore from Rosebud to be milled at the Twin Creeks Pinon Mill, the concern is sampling will bias towards the fines and a higher moisture content will be unfairly assigned to any particular lot of material to be shipped.

A more general question relating to both of the above issues: What actually constitutes a *particle* of Rosebud material - is it an individual speck of clay, a clump of clay, rock fragments cemented by clay?

I look forward to your evaluation of the enclosed data, and your thoughts on these other subjects. If you have any questions or comments, please do not hesitate to contact me at (702) 623-6912. Gene Pierson is advising me on the sampling issues at Rosebud; please feel free to contact him in Coeur d'Alene if you wish at (208) 769-4195. Thank you for your consideration.

Sincerely,

Charlie

Charles V. Muerhoff
Chief Geologist
Rosebud Project

enclosures

cc: G. Pierson, HMC

HECLA MINING COMPANY - ROSEBUD DEPOSIT

SUMMARY OF ALTERATION & MINERALIZATION - SOUTH ZONE

The Rosebud Deposit is a low-temperature, epithermal, quartz-sericite, precious metal deposit which is primarily hosted in volcanic rocks (rhyolitic in composition) of Miocene age.

Polished section examination of core and bench-scale mill concentrates indicates the majority of the gold occurs in three dominant grain size populations: ±10 to 100 microns, ±350 microns, and ±700 microns. Silver occurs over an extremely large range of grain sizes (pyrargyrite (Ag_3SbS_3) crystals up to 1/4 inch in diameter were observed in drill core). The overall silver-to-gold ratio of the deposit is 9.5:1, while the silver to gold ratio in the ore grade portion (>=0.14 Au opt) of the mineral occurrence is 6.2:1.

Alteration associated with precious metal deposition within the volcanic package displays vertical and lateral zonation. In general, there is a core of moderate to intense argillic and potassic alteration within the ore zone itself. Extending upward (proximal to structures) and outward (along favorable stratigraphic horizons) is an intermediate zone of propylitic alteration (carbonate-chlorite dominant) which is overprinted by a 'halo' of a quartz/chalcedony-clay alteration assemblage. A hematite-carbonate assemblage comprises an extreme distal alteration package to the mineral deposit. The boundaries of these alteration assemblages are not sharp, as the different alteration zones clearly overlap, suggestive of alteration overprinting due to a fluctuating hydrothermal cell.

Alteration began with the diagenetic devitrification of glassy volcanic fragments to quartz, K-feldspar and albite. Early sericitic alteration of both feldspars appears to accompany the introduction of disseminated pyrite, marcasite; sphalerite, and galena. The sericite often contains minor amounts of iron, and therefore, can be classified as illite.

The earliest major mineralizing episode is characterized by stockwork and dissemination of quartz + pyrite + marcasite ± chalcopyrite ± electrum, with traces of arsenopyrite ± sphalerite ± galena ± pyrrhotite ± anatase ± tetrahedrite-tennantite. Fractures containing this mineral assemblage may be the same age of, and feeders for, the disseminated sulfides and sericitization.

A later set of fractures contain the mineralizing assemblage consisting chiefly of manganese- or iron-rich calcite + silver sulfosalts (pyrargyrite, miargyrite, stylotypite, proustite, and polybasite) + silver selenides (naumannite, aguilarite) + silver sulfide (acanthite) + native silver + auriferous silver (Au content < 30%) + and silver-rich electrum (Au content > 30%). Calcite in these veins appears to corrode earlier pyrite and marcasite. While alteration of marcasite to pyrite proceeded from the margins of the marcasite blades inward toward the center, calcite or kaolinite commonly replaces the core of the marcasite blades. The calcite-silver veining phase appears to often incorporate fragments of earlier quartz-sulfide mineralization.

The precious-metal stages of mineralization were followed by minor veining and open-space filling of barite, particularly on the hanging wall of precious metal mineralization. This was followed by the latest stage of mineralization, consisting of veinlets of kaolinite which cut across calcite veins, and replace both the calcite and earlier marcasite; it is uncertain whether the kaolinite is hydrothermal or supergene. It is possible that a portion of the chlorite formed instead of kaolinite where iron was locally available.

In the south half of the South Zone, precious metals occur as a component of stratabound stockwork (the result of preferential brecciation of the more brittle volcaniclastic units) and disseminated within several stratigraphic members. Stratabound ore grade mineralization (stockworked and disseminated) ranges from ten (10) to locally 60 feet in thickness. Higher gold grades are normally associated with chloritized and pyritized planar- and convoluted-laminated tuff and vesicular, flow-banded tuff, and with potassic-altered (alunite-adularia) tuff breccia. There is also a region within one of the flow-laminated tuff/tuff breccia members in which high gold and silver grades are associated with carbon, occurring on fracture surfaces and as a portion of the breccia matrix. Metallurgical tests indicate the carbon is not active and therefore not detrimental to precious metal recoveries. It appears the carbon had been emplaced in the volcanic host rock as a result of remobilization from the underlying graphitic metasediment basement during the epithermal mineralizing process.

Mineralization in the north half of the South Zone occurs structurally controlled along high-angle fractures, stratabound, and disseminated. Several mineralized, northeast-trending, high-angle structures coalesce and define a zone of intense shearing and alteration. High-grade gold (+1.0 opt) and silver mineralization occur within this zone over a vertical extent of 220 feet along the structures and within two preferentially mineralized lithologies. It was in this area that Hecla excavated a 240-foot long cross-cut drift, exposing 120 feet of ore-grade mineralization which averaged 1.3 Au opt.

HECLA MINING COMPANY - ROSEBUD PROJECT
SOUTH ZONE HETEROGENEITY STUDY

Sample Collection and Processing

- The sample used for this test work was collected from a cross-cut into the Rosebud Deposit south ore zone via a decline, where approximately 120 feet of ore grade (>=0.14 Au opt) mineralization was intersected. The three major types of mineralization found at Rosebud were exposed in the cross-cut: mineralization controlled by high-angle structures, bedding plane mineralization, and disseminated mineralization.

- The sample was taken by scraping the back of the ore-grade portion of the cross-cut using a 3½ -yard LHD, with the material being collected in the bucket. The material was then spread out on a concrete pad where it was placed into plastic sample bags. A visual inspection of the material was conducted to ensure that the three main rock types (ore hosts) and the three types of mineral occurrences were represented in the bulk sample. The total sample weight submitted to the laboratory was 251.6 kg (674 pounds). Personnel from the metallurgical testing department of American Assay Laboratories, Inc. of Sparks, Nevada was selected to perform the crushing, screening, pulverizing, and assaying of the material.

- The entire composite was dried for 24 hours at 105°C, then jaw crushed to minus ¾ inch.

- The entire composite was then screened through ½ inch, ¼ inch, 10 mesh, 24 mesh, and 65 mesh screens. The size fractions were then weighed, with results as follows:

+½ inch	86.59 kg.
-½ inch +¼ inch	68.30 kg.
-¼ inch +10 mesh	52.25 kg.
-10 mesh +24 mesh	17.92 kg.
-24 mesh +65 mesh	18.66 kg.
-65 mesh	7.84 kg.

- The entire -½ inch +¼ inch fraction was spread out over a clean cement floor in a layer one fragment deep. Scott Hartman and Charlie Muerhoff collected 100 samples from this material, with each sample made up of 30 fragments selected one by one at random. These samples were numbered and weighed. The pulp envelopes were weighed individually prior to collecting the sample so as to determine the true weight of the sample.

- The 100 samples were then pulverized in an enclosed ring pulverizer to about 95% passing 100 mesh. Each sample was analyzed for gold and silver by fire assaying the entire sample and completing with a gravimetric finish.

- Three size fractions (+½ inch, -½ inch +¼ inch, -¼ inch +10 mesh) were then individually crushed to -10 mesh.

- From each of the six size fractions(+½ inch, -½ inch +¼ inch, -¼ inch +10 mesh, -10 mesh +24 mesh, -24 mesh +65 mesh, and -65 mesh), 8,000 gram subsamples were split out using a riffle splitter and pulverized in their entirety in an Essa 3-kg capacity enclosed ring and puck mill to approximately 95% passing 100 mesh.

- Each 8,000 gram subsample was split into eight 1,000 gram (approximate) subsamples using a riffle splitter, with each subsample being weighed.

- Metallic screen assays over a 100-mesh screen were performed on each of the 1,000 gram subsamples. The entire +100 mesh fraction was fire assayed and four 30 gram subsamples from the -100 mesh fraction were split out and fire assayed. All analyses were completed using a gravimetric finish.

