

DOCKET NO. 40-1856

FORM
(9-55) AEC-2UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSIONAPPLICATION FOR AEC LICENSE TO
TRANSFER, DELIVER, EXPORT, OR RECEIVE
URANIUM OR THORIUM SOURCE MATERIALPursuant to Code of Federal Regulations, Title 10—
Atomic Energy, Part 40—Control of Source MaterialTO: U. S. Atomic Energy Commission,
1901 Constitution Ave. NW.,
Washington 25, D. C.1. NAME
AND
ADDRESS
OF
APPLICANT
(Street,
city,
zone,
state)TRACE ELEMENTS CORPORATION
A Unit of Union Carbide Corporation
30 East 42nd Street
New York 17, New YorkForm approved.
Budget Bureau No. 38-R002.4.

2. PREVIOUS AEC LICENSE NUMBER, IF ANY.

P-2195

INSTRUCTIONS

File ~~two~~ ⁴ copies of this application with the U. S. Atomic Energy Commission, 1901 Constitution Ave. NW., Washington 25, D. C. This application may be used for an original license or for the renewal of a license. In the case of a renewal, this application should be received by the Commission on or before 30 days before the expiration of the previous license. Complete blocks 1, 2, 3, 9, and if you combine two or more of the activities of Producer, Processor, Distributor, Exporter, or Consumer, complete each of the applicable blocks numbered 4 through 8.

3. INVENTORY. INVENTORY OF SOURCE MATERIAL, RAW AND REFINED, AS OF

September 30, 1957

(Specify date of last inventory)

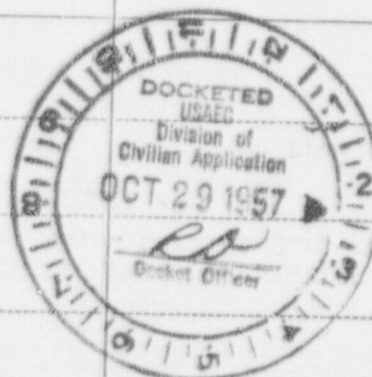
INSTRUCTION.—Include all source material in your possession or under your control, regardless of location. Include any source material you have possession of but which is owned by others, whether or not they are licensees of the Commission. Please specify that part of your inventory which is owned by other persons, listing the names, addresses, and quantities owned by each. Do not include in this inventory any raw source material not yet removed from its place of deposit in nature.

(a) Raw Source Material

DESCRIPTION OF MATERIAL	ESTIMATED PERCENT URANIUM OR THORIUM	QUANTITY IN INVENTORY (Gross tons)	NAME AND ADDRESS OF OWNER, IF DIFFERENT FROM THAT IN BLOCK 1 ABOVE
Browns Park Formation	Est. 0.10% U308	23,240	

(b) Refined Source Material

DESCRIPTION OF MATERIAL	GRADE (Comm., CP, USP, etc.)	PERCENT OF URANIUM OR THORIUM	QUANTITY (Lb.)	NAME AND ADDRESS OF OWNER, IF DIFFERENT FROM THAT IN BLOCK 1 ABOVE
		NONE		

9810200311 571025
PDR ADOCK 040*****
C PDR

9. CERTIFICATION AND AGREEMENT. THE APPLICANT AND ANY OFFICIAL EXECUTING THIS CERTIFICATION AND AGREEMENT ON BEHALF OF THE APPLICANT (1) CERTIFY THAT THIS APPLICATION IS PREPARED IN CONFORMITY WITH CODE OF FEDERAL REGULATIONS, TITLE 10—ATOMIC ENERGY, PART 40—CONTROL OF SOURCE MATERIAL; (2) CERTIFY THAT ALL INFORMATION CONTAINED IN THIS APPLICATION IS TRUE AND COMPLETE TO THE BEST OF THEIR KNOWLEDGE AND BELIEF; AND (3) AGREE THAT IN THE EVENT THAT THIS APPLICATION IS APPROVED BY THE ATOMIC ENERGY COMMISSION, AND A LICENSE IS ISSUED, THAT THE DULY AUTHORIZED REPRESENTATIVES OF THE COMMISSION MAY FREELY INSPECT AT ALL REASONABLE TIMES FACILITIES AND RECORDS, TAKE SAMPLES FOR ASSAY, AND DO SUCH OTHER THINGS AS WILL, IN THE OPINION OF THE COMMISSION, ASSURE THAT ALL SOURCE MATERIAL HANDLED BY THE APPLICANT UNDER THE AUTHORITY OF HIS LICENSE, IS PROPERLY ACCOUNTED FOR AND USED.

TRACE ELEMENTS CORPORATION
A Unit of Union Carbide Corporation

BY

Wm. M. Smart
(Signature of applicant)

October 25, 1957

(Date)

Wm. M. Smart

Vice President

(Title)

Section 35 (A) of the United States Criminal Code, 18 U. S. C. Sec. 86, 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.

(FOR GOVERNMENT USE ONLY)

UNITED STATES OF AMERICA
ATOMIC ENERGY COMMISSION
SOURCE MATERIAL LICENSE

LICENSE NO. _____

✕

5. PROCESSORS. ☒ IF YOU REQUEST AN ATOMIC ENERGY COMMISSION LICENSE TO CHEMICALLY PROCESS SOURCE MATERIAL, CHECK THIS BOX AND SUPPLY THE INFORMATION REQUESTED IN THIS BLOCK, AS WELL AS THE INFORMATION REQUESTED IN BLOCKS 1, 2, 3, AND 9.

1.

2

3.

