

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-00639-01

Docket or Reference number

Amendment No. 29

The Gmurt Corporation  
4241 Allendorf Drive  
Cincinnati, Ohio 45209

In accordance with letter dated June 16, 1982, License Number 34-00639-01  
is amended as follows:

Conditions 10. and 17. are amended to read:

10. Except for custom-made devices, each device distributed under this license shall  
be in accordance with the following table:

Device Model Numbers	Source Model Numbers	Isotopes	Maximum Activity Per Source (Millicuries)	User Leak Test Interval
AS-2	A-2102	Cesium 137	100	3 yrs
ASR-2	A-2102 or A-2104	Cesium 137	4500	3 yrs
ASR-3	A-2102 or A-2104	Cesium 137	4000	3 yrs
ASR-4	A-2102	Cesium 137	2700	3 yrs
BAL	A-33766	Krypton 85	75	NONE
	A-4829	Krypton 85	1200	NONE
	A-36058	Krypton 85	1500	NONE
	A-4830	Strontium 90	200	6 Mos.
	A-5799	Americium 241	1000	6 Mos.
	A-22439	Iron 55	150	6 Mos.
Beta Art	A-35950	Krypton 85	75	NONE
Series 6000	A-36056	Krypton 85	200	NONE
(with BAL	A-22439	Iron 55	150	6 Mos.
source holder)				
BG-1G	A-4829 or A-4834	Krypton 85	600	NONE
BG-2G	A-5840 or A-4830	Strontium 90	300	6 Mos.
BG-2/9G	B-14315	Strontium 90	100	6 Mos.
	B-14315	Krypton 85	1200	NONE
BG-3G	A-4832, A-4831	Strontium 90	1000	6 Mos.
	or A-5800			
BG-4G	B-6815	Krypton 85	1000	NONE
BG-9G	A-4829 or A-4834	Krypton 85	1200	NONE
BG-11G	B-6815	Krypton 85	2000	NONE
BGCD-2/9G	B-14315	Strontium 90	100	6 Mos.
	B-14315	Krypton 85	1200	NONE
BGCD-9G	A-4829	Krypton 85	1200	NONE
BGO-1G	A-4829 or A-4834	Krypton 85	600	NONE
BGO-2G	A-5840 or A-4830	Strontium 90	300	6 Mos.
BGO-3G	A-4832, A-4831 or	Strontium 90	1000	6 Mos.
	A-5800			
BGO-4G	B-6815	Krypton 85	1000	NONE
BGO-9G	A-4829 or A-4834	Krypton 85	1200	NONE
BGO-11G	B-6815	Krypton 85	2000	NONE
BGOC-1G	A-4829 or A-4834	Krypton 85	600	NONE

