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James Doyle Sell Mining Collection

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December 20, 1983

To: SWED Staff

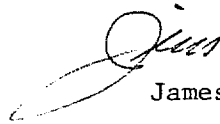
From: J. D. Sell

Fire Insurance

It has been brought to my attention that Asarco does not have a fire insurance policy which will cover the loss of your equipment and goods if such occurs while away from your home.

You may have coverage, or should secure a rider, on Personal Belongings taken out of your house (around \$10-\$15/year) under your Homeowners or Renters Insurance Policy.

This may be particularly applicable when you are staying for extended periods of time in one general area where you tend to accumulate more and more stuff as time goes on, i.e. Rock Creek, Tintic, etc.



James D. Sell

JDS/cg

Utah Power & Light Company

EA-0198

ASARCO Billing for CMC Project.

Account No. 3850-01200.001 9 Rate 2

RBCist % ASARCO PO Box 5747

THIS IS THE MOGENSEN RESIDENCE.

Account No. 3850-01250.000 0 Rate 1

Was: Chief Consolidated PO Box 270

Now: (1/26/82) ASARCO, Inc., PO Box 31, ⁸⁴⁶²⁸Carleton, Utah

THIS IS THE DRAFTING OFFICE

Account No. 4350-03935.001 7 Rate 8 (Mining)

ASARCO Chief Con Mine #2, PO Box 31, ⁸⁴⁶²⁸Carleton, Utah

THIS IS THE Chief No. 2 Shaft.

Lee Wyrnager, Sinterquin office.

Copy for TCB, FRK, HGK,
GJS, HMS, JRS
& mk, cg, & jds

FILE

New York, June 6, 1983

MEMORANDUM FOR: Exploration Managers

Analytical Results

Henceforth it is firm Exploration Department policy that the managers of each exploration office will receive his own copy of every analytical report - spectrographic, assay, geo-chem, etc. received by his office or sub-office. This means that the laboratory doing the work will have to send at least two sets of the results, addressed to 2 different people, one to the geologist collecting the sample and one to the manager.

The above policy will apply to samples from raw exploration prospects up through and including major drilling programs and there will be no exceptions. It is up to each of you to work out the details. If you are worried that the flow of data from a major drill effort will overwhelm you, ask your secretary to mark assays at or above the cutoff being used on that project. If the exploration sample is collected by the manager, he can designate a duplicate be sent to one of his staff if he choses.

This policy is designed to avoid significant analytical results sitting on a geologist's desk for a long period of time when he may be in the field or a value of exploration significance going unrecognized by a staff geologist while he thinks about it or works on other items considered more important.

F. T. Graybeal
F. T. Graybeal

cc: WLKurtz

Blind note for J. D. Sell. You might route your and your staff's sample results to WLK since you're gone so much.

RECEIVED
JUN - 9 1983
S. W. U. S. EXPL. DIV.

May 11, 1982

To: SWED Staff

From: James D. Sell

Expense Accounts and
Distribution

A wide variety of reporting the end-of-the-month accounting is evident. Numerous memos have been written concerning the above and if your memory of those has faded, please see Carol for a general copy.

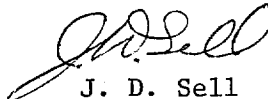
To simplify the collating of distributions I would appreciate it if you would incorporate the following features as applicable.

Expense Account - On each day of entry please note the place (or start-stop), lodging notation, and the project number (or general exploration) notation. See attached example. If, as in the example, you alphabetize your receipts with A, B, etc., and place the same on your receipts, then all can be verified and separated out as needed with a minimum of fuss. Naturally, your receipt should also have the project number and cost center-expense classification numbers, or the general exploration notation with expense classification as applicable.

As per the Accounting Department, all supplies (if more than 2 purchases) should be listed on the Supply Purchase form (sample attached) supplied by them, totaled, and the total transferred to your expense account sheet as noted in the example.

After you have filled out all the accounting forms please collate these with a cover letter to Carol. This cover, hand written, should have your name, month-year, and the summary-synopsis of the three categories as filled out for accounting (see attached example).

Any thoughts for improvement should be brought to Carol's or my attention.


J. D. Sell

JDS/cg

Attachments

TRAVEL AND OTHER REIMBURSABLE EXPENSE

FORM AD 126-ASARCO
(REV. 1-63)
PRINTED IN U.S.A.

EXPENSES OF NAME FOR MONTH 19

DAY	TRANSPORTATION		ITINERARY Starting point, destination, hotel name, business purpose. (Show mileage if personal car used)	HOTEL	MEALS	MISC.		ENTERTAINMENT, BUSINESS MEETINGS AND MEALS, ETC. Firm and individuals, place and business purpose (Additional space on reverse side)	Amc.
	Auto, Rail, Air, etc. Code	Taxi, Bus, etc. Amount				Telephone, Telegrams, Postage, etc. Detail	Amount		
1			Tucson - Willcox, Az Rodeoway Inn	(A) ~	~				
2			Genev - Winchester Willcox - Safford, Az Holiday Inn	(B) ~	~	(C) AGS	~		
3			Genev - AGS, Field Trip Safford - Silver City, NM	(C) ~	~	Regist.	~		
4			Genev - Grant, Silver	~	~				
5			Silver City - Tucson Genev - travel		~				
28									
29									
30						Supply purchase	Total	(from Supplemental Form)	
31							Grand Total		
TOTALS									

DISTRIBUTION OF EXPENSES		DETAIL OF ADVANCES		GRAND TOTAL EXPENSES \$	
A/c	\$	Cash (..... Office) \$		LESS ADVANCES	
A/c	\$	Cash (..... Office)		DIFFERENCE	\$
A/c	\$	Transportation		DUE TO EMPLOYEE <input type="checkbox"/> DUE TO COMPANY <input type="checkbox"/>	
A/c	\$	Personal Mileage (CO. OWNED CAR) @		(Indicate disposition of balance on reverse side)	
TOTAL	\$	TOTAL	\$		

*CODE: A - Air; B - Excess Baggage; R - Rail; C - Personal car; H - Rented car; K - Company car; P - Parking; T - Tolls

DATE COMPLETED _____ CORRECT _____ EMPLOYEE'S SIGNATURE _____ APPROVED _____ DEPT. HEAD _____ ACCOUNTING DEPT. _____

SAMPLE

SUPPLY PURCHASES

Employee: _____ Month: _____

<u>Receipt No.</u>	<u>Office or Project</u>	<u>Cost Center and Expense No.</u>	<u>Amount</u>
1	EA-0000	530-400	\$ <u> </u>
2	EA-0000	560.-350	<u> </u>
3	499-01	570-350	<u> </u>
4	499-01	580-750	<u> </u>
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
TOTAL			\$ <u> </u>

If the above figures are in other than U. S. Dollars, enter currency _____ and exchange rate. Use separate sheet for each currency involved.

* For General Exploration, Tucson Office, enter Office No. 499-01

Date: _____ Signed _____ Approved _____

Cover Example:

NAME

MONTH - YEAR

TIME

Project EA-0000, xyz, field	14 days
Project EA-0000, xyz, office	4
Gen-Ex. Winchester, Az exam	1
Gen-Ex Grant Sitien, NM exam	1
Gen-Ex AGS Field Trip (Safford)	1
Gen-Ex. office	2
Gen-Ex travel	<u>1</u>
	24 days
weekends	<u>7</u>
	31 day Total

EXPENSE

Project EA-0000, xyz	\$ Cost
General Expl. (specify)	<u>Cost</u>
	\$ Cost Total

MILEAGE

Project EA-0000, xyz	miles
General Expl. (specify)	<u>miles</u>
	miles Total

Cost Centers

- 500 Mineral Property
 - 501 Outright Purchases
 - 502 Option Payments on Mineral Prop.
 - 503 Bonus Payments on Mineral Prop.
 - 504 Min. Royalties--Deductible from Future Production
 - 505 Min. Royalties-- Not Deduc. " " "
 - 506 Rental Payments
- 507 Claim Staking (Location/assessment work, claim valid.)
- 510 Excavating
 - 511 Surface Excavating
 - 512 Underground Excavating
- 520 Drilling
 - 521 Surface Drilling (Site Prep./Mud Pits)
 - 522 Underground Drilling
- 530 Geology
 - 531 Mapping
 - 532 Photo-interpretation
 - 533 Geologic Research
 - 534 Geologic Reports
 - 535 Permeability Test Work
- 540 Sampling, Assaying, Lab., Core Logging
- 550 Geophysics
 - 551 Line Cutting
 - 552 Ground Geophysics
 - 553 Air Geophysics
- 560 Geochemistry
 - 561 Geochem Field Work
 - 562 Geochem Lab.
- 570 Engineering
 - 571 Surveying
 - 572 Photographing, Aerial, Flagging
- 580 Construction (Temporary)
 - 581 Roads, Trails (Temp.)
 - 582 Buildings (Temp.)
 - 583 Shaft Repair
- 590 Construction (Permanent)
 - 591 Roads, Trails (Perm.)
 - 592 Building (Perm.)
- 610 Administration, Field Offices & Camps
- 620 Administration, General
- 640 Distributable Accounts
 - 641 Autos & Vehicles (incl. depreciation)
 - 642 Aircraft & Boats
- 650 Partner's Share
- 660 Adjustments
 - 661 Commission or fees
 - 663 Exchange

Expense Classification

100 Salaries
150 Labor-Wages
200 Additional Labor
220 Social Security Taxes
230 Group Life Insurance
240 Retirement Annuity
270 Savings Plan
300 Medical Expense
310 Health Plan
320 Dental Plan
330 Vision Care
350 Equipment Rental
390 Repairs & Maintenance
400 Materials & Supplies (tools, maps, casing,
drill bits, explosives, office supplies)
440 Office Equipment & Furnishings
500 Communications (Tel. & Tel.)
530 Postage, P.O. Box
550 Freight & Express
600 Traveling
660 Depreciation
680 Insurance
710 Membership/Dues
720 Newspapers, Periodicals, etc.
750 Outside Professional Expenses
780 Fuel, Power, Water
790 Rent
800 Taxes
801 Sales Tax 802 Use Tax 803 Prop. Tax 804 Franchise Tax
870 Dropped Projects (NY Office only)
880 Exchange
890 Commissions
950 Other
970 Distributions from Other Centers



February 11, 1983

To: T. C. Benavidez
F. R. Koutz
H. G. Kreis
G. J. Stathis
H. M. Stone
J. R. Stringham

From: J. D. Sell

Drill Project Paperwork

Overall the drilling project flowsheet seems to work well and, to date, the estimates made by the individual project geologists are sufficiently close that we have been able to keep close control on expenditure levels. However, there are two things on the flowsheet which were perhaps not clear.

First, at the end of each month, as soon as you have made your monthly cost estimates, please copy the monthly sheet #3031 which you have filled out and attach the driller's shift reports to the copied 3031 for filing.