HECLA MINING COMPANY - ROSEBUD PROJECT
1996 Heterogeneity Study

29-Jul-96

100 Samples Comprised of 30 Fragments Picked at Random
Size Fraction: -1/2" + 1/4"

Sample ID	Weight (g)	Au (opt)	Ag (opt)	Sample ID	Weight (g)	Au (opt)	Ag (opt)
1	36.60	0.738	0.63	51	45.65	0.046	0.20
2	36.22	0.265	2.68	52	38.93	0.100	0.41
3	35.34	1.207	2.36	53	39.53	0.054	0.44
4	39.40	1.432	3.79	54	33.31	2.386	2.21
5	31.15	0.396	0.87	55	31.40	0.021	0.10
6	42.10	2.276	4.25	56	26.30	11.623	10.33
7	33.58	0.380	2.52	57	40.12	1.079	0.47
8	39.80	0.222	0.36	58	40.79	1.263	4.16
9	40.70	1.994	3.92	59	35.23	0.073	1.02
10	47.24	0.216	3.95	60	42.91	0.861	1.57
11	32.33	9.838	45.93	61	42.84	0.021	0.14
12	44.12	0.020	0.34	62	48.14	0.046	0.24
13	38.64	0.056	0.23	63	38.64	0.981	1.05
14	38.06	0.489	0.65	64	37.29	0.702	2.34
15	39.52	1.223	1.97	65	44.79	0.493	31.53
16	38.93	0.089	0.29	66	34.86	0.094	0.17
17	38.18	0.056	0.28	67	42.72	0.041	0.17
18	37.95	1.541	2.05	68	37.51	0.780	0.90
19	37.61	0.119	15.83	69	38.63	0.051	0.66
20	34.97	0.037	0.17	70	41.24	0.715	0.79
21	32.47	0.055	0.14	71	33.91	0.091	0.51
22	33.12	0.409	13.94	72	37.77	0.314	39.24
23	40.45	0.051	0.11	73	62.97	0.043	0.32
24	35.60	0.055	0.30	74	28.66	0.133	0.33
25	31.85	0.102	0.25	75	34.67	3.894	4.64
26	36.71	0.476	0.75	76	42.43	0.040	0.17
27	36.18	8.858	6.76	77	38.27	0.598	0.88
28	36.39	0.359	0.57	78	45.12	0.089	0.27
29	35.90	0.055	0.16	79	47.21	0.021	2.69
30	26.84	0.643	1.40	80	45.84	0.352	0.45
31	39.74	0.703	0.34	81	42.59	0.464	0.53
32	38.86	0.037	0.47	82	39.09	1.090	1.33
33	35.70	0.030	0.13	83	42.60	0.451	0.44
34	50.36	2.048	5.29	84	32.31	0.082	0.37
35	40.36	1.114	2.39	85	45.05	0.066	0.13
36	39.64	0.640	0.33	86	43.98	0.585	0.96
37	38.85	0.401	1.91	87	37.05	0.350	0.89
38	34.08	0.355	7.80	88	37.68	0.088	0.45
39	42.54	1.778	31.41	89	32.41	0.097	0.12
40	33.91	0.039	0.44	90	47.68	0.273	1.10
41	35.33	1.356	6.94	91	46.43	0.658	0.41
42	33.62	0.407	0.53	92	39.05	1.590	0.44
43	40.71	0.407	30.90	93	37.51	0.070	0.14
44	36.56	9.664	22.51	94	36.25	0.057	0.44
45	43.31	14.126	0.17	95	46.81	0.066	0.40
46	35.18	0.193	0.49	96	39.91	0.218	5.14
47	33.71	19.255	30.11	97	38.46	0.104	0.20
48	33.96	0.153	0.31	98	41.46	0.612	0.92
49	40.95	20.275	24.86	99	44.41	0.078	0.35
50	35.67	0.115	0.22	100	33.93	0.570	1.89
				Average	38.73	1.355 (weighted)	4.02

HECLA MINING COMPANY - ROSEBUD PROJECT
HETEROGENEITY STUDY - METALLIC SCREEN ASSAYS
Analytical Performed by American Assay Laboratories, Inc. Sparks, Nevada

29-Jul-96

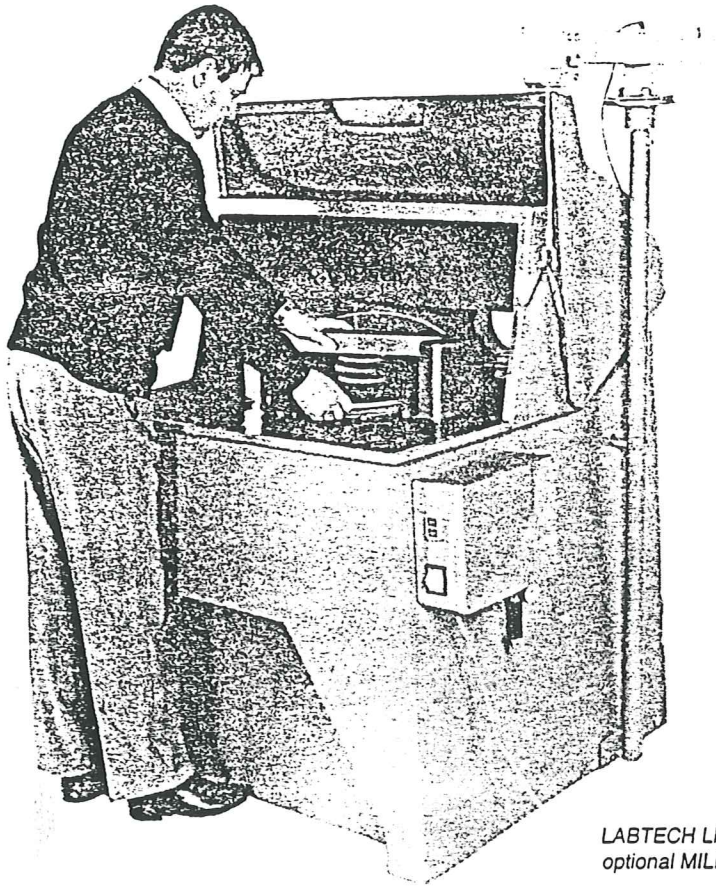
Fraction	Split #	Total Wt (g)	+100m wt (g)	-100m wt (g)	+100m wt %	-100m wt %	+100m Au (opt)	-100m Au (opt)	-100m Au (opt)	-100m Au (opt)	-100m Au (opt)	Average -100m Au (opt)	Weighted Au Average (opt)	+100m Ag (opt)	-100m Ag (opt)	-100m Ag (opt)	-100m Ag (opt)	-100m Ag (opt)	Average -100m Ag (opt)	Weighted Ag Average (opt)
+1/2"	1	970.4	53.7	916.7	5.5%	94.5%	4.991	1.011	1.114	1.155	1.115	1.099	1.314	7.14	6.03	6.11	6.06	6.02	6.05	6.11
	2	974.1	38.3	935.8	3.9%	96.1%	4.543	1.133	1.150	1.116	1.051	1.113	1.247	1.82	6.54	6.60	6.62	6.64	6.60	6.41
	3	969.0	33.5	935.5	3.5%	96.5%	4.388	1.065	1.052	1.038	1.061	1.054	1.169	16.90	6.79	6.71	6.70	6.77	6.74	7.09
	4	1014.3	35.5	978.8	3.5%	96.5%	3.946	1.165	1.092	1.044	1.072	1.093	1.193	10.41	5.43	5.58	5.26	5.55	5.45	5.63
	5	1180.4	35.9	1144.5	3.0%	97.0%	4.721	1.033	1.061	1.012	1.150	1.064	1.175	2.20	5.37	5.37	5.40	5.41	5.39	5.29
	6	1207.5	40.0	1167.5	3.3%	96.7%	3.795	1.169	1.086	1.075	1.114	1.111	1.200	3.52	5.72	5.76	5.65	5.73	5.72	5.64
	7	1280.7	31.4	1249.3	2.5%	97.5%	4.631	1.144	1.168	1.051	1.018	1.095	1.182	10.20	6.52	6.53	6.70	6.56	6.58	6.67
	8	1273.3	33.1	1240.2	2.6%	97.4%	8.215	1.036	1.061	1.070	1.031	1.050	1.236	7.25	5.88	5.92	5.86	5.86	5.88	5.92
-1/2" + 1/4"	1	975.3	39.6	935.7	4.1%	95.9%	18.941	2.058	1.731	1.822	2.051	1.916	2.607	37.70	13.20	13.30	13.40	13.37	13.32	14.31
	2	745.6	26.2	719.4	3.5%	96.5%	16.640	2.044	1.852	1.956	1.960	1.953	2.469	15.40	15.51	15.62	15.81	15.75	15.67	15.66
	3	1014.1	25.9	988.2	2.6%	97.4%	17.032	1.991	1.901	1.919	1.969	1.945	2.330	16.91	11.61	11.70	11.73	11.87	11.73	11.86
	4	929.7	37.4	892.3	4.0%	96.0%	18.238	1.912	1.945	1.987	1.761	1.901	2.558	33.92	12.95	13.02	13.58	13.12	13.17	14.00
	5	1119.7	18.3	1101.4	1.6%	98.4%	19.235	2.035	1.903	2.051	1.834	1.956	2.238	19.93	14.42	14.44	14.57	13.85	14.32	14.41
	6	1064.9	30.6	1034.3	2.9%	97.1%	19.329	1.974	1.942	1.920	1.950	1.947	2.446	32.13	13.66	13.57	13.98	13.84	13.76	14.29
	7	1015.5	29.1	986.4	2.9%	97.1%	17.674	2.067	1.906	1.843	1.876	1.923	2.374	12.34	14.89	14.92	15.02	14.72	14.89	14.82
	8	936.6	33.1	903.5	3.5%	96.5%	16.047	2.892	1.850	1.515	1.842	2.025	2.520	30.42	16.42	16.47	16.31	16.48	16.42	16.92
-1/4" + 10m	1	888.6	19.9	868.7	2.2%	97.8%	24.790	2.995	2.588	2.886	2.863	2.833	3.325	17.82	18.75	18.86	18.81	19.03	18.86	18.84
	2	876.6	30.4	846.2	3.5%	96.5%	21.741	2.962	2.764	2.924	2.817	2.867	3.521	26.70	18.71	18.53	18.62	18.94	18.70	18.97
	3	854.5	19.5	835.0	2.3%	97.7%	28.316	2.931	2.852	3.027	3.024	2.959	3.537	29.36	14.20	13.84	14.22	13.84	14.03	14.38
	4	889.4	32.4	857.0	3.6%	96.4%	22.932	3.041	2.841	2.888	2.738	2.877	3.608	36.30	18.12	18.29	18.35	18.30	18.26	18.92
	5	1011.8	19.3	992.5	1.9%	98.1%	27.331	2.862	2.896	3.015	2.632	2.851	3.318	22.77	18.00	17.93	18.17	18.38	18.12	18.21
	6	1025.1	30.4	994.7	3.0%	97.0%	24.345	2.861	2.814	2.830	2.814	2.830	3.468	35.06	17.70	17.60	17.79	17.84	17.73	18.25
	7	925.5	24.4	901.1	2.6%	97.4%	25.658	2.794	2.871	2.811	1.475	2.488	3.099	43.22	17.06	17.12	17.14	17.27	17.15	17.84
	8	917.5	25.7	891.8	2.8%	97.2%	23.110	2.957	2.540	2.654	2.764	2.729	3.300	35.49	15.62	15.99	15.84	15.98	15.86	16.41
-10m + 24m	1	1211.5	62.1	1149.4	5.1%	94.9%	21.645	4.394	4.471	4.377	4.531	4.443	5.325	42.15	27.15	27.28	27.72	26.33	27.12	27.89
	2	1123.1	58.9	1064.2	5.2%	94.8%	50.768	4.135	3.937	4.565	4.325	4.241	6.681	70.67	25.85	26.36	26.10	25.18	25.88	28.22
	3	1146.6	64.5	1082.1	5.6%	94.4%	38.149	4.246	4.278	4.462	4.544	4.383	6.282	45.60	21.66	22.40	22.04	22.05	22.04	23.36
	4	1147.2	62.8	1084.4	5.5%	94.5%	42.597	4.159	4.540	4.411	4.488	4.400	6.491	37.92	21.33	21.83	21.63	22.13	21.73	22.62
	5	1128.1	54.4	1073.7	4.8%	95.2%	48.083	4.535	4.384	4.656	4.149	4.431	6.536	70.23	23.79	24.53	23.79	24.11	24.05	26.28
	6	1129.8	45.5	1084.3	4.0%	96.0%	47.065	4.512	3.741	4.210	4.382	4.211	5.937	70.28	25.41	26.01	25.89	25.45	25.69	27.48
	7	1123.5	55.2	1068.3	4.9%	95.1%	45.326	4.483	4.452	4.733	4.410	4.520	6.524	43.00	23.46	22.81	23.16	23.21	23.16	24.13
	8	1104.6	44.9	1059.7	4.1%	95.9%	49.502	4.425	4.226	4.511	4.595	4.439	6.271	55.49	22.53	22.93	22.69	22.66	22.70	24.03
-24m + 65m	1	1209.9	48.1	1161.8	4.0%	96.0%	44.295	4.360	4.235	3.452	5.022	4.267	5.859	46.16	18.95	19.01	18.46	19.17	18.90	19.98
	2	1138.5	41.7	1096.8	3.7%	96.3%	30.724	3.784	4.669	2.503	4.514	3.868	4.851	65.90	18.90	19.96	19.43	19.14	19.36	21.06
	3	1218.8	40.7	1178.1	3.3%	96.7%	42.266	4.331	4.933	4.645	4.926	4.709	5.963	64.27	19.91	20.07	19.99	20.17	20.03	21.51
	4	1218.1	32.0	1186.1	2.6%	97.4%	16.361	4.312	4.852	5.181	4.942	4.822	5.125	65.23	20.13	20.84	20.46	20.70	20.53	21.71
	5	1005.9	33.4	972.5	3.3%	96.7%	36.468	4.231	4.564	4.382	4.664	4.460	5.523	74.77	23.26	22.45	22.13	23.64	22.87	24.59
	6	1047.6	37.2	1010.4	3.6%	96.4%	45.430	3.982	3.984	4.975	4.296	4.309	5.769	72.68	19.95	20.20	19.90	20.04	20.02	21.89
	7	1101.3	46.3	1055.0	4.2%	95.8%	44.001	3.931	4.622	4.689	4.898	4.535	6.194	48.83	21.13	22.40	21.99	22.09	21.90	23.03
	8	1104.9	37.2	1067.7	3.4%	96.6%	43.287	4.760	4.455	5.003	4.064	4.571	5.874	39.42	22.30	21.64	22.47	22.56	22.24	22.82
-65 m	1	940.6	43.5	897.1	4.6%	95.4%	10.673	5.345	6.594	6.702	6.662	6.326	6.527	26.82	25.72	26.46	26.12	26.50	26.20	26.23
	2	921.8	37.9	883.9	4.1%	95.9%	15.152	5.648	6.556	6.678	6.535	6.354	6.716	33.79	25.38	25.89	25.54	25.55	25.59	25.93
	3	1000.1	46.0	954.1	4.6%	95.4%	10.320	6.038	6.243	5.192	5.991	5.866	6.071	49.32	25.66	25.96	25.84	25.82	25.82	26.90
	4	956.2	34.8	921.4	3.6%	96.4%	14.120	3.440	6.210	2.355	5.661	4.417	4.770	27.12	23.52	23.98	23.81	23.47	23.69	23.82
	5	1027.4	48.9	978.5	4.8%	95.2%	20.088	3.964	5.511	7.172	6.796	5.861	6.538	37.42	25.48	25.74	25.45	25.54	25.55	26.12
	6	1003.0	30.2	972.8	3.0%	97.0%	15.326	3.656	5.975	6.391	6.154	5.544	5.839	36.53	28.74	26.80	27.15	26.49	27.30	27.57
	7	986.9	44.0	942.9	4.5%	95.5%	13.216	5.948	5.583	6.216	5.465	5.803	6.134	38.98	24.30	25.11	24.69	24.57	24.67	25.31
	8	869.7	32.5	837.2	3.7%	96.3%	11.960	5.522	5.078	6.312	10.368	6.820	7.012	40.31	24.80	25.05	24.91	25.19	24.99	25.56

