UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

December 10, 1953

Memorandum

To: C. O. Mittendorf, Administrator, DMEA

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docket No. DMEA 3200 (Tungsten), Standard Tungsten Corp. Tungsten King and Black Rock Mines, Cochise County, Arizona

Enclosed is a copy of a letter dated December 7, 1953 from the applicant and our reply. We have withdrawn the application.

W H King
W. H. King

Enclosure

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
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224 New Customhouse
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UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

224 New Customhouse
Denver 2, Colorado

December 10, 1953

Mr. S. C. Hu, President
Standard Tungsten Corporation
P. O. Box 247
Benson, Arizona

Re: Docket No. DMA 3200

Dear Mr. Hu:

This will acknowledge receipt of your letter dated December 7 requesting that your application of October 21 be withdrawn.

The application will be withdrawn without prejudice, and we will be pleased to receive your new application based on further study of the property.

Returned herewith is one set of Exhibits A to L, inclusive. Two other sets of these exhibits have not as yet been returned by the field examiners.

Very truly yours,

W H King

W. H. King
Executive Officer, DMA
Field Team, Region IV

Enclosure

HMC:Fwo

cc COMittedorf
WHStorms
AFShride
Subject
Chron
Koschmann (2)

STANDARD TUNGSTEN CORPORATION

POMERENE MILL

P. O. Box 247, Benson, Arizona

COPY

December 7, 1953

Mr. W. H. King, Executive Officer
DMEA Field Team, Region IV
224 New Customhouse
Denver 2, Colorado

Subject: Withdrawal of application of October 21st, 1953, which is to be replaced with a new application to be submitted to your office soon

Dear Sir:

We thank you for your helpful and prompt action in the process of our DMEA application dated October 21st, 1953; we thank you particularly for your visit by your Mr. Faick and Mr. Farhnam to our mining properties from Tucson, Arizona, last week.

We hereby respectfully withdraw the above said DMEA application of Oct. 21, 1953; and instead we will submit a new application soon for the same property but with different exploration and development plan. This is directly resulted from our closer amd clearer understanding of DMEA proceedure and defination of exploration loan, through our meetings with your Mr. Faick and Mr. Farhnam of Tucson.

We would appreciate it very much if you will return all of the papers and documents we submitted with out last application, so that we can use part of them for our new application to be submitted.

We thank you for your continuous guidance and assistance.

Respectfully yours

STANDARD TUNGSTEN CORPORATION

(Sgd) S. C. Hu

S. C. Hu, president

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

November 2, 1953

Memorandum

To: Executive Officer, DMEA Field Team, Region IV

From: Chief, Operation's Control and Statistics Division

Subject: Assignment of Docket Number DMEA-3200

There is listed below the assigned docket number to an application recently received from Region IV.

DMEA - Standard Tungsten Corporation

ROBERT E. ADAMS

Robert E. Adams
Chief, Operation's Control
and Statistics Division

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Defense Minerals Administration
RECEIVED
NOV - 2 1953

224 New Customhouse
Denver 2, Colorado

October 30, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: Code 200

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docketing for Exploration Assistance

Enclosed herewith in duplicate is DMA Form 3a and MF-103 and supporting data pertaining to the following application for Government assistance in exploration work:

Standard Tungsten Corporation
Box 247
Benson, Arizona

W. H. King
W. H. King

Enclosures

UNITED STATES
DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION
WASHINGTON 25, D. C.

Department of the Interior
Defense Minerals Administration
RECEIVED
NOV 2 1953

224 New Customhouse
Denver 2, Colorado

October 30, 1953.

Memorandum

To: Administrator, Defense Minerals Exploration Administration
Attention: Code 200

From: Executive Officer, DMEA Field Team, Region IV

Subject: Docketing for Exploration Assistance

Enclosed herewith in duplicate is DMA Form 3a and MF-103 and supporting data pertaining to the following application for Government assistance in exploration work:

Standard Tungsten Corporation
Box 247
Benson, Arizona

W. H. King
W. H. King

Enclosures

Mining Division
Date Rec'd
OCT 1953
BUREAU OF MINES
Denver, Colorado

STANDARD TUNGSTEN CORPORATION

POMERENE MILL
P. O. BOX 247, BENSON, ARIZONA

ARIZONA & NEW MEXICO MINES:
SILVER HILL MINE
GRANITE PEAK MINE
BLACK ROCK MINE
TUNGSTEN KING MINE
DRAGOON MINE

NEW YORK OFFICE:
75 WEST STREET
NEW YORK CITY 6, N. Y.
PHONE: WHITEHALL 4-2297

October 24th,1953

please reply to:
Box 247
Benson, Ariz.

Mr. W.H.King, Executive Officer
DMEA Field Team, Region IV
224 New Custom House
Denver 2, Colorado

Dear sir:

We hereby respectfully submit our application for Exploration loan under the Defense Minerals Exploration Program of U.S.Department of Interior,within the $25,000.00 limit.

We are at present operating a tungsten processing mill at Pomerene,Arizona, at present capacity of 15-25 ton per day; and are engaged in increasing the capacity to 150 ton per day before the end of the year. We are also at present doing mining, development and exploration work at several tungsten mines in and near-by Cochise County, Arizona, with a total working force of twenty people.

We received the subject application form from Mr. Storms, your representative stationed at University of Arizona,Tucson,Arizona. We have been working with Mr. Storms in the preparation of the subject application; and he has looked over the enclosed papers yesterday, and advised us to officially submit it to you for your examination.

We thank you in advance for your guidance and direction . We would be very glad to supply any additional information, if needed, so that the loan under this application could be granted to us at an early date for the projected exploration.

Very truly yours
STANDARD TUNGSTEN CORPORATION

S.C.Hu, president

enclosed: four copies of DMEA exploration loan application form MF 103, with exhibits: A,B,C,D,E,F,G,H,J,K and L,dated 10/21/1953

MF-103
(Revised April 1952)

UNITED STATES DEPARTMENT OF THE INTERIOR
DEFENSE MINERALS EXPLORATION ADMINISTRATION

Form Approved.
Budget Bureau No. 42-R1035.2.

DEPARTMENT OF THE INTERIOR
Defense Minerals Administration
RECEIVED
NOV 2 1953

APPLICATION FOR AID IN AN EXPLORATION PROJECT, PURSUANT TO DMEA ORDER 1, UNDER THE DEFENSE PRODUCTION ACT OF 1950, AS AMENDED

Not to be filled in by applicant

Docket No. DMEA-3200
Metal or Mineral
Date Received 11-2-53
Estimated Cost
Participation (Government %)

INSTRUCTIONS

1. *Name of applicant.*—(*a*) State here your full legal name, in the form in which you will wish to contract, and your mailing address: Standard Tungsten Corporation, Box 247, Benson, Arizona; a corporation organized under the Law of State of Delaware; S.C.Hu -president, 311 East Congress Street, Tucson, Ariz. Howard R. Amundsen-secretary, 40 East 64th Street, New York City, N.Y., David Huang-treasurer, Room 804, 75 West Street, New York City 6, New York.

(*b*) If other than an individual, add to your name above whether a corporation, partnership, etc., and the name of the State in which incorporated or otherwise organized. see (a)above

(*c*) If a corporation, add to above statement, titles, names and addresses of officers. see (a)above

(*d*) If a partnership, add to the above statement the names and addresses of all partners. not applicable

2. *General.*—Read DMEA Order 1, "Government Aid in Defense Exploration Projects," before completing this application. Submit this application and all accompanying papers in quadruplicate (four copies), with your name and address on each sheet of the application and on all accompanying papers. Where sufficient space is not provided on the form for all required information, state it on an accompanying paper, with a reference in each case to the instruction to which it refers by number. Comply with all applicable instructions; or, if not applicable, so state. File the application with Defense Minerals Exploration Administration, Department of the Interior, Washington 25, D. C., or with the nearest field executive officer thereof.

3. *Applicant's property rights.*—(*a*) State the legal description of the land upon which you wish to explore, including all land which you possess or control that may be benefited by the exploration, and excluding any land or interest in land which is not to be included in the exploration project contract All interests in four mining claims(unpatented) known as Tungsten King no:15 and no:16 and Black Rock no:9 and no:10; all located in Little Dragoon Mountains, about 15 miles N.E. of Benson, Cochise County, Arizona; Claims are recorded with County Recording Office at Bisbee, Arizona in Docket no:92-page 392 &393 and Docket no:86-page 492 & 493.

(*b*) State any mine name by which the property is known. Tungsten King - Black Rock Mine

(*c*) State your interest in the land, whether owner, lessee, purchaser under contract, or otherwise Owner of the subject four claims by assignment (see exhibit AA)

(*d*) If you are not the owner, submit with this application a copy of the lease, contract, or other document under which you control the property.

