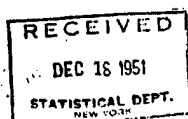


Mr. W. C. Roney



INTERNATIONAL SMELTING AND REFINING COMPANY

TOOELE PLANT - TOOELE, UTAH

REPORT ON AUDIT OF THE SULPHIDE CONCENTRATOR, THE LEAD PLANT AND THE SLAG TREATING PLANT
OF THE INTERNATIONAL SMELTING AND REFINING COMPANY, TOOELE, UTAH, FOR AUGUST 1951

MONTH OF AUGUST 1951

TIME REQUIRED FOR AUDIT

C. E. Rowan

September 17, to November 18, 1951, inclusive

Audit of the Metallurgical records of the Tooele Plant of the International Smelting and Refining Company for August 1951 included the three operating plants, as follows:

Approximately 61.5%, 17% and 65% of the purchased receipts of the Concentrator, Lead Plant and Slag Plant, respectively, were audited in detail for weights, assays, unloadings, contracts, settlements, etc. In addition, 35% and 25% of purchased receipts of the Concentrator and the Lead Plant, respectively, were audited for Tooele weights and unloadings. This covered seven fully audited shippers and four tested cars. Detail on some receipts and new contracts appears in the report.

All of the outside shipments and interplant movements were audited in detail as were most of the plant movements at the Sulphide Concentrator and the Lead Plant. All shipments from the Slag Treating Plant were audited except two cars of Deleaded Zinc Fume shipped to the Great Falls Plant of the Inland Empire Smelting Company. Final and preliminary data as included in the August statements were used in all cases.

Inventory observations were made on September 1st and 27th, October 1st and November 1st, as detailed in the report. All four observations were checked to the books to determine practices and accuracy. All four 1st inventories were audited in detail from the physical and estimated inventory reports on into the books. Valuations of all inventories were also audited in full including purchase costs, fixed operating and worked back inventory. A complete review of the lead plant metal valuation was made and a discussion of the same is presented herein.

August work sheets and statements as well as August 31, 1951 cumulative statements were audited using the same methods as mentioned above and assuming all July 31, 1951 inventories to be correct.

C. E. Rowan
Metallurgical Auditor

November 18, 1951

PNYC 00011844

INTERNATIONAL SHELTING AND REFLUGEE COMMISSION

TOOLBEE PLANT - TROBIE, N.W.A.

MONTH OF AUGUST 1951

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PNYC 00011845

INTERNATIONAL SHELTON AND SOUTHERN CALIFORNIA

TOOLE PLANT - TOOLE, UTAH

MONTH OF AUGUST 1951

SULPHIDE CONCENTRATOR

Utah Consolidated Mines Company - Ore

This ore accounted for over 49% of the Concentrator receipts in August 1951. The contract has remained essentially the same as detailed in the 1948 audit. The treatment cost has risen to \$1.49 per dry ton and the sampling credit has been increased to 50¢ per dry ton. This ore is all sampled, weighed and assayed by the Utah Ore Sampling Company and the International Company accepts and uses these weights and moisture but averages the assays with their own and calls for impurities when needed.

All August zinc contents were totaled and averaged and the shipper was paid for the balance of zinc in two lots which had been given the 60 pound minimum deduction because of low content zinc. This is allowed in the contract if the monthly average assay is large enough to receive the 65% payment. 19,735 pounds were paid for at \$9.4389 per pound. Also, the difference between the July sampling credit total (50¢ per dry ton) and half the July sampling charge (\$1.00 per wet ton) was paid to the shipper as allowed in the contract.

Lead and Silver - Ore

This lead-silver ore from Ketchum, Idaho, received in August 1951 amounted to 5 lots or 4.7% of the August receipts. The contract of September 15, 1948 states the usual metal percentages and prices but the duplicate copy has not yet been signed and returned, as is the custom. The August 1951 treatment cost was \$2.921 per dry ton and copper is not paid for. No agreement could be located for the 6% royalty paid on each lot to J. B. Eldridge, owner of the property.

Gold and Mullinax - Tailings

These tailings are from Park City, Utah, and accounted for 6.5% of the August 1951 receipts. No written contract was available but the terms of the last two lots were listed by Mr. G. M. Hurt, Ore Buyer, on one of the lot sheets, as follows:

Gold - 100% @ \$16.00 per ounce, if .01 ounce per ton or over.

Silver - 80% @ market over 1 ounce per ton.

Lead - 100% @ \$1.50 per unit over 1.5 units.

Copper - 100% @ \$1.50 per unit

Zinc - 100% @ \$1.75 per unit after deducting oxide zinc and .7 unit.

Treatment - \$4.00 per dry ton.

Hauling - \$1.00 per wet ton to shippers.

Splitting Limits - Au. - .01 oz. per ton, Ag. - .3 oz. per ton,
Pb. - .3%, Cu. - .2%, Zn. - .5%.

Payment - Half to Silver King Coalition Mines.

These terms were higher than those on the first three August lots because of an upward in grade during the month. Neither formal contract was available.

Copper Mining Company - Silver Iron Concentrates

These concentrates accounted for 34.5% of the Concentrator receipts for August 1951. Toole weights, moisture and assays are used on the settlements. These were checked in detail but the settlements themselves were not proven because they are checked yearly in Anaconda, during the Zinc Concentrator Audit.

