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Alaska Industrial X-ray Inc.
4047 Kingston Drive
Anchorage, Alaska 99504
907 344-4061

RECEIVED
REGION V

June 27, 1989

JUN 28 09:30

U.S. Nuclear Regulatory Commission
Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Re: NRC License # 50-16084-01

Dear Sir:

Alaska Industrial X-ray, Inc. would like to amend its License # 50-16084-01 to include and/or change the Industrial Nuclear Company source changer IR-50 to our license.

The changes refer to Amendment No. 5, page 2 of 3 pages, Docket or Reference number 030-10346 and includes the following:

Item 9A should read:

For use in Gamma Industries Model Gamma Century SA exposure device for industrial radiography and in Gamma Industries Model C-10, "and Industrial Nuclear Model IR-50" source changers for storage and replacement of sources.

Item 9E should read:

For use in G. I. Model Gamma 35S exposure devices for industrial radiography and G. I. Model C-10 "and/or Industrial Nuclear Model IR-50" source changers for storage and replacement of sources.

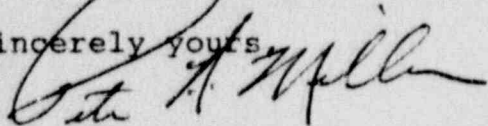
Item 9F should read:

For use in G. I Model Gamma Century S exposure devices for industrial radiography and Industrial Nuclear "Model IR-50" source changers for storage and replacement of sources.

Also included is information on the Industrial Nuclear Company source changer IR-50.

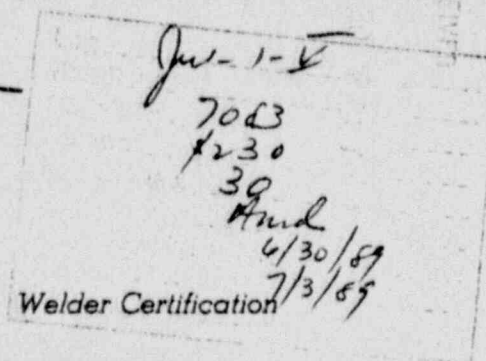
Enclosed is a check for \$230.00 for the amendment change.

Sincerely yours,



Peter A. Millar, P.E.
President

Weld Inspection
Welding Engineering
Metallurgical Engineering
9002070433 890706
REG5 LIC30
50-16084-01 PDR