(*e*) If you own the land, describe any liens or encumbrances on it royalty payment of 10% of net mill or smelter return out from the productionof Tungsten King Black Rock Group 16 claims up to $35,000.00; the subject 4 claims are part of this 16 claim group.

(*f*) If the land consists of unpatented claims, add to the description above, the book and page numbers for each recorded location notice. see item 3(a) above

4. *Physical description.*—(*a*) Describe in detail any mining or exploration operations which have been or now are being conducted upon the land, including existing mine workings and production facilities. State your interest, if any, in such operations. Also describe accessibility of mine workings for examination purposes. see Exhibit A attached

(*b*) State past and current production, and ore reserves, if any, giving quantities and grades. see Exhibit A attached

(*c*) Describe the geologic features of the property, including mineralization, type of deposit (vein, bedded, etc.), and your reasons for wishing to explore. Illustrate with maps or sketches. Send with your application (but not necessarily as a part of it) any geologic or engineering report, assay maps, or other technologic information you may have, indicating on each whether you require its return to you. see Exhibit A attached

(*d*) State the facts with respect to the accessibility of the project: Access roads, distances to shipping, supply and residence points. see Exhibit A attached

(*e*) State the availability of manpower, materials, supplies, equipment, water, and power. see Exhibit A attached

5. *The exploration project.*—(*a*) State the mineral or minerals for which you wish to explore Tungsten Ore(Scheelite)

(*b*) Describe fully the proposed work, including a map or sketch of the property showing a plan (and cross sections if needed) of any present mine workings, and the location of the proposed exploration work as related to such features as contacts, veins, ore-bearing beds, etc. 550 ft of drift northward on Claim no:15 together with 100 ft of raise & 150 ft of winze;please read Exhibit A,item 4c also maps in Exhibit H,G and F.

(*c*) The work will start within 30 days and be completed within 20 months from the date of an exploration project contract.

(*d*) State the operating experience and background of the applicant with relation to the ability to carry out such exploration project, and also that of the person or persons who will supervise the operations. please see Exhibit B attached

6. *Estimate of costs.*—Furnish a detailed estimate of the costs of the proposed work (you will have to use a separate sheet), under the following headings. Add the totals under all headings to give the estimated total cost of the project: please see Exhibit C attached

(*a*) *Independent contracts.*—(Note.—If the applicant does not intend to let any of the work to contractors, write "none" after this item. To the extent that the work is to be contracted, do not repeat the cost of the contract-work in subsequent items.) State the cost of any proposed independent contracts for the performance of all or any part of the work, expressed in terms of units of work (such as per foot of drilling, per foot of drifting, per hour of bulldozer operations, per cubic yard of material moved, etc.). see Exhibit C.

(*b*) *Labor, supervision, consultants.*—Include an itemized schedule of numbers, classes and rates of wages, salaries or fees for necessary labor, supervision and engineering and geological consultants. see Exhibit C.

(*c*) *Operating materials and supplies.*—Furnish an itemized list, including items of equipment costing less than $50 each, and power, water and fuel. see Exhibit C.

(*d*) *Operating equipment.*—Furnish an itemized list of any operating equipment to be rented, purchased, or which is owned and will be furnished by the Operator, with the estimated rental, purchase price, or suggested use-allowance based on present value, as the case may be. see Exhibit C.

(*e*) *Rehabilitation and repairs.*—Furnish a detailed list showing the cost of any necessary initial rehabilitation or repairs of existing buildings, installations, fixtures, and movable operating equipment, now owned by the Operator and which will be devoted to the exploration project. see Exhibit C.

(*f*) *New buildings, improvements, installations.*—Furnish a detailed list showing the cost of any necessary buildings, fixed improvements, or installations to be purchased, installed or constructed for the benefit of the exploration project. see Exhibit C.

(*g*) *Miscellaneous.*—Furnish a detailed list showing the cost of repairs to and maintenance of operating equipment (not including initial rehabilitation or repairs of the Operator's equipment), analytical work, accounting, workmen's compensation and employers' liability insurance, and payroll taxes. see Exhibit C.

(*h*) *Contingencies.*—Give an estimate of any necessary allowances for contingencies not included in the costs stated above. see Exhibit C.

NOTE.—No items of general overhead, corporate management, interest, taxes (other than payroll and sales taxes), or any other indirect costs, or work performed or costs incurred before the date of the contract, should be included in the estimate of costs.

7. (*a*) Are you prepared to furnish your share of the cost of the proposed project in accordance with the regulations on Government participation (Sec. 7, DMEA No. 1)? YES

(*b*) How do you propose to furnish your share of the costs? Money

[X] Money [ ] Use of equipment owned by you [ ] Other

Explain in detail on acompanying paper.

CERTIFICATION

The undersigned, whether as an individual, corporate officer, partner, or otherwise, both in his own behalf and acting for the applicant, certifies that the information set forth in this form and accompanying papers is correct and complete, to the best of his knowledge and belief.

Dated October 21st,1953, 195

STANDARD TUNGSTEN CORPORATION
(Applicant)

By S.C.Hu, president

Title 18, U. S. Code (Crimes), Section 1001, makes it a criminal offense to make a willfully false statement or representation to any department or agency of the United States as to any matter within its jurisdiction.

U. S. GOVERNMENT PRINTING OFFICE 16—66551-1

EXHIBIT A.

Attached sheet for:
Item 4.Physical description

4a. present operation and accessibility for examination

The Tungsten King- Black Rock group mines are presently being mined for production and shipment of tungsten ore. The operation is being carried out on mining claim number 1, which is about 6000 feet in the north from the location of the proposed exploration project under this application. In the past year, the ore has been shipped for 11 miles to a tungsten mill at Pomerene,Arizona, where it is processed for production of 60% tungsten concentrates. The rate of shipment is about 15 tons daily. Approximately one thousand tons of ore have been so processed in the past 6 months. The majority and controlling interest of both the mine and the mill are held by the applicant, who at present is engaged in enlarging the mill facilities to increase its production capacity from 15-ton-daily to 150-ton-daily.

Arizona State Bureau of Mines,Geological series no:14,bulletin no:148 reported its early history as follows:"Scheelite was discovered upon this ground in 1916... .. During world war I it was developed by open cuts...yielded 5 ton of high-grade scheelite concentrates. When visited in January,1940, the Tungsten King group under a lease produced about 800 pounds of concentrates with a small gravity pilot plant."

The mine workings can be reached for examination by driving about 7 miles from Pomerene,Arizona on dirt road, then walking 1000 feet uphill (or by driving a four wheel drive vehicle for such 1000 feet uphill road) to the tunnel entrance.

The details of present mining operation at claim no:1 are described in the engineering report shown in exhibit D. and E. and map in exhibit J. ; the production facilities are shown in exhibit K. of this application.

4b. production and ore reserve

The possibility of existence of tungsten ore was known in this location since 1916. As mentioned in section (a) above, the property yielded 5 tons of scheelite concentrates during War I, and yielded over 800 pounds of concentrates in about 1940. Approximately 1000 ton s of scheelite ore were shipped from the property in the past six months, at a rate up to 15-ton daily.

The ore reserve at and near claim no:1 is estimated per engineering report

shown in exhibit D. as follows: developed ore - 3500 tons, probable ore-11,000 tons and possible ore-140,000 tons. The grade of the ore ranges from 3/4% to 1½% of tungsten trioxide contents.

4c.geological features of the property & reasons for exploration

The geological features, as described by Arizona Bureau of Mines,Geological series no:14, bulletin no:148, are as follows:"In the subject area pre-Cambrian schist on the East is invaded by granite on the West, which in turn is intruded by northeastward trending aplite dikes up to about one foot wide. Scheelite-bearing quartz veins crop out intermittently for some several thousand feet along this granite-schist contact and in adjacent schist. These veins form eastward-dipping lenticular segments from a few inches to 6 feet wide, offset in places by faults."

Exhibits D.E.F.G.of this application describe more of the geological features of the property.

Present mining operation at claim no:1 reveals the ore-bearing vein has an average width of 3 to 5 feet, and depth of approximately 200 feet. Claims no:9,10,15 and 16 appear along the same vein, and with same intermitent scheelite showing along the hill surface. We propose to drift northward from the low point of the south portion of claim no:15 (please see map per Exhibit H.) for 550 feet together with 150 feet of raise and 100 feet of winze. By so doing, we believe that the general idea of the existence of ore could very well be determined. This would also reveal possible ore reserve along the 6000 feet vein between claim no:15 and the presently ore-producing claim no:1.

4d.accessibility of the project

The projected location of exploration can be reached easily by driving about 8 miles from Pomerene,Arizona on a dirt road, then about 2 miles over a moderately flat field. The present dirt road from Pomerene can be extended directly to the working location by some bulldozer work. The applicant's tungsten mill is located within 11 miles of the location. The ore can be trucked to the mill by truck in about 2 hours per round trip or faster.

