
By Edwin W. Tooker and George Wong

GEOLOGICAL SURVEY CIRCULAR 846
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INTRODUCTION

The U.S. Geological Survey’s revised and expanded computerized resource information file for the State of Utah, CRIB-UTAH, is available for public use through the aegis of the Office of Information Systems Programs, University of Oklahoma, and the General Electric World-Wide MARK 3000 Computer Network. Part of a national file of resource data, the Utah file currently consists of more than 3,500 records containing location, geologic, and resource information about metal and some nonmetal deposits or commodity occurrences in the State. These records are stored in the U.S. Geological Survey’s Computerized Resource Information Bank (CRIB), a part of the U.S. Geological Survey’s Mineral Data System (MDS) which is revised in a continuing program of verification, documentation, corrections, and addition of new information.

The retrieval programs available for use with CRIB make possible highly selective rapid searches of this file. The information can be reproduced as a complete record or specified parts of a record, as tabulations, and as map plots for selected fields of interest. Procedures for public access and use can be obtained from the Director of Information Systems Programs, University of Oklahoma, P.O. Box 3030, Norman, OK 73070. Additional information concerning MDS-CRIB can be obtained from the Regional MDS Representative, U.S. Geological Survey, 345 Middlefield Road, Menlo Park, CA 94025; Federal Center, Denver, CO 80225; or National Center, 12201 Sunrise Valley Drive, Reston, VA 22092.

CRIB-UTAH provides a source of existing resource information from a number of specialized internal Geological Survey files (see U.S. Geological Survey, 1979) and publicly available literature sources. The file represents a comprehensive central source of documented or verified nonconfidential geologic and resource information about metal and nonmetal mineral localities for the State of Utah. The file excludes organic fuels, most industrial minerals (clays and saline evaporate minerals), and construction materials (i.e., sand, gravel, and cement rock). Complementary files discussed below, are available for those resource materials specifically excluded.

A compilation of data such as this relies on the cooperation and assistance of many persons. We are pleased to acknowledge some of those whose contributions to the completion of this file have been substantial: Maureen G. Johnson, Jocelyn A. Peterson, and Donald F. Huber, U.S. Geological Survey, guided us through the computer input-output phases. Donald T. McMillan, director, and Hellmut H. Doelling, economic geologist, of the Utah Geological and Mineral Survey were most cooperative in discussing the methodology of resource files and in exchanges of data. Gail McCoy, William J. Moore, Richard A. Armin, Hal T. Morris, Roscoe M. Smith, and Thomas A. Steven, U.S. Geological Survey, contributed information from the Tooele, Delta, and Richfield 1°x2° quadrangle projects of the Conterminous United States Mineral Assessment Program (CUSMAP). William J. Hassler made available the Utah files of the U.S. Geological Survey exploration loan programs (OME and DMEA). Terry W. Offield, U.S. Geological Survey, contributed computerized information on energy materials in Utah from the National Uranium Resource Evaluation (NURE) program. To the many others, unnamed, we tender our sincere thanks.
PURPOSE OF THE CRIB-UTAH FILE

CRIB-UTAH is one of several files currently being compiled by the U.S. Geological Survey for the conterminous United States to be a working tool in meeting advisory responsibilities for assessing the known and potential locatable mineral resources of the nation (U.S. Geological Survey, 1975). Constructed primarily for use by the U.S. Geological Survey to help meet its specific national resource responsibilities, it complements several other files prepared for regional, local, or other uses. The file will also be available for use in geologic mapping, mineral-commodity compilations, and metallogenesis research. Focus is therefore on those metallic and nonmetallic commodities of broad national or international interest, rather than on equally important materials that are generally abundant but of more local (Statewide) economic significance: common nonmetals (sodium and potassium), industrial minerals (brick clay, limestone for flux, or gem stones), and construction materials (sand, gravel, and cement rock). The CRIB-UTAH file emphasizes geologic information on resource occurrence, because the geologic availability of the resource material is a primary consideration. While no appraisal of currently economic resources is made, all available production data are included.

