

Bretz, Todd

To: Gaskins, Farrah
Subject: Mail Control No 574436
Attachments: SSSDR 5205.pdf; SSSDR 5204.pdf

L-4

Attention: Farrah Gaskins

Licensing Assistance Team
 Division of Nuclear Materials Safety
 U.S. Nuclear Regulatory Commission - Region 1
 475 Allendale Road
 King of Prussia, PA 19406-1415
 Fax (610) 337-5269.

07-31432-01
 03038412

Ref: Amendment to section 8.5.1 Sealed Sources and Devices of original application
 Mail Control# 574436

Dear Ms. Gaskins

Per our discussion, please find attached amendments to section 8.5.1 Sealed Sources and Devices of original application.

8.5.1 Sealed Sources and Devices**Cs-137 Industrial Fixed Gauges**

Manufacturer	SSDR	Gauge Model Number	Activity (Bq)	Activity (mCi)	Number of Fixed Gauges
ThermoFisherScientific	TX634D141B	5204	37 GBq	1000	1
ThermoFisherScientific	TX634D141B	5204	7.4 GBq	200	1
ThermoFisherScientific	TX634D141B	5204	7.4 GBq	200	1
ThermoFisherScientific	TX634D141B	5204	3.7 GBq	100	1
ThermoFisherScientific	TX0628D142B	5205	1.85 GBq	50	1
ThermoFisherScientific	TX0628D142B	5205	1.85 GBq	50	1
TFS Kay Ray	TX634D141B	5204	18.5 GBq	500	1
TFS Kay Ray	TX634D141B	5204	1.85 GBq	50	1

The total quantity of fixed gauges on site will be 8.

I attached the SSSDRs for both models 5204 and 5205.

We appreciate your patient on this last minute adjustment. If there are any questions or concerns related to the application for material license please contact me.

This e-mail and associated documents were also faxed to your attention at (610) 337-5269.

Sincerely,



Todd E. Bretz, CSP
Refinery Safety Supervisor

Delaware City Refining Company, LLC
4550 Wrangle Hill Road
Delaware City, DE 19706

Tel: (302) 836-6609
Cell: (609) 828-3435
E-Mail: Todd.Bretz@PBFEnergy.com

8.5.1 Sealed Sources and Devices

Cs-137 Industrial Fixed Gauges

Manufacturer	SSDR	Gauge Model Number	Activity (Bq)	Activity (mCi)
ThermoFisherScientific	TX634D141B	5204	37 GBq	1000
ThermoFisherScientific	TX634D141B	5204	7.4 GBq	200
ThermoFisherScientific	TX634D141B	5204	7.4 GBq	200
ThermoFisherScientific	TX634D141B	5204	3.7 GBq	100
ThermoFisherScientific	TX0628D142B	5205	1.85 GBq	50
ThermoFisherScientific	TX0628D142B	5205	1.85 GBq	50
TFS Kay Ray	TX634D141B	5204	18.5 GBq	500
TFS Kay Ray	TX634D141B	5204	1.85 GBq	50

Todd Bretz
Refinery Safety Supervisor

PBF Energy
4550 Wrangle Hill Road
Delaware City, DE 19706
(302) 836-6609

SSDR 5205

**REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE**

Corrected Page

NO.: TX0628D142B

DATE: January 25, 1996

PAGE 1 OF 4

DEVICE TYPE: Source Housing

MODEL: 5205, 5205A

MANUFACTURER/DISTRIBUTOR: TN Technologies Inc.
P. O. Box 800
Round Rock, Texas 78680-0800

SEALED SOURCE MODEL DESIGNATION: (1) 696894 (5205)
(2) 57157C or (3) **696894 (5205A)**

ISOTOPE:

MAXIMUM ACTIVITY:

- (1) Cs-137
- (2) Cs-137
- (3) Cs-137

- (1) 200 mCi (7.4 GBq)
- (2) 200 mCi (7.4 GBq)
- (3) 200 mCi (7.4 GBq)