The projected exploration location is within 10 miles from the town of Pomerene with 500 population; within 15 miles from Benson,Arizona of 2000 population; and within 65 miles from Tucson,Arizona of 100,000 population. Supply of material and labor have

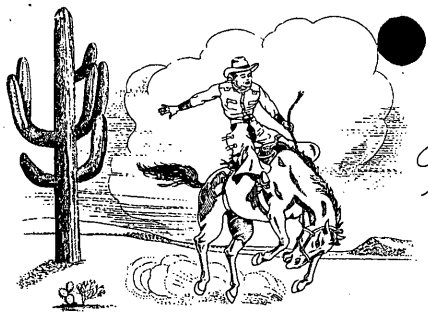
Exh. A2

been proven satisfactory, as the applicant and its predecessor have been mining and milling tungsten ore in the general area for the past two years.

4e.manpower,material,supplies,equipment,water and power

As the projected working location is within driving distance from near-by towns and cities: Pomerene,Benson and Tucson,Arizona as mentioned in section(4d) above, necessary manpower,material and various supply are available fo r efficient operation. The applicant at present is in posession of adequate amount of machinery and equipment for exploration: including 4 portable compressors(315,315,310 and 85 cu.ft.per minute rating),5 rock drills, 3 hoists,hoses,rails and blowers, together with a 150 ton mill. Water and gasoline for power can be brought to the working location by trucks,as practiced by the applicant for its present operation and production.

EXHIBIT A.#3



A "CACTUS HOTEL"

The GADSDEN HOTEL

(ON THE MEXICAN BORDER)

DOUGLAS, ARIZONA

C. W. POST, GEN. MGR.

October 20th, 1953

Standard Tungsten Corporation
Box 247, Benson, Arizona

Dear sir:

For value received, the undersigned hereby assign to you 75% of theinterest of the following described property and mining claims:

Four Claims (unpatented) located at Little Dragoon Mountain, Cochise County, Arizona known as:

Tungsten King no:15 and 16, recorded with County Office in Docket no:92, page 393 & page 392

Black Rock no:9 and no:10, recorded with County Office in Docket no:86, page 492 and 493

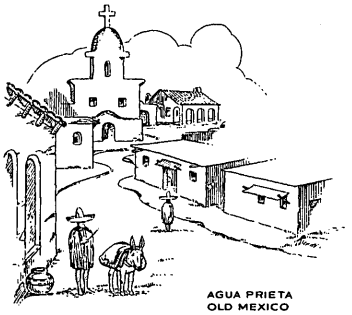
The undersigned represents that he is the owner of the subject four claims, subject only to royalty payment of 10% of net mill or smelter return out from production of the 16 claim-group Of Tungsten King-Black Rock Mine. The subject four claims are part of this 16-claim-group. This assignment however would be automatically cancelled in case of Bankruptcy of your Co.

By: KELLY & COMPANY

Kelly & Co / S.C. Hu

By S.C.Hu, trustee

INTERNATIONAL BOUNDARY



AGUA PRIETA
OLD MEXICO

Exhibit AA.

OTHER "CACTUS HOTELS"
THE BUENA VISTA IN SAFFORD
THE DOMINION IN GLOBE

EXHIBIT B.

Attached sheet for item 5(d): operating experience and background of the applicant

The applicant at present is engaged in actual mining development and production work and in milling operation. We are operating with a working force of about twenty people: experienced engineers, geologists, mining foremen, miners and mill men. At present, we are developing and mining simutaneously at Silver Hill Mine, Paradise, Ariz., Granite Peak Mine, Rodeo, New Mexico and at Tungsten King-Black Rock Mine, Pomerene, Ariz.. Also, we have been operating a tungsten mill at pomerene, Arizona, and are now engaged in enlarging the mill capacity form 15-ton per day to 150-ton per day. We schedule to be in enlarged and increased production before the end of the year. We are fully equiped to do all types of work in Tungsten Mining field: including surveying, mapping, exploration (tunnelling, shafting, drifting, crosscutting, raising and sinking), mining, milling and trading. We are financially stable with current bank cash balance in excess of $100,000.00 for the past year. A partial list of the general experience and background of our supervising and operating staff is as follows: (in alphabetic order)

Howard R. Amundsen, graduated from Montana School of Mines and Western Reserve Graduate School; served as Head Field Engineer for War Production Board, subsequently as Commissioner of Truck and Engine Rebuilding, Ministry of Communications, Republic of China.

James Baize, graduated with B.S. from North Western University, Chicago; worked as student engineer in automotive shops, as mining operator in Arivaca, Arizona, as engineer with Infilco Engineering Co., Tucson, Arizona.

Henry G. Grundstedt, B.S. in Mining Engineering, University of Arizona; able to speak German, Spanish and English; worked as miner and as student engineer in several mines; served as Chief engineer for Christmas Coper Corporation, Christman, Ariz, responsible for ~~under~~ underground survey, diamond drilling, mapping, structure analysis and geological research; served as Field engineer with Copco Pacific Ltd for field demonstration of Swedish Rock drilling machine and field geological and mining consultation; worked also as general consulting engineer in the mining and geological field.

Exh. B.

S.C.Hu, B.S.in engineering from Chiao Tung University,Shanghai, M.S. in engineering from Rensselaer Polytechnic Institute,Troy,New York, and Doctor of Engineering from M.I.T. Cambridge,Mass.;receipient of Sloane Research Fellowship and winner of Salisbury Prize, Graduate School, M.I.T.; full member of Honorary Scientific Society,Sigma Xi; worked as engineer with General Electric Company,Berger Manufacturing Co,,United Aircraft Corp., as Chief engineer of Jet Construction with Aero Jet Engineering Co.,as Chief engineer with China Aircraft Corp., and as Chief engineer with United Motor Industries Corp.

David Huang, B.S. in engineering ,Wu Han University,Hankow,China, M.S. in engineering M.I.T.,Cambridge,Mass.;worked as engineer with Central Machine Work,Inc.,Celanese Corp. of America, Oscar Kohorn Co., and A.J.Maurer Co.; Mr. Huang is from one of the most outstanding families in China in the field of ferrous and non-ferrous metals, brother-in-law of former Governor of Formosa and son of a director of National Supreme Policy Making Board to Chiang Kai-shek.

Othel Conger and Ralph Pursley, both are experienced mining foremen, with over twenty five years of experience as miners and mining foremen.

Ferdinand A.De Wiess,graduated from University of Vienna,Austria;able to speak English,French,German,Italian,Dutch and Portuguese; worked as inventor,engineer and financial expert with Austrian Dept. of Commerce, with Briggs Clarifier Co.,Washington,D.C., with Stevenson,Jordan and Harrison,Inc.,Spacarb,Inc,and Aero-Affiliates,Inc. of New York.

EXHIBIT C.

ATTACHED SHEET TO ITEM 6: Estimate of Costs

For proposed 700 feet of drift and raise and 100 feet of winze at the low point of Claim no:15; drift to be northward along the vein, toward the presently producing (mining and shipping) area, which is about 6000 feet away.

6a. Independent contractors and contracts .... none

6b. Labor, supervision, consultants

700 feet of drift & raise: estimated at 700 man-day of labor together with supervision and consultant charges		$10,500.00
100 feet of winze: estimated at 160 man-day of labor together with supervision and consulting expenses		$ 2,400.00

6c. Operating material and supplies

Powder, fuse and caps	$1,500.00	
Timber	$1,000.00	
Fuel for power	$1,500.00	
Water, hauling charges (for 300 "8-hour" shifts	$ 200.00	
Rails, fish plates and track ties	$1,000.00	$5,200.00

6d. Operating equipment - rentals or depreciation for 300 "8-hour" shifts

Compressor	$4,500.00	
2 rock drills & fittings & hoses, etc.	$ 500.00	
Hoists and motors	$ 500.00	
Ventilation blowers, welding equipment, general repairing & maintenance equipment & hand tools	$ 500.00	$6,000.00

6e. Rehibilitation & repairs - work for 3½ miles of road extention $3,600.00

6f. Miscellaneous

analytical work	$ 500.00	
accounting	$ 500.00	
workmen's compensation & employers' liability insurance & payroll tax	$1,500.00	$2,500.00

Total of items 6b, c, d, e, & f.	$30,200.00
6h. 10% of above total as contigencies (10% of $30,200.00)	$ 3,020.00
TOTAL	$33,220.00

This total exploration cost of $33,220.00 is further analyzed on the next page.