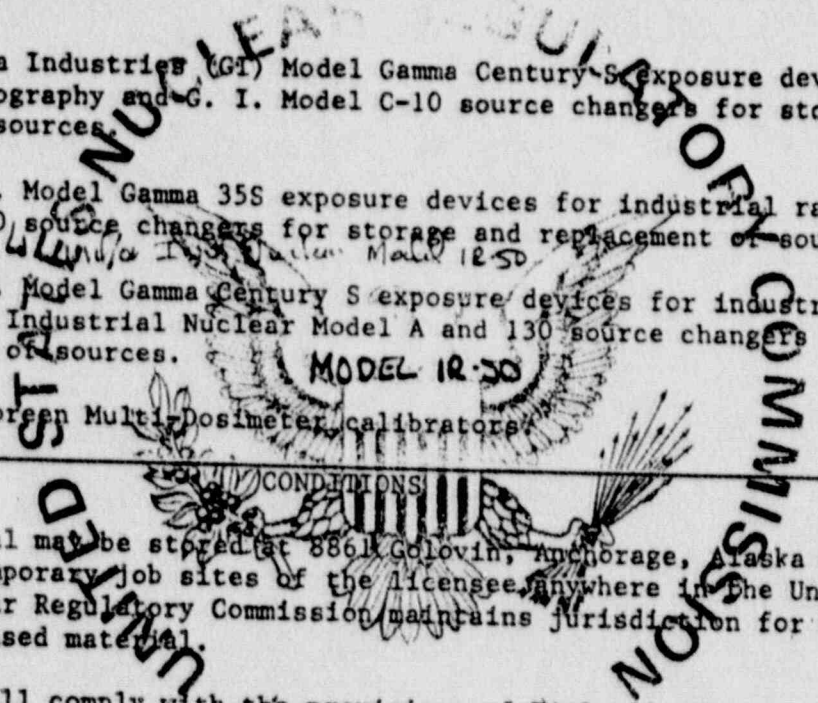


Nondestructive Testing
Gamma Ray - X-ray
Ultrasonics

MATERIALS LICENSE
SUPPLEMENTARY SHEET

License number	50-16084-01
Docket or Reference number	030-10346
Amendment No. 5	

9. Authorized use
- A. For use in Gamma Industries Model Gamma Century SA exposure device for industrial radiography and in Gamma Industries Model C-10 source changers for storage and replacement of sources. *(Gamma Industries Nuclear Model 1250)*
 - B. For use in Gamma Industries Model Gammatron 100A exposure devices for industrial radiography.
 - C. For use in Gamma Industries Pipeliner Model 1 exposure devices for industrial radiography.
 - D. For use in Gamma Industries (GI) Model Gamma Century S exposure devices for industrial radiography and G. I. Model C-10 source changers for storage and replacement of sources.
 - E. For use in G. I. Model Gamma 35S exposure devices for industrial radiography and G. I. Model C-10 source changers for storage and replacement of sources. *(Gamma Industries Model 1250)*
 - F. For use in G. I. Model Gamma Century S exposure devices for industrial radiography and Industrial Nuclear Model A and 130 source changers for storage and replacement of sources. *MODEL 12-30*
 - G. For use in Victoreen Multi-Dosimeter calibrators.



10. Licensed material may be stored at 8861 Golovin, Anchorage, Alaska and shall be used only at temporary job sites of the licensee anywhere in the United States where the Nuclear Regulatory Commission maintains jurisdiction for regulating the use of licensed material.
11. The licensee shall comply with the provisions of Title 10, Chapter 1, Code of Federal Regulations, Part 19, "Notices, Instructions and Reports to Workers; Inspections", Part 20, "Standards for Protection Against Radiation", and Part 34, "Licenses for Radiography and Radiation Safety Requirements for Radiographic Operations".
12. A. Pursuant to Section 34.25, 10 CFR 34, the licensee is authorized to perform tests for leakage or contamination of the sealed sources authorized by this license in accordance with procedures contained in application dated May 15, 1979.
- B. Notwithstanding the periodic leak test required by Section 34.25(b), 10 CFR 34, such requirement does not apply to radiography sources that are stored and not being used. The sources excepted from this test shall be tested for leakage prior to any use or transfer to another person unless they have been leak tested within six (6) months prior to the date of use or transfer.
- C. Sealed sources authorized for a use other than radiography shall be tested as radiography sources in accordance with Section 34.25 of 10 CFR 34.



(415) 562-7500
(415) 568-0132

Plant Inspection Company
Plant Inspection Laboratories
INC / Plant Inspection Services

2506 Davis Street, San Leandro, CA 94577
35 Hegenberger Place, Oakland, CA 94621



(415) 568-7775

March 13, 1989

This letter is a follow up to our recent telephone conversation regarding license amendments to include the Industrial Nuclear Company source changer; the IR-50.

The State of California acting at the behest of the USNRC has requested that Industrial Nuclear notify all licensees who purchase sources from INC that their State of California, Agreement State or USNRC license must specifically include the INC source changer by its NRC approved name: IR-50.

Recently there has been some confusion regarding the use of the name "Model 50" on certain licenses to mean the INC IR-50. In order to comply with NRC requirements we have been instructed to ask all of our clients to amend their licenses to reflect the correct name of the Industrial Nuclear source changer.

We regret any inconvenience this may have caused you and INC appreciates your cooperation in this matter.

