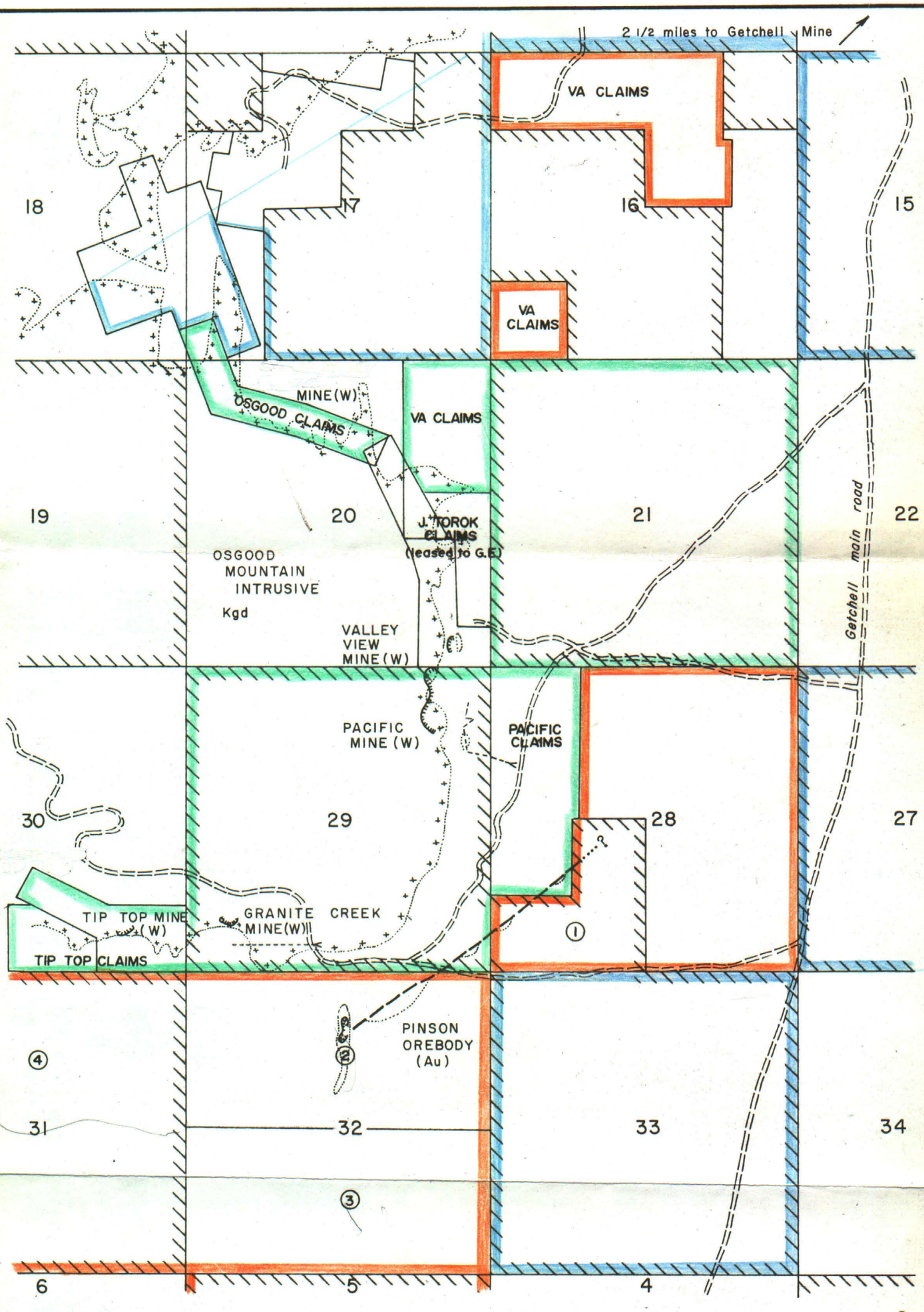
3680 0044



EXPLANATION

④

- PATENTED GROUND
- CORDILLERAN EXPLORATIONS
- CORDEX SYNDICATE
- GOLDFIELD CORP. (leased to CONOCO) (subleased to GENERAL ELECTRIC)

