

# OFFIGIAL FILE

### DEPARTMENT OF MINERAL RESOURCES

### STATE OF ARIZONA

#### BOARD OF GOVERNORS:

Charles F. Willis, Phoenix - Chairman (term expires January 31, 1956)

Edwin W. Mills, Salome - Vice-Chairman (term expires January 31, 1958)

H. F. Mills, Humboldt (term expires January 31, 1959)

T. J. Long, Globe (term expires January 31, 1957)

Stanley M. Secrist, Tucson (term expires January 31, 1955)

### PERSONNEL:

R.I.C.Manning, Director
W. C. Broadgate, Special Assistant
A. L. Flagg, Museum Curator
Mark Gemmill, Field Eng'r - Northern District
Axel L. Johnson, Field Eng'r - Southern District
George F. Reed, Field Eng'r - Western District
(resigned 9-1-53)
Bayard J. Squire, Field Eng'r - Central District
(from 5-1-54)
Frank J. Tuck, Statistical Engineer
Mrs. Glenn W. Pare, Office Secretary
Mrs. George L. Dunagan, Stenographer

# FINANCIAL STATEMENT July 1, 1953 - June 30, 1954

### DEPARTMENT APPROPRIATION:

Lump Sum (excl of capital outlay) Capital Outlay - Equipment  EXPENDITURES: Personal Services \$ 37,666.98 Current Expenditures: Utilities \$ 556.93 Tel & Tel \$ 516.04 Postage & Insurance \$ 441.52 Printing 729.11 Equip.Maintenance, etc 1,877.25 Travel - State 6,364.72 Out of State 594.71 Subscriptions & Dues 50.00 Capital Outlay 1,887.41	\$ 55,982.50 2,112.50 \$ 58,095.00			
	\$ 51,941.28			
BALANCE returned to General Fund -	\$ 6,153.72			
-,				
MUSEUM ACCOUNT				
DEPOSITS: Donations by Mining Companies	\$ 7,785.32			
EXPENDITURES: Personal Services 6,614.40 Supplies 165.71				
	\$ 6,780.11			
BALANCE, carried forward	\$ 1,005.21			

exchanges and loans. Visual aid material in the form of film-strips, in black and white and in color, have accompanied exhibits from the Bituminous Coal Institute, the U. S. Steel Corporation and the Shell Oil Company. Similar museum aids are anticipated from the other basic industries. Through this assistance from outside sources the Museum is building up its field of usefulness to its visitors.

We again extend our thanks and grateful appreciation to the following whose generous support has made the Museum possible:

American Smelting and Refining Company Inspiration Consolidated Copper Company Kennecott Copper Corporation Magma Copper Company Miami Copper Company and Phelps Dodge Corporation.

# Money Refunded

The resignation in August of our field engineer for the Western District plus our inability to replace him until the end of the fiscal year accounted for the return of a considerable sum to the General Fund. To the Honorable J. Howard Pyle Governor of Arizona Capitol Building Phoenix, Arizona

Dear Governor Pyle:

The Annual Report of the Department of Mineral Resources covering the fiscal year 1953-54 is herewith submitted.

Respectfully,

R.I.C.MANNING

Director

As a further aid to the prospector, ores of like metal content have been grouped. By this arrangement one can see the principal copper minerals in one group; the manganese minerals in another, the tungsten minerals together, and so on. Emphasis is laid on the ore types commonly found in Arizona. As material is available, this plan will be expanded. Due to the increased importance of the non-metallic minerals the case set aside for non-metallics is already inadequate to care for the increasing number of examples.

The two most popular displays from the layman's point of view are the gold case and the fluorescent booth. The casual visitor first asks to see the gold. Until recently there was no equipment in the fluorescent booth. During the Fair period ultra violet lamps were rented: now complete equipment is installed. The fluorescent display is nore spectacular but less educational than other exhibits, but is exceedingly popular because of its brilliance. Two exceptionally attractive compositions executed in fluorescent minerals have been presented to the Museum recently. To fit the mood of the Fair figures done in fluorescent minerals have been part of this display. This year the motif is "'Lil' Dudette", a Reg Manning creation. who will be made and costumed in brilliant fluorescing colors.

During the Fair the entire balcony is given over to temporary displays, most of which are in competition under regulations of the Fair Commission. These exhibits by adults, individual school children and grade schools as a unit are at least the equal if not superior to any similar program in the Southwest. They consist of minerals, fossils, gemstones and outstanding examples of hand made jewelry, mostly in silver.