LEAK TEST FREQUENCY: 36 months

PRINCIPAL USE: (D) Gamma Gauges

CUSTOM DEVICE: YES NO

CUSTOM USER:

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

Corrected Page

NO.: TX0628D142B

DATE: January 25, 1996

PAGE 2 OF 4

DEVICE TYPE: Source Housing

DESCRIPTION: The source housing is constructed of lead-filled, welded steel containing all of the features normally associated with a manually operated device. The source housing is a right circular cylinder welded to a base plate and mounted with two welded steel "L" bars. It is approximately 4 inches in diameter by 4.3 inches high by 8.5 inches wide by 10.6 inches long and weighs approximately 44 pounds.

The source is retained in the lead filled housing by a 360° crimp cushioned by a curved spring washer. The collimating slot is covered by a 1/8 inch thick stainless steel cover plate, sealed with RTV silicon sealant and held in place by four 1/4 inch diameter steel drive rivets.

The shutter is comprised of a lead-filled, all welded stainless steel canister secured by welding a steel guide bolt to a stainless steel plate to prevent it from inadvertent movement by vibration or shock. The shutter has both ON and OFF position indicated on the source head by tags, is secured in the OFF position by lock and the ON position by pin. In the ON position, the beam is emitted into approximately a 45° beam angle, and collimated into a fan shape.

Gauges with the "A" suffix in the model number have the source cavity enlarged to take the Model 57157C sealed source. A Stainless Steel adapter with the same outer dimensions as the Model 57157C can be inserted into the source cavity to allow the Model 696894 to replace the Model 57157C. A hole in the beam port end of the adapter allows full transmission of the gamma rays of the smaller source. The Model 5205 gauges are designed to hold only the Model 696894 sealed source.

LABELING: The gauge is tagged with a standard tag, containing the company's name, trade mark, and symbol and the model, isotope, amount of activity, date of measurement, CAUTION RADIOACTIVE MATERIAL, and DO NOT REMOVE. The tag is stainless steel and the radiation symbol is color coded. Additionally, the device contains a separate caution tag which uses both words and symbols to caution users to keep their hands out of the beam area as an added safety feature. The third tag is a shipping bolt tags which serves to caution those individuals not authorized to install and survey gauging devices not to proceed with opening the shutter. For those devices distributed to general licensees, another tag will be added which specifies all details and conditions of general license distribution and the requirements that the user must follow as set out in the Texas Regulations for Control of Radiation 41.28 (d)(1)(iii). These tags are manufacturing using a second surface printed polyester laminated with pressure sensitive adhesives and tamper proof construction.

DIAGRAM:

See attachments 1, 2, and 3.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

Corrected Page

NO.: TX0628D142B

DATE: January 25, 1996

PAGE 3 OF 4

DEVICE TYPE: Source Housing

CONDITIONS OF NORMAL USE: This device is used in making density, level and interface measurements on all types of industrial ships, submarines, dredges, barges, trucks, lowered into the ocean, etc. It is difficult to conceive an environment, short of extremely high temperatures, in which the devices could not be safely used. The typical user would include any manufacturing process including food and, therefore, environments could range all the way from extremely harsh (by way of acids, corrosives and/or toxic vapors and fumes) to laboratory sterile rooms with preconditioned air. They could be used both above and below ground with an expected temperature range of 400°F to -100°F. These devices are routinely used as component parts of other systems. Their care and maintenance is minimal. These devices will withstand extremely harsh environments. As long as the temperatures do not exceed the melting point of lead they can remain in use. If temperatures exceed the melting point of lead, the device will fail in an inoperable mode; that is, the first void volume closed by lead expansion will be the beam port. Short of vaporizing lead, the device should not fail in a condition that constitutes an unacceptable hazard. If the lead is vaporized, the failure will occur at the expansion plug and the lead will continue to run out until temperatures drop and the lead solidifies. In the worst case, the source will remain in the head and one will simply have an external radiation problem. This shutter block has been designed so that it is visually accessible to the user; therefore, one can assess any loss of lead by simply inspecting the beam port and shutter block.