PROPERTY MAP

GRANITE CREEK AREA

T. 38 N., R. 42 E.
HUMBOLDT CO., NEVADA
SCALE: 1"= 2000'

PLATE 1

R 41E
R 42E

Getchell Mill

RICHMOND MINE (UCC)
35,000 Tons (1)

Taylor, Knight
25,000 Tons (1)

Tonopah (GE)
67,000 Tons

T 39 N
T 38 N

31 32
6 5

PLATE 2

UNION CARBIDE CORPORATION
MINING & METALS DIVISION
EXPLORATION DEPARTMENT

OSGOOD MTNS, TUNGSTEN DISTRICT

HUMBOLDT COUNTY, NEVADA

SCALE: 1" = 2000' DATE 4-9-76 REVISED BY D. ANTRIM

Alpine (GE)
70,000 Tons (1)

6 5
7 8

Riley Extension (GE)
257,000 Tons

Riley Mine (UCC)
667,000 Tons

N

Intrusive - Sedimentary Contact

7 8
18 17

COMMERCIAL TUNGSTEN OCCURRENCES AROUND OSGOOD MOUNTAINS GRANITE INTRUSIVE

Kirby (GE)
60,000 Tons (1)

18
19

Marcus (GE)
21,000 Tons

Valley View (GE)
95,000 Tons (1)

19 20
30 29

Pacific (CORDEX)
321,000 Tons

Tip Top (CORDEX)
41,000 Tons

Granite Creek (CORDEX)
370,000 Tons (1)

31 32

Notes:
(1) Pre-1951 production partially estimated

PLATE ___

UC 149-2

UNION CARBIDE **INTERNAL CORRESPONDENCE**

METALS DIVISION • 751 RYLAND STREET, RENO, NEVADA 89502

To (Name) Mr. J. E. Morgan
Division
Location

Date May 4, 1976

Originating Dept.

Answering letter date

Copy to Mr. R. R. Guilinger (w/enc.)
Mr. D. R. Antrim (w/o enc.)

Subject Recommendation for Property Acquisition, South Getchell, Nevada, by D. R. Antrim

Dear Jim:

Enclosed is an excellent report by Don Antrim reporting the state of our geological thinking on the Getchell project. Even though our land recommendation has already gone forward, I asked Don to finish this report in order to complete his perspective on the exploration environment.

Since our reports, we have located eleven claims (see memo to G. F. Yoder, this date) to fill three "holes" in the property ownership along the contact and its down-dip extension.

As soon as we can sign up the Cordilleran Exploration properties, we are prepared to proceed with seismic surveys with Jim Cooksley.

Very truly yours,

Peter H. Hahn
District Geologist

PHH:kv
Enc.

(136)
Item 44

RECOMMENDATION FOR PROPERTY ACQUISITION

SOUTH GETCHELL DISTRICT,

HUMBOLDT COUNTY, NEVADA

By

Donald R. Antrim

April 1976

TABLE OF CONTENTS

ILLUSTRATIONS

INTRODUCTION

In mid-January of 1976, members of the UCC Reno Exploration staff were granted an opportunity to examine a large body of geologic data pertaining to four tungsten properties controlled by Cordilleran Explorations, Inc. (P. E. Galli and J. Livermore) and Cordex Syndicate. The area considered is composed of three contiguous properties - the Pacific, Granite Creek, and Tip Top mines, and a fourth property, the Osgood mine, situated respectively at the southeast end and the east central edge of the Getchell mining district, Humboldt County, Nevada. During the early forties and fifties the Getchell district produced about 847,000 STU WO_3 of which a substantial amount was mined from the properties offered by Cordex.