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-00639-01

Docket or Reference number

Amendment No. 29

10. continued

Device Model Numbers	Source Model Numbers	Isotopes	Maximum Activity Per Source (Millicuries)	User Leak Test Interval
BGOC-2G	A-5840 or A-4830	Strontium 90	300	6 Mos.
BGOC-3G	A-4832, A-4831 or A-5800	Strontium 90	1000	6 Mos.
BGOC-4G	B-6815	Krypton 85	1000	NONE
BGOC-9G	A-4829 or A-4834	Krypton 85	1200	NONE
BGOC-11G	B-6815	Krypton 85	2000	NONE
BGON-1G	A-4729 or A-4934	Krypton 85	600	NONE
BGON-2G	A-5840 or A-4830	Strontium 90	300	6 Mos.
BGON-3G	A-4832, A-4831 or A-5800	Strontium 90	1000	6 Mos.
BGON-4G	B-6815	Krypton 85	1000	NONE
BGON-9G	A-4829 or A-4834	Krypton 85	1200	NONE
BGON-11G	B-6815	Krypton 85	2000	NONE
BGON-9G	A-4829	Krypton 85	1200	NONE
BGTL-2/9G	B-14315	Strontium 90	100	6 Mos.
	B-14315	Krypton 85	1200	NONE
BGTL-9G	A-4829	Krypton 85	1200	NONE
BWEL	A-5771	Cesium 137	100	3 yrs.
CC	A-5776	Cesium 137	3	3 yrs.
CL-10	A-2102	Cesium 137	3000	3 yrs.
CL-12	A-2102 or A-2104	Cesium 137	3750	3 yrs.
CL-14	A-2102 or A-2104	Cesium 137	4500	3 yrs.
CL-16	A-2102 or A-2104	Cesium 137	5250	3 yrs.
CL-18	A-2102 or A-2104	Cesium 137	7500	3 yrs.
CL-20	A-2102 or A-2104	Cesium 137	9400	3 yrs.
CL-30	A-2102 or A-2104	Cesium 137	5000	3 yrs.
Coke Drum Level	A-35210	Cesium 137	500	3 yrs.
	B-38239	Cobalt 60	25	3 yrs.
CP-2	A-2102 or A-2104	Cesium 137	4000	3 yrs.
CP-3	A-2102 or A-2104	Cesium 137	4800	3 yrs.
CP-4	A-2102 or A-2104	Cesium 137	5000	3 yrs.
CP-5	A-2102 or A-2104	Cesium 137	5000	3 yrs.
CP-6	A-2102 or A-2104	Cesium 137	6000	3 yrs.
CP-8	A-2102 or A-2104	Cesium 137	6000	3 yrs.
CS-2	A-2102 or A-2104	Cesium 137	4500	3 yrs.
CS-3	A-2102 or A-2104	Cesium 137	4000	3 yrs.
CS-4	A-2102	Cesium 137	2700	3 yrs.
D-36698	A-5799	Americium 241	500	6 mos.
ED-2	A-2102	Cesium 137	300	3 yrs.

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-00639-01

Docket or Reference number

Amendment No. 29

10. continued

Device Model Numbers	Source Model Numbers	Isotopes	Maximum Activity Per Source (Millicuries)	User Leak Test Interval
ED-3	A-2102	Cesium 137	500	3 yrs
ED-4	A-2102	Cesium 137	750	3 yrs
ED-5	A-2102	Cesium 137	1000	3 yrs
ED-6	A-2102	Cesium 137	1500	3 yrs
ED-8	A-2102	Cesium 137	2000	3 yrs
ED-10, ED-12	A-2102 or A-2104	Cesium 137	3000	3 yrs
ED-14	A-2102 or A-2104	Cesium 137	4000	3 yrs
ED-16, ED-18	A-2102 or A-2104	Cesium 137	5000	3 yrs
ED-20				
ES-2	A-2102 or A-2104	Cesium 137	4500	3 yrs
ES-3	A-2102 or A-2104	Cesium 137	4000	3 yrs
ES-4	A-2102 or A-2104	Cesium 137	2700	3 yrs
GFS-1	A-2102	Cesium 137	1000	3 yrs
GFS-2	A-2102	Cesium 137	2000	3 yrs
HM-8	A-2102	Cesium 137	5000	3 yrs
HM-10	A-2102	Cesium 137	20000	3 yrs
LASP-2	A-2102 or A-2104	Cesium 137	4500	3 yrs
LASP-3	A-2102 or A-2104	Cesium 137	4000	3 yrs
LASP-4	A-2102	Cesium 137	2700	3 yrs
LBG-1G	A-4829 or A-4834	Krypton 85	600	NONE
LBG-2G	A-5840 or A-4830	Strontium 90	300	6 Mos.
LBG-3G	A-4832, A-4831 or A-5800	Strontium 90	1000	6 Mos.
LBG-4G	B-6815	Krypton 85	1000	NONE
LBG-9G	A-4829 or A-4834	Krypton 85	1200	NONE
LBG-11G	B-6815	Krypton 85	2000	NONE
LR-10 or LRV-10	A-2102 or A-2104	Cesium 137	9500	3 yrs
LR-12 or LRV-12	A-2102 or A-2104	Cesium 137	9500	3 yrs
LR-14 or LRV-14	A-2102 or A-2104	Cesium 137	9500	3 yrs
LR-16 or LRV-16	A-2102 or A-2104	Cesium 137	9500	3 yrs
LR-20 or LRV-20	A-2102 or A-2104	Cesium 137	9500	3 yrs
LP-24 or LRV-24	A-2102 or A-2104	Cesium 137	9500	3 yrs
LSDG	A-2102 or A-2104	Cesium 137	5400	3 yrs
MDDG	See AS-2			