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(b) IN THE EVENT RESIDUES AND TAILINGS ARE TO BE DISCARDED PLEASE DESCRIBE THESE RESIDUES AND TAILINGS, THE FREQUENCY OF DISCARDS, THE PROBABLE SOURCE MATERIAL CONTENT AND THE REASONS FOR NOT CONSERVING THE MATERIAL:

6. DISTRIBUTORS. ☐ IF YOU REQUEST AN ATOMIC ENERGY COMMISSION LICENSE TO RECEIVE SOURCE MATERIAL FOR RESALE ONLY, WITHOUT ANY INTERMEDIATE PROCESSING, CHECK THIS BOX AND COMPLETE BLOCKS 1, 2, 3, AND 9.

7. **CONSUMERS.** ☐ IF YOU REQUEST AN ATOMIC ENERGY COMMISSION LICENSE TO USE SOURCE MATERIAL IN CHEMICAL ANALYSIS OR IN THE MANUFACTURE OF, OR FOR INCORPORATION IN, ANY PRODUCT, CHECK THIS BOX AND SUPPLY THE INFORMATION REQUESTED IN THIS BLOCK AS WELL AS THE INFORMATION REQUESTED IN BLOCKS 1, 2, 3, AND 9.

USFS

INDICATE WHETHER (1) AS ANALYTICAL REAGENT, (2) FOR INCANDESCENT MAN-
S. (3) MEDICINAL, OR (4) OTHER. IN THE CASE OF OTHER USES, DESCRIBE THE
PRODUCT, THE SOURCE MATERIAL CONTENT, AND THE MANNER IN WHICH THE
PRODUCT WILL BE USED.

I. EXPORTERS. ☐ IF YOU REQUEST AN ATOMIC ENERGY COMMISSION LICENSE TO EXPORT SOURCE MATERIAL, CHECK THIS BOX AND SUPPLY THE BALANCE OF THE INFORMATION REQUESTED IN THIS BLOCK AS WELL AS THE INFORMATION REQUESTED IN BLOCKS 1, 2, 3, AND 4. (Note that approval on Form AEC-7 is required for each individual export transaction.)

Name and address of each of your agents who for your account will prepare Department of Commerce "Shipper's Export Declaration" (Form 7525-V), will request permission to export on Form AEC-7, and will ship source material.

NAME OF AGENT

ADDRESS

4. **PRODUCERS.** (*Miners of uranium and thorium containing ores and gravels*) ☒ IF YOU REQUEST AN ATOMIC ENERGY COMMISSION LICENSE TO TRANSFER AND DELIVER SOURCE MATERIAL AFTER ITS REMOVAL FROM ITS PLACE OF DEPOSIT IN NATURE, CHECK THIS BOX AND SUPPLY THE INFORMATION REQUESTED IN THIS BLOCK AS WELL AS THE INFORMATION REQUESTED IN BLOCKS 1, 2, 3, AND 9.

NAMES OF OPERATING PROPERTIES (Show number of claims included on each property)	LOCATIONS (Mining district and county)	NAMES AND ADDRESSES OF OWNERS IF DIFFERENT FROM APPLICANT	ESTIMATED QUANTITY OF ORE TO BE PRODUCED IN NEXT 12 MONTHS	ESTIMATED PERCENT URANIUM OF THORIUM
Marge Group 5 Claims	Meeker District Moffat County		<u>Tons</u> 240,000	0.10% U308
Maybell Group 4 Claims	Meeker District Moffat County		41,000	0.10% U308
Babs Group 5 Claims	Meeker District Moffat County		54,000	0.10% U308
Bessie Group 11 Claims	Meeker District Moffat County	L. Smith Grand Junction, Colo.	2,300	0.10% U308

The above represents only those properties from which we are estimating production during the next twelve months.

In addition, there may be ores purchased from various independent claim owners and also production of ores from properties owned by independent producers and leased to the applicant. It is impossible to estimate the yearly purchases and production at this time.