Second, prepare your drilling cost summaries as soon as the accounting department has all the official data, usually a month after drilling or cleanup road or site work is complete. There is a tendency to wait several months for geologic data and include the drilling cost summaries with the geologic report. This is not necessary. Cost summaries should be completed as soon as the data are available so that this information can be used for Supplemental Exploration Authorization requests. This can be pulled monthly from the accounting sheets, then totalled at the last month. The cost summaries should contain the following:

	<u>Total</u>	<u>Cost/Ft.</u>
Drilling	\$	\$
Road, Site Work		
Assaying		
Geology		
Field Supervision		
General Administration		
Other Categories you wish to include		
	_____	_____
	\$	\$

If rotary or air hammer and diamond drilling are done in the same hole, those direct drilling costs (contractor invoices) should be tabulated separately. A paragraph of comments should include the contractor, the

size of drill used, and other pertinent information such as major problems and major unusual costs (mud, casing lost or left in the hole, moving costs, etc.). A notation of the impact of the unusual items on a cost/ft. basis is particularly useful. Please mark Mr. Sell for a copy of all cost summaries. Cost summaries can be prepared on a hole by hole basis for particularly deep tests or for aggregate programs which run continuously, such as Buckskin or Santa Cruz. In the latter case, summaries are often best prepared after the authorization is expended.

I emphasize that the above are not just exercises in paperwork. Shift reports are used to acquaint prospective contractors with drilling conditions and can result in reduced bids. Cost summaries are extensively used to prepare new authorizations and annual budgets, so I would appreciate your cooperation on the above items.

James D. Sell
J. D. Sell / *es*

JDS/cg

Attachments

ATTACHMENT A

Drilling Project Flowsheet

I resubmit a previous report compiled by various people involved in drilling projects which has proven to be of help in keeping the project drilling thoughts and data under control during management of a drilling project. The steps are self-explanatory, but please review them and bring any questions you might have to my attention. Those who have not made a monthly cost estimate, checked contractor invoices, or written a monthly or final report should review various examples in the files if there are any problems on how to proceed.

The flowsheet is set up to remind you of the daily details in all our drilling projects which are logically handled by the project geologist and the field technicians. You might use it as a check list and cross off steps as they are completed, making it easy for someone to pick up a project at some interim stage and carry it to completion. Several of the steps can be easily handled by Messrs. Stone or Benavidez, but geologists should see me first to determine whether additional help will be available.

James D. Sell

February 11, 1983

DRILLING PROJECT FLOWSHEET

The various steps in a drilling project are listed below in approximate sequential order; not all steps may be applicable to a specific project. The project geologist (with J. D. Sell) is responsible for obtaining drill contractors; J. R. Stringham and the geologist are responsible for all road permits and land owner notifications; the project geologist is responsible for the remainder, including tabulating progress by himself and others on the flowsheet, and keeping everyone informed. J. D. Sell will assign geological technicians who can expedite certain steps with instructions from the geologist. Stay organized and flexible.

1. Land status reviewed with geologist, J. D. Sell, and J. R. Stringham; timing established for permits and road work (at least 2 months before drilling when possible).
2. Bids solicited by project geologist and J. D. Sell.
 - a) Contractor needs location (state), minimum footage, drilling requirements (hole size, etc.), water source, and starting date.
 - b) Rotary casing inventory and diamond bit for rotary spot cores maintained by technicians, with input from geologist, and filed with Carol.
 - c) Sample material inventory maintained by D. A. Melhado as monitored and requested by geologists-technicians.
3. Drill contractor selected by J. D. Sell-geologist; purchase order written by geologist; drill authorization request written by geologist with cover/final by J. D. Sell.
4. Drill site located on ground and roads flagged by geologist.
5. Road permit applications filed by J. R. Stringham.
6. Road contractor obtained by geologist; may need different contractor for rotary vs. diamond drill sites.
 - a) Purchase order number for construction/reclamation obtained by geologist.
7. Road and drill site reviewed with U.S.F.S., state/federal government, patent landowner (where necessary), road contractor, and geologists; permission to build gates, separate disposal of drilling mud, sanitations arranged.
8. Road permit permission received by J. R. Stringham.
9. Road contractor mobilized to build site and road.
10. Water source and cost confirmed by geologist.
11. Sample materials (trailer if required) moved on site by geologist (see attached list).

12. Rotary casing moved to site (arranged by geologist, consult with J. D. Sell).
13. Diamond bit for rotary spot cores obtained from storage and moved on site by geologist.
14. Fire-fighting equipment in working order and on site (geologist), but should also be included in drilling contractor proposal as part of their responsibility.
15. Name and phone number of project geologist given to drill contractor.
16. Drill moved on site by geologist with letter of personnel authorized to see the core.
17. Sample procedures clearly outlined to driller with initial close supervision.
18. Drill core and shift reports collected weekly; reports checked on site for accuracy/legibility.
 - a) Spot checks on core recovery, proper handling of core made on site.
19. Monthly cost estimate made by geologist.
 - a) Drill costs calculated from shift reports and contract.
 - b) Cost estimate to Carol Gregory by 27th of month (see attached forms).
 - c) Submittal of completed Form 3031 and shift reports to Carol.
 - d) Monthly contractor invoices carefully checked and signed by geologist, forwarded to J. D. Sell.
20. Monthly report of drilling progress, assays, etc. by geologist (by 27th of month).
21. Quarterly reports, if needed, to landowner, by geologist via J. D. Sell (by end of quarter).
22. Down-the-hole survey scheduled by geologist before hole terminated (if required, allow several weeks).
23. Hole terminated by geologist; contractor headquarters notified.
 - a) Site cleaned by drill crew.
 - b) Hole plugged/capped/concealed/abandoned (whichever necessary).
 - c) Survey of collar location (may be done anytime after rig on site).
24. All equipment cleaned, stored.
 - a) List of all sample materials and rotary casing used compiled by geologist and given to Carol for filing.
 - b) Rotary diamond bit returned to storage.
 - c) Fire-fighting equipment reconditioned if necessary.

25. Final report on drilling by geologist; should include cost summary.
26. Final drill hole record sheet completed (see attached form).
27. Geologist to notify J. R. Stringham when drilling complete - all property owners notified where required.
28. Site reclaimed; road contractor notified by geologist; seeded by technician if advisable or required.

SOUTHWESTERN EXPLORATION DIVISION

26th _____ thru
25th _____, 198__

MONTHLY COST SUMMARY

Project, _____, _____
(County) (State)

A. DIRECT DRILLING (Acct. 521-)

CONTRACTORS' CHARGES

Invoiced during month covering prior month's work

Contractors' Services

(Invoice Amt.)

(Prior month's estimate)

(Invoice Amt.)

(Prior month's estimate)

Invoiced during month covering current month's work

Contractors' Services

Statement Amt.

Estimated balance of contractors' charges covering work through 25th of current month

Contractors' Services

Statement Amt.

Supplies and Freight

Field Trailer Rental

Water Purchases (Drilling)

Surveying of Drill Holes

B. SITE PREPARATION (Acct. 580-)

CONTRACTORS' CHARGES

Invoiced during month covering prior month's work

Contractor's Services

(Invoice Amt.)

(Prior month's estimate)

Invoiced during month covering current month's work

Contractor's Services

Statement Amt.

Estimated balance of contractor's charges covering work through end of current month

Contractor's Services

Estimated Cost

Supplies and Freight

C. FIELD ADMINISTRATION (Accts. 530-, 540-, 550-, 570-, 610-)

Salaries

Name

No. Days Allocated to
Project During Month
(show as ratio to total
working days in month,
i.e., 24/26)

_____	_____
_____	_____
_____	_____
_____	_____

Wages

Name

No. of Straight
Time Hours
During Month

No. of Overtime
Hours During
Month

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Traveling and Living Expenses - ASARCO Salaried Personnel

Name

Estimated or Actual
Traveling Expenses
Incurred During Month

_____	_____
_____	_____
_____	_____
_____	_____

Supplies - Itemize individual purchases of \$25.00 or more -
group small purchases under Misc.

Item

Cost

_____	_____
_____	_____
_____	_____
_____	_____

Assaying

Assayer

Charge or Estimated
Expense for Assaying
Performed During Month

_____	_____
_____	_____
_____	_____

Freight

Carrier

Charge

_____	_____
_____	_____

C. FIELD ADMINISTRATION - Continued

Field Administration Expenses

Item

Cost

Office or Core Shed Rental
Electrical Service
Gas Service
Water Service
Telephone Service

D. GENERAL ADMINISTRATION (Accts. 620-, 641-)

Salaries

No. Days Allocated To
Project During Month
(show as ratio to total
working days in month,
i.e., 24/26)

Name

Transportation - Company Vehicles

Vehicle License

Miles Driven Chargeable
to Project During Month

Drafting Dept. Expense

Salaries & Wages
Supplies

E. MINERAL PROPERTY (Accts. 501- thru 507-)

Includes legal fees & taxes; claim staking & validation;
State Land rental payments

Description

Amount

TOTAL

Form completed by: _____

DRILLING PROJECT CHECK LIST

Equipment & Supplies

- Trailer _____
- SEPOR Splitters _____
- Wash Tubs _____
- Cloth Sample Bags _____
- Plastic Sample Bags _____
- Wire Ties _____
- Markers (Waterproof) _____
- Markers (Sharpies) _____
- Tags (White) _____
- Tags (Yellow) _____
- Stamp (Hole No. & Depths) _____
- Stamp (American Analytical...) _____
- Burlap Bags _____
- Gold Pans _____
- Scales _____
- Bailing Wire _____
- Pliers w/Wire Cutters _____
- Pallets _____
- Plastic Vials _____
- BX Core Boxes _____
- Ball-point Pens _____
- Carbon Paper _____
- White Envelopes _____
- Manila Envelopes (Large) _____

Forms

- a) Drill Hole Summary _____
- b) ASARCO Rotary Drill Shift _____
- c) Monthly Cost Summary _____
- d) Drilling Time-Hrs.-Per Diem-Assay Charges _____
- e) ASARCO Sample Shipments _____
- f) American Analytical Assay Forms _____
- g) List of Holes, Depths, etc. _____

- Plastic Containers (Pails) _____
- Flagging _____
- Lath _____
- Grade Stakes _____

HOLE _____ PROJECT _____ 26th _____ THRU 25th _____, 19 _____ CONTRACTOR _____

DESCRIPTION: _____

	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	TOTAL	PRICE	AMOUNT
FEET DRILLED																																		

SUB TOTAL _____

CEMENTING
CONDITIONING
CASING

SUB TOTAL _____

MATERIALS

SUB TOTAL _____

TRUCK RENTAL
MILEAGE
LOADS OF WATER

SUB TOTAL _____

MISC.

SUB TOTAL _____

TOTAL _____
mn 3031

DRILL HOLE RECORD

HOLE NUMBER _____

HOLE DESIGNATION: _____ RECORD DATE: _____ 19____ BY _____

LOCATION: PROJECT (?) _____

COUNTY _____ STATE _____

HOLE DESCRIPTION:

MODE
a.) ROTARY
b.) DIAMOND
c.) VERTICAL
d.) ANGLE BEARING _____ INCLINATION _____

FINAL T.D. _____ FT.
DEPTHS
FROM _____ TO _____ FT.
FROM _____ TO _____ FT.