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-00639-01

Docket or Reference number

Amendment No. 29

## 10. continued

<u>Device Model Numbers</u>	<u>Source Model Numbers</u>	<u>Isotopes</u>	<u>Maximum Activity Per Source (Millicuries)</u>	<u>User Leak Test Interval</u>
NMG-1 for conveyors, pipes or chutes				
	B-18248	Am/Be or Pu/Li and Cs 137 or Co-60	1-2000  1- 2 gram 2-50 2-5	6 Mos.
	B-18489	Am/Be and Cs-137 or Co-60	2-2000 3-25 3-5	
NMG-2 for conveyors				
	A-33131 A-2102	Cf-252 Cs-137	2.5 microgram 50	6 Mos.
PG-2 through PG-4 or PGV-2 through PGV-4				
	A-2102	Cesium 137	1500	3 yrs
PG-5 or PGV-5				
	A-2102	Cesium 137	1050	3 yrs
PG-6 or PG-8 or PGV-6 or PGV-8				
	A-2102	Cesium 137	1000	3 yrs
PR-1C				
	A-4829 or A-4834	Krypton 85	600	NONE
PR-9C				
	A-4829 or A-4834	Krypton 85	1200	NONE
Ray-Weigh Scale - See SHEM Series				
RTSM-3				
	A-5776	Cesium 137	3	3 yrs
SDG				
	A-2102 or A-2104	Cesium 137	5400	3 yrs

MATERIALS LICENSE  
SUPPLEMENTARY SHEETLicense number  
34-00639-01

Docket or Reference number

Amendment No. 29

10. continued

Device Model Numbers	Source Model Numbers	Isotopes	Maximum Activity Per Source (Millicuries)	User Leak Test Interval
SH-100	A-2102	Cesium 137	100	3 yrs
SHD	A-2102	Cs-137	500	3 yrs
SHDP or SIEP	A-33361	Cesium 137	200	3 yrs
SHDP-150 or SIEP-150	A-2102	Cesium 137	200	3 yrs
SHGF-2	A-2102	Cs-137	500	3 yrs
SHLG-1	A-2102	Cs-137	2400	3 yrs
	A-2100	Co-60	30	3 yrs
SHLG-2	A-2104	Cs-137	9000	3 yrs
	A-25159	Cs-137	4000	3 yrs
	A-2100	Co-60	75	3 yrs
SHLG-3	A-25159	Cs-137	4000	3 yrs
	A-2104	Cs-137	9000	3 yrs
	A-2100	Co-60	750	3 yrs
SHLG-3A	A-22593	Cs-137	10,000	3 yrs
SHLM-B & SHLM-C				
-1	A-2102	Cs-137	100	3 yrs
	A-5771	Cs-137	100/foot	3 yrs
	A-2100	Co-60	5	3 yrs
	A-5772	Co-60	5/foot	3 yrs
-2	A-2102	Cs-137	1000	3 yrs
	A-5771	Cs-137	1000/foot	3 yrs
	A-2100	Co-60	15	3 yrs
	A-5772	Co-60	15/foot	3 yrs
-3	A-2104	Cs-137	5000	3 yrs
	A-5771	Cs-137	1000/foot	3 yrs
	A-2100	Co-60	60	3 yrs
	A-5772	Co-60	60/foot	3 yrs
SHRD	A-2104	Cs-137	20,000	3 yrs
	A-2100	Co-60	5,000	3 yrs
SHRG-A	A-2102	Cs-137	750	3 yrs
	A-2100	Co-60	35	3 yrs
	A-5771	Cs-137	600/foot	3 yrs

MATERIALS LICENSE  
SUPPLEMENTARY SHEET

License number

34-00639-01

Docket or Reference number

Amendment No. 29

## 10. continued

Device Model Numbers	Source Model Numbers	Isotopes	Maximum Activity Per Source (Millicuries)	User Leak Test Interval
SHM-PA	A-2102	Cs-137	100	3 yrs
	A-2100	Co-60	5	3 yrs
SHM Series	A-5771	Cs-137	100/foot	3 yrs
	A-5772	Co-60	10/foot	3 yrs
SR-1	A-2102	Cs-137	1000	3yrs
SR-2	A-2104	Cs-137	5000	3 yrs
SR-1A	A-2102	Cs-137	1562	3 yrs
SHL	A-2102	Cs-137	130	3 yrs
	A-2100	Co-60	15	3 yrs