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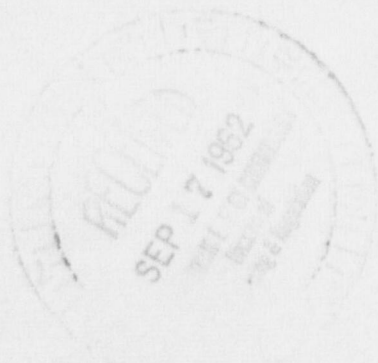
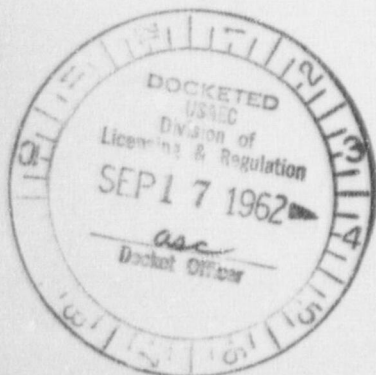
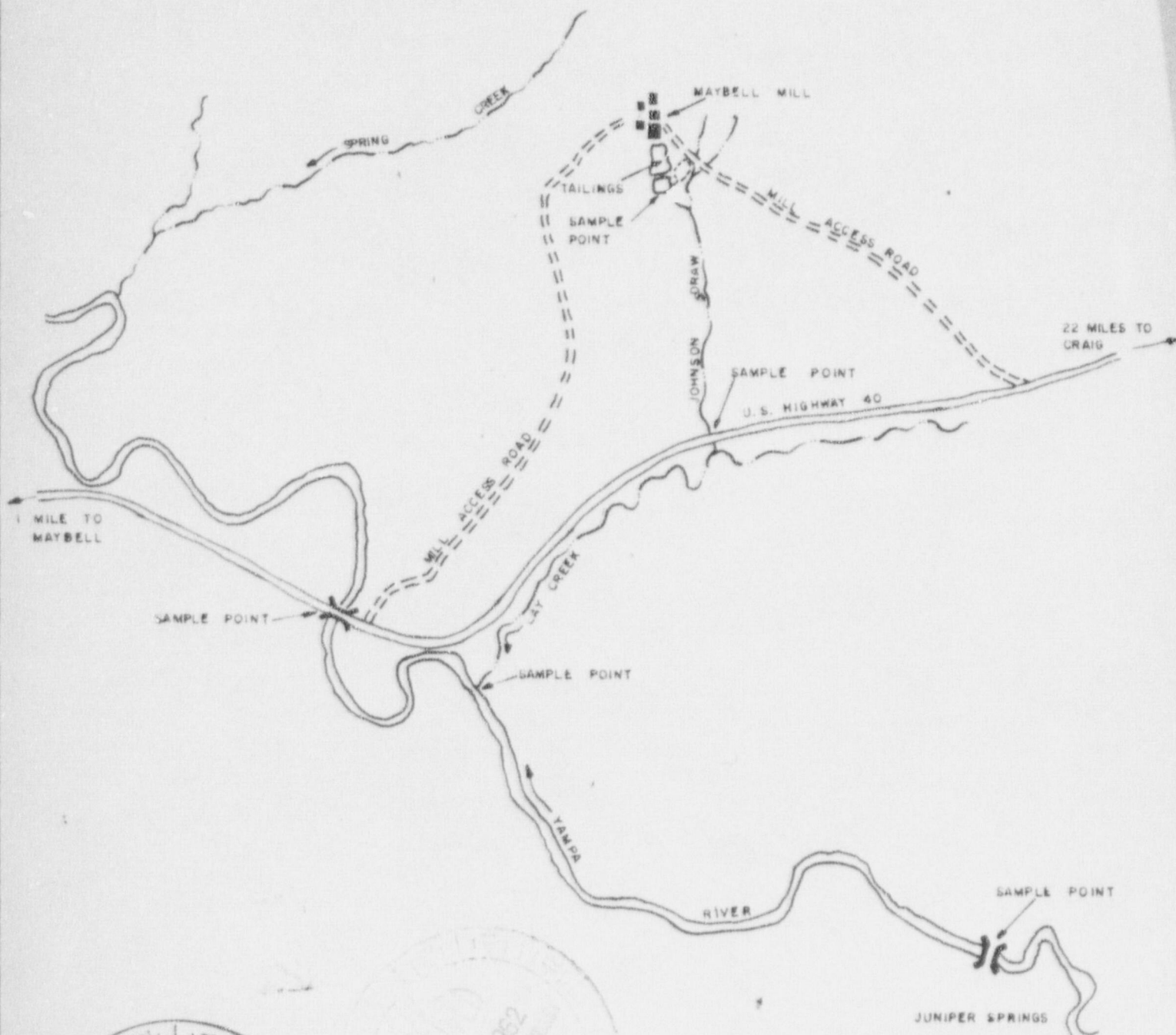
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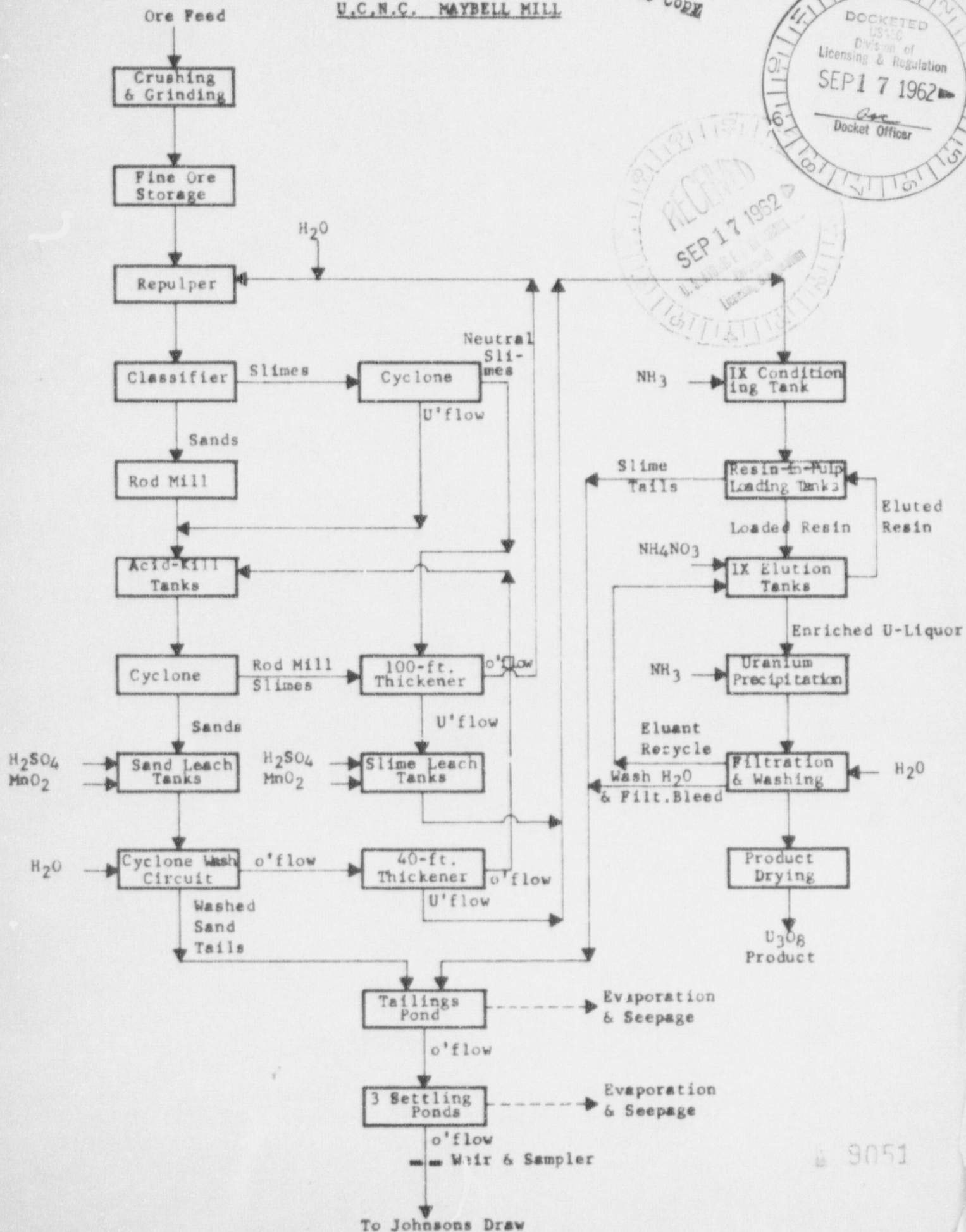
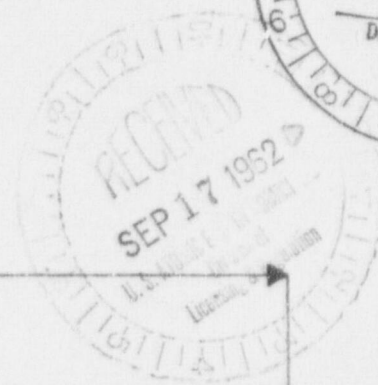
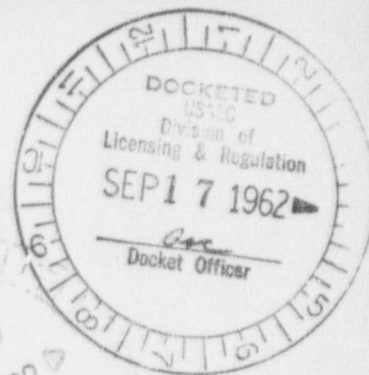
MAYBELL PLANT
UNION CARBIDE NUCLEAR CO.