LABTECHNICS

LABTECH LM5 LABORATORY PULVERISING MILL

APPENDIX 2

To 5 kilogramme batches of
HOMOGENEOUS SAMPLE
for mineral analysis



LABTECH LM5 with optional MILLMATE

The LABTECH LM5 vibratory mill stands alone in its ability to prepare up to a 5kg batch of more representative sample for mineral analysis. Optimum pulverising and mixing efficiency is assured by Labtechnics' internationally patented, time tested pulverising bowl. A conventional ring and roller type bowl option is available. Maximum performance power at the bowl is provided by an integral, minimum maintenance electro-mechanical drive.

Designed and manufactured by:

LABTECHNICS AUSTRALIA
9 PINDA STREET, KILKENNY
SOUTH AUSTRALIA 5009
AUSTRALIA
Telephone: (08) 45 9722 Facsimile: (08) 243 2656

LABTECHNICS

THE LABTECH MODEL LM5 VIBRATORY MILL PREPARES UP TO 5KG OF HOMOGENEOUS SAMPLE FOR MINERAL ANALYSIS.

This unique capability to prepare a batch of more representative sample is performance assured by Labtechnics' internationally patented pulverising bowl ... field proven in hundreds of applications since 1984. A single "flying saucer" shaped puck operates in a matching curved bottom bowl. THE MATCHING CURVATURES OF THE PUCK AND BOWL ADD A PULVERISING CAPABILITY NOT ACHIEVABLE IN CONVENTIONAL RING AND ROLLER OR OTHER FLAT BOTTOM BOWL TYPES ... and create a uniform wear situation which assures optimum pulverising performance over the life span of the bowl. A special profile off-centre located hole through the puck provides positive mixing of the sample during its pulverising cycle.

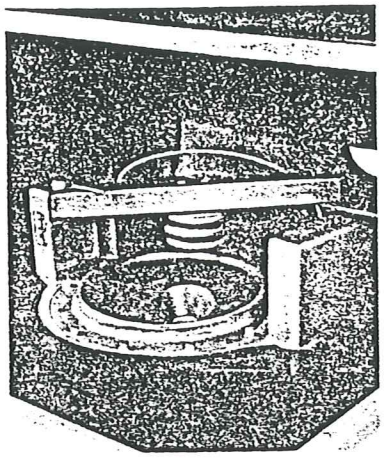
Features which confirm the superiority of the LABTECH LM5 mill are:

1. **LABTECHNICS' INTERNATIONALLY PROVED AND PATENTED ONE PIECE "FLYING SAUCER" SHAPED PUCK TYPE BOWL ... standard on the LM5.**

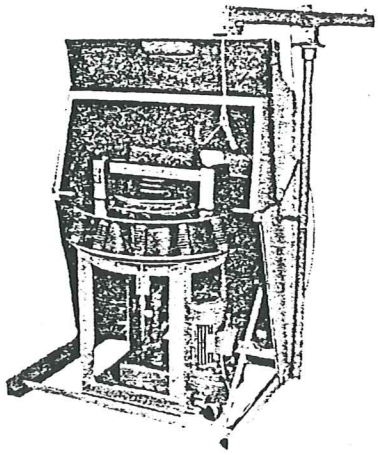
   The unique capability of this internationally patented bowl to rapidly and simultaneously fine pulverise and mix coarse infeed materials assures the largest practical batch of sample in a minimum of time. Even particulate gold can be pulverised. Capacities to 6kg are achievable, with 3 to 5kg samples being most frequently used, depending upon the material to be pulverised and the degree of fineness required. The Labtechnics puck and bowl is noted for its relative ease of emptying and cleaning.