Exh. C

Company's (applicany's) share and Government's share

25% of $33,220.00 :$8,305.00

75% of $33,220.00: $24,915.00

Cost on "per foot of drift & raise" and on "per foot of winze" basis

Total exploration cost		$33,220.00
Less Road work & its portion of 10% contigency	$3600	
	$ 360	$ 3,960.00
		$29,260.00

Proportional part of cost for "drift & raise" & for "winze"

700 foot of drift & raise

$29,260 x (700 man-day/860 man-day total, see item 6b above)

or $29,260 x (700/860): $23,817.00

Cost per foot of drift or raise: $23,817.00/700 or $34.03/foot of drift or foot of raise

100 foot of winze

with similar calculation as above

$29,260.00 x (160/860): $ 5,443.00

Cost per foot of winze: $5,443.00/100 or $54.43 per foot of winze

Summary of cost: The above total exploration cost of $33,220.00 could be viewed as follows:

Road work	$3,960.00	
700 foot of drift & raise @ $34.03 per ft.	$23,817.00	
100 foot of winze @ $54.43 per ft.	$ 5,443.00	
	$33,220.00	TOTAL Exploration Cost

Exh. C-2

EXHIBIT D.

C O P Y

REPORT ON BLACK ROCK-TUNGSTEN KING MINE NEAR BENSON, ARIZONA

By Henry G. Grundstedt, May 7, 1953 (revised 10/7/1953)

The property is located approximately 15 miles northeast of Benson, Cochise County, Arizona. The mine is in the little Dragoon mountains, west of the San Pedro river at a point 10 miles northeast of the town of Pomerene.

Sixteen unpatented claims: claims 1 through 16, comprise the property. The claims are well located with respect to the trend of the vein structure. Mr. Sam Kramer is the former owner of the above claims. A good road leads to the town of Pomerene from Arizona State Highway no: 86. From Pomerene a fair dirt road leads to the mine. The last quarter of a mile is quite steep and a vehicle with a four wheel drive assembly must be used to travel this part of the road. A 6x6 truck hauls the ore to the mill in Pomerene. This type of vehicle can also traverse the road quite easily. Timber is lacking at the property, and all timber used must be hauled in. There is water enough in the mine to be used for all present drilling purposes, and at the mill there is water enough for operation. The topography at the mine is rugged and steep. The weather is pleasant all the year round, and does not affect the operation at all. The elevation of the mine is approximately 1000 feet higher than the town of Benson.

The country rocks in the area are granite and sericitic schists. The granite which is porphyritic forms the footwall of a vein of ~~the~~ scheelite, and the schist forms the hanging wall. Some of the schist contains seams of calcite. The vein of Scheelite is well defined and seems to have an average thickness of approximately 3.5 feet. The vein strikes approximately S 8 degrees E, and dips 44 degrees to the east. A south dipping, east trending fault cuts across the vein at almost right angles. From the appearance of the fault it seems the fault has developed a horizontal movement which has resulted in moving the hanging wall block to the east. This interpretation is substantiated by the reappearance of the vein to the north and east. Movement along the fault is about 76 feet. The vein can be seen again on the surface where it outcrops and where

Exh. D

it has been exposed by trenching and open cuts. Samples taken from parts of the aurface outcroped showed some scheelite when exposed to an ultra-violet lamp.

Development in the mine (in claim no:1) to date consists of approximately 600 feet of 5x7 drift, this figure may be low as one of the drift is caved and the exact extent of it beyond the cave can not be determined. In the east end of the mine there is a winze approximately 4x4x18 feet deep. The winze is full of water most of the time and thedrilling water for the mining operation is supplied from this winze. In the south part of the mine there is an inclined stope where the vein is presently being mined. Approximately 500 tons of the ore have been taken from this stope. The mine itself is in fair condition and is currently being operated.

On the basis of the ore now exposed in the south stope, the following estimate of ore reserve tonnage are obtained.

Developed (tons)	3500
Probable	11,000
Possible	140,000

It is reasonable to assume that the total over-all tonnage may eventually be greater than calculated, but the writer believes these estimates are well-founded, as based on geological relations and the exposures revealed by the present development.

The figure for probable ore was obtained by assuming future development would be done along the vein to the south, continuing southward until the fault is reached. Development described above would be in writer's opinion the most likely place for future development.

In calculating reserves the writer did not take into consideration the possibility of the vein continuing in depth,(continuance of vein below zero elevation or track level.) This would be another good possibility for future development, that is exploring by means of long holes drilling down along the dip of the vein.

From the foregoing it can be stated that more development and exploration work should be done to eliminate some of the great risk which is presently involved. By more exploration work, much of this risk could probably be eliminated.

Respectfully submitted,

Henry G.Grundstedt/s/

Exh. D-2

EXHIBIT E. ASSAY REPORTS FROM A REPRESENTATIVE SAMPLES

EXHIBIT F. GENERAL LOCATION OF THE 16-claim TUNGSTEN KING - BLACK ROCK MINE, LOCATED AT LITTLE DRAGOON MOUNTAIN, COCHISE COUNTY, ARIZONA: THE PROPOSED LOCATION OF EXPLORATION WORK AT SOUTHERN TIP OF THE GROUP ON CLAIM NO: 15

EXHIBIT G. GEOLOGICAL AND CONTOUR MAP OF SOUTHERN PORTION OF TUNGSTEN KING - BLACK ROCK MINE GROUP

EXHIBIT H. VERTICAL CROSECTION OF CLAIM NO: 1, 9, 10, 15, and 16; SHOWING THE PROPOSED LOCATION OF EXPLORATION WORK IS ABOUT 6000 FEET SOUTH AND 400 FEET BELOW THE LOCATION OF PRESENT PRODUCTION

EXHIBIT J. MAP OF PRESENT MINE WORKINGS: PRESENT PRODUCTION AREA ON CLAIM NO: 1

EXHIBIT K. PRESENTLY EXISTENT MILL WITH MILL BUILDING NOW UNDER CONSTRUCTION AT POMERENE, ARIZONA, 11 MILES FROM THE PROPOSED LOCATION OF EXPLORATION WORK

EXHIBIT L. SCHEMATIC DIAGRAM OF THE POMERENE MILL, POMERENE, ARIZONA

EXHIBIT E.

COPIES OF ASSAY REPORTS FOR SAMPLES TAKEN FROM ORE PRODUCED ON CLAIM NO:1 OF TUNGSTEN KING - BLACK ROCK MINE GROUP

Heads & Middlings:

Assayer: Jacobs Assay Office,30 S.Main St.,Tucson,Arizona

Date: September 1st,1953

Certificate No: 50546

Serial No: 136746

Percentage of WO3 (%WO3): Heads: 1.28%

Middlings: 0.32%

Concentrates produced at the mill (first run concentrates):

Assayer: report by Denver Equipment Co.,Ore Testing Division Denver,Colorado

Date: October 13,1953

Sample: 50 pounds of Tungsten concentrates (Scheelite)