PROTOTYPE TESTING: Prototypes were tested in accordance with American National Standard N538-1979, published as NBS Handbook 129. As a result of those tests, this device was assigned a classification of ANSI 54-454-455-R3.

EXTERNAL RADIATION LEVELS: This device is designed to include sufficient shielding to reduce radiation levels everywhere to less than 5 mR/hr at one foot from any accessible surface at maximum loading. At the maximum loading this device complies with all applicable regulations and will not require additional posting, personnel monitoring or controlling of the area.

QUALITY ASSURANCE AND CONTROL: The construction of the gauge is typical high-quality, welded steel with lead fill. These devices are tested as a function of temperature, drop, vibration and shock with the maximum drop being from a 14 foot elevated platform to an unyielding surface and vibration and shock in excess of 20Gs.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

AMENDED IN ENTIRETY

NO.: TX0628D142B

DATE: January 11, 1996

PAGE 4 OF 4

DEVICE TYPE: Source Housing

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

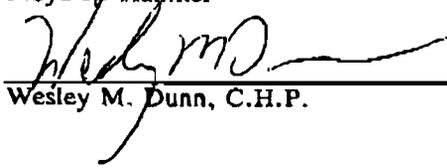
1. This device may be distributed to either generally or specifically licensed individuals.
2. Because of the construction of the source and the nature of the radioactive material, a three year leak interval has been granted.
3. The device is designed and supplied with sufficient information for an individual to unpack and safely mount both the source head and detector following manufacturer's instructions. Initial radiation survey and leak testing should be done by someone specifically authorized to do so.
4. All applicable services are provided by the manufacturer including training.

SAFETY ANALYSIS SUMMARY: This device was found to provide a safe method of making density, level and interface measurements in all or corrosive atmospheres, high pressures, and temperature environment up to the melting point of lead. If temperatures exceed the melting point of lead, the device will fail in an inoperable mode; that is, the first void volume closed by lead expansion will be the beam port. Short of vaporizing lead, the device should not fail in a condition that constitutes an unacceptable hazard. If the lead is vaporized, the failure will occur at the expansion plug and the lead will continue to run out until temperatures drop and the lead solidifies. In the worst case, the source will remain in the head and one will simply have an external radiation problem.

REFERENCES: This summary was prepared with the aid of the Texas Nuclear Corporation letters dated January 26, 1983 and August 14, 1995, and all associated drawings, documents and procedures.

ISSUING AGENCY: Texas Department of Health

Date: January 11, 1996 Reviewer: 
Floyd R. Hamiter

Date: January 11, 1996 Concurrence: 
Wesley M. Dunn, C.H.P.