   A CONVENTIONAL RING AND ROLLER BOWL ASSEMBLY IS AVAILABLE AS AN OPTION for operators whose performance needs are less critical or who may prefer to use this traditional style of bowl for comparison purposes with past records or with other laboratories using ring type mills. Capacities to 4kg are achievable, with 1 to 3kg samples being most frequently used.

   These two head styles are interchangeable in the LM5. Approximately 1.5 hours is required to change from one bowl style to the other.



LABTECH LM5 patented bowl with lid removed.



LABTECH LM5 MILL with front half of fibreglass cabinet removed for maintenance access.

2. **THE REMOVEABLE LID OF THE PULVERISING BOWL IS SECURED BY A VERY EASY TO USE AND MAINTAIN PNEUMATIC CLAMP.** The pneumatic clamp rotates clear for maximum operator access to the pulverising bowl.

3. **THE LABTECHNICS LM5 MILL IS HOUSED IN A GOOD LOOKING, DURABLE, EASY TO CLEAN FIBREGLASS CABINET ... WITH SOUND ABSORBING INTERNAL LINING.** The cabinet splits open for ease of maintenance access. A dust extraction take-off is incorporated as standard.

4. **A SELF-CONTAINED, FULLY ENCLOSED CONTROL BOX WITH OPERATOR PUSH BUTTONS AND ELECTRONIC TIMER IS ATTACHED TO THE CABINET.** This can be removed for optional separate wall mounting if required. Fail-safe protection against loss of pneumatic air pressure is in-built as standard.

5. **A SIMPLE BUT POWERFUL INTEGRATED DRIVE ARRANGEMENT.** This incorporates a standard 4.4KW (6HP) induction motor which allows Labtechnics to readily comply with most electrical supply voltages and frequencies. Replacement motors and other drive spares can usually be purchased in the country of use. The simplicity of the drive allows ready site maintenance in even the most remote geographical areas of operation.

6. **THE OPTIONAL EXTRA MILL MATE FOR "WEIGHTLESS" PUCK HANDLING.**

LABTECHNICS INVITE YOU TO SEND US SAMPLES FOR OBLIGATION-FREE TESTING.

LABTECHNICS are specialist designers and manufacturers of laboratory pulverising mills and bowls. We strive always to offer optimum performance equipment. We must therefore reserve the right to change our published information without notice in accordance with our continuing experience and research and development programme.

TECHNICAL INFORMATION: LABTECH LM5

DRIVE ASSEMBLY AND POWER SUPPLY: The vibrating head of the LABTECH LM5 is direct driven by a universal shaft which is vee-belt driven from a standard 4.4KW 3 phase, 50 cycle flange mounted TEFC induction motor. Motors can be supplied to suit most other power supplies, the ratio of the vee-belt drive being factory set accordingly.

BOWL ASSEMBLY: The Labtechnics patented pulverising bowl assembly is fitted as standard to the LABTECH LM5. A conventional ring roller bowl assembly is available as an option. The bowl assembly is left fixed in the vibratory head of the mill during normal operation; but can be easily removed for maintenance purposes. Only the lid & puck (or rings) have to be manually removed from and replaced in the bowl during normal operation.

PNEUMATIC CLAMPING: The lid of the pulverising bowl is secured by a minimum maintenance pneumatic clamp. No adjustments are necessary. The system automatically clamps the lid down on to the bowl when the mill is started, and then automatically releases at the end of the pulverising cycle. The pneumatic clamping arm pivots about one end to allow it to be swung clear while loading and unloading the bowl. Inbuilt safety protection prevents the mill from being started if the clamp assembly is not in its fully "closed" position or if the air pressure is too low.

MILL MATE: "Weightless" handling of the puck (or rings) into and out of the bowl is provided by the optional extra MILL MATE. Its lifting hook is raised and lowered by manual actuation of the MILL MATE'S pneumatic hoisting and lowering mechanism.

AIR REQUIREMENTS: A 400-600Kpa (nominal 100psi) air supply at 1 litre/minute maximum flow is required to operate the bowl clamp (and MILL MATE, if fitted).

CONTROLLER: A conveniently located controller (with full size removeable access cover) is attached to the fibreglass cabinet. This can be removed for wall mounting if preferred. Externally accessible manual "start and stop" push buttons, and an electronic timer are incorporated. The timer is used to set the pulverising cycle. It can be set in seconds or minutes on a 0 to 3 scale or a 0 to 30 scale. A low air pressure switch is included to automatically prevent startup or to shut the mill down if the air pressure falls below acceptable levels. Motor overload protection is also incorporated as standard.

MAINTENANCE ACCESS: The front half of the base section of the fibreglass cabinet is easily removed in its entirety to give full access to the inside of the cabinet for maintenance or cleaning.

SHIPPING DIMENSIONS: Approximate shipping volume is 3.7 cubic metres; approximate shipping weight is 600kg.

TYPICAL RESULTS BASED ON PULVERISING A 20MM SIZED SAMPLE OF COMPETENT ORE FOR 5 MINUTES.

QUANTITY	RESULT (% passing 200 mesh)	
	LABTECH PATENTED BOWL	RING & ROLLER BOWL
2KG	93%	90%
3KG	81%	78%
4KG	72%	51%
5KG	63%	

Results will vary with the sizing and types of material to be pulverised, the quantity in the bowl and the pulverising time. Ask Labtechnics for other typical results we have on file or send us samples of your material for obligation-free testing.

LABTECHNICS AUSTRALIA

9 PINDA STREET, KILKENNY, SOUTH AUSTRALIA 5009. AUSTRALIA.

Telephone: (08) 45 9722. Facsimile: (08) 243 2656.

Leaflet designed by R.J.H. MARKETING SERVICES PTY. LTD. Printed by AUSTRALIAN PRINTING SPECIALISTS.

LABTECHNICS

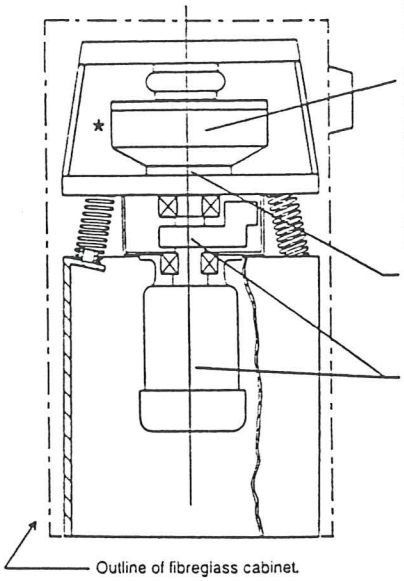
MODEL LM1 LABORATORY PULVERISING MILLS ... & BOWLS

POWER
PERFORMANCE
FLEXIBILITY
FEATURES

To 2000 gramme batches of
HOMOGENEOUS SAMPLE

LABTECHNICS AUSTRALIA
A division of Quinncorp Pty Ltd
9 PINDA STREET, KILKENNY
SOUTH AUSTRALIA 5009
AUSTRALIA
Telephone (61 8) 45 9722 Facsimile (61 8) 243 2656

LABTECHNICS MODELS LM1 LABOI
DELIVER MORE POWER ... PERFORMANCE
for maximum effectiveness & efficien



STANDARD FEATURES & BENEFITS OF THE LABTECHNICS MODELS LM1-P & LM1-M MILLS INCLUDE:

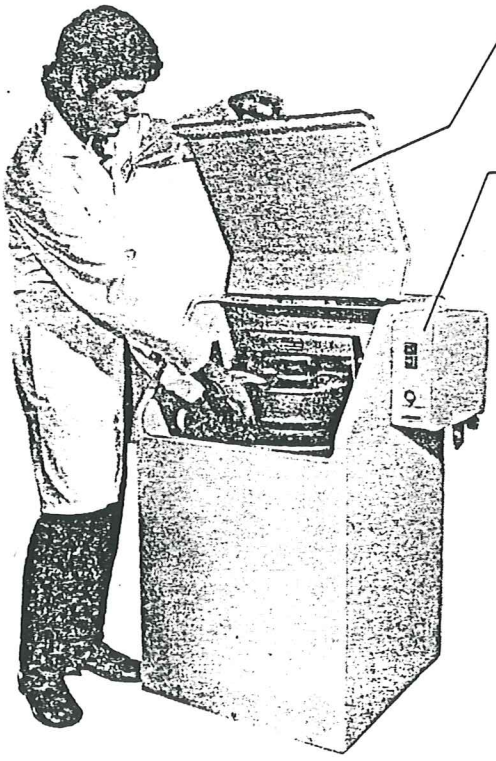
FLEXIBILITY OF OPERATION is maximised by the range of pulverising bowls which can be fitted to both the LM1-P and LM1-M mills ... bowls from 10 to 2000 gramme nominal useable capacity. These include conventional ring & roller type bowls as manufactured by Labtechnics and others, and Labtechnics own patented solid puck type BIG BOWLS at 800, 1000 and 2000 gramme nominal live capacity. Any of these bowls can be fitted to the LM1-P model mill without adjustment to the automatic bowl clamping system. Some adjustment of the clamp may be required on the model LM1-M.

HARD WEARING REPLACEABLE INSERT, which provides a minimum wear clamping surface and retaining ring function beneath the pulverising bowl. The insert is easily replaced.