Percentage contents: WO3 57.60%

Lead: 0.015%

Arsenic: 0.052%

Assayer: Hawley & Hawley,Douglas,Arizona

Date: July 10,1953

Percentage contents: WO3 -62.94%,

Assayer: Jacobs Assay Office,30 S.Main Street,Tucson,Arizona

Date: September 1st,1953

Certificate no: 50548; serial no:136749

Percentage contents: WO3-62.3%,

Exh. E

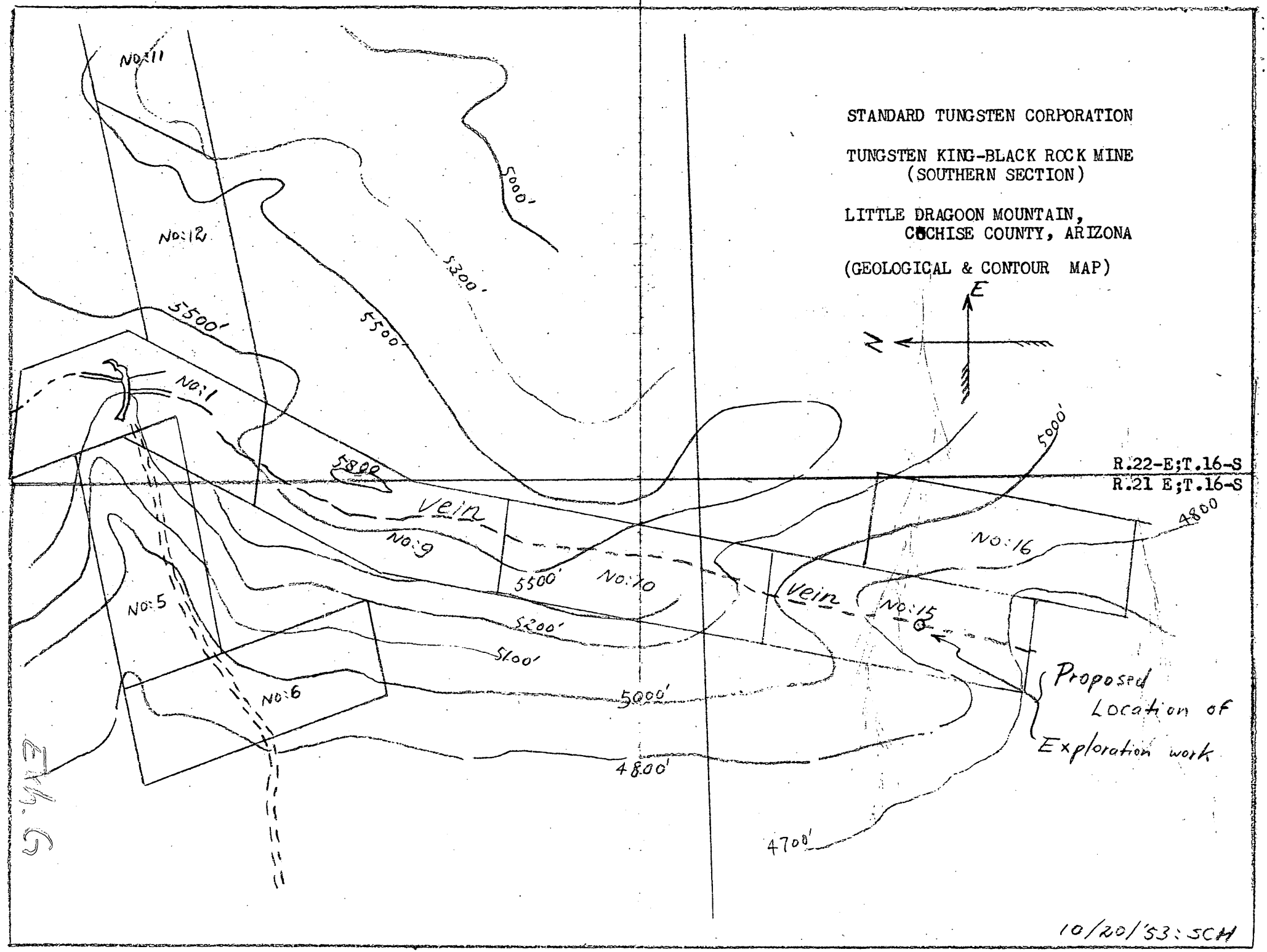
DEFENSE MINERALS
EXPLORATION ADMINISTRATION
~~WASHINGTON 25, D. C.~~

OFFICIAL BUSINESS

U. S. GEOLOGICAL SURVEY
SOUTH 157 HOWARD ST.
SPOKANE 4, WASHINGTON

1953 1953

Mr. George C. Selfridge, Chairman
Operating Committee
Defense Minerals Exploration Administration
Department of the Interior
Washington 25, D. C.

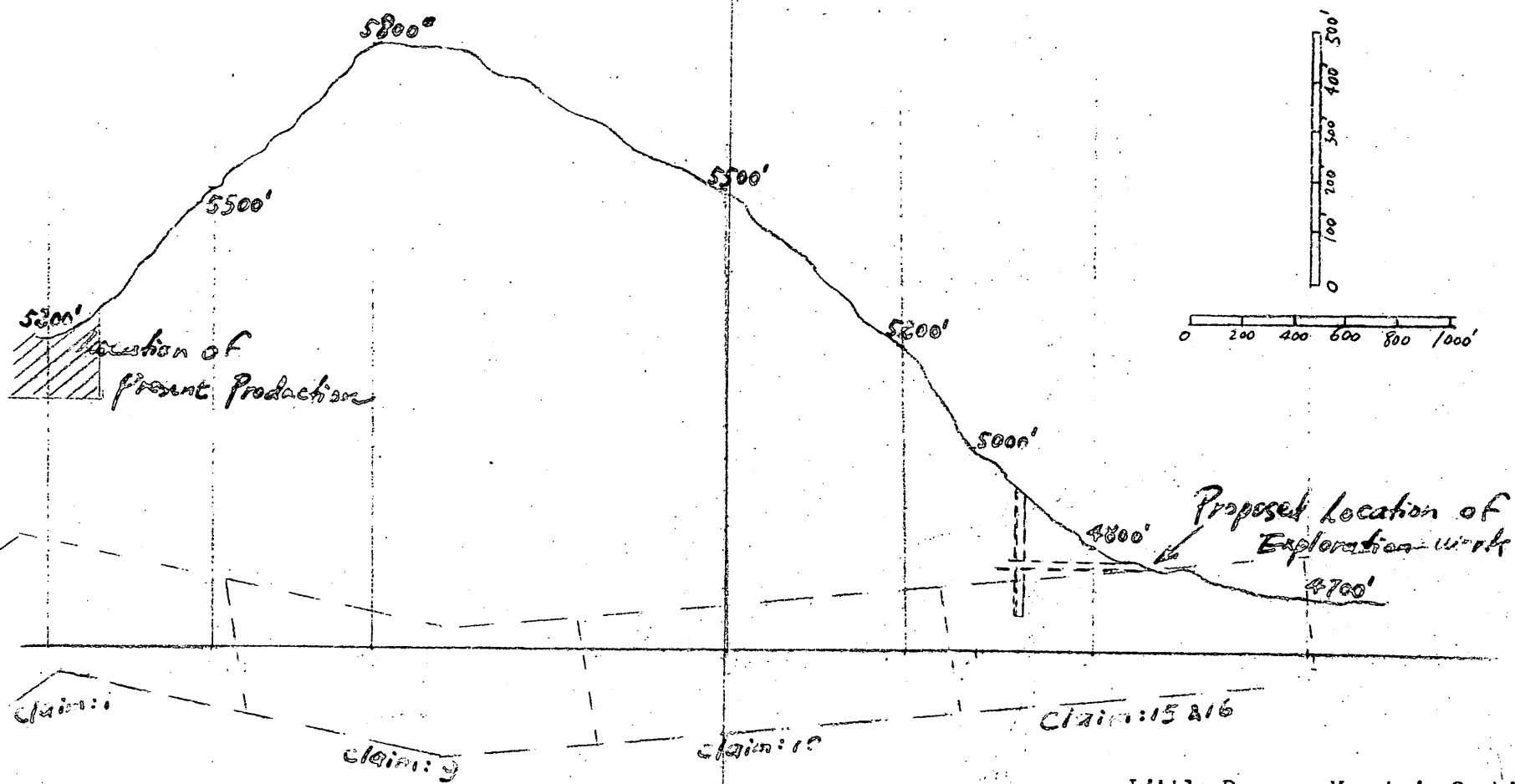

STANDARD TUNGSTEN CORPORATION
TUNGSTEN KING-BLACK ROCK MINE
(SOUTHERN SECTION)
LITTLE DRAGOON MOUNTAIN,
COCHISE COUNTY, ARIZONA
(GEOLOGICAL & CONTOUR MAP)
E
N
R.22-E;T.16-S
R.21 E;T.16-S
No:11
No:12
No:1
No:5
No:6
No:9
No:10
No:15
No:16
Vein
Vein
5000'
5300'
5500'
5500'
5800
5500'
5200'
5100'
5000'
4800'
4700'
5000'
4800
Proposed
Location of
Exploration work
10/20/53: SCH