PNYC 000118454

Shuttle to Lead Plant

Shuttle to Lead Plant

August 1951, five cars, 293 wet tons of lead concentrates, were received and treated at the Lead Plant. All Concentrator production is considered shipped, used as Lead Plant receipts and to carry all inventories. These shipments are adjusted monthly to arrive at normal concentrator recoveries. August shipments were reduced by 13,000 pounds of lead, 1,700 ounces of silver, and ounces of gold. Each car is assayed so this reduction in output pushed the concentrator rates down and helped to raise the Lead Plant recoveries at the same time since all of these cars were received at the Lead Plant in August. These adjustments are made at October if needed.

Schedule of payments and credits, similar to the Lead Plant open contract is used for valuing concentrates for transfer. The schedule, including latest changes in freight and taxes, is:

Lead	- 1.5 units, balance 95¢ @ h. t. price, less 2¢ per unit
Copper	- (h. t. deduction 10 lbs.) 90¢ @ h. t. price, less 3.5¢ per unit
Zinc	- If 5¢ 80¢ @ 22¢ of east St. Louis price
Silver	- If 1 ounce 97¢ @ h. t. price
Gold	- If .02 ounce 91¢ @ \$35.40 per ounce
Iron	- Credit - 1¢ per unit
Insoluble	- Charge - 10¢ per unit
Sulphur	- 2¢ free - balance 2¢ per unit - maximum 2.25 ton
Zinc	- Charge - 15¢ per unit paid for
Treatment	- 25.215 per dry ton plus or minus 1¢ per unit of lead over or under 46% (after deducting 1.5 units)
Labor Base	- 9.35 - 15¢ for each - 25¢ change
Coke Base	- 16.10 - 15¢ for each - 1.50 change
Bullion Freight Base	- 22.95

Weights, assays and value of shipments were credited in detail for August 1951.

Concentrates to Lead Plant

Concentrator production is also used to determine lead plant receipts but no adjustments are made to normal concentrator recoveries. All inventories are Lead Plant inventories. Shipments were 18 cars, 757 wet tons.

The schedule for valuing these concentrates is as follows:

Lead	- 50¢ @ h. t. price, less 4.0¢ per unit
Copper	- Deduct 20 pounds, balance at h. t. price less 3.5¢ per unit
Zinc	- 10¢ per unit
Silver	- If .5 ounces, 55¢ @ h. t. price
Gold	- If .02 ounces, 91¢ @ \$35.40 per ounce
Iron less insoluble	- 5¢ per unit, credit
Treatment	- 27.24 per dry ton - 1¢ change, value to shipping, then treatment to h. t. price, still to zero
Labor Base	- 9.35 - 15¢ for each - 25¢ change
Bullion Freight	- 22.95 less

Weights, assays and value of shipments were credited in detail for August 1951.

PNYC 00011846

SULPHIDE CONCENTRATOR

INVENTORIES

All Concentrator bin inventories were measured on September 1, 1951 and observed and noted by Messrs. J. C. Wilson and W. F. Noll, Jr., Pogson and Feloubat Auditors. Since material is being deposited and specific weights are used as comparisons. Full cars and/or lots are used to approximate the stated tonnages. Actual weights and assays are used on a first-in, first-out basis. Sulphide concentrates are at average stockpile assays.

Zinc concentrates on hand are weighed and assayed. Lead and Iron concentrates are included in Lead Plant inventories.

The Superintendent prepares a monthly sheet detailing the full lots which contain in time, actual and weights and actual weights on any zinc concentrates on hand. This report is used for inventory purposes. Bin measurements are only used for checking.

On September 27, 1951 the Auditor viewed the shutdown concentrator and its inventories. In-process inventories are reported for this plant because it is usually taken on runs when inventory is taken and any material on hand belongs to the prior run. Some test material was observed in the classifiers and on the floor but neither the Superintendent nor the Accounting Office thought it was large enough to affect recoveries of the prior run and put it into inventories.

VALUATION OF INVENTORIES

Stockpile and Bins

As explained in the previous audit, these are inventories are taken on a first-in, first-out basis for silver and gold. Each lot, on a first-in, first-out basis for weight, is valued at cost. The actual silver ounces paid for are valued at 34.75¢ per ounce. The total value of gold paid for is divided by 334.91 to arrive at ounces paid for and this total is valued at 194.60 per ounce. The theory back of this is that, even though the terms of the many contracts differ in percent of gold paid for and silver, all are based on a \$34.71 price, approximately. This is market price less cost to market.

Ores and concentrates in bins which were not sampled are valued at the market price less a sampling cost of \$.4040 per ton which is an old figure from the 1940's. Since the market price does not carry this because they are to be sampled again before sale.

Zinc Concentrates

Zinc Concentrates are still valued at the contract sales prices under the terms of the contract at 34.75¢ per ounce. The contract states a gold price of 194.70 per ounce and will be used for valuation.