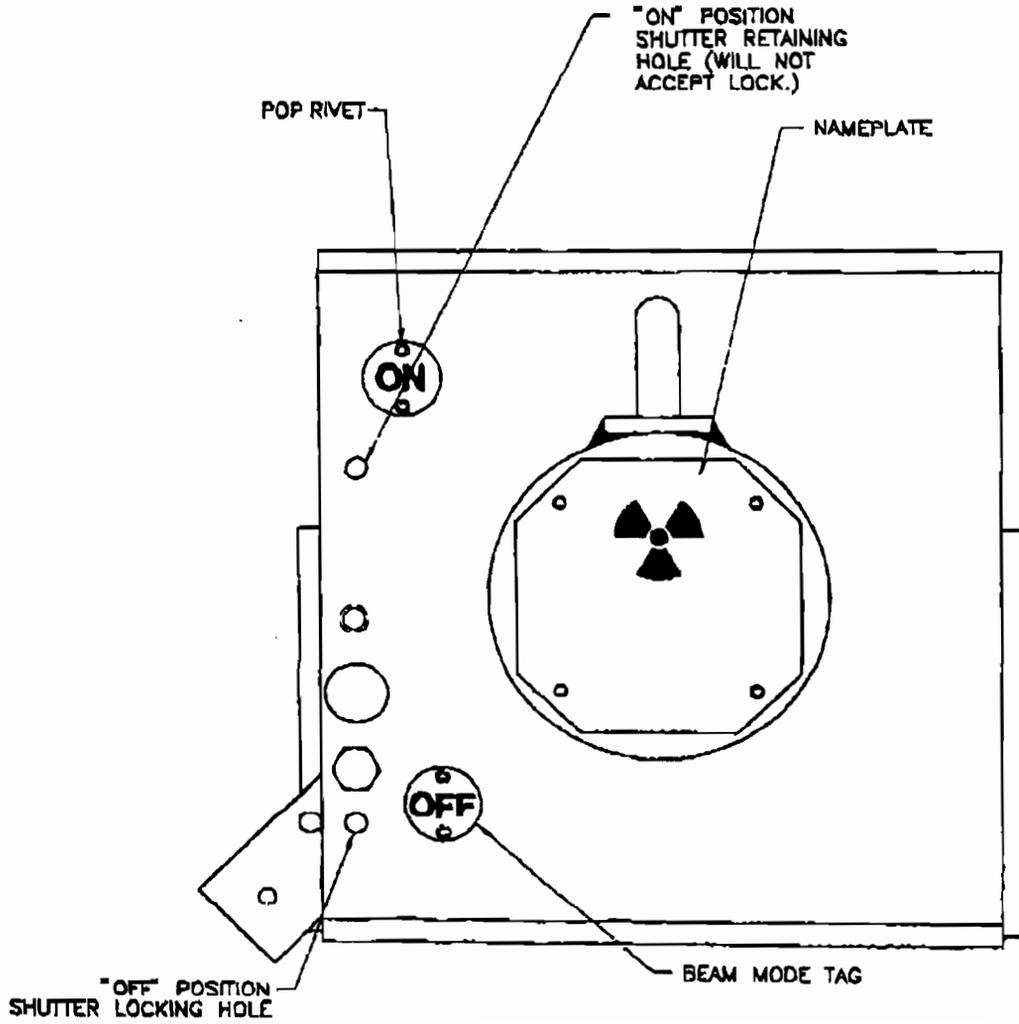
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

