
**FOURTH
ANNUAL REPORT**

•

**DEPARTMENT OF
MINERAL RESOURCES**

STATE OF ARIZONA

JULY 1, 1942 TO JUNE 30, 1943

•

J. S. COUPAL, Director

OFFICIAL FILE



DEPARTMENT OF MINERAL RESOURCES

Board of Governors:

Charles F. Willis, Phoenix, Arizona, Chairman
Dr. N. H. Morrison, Phoenix, Arizona, Vice-Chairman
Shelton G. Dowell, Douglas, Arizona (Deceased Feb. 27, 1943)
Loyde C. Edmonson, Globe, Arizona
L. V. Root, Kingman, Arizona (Deceased Nov. 10, 1942)

Personnel of Department:

J. S. Coupal, Director
W. C. Broadgate, Assistant Director
W. J. Graham, Assistant to the Director (Deceased June 30, 1943)
Earl F. Hastings, Project Engineer
Edna B. Montgomerie, Office Secretary (Resigned Oct. 15, 1942)
Lorraine Porter, Office Secretary
C. C. Beddome, Acting Assistant to the Director

Field Engineers:

George Ballam, Southern District, Tucson, Arizona
Elgin B. Holt, Western District, Kingman Arizona
A. C. Nebeker, Central District, Prescott, Arizona (Resigned Feb. 20, 1943)
Fred H. Perkins, Eastern District, Globe Arizona (Deceased Nov. 7, 1942)
Andrew Macfarlane, Eastern District, Globe, Arizona
Bahngrell W. Brown, Central District, Prescott, Arizona

Offices:

Headquarters Office
413 Home Builders Building, Phoenix, Arizona
Telephone—Phoenix 4-7034

Field Offices

Tucson, c/o Chamber of Commerce, Tucson, Arizona
Kingman, c/o Chamber of Commerce, Kingman, Arizona
Prescott, c/o Yavapai Associates, Prescott, Arizona
Globe, c/o Old Dominion Bank Building, Globe, Arizona



DEPARTMENT OF MINERAL RESOURCES

Statement of Expenses
July 1, 1942 to June 30, 1943

Allotment				\$40,680.00
ADMINISTRATIVE				
Salaries	\$14,970.55			
Travel	1,461.55			
Printing & Stationery.....	907.93			
Postage	806.50			
Tel. & Tel.....	394.18			
Rent	979.20			
Office Supplies	430.41			
Insurance	52.42			
Miscellaneous	413.41			
			\$20,416.15	
Publicity				
Salary	\$ 50.00		50.00	
Special Projects				
Salary	\$ 3,100.47			
Travel	380.61		3,481.08	
Capital Expense	\$ 542.09		542.09	
FIELD WORK				
Eastern District—Globe				
Salary	\$ 2,037.50			
Travel	733.98		\$2,771.48	
Southern District—Tucson				
Salary	\$ 2,825.00			
Travel	1,050.98		3,875.98	
Western District—Kingman				
Salary	\$ 2,825.00			
Travel	1,356.39		4,181.39	
Northern District—Prescott				
Salary	\$ 2,235.74			
Travel	586.90	2,822.64	13,651.49	38,140.81
				\$ 2,539.19
Returned to General Fund				9.89
Returned to State, June 30, 1943.....				\$ 2,549.08
Returned to State, June 30, 1942.....				\$ 2,663.46
Returned to State for Biennium.....				\$ 5,212.54

In compliance with Chapter 27, Laws of 1939, creating the Department of Mineral Resources, the following report of the activities of the Department from July 1, 1942, to June 30, 1943, is respectfully submitted:

To Honorable Sidney P. Osborn, Governor

State of Arizona

Phoenix, Arizona

Dear Governor Osborn:

Immediately after the attack on Pearl Harbor in December, 1941, the program of the Department of Mineral Resources, which was then working on a skeleton program supported by funds donated by the Arizona Small Mine Operators Association, was changed and directed toward a closer and more intimate coordination with the war efforts. This program was amplified and enlarged upon when the Department was reinstated as a State agency on April 17, 1942.

The activities of the Department of Mineral Resources at that time were exclusively a war effort as they related solely to the production of strategic metals and minerals. The work was guided from week to week by the requirements of the various agencies in Washington relating to mining with whom we maintained an intimate connection.

Everything done has been measured by its importance in the defense program and those items or projects which did not relate directly to the war effort were, for the time being, passed up. The program was geared to high speed in the endeavor to avoid delays and to increase production with the feeling that every day in which production is lost is time added to the length of the war.

The program was, and is, to direct all of the Department's activities toward an effort to rapidly increase and maintain the production from the small mines already in operation and to seek out and assist those mines which could be readily put into production.

With the conversion from a defense effort to the actual war time program the rules and regulations pertaining to business became more and more complicated and the problem of staying in business became more complex. It soon developed that many delays and much expense were encountered by the mine operators in trying to conform to the rapidly changing directives and regulations issued from Washington. The delays and the complexity resulting from the many changes, rules, and restrictions caused an increase of cost, a delay in production and, in some cases, the shutting down of marginal operations.

In order to assist in even the maintenance of production from month to month a detailed study and knowledge of the procedure

under the new regulations was absolutely essential. The operator in the field simply could not keep up to date on the rapidly changing picture and it was obviously necessary to have some central office, such as the Department, which could be kept informed on all phases of doing mining business under war conditions; for keeping a close contact with the multitude of agencies in Washington and for passing such information on to others.

Accordingly the program of the Department was established so as to maintain a close contact with the various federal agencies and to keep posted on the requirements necessary to do business with a minimum of delay. These contacts included the Reconstruction Finance Corporation, War Production Board, Metals Reserve Company, Army and Navy Munitions Board, Office of Defense Transportation, Office of Price Administration, U. S. Geological Survey, U. S. Bureau of Mines, War Manpower Commission, Selective Service Division, the various subdivisions under many of these agencies and, in addition to the federal agencies, to keep a close coordination with the various state departments who were also engaged in a war time program.

It was realized by the Board of Governors that, in order to maintain the necessary close relations with these various agencies, it was highly advisable to have a liaison man located in Washington who had a close association with the work of the Department, a detailed knowledge of Arizona conditions and of the problems of the Arizona small mine operators.

We were fortunate in finding a man with the necessary requisites as well as a man who could meet with the keymen in the various agencies and who had the ability to present the proper arguments and analyze the effect of the various rules and regulations insofar as they affected the problems of the Arizona mine operators. We found such a man in W. C. Broadgate, Prescott, who was appointed Assistant Director, and, for the emergency, assigned to duties in Washington. Mr. Broadgate went to Washington in May, 1942.

That the right man was selected for this important position is evidenced by the accomplishments mentioned briefly in this report and the progress that he has made in advancing into niches in the Washington picture which has increased the value of our work to the state and the mining industry. The setup is well coordinated, complete, and works smoothly and has brought splendid results both to the war effort and the state.

MINE LOANS

Due to the fact that private capital has been reluctant to enter mining under the adverse tax structure, low metal prices and complications of present day business, government aid is absolutely necessary for an increase in metal production from the State. Hence, the Department gave special attention to the Reconstruction Finance

CONCLUSION

The Department policy has been made to conform to the most urgent needs of the small mine industry in the state as imposed upon it by the war effort. Special attention has been given to the problem of stepping up production from the small mines, opening up new sources of mine production and maintaining the production of the operating mines.

The complexities and complications of doing business under the flood of restrictions and regulations have made it necessary to study and work on the many revisions constantly occurring; to keep the operators advised as to the changes and procedures necessary to follow to get results; to study ways and means of removing some of the obstacles retarding production which the restrictions imposed; and serve as trouble-shooters for the industry when the load became heavier than the operators could carry.

We have had the busiest and the most productive year for the Department and have unquestionably rendered more personal services than at any time in the past. Fortunately, the Department was established four years ago and in the interim has grown rapidly in experience and in accumulated data and knowledge of the small mines in Arizona so that in this period of dire need for increased production from small mines we have been able to render the maximum service at the time it was most valuable.

Respectfully submitted,

J. S. COUPAL, Director
Department of Mineral Resources

Phoenix, Arizona
July 15, 1943

Special mention should be made of the time and effort so freely given by Mr. Charles F. Willis, Chairman of the Board. He has given unselfishly of his time and his highly valued experience on economic subjects and has maintained a daily, personal and intimate contact not only with the problems in Arizona, but with the agencies in Washington where many of our problems had to be presented in order to secure relief.

During the past year we have lost two members of the Board of Governors by death. Their loss has been serious as both gave freely and willingly of their time in helping formulate a progressive policy for their Department. As the vacancies caused by their death have not at this time been filled, an added burden is placed on the present Board members.

FINANCIAL REPORT

The statement of expenditures of the fiscal year starting July 1, 1942, and ending June 30, 1943, shows an expenditure of \$38,130.92. The budget allocated for this period was \$40,680.00 and the sum of \$2,549.08 was returned to the General Fund.

During the previous fiscal year the Department appropriation of \$10,170 was made available after the Special Session of the 15th Legislature on April 17, 1942, and the expenditures from that date to the end of the fiscal year, June 30, 1942, amounted to \$7,506.54, \$2,663.46 being returned on June 30, 1942, to the General Fund.

Thus for the biennium, which in this particular case was for a period of 14½ months, the appropriation was \$50,850.00 and the expenditures \$45,637.46; the balance, \$5,212.54, was returned to the General Fund.

For the special work on the review of the R.F.C. accessibility loans arrangements were made whereby the Department was paid \$10.00 for each loan reviewed. A total of 174 loans were reviewed and the payment of \$1,740 was placed in a Special Operating Fund. Of this amount \$40.00 was paid out by the Department for special work requested by Washington, so that the Department had on July 1, 1943, a credit in the Special Operating Fund of \$1,700, which has been authorized by the State Auditor to be carried over into the fiscal year commencing July 1, 1943.

The appropriation for the biennium starting July 1, 1943, has been set at \$66,000. This means a cut from \$40,680 for the past fiscal year to \$33,000 for the present year commencing July 1, 1943.

Every effort will be made by the Department to render equal service under the reduced budget as was given during the past year. No changes are contemplated in the program or personnel, the Washington contact, or the four field engineers, with the exception of a rearrangement of the field engineers' districts so that one of them may be made available for a portion of his time in the office in Phoenix.

Corporation Mine Loan Division program as the best and quickest means available for increasing production.

In 1940 the Yavapai County Council of the Arizona Small Mine Operators Association sponsored, and was backed by the Department and the Association, a small mine loan bill. A large amount of study and preparatory work was put in drafting a proposed bill. Wm. J. Graham, Assistant to the Director, and W. C. Broadgate, Chairman of the Yavapai County Council, were sent to Washington, D. C. on funds by the small operators of the state to arrange for the presentation of the bill to the 77th Congress.

The time evidently was not ripe for proper presentation of the bill and it was impossible to get sufficient backing, interest and approval to warrant forcing the issue. However, at the time, certain concessions and liberalization of the rules and regulations governing the general mining loans and the development loans were obtained.

