

Minerals Exploration Company

Sweetwater Uranium Project
P.O. Box 1500, Rawlins, Wyoming 82301
Telephone: (307) 328-1476

union
MINERALS

Energy Mining Division
Box 7600
Angeles, California 90051
977-7600

20 June 1983

R. J. Everett, Chief
Materials Radiation Protection Section
USNRC, Region IV
611 Ryan Plaza Dr., Suite 1000
Arlington, Texas 76011

RE: By-Product Material License
No. 49-19005-01

Dear Mr. Everett:

Minerals Exploration Company is submitting the additional information required to continue processing of our amendment to By-Product Material License No. 49-19005-01. The intent of this amendment is to allow in-house servicing operations as specified in the following proposed license condition:

15. Installation, relocation, maintenance, repair and initial radiation survey of devices containing licensed material and leak testing, installation, and replacement of sealed sources containing licensed material used in devices shall be performed only by Texas Nuclear Corporation or by persons having completed the Texas Nuclear Corporation course, "Industrial Radiation Safety Training". The radiation safety officer will evaluate qualified persons and and approve work procedures to be employed (Re: telephone conversation with Jack Whitten on 15 April 1983 - generic qualification).

All work will be performed in accordance with Texas Nuclear Instruction Manual "SGH Series Density Gauge" and the outline of specific operations attached. Disposal of sealed sources will be through transfer to another authorized licensee or via return to the manufacturer.

In addition to the above, Minerals requests a definition of "storage" as used in Condition 13.A.3 of our license. Specifically, our mill has suspended operations for a period of time. We desire to leave our gauges in place during this shutdown and to consider them in storage. All mill exits will be closed and locked; the only activity will be limited to security and fire inspections conducted once each eight hour shift, and general maintenance to preserve the facility.

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REG4 LIC30
49-19005-01 PDR

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R. J. Everett
Page 2

Removal of these devices to a smaller storage area and replacement prior to resumption of operations would result in two episodes of potential exposure which should be avoided under the ALARA concept. We propose to continue physical inventories of all devices in our possession every six months, as per Condition 16. Prior to resumption of milling, all gauges will be leak tested.

Please contact us for any additional information required.

Sincerely,

MINERALS EXPLORATION COMPANY



Thomas J. Klein
Environmental Supervisor

TJK:ss

cc: C. Z. Hill
NRC Document Branch
Files (2)

1. Please provide the following information in support of your amendment request to perform initial installation, relocation, maintenance, repair, removal for disposal, and required radiation surveys on Texas Nuclear gauges.

(a) A description of each specific operation to be performed.

ANS: 1.(a)

Installation - mounting of source housing and detector at the operational site, insuring proper alignment and geometry.

Relocation - removal of source housing, mounting bracket, and detector from one site and reinstallation at a second site.

Maintenance and repair - unspecified work on detector, mounting bracket and mounting location (no maintenance or repair of the source housing is permitted).

Removal for disposal - disassembly of mounting bracket and removal of gauge from service.

Required radiation surveys - penetrating radiation survey-meter readings at various points around the source head.

Leak test - swabbing of external seams of source head to detect leakage of source material.

1. (b) The step-by-step procedures to be followed in performing each operation including a description of the radiation safety procedures which will be followed.

ANS: 1.(b)

Installation -

- 1) uncrate the source housing
- 2) survey the source housing for excessive penetrating radiation
- 3) perform initial leak test
- 4) install housing, mounting bracket, and detector
- 5) survey the installation site for excessive penetrating radiation
- 6) unlock and open shutter, test operational status
- 7) survey gauge in operation for excessive penetrating radiation

Relocation -

- 1) close and lock shutter
- 2) remove and reinstall housing, mounting bracket, and detector
- 3) survey the installation site for excessive penetrating radiation
- 4) perform relocation leak test
- 5) unlock and open shutter, test operational status
- 6) survey gauge in operation for excessive penetrating radiation

Maintenance, repair -

- 1) close and lock shutter
- 2) perform necessary work on detector, mounting bracket or mounting location (no maintenance or repair of

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- the source housing is permitted)
- 3) perform necessary remounting
- 4) survey the site for excessive penetrating radiation
- 5) unlock and open shutter, test operation status
- 6) survey gauge in operation for excessive penetrating radiation

Removal for disposal -

- 1) close and lock the shutter
- 2) remove gauge from service
- 3) crate gauge in accordance with DOT standards

1. (c) A description should be provided to show the locations of the radiation measurements and the kinds of records to be maintained on these surveys.

ANS: 1.(c)See attached "Density Gauge Radiation Safety Certificate", two examples.

2. With regard to radiation survey and monitoring instruments available in your facility, you should specify the manufacturer's name and model number of each instrument and the frequency of calibration of each instrument.

ANS: 2. Our facility uses a Ludlum Model 5 geiger counter and a Ludlum Model 12 Micro R Meter, calibrated every six months.

3. If you wish to calibrate your own radiation survey and monitoring instruments, you should submit a detailed description of your planned calibration procedures. The description of calibration procedures should include, as a minimum:

- (a) The manufacturer's name and model number of the source(s) to be used.
- (b) The nuclide and quantity of radioactive material contained in the source(s).
- (c) The accuracy of the source(s). Traceability of the source to a primary standard should be provided.
- (d) The step by step procedures, including associated radiation safety procedures. These procedures should include a two-point calibration of each instrument with the points separated by at least 50 percent of the scale.
- (e) The name(s) and pertinent experience of person(s) who will perform the calibrations.

If you intend to contract out calibration of your radiation survey and monitoring instruments, you should specify the name, address, and the license number of the firm.

ANS: 3. Instrument calibration is performed by the manufacturer, Ludlum Measurements, Inc., Sweetwater, Texas.

4. The procedures for leak testing of the sealed sources should be submitted. If the RPO will perform leak tests of the sealed sources and forward to the device manufacturer to be analyzed, it is only necessary for you to state this. You should include the frequency of the leak test, the name of the supplier, and the model number of the leak test kit. If you plan to conduct the analysis in-house, please specify:
- a) procedures and materials to be used in collecting test samples
 - b) manufacturer's name and model number of instruments to be used in the analysis
 - c) manufacturer's name, model number, and accuracy of the calibration source(s) used to calibrate your instruments
 - d) describe the method of analysis

If this is to be performed by an individual or company other than the supplier, please provide the NRC and/or Agreement State license number. If the individual or company has an Agreement State license you should submit a copy of the license.