AMENDED IN ENTIRETY

NO.: TX0634D142B

DATE: January 11, 1996

ATTACHMENT 1



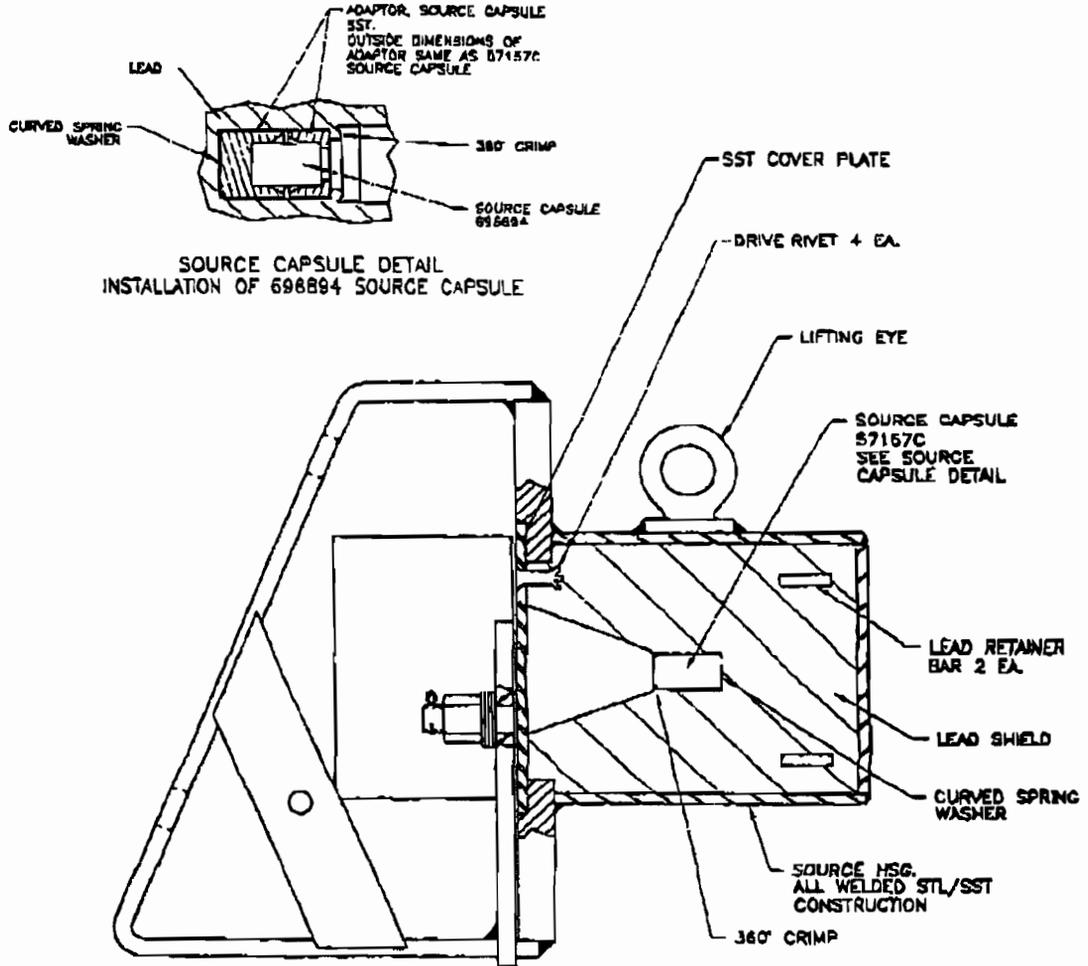
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