The work to obtain wider interest and support for the small mine loan bill continued and, as a result, when we were actually engaged in the World War, the value and need of such legislation was appreciated and a hearing was called in May, 1942, to draft such a bill. Fortunately, the department had at that time appointed W. C. Broadgate as Assistant Director. Broadgate was one of the original framers of the proposed small mine loan bill, and had established valuable Senate and House connections in his work on the bill in Washington in 1940 and had devoted long and serious study to the problem. He was sent to Washington to represent the Department at the hearings and took an active part in the preparation of the new bill.

The value of the small mine loan bill as modified was now also appreciated by the R. F. C. and it was adopted without need of congressional action and made a part of the revised rules and regulations on mine loans. Chairman Charles F. Willis was also in Washington at the time working on the project.

In the debates and discussion on the modifications in R. F. C. procedure, so as to include the major items of the proposed small mine loan bill, the operating structure of the Department and the Arizona Small Mine Operators Association was described in detail and their cooperation assured.

As a direct result of the activity of the Department in the general mine loan program, the Department was requested to assist R. F. C. in the field work in Arizona of the new small loans and was asked to analyze and review the accessibility loans from the information in their files and also, when necessary, have the field engineers assist in gathering additional data which might have a bearing on the loan application.

Many of the small mine owners and operators were at a loss to properly prepare an application for a loan and came to the De-

partment office and to the field engineers for assistance. After the applications were submitted, a careful study often indicated vaguely a property worthy of consideration but lacking in sufficient data to determine as to whether a loan should or should not be recommended. In such cases, the applicant was contacted by the Department and assistance given in gathering the information required. This often called for a field examination, report and sketches and the field engineers were assigned such duties.

In addition to the applications for accessibility loans many applications for development and for general mining loans were submitted direct to the Department for assistance and guidance before being officially submitted to the Reconstruction Finance Corporation.

The work on the loans brought to our attention points which required clarification and liberalization. These were submitted to the R. F. C. either by Broadgate in Washington or in field contacts with representatives of the legal department and the examining engineers of the R. F. C. Plans for development and mining loans were studied and suggested and in January, 1943, revised Circular No. 14 was released by the R. F. C. with a much simpler and clearer procedure outlined for mine loans.

The mine loan program has been described in rather lengthy detail as it has entailed a large part of the office and field work during the past year. The Department has taken a very active part in it and feels justly proud of its accomplishments.

During the year, 174 accessibility loans have been reviewed by the Department. Eighty of these were granted to June 30, 1943. A total of 99 have been granted in Arizona. Nineteen of them were processed without being reviewed by the Department. Those reviewed by the Department on which loans have been granted are as follows:

Mine	County	Applicant
Abe Lincoln	Yavapai	E. I. Mills, Phoenix
Ainsworth	Cochise	W. H. Wilson, Portal
Alpha	Mohave	S. J. Langley, Los Angeles
Astonished-Fairview	Pinal	R. Hardy, E. L. Nelson, Globe
Binghampton	Yavapai	Mark Gemmill, Prescott
Black Oxide	Gila	E. A. Borge, Globe
Bland	Santa Cruz	A. T. Russell, Nogales
Bodie	Yavapai	W. B. Blaylock, Prescott
Boggs	Yavapai	R. P. M. Davis, Hollywood
Braathen	Santa Cruz	Arnt T. Braathen, Amado
Butternut	Yavapai	Evert Breckenridge, Mayer
Cabot	Pinal	S. C. Patrick, Los Angeles
Camp B	Yavapai	N. S. Oberan, Wickenburg
Carlisle	Grant, N. Mex.	Exploration Syndicate, Inc. Salt Lake City, Utah
Castile	Pima	C. B. Conlin, Tucson

DEPARTMENT LOSSES

The past year has been unusual in the number of the personnel of the Department who have passed on.

Fred H. Perkins, field engineer for the eastern district, Globe, passed away on November 7, 1942.

Leroy V. Root, member of the Board of Governors, Kingman, passed away on November 10, 1942.

Shelton C. Dowell, member of the Board of Governors, Douglas, passed away on February 27, 1943.

William J. Graham, Assistant to the Director and Secretary to the Board of Governors, passed away on June 30, 1943.

The Department has suffered a great loss in the passing of these men, who have given so unselfishly of their time and energy to the solving of the problems confronting the small mine operators of the State of Arizona.

APPRECIATION

The Department work has been to a large degree in the nature of trouble-shooting, that is, an endeavor to overcome delays or override obstacles caused by the maze of rules and regulations imposed on the mining industry by centralized control in Washington. In addition to our efforts to speed up production on individual cases where delays, non-observance of proper procedure, etc., have hindered the effective work of such individuals, we have been able to study and suggest modifications in procedure or the broadening and liberalization of policies to the various Washington agencies.

There has been a close cooperation and a sympathetic hearing from these various agencies in practically all instances. Where the difficulties were due to complex procedures or to procedures not adaptable to small mine operations, suggestions of changes have been willingly considered. At all times the Department has tried to make its criticisms constructive and along with the criticisms we have been able to submit suggestions for improvement as they applied to the particular needs of the State.

As Director, I wish to express the appreciation of the Department to the various Washington agencies for their sympathetic attitude in dealing with the small mine industry.

To the field engineers and to the office staff, together with those called upon for assistance on special projects, I express my sincere thanks and appreciation for their valued assistance. We have lost two of our staff by death and their loss to us has been deeply mourned.

As Director and on behalf of the personnel of the Department, I wish to thank the Board of Governors for their guidance and consideration in the work we have attempted of getting increased war time production.

Mrs. M. R. Linesba, owning manganese claims in Long Valley, Gila County, was unable to restrain others from taking ore from her property. Advice was given which, when followed, gave results.

Mr. J. M. Ramsden, operating the Hack Mine in the strip area required equipment and authorization for road work in that area which we were able to obtain.

In the Octave district drift fences were proposed which would cut off access to a number of mining claims. Appeal was made to the Department; the land department consulted and instructions issued which clarified the difficulties.

It was reported that plans were being made to abandon the Fairbanks-Patagonia branch of the Southern Pacific. A survey was requested by the areas served and the results of the Department survey submitted and discussed with the Corporation Commission. No further rumors of the reported abandonment were heard.

Appearances were made before the Tax Commission on the taxing, under the Privilege Sales Tax, of the premium or subsidy payments made by the Government on the over-quota production of copper, lead and zinc.

The Arizona Bureau of Mines under the direction of Dr. Thomas G. Chapman, continued to demonstrate the utmost cooperation with the Department. Problems presented to the Department which dealt with subjects covered by the work of the Arizona Bureau of Mines were referred to them and, likewise, Department problems or subjects presented to the Bureau were referred to the Department.

Particular care is taken to be sure that there was no overlapping or duplication of work of the two state agencies each of which has a definite place in the picture. The utmost harmony prevails between the two departments and frequent conferences as to program prevent misunderstanding.

PERSONNEL OF THE DEPARTMENT

The personnel of the Department has undergone many changes during the year.

Earl F. Hastings was added to the staff as projects engineer. Wm. J. Graham, Assistant to the Director, was given a leave of absence to perform the duties of Secretary of the Senate in the 16th Legislature, and C. C. Beddome of Bisbee was appointed as acting assistant to the director in his absence.

Fred H. Perkins, field engineer for the eastern district with headquarters in Globe, passed away in November, 1942, and Andrew Macfarlane was named in his place.

A. C. Nebeker, engineer in the central district with Prescott as headquarters, resigned on February 20, 1943, to take up duties with the War Production Board, Phoenix office, as technical advisor. Bahngrell W. Brown was appointed field engineer in his place for the central district.

Mine	County	Applicant
Columbia	Gila	A. D. Disney, Los Angeles
Columbus	Mohave	J. H. Hall, Chloride
Columbus Lead	Mohave	J. H. Hoffman, Kingman
Conlig	Cochise	J. Dewey Chadwick, Tombstone
Copper Bell	Pima	John Greenwood, Tucson
Copper Butte	Pinal	C. F. Mitchell, Ray
Copper Glance	Pima	Howard H. Fields, Prescott
Copper Hill	Yavapai	Fred Gibbs, Prescott
Copperville	Mohave	Mines Development Inc., Los Angeles
Copper World	Mohave	Pete Vukoye, Kingman
Critic	Yuma	Rhoda H. Nohlecheck, Wenden
Crump	Maricopa	Otis McVaugh, Phoenix
Daily	Pima	John W. Daily, Tucson
Detroit	Mohave	Sam Norris, Kingman
Dixie	Maricopa	C. A. Gillespie, Phoenix
Emerson	Mohave	Frank H. Grannis, Chloride
Empire	Yuma	W. W. Harrett, Parker
Esperanza	Pima	D. J. Miller, Tucson
Gladstone	Santa Cruz	Todd & Hoffman, Nogales
Globe-Transit	Gila	Heron & Gribble, Globe
Golden Gem	Mohave	R. L. Langley, Kingman
Havasut	Coconino	R. M. Sandersen, Goodwin
Hercules Badger	Mohave	J. E. Layton—Albin Larson, Chloride
Hidden Treasure	Yavapai	Hidden Treasure Mining Co., Phoenix
King Copper	Gila	Jack G. Russell, Globe
Leviathan	Mohave	M. B. Dudley, Kingman
Little Butte	Yuma	Paul J. Dueker, Bouse
Loma Prieta	Yavapai	N. Duyn, Prescott
Lone Star	Graham	Albert Spalding, Safford
Lund	Gila	P. H. Lund, Globe
Maudina	Pinal	Edward H. Molson, Tucson
Mile Wide	Pima	Ralph C. Campbell, Tucson
Mountain Copper	Yavapai	Mtn. Copper Co., c/o Pierre Perry, Mayer
Muheim-Grafen	Pima	Joe M. Muheim, Jr., Tucson
McIntosh	Maricopa	Frank P. Bracken, Wickenburg
New Hope	Pima	Jas. R. Cray, Chicago, Ill.
Nugget	Maricopa	Mrs. M. S. Ponton, Los Angeles
Olivette	Pima	Fred W. Kuenzel, Tucson
Ord Mercury	Gila	Tyree Trobaugh, Tonto Basin
Prosperity	Santa Cruz	Henrietta E. Miller, Tucson
Rare Metals	Pima	Arnold H. Johnson, Phoenix
Rio Vista	Yuma	George E. Trowbridge, Los Angeles
Rocky Mountain	Yavapai	H. E. Ketchum & H. Stump, Long Beach

Mine	County	Applicant
St. Louis	Mohave	A. T. Lietzow, Kingman
San Xavier Extension.....	Pima	R. E. & D. G. Chilson, Tucson
Senator Morgan	Pima	C. M. Taylor & A. L. Gorman, Tucson
Silver King	Yavapai	J. A. Poindexter, Prescott
Snyder	Gila	C. W. Hughes & F. L. Perry, Globe
Starlight	Graham	C. L. Fredericks, Dewey
Storm Cloud	Yavapai	Richard Simis, Jr., Phoenix
Stump	Pima	Artesia Dev. Co., Los Angeles
Sulphide Mine	Pinal	O. W. Blevins, Sombbrero Butte
Sundance	Yavapai	Edwin F. Rippey, Phoenix
Tintic	Mohave	Joseph G. O'Brien, Chloride
Tout	Cochise	Walter Sim, Pearce
Troy-Arizona	Pinal	John A. Devine, Globe
U. S. Mine	Yavapai	Henry L. Williams, Prescott
Victory	Mohave	Frank Nelson, Kingman
Western Lode	Cochise	H. S. Neel, Phoenix
Westerner Gold Lead.....	Yavapai	Roma Tomlinson, Prescott
Wolverine & Arizona.....	Cochise	A. W. Ecker, Bisbee
Yuma Copper	Yuma	George Spry, Vicksburg

Almost every accessibility loan application has called for individual work, both in the main office and in the field. Our work did not stop there for once a loan was granted further guidance and assistance was needed on quotas, premiums, priorities, tires, gasoline, etc.