DRILLING HISTORY:

a.) ROTARY: CONTRACTOR _____
OPEN CASED SIZE (ID)
FROM _____ TO _____ FT. FROM _____ TO _____ FT. _____ INS.
FROM _____ TO _____ FT. FROM _____ TO _____ FT. _____ INS.
FROM _____ TO _____ FT. FROM _____ TO _____ FT. _____ INS.
FROM _____ TO _____ FT. FROM _____ TO _____ FT. _____ INS.
TERMINATED . LOST REASON _____
DATES _____ 19____ TO _____ 19____

b.) DIAMOND: CONTRACTOR _____
FROM _____ TO _____ FT. SIZE _____
FROM _____ TO _____ FT. SIZE _____
FROM _____ TO _____ FT. SIZE _____
FROM _____ TO _____ FT. SIZE _____
TERMINATED . LOST REASON _____
DATES _____ 19____ TO _____ 19____

c.) HARDWARE LEFT IN HOLE (CASING, TOOLS, ETC.):
FROM _____ TO _____ FT. SIZE _____
FROM _____ TO _____ FT. SIZE _____
OTHER _____

d.) DIRECTIONAL SURVEY YES NO _____
e.) NATURAL WATER ENCOUNTERED _____ IF SO, DEPTH(S) _____ AND NATURE IF KNOWN _____

REMARKS: _____

April 5, 1983

To: TCBenavidez
FRKoutz
HGKreiss
GJStathis
HMStone
JRStringham

From: J. D. Sell & C. Gregory

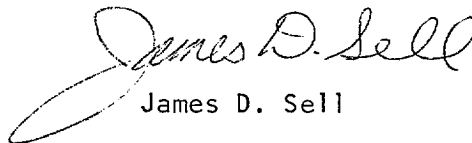
Assay Results

As a follow-up to Carol Gregory's memo of March 8, 1983, on Assaying and the need to submit a copy of your order sheet, acknowledgement, TAJ #, etc., to Carol for identifying and keeping track of the samples, it is also requested that you:

- 1) On the order sheet submitted to Carol, also write the project, prospect, or other identifying name, county, state, so that we have an inkling as to where the samples are from (see Attachment A).
- 2) Have the assayer send a second copy of the analytical results to the office, attention J. D. Sell (Attachment B).

Carol will collate these two sheets and bring any special items of interest to the attention of Kurtz/Sell and to your attention if you are out of town.

Thank you.


James D. Sell

JDS/cg

Attachments A & B

cc: WLKurtz

ORDER FOR ANALYTICA

A

Samples Sent to:

SKYLINE LABS, INC.
 P.O. BOX 50106 • 1700 WEST GRANT ROAD
 TUCSON, ARIZONA 85703
 (602) 622-4836

JOB NO. TATJ259
 PLEASE USE THE ABOVE NO.
 ON ALL CORRESPONDENCE
 SAMPLES REC. 3/16/83
 THANK YOU

(Report and invoice in duplicate will be sent to address below unless otherwise instructed)

Address Report To:

FLEMMING P. KURTZ
ASARCO, INC. SWED
P.O. BOX 5747
TUCSON AZ
85703
 Tel. 792-340

P.O. NO.: _____
 SHIPMENT NO.: SILH
 DATE SHIPPED: MAR 16, 1983
 SHIPPED VIA: DELIVERED BY FEDEX
 NO. OF CARTONS: 1
 NO. OF SAMPLES: 12
 (Information above helps us trace lost shipments)

Send Invoice To:

ABOVE

Send Copy of Report To:

J. D. Sell
ASARCO

LIST SAMPLE NOS.	DESCRIBE MATERIAL	LIST ELEMENTS TO BE DETERMINED (Give anticipated range of values, if possible) Describe any special sample preparation procedures desired.	INDICATE METHOD OF ANALYSIS*	✓ IF 31 - ELEMENT EMISSION SPEC SCAN DESIRED
<u>SILH-1 to 10</u>	<u>ROCK CHIPS</u> <u>(#6 = TAILS)</u>	<u>AU (.02 ppm), E-SPEC</u> <u>PT ORS #1, 2 & 3</u>	<u>GEOCHEM</u>	<input checked="" type="checkbox"/>
<u>WAT TAILS-E</u>	<u>TAILINGS</u>	<u>AU (.02) E-SPEC</u>	<u>GEOCHEM</u>	<input checked="" type="checkbox"/>
<u>WAT TAILS-W</u>	<u>"</u>	<u>AU (.02) " "</u>	<u>"</u>	<input checked="" type="checkbox"/>
	<u>SILURIAN</u> <u>S.B. W. (MIF)</u>	<u>H/Ls (Barker)</u>		

PAYMENT FOR SERVICES REQUESTED MUST ACCOMPANY ORDER UNLESS CREDIT ARRANGED

Signature of person authorizing work:

F.R. King
 (Use Continuation Sheet if Necessary)

INSTRUCTIONS

*METHOD OF ANALYSIS: G-Geochem, Q-Quantitative or Routine Assay
 W-Wet Assay, F-Fire Assay

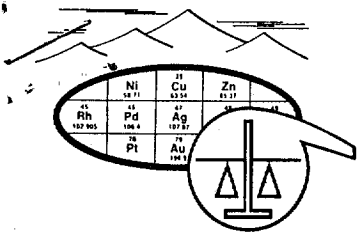
†SAMPLE STORAGE: Pulps stored 90 days pending instructions, bulk rejects stored 30 days pending instructions.

Enclose yellow original with samples, send white copy by mail, retain pink copy. White copy will be returned to shipper as an acknowledgement that shipment has been received.

INDICATE DESIRED DISPOSITION OF SAMPLES AFTER ANALYSIS	Bulk Rejects	Pulp
Return at customer's expense via:		
Store temporarily pending instructions†	<u>WILL PICK UP</u> <input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Discard immediately		

B

SKYLINE LABS, INC.
1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836



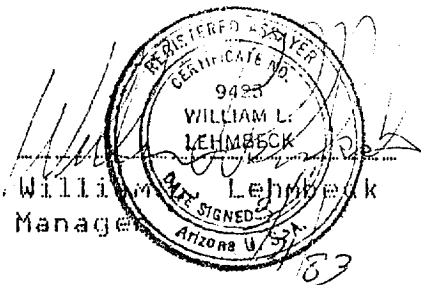
REPORT OF SPECTROGRAPHIC ANALYSIS

CORRECTED REPORT
JOB NO. TAJ 259
March 29, 1983
SHIPMENT NO. SILH
FLEETWOOD R. KOUTZ
SILH-1 THRU WAT TAILS-W

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 9 Rock Chips and 3 Tailing Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.



cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. J.D. Sell

RECEIVED

APR - 4 1983

S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmbek
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122

April 5, 1983

To: Carol

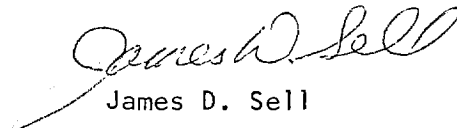
From: JDS

As I am requesting that a copy of all order sheets, with area designation, be sent to you, plus a copy of all assays be sent to the attention of J. D. Sell - then it appears that I need a collator-marker to help expedite any follow-up.

When the assays come in please use a non-reproducible color marker and highlight the following values:

Au	0.5	ppm	or	higher
Ag	10.0	ppm	or	higher
Cu	1000	ppm	or	higher
Pb	"	"	"	"
Zn	"	"	"	"

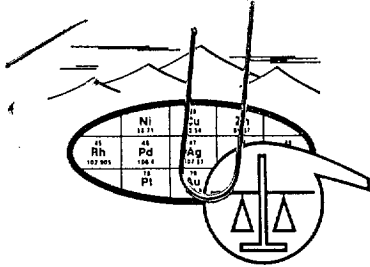
Attach the order sheet and assay sheets together and route by me and/or Kurtz for our attention and comment. If neither of us are in the office then call the person who requested the assays and alert them that they have high values for possible follow-up.


James D. Sell

JDS/cg

Attachment (Examples)

xc: WLKurtz



SKYLINE LABS, INC.
 P.O. Box 50106 • 1700 West Grant Road
 Tucson, Arizona 85703
 (602) 622-4836

REPORT OF ANALYSIS

JOB NO. TAJ 195
 August 27, 1982
 SHIPMENT NO. LMT (F) -3
 Page 1 of 4

ASARCO INCORPORATED
 Attn.: Mr. Fleetwood Koutz
 Southwestern Exploration
 P.O. Box 5747
 Tucson, Arizona 85703

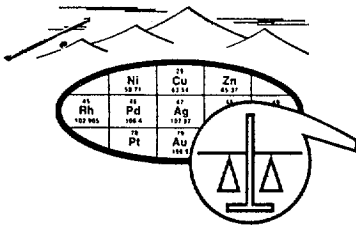
Analysis of 42 Rock Chip Samples

ITEM	SAMPLE NO.	Au ppm	Ag ppm	Hg ppm
1	82 LMT 2	<.002	.4	.05
2	82 LMT 4	.015	2.6	.02
3	82 LMT 6	<.002	<.2	.04
4	82 LMT 8	<.002	.6	.04
5	82 LMT 10	<.002	.2	.17
6	82 LMT 12	.003	.2	.05
7	82 LMT 14	<.002	<.2	.06
8	82 LMT 16	.002	.2	.04
9	82 LMT 18	.026	11.0	.14
10	82 LMT 20	<.002	1.2	.05
11	82 LMT 22	<.002	<.2	.07
12	LMT 1	.007	.4	.03
13	LMT 3	1.700	12.0	.11
14	LMT 5	.270	1.0	.05
15	LMT 7	.160	2.4	.05
16	LMT 9	.340	6.0	.05
17	LMT 11	.010	.8	.06
18	LMT 13	<.002	.4	.05
19	LMT 15	.004	<.2	.08
20	LMT 17	.008	1.0	.05
21	LMT 19	.009	.4	.07
22	LMT 21	.560	26.0	.06
23	LMT 23	.024	.4	.04
24	LMT 25	.230	.2	.05
25	LMT 27	.060	.2	.05

RECEIVED

AUG 30 1982

S. W. U. S. EXPL. CO.



SKYLINE LABS, INC.
1775 W. Sahuaro • P.O. Box 50106
Tucson, Arizona 85703
(602) 622-4836

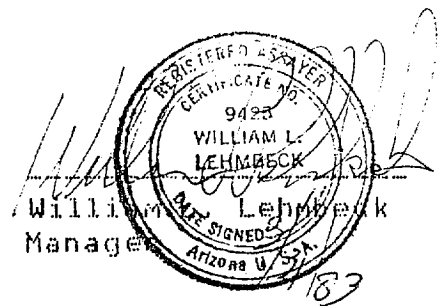
REPORT OF SPECTROGRAPHIC ANALYSIS

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SILH-1 THRU WAT TAILS-W

ASARCO INCORPORATED
Attn: Mr. Fleetwood R. Koutz
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703

Analysis of 9 Rock Chips and 3 Tailing Samples

The attached pages comprise this report of analysis. Values are reported in parts per million (ppm), except where otherwise noted, to the nearest number in the series 1, 1.5, 2, 3, 5, 7, 10, etc. within each order of magnitude. These numbers represent the approximate boundaries and midpoints of arbitrary ranges of concentration differing by the reciprocal of the cube root of ten. The 'accepted' value is considered to be within + or - 1 step of the range reported at the 68 % confidence level and within + or - 2 steps at the 95 % confidence level.



cc: Asarco Incorporated
Southwestern Exploration
P.O. Box 5747
Tucson, Arizona 85703
Attn.: Mr. J.D. Sell