Sincerely,

William E. Cain
Radiation Safety Officer
Industrial Nuclear Company

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA384D115S

DATE: February 6, 1989

PAGE: 1 of 11

DEVICE TYPE: Radiographic Source Changer

MODEL: IR-50

MANUFACTURER/DISTRIBUTOR: Industrial Nuclear Co.
2506 Davis Street
San Leandro, CA 94577

SEALED SOURCE MODEL DESIGNATION:

Industrial Nuclear Models 1, 2, 5, 6, 7, 8, 9, 32, and 33 and equivalent sources from other manufacturers.

ISOTOPE:

MAXIMUM ACTIVITY:

Iridium 192

120 curies

Deplete Uranium (as shielding)

32 pounds

LEAK TEST FREQUENCY:

PRINCIPAL USE: Industrial Radiography

CUSTOM SOURCE: YES NO

CUSTOM USER: No

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES

SAFETY EVALUATION OF DEVICE

NO.: CA384D115S

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DEVICE TYPE: Radiographic Source Changer

DESCRIPTION:

The Model IR-50 radiographic source changer consists of a welded stainless steel (11 gauge) rectangular box, with handle, approximately 9 inches long and 8-1/2 inches high by 4-1/2 inches wide, containing a depleted uranium shield (32 pounds). The void space between the outer body and the uranium shield is filled with a rigid polyurethane foam. A lock assembly secures the pigtail assembly with the source capsule (IR-192) positioned in the center of the shield within a titanium "S" tube. The tube of 3/7 inch \pm 1/64 inch diameter will accept pigtail assemblies listed in Table 1. The lock assembly is key actuated and the key can only be removed in the "locked" position. The assembly also has a blocking feature to prevent "pass through" of the pigtail assembly. The various pigtails are accommodated by varying the position of the lock assembly to assure that all source assemblies will always be secured in the center of the shield. To prevent tampering, a lead seal is provided through the lock assembly plug. The changer has a gross weight of 45 pounds.

The Model IR-50 source changer is suitable for changing the source assemblies listed in Table 1 utilizing a standard source guide tube coupling the changer to the camera. Identity of the source in the device is maintained using the source identification tag secured to the lead seal wire. Under no circumstances should this device be used directly for radiographic operations in place of a radiographic camera.

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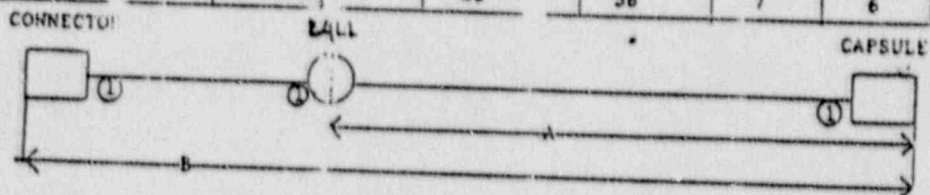
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DEVICE TYPE: Radiographic Source Changer

TABLE 1: Compatible Sealed Sources for IR-50.

MAGNIFLUX SOURCE PIGTAILS
Amended 1-13-83

INC #	O.E.M.	CAMERA MODEL	DIMENSION (inches)		CONNECTOR P/R	BALL	CAPSULE	
			A	B			PLUG P/N	CUP P/N
1	A424-1	533 490	5	7 13/32	39	37	8	6
2	A-1-A	CENTURY 35	5 3/16	7 1/2	40	38	7	6
5	200-250-009	520	5 7/32	6 23/32	39	37	8	6
6	200-250-010	520	5 7/32	6 23/32	40	38	7	6
7	A424-9	660,664 713	6 3/32	7 1/2	39	37	8	6
8	A-2-A	CENTURY SA	5 3/16	7 3/4	40	38	7	6
9		MG-IC-100	5 5/16	8	40	38	7	6
32	32	II-100	5 13/32	7	39	37	8	6
33	33	II-100	5 13/32	7	40	38	7	6



NOTE: Ⓢ Swage

Exposure Device Mfg. & Model Number	Curie Capacity	Inc Source Model Number	Changer Model Number
Industrial Nuclear Company IR-100	120	32 33	IR-50
Technical Operations 402 490.533 660.713	200 100 100	1 1 7	IR-50
Gamma Industries Century Century SA	100 100	2 8	IR-50
Automation Industries 520	100	5.6	IR-50
Magnaflex IC-100	100	9	IR-50

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REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES

SAFETY EVALUATION OF DEVICE

NO.: CA384D1155

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DEVICE TYPE: Radiographic Source Changer

LABELING:

Attached to the exterior surface of the Model IR-50 source changer are stainless steel label plates with the following etched and colored information:

- A. Radiation Symbol (magenta and yellow)
Caution Radioactive Material Special Form N.O.S.