SUMMARY BY COUNTIES

Counties	Applications	Loans Authorized
Yavapai	38	16
Pima	30	13
Gila	22	8
Mohave	21	13
Pinal	12	6
Santa Cruz	11	4
Maricopa	10	4
Cochise	10	5
Yuma	9	5
Graham	5	2
Greenlee	2	0
Coconino	1	1
Grant, New Mexico.....	2	2
Sierra, New Mexico	1	1
Totals	174	80

ance and this, in turn, is largely caused by unsafe practices in many of the small mines. It was urged upon the Bureau of Mines that special safety work should be carried on under their supervision for the small mines.

As a result of this effort a special assignment was made by them and provisions made for carrying safety work to the small mine operators. A series of accident prevention films were assembled and a man assigned the duty of showing those safety films to as many of the small mine operator gatherings as possible. Arrangements were made for the showing of these films by the Department through the various council meetings of the Arizona Small Mine Operators Association.

Mining Requirements

So many instances have been called to our attention where the mine operator has failed to keep in close touch with the many changes in rules, regulations and directives for mine operations that it was deemed advisable to compile a list of the requirements necessary in order to conform to present day practice.

The business of mining, both large and small, has become increasingly complicated and complex. In the earlier periods about all that was necessary for a man entering mining was to find a promising property and be sufficiently financed to properly equip and operate.

Today the situation is quite different. There are innumerable restrictions and requirements which are necessary to heed. In many instances costly penalties may be invoked by neglect of following the proper procedure.

A list of some 33 items was compiled showing briefly the highlights of the various major points necessary to consider with comment as to where additional detailed information can be obtained. Most of the information needed is covered in circulars, copies of which are available at the Office of the Department of Mineral Resources.

A compilation of these items was made and was published in the July, 1943, edition of "Pay Dirt" under the title "Business of Mining Complicated". In addition to this, a number of reprints of this article have been obtained and are available for distribution at the Department office or through the field engineers.

INTRA-STATE DEPARTMENT CONTACTS

Numerous land problems have been submitted to the Department for advice and assistance.

Among them, Mrs. Ethel Ferguson, owner of copper property in the Owl Head district, Pinal County, had been unable to obtain free access to her property. The facts regarding the difficulties were investigated by a field examination and access provided.

STATE ITEMS

The Arizona Tax Commission ruled that the privilege sales tax applied to the premiums or bonuses granted by the government for increased production of metals. Several hearings were held with the Tax Commission where the point was discussed and at which the small mine operator was represented by the Department.

The view of the mine operator is that these premiums are not a part of the sale price of the metal and as such cannot be taxed. Furthermore, they are payments from the Federal Government. A discussion on this same point took place in Utah and the tax commission there ruled that the premiums were not taxable under the sales tax law.

Despite the presentation of the arguments against such taxation the Arizona Tax Commission ruled that the premiums were taxable. It has been suggested by the Tax Commission that a friendly suit be entered in order to secure judicial judgment on this point. However, the cost of such litigation would fall heavily upon people with the least ability to pay.

The freight rates on ores from various points in Arizona to markets are often inconsistent with the tariffs on similar ores in other districts. The nominal published rates are out of line and have never applied to an actual freight movement, and these high rates have prevented low grade ores from moving to possible markets.

A complete study of the railroad tariffs on ores was made from various Arizona points to markets, particularly in California, Salt Lake City and New Mexico. This study applied particularly between points which had not had a freight movement of this character but which could, if rates were equitable. As a result of these studies numerous sizeable reductions were made in the nominal published rates and additional ores were thereby permitted to move.

During the year arrangements were continued with the Arizona Bureau of Mines whereby George R. Fansett has been able to attend various meetings of the Arizona Small Mine Operators Association and demonstrate the common field tests made on strategic and critical minerals. This has been a work of great value to many of the small mine operators who are able to get a very limited equipment and make the tests in the field for themselves.

The Real Estate Division of the U. S. Army Engineers has made a careful survey of a number of areas designated as bombing, or other, areas for war use. In many of these areas promising mine developments were under way or promising prospects were located. The Department cooperated closely with the field men of the Real Estate Division and was able to make contacts for them with a great many of the claim owners in the areas to be withdrawn.

One of the factors of increasing costs in small mine operations is that due to the heavy charge for industrial compensation insur-

During the year Arizona small mine operators have received approximately \$500,000 in small mine loans. These are apart from the development loans and the large government mine projects, such as at Morenci, Castle Dome, Bagdad, etc. This has resulted in the reopening of many properties which, without the loan program, would otherwise still be idle. The Department feels fully justified in the time and effort devoted to the small mine loan program, which is a distinctly Arizona sponsored accomplishment.

It will be noted that 174 applications for accessibility loans have been reviewed by the Department. The summary shows that Arizona has been granted from the start of the program in August, 1942, to June 30, 1943, 99 accessibility loans.

A summary of the accessibility loans granted throughout the country is as follows:

Arizona	99	27.5 per cent
Colorado	97	27.0 per cent
California	54	15.0 per cent
Nevada	14	4.0 per cent
All other states	95	26.5 per cent
Totals	359	100.0 per cent

From this tabulation it is seen that Arizona is in first place among the states receiving accessibility loans and the Department may take full credit for this standing, as the assistance on the small mine loans required a large amount of detailed work, both in the office and by the field engineers.

DEVELOPMENT LOANS

The development loan program as applied to the small mines in the State of Arizona shows that from August, 1940, to June 30, 1943, a total of 64 loans were granted and \$831,300 advanced by R. F. C. for the development of these mines. There were approximately 230 mine loan applications made during this period.

The Department of Mineral Resources, both in the office and in the field, has been called upon to assist the mine operators in the procedure necessary to obtain mine loans and we have in a great many instances assisted in the preparation of the application. During the past year a great deal of individual service and personal attention have been given the application for the development loan. The Department, however, had no part in the decisions as to whether or not a loan should be granted.

After the loans were granted the Department was then called upon to assist practically all of the applicants receiving these loans in questions of quotas, premiums, priorities and a host of other problems which occur in doing business today.

The total granted to date under the war program amounts to \$831,300 in small development loans and approximately \$500,000 in accessibility loans.

Not included in these totals are the large Defense Plant Corporation expenditures for Arizona, such as the Phelps Dodge project at Morenci, the Castle Dome project, the Bagdad Copper and several others which were the result of individual negotiation direct with Washington. There were other large projects, however, in which the Department has taken an active part, and which also are not included, such as Christmas Copper, Control Mines, Crown King, and others.

WAR PROGRAM DEVELOPMENT LOANS GRANTED THROUGH JUNE 30, 1943

Name of Applicant	Mine Location County	Principal Metals	Amount Granted
Henry W. Berger	Mohave	Tungsten	\$ 20,000
Henry W. Berger	Mohave	Tungsten	18,000
H. H. & F. D. Shuck	Mohave	Silver, zinc	11,000
Ben E. Joy	Yavapai	Tungsten	20,000
Joe H. & John H. Cline	Gila	Wolframite	20,000
Reward Mine	Pinal	Zinc	20,000
William F. Foy	Pima	Gold, zinc, copper	20,000
N. C. Burson	Pinal	Gold, silver, lead	20,000
Lime Cap Mine	Greenlee	Lead, zinc	20,000
Harrison H. Sansk	Gila	Tungsten	20,000
P. R. Helm	Yavapai	Copper	5,000
P. R. Helm	Yavapai	Copper	20,000
Mammoth-Tiger Ext. Min. Co.	Pinal	Lead	9,000
Carl Eder	Gila	Zinc	5,000
A. R. Byrd, Jr.	Pima	Silver, lead, zinc, copper	20,000
A. R. Byrd, Jr.	Pima	Silver, lead, zinc, copper	8,000
Boulder Mining Co.	Yavapai	Lead, zinc	20,000
Boulder Mining Co.	Yavapai	Lead, zinc	20,000
Williams & Chalmers Maricopa Squaw Peak Copper		Manganese	8,000
Min. Co.	Yavapai	Copper, molybdenum..	20,000
Vivian Mining Co., Inc.	Graham	Silver, lead, copper	8,000
A. Armstrong & J. S. MacDonald	Yavapai	Zinc	5,000
Grace M. Sparks	Cochise	Gold, silver, lead, zinc copper	14,000
Wm. S. Segar	Mohave	Gold, silver, lead zinc	20,000
John A. Campbell	Maricopa	Fluorspar	7,000

38. SANTA MARIA, Pinal County. Road to manganese mine north of Mammoth. Disapproved.
39. SAVANIC, Mohave County. This, together with the Grand Gulch, is a 34½ mile road improvement project, estimated to cost \$8,000. Approved to W.P.B.
40. 79 MINE, Pinal County. 4 miles at cost of \$4,000. Completed.
41. SILVER HILL, Pima County. 10 miles to copper mine of A. R. Byrd, Jr. Estimated cost \$14,000. Approved to W.P.B.
42. SOMBRERO BUTTE, or MAGNA CHIEF, Pinal County. Disapproved twice but project now amended by O. W. Blevins to consist of 4½ miles at cost of \$5,000, which has been approved to W.P.B.
43. SPRING, Yavapai-Yuma Counties. 22 miles to Ramsing manganese mine improved at cost of \$3,500.
44. SUMMIT, Mohave County. 6 miles north of Kingman to lead and zinc mine of J. D. McPherson in Stockton Hill. Cost \$5,000. To be revised.
45. TIN STRIKE, Pinal County. Road to lead mine of J. T. Corn of Klondyke. Disapproved.
46. VANADIUM, northeast corner of Apache County. Road completed at cost of \$29,000.
47. VICTORY, Mohave County. 4 miles to lead zinc mine. Completed at cost of \$1,500.
48. WALLACE, Navajo County. Road to this timber area at cost of \$193,500. Approved to W.P.B.
49. WAYNE, Mohave County. 3½ miles to mica property of F. Alberg, cost \$5,000. Approved to W.P.B.

A new access road appropriation has recently been approved and the net amount now available as new funds is \$17,500,000. The complicated procedure for handling these access roads has been the subject of much discussion and undue delays were attributed to the cumbersome set-up. Arrangements are being made to simplify the procedure and speed up the work on new access roads. Many of the applications for roads were held up due to the lack of funds at the end of the year and a number of them are now being reviewed as the additional appropriation is now available.

The field engineers have been called upon frequently to check over the properties served by the roads and assist the operators in preparing their applications. Much work has also been done in Washington to expedite action on applications after field work has been completed.