EXH. C

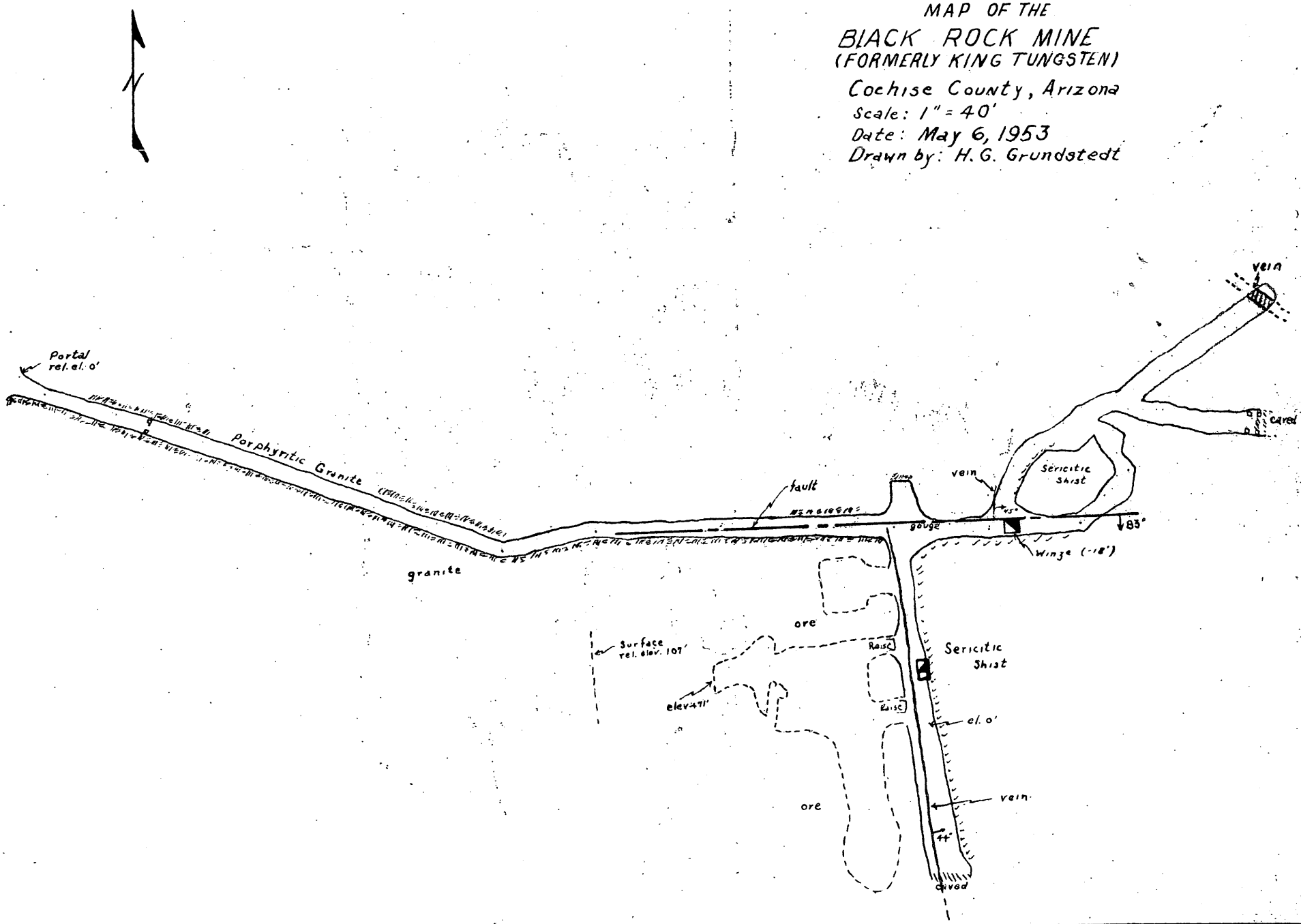
STANDARD TUNGSTEN CORPORATION

TUNGSTEN KING-BLACK ROCK MINE
(SOUTHERN SECTION)
****

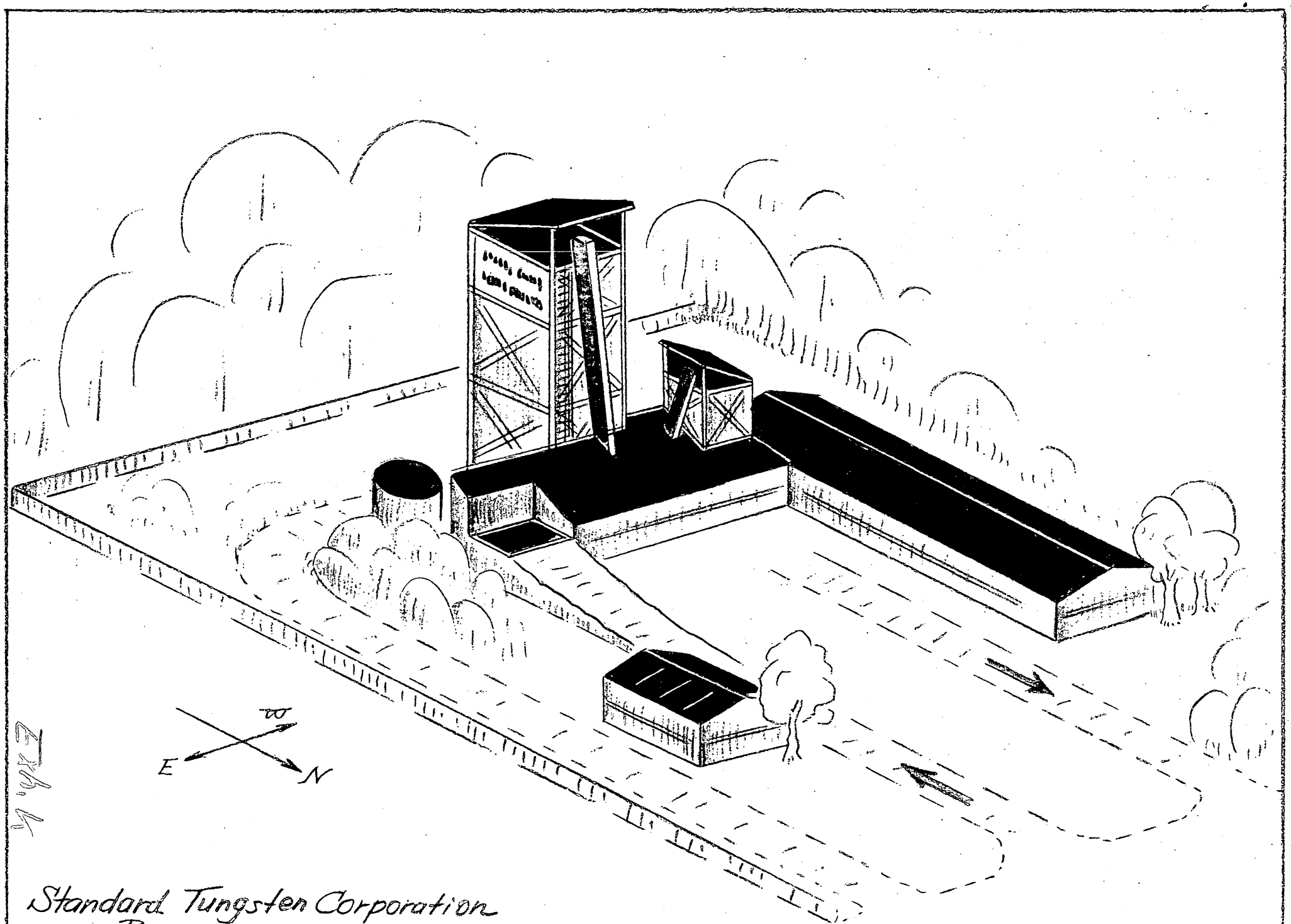
VERTICAL CROSSECTION OF THE
HILL ALONG THE NORTH-SOUTH VEIN



Little Dragoon Mountain, Cochise
County, Arizona, 10/21/53 SCH

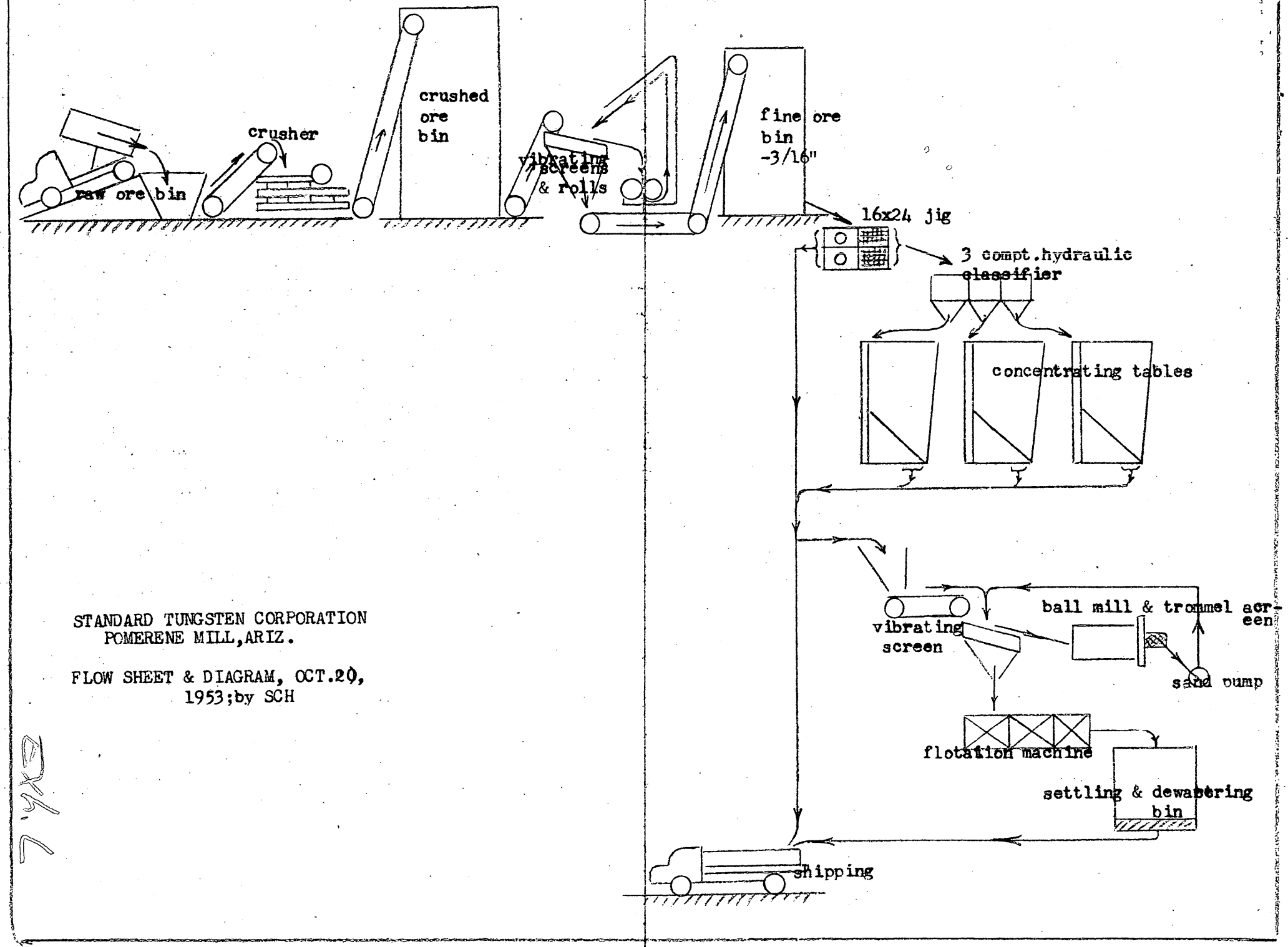

MAP OF THE
BLACK ROCK MINE
(FORMERLY KING TUNGSTEN)
Cochise County, Arizona
Scale: 1" = 40'
Date: May 6, 1953
Drawn by: H. G. Grundstedt
N
Portal
rel. el. 0'
Porphyritic Granite
granite
fault
gouge
vein
Sericitic Shist
45°
85°
Winze (-18')
vein
caved
ore
Surface
rel. elev. 107'
elev. 47'
Raise
Raise
Sericitic Shist
el. 0'
vein
ore
caved

Exh. J



Standard Tungsten Corporation
Pomerene Arizona Mill

SCH: 10/22/1953



STANDARD TUNGSTEN CORPORATION
POMERENE MILL, ARIZ.

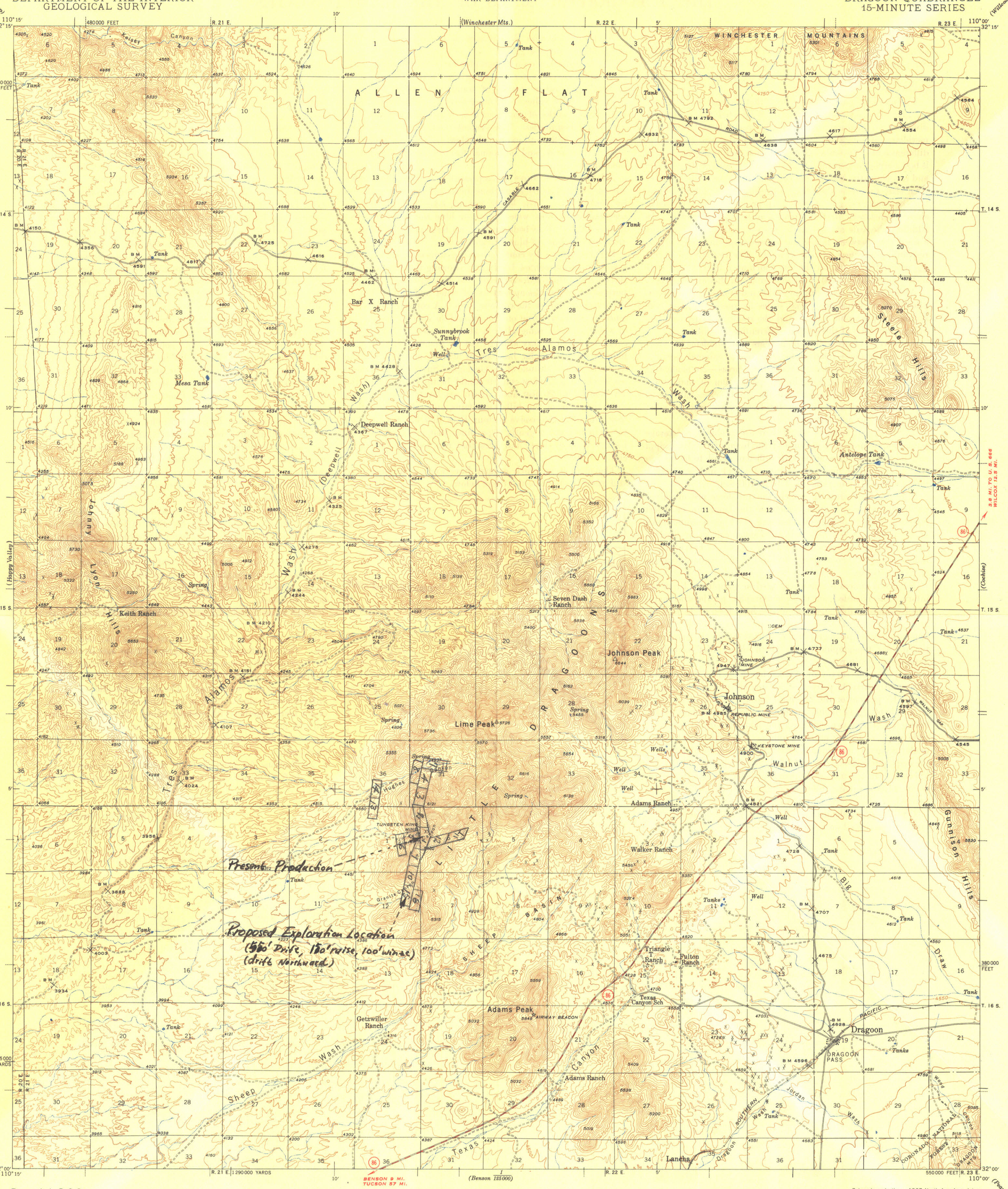
FLOW SHEET & DIAGRAM, OCT.20, 1953; by SCH

7-4-8

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

WAR DEPARTMENT

ARIZONA
(COCHISE COUNTY)
DRAGOON QUADRANGLE
15-MINUTE SERIES



Topography by R. C. Dewey,
C. C. Cooper, and K. A. Bunker

Surveyed in 1940–41

ROAD CLASSIFICATION

HARD-SURFACE ALL WEATHER ROADS — DRY WEATHER ROADS
Heavy-duty — 4 LANE | 6 LANE — Improved dirt
Medium-duty — 4 LANE | 6 LANE — Unimproved dirt
Loose-surface, graded, or narrow hard-surface
U. S. Route — State Route

TRUE NORTH — MAGNETIC NORTH — 14°
APPROXIMATE MEAN DECLINATION, 1941

SCALE 1:62500

1 ½ 0 1 2 3 4 MILES
3000 0 3000 6000 9000 12000 15000 18000 21000 FEET
1 .5 0 1 2 3 4 5 KILOMETERS

Contour interval 50 feet
Datum is mean sea level

Polyconic projection. 1927 North American datum
5000 yard grid based on U. S. zone system, F
10000 foot grid based on Arizona (East)
rectangular coordinate system

DRAGOON, ARIZ.
Edition of 1943
reprinted 1948
N3200—W11000/15

Exh. F

13

THE TOPOGRAPHIC MAPS OF THE UNITED STATES

The United States Geological Survey is making a series of standard topographic maps to cover the United States. This work has been in progress since 1882, and the published maps cover more than 47 percent of the country, exclusive of outlying possessions.