SCALE 1" = 1 MILE

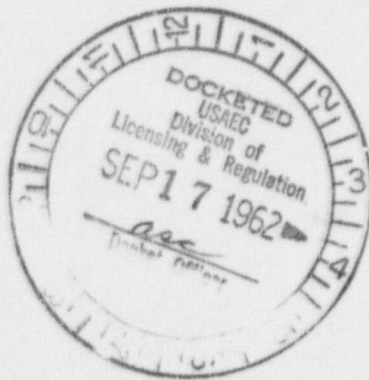
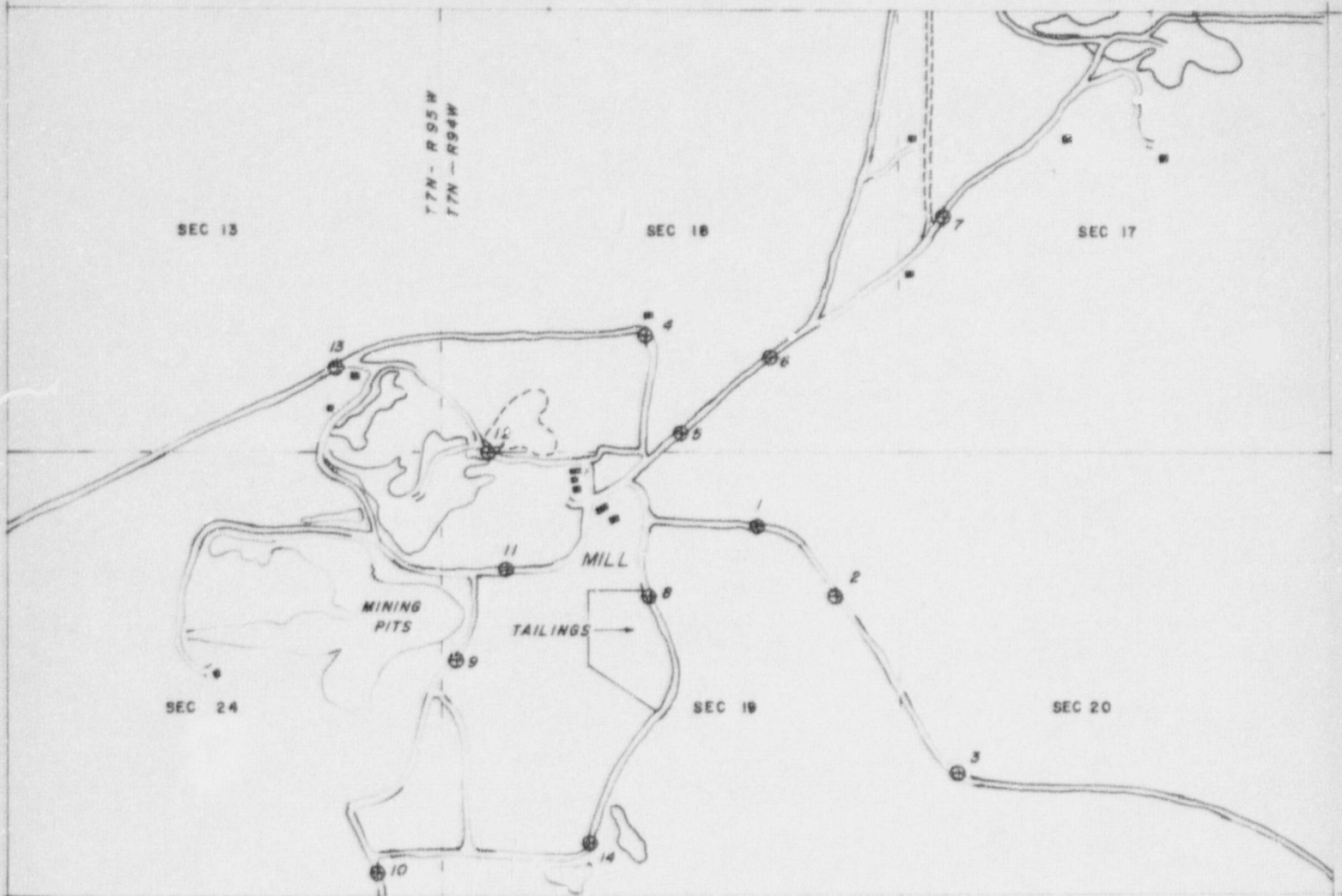
FLOW DIAGRAM