RECEIVED

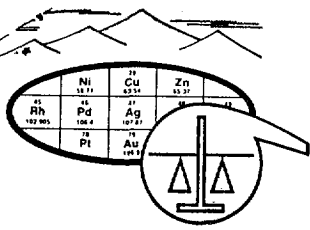
APR - 4 1983

S. W. U. S. EXPL. DIV.

Charles E. Thompson
Arizona Registered Assayer No. 9427

William L. Lehmebeck
Arizona Registered Assayer No. 9425

James A. Martin
Arizona Registered Assayer No. 11122



ITEM NO. SAMPLE NO.
 1 = SILH-1
 2 = SILH-2
 3 = SILH-3
 4 = SILH-4
 5 = SILH-5
 6 = SILH-6
 7 = SILH-7
 8 = SILH-8

ITEM	1	2	3	4	5	6	7	8
ELEMENT								
Fe	2%	10%	7%	1.5%	7%	2%	3%	5%
Ca	5%	10%	15%	7%	7%	>20%	7%	>20%
Mg	.5%	1%	1.5%	.1%	.3%	3%	.7%	3%
Ag	20	5	7	<1	1.5	30	<1	7
As	<500	3000	1500	<500	500	<500	<500	<500
B	<10	<10	<10	<10	20	20	10	<10
Ba	<10	<10	<10	<10	<10	1500	200	70
Be	<2	<2	<2	<2	<2	<2	<2	<2
Bi	<10	<10	<10	<10	<10	<10	<10	10
Cd	150	<50	<50	<50	<50	<50	<50	<50
Co	<5	20	7	<5	<5	<5	<5	<5
Cr	<10	<10	<10	<10	<10	<10	<10	<10
Cu	1000	150	150	50	200	70	50	2000
Ga	<10	<10	<10	<10	<10	<10	<10	<10
Ge	<20	<20	<20	<20	<20	<20	<20	<20
La	<20	<20	<20	<20	<20	<20	<20	<20
Mn	1000	2000	2000	50	1000	5000	700	>10000
Mo	20	100	70	20	20	<2	<2	10
Nb	<20	30	<20	<20	<20	<20	<20	<20
Ni	<5	30	10	<5	<5	<5	<5	<5
Pb	>10000	10000	3000	2000	2000	5000	30	1500
Sb	<100	100	<100	<100	<100	<100	<100	500
Sc	<10	<10	<10	<10	<10	<10	<10	<10
Sn	<10	<10	<10	<10	<10	<10	<10	<10
Sr	<100	<100	<100	<100	<100	<100	100	150
Ti	<20	<20	<20	<20	300	1000	2000	<20
V	<10	<10	<10	<10	<10	<10	10	10
W	<50	<50	<50	<50	<50	<50	<50	<50
Y	<10	<10	<10	<10	<10	<10	<10	<10
Zn	>10000	10000	10000	1500	>10000	1500	200	2000
Zr	<20	<20	<20	<20	<20	<20	70	<20

February 25, 1983

To: T. C. Benavidez
F. R. Koutz
H. G. Kreis
G. J. Stathis
H. M. Stone
J. R. Stringham

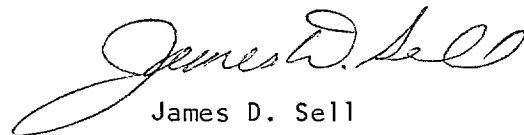
From: J. D. Sell

Drill Project Paperwork

In regard to my memo dated February 11, 1983, it has been brought to my attention that the Department of Water Resources has to be notified by sending in an "Application for Exploration Drilling Permit."

Therefore, after about point 9 of the Drilling Project Flowsheet, please add:

- 9a. DWR Application for Exploration Drilling Permit filed and received by J. R. Stringham.



James D. Sell

JDS/cg



February 11, 1983

To: TCBenavidez
HGKkreis
HMStone

From: J. D. Sell

Hole A-15
Superior East Project (EA-0010)
Pinal County, AZ

Minimum monies have been secured for drilling hole A-15, in the SW $\frac{1}{4}$ of Sec. 23 (see Map #5466 attached). The Forest Service approved the site on January 28. Bryant Construction Company is presently constructing the site adjacent and east of the existing road going south from the big pond. Joy Manufacturing Company has been awarded the drill contract (see attached copy), and will move on or about the 15th of February, based on the site availability. As the pond is close to the site, Joy may install a pump and water line rather than truck haulage. Purchase Order numbers have been secured for both Bryant and Joy and sent to them.

It is necessary that we do not overexpend the authorized budget project monies; thus very close accounting must be maintained as to the ongoing and projected costs so that we can terminate the drill contract and stop further expenditures against the project and leave several thousand dollars to take care of the annual storage rental and the monthly utility bills for the year at Superior East.

As the site will be on fill and soft weathered dacite for some distance, it will be necessary to install a surface casing; well cemented in. Remember that the J. I. Ranch has a stockpile of 4", etc. pipe and is available to be used if Joy does not provide the pipe. It should be outside threaded so that a tight cap can be placed when the hole is temporarily terminated at the end of our authorized expenditure.

The hole should be drilled NC size to a depth where the surface fracturing no longer drains the hole and the fluid loss is no longer a major factor. This will probably be around 800 feet of depth. Casing should then be placed and cemented well to seal off the lost circulation zone. Note that since we will be drilling the hole over a two year period, it will be necessary to purchase the NC casing. Check the drill casing on the J. I. Ranch racks as we may have enough "used" NC to use for this hole and save some outlay of additional monies.

As you may remember, the high fracturing intensity of the top part of the dacite sheet generally is sufficient to prevent any drilling fluids from getting up to the discharge point. Thus good drilling practices with a

light mud program with minimum additives is generally sufficient to clear the hole of cuttings to where they move out into the fractures. Thus the NC coring will be "blind" from start to the casing point. Past drilling indicates we do not need to resort to a "lost circulation recovery program", as we have been unsuccessful in plugging the fractures before we reach the casing point.

After about 600 feet of depth, the drillers should note that a fluid level is retained in the hole and the NC coring should continue some 100 feet or more to the zone of few fractures before setting casing.

J. D. Sell and H. G. Kreis will log and skeletonize the core. On this hole we will not put the core in boxes when it comes out of the hole, but will instead have it laid out on the site. Off to the edge of the site we will prepare the ground, level and sand or gravel for some 50 feet in length, and lay $\frac{1}{4}$ " x 1" lath strips down for guides. The core should be placed with the top of the hole starting on the left and move down hole to the right (as in core boxes), and when the end of the prepared ground is reached, the core restarts on the left and in front of the previous row and repeated. The lath strips are between rows to contain and separate the core. Core run markers are placed as usual. We will probably do the same for the Earlier Volcanics and Whitetail Conglomerate and place only the skeleton intervals in core boxes. This will necessitate weekly (Friday) logging and skeletonizing of the core so as not to get too far behind in case the core is vandalized at some time (and it undoubtedly will be by weekenders and extraneous geologists). Of course, all contacts will be saved in the skeleton boxes and also any mineralized intercepts in the Whitetail. The contact of the Whitetail and the underlying premineral units will be boxed and all subsequent core will be placed in boxes by the drill crews and not laid out on the site. These are to be moved to the Miami warehouse upon collection and on-site stored in the trailer for safekeeping.

T. C. Benavidez and H. M. Stone should have a trailer with lock & keys (copy of keys to all of us plus the driller) moved to the site, along with the laths, core blocks, marker pens, and a bundle of NC and NX boxes. We should have fire-fighting equipment, although Joy is also responsible for fire-prevention control. Benavidez-Stone should secure the necessary forms, clip-boards, etc., to place in the trailer so that the daily drilling-supply records can be kept. Each person visiting the rig should up-date the record sheet but it will be Benavidez-Stone's responsibility for the end-of-month cost figures, with my help, and general rig-driller problems.

Based on the collar elevation of 4660 feet (estimated), the following intervals-depths are expected for A-15:

Surface to base of dacite (1450'), to base of Earlier Volcanics	2085 feet
Base of Whitetail Conglomerate	3090 feet
Oxidized, broken, schist & intrusive	

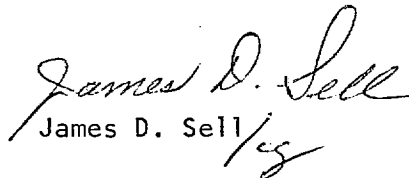
Base of flat fault (top of in-place leached capping)	3510 feet
Top of sulfides	3760 feet.

Based on the projected expenditures it is probable that the hole can be taken to between 3000 and 3500 feet of depth before it is terminated. If the hole is in good condition or only a couple of hundred feet of oxidized, broken, schist has been cored, then we will probably fill the hole with heavy mud and leave the NX portion open for this period. The surface casing cap will be sealed over the entire hole to await re-entry and completion of the hole when drilling monies become available again. If we have to place NX casing in the hole, then purchasing that amount of casing will be a very large expenditure and must be thought of in terms of overall expenditures to prevent an overrun of available monies.

I am attaching an up-date of the various memos and forms for drill project paperwork.

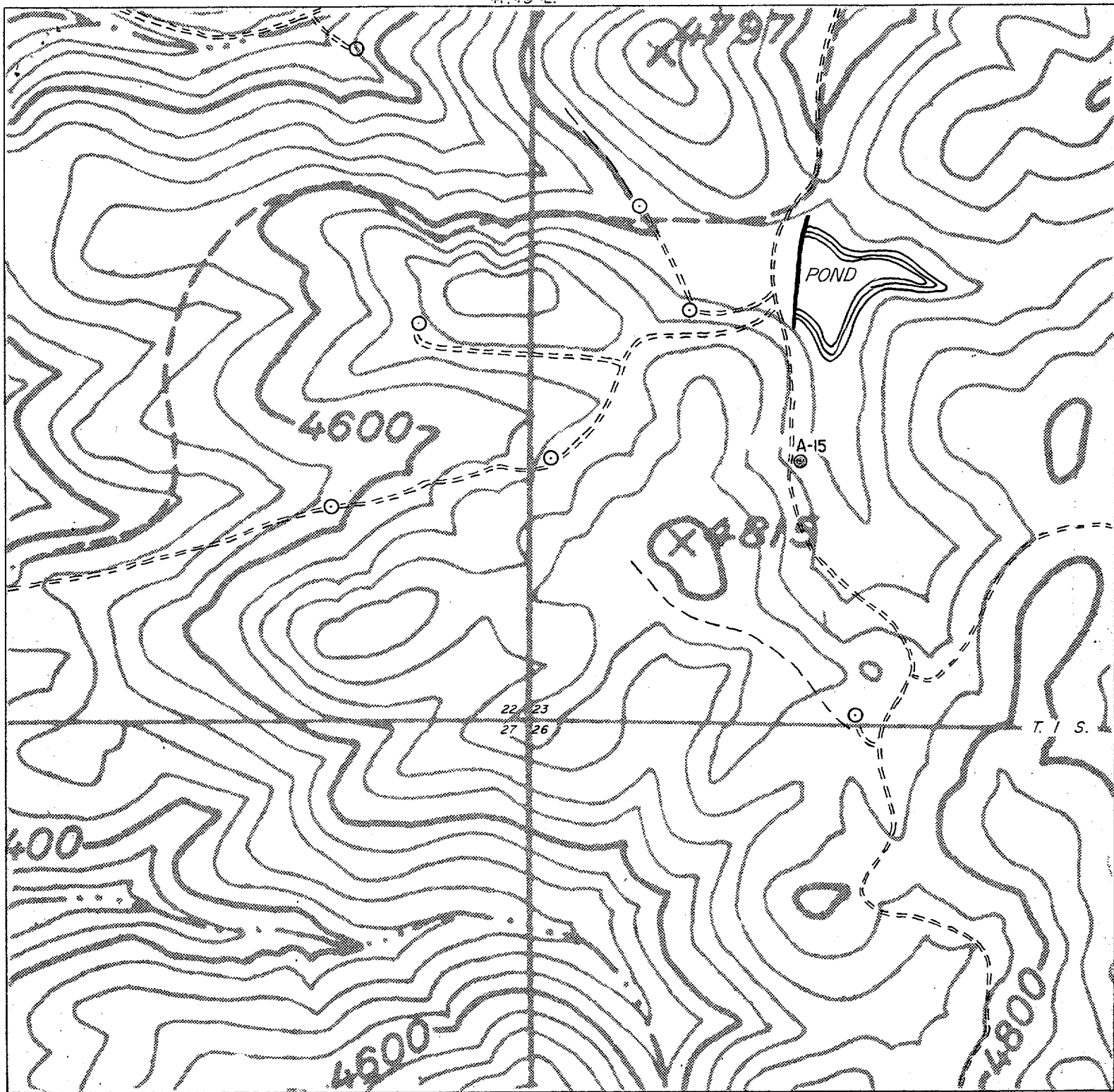
I also bring to your attention that it is the desire of Carol and Mary to visit an operating drill rig so as to better understand what geologists-field people do - so invite one at a time to accompany you on a day that you travel from Tucson-project rig-Tucson all the same day.