ANS: 4. Leak testing is performed according to the attached procedure, "Sealed Source Leak Test Procedure". Texas Nuclear leak test kits are used and returned to Texas Nuclear for analysis.

5. For use of a device where it is possible for a major portion of an individual's body to receive exposures to the radiation beam from the device, a description of "lock-out" procedures should be submitted. If the device shutter and/or switch is locked, "tagged-off", until the work is completed, you should describe this operation and provide the name of the individual(s) responsible for enforcing this procedure.

ANS: 5. The source shutter on Model 5190 and 5192 source holders will be in the closed position and locked during procedures described in 1.(b) above, which might result in exposure to the source beam. Lock-out is done with a padlock through the shutter gate, the technician performing the work is responsible for the lockout procedure, the RPO/RSO is responsible for enforcing the procedure.

6. Please provide a description of the equipment and facilities to utilize the devices containing the byproduct material. This should include a simple annotated sketch or drawing showing where each device is installed and the location of adjacent ladders, aisles, or work areas employees will occupy.

In the event the sealed sources will no longer be needed, you should specify your means of disposal. Sealed sources containing byproduct material may be returned to the manufacturer, transferred to another licensee authorized to possess the specific quantity and form being transferred, or transferred to a licensed waste disposal firm.

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ANS: 6. The attached illustration labeled "Gauge Head" shows the typical application mounted on a process pipe. All Model 5190 source holders (12 as of this date) are mounted on process pipes at elevations from six to twenty feet above the floor in areas of limited traffic. We have one Model 5190 source holder used to control fill level in 55 gallon drums. The source head is mounted on one side of a drum conveyor and the detector is located opposite with about three feet of separation. This packaging area is contained in a room approximately 10 feet by 10 feet, which is kept locked. No employee entry is required during all packaging activities.

When the sealed sources are no longer needed, they will be placed in storage, transferred to another authorized licensee, or returned to the manufacturer for disposal.

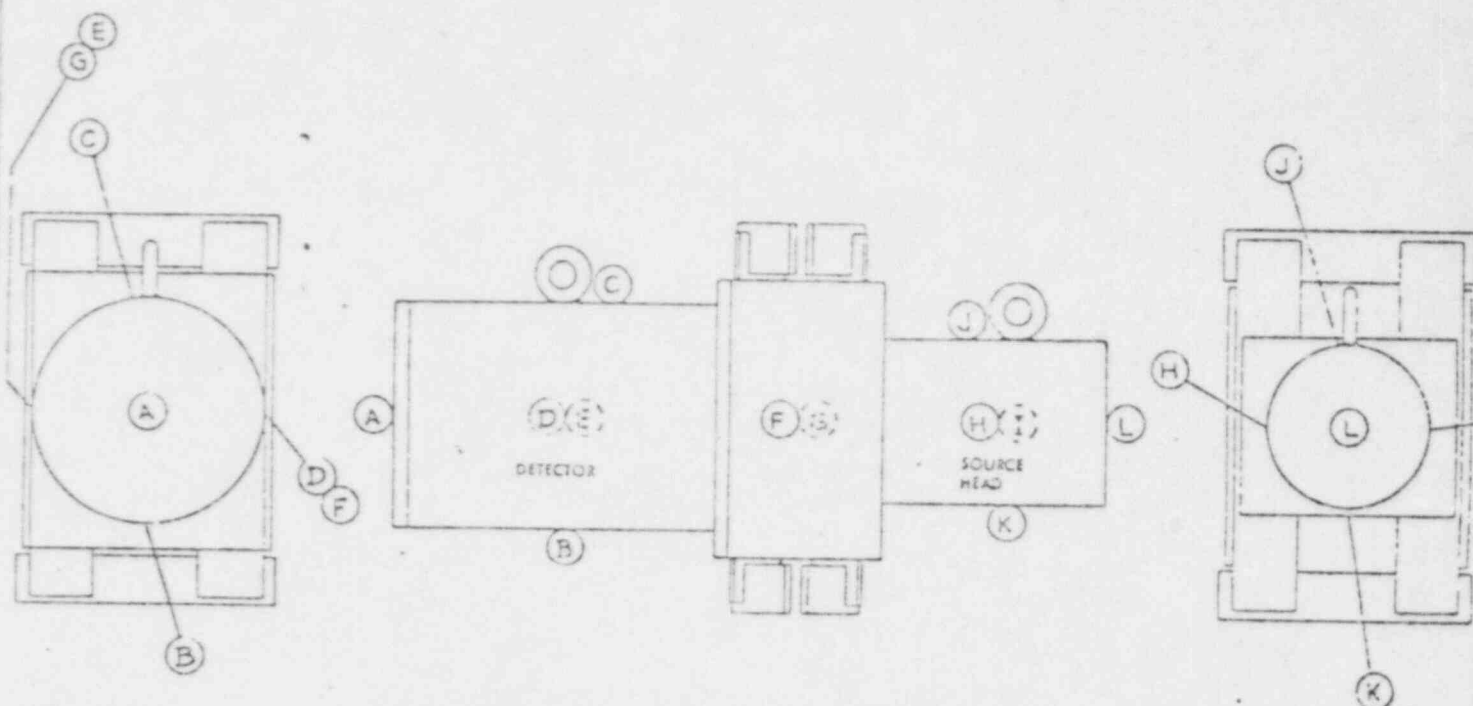
8. With regard to personal monitoring devices, you should specify:
- a) Name of the supplier.
 - b) Type of devices used (e.g. film badges, TLD).
 - c) Frequency of changing monitoring devices.

ANS: 8. Thermoluminescence Dosimeters (TLD's) are currently supplied by R. S. Landauer, Jr. and Co., Glenwood, Ill., on a monthly basis. Choice of supply source is subject to change.

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ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

P.O. Box 1500 Rawlins, Wyo

[illegible]

PIPE FULL ☐ PIPE EMPTY ☐

[illegible]

LEVEL GAUGE RADIATION SURVEY CERTIFICATE

SURVEY LISTED POINTS AT ONE FOOT FROM THE SURFACE ABOVE AT THE SURFACE.

SOME GAUGES USE PURE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METERS OR TAKE READINGS AT ONE FOOT.

ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

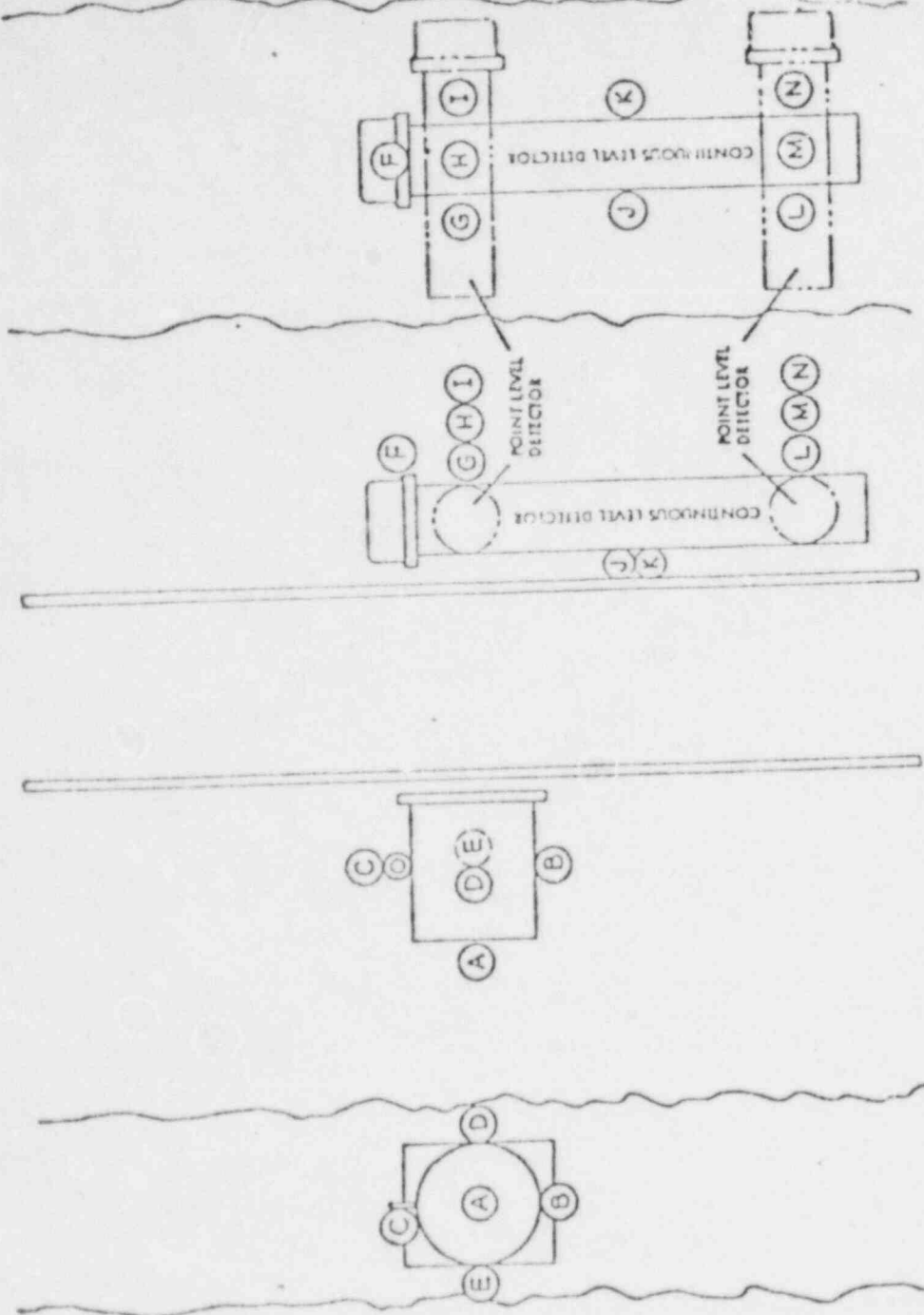
Client Minerals Exploration
 Investigation Yellowknife Packaging
 Location Azulins, WV
 SOURCE READ NO. 5192
 NO. None
 SOURCE READ NO. B3764
 ACTIVITY 20-0 V G127, COMB
 MEASURING INSTRUMENT Tex 25 Nuclear
 Model 2650 SN KTD