- B. Name of manufacturer and address
Model IR-50 Changer (and serial number)
Do Not Handle Notify Civil Authorities If Found
Capacity 120 curies Iridium 192
Contains 32 pounds Depleted Uranium
Gross Wt. 45 pounds
Type P USA/9156/B (U)

Each changer is accompanied by a set of user instructions, source certificate with decay and leak test date, and return shipping labels.

DIAGRAMS:

Figure 1: Side and End View of IR-50 Source Changer

Figure 2: Identified Parts of IR-50 Source Changer Corresponding to Figure 1.

Figure 3: Side View of IR-50 Source Changer.

Figure 4: Dose Rate Measurements at Surface of IR-50 Source Changer.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

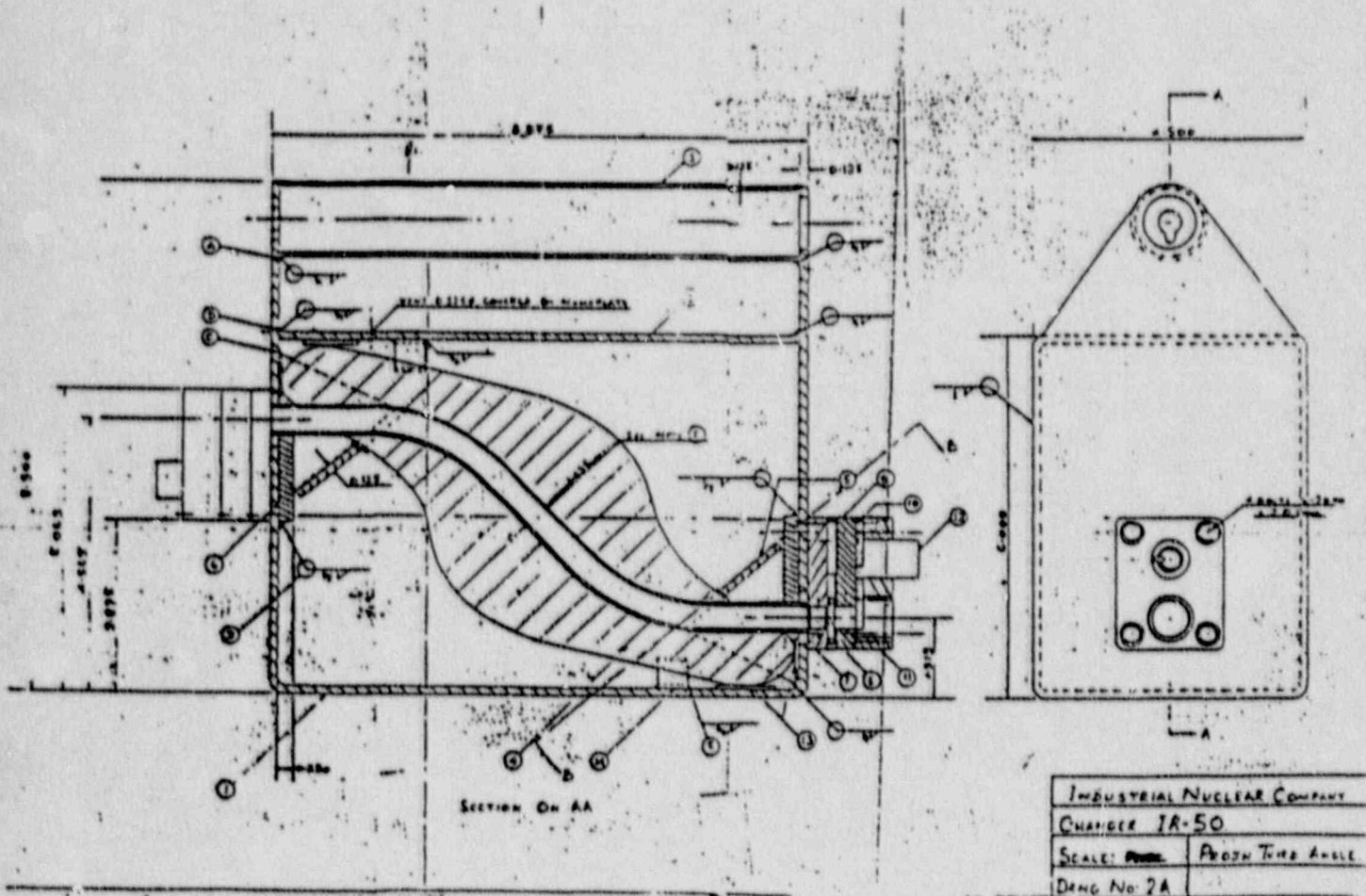
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DEVICE TYPE: Radiographic Source Changer