Carol will start you out on what monies are available.


James D. Sell

JDS/cg

Attachments: Map #5466
Joy Contract
Drill Project Paperwork



BASE FROM U.S.G.S. SUPERIOR ARIZ. 7.5' QUAD.

EXPLANATION

- Existing Roads
- - - Approved Rights-of-way
- Proposed Drill Site



TO ACCOMPANY	<i>Memo</i>
DATED	<i>Feb. 11, 1983</i>
BY	<i>J. D. Sell</i>

PLAN OF ASARCO DRILL HOLES

U.S. FOREST SERVICE

PINAL COUNTY, ARIZONA

SCALE : 1" = 500'

J.D. Sell

Jan, 1983

ASARCO

Exploration Department
 Southwestern United States Division
 R. B. Crist
 Property Manager

February 15, 1983

Dept. of Water Resources
 99 E. Virginia
 Phoenix, AZ 85004

Attention: Mr. Roger Kennett

Superior East Project
 Tonto National Forest
Pinal County, AZ

Gentlemen:

In compliance with well construction regulations (HB #2228 and as amended in HB #2502) we submit the following "Application for Exploration Drilling Permit":

Name

Southwestern Exploration Division
 ASARCO Incorporated
 P.O. Box 5747
 Tucson, AZ 85703

Location of Drill Site

NE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 23 T. 1 S., R. 13 E., GSRB&M
 Pinal County, Arizona

Drilling Company

Joy Manufacturing Co. - Drilling Division
 750 E. Evans Blvd.
 Tucson, AZ 85719

Well Driller's License T-75
 (Arizona Contractor's License 261-71)

Number of Drill Holes Under This Project: 1 - (one)

Which hole upon completion will have the surface casing capped with a steel plate and the drilled hole will be available for re-entry.

Drilling equipment will consist of a heavy duty truck mounted Joy-22 or Joy-36 using conventional wire-line drill coring barrels. The diameter of the hole will be approximately 3½".

The drill hole will be collared in Volcanics (Dacite).

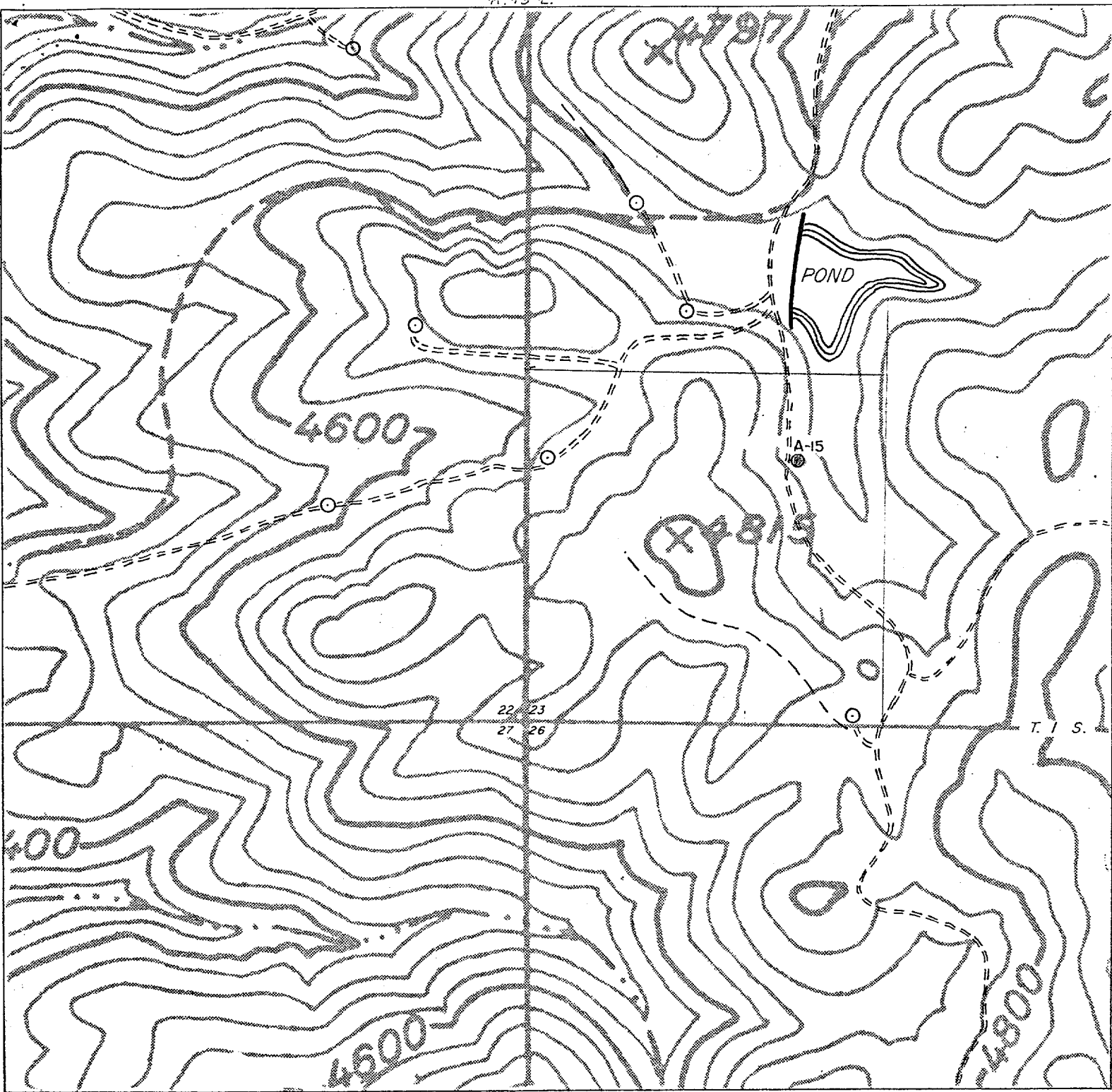
Very truly yours,



R. B. Crist




RBC:mek

cc: J. D. Sell
Jack Lloyd - Joy Manuf.
T. C. Benavidez



BASE FROM U.S.G.S. SUPERIOR ARIZ. 7.5' QUAD.

EXPLANATION

-  Existing Roads
-  Approved Rights-of-way
-  Proposed Drill Site



TO ACCOMPANY	<i>Memo</i>
DATED	<i>Feb. 11, 1983</i>
BY	<i>J.D. Sell</i>

PLAN OF ASARCO DRILL HOLES
 U.S. FOREST SERVICE
 PINAL COUNTY, ARIZONA
 SCALE : 1" = 500'

J.D. Sell

Jan, 1983

March 8, 1983

To: TCBenavidez
FRKoutz
HGKkreis
GJStathis
HMStone

From: Carol Gregory

Assaying

In order to help us identify and keep track of whose samples/analyses are being processed, I would appreciate each of you giving me a copy of the acknowledgement you receive (example attached) when samples are submitted for assaying, irregardless of the assayer. In the case of Skyline Labs, this should include their TAJ #.

Thanks.



Carol Gregory

Attachment

xc: JDS

P.S. We have received Certificate of Analyses from MSRD for the following sample Nos.: PW-2 thru 6; W-1 thru 6; ASR-7 thru 11; and FW-1 thru 6. Can any of you identify these?

ORDER FOR ANALYTICAL SERVICES

TAJ 253
2-17
hand

Samples Sent to:

SKYLINE LABS, INC.
1775 W. SAHUARO • P.O. BOX 50106
TUCSON, ARIZONA 85703
(602) 622-4836

2/17/83
KS
HAND
2
3 LBS
None
None

(Report and invoice in duplicate will be sent to address below unless otherwise instructed)

Address Report To: JAMES D. SELL
ASARCO Inc.
PO BOX 5747
TUCSON, AZ 85703
Tel. 792-3010

PROJ. NO.: _____
P.O. NO.: _____
SHIPMENT NO.: ①
DATE SHIPPED: 2/17/83
SHIPPED VIA: _____
NO. OF CARTONS: ①
NO. OF SAMPLES: 2
(Information above helps us trace lost shipments)

Send Invoice To: Asahow

Send Copy of Report To: _____

LIST SAMPLE NOS.	DESCRIBE MATERIAL (ROCK CHIP, SOIL, WATER, DRILL CORE, ETC.)	LIST ELEMENTS TO BE DETERMINED (Give anticipated range of values, if possible) Describe any special sample preparation procedures desired.	INDICATE METHOD OF ANALYSIS*	✓ IF 31 - ELEMENT EMISSION SPEC SCAN DESIRED
CLJ-1 Three	rock chip			✓
CLJ-2				

RECEIVED
FEB 22 1983
S. W. U. S. EXPL. DIV.

PAYMENT FOR SERVICES REQUESTED MUST ACCOMPANY ORDER UNLESS CREDIT ARRANGED

Signature of person authorizing work: James D. Sell
(Use Continuation Sheet If Necessary)

INSTRUCTIONS

*METHOD OF ANALYSIS: G-Geochem, Q-Routine Quantitative Assay
F-Fire Assay

†SAMPLE STORAGE: Pulps stored 90 days pending instructions, bulk rejects stored 30 days pending instructions.

INDICATE DESIRED DISPOSITION OF SAMPLES AFTER ANALYSIS	Bulk Rejects	Pulp
Return at customer's expense via:	✓	✓
Store temporarily pending instructions†		
Discard immediately		

Enclose yellow original with samples, send white copy by mail, retain pink copy. White copy will be returned to shipper as an acknowledgement that shipment has been received.

ASARCO

Southwestern Exploration Division

March 21, 1989

F. T. Graybeal
New York

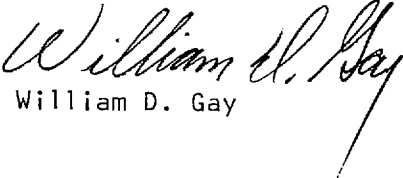
Annual Exploration Report
U.S. DOI

Enclosed are the completed forms you requested in your letter dated February 10, 1989.