21. HELVETIA, Pima County. 14 miles of road from Sahuarita to Helvetia consisting of improvement and construction at cost of \$17,500. Completed.
22. HORSESHOE, Graham County. 4 miles of road to J. D. Merrill property at cost of \$1,000. Approved for construction.
23. KING, Maricopa County. 10 miles at cost of \$1,000 to manganese mine of Hastings and Alston. Reported to Bureau of Mines.
24. KING OF LEAD, Cochise County. Short approach to lead mine of A. C. Windes in Chiricahua Mountains at cost of \$3,000. Approved for construction.
25. LAST CHANCE, Pinal County. 1 mile near Klondyke at cost of \$1,000. Under construction.
26. LEAD JEWEL, Pinal County. 3½ miles near Klondyke at cost of \$4,000. Under construction.
27. LINE BOY, Santa Cruz County. 4½ miles of improvement costing \$2,000 giving access to Line Boy copper mine of Don Haverley. In process of Forest Service.
28. MAYNARD, Mohave County. 3½ miles road giving access to Mica property of T. Mac Smith. Cost \$5,250. Under construction.
29. MORMON CROSSING, Coconino County. Road into this timber area at cost of \$22,250. Approved by W.P.B.
30. PARKER, Yuma County. 3 miles of road to Black Metal Mine approved at cost of \$5,000. Completed.
31. PATSY, Gila County. 2½ miles of road at cost of \$1,500 to Mase Manganese mine. In process by Bureau of Mines.
32. PRODIGAL, Maricopa County. Includes 3 miles of road, cost \$1,500 to D. R. Wolfe Mine; 5.2 miles, cost \$5,000, to Garcia Mine; and concrete apron across Hassayampa River. Apron disapproved, substituting 600 cu. yd. stockpile of rock. Approved to W.P.B.
33. RAMBO, Gila County. 2 miles of road at cost of \$3,000 to manganese property of Scholl and Racine. Approved for construction.
34. REGAL, Gila County. Road to this asbestos mine cost \$15,400. Completed July 1, 1943.
35. REWARD, Pinal County. Improvement of road into Reward Mine of Pomeroy and Schornick at cost of \$1,000. Completed.
36. ROSEMONT, Pima County. Extension of Helvetia road about 1 mile to King in Exile Mine. Cost \$10,500. Under construction.
37. ROSS, Maricopa County. 2.2 miles road to this mine off Black Vulture and Moon Anchor Project. Cost \$750. Completed.

Name of Applicant	Mine Location County	Principal Metals	Amount Granted
Elmer C. Walker	Cochise	Tungsten	5,000
The Victory Manganese Co.	Yavapai	Manganese	5,000
R. C. Jamison & R. T. Still	Pinal	Manganese	11,000
R. C. Jamison & R. T. Still	Pinal	Manganese	2,500
W. F. Scholl & L. W. Racine	Gila	Manganese	12,000
W. F. Scholl & L. W. Racine	Gila	Manganese	2,500
R. P. M. Davis	Yavapai	Gold, silver, copper, lead, zinc	20,000
R. P. M. Davis	Yavapai	Gold, silver, copper, lead, zinc	20,000
El Dorado-Rover Mining Co.	Mohave	Gold, silver, copper, lead, zinc	20,000
El Dorado-Rover Mining Co.	Mohave	Gold, silver, copper, lead, zinc	20,000
Lawrence DeZee	Yavapai	Gold, lead, zinc	7,500
Ronald L. Brown	Cochise	Lead	5,000
Liberty Hill Gold Mines, Ltd.	Yavapai	Copper, lead, zinc, gold, silver	20,000
Liberty Hill Gold Mines, Ltd.	Yavapai	Copper, lead, zinc, gold, silver	10,000
Universal Mining & Smelting	Gila	Copper, zinc	13,000
D. R. Wolfe	Maricopa	Lead	2,000
Spring Manganese Co.	Yuma	Manganese	15,000
B. & R. Mines, Inc.	Santa Cruz	Copper, lead, zinc	10,000
Ord Mercury Mine	Gila	Mercury	20,000
E. P. Hilton	Pima	Copper, lead, zinc	5,000
Havasui Lead Zinc Mining Co.	Coconino	Lead, zinc, vanadium	7,500
J. L. McIver	Gila	Lead, zinc	25,000
Mines Development, Inc.	Mohave	Lead, zinc	9,500
Amargosa Mol. & Cu. Corp.	Pima	Molybdenum, copper	6,500
N. S. Oberan	Yavapai	Copper	15,000
E. I. Mills & F. P. Bracken	Yavapai	Copper	7,500
E. I. Mills & F. P. Bracken	Yavapai	Copper	8,500
James H. Macia	Cochise	Lead	8,000
Fred Gibbs	Yavapai	Molybdenum, copper	30,000

Name of Applicant	Mine Location County	Principal Metals	Amount Granted
D. J. Miller	Pima	Gold, silver, copper, lead, zinc	9,500
C. W. T. Copper Mining Co.	Coconino	Copper	7,000
J. Henry Hall	Mohave	Lead, zinc	16,000
Witt Burrows Blaylock, Yavapai		Gold, silver, copper, zinc, lead	14,500
Sam Norris	Mohave	Gold, silver, copper zinc, lead	24,000
Fred A. Bennett	Pima	Copper, zinc	6,000
Taylor & Gorman	Pima	Copper, tungsten	8,000
Gold Hill Dredging Co.....	Yuma	Tungsten	25,000
Horseshoe Mine	Graham	Copper	11,000
Edwin F. Rippey	Yavapai	Gold, silver, lead, zinc	8,800

SUMMARY BY COUNTIES OF DEVELOPMENT LOANS GRANTED

No. of Loan Applications	County	Amount
19.....	Yavapai	\$276,800
9.....	Mohave	158,500
8.....	Gila	117,500
8.....	Pima	83,000
5.....	Pinal	62,500
4.....	Cochise	32,000
3.....	Maricopa	17,000
2.....	Graham	19,500
2.....	Yuma	40,000
2.....	Coconino	14,500
1.....	Greenlee	20,000
1.....	Santa Cruz	10,000
64		\$831,300

Under the R. F. C. Mine Loan Program for small mines, there were 99 preliminary or accessibility loans granted which averaged about \$5,000, or a total of \$495,000; and 64 development loans amounting to \$831,300—making a total of \$1,326,300 spent by the federal government on the small mines in Arizona during the war program.

Almost every one of the accessibility and development loans applied for have had considerable work done in the Department office and by the field engineers as assistance to the small mine operators on their loan problems. In some instances only advice or suggestions were required, others called for several hours of work and in many cases one, two, or three days of active work was necessary.

6. BAGDAD COPPER, Yavapai County. 7.7 miles of road, estimated cost \$97,000. Approved by W. P. B. for construction.
7. BANNER, Gila County. One-half mile of road off 79 Mine road: Martin Fisback, applicant. Cost \$2,500. Approved to W.P.B.
8. BEAR FLAT, Yavapai County. Road from Camp Wood to Bagdad and Hillsdale. Disapproved.
9. BERGER, Mohave County. This road, near Wickieup to give access to Berger tungsten mine. Rejected in November, 1942, but subject to reconsideration pending completion of development work by Berger.
10. BLACK DYKE, Yavapai County. 3 miles of road at cost of \$1,500 to give access to Glen Carroll manganese mine. Pending examination by Bureau of Mines.
11. BLACK VULTURE AND MOON ANCHOR, Maricopa County. 6 miles of road to Moon Anchor and 1 mile to Black Vulture at cost of \$13,000. Completed.
12. BLAZED RIDGE, Yavapai County. Approved for \$11,500.
13. BULL CANYON, Mohave County. To give access to Rob-inette mine near Kingman. Disapproved by W.P.B.
14. CASTLE CREEK, Yavapai County. Access to Abe Lincoln Mine of Ed Mills and other mines in area. New Project calls for 5.2 miles at cost of \$17,000. Action pending.
15. CLEOPATRA, Mohave-Yuma Counties. 10 miles of road. Cost \$6,000. Dave Strong, applicant. Approved for construction.
16. COPPEROPOLIS, Yavapai County, 2 miles of road, estimated cost \$4,000. Keltron & Straight, applicants. Extension of Castle Creek road. Pending examination by Bureau of Mines.
17. COPPERVILLE, Mohave County. 14 miles of road under construction at cost of \$12,000. An additional 5 miles of road giving access to Leviathan Mine, cost \$1,000, has been reported favorably to W.P.B.
18. DREW SPRINGS, Pinal County. Improvement of road on Papago Indian Reservation to manganese mine of Thurman and VanMarel. Approved for \$2,000.
19. FORT APACHE, Gila County. 7 miles of road to asbestos mine at cost of \$77,000, one way with turnouts. Under construction.
20. HAVASU CANYON, Coconino County. ½ mile of road to be rerouted into Sandersen lead mine at cost of \$3,000. Approved to W. P. B.

roads and assistance was given the mine operators in the various districts in preparing applications for such roads, particularly those which had been studied and surveyed prior to this time by the Department. The previous work made it possible to get Arizona into the program quickly.

The procedure on the access roads was for the applicant or applicants for such roads to submit their project to the Grazing Service, Forest Service or Indian Service or direct to the Bureau of Mines. In each case the project had to be passed on by the Bureau of Mines to determine whether or not the mines to be served by such road had sufficient ore production possibilities to justify the expense of the road.

When approved by the Bureau of Mines it was submitted to the Public Roads Administration and from there to the War Production Board. If the project was approved by the Bureau of Mines, Public Roads Administration and the War Production Board, the actual construction work was then assigned back to the Grazing Service, the Forest Service, or the Indian Service, depending upon the service best able to handle that particular road.

The Grazing Service took a very active part in this mine access road program and has worked in close cooperation with this Department in assisting the mine operators to initiate their road programs. Most of the Arizona mine road projects were initiated through the Grazing Service.

The Department wishes to acknowledge the splendid cooperation of Senator Carl Hayden on this program. He has made it possible to do an unusual piece of work for the State and has been very helpful in pushing many projects through.

As of June 30, 1943, there have been initiated 49 access road projects in Arizona. Of these 49 applications, 25 have been approved and 14 of them have been completed.

The following summarizes the status of the access road projects in Arizona to June 30, 1943:

1. ALAMO, Mohave-Yuma Counties. 5 miles of road and bridge and approaches. Bureau of Mines recommended a maximum of \$20,000 for bridge only. Pending.
2. ALAMO-WENDEN, Yuma County. 8½ miles of road to cost \$4,000. Action withheld pending building of Alamo bridge.
3. ARAVAIPA PROJECT, Graham County. Access to Arizona Shaft, Abe Reed, Head Center, and Iron Cap Mines. 8½ miles. Cost \$35,600. Reported to be complete July 15, 1943.
4. ARIPIKE-SNOWFLAKE timber area road, Navajo County. Cost \$10,000. Approved.
5. ASBESTOS MINE, Gila County, southeast of Young, Arizona. Cost \$21,800. Approved up to W. P. B.

Not all the loans applied for were granted but often the marginal and sub-marginal applications called for much more office work than the ones readily granted. Even after loans were granted, the Department's services have been called upon for procedure in quotas, premiums, priorities and the many other requisites to keep in line with the maze of rules and regulations imposed on mining.