A review of available data consisting of both surface and mine maps, assay information, and past mine production records indicated that an on-the-ground examination was warranted. Six days were spent on the properties by UCC personnel, lamping all of the accessible mine workings, evaluating surface and subsurface geology, and collecting rock samples to check reported grades of mineralization.

The results of our evaluation indicate that the Cordex mines contain sufficient potential for the discovery of additional reserves and that the unexplored contact between and adjacent to the mines represents a favorable geologic target worthy of a major exploration effort.

It is the intent of this report to present a brief description of the geologic environment and to discuss the ore reserve potential of the southern Getchell district. A recommendation for land acquistion and a program for further exploration are set forth at the end of this text.

Location

The Cordex properties (Tip Top, Granite Creek, Pacific, and Osgood mines) are located on the east side of the Osgood Range in southeastern Humboldt County, Nevada (figure 1). The properties, in sections 17, 20, 21, 28, 29, and 30, T. 38 N., R. 42 E., are approximately 21 miles northeast of Golconda and are accessible via a combination of paved highway (State Route 18) and unimproved dirt road. The mine properties range in elevation from 5,500 feet to 6,300 feet and are only sparsely vegetated.

Property Description and Land Status

The south Getchell district (including the Osgood, Pacific, Granite Creek, and Tip Top mines) consists of unpatented claims, fee land, mineral leases on feeland and unpatented claims controlled by two companies: Cordilleran Exploration, Inc. (Cordex) and Cordex Syndicate. A map showing their respective holdings has been included (see Plate 1). The Osgood 1-3 (3 claims); UA 8-13 (6 claims); Pacific 1-7 (7 claims); Tip Top 1, 3, 8, Tip Top Extension 1, 2 (5 claims); Secs. 21 and 29, T.38 N., R. 42 E.: owned by Cordilleran (Cordex) are currently being offered to UCC for its consideration.