COMPLEMENTARY AVAILABLE RESOURCE DATA

Complementary data file sources for the organic fuels, industrial (metallic and nonmetallic) minerals, and construction materials are available. Reports and documents on organic fuel materials are located in several files described in U.S. Geological Survey Circular 817 (1979). Some of these data are included in the MDS-CRIB files of the Utah Geological and Mineral Survey (UGMS), 606 Black Hawk Way, Salt Lake City, UT 84108. The UGMS file also contains geologic information on the occurrence and estimates of the resource potential of the common nonmetals, industrial minerals, and construction materials. Information about the economic factors of resource production of metallic and nonmetallic materials may be found in the Minerals Availability System (MAS) file prepared by the U.S. Bureau of Mines (1974), available through the U.S. Bureau of Mines, Western Field Operations Center, East 315 Montgomery Avenue, Spokane, WA 99107.

DESCRIPTION OF THE CRIB-UTAH FILE

The CRIB-UTAH file currently contains 3,552 entries similar in format to the example shown as table 1. CRIB is a dynamic file continually being corrected, updated, and added to as new information is made available. The file is an inventory of metal and nonmetal occurrence localities. The records include available data such as the name, location, geologic setting, commodity information, deposit development information, production, resource potential, and significant literature citations. The file uses the program GIPSY, an English-based computer language format by which new data and new records can be added easily, old data corrected and revised, and superfluous or duplicate records deleted (Keefer and Calkins, 1978). Information about a metal or nonmetal commodity, its location by district, county, longitude and latitude, Universal Transverse Mercator (UTM), or township and range, can be retrieved by means of interactive access, batch computer text, tabular printout, or map plots.

Geologic and resource information about historical mineral deposits (those now worked out), currently economic and productive deposits, and subeconomic occurrence localities that may contain potentially usable metallic or nonmetallic resource materials make this file more than an inventory of past and present productive deposits.

Output retrieval from the CRIB-UTAH file may be in the form of batch computer text similar to that shown in table 1, or in selective tabular printout similar to that shown in table 2. Tables and maps used here that were derived directly from the computer have not been edited or reviewed for conformity with Geological Survey standards and nomenclature.

SOURCES OF CRIB INFORMATION

The CRIB-UTAH file brings together in verified form several overlapping sources of data from individual resource programs within the Geologic and Conservation Divisions of the U.S. Geological Survey and data from State of
Utah agencies and other public and private sources. The Conservation Division has had special responsibility for the assessment and management of leasable minerals on Federal lands; the Geologic Division has maintained special expertise for the assessment and measurement of the geologic availability of the major metal and nonmetal commodities and has responsibility for locatable minerals on all lands. The Geologic Division has managed the U.S. Geological Survey mineral exploration loan programs (OME-DMEA) and has been involved in the National Uranium Resource Evaluation (NURE), and the Forest Service Regional Area Resource Evaluation (RARE II), a mapping program to assess the resource potential in the Richfield, Tooele, and Delta 1°x2° quadrangles, as part of the Conterminous United States Mineral Assessment Program (CUSMAP). Programs such as the Circumpacific Resource Study, the National Atlas, the Wilderness Resource Assessment programs, and the metallogenic map program of the Geologic Division are a few of the major continuing sources of information.

A major source of data for this file is the Utah Geological and Mineral Survey (UGMS), which has developed a file for use in the resource appraisal of leasable and other minerals for the U.S. Bureau of Land Management (BLM) to assist them in management of leasable minerals on Federal lands in Utah. The extensive published literature on the mineral resources of Utah is an important additional source of data.

LEVELS OF COVERAGE AND ACCURACY

The CRIB-UTAH file is a level-one compilation (U.S. Geological Survey, 1975, p. 19) or inventory of known and available resource information based essentially on a search of existing files and of the literature. Each entry has been verified as to location by longitude and latitude and UTM coordinates, references to the literature have been authenticated, and the geologic information in the file has been expanded where possible. Even so, the records vary in the amount of detail, quality, and consistency, in large part because of similar variations in the original data, the differences in intensity and specialization of the individual contributors, the particular program emphasis of the contributor, and differences in an individual's capabilities for making such observations. We have made no onsite investigations in individual deposits, mines, or prospects, and no assessments or estimates of resource potential have been added by the compilers of the present file to those of the original contributors. Should the depth of information currently in the files be insufficient for the users' purposes, appropriate references cited should be consulted. The extent and distribution of mineral deposits and occurrence localities in the file are summarized in table 1. Table 2 shows the total number of records and the distribution of major commodity groups by county and geologic provinces in Utah.