READINGS TAKEN, ☒ AT SURFACE, ☐ AT ONE FOOT

SIGNATURE (ONLY AFTER RESULTS RECORDED) _____ DATE _____

TECHNICIAN _____

DEPARTMENT _____



mR/h													
SHUTTER	A	B	C	D	E	F	G	H	I	J	K	L	M
OPEN													
CLOSED													

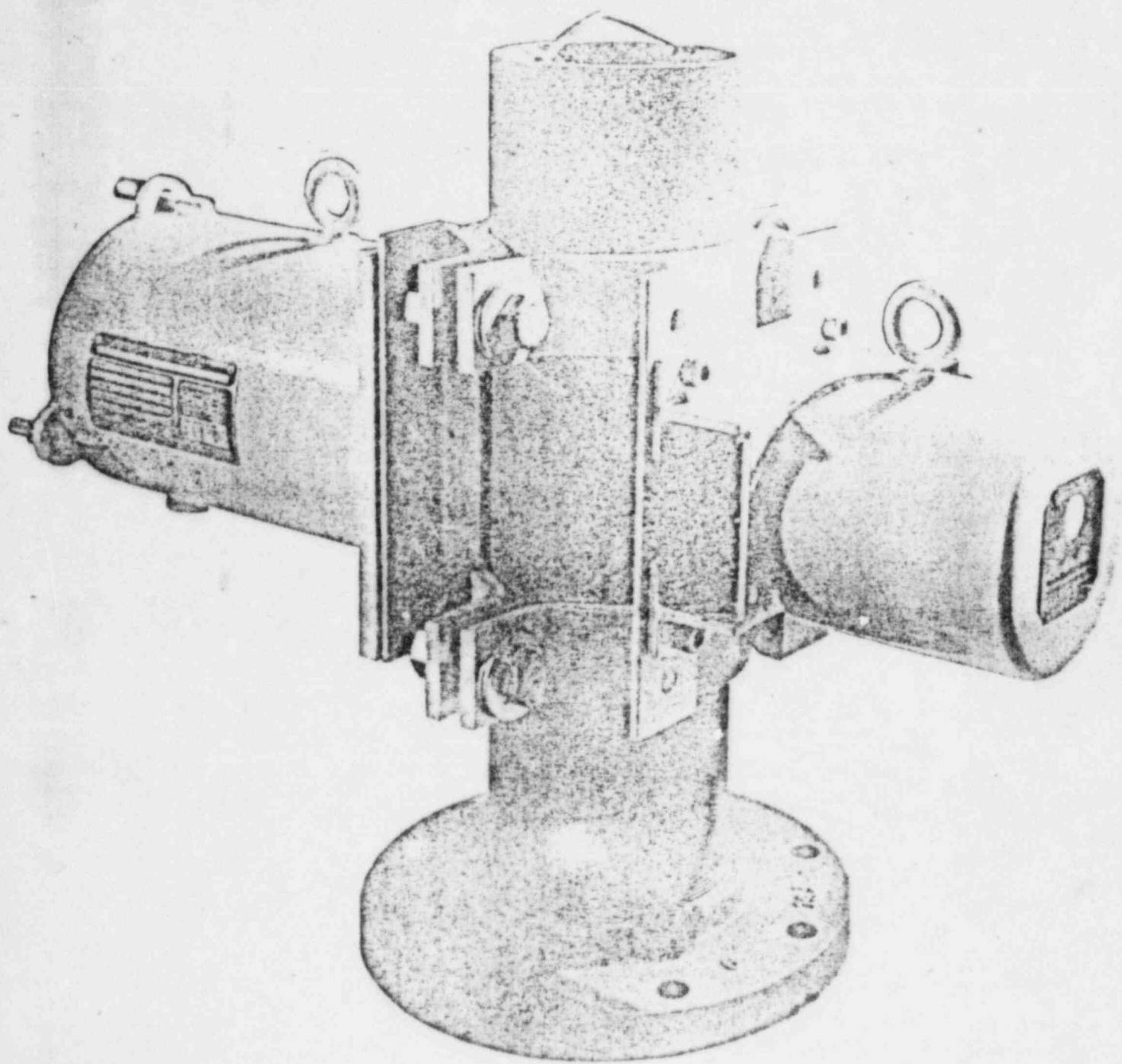
VESSEL; EMPTY ☒ ; FULL ☐

Sealed Source Leak Test Procedure

1. Obtain Texas Nuclear leak test kits from Texas Nuclear, Box 9267, Austin, Texas 78766. (512)836-7740
2. Remove the swab from the packing tube and wipe all seams around the source head of a nuclear gauge. Return the swab to the packing tube, fill out the survey form with serial number, date, etc., and mail a copy of the form with the swab.
3. Return the test kits to Texas Nuclear for analysis.

TJK:ss
6/20/83

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GAUGE HEAD

Radiation Protection Officer Responsibilities

The Project Radiation Protection Officer is responsible to the General Manager for the environmental protection, radiation and industrial safety programs for the project. He is responsible for all reports and records necessary to comply with regulations and requirements of the NRC, EPA, MSHA, and other government agencies that regulate these aspects of mining and milling. He is responsible for ensuring that monitoring conducted by his staff is conducted in a proper and accurate manner. He will serve as management surveillance and as an advisor to the Maintenance, Mill and Mine Superintendents, will direct project security programs, and has the authority to cancel, postpone or modify any process or operation which proves an immediate radiological hazard to employees. His decision is subject to revocation only by the General Manager or his designate after consultation.

The Radiation Protection Officer will have the following minimum qualifications:

- a. B.S. Degree in the physical sciences, mathematics or engineering from an accredited college or university, equivalent experience, or a combination of education and experience. Equivalent experience will be at least four years of relevant radiation safety experience.
- b. Specialized training in radiation protection, with at least biannual refresher course.
- c. Training and experience in management.
- d. Have a working knowledge of radiation detection instruments, biological effects of radiation and mathematics of radiation.

Any training requirements, process changes, unusual maintenance work or equipment modification requires the approval of the Radiation Protection Officer prior to implementation. An operating manual covering each phase of the operation will be written by the appropriate department staff and made available to each ore control and maintenance employee. The Radiation Protection Officer will approve the health and safety aspects of the operating procedures. The manual will be updated as necessary to reflect any process or operational changes. The manual will be on file in appropriate work areas.

Emergency Notification

In case of radioactive incident such as personnel overdose, source accident, fire or theft, action shall be taken immediately upon discovery to notify the proper authorities. An appropriate office of MINERALS, Los Angeles Office, will also be notified of all such incidents.

An investigation shall be made of the incident and a written report shall be prepared, where appropriate. A report shall be made to the Nuclear Regulatory Commission in accordance with Section 20.402 and 20.403 of 10 CFR 20 and any requirement of CFR 21.

Liquid Lab Standard - Po-210

Use of Po-210 laboratory standard solution will be controlled as follows:

- a) The source will be used to prepare laboratory standards for the analysis of Polonium 210. The standard solution prepared from this source will be contained and stored in stoppered glass containers in the environmental laboratory. No additional shielding of prepared standards is anticipated as the glass walls of the storage containers will attenuate all alpha radiation emissions.
- b) Spills of liquid standard solution will be immediately wiped up and/or washed down. Wastes from routine use and spill cleanup will be deposited in our licensed tailings cell.
- c) The radiation safety program will be supplemented with instruction on waste handling, personnel and area decontamination and personal hygiene in order to keep exposure to radiation "As Low As Reasonably Achievable".
- d) The environmental laboratory will be wipe tested weekly for total removable contamination when Polonium 210 standard solutions are prepared or used. Contamination levels in excess of those specified in Annex C, "Guidelines for decontamination of facilities and equipment prior to release for unrestricted use..." will be cause for immediate decontamination and an investigation by the Radiation Safety Staff to determine the causes of contamination and measures to be taken to prevent a recurrence. Contamination surveys and investigations including remedial actions taken, shall be documented.

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16. and 17. Resumes of Training and Experience

PERSONAL RESUME'

Thomas J. Klein

520-52-5494

EDUCATION:

BS Psychology, University of Idaho, 1972.
MSHA Radiation Control and Monitoring.
Nuclear Gauge Radiation Safety, Ohmart.
Three-Day In-House Course by Corporate Health Physicist (Exxon Minerals).
Water and Wastewater Plant Operator School - Casper College.
Stack Sampling Seminar.
Fundamentals of Ground Water Protection.
Emergency Medical Technician - Class I.
Respiratory Protection Course, Los Alamos Scientific Labs.
Occupational Hearing Conservation.
Fundamentals of Occupational Safety, National Safety Council.
Mine Foreman Certification - Surface Uranium.
Supervisors' Safety Course - Western Wyoming College.

EXPERIENCE:

1 year Grade Control Technician; used Texas Nuclear portable x-ray and various gamma detectors.
1½ years Metallurgical Lab Technician; using x-ray and gaining first hand knowledge for uranium milling.
2½ years Environmental Lab Technician; conducting inventories, monitoring and performing wipe test on various nuclear gauges used in a uranium mill.
2½ years Safety Technician, underground uranium; performing industrial hygiene and radiation health monitoring.
Environmental Supervisor since February 1981; responsible for environmental monitoring and radiation health monitoring and compliance reporting.