The Museum acknowledges with appreciation many gifts,

Mine Production of Copper, Lead, Zinc, Gold and Silver in Arizona 1860-1953, Incl.

Arizona and United States Metal Statistics - Five Principal Metals, 1949-1953.

Metallic and Non-metallic Mineral Production of Arizona, 1860-1953.

Arizona Copper Revenue in 1953 - Pie Chart

Salient Copper Statistics - Years 1950-53, Averages for years 1925-49 and 1940-49.

### MINERAL MUSEUM

Considering the fact that the present mineral museum program is less than two years old the response has been very gratifying. Exclusive of the 10-day period of the State Fair nearly 10,000 visitors have availed themselves of the facilities during the past fiscal year. In addition to the regular visitors, over three hundred students at various levels have been given conducted tours and talks; which science teachers reveal is a valuable supplement to classroom work. From 29 states and Alaska, 282 requests for illustrative material for school work have been filled.

Nearly 100 new specimens have been added by gift or exchange. More than three times as many are displayed on a loan basis. The most important and popular loan consists of over one hundred radio active minerals which fill two cases. Seventy of just over 100 known radio active minerals are represented, constituting the largest and most complete display of its kind in the Southwest. Some of the specimens are from foreign sources behind the Iron Curtain. The type specimens from domestic sources are especially valuable to prospectors for comparison.

#### OFFICES:

The headquarters office of the Department is located in the Mineral Building at the State Fairgrounds, McDowell Road and Nineteenth Avenue, Phoenix.

The field offices are located as follows:

Northern District:
Chamber of Commerce Building
150 South McCormick
Prescott, Arizona

Southern District:
Chamber of Commerce Building
80 South Stone Avenue
Tucson, Arizona

Central District:
Mineral Building, Fairgrounds,
McDowell Road & 19th Avenue
Phoenix, Arizona

Western District: Chamber of Commerce Building Kingman, Arizona

The Kingman, Prescott and Tucson Chambers of Commerce have graciously furnished space to the Department at no cost to the State and the many favors extended are gratefully acknowledged.

# EXCERPTS FROM THE LAW CREATING THE ARIZONA DEPARTMENT OF MINERAL RESOURCES

"Aid in the promotion and development of the mineral resources of the State.

Conduct studies of the economic problems of prospectors and operators of small mines with a view to assisting in their solution.

Assist in discovering sources of supply for persons desiring to buy minerals.

List and describe available mining properties.

Make mineral resource surveys and conduct such other investigations as may interest capital in the development of the State's mineral resources.

Serve as a bureau of mining information in conjunction with the Arizona Bureau of Mines.

Publish and disseminate such information and data as may be necessary or advisable to attain its objectives.

Cooperate with the State Land Department to encourage mining activity on state lands.

Cooperate with the Corporation Commission in its investigations and administration of laws relating to the sale of mining securities.

Cooperate with the Arizona Bureau of Mines, and turn over to said Bureau such problems as the field work of the division may show to be within the scope of the activities of said Bureau.

Cooperate with federal and other agencies having for their purposes the development of mines and minerals.

Work against all congressional acts favoring reciprocal or duty free imports of foreign minerals.

Do such other things as may assist the more extensive exploration and development of the Mineral Resources of the State."

Administration's Mineral Policy
Aid to individual companies in contract
negotiations.

The statistical department issued the following reports which were sent to a mailing list of about 185 companies, governmental agencies, newspapers and individuals, and to the Capitol, University and Phoenix libraries:

Final Figures on Gold, Silver, Copper, Lead and Zinc Production in 1952.

Comparison of Increase in Cost of Living with Increase in Wages and Output of Arizona Copper Miners.

The Current Condition of the Arizona Lead and Zinc Mining Industry.

Arizona, United States, and Free World Mine Production of Recoverable Copper, Lead and Zinc, Years 1949 thru 1952.

Economic Aspects of Copper Production in the United States.

Arizona Production of Copper, Lead, Zinc, Gold and Silver, Prices & Values, by Years, 1936-42, Compared with Yearly Averages for 1911-35.

Arizona State, County and School Property Taxes Compared in the Mining and Agricultural Industries.

Preliminary Estimate of Copper, Lead & Zinc Production in Arizona and the US, 1953, by months.

Are the Big Copper Mines Depleting Arizona's Natural Resources?