POWER from a standard 3 phase TEFC electric motor which has been specially modified in our own factory for heavy duty vibratory operation. The motor is direct coupled to a powerful rotating eccentric supported by heavy duty roller bearings. This rugged, minimum-maintenance combination provides more than adequate PERFORMANCE POWER to the steel coil spring mounted vibrating head assembly to which the pulverising bowls are clamped.

And because the drive has sufficient power to drive Labtechnics model C2000 big bowls, it therefore also has the "extra" power to significantly improve the performance of smaller conventional ring and roller type bowls.

*** Refer back cover for details of pulverising bowls.**



A FIBREGLASS CABINET with sound reducing internal lining is supplied as standard with the LM1-P, and is available as an option for the LM1-M. The cabinet is durable, easy to clean & aesthetically pleasing. An electric fan if fitted at the back of the cabinet to minimise the temperature rise of the pulverising bowls in commercial laboratory applications where near continuous operation may be a common practice.

A CONTROL UNIT incorporating protection for the drive motor, a fail-safe system for the pneumatic bowl clamp, an electronic timer to control the pulverising cycle, and an interlock which switches off the drive if the lid is inadvertently opened during the pulverising cycle, is STANDARD on the LM1-P cabinet.

A CONTROL UNIT incorporating the motor protection and the electronic cycle timer is STANDARD on the LM1-M cabinet ... with the lid interlock switch available by special request only.

LABTECHNICS MODELS LM1 MILLS

Designed & manufactured in Australia by:

LABTECHNICS AUSTRALIA

9 PINDA STREET, KILKENNY
SOUTH AUSTRALIA 5009

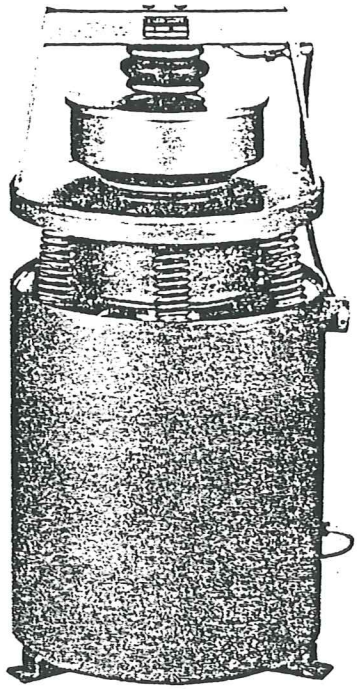
Telephone (61 8) 45 9722 Facsimile (61 8) 243 2656

(Postal Address: P.O. Box 232, Kilkenny S.A. 5009)

REFER BACK COVER FO

RATORY PULVERISING MILLS
... FLEXIBILITY ... & FEATURES
icy in sample preparation

MODEL LM1-P
PNEUMATIC bowl clamping

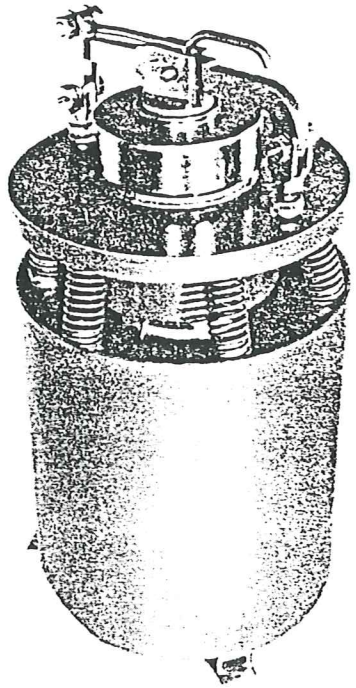


The LABTECHNICS model LM1-P laboratory pulverising mill features pneumatic clamping of the pulverising bowl for quick & easy bowl fitting & removal. This system is long term proven by practical application to be very effective and reliable. It does not require adjustment when changing bowl sizes and types ... and is a true minimum-maintenance system.

The pneumatic system automatically clamps the bowl in position when the mill is started and then automatically releases it when the pulverising cycle is finished (or when the mill is stopped for any other reason including by the standard inbuilt safety features).

The LM1-P mill is housed as standard in the fibreglass cabinet described in this leaflet.

MODEL LM1-M
MANUAL bowl clamping



The LABTECHNICS model LM-1 laboratory pulverising mill with manual clamping of the pulverising bowl has application in laboratories without a compressed air supply. The Labtechnics manual bowl clamping system is unique because the complete clamp assembly is demountable, allowing it to be readily removed for speedier maintenance or repairs. Grease nippies are provided on pivot points for longer life.

The LM1-1 mill can be supplied housed in the fibreglass cabinet described in this leaflet ... or the cabinet can be supplied as a retrofit.

TECHNICAL DATA: LABTECHNICS MODELS LM1 LABORATORY PULVERISING MILLS

	MODEL LM1-P	MODEL LM1-M
Method of bowl clamping	Pneumatic (automatic, self adjusting)	Manually operated mechanical linkage
Pulverising bowl capacity	All sizes up to Labtechnics Model C2000	
Vibration frequency	920 cpm	920 cpm
Drive motor	1.1Kw	1.1Kw
Power Requirement	3 Phase, 415 Volt, 50 Hz, cycle: 3.1 Amps per phase *	
2 metre long flexible cable with plug for power supply	Standard	Standard
Air required	400-600Kpa @ 1 litre/minute max. flow	Not applicable
Fibreglass cabinet with sound reducing internal lining	Standard	Optional Extra
Cabinet mounted control unit with electronic cycle timer & with protection for drive motor	Standard	Optional extra
Pulverising cycle timer range	Infinitely variable between 0.5 seconds and 1 hour	
Fail safe system for pneumatic bowl clamp	Standard	Not applicable
Cabinet lid interlock switch	Standard	Optional Extra
Bowl cooling fan in cabinet	Optional Extra	Optional Extra
Cabinet dimensions (approximate)	700 wide x 600 deep x 1000 high	
Shipping weight (approximate)	160 kg	160 kg

* OTHER POWER RATINGS AVAILABLE TO SUIT PARTICULAR APPLICATIONS.

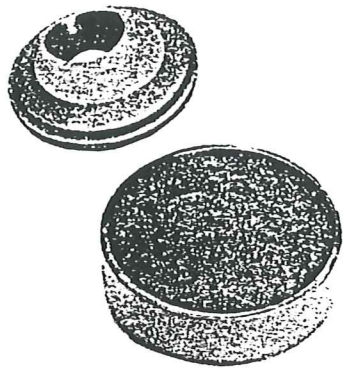
R PULVERISING BOWLS

LABTECHNICS BOWLS

for vibratory type laboratory pulverising mills

LABTECH BIG BOWLS

1000g & 2000g for use on LABTECH LM1* MILLS
800g for use on LM1* and some competitive mills**



LABTECHNICS manufacture a long-term application proved range of Internationally patented BIG capacity pulverising bowls which allow a much more representative laboratory sample to be prepared. Three sizes of BIG bowls are made with nominal live capacities of 800, 1000 & 2000 grammes, which are called the models C800, C1000 & C2000 respectively.

Each of these unique BIG bowls will accept a relatively coarse sample (to 20mm sizing in the model C2000) and then rapidly pulverise & mix it to a very fine-grained and homogenous laboratory sample.

Each contains Labtechnics' unique single "flying saucer" shaped puck operating in a matching curved bottom bowl. The matching curvatures of the puck & bowl combined with the mass of the puck provide a degree of pulverising not usually achievable in conventional ring and roller or other types of flat bottom bowls ... and create a uniform wear situation which assures optimum performance throughout the whole life span of the bowl. A special profile off-centre located hole through the puck provides positive mixing of the sample during the pulverising cycle.

The model C1000 & C2000 bowls weigh 19 & 27 kg respectively and require the power of the Labtechnics model LM1 laboratory mill to effectively drive them ... while the smaller C800 bowl is also suitable for use on other less powerful mills, including those from other manufacturers with manual bowl clamps. Refer separate Labtechnics data sheet for information about our MILL MATE lifting device accessory for transferring these BIG BOWLS between the LM1 mill and work bench.

THESE **LABTECHNICS** PATENTED **BIG** BOWLS HAVE EARNED AN ENVIABLE REPUTATION IN AUSTRALIAN GOLD ASSAY LABORATORIES, WHERE THEIR HIGHER BATCH CAPACITY AND IN-BOWL HOMOGENISING ACTION ASSURES A **MORE REPRESENTATIVE SAMPLE** FOR ASSAY PURPOSES ... A REPUTATION WHICH IS FURTHER ENHANCED BY A PROVEN ABILITY TO PULVERISE FREE GOLD.

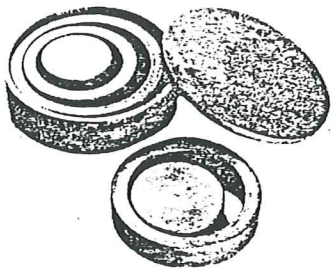
The high performance characteristics of these bowls allow them to also be used in other than laboratory situations. Their ability to accept coarse ore feed samples direct from jaw crushers or pre-crushed drill cores extends their range of application to geological and mine-development applications.

Labtechnics BIG BOWLS are supplied as standard in through hardened chrome steel. Other materials of construction available on request.

* All bowls can also be used on the LABTECH LM2 pulverising mill. ** Depends generally upon drive power of the mill.

LABTECH RING ROLLER BOWLS

for use on LABTECH & competitors' mills



LABTECHNICS also manufacture a full range of conventional ring and roller bowls for fitting to their own model LM1 laboratory pulverising mills ... and for retrofitting to mills from other manufacturers. Simple spacer rings supplied by Labtechnics may be required to accommodate dimensional variations. Most common types and size of bowl are available, with many held in stock at the Labtechnics factory. Typical sizes include 50g, 100g, 125g, 300g and 400 gramme nominal capacity bowls.