LEAD PRICE

Continued

Anacosta Copper Mining Company - Lead Concentrate - Contract

Lead	- Under 25% - 90% of Net Assay, 1951-1952
	- 25 to 50% - 91% of Net Assay
	- Over 50% - 92% of Net Assay
	- Price - Average New York 2 1/2% d. p. p. with ending Wednesday, next preceding sampling date, 1951-1952 with lead to 15%, plus or minus .03% for each 1% change in lead price, also plus or minus change in 1/2% d. p. p. for each 1% change in lead price.
Copper	- Deduct 20 pounds balance at 1951-1952 price limit of per pound
Arsenic and Antimony	- 1% free, excess at \$80 per unit
Treatment	- \$9.00 per dry ton, return International - 1951
Freight	- International pays freight from smelter, Idaho
	- Shipper pays only freight to smelter, Idaho
Labor	- Smelter - \$13.00 per ton, add 1/2% for each 25% raise
	- Refinery - \$1.55 per ton, add 1/2% for each 25% raise
	- ton of paid for lead for each 1% ton third preceding month
	- Labor cost average
Coke	- \$16.167 base plus 15% for each 1% raise
Bullion	- \$22.95 base, variation for ship, new contract, under each price deduction.

The splitting limits on assays were mentioned in a letter dated June 28, 1951 from Mr. H. G. Jones, Manager at Anaconda, to Mr. H. L. Sackett, suggesting limits of 100 and 150 ounces silver. Mr. Sackett agreed in his reply of June 28, 1951.

August 1951 Bonanza Line receipts using 1951-1952 prices and 1951-1952 split limits

Net Weight	Net Weight	Net Weight	Net Weight	Net Weight
332,720 lbs.	300,167 lbs.	104,279 lbs.	1,057 lbs.	1,057 lbs.

The zinc was not paid for and there was no gold content

Shipment to Omaha, Nebraska

Lead bullion shipped to the American Smelting and Refining Company, Inc. at the Tooele Plant. The silver is returned to the Tooele Plant in 20 days after receipt at a price of \$10.00 per ounce. The contract has remained the same for the last half (5 years) of contract period started on June 1, 1946. The treatment cost went into effect adding \$1.25 per ton to the cost of the bullion after the 14th. Also the splitting limit on silver was changed from 100 to 150 ounces of letters between Mr. Carl Gall, Manager of the Tooele Plant and Mr. H. L. Sackett, Manager of the Omaha Plant. If silver ran over 100 ounces the splitting limit was changed to 150 ounces.

The final settlement for June 1951 shipments was received and the final settlement for August 1951 shipments. The settlements and interest were received and the settlements were checked in Tooele as received.

August shipments with Omaha weights (final) and 1951-1952 prices (provisional) shown

	Weight	Price	Value	Weight	Price	Value
Total Weight	332,720	4.75	1,580,400	300,167	4.75	1,425,800
Lead	98,700	4.75	468,750	104,279	4.75	496,325
Electrum	1,000	2.00	2,000	1,057	2.00	2,114
Silver	2,127 oz.	1.25	2,658.75	1,057 oz.	1.25	1,321.25
Gold	1,983 oz.	1.25	2,478.75	1,057 oz.	1.25	1,321.25
Gold Payment				1,057 oz.	1.25	1,321.25
Smelter Charge				1,057 oz.	1.25	1,321.25
Estimated Treatment				1,057 oz.	1.25	1,321.25
Estimated Freight				1,057 oz.	1.25	1,321.25

PNYC 00011848

LEAD PLANT

INTERPLANT TRANSFERS AND INVENTORIES - Continued

Work Matte And Slag

The Converters receive and treat this material from the Blast Furnaces. The August transfer was from the August 1st inventory and worked from August 1st.

Furnace Cadmium Dust

High cadmium content dust is accumulated for recovery and processing at the copper roasters. None was shipped in August 1951.

Blast Furnaces

The product of the Sintering Furnace is weighed by cars, except for inventories at the Blast Furnace Bins and the balance used as shipments to the Blast Furnace and as Blast Furnace Treatment. All inventories are for the Sintering Furnace. A fixed moisture of .75% is used. Constant loss percentages are used on each carload to arrive at the content of the sinter, even though a monthly assay is taken for comparison and adjustment on sinter shipped are:

	Lead	Copper	Alumina	Silica	SO ₂
Lead Loss	2%	.5%	1.5%		1.0%
Monthly Assay	29.20%	2.00%	10.4%	5.1%	1.4 oz.
Computed Assay	29.06%	1.95%	9.4%	5.1%	1.25 oz.
Monthly Weights	4,477,236 lbs.	305,660 lbs.	1,440,441 lbs.	728,374 lbs.	1,639,950 oz.
Computed Weights	4,455,770 lbs.	298,994 lbs.	1,399,474 lbs.	711,000 lbs.	1,611,207 oz.

Slag to the Slag Treatment Plant

The molten slag sent to the Slag Treatment Plant is subject to the loss of iron and manganese at the Blast Furnaces. The loss is estimated by taking the loss in the cold dump slag, scrap iron and coke, and the loss in the Blast Furnace. All materials except slag is the content of the Blast Furnace. The loss is estimated by dry weight and other contents of the slag are estimated by the loss in the Slag Treatment Plant on the following schedule:

Zinc Charge	- Total zinc content of the slag is 1.5% of the dry weight of the slag. The loss of zinc in the slag is estimated by taking the loss in the cold dump slag, scrap iron and coke, and the loss in the Blast Furnace. The loss is estimated by dry weight and other contents of the slag are estimated by the loss in the Slag Treatment Plant on the following schedule:
Treatment of Cold Slag Charge	- \$7.00 per dry ton of slag at the Blast Furnace. Increased from \$5.00 per ton in August 1951 to \$7.00 per ton in August 1951 from the loss of zinc in the slag.
Credit for further Treatment of Told Zinc	- \$6.75 per dry ton of slag at the Blast Furnace. Increased from \$5.00 per ton in August 1951 to \$6.75 per ton in August 1951 from the loss of zinc in the slag.