I left the answer (yes or no) to the question on revealing data blank. You can mark it as you want.

Also enclosed is a form from Doug Smith which was sent to the Tucson Office.

WDG:mek
encs.


William D. Gay

cc: W.L. Kurtz (w/encs.)
J.D. Sell (w/encs.)

EXPLORATION

Name and address of Exploration Division, if different from the address imprint
 Name Southwest Exploration Dept. Nearest city or town Tucson State Arizona

5. Exploration for minerals by location, major commodity, and type of drilling during year

Exploration operation No. 1

(1) Project Name <u>Ochre Springs</u>	Code																												
(2) Location: State <u>Utah</u> County <u>Tooele</u> Section <u>27, 28, 33, 34, 35</u> Township <u>7S, R18W</u> Sec. <u>1-4, 9-12, T8S, R18W</u>	Bureau of Mines Office Use																												
(3) Major commodities for which exploration work was done. <u>Gold</u>	(Primary commodity) (Others)																												
(4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input checked="" type="checkbox"/> Private Land																													
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Rotary	03	--																											
Percussion .. RC	04	4785																											
Other drilling (specify)	05	--																											
Trenching	08	--																											

Exploration operation No. 2

(1) Project Name <u>Gold Hill</u>	Code																												
(2) Location: State <u>Utah</u> County <u>Tooele</u> Section <u>1, T8S, R18W; Sec. 36</u> Township <u>T7S, R18W; Sec. 31,</u> Sec. 32 <u>T7S, R17W; Sec. 6, T8S, R17W</u>	Bureau of Mines Office Use																												
(3) Major commodities for which exploration work was done. <u>Gold</u>	(Primary commodity) (Others)																												
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Other drilling (specify)	05	--																											
Trenching	08	--																											

Remarks:

Name of person to be contacted regarding this report		Tel. area code	No.	Ext.
<u>W.D. Gay</u>		<u>602</u>	<u>792-3010</u>	<u>314</u>
Address No.	Street	City	State	Zip
<u>ASARCO Incorporated,</u>	<u>1150 N. 7th Ave</u>	<u>Tucson</u>	<u>Arizona</u>	<u>85705</u>

May tabulations be published which could indirectly reveal the data reported above? (1) Yes (2) No

Signature	Title	Date
<u>W. D. Gay</u>	<u>Land Engineer</u>	<u>3/21/89</u>

EXPLORATION

Name and address of Exploration Division, if different from the address imprint

Name Southwest Exploration Dept. Nearest city or town Tucson State Arizona

5. Exploration for minerals by location, major commodity, and type of drilling during year

Exploration operation No. 1

(1) Project Name <u>Superior East</u>	Code		
(2) Location: State <u>Arizona</u> County <u>Pinal</u> Section <u>23</u> Township <u>1S</u> Range <u>13W</u>	Bureau of Mines Office Use		
(3) Major commodities for which exploration work was done. <u>Copper</u>	_____ (Primary commodity) _____ (Others)		
(4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input type="checkbox"/> Private Land			
(5) Type of Exploration (Check appropriate boxes). <input type="checkbox"/> Prospecting <input type="checkbox"/> Geophysics <input type="checkbox"/> Mapping <input checked="" type="checkbox"/> Drilling <input type="checkbox"/> Geochemistry <input type="checkbox"/> Underground Exploration			
(6) For Drilling and Trenching (Enter footage and short tons).			
Type (1)	Code	Footage (2)	Short Tons (3)
Diamond	01	352	
Churn	02	--	
Rotary	03	--	
Percussion	04	--	
Other drilling (specify)	05	--	
Trenching	08	--	

Remarks:

Exploration operation No. 2

(1) Project Name <u>Thunder Mtn.</u>	Code		
(2) Location: State <u>Arizona</u> County <u>Santa Cruz</u> Section <u>5</u> Township <u>23S</u> Range <u>16E</u>	Bureau of Mines Office Use		
(3) Major commodities for which exploration work was done. <u>Silver</u>	_____ (Primary commodity) _____ (Others)		
(4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input type="checkbox"/> Private Land			
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(6) For Drilling and Trenching (Enter footage and short tons).			
Type (1)	Code	Footage (2)	Short Tons (3)
Diamond	01	438	
Churn	02	--	
Rotary	03	--	
Percussion	04	--	
Other drilling (specify)	05	--	
Trenching	08	--	

Name of person to be contacted regarding this report

W. D. Gay Tel. area code 602 No. 792-3010 Ext. 314

Address No. Street City State Zip
ASARCO Incorporated, 1150 N. 7th Ave. Tucson Arizona 85705

May tabulations be published which could indirectly reveal the data reported above? (1) Yes (2) No

Signature W. D. Gay Title Land Engineer Date 3-21-89

EXPLORATION

Name and address of Exploration Division, if different from the address imprint
 Name Southwest Exploration Dept. Nearest city or town Tucson State Arizona

5. Exploration for minerals by location, major commodity, and type of drilling during year

Exploration operation No. 1

(1) Project Name <u>Barnes/Gentner</u> (2) Location: State <u>Arizona</u> County <u>Cochise</u> Section <u>25, 26, T13S, R25E</u> Township <u>T13S, R26E, GSRB&M</u> Range <u>T13S, R26E, GSRB&M</u> (3) Major commodities for which exploration work was done. <u>Gold</u> (4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input type="checkbox"/> Private Land (5) Type of Exploration (Check appropriate boxes). <input checked="" type="checkbox"/> Prospecting <input type="checkbox"/> Geophysics <input checked="" type="checkbox"/> Mapping <input type="checkbox"/> Drilling <input type="checkbox"/> Geochemistry <input type="checkbox"/> Underground Exploration (6) For Drilling and Trenching (Enter footage and short tons).	Code _____ Bureau of Mines Office Use _____ (Primary commodity) _____ (Others)																												
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Percussion	04	--																											
Other drilling (specify)	05	--																											
Trenching	08	--																											

Remarks:

Exploration operation No. 2

(1) Project Name <u>Yarnell</u> (2) Location: State <u>Arizona</u> County <u>Yavapai</u> Section <u>14, 15, 22 & 23</u> Township <u>10N</u> Range <u>5W</u> (3) Major commodities for which exploration work was done. <u>Gold</u> (4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input checked="" type="checkbox"/> Private Land (5) Type of Exploration (Check appropriate boxes). <input type="checkbox"/> Prospecting <input type="checkbox"/> Geophysics <input type="checkbox"/> Mapping <input type="checkbox"/> Drilling <input type="checkbox"/> Geochemistry <input type="checkbox"/> Underground Exploration (6) For Drilling and Trenching (Enter footage and short tons).	Code _____ Bureau of Mines Office Use _____ (Primary commodity) _____ (Others)																												
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Name of person to be contacted regarding this report <u>W.D. Gay</u>		Tel. area code <u>602</u>	No. <u>792-3010</u>	Ext. <u>314</u>
Address No. <u>ASARCO Incorporated, 1150 N. 7th Ave.</u>	Street <u>Tucson</u>	City <u>Tucson</u>	State <u>Arizona</u>	Zip <u>85705</u>

May tabulations be published which could indirectly reveal the data reported above? (1) Yes (2) No

Signature <u>W. D. Gay</u>	Title <u>Land Engineer</u>	Date <u>3-21-89</u>
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EXPLORATION

Name and address of Exploration Division, if different from the address imprint
 Name Rocky Mountain Nearest city or town Lakewood State Colorado

5. Exploration for minerals by location, major commodity, and type of drilling during year

Exploration operation No. 1

(1) Project Name <u>Ark</u> (2) Location: State <u>Colorado</u> County <u>Lake</u> Section <u>21</u> Township <u>8S</u> Range <u>79W</u>	Code-		
Bureau of Mines Office Use			
(3) Major commodities for which exploration work was done. <u>Pb-Zn-Cu-Ag-Au</u>	(Primary commodity)		
		(Others)	
(4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input type="checkbox"/> Private Land			
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(6) For Drilling and Trenching (Enter footage and short tons).			
Type (1)	Code	Footage (2)	Short Tons (3)
Diamond	01	0	
Churn	02	0	
Rotary	03	2,300	
Percussion	04	0	
Other drilling (specify)	05	0	
Trenching	08	0	

Remarks:

Exploration operation No. 2

(1) Project Name <u>Oro Quay</u> (2) Location: State <u>New Mexico</u> County <u>Santa Fe</u> Section <u>21-28</u> Township <u>12N</u> Range <u>7E</u>	Code		
Bureau of Mines Office Use			
(3) Major commodities for which exploration work was done. <u>Au</u>	(Primary commodity)		
		(Others)	
(4) Land Classification (Check appropriate box). <input checked="" type="checkbox"/> Federal Land, Open Public Domain <input type="checkbox"/> Federal Land, Wilderness Study Area <input type="checkbox"/> Federal Land, Statutory Wilderness <input type="checkbox"/> Federal Land, Other _____ <input checked="" type="checkbox"/> Private Land			
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(6) For Drilling and Trenching (Enter footage and short tons).			
Type (1)	Code	Footage (2)	Short Tons (3)
Diamond	01	0	
Churn	02	0	
Rotary	03	0	
Percussion	04	0	
Other drilling (specify)	05	0	
Trenching	08	0	

ASARCO Inc.,

MAR 13 1989

SW Exploration

Name of person to be contacted regarding this report		Tel. area code	No.	Ext.
Address	No.	Street	City	State
			Zip	

May tabulations be published which could indirectly reveal the data reported above? (1) Yes (2) No

Signature	Title	Date
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January 24, 1979

TO: J. D. Sell S. R. Davis ✓
R. B. Crist N. P. Whaley
B. J. Devere P. G. Vikre
G. W. Pickard T. C. Benavidez
G. J. Stathis H. M. Stone
H. G. Kreis

Drilling Project Flowsheet

Mr. N. P. Whaley and I have prepared the attached outline of steps to be taken during management of a drilling project. The steps are self-explanatory, but please review them and any questions you might have may be brought up during an in-house meeting I am planning in early February. Those who have not made a monthly cost estimate, checked contractor invoices, or written a monthly or final report should first check with Lois and review various examples in the files if there are any problems on how to proceed.

The flow sheet is set up to free Mr. Whaley from the dozens of daily details in all our various drilling projects which are more logically handled by the project geologist. You might use it as a check list and cross off steps as they are completed, making it easy for someone to pick up a project at some interim stage and carry it to completion. Several of the steps can be easily handled by Messrs. Stone, Benavidez, or Wood but geologists should see me first to determine whether additional help will be available.

F. T. Graybeal
F. T. Graybeal

FTG:lb
Atts.

cc: WLKurtz - w/atts.

DRILLING PROJECT FLOWSHEET

The various steps in a drilling project are listed below in approximate sequential order and not all steps may be applicable to a specific project. N.P. Whaley is responsible for obtaining drill contractors; R.B. Crist is responsible for all road permits and land owner notifications; the project geologist is responsible for the remainder, including tabulating progress by himself and others on the flowsheet, and keeping everyone informed. F.T. Graybeal will assign geological technicians who can expedite certain steps with instructions from the geologist. Stay organized and flexible.