These conventional bowls take on a new "dimension" of performance when fitted to LABTECHNICS MODEL LM1 laboratory pulverising mills. The more powerful drive combination of Labtechnics mills allow small capacity bowls to really perform ... usually producing a finer sample or allowing a faster cycle time than when used on other mills.

Labtechnics ring roller bowls are available as standard in through hardened chrome steel, case hardened chrome free steel and zirconia. Other materials of construction available on request.

LABTECHNICS INVITE YOU TO SEND US SAMPLES FOR OBLIGATION-FREE TESTING IN OUR FACTORY TEST FACILITY

LABTECHNICS are specialist designers, manufacturers and reconditioners of laboratory pulverising mills and bowls. We strive always to offer our customers optimum performance equipment. We must therefore reserve the right to change our published information without notice in line with our continuing experience and research and development programmes.

TYPICAL RESULTS FROM THE LABTECHNICS MODEL C2000 BIG BOWL.*

MINERAL	QTY.	SIZING	GRIND TIME	RESULTS
DOLOMITE	2000g	8 to 16mm	5.0 mins	95% passing 100 mesh 79% passing 200 mesh 67% passing 350 mesh
HEMATITE	2000g	4 to 10mm	5.0 mins	99% passing 100 mesh 85% passing 200 mesh 67% passing 350 mesh
MICACEOUS TIN ORE	1000g	4 to 12mm	5.0 mins	88% passing 100 mesh 69% passing 200 mesh 54% passing 350 mesh
COPPER ORE	1000g	4 to 12mm	5.0 mins	99% passing 100 mesh 83% passing 200 mesh 61% passing 350 mesh
BITUMINOUS COAL	1000g	8 to 16mm	3.0 mins	74% passing 100 mesh 54% passing 200 mesh 38% passing 350 mesh

* Results will vary with the sizing and type of material to be pulversed and the time for which it is pulversed. Ask Labtechnics for other typical results we have on file or send us samples of your material for obligation-free testing.

LABTECHNICS BOWLS
are manufactured in Australia by

LABTECHNICS AUSTRALIA

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APPENDIX 3

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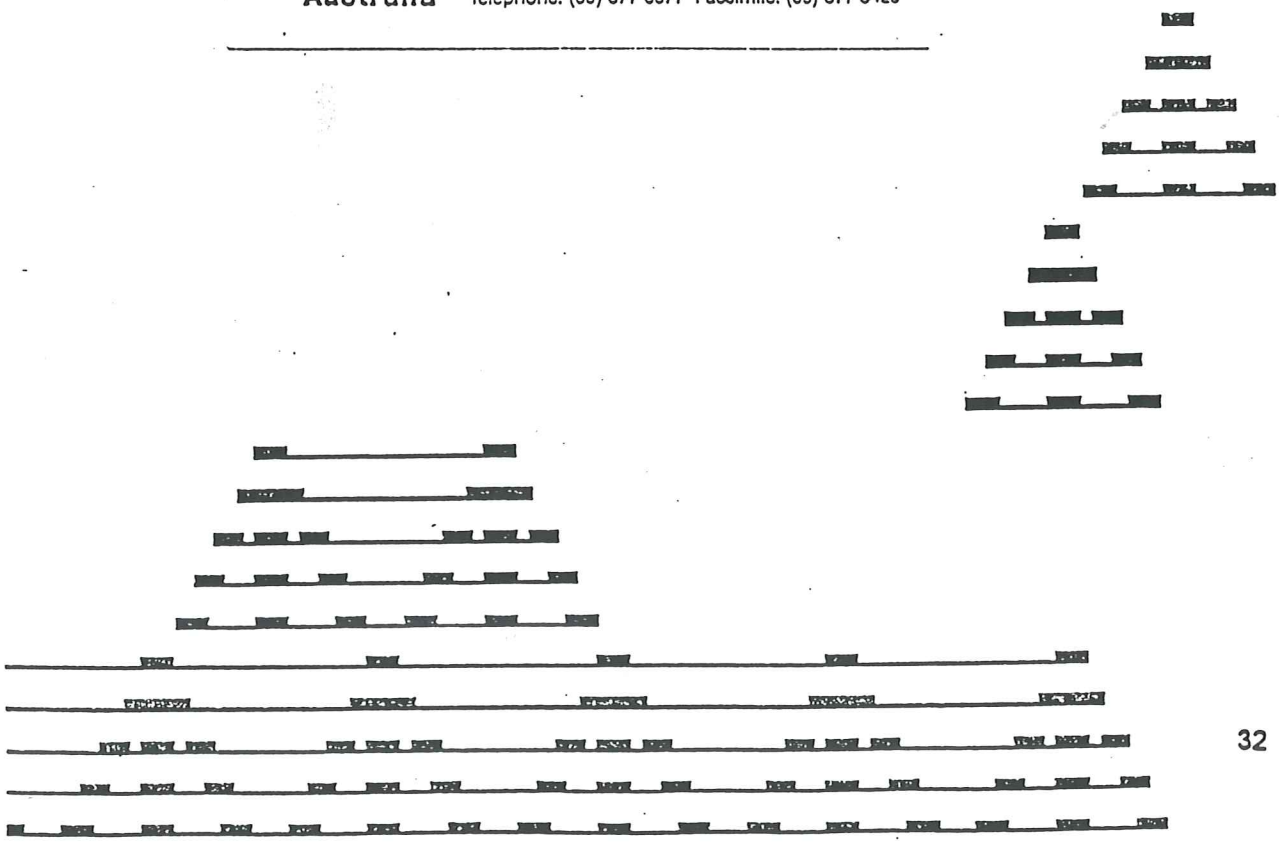

UTM FILE:ROSEBUD NK-11-10-06C
cc: KWS, RLP, GLM⇒Albq File
RWO, FJJ⇒Reno Monthly

Santa Fe Pacific Gold Corp.
Reno Office

To: F. J. Jenkins, Jr.
From: R. L. Dixon
Date: July 24, 1996
Subject: Monthly Progress Report - Rosebud Joint-Venture, Pershing and Humboldt Counties, Nevada - July 1996

SUMMARY:

1.) The Rosebud Mine was visited for the first time by myself on July 8, 1996. Mike McCulla provided a tour of surface facilities and a cursory examination of Rosebud geology. An introductory meeting with Charlie Muerhoff, Hecla Senior Mine Geologist for Rosebud, was held on July 9, 1996, in Winnemucca.

2.) A search of Hecla's files and archives in Winnemucca has revealed much useful Rosebud data, most of it generated by previous mining companies. The data package includes various scales of geologic mapping from regional to very detailed (e.g., 100-scale), soil and rock chip multi-element geochemical surveys, and comprehensive geo-physical coverage.

3.) A tentative exploration budget for Rosebud, totaling $1.4 million to be spent through the end of 1997, has been proposed (see attachment). This total amount breaks down to $520,000 by the end of 1996, and another $520,000 during the first half of 1997. The remaining $360,000 would be spent during the second half of 1997.

Rosebud Tour:

Mike McCulla hosted a one day excursion to the Rosebud Mine in early July. It was an opportunity to see the mine site surface and to look at Rosebud geology. Exposures at Dozer Hill and the surface expression of the South Ridge Fault were visited before traversing the ridge south and west to Rosebud Canyon. It was not possible then to see the underground because of repairs being made on the pump station; the lower workings are temporarily flooded. Despite this fact, above ground stockpiles of material from a crosscut through the South Ore Zone were examined and discussed with recent Santa Fe assays in hand.

A short meeting with Charlie Muerhoff, Senior Mine Geologist with Hecla, was held Tuesday, July 9, 1996, for purposes of getting acquainted and for learning the locations of Rosebud data. The meeting was cordial and a spirit of cooperation was established.

Geologic, Geophysical ,and Geochemical Data Bases:

During a chance breakfast conversation with Andy Wallace (Cordex) and Bob Thomas (formerly with Lac Minerals) at the Griddle in Winnemucca on July 9, it was learned that there had been many generations of geologic mapping at Rosebud prior to Hecla's participation. After the brief meeting later that same morning with Charlie Muerhoff of Hecla, it was decided that our first order of business was to inventory the Rosebud files and maps. Certainly, there was no need "to re-invent the wheel"!

Mike McCulla diligently has inventoried part of Hecla's Rosebud files and already has found a wealth of useful information from past operators. The Rosebud property since about 1980, has been geologically mapped on various scales ranging from 1 inch = 1 mile down to 1 inch = 100 feet! (see attachment). Much of the previous mapping was conducted by Lac Minerals and by personnel with whom we are familiar. In fact, a master index of geologic mapping through about 1993, was compiled by Lac Minerals.

The discovery of the master index and the existing maps is akin to finding the "Rosetta Stone" and should greatly compress our time frame for geologic mapping and target indentification. In addition, under Hecla's tenure much of Rosebud was geologically mapped by a respected consultant (M. Brady) at a scale of 1 inch = 500 feet. The surface geologic data base appears to be extensive and may only need fine tuning in specific areas. Many of the mylar originals of Lac's geologic maps already have been copied for our use. Ironically, Hecla personnel seem to be spread very thin and were unaware of most of the previous geologic work, some of which is very high in quality.