A. M. on September 1, 1951, Messrs. J. C. Wilson and W. C. (Jr.), Jr., Peoria, Illinois, auditors, observed the taking of all bin inventories at the Lead Plant. The inventory was recorded and turned over to the Metallurgical Engineering Department of the plant. The inventory was taken at the end of the audit period, they did not observe the taking of the inventory. The inventory was taken at a later date. Bin audit inventories are taken at the end of the audit period. Specific weights per cubic foot if available, including the inventory and the loss of slag, including specific assays. Full or partially loaded cars or loads were observed at the end of the audit period, but were further audited for weight and the loss of slag, including the inventory. This also included clerks' estimates of the loss of slag.

PNYC 00011849

6.

On September 27, 1951 while the plant was down the Auditor accompanied Walter Long, Clerk, on an inventory taking trip around the Lead Plant. Observations were made of materials on the floor, in bins, etc. at the old Copper Plant. These are mostly lead inventories. They were later traced to the sheets for September 30, 1951.

The Sintering and Precoaster (crusher) buildings took a good deal of repair work. In the Sintering building, the only badly needed care was noted at the loading platform near these buildings. At the plant furnaces, considerable repairs were in progress. Furnaces number 1, 2 and 3 are completely gone with only a foundation number 2. Furnace number 3 had been torn down for repairs and number 4 was being cleaned out and ready for the next run. Inventories were very difficult to take but it was assumed that the coal quantities had taken place since September 1, 1951 even though a change in location had been

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Rest of this dust is in fixed quantities as follows:

The assays on these fixed inventories are also fixed and are not entirely under the monthly average of the car inventory of Dust. Actual weights and monthly variations were used in the final report. See further comment at the end of this audit report.

in transit and plant inventories of lead bullion are reconciled. The plant closed on August 27th so no assays were taken of the plant's on-hand inventories, as is the usual practice. The assays of the plant's inventories are used, slightly lower than the in transit assays, making the plant's inventories taken from the estimated settlement assets, to reconcile the plant's assets to figures from the A. S. and R. Company, the total of the plant, inventories and assays is taken without change and the actual inventory and assays are added to the balance. This assumes that the total of the four assets is known, as the first three

PNYC 00011850

LEAD PLANT

VALUATION OF INVENTORIES

Stockpiles and Stock Bins

The method of valuing these inventories has changed since the 1948 audit. The silver and gold are no longer reduced to 34.75 cents and \$34.00 per ounce, respectively, when added to the stockpiles. All lots are now added at actual costs and charges but the gold cost is divided by .94.91 to arrive at a new paid-for ounces figure. Thus, all gold paid-for ounces go into stockpiles and stock bins at .94.91 per ounce. As before, cars out of stockpiles and stock bins are given average contents and values. At month end, inventories of all lots are recapped and silver and gold total paid-for ounces are revalued at 34.75 cents and \$34.00 per ounce, allowing the difference to fall into treatment. Therefore, the individual stockpile records carry actual costs and charges with gold at .94.91 per ounce but the total inventory as used on statements is revalued for both silver and gold. This is useful when lots are transferred between plants because original costs are then needed.

Actual freight and refining charges, zinc and zinc costs and treatment charges are used as totaled on the Stockpile Recap Sheet.

The lead and copper valuations now are made on a "normal base" method along with the lead and copper in the by-products inventory. On May 31, 1949 this method was started using the May 31, 1946 inventory as a base when the government controlled price was lifted. The May 31, 1949 inventory was called normal. Also included in the base were old Copper Plant inventories on hand at that plant in 1946 but transferred to the Lead Plant on January 1, 1949.

PNYC 00011851

Date

12/31/49

Stock Pile
By-Products

Q. No. of Pounds	Per Pound	Amount
4,118,496	6.500	\$ 26,771.20
4,118,496	4.500	\$ 18,533.28
4,118,496	4.500	\$ 18,533.28

Case	3,176,105	4.500	\$ 14,292.53
Base	2,107,763	6.500	\$ 13,700.46
Base	447,098	4.500	\$ 2,011.94
Base (1.7)	90,807	4.500	\$ 408.63

Total

3,821,737	\$ 237,655.62
-----------	---------------

12/31/49

Stock Pile and
By-Products
Increase

(5)	3,821,737	\$ 237,655.62
(5)	470,035	\$ 2,912.72
(5)	4,291,772	\$ 294,078.22

12/31/50

Stock Pile and
By-Products
Increase

(5)	3,821,737	\$ 237,655.62
(5)	470,035	\$ 2,912.72
(5)	4,291,772	\$ 294,078.22

Stock Pile
Increase

(5)	3,821,737	\$ 237,655.62
(5)	470,035	\$ 2,912.72
(5)	4,291,772	\$ 294,078.22

By-Products
Increase

(5)	470,035	\$ 2,912.72
(5)	4,291,772	\$ 294,078.22

PNYC 00011852

LEAD PLANT

OF INVENTORIES - Continued

Files and Stock Bins - Continued

Period Inventory - May 31, 1946

This inventory contained quantities of lead and copper at the distinctive rate of prices, both controlled and both used under the prior method of valuation. The early prices were 4.5¢ and 11.75¢ while the last controlled prices were 6.5¢ and 11.75¢, both for lead and copper respectively.