WebArt Series Sec BAL

Weight

- Series Scale See: 1) SH-100 or  
2) SHVA or  
3) D-36698

17. Except as specifically provided otherwise by this license, the licensee shall possess and use licensed material described in Items 6, 7, and 8 of this license in accordance with statements, representations, and procedures contained in application received May 27, 1977; and letters dated January 16, 1978, April 10, 1978, May 9, 1978, June 28, 1978, July 6, 1978, May 5, 1980, May 16, 1980, October 3, 1980 (2), May 19, 1981, May 29, 1981, June 16, 1982, August 24, 1982, and November 9, 1982. The Nuclear Regulatory Commission's regulations shall govern the licensee's statements in applications or letters, unless the statements are more restrictive than the regulations.

DEC 01 1982

Date \_\_\_\_\_

FOR THE U.S. NUCLEAR REGULATORY COMMISSION  
Original Signed By

Paul R. Guinn

By Material Licensing Branch  
Division of Fuel Cycle and  
Material Safety  
Washington, D. C. 2055576  
12/1/82

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its entirety)

NO.: NR522D196B

DATE: NOV 29 1982

PAGE 1 OF 5

DEVICE TYPE: Source Housing

MODEL: SH-100, SH-100-B5

MANUFACTURER/DISTRIBUTOR: Ohmart Corporation  
4241 Allendorf Drive  
Cincinnati, OH 45209

MANUFACTURER/DISTRIBUTOR:

SEALED SOURCE MODEL DESIGNATION: Ohmart A-2102 (ANSI C-43343)  
3M 4F6S  
MRC 24148

ISOTOPE: Cesium-137

MAXIMUM ACTIVITY: 100 millicuries

LEAK TEST FREQUENCY: 3 years

PRINCIPAL USE: (D) Gamma Gauges

CUSTOM DEVICE: ☐ YES ☒ NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its entirety)

NO: NR522D196B

DATE: NOV 29 1982

PAGE 2 OF 6

DEVICE TYPE: Source Housing

DESCRIPTION:

The Model SH-100 source housing is used for level, density, and belt scale gauging applications. The Model A-2102 sealed source (Cs-137, 100 mCi) is contained in the source housing which provides shielding and collimation.

The gamma radiation is obtained from radioactive material which is doubly encased in a stainless steel source capsule. The capsule is mounted in a source housing which is constructed of a steel shell filled with lead. The lead provides radiation shielding and a collimator so that the radiation beam is directed through the process material toward the detector.

The source housing has a lead shielding block, or shutter, which can be positioned so that the collimated beam directed toward the detector can be turned off. The shutter is controlled by a handle on the front side of the source housing. There are two other positions of this handle - On and STANDARDIZE. The shutter can be locked in the OFF position but is held in place by a tamper-proof screw in the ON and STANDARDIZE position.

The SH-100 source housing is equipped with a padlock or combination lock to secure the housing in the OFF position.

The source housing has a four bolt arrangement to facilitate mounting of the device assembly on the different primary locations (e.g., on piping, the arm over the conveyor belt or the side of a tank).

The Model SH-100-BS (belt scale) is identical to the Model SH-100 except that the shutter mechanism of the Model SH-100-BS has been rotated 90° to allow the operator to actuate the shutter without leaning over the conveyor belt.

LABELLING:

The Model SH-100 is labeled in accordance with requirements of Section 20.203, 10 CFR Part 20 or Section 32.51(a)(3) of 10 CFR Part 32.

As a deterrent the Model SH-100-BS has the label "Do not put hands in air gap" affixed to both sides of the gauge.

