

DISTRICT	Rosebud
DIST_NO	4010
COUNTY If different from written on document	Pershing
TITLE If not obvious	Rosebud Policies and Procedures
AUTHOR	Langstaff G; Lisle R; Vance R; Carter G. Muerhoff, C; Drobny, C
DATE OF DOC(S)	1997-1998
MULTI_DIST Y / N?	
Additional Dist Nos:	
QUAD_NAME	Sulphur 7½'
P_M_C_NAME (mine, claim & company names)	Rosebud Mine; Newmont Exploration Ltd; Hecla Mining Co.
COMMODITY If not obvious	
NOTES	Guide to some policies and procedures while working around mine NOTE Scan dividers 17p.

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)

SS: DP 2/24/08
Initials Date

DB: _____
Initials Date

SCANNED: _____
Initials Date

60001886

4010

Administrative

Newmont Exploration Ltd. - Rosebud
Winnemucca, Nevada

Memorandum

To: George Langstaff
cc: Rick Lisle

Date: January 21, 1998

Fr: Randy Vance

Subj: Distribution of Rosebud Memos and Reports

Rosebud, being a joint venture, is unusual in that we are maintaining two sets of files: the Newmont set in the Winnemucca office, and a second Rosebud Mining Company LLC set in the exploration trailers at the mine. In general, working maps, sections, and drill-related papers, tables, and forms are kept at the mine, and are not filed in Winnemucca. The Winnemucca files contain formal reports, technical memos, original assay sheets, etc.

I am requesting that you print and **distribute two copies to me** of all technical memos and reports that you write, e.g., your recent memos on dblog, the contour map of the basement, the South Ridge fault. I will file an original in the Winnemucca file, and keep the second as a working copy (write on it as a reply, file it, carry it around, etc.). Also, **you should file a third copy** in the file cabinet in the exploration trailer under the appropriate topic. For instance, a paper on the South Ridge fault should be placed in the structural file. Feel free to expand the file system as needed, using file groups as defined on the attached page.

Following this procedure will ensure that the respective files contain original memos and reports, and that a historical record exists for the development of technical concepts for the project.

Types of File Groups

Accounting: budgets, AFE's vendor contracts & payments, invoices, expenditures

Correspondence: letters, memos, faxes, submittal letters without other information, literature &/or press releases,

Drilling: drill logs with no other information, drill reports, survey of drill holes, drill hole maps, hole plots, strip logs, hydrology (drilling of wells for water or ground water table)

Engineering: pit slop design, hydrology (dealing with mine use of water)

Geochemistry: assay reports, rock chip information, soil samples, drill assay & with logs, drill log with descriptions, soil sample locations and maps, chip samples w/location maps, forms for submittal of samples to assay company, drill assays with physical descriptions, stream sediment maps,

Geology: reports (summary, monthly, annual), plot or claims map, submittal with geologic report &or assay, project negatives, aerial photo with notations or mapping, cross-sections or stratigraphy, map index (tube files), age dating, archeological reports, fossils, palynology, deposit information, depth to bedrock maps, lithology,

Geophysics: geophysical images, reports, surveys, TIR's (thermal infra-red), CSAMT, AMT (audio-magnetotelluric), EFT (electric-field traverse,

Land: claim information, agreements, legal issues, permitting, reclamation, hole plug, reseeding, environmental studies and/or directions

Metallurgy: "Met services" reports, reference material,

Petrography: reports, reference material, oil, coal, photo book reports, thin section reports.

Drilling

Newmont Drilling Services

Memo

To: NEL Staff
From: Glen R. Carter
Date: 12/23/97
Re: Drill Hole Abandonment Procedures

New regulations pertaining to water well and exploratory drilling were put into law this summer. These regulations specify the method and materials to be used when plugging old drill holes. Newmont will abandon drill holes according to the regulations. The new abandonment requirements will entail costs higher than in previous years.

All water wells, piezometers, drain holes, and monitoring wells must have a licensed driller both drill and plug these types of holes. A notice of intent must be filed by the driller with the State Division of Water Resources before plugging these types of holes.

Exploration hole drilling and plugging may be performed by an un-licensed driller, and without a notice of intent.

Procedures for hole abandonment

For: Uncased drill holes that won't be mined out in the near future

Routine uncased exploration holes will normally be plugged by the drill on the hole before it leaves the site.

For: Uncased drill holes that will be mined out in the near future

Exploration drill holes in active pits or on benches, that will be mined out within a reasonable time, do not have to have the mined out portion plugged unless artesian water is encountered in the hole. If artesian conditions are encountered, the hole should be plugged so as to control the artesian flow.

For: Holes that may be intersected by underground mining

To prevent rifling during underground shots, any hole that may reasonably be mined into during underground mining operations will be plugged by cementing or grouting (casing seal) the portion of the hole that may be mined into, and the rest of the hole plugged normally. The product Abantonite will not normally be used in the portion of the hole that will be intersected by underground workings. This product liquefies readily and may run out of the hole when disturbed. Abantonite may be used by core drills to plug the rest of the hole.

For: Holes that are being cased as core precollars

The Regulations call for perforating any casing that is left in a drill hole, unless the annulus between the casing and wallrock is already sealed with cement or bentonite. Perforating is very expensive and time consuming. To avoid having to perforate casing that is lost in the hole, cased holes will have a legal plugging mix, normally casing seal bentonite, pumped into the annular space between the wallrock and the casing when the casing is installed. Should part of the casing become stuck in the hole, the plugging requirements are met by plugging the inside of the casing and any remaining hole. Exceptions to this procedure for shallow holes will be approved only by the area drill Foremen.

The product Abantonite will not normally be used when installing casing. Abantonite will liquefy during coring operations, run into the cored portion of the hole, and wash rotary cuttings into the core hole.

Plugging holes that have lost circulation zones

Should plugging materials fail to fill the hole because of lost circulation zones, then alternate procedures must be used. If possible, attempt to bridge immediately above the lost circulation zone, and plug from there to surface. The rule of thumb of pumping 1.5 times the hole volume before quitting is no longer an option. We must make every reasonable attempt to plug the holes. Situations will arise where the hole intersects voids or fracture zones that cannot be plugged. In these cases, plug the lower hole portion, bridge above the zone, and continue plugging to surface. This may require the use of rubber plugs, dry bentonite, cement baskets, or packers. When a hole cannot be plugged after reasonable amounts of product have been installed, contact the Drilling Foreman for instructions.

Plugging water wells, monitoring holes, or piezometers

Plug these holes as per rotary holes. Do not use the product Abantonite in screened intervals as it will flow through the screen slots and into the formation. Instead use casing seal, dry bentonite, or cement as warranted. Existing PVC in holes must be extracted from the hole, or destroyed by redrilling, unless the PVC is already grouted or cemented in place. If already grouted or cemented, simply tremmie a cement or bentonite grout into the PVC and place the appropriate surface seal. A licensed driller is required to seal these types of holes.

Plugging materials and mixes

State Regulations call for a plugging mix containing at least 12.1% by weight of sodium bentonite, or a neat cement mix of 5.2 gallons of water per bag (94 pounds) of portland type cement. Dry bentonite chips may be poured into a hole in addition to, or instead of, the liquid mix. A 12.1% mix is one 50 pound bag of any sodium bentonite product added to 42 gallons of water or existing drill fluid. Any bentonite already in an existing drill fluid counts towards the 12.1% bentonite requirement. Drill cuttings are legal to plug dry holes, but we will not normally use cuttings to plug holes.

Casing Seal Bentonite Mix

We have formulated an inexpensive mix using granular casing seal (basically an unscreened #8 bentonite) as the bentonite component. This mix can be pumped by most rotary drills, but not core drills, and will be the standard mix used to plug most rotary holes. The Fluid Engineers will assist in training the drill crews in the proper mixing and pumping for this mix.

Any liquid mix must be installed using a tremmie rod, casing, or drill steel, and pumped from the bottom up while withdrawing the rods. Dry bentonite chips may be poured from the surface but cannot be allowed to bridge in the hole. This means that care must be taken when installing dry bentonite in wet holes; the bentonite partially hydrates and bridges readily. Dry bentonite is approximately eight times more expensive per unit volume than a liquid mix, but doesn't require a drill to install.

Abantonite Bentonite Mix

Most core drills can mix and pump cement or the product Abantonite. However, because of it's grainy consistency, core drills cannot normally pump a casing seal based mix through their Bean pump. Abantonite may be used by core drills to abandon the cored portion of most holes (see notes regarding underground hazards). If the core drill also pulls the casing after hole completion, the drill may continue plugging the hole with Abantonite rather than moving a rotary drill onto the hole to plug with casing seal.

Surface Seals

Water Wells, Monitoring Holes, or Piezometers

The top fifty feet of hole will be sealed with cement, dry bentonite wetted with two gallons of water per bag when installed, or a 30% bentonite grout (14 gallons of fluid per 50 pound bag of bentonite). Normally, cement or bentonite chips will be used. The top 50 feet of all large diameter water wells (those > 12" in completed diameter) will be sealed with cement, unless otherwise directed by the Hydrologist or Drilling Foreman. A licensed driller is required to seal these types of holes.

Exploration Holes

A ten foot surface seal of dry bentonite, wetted with two gallons of water per bag when pouring, or a seal of cement is allowed. The ten foot seal must remain after site reclamation is complete. For sites that may be recontoured below their drilled grade, install enough seal to leave at least ten feet after the dirtwork is complete. We will normally use a cement seal, but the Geologist may specify either of the seal types. A license is not required to plug exploration holes.

Record keeping

For each exploration hole plugged, a record will be made and given to Newmont Drilling Services. The record will contain data sufficient to identify the hole, the hole diameter, the plugged interval, person plugging the hole, the amount and type of material used, the plugging methods used, and other information as required by Newmont.

Water wells, monitoring holes, drain holes, and piezometers require a State abandonment affidavit as well.

7/22/98

Randy,

Rich Appling said the mine has run out of water a couple of times (due to excessive water use by underground drilling) and reminded us to monitor water usage by the surface drilling rigs. So far, surface drilling hasn't needed much water so I haven't told the drillers to record how much water they use. I have told them to try to fill up their water trucks in the afternoon or evening when the mine isn't operating. For the time being, I think the following procedure will be adequate:

You, Jesse, or I should check the water level first thing whenever we come out to Rosebud and whenever we go to check on the rigs. Eklund's 1,000 gal water truck can be filled whenever water levels are $> 54"$.

Boart-Longyear's ~~water~~ 4,000 gal water truck can be filled whenever water levels are $> 62"$.

Water levels should stay above 48" and must be monitored more frequently if they drop below ~~48~~ 66". You, Jesse, the drillers or I should check before any water trucks are filled up if levels have been low.

If you have any other suggestions, let me know.

Gerge

P.S. Rich said the pumps ~~are~~ produce only 50 gpm now rather than the 60 gpm they produced before.

