Industrial Hygiene Section
Environmental Health Affairs
Employee Health Services
Employee Relations Staff

Ford Motor Company
104 Central Laboratory
15000 Century Drive
Dearborn, Michigan 48120

U.S. Nuclear Regulatory Commission
Region III
Materials Licensing Section
799 Roosevelt Road
Glen Ellyn, IL 60137

November 6, 1987

Subject: REQUESTED RENEWAL OF NRC LICENSE NO. 21-04114-17
(EXPIRATION 12/31/87)

As indicated in a received NRC Notice of Expiration and Instructions, this serves as a requested renewal of the subject license as reflected in updating License Amendments No. 10 (12/1/82), No. 11 (4/12/83) and No. 12 (10/3/84).

Basically the license authorizes specified In-Val-Co and Texas Nuclear device gauges for stationary level measurement purposes at Ford Motor Company Cleveland Casting, 5600 Engle Road, Cleveland, Ohio. The license renewal review included:

1) Review of current license and supporting documents do not indicate any changes, with current license authorization meeting current and anticipated needs.

2) To ensure an ongoing awareness of user needs, the attached form was recently recompleted by designated users.

3) Replaced NRC Parts 19 and 20 with updated copies for availability in facility safety office.

4) Based on internal controls, the attached current status of specified possessed gauges as authorized under current license was reconfirmed as to type and authorized use.

5) As indicated in Part 170.31, enclosed is check in amount of $120.00 (U.S. Nuclear Regulatory Commission) for indicated license renewal fee.

As in the past, for license control purposes, please forward correspondence to:

Ford Motor Company
Radiation Health Office
15000 Century Drive, Room 104
Dearborn, Michigan 48120
(Telephone 313/594-6955)

D. A. Greschaw

D. A. Greschaw
Radiation Health Administrator

cc Safety Office, Cleveland Casting

Facil.	Source:	No.of	Status	Mfg	Mod:I	Sta	Lic.	Expir.
Clevl Cast	Cs137 50mCi	1	act:Cupola#3 D4782	TexNuc	5192	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 50mCi	1	act:Cupola#1 D4782	TexNuc	5192	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 50mCi	1	act:Cupola#7 D4782	TexNuc	5192	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 50mCi	1	act:Cupola#2 D4782	TexNuc	5192	OH	NRC L#21-04114-17	123187

Facil.	Source:	No.of	Status	Mfg	Mod:ID	Sta	Lic.	Expir.
Clevl Cast	Cs137 25mCi	1	act:bin#1 D4787	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#2 D4787	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#3 D4787	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#4 D4787	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#5 D4787	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#13 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#14 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#3 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#4 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#11 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#13 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:bin#14 D4786	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187

Facil.	Source:	No.of	Status	Mfg	Mod:ID	Sta	Lic.	Expir.
Clevl Cast	Cs137 25mCi	1	act:stge C crib	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:stge C-crib	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:stge C-crib	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:stge C-crib	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:stge C-crib	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187
Clevl Cast	Cs137 25mCi	1	act:stge C-crib	InValCo	B2006ELT	OH	NRC L#21-04114-17	123187

The facility Safety and Medical activity, with advice and assessment from the Corporate Radiation Specialist, Employee Health Services, administrates the occupational radiation control program for your facility.

Radioisotopes and X-ray sources are strictly regulated by various Federal/State governmental radiation regulatory agencies which include authorization of specific uses through licensing and/or registration procedures.

Some operations in your location involve the use of radioisotopes for process control purposes that are authorized by an issued U.S. Nuclear Regulatory Commission (NRC) license. The issued license, regulations, and related documents are available for examination in the facility Safety Office.

One of the requirements of an NRC-issued license is that of individual users, who will use or directly supervise the use of licensed material, be instructed in needed control procedures based on the NRC rules and regulations. The purpose of the prepared instructions is to maintain an effective radiation control program and to recognize when radiological assistance may be needed.

Please sign and date, indicating that you have reviewed the following material:

- ☐ "Radioisotope Hazards in Industrial Applications"
- ☐ "Radioisotope Control Procedure -- Industrial Installations"
- ☐ NRC License Application and Issued License Conditions
- ☐ Other

Date _____ Title _____ Signature _____

Name (type or print) _____

All known or suspected excessive radiation levels, damage sources, or violations of NRC regulations and license conditions must be reported to facility Safety and Company radiation protection personnel.