WAR PRODUCTION BOARD

The War Production Board covers practically every phase of the war effort and as a result there are innumerable branches and divisions. Contacts have had to be established first with the War Production Board as a whole and then with the heads of the various branches and divisions. Most of the branches are more or less interrelated and the confusion resulting therefrom has made the handling of some of the problems very difficult as it is necessary to deal with several groups on the same problem. For example, a complex copper-lead-zinc ore naturally comes to the attention of all three branches; namely, the Copper, Lead and Zinc Production Branches of the W. P. B. each with separate organizations and different policies.

In order to facilitate the handling of each problem it has been of utmost importance to have a personal contact in Washington who could determine the route which could be followed in tackling any proposed project or problem. In this connection Mr. Broadgate, stationed in Washington, has been of great value in expediting action on the various projects presented to him through the Department. In fact, without this connection our efforts would have been stymied on many of them.

W. P. B., Copper Branch

One of the first requests from the W. P. B. Copper Branch was for a survey of the opportunities for an increase in production of copper from Arizona small mines. In order to arrive at a prompt answer to this problem the field engineers were assigned the task of making a quick reconnaissance survey in each of the districts so that we might check with our files and make a reasonably complete survey in a short time.

The survey requested called for a classification of the mines into three groups: Group 1, those properties which could be put into immediate production, that is, within six months time; Group 2, those properties that would take from six months to a year to get into production; and Group 3, properties that would take more than a year.

In the first group only those properties were covered on which definite reliable data could be gathered and presented. Some 20 properties were submitted in this list and of these 20, 75 per cent

have since come into production or are now in the process of equipping for production. Since that time several other supplementary surveys of the potential copper producers have been made.

Another survey called for those properties which could qualify for advanced premiums on copper in order to operate at a profit. As soon as the policy of establishing an advanced price (above 17 cents) for new copper production became effective, an urgent request came to submit a list of properties which would qualify. A preliminary list was sent by return mail.

An increased copper price was promptly granted Christmas Copper Mine, Gila County; Carlotta Mine, Gila County; Lewishon Copper, Helvetia District, Pima County; Universal Mine, Dripping Springs, Gila County; Copper Giant, Mohave County; Daily Mine, Pinal County; Dundee Mine, Yavapai County; Silver Hill Mine, Pima County; Yuma Copper Mine, Yuma County; King Copper, Pinal County; Storm Cloud Mine, Yavapai County; Mountain Copper, Yavapai County; Yaller Kid Mine, Yavapai County.

Since that time numerous other copper properties have submitted applications for special advanced premiums and a considerable number of them have been granted ranging from 5 to 10 cents per pound. This special premium is over and above the original 5 cent premium.

At the very end of June, 1943, a request came from the Copper Branch for an additional survey, supplementing the former applications, asking for names, addresses and brief descriptions of any additional potential copper producers which might bring out more copper if given higher premiums. This report has been submitted.

Many of the copper properties requiring additional premiums have called for a considerable amount of work over a long period in each individual case. Among them might be mentioned the Christmas Copper Company, which finally has been granted an operating loan and an increase in price for copper. It was battled around in Washington for over a year. The Control Mine in Pima County has also been the subject of extensive work and has finally obtained its advanced premium. A complete list of the properties granted increased premiums cannot be made public.

Not only has the Department given valuable aid and assistance in each individual case, but it was mainly through the efforts of the Department and the constant drive for an increased premium on copper in order to obtain the added production from the marginal copper properties that the policy of an additional premium was adopted.

In a few instances the individual operators themselves have been able to supply the necessary data and qualify for the advanced copper premiums without specific Department help. These properties may not feel as though they have had the assistance of the

Maximum Royalties on Copper, Lead, and Zinc Ores, May 24, 1943.

Information for Revision of Quotas for New Mining Operations Conditions and Information for Eligibility for Increased Copper Premium, May, 1943.

Program for Payment of Special Additional Premium on Copper Production, June 18, 1943.

Priorities

Preference Rating Order P-100, February 10, 1942.

Preference Rating Order P-56, as amended to March 2, 1942.

Application Form for Serial Number Under P-56. Form PD-542. PD-1A, Instructions for Preparation of Application for Preference Rating.

Amendment No. 3 to Preference Rating Order P-56, August 8, 1942.

Information Required to Speed Shipment of Machinery, Repairs and Supplies, March 12, 1943.

Procedure for Purchase of Machinery, Equipment, and Supplies, March 17, 1943.

RFC Mine Loans

RFC Circular No. 14, Revised January, 1943.

RFC Circular No. 23.

Data Required by Metals Branches, WPB in Reference to Requests for Government Aid, July 1, 1942.

Data Necessary for Setting Up a WPB Project, July 23, 1942.

Smaller War Plants Corporation Loan Policy Memorandum No 6, June 12, 1943.

Miscellaneous

An Act Relating to the Leasing of State Lands, March 24, 1941.

Regulations for Control of Explosives, December 26, 1941.

Gold Mining Limitation Order L-208, Revised, November 19, 1942.

Survey on Carload Freight Rates for Manganese Ore, Iron Ore, and Fluorspar, March 23, 1943.

Rationing of Food and Food Products, May 24, 1943.

Specifications for Testing and Grading Crystalline Quartz, May 26, 1943.

MINE ACCESS ROADS

During the earlier work of the Department the problem of securing mine-to-market roads was studied and each engineer was assigned the task of making preliminary surveys of the mine-to-market roads necessary for the small mines in his district. Attempts were made at that time to interest various agencies in getting these roads completed by county or other help.

With the increased need of production of war metals an appropriation of \$10,000,000 was made by Congress for mine access

Ore Buying—Domestic

Conservation Order on Stragetic Mica, May 23, 1942.
Schedule of Prices on Manganese Oxide Concentrating Ores, August 28, 1942.
Maximum Price Regulation on Metallurgical Manganese Ores, November 5, 1942.
Domestic Tungsten Contract, November 16, 1942.
Purchase of Small Lots of Domestic Tin and Antimony Ores and Concentrates, March 30, 1943.
Extension of Purchase Programs for an Additional 12 Months, March 30, 1943.
Purchase Prices for Faced Material, Special Grade Radio Quartz, April, 1943.
Purchase of Domestic Oxidized Zinc-Lead Ores at Jean, Nevada, April 14, 1943.
Purchase of Domestic Beryl and Tantalite-Columbite Ores, May 1, 1943.
Purchase of Domestic Tugnsen Ores and Concentrates, May 11, 1943.
Purchase of Domestic Mercury, May 11, 1943.
Purchase of Domestic Chrome Ores and Concentrates, May 15, 1943.
Purchase of Domestic Manganese Ores and Concentrates, May 15, 1943.
Small Lot Purchases of Chrome and Manganese Ores and Concentrates, May 15, 1943.
Buying Price Schedule for Domestic Mica, May 24, 1943.
Schedule of Purchase Prices for Domestic Mica, May 26, 1943.
Purchase of Small Lots of Domestic Molybdenite Concentrates, July 8, 1943.

Ore Buying—Mexican

Purchase of Mexican Manganese Ore, Revised November 15, 1942.
Purchase of Mexican Tungsten Ores and Concentrates, Revised September 15, 1942.
Purchase of Mexican Tungsten Ores and Concentrates, December, 1942.

Premium Payments

Announcement of Premium Payment Program, February 9, 1942.
Program of Premium Payments by Metals Reserve Company, March 7, 1942.
Premium Payments for Small Producers and Ore Buyers, May 26, 1942.
Application for Zero Quota.
Revised Method for Figuring Bonus Metal Content, November 13, 1942.
Additional Premium Payments on Over-Quota Lead-Zinc Production.

Department but, in each case, the ground work had been laid by the Department by steady consistent working on the advanced premium policy and any properties obtaining the higher prices have thus directly benefited by the Department work.

One of the outstanding accomplishments of the past year was on the Coconino Sandstone Copper deposit. An application was made by the Mardun Company to the Copper Branch for plant installation and was definitely rejected. The Mardun Company, owners of the property, appealed to the Department for assistance.

The potential large production of a new source of copper was realized by the Department in view of the fact that a successful dry process had been evolved for handling these ores. Before any steps were taken to push this project an extensive field examination was made by the Department and, as a result of these investigations, the Copper Branch was again approached. The engineers from the Copper Branch were finally convinced that the project was feasible but at the time a change in policy stymied immediate action.

The Department was successful, however, in calling this property to the attention of the Mudd-Wiseman interests and, after investigation, a contract was entered into by the owners and the Mudd-Wiseman interests for a complete development and exploration program which is being carried out at this time. If the examination and development warrant, a large size reduction plant will be placed on the property and a new source of copper production obtained.

Fluxing Ores

Another request from the W. P. B. Copper Branch was for a survey of the fluxing ore situation in Arizona to determine the effect of government orders and regulations closing gold mines on the production of fluxing ores and the effect on the copper smelters.

It has been the practice of most of the smelters to obtain the siliceous fluxes needed for smelter operations from various small mines. Most of these ores were gold bearing, sometimes carrying a little copper, but mostly without copper. Any curtailment in the production of siliceous gold ores for smelter treatment would seriously curtail the copper production, as otherwise the smelters would have to open up new properties to take the place of the present properties now being operated.

The survey showed that the small gold and silver operations are producing the fluxing ores necessary to keep the smelting of the copper ores at a high production and, even though these particular ores have no appreciable copper content, it was shown that there are relatively small amounts of copper bearing fluxes available and many of these were not suitable for use.

The report brought out the necessity of maintaining the fluxing ore mines in full capacity in order to keep up copper production and indicated that the small fluxing ore mines must be given as much consideration on their problem as the mines which are actually producing ores with appreciable copper content.

A complete report was submitted to the War Production Board and it is expected that, as a result of this survey, no steps will be permitted to be taken which will curtail the output of copper by the cutting off of production from the gold and silver fluxing ore mines.

W. P. B., Lead Division

Reports during the year indicated that whereas additional lead production was desirable, there were ample stocks on hand and in sight which did not place lead among the first group of critical metals needed. As a result more encouragement was given to the metals critically needed and lead was given secondary consideration.

In the spring of 1943, however, word was received from the War Production Board that the lead stockpiles were being depleted and that additional production was required. A bulletin on this condition was published and distributed by the office and the field engineers were assigned the duty of contacting all lead producers and assisting them to increase their production.

W. P. B., Zinc Branch

Zinc has been classified as one of the most critical metals and as there are many deposits of simple and complex ores of zinc in Arizona, we have constantly urged the owners or possible lessors to try to get them into production.

Many difficulties have arisen, however, due to the fact that there are no zinc smelting facilities available in Arizona and that only a few custom mills were in position to receive complex ores. The premium price on zinc and the notice of advanced premium prices on zinc during May have greatly increased the activity in Arizona zinc operations.

Numerous marketing difficulties have been called to our attention and, as a result, it was necessary to make a comprehensive survey of the marketing problems for crude Arizona zinc ores. One general state survey was made and another specific survey for the treatment of complex ores in the Chloride area, Mohave County, has been undertaken.

The Lime Cap Mine, Greenlee County, Dannenhauer brothers of Clifton, presented one problem which is worthy of especial note. The property had been producing and about breaking even but required additional development work. The first premium on zinc and lead would have shown a profit so an application for a loan and further development was suggested, made and granted.