The geophysical data base for Rosebud is similarly extensive and has been indexed by Lac Minerals and inventoried by Mike McCulla (see attachment). The geophysical data should undergo a comprehensive review by a geophysicist to determine where we go from here. Is there a geophysical method yet untested at Rosebud to "see" the blind high-grade gold orebodies?

cont.-

The geochemical data base for Rosebud is ample over specific areas, e.g., the main Rosebud soil grid with contour plots for Au, Ag, As, Sb, and Se and contour plots for IP-Resistivity. Other, smaller areas have received focused attention. There likely will be much data entry and digitizing related to Rosebud surface geochemistry.

Proposed 1996-1997 Rosebud Budget:

The proposed 1996-1997 budget for Rosebud is attached and will be reviewed at July's Monthly Meeting in Reno. With details of the Rosebud Joint-Venture still being negotiated and the uncertainty of timing, this budgetary proposal may be totally revamped before a joint-venture deal is completed.

Richard L. Dixon
attachments

PARTIAL INDEX OF GEOLOGIC, GEOPHYSICAL,

AND GEOCHEMICAL MAPS FOR ROSEBUD

AT HECLA'S OFFICE

GEOLOGIC MAPS

1. Index of Geologic Mapping Property Wide; Lac, 1991; scale 1"=500'.

2. Geologic Map; by CBW, 1992; S1/2 property; scale 1"=500'.

3. Geologic Map; by G. Massingill, mylar, property wide; scale 1"=500'.

4. District Structural Map with Targets; Hecla, 1995; scale 1"=2000'.

5. Geologic Map of Entire Property, N.H. Brewer, 1989; scale 1"=1000'.

6. Geology-Structure Map; S1/2 of Property; S. Moore, 1991; scale of 1"=500'.

7. Seven Stage Genetic Model of the Kamma Mountains Volcanic Caldera - Tectonic Depression.

8. Geology with Gold in Soil Overlay; Wildrose Target; S. Maynard, 1990; scale 1"=2000'.

9. Geologic Field Maps; West and North Dozer Hill; Geologist ?; scale 1"=200'.

10. Geology-Geochemistry; SB Claims (SW of Rosebud Deposit); C.B. Wienteer, 1994; scale 1"=500'.

11. Geology-Geophysics; Northern Target Area; Alteration Map with Geophysical Anomalies as Overlay; Lac, 1988, scale 1"=500'.

12. Chance Area; K. Tullar, 1991; scale 1"=200':
    - Geology Map with Drill Holes, Grids, and etc.
    - Geochemistry in Soils; Au, Ag, As, and Sb
    - Sample Location Map
    - Drill Cross Section Spines.

13. Property Wide Geology on Mylar; Steve Moore, 1991; scale 1"=500':
    Geology
    Cross Sections
    Longitudinal Volcanic Stratigraphy

ARCHIVAL GEOLOGIC MAPS ON MYLAR

SCALE 1"=200'

14.	Degerstrom East	Steve Maynard	1990
15.	Degerstrom East	Cyndie Walck	1991
16.	Degerstorm West	Cyndie Walck	1992
17.	Dozer West (paper)	Steve Maynard?	1990?
18.	North Dozer West	K.N. Tullar	1990
19.	Sulfur East	Steve Maynard	1990
20.	Sulfur West	Steve Maynard	1990
21.	Wildrose East	Steve Maynard	1990
22.	Wildrose East	Cyndie Walck	1992
23.	Wildrose West	S.Maynard / C.Walck	1990/92
24.	White Alps East	Steve Maynard	1990
25.	White Alps East	S.Maynard / C.Walck	1990/92
26.	White Alps West	Steve Maynard?	1990
27.	Dreamland East	Steve Maynard	1990
28.	Dreamland East	Cyndie Walck	1991
29.	Dreamland West	Cyndie Walck	1992

30. Stratigraphic Column for Kamma Volcanics

ARCHIVAL GEOLOGIC MAPS ON MYLAR

SCALE 1"=100'

31.	South Ridge East	Steve Maynard	1989
32.	South Ridge West	Steve Maynard	1989
33.	Dozer Hill	Steve Maynard	1989

34. Geologic Map; Kamma Mountain Volcanics; G. Massingill, 1988?, scale 1"=2000'.

GEOCHEMISTRY

1. Geochemistry - Geophysics; Main Rosebud Soil Grid; Lac, 1989; Contour Plots for Au, Ag, As, Sb, and Se with IP-Resistivity Contour Plots; scale 1"=1000'.

2. Geochemistry; Dreamland; Lac, 1989; Soil Assay Plots for Au, Ag, As, and Sb; scale 1"=1000'.

3. Geochemistry; North Kamma Target Work Map; Gold-Silver in Rock Samples with Minor Geology; Geologist ?, 1988; scale 1"=500'.

4. Oscar Area; Geochemistry Maps; 20 Rock Chip and Soil Geochem. Maps; Lac, 1993; 17 at a scale of 1"=200' and 3 at 1"=100'.

5. Chance Area; K. Tullar, 1991; scale 1"=200':
   Geochemistry in Soils; Au, Ag, As, and Sb

6. Geology-Geochemistry; SB Claims (SW of Rosebud Deposit); C.B. Wienteer, 1994; scale 1"=500'.

MISCELLANEOUS MAPS

Property Wide Mylar Maps; scale 1"=500' for:

Geology;	G. Massingill, 1988.
Alteration;	K. Kenner, 1988.
Au-Ag in Rocks;	K. Kenner, 1988.
As, Ba, Sb, Hg in Rocks;	K. Kenner, 1988.
Rock Chip Location;	K. Kenner, 1998

Property Wide Paper Maps; scale 1"=500' for North Target Area:

Rock Chip Location;	K. Kenner, 1998
Au-Ag in Rocks;	K. Kenner, 1998
Claim Map;	K. Kenner, 1998

Topographic Maps on Mylar; Property Wide, scale 1"=200'.

Air Photo Maps; Property Wide; scale 1"=2000', and 1"=500'.

GEOPHYSICS

1. Index of Geophysics for the South Area; IP & Ground Mag; Lac, 1992; scale 1"=500'.

2. Property wide gradient enhanced Residual Magnetics, with a scale of 2"=1 mile.

3. Oscar Target; IP and Magnetics; scale 1"=500'.

4. Geophysics, Dozer Hill; IP-Resistivity Contour Plots; Lac, 1990; scale 1"=2000'.

5. Geophysics, Dozer Hill; IP-Resistivity Contour Plots; Lac, 1991; scale 1"=500'.

6. Airborne Geophysics; Sheet 2 or 4; Gradient Enhanced Residual Magnetic Contour Map; 1987; scale 1"=2000'.

7. Geophysics; Dozer Hill and Valley Areas; VLF Stacked Profile Line Maps; scale 1"=100'.

8. Geophysics; Main Rosebud Grid; Total Field Magnetic Color Contour Maps; Lac, 1989; scale 1"=2000'.

9. Geophysics; Dozer Hill VLF - Resistivity Profiles, Contours, and Interpretations; Lac, 1991; scale 1"=1000'.

10. Geophysics; Dozer Hill IP - Resistivity Color Contours; Lac, 1989; scale 1"=1000'.

11. Geophysics Index Map; Property Wide Mylar with Topo and Geophysical Lines and Stations; Lac, 1989(?); scale 1"=500'.

12. Geophysics; Main Rosebud Grid; Ground Magnetics Color Contour Plots, Lac, 1990; scale 1"=2000'.

13. Geophysics; VLF Data, Individual Line Plots; Lac, 1990(?); scale 1"=100'.

14. Geophysics; IP - Resistivity Profiles on onion skin paper; Lac, 1988; scale 1"=500'.

15. Geophysics; Ground Magnetic Profiles over Main Rosebud Grid; Lac, 1988; scale 1"=100'.

		Rosebud JV Budget July 25 - Dec. 31, 1996						
Geophysics:		.....						25,000
indexing of all previous geophysical surveys						2,000		
review and recommendations by geophysicist						5,000		
new geophysical surveys						18,000		
						25,000		
Surface Geochemistry	.....					.....		55,000
critically review previous geochemical work						2,000		
digitizing and data entry						6,000		
new geochemical surveys						47,000		
						55,000		
soils	(est. 600 samples)		20,000					
	(Au,Ag,Sb,As,Se,Ba)							
auger (?)			18,000					
rock-	chip (est. 100 spls.)		5,000					
backhoe trenching			4,000					
			47,000					
Geology (Target Definition):				.....				131,100
Tasks to be accomplished:								
compilation, review, and indexing of all previous mapping (digitizing if needed)								
2000-scale,	1000-scale, 500-scale, 200-scale, and 100-scale							
construction of additional geologic cross sections								
refine volcanic stratigraphy	(standardize nomenclature, legends, etc.)							
	organize and examine core in trailers (re-log?)							
	review stratigraphic work of C. Walck and others							
reconcile surface and UG geology								
analyze district and deposit structural controls								
characterize wallrock alteration								
formulate working geologic model								
detailed geologic mapping of specific areas								
Geologic Support:		(mapping, sampling, logging, reports,etc)						
R. Dixon (SFPG proj. mgr.)	salary, benefits, exp., mileage)					50,400		
Proj. Geologist (SFPG)								
$	420/day for 100 days					42,000		
Consulting Geologist (M. Brady)								
$	430/day for 90 days					38,700		
						131,100		
Drilling:	.....							266,000
			No. DH's	Depth	Total Ft.	Cost/ft	RC Total	
Reverse Circulation			14	800	11,200	17.24	193,000	
	Contract Cost/ft 12.00							
	Analyt. Cost/ft 3.75							
	Downhole surv. .70/ft.							
	Permitting .10/ft.							
	Site Preparation .50/ft							
	Reclamation .19/ft.							
	RC Cost 17.24/ft.							cont.-