Facility Safety: X- 7189 / 7244

Company Radiation Protection: (313) ~~33-7095~~ 59-46955
Off-hours (313) 32-30045

Return completed form to facility Safety Office with a copy to:

D. A. Greschaw, Radiation Specialist
Industrial Hygiene & Toxicology Department
Room 104, Central Lab
15000 Century Drive
Dearborn, Michigan 48121

"RAD-9 (Rev)"

RADIOISOTOPE HAZARDS IN INDUSTRIAL APPLICATIONS

The U.S. Nuclear Regulatory Commission (NRC), or equivalent Agreement States, have strict regulations and penalties for violations covering radioisotope usage through various licensing conditions, which normally require designated responsible individual users and periodic inspections. NRC CFR Part 19 and Part 20 "Standards for Protection Against Radiation", license conditions, and operating procedures are normally maintained for examination in the facility safety office.

Radioisotopes, which spontaneously emit radiation, as opposed to normally electrically generated X-rays, present a potential radiation hazard if basic radiation controls are abused; the degree of the hazard being dependent on various radiological factors such as type of radiation emitted, strength of source, exposure duration, distance and shielding available.

The beneficial application of radioisotopes to industrial process control operations normally consists of sealed material encapsulated within a weighty lead shielded holder which provides for attenuation of nonessential external radiation and ensures the integrity of the sealed source. The shielded source holder is designed with a "closed" and "open" shutter mechanism to allow for safe radiation levels during storage and shipment and the emission of a properly aligned collimated gamma radiation beam, similar to X-ray, for various process control purposes. Complete installations are designed, and confirmed by radiation survey, such that under normal operating conditions and low occupancy no unusual restrictions are needed.

Pertinent potential radiation hazards associated with this type of installation include:

- Excessive radiation exposure during the uncontrolled occupancy in the direct radiation beam emitted from an "open" shutter condition. An example would be an unshielded 100 millicurie Cesium 137 source would have a radiation intensity rate of approximately 320 and 80 millirems/hour at one foot and two feet distances respectively; in comparison, the current whole body occupational accumulate exposure limit is 1,250 millirems/3 month period (NRC Part 20.101) and 500 millirems a year for unrestricted areas (NRC Part 20.105a).

- Unauthorized opening of shielded source holders and/or removal of the sealed radioisotope creating a potential acute exposure at close distances.

- Undue environmental conditions causing damage to the holder shielding or shutter mechanisms.

- Although remote, the integrity of the sealed source being impaired, releasing radioactive contamination.

Cleveland Casting Plant

Radiation Control Procedure - Process Installations

Prevention of any unnecessary radiation exposure is of prime importance in the Company's overall Health and Safety Program. To maintain an effective radiation control program, the following rules strictly adhered to will provide for the controls needed for the safe and beneficial use of radioisotopes in industrial applications.

It shall be the responsibility of the designated users to ensure the following is performed and to notify Company radiation protection personnel for assistance.

- Prohibit unauthorized maintenance or repair of radiation sources.
- Control access to process vessel interiors and maintain warning systems.
- Control of storage, receipt or shipment of radiation sources with documentation maintained, such as the Plant Safety Office.
- Any transfer or movement of shielded source will first require
  - Approval of facility radiation protection personnel
  - Shutter mechanism be in the "closed" and locked position and verified by radiation measurement
  - Documentation of any transfer of source, including date, source identification and radiation levels be maintained.
- Corporate Industrial Hygiene and/or Facility Safety perform required periodic audit and inspection of radioisotopes.

In the event of explosion, fire, theft, or other unusual incident which could cause excessive radiation levels or damage to the sources, the following measures shall immediately be taken as needed.

- Restrict unnecessary personnel from the area.
- Provide additional shielding and/or use distance to minimize unnecessary exposure.
- Do not directly handle radioisotopes if dislodged from the shielded holder.
- Note pertinent conditions, such as individuals involved, location and condition of source.
- Notify Company Radiation Protection personnel for assistance in determining radiation control needs, securing source pending proper repair, and any required notification needs.