Access Roads

Mine Access Roads, July 3, 1942.

Application for Mine Access Roads, September 3, 1942.

Assessment Suspension

Notice of Intention to Hold Mining Claims Without Assessment Work, May, 1943.

Department Publications

Law Creating the Department of Mineral Resources, March 1, 1939.

First Annual Report, Department of Mineral Resources, June 30, 1940.

Second Annual Report, Department of Mineral Resources, June 30, 1941.

Third Annual Report, Department of Mineral Resources, June 30, 1942.

Copper and the Chilean Treaty, November 11, 1939.

Dependence of Arizona on the Mining Industry, October, 1940.

Preliminary Report on Dust Control Conditions in Arizona, January 27, 1941.

Production Possibilities of Arizona Marginal Copper Mines, August 1, 1941.

Small Mine Operators vs. Strategic Minerals, May 15, 1942.

Report on Silicosis by Arizona State Medical Association, May 29, 1942.

Industrial Salvage

Outline of Major Activities of Industrial Salvage Section.

Arizona Industrial Salvage Plan, June 4, 1942.

Arizona Committee on Industrial Salvage, Revised June 15, 1942.

Labor Rulings

Selective Service Occupational Bulletin for Mining, July 28, 1942.

Wage-Hour Status of Mine Lessees, August 3, 1942.

Selective Service Bulletins Nos. 149 and 150, August 29, 1942.

Employment Stabilization in Non-Ferrous Metal Mines, September 7, 1942.

Overtime Wage Compensation, September 9, 1942.

War Manpower Commission Directive on Gold Miners, October 8, 1942.

Affidavit to Support Claim for Occupational Deferment.

Wage Stabilization Orders of WLB, Nos. 1-6, October 24, 1942.

Freezing Labor in Critical Occupations, September 11, 1942.

Reclassifications for Mine Employees, September 30, 1942.

Occupational Deferment of Non-Ferrous Metal Miners, September 30, 1942.

Washington 114.9 per cent; California 110.8 per cent; and Nevada 88.5 per cent. The other states had a federal setup with state cooperation, while in Arizona it was independently handled.

The War Production Board has recently appointed Mr. Leon S. Black to serve as district chief of the Industrial Salvage Section. His office is located in the Security Building at Phoenix and Mr. Black will henceforth handle all records and reports for this area and, as the government now has its own setup to handle this work, no part of it will be done by the Department except to cooperate with Mr. Black.

The Department engineers were also asked to locate and report all usable idle mining equipment and machinery. This proved to be a very important work and a space was allocated monthly in the pages of "Pay Dirt," the official organ of the Arizona Small Mine Operators Association for recording machinery available. Through this service many small mine operators were able to buy, sell or exchange equipment. The results were of great benefit and many operations were able to secure much needed equipment without the necessity of priorities.

In this way much idle and usable equipment was returned to service as an aid to the production of strategic and critical war materials. A complete file on available machinery is maintained at headquarters and is being kept up to date by the Department.

An urgent appeal was sent out by the Copper Division of the War Production Board to learn what amounts of tin-can material could be depended upon in Arizona for leaching purposes at copper mines.

C. C. Beddome was assigned the task of making this survey and a complete report was made showing all sources of supply together with present requirements at all mines. The results of this survey made it possible for the W. P. B. to allocate imports from outside points to increase production of copper by leaching.

BULLETINS

During the year whenever any change in rules, regulations or directives relating to the mining industry were available from Washington, they were immediately mimeographed and made available for distribution by the Department. Whenever possible the bulletins were immediately mailed to the mine operators known to be directly interested in the subject of that particular bulletin. In other instances a complete list was set forth in the small mine operators' official publication, "Pay Dirt". The publication in "Pay Dirt" of these bulletins gave notice to all mine operators that they were available for distribution.

The following list shows the bulletins which were prepared for distribution by the Department.

After several months of development work a sizeable tonnage of oxidized zinc-lead ore was developed ready for mining. Prior to the loan shipments from the Lime Cap Company had been made to Coffeyville, Kansas. Notice that they were about to resume shipments was made and advice received that Coffeyville could not receive their ores. An attempt was made to have Metals Research create a stockpile at this point, but was unsuccessful. The reason Coffeyville was unable to receive additional outside ores was that shortage of labor prevented their handling more than the ores already contracted for.

In another instance Dan Lewis operating the Sceneca Mine in the Dagoon Mountains, Cochise County, opened up a sizeable tonnage of sulphide ore running about 35 per cent zinc. The ore proved unsuitable to the Shattuck Denn mill at Bisbee due to the fact that such high grade ore would interfere with balance in their flotation circuit and disturb recovery on the other ores.

No market was available at the Amarilla plant of the A. S. & R., nor at the Dumas plant of the Illinois Zinc Company. As a result of this, Mr. Lewis had to dilute his ore until the grade was low enough so as not to disturb the flotation circuit in the Shattuck Denn mill.

A similar happening regarding high grade zinc ores occurred to Maurice Hedderman on the Hedderman Mine, Cochise County. He also had high grade ore on which he could not find a market for the crude ore without diluting.

There are a large number of sources of complex lead-zinc ores being developed in the Chloride area where facilities for milling are not available excepting at the plant of the Tennessee Schuylkill, whose capacity is only sufficient for taking care of their own ores. An effort is being made to obtain government aid for increasing the milling capacity and also renewing the equipment which has had rather hard usage. Plans are also being considered for a new custom mill to serve that district.

A custom mill has been discussed with the Metals Reserve for Sahuarita, Pima County, which, when operating, would handle the copper-lead-zinc ores in the Twin Buttes, Mineral Hill and Helvetia districts. The ores in this section are now being shipped pending mill construction.

Producers of lead-zinc ores in the area around Globe have been asking for facilities of a custom mill in that area and assistance has been given by the Department in presenting these facts to the R. F. C. for financing such a project.

The smelters for zinc ores have been working to capacity and will not stockpile any additional ores so that a market is cut off for a great many of the crude ores. It is hoped that, as a result of the surveys on zinc, some solution to this problem will soon be found.

W. P. B., Tungsten Branch

On request from the War Production Board a comprehensive survey of the tungsten deposits in Arizona was made starting May, 1942, and completed in July. Due to its emergency this was made a special project and an outside engineer assigned exclusively to this particular work. This survey showed that whereas there were a great many showings of tungsten in various stages of development, the price of \$24.00 per unit was not sufficient to permit them to stay in steady profitable operation. The price has since been advanced to \$30.00 per unit for new production.

At the time a study was made of the various sites or locations for small concentration plants which would allow the local mines to handle low grade ores with a nearby market. Due to the lack of sizeable tonnage developed in any one of the new districts, this plan was not found feasible and no headway made. Most of the tungsten occurrences in Arizona are spotty and the properties, as a rule, do not lend themselves to the development of large tonnages.

In the course of our survey on the tungsten deposits the cooperation of Mr. Ira Joralemon, consultant for the Tungsten Branch in the western district, was had and his advice and assistance given on the general plan for increasing Arizona production of tungsten. We have been requested since this examination to keep Mr. Joralemon posted on any and all new finds of tungsten.

An attempt was made to have the Jacobs mill at Tucson expand its milling facilities so as to handle tungsten ores in southern Arizona and from Mexico. It was decided, however, by the Metals Reserve that a tungsten cleaning plant would be installed at Nogales, Sonora, for handling Mexican ores inasmuch as a large portion of the ores would come from Sonora, and that the Jacobs mill could serve the southern Arizona area.

We were successful, however, in assisting Mr. E. Fernstrom in his arrangements to handle the purchasing and cleaning of tungsten ores coming into Tucson and, as a result, he was appointed a Metals Reserve agent. Thus, complete marketing facilities for southern Arizona are now available at a price which makes it possible to handle the ore.

Vanadium

The U. S. Vanadium Company, as an agent of Metals Reserve, established an office in Arizona for examining the many occurrences of vanadium ores. Mr. G. Donald Emigh was placed in charge and the Department files on properties in Arizona were made available to him. The engineers in the field also assisted the operators and Mr. Emigh in contacting the more promising vanadium properties.

The work on vanadium was very disappointing as it was found that many of the properties, having reports on good vanadium

Board at San Francisco. Arizona was included in Region No. 10, which comprised seven western states.

The Department was asked to take an active part in the scrap program due to the fact that, with four field engineers in close touch with all operations and with the various properties in each district together with the fact that the engineers met frequently with the councils of the Arizona Small Mine Operators Association, it was felt as though Arizona was provided with a ready made setup to carry on the salvage work. The engineers were instructed to report all scrap accumulations or occurrences in their district directly to the office and further investigation was then made as to ways and means of moving such scrap into the market.

Through the efforts of this Department the users of scrap in Arizona were able to meet their monthly quotas and requirements and no shortage resulted here; whereas, in some of the other areas an acute situation developed which caused a serious curtailment of production and more than 50 foundries were shut down. The War Production Board Salvage Division was quick to see the benefit derived by the Arizona group under the program which had been set up and forthwith the Arizona program and plan was adopted by the W. P. B. and set up throughout the nation.

In addition to steel and iron scrap, non-ferrous metals such as copper, brass, aluminum, lead and zinc were reported. Then later when rubber scrap was needed this was added, as well as burlap, rags, and manila rope.

The net results for Arizona at the close of June, 1943, showed a total of 40,786 short tons of all classes of industrial scrap. The quota, which had been set by the government for Arizona, was 25,000 tons. Thus, it can be said that through the efforts of the Statewide Committee and the Department of Mineral Resources, which included our four field engineers, who were constantly on the lookout for new sources of scrap material, our accomplishment has had nationwide acclaim, both as to the program, plan and results.

The breakdown on the total tonnage is herewith given:

Iron and Steel	Non-Ferrous	Rubber	Burlap, etc.
78,928,206 lbs.	1,843,288 lbs.	610,069 lbs.	190,544 lbs.

We are rather proud of our record in handling the industrial scrap program for Arizona which was done throughout 1942 without any government cooperation or assistance. Arizona is a part of Region 10 and that region held top honors in that it produced more scrap than any other region in the United States, doing in 1942 113.3 per cent of the quota set for it.

Among the states comprising Region 10, Arizona made the best percentage showing by producing 158.3 per cent of its allotted quota; Idaho came next with 129 per cent; Oregon third with 127.9 per cent;

An outcome of the Denver meeting was a field investigation by the Subcommittee on mining of the Senate Small Business Committee. The Department was requested to assist the small mine operators in the presentation of their problems to this committee. Hearings were held in Tucson, Phoenix and Prescott in April, 1943, where the problems encountered by the small mine operators were presented to the Senate investigating committee.

As a direct outcome of these hearings a more liberal policy on advanced premium prices for copper, lead and zinc was issued within a short period after the hearings. A new price structure for manganese was adopted whereby the lower grades of ore received a higher price and where the former unfair price division brackets were removed and a uniformly graduated scale of payment adopted. An extension of the time guarantee for premium payments on metals was also forthcoming. A simplification of mine forms also resulted.

A complete transcript of these hearings was obtained and placed in the Department files so that each problem presented could be followed up when and as the necessity arose.