Period Inventory - May 31, 1949

The stock pile and by-product inventories were valued separately on a last-in, first-out basis during January 1, 1949 quantities.

- (1) This stock of copper was incorrectly valued. It should have been carried at 11.03¢, per pound.
- (2) Old copper plant inventories were transferred to the Lead Plant on August 1, 1949 and these amounts were still on hand at May 31, 1949. Values are at transferred prices.
- (3) Excess copper (459,176 pounds) over January 1, 1949 amount (524,301) caused the value at average current sales price. This excess was lost at year end, however.

Period Inventory - 1949 and 1950

The stock pile and by-product inventories were now valued on the last-in, first-out basis regardless of physical inventories of each.

- (2) In 1950 the old copper plant inventory was being valued at the average rate of the old plant which much of it had been recovered in the previous year and not written down. Part of the difference was being made at 10.5¢ per pound which was higher than the original inventory as shown at May 31, 1949.
- (4) Even though the May 31, 1949 gain of 459,176 pounds was shown at May 31, 1949, another gain was shown (86,921 pounds) which was the difference between the original inventory and the gain of 1949. The value per pound was the average stock pile value for 1949.
- (5) Increases and decreases are at current market prices.
- (6) This copper increase was valued at May and June 1950 value and not at the original value of the last-in, first-out basis.

Period Inventory - August 31, 1951

A return has now been made to valuing the two base metals separately on a last-in, first-out basis from the May 31, 1949 inventory.

- (1) This is to be written down to 11.03¢ per pound on August 31, 1951.
- (2) This balance of old copper plant inventory is well above the last-in, first-out basis. The removal at 10.5¢ has reduced the value to 9.74¢ per pound. This is to be written down to the actual pounds of old copper plant copper still on hand by December 31, 1951. The August 31, 1951 inventory was 197,943 pounds at 10.5¢ per pound transferred cost.
- (7) The lead content of old copper plant inventories has been 100% removed and the 1949 plans to eliminate this part of the base inventory (10,000) pounds at May 31, 1951.
- (8) The practice of decreasing (borrowing) from base inventory, as shown in the old inventory, is a very low value even though it would be called a "last-in, first-out" inventory. It was suggested to Mr. Floyd that he value the decreases at the last added base costs per pound, at least at December 31, of each year. Then the system could be classified as a last-in, first-out system. He stated that this would give him a bad looking profit and loss statement at it had been increased and designed but he stated that this is a necessary evil of this valuation system. He said the Auditor stated that there is no such thing as a free lunch. Instructions on the desired method of valuation to be followed. The inventory of old copper plant should show a large increase over these base inventories because of the old-in, first-out basis.

PNYC 00011853

LEAD PLANT

10

INVENTORIES - Continued

Material

Lead Bullion is valued in New York but any lead bullion on hand is valued on basis of cost to finish - dressing expense. This credit is held on the Salt Lake statements until the following month. A fixed cost of \$1.7589 per ton is used which was the cost at December 31, 1941. Stated in the previous audit, it is assumed that the New York Office uses this credit when valuing lead inventory.

SLAG TREATING PLANT

Metals Reduction Company

Sixty-five percent of the purchased ore receipts at the Slag Treating Plant in August came from Combined Metals Reduction Company stockpile at Jean, Nevada. The special contract for this material has the following terms:

Zinc and Lead	- 80 percent at 44 percent of average East St. Louis price for the week ending Wednesday, next preceding date of sampling of last car of each lot.
Treatment	- \$7.48 per dry ton F.O.B. International, Utah.
Splitting Limits	- Same as Lead Plant Contract
Weights	- Tootle Weights

Oxide

All zinc oxide is weighed and assayed as shipped. If consigned, it remains at such assays and partially sold, it is sold at such assays. August 1951 shipments and sales were as follows:

American Chemet Corporation, East Helena, Montana

One car shipped and sold in August. Lead per pound - 8.44. Zinc per pound - 11.35. No consigned inventory on hand.

Settlement Shipments

One car shipped in August 1951 but no sales were made from it. Two sales of 2,950 pounds and 53,000 pounds were made at 12.875¢ per pound of oxide. One consignment had no sales in August.

Zinc Fume returned to American Zinc Company

Eighty percent of the zinc content of American Zinc Company residue from its refineries is in de-leaded zinc fume. In August 1951 approximately 270 tons of fume containing 375,422 pounds zinc were returned, using averaged assays and their weights as received at Huntington, Texas. Tootle pits and assays are used on the books as shipped.

Zinc Fume to International Minerals and Metals

All lots shipped to Bartlesville, Oklahoma in August 1951 were still in storage at August 31. The August settlement for previous shipments and the August shipment were computed using Tootle and Bartlesville weights, all assays, receiving, dispatch and current prices.

There was no change in the stock pile during August 1951. Any change would be noted at current assays and assays. Removals would be taken out at actual weights and at current prices.

These bins were among those measured by the Pogoan, Helena, Montana, on August 1, 1951. Measurements, cubic foot volume and specific weights are used for these bins and the total weight checked by in and out actual weights. Lot weights and assays are used as a firm lot, first one beside cumulative the desired total weight. All measurements, measurements and assays are noted in detail.