60420

RESUME'

Jack A. Marshall

528-62-7330

Education:

B.S. Degree, Utah State University, 1970. Major: Chemistry;
Minor: Mathematics and Geology

Principles of Accident Prevention, MESA, 1972.

First Aid Methods, MESA, 1972, 1974, 1975.

Blueprint Reading, Casper College, 1974.

Fundamentals of Industrial Hygiene Course, NSC, 1974.

Noise and Gravimetric Sampling, MESA, 1974.

Use of Draeger Oxygen Breathing Apparatus, MESA, 1975.

Environmental Physics Course, Brigham Young University, 1976.

First Aid Instructor Course, MESA, 1976.

Stack Sampling School, RAC, 1976.

Radiation Monitoring School, MESA, 1976.

Radiation Safety, Ohmart, 1976.

Instrumentation Techniques, NSC, 1976.

Certified Emergency Medical Technician.

Certified Mine Foreman, State of Wyoming.

Experience:

3 years as a chemist in an analytical and metallurgical laboratory.
Familiar with uranium metallurgy and analytical methods related to
uranium milling.

2½ years as Environmental and Radiation Protection Specialist.
Responsible for carrying out the Environmental and Radiation Protection
Program. Designed and set up an environmental laboratory for chemical
and radiometric analyses, primarily gross alpha and beta, Ra-226,
Th-230 and uranium. Gained working knowledge of radiation detection
instruments and mathematics and calculations used in radioactive
measurements.

2 years Safety and Environmental Administrator; responsible for environmental protection, radiation and industrial safety for the project; played a key role in obtaining all permits and licenses to construct and operate the mine and milling operation.

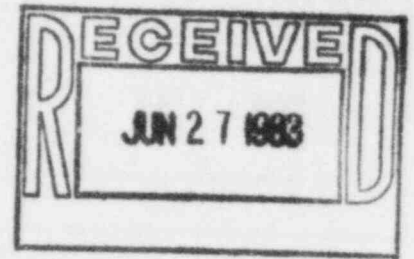
3½ years Mill/Maintenance Superintendent; responsible for mill production, costs, quality control, and metallurgical services for a 3300 ton per day milling operation. Also responsible for all maintenance activities for a 90,000 ton per day open pit mining operation.

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Minerals Exploration Company

Sweetwater Uranium Project
P.O. Box 1500, Rawlins, Wyoming 82301
Telephone: (307) 328-1476

union
MINERALS



Union Energy Mining Division
P.O. Box 7600
Los Angeles, California 90051
(213) 977-7600

20 June 1983

R. J. Everett, Chief
Materials Radiation Protection Section
USNRC, Region IV
611 Ryan Plaza Dr., Suite 1000
Arlington, Texas 76011

RE: By-Product Material License
No. 49-19005-01

Dear Mr. Everett:

Minerals Exploration Company is submitting the additional information required to continue processing of our amendment to By-Product Material License No. 49-19005-01. The intent of this amendment is to allow in-house servicing operations as specified in the following proposed license condition:

15. Installation, relocation, maintenance, repair and initial radiation survey of devices containing licensed material and leak testing, installation, and replacement of sealed sources containing licensed material used in devices shall be performed only by Texas Nuclear Corporation or by persons having completed the Texas Nuclear Corporation course, "Industrial Radiation Safety Training". The radiation safety officer will evaluate qualified persons and and approve work procedures to be employed. (Re: telephone conversation with Jack Whitten on 15 April 1983 - generic qualification).

All work will be performed in accordance with Texas Nuclear Instruction Manual "SGH Series Density Gauge" and the outline of specific operations attached. Disposal of sealed sources will be through transfer to another authorized licensee or via return to the manufacturer.

In addition to the above, Minerals requests a definition of "storage" as used in Condition 13.A.3 of our license. Specifically, our mill has suspended operations for a period of time. We desire to leave our gauges in place during this shutdown and to consider them in storage. All mill exits will be closed and locked; the only activity will be limited to security and fire inspections conducted once each eight hour shift, and general maintenance to preserve the facility.

~~8510240179~~

DUPE

13373

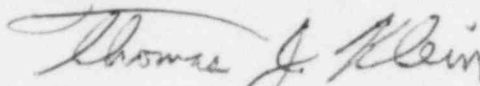
R. J. Everett
Page 2

Removal of these devices to a smaller storage area and replacement prior to resumption of operations would result in two episodes of potential exposure which should be avoided under the ALARA concept. We propose to continue physical inventories of all devices in our possession every six months, as per Condition 16. Prior to resumption of milling, all gauges will be leak tested.

Please contact us for any additional information required.

Sincerely,

MINERALS EXPLORATION COMPANY

A handwritten signature in cursive script, reading "Thomas J. Klein".

Thomas J. Klein
Environmental Supervisor

TJK:ss

cc: C. Z. Hill
NRC Document Branch
Files (2)

1. Please provide the following information in support of your amendment request to perform initial installation, relocation, maintenance, repair, removal for disposal, and required radiation surveys on Texas Nuclear gauges.

(a) A description of each specific operation to be performed.

ANS: 1.(a)

Installation - mounting of source housing and detector at the operational site, insuring proper alignment and geometry.

Relocation - removal of source housing, mounting bracket, and detector from one site and reinstallation at a second site.

Maintenance and repair - unspecified work on detector, mounting bracket and mounting location (no maintenance or repair of the source housing is permitted).

Removal for disposal - disassembly of mounting bracket and removal of gauge from service.

Required radiation surveys - penetrating radiation survey-meter readings at various points around the source head.

Leak test - swabbing of external seams of source head to detect leakage of source material.

1. (b) The step-by-step procedures to be followed in performing each operation including a description of the radiation safety procedures which will be followed.