INDUSTRIAL SALVAGE

Anticipating the need for scrap steel and iron for the benefit of the war effort this Department assumed responsibility for a program of recording all sources of scrap from mining properties. Included in the project was the inventorying of all idle mining machinery in the state. The work was started in January, 1942, by the Industrial Resources Committee of the Arizona Defense Council.

Charles F. Willis, Chairman of the Board, was assigned the task of forming a Statewide Industrial Salvage Committee and Thomas H. O'Brien, General Manager of Inspiration Consolidated Mining Company, was appointed chairman of this group, with Brent N. Rickard, Arizona Manager of the American Smelting & Refining Company at Tucson, and vice-chairman and Charles F. Willis, Title and Trust Building, Phoenix, as executive secretary.

With this setup a committee of 52 responsible business heads throughout the state was approved and accepted as representatives in various districts. Their function was to contact each potential scrap producer in their respective areas to have them stimulate and report the movement of all industrial scrap originating at their plants or in their district.

W. J. Graham and C. C. Beddome were assigned the duty of tabulating the returns and keeping each scrap producer supplied with report cards. At the peak of the year a total of over 700 reports were received and tabulated. The scrap included all material sold, donated or used in their own operations. All monthly reports on totals were submitted to the Regional Office of the War Production

showings, after examination, sampling and assaying were found to carry too low grade ore to justify operations.

Several hundred properties were examined and in practically all of them it was found that the reported assays contained from 10 to 20 times the assays from carefully taken samples by the U. S. Vanadium Company's engineers.

The only conclusion which we were able to reach from these results was that the procedure used in making the vanadium assays in the first instance was evidently faulty and sampling and assaying for the vanadium content incorrect. A thorough investigation of this point was made but the result of the investigation was most disappointing and indicated that, at present prices for vanadium, only a limited production could be had from the many Arizona properties containing lead vanadates.

Molybdenum

The Department was asked to assist in making a complete survey of the molybdenite occurrences in Arizona. From the files of the Department reports on the known molybdenite properties were submitted and were investigated by an engineer representing the U. S. Geological Survey.

Quartz Crystals

The U. S. G. S. sent one of their engineers to examine the occurrences of quartz crystals in Arizona. Many of the mine operators knowing occurrences of quartz crystals were contacted by the Department and samples submitted to this office for examination by the government engineer.

Mr. T. P. Thayer, who was the engineer assigned in this work, used the Department of Mineral Resources as his headquarters for receiving samples and for contacting mine operators who were interested in quartz crystals. That contact is being maintained.

Asbestos

At the request of the War Production Board a survey of the asbestos deposits in Gila County was assigned to Andrew MacFarlane, field engineer for this district. A brief description of all the properties occurring in the area was made and submitted. A plan for establishing a custom mill and grading plant was discussed and recommended as a result of this survey.

The results of this survey were submitted to an investigation of the possibilities of the custom milling plant being financed by the Smaller War Plants Corporation and it is expected that this will result in the establishment of a milling plant and provide an outlet for the production from many of the asbestos properties in the Globe area.

PRIORITIES

Under the priority system many obstacles were encountered, mainly due to the fact that many of the small operators could not get a clear understanding or grasp the complicated procedure necessary to comply with the requirements. Changes in the system were quite frequent and it required constant contact with these changes so as to be able to render the proper advisory service to the mine operators.

Much difficulty was encountered and a great many useless delays resulted due to the complications of the whole system. These difficulties were presented from time to time by the Department through our representative in Washington and, where undue delay occurred, special individual attention had to be given. The whole program has now been greatly simplified and as a result very few urgent requests are being received for ordinary mine supply priorities and service is only required under unusual circumstances.

The general policy of the Department has been to render immediate aid to the operator who was obstructed by the complicated priority system. Each case was taken up individually in Washington and, when a sufficient number of similar problems and delays were presented, an endeavor was made to secure a change in the system which would prevent these delays occurring again.

Undoubtedly the same problems were occurring in other states, and, whenever our studies showed a recurrence of a specific type of difficulty, presentation was made to the proper authorities. By the accumulation of like problems suggestions as to the manner to modify or simplify the rulings were usually favorably received.

Almost every one of the operating properties in the state has at one time or another presented its problems on priorities to the Department and this has meant a long list of special individual services that have been rendered both in Phoenix and in Washington.

In March, 1943, the War Production Board established a technical adviser on mine priorities located in Phoenix. The man selected was A. C. Nebeker, who was, at the time of his appointment, field engineer for the Department of Mineral Resources. We have been working closely with Mr. Nebeker on all of the priority problems and the situation has greatly clarified and the problems are now mainly a question of routine procedure. We are now able to assist the operators on their priority problems with minimum of effort.

A regulation emanating from Washington called for the withdrawal of priorities and of serial numbers on all mining properties where the ratio of gold and silver values to base metals on a dollar basis exceeded 30 to 70. Numerous serial numbers previously granted on such priorities were cancelled.

intention to hold mining claims without performance of assessment work were devised and distributed to the operators of the state by the Department.

Mr. Charles F. Willis, Chairman of the Board, was called to Washington several times to attend hearings of the Senate Finance and the House Ways and Means Committee on tax legislation and was able to present the position of the small mine operators in Arizona and to show the effect of discriminatory tax policies in the production of metals from this state.

W. C. Broadgate, Assistant Director, has not only steered the individual cases of difficulties presented by the operators of the state into proper channels for correction, but has been very active on a number of the larger and broader policies, which affect many people. He first appeared before the Senate Banking and Currency Committee on a revision of the R. F. C. mine loan regulations. He also appeared before the Subcommittee on mining on the Senate Small Business Committee and numerous other committees of the House and Senate.

Due to his close contact on all subjects relating to mining Mr. Broadgate has been called in to various hearings in the preparation of new bills relating to mining. Considerable work was done by him on the preparation of a new stockpiling bill which is now before Congress.

In recognition of the service that could be rendered by Broadgate through his intimate connection with the problems as presented by the Department he was appointed consultant and technical adviser for the Senate Small Business Committee. He was later appointed on the Subcommittee to study the simplification of mine questionnaires and was made chairman of that group. He was also appointed observer on the Minerals and Metals Advisory Committee of the War Production Board.

Charles F. Willis, Chairman of the Board, in addition to his serving as consultant for the Metals Reserve Company, has been appointed an industry member of the War Labor Board to represent mining in labor and wage hearings in the state.

Chairman Willis and Director Coupal attended the American Mining Congress convention at Salt Lake City in August, 1942, where a full discussion of the various agencies in Washington concerned with the mining industry was held. This meeting was attended by the top men from Washington and many problems were ironed out.

At the War Metal Conference meeting of the Colorado Mining Association in January, 1943, which Chairman Willis and Director Coupal attended, a full discussion of ways and means to clarify and simplify the rules and restrictions by the various Washington bureaus was fully discussed. This meeting largely referred to legislative matters.

WASHINGTON ACTIVITIES

The need of a liaison man in Washington for the small mine industry in Arizona has been fully recognized and its value demonstrated. Apart from the special cooperation with all of the agencies in Washington directly concerned with individual problems of the war effort as outlined briefly in this report there have been a great many general policies coming before Congress and government departments which were of vital importance to the mining industry of Arizona and upon which the Department has done much work.

The 1940 Revenue bill provided for the exemption of certain strategic and critical minerals from the excess profits tax. The 1941 Revenue bill omitted this exemption clause. This was a serious blow to the increased production of critical minerals.

When the 1942 Revenue bill was under consideration the omission was strongly opposed by briefs from the Department and from the Arizona Small Mine Operators Association. This opposition, together with cooperative action from the other states, resulted in a change in the 1942 Revenue Act whereby the excess profits tax did not apply to certain critical minerals and was made retroactive to 1940.

The allowance for the depletion on mines in the federal tax structure has always been of great importance to mining. A strong attempt was made to remove this depletion allowance from the 1942 Revenue bill. Numerous hearings were held on this subject and briefs and arguments presented to show its necessity to the mining industry. We were successful in preventing any change in the depletion clause in the 1942 Revenue bill. On such matters we work closely in cooperation with other states. Chairman Willis made personal appearances at both the above hearings.

A widespread movement started in the eastern states to remove the present silver legislation from the books and allow silver to go at the world market price. This movement was vigorously opposed by briefs and publicity and action was prevented during the latter part of 1942. The subject again came up in 1943 in the discussion of the Green bill. William J. Graham, for the Department, contacted the silver bloc in the Senate and kept constantly in touch with the fight against demonetization of silver. The Green bill, as finally passed, does not affect the monetization of silver and the 71.11 cent payment was maintained. A fair price and established market for silver is of vital importance to the welfare of the mining industry in Arizona and is highly important to the operation of the small mines.

Due to the necessity of conserving manpower and the use of materials it was advocated by the Department that the assessment work for 1943 and for the duration of the war on unpatented mining claims be waived. This was accomplished through legislation sponsored by Representative John R. Murdock. Forms for notice of

This order was very harmful to the Arizona mines and particularly to those furnishing fluxing ores. Vigorous opposition was presented to Washington in a Department brief on this subject and various hearings were held in many parts of the country, including Reno, Salt Lake City and Denver, where the arguments of the small mine operators against such a plan were presented. Chairman Charles F. Willis personally appeared at these hearings on behalf of the Arizona operators.

As a result of the presentation of the actual facts of the harmful results of this order, the order was later eased up and many of the serial numbers formerly cancelled were restored.

Office of Defense Transportation

During June, 1942, a regulation from the Office of Defense Transportation was issued stating that trucks would not be allowed to make any trips without a 75 per cent back haul. This ruling was applied to all trucking and it was obvious that the movement of ore and concentrates and the trucking facilities needed in mining could not possibly comply with such regulations. This matter was presented to the proper authorities and resulted in a modification of the so-called 75 per cent back haul ruling.

Many of the operators starting new operations were in need of new trucks. These applications were made direct to the Office of Defense Transportation. In order to determine the productive value and the war necessity of the mines requesting new trucks the Department has been called upon in a great many instances to certify to the mining operation and to its qualification as a war necessity.

When there was any question as to the validity of the application and detailed information was not available, the engineers were asked to investigate and submit their report. In this manner the Department has been of great assistance in providing transportation which could be certified for operators who would not otherwise have been able to continue their work.

Office of Price Administration

Many problems have arisen regarding the obtaining necessary allocation of tires and of gasoline to new mining operations. These applications usually first go to the local boards and, if difficulty is encountered, an appeal for help is usually given to the Department. In most instances the question is then taken up direct with the main state Office of Price Administration, and, where possible, the Department is asked to certify as to the war necessity of the project in question. In numerous instances where ore had to be moved and such gas was not available special requests and special forms have been submitted and invariably gas and tire allowances have been allowed.

The point system of rationing of food has caused a lot of difficulty for mine operators and for individual miners living in remote areas. The Department has been able to assist such cases by certifying as to the transportation, the remoteness of the operation and to the war necessity of the project, and when results were not obtainable through the local boards, appeal was made by the Department to the main state office.

With a modification in the rules and regulations regarding mining and the rationing of food these problems have been somewhat lessened, although there is much yet to be done before they will be solved.