The maps are published on sheets that measure about 16½ by 20 inches. Under the general plan adopted the country is divided into quadrangles bounded by parallels of latitude and meridians of longitude. These quadrangles are mapped on different scales, the scale selected for each map being that which is best adapted to general use in the development of the country, and consequently, though the standard maps are of nearly uniform size, the areas that they represent are of different sizes. On the lower margin of each map are printed graphic scales showing distances in feet, meters, miles, and kilometers. In addition, the scale of the map is shown by a fraction expressing a fixed ratio between linear measurements on the map and corresponding distances on the ground. For example, the scale $\frac{1}{62,500}$ means that 1 unit on the map (such as 1 inch, 1 foot, or 1 meter) represents 62,500 of the same units on the earth's surface.

Although some areas are surveyed and some maps are compiled and published on special scales for special purposes, the standard topographic surveys and the resulting maps have for many years been of three types, differentiated as follows:

1. Surveys of areas in which there are problems of great public importance—relating, for example, to mineral development, irrigation, or reclamation of swamp areas—are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{31,680}$ (1 inch = one-half mile) or $\frac{1}{24,000}$ (1 inch = 2,000 feet), with a contour interval of 1 to 100 feet, according to the relief of the particular area mapped.

2. Surveys of areas in which there are problems of average public importance, such as most of the basin of the Mississippi and its tributaries, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile), with a contour interval of 10 to 100 feet.

3. Surveys of areas in which the problems are of minor public importance, such as much of the mountain or desert region of Arizona or New Mexico, and the high mountain area of the northwest, are made with sufficient detail to be used in the publication of maps on a scale of $\frac{1}{125,000}$ (1 inch = nearly 2 miles) or $\frac{1}{250,000}$ (1 inch = nearly 4 miles), with a contour interval of 20 to 250 feet.