Figure 1: Side and End View of IR-50 Source Changer.



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SAFETY EVALUATION OF DEVICE

NO.: CA384D1155

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DEVICE TYPE: Radiographic Source Changer

Figure 2: Identified Parts of IR-50 Source Changer Corresponding to Figure 1.

DET NO.	PART NO.	DESCRIPTION	NO OF	MATERIAL
1	3	HOUSING, BASE	1	ST. STEEL
2	2	HOUSING, TOP	1	ST. STEEL
3	5	HANDLE	1	ST. STEEL
4	1	SHIELD	1	DEPLETED URANIUM TITANIUM S-TUBE
5	201	SUPPORT PLATE	2	ST. STEEL
6	202	BACKING PLATE	2	MILD STEEL
7	203	SPACER	2	STEEL, Cd PLATED
8	204	CHANGER TRAP PLATE	2	STEEL, Cd PLATED
9	205	CHANGER TRAP	2	STEEL, Cd PLATED
10	206	LOCA A. TUBE	2	STEEL, Cd PLATED
11	207	LOCA BODY	2	STEEL, Cd PLATED
12	15	LOCA CYLINDER	2	PRESS-CAST ALLOY
13		INTERFACE		COPPER-D-DIATRICA
14		SUPPORT TABS	4	ST. STEEL

NOTE: HOUSING CAVITY IS FILLED WITH POLYURETHANE FOAM FOR HEAT AND MOISTURE INSULATION AND TO GIVE SUPPORT TO CASTING.

WELDS: A- FULL CIRCUMFERENTIAL WELD.
B & D- FULL PERIPHERAL WELDS.
C & E- TWO SIDES CONTINUOUSLY WELDED TO CASING

FOR SECTION BB SEE DRAWING 2B

T- MINIMUM SHIELD THICKNESS 1.625, TITANIUM S-TUBE HAS O.D. 0.5" WALL THICKNESS 18GA.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