CONDITIONS OF NORMAL USE:

The device is intended for use in industrial and process control environments for measurement of level, density, and/or weight of materials. Typical environmental conditions are:

Temperature.....	-40°C to 60°C
Pressure.....	Atmospheric
Vibration .....	Ranges from Zero to Mild
Corrosion.....	Ranges from Zero to Mild Corrosive Vapor

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its entirety)

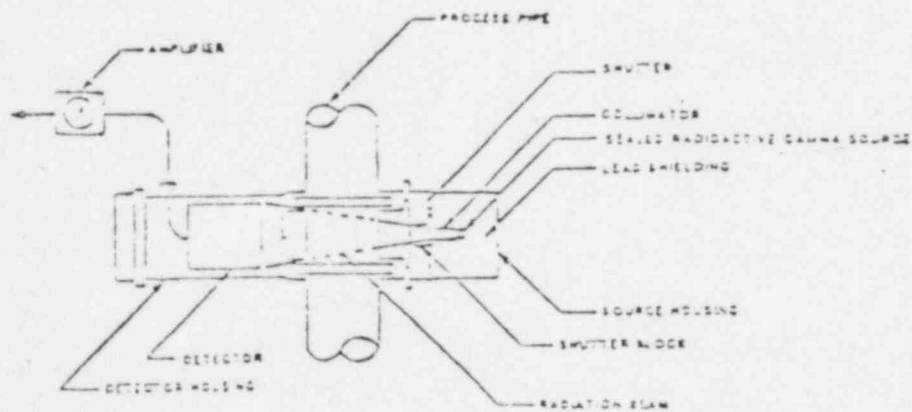
NO.: NR522D196B

DATE: NOV 29 1982

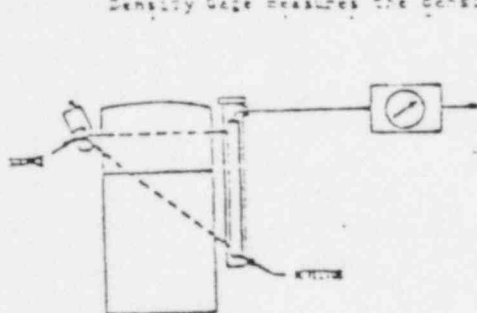
PAGE 3 OF 6

DEVICE TYPE: Source Housing

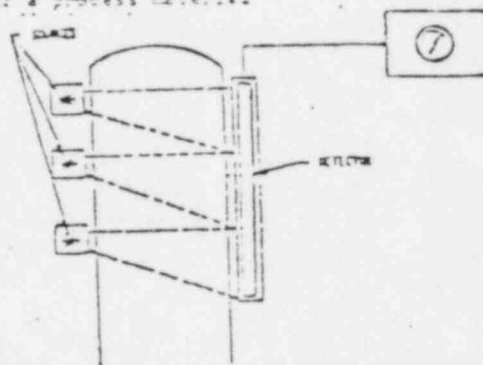
DIAGRAM:



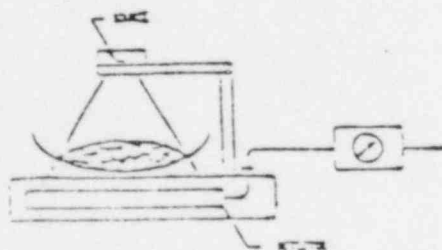
Density Gage measures the density of a process material



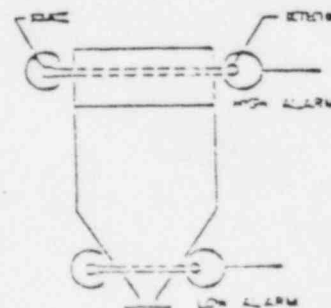
Level Gage  
Point Source & Strip Detector



Level Gage  
Multiple Point Source  
& Strip Detector



Belt Weigh Scale  
Point Source & Strip Detector



Level Gage

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its entirety)

NO: NR522D196B

DATE: NOV 29 1982

PAGE 4 OF 6

DEVICE TYPE: Source Housing

PROTOTYPE TESTING:

A prototype of Model SH-100 source housing was subjected to tests prescribed by Ohmart Corporation for vibration, mild impact, operating temperature and manual shutter operations of 100 cycles.