PNYC 00011854

SLAG TREATING PLANT

- Continued

Fume and By-Products

The fume inventory consisted of in transit to I. M. and M. Company, on hand company owned and on hand returnable to American Zinc Company. Most of the on hand are still reported by the operating department and are all handled as outlined in the previous audit, except the assay of the last lot of fume shipped is used for content of the fume on hand. The car and miscellaneous inventory was observed by the Auditor on October 1, 1951 with Mr. W. H. Floyd and later checked with the records. This did not include those reported by the operating department which were estimated. The auditor was present on November 1, 1951 when the Lead Plant Superintendent, the Slag Treating Plant Foreman and his assistant met and reviewed cleanings, deposits and operations since remaining on October 22, 1951. The Baghouse pits were viewed and estimated while all other by-products inventories were entirely estimated. The in process inventory at East Helena is considered but both systems seem to be reasonably accurate. The estimated inventories at Toole include fume in the Chamber, Flue and Bag House, most of which is not available for measuring or viewing.

Zinc Oxide

Consigned stocks of zinc oxide were out of town and were not physically verified by the Auditor. Consignee letters were audited to confirm sales and balances on hand. All consigned stocks remain the car assay as originally shipped.

One consigned balance of 20,775 pounds of oxide was on hand at August 31, 1951 out of a car shipped in June 1950. The consignee is the C. L. Duncan Company, 1101 - 17th Street, San Francisco, California. No sales had been reported since August 31, 1951 up to the date of this writing.

INVENTORIES

The methods of valuing Slag Treatment Plant inventories have not changed since the 1948 audit. In stock piles and bins is valued at actual lot costs. The lots are designated on the first-in, first-out basis. Bin ore also carries sampling cost at the current cost per ton. Deducted zinc fume in transit to International Minerals and Metals Company and on hand at the plant are valued together at the I. M. and M. Company contract terms but with an estimated treatment cost added on the preliminary settlement. Gold and silver are not paid for in this contract nor valued on any of these inventories.

Leaded zinc oxide at the plant is valued on the sales terms of fumes sent to the Lead Plant. Consigned stock was also valued at these same sales terms except that lead was carried at 16.04¢ per pound. Mr. Floyd stated that he would change this to follow the first sales price which is the current market value. Gold and silver are paid for and valued at \$32.83¢ (100%) and 34.75¢ per ounce, respectively.

By-products which include dusts, cleanings, fumes etc., are valued at current cleaning costs. This includes sampling cost. A minor portion of these materials, some furnace cleanings, etc., are returned to the Lead Plant for retreatment but most continue on through the Slag Treating Plant. No leading cost is applied because the only by-product in this section of the plant is either recycled or perhaps sold as a finished product with Leaded Zinc Oxide. Mr. Floyd was questioned as to the omission of purchase cost on all by-products and he stated that there was no purchase cost during the early operation of this plant and he is using a last-in, first-out theory on this material. This inventory is almost entirely estimated and fluctuates very little.

ERRORS AND DISCREPANCIES

CONTRACTOR

Concentrates shipped to Anaconda

In checking the August settlement for Zinc Concentrates shipped to Anaconda, Montana, the audit price for zinc freight to East St. Louis was noted as being \$6.35¢ per pound, or \$15.27 per ton. This was not auditable from the information on hand at Toole because the previous rate in March 1951 was \$15.43 per ton and the last increase on April 4, 1951, was the present, supposedly, giving a new rate of \$15.74 per ton. The rate used in August 1951, however, was \$15.27.

Upon inquiry to Anaconda, Mr. R. N. Kelly replied that the Hatchue Smelter had not been advised of a decrease in February 1951 to \$14.98 which would explain the two percent increase to \$15.27 in April. Mr. Kelly also stated that Salt Lake was informed of the error but "decided that the amount involved warranted revising the settlements."

PNYC 00011855

PLANT

Portion of Total Treatment Cost

In August 1951 the deferred Cadmium and reclaiming costs were deducted from the total treatment cost instead of the current treatment portion of those operations. This gave a portion treatment cost for Anasoda materials which was approximately 85% per ton lower than it should have been. It also left a larger treatment cost against custom ore than was current. This will be corrected in November 1951 accounts.

TREATING PLANT

Leaded Fuel to International Minerals and Metals

Inventory Value of Consigned Zinc Oxide

RAI

With the above exceptions, only a few minor errors and omissions were found. The following are the only errors noted:

Q&A: 6/28/13

LANT COTTRELL FINE

[illegible]

PLANT WHITE.CFP

[illegible]

	1951	1952
Lead	1,000,000	1,000,000
Copper	1,000,000	1,000,000
Silver	1,000,000	1,000,000
Gold	1,000,000	1,000,000
Total	4,000,000	4,000,000
Residualing Cost		1,200,000

PNYC 00011856

ORIGINAL DOCUMENTS

ANY WRITE-OFF - Continued

No metallurgical statements have been prepared for the Sinter Plant since 1951.

RECEIPTS

As before, date of receipt depends entirely on availability of final metallurgical statement. Estimated profit and loss figures are submitted to New York. This is usually the 15th of the following month. The Salt Lake and Tooele Offices agree on lots to be included and returned to the plant. Any lots which had been physically received and dumped but were not included in the statement receipts are removed from the inventory where they were dumped. This is a complicated and costly method of arriving at receipts and inventories but Mr. Floyd states that it is necessary because of the need for accuracy in the estimated profit and loss statement. He also has received instructions to include only final silver affidavit figures in his monthly profit and loss statement. The estimated profit and loss statement is also the final monthly statement.