ANS: 1.(b)

Installation -

- 1) uncrate the source housing
- 2) survey the source housing for excessive penetrating radiation
- 3) perform initial leak test
- 4) install housing, mounting bracket, and detector
- 5) survey the installation site for excessive penetrating radiation
- 6) unlock and open shutter, test operational status
- 7) survey gauge in operation for excessive penetrating radiation

Relocation -

- 1) close and lock shutter
- 2) remove and reinstall housing, mounting bracket, and detector
- 3) survey the installation site for excessive penetrating radiation
- 4) perform relocation leak test
- 5) unlock and open shutter, test operational status
- 6) survey gauge in operation for excessive penetrating radiation

Maintenance, repair -

- 1) close and lock shutter
- 2) perform necessary work on detector, mounting bracket or mounting location (no maintenance or repair of

- the source housing is permitted)
- 3) perform necessary remounting
- 4) survey the site for excessive penetrating radiation
- 5) unlock and open shutter, test operation status
- 6) survey gauge in operation for excessive penetrating radiation

Removal for disposal -

- 1) close and lock the shutter
- 2) remove gauge from service
- 3) crate gauge in accordance with DOT standards

1. (c) A description should be provided to show the locations of the radiation measurements and the kinds of records to be maintained on these surveys.

ANS: 1.(c)See attached "Density Gauge Radiation Safety Certificate", two examples.

2. With regard to radiation survey and monitoring instruments available in your facility, you should specify the manufacturer's name and model number of each instrument and the frequency of calibration of each instrument.

ANS: 2. Our facility uses a Ludlum Model 5 geiger counter and a Ludlum Model 12 Micro R Meter, calibrated every six months.

3. If you wish to calibrate your own radiation survey and monitoring instruments, you should submit a detailed description of your planned calibration procedures. The description of calibration procedures should include, as a minimum:

- (a) The manufacturer's name and model number of the source(s) to be used.
- (b) The nuclide and quantity of radioactive material contained in the source(s).
- (c) The accuracy of the source(s). Traceability of the source to a primary standard should be provided.
- (d) The step by step procedures, including associated radiation safety procedures. These procedures should include a two-point calibration of each instrument with the points separated by at least 50 percent of the scale.
- (e) The name(s) and pertinent experience of person(s) who will perform the calibrations.

If you intend to contract out calibration of your radiation survey and monitoring instruments, you should specify the name, address, and the license number of the firm.

ANS: 3. Instrument calibration is performed by the manufacturer, Ludlum Measurements, Inc., Sweetwater, Texas.

4. The procedures for leak testing of the sealed sources should be submitted. If the RPO will perform leak tests of the sealed sources and forward to the device manufacturer to be analyzed, it is only necessary for you to state this. You should include the frequency of the leak test, the name of the supplier, and the model number of the leak test kit. If you plan to conduct the analysis in-house, please specify:
- a) procedures and materials to be used in collecting test samples
 - b) manufacturer's name and model number of instruments to be used in the analysis
 - c) manufacturer's name, model number, and accuracy of the calibration source(s) used to calibrate your instruments
 - d) describe the method of analysis

If this is to be performed by an individual or company other than the supplier, please provide the NRC and/or Agreement State license number. If the individual or company has an Agreement State license you should submit a copy of the license.

ANS: 4. Leak testing is performed according to the attached procedure, "Sealed Source Leak Test Procedure". Texas Nuclear leak test kits are used and returned to Texas Nuclear for analysis.

5. For use of a device where it is possible for a major portion of an individual's body to receive exposures to the radiation beam from the device, a description of "lock-out" procedures should be submitted. If the device shutter and/or switch is locked, "tagged-off", until the work is completed, you should describe this operation and provide the name of the individual(s) responsible for enforcing this procedure.

ANS: 5. The source shutter on Model 5190 and 5192 source holders will be in the closed position and locked during procedures described in 1.(b) above, which might result in exposure to the source beam. Lock-out is done with a padlock through the shutter gate, the technician performing the work is responsible for the lockout procedure, the RPO/RSO is responsible for enforcing the procedure.

6. Please provide a description of the equipment and facilities to utilize the devices containing the byproduct material. This should include a simple annotated sketch or drawing showing where each device is installed and the location of adjacent ladders, aisles, or work areas employees will occupy.

In the event the sealed sources will no longer be needed, you should specify your means of disposal. Sealed sources containing byproduct material may be returned to the manufacturer, transferred to another licensee authorized to possess the specific quantity and form being transferred, or transferred to a licensed waste disposal firm.

ANS: 6. The attached illustration labeled "Gauge Head" shows the typical application mounted on a process pipe. All Model 5190 source holders (12 as of this date) are mounted on process pipes at elevations from six to twenty feet above the floor in areas of limited traffic. We have one Model 5190 source holder used to control fill level in 55 gallon drums. The source head is mounted on one side of a drum conveyor and the detector is located opposite with about three feet of separation. This packaging area is contained in a room approximately 10 feet by 10 feet, which is kept locked. No employee entry is required during all packaging activities.

When the sealed sources are no longer needed, they will be placed in storage, transferred to another authorized licensee, or returned to the manufacturer for disposal.

8. With regard to personal monitoring devices, you should specify:

- a) Name of the supplier.
- b) Type of devices used (e.g. film badges, TLD).
- c) Frequency of changing monitoring devices.

ANS: 8. Thermoluminescence Dosimeters (TLD's) are currently supplied by R. S. Landauer, Jr. and Co., Glenwood, Ill., on a monthly basis. Choice of supply source is subject to change.

NOTES:

- 1) SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE AND, OR AT THE SURFACE.
- 2) SOME GEIGER TUBE TYPE SURVEY METERS MAY NOT HAVE SUFFICIENT RANGE TO TAKE SURFACE READINGS ON SOME APPLICATIONS. IN SUCH CASES, USE ION CHAMBER TYPE SURVEY METER OR TAKE READINGS AT ONE FOOT.
- 3) ONCE COMPLETED, DATED AND SIGNED, THIS CERTIFICATE SHOULD BE MAINTAINED AS A PERMANENT RECORD.