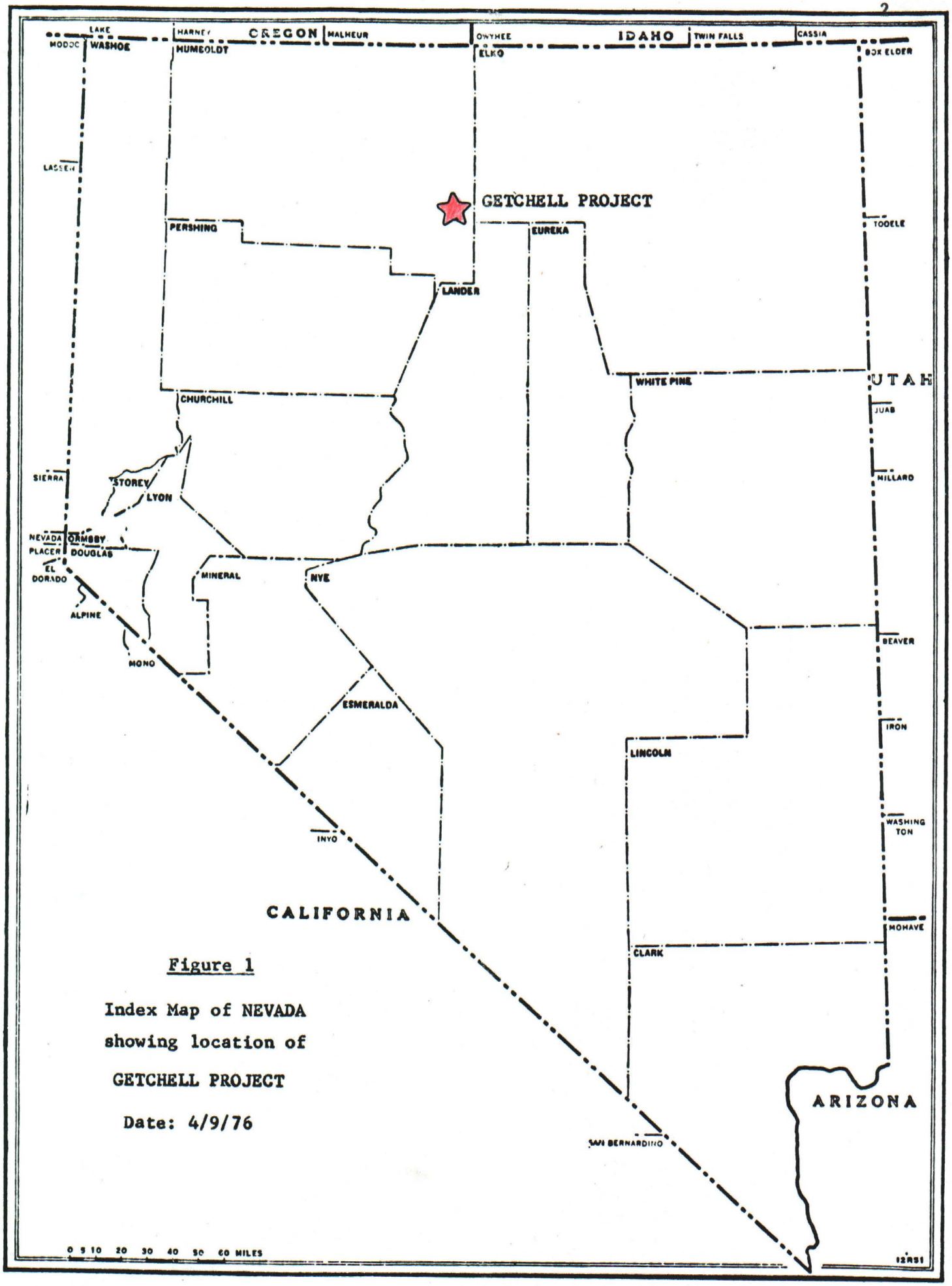


Figure 1

Index Map of NEVADA
showing location of
GETCHELL PROJECT

Date: 4/9/76

Cordilleran Exploration, Inc. is composed of:

John S. Livermore
511 East 2nd Street
Reno, Nevada 89502

Peter E. Galli
100 North Washington Street
Reno, Nevada 89502

Approximately 1,000 acres of unpatented claims and fee land is held by Cordex Syndicate, composed of P. E. Galli, John S. Livermore, and three Canadian firms: Lacanex Mining Company, Mogul of Nevada, and Rayrock Mines; % John S. Livermore, address above. Although verbal permission for exploration on portions of the Syndicate ground was granted by Mr. Livermore, it is essential that a lease or contract approved by all partners be executed before exploration is commenced. A study of the land status and current lease agreements is detailed in a report by Peter Hahn (4/15/76).

The remainder of the Getchell district is controlled by Continental Oil Company (Conoco) whose principal interest, like that of Cordex, is the gold mineralization associated with the Getchell fault and other high-angle fault structures on the east side of the range. Through a lease agreement with Conoco and independent claim staking, General Electric controls the tungsten exploration potential of much of the favorable contact area in the district. Union Carbide currently has two land holdings; the Richmond, consisting of one patented claim and the Riley, composed of 40 acres of patented ground in the northern half of the district.

History and Production

Although scheelite ($CaWO_4$) was first discovered in the district in 1916, the first major mining operations were for gold discovered by Noble A. Getchell in the early 30's. During World War II, and the Korean conflict, tungsten deposits were developed and mined by Union Carbide Corporation, Getchell Mines, Inc., and several independent operators. From 1942 to 1956 the district produced over 2,000,000 tons of scheelite ore containing about 847,000 STU WO_3. Of this total approximately 645,000 tons was mined from open pits and about 1,376,000 tons was produced from underground workings.

Tungsten production was derived from twelve distinct tactite occurrences distributed along the periphery of a figure 8 shaped granodiorite stock. The distribution of mines, past production, and present ownership is shown on the enclosed map (Plate 2). In comparison with other known tungsten districts in the state, Getchell is the second largest behind only the Nevada Massachusetts mine, which is currently being explored by General Electric.