Ohmart states that the source housing will withstand continuous operating temperatures up to 105°C and temporary temperatures up to 200°C. Above 105°C, various gaskets and sealants used in the source housing will char, but radiation safety will not be affected. In addition, the manufacturer also stated that the unit contains a Model A-2102 sealed source which meets ANSI Classification C-43343 (temperature limitation of 595°C). Ohmart also indicated that the weld construction of the source housing should remain intact and retain the sealed source up to a temperature just below the softening point of carbon steel which is about 1000°C.

Ohmart also tested the source holder for compliance with 10 CFR 71, Appendix A (DOT spec 7A). requirements. The engineering analysis of the device documents that the unit will comply with the tests of heat, cold, water spray, and compression. The free drop test was performed from a height of four feet with no loss of shielding integrity. The penetration test showed no reduction in shielding efficiency.

EXTERNAL RADIATION LEVELS:

The external radiation levels from the surface of the device are as follows:

- ° At 5 cm with shutter closed 21.0 mr/hr
- ° At 30 cm with shutter closed 3.6 mr/hr

QUALITY ASSURANCE AND CONTROL:

The manufacturer maintains a quality control program to inspect all parts before and after assembly which includes inspection of all castings and welds. Operational checks are made of the source OFF/ON mechanism. Visual check is made for proper location and attachment of all labels.

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE:

- A. The device may be distributed to Specific Licensees of NRC or Agreement States. The device for density gauges may be distributed to General Licensees of NRC or Agreement States.
- B. Installation, dismantling, relocation, repair, and initial testing shall be performed only by person(s) specifically licensed by NRC or Agreement States.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its entirety)

NO: NR522D196B

DATE: NOV 29 1982

PAGE 5 OF 6

DEVICE TYPE:

LIMITATIONS AND/OR OTHER CONSIDERATIONS OF USE (Cont'd):

- C. The licensing authority should ensure that all belt scale installations of the Model SH-100 or SH-100-BS are properly posted and personnel access to the radiation beam either physically restricted or administratively controlled to prevent unnecessary exposure.
- D. Handling, storage, use, transfer, and disposal: To be determined by licensing authority.
- E. The device shall be tested for radioactive leakage and proper functioning of the ON/OFF mechanism and indicator at installation and at source replacement by persons specifically licensed by NRC or an Agreement State. Thereafter, testing shall be done at no longer than three year intervals, using procedures stated in the manufacturer's instruction manual.
- F. Since the SH-100/SH-100 BS have been drop tested only from a height of four feet, any device installed above this four feet level should be provided with additional protection to prevent the device from falling from its mounting.

SAFETY ANALYSIS SUMMARY:

Based on our review of the information and test data contained in references listed below, we conclude that the Model SH-100 source housing in an Ohmart Corporation density gauging device is acceptable for licensing purposes under the provisions of Section 30.33 (specific license) 10 CFR Part 30, Section 31.5 (general license) 10 CFR Part 31 and Section 32.51 (manufacturing license) 10 CFR Part 32. Under ordinary conditions of use in industrial environments, we expect the SH-100 to retain containment integrity. Likewise, under normal use personnel exposures are not expected to exceed the requirements of Section 20.101(a), 10 CFR Part 20 or Column IV of the table in Section 32.24, 10 CFR Part 32. For example, even if an abnormal occurrence, such as a fire or explosion, unshields the 100 millicurie Cesium source, the dose rate at 30 cms is only about 375 mr/hr. Thus, a person could remain within that distance of the source for periods of about 40 hours without exceeding the doses in Column IV of the table of Section 32.24. For similar reasons, the Model SH-100 BS is acceptable for licensing under the provisions of Section 30.33 (specific licensing) 10 CFR Part 30.

REFERENCES:

The safety review and registration of Model SH-100 source housing design is based on information in Ohmart Corporation letters dated October 3, 1980, December 8, 1980, December 17, 1980, July 15, 1982, October 7, 1982 and attachments thereto.