DENSITY GAUGE RADIATION SURVEY CERTIFICATE

DATE _____

USER Minerals Exploration Company

GAGE LOCATION _____

SOURCE HEAD MOD. NO. 5190

TAG NO. _____

SOURCE HEAD SER. NO. _____

ACTIVITY 200 MG ☒ CS137, CO60

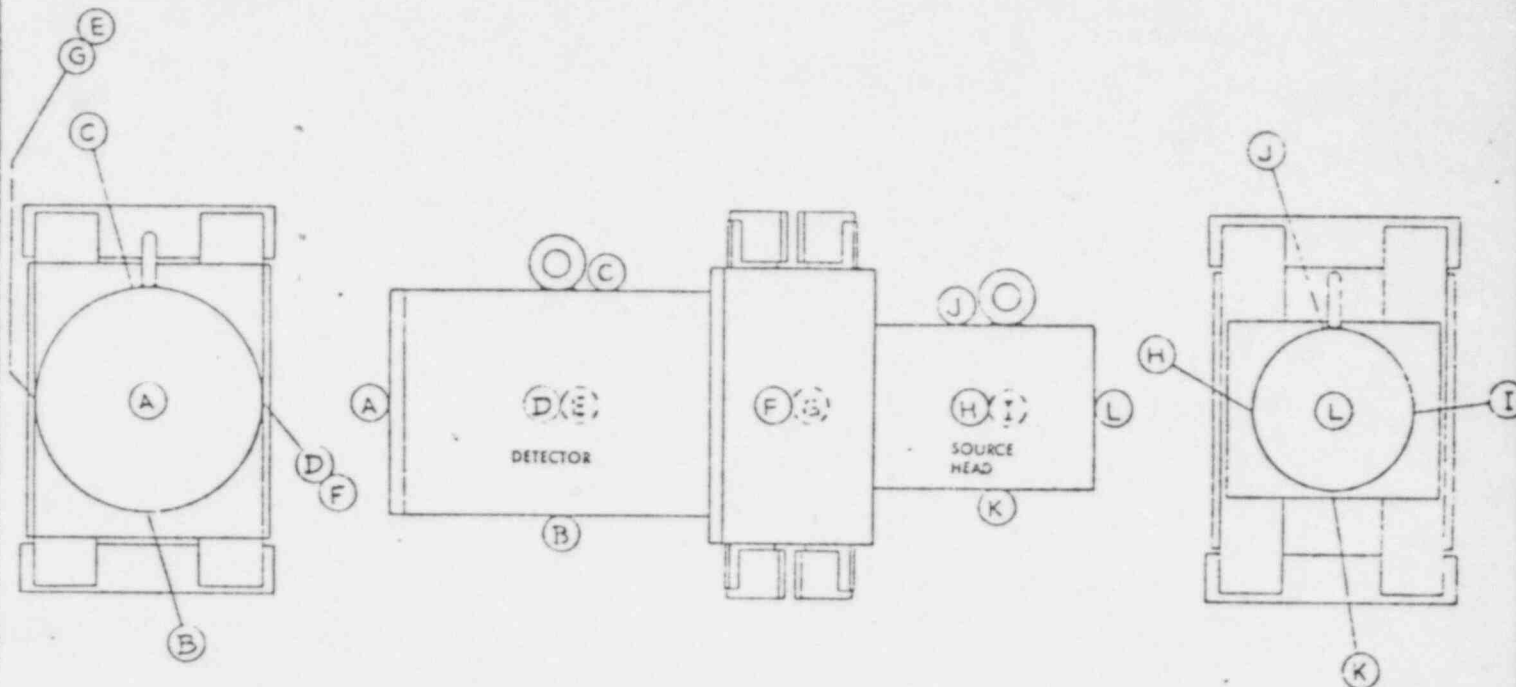
MEASUREMENT INSTRUMENT Model 12 CRM (#12893) w/
5M tube #2, Model 5 geiger counter (#8170)

READINGS TAKEN _____ AT SURFACE, ☒ AT ONE FOOT

SIGNATURE (ONLY AFTER RESULTS RECORDED) Stephen C. Hall DATE _____

COMPANY NAME Minerals Exploration Company

COMPANY ADDRESS P.O. Box 1500 Rawlins, Wyo.



	mR/h											
SHUTTER	A	B	C	D	E	F	G	H	I	J	K	L
OPEN												
CLOSED												

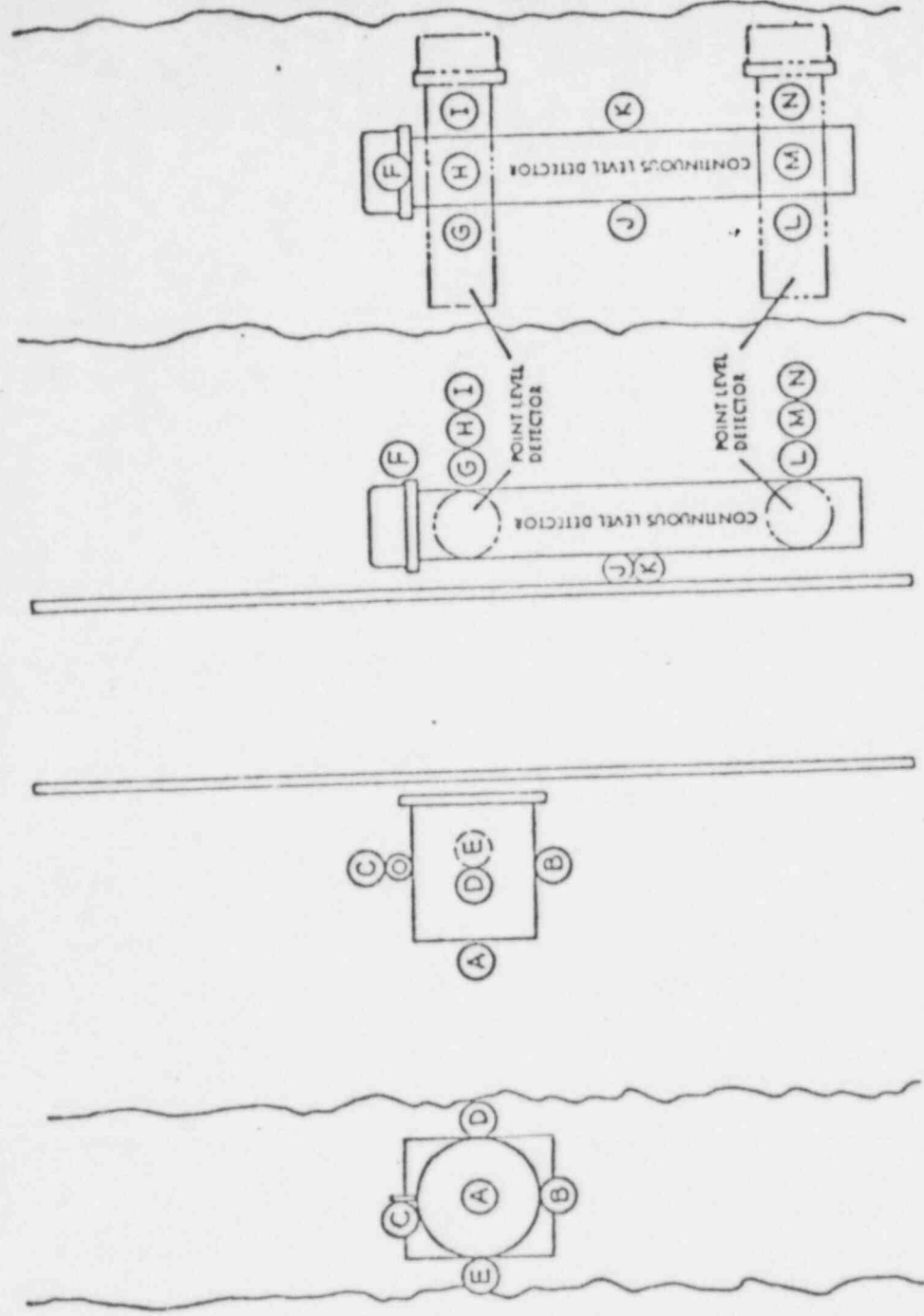
	COUNTS/min											
Shutter	A	B	C	D	E	F	G	H	I	J	K	L
open												
closed												