1. Land status reviewed with geologist, F.T. Graybeal, and R.B. Crist; timing established for permits and road work (at least 2 months before drilling when possible).
2. Bids solicited by N.P. Whaley
 - a) contractor needs location (state), minimum footage, drilling requirements (hole size, etc.), water source, and starting date
 - b) rotary casing inventory and diamond bit for rotary spot cores maintained by N.P. Whaley
 - c) sample material inventory maintained by N.P. Whaley and monitored by geologists.
3. Drill contractor selected by F.T. Graybeal-N.P. Whaley; purchase order written by N.P. Whaley; drill authorization request written by F.T. Graybeal.
4. Drill site located on ground and roads flagged by geologist.
5. Road permit applications filed by R.B. Crist.
6. Road contractor obtained by geologist; may need different contractor for rotary vs. diamond drill sites
 - a) purchase order number for construction/reclamation obtained by geologist. *need separate for each supplier.*
7. Road and drill site reviewed with U.S.F.S., state/federal government, patent land owner (where necessary), road contractor, and geologist; permission to build gates, separate disposal of drilling mud, sanitations arranged.
8. Road permit permission received by R.B. Crist.
9. Road contractor mobilized to build site and road.
10. Water source and cost confirmed by geologist.
11. Sample materials (trailer if required) moved on site by geologist (see attached list).
12. Rotary casing moved to site (arranged by geologist, consult with N.P. Whaley). *Call SW Pipe Supply - Phoenix & notify as to supplier will confirm as to time & how much & where, etc.*
13. Diamond bit for rotary spot cores obtained from N.P. Whaley and moved on site by geologist.

14. Fire-fighting equipment in working order and on site (geologist).
15. Name and phone of project geologist given to drill contractor.
16. Drill moved on site by geologist with letter of personnel authorized to see the core.
17. Sample procedures clearly outlined to driller with initial close supervision.
18. Drill core and shift reports collected weekly; reports checked for accuracy/legibility on site
 - a) spot checks on core recovery, proper handling of core made on site.
19. Monthly cost estimate made by geologist
 - a) drill costs calculated from shift reports and contract (two summary forms attached; take your pick)
 - b) cost estimate to Lois Bormolini by 27th of month (see attached forms)
 - c) monthly contractor invoices carefully checked and signed by geologist, forwarded to F.T.Graybeal.
20. Monthly report of drilling progress, assays, etc. by geologist (by 27th of month).
21. Down-the-hole survey scheduled by geologist before hole terminated (if required, allow several weeks).
22. Hole terminated by geologist; contractor headquarters notified
 - a) site cleaned by drill crew
 - b) hole plugged/capped/concealed/abandoned (whichever necessary)
 - c) survey of collar location.
23. All equipment cleaned, stored
 - a) list of all sample materials and rotary casing used compiled by geologist and given to N.P.Whaley
 - b) rotary diamond bit returned to N.P.Whaley
 - c) fire-fighting equipment reconditioned if necessary.
- 24. Final report on drilling by geologist; should include cost summary.
See form outline cc to NPE See list.
- 25. Drill hole record sheet completed (see attached form); shift reports filed.
26. Geologist notify R.B.Crist when drilling complete -- all property owners notified where required.
27. Site reclaimed; road contractor notified by geologist; seeded by technician if advisable or required. *check owner number for preference.*

File
Budget

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

October 5, 1972

MEMORANDUM TO STAFF:

Administrative Procedures
Monthly Cost Reporting for
Projects and General Exploration

Like death and taxes, some things are inevitable. It is imperative that we have a good monthly cost estimate for Projects and General Exploration. Mr. Sell, Mrs. Decker, the Accounting Department, and I have arrived at a system which will work. It simply requires all of you to complete your Expense Account, Automobile Mileage Record, and Time Distribution on the 25th or 26th of every month and forward them to Mrs. Decker by the morning of the 28th. In addition, the Project Supervisor must complete an abbreviated Monthly Project Cost Summary. The following procedures will be followed:

A. Expense Accounts.

Make out monthly. Month starts on the 26th and ends on the 25th. Use one expense sheet only (e.g., Oct. 26-30; Nov. 1-25 on one sheet). These should be in the hands of Mrs. Decker by the 28th of each month. Indicate (in Misc. Column or Entertainment Column) charges assignable to specific Mining Authorization, by M.A.# or Project Name. Supply Purchases form (AD126ME/Tucson) should always accompany expense account; it must show the Project Name or # and the cost center number (see attached sheet for cost center numbers).

B. Automobile Mileage Record.

Make out monthly. Month starts on the 26th and ends on the 25th. These should be in the hands of Mrs. Decker by the 28th of each month. Show mileage assignable to specific Mining Authorizations by M.A.# or Project Name.

C. Time Distribution.

These will reach you so that you can complete them and have them in Mrs. Decker's hands by the 28th of each month. Please estimate your time distribution for the 26th thru end of month. All days assignable to a Mining Authorization (Project) should appear on the "Supplemental Time Distribution Sheet". You need only carry the totals from the supplemental sheet to the particular Mining Authorization columns on Regular Sheet (no longer necessary to show M.A. breakdown on Regular Sheet).

October 5, 1972

D. Charged Purchases.

Delivery receipts (invoice copy) should contain your signature and assignable M.A.# or Project Name. Project Supervisors will be responsible for making certain the invoices contain a cost center number. Invoices should go to Accounting Department as soon as possible.

E. Southwestern Exploration Division Monthly Cost Summary Sheet for M.A. Projects.

Project Supervisors should complete this form monthly. The 25th of the month will be the last reporting day. It should be in Mrs. Decker's hands by the 28th. One of these forms is attached for your information. Mrs. Decker will maintain a supply of these forms.

Project Supervisor should work in close coordination with Mr. Crittendon, Drilling Supervisor, on completing this form.

Thus, I am not really requiring anything new, but simply imposing a deadline. So that you have no excuses for not meeting the deadline, you are all hereby authorized to complete the paperwork on Company time.

Mr. Sell, Mrs. Decker, or myself will gladly clarify any questions you may have.


W. L. Kurtz

WLK:lad
Attachs.

cc: JJCcollins
RBCrist
ADCoumides

Cost Center Numbers to be used on supply purchase form (AD126ME/Tucson)
and charged purchases.

507 - Staking Claims & Location Work

511 - Surface Excavating - Trenching

512 - Underground Excavating - Drifting, raising, etc.

521 - Surface Drilling

522 - Underground Drilling

530 - Geology - Fieldwork, core logging, map compiling, geologic reports

540 - Sample Preparation, Sampling, Assaying

550 - Geophysics

560 - Geochemistry

570 - Engineering, Surveying

580 - Drill Sites, Roads, Temporary Construction

610 - Field Administration - Project expenses not accounted for above

620 - General Administration - Drafting

COST CENTER NUMBERS - To be used
on supply purchases form
(AD126ME/Tucson) and charged
purchases.

- 507 - Staking Claims & Location
Work
- 511 - Surface Excavating -
Trenching
- 512 - Underground Excavating -
Drifting, raising, etc.
- 521 - Surface Drilling
- 522 - Underground Drilling
- 530 - Geology - Fieldwork, core
logging, map compiling,
geologic reports
- 540 - Sample Preparation,
Sampling, Assaying
- 550 - Geophysics
- 560 - Geochemistry
- 570 - Engineering, Surveying
- 580 - Drill Sites, Roads,
Temporary Construction
- 610 - Field Administration
(Project expenses not
accounted for above)
- 620 - General Administration -
Drafting

*for Lejos
Notebook*

MONTHLY COST SUMMARY

Project, _____, _____
(County) (State)

A. DIRECT DRILLING (Acct. 521-)

CONTRACTORS' CHARGES

Invoiced during month covering current month's work

Contractors' Services

Statement Amt.

Estimated balance of contractors' charges covering work through end of current month

Contractors' Services

Estimated Cost

Supplies and Freight

Field Trailer Rental

Water Purchases (Drilling)

B. SITE PREPARATION (Acct. 580-)

CONTRACTORS' CHARGES

Invoiced during month covering current month's work

Contractors' Services

Statement Amt.

Estimated balance of contractors' charges covering work through end of current month

Contractors' Services

Estimated Cost

Supplies and Freight

C. SAMPLERS, SAMPLING, SAMPLE PREPARATION, ASSAYING (Acct. 540-)

Wages (Temporary Help)

<u>Name</u>	<u>No. of Straight Time Hours During Month</u>	<u>No. of Overtime Hours During Month</u>
_____	_____	_____
_____	_____	_____

Assaying

<u>Assayer</u>	<u>Charge or Estimated Expense for Assaying Performed During Month</u>
_____	_____
_____	_____

D. CLAIM STAKING, VALIDATION (Acct. 507-)

Invoiced during month covering current month's work

<u>Contractors' Services</u>	<u>Statement Amt.</u>
_____	_____
_____	_____

Estimated balance of contractors' charges covering work through end of current month

<u>Contractors' Services</u>	<u>Estimated Cost</u>
_____	_____
_____	_____

Wages

<u>Name</u>	<u>No. of Straight Time Hours During Month</u>	<u>No. of Overtime Hours During Month</u>
_____	_____	_____
_____	_____	_____

E. OTHER (Itemize any other major expenses not covered above or by invoice.)

<u>Item</u>	<u>Cost</u>
_____	_____
_____	_____
_____	_____
_____	_____

AMERICAN SMELTING AND REFINING COMPANY
Tucson Arizona

July 21, 1970

TO EXPLORATION DEPARTMENT PERSONNEL:

Effective with the month of July, 1970, and in accordance with recent revisions of the Mineral Exploration Accounting Instructions, supplies and miscellaneous services purchased by employees are no longer to be included on Travel and Other Reimbursable Expense Form AD-126, but should be reported separately on Supply Purchases Form AD126ME (a sample of which is attached).

Receipted bills for such purchases should be numbered consecutively, listed on the form, and submitted with the form to the disbursing office. When listing, there should be entered in the appropriate columns on the form the Office or Project number, the Account number, and the amount for each receipt.

As noted at the bottom of the form, when supplies are purchased for Tucson General Exploration, Denver General Exploration, or Reno General Exploration, the respective office numbers to be entered in the Office or Project number column are 499-01, 499-02, or 499-03.

Currently active Mining Authorizations under Tucson Office accounting jurisdiction are as follows:

<u>Project</u>	<u>Authorization Number</u>
Poston Butte, Arizona	0003-02
G.E.M., Nevada	0004-00
Santa Rosa South, Arizona	0005-00
Barge-Butler, Colorado	0006-01
Copper King, Wyoming	0007-00
Superior East, Arizona	0010-00 → change 12/10 to 0010-02
Rochester District, Nevada	0011-00
Silver Bell East, Arizona	0012-00
Bodie, California	63-68
Parkview, Colorado	58-69
Hardshell, Arizona	89-69
Hachita, New Mexico	32-70

There is also attached a tabulation, punched for a Lefax binder, listing numbers to be entered in the Account number column. The following examples may help to clarify the use of this table:

<u>Item</u>	<u>Office or Project Number</u>	<u>Account Number</u>
(1) Supplies for staking claims, Parkview	58-69	507-20
(2) Supplies for surface drilling, Copper King	0007-00	521-20
(3) Freight or express on supplies for surface drilling, Copper King	0007-00	521-34
(4) Supplies for Reno Office general geophysics	499-03	550-20
(5) Freight or express on supplies for Reno Office general geophysics	499-03	550-34
(6) Supplies purchased for Denver Office administration	499-02	620-20
(7) Rent on field office, G.E.M.	0004-00	610-25
(8) Recording fee for recording Copper King location notice	0007-00	620-25
(9) Assaying for Superior East	0010-00	540-25

You should continue to use Form AD126 for Travel, Entertainment, Business Meetings, Business Meals, and similar expenses, including transportation, hotel or motel, meals, laundry, telephone, telegrams, postage, etc. Please note that meals at business meetings should be reported in the "Entertainment, Business Meetings and Meals, Etc." column as distinct from meals while traveling which should be entered in the "Meals" column. Please note also that tips should be included with the related expense, not stated separately.