MISCELLANEOUS SAMPLES FOR WHOLE-ROCK ANALYSIS								
Sample/ Hole No.	Location/ Depth	Date	Sample Type	Sample Size	Purpose	Rock Type	Alteration	Comments
RS-401	1956.3-1956.7	3/21/98	whole cor	4.4" NQ	w.r. geochem	Chocolate; aphanitic grey rock without(?) hbl microphenos	negligible; rare, narrow bleaching along fractures with chl, calcite; tr. dissem. calcite	how does this differ from Chocolate with hbl microphenos? what is comp?
RS-410	943.2-943.75	3/20/98	split core	6.3" HQ	w.r. geochem	Dozer; v. pale grn-grey; weak caraway seed tex.; rare darker xenoliths(?) up to 1 cm	weak arg/grn clay; tr. dissem. pyrite; tr. dissem calcite; rare calcite vns	compare composition of weakly altered to unaltered 1047.4'
RS-410	1047.4-1047.8	3/20/98	split core	5.2" HQ	w.r. geochem	Dozer; massive, grey, aphyric, aphanitic	negligible; minor hematite & calcite along fractures; tr. dissem. calcite	should be primary igneous comp., possibly slightly higher Fe, Ca
RS-425	2142.7-2143.0	3/17/98	split core	4.6" HQ	w.r. geochem	Chocolate; apparently aphyric, aphanitic rock	weak arg with rare relict grey; sparse tiny grn specks; tr. dissem. calcite; possibly tr. dissem ext. fine pyrite	should be close to primary comp.; compare to 2159.2'
RS-425	2159.2-2159.6	3/17/98	split core	3.2" + 2.3" HQ	w.r. geochem	Chocolate; v. rare hbl microphenos & tiny black specks; wavy, subparallel stylolite-like streaks	negligible; minor bleached patches; tr. dissem. hematite & calcite	as close to a primary igneous comp. as it's likely to get
SK-98-1	3 km S of jct. E of access rd.	9/25/97	hand sam	1 kg	w.r. geochem	black, aphanitic, with fine feld(?) and 2-3 mm px(?) and possibly olv phenos; weakly magnetic	Feox and calcite on weathered surfaces and fractures	is this really basalt? same locality as SK-97-4
SuK-97-3B	1.3 km SE of j	9/25/97	hand sam	2 kg	w.r. geochem	black, twinned, platy K-spar(?) up to 3 cm in black aphanitic matrix; possibly black cpx up to 5 mm; locally weakly magnetic	Feox and calcite on weathered surfaces and fractures; collected down hill from SuK-97-3	selected for coarse phenos so comp could be biased what is comp?
F-98-1	hill 1423, 2.4 k W of access rd.	3/21/98	hand sam	1 kg	w.r. geochem	10-15% 1-2 mm plag laths; 2% 2-3 mm tabular cpx(?); rare round 3 mm opx(?); black matrix; weakly magnetic	Feox on weathered surfaces	should be same unit as SuK-97-3B but no coarse K-spar phenos on outcrop; is it basalt?
RS-426	1360.8-1361.5	4/19/98	split core	8" HQ	w.r. geochem	Chocolate?: grey, aphanitic, apparently aphyric	minor hematite banding and fractures rare bleached bands with(?) clay	is this same as aphyric unit in 401?
RS-424	2009.6-2010.1	4/19/98	whole cor	6" HQ	w.r. geochem	Chocolate?: vitric-lithic lapilli-ash tuff, <3% volc. & ALS lithics, <1% vitrics	devitrified; hematite in fractures	is composition related to other volcanic units?
RS-422.1	1959.25-1960.	5/28/98	whole cor	3.3" NQ	w.r. geochem	Chocolate?: 3-5% eu-sub, zoned feld up to 2 mm in aphanitic matrix	some dark, v. fine hem?; calcite & clay? in phenos; calcite and hem in fractures	how does this compare to BMB-type?
RS-422.1	1984.8-1985.5	5/28/98	whole cor	2.2" NQ	w.r. geochem	Chocolate?: 2% eu-sub, 1-mm hbl & bi? phenocrysts, 1-2 mm pale splotches some could be feldspar phenos; aphanitic matrix	weak arg or possibly green clay; moderate dissem. calcite; rare fractures with bleached margins	is this same composition as RS-422 2141.9?
RS-422	2141.1-2142.0	5/28/98	whole cor	2.1" HQ	thin section	Chocolate?: aphyric, aphanitic with 2-3% <1mm, irreg. vitric? shards, <1% irreg. white specks (secondary?)	dark green clay in vitric? shards & weak? in matrix; mod. dissem. calcite	could this be same rock unit as RS-422. 1984.8? doesn't seem to be contact between them; what is effect of alterati

**Newmont Exploration Ltd.
Rosebud Joint Venture**

To: Drilling personnel at the Rosebud Mine
From: George Langstaff

Date: November 1, 1997

Subject: Water Use for Drilling Activities

Rich Appling and Mark Barnett of Hecla and Jesse Arthur and Gene Mapel of Newmont have contributed to the development of these procedures.