Production from three of the four mines offered by Cordex accounts for approximately 36% of the total tungsten ore mined from the Getchell district. Their production is summarized in the following table:

TABLE I

Pre-1951 Tungsten Ore Production

Mine	Tons Mined	Grade % WO_3	Units
Granite Creek	100,000 (underground)	0.5	50,000

1951-1957 Tungsten Ore Production

Mine	Tons Mined	Grade % WO_3	Units
Granite Creek	270,400 (underground	0.51	137,904
Pacific	321,300 (open pit and underground)	0.39	125,307
Tip Top	40,600 (open pit and underground)	0.43	17,458
Total Production	732,300 tons with an average grade of 0.45%		330,669 units

The mines were shut down at the conclusion of the Federal purchase program in 1957.

Geology

The geology of the Osgood Mountain quadrangle, which covers the northern part of the Osgood Mountains and includes the Getchell district, was described by Hobbs (1948) and Hotz and Wilden (1964). A portion of the geologic map covering the district is included as figure 2 of this report.

The geology of the northern Osgood Mountains consists of a sequence of complexly folded and faulted Paleozoic sedimentary rocks intruded by a Cretaceous (90 million years) granodiorite stock. The stock has two lobes joined by a thin septum. Igneous dikes, probably genetically related to the pluton, commonly cut the sedimentary rocks on the contact which are principally argillites and limestones of the Preble formation of Cambrian age.

Within the metamorphic aureole surrounding the pluton, shales and argillites have been transformed to biotite-andalusite, and cordierite-bearing hornfels; the limestone to marble, light-colored calc-silicate rocks, and dark-colored tactite composed of garnet, pyroxene, and other calcium-bearing silicates, along with varying amounts of scheelite, molybdenite, and copper sulfides.

The predominant structural features of the district are thrust faults and northerly-trending high-angle faults, which are more continuous and more important structurally than the high-angle cross faults. The age of most of the high-angle longitudinal faults is not known; however, the presence of rounded blocks of granodiorite within the Getchell fault on the east side of the range indicates movement younger than the intrusive.

Tight folding on a small scale is locally common, but no major folds have been recognized.

Ore Deposits

In the district, tungsten (over 800,000 STU) was mined from twelve separate tactite deposits situated along 15.7 miles of exposed intrusive-sedimentary contact. Tungsten, in the form of scheelite, occurs in tactite deposits where favorable beds of Preble limestone are in contact with the granodioirte stock. Although deposits were found and mined on the west side of the stock, the most productive mines - Riley, Riley Extension, Pacific, and Granite Creek - are intermittently distributed along the east side of both intrusive lobes. The reasons for the more productive nature of the east contact is not clearly understood but could be due to stratigraphic variations, magmatic differentiation, proximity to the Getchell Mill, a function of exploration, etc.

A detailed study of the surface and underground workings of the Tip Top, Granite Creek, and Pacific mines indicates that the tactite deposits are localized where limestones form troughs, embayments, or reentrants in the granodiorite contact zones. See Plate 3 . As a result, most of the tactites occur as elongated, steeply plunging, tabular bodies with vertical dimensions (500+ feet), greatly exceeding their width or strike dimensions. In the Pacific mine, the steeply northeast plunging tactites are developed along a discordant contact, but at the Granite Creek and Tip Top properties, the deposits are concordant with the intrusive contact and plunge to the southeast. Though not previously emphasized, isoclinal or near isoclinal folding within the carbonates

appears to have influenced metasomatism and the formation of tactites. The tactite deposits dip 40° to 60° and average from 5 feet to roughly 30 feet in width. Within the garnet and pyroxene-rich tactites, blue-white and pale yello-white fluorescing scheelite occurs as fine to moderately coarse grains disseminated along remnant bedding.