WAYS TO ARRIVE AT NORMAL RECOVERIES

It is still the practice to adjust, at will, various inventories to a desired level, which arrive at more normal recoveries. In August 1951 numerous changes in weights and assays were made, but were not shown as adjustments. The majority of changes were made in the Plant inventory inventories but stock pile removals and interplant movements were also shown as adjustments. Stock pile removals are given either actual assays or average stockpile assays, depending on desired results. The Sinter sent to the Blast Furnaces from the Sinter Plant is adjusted monthly, as often as more reasonable recoveries at both plants but does not affect the overall Plant recoveries. The zinc content of hot slag sent to the Slag Treating Plant from the Sinter Plant is adjusted to get a more reasonable recovery at the Slag Treating Plant. On August 31, 1951, the Sinter Plant inventories were not used at all to help pull down an abnormally high recovery. Because of the shortage of materials and the impending strike, August was a cleanup month. Before the strike, a large amount of the larger August 31st inventory adjustments, the 1st adjustments and the Sinter Plant adjustments.

	LEAD		COPPER		IRON		ZINC		OTHER
	1/2 Pounds	1/2 Pounds	1/2 Pounds	1/2 Pounds	1/2 Pounds	1/2 Pounds	1/2 Pounds	1/2 Pounds	1/2 Pounds
Inventories:									
Sinter - As Taken	27.00	423,501	2.80	31,740	12.45	11,711.74	15	11,711.74	
As Used	21.00	333,278	1.00	15,000	11.21	10,741.14	15	10,741.14	
Sinter Cleanings (1)									
- As Taken	31.35	981,505	2.01	22,000	30.70	2,221.51	130	2,221.51	
- As Used	27.55	759,145	1.01	25,000	1.61	20,311.10	100	20,311.10	
Dross Mover Spills									
- As Taken	8.60	64,125	57.40	430,000	22.00	22,000.00	1.00	22,000.00	
- As Used	8.60	64,125	47.80	344,000	43.15	1,111.15	1.00	1,111.15	
Total As Taken		1,474,131		735,740		35,244.35		35,244.35	
Total As Used		1,156,532		396,000		32,864.39		32,864.39	
Decreases		317,599		339,740		2,379.96		2,379.96	
Outstanding									
Yard Cleanings	15.6	22,600	2.0	4,000	12.8	1,280.00	1	1,280.00	
Pelt Cleanings	14.9	45,320	2.0	4,000	5.21	5,210.00	1	5,210.00	
Total Inventory Receipts		368,920		8,000		6,490.00		6,490.00	
Transfer									
Sinter - As Taken	29.20	4,477,236	2.00	304,000	21.15	14,115.00	15	14,115.00	
- As Used	29.06	4,455,770	1.55	244,000	23.12	17,112.00	15	17,112.00	
Decreases		21,466		7,000		2,000.00		2,000.00	

(1) The dry weight of this material was reduced from 1951 to 1952.

PNYC 00011857

GENERAL COMMENTS

WRITE-OFF - Continued

No metallurgical statements have been prepared for the Copper Plant since 1946.

RECEIPTS

As before, date of receipt depends entirely on availability of final settlement data when the estimated profit and loss figures are submitted to New York. This is usually the 12th of the following month. The Salt Lake and Tooele Offices agree on lots to be included and excluded at month's end. Any lots which had been physically received and dumped but were not to be included in the month's receipts are removed from the inventory where they were dumped. This is a confusing and costly office method of arriving at receipts and inventories but Mr. Floyd states that it is necessary because of the need for accuracy in the estimated profit and loss statement. He also has received instructions to include only final silver affidavit figures in his monthly profit and loss statements. The estimated profit and loss statement is also the final monthly statement.

TO ARRIVE AT NORMAL RECOVERIES

It is still the practice to adjust, at will, various inventories and interplant shipments to arrive at more normal recoveries. In August 1951 numerous changes in weights and assays were in evidence but were not shown as adjustments. The majority of changes made were in Lead Plant secondary inventories but stock pile removals and interplant movements were also adjusted and adjusted when needed. Stock pile removals are given either actual assays or average stockpile assays, depending on desired results. The Sinter sent to the Blast Furnaces from the Sinter Plant is adjusted monthly to effect more reasonable recoveries at both plants but does not affect the overall Lead Plant recoveries. Also, the zinc content of hot slag sent to the Slag Treating Plant from the Lead Plant is often adjusted to get a more reasonable recovery at the Slag Treating Plant. On August 31, 1951 the Sinter Plant inventories were not used at all to help pull down an abnormally high recovery. Because of the shortage of materials and the impending strike, August was a cleanup month. Below is an example of three of the larger August 31st inventory adjustments, the two omissions and the Sinter transfer adjustments:

	LEAD		COPPER		SINTER		ZINC	
	1	Pounds	2	Pounds	Oz. Per Ton	1	Oz. Per Ton	Ounces
Inventories:								
Sinter - As Taken	27.00	428,501	2.00	31,741	19.25	15,271.06	.15	119,028
As Used	21.00	333,278	1.00	15,870	13.25	10,512.14	.15	119,028
Sinter Cleanings (1)								
- As Taken	31.35	981,505	2.01	62,500	20.255	25,200.31	.125	151,521
- As Used	27.55	759,149	.873	24,058	16.635	22,517.10	.102	143,605
Dross Revert Spoils								
- As Taken	8.60	64,125	57.80	430,980	72.96	27,202.95	1.04	307,443
- As Used	8.60	64,125	47.80	224,111	42.96	16,426.25	.84	311,162
Total as Taken		1,474,131		525,421		77,684.25		760,294
Total as Used		1,156,552		396,343		49,147.52		592,801
Decrease		317,579		129,278		28,536.73		167,493
Omissions:								
Yard Cleanings	18.6	22,608	3.6	4,370	17.08	1,034.04	.12	7,453
Belt Cleanings	12.9	48,321	2.6	9,719	9.71	1,034.22	.09	12,001
Inventory Decrease		386,508		143,393		29,570.97		179,494
Transfer								
Sinter - As Taken	29.20	4,477,236	2.00	306,660	20.15	158,000.50	.12	1,400,000
As Used	29.06	4,455,770	1.55	218,541	18.116	141,000.00	.11	1,311,000
Decreased		21,466		7,619		17,000.50		89,000

(1) The dry weight of this material was 1,000,000 lbs.

PNYC 00011858

GENERAL COMMENTSTRENDS TO ARRIVE AT NORMAL RECOVERIES - Continued

Examples of past unaccountable (x) losses, as published, were:

	LEAD	COPPER	SILVER	GOLD
Year - 1949	3.361%	.391%	.18%	4.175%
Year - 1950	3.168%	.360%	.17%	4.645%
August - 1951	6.941%	.614%	.27%	5.555%
January - June 1951	3.082%	3.948%	.10%	4.112%

(x) These are all losses except slag loss, which is nearly constant.

While it is true that the Tooele Plant has large fluctuations in contents of ores and concentrates treated, there should be a more uniform and more easily traceable method of leveling these recovery and loss percentages. The most preferable move would be more exact and complete inventories and better assays. There seem to be ample assays. Composites are hard to use because of the constant fluctuations. After all this is done, then adjustments would be proper if needed. An anomalously high adjustment would then seem to call for an investigation if time allowed. In the Montana plant, adjustments are allowed every month, except June 30th and December 31st.

In a discussion with Mr. Charles Bardwell, Smelter Superintendent, and W. B. Floyd, Chief Clerk, the Auditor suggested that adjustments be limited to a few specific inventories when needed and that all adjustments be shown on the work sheets as such and shown to the management each month. This was readily agreed to by both men. In discussing inventory taking, Mr. Bardwell agreed with Mr. Floyd that the fluctuations of the contents of treated custom ores and concentrates are a major consideration at Tooele and that recovery fluctuations are bound to occur but in the long run losses are reasonably constant. He also stated that the point of loss occurrences are watched and controlled, adding also that these losses are not changing noticeably. Upon inquiry by the Auditor, Mr. Bardwell stated that he would be glad to have the operating department give special assistance to the clerk at December 31st or each year after they take inventories and be offered to submit more complete flux and bag house inventories each month of the Lead Plant, where all parties agreed, the inventories were lax.

In time it is believed that these changes will make both departments more cognizant of the causes and effects of these fluctuations and perhaps will lead to their being partially solved.

METAL RECOVERY FROM FURNACE BOTTLES

Removal of the old Copper Plant Reverberatory Furnace bottles from 1949 to October 1950 recovered some large excesses in metals over the original inventory. All chemicals and bottles but carry no metals or values. The final accounting showed the following excess metals inventory as at October 31, 1950:

	Lead Pounds	Copper Pounds	Silver Grams	Gold Grams
Furnace No. 3.	264,175	150,700	25,214.34	3,715.100
Furnace No. 4	31,631	17,445	566.82	224.559

This is further support to the theory recently proven at other plants that the build-up of furnace bottoms over the period of operations tends to be considerably conservative.

The recoveries of past losses show up in higher average recoveries and in the case of the metals with them from cold slag at the Blast Furnace Plant.

CONCLUSION

The Lead and Slag Treating Plants were shut down from August 27th to October 21, 1951, inclusive, as result of a strike and a fire, both of which began on August 27, 1951. A new Lead Plant Sinter Circuit was built during the shutdown.

All remaining Copper Plant inventories were transferred to the Lead Plant on January 1, 1949. All Copper Plant statements have been drawn up since that date.

PNYC 00011859

CONCLUSION

During the audit, the following major points were brought up and are discussed in more detail in the following report:

- (1) The necessity of compiling a final profit and loss statement by the 12th of the following month if necessary to eliminate some receipts from the physical inventory.
- (2) The Auditor observed the taking of inventory at four different dates. The operating department agreed to submit more data on monthly Lead Plant Fine Systems inventories. They also will assist in December 31st inventories.
- (3) Numerous adjustments were made in August interplant shipments and August 31st inventories. The management has agreed to limit these adjustments to a few specific materials and to show them on the sheets.
- (4) The New York Office is herein asked to clarify the desired inventory valuation procedure. The sheets used are changed at will to facilitate recoveries and to hold low costs and all parties concerned written instructions.

Only a few errors and discrepancies were uncovered during the audit. The work sheets and statements appeared to be in good order and to follow the Anaconda Company Metallurgical standards with the noted exceptions. The Metallurgical staff was cooperative and their work was neat and accurate.