Rosebud Mine Water System:

- water available for drilling activities is stored in the larger of the 2 water tanks above the Exploration Trailers,
- the larger water tank has a capacity of 50,000 gallons; of this 36,000 gallons is available for daily use, the remainder is reserved for fire suppression,
- a minimum of 18,000 gallons is needed to keep the batch plant and mine operating for one shift, exclusive of road work,
- water level in the large water tank is measured in inches where one inch represents about 333 gallons (one foot represents about 4,000 gallons),
- a digital meter on the northeast side of the large water tank displays the water level from 0 (lowest) to 108 inches (full),
- the water level in the large water tank must remain above 48 inches to insure the mine can operate without interruption,
- 3 pumps supply water to the large water tank and together yield about 80 gallons/minute (4,800 gallons/hour),
- all 3 pumps start automatically when the water level in the large water tank falls below 80 inches; pumps turn off automatically in succession as the water level rises to 108 inches.

Total allocation of water for drilling: 15,000 gallons/day

Water allocations for each drill rig:

- Eklund 586 - 2 truck loads/day (2,400 gallons)
- Boart-Longyear P1 - 4 truck loads/day (4,400 gallons)
- Boart-Longyear 436 - 2 truck loads/day (8,000 gallons)

Monitoring water use

1. When filling up with water, drillers will record the amount of water taken on a list hung by the standpipe. To stay within the allocations, each drilling crew will inform their relief crew of the amount of water they have used.
2. Newmont personnel will check the list by the standpipe daily whenever drill rigs are in operation and verify that the water level in the large water tank is above 48 inches. If the water level is below 48 inches, they will confer with Rich or Mark to determine if drilling activities must be curtailed.

3. Before leaving the mine site each evening, George will check the water level in the large water tank. Any amount over 60 inches will be considered available for drilling use before 6:00 am the following morning. Drillers will, accordingly, be told how many truck loads of water they may use overnight.

If the allocated amount of water is insufficient

1. If a driller needs more than his allocation, he will contact Newmont personnel (George/Randy/Bob at Exploration Trailers or Jesse/Andy/Gene on site).

i. Newmont personnel will check the list of water usage by the standpipe to determine if additional water is available within the 15,000 gallons/day total allocation and confer with the other drillers to determine their anticipated water needs. If the driller who needs water can be given sufficient water from the 15,000 gallons/day allocation, drilling will continue.

ii. If not, Newmont personnel will contact Mark (ext. 111) or Rich (ext. 129), who will determine if current mine needs allow for additional water to be diverted to drilling use. If so, the available water will be used for drilling and water levels will be monitored closely to insure that they are not drawn down too low.

iii. If Mark and Rich are not available, Newmont personnel will check the water level in the large water tank. Water will continue to be withdrawn for drilling use as long as the water level in the large water tank stays above 48 inches. Mark or Rich will be informed of the additional water use as soon as practicable.

iv. If there is no more water available for drilling, Boart-Longyear's 4,000-gallon water truck will fill up with water at the Crofoot-Lewis Mine (18 miles round trip) as often as necessary and dispense the water as needed. A temporary storage pond (such as the sump by RS-415 on the East Zone) may be used to facilitate transferring water.

2. If Newmont personnel are not available, the driller will first check the list of water usage by the standpipe to determine if additional water is available within the 15,000 gallons/day allocation. If so, he will inform the other drillers of his increased use of water and continue to use water until the 15,000 gallons/day allocation is exhausted.

i. If the 15,000 gallons/day allocation is insufficient, the driller will check the water level in the large water tank and then call George (Thurs, Fri, Sat, Sun, Mon: 623-5158) or Jesse (Tues, Wed: 623-0729) at home. George or Jesse will drive to the mine site if necessary to supervise water usage and insure that water levels in the large water tank do not fall below 48 inches; to monitor water levels while the large tank refills and authorize additional use when the level has recovered sufficiently; to arrange for other sources of water; or to curtail drilling activities.

ii. If the water level is below 48 inches and remains low, George or Jesse will call Rich (625-3749) or Mark (623-9589) at home and ask if additional water can be made available for drilling.