Eighteen tactite samples were collected by UCC personnel and submitted to Union Assay for WO_3, Mo, and Cu determinations. Tungsten assays received ranged from 0.06 to 1.10% and averaged 0.39%. Only minor concentrations of molybdenum and copper were reported. The tungsten values for the samples collected during our examination correlated well with the values reported by Cordex.

Tungsten Ore Reserves and Potential

The Pacific, Granite Creek, and Tip Top mines were started on tactite outcrops and mining by Getchell Mines, Inc. was continued down dip until the government purchasing program was discontinued in 1957. During the periods of production, mining was usually done on a "hand-to-mouth" basis and even in the mines little regard was given to the geologic aspects of the tungsten deposits. Although some scattered drilling was completed on the lowermost mine levels during the last phases of production, much of the drilling appears to have been misguided and consequently portions of down dip and lateral extensions of the mineralized tactites remain untested.

In 1961, Harry Trollope and Dave Gray, while employed by the Goldfield Corporation, made an effort to determine the tungsten reserves of the properties under the company's ownership at the time. The Pacific, Granite Creek, and Tip Top mines were among those in which reserves were calculated. The reserves in all classes are summarized as follows:

Mine	Tonnage
Pacific	64,000
Granite Creek	42,200
Tip Top	116,300
Total	222,500 tons with an average grade of 0.32% WO_3.

Recent (1972-74) exploration on the Cordex tungsten properties has been limited to geologic mapping (1"=30 ft) and sampling of the mines, while the 9,000 feet of poorly exposed, but potentially favorable contact between the mines has had no exploration.

Conclusions and Recommendations

In view of the amount of past production, ore distribution, method of discovery, and apparent lack of well guided exploration, I feel that the likelihood of finding additional reserves in known mineralized areas and discovering new deposits on the Cordex properties is very good. A serious effort requiring careful geologic work along with an extensive exploration program could conceivably result in the discovery of several hundred thousand units of tungsten. The grade of any newly discovered ore would probably average between

0.3% and 0.5% and would probably have to be mined using underground methods. Though relatively low grade by present-day standards, an anticipated price increase for tungsten when GSA stockpiles are depleted makes the Cordex properties an attractive exploration venture.

I recommend that Union Carbide initiate negotiations with the owners, Cordelleran Exploration, for acquisition of their tungsten holdings, to include principally the Pacific, Granite Creek, and Tip Top mines, in the Getchell district. In addition, an agreement for exploration rights on the adjacent ground to the south of the Granite Creek and Tip Top properties is recommended. The adjoining southerly property, composed of sections 31 and 32, is controlled by Cordex syndicate and is essential to Union Carbide if down dip extensions or new mineralization is discovered on the Cordex properties. A separate detailed report outlining the specific properties for acquisition and the general terms for negotiations has been submitted to the UCC Land Department (4/15/76 , Hahn).

If a suitable lease or option agreement can be worked out with the owners, exploration should be conducted in two phases, seismic testing and a combination of air rotary and diamond drilling. Seismic profiles would be run to determine the location and attitude of the poorly exposed intrusive-sedimentary contact. Also it is hoped that seismic work will be able to aid us in locating favorable carbonate units within the stratigraphic section and possibly even detect tactite units. It is estimated that the seismic work will require about two weeks to complete and will cost $15,000 to $20,000.

Even if the seismic program does not succeed in refining our target definition, drilling will be required to thoroughly test the known occurrences and explore for new deposits. Both air rotary and diamond drilling are planned. Rotary drilling, approximately 10,000 feet, will be done along the flanks of the intrusive in the areas where exposure is poor and WO_3 mineralization has not yet been discovered. A concurrent diamond drilling program will consist of roughly 2,000 feet of coring. It is estimated that the combined drilling program will cost $90,000 and require a minimum of two and a half months time. An additional $5,000 expenditure is anticipated for Cat work. Excavation will consist of road and drill-site construction.

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