U.C.N.C. MAYBELL MILL

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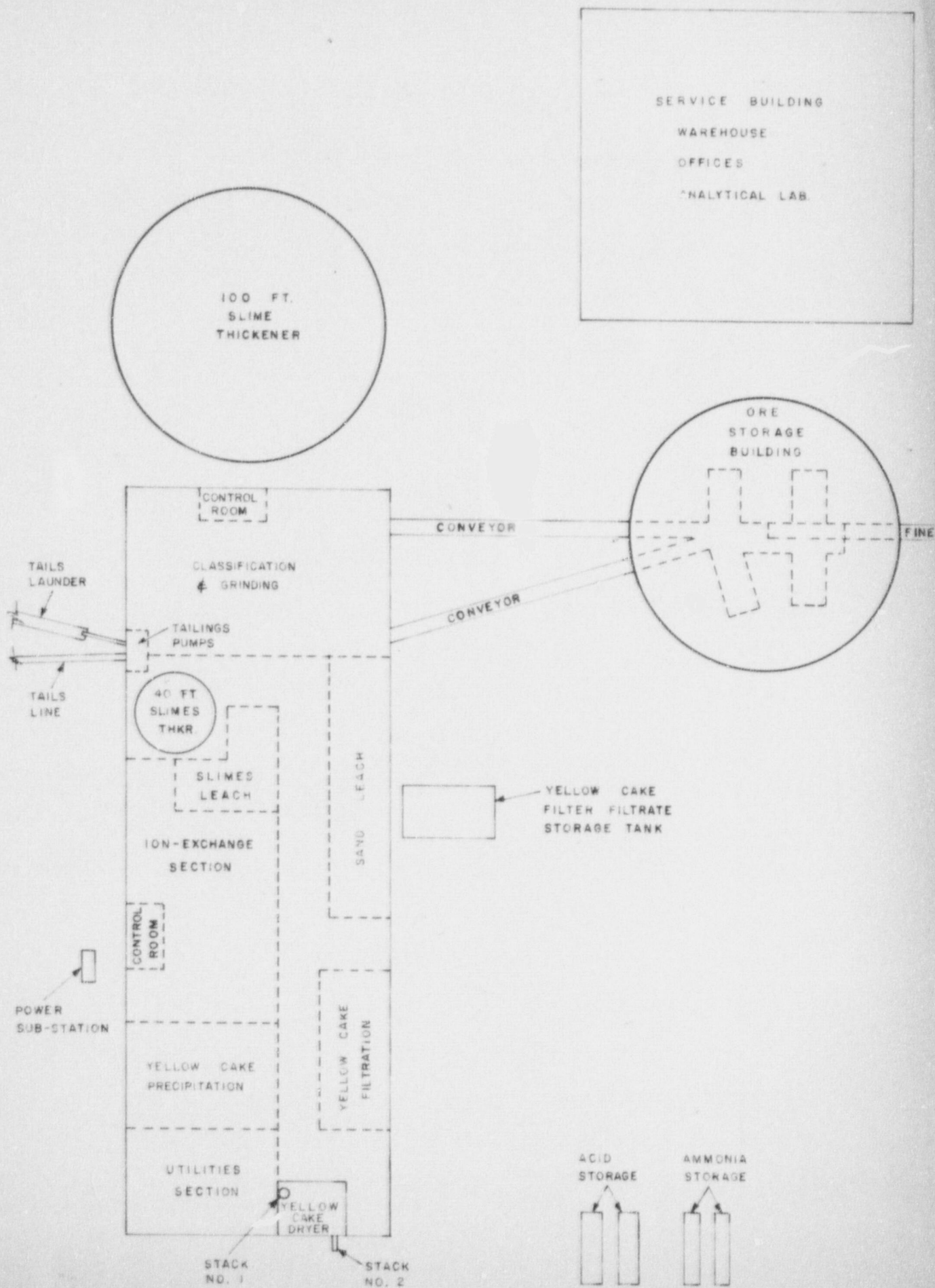
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U.C.N.C. MAYBELL, COLORADO
MILL & MINES