AMENDED IN ENTIRETY

NO.: TX0634D142B

DATE: January 11, 1996

ATTACHMENT 2



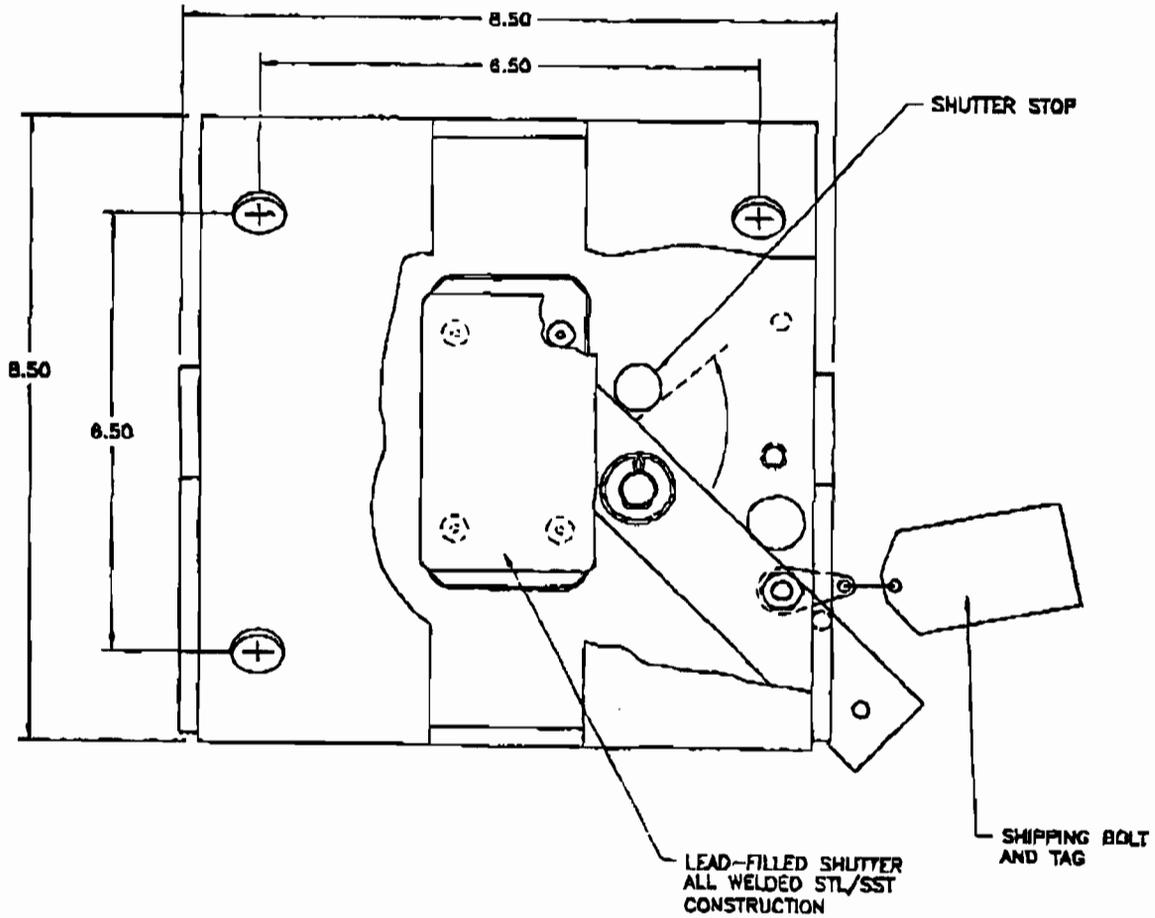
REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

AMENDED IN ENTIRETY

NO.: TX0634D142B

DATE: January 11, 1996

ATTACHMENT 3



SSDR 5204

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: TX634D141B

DATE: February 18, 1983

PAGE 1 OF 6

DEVICE TYPE: Source Housing

MODEL: 5204

MANUFACTURER/DISTRIBUTOR:

TN TECHNOLOGIES INC
A THERMO INSTRUMENTS COMPANY
2555 NORTH INTERSTATE 35 (78664)
P.O. BOX 800
ROUND ROCK, TEXAS 78680-0800

SEALED SOURCE MODEL DESIGNATION: Texas Nuclear Model 57157C

ISOTOPE: Cs-137
Co-60

MAXIMUM ACTIVITY: 10 Curies
500 millicuries

LEAK TEST FREQUENCY: 36 months

PRINCIPAL USE: Gamma Gauges

CUSTOM DEVICE: YES NO

CUSTOM USER:

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICENO: TX634D141BDATE: February 18, 1983Page 2 OF 6DEVICE TYPE: Source Housing

DESCRIPTION: This source housing is constructed of lead-filled, welded steel containing all of the features normally associated with a manually operated device. The source housing is a right circular cylinder welded to a base plate and mounted with two welded steel "L" bars. It is approximately 7.5 inches in diameter by 8 inches high by 12.25 inches wide and weighs approximately 167 pounds.

The source is retained in the lead filled housing by the use of a spring load, stainless steel spacer, stainless steel internal snap ring and a stainless steel source tube and is sealed from the environment by a stainless steel expansion plug.

The shutter is comprised of a lead-filled, all welded stainless steel canister secured by welding a steel guide bolt to a steel bar to prevent it from inadvertent movement by vibration or shock. The shutter has both an ON and OFF position indicated on the source head by tags and is secured in the OFF position by lock and the ON position by pin. In the ON position, the beam is emitted into approximately a 13 degree beam angle, conical in shape.