5% of the net smelter returns. Should no discovery be made, repayment of the Government portion is not necessary and no liability or lien is incurred.

It is estimated that nationally the program has resulted in the discovery of ores valued at six times the cost.

Changing conditions made it expedient during the year to close the Kingman office and add a field engineer to the Phoenix (headquarters) office. Some shuffling of the districts was necessary.

Field personnel traveled a total of 51,893 miles, attended 154 meetings, visited 305 mines, showed 36 educational movies and had 287 office calls.

We worked with representatives of industry, the federal government and other states toward the passage of legislation favorable to mining, and the dissemination of information regarding the various federal programs.

Information on mining and its allied industries was furnished to our congressmen and in many instances to those from other western mining states with similar interests.

We spent considerable time in the attempt to get an additional allotment for the Wenden Purchase Depot for manganese. Considerable effort was put forth in the lead-zinc situation both here and in Washington.

In addition, conferences and meetings were attended dealing with the following:

Loans for mining by the Small Business Administration,
Asbestos Purchasing Program
Hearings on Gold Mining
Mining Law revision

Preliminary estimates of Arizona's output of copper varied little in quantity in 1953 from 1952, but rose 17 percent in value to a record high of \$224,395,600, owing to the advance in the price of copper. As the gain in the copper value more than offset heavy declines in both quantity and value of the lead and zinc output and a moderate decrease in silver, the total value of the five metals increased from \$220,686,278 in 1952 to \$240,697,080 in 1953. The former record value was \$235,289,045 in 1951.

Arizona ranked first in copper production in the United States (including Alaska), fourth in silver, sixth in gold, eighth in lead, and tenth in zinc.

Arizona production and value of the five metals in 1953 were as follows: (preliminary figures)

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392,300 tons copper @ 28.6¢ lb $ 224,395,600

9,300 tons lead @ 13.3¢ lb 2,473,800

27,300 tons zinc @ 10.9¢ lb 5,951,400

112,500 oz gold @ $35.00 oz. 3,937,500

4,352,000 oz silver @ 90.5¢ oz 3,938,780

$ 240,697,080
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This compares with the following actual figures for 1952:

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395,719 tons copper @ 24.2¢ lb $ 191,527,996
16,520 tons lead @ 16.1¢ lb 5,319,440
47,143 tons zinc @ 16.6¢ lb 15,651,476
112,355 oz gold @ $ 35.00 oz. 3,932,425
4,701,330 oz silver @ 90.5¢ oz 4,254,941
$ 220,686,278
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### ARIZONA'S METAL

### Source: U. S.

	GOLD oz.	SILVER oz.	COPPER Lbs.
1944 1945 1946 1947 1948 1949 1950 1951 1952	112,162 77,223 79,024 95,860 109,487 108,993 118,313 116,093 112,355 112,500	4,394,039 3,558,216 3,268,765 4,569,084 4,837,740 4,790,736 5,325,441 5,120,985 4,701,330 4,352,000	716,606,000 574,406,000 578,446,000 732,436,000 750,242,000 718,020,000 806,602,000 831,740,000 791,438,000 784,600,000

# \* Preliminary

# RELATIVE 1953

# Preliminary

	United States	Arizona	Arizona %
Gold (oz) Silver (oz) Copper (tons) Lead (tons) Zinc (tons)	1,964,676	112,500	5.73
	36,776,003	4,325,000	11.83
	924,600	392,300	42.43
	335,412	9,300	2.77
	534,730	27,300	5.11

ARIZONA:	Applications	Applications	Contracts	Applications	Applications
	Received	Pending	Executed	Denied	Withdrawn
	162	6	32	84	40

Arizona contracts call for 4 percent of Government participation in all executed contracts and contracts in force.

DMEA Certified projects in Arizona as of 6-30-54:

Copper, lead-zinc and	
lead-zinc-copper	6
Asbestos	3
Tungsten	1

Arizona contracts were awarded for the following materials:

Copper	7
Copper-Zinc	1
Copper-Lead-Zinc	1
Lead	2
Lead-Zinc	4
Zinc	1
Asbestos	9
Tungsten	4
Manganese	1
Fluorspar	1
Mercury	1
	20

Under the terms of the DMEA regulations, in the event a significant discovery of ore is made, the grants are repaid at the rate of not to exceed

Production of lead and zinc continued to drop due principally to low prices and high operating costs. Imports were in a measure responsible for large stocks; these imports coming from countries with low wages in comparison with ours. A number of plans have been suggested to remedy the situation, such as: tariff increases, imports, quotas, subsidies, stockpile purchases, etc. At present purchases for stockpile seem to fit best the administration's policies and will probably be tried.