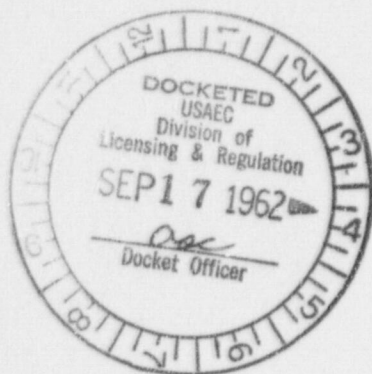
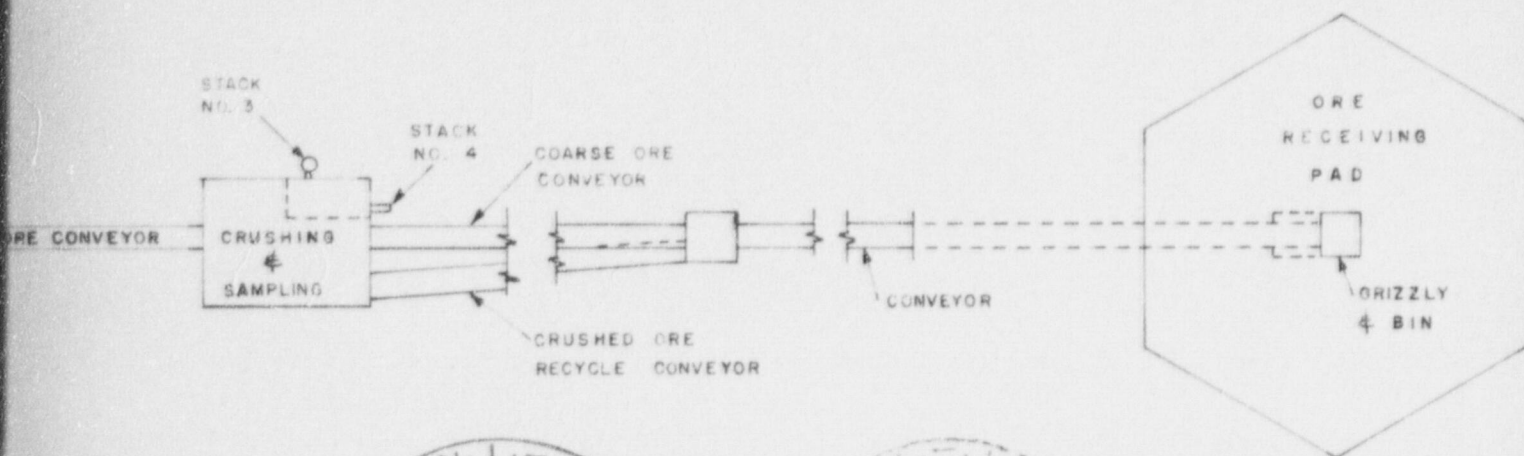
⊕ SAMPLING STATION
UNRESTRICTED AREA

SCALE 1"=2000'
DATE — 1961



Trans w/9-14-62 ltr
DOCKET NO. 40-185C

L&R File Copy



**APERTURE
CARD**

Also Available on
Aperture Card

UNION CARBIDE NUCLEAR CO.
MAYBELL PLANT
PLANT LAYOUT

SCALE 1" = 50'

DATE

SUPPLEMENT NO. 9

9810200311-03

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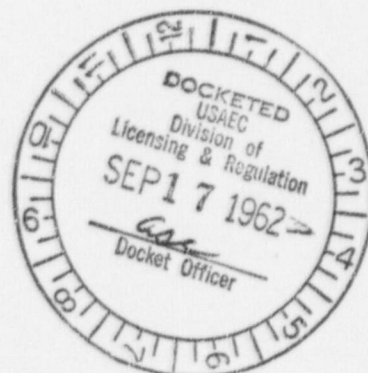


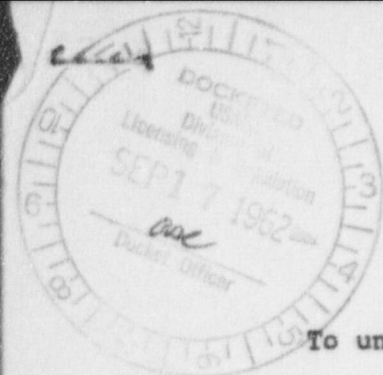
Figure 1

Tailings Pond, UCNC Maybell Plant. Launder carrying slime tailings on lower left. Sand tailings dam on left and across center of picture. Johnson's Draw left center. Mine waste pile in center background.



Figure 2

Tailings line discharging sand tailings along inside edge of tailings dam. Point of discharge was moved to new location on dam soon after picture was taken as sands have built up nearly to dike.



DOCKET NO.

40-1856

Supplement No. 14

Trans 40-1856-14-62
L&E File CopyGENERAL RADIATION SAFETY RULES AND PROCEDURES

To understand the hazards presented by radiation and what must be done to overcome these hazards, it is important that each individual know something about the sources of radiation and the conditions which might cause hazardous situations to exist.

WHAT IS RADIATION

Radiation is caused by the radioactive decay of certain elements. All radioactive elements are in a state of decay over periods of millions of years, in fact, the ages of prehistoric animals have been determined by the state of radioactivity of radioactive carbon, so it's nothing new. In the process of radioactive decay or disintegration radioactive elements change physically from one isotope or element to another. The particular case we are interested in is the radioactive element - Uranium.

What is meant by radioactive decay is this: The atoms of a radioactive element are disintegrating by emitting invisible particles called "alpha" and "beta" particles and high energy electromagnetic waves of higher frequency and energy than radio waves called "gamma" rays. Alpha particles travel only a few inches in air and can be stopped by the skin. Beta particles travel several feet and depending on their energy level can penetrate the skin, although they are not harmful except for high concentrations. Gamma rays go a considerable distance and several feet of concrete are required to shield them, but as in the case of beta particles, high concentrations are necessary to harm the body.

WHY ARE WE CONCERNED ABOUT RADIATION

By experience and experimental study it is known that the human body can be damaged by certain levels of radiation. An agency of the Federal Government (The National Committee of Radiation Protection) has agreed on levels of

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various types of radiation which are known to produce body damage; by knowing the amount of radiation which is harmful they then picked levels which they were certain would not be harmful if a person were to work eight hours a day, forty hours a week for forty years at these specified levels. A division of the AEC was then formed for the purpose of inspecting facilities controlled by the AEC. Since Trace Elements Corporation is under contract to the AEC, the AEC is authorized to ensure that all people in the Plant are adequately safeguarded from being exposed to radiation in excess of the specified limits.