If you have any questions regarding these instructions, please contact me.

ORIGINAL SIGNED BY
K. A. von den Steinen

K. A. von den Steinen
Chief Accountant

KvdS/ms
w/attachs.

cc: S. I. Bowditch	A. Dalla Vista	L. P. Entwistle
J. H. Courtright	R. P. Shannon	H. M. Stone
S. R. Davis	G. J. Stathis	
W. G. Farley	R. Van Blaricom	
B. E. French	C. E. Beverly	
J. A. Harper	R. H. Bogner	
D. D. Hedrick	G. S. Curtiss	
R. D. Karvinen	F. R. Dowsett, Jr.	
B. E. Kilpatrick	R. T. Farrell	
J. R. King	W. G. Hoskins	
W. L. Kurtz	R. K. Kirkpatrick	
R. H. Luning	D. J. Krasowski	
W. E. Saegart	T. M. Moreland	
J. D. Sell	S. Von Fay	
N. P. Whaley	J. R. Wojcik	

SUPPLY PURCHASES

AD126ME
(Tucson)

Employee: _____

Month: _____

Rept. No.	Office No. or Project No.	Acct. No.	Amt.	Rept. No.	Office No. or Project No.	Acct. No.	Amt.
1				36			
2				37			
3				38			
4				39			
5				40			
6				41			
7				42			
8				43			
9				44			
10				45			
11				46			
12				47			
13				48			
14				49			
15				50			
16				51			
17				52			
18				53			
19				54			
20				55			
21				56			
22				57			
23				58			
24				59			
25				60			
26				61			
27				62			
28				63			
29				64			
30				65			
31				66			
32				67			
33				68			
34				69			
35				70			
Total this column				Total this column			
				Grand total			

If the above figures are in other than U. S. Dollars, enter currency _____ and exchange rate _____. Use separate sheet for each currency involved.

- * For General Exploration, Tucson Office, enter Office No. 499-01
- " " " , Denver Office, " " No. 499-02
- " " " , Reno Office, " " No. 499-03

Date: _____ Signed: _____ Approved: _____
Employee Supervisor

Cost Center	Item	<u>10</u>	<u>15</u>	<u>20</u>	<u>25</u>	<u>29</u>
		Salaries	Wages	Materials & Supplies	Fees, Rental Services	Traveling
501	Mineral Property, Outright Purchases	-	-	-	501-25	-
502	Mineral Property, Option Payments	-	-	-	-	-
503	Mineral Property, Bonus Payments	-	-	-	-	-
504	Mineral Property, Deductible Minimum Royalties	-	-	-	-	-
505	Mineral Property, Non-deductible Minimum Royalties	-	-	-	-	-
506	Mineral Property, Rental Payments	-	-	-	-	-
507	Staking Claims	-	-	507-20	507-25	-
511	Surface Excavating	-	-	511-20	511-25	-
512	Underground Excavating	-	-	512-20	512-25	-
521	Surface Drilling	-	-	521-20	521-25	-
522	Underground Drilling	-	-	522-20	522-25	-
530	Geology	-	-	530-20	530-25	-
540	Sampling, Assaying, Laboratory	-	-	540-20	540-25	-
550	Geophysics	-	-	550-20	550-25	-
560	Geochemistry	-	-	560-20	560-25	-
570	Engineering	-	-	570-20	570-25	-
580	Construction - Temporary	-	-	580-20	580-25	-
590	Construction - Permanent	-	-	590-20	590-25	-
610	Administration - Field Offices and Camps	610-10	610-15	610-20	610-25	610-29
620	Administration - General	620-10	620-15	620-20	620-25	620-29
641	Distributable Accounts - Autos and Vehicles	-	-	-	-	-
642	Distributable Accounts - Aircraft and Boats	-	-	-	-	-

July 7, 1981

Memo to: All Project Geologists/Supervisors

From: W. D. Payne

Subject: Routine Reporting on Drilling Activities and General Geologic Reports for Drilling Projects

Asarco spends a lot of money on drilling, probably a higher proportion of total budget than most, and, in order to insure that a reasonable amount of geologic information gets recorded both as timely information and for posterity, the following reporting guidelines are presented. They proceed from monthly drilling summaries to completed drill hole summaries to annual progress reports and to multi-year status reports.

1) Monthly Drilling Summary (example form attached)

The purpose of these is to provide factual, generally non-interpretive, updates on drilling progress and results during the month. Please fill these in and submit with the project planning sheet. Allow one or two lines per drill hole -- diamond or percussion. Significant intersections might include: patches of notable alteration, zones of low-grade mineralization, vein intercepts, etc. In short, there normally might be 4-6 lines of single space (3 if you use only one section) to report geology pertinent to the reported footage.

If assays are available they should also be reported. If assays are not returned till the following month, then they should be included on the form that subsequent month with the "footage drilled" section to read "previously reported." It is easier if assay data are kept in tabular form; report only significant clusters, but do give general limits on large, low-grade zones.

Be concise and informative. Copies of these will definitely go to the Western Exploration Manager and some will undoubtedly go to NYC. These may be their only interim (vis-a-vis the quarterly reports) source of information.

There is nothing wrong with putting more than one project on a sheet providing they are of reasonably similar geologic cum geographic environment. For example, different project holes being drilled concurrently at the north end of the Patagonia Mtns. could be combined on one sheet, etc.

Bear in mind these are purely information reports. They should take no more than 5-10 minutes per hole per month to complete.

2) Drill Hole Summary

Drill Hole Summaries are not required for rotary or percussion holes, but are mandatory for all surface or underground exploratory holes -- be they wide-spaced, routine exploration, or close-spaced grid-type. The latter would include fan patterns drilled from underground. (What is not included here is "ore confirmation" or "block delineation" type holes which would be drilled by the mining department anyway.)

a) Routine Exploration Holes (Copy for DDH V76-1 appended for review)

Drill hole summaries should be completed as soon as possible after return and review of assay data, thin sections, etc. Ordinarily this would be within about a month after completion of the hole.

The following material should be included in the report:

Heading containing general parameters of the hole (date, depth, deviation, logged by, etc.).

Highlights - To be enumerated and single spaced.

Introduction - General purpose of hole and rationale for its specific location.

Petrology - Tabulation of rock types and brief discussion of anything new or unexpected.

Structure - As applicable.

Alteration - Tabulation (condensing into zones as needed) of alteration from top to bottom. Discuss the mode of alteration, i.e., structure controlled vs. pervasive; type - hydrolytic, potassic, silicic, etc. and the identifying criteria (unless these have been explained in detail in a previous drill summary from the same property.

Mineralization - Present weighted average assay data where continuous mineralization is present. Discuss trace data for rest of hole and how they are thought to fit into the big pattern, i.e., how the Pb-Zn or Mo values fit relative to a supposed Cu system, etc. And, obviously, mention should be made of the nature of mineralization: fracture controlled vs. disseminated, etc.

Interpretation - This will vary from simple and short to long and involved depending on the complexity of the geology and the amount of previous data available. It should briefly integrate all the above sections and come to a rational conclusion.

Recommendations are not needed but may be included. Often, in the case of 1-hole-per-year projects, the addition of this section will render the report acceptable as an annual progress report and thus eliminates the need for a separate one.

Diagrams - If not too inconvenient, a simplified plan map showing topography, geology, hole location(s), deviation, etc. should be appended. In some cases a cross-section might be more apt.

b) Close-spaced, Grid Type Drill Holes

By the time grid drilling rolls around the geologic systems are pretty well understood and the need for abundant comment is minimized.

However, it is still necessary to "reduce" drill log data into form usable for plotting on cross-sections: grade composites, gross alteration patterns, major rock contacts, etc. Accordingly, the same type tabulations as mentioned above should be presented, along with whatever additional explanation is deemed appropriate.

In addition to the heading, highlights, and tabulations (lithology, alteration, mineralization) there should be a brief introduction and a brief conclusion (perhaps interpretation instead, if it is a fringe hole). The report need not be more than 2-4 pages long + map; and most of it would be tabulations.

3) Project Progress Report

At the end of each substantial increment of progress, usually to coincide with the termination of a year-ending field season, a progress report should be written.

It should provide a background for the work done, a logical summary of the results, a set of updated maps and cross-sections to reflect the new information, and recommendations for the following year (or appropriate time/work increment). These reports become the written basis for requesting and justifying additional exploration funds.

There is no reason for these to be particularly long. Something in the 4-6-8 page range should suffice. Please keep any long data sets restricted to appendices. (You may choose to insert a short, single-spaced "Summary and Recommendations" paragraph or two at the outset of the report. If so, keep it very short!) Copies of these reports will be dispersed to a variety of files (incl. NYC?) and to JV partners.

4) Status Reports

These are lengthy, formal reports that, in essence, represent a fait accompli with regard to an exploratory drilling program or subsequent grid drilling.

They are appropriately written before hand-off to the mining department, for final wrap-up of a low-grade system that is being put on the shelf, for a fence-sitter that needs more testing - but with farm-in money, etc.

July 7, 1981

A lot of money will have been spent, a lot of data gathered, and these reports represent the geologic summation of all that is known. Both progress reports and drill hole summaries can be used as references. Even though they are fairly long (25-40 pages?) they should present generalizations, summaries, and residual queries re aspects of the geology -- rather than a myriad of detail. Procedures should be specified only where appropriate: how mineral inventory or ore reserves were calculated, etc.

The various entities of the report will vary, but normally should include all pertinent aspects of the work done: history, Asarco's approach, geochemistry, geophysics, geology, mineral inventory, and recommendations for further testing. Such testing could be grid drilling by the exploration department or block delineation by the mining people, etc. And obviously a variety of final plan maps and cross-sections will accompany the report. These should be on a scale appropriate for the scope of the project.

Properties which are ready for reports of this type are Hardshell, Santa Cruz (The Lands) [after the '81 drilling?], and perhaps Superior East after the '81 drilling.

For those who would like to peruse a completed status report, check with me in connection with one for the Ventura property. (In fact, in view of the Asarco farm-in there may be a spare one around the office.)

One last comment. For your first writing of a DDH Summary, Progress Report, or Status Report within the guidelines of this memo, would you please provide me with a Xerox copy of the next-to-final draft. I retain the right to make a few editorial comments which should be considered but need not be followed to the letter. After one or two type reports each, we will understand each other's wavelength, which is the object of the exercise.

WDP:lb
Atts.

ASARCO MONTHLY DRILLING SUMMARY

DISTRICT _____

Project _____ Project No. _____ State _____ County _____ Month _____ Year _____ Page _____

Hole No.	Collar location	Bearing	Dip	Footage drilled			Remarks (significant intersections, geology and/or assay intervals, etc.)
				From	To	Feet	