LABELING: The gauge is tagged with a standard tag, containing the company's name, trade mark, and symbol and the model, isotope, amount of activity, date of measurement, CAUTION RADIOACTIVE MATERIAL, and DO NOT REMOVE. The tag is stainless steel and the radiation symbol is color coded. Additionally, the device contains a separate caution tag which uses both words and symbols to caution users to keep their hands out of the beam area as an added safety feature. The third tag is a shipping bolt tag which serves to caution those individuals not authorized to install and survey gauging devices not to proceed with opening the shutter. For those devices distributed to general licensees, another tag will be added which specifies all details and conditions of general license distribution and the requirements that the user must follow as set out in the Texas Regulations for Control of Radiation 41.28 (d)(1)(iii). These tags are manufactured using a second surface printed polyester laminated with pressure sensitive adhesive. These tags are approved by UL and CSA with these adhesives and tamperproof construction.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

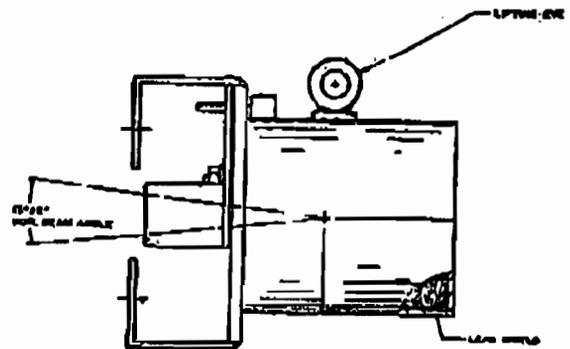
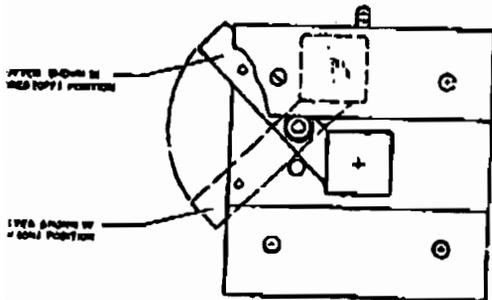
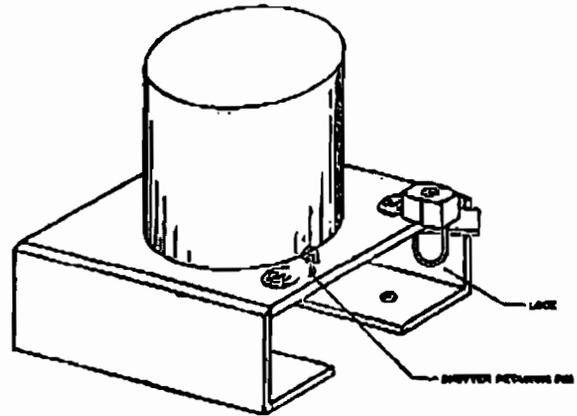
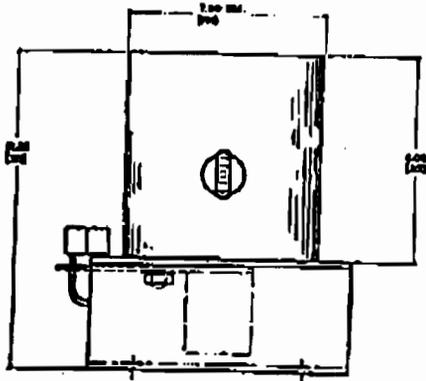
NO: TX634D141B

DATE: February 18, 1983

PAGE 3 OF 6

DEVICE TYPE: Source Housing

DIAGRAM:



REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICENO: TX634D141BDATE: February 18, 1983PAGE 4 OF 6DEVICE TYPE: Source Housing