WHAT ARE THE DIFFERENT TYPES OF RADIATION

We may receive radiation from alpha particles, beta particles and gamma rays in three ways. They are as follows:

1. External Radiation: This type of radiation is received by just being in the proximity of radioactive material and being bombarded by radioactive particles and gamma rays. In some plants farther along in the uranium processing scheme this is a problem, but surveys made by the Company and the AEC indicate that this type of radiation is not a hazard in our Plant. The most radioactive area found was the high grade stockpile; if a person were to stand in the middle of the stockpile eight hours a day, forty hours a week for forty years, he would receive one-sixth of the maximum allowable dosage for external radiation.
2. Airborne Radioactive Dust: Dust which contains uranium and is of fine enough particle size to be breathed is of concern at our Plant. Whereas alpha and beta particles are not a problem in our Plant from an external radiation standpoint they can become a problem when breathed into the lungs in significant quantities over long periods of time. Although we do not have a serious problem with dust in the Plant we must, nevertheless, take precautions to prevent it from being serious by following the simple rules outlined later in this section.

It is worthwhile to mention that freshly processed yellow cake is not nearly so radioactive as yellow cake that has aged for several weeks, the reason being that the more radioactive portion of the ore is lost in the ion exchange tails (radium) and it takes time for the radiation level to build up in the fresh yellow cake by radioactive decay.

3. Ingested Radioactive Material: Uranium or radium which is swallowed or drank in the water is what we are concerned about in this case. It is important that employees follow the instructions pertaining to eating, smoking, and personal cleanliness to minimize the amount of uranium entering the body through the mouth. Our survey work in this type of radiation has shown that the mill waste (or effluent) that is being discharged toward the Yampa River does not raise the radium and uranium content in the river a detectable amount above the natural background content.

POSTING OF SPECIFIC AREAS

Federal regulations require that certain areas in the Plant be posted with signs. It is important that you understand what these signs mean. Each of the three types of signs used are discussed in the following paragraphs:

"Caution - Any Area or Container in This Plant May Contain Radioactive Materials (Uranium)." This sign, which is posted at the Plant entrance, is nearly self-explanatory. It is merely a general warning that the area is restricted from the general public and that there are radioactive materials present. You will note the three bladed design similar to a propeller which is purple. Wherever you see this sign it is a symbol that radiation is present; the wording of the sign tells you what is radioactive.

"Caution - Airborne Radioactivity Area." This sign is posted in any area or entrance to a building which contains a concentration of airborne dust in excess of 25 per cent of the specified limit for airborne dust

concentrations. This condition is only when abnormally dusty conditions exist, which is a small part of the time. The yellow cake dryer enclosure is an exception as the dust concentration is often over 25 per cent of the specified maximum, the concentration depending on how recent the area has been washed down.

"Caution - Radioactive Materials." Any area in which large quantities of radioactive materials are stored for more than eight hours; such as, the storage area for barreled yellow cake, the tailings pond, and the yellow cake presses. The signs indicate the radioactive materials are present and not necessarily that a hazard exists.

It can be seen from this discussion that airborne radioactive dust is a potential problem in our Plant. This is not a critical problem but to keep it from getting that way certain rules and procedures must be followed. These rules and procedures are:

1. Keep dust (from ore and yellow cake) from accumulating. Wash down the areas rather than sweep, but if it is absolutely necessary to sweep wear the respirator provided. Never use compressed air to clean with as this aggravates the problem.
2. Procedure to follow regarding use of respirators:
 - a. Adjust the strap and face piece (it can be bent to fit) so that the respirator fits your face and no dust-laden air short circuits around the respirator face piece. To test the fit of the respirator, remove the entire filter holder (by twisting it off), hold your hand over the hole, if you get no air when inhaling the respirator fits properly.
 - b. Change the filter at the start of each shift if the filter has been used before. If you are using the respirator in an area concentrated with dust, it may be necessary to change the

filter after two or three hours. When resistance to breathing becomes uncomfortable, it is a sign that the filter has served its useful life and should be renewed.

- c. Clean respirator as follows: Remove filter and headband, then immerse the respirator in the Cleanser-Sanitizer solution and scrub face piece with a brush; take care to clean the exhalation valve in the face piece and all other parts that exhaled air contacts; then rinse in plain warm water and hang up to dry. Clean your respirator at the end of every day that you use it. If replacement parts are needed they can be secured from the warehouse. The Cleanser-Sanitizer powder and a sink for the purpose of cleaning respirators are in the southwest corner of the change room shower. To make the cleaning solution, put one package of the powder in about a gallon of warm water. After you have finished cleaning your respirator clean the sink and basin for the next person.

3. Follow good personal hygiene habits:
 - a. Wash your hands before eating and before leaving the Plant.
 - b. Change clothes and bathe regularly.
 - c. Wash your hands before smoking, especially if you have been handling yellow cake.
 - d. Store your lunch box in a dust free location and eat in an area which is as dust free as possible.
4. Cooperate with people making radiation surveys by doing your work in a normal manner. In order to accurately compute the amount of radiation you are being exposed to the areas should be sampled under normal conditions. If you think sampling is being done under abnormal conditions, tell the person making the survey what

the conditions are. Also, you will be asked to keep track of the amount of time you are in specific areas. Do this conscientiously as this is the best means of calculating your exposure dosage. Radiation exposure is the only reason a time study is being made and inaccurate time accounting will prolong the periods of time accounting.

5. If you are ever in doubt or fear of the amount of radiation you are receiving, see the Safety Engineer and he will show you the results of the survey work done in your working area.