Facility Radiation Protection - X7244

Corporate Radiation Protection -

59-46958

Days - 313-~~33-78995~~

Nights and Holidays - 313-32-30045

CONTROL NO 8 4 4 2 1

Industrial Hygiene Services
Environmental Health Affairs
Employe Health Services

Central Laboratory
Ford Motor Company
15000 Century Drive
Dearborn, Michigan 48121

5 September 1984

U.S. Nuclear Regulatory Commission
Region III, Material Licensing Section
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Attention: William P. Reichhold

Subject: RESPONSE TO NRC LETTER DATED AUGUST 3, 1984 -
AMENDMENT REQUEST TO NRC LICENSE 21-04114-17,
DATED JUNE 19, 1984, CONTROL NO. 77033

In response to your request for additional information, the attached August 29, 1984 response and drawings are provided by the licensed facility.

To further clarify your request, the following is noted:

. The requested use of a device containing a relatively low level sealed source of 50 M Ci of Cs-137 for the common application of a level system of an industrial process enclosure is expected, or readily made to by proper sizing or shielding, to demonstrate general exterior enclosure levels to meet NRC 20.105 requirements for unrestricted areas.

. The actual installed exterior source holder and receiver areas (attached sketch) are expected to be less than 1.0 mr/hr at 12" from each area. The occasional maintenance of the receiver based on experience is expected to be well below 500 hours/year.

. A confirming survey of the actual installation will be performed by the supplier, Texas Nuclear, and/or this office.

It is requested that the writer be contacted (telephone 313/594-6955) if needed to expedite this license amendment request, which is urgently needed for a late application schedule. It is hoped this will met your needs and our common objectives.

Sincerely,

D. A. Greschaw
Radiation Health Specialist

jb
Attachments

Inter Office

Casting Division
Cleveland Casting Plant

August 29, 1984

Ford Motor Company
Radiological Health
ATTN: D. A. Greschaw
Radiation Health Specialist
1500 Century Drive
Dearborn, Michigan 48120

Reference: NRC letter dated August 3 , 1984. **Response to items 1 thru 5.**

1. The device will be utilized to control the scrap metal charge level in a cupola which produces (melts) iron for automotive castings. See reference drawings E-1 and GHW 391-1.

2. The gauge will be stored in a locked crib inside the non-productive stores. See attached drawing 76-CCP-4.

3. The gauge will be exposed to ambient temperatures, significantly lower than the manufacturer's temperature limits of 450°F.

4. The radiation source will have a lockable mechanism which will allow the source shutter to be closed and locked to block the radiation beam. The "Lockout Mode" shall be verified by visual inspection of the lockable radiation shutter mechanism and with the use of a geiger counter.

5. Individuals will not normally be assigned to work near the gauges or radiation sources. The device shall be mounted 6 ft. 2 1/2 in. above charging floor level and be located about 25 ft. from the main aisle.

   A (1/4 in.) thick steel barrier plate shell enclosure with two man-access doors shall be installed around the radiation source and detector near the cupola shell to limit employe access. Warning signs shall be posted on each door exterior and at the radiation source which read as follows:

   CAUTION
   RADIOACTIVE MATERIALS PRESENT-BEFORE ATTEMPTING
   REPAIRS OR ADJUSTMENTS TO THE CUPOLA SHELL
   (INTERIOR OR EXTERIOR), RADIATION SOURCE HOLDER,
   OR RADIATION STOCK HEIGHT DETECTOR, LOCK RADIATION
   SOURCE SHUTTER IN CLOSED POSITION AND VERIFY RADIATION
   BEAM TERMINATION WITH A GEIGER COUNTER.