LEVEL GAUGE RADIATION SURVEY CERTIFICATE

NOTES:
 1. SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE
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 10. SURVEY LETTERED POINTS AT ONE FOOT FROM THE SURFACE
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USE Minerals Exploration
 CAUSE/LOCATION Yellowcake Packaging
Rawlins, WY
 SOURCE HEAD MOD. NO. 5192
 TAG NO. None
 SOURCE HEAD SER. NO. B3764
 ACTIVITY 20-0 V CS137 CONGO
 MEASURING INSTRUMENT Tex 25 Nuclear
Model 2650 SN KJN
 READINGS TAKEN: ✓ AT SURFACE ✓ AT ONE FOOT

SIGNATURE (ONLY AFTER RESULTS RECORDED) _____ DATE _____
 COMPANY NAME _____
 COMPANY ADDRESS _____



mR/h													
SHUTTER	A	B	C	D	E	F	G	H	I	J	K	L	M
OPEN													
CLOSED													

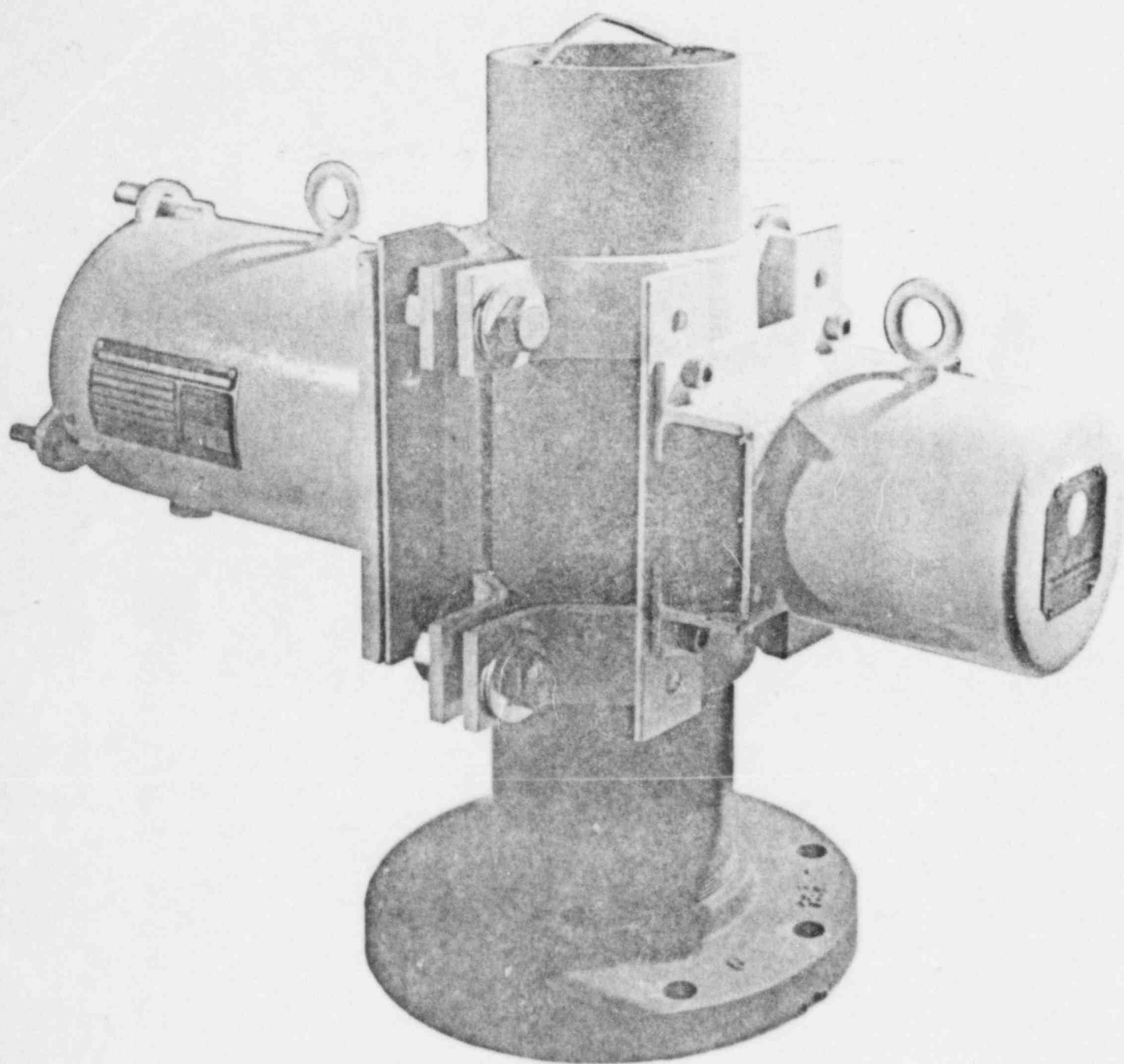
APPLY ONLY TO CONTINUOUS OR DOUBLE POINT LEVEL

VESSEL; EMPTY ☒; FULL ☐
 Empty Barrel in position

Sealed Source Leak Test Procedure

1. Obtain Texas Nuclear leak test kits from Texas Nuclear, Box 9267, Austin, Texas 78766. (512)836-7740
2. Remove the swab from the packing tube and wipe all seams around the source head of a nuclear gauge. Return the swab to the packing tube, fill out the survey form with serial number, date, etc., and mail a copy of the form with the swab.
3. Return the test kits to Texas Nuclear for analysis.

TJK:ss
6/20/83



GAUGE HEAD