Among non-metallics cement, flagstone, pumice, diatomite, bentonite, barite, clay, mica, limestone, perlite, feldspar and gypsum continue to be produced in increasing quantities. Cement production in particular will be greatly increased with the completion of two new plants now in the planning stage. The rapid expansion of industries and population assures a bright future for non-metallics.

Government assistance to mining in the form of Defense Minerals Exploration participation loans was active thru out the year; many concerns and individuals have been aided. Since inception of the program, more than three years ago, 32 contracts, calling for \$1,315,649.00 of exploration work and maximum Government participation of \$809,748.00 have been entered into by the Government in Arizona. Companies and individuals have put up the rest, \$505,901.00, the difference between total contracts and Government participation. The smallest was \$3,050.00 and the largest \$135,000.00.

A tabulation of this DMEA program follows:

### PRODUCTION

### Bureau of Mines

LEAD		TOTAL
33,414,000	58,154,000	\$ 113,094,806
45,734,000	80,452,000	95,963,006
47,860,000	87,330,000	114,986,254
57,132,000	109,288,000	182,752,537
59,798,000	108,956,000	196,207,948
67,136,000	141,316,000	177,894,134
52,766,000	120,960,000	201,033,694
34,786,000	105,998,000	235,289,045
33,040,000	94,286,000	220,686,278
18,600,000	54,600,000	240,697,080

# PRODUCTION

# Figures

Arizona's Place	Leading State	Production
6 4 1 8 10	So. Dakota Idaho Arizona Missouri Montana	526,406 14,249,700 392,300 124,100 80,250

As of July 1, 1954 there were 197 mines operating in the state of which 163 were classed as metal mines and 34 non-metallic. Combined they employed an average of 13,302 people with a payroll of \$59,928,000. Average annual wage was \$4,994.00, the highest of any industry in the state. Loss in employment in the lead and zinc mines due to closings because of depressed prices was offset by an increase in other categories, notably manganese mining.

The Wenden Purchasing Depot for manganese ores, operated by the General Services Administration at Wenden has acquired to date 4,236,344 units of manganese at a cost of \$5.650.370. This depot is authorized to purchase 6,000,000 units, which quota will, in all probability, be met prior to January 1, 1955, at the present rate of production and efforts are being made to have an additional quota alloted. Manganese mining has meant much to the economy of the state and companies and individuals have invested considerable sums in developing mines capable of producing over a period of several years. Some of these can ship to other depots and perhaps by constructing mills to upgrade their ore, sell in the open market, but the majority are dependent on the Wenden Depot because of low grade ores and high freight rates. Manganese is vital to our national defense and a healthy mining industry capable of continued production is a must.

At present better than six hundred men are employed by this industry, which means that some 2,400 derive their support from it, considering an average family of 4. In addition, many more are employed in supporting industries.

The General Services Administration Asbestos Purchase program operated in Globe has meant much to the industry in that area. Twelve mines were operating with about 300 employees producing around 100 tons of fiber per month. Since many of these mines are on the San Carlos Indian Reservation and employ

Indians, asbestos mining is of prime importance to the economy of the Tribe.

Three custom mills for the treatment of tungsten ore in addition to several private ones have operated intermittently throughout the year and some ores and concentrates went out of the state for treatment and sale. Small operators are still beset with the problem of finding a concentrator situated close enough to them that freight rates will not be prohibitive and can give them a 60% concentrate, with a good recovery for their particular type of ore. There is still a ready market for 60% concentrates but few of the smaller operators can produce this grade.

The principal uranium operations are still in the northeast portion of the State and mostly on the Navajo Indian Reservation. Production in that area has been stepped up and the increase has made mining the principal industry in that area.

A number of new discoveries of radio active materials elsewhere in the state has resulted in prospecting on a scale seldom if ever equalled here. This is particularly true in Gila County where the sale of a uranium property and the shipment of over 3,000 tons of ore from it by the new owners has created a tremendous interest. Over 2,000 mining claims have been located in this county alone. Many of the claims are situated in an area that has experienced very little mining in the past.

The copper mining industry, the mainstay of Arizona mining, accounted for almost 90% of the total value of mineral production. Five new properties were brought into production and two large open pits were scheduled to commence operations during the summer or early fall.