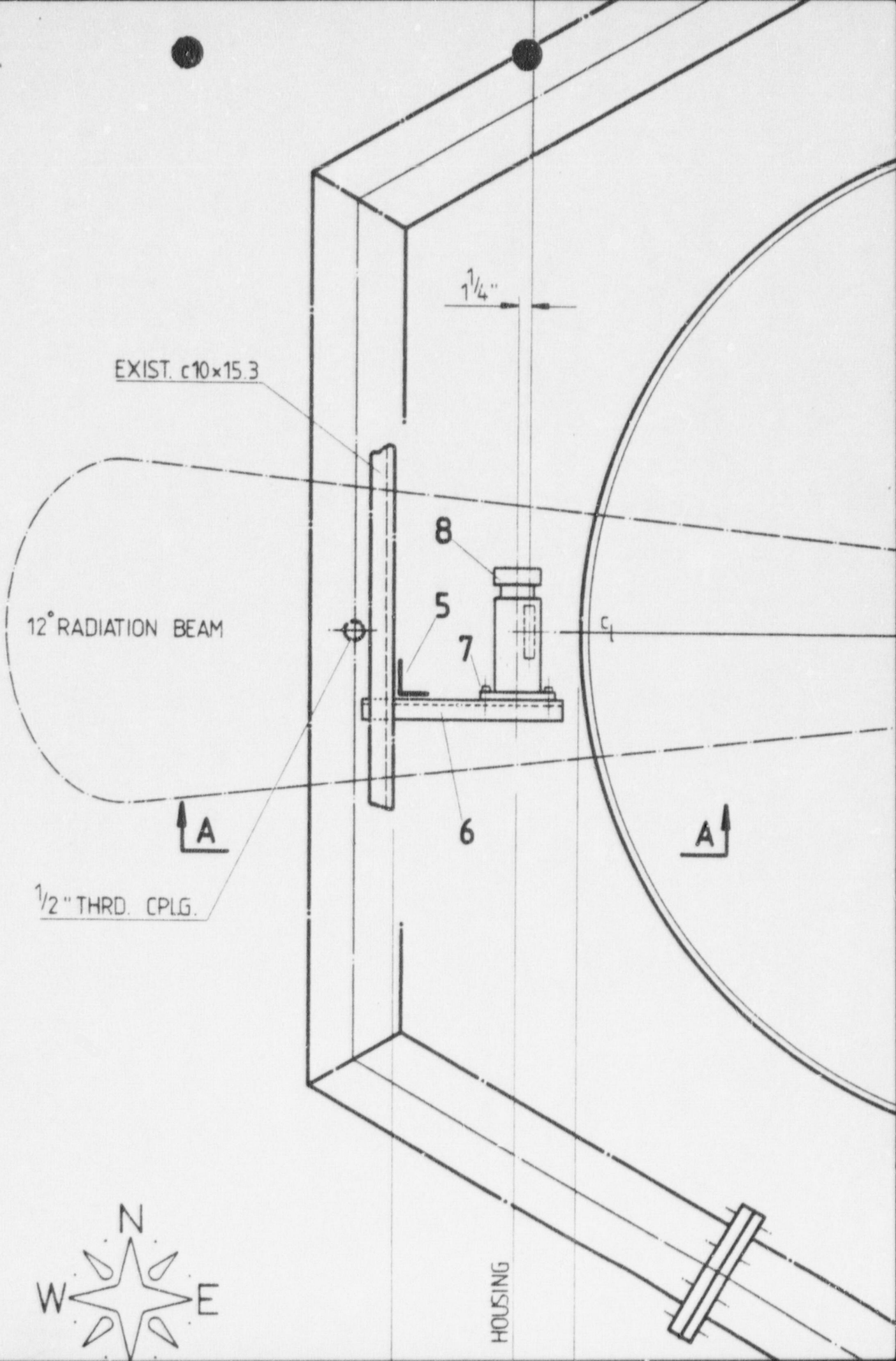
D. Schultz, Safety Engineer

V. DiFilippo , Engineer
Facilities & Equipment Engineering

T. A. Cunningham, Section Supervisor
Facilities & Equipment Engineering

R. F. Pindel, Manager
Facilities & Equipment Engineering

0479G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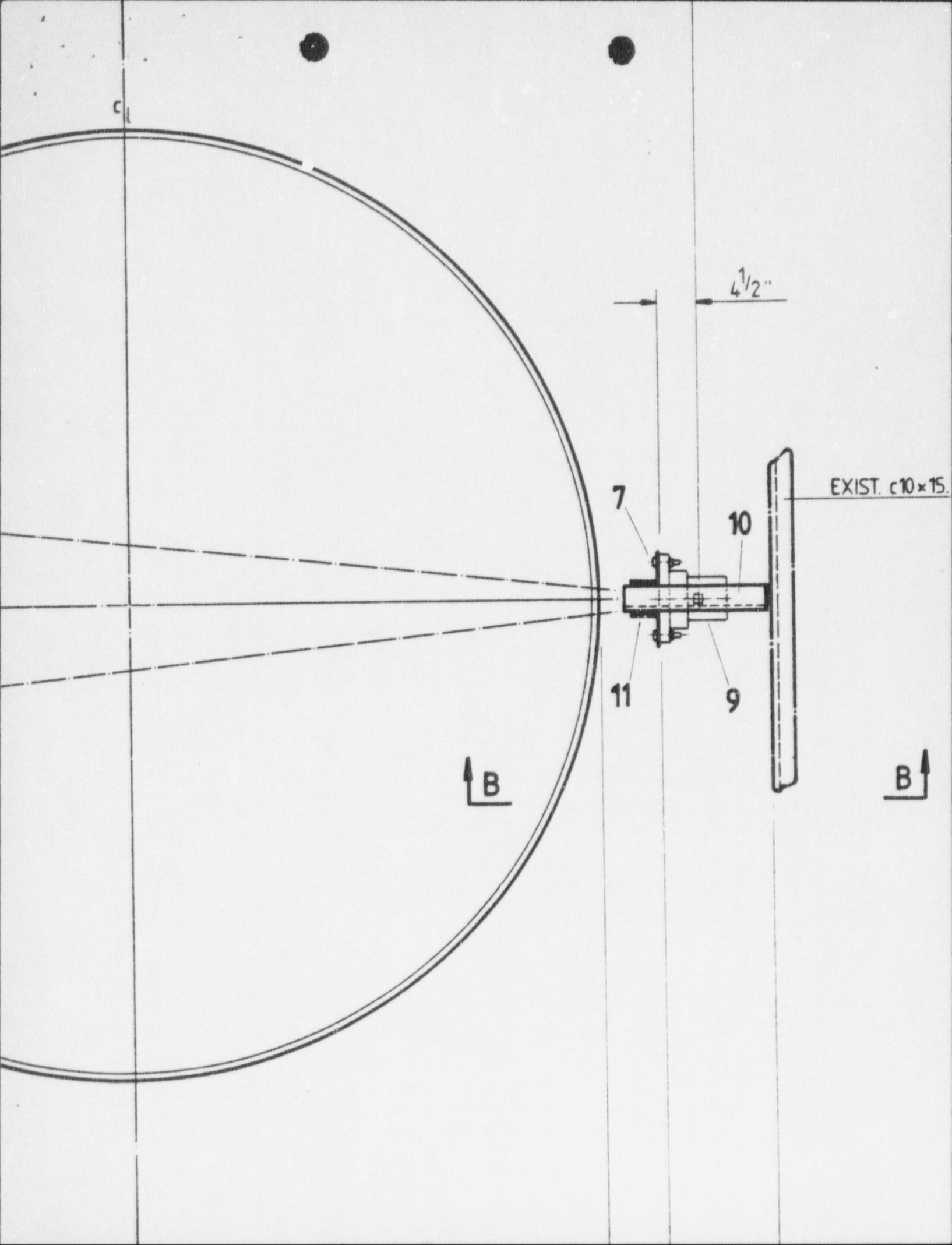
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AUG 03 1984

Ford Motor Company
Radiological Health
ATTN: D. A. Greschaw
Radiation Health Specialist
1500 Century Drive
Dearborn, MI 48120

Re: Amendment Request to NRC License 21-04114-17, dated June 19, 1984, Control 77033.

Gentlemen:

In order for us to complete our review, it will be necessary for you to respond to the following items:

1. Please submit a description of the equipment and facilities which will utilize the devices containing the byproduct materials. A simple sketch or drawing (with notes) showing where each device is installed and the location of adjacent ladders, aisles, or work areas employees will occupy.

2. Please submit a description of where your gauges will be stored when not in use. The description should include a diagram showing the relationship of the storage area to adjacent areas and security to ensure against unauthorized removal.

3. It appears that the gauges will be in an unfavorable environment. Describe your methods to ensure each gauge will be kept within the manufacturer's specified temperature and other environmental limits such that the shielding and shutter mechanism of the source holder is not compromised.

4. It appears that the gauges will be mounted on vessels to which entry is possible for purposes of maintenance of repair. Submit a description of the precautions, restrictions, and "lock-out" procedures used to ensure that no personnel are exposed to the radiation beam during these operations. Describe your method to verify that the gauge has been successfully "locked-out". For example, checking the associated electronics to verify that the radiation beam has been terminated, as well as verifying that mechanical controls are secured (locked) in the "off/safe" position.

5. It is not clear if individuals will be working near the gauges. Describe how access to the gauges will be controlled (e.g. warning signs, barriers, inaccessible areas, etc.) and your method to ensure that no individual will receive a dose in excess of the regulatory limits.

~~8411280130~~ B41003 2pp

We will continue our review of your application upon receipt of this information. Please clarify in duplicate, within 30 days, and refer to Control Number 77033. If you have any questions please contact us at 312-790-5625.

Sincerely,

William P. Reichhold
Materials Licensing Section

RIII
Reichhold/as
07/18/84