CONDITIONS OF NORMAL USE: This device is used in making density, level and interface measurements on all types of industrial process lines in industrial environments, on drilling platforms, ships, submarines, dredges, barges, trucks, lowered into the ocean, etc. It is difficult to conceive an environment, short of extremely high temperatures, in which the devices could not be safely used. The typical user would include any manufacturing process including food and, therefore, environments could range all the way from extremely harsh (by way of acids, corrosives and/or toxic vapors and fumes) to laboratory sterile rooms with preconditioned air. They could be used both above and below ground with an expected temperature range of 400°F to -100°F. These devices are routinely used as component parts of other systems. Their care and maintenance is minimal. These devices will withstand extremely harsh environments. As long as the temperatures do not exceed the melting point of lead they can remain in use. If temperatures exceed the melting point of lead, the device will fail in an inoperable mode; that is, the first void volume closed by lead expansion will be the beam port. Short of vaporizing lead, the device should not fail in a condition that constitutes an unacceptable hazard. If the lead is vaporized, the failure will occur at the expansion plug and the lead will continue to run out until temperatures drop and the lead solidifies. In the worst case, the source will remain in the head and one will simply have an external radiation problem. This shutter block has been designed so that it is visually accessible to the user; therefore, one can access any loss of lead by simply inspecting the beam port and shutter block.

PROTOTYPE TESTING: Prototypes were tested in accordance with American National Standard N538-1979, published as NBS Handbook 129. As a result of those tests, this device was assigned a classification of ANSI 64-454-555-R3.

EXTERNAL RADIATION LEVELS: This device is designed to include sufficient shielding to reduce radiation levels everywhere to less than 5 mR/hr at one foot from any accessible surface at maximum loading. At the maximum loading this device complies with all applicable regulations and will not require additional posting, personnel monitoring or controlling of the area.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: TX634D141B

DATE: February 18, 1983

PAGE 5 OF 6

DEVICE TYPE: Source Housing

QUALITY ASSURANCE AND CONTROL: The construction of the gauge is typical high-quality, welded steel with lead fill. These devices are tested as a function of temperature, drop, vibration and shock with the maximum drop being from a 14 foot elevated platform to an unyielding surface and vibration and shock in excess of 20Gs.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

1. This device may be distributed to either generally or specifically licensed individuals.
2. Because of the construction of the source and the nature of the radioactive material, a three year leak test interval has been granted.
3. The device is designed and supplied with sufficient information for an individual to unpack and safely mount both the source head and detector following manufacturer's instructions. Initial radiation survey and leak testing should be done by someone specifically authorized to do so.
4. All applicable services are provided by the manufacturer including training.

SAFETY ANALYSIS SUMMARY: This device was found to provide a safe method of making density, level and interface measurements in all types of industrial environments. This device will withstand acid or corrosive atmospheres, high pressures, and temperature environments up to the melting point of lead. If temperatures exceed the melting point of lead, the device will fail in an inoperable mode; that is, the first void volume closed by lead expansion will be the beam port. Short of vaporizing lead, the device should not fail in a condition that constitutes an unacceptable hazard. If the lead is vaporized, the failure will occur at the expansion plug and the lead will continue to run out until temperatures drop and the lead solidifies. In the worst case, the source will remain in the head and one will simply have an external radiation problem.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO: TX634D141B

DATE: February 18, 1983

PAGE 6 OF 6

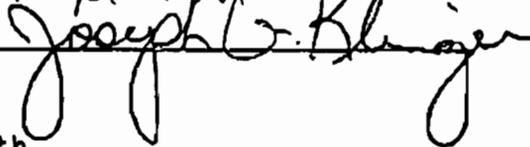
DEVICE TYPE: Source Housing

REFERENCES: This summary was prepared with the aid of the Texas Nuclear Corporation letter dated January 26, 1983 and all associated drawings, documents and procedures.

DATE: February 18, 1983

REVIEWED BY: 

DATE: February 18, 1983

REVIEWED BY: 

ISSUING AGENCY: Texas Department of Health