War Manpower Commission

Due to the active part that the Department had been taking in all mining problems, Chairman Charles F. Willis and the Director were called into a discussion with representatives of the War Manpower Commission on the problem of arranging for the mechanics of handling appeals, especially for small mines, on the labor freezing order issued by the War Manpower Commission. The freezing of labor did not solve the labor shortage problem. It might prevent the outflow of miners to a certain extent to some of the other industries, but did in no case aid in providing additional supply of labor to some of the mines.

Several months prior to the freezing order and due to the pressing need for labor, which was one of the problems presented by both the small and large mine operators, a plan was prepared and submitted to Washington for the use of Mexican labor, particularly in Arizona, as the best solution for this problem. The plan was presented and favorably received by many of the department heads, but some formidable opposition arose and no progress was made.

Among other methods for obtaining the skilled men who had left the mining industry and were in the Army, a plan was evolved for a furlough arrangement. Through working closely with the U. S. Army Office of Service and Supply, we have been able to assist in keeping miners on the job and in getting key men from the Army returned to the industry in special cases which did not come under the furloughs.

In a great many special instances, where key men in the industry had been unable to obtain their deferment, appeal was made to the Department. The particular instance was investigated and a report made to the Selective Service officials. Except in cases which did not warrant we were usually able to get deferment of the key men.

Selective Service Division

When rules and regulations were issued for deferment of miners engaged in critical mineral production, we were able to contact

mines through a 20 per cent screen. Special and individual arrangements were made that such ores would be accepted at Deming, New Mexico, with a normal charge for sintering and nodulizing.

Many of the ores in Arizona contained more than the maximum allowable for zinc, which was one per cent. Several cases were discussed with Metals Reserve and arrangements made in special instances where as high as three per cent zinc was received.

With the increased production of zinc ores to the zinc smelters it was found that the smelters were refusing to accept additional ores as their supply of ores were in excess of their furnace capacity, or the labor which they could get to run at full capacity. This cut out certain Arizona production and a zinc sulphide ore stockpile was authorized by the Metals Reserve at Dumas, Texas, and a zinc oxide stockpile at Jean, Nevada. Other difficulties have since been encountered on the marketing of zinc ores and the problem has been made the subject of a special investigation.

A great many of the small producers of tungsten ores were not in position to erect their own concentrating plants nor were they justified by the ores available. Tucson was selected as the logical site for a central concentrating and cleaning plant for tungsten ores.

Assistance was given to the Jacobs mill at Tucson for the expansion of their milling facilities. It was proposed that this plant should be expanded so as to take ores coming from southern Arizona and Sonora, Mexico, and have them cleaned or concentrated intransit to the East. A discussion of this project resulted in the Metals Reserve establishing a buying agency at Sonora, Mexico, and also in plans for future construction of a mill and concentrating plant at that point. International complications made it impossible to get one plant which would serve the producers of two countries.

A small plant operated by Fernstrom and Company at Tucson has been able to handle much of the cleaning and some concentrating of tungsten ores. Considerable difficulty was encountered by Fernstrom and Company and assistance was given them in Washington through the Department whereby he was appointed a Metals Reserve agent for buying tungsten ores, thus providing an outlet in two directions for tungsten ores at Tucson—one the concentration at the Jacobs mill, and the other, the cleaning of tungsten ores and bringing them up to the high grade required at the Fernstrom plant. Thus, tungsten producers in southern Arizona are, now, fairly well served.

Through the close contact the Department maintains with the small mine operators and through Charles F. Willis, Chairman of the Board and Consultant of Metals Reserve, we are able to compile and present all of the problems relating to Metals Reserve direct to the company and have been very fortunate in getting prompt and favorable consideration of these problems which have resulted in great benefit to the small mine operators in the state, as well as to the general war effort.

Many manganese deposits have been known to exist in Arizona and a substantial production of manganese was made during the World War I. The long freight hauls and the difficulty of finding proper markets for manganese ores prevented many of the operators from entering into manganese production at a profit.

A manganese ore survey of the state showed that a substantial production could be had if proper facilities for marketing could be established. Largely as a result of our efforts the Metals Reserve Company established two stockpiles for manganese ores in Arizona—one at Phoenix and the other at Parker.

Originally the manganese stockpiles were to receive only carload lots of manganese and chrome ores. Through continued efforts to expand the scope of service rendered by the stockpiles we have succeeded in getting the Metals Reserve to authorize the stockpiles to receive other ores and small lots of manganese (minimum of ten tons).

We are hopeful that by continued effort the service rendered by the stockpiles be extended so as to receive all kinds of strategic ores. They now have been authorized to receive, in addition to the original manganese and chrome ores, mercury, antimony, tungsten, tin, tantalum and beryl. A bill to extend the services of stockpiling has been prepared and presented to Congress.

The original specifications on manganese ores were rather severe and limited to only high grades. Through continued efforts the specifications have been eased up, the price per unit raised and the price structure revised so that the small operators have been given every possible advantage. The method of settlement has been simplified so that more prompt payments are now in effect.

Several problems arose in the manganese production. It was found that a large quantity of ore lower than the minimum of 35 per cent specified occurred and often had to be mined while getting out higher grade ores. An effort was made to authorize the acceptance of low grade ores at the stockpiles. The erection of the Henry Kaiser Company, Incorporated, steel plant at Fontana, California, offered an outlet for the low grade ores from the western part of the state, but there was no market elsewhere.

A survey and attempt was made to have the Metals Reserve authorize a reduction or concentration plant for low grade manganese ores at Parker but this was not approved. However, they did authorize a low grade manganese stockpile at Deming, New Mexico, and it was planned that a concentration plant should be erected near this stockpile. As a result, low grade ores from 35 down to 15 per cent manganese content will now be accepted at the Deming, New Mexico, plant.

Difficulties also arose as to the specifications on ores and concentrates receivable and by ores carrying more than 25 per cent

the various mine operators and inform them as to the procedure necessary to get key men deferred.

When special cases arose we were in close contact with the Selective Service and, when conditions justified and we were able to certify as to the war necessity of the particular mine and the particular man in question, deferments have been granted. In this manner we have been able to assist many of the small operators in maintaining production.

The Department also assisted in working out a special procedure for deferring key men and also for getting key men, who had already been inducted, returned to the mining industry.

In questions arising by the Selective Service System, particularly where the cases had to go to the State Appeal Board, information as to the mine and the men involved is often requested from the Department and on the information submitted the Appeal Board has been able to render decisions based upon more complete information than would otherwise be available.

Smaller War Plants Corporation

Ways and means were provided by Congress for assisting small business in performing its part in the war effort. To do this the Smaller War Plants Corporation was set up and its powers were broad enough to permit activity in mining work.

Other agencies, such as the R. F. C. and Metals Reserve and Defense Plant Corporation, provided procedure for getting federal aid along various lines but a number of projects were borderline cases which did not properly fit, or, due to the character of the project, would not get favorable consideration under the rulings of the agencies mentioned.

The Smaller War Plants Corporation is authorized to consider such borderline cases and through our connection in Washington (and considerable urging) mining or closely allied projects are now being considered.

Three Arizona projects have been presented and are being studied and prepared for the Smaller War Plants Corporation: A centrally located custom asbestos mill for the Globe area; the mining and equipment to produce perlite products; and the expansion of facilities for mining and processing a diatomaceous earth.

Individual Services

In addition to the assistance rendered to the operators, who have obtained accessibility and development mining loans, and to those who have applied but to whom loans have not been granted, which totaled about 450 for the state, many services have been rendered them in obtaining priorities, quotas, premiums, premium payments and a host of other subjects relating to mine operations.

A great many of these services were rendered in the office and many others by the engineers in the field.

When a ready solution of the difficulties was not available, the Department would contact the officials directly in charge of the branch or agency with whom the problems were concerned and usually have been successful in easing up the difficulties and obtaining satisfactory solutions.

The Department has become a clearing house for all problems relating to mining and has been used frequently by not only the operators, but by the various agencies, both state and federal, relating to mining.

METALS RESERVE COMPANY

Due to the active part taken by the Department and the small mine operators of the state, and also to the intimate knowledge of the economic phases of mining, Charles F. Willis, Chairman of the Board of Governors of the Department, was appointed consultant for the Metals Reserve Company.

The Department has worked consistently during the past year for a greater production of metals and has strongly advocated higher prices of metals as a most logical way of securing such an increase. Briefs on the subjects of prices and production costs of the various metals have been prepared from time to time and submitted to the Metals Reserve Company and the Office of Price Administration for consideration.

A flat increase in the price of copper, lead and zinc was recommended. For various reasons this suggestion was rejected and assistance was given in preliminary hearings on the planning of bonus, premium and quota methods as a means of increasing prices and production for copper, lead and zinc.

The establishment of the quota system and the method of payment of premium prices caused endless confusion and has required a great deal of work with the small mine operators in order to have them conform with the complicated procedure established to qualify for premiums and then get them after qualifying.

In the early part of the premium price plan payments were often delayed three months and more. As the premiums were established mainly for those mines which could not produce at a profit on the base price for the metals, it was obvious that prompt payment of the premiums was necessary in order to keep the properties in continuous operation. The delay in payment on the premiums required the small mine operators to tie up considerable capital—which they did not have—while awaiting the slow payment of the premiums.

A particular delay was encountered by those dealing through custom mills and suggestion was submitted to have the custom mills

act as agents in the payment of premiums in the same manner as smelters. After considerable discussion and investigation this plan was adopted. However, the system was still complicated as the various custom mills settled for their ores on widely different paying contracts and agreements. A discussion of this point resulted in the adoption of a new arbitrary simplified method of determining the amount of metal eligible to receive premium payments at both smelters and custom mills.

A number of instances came to our attention where mine operators had thousands of dollars tied up in premium payments which were being delayed due to complications of the established system. An early request by the Department that the banks or ore buyers be allowed to take assignment of the premiums due and make advance payments was denied.

Upon further presentation and discussion with Washington of the difficulties being encountered by the operators due to the delayed payments, the shippers were finally permitted to make such assignments and several of the banks agreed to discount the premium payments due or make loans against the assignments. This made it possible for a number of the operators to make use of the funds due them and continue in production. The same program was worked out for cash advances on ores shipped to the government stockpiles.

With the increased prices of labor, supplies, materials and the inefficiency of new labor made necessary by many of the experienced miners going into the armed forces and the war industries, costs of mining rapidly rose. In many instances where quotas had been granted and passed upon on the basis of the 1941 production and costs it was found that many properties could not operate at a profit under present conditions.

A full discussion of this subject was taken up with the Metals Reserve, War Production Board and the Office of Price Administration and, rather than increase the base price of metals an adjustment was made whereby, when factual data was presented by the individual mine to show the insufficiency of the premium established, the quota was reduced, and often entirely removed, so that all production came under the over quota arrangement.

Originally the premium price on copper, lead and zinc was established for only two years. This made it inadvisable for private capital to go ahead with a definite assurance of getting their money back in the short time. If the premium price was to be effective, a longer duration of guaranteed price was necessary. Efforts along these lines resulted in obtaining an extension of the quota-premium plan on copper, lead and zinc to July 31, 1945, thus giving assurance for a longer period for amortization of cost of development or capital investment programs. Similar price extensions for metals going to Metals Reserve stockpiles were secured.