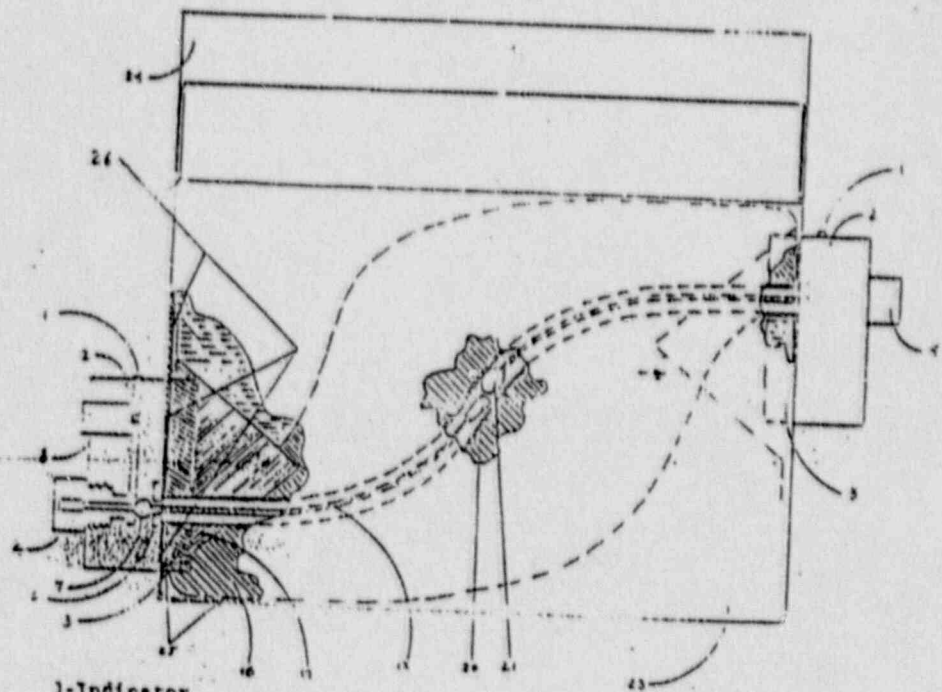
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DEVICE TYPE: Radiographic Source Changer

Figure 3: Side View of IR-50 Source Changer.



- 1-Indicator
- 2-Lockbody
- 3-Backing Plate
- 4-Dust cap
- 5-Shipping Plug
- 6-Trap
- 7-Stopball
- 8-Lock
- 12-Pigtail
- 17-Support Bracket
- 18-D.U. Shield
- 20-Source Capsule
- 21-Safety Plug Stopball
- 23-Housing
- 24-Handle
- 25-Copper Interface
- 26-Weld

NOTE: Lock system same both ends

DIMENSIONS
 L = 12"
 W = 4 1/2"
 H = 8 1/2"

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

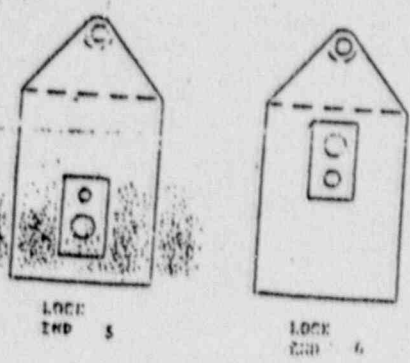
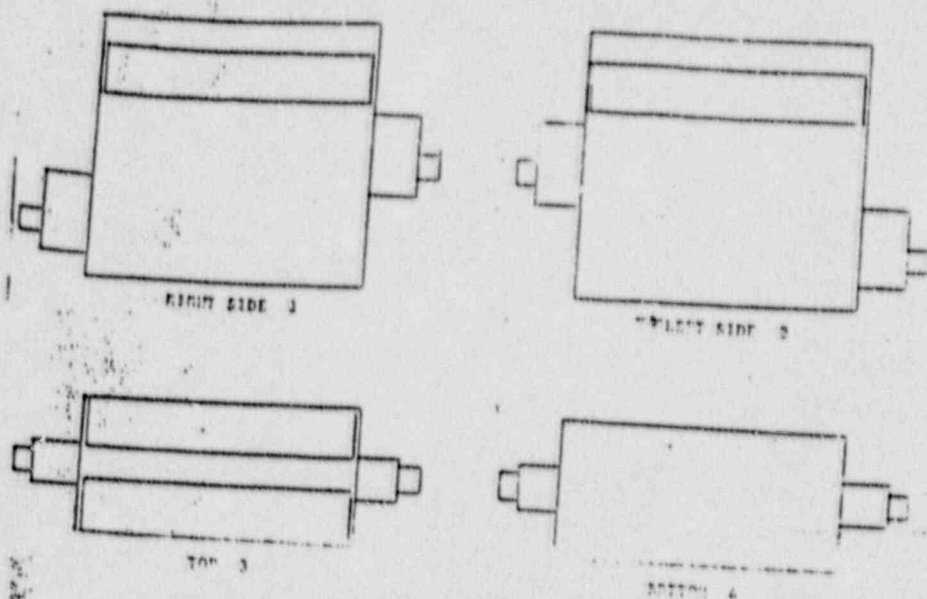
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DEVICE TYPE: Radiographic Source Changer

Figure 4: Dose Rate Measurements at Surface of IR-50.



TEST EQUIPMENT:
SOURCE STRENGTH 100 Ci.
SOURCE S/N 658
SURVEY METER S/N 6
CALIBRATION DATE 9-8-81

INSPECTED BY [Signature] DATE 12-8-89

SURFACE MR/HR		POSITION
PRE-TEST	POST-TEST	
58	58	1
60	60	2
78	78	3
52	52	4
80	80	5
75	75	6
---	NONE	7*
---	NONE	8*

* LOCATION OF ANY
BEARING EXCEEDING
200 MR/HR

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA384D115S

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DEVICE TYPE: Radiographic Source Changer

CONDITIONS OF NORMAL USE:

The Model IR-50 source changer is used for the transportation and exchange of encapsulated radioactive sources used in radiographic exposure devices. The source changer is designed to contain the radioactive sources during transportation and to permit the field exchange of same.

PROTOTYPE TESTING:

The Model IR-50 source changer was deemed acceptable for licensing purposes by the U. S. Nuclear Regulatory Commission on December 23, 1981. Industrial Nuclear Co. performed shielding and dimensional tests on the source assemblies manufactured by Industrial Nuclear Co. listed in Table 1 to demonstrate their compatibility (dimensional and external dose rate) with the source changer.

EXTERNAL RADIATION LEVELS:

A radiation profile performed by Industrial Nuclear Co. with a 100-curie IR-192 source indicated external radiation levels well below regulatory limits. (See Figure 4.)

QUALITY ASSURANCE AND CONTROL:

The Model IR-50 already has been deemed acceptable by the U. S. Nuclear Regulatory Commission, and the addition of the source assemblies should not affect the quality assurance and control of the model significantly.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

NO.: CA3B4D1155

DATE: February 6, 1989

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DEVICE TYPE: Radiographic Source Changer

LIMITATIONS AND/OR OTHER CONDITIONS OF USE:

The device shall be distributed only to persons specifically licensed by the U. S. Nuclear Regulatory Commission or an Agreement State. (Foreign distribution subject to regulations of cognizant authority.)

An instruction sheet for use of the source changer is provided by the manufacturer and should be present when the device is used.

The loaded device shall be shipped only when contained in Industrial Nuclear Co. overpack Model No. OP-100 (Dvg. 50-4, 50-4A) and certificate No. USA/9185/E (U)

Handling, storage, use transfer, and disposal: to be determined by the licensing authority. Due to the potential for high radiation levels (unshielded), these functions should only be performed by qualified personnel using appropriate safeguards and approved procedures.

Modification of this equipment may be performed only in accordance with appropriate regulations.

SAFETY ANALYSIS SUMMARY:

Based on review of the information and data listed under "References", the State of California concludes that the Model IR-50 source changer design is acceptable for licensing purposes. The State of California further concludes that the device should continue to maintain its full integrity for normal conditions of use as well as accidental conditions which might occur during uses specified in this certificate.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF DEVICE

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DEVICE TYPE: Radiographic Source Changer

REFERENCES:

The following supporting documents for the IR-50 source changes are hereby incorporated by reference and made a part of this registry application.

- 1. Previously approved Certificate of Compliance USA/9156/B (U)
- 2. Previously approved Certificate of Competent Authority USA/9185/B (U)

DATE: 2/9/89

REVIEWED BY: *Kurt E. Jace*

DATE: 2/9/89

CONCURRENCE: *[Signature]*

ISSUING AGENCY: California Department of Health Services