SAFETY

**THE ROSEBUD MINING COMPANY, LLC.
HECLA MINING COMPANY - MANAGER OF MINING**

May 2, 1997

Memorandum to: Geology Staff

From: Charlie Muerhoff 

RE: Vehicle Chock Blocks

As of May 1st, **ALL** pick-up trucks, vans, tractors, and other light vehicles on the Rosebud minesite must have one wheel chock in place when the vehicle is parked, as per MSHA regulations. The chock must be placed so that the vehicle will not roll when put into neutral.

If your vehicle does not have a wheel chock, get one from the shop.


Hecla
MINING COMPANY
Rosebud Mine

✓ RBV
✓ GL
✓ BK

Post on bulletin board

TO: All Employees
FROM: Chris Drobny
SUBJECT: Traffic by Portals
DATE: 10/23/97

During the monthly supervisor safety meeting this morning, it was brought up that we have the potential for a major accident with haul trucks coming out of the portals and running into surface traffic. Especially with winter coming on. The request that came out of this meeting is that everyone uses the haul road to the north of the complex when traveling from one side of the mine site to the other unless it is **absolutely necessary**. For example: Fueling vehicles, work at the central plant or fuel farm, checking supplies at the lay down area, etc. These are necessary functions. Traffic for other reasons such as going to Dreamland, samplers going to the ore pad, travel to the batch plant or discharge ponds, etc. please use the north haul road. There will be signs posted on each side of the portals reading "RESTRICTED AREA, MINE TRAFFIC ONLY" Remember, **equipment has the right of way!**


Chris Drobny

cc: all department heads
clayton

Geology

Newmont Gold Co. - Rosebud
Winnemucca, Nevada

Memorandum

To: George Langstaff

Date: January 30, 1998

Fr: Randy Vance -RBV

Subj: Master Drill Hole List and Drill Hole Summary Logs

You recently requested that your responsibilities be better defined and conveyed to you. Two items that I'd like you to maintain from here out are the master drill hole list and the drill hole summary logs.

Bob Kastelic was maintaining the drill hole list using Holelist.xls. For the most part it is adequate, but there are several improvements that we can make for 1998. Some columns need to be added pertaining to gold intercepts and the automatic calculation of gradeX thickness values. An example of Newmont's master drill hole list can be seen in K:\reports8\annual\Tcdhms97. This shows how a gold intercept, say 45 feet of 0.044 oz/st, is entered and a GXT is automatically calculated. Also, the Newmont version allows the quick calculation of RC and/or core footages. In general, my philosophy is that the master drill hole list contain as much as reasonably possible; individuals can extract the desired parts at any time for monthly reports, etc. Please incorporate the above columns and formulas (you can simply copy the above file) and propose a new 1998 drill hole table using Excel that we can review.

I left you a note on the second item, the drill hole summary logs. They are an important part of the drill hole file, as they record the history of the hole and all activities surrounding it. The file contents typically contain the summary, geologic log, core photos, downhole survey, core splitting worksheets, dblog printout, abandonment records, sample submittal, assays, and copy of assay invoice. I would also like to see a simple cross section of each hole (hand drawn or plot by Craig), but I doubt if time will allow at this time. Please note on the summary any information related to the driller's comments, i.e., lots of water at X depth, fault zone at X depth, etc. The driller's daily reports can be quickly reviewed once per month by asking Michelle, and there may be information of value on our daily drill reports. Perhaps Jess can start noting details as he meets with the drillers each day. I feel it is important that the summary sheets be kept current on an ongoing basis. If a person fills them out 3 or 4 weeks after the hole is finished, details become fuzzy.