Drilling: cont.-								
			No. DH's	Depth	Total Ft.	Cost/ft	Core Total Cost	
Core Drilling			2	800	1,600	45.24	73,000	
	Contract Cost/ft	40.00						
	Analyt. Cost/ft	3.75						
	Downhole surv.	.70/ft.						
	Permitting	.10						
	Site Preparation		.50/ft					
	Reclamation		.19/ft.					
	Core Cost	45.24/ft.						
Contingency		.....						42,900
			July 25 -Dec. 31, 1996			**GRAND TOTAL**		**520,000**

		Rosebud JV Budget Jan.1 - June 30, 1997						
Geophysics:								15,000
	(downhole gephysics ?)							
Surface Geochemistry:								20,000
	New geochem. over very selective areas							
Geologic Mapping:							.....	30,000
	Detailed mapping (100-scale)							
Drilling: (Discovery and initial follow-up)								356,000
	RC Drilling:							
		20 DH's X 800 ft. X 17.65/ft. =			283,000			
	Core Drilling:							
		2 core DH's X 800 X 45.65/ft =			73,000			
					356,000			
Geologic Support:								60,000
	SFPG geologists plus one consultant							
Contingency:								39,000
				Jan. 1 - June 30, 1997 GRAND TOTAL				**520,000**
		Rosebud JV Budget July 1 - Dec. 31, 1997						
Geophysics:								10,000
	To be decided							
Surface Geochemistry								10,000
	To be decided							
Geologic Mapping:								15,000
Drilling: (Discovery Follow-Up)								249,000
	RC Drilling:							
		15 DH's X 800 ft. X 17.65/ft. =			212,000			
	Core Drilling:							
		1 DH X 800 ft. X 45.65/ft. =			37,000			
					249,000			
Geologic Support:								60,000
Contingency:								16,000
				July 1 - Dec. 31, 1997 GRAND TOTAL				**360,000**

SANTA FE PACIFIC GOLD

INTERNAL CORRESPONDENCE

To: Fred Jenkins
Roy Owen
Robin Hendrickson
Ron Parratt

Date: July 3, 1996

From: Skip McIntosh, Dave Caldwell, and M. McCulla

ROSEBUD PROGRESS REPORT (6/25 to 7/03, 1996)

- The Rosebud Mine pump station has been removed from operation and is being rebuilt off site. For the next one and one half to two months there will not be any way to pump water from the workings, and thus the cross cut through the South Ore Zone will be inaccessible during that time.

- All of Hecla's files containing surface rock chip and soil geochemistry data, as well as geophysical information, have been examined. Hecla has this information as hard data only, in several individual reports and in part plotted on several maps. None of this information is in a computer data base, and Hecla has made no attempt to compile the surface geochemistry into one set of comprehensive maps. We will need to compile a surface geochemical data base as a prerequisite to choosing exploration drill targets. Compilation overlay maps of the geophysics (IP, Resistivity, and Ground Magnetics) will also need to be made.

- Field checks of the 1995 surface mapping were initiated in the area surrounding the mine. There may need to be a significant reinterpretation of the units mapped before correlation with subsurface geology can be attempted. While traversing the area one unit was noted to contain a vesicular flow top 5'-15' thick. This flow top is similar to Hecla's Unit 7, and may represent a significant marker horizon in determining the local volcanic section.

- Dave Caldwell has been on vacation during this time period, and Skip McIntosh attended a Geostatistics Class from 6-24 to 6-27. Dave will return to work on Rosebud 7-8.

- Skip loaded the Hecla 1996 cross sectional mineralized zones into Minesight, and has started the process of connecting the cross sections into three dimensional solids.

END

SANTA FE PACIFIC GOLD
INTERNAL CORRESPONDENCE

To: Fred Jenkins
Roy Owen
Robin Hendrickson
Ron Parratt
Rich Dixon

Date: June 15, 1996

From: Dave Caldwell, Bill Matlack,
Mike McCulla, and Skip McIntosh

ROSEBUD PROGRESS REPORT (6/07 to 6/15, 1996)

- The new M650AR manual resource, which incorporates Hecla's 1995 drilling results between 600N and 1000N, is essentially the same as the one that utilized only the pre-1995 results. These numbers are attached.

- Preliminary results of sixteen density measurements taken from sites within the decline in the South Zone deposit average 13.77 cu ft/ton for wet density and 14.89 cu ft/ton for calculated dry density. This is significantly higher than the tonnage factor of 13.4 cu ft/ton density factor used by Hecla for the South Zone deposit, and would result in a loss of 11% of the reserves as calculated by Hecla for this deposit which represents 60% of total reserves.

- Water data were compiled for all reverse circulation exploration and pilot holes from the deposit area. Water flows appear to be highest down-dip along the South Ridge Fault in the East Zone and North Zone areas, and thus could potentially influence down-hole contamination in the East Zone deposit in the footwall of the South Ridge Fault.

- Work advanced on converting Hecla's data in MEDS format.

- Assay data were further verified. Plans are in place to make changes, where necessary, to the database. These revisions will be minor in nature.

- Rich Dixon will assume the duties of Rosebud project manager in the near future.

RESOURCE VALIDATION OF THE 1994 HECLA MODEL RESULTS UTILIZING A CROSS-SECTIONAL POLYGONAL ESTIMATION

HECLA STATED RESERVES SCHEDULED FOR MINING

	TONS	Au GRADE	Au OUNCES	
SOUTH	594,245	0.560	332,777	
NORTH and EAST	555,158	0.348	193,195	
FAR EAST	*40,000*	*0.299*	*11,960*	*
TOTAL	1,189,403	0.452	537,932	

* not included in SFPG estimate

DILUTION INCLUDED IN FIGURES ABOVE

	TONS	Au GRADE	Au OUNCES	
SOUTH	132,047	0.070	9,243	
NORTH and EAST	148,224	0.095	14,081	
FAR EAST	16,007	0.005	80	
TOTAL	*296,278*	*0.079*	*23,405*	*

* not included in SFPG estimate

RESOURCE VALIDATION OF THE 1994 HECLA MODEL RESULTS UTILIZING A CROSS-SECTIONAL POLYGONAL ESTIMATION

HECLA STATED 1994 *MEASURED AND INFERRED RESOURCE*

ABOVE a 0.14 opt CUTOFF (EXCLUSIVE of FAR EAST; AVERAGE TF = 13.25)

CU YD	TONS	Au GRADE	Au OUNCES
450,861	893,492	0.557	497,675

HECLA 1994 *GLOBAL RESOURCE*

INVENTORY of BLOCKS ABOVE a 0.14 opt CUTOFF (AVERAGE TF = 13.25)

CU YD	TONS	Au GRADE	Au OUNCES
503,556	1,031,599	0.489	504,783

SANTA FE 1996 MANUAL RESOURCE MODEL RESULTS

ABOVE a 0.14 opt CUTOFF AVERAGE TF = 14.30

	CU YDS	TONS	Au GRADE	Au OUNCES
MEASURED	189,318	348,360	0.592	206,183
INDICATED	230,359	440,425	0.531	233,700
INFERRED	80,892	156,465	0.340	53,262
GEOLOGICALLY POSSIBLE	113,590	222,456	0.357	79,402
MEASURED AND INDICATED	419,676	788,785	0.558	439,883
SFPG as a % of HECLA	93%	88%	100%	88%
GLOBAL RESOURCE	500,568	945,250	0.522	493,144
SFPG as a % of HECLA	99%	92%	107%	98%
*MODEL AREA RESOURCE**	614,158	1,167,706	0.456	532,845

* GLOBAL RESOURCE PLUS 50% of GEOLOGICALLY POSSIBLE

925N	14	67	5	3950	2194	0.734	2899	
950N	15	21	6	597	332	0.288	172	
950N	15	21	7	572	318	0.209	120	
950N	15	21	8	650	361	0.358	233	
950N	15	21	9	735	408	2.801	2059	
950N	15	21	10	1053	585	0.341	359	
950N	15	21	11	352	195	0.954	336	
950N	15	21	12	345	192	1.171	404	
950N	15	22	1	1745	970	0.271	473	
950N	15	22	2	2235	1242	0.307	686	
950N	15	67	3	698	388	0.344	240	
950N	15	67	4	986	548	0.229	226	
950N	15	67	5	3093	1718	0.562	1738	
975N	16	21	2	1084	602	0.191	207	
975N	16	21	3	1527	849	0.364	556	
975N	16	22	1	2763	1535	0.168	464	
1000N	17	22	1	3427	1904	0.153	524	
1000N	17	22	2	2763	1535	0.180	497	
1000N	17	22	3	2043	1136	0.346	707	
1000N	17	22	4	2898	1609	0.530	1536	
1000N	17	22	9	2189	1217	0.161	352	
1000N	17	22	10	2171	1206	0.214	465	
1000N	17	67	5	4547	2527	0.256	1164	
1000N	17	67	6	1465	812	0.116	170	
1000N	17	67	7	2783	1546	0.299	832	
1000N	17	67	8	5195	2887	0.653	3392	
			POLYS	TONS	CU YDS	Au GRAD	TOTAL OUNCES	
	1994 CUMMULATIVE		112	323805	179889	0.634	205202	
	1995 CUMMULATIVE		175	324727	180399	0.626	203143	
	% DIFFERENCE		156%	100%	100%	99%	99%	