The aerial camera is now being used in mapping. From the information recorded on the photographs, planimetric maps, which show only drainage and culture, have been made for some areas in the United States. By the use of stereoscopic plotting apparatus, aerial photographs are utilized also in the making of the regular topographic maps, which show relief as well as drainage and culture.

A topographic survey of Alaska has been in progress since 1898, and nearly 44 percent of its area has now been mapped. About 15 percent of the Territory has been covered by maps on a scale of $\frac{1}{500,000}$ (1 inch = nearly 8 miles). For most of the remainder of the area surveyed the maps published are on a scale of $\frac{1}{250,000}$ (1 inch = nearly 4 miles). For some areas of particular economic importance, covering about 4,300 square miles, the maps published are on a scale of $\frac{1}{62,500}$ (1 inch = nearly 1 mile) or larger. In addition to the area covered by topographic maps, about 11,300 square miles of southeastern Alaska has been covered by planimetric maps on scales of $\frac{1}{125,000}$ and $\frac{1}{250,000}$.

The Hawaiian Islands have been surveyed, and the resulting maps are published on a scale of $\frac{1}{62,500}$.

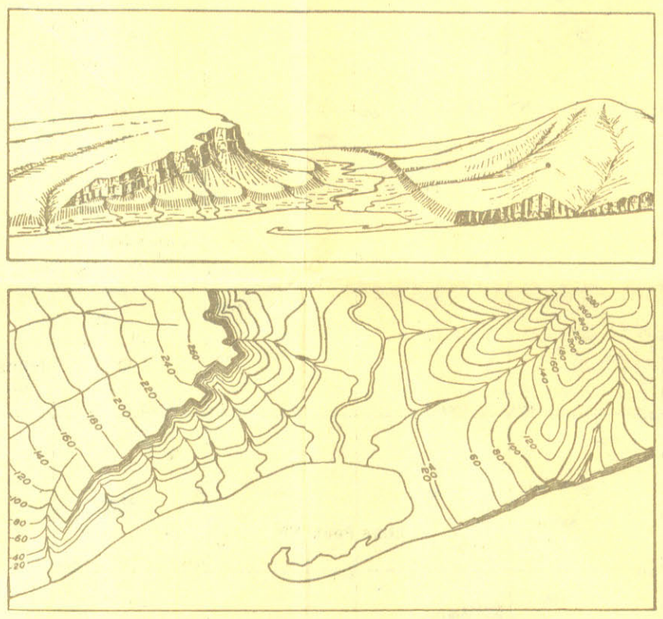
A survey of Puerto Rico is now in progress. The scale of the published maps is $\frac{1}{30,000}$.

The features shown on topographic maps may be arranged in three groups—(1) water, including seas, lakes, rivers, canals, swamps, and other bodies of water; (2) relief, including mountains, hills, valleys, and other features of the land surface; (3) culture (works of man), such as towns, cities, roads, railroads, and boundaries. The symbols used to represent these features are shown and explained below. Variations appear on some earlier maps, and additional features are represented on some special maps.

All the water features are represented in blue, the smaller streams and canals by single blue lines and the larger streams by double lines. The larger streams, lakes, and the sea are accentuated by blue water lining or blue tint. Intermittent streams—those whose beds are dry for a large part of the year—are shown by lines of blue dots and dashes.

Relief is shown by contour lines in brown, which on a few maps are supplemented by shading showing the effect of light thrown from the northwest across the area represented, for the purpose of giving the appearance of relief and thus aiding in the interpretation of the contour lines. A contour line represents an imaginary line on the ground (a contour) every part of which is at the same altitude above sea level. Such a line could be drawn at any altitude, but in practice only the contours at certain regular intervals of altitude are shown. The datum or zero of altitude of the Geological Survey maps is mean sea level. The 20-foot contour would be the shore line if the sea should rise 20 feet above mean sea level. Contour lines show the shape of the hills, mountains, and valleys, as well as their altitude. Successive contour lines that are far apart on the map indicate a gentle slope, lines that are close together indicate a steep slope, and lines that run together indicate a cliff.

The manner in which contour lines express altitude, form, and grade is shown in the figure below.



The sketch represents a river valley that lies between two hills. In the foreground is the sea, with a bay that is partly enclosed by a hooked sand bar. On each side of the valley is a terrace into which small streams have cut narrow gullies. The hill on the right has a rounded summit and gently sloping spurs separated by ravines. The spurs are truncated at their lower ends by a sea cliff. The hill at the left terminates abruptly at the valley in a steep scarp, from which it slopes gradually away and forms an inclined tableland that is traversed by a few shallow gullies. On the map each of these features is represented, directly beneath its position in the sketch, by contour lines.

The contour interval, or the vertical distance in feet between one contour and the next, is stated at the bottom of each map. This interval differs according to the topography of the area mapped: in a flat country it may be as small as 1 foot; in a mountainous region it may be as great as 250 feet. In order that the contours may be read more easily certain contour lines, every fourth or fifth, are made heavier than the others and are accompanied by figures showing altitude. The heights of many points—such as road intersections, summits, surfaces of lakes, and benchmarks—are also given on the map in figures, which show altitudes to the nearest foot only. More precise figures for the altitudes of benchmarks are given in the Geological Survey's bulletins on spirit leveling. The geodetic coordinates of triangulation and transit-traverse stations are also published in bulletins.

Lettering and the works of man are shown in black. Boundaries, such as those of a State, county, city, land grant, township, or reservation, are shown by continuous or broken lines of different kinds and weights. Public roads suitable for motor travel the greater part of the year are shown by solid double lines; poor public roads and private roads by dashed double lines; trails by dashed single lines. Additional public road classification if available is shown by red overprint.

Each quadrangle is designated by the name of a city, town, or prominent natural feature within it, and on the margins of the map are printed the names of adjoining quadrangles of which maps have been published. More than 4,100 quadrangles in the United States have been surveyed, and maps of them similar to the one on the other side of this sheet have been published.

Geologic maps of some of the areas shown on the topographic maps have been published in the form of folios. Each folio includes maps showing the topography, geology, underground structure, and mineral deposits of the area mapped, and several pages of descriptive text. The text explains the maps and describes the topographic and geologic features of the country and its mineral products. Two hundred twenty-five folios have been published.

Index maps of each State and of Alaska and Hawaii showing the areas covered by topographic maps and geologic folios published by the United States Geological Survey may be obtained free. Copies of the standard topographic maps may be obtained for 10 cents each; some special maps are sold at different prices. A discount of 40 percent is allowed on an order amounting to $5 or more at the retail price. The discount is allowed on an order for maps alone, either of one kind or in any assortment, or for maps together with geologic folios. The geologic folios are sold for 25 cents or more each, the price depending on the size of the folio. A circular describing the folios will be sent on request.

Applications for maps or folios should be accompanied by cash, draft, or money order (not postage stamps) and should be addressed to

THE DIRECTOR,
United States Geological Survey,
Washington, D. C.

November 1937.

NOTE:—Effective on and after October 1, 1946, the price of standard topographic quadrangle maps will be 20 cents each, with a discount of 20 percent on orders amounting to $10 or more at the retail rate.

STANDARD SYMBOLS

CULTURE
(printed in black)

City or village · Roads and buildings · Ruins · Cliff dwelling · Good Public road · Poor Public or private road · Trail · Railroads · Electric railroad · Tunnel · Power-transmission line · Wharves · Breakwater and jetties · Bridge · Drawbridges · Ferry *(point upstream)*

Ford · Dam · Dam with lock · Canal lock *(point upstream)* · U.S. township and section lines and recovered corners · State line · County line · Civil Township or district line · Reservation line · Land grant line · City, village, or borough line · Small park or cemetery line · Triangulation point or transit-traverse station · U.S. mineral monument

Boundary monument · Bench mark *(supplementary bench mark shown by cross and black figures without lettering)* · Cemeteries · Church, School *(distinguished on recent maps)* · Coke ovens · Tanks and oil reservoirs · Oil and gas wells · Mine or quarry · Prospect · Shaft · Mine tunnel · Mine tunnel *(showing direction)* · Lighthouse or beacon · Coast Guard station

RELIEF
(printed in brown)

Elevation above mean sea level *(in black on recent maps)* · Contours *(Contours showing depth of water printed in blue)* · Depression contours · Levee

Wash · Cliffs *(or shown by contours)* · Mine dumps · Tailings or mining debris · Sand and sand dunes

WATER
(printed in blue)

Streams · Falls and rapids · Intermittent streams and ditches · Canals or ditches · Aqueducts or waterpipes · Aqueduct tunnels · Lake or pond · Unsurveyed stream and abandoned canal

Intermittent lake · Glacier *(Or shown by contours printed in blue)* · Spring · Well · Marsh · Submerged marsh

WOODS
(when shown, printed in green)