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U. S. ATOMIC ENERGY COMMISSION

APPLICANT

Trace Elements Corporation, Univ of Union Carbide
40 E 42nd St.
New York 17, NY

DOCKET NO. 40-1856

DOCUMENTS

DATE DOCKETED

DESCRIPTION

May 29, 1961

Ltr. 5-29-61 to UCN amending SM Lic. Nos. R-105 (Slick Rock, Rifle, and Uravan) R-212 (Trace Elements Corp); and R-238 (Globe Mining Co)...based upon info contained in their appl of 12-1-60.

June 29, 1961

Ltr. 6-29-61 to Trace Elements Corp advising them that eff. this date, they are hereby relieved of any requirements to perform routine urinalysis for uranium in conn. w/their uranium milling operations if such h/been inc. as a condition of their lic as a result of statements and representations made by them in their lic appl or amendments thereto.

put back in book

U. S. ATOMIC ENERGY COMMISSION

APPLICANT Trace Elements Corporation, Unit of Union Carbide DOCKET NO. 40-1856
 30 E. 42nd St.
 New York 17, N. Y.

DOCUMENTS

DATE DOCKETED	DESCRIPTION
Nov. 6, 1959	Ltr. 11/5/59 trans. AEC-2, req. for renewal of SM Lic. R-212.
N July 12, 1960	Ltr. 2/9/60 frm. Union Carbide advising us of the airborne sampling equipment being used or plan to be used in their radiation control program at their six uranium milling operations.
Aug. 1, 1960	Ltr. to applicant stating that Mr. Lester Rogers and two AEC consultant will visit your mill on Aug. 12, 1960 to review your present waste treatment procedures and to obtain info. as a basis for evaluating the effect of the waste effluent from your mill on the environment.
Aug. 15, 1960	Ltr. 2/23/60 frm. applicant advising of several modifications made recently in their area posting and records procedures.
Aug. 15, 1960	Ltr. 5/5/60 to applicant of noncompliance based on the inspection of their mill at Maybell re: insufficient surveys conducted etc.
Aug. 15, 1960	Ltr. 6/3/60 frm. applicant in ans. to our ltr. of May 5, in which we req. a full and complete statement of the steps which will be taken in order to bring the operation of their mill into compliance with the Commission's regulations.
Sept. 14, 1960	Ltr. to applicant trans. rpt. entitled, "AEC Radiation Control Program for Uranium Mill Operators" dtd. May 11, 1960.
Dec. 8, 1960	Ltr. 12/1/60 frm. UCN req. approval of a new external radiation survey program which they propose to adopt on Jan. 1, 1961 at the UCN mills at Rifle, Uravan, Slick Rock, Green River, Trace Elements Corp. and Globe Mining Co.
Dec. 8, 1960	Ltr. 12/1/60 frm. UCN req. approval of a new airborne sampling program which they propose to adopt on Jan. 1, 1961 at the above mills.
Apr. 13, 1961	Press Release/dtd 3-21-61 announcing that the AEC today signed a new uranium concentrate purchase contract w/Trace Elements Corp, eff Jan. 1, 1961 thru Dec 1966, providing that the U S Government will purchase fm Trace Elements uranium concentrates valued at \$20,700,000.

U. S. ATOMIC ENERGY COMMISSION

APPLICANT Trace Elements Corporation, Unit of Union Carbide DOCKET NO. 40-1856

DOCUMENTS

DATE DOCKETED	DESCRIPTION
November 1, 1957	Appl. for SM License to cover renewal of previous license No. P-2195.
November 1, 1957 November 18, 1957	SM renewal of previous license No. P-2195 issued. SM License No. R-212 issued.
May 26, 1958	AS OF FEBRUARY 13, 1958, FORMAL FILE TO THIS DOCKET RETIRED TO RECORDS CENTER OF CONSTRUCTION AND SUPPLY - LOCATION: ROOM C-003 Ltr. informing that there were several items of non-compliance due to the inspection and that they should reply by ltr. informing of the steps to be taken to correct them.
June 19, 1958	Ltr. 6/17/58 informing of the steps that are being taken to correct the deficiencies outlined in the ltr. 5/26/58.
June 19, 1958	Ltr. 6/17/58 appl. for exemption from sections 20.203 (e) (2) and Section 20.203 (f) (2) of the AEC's Standards for Protection.
July 11, 1958	Ltr. informing that the steps to be taken to correct the deficiencies seems to be adequate.
October 1, 1958	Ltr. rec. renewal of previous lic R-212.
October 16, 1958	Ltr. and license R-212 req. exemption issued.
May 22, 1959	Ltr. RE compliance under SM Lic. R-212.
May 27, 1959	Ltr. 5/27/59 to Dr. Cleere (Dept. of Public Health, Colo) trans. copies of orders issued to 4 companies operating uranium mills in Colorado for info.
June 29, 1959	Ltr. 6/24/59 from UCNC trans: Ltr. 6/24/59 (w/3 encls) in reply to our ltr. of 5/22/59 for non-compliance under Lic. R-212 for Maybell, Colorado. (See 40-1112 also--2 compl. cys. rec'd & 1 cy verifaxed).
June 30, 1959	Ltr. of acknowledgement to the applicant of their ltr. of June 24, 59.
July 24, 1959	Ltr. to applicant amending SM Lic. R-212 by the addition of new conditions effective as of the date of this order.
Aug. 4, 1959	Ltr. to Dr. Cleere trans. further orders to the same companies, amending their licenses to incorporate survey programs and procedures, facility and equipment changes which they have proposed, etc.
Aug. 16, 1959	Ltr. to applicant acknowledging appl. of 11/4/59 for renewal of Lic. R-212
Aug. 31, 1959	Ltr. from applicant re: the change in plans from the ones previously stated concerning the scrubber modifications.

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