SUMMARY MAPS OF METAL AND NONMETAL LOCALITIES

The series of maps that follow afford a visual estimate of the individual metal and nonmetal commodity localities documented in the CRIB-UTAH file, as detailed in table 2, within the boundaries of the main geologic regions in Utah, the Great Basin, the Northern Rocky Mountains, and the Colorado Plateau (which also happen to coincide with physiographic provinces—the Basin and Range, the Northern Rocky Mountains, and the Colorado Plateaus), and individual counties (figs. 1-20). Index to the 1°x2° quadrangle base maps in the State is inset on figure 1. The distribution maps (figs. 2-20) are in order of base metals (copper, lead, and zinc); precious metals (gold and silver); ferroalloy metals (iron, manganese, titanium, molybdenum, and vanadium); uranium; and other important but less abundant materials—beryllium, phosphorus, mercury, tungsten, fluorine (as fluorite), barium (as barite), the rare-earth minerals (including thorium and monazite), arsenic, bismuth, cadmium, antimony, selenium, and tellurium. Because these maps are reproductions of computer printouts, they do not include all the information expected from maps that comply with Geological Survey standards and nomenclature. Although not all locality points may be resolvable at the reduced scale shown, local areas of interest can be resolved on computer plots at a more detailed scale.
REFERENCES CITED


FIGURES 1-20; TABLES 1,2
Figure 1.—Index map of Utah, showing counties, areas of 1°×2° (1:250,000 scale) topographic quadrangle maps, and three main geologic regions (Great Basin, Northern Rocky Mountains, and Colorado Plateau).
Figure 2.—Deposits and occurrences of copper (triangles) in Utah listed in CRIB-UTAH file.
FIGURE 3.—Deposits and occurrences of lead (crosses) in Utah listed in CRIB-UTAH file.
Figure 4.—Deposits and occurrences of zinc (X's) in Utah listed in CRIB-UTAH file.
Figure 5.—Deposits and occurrences of gold (X's) in Utah listed in CRIB-UTAH file.
Figure 6.—Deposits and occurrences of silver (crosses) in Utah listed in CRIB-UTAH file.
FIGURE 7.—Deposits and occurrences of iron (X's) in Utah listed in CRIB-UTAH file.
FIGURE 8.—Deposits and occurrences of manganese (diamonds) in Utah listed in CRIB-UTAH file.
FIGURE 9.—Deposits and occurrences of titanium (arrows) in Utah listed in CRIB-UTAH file.
FIGURE 10.—Deposits and occurrences of molybdenum (squares) in Utah listed in CRIB-UTAH file.
FIGURE 11.—Deposits and occurrences of vanadium (X's) in Utah listed in CRIB-UTAH file.
FIGURE 12.—Deposits and occurrences of uranium (circles) in Utah listed in CRIB-UTAH file.
Figure 13.—Deposits and occurrences of beryllium (triangles) in Utah Listed in CRIB-UTAH file.
Figure 14.—Deposits and occurrences of phosphorus (X’s) in Utah listed in CRIB-UTAH file.
FIGURE 15.—Deposits and occurrences of mercury (X's) in Utah listed in CRIB-UTAH file.
FIGURE 16.—Deposits and occurrences of tungsten (crosses) in Utah listed in CRIB-UTAH file.
Figure 17.—Deposits and occurrences of fluorite (X's) in Utah listed in CRIB-UTAH file.
Figure 18.—Deposits and occurrences of barite (X’s) in Utah listed in CRIB-UTAH file.
FIGURE 19.—Deposits and occurrences of thorium, rare-earth minerals, and monazite in Utah listed in CRIB-UTAH file.
Figure 20.—Deposits and occurrences of arsenic, bismuth, cadmium, antimony, selenium, and tellurium in Utah listed in CRIB-UTAH file.
TABLE 1.—Typical CRIB-UTAH file entry

CRIB MINERAL RESOURCES FILE 12

RECORD IDENTIFICATION
RECORD NO. ............. DC12525
COUNTRY/ORGANIZATION. USGS
FILE LINK ID. ........... CONSV
MAP CODE NO. OF REC. *

REPORTER
DATE ...................... 74
06
UPDATED ...................... 79
01
BY ......................... WONG,
GEORGE; TOOKER; ED

NAME AND LOCATION

DEPOSIT NAME ................ CHIEF MINE,
SYNONYM NAME ................ CHIEF CONSOLIDATED

MINING DISTRICT/AREA/SUBDIST. TINTIC DISTRICT
SUBDISTRICT .................. MAIN TINTIC

COUNTRY CODE ............... US
COUNTRY NAME ................ UNITED STATES

STATE CODE ................. 49
STATE NAME .................. UTAH

COUNTY ...................... JUAB

QUAD SCALE QUAD NO OR NAME
1: 24000 EUREKA, 1954

LATITUDE .................... 39-57-03N
LONGITUDE ................... 112-07-01W

UTM NORTHING ............... 4422691.
UTM EASTING ................. 404594.
UTM ZONE NO ................ +12

TWP ............... 010S
RANGE .............. 002W
SECTION ........... 1A
MERIDIAN, SL

ALTITUDE ... 6577 FT

POSITION FROM NEAREST PROMINENT LOCALITY: SOUTH-CENTRAL EDGE OF EUREKA TOWNSITE

LOCATION COMMENTS: LOCATION IS OF NO. 1 SHAFT

COMMODITY INFORMATION
COMMODITIES PRESENT ........ AG PR 7N CU AU Mn CD

PRODUCER(PAST OR PRESENT):
MAJOR PRODUCTS ....... AG PB 7N
MINOR PRODUCTS ...... CU AU
COPRODUCTION ......
BYPRODUCTS ...... CD
TABLE 1.—Typical CRIB UTAH file entry—Continued

OCCURRENCE(S) OR POTENTIAL PRODUCT(S):

POTENTIAL

OCCURRENCE

MN

ORE MATERIALS (MINERALS, ROCKS, ETC.):
GALENA, SPHALERITE, ARGENTITE, NATIVE SILVER, NATIVE GOLD, WURTZITE,
CERARGYRITE, CERUSSITE, PLUMEROSITE, ENARGITE,
TETRAHEDRITE-TEMMANTITE, PROUSTITE

ANALYTICAL DATA (GENERAL)
1910 - 56 AVE: 0.1 OZ AU, 15.5 OZ AG, 0.3 % CU, 6 % PR, 2.3 % ZN

EXPLORATION AND DEVELOPMENT

STATUS OF EXPLOR. OR DEV. 4
PROPERTY IS INACTIVE

EXPLOR. AND DEVELOP. COMMENTS:
1980—UNDER EXPLORATION BY ASARCO

DESCRIPTION OF DEPOSIT

DEPOSIT TYPES:
REPLACEMENT

FORM/SHAPE OF DEPOSIT: POD, PIPELIKE, AND VEIN DEPOSITS ALL IRREGULARLY INTERCONNECTED.

SIZE/DIRECTIONAL DATA

SIZE OF DEPOSITS: MED-LARGE

DESCRIPTION OF DEPOSITS:
GRANITE CLAIMS PIPE (75 FEET IN DIAMETER AND 800 FEET THICK): THIS IS ONE EXAMPLE OF THE MANY ORE BODIES IN THE MINE.

DESCRIPTION OF WORKINGS

UNDERGROUND SURFACE AND UNDERGROUND LENGTH OF WORKINGS: 120 MI

DESCRIPTION OF WORKINGS:
THE LENGTH OF WORKINGS INCLUDES ADJACENT MINES. THE MINE IS DEVELOPED BY TWO SURFACE SHAFTS, FOUR UNDERGROUND WINZES WITH DRIFTS AND CROSSCUTS. NO. 1 SHAFT IS 1,850 FEET DEEP WITH NINE LEVELS. NO. 2 SHAFT IS 1,800 FEET DEEP; IT IS USE FOR VENTILATION AND ESCAPE. THE LOWEST LEVEL IS AT 3,050 FEET BELOW THE SURFACE.

PRODUCTION

YES

ANNUAL PRODUCTION (ORE AND COMMODITIES)

CUMULATIVE PRODUCTION (ORE, COMMOD. CONC., OVERBUR.)

<table>
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<th>ITEM</th>
<th>ACC</th>
<th>AMOUNT</th>
<th>THOUS. UNITS</th>
<th>YEAR</th>
<th>GRADE</th>
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</table>
TABLE I.—Typical CRIB-UTAH file entry—Continued

PRODUCTION YEARS......... 1909-1956

SOURCE OF INFORMATION (PRODUCTION).•• UTAH GEOL SOC GUIDEBOOK # 12

PRODUCTION COMMENTS.... $48,770*940 (NET FROM THE SMELTER AT PREVAILING PRICES)

GEOLOGY AND MINERALOGY

AGE OF HOST ROCKS................. EORD-LMISS
HOST ROCK TYPES.................. OPOHONGA LIMESTONE TO DESERET LIMESTONE FORMATIONS

AGE OF ASSOC. IGNEOUS ROCKS.. OLIGO
IGNEOUS ROCK TYPES.............. (30-32 M.Y.) PACKARD QUARTZ LATITE; SILVER CITY MONZONITE PORPHYRY AND RELATED PLUTONS
PERTINENT MINERALOGY............. GANGUE OF BRECCIATED, VUGGY, BARITIC JASPEROID
IMPORTANT ORE CONTROL/LOCUS.. NORTHEAST TRENDING STRIKE-SLIP FAULTS.

GEOLOGICAL DESCRIPTIVE NOTES.. 2 ORE ZONES

LOCAL GEOLOGY

SIGNIFICANT LOCAL STRUCTURES:
THE MINE IS ON THE WEST LIMB AND IN THE TROUGH OF THE TINTIC SYNCLINE. BODIES IN THE LIMB ARE STEEP TO OVERTURNED. EAST BECK FAULT(N 60 E; STEEP NW); MILLIONAIRE ROW FAULT(N 60 E, IRREGULAR N); INTERMEDIATE FAULT(N 77 E; 75 S); LEADVILLE REVERSE FAULT(N 75 E; STEEP SE); BULKHEAD FAULT(N 75 W; 65-85 SW).

SIGNIFICANT ALTERATION:
OXIDATION TO THE 1800 FT LEVEL; LIMESTONES WERE DOLOMITIZED, PYRITIZED, AND JASPEROIDIZED PRIOR TO ORE DEPOSITION.

GEOLOGICAL PROCESSES OF CONCENTRATION OR ENRICHMENT:
ASCENDING HYDROTHERMAL ORE FLUIDS.

GENERAL REFERENCES
1) COOK, DR., 1957, GEOL OF E TINTIC MTNS AND ORE DEP OF TINTIC MINING DIST: UTAH GEOL SOC GUIDEBOOK # 12, PL 3, P. 80 - 93
2) USBM MIN. RES. 1923-1933
3) LINDGREEN, W AND LOUGHLIN, GF, 1919, GEOL AND ORE DEP OF TINTIC MINING DIST: USGS PROF PAPER 107, P. 205 - 207
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<tr>
<th>County</th>
<th>Geologic region</th>
<th>Number of entries</th>
<th>Base metals (Fe, Mn, V, Ti, Mo)</th>
<th>Precious metals (Au, Ag, Pt gp)</th>
<th>Energy metals (U-Th, Li)</th>
<th>Miscellaneous metals (W, Sn, Be, Nb/Ta, Hg, Co/Ni, Cr)</th>
<th>Nonmetals (F, P, Al)</th>
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1BR = Basin and Range  
CP = Colorado Plateau  
RM = Rocky Mountain