\* This document supersedes NR-522-D-196-B dated January 14, 1981.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES  
SAFETY EVALUATION OF DEVICE  
(Amended in its entirety)

NO: NR522D196B

DATE: NOV 29 1982

PAGE 6 OF 6

DEVICE TYPE: Source Housing

ISSUING AGENCY:

U.S. Nuclear Regulatory Commission

Date: NOV 29 1982

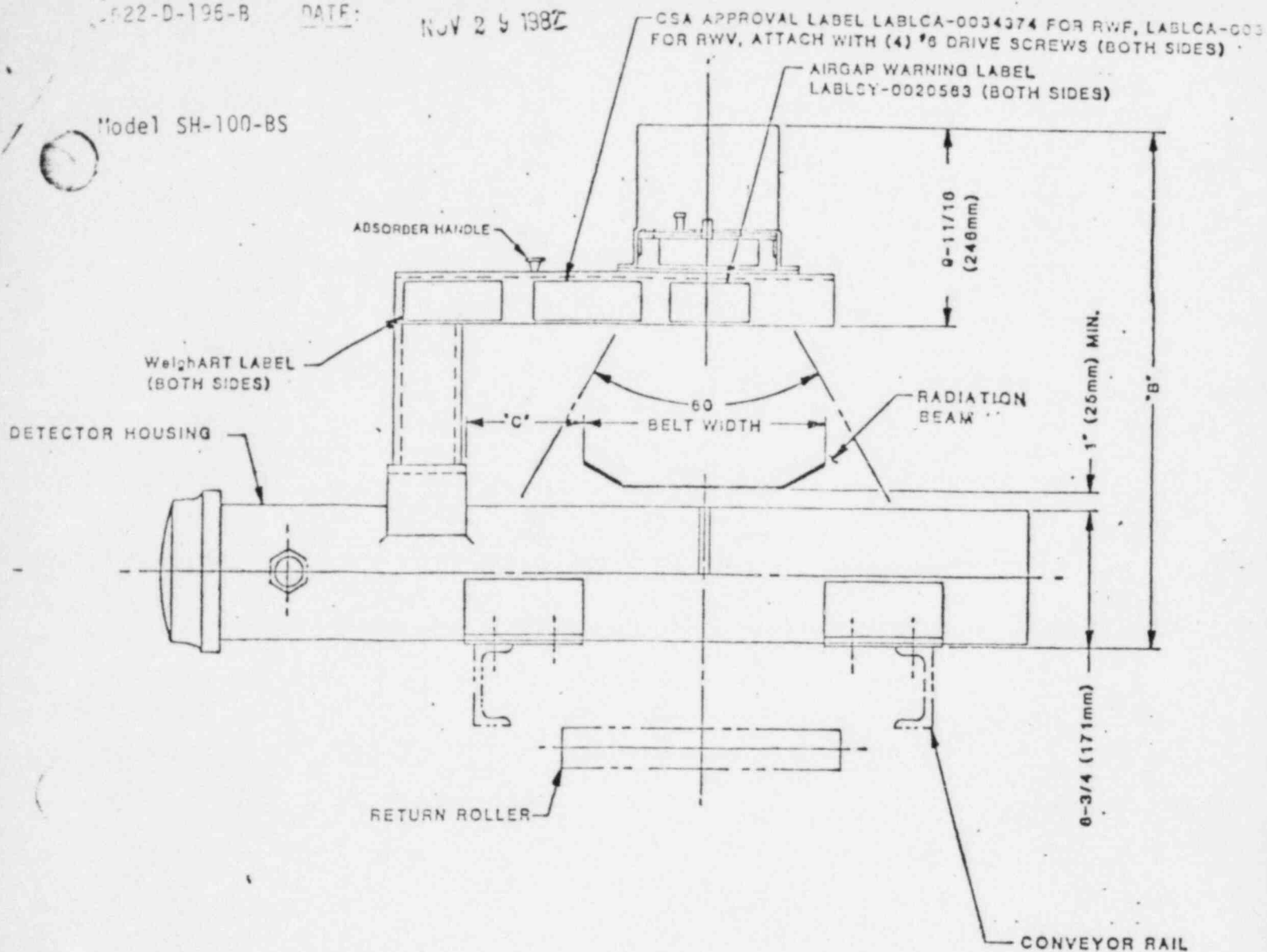
Reviewer: *Gene B. Wright*

Date: NOV 29 1982

Concurrence: *Earl B. Wright*

NOV 25 1982

Model SH-100-BS



SLIDING SHUTTER OPERATION POSITION:

