



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION III
799 ROOSEVELT ROAD
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SEP 3 1985

Honeywell, Inc.
ATTN: Mr. Paul G. Johnson
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License No. 22-19422-02G

Gentlemen:

We have reviewed your letter dated November 15, 1984 requesting an amendment to your NRC License Number 22-19422-02G and find that we will need additional information as follows:

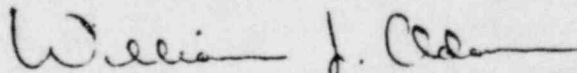
We believe your request may be processed under the provisions of 10 CFR 32.15(c) regarding removal and installation of the devices, however, we cannot authorize redistribution of devices from the Boeing Corp. Uninstalled devices may not be transferred by Boeing Corp. for installation by Boeing aircraft owners or operators. Devices installed in aircraft may be transferred only by sale of the aircraft. Boeing Corp. is not operating under NRC jurisdiction but does operate under compatible Agreement State general license requirements established by the State of Washington. It is not appropriate for the NRC to act on your request to exempt all Honeywell customers from Agreement State requirements as this would undermine the regulatory authority of Agreement States.

If you wish to pursue an amendment authorizing installation and removal of the devices by Boeing aircraft owners or operators you should submit detailed written instructions to be followed by the general licensees. These instructions should include, but not be limited to:


- a. a clear statement informing the general licensees that devices must be received directly from and returned directly to Honeywell
- b. step-by-step procedures for the mechanics who will remove and install the devices
- c. step-by-step procedures for shipping and receiving the devices from and to the installation site.

We will continue our review of your application upon receipt of this information. Please reply in duplicate, within 30 days, and refer to Control Number 77823.

Sincerely,


William J. Adam, Ph.D.
Materials Licensing Section

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REG3 LIC30
22-19422-02G PDR



Honeywell

**WG1136AA-1 HANDLING PROCEDURE
MANUAL**

SEP 27 1985

DIST 22-19422-02G

**PART NO. WG1136AA01
WG1136AA02**

**DENSITOMETER
EMITTER ASSEMBLY**

**COMPONENT OF FUEL QUANTITY
INDICATING SYSTEM
USED ON B757 AND B767 AIRCRAFT**

This manual replaces
ATA publication 28-41-25
(Honeywell publication 95-8089A
dated 1 October 1982).

28-41-25

TITLE PAGE T-1

1 DECEMBER 1983

TO: HOLDERS OF WG1136AA-1 HANDLING PROCEDURE MANUAL

REVISION NO. 2 DATED 1 DECEMBER 83HIGHLIGHTS

This publication, revision 2, replaces ATA 28-41-25 (Honeywell publication 95-8089A) dated 1 October 1982. Three new topics have been added to this manual, and material has been reformatted and shifted from previous page locations. In addition, extensive changes have been made to include new data and to update existing data. Due to the extensive changes and reformatting, no change bars are included in text. The following major changes have been made:

PAGE NO.	DESCRIPTION OF CHANGE	EFFECTIVITY
Introduction	Revised to list added topics: notice of training requirement, fuel tank entry and breathing equipment requirements, and packaging for shipment or storage.	All
301	Added new topic: notice of training requirement.	All
401, 601, 701, 801, 901, 1101, 1201, 1301	Topics starting on these pages, previously started on pages 301, 401, 501, 601, 701, 801, 901, and 1001, respectively.	NA
501 thru 504	Added new topic: fuel tank entry and breathing equipment requirements.	All
701	Material previously on page 501 revised to add warning of fuel vapors and transfer record information.	All
1001	Added new topic: packaging for shipment or storage.	All

HIGHLIGHTS (CONT)

PAGE NO.	DESCRIPTION OF CHANGE	EFFECTIVITY
801	Material previously on page 601 revised to add warning of fuel vapors.	All
802 and 803	Tables 801 and 802 added to include tools for emitter assembly change-out.	All
806 and 808	Figures 802 and 803 added.	All
901	Material previously on page 701 revised to add warning of fuel vapors and text changes.	All
1001	Packaging for shipment or storage topic added.	All
1301 thru 1309	Revised NRC rules and regulations added.	N/A

RECORD OF REVISIONS

Retain this record in the front of the manual. On receipt of revisions, insert revised pages in the manual and enter date inserted and initials.

ASSIGNED TO:

LOCATION:

Handling Procedure Manual,
WG1136AA Densitometer Emitter
Assembly

REV. NO.	REVISION DATE	INSERTION DATE	BY	REV. NO.	REVISION DATE	INSERTION DATE	BY
0	1 Feb 82						
1	1 Oct 82						
2	1 Dec 83						

Address communications regarding this manual to:

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Honeywell Inc.
MN23-2010
P.O. Box 889
Minneapolis, MN 55440

Include name, position, company mail station, and address. Ensure that the manual number, publication date, and page number are provided, together with a brief description of the problem or suggested change.

28-41-25

RECORD OF TEMPORARY REVISIONS

REV. NO.	REVISION DATE	INSERTION DATE	REMOVAL DATE	BY
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28-41-25

SERVICE BULLETIN LIST

SERVICE BULLETIN	DATE INCORPORATED	SERVICE BULLETIN	DATE INCORPORATED

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INTRODUCTION

This manual contains handling procedures for the WG1136AA01 and WG1136AA02 Densitometer Emitter Assemblies (emitter assembly) manufactured by the Commercial Aviation Operations of Honeywell Inc., Minneapolis, MN 55440, for use on Boeing 757 and 767 aircraft. The WG1136AA01 Emitter Assembly is a component of the YG1757 (Boeing 757) and YG1767 (Boeing 767) Fuel Quantity Indicating Systems (FQIS). The WG1136AA02 Emitter Assembly is a component of the YG1757 FQIS only. The emitter assembly is used with the LG1136AA01 Densitometer Electronics Unit Assembly (electronics unit). Together, the emitter assembly and the electronics unit make up a densitometer which provides two output signals used in the FQIS to calculate fuel density. Except where otherwise specified, all procedures pertain to both the WG1136AA01 and WG1136AA02 Emitter Assemblies.

NOTE: The procedures in this manual are suggested procedures for training only and are not intended to take the place of any procedures supplied by Boeing Aircraft Company. If any conflicts arise between procedures supplied by Boeing Aircraft Company and the procedures supplied herein, the Boeing procedures shall take precedence. Removal or installation of the emitter assembly shall be performed only by or under the direction of trained and qualified airline, Boeing, or Honeywell personnel. If an emitter assembly must be removed or replaced, a device transfer report, similar to the form suggested and provided in TRANSFER RECORDS, must be filled in with the appropriate information and returned to Honeywell.

This manual is divided into the following topics:

1. NOTICE OF RADIATION WARNING. This contains the warning note and descriptions which are required by the U.S. Nuclear Regulatory Commission (NRC) for handling the emitter assembly and which are specified in distribution license agreement 22-19422-02G.
2. NOTICE OF REQUIREMENT TO REPORT TRANSFER. This contains a description of the procedures required by an aircraft emitter assembly owner to report transfers or sales of aircraft containing emitter assemblies to Honeywell.
3. NOTICE OF TRAINING REQUIREMENT. This contains information on training required for an airline intending to perform emitter assembly removal and installation.

4. DESCRIPTION AND OPERATION. This contains a description of the emitter assembly.
5. FUEL TANK ENTRY AND BREATHING EQUIPMENT REQUIREMENTS. This contains general tank entry procedures and breathing equipment requirements.
6. GENERAL MAINTENANCE. This contains general instructions for maintenance of emitter assemblies.
7. TROUBLESHOOTING. This contains general instructions for isolating a densitometer failure in the FQIS system to the emitter assembly, electronics unit, or system wiring.
8. REMOVAL. This contains a description of the procedures and equipment required to remove the emitter assembly from the fuel tank.
9. INSTALLATION. This contains a description of the procedures and equipment required to install the emitter assembly in the fuel tank.
10. PACKAGING FOR SHIPMENT OR STORAGE. This contains general instructions for packaging the emitter assembly for shipment or storage.
11. TRANSFER RECORDS. This provides a suggested form required for notification of transfer or sale of an emitter assembly.
12. HONEYWELL CONTACT INFORMATION. This provides Honeywell contacts to be called for removal or installation of the emitter assembly.
13. APPLICABLE NRC RULES AND REGULATIONS. This contains applicable NRC rules and regulations. The text contains sections of NRC rules and regulations contained in Title 10, CHAPTER 1, CODE OF FEDERAL REGULATIONS - ENERGY. The text contains a copy of the NRC Notice to Employees (Form NRC-3).

Related 757 FQIS publications consist of the following component maintenance manuals:

1. FG1006AA50 through FG1006AA64 Fuel Quantity Tank Unit Assembly, ATA publication 28-41-18, Honeywell publication 95-8045.

2. FG1007AA01, FG1007AA02, FG1007AA03, FG1007AA04 Fuel Quantity Compensator Assembly, ATA publication 28-41-09, Honeywell publication 95-8002.
3. HG1057AA, HG1064AA, JG1205AA, JG1205AB, JG1208AA ATLAS Test Procedures Manual 28-41-26, Honeywell publication 95-8105.
4. HG1064AA04 Digital Fuel Gauge Processor, Volume I, ATA publication 28-41-17, Honeywell publication 95-8057.
5. HG1064AA04 Digital Fuel Gauge Processor, Volume II, ATA publication 28-41-17, Honeywell publication 95-8067.
6. JG1208AA01, JG1208AA02, JG1208AK01 Load Select Indicator, ATA publication 28-41-05, Honeywell publication 95-9998.
7. RG1017AA01 and RG1017AA02 Load Select Control Assembly, ATA publication 28-41-06, Honeywell publication 95-9999.
8. YG1757B02 Fuel Quantity Indicating System, ATA publication 28-41-16, Honeywell publication 95-8046.

Related 767 FQIS publications consist of the following component maintenance manuals:

1. FG1006AA01 through FG1006AA17 Fuel Quantity Tank Unit Assembly, ATA publication 28-41-07, Honeywell publication 95-8000.
2. FG1007AA01, FG1007AA02, FG1007AA03, FG1007AA04 Fuel Quantity Compensator Assembly, ATA publication 28-41-09, Honeywell publication 95-8002.
3. HG1057AA, HG1064AA, JG1205AB, JG1208AA ATLAS Test Procedures Manual, ATA publication 28-41-26, Honeywell publication 95-8105.
4. HG1057AA04 Digital Fuel Gauge Processor, Volume I, ATA publication 28-41-02, Honeywell publication 95-9995.
5. HG1057AA04 Digital Fuel Gauge Processor, Volume II, ATA publication 28-41-02, Honeywell publication 95-8085.

6. JG1208AA01, JG1208AA02, JG1208AK01 Load Selector Indicator, ATA publication 28-41-05, Honeywell publication 95-9998.
7. RG1017AA01 and RG1017AA02 Load Select Control Assembly, ATA publication 28-41-06, Honeywell publication 95-9999.
8. YG1767A02 Fuel Quantity Indicating System, ATA publication 28-41-01, Honeywell publication 95-9994.

NOTICE OF RADIATION WARNING

The following radiation warning is included here to comply with NCR regulations that routinely require WARNING labels whenever a radioactive source is present. The extremely small radioactive source (Americium 241, 2.5 millicuries maximum) contained within the emitter assembly is triple encapsulated in a sealed source configuration which provides an extremely low exposure rate to individuals handling the emitter assembly.

WARNING: THE WG1136AA DENSITOMETER EMITTER ASSEMBLY CONTAINS A RADIOACTIVE SOURCE (AMERICIUM 241, 2.5 MILLICURIES MAXIMUM) IN A SEALED-SOURCE CONFIGURATION. RECEIPT, POSSESSION, USE, AND TRANSFER OF THIS DEVICE IS SUBJECT TO A GENERAL LICENSE OR EQUIVALENT AND REGULATIONS OF THE U.S. NUCLEAR REGULATORY COMMISSION OR AN AGREEMENT STATE. ABANDONMENT OR DISPOSAL OF THIS DEVICE IS PROHIBITED. INSTALLATION, REMOVAL, REPAIR, OR CALIBRATION SHALL NOT BE ATTEMPTED EXCEPT BY, OR UNDER THE DIRECTION OF, QUALIFIED HONEYWELL, BOEING, OR AIRLINE PERSONNEL. HONEYWELL ASSUMES NO LIABILITY IN AIRLINE REPLACEMENT OF THE EMITTER ASSEMBLY OTHER THAN NORMAL PRODUCT WARRANTIES CALLED OUT IN ITS CONTRACT WITH BOEING.

Applicable NRC regulations are attached to this manual and must be included with this manual for shipment to persons considered a general licensee when any emitter assembly or aircraft containing an emitter assembly is sold or transferred to that general licensee. (Refer to NOTICE OF REQUIREMENT TO REPORT TRANSFER for additional instructions.)

An airline performing maintenance involving the emitter assembly must have an alpha calibration standard and quantitative, alpha-measuring equipment capable of detecting five nanocuries.

Each airline shall be responsible for the acquisition and maintenance of its own nuclear regulatory license in accordance with the laws and regulations of its home country.

Each U.S. airline should have a copy of the Code of Federal Regulation (CFR) Title 10, Chapter 1, available at the site when any emitter assembly change-out occurs.

NOTE: IN ORDER TO COMPLY WITH NRC REGULATIONS CONCERNING ACCOUNTING AND TRANSFER OF MATERIAL, ALL WG1136 EMITTER DEVICES NOT INSTALLED ON AIRPLANES MUST BE RECEIVED DIRECTLY FROM AND RETURNED DIRECTLY TO HONEYWELL."

NOTICE OF REQUIREMENT TO REPORT TRANSFER

As specified in NRC Distribution License 22-19422-02G, any sale or transfer of emitter assemblies or aircraft which contain emitter assemblies to persons generally licensed must be reported to the U.S. Nuclear Regulatory Commission within 30 days after the end of each calendar quarter in which the device is transferred.

Honeywell has agreed with Boeing and the Nuclear Regulatory Commission, as a convenience to the user airline, to make all such reports providing that Honeywell receives notice of all such transactions from the transferring party. A suggested form for reporting such a transfer is provided in TRANSFER RECORDS. If the form provided in TRANSFER RECORDS is not used, and an alternate form or letter is provided, the following information must be included, as a minimum:

1. Name and address of person to whom the device was transferred.
2. Type of device transferred, part numbers, and serial number.
3. Quantity of licensed material transferred.
4. Date of transfer.
5. Date of report.

The airline that elects to install or replace the emitter assembly must agree to cooperate with Honeywell in accounting for all units by reporting all emitter assemblies that are shipped, received, or stored by the airline. The airline must also record the appropriate information on the TRANSFER RECORDS form or an equivalent form and supply this form to Honeywell. The report of transfer must be mailed to Honeywell at the address listed in TRANSFER RECORDS.

NOTE: IN ORDER TO COMPLY WITH NRC REGULATIONS CONCERNING ACCOUNTING AND TRANSFER OF MATERIAL, ALL WG1136 EMITTER DEVICES NOT INSTALLED ON AIRPLANES MUST BE RECEIVED DIRECTLY FROM AND RETURNED DIRECTLY TO HONEYWELL."

NOTICE OF TRAINING REQUIREMENT

Removal or installation of the emitter assembly shall be performed only by, or under the direction of, trained and qualified airline, Boeing, or Honeywell personnel. The individual airline will be responsible for training its personnel, using the materials provided by Honeywell. Based on the expected low frequency of replacement needed, Honeywell recommends that any given airline train only a few people.

At present, training consists of a two-hour videotape of radiation education, supplemented by familiarization with the material and procedures in this manual.

Honeywell recommends that there be actual hardware present at the training sessions. A WG1136AA Densitometer Emitter Assembly or an inactive model containing no radioactive material can be provided by Honeywell as a training aid.

Honeywell may offer to provide the above training as a part of other FQIS courses given at its factory, with the agreement of the attending airline.

DESCRIPTION AND OPERATION1. General.

- A. This topic contains description and theory of operation for the emitter assembly. For a description of the 757 and 767 FQIS, refer to the component maintenance manuals listed in the INTRODUCTION of this manual.
- B. The emitter assembly is a component of the YG1757 and YG1767 Fuel Quantity Indicating Systems. The emitter assembly is used with the LG1136AA01 Densitometer Electronics Unit Assembly (electronics unit). Together, the emitter assembly and the electronics unit make up a densitometer which provides two output signals used in the FQIS to calculate fuel density.
- C. The WG1136AA01 Densitometer Emitter Assembly is installed in the left, right, and auxiliary fuel tanks of the 767 aircraft and in the left and right fuel tanks of the 757 aircraft. The WG1136AA02 Densitometer Emitter Assembly is installed only in the center fuel tank of the 757 aircraft. One emitter assembly and one electronics unit are installed in each of the aircraft fuel tanks. The emitter assembly contains a gamma ray source which transmits gamma rays to the electronics unit through the fuel in the tank. The electronics unit transmits two digital signals to the system processor where fuel density is calculated.
- D. Table 401 lists leading particulars for the emitter assembly.
- E. Table 402 lists abbreviations used throughout this manual.

2. Densitometer Description. See figure 401.

- A. The emitter assembly is mounted on the inside of the fuel tank and consists of a sealed Americium 241 gamma ray source that is staked into a cast housing for alignment. This design provides redundant protection against possible loss of radioactive material. The Americium 241 source contains 2.5 millicuries maximum in a sealed ceramic matrix form.
- B. The cast housing provides two different fuel length paths for the gamma rays to travel through to reach the detectors in the electronics unit, which is positioned on the outside of the fuel tanks. Fuel path B, as shown in figure 401, is longer (more fuel for rays to pass through) than is fuel path A. More gamma rays are absorbed through fuel path B than are absorbed through fuel path A. The differential count rates detected by the proportional counter-type

detector tubes are converted to pulses in preamplifier CCA A3 and further shaped into a train of logic pulses in pulse processor CCA A2. The differential pulse train outputs for each of the detectors (SLOW and FAST) are transmitted to the FQIS processor unit. The processor unit calculates the fuel density as a function of the fast/slow count ratio.

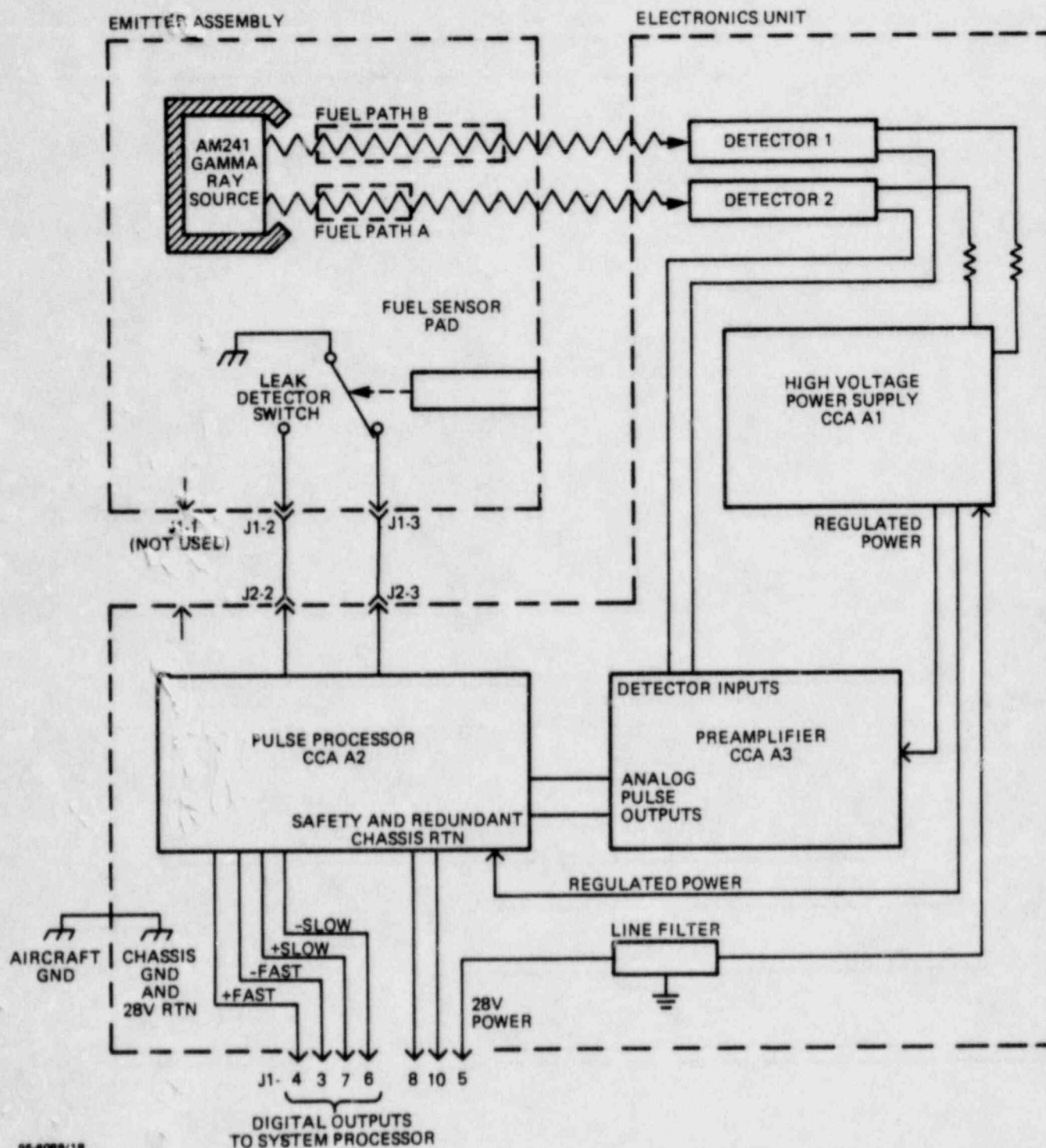
- C. A leak detector (located in the emitter assembly housing) is activated if fuel contaminates the gamma ray source cavity. The leak detector consists of a leak detector switch and a fuel sensor pad. If a fuel leak exists, the fuel sensor pad absorbs the fuel, expands, and activates the leak detector switch. Activation of the fuel leak detector switch disables the SLOW pulse train and causes the processor to flag this condition (infinite ratio) in the fault code directory as a densitometer failure. The densitometer failure is indicated by the processor unit fault code. The fault codes D1, D2, and D3 indicate a left main tank densitometer, auxiliary or center tank densitometer, or a right main tank densitometer fault, respectively.

Table 401. Leading Particulars

CHARACTERISTIC	SPECIFICATION
Physical:	
Width.....	4.29 in. max
Length.....	7.86 in. max
Height.....	5.61 in. max
Weight.....	1.75 lb
Environmental:	
Temperature (operating and storage)....	-55°C to +75°C (-67°F to +167°F)
Altitude.....	-1,000 to +50,000 ft
Vibration.....	13g rms
Mechanical shock.....	6g vertical, 2g lateral and horizontal
Fuel.....	Jet hydrocarbon fuels with normal additives -55°C to +57°C (-67°F to +135°F)
Radioactive Source.....	2.5 millicuries maximum of Americium 241 (sealed source)

Table 402. List of Abbreviations

ABBREVIATION	DEFINITION
BIT	Built-in test
CCA	Circuit card assembly
CFR	Code of Federal Regulation
FQIS	Fuel quantity indicating system
GND	Ground
IPL	Illustrated parts list
LRU	Line replaceable unit
NIOSH	National Inspection Organization Safety and Health
NRC	Nuclear Regulatory Commission
PPM	Parts per million
RTN	Return



95-8089/18
10078212 (E)

Densitometer System - Block Diagram
Figure 401

28-41-25

FUEL TANK ENTRY AND BREATHING EQUIPMENT REQUIREMENTS

NOTE: Aircraft with one failed emitter assembly are dispatchable for flights. Therefore, replacement of a failed emitter assembly may be delayed until a maintenance area suitable for best tank entry procedures is available.

All jet fuel vapors in an aircraft fuel tank must be considered explosive and toxic. The vapor concentrations present in the aircraft fuel tank determine the equipment necessary for tank entry and for work inside of tank. Refer to applicable Boeing aircraft maintenance manuals and observe all airline and industry safety standards related to fuel tank entry, fire hazards, and personnel safety, before entering an aircraft fuel tank.

GENERAL MAINTENANCE

1. The emitter assembly is a sealed unit which is installed in the aircraft fuel tank. The emitter assembly contains no moving parts and its radioactive source has a half-life in excess of 450 years. Therefore, no scheduled maintenance is recommended or expected.
2. If the densitometer is determined to be faulty by on-aircraft procedures, the electronics unit shall be suspected first due to ease of replacement. It should be noted that on-aircraft procedures using the processor unit BIT do not distinguish whether the electronics unit or the emitter assembly is at fault. The only test which can be performed on the emitter assembly is checking the condition of the leak detector switch within the emitter assembly. This can be accomplished without removing the emitter assembly from the aircraft fuel tank.
3. Procedures for checking the leak detector switch are contained in TROUBLESHOOTING. If the leak detector switch test procedure indicates no fault in the emitter assembly, the densitometer fault is most likely in the electronics unit or the aircraft wiring. Misalignment of the radioactive source in the emitter assembly could cause densitometer failure, but such misalignment could result only from an accident severe enough to damage the aircraft itself. If the leak detector test procedure indicates a faulty switch, removal of the emitter assembly and installation of a replacement emitter assembly shall be performed only by, or under the direction of, qualified airline, Boeing, or Honeywell personnel. If an emitter assembly must be removed or replaced, a device transfer report, similar to the form provided in TRANSFER RECORDS, must be filled in with the appropriate information and returned to Honeywell.

TROUBLESHOOTING

WARNING: IF TANK ENTRY IS REQUIRED FOR REMOVAL OR INSTALLATION OF EMITTER ASSEMBLY, FUEL TANK ENTRY AND BREATHING EQUIPMENT REQUIREMENTS MUST BE OBSERVED. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT AND/OR THE AIRCRAFT.

1. Faults in the densitometer are detected by the processor unit BIT and are displayed on the processor unit display as fault codes. Densitometer faults can be isolated to one of three areas: the emitter assembly, the electronics unit, or the aircraft wiring. The fault codes indicate which tank or tanks contain the densitometer(s) considered faulty. The fault codes do not indicate whether it is the emitter assembly or electronics unit which is at fault.
2. Table 701 contains the troubleshooting procedure required to isolate faults to one of the three possible fault areas. If the procedure and corrective action eliminate the fault, continued troubleshooting is not required unless otherwise specified. The procedures in table 701 assume that the technician has used the BIT fault codes to isolate to the specific densitometer(s).
3. The STEP column in table 701 identifies the consecutive steps. These steps must be completed in the order listed. The PROCEDURE column lists the operator action required. The NORMAL INDICATION column identifies the test results if the unit is operating properly. The CORRECTIVE ACTION column provides instructions for returning the system to normal operation. When the CORRECTIVE ACTION column indicates that the emitter assembly should be replaced, the removal and installation of the emitter assembly shall be performed only by, or under the direction of, qualified airline, Boeing, or Honeywell personnel.

NOTE: To correctly identify a failed emitter assembly, the procedure in table 701 must be performed with care. Incorrectly performed, the indication may result in purging the fuel tank unnecessarily and replacing an operational emitter assembly. If any doubt exists after performing the tests specified in table 701, replace the electronics unit and retest the densitometer prior to purging the tank.

4. If an emitter assembly must be removed or replaced, a device transfer report, similar to the form provided in TRANSFER RECORDS, must be filled in with the appropriate information and returned to Honeywell.

28-41-25

Table 701. Densitometer Troubleshooting

STEP	PROCEDURE	NORMAL INDICATION	CORRECTIVE ACTION
<p>NOTE: The procedures in this manual are suggested for training only and are not intended to take the place of any procedures supplied by Boeing Aircraft Company. If any conflicts arise between procedures supplied by The Boeing Aircraft Company and the procedures supplied herein, the Boeing procedures shall take precedence.</p> <ol style="list-style-type: none">1. Ensure that all power is removed from the FQIS. Refer to appropriate Boeing aircraft manual for procedure.2. Disconnect connector J1 on electronics unit.3. Disconnect ground wire from electronics unit.4. Remove four self-locking nuts which attach electronics unit to emitter assembly (figure 901), and remove electronics unit. This will expose connector J1 on the emitter assembly.			

Table 701. Densitometer Troubleshooting (Cont)

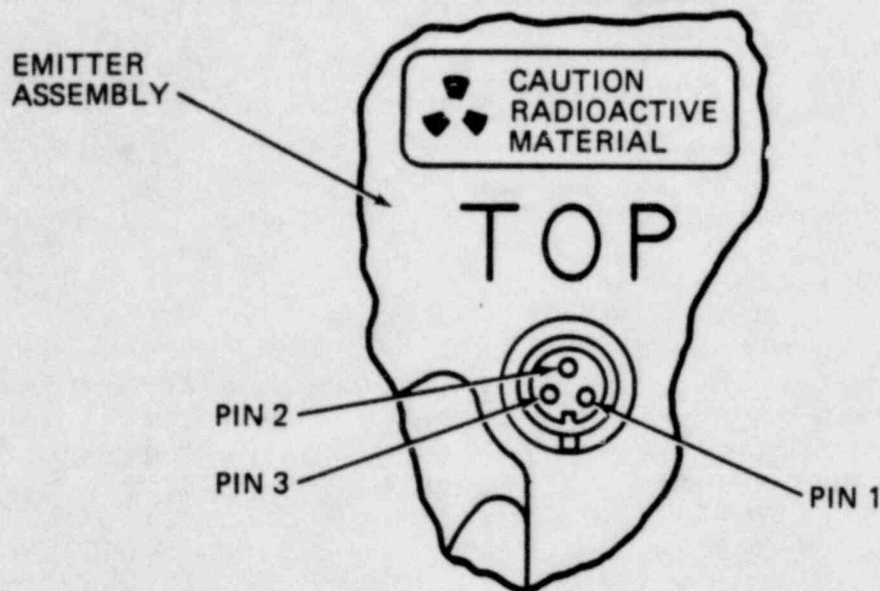
STEP	PROCEDURE	NORMAL INDICATION	CORRECTIVE ACTION
<p>NOTE: In test steps 6 and 7, when making resistance measurements to test the leak detector switch in the emitter assembly, ensure that the emitter chassis is used as the ground return. Use of the tank wall or spar as ground return will result in incorrect readings.</p>			
5.	Using ohmmeter, measure resistance between pin 3 of connector J1 on emitter assembly and emitter assembly chassis (ground return). (See figure 701 for pin locations.)	<0.2 ohm (See figure 401.)	<ol style="list-style-type: none"> 1. Verify that emitter assembly J1 connector contacts are not fouled, shorted, or corroded. If cleaning of the contacts corrects the problem, proceed to test step 6. 2. Remove and replace emitter assembly using instructions and cautions listed in REMOVAL and INSTALLATION.
6.	Using ohmmeter, measure resistance between pin 2 of connector J1 on emitter assembly and emitter chassis (ground return). (See figure 701 for pin locations.)	>1.0 megohms (See figure 401.)	<ol style="list-style-type: none"> 1. Verify that emitter assembly J1 connector contacts are not fouled, shorted, or corroded. If cleaning of the contacts corrects the problem, proceed to test step 7. 2. Remove and replace emitter assembly using instructions and cautions listed in REMOVAL and INSTALLATION.

Table 701. Densitometer Troubleshooting (Cont)

STEP	PROCEDURE	NORMAL INDICATION	CORRECTIVE ACTION
7.	Using ohmmeter, measure resistance between pins 2 and 3 of connector J1 on emitter assembly.	>1.0 megohm (See figure 401.)	<ol style="list-style-type: none">1. Verify that emitter assembly connector J1 contacts are not fouled, shorted, or corroded. If cleaning of the contacts corrects the problem, connect the electronics unit to the emitter assembly as directed in INSTALLATION, paragraph 2C, and verify system operation using procedures in the appropriate Boeing aircraft manual or Honeywell YG1757 or YG1767 system manual.2. Remove and replace emitter assembly using instructions and cautions listed in REMOVAL and INSTALLATION.

Table 701. Densitometer Troubleshooting (Cont)

STEP	PROCEDURE	NORMAL INDICATION	CORRECTIVE ACTION
8.	Replace electronics unit and verify system operation using procedures contained in appropriate Boeing aircraft manual or Honeywell YG1757 or YG1767 system manual.		
9.	Verify system wiring using schematic diagrams in appropriate Boeing aircraft manuals and Honeywell YG1757 or YG1767 System Manual.	Continuity is as shown in referenced manuals.	Remove and replace defective wiring, and verify system operation using procedures in appropriate Boeing aircraft manuals and Honeywell YG1757 or YG1767 System Manual.



NOTE:

EMITTER ASSEMBLY IS SHOWN
WITH ELECTRONICS UNIT REMOVED.

TABLE. EMITTER ASSEMBLY OPERATION

NORMAL OPERATION	FAILED OPERATION
PIN 1 TO GND -- NOT USED	PIN 1 TO GND -- NOT USED
PIN 2 TO CHASSIS GND -- OPEN	PIN 2 TO CHASSIS GND -- CONTINUITY
PIN 3 TO CHASSIS GND -- CONTINUITY	PIN 3 TO CHASSIS GND -- OPEN
PIN 2 TO 3 -- OPEN	PIN 2 TO 3 -- CLOSED

95-8089/2A

Emitter Assembly - Connector Pin Locations
Figure 701

28-41-25

REMOVAL

WARNING: IF TANK ENTRY IS REQUIRED FOR REMOVAL OF EMITTER ASSEMBLY, THE FUEL TANK ENTRY AND BREATHING EQUIPMENT REQUIREMENTS MUST BE OBSERVED. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT AND/OR THE AIRCRAFT.

NOTE: Removal of the emitter assembly shall be performed only by, or under the direction of, qualified airline, Boeing, or Honeywell personnel. If an emitter assembly must be removed, a device transfer report, similar to the form provided in TRANSFER RECORDS, must be filled in with the appropriate information and returned to Honeywell.

1. General. This topic contains instructions for removing an emitter assembly from an aircraft fuel tank.
 - A. If the emitter assembly has obvious physical damage or if troubleshooting has determined that the leak detector switch has been activated (signifying the possibility of a leak), refer to paragraph 2, Removal Procedures, for emitter assembly removal instructions.
 - B. The WG1136AA01 and the WG1136AA02 emitter assemblies require separate removal procedures. Paragraph 2A contains procedures for removal of WG1136AA01 Densitometer Emitter Assembly. Paragraph 2B contains procedures for removal of WG1136AA02 Densitometer Emitter Assembly.
 - C. Before an emitter assembly can be removed, the fuel tank must be drained and purged, and the fuel tank access hatch must be opened.
 - D. Removal of emitter assembly requires two technicians. One technician works inside the fuel tank, and one technician works outside the fuel tank. Tools and materials required by the technician working outside the fuel tank are listed in table 801. Tools required by the technician working inside the fuel tank are listed in table 802.

WARNING: THE TECHNICIAN WORKING INSIDE THE FUEL TANK MUST ENSURE THAT NO LOOSE MATERIALS (PROTECTIVE PLUG, SAFETY WIRE, OR TOOLS) ARE LEFT IN THE FUEL TANK. FAILURE TO REMOVE LOOSE MATERIAL MAY CAUSE SERIOUS INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT AND/OR THE AIRCRAFT.

Table 801. Tools and Materials Needed Outside Tank

TOOL/MATERIAL	DESCRIPTION
Cutting tool	Nonmetallic
Extension*	1/4 in. (4 in. long)
Extension	1/4 in. (6 in. long)
Ratchet	1/4 in. drive
Socket	5/16 in. (thin wall, deep well, 1/4 in. drive)
Socket, swivel*	5/16 in. (thin wall, deep well, 1/4 in. drive)
Wrench	3/8 in., open end
Wrench	5/16 in., open end
Wrench	7/16 in., open end
Wrench**	Torque (70-75 in.-lb), 1/4 in. drive
PARKER O LUBE***	Lubricant and sealer for O-rings
PR1422 Tank Sealant	

* Used to remove electronics unit on 757 aircraft only.

** Used during installation only.

*** Sealant for emitter assembly to aircraft mating surface.

Table 802. Tools Needed Inside Tank

TOOL	DESCRIPTION
Collimator sleeve tool*	UG347AA
Cutters	Diagonal
Cutting tool	Nonmetallic
Extension	1/2 in. (6 in. long)
Flashlight	Explosion-proof
Ratchet	1/2 in. drive
Wrench, WG1136T12**	3-5/8 in. crow-foot
Wrench***	Torque (30-35 ft-lb, 1/2 in. drive)

- * Used on WG1136AA01 Densitometer Emitter Assembly only. See figure 802.
- ** Used on WG1136AA02 Densitometer Emitter Assembly only. See figure 804.
- *** Used during installation only.

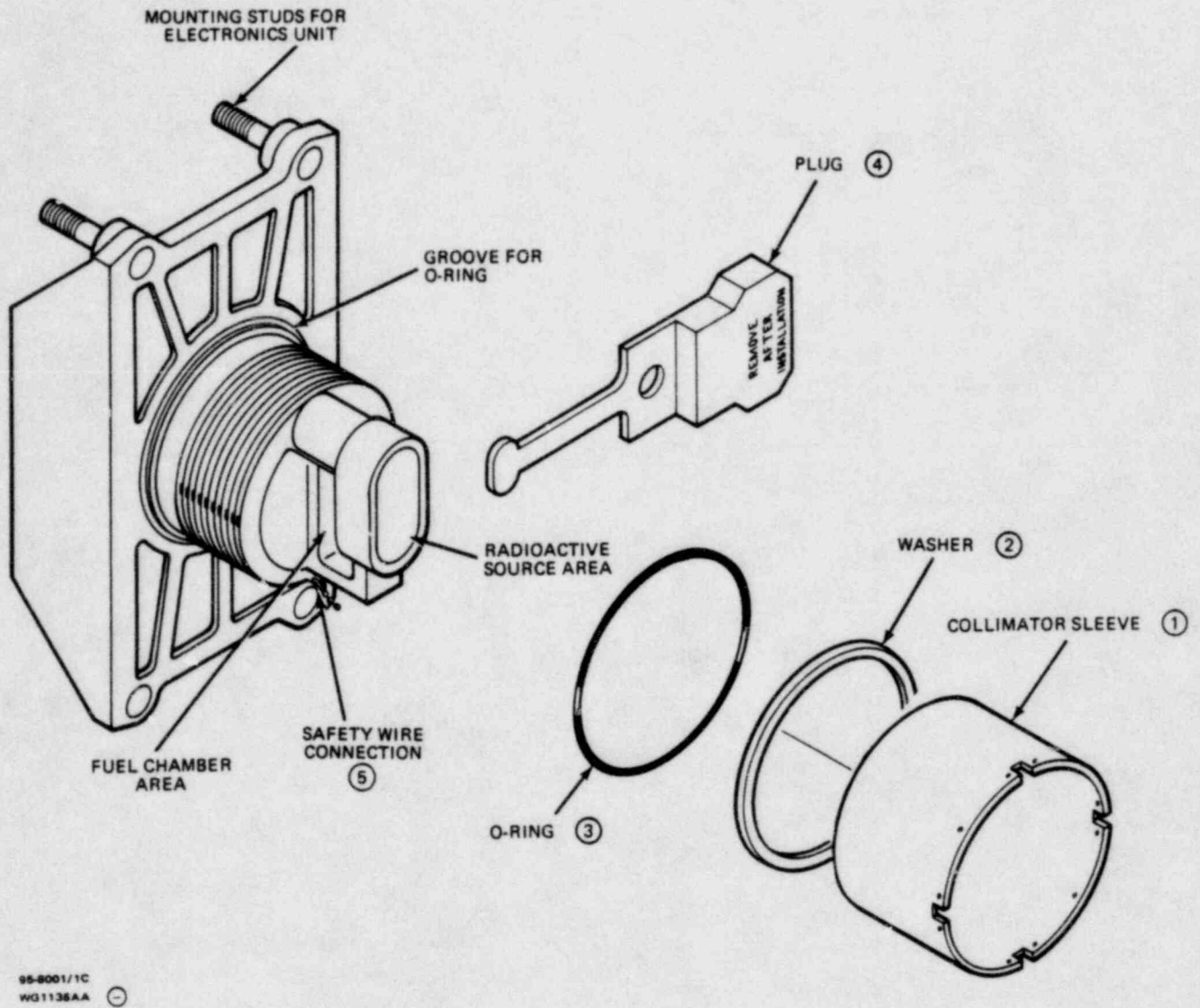
2. Removal Procedures.

- A. WG1136AA01 Densitometer Emitter Assembly removal procedure.
(Item numbers refer to figure 801.)

NOTE: If the technician working inside the fuel tank will install the replacement WG1136AA01 Emitter Assembly before leaving the fuel tank, the technician must take the collimator sleeve (1, figure 801) and washer (2, figure 801) for the replacement emitter assembly into the fuel tank upon entry.

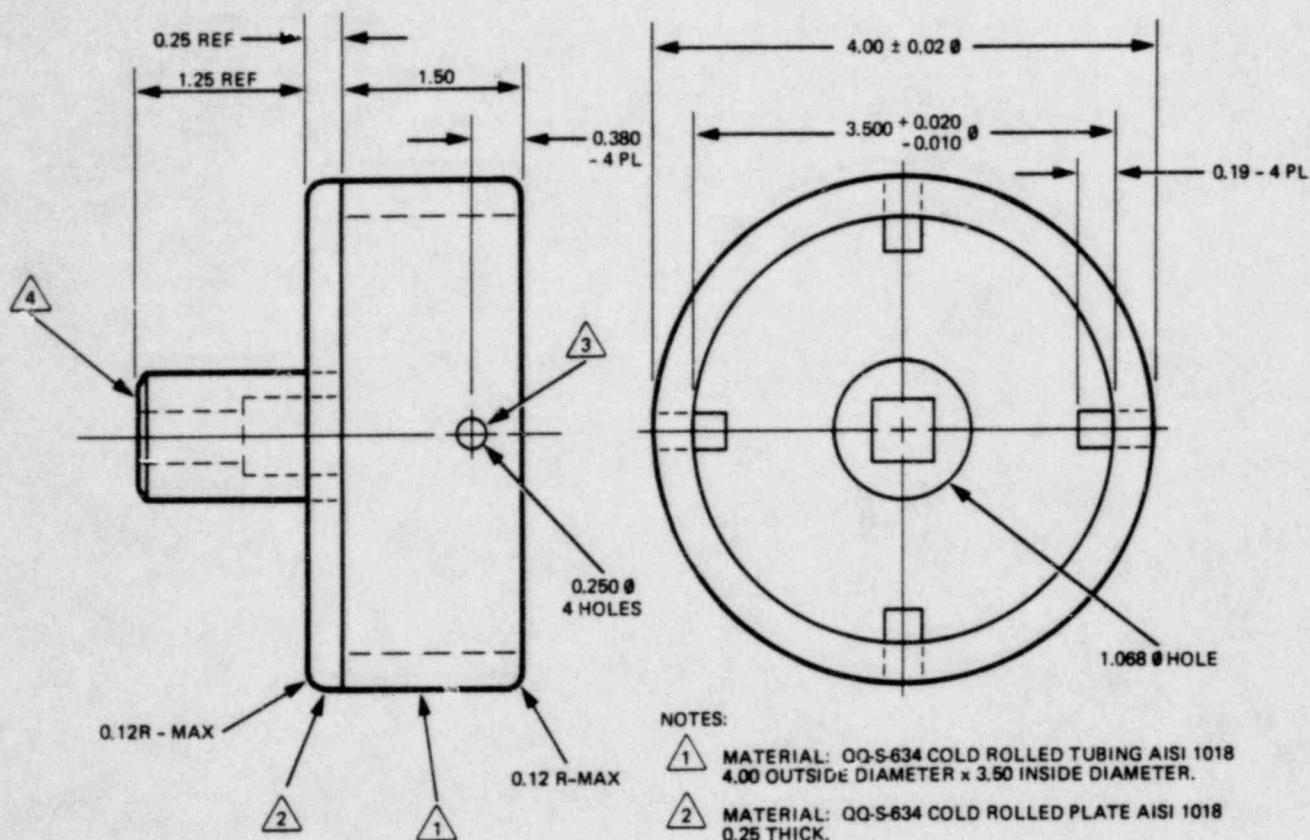
WARNING: FOR NORMAL TANK ENTRY PROCEDURES, THE TECHNICIAN ENTERING FUEL TANK SHALL WEAR DISPOSABLE PLASTIC OR RUBBER GLOVES, A BREATHING APPARATUS (NIOSH APPROVED OR EQUIVALENT), COVERALLS, PROTECTIVE BOOTS, AND A CAP.

- (1) The equipment listed in table 802 must be brought into the fuel tank by the technician.
- (2) From outside fuel tank, disconnect connector J1 and the electronics-unit-to-aircraft grounding wire from the electronics unit, and remove electronics unit as instructed in Boeing aircraft maintenance manual using 5/16 inch socket, extension, and wrench listed in table 801.
- (3) From outside fuel tank, use a nonmetallic cutting tool to cut and remove tank sealant from around the outside of the emitter assembly.
- (4) From inside fuel tank, use diagonal cutters to cut and remove safety wire (5) from collimator sleeve (1).
- (5) From inside of fuel tank, use a nonmetallic cutting tool to remove tank sealant, if present, from around collimator sleeve (1).
- (6) While outside technician holds emitter assembly in place, the inside technician uses UG347AA Collimator Sleeve Tool (figure 802), 1/2 inch drive ratchet, and extension to remove collimator sleeve (1) and washer (2) from emitter assembly.
- (7) From outside fuel tank, remove emitter assembly from mounting hole, using a nonmetallic cutting tool as necessary to cut away sealant.



WG1136AA01 Emitter Assembly - Parts Identification View
Figure 801

28-41-25



NOTES:

- 1 MATERIAL: QQ-S-634 COLD ROLLED TUBING AISI 1018
4.00 OUTSIDE DIAMETER x 3.50 INSIDE DIAMETER.
- 2 MATERIAL: QQ-S-634 COLD ROLLED PLATE AISI 1018
0.25 THICK.
- 3 MATERIAL: QQ-S-634 COLD ROLLED ROD AISI 1018
0.25 DIAMETER.
- 4 MATERIAL: SNAP-ON SOCKET NO. P-240, 1/2 DRIVE SIZE -
3/4, OR EQUIVALENT.
5. CASE HARDEN 0.010 DEEP MIN TO 50 R_C MINIMUM.
6. ALL DIMENSIONS ARE IN INCHES.

95-8089/6
UG347AA

UG347AA Collimator Sleeve Tool
Figure 802

28-41-25

- (8) Loosely assemble collimator sleeve (1) and washer (2) to emitter assembly. Prepare emitter assembly for storage according to instructions in paragraph 3, Special Handling.

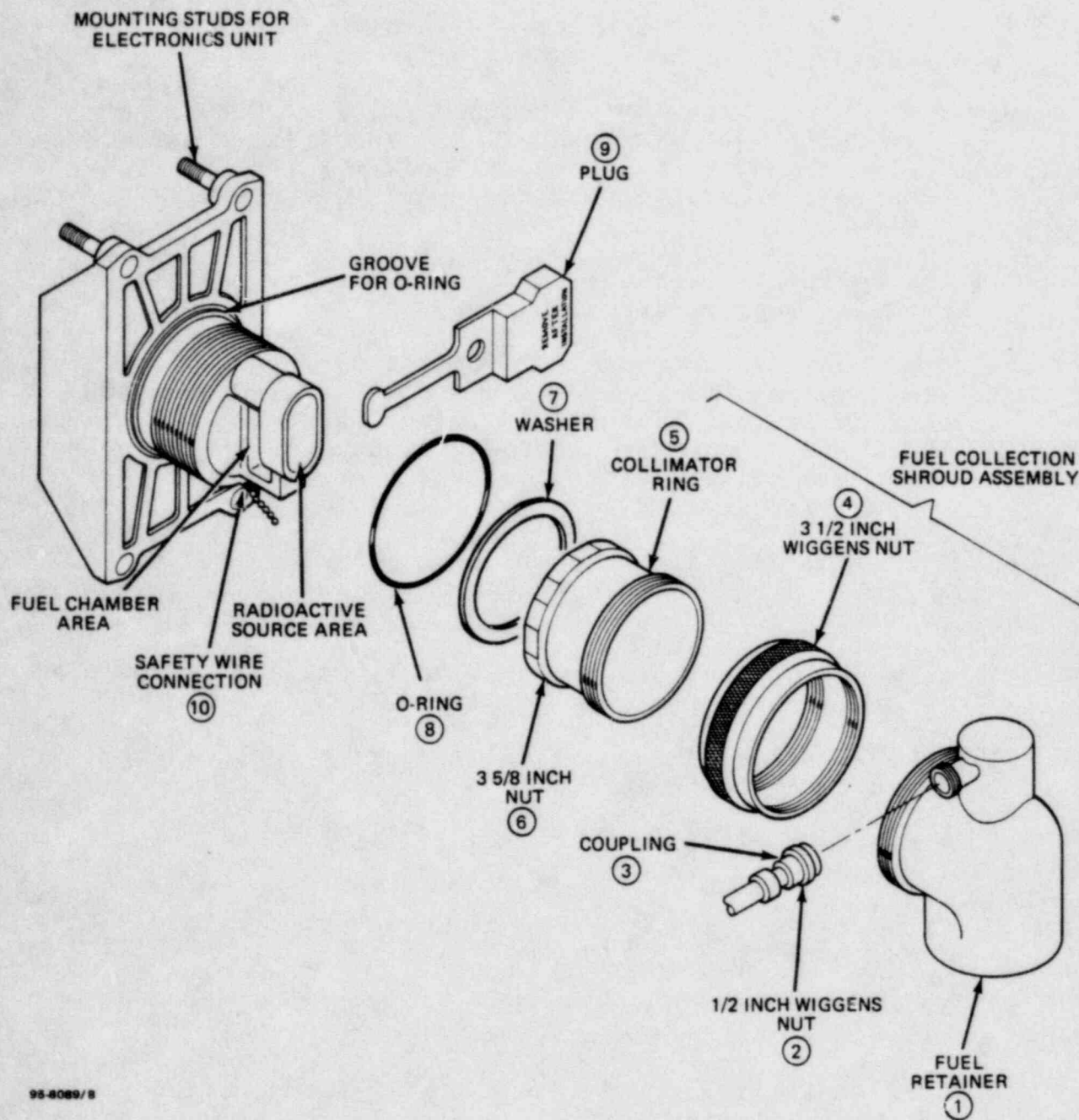
B. WG1136AA02 Densitometer Emitter Assembly removal procedures. (Item numbers refer to figure 803.)

WARNING: FOR NORMAL TANK ENTRY PROCEDURES, THE TECHNICIAN ENTERING FUEL TANK SHALL WEAR DISPOSABLE PLASTIC OR RUBBER GLOVES, A BREATHING APPARATUS (NIOSH APPROVED OR EQUIVALENT), COVERALLS, PROTECTIVE BOOTS, AND A CAP.

- (1) The equipment listed in table 802 must be brought into the fuel tank by the technician.
- (2) From outside fuel tank, disconnect connector J1 and electronics unit-to-aircraft grounding wire from the electronics unit, and remove electronics unit as instructed in Boeing aircraft maintenance manual using 5/16 inch socket, extension, and ratchet listed in table 801.
- (3) From outside fuel tank, use a nonmetallic cutting tool to cut and remove tank sealant from around outside of emitter assembly.
- (4) From inside fuel tank, use diagonal cutters to cut and remove safety wire from coupling (3).

NOTE: WIGGENS nuts should be hand tight; no special tools are required to loosen it.

- (5) From inside fuel tank, loosen 1/2 inch WIGGENS nut (2) and slide coupling (3) back.
- (6) From inside fuel tank, use diagonal cutters to cut and remove safety wire from fuel retainer (1).
- (7) From inside fuel tank, loosen 3-1/2 inch WIGGENS nut (4) and remove fuel retainer (1).
- (8) From inside fuel tank, use a nonmetallic cutting tool to remove tank sealant, if present, from around collimator ring (5).
- (9) From inside fuel tank, use diagonal cutters to cut and remove safety wire from collimator ring (5).



95-8089/8

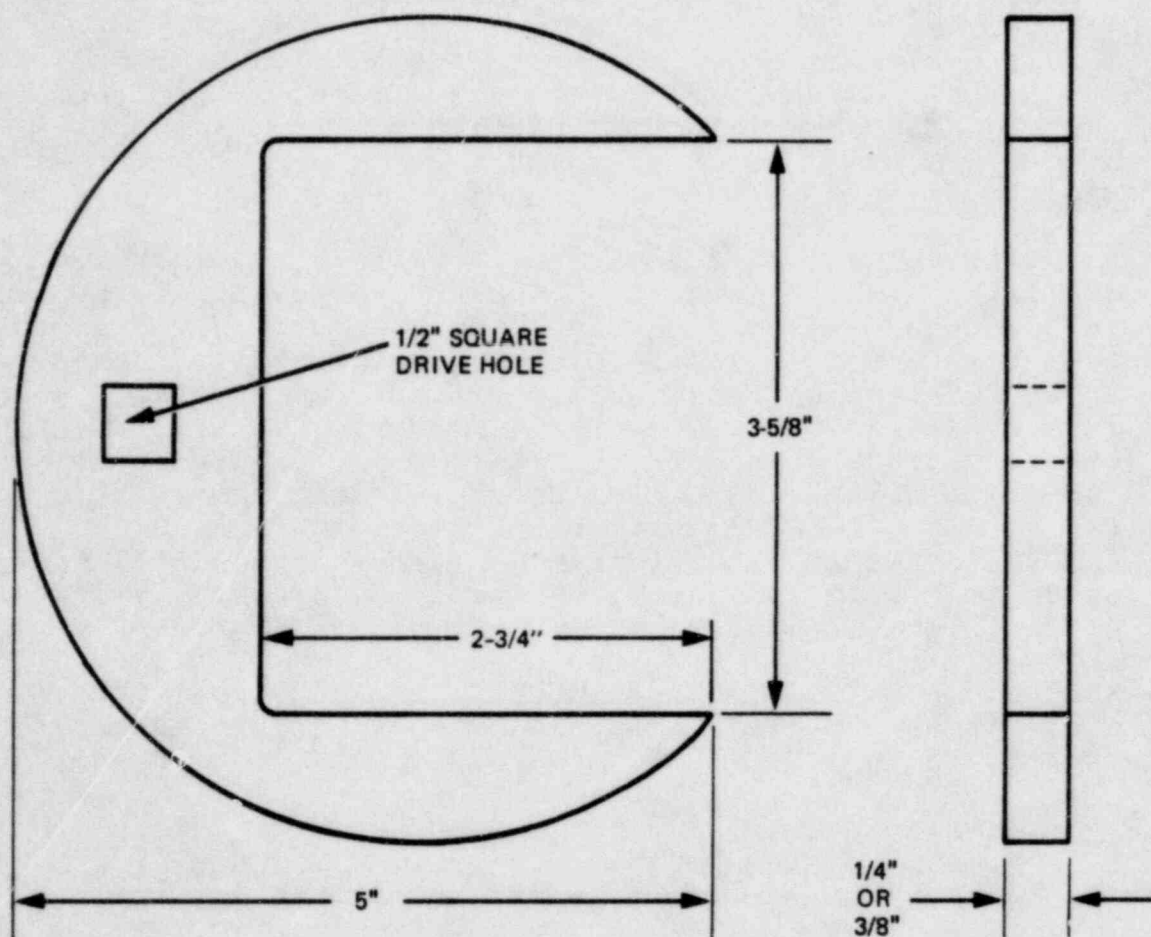
WG1136AA02 Emitter Assembly with Fuel Collection Shroud
Assembly - Parts Identification View
Figure 803

28-41-25

- (10) While the outside technician holds the emitter assembly, the inside technician uses WG1136T12 Crow-Foot Wrench (figure 804), 1/2 inch ratchet, and extension to remove collimator ring (5), nut (6), and washer (7).
- (11) From outside fuel tank, remove emitter assembly from mounting hole, using a nonmetallic cutting tool as necessary to cut away sealant.
- (12) Assemble washer (7) to emitter assembly. Prepare emitter assembly for storage according to instructions in paragraph 3, Special Handling.

3. Special Handling.

- A. After installation of replacement emitter assembly is completed, insert plug (4, figure 801 or 9, figure 803) into emitter assembly removed from aircraft. Place emitter assembly in 6 mil plastic bag or multiple thinner bags whose total thickness equals 6 mil or greater. Also, place in the plastic bag any gloves worn during removal of emitter assembly and any absorbent material used to wipe fuel from emitter assembly. Secure plastic bag by tying or taping shut. Label plastic bag to identify contents, removal date, and individuals who removed the unit. Wash hands with soap and water after special handling procedures are complete.
- E. Refer to PACKAGING FOR SHIPMENT OR STORAGE topic for procedures to package emitter assembly for shipment or storage.



95-8089/5
WG 136T12-2

WG1136T12 Crow-Foot Wrench
Figure 804

28-41-25

INSTALLATION

WARNING: IF TANK ENTRY IS REQUIRED FOR INSTALLATION OF EMITTER ASSEMBLY, FUEL TANK ENTRY AND BREATHING EQUIPMENT REQUIREMENTS MUST BE OBSERVED. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT AND/OR THE AIRCRAFT.

NOTE: Installation of emitter assembly shall be performed only by, or under the direction of, qualified airline, Boeing, or Honeywell personnel. If an emitter assembly must be installed, a device transfer report, similar to the form provided in TRANSFER RECORDS, must be filled in with the appropriate information and returned to Honeywell.

1. General. This topic contains instructions for installing the emitter assembly into the fuel tank. Refer to tables 801 and 802 in REMOVAL for tools required during installation.

A. Installation of emitter assembly requires two technicians. One technician works inside the fuel tank, and one technician works outside the fuel tank.

WARNING: THE TECHNICIAN WORKING INSIDE THE FUEL TANK MUST ENSURE THAT NO LOOSE MATERIALS (PROTECTIVE PLUG, SAFETY WIRE, OR TOOLS) ARE LEFT IN THE FUEL TANK. FAILURE TO REMOVE LOOSE MATERIAL MAY CAUSE SERIOUS INJURY TO PERSONNEL AND DAMAGE TO THE EQUIPMENT AND/OR THE AIRCRAFT.

B. Before a new emitter assembly is installed, ensure the aircraft surface where the emitter assembly will be located is thoroughly cleaned of sealant or other contaminants.

C. The WG1136AA01 and the WG1136AA02 Emitter Assemblies require separate installation procedures. Paragraph 2A contains procedures for installation of the WG1136AA01 Densitometer Emitter Assembly. Paragraph 2B contains procedures for installation of the WG1136AA02 Densitometer Emitter Assembly.

D. If the emitter assembly is dropped during installation, package emitter assembly in same manner used to package a faulty emitter assembly for return to Honeywell, as described in REMOVAL, paragraph 3, Special Handling, and return it to Honeywell.

2. Installation Procedures.

A. WG1136AA01 Densitometer Emitter Assembly. (Item numbers refer to figure 801.)

WARNING: FOR NORMAL TANK ENTRY PROCEDURES, THE TECHNICIAN ENTERING FUEL TANK SHALL WEAR DISPOSABLE PLASTIC OR RUBBER GLOVES, A BREATHING APPARATUS (NIOSH APPROVED OR EQUIVALENT), COVERALLS, PROTECTIVE BOOTS, AND A CAP.

- (1) The equipment listed in table 802 must be brought into the fuel tank by the technician. The technician inside the fuel tank must have the collimator sleeve (1) and washer (2) inside the fuel tank.
- (2) From outside fuel tank, remove O-ring (3) from emitter assembly, inspect O-ring for damage and replace if necessary, apply PARKER O LUBE to O-ring, and install O-ring to emitter assembly. Ensure O-ring is properly seated in O-ring groove.
- (3) From outside fuel tank, insert safety wire (5) (MS2095NC32 or equivalent) in emitter casting and twist approximately three inches to secure. Do not cut off excess safety wire at this time. The other end of safety wire is secured to the collimator sleeve (1) in step 2A(5)(e).
- (4) From outside fuel tank, insert emitter assembly through tank wall. Hold emitter assembly in position until step 2A(5)(d) is completed.
- (5) From inside fuel tank, perform the following procedures:

WARNING: TO AVOID UNNECESSARY EXPOSURE TO THE RADIOACTIVE SOURCE, DO NOT INSERT FINGERS INTO FUEL CHAMBER OPENING AFTER REMOVING RED PROTECTIVE PLUG (4).

- (a) Remove red protective plug (4) (marked REMOVE AFTER INSTALLATION) from emitter assembly. Do not discard protective plug; it must be inserted in removed emitter assembly before packaging for shipment or storage.
- (b) Install washer (2) over threaded portion of emitter assembly.

- (c) Install collimator sleeve (1) onto threaded portion of emitter assembly. Tighten finger tight only.
 - (d) Using UG347AA Collimator Sleeve Tool and a 1/2 inch drive torque wrench, tighten collimator sleeve (1) to 30-35 ft-lb.
 - (e) Attach free end of safety wire (5) (from step 2A(3)) to collimator sleeve (1). Twist ends to secure and clip off any excess safety wire.
 - (f) Before leaving fuel tank, ensure that no loose materials (protective plug, safety wire, or tools) are left in fuel tank.
- (6) From outside fuel tank, apply PRL422 Tank Sealant or equivalent around emitter assembly and to aircraft sparmating surfaces.

B. WG1136AA02 Densitometer Emitter Assembly. (Item numbers refer to figure 803.)

WARNING: FOR NORMAL TANK ENTRY PROCEDURES, THE TECHNICIAN ENTERING FUEL TANK SHALL WEAR DISPOSABLE PLASTIC OR RUBBER GLOVES, A BREATHING APPARATUS (NIOSH APPROVED OR EQUIVALENT), COVERALLS, PROTECTIVE BOOTS, AND A CAP.

- (1) The equipment listed in table 802 must be brought into fuel tank by the technician.
- (2) From outside fuel tank, remove O-ring (8) from emitter assembly, inspect O-ring for damage and replace if necessary, apply PARKER O LUBE to O-ring, and install O-ring to emitter assembly. Ensure O-ring is properly seated in O-ring groove.
- (3) From outside fuel tank, install safety wire (10) (MS2095NC32 or equivalent) into emitter casting and twist approximately three inches to secure. Do not cut off excess safety wire at this time. The other end of safety wire is secured to the collimator ring (5) in step 2B(5)(c).
- (4) From outside fuel tank, install replacement emitter assembly into fuel tank wall and hold in place until step 2B(5)(b) is completed.

- (5) From inside the fuel tank, perform the following procedures:

WARNING: TO AVOID UNNECESSARY EXPOSURE TO THE RADIOACTIVE SOURCE, DO NOT INSERT FINGERS INTO FUEL CHAMBER OPENING AFTER REMOVING RED PROTECTIVE PLUG (9).

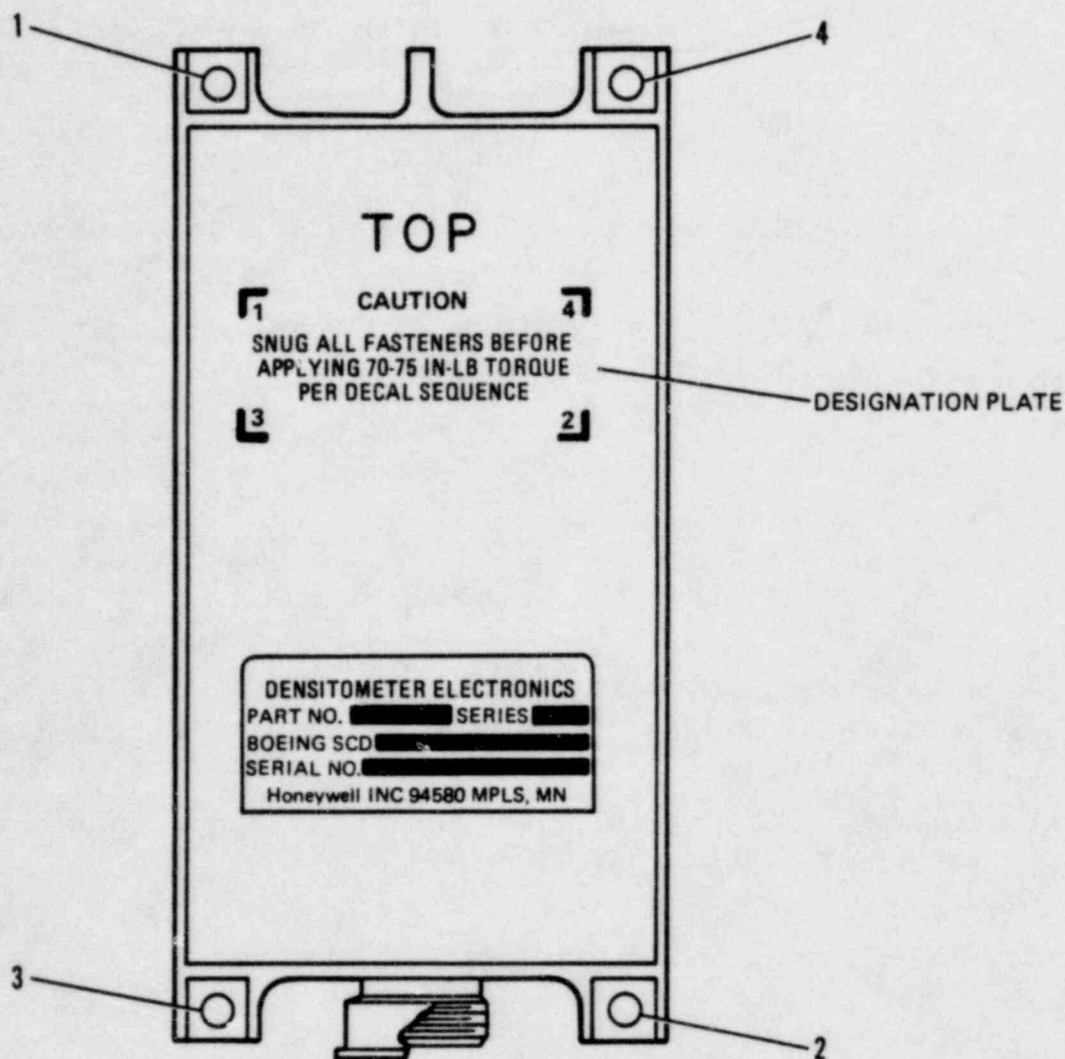
- (a) Remove red protective plug (9) (marked REMOVE AFTER INSTALLATION) from emitter assembly. Do not discard protective plug; it must be inserted in removed emitter assembly before packaging for shipment or storage.
 - (b) Install washer (7) and collimator ring (5). Use WG1136T12 Crow-Foot Wrench (figure 804), 1/2 inch drive torque wrench, and extension to tighten nut (6) to 30-35 ft-lb..
 - (c) Secure safety wire (10) (from step 2B(3)) to collimator ring (5). Clip off any excess safety wire.
 - (d) Install fuel retainer (1) and hand tighten 3-1/2 inch WIGGENS nut (4).
 - (e) Connect 3-1/2 inch WIGGENS nut (4) to collimator ring (4), align fuel retainer (1), and hand tighten 3-1/2 inch WIGGENS nut (4).
 - (f) Install safety wire (MS2095NC32 or equivalent) to fuel retainer (1). The other end of safety wire is attached to coupling (3) in step 2B(5)(h).
 - (g) Attach coupling (3) to fuel retainer (1) and hand tighten 1/2 inch WIGGENS nut (2).
 - (h) Secure safety wire (from step 2B(5)(f)) to coupling (3). Clip off any excess safety wire.
- (6) Before leaving the fuel tank, ensure that no loose materials (protective plug, safety wire, or tools) are left in the fuel tank.
- (7) From outside the fuel tank apply PR1422 Tank Sealant or equivalent around the emitter assembly and to aircraft spar mating surfaces.

CAUTION: WHEN THE ELECTRONICS UNIT IS INSTALLED, USE CAUTION TO PREVENT DAMAGE TO ELECTRICAL CONNECTOR J1 WHICH CONNECTS THE ELECTRONICS UNIT AND THE EMITTER ASSEMBLY.

CAUTION: THE MATING OF THE ELECTRONICS UNIT TO THE EMITTER ASSEMBLY IS CRITICAL. INCORRECT DEVICE MATING COULD RESULT IN MISALIGNMENT WHICH COULD AFFECT DENSITOMETER CALIBRATION AND DEGRADE THE ACCURACY OF THE DENSITOMETER MEASUREMENT.

C. From outside the fuel tank, install electronics unit to emitter assembly as follows:

- (1) Ensure mating surface between emitter assembly and electronics unit is free of all dirt and obstructions.
- (2) Attach electronics unit to emitter assembly, being careful to align connectors.
- (3) Firmly snug (20-30 in.-lb torque) four nuts attaching the electronics unit to the emitter assembly before final tightening. See figure 901 for location of nuts.
- (4) Tighten four nuts attaching electronics unit to emitter assembly to 70-75 in.-lb torque in the sequence identified by the designation plate located on the electronics unit (figure 901).
- (5) Connect ground wire and aircraft wiring connector J1 to the electronics unit.



TIGHTENING PROCEDURE

1. FIRMLY SNUG (20-30 IN-LBS TORQUE) NUTS 1, 2, 3, AND 4.
2. TIGHTEN NUTS 1, 2, 3, 4 TO 70-75 IN-LBS TORQUE IN THE SEQUENCE OF: NUT 1 FIRST, NUT 2 SECOND, NUT 3 THIRD, AND NUT 4 FOURTH.

95-8089/4

Emitter Assembly/Electronics Unit Torque Requirements and
Sequence
Figure 901

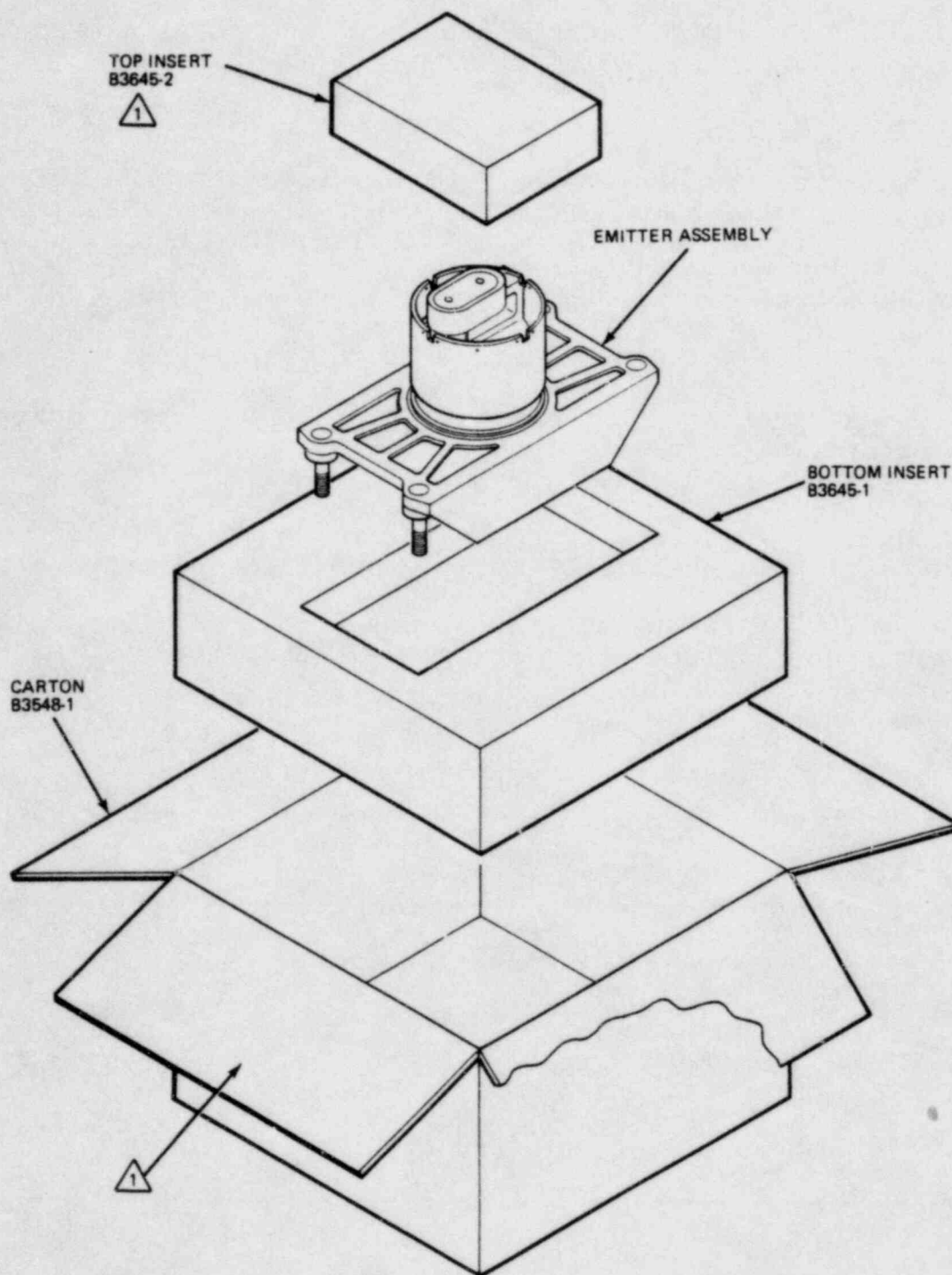
28-41-25

PACKAGING FOR SHIPMENT OR STORAGE

1. General. This topic contains instructions for packaging the emitter assembly for shipment or storage.
2. Packaging Procedures.
 - A. The emitter assembly should be packaged in the original shipping container. If the original shipping materials are not available, use the materials listed in table 1001.
 - B. Package the emitter assembly as shown in figure 1001.
 - C. Seal the shipping container with shipping tape.
3. Storage Requirements for Facilities Based in United States. The emitter storage area must be locked with access only by the following authorized personnel:
 - A. Individuals authorized to install or supervise the installation of assemblies which contain radioisotopes.
 - B. A radiation safety officer or other individual named in an NRC specific license or agreement state license.

Table 1001. Shipping Materials

PART NUMBER	DESCRIPTION	VENDOR
B 3548-1	Carton	Honeywell Inc.
B 3645-1	Bottom insert	Honeywell Inc.
B 3645-2	Top insert	Honeywell Inc.
	Plastic bag (6-mil or greater in thickness)	Commercial



NOTES:



BOND TO CARTON FLAP

95-6001/28

Packaging the Emitter Assembly
Figure 1001

28-41-25

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TRANSFER RECORDS

1. Honeywell is accountable to the U.S. Nuclear Regulatory Commission for reporting the transfer of all emitter assemblies. The airline must agree to cooperate with Honeywell in accounting for all units by reporting all emitters that are shipped, received, or stored by the airline.
2. Written acknowledgement of receipt of spare units by the airline will be required at the time of transfer from Honeywell to airlines with an additional update report at the time of actual installation in an aircraft. The update will consist of adding the installation date and aircraft registration number to a copy of the original transfer receipt and identifying the unit serial number of the installed emitter assembly.
3. Figure 1101 shows the suggested form to be used to notify Honeywell Inc. of a transfer as specified in NOTICE OF REQUIREMENT TO REPORT TRANSFER. This form may be reproduced by the airline to report emitter assembly transfers.

NOTE: IN ORDER TO COMPLY WITH NRC REGULATIONS CONCERNING ACCOUNTING AND TRANSFER OF MATERIAL, ALL WG1136 EMITTER DEVICES NOT INSTALLED ON AIRPLANES MUST BE RECEIVED DIRECTLY FROM AND RETURNED DIRECTLY TO HONEYWELL."

NRC DEVICE TRANSFER REPORT

DATE OF REPORT:		ORIGINATOR:	
ORIGINATORS ORGANIZATION:			
ADDRESS OF ORIGINATORS ORGANIZATION:			
TYPE OF DEVICE TRANSFERRED:		SERIAL NO. OF AIRCRAFT	
QUANTITY OF LICENSED MATERIAL TRANSFERRED:		DEVICE S/N REMOVED:	
		SERIAL S/N INSTALLED:	
		NO(S):	
DATE OF TRANSFER:			
ORGANIZATION DEVICE/MATERIAL TRANSFERRED TO:			
ADDRESS OF ORGANIZATION MATERIAL WAS TRANSFERRED TO:			

95-8089/2B

Mail to:

Honeywell Commercial Aviation Operations
P.O. Box 889
Minneapolis, MN 55440

Attn: FQIS Contracts Manager
Mail Station MN15-2334

NRC Device Transfer Report - Sample Form
Figure 1101

28-41-25

HONEYWELL CONTACT INFORMATION

Assistance in performing densitometer maintenance may be obtained through any of the following contact points. The WG1136AA Emitter Assemblies may be obtained or returned through these locations.

- 1) Honeywell Avionics Service Center
Hidden Valley Office Park
1750 112th NE, Suite A109
Bellevue, WA 98004

Attn: Donald M. Moncrieff, Manager
Tel: (206) 453-7761

- 2) Honeywell Avionics Service Centre
London Rd
Bracknell Berkshire
RG12 2SU
England

Attn: Terry Timms
Tel: 0344-24555 ext 529
Telex: 849-398

- 3) Honeywell Avionics Service Centre
13 Garden Grove Dr
Tullamarine 3045
Victoria, Australia

Attn: Ross Lloyd
Tel: (03) 429-1933
Telex: AA 20614

- 4) Honeywell Commercial Aviation Operations
5775 Wayzata Blvd
P.O. Box 889
Minneapolis, MN 55440

Attn: James R. Walborn
Tel: (612) 542-6096
Telex: 29-8110
TWX: 910-576-0231

- 5) Honeywell Avionics Service Center
1930 Obispo Ave
Long Beach, CA 90804

Attn: Dana Larsen
Tel: (213) 498-1177
Telex: 290661 CA57

- 6) Honeywell Inc.
4101 NW 29th St
Miami, FL 33142

Attn: Harvey H. Wheless
Tel: (305) 871-4535 or
(404) 765-3761

APPLICABLE NRC RULES AND REGULATIONS

1. This topic contains applicable NRC rules and regulations from Title 10, Chapter 1, Code of Federal Regulations - Energy which are required by distribution license 22-19422-02G for distribution to general licensees.
2. The text contains the following sections of NRC rules and regulations dated 1 September 1982.
 - A. Section 20.402, 10CFR20.
 - B. Section 20.403, 10CFR20.
 - C. Appendix D, 10CFR20.
 - D. Section 30.34, 10CFR30.
 - E. Sections 30.51 through 30.53, 30.55, and 30.61 through 30.63, 10CFR30.
 - F. Section 31.5, 10CFR31.
3. The text provides a copy of Form NRC-3, NRC Notice to Employees. This notice is required to be posted wherever devices containing radioactive material are stored. Each U.S. airline should have a copy of the Code of Federal Regulations, Title 10, Chapter 1, available when any emitter assembly change-out occurs.

§ 20.402 Reports of theft or loss of licensed material.

(a) Each licensee shall report by telephone to the Director of the appropriate Nuclear Regulatory Commission Inspection and Enforcement Regional Office listed in Appendix D of this part, immediately after its occurrence becomes known to the licensee, any loss or theft of licensed material in such quantities and under such circumstances that it appears to the licensee that a substantial hazard may result to persons in unrestricted areas.

(b) Each licensee who is required to make a report pursuant to paragraph (a) of this section shall, within thirty (30) days after he learns of the loss or theft, make a report in writing to the appropriate NRC Regional Office listed in Appendix D of this part with copies to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, setting forth the following information:

(1) A description of the licensed material involved, including kind, quantity, chemical, and physical form;

(2) A description of the circumstances under which the loss or theft occurred;

(3) A statement of disposition or probable disposition of the licensed material involved;

(4) Radiation exposures to individuals, circumstances under which the exposures occurred, and the extent of possible hazard to persons in unrestricted areas;

(5) Actions which have been taken, or will be taken, to recover the material; and

(6) Procedures or measures which have been or will be adopted to prevent a recurrence of the loss or theft of licensed material.

(c) Subsequent to filing the written report the licensee shall also report any substantive additional information on the loss or theft which becomes available to the licensee, within 30 days after he learns of such information.

(d) Any report filed with the Commission pursuant to this section shall be so prepared that names of individuals who may have received exposure to radiation are stated in a separate part of the report.

[34 FR 7500, May 9, 1969, as amended at 38 FR 1271, Jan. 11, 1973; 41 FR 16445, Apr. 17, 1976; 42 FR 43965, Sept. 1, 1977]

§ 20.403 Notifications of incidents.

(a) *Immediate notification.* Each licensee shall immediately notify by telephone and telegraph, mailgram, or facsimile, the Director of the appropriate NRC Regional Office listed in Appendix D of this part of any incident involving byproduct, source, or special nuclear material possessed by him and which may have caused or threatens to cause:

(1) Exposure of the whole body of any individual to 25 rems or more of radiation; exposure of the skin of the whole body of any individual of 150 rems or more of radiation; or exposure of the feet, ankles, hands or forearms of any individual to 375 rems or more of radiation; or

(2) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 5,000 times the limits specified for such materials in Appendix B, Table II of this part; or

(3) A loss of one working week or more of the operation of any facilities affected; or

(4) Damage to property in excess of \$200,000.

(b) *Twenty-four hour notification.* Each licensee shall within 24 hours notify by telephone and telegraph, mailgram, or facsimile, the Director of the appropriate NRC Regional Office listed in Appendix D of this part of any incident involving licensed material possessed by him and which may have caused or threatens to cause:

(1) Exposure of the whole body of any individual to 5 rems or more of radiation; exposure of the skin of the whole body of any individual to 30 rems or more of radiation; or exposure of the feet, ankles, hands, or forearms to 75 rems or more of radiation; or

(2) The release of radioactive material in concentrations which, if averaged over a period of 24 hours, would exceed 500 times the limits specified for such materials in Appendix B, Table II of this part; or

(3) A loss of one day or more of the operation of any facilities affected; or

(4) Damage to property in excess of \$2,000.

(c) Any report filed with the Commission pursuant to this section shall be prepared so that names of individuals who have received exposure to radiation will be stated in a separate part of the report.

APPENDIX D—UNITED STATES NUCLEAR REGULATORY COMMISSION REGIONAL OFFICES

	Address	Telephone (24 hrs)
Region I: Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont.	USNRC, 631 Park Ave., King of Prussia, PA 19406.	(215) 337-5000, (FTS) 488-1000.
Region II: Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, Puerto Rico, South Carolina, Tennessee, Virginia, Virgin Islands, and West Virginia.	USNRC, 101 Marietta Street, Suite 3100, Atlanta, GA 30303.	(404) 221-4503, (FTS) 242-4503.
Region III: Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin.	USNRC, 799 Roosevelt Road, Glen Ellyn, IL 60137.	(312) 932-2500, (FTS) 384-2500.
Region IV: Arkansas, Colorado, Idaho, Kansas, Louisiana, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, Utah, and Wyoming.	USNRC, 611 Ryan Plaza Drive, Suite 1000, Arlington, TX 76011.	(817) 860-8100, (FTS) 728-8100.
Region IV Field Office.....	USNRC, Region IV Uranium Recovery Field Office, 730 Simms Street, P.O. Box 25325, Denver, CO 80225.	(303) 234-7232, (FTS) 234-7232.
Region V: Alaska, Arizona, California, Hawaii, Nevada, Oregon, Washington, and U.S. territories and possessions in the Pacific.	USNRC, 1450 Marin Lane, Suite 210, Walnut Creek, CA 94596.	(415) 943-3700, (FTS) 463-3700.

[47 FR 41338, Sept. 20, 1982]

(d) For nuclear power reactors licensed under § 50.21 or § 50.22, the incidents included in paragraph (a) and paragraph (b) in this section shall in addition be reported pursuant to § 50.72.

[27 FR 5905, June 22, 1962, as amended at 28 FR 6823, July 3, 1963; 41 FR 16445, Apr. 19, 1976; 42 FR 43965, Sept. 1, 1977; 43 FR 2719, Jan. 19, 1978; 45 FR 13435, Feb. 29, 1980]

§ 30.34 Terms and conditions of licenses.

(a) Each license issued pursuant to the regulations in this part and the regulations in Parts 31 through 35 of this chapter shall be subject to all the provisions of the Act, now or hereafter in effect, and to all valid rules, regulations and orders of the Commission.

(b) No license issued or granted pursuant to the regulations in this part and Parts 31 through 35, nor any right under a license shall be transferred, assigned or in any manner disposed of, either voluntarily or involuntarily, directly or indirectly, through transfer of control of any license to any person, unless the Commission shall, after securing full information, find that the

transfer is in accordance with the provisions of the Act and shall give its consent in writing.

(c) Each person licensed by the Commission pursuant to the regulations in this part and Parts 31 through 35 shall confine his possession and use of the byproduct material to the locations and purposes authorized in the license. Except as otherwise provided in the license, a license issued pursuant to the regulations in this part and Parts 31 through 35 of this chapter shall carry with it the right to receive, acquire, own, and possess byproduct material. Preparation for shipment and transport of byproduct material shall be in accordance with the provisions of Part 71 of this chapter.

(d) Each license issued pursuant to the regulations in this part and Parts 31 through 35 shall be deemed to contain the provisions set forth in section 183b.-d., inclusive, of the Act, whether or not these provisions are expressly set forth in the license.

(e) The Commission may incorporate, in any license issued pursuant to the regulations in this part and Parts 31 through 35, at the time of issuance, or thereafter by appropriate rule, reg-

ulation or order, such additional requirements and conditions with respect to the licensee's receipt, possession, use and transfer of byproduct material as it deems appropriate or necessary in order to:

- (1) Promote the common defense and security;
- (2) Protect health or to minimize danger to life or property;
- (3) Protect restricted data;

(4) Require such reports and the keeping of such records, and to provide for such inspections of activities under the license as may be necessary or appropriate to effectuate the purposes of the Act and regulations thereunder.

(f) Each licensee shall notify the Commission in writing when the licensee decides to permanently discontinue all activities involving materials authorized under the license. This notification requirement applies to all specific licenses issued under this part and Parts 32 through 35 of this chapter.

(g) Each licensee preparing technetium-99m radiopharmaceuticals from molybdenum-99/technetium-99m generators shall test the generator eluates for molybdenum-99 breakthrough in accordance with § 35.14(b)(4) (i) through (iv) of this chapter.

(Sec. 161, as amended, Pub. L. 83-703, 68 Stat. 948 (42 U.S.C. 2201); sec. 201, as amended, Pub. L. 93-438, 88 Stat. 1243 (42 U.S.C. 5841); secs 81, 161b, Pub. L. 83-703, 68 Stat. 935-948 (42 U.S.C. 2111, 2201); sec. 201 as amended, Pub. L. 93-438, 88 Stat. 1242 as amended by Pub. L. 94-79, 89 Stat. 413 (42 U.S.C. 5841))

[30 FR 8185, June 26, 1965, as amended at 38 FR 33969, Dec. 10, 1973; 43 FR 6922, Feb. 17, 1978; 44 FR 17480, Mar. 22, 1979; 45 FR 41394, June 19, 1980]

RECORDS, INSPECTIONS, TESTS, AND REPORTS

§ 30.51 Records.

(a) Each person who receives byproduct material pursuant to a license issued pursuant to the regulations in this part and Parts 31 through 35 of this chapter shall keep records showing the receipt, transfer, and disposal of such byproduct material.

(b) Records which are required by the regulations in this part and Parts 31 through 35 of this chapter or by license condition shall be maintained for the period specified by the appropriate regulation or license condition. If a retention period is not otherwise specified by regulation or license condition, such records shall be maintained until the Commission authorizes their disposition.

(c)(1) Records of receipt of byproduct material which must be maintained pursuant to paragraph (a) of this section shall be maintained as long as the licensee retains possession of the byproduct material and for two years following transfer, or disposal of the byproduct material.

(2) [Reserved]

(3) Records of transfer of byproduct material shall be maintained by the licensee who transferred the material for five years after such transfer.

(4) Records of disposal of byproduct material shall be maintained in accordance with § 20.401(c) of this chapter.

(d)(1) Records which must be maintained pursuant to this part and Parts 31 through 35 of this chapter may be the original or a reproduced copy or microform if such reproduced copy or microform is duly authenticated by authorized personnel and the microform is capable of producing a clear and legible copy after storage for the period specified by Commission regulations.

(2) If there is a conflict between the Commission's regulations in this part and Parts 31 through 35 of this chapter, license condition, or other written Commission approval or authorization pertaining to the retention period for the same type of record, the retention period specified in the regulations in this part and Parts 31 through 35 of this chapter for such records shall apply unless the Commission, pursuant to § 30.11, has granted a specific exemption from the record retention requirements specified in the regulations in this part or Parts 31 through 35 of this chapter.

(Sec. 161, as amended, Pub. L. 83-703, 68 Stat. 948 (42 U.S.C. 2201); sec. 201, as amended, Pub. L. 93-438, 88 Stat. 1243 (42 U.S.C. 5841))

[41 FR 18301, May 5, 1976, as amended at 43 FR 6922, Feb. 17, 1978]

§ 30.52 Inspections.

(a) Each licensee shall afford to the Commission at all reasonable times opportunity to inspect byproduct material and the premises and facilities wherein byproduct material is used or stored.

(b) Each licensee shall make available to the Commission for inspection, upon reasonable notice, records kept by him pursuant to the regulations in this chapter.

§ 30.53 Tests.

Each licensee shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or necessary for the administration of the regulations in this part and Parts 31 through 35 of this chapter, including tests of:

- (a) Byproduct material;
- (b) Facilities wherein byproduct material is utilized or stored;
- (c) Radiation detection and monitoring instruments; and
- (d) Other equipment and devices used in connection with the utilization or storage of byproduct material.

(Sec. 161, as amended, Pub. L. 83-703, 68 Stat. 948 (42 U.S.C. 2201); sec. 201, as amended, Pub. L. 93-438, 88 Stat. 1243 (42 U.S.C. 5841))

[30 FR 8185, June 26, 1965, as amended by 43 FR 6922, Feb. 17, 1978]

§ 30.55 Tritium reports.

(a) [Reserved]

(b) Except as specified in paragraph (d) and (e) of this section, each licensee who is authorized to possess at any one time and location more than 10,000 curies of tritium shall submit to the Commission within thirty (30) days after March 31 and September 30 of each year a statement of his tritium inventory to the nearest hundredth of a gram calculated at 10,000 curies per gram. The reports shall be submitted to the Department of Energy, Post Office Box E, Oak Ridge, Tennessee 37830, and shall include the Reporting Identification Symbol (RIS) assigned by the Commission to the licensee.

(c) Except as specified in paragraph (d) of this section, each licensee who is authorized to possess tritium shall report promptly to the appropriate NRC Regional Office listed in Appendix D of Part 20 of this chapter by telephone and telegraph, mailgram or facsimile any incident in which an attempt has been made or is believed to have been made to commit a theft or unlawful diversion of more than 10 curies of such material at any one time or more than 100 curies of such material in any one calendar year. The initial report shall be followed within a period of fifteen (15) days by a written report submitted to the appropriate NRC Regional Office which sets forth the details of the incident and its consequences. Copies of such written report shall be sent to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Subsequent to the submission of the written report required by this paragraph, the licensee shall promptly inform the Office of Inspection and Enforcement by means of a written report of any substantive additional information, which becomes available to the licensee, concerning an attempted or apparent theft or unlawful diversion of tritium.

(d) The reports described in this section are not required for tritium possessed pursuant to a general license provided in Part 31 of this chapter or for tritium contained in spent fuel.

(e) The reports described in paragraph (b) of this section are not required for (1) tritium produced or possessed within a production or utilization facility incidental to the operation of the facility, other than tritium intentionally produced by or recovered from a production or utilization facility for any subsequent use.

(Sec. 201, Pub. L. 93-438, 88 Stat. 1242 (42 U.S.C. 5841))

[37 FR 9208, May 6, 1972, as amended at 38 FR 1271, Jan. 11, 1973; 38 FR 2330, Jan. 24, 1973; 40 FR 8785, Mar. 3, 1975; 41 FR 16446, Apr. 19, 1976; 42 FR 33266, June 30, 1977; 43 FR 6922, Feb. 17, 1978; 46 FR 55085, Nov. 6, 1981]

ENFORCEMENT**§ 30.61 Modification and revocation of licenses.**

(a) The terms and conditions of each license issued pursuant to the regulations in this part and Parts 31 through 35 of this chapter shall be subject to amendment, revision or modification by reason of amendments to the Act, or by reason of rules, regulations and orders issued in accordance with the terms of the Act.

(b) Any license may be revoked, suspended or modified, in whole or in part, for any material false statement in the application or any statement of fact required under section 182 of the Act, or because of conditions revealed by such application or statement of fact or any report, record or inspection or other means which would warrant the Commission to refuse to grant a license on an original application, or for violation of, or failure to observe any of the terms and provisions of the Act or of any rule, regulation or order of the Commission.

(c) Except in cases of willfulness or those in which the public health, interest or safety requires otherwise, no license shall be modified, suspended or revoked unless, prior to the institution of proceedings therefor, facts or conduct which may warrant such action shall have been called to the attention of the licensee in writing and the licensee shall have been accorded an opportunity to demonstrate or achieve compliance with all lawful requirements.

(Secs. 186, 187, 68 Stat. 955; 42 U.S.C. 2236, 2237, sec. 161, as amended, Pub. L. 83-703, 68 Stat. 948 (42 U.S.C. 2201); sec. 201, as amended, Pub. L. 93-438, 88 Stat. 1243 (42 U.S.C. 5841))

[30 FR 8185, June 26, 1965, as amended at 35 FR 11460, July 17, 1970; 43 FR 6922, Feb. 17, 1978]

§ 30.62 Right to cause the withholding or recall of byproduct material.

The Commission may cause the withholding or recall of byproduct material from any licensee who is not equipped to observe or fails to observe such safety standards to protect health as may be established by the Commission, or who uses such materials in violation of law or regulation of the Commission, or in a manner other than as disclosed in the application therefor or approved by the Commission.

[30 FR 8185, June 26, 1965, as amended at 40 FR 8785, Mar. 3, 1975]

§ 30.63 Violations.

An injunction or other court order may be obtained prohibiting any violation of any provision of the Atomic Energy Act of 1954, as amended, or Title II of the Energy Reorganization Act of 1974, or any regulation or order issued thereunder. A court order may be obtained for the payment of a civil penalty imposed pursuant to section 234 of the Act for violation of section 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Act, or section 206 of the Energy Reorganization Act of 1974, or any rule, regulation, or order issued thereunder, or any term, condition, or limitation of any license issued thereunder, or for any violation for which a license may be revoked under section 186 of the Act. Any person who willfully violates any provision of the Act or any regulation or order issued thereunder may be guilty of a crime and, upon conviction, may be punished by fine or imprisonment or both, as provided by law.

[40 FR 8785, Mar. 3, 1975]

§ 31.5 Certain measuring, gauging or controlling devices.²

(a) A general license is hereby issued to commercial and industrial firms and research, educational and medical institutions, individuals in the conduct of their business, and Federal, State or local government agencies to acquire, receive, possess, use or transfer, in accordance with the provisions of paragraphs (b), (c) and (d) of this section, byproduct material contained in devices designed and manufactured for the purpose of detecting, measuring, gauging or controlling thickness, density, level, interface location, radiation, leakage, or qualitative or quantitative chemical composition, or for producing light or an ionized atmosphere.

(b) The general license in paragraph (a) of this section applies only to byproduct material contained in devices which have been manufactured or initially transferred and labeled in accordance with the specifications contained in a specific license issued pursuant to § 32.51 of this chapter or in accordance with the specifications contained in a specific license issued by an Agreement State which authorizes distribution of the devices to persons generally licensed by the Agreement State.

(c) Any person who acquires, receives, possesses, uses or transfers byproduct material in a device pursuant to the general license in paragraph (a) of this section:

(1) Shall assure that all labels affixed to the device at the time of receipt and bearing a statement that removal of the label is prohibited are maintained thereon and shall comply with all instructions and precautions provided by such labels;

(2) Shall assure that the device is tested for leakage of radioactive material and proper operation of the on-off mechanism and indicator, if any, at no longer than six-month intervals or at such other intervals as are specified in the label; however:

(i) Devices containing only krypton need not be tested for leakage of radioactive material, and

(ii) Devices containing only tritium or not more than 100 microcuries of other beta and/or gamma emitting material or 10 microcuries of alpha emitting material and devices held in storage in the original shipping container prior to initial installation need not be tested for any purpose;

(3) Shall assure that the tests required by paragraph (c)(2) of this section and other testing, installation, servicing, and removal from installation involving the radioactive materials, its shielding or containment, are performed:

(i) In accordance with the instructions provided by the labels; or

(ii) By a person holding a specific license pursuant to Parts 30 and 32 of this chapter or from an Agreement State to perform such activities;

(4) Shall maintain records showing compliance with the requirements of paragraphs (c) (2) and (3) of this section. The records shall show the results of tests. The records also shall show the dates of performance of, and the names of persons performing, testing, installation, servicing, and removal from installation concerning the radioactive material, its shielding or containment. Records of tests for leakage of radioactive material required by

²Persons possessing byproduct material in devices under the general license in § 31.5 before Jan. 15, 1975 may continue to possess, use or transfer that material in accordance with the requirements of § 31.5 in effect on Jan. 14, 1975.

paragraph (c)(2) of this section shall be maintained for one year after the next required leak test is performed or until the sealed source is transferred or disposed of. Records of tests of the on-off mechanism and indicator, required by paragraph (c)(2) of this section, shall be maintained for one year after the next required test of the on-off mechanism and indicator is performed or until the sealed source is transferred or disposed of. Records which are required by paragraph (c)(3) of this section shall be maintained for a period of two years from the date of the recorded event or until the device is transferred or disposed of;

(5) Upon the occurrence of a failure of or damage to, or any indication of a possible failure of or damage to, the shielding of the radioactive material or the on-off mechanism or indicator, or upon the detection of 0.005 microcurie or more removable radioactive material, shall immediately suspend operation of the device until it has been repaired by the manufacturer or other person holding a specific license pursuant to Parts 30 and 32 of this chapter or from an Agreement State to repair such devices, or disposed of by transfer to a person authorized by a specific license to receive the byproduct material contained in the device and, within 30 days, furnish to the Director of the appropriate Nuclear Regulatory Commission, Inspection and Enforcement Regional Office listed in Appendix D of Part 20 of this chapter, a report containing a brief description of the event and the remedial action taken;

(6) Shall not abandon the device containing byproduct material;

(7) Shall not export the device containing byproduct material except in accordance with Part 110 of this chapter;

(8) Except as provided in paragraph (c)(9) of this section, shall transfer or dispose of the device containing byproduct material only by transfer to persons holding a specific license pursuant to Parts 30 and 32 of this chapter or from an Agreement State to receive the device and within 30 days after transfer of a device to a specific licensee shall furnish to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555 a

report containing identification of the device by manufacturer's name and model number and the name and address of the person receiving the device. No report is required if the device is transferred to the specific licensee in order to obtain a replacement device;

(9) Shall transfer the device to another general licensee only:

(i) Where the device remains in use at a particular location. In such case the transferor shall give the transferee a copy of this section and any safety documents identified in the label of the device and within 30 days of the transfer, report to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, the manufacturer's name and model number of device transferred, the name and address of the transferee, and the name and/or position of an individual who may constitute a point of

contact between the Commission and the transferee; or

(ii) Where the device is held in storage in the original shipping container at its intended location of use prior to initial use by a general licensee.

(10) Shall comply with the provisions of §§ 20.402 and 20.403 of this chapter for reporting radiation incidents, theft or loss of licensed material, but shall be exempt from the other requirements of Parts 19, 20, and 21, of this chapter.

(d) The general license in paragraph (a) of this section does not authorize the manufacture or import of devices containing byproduct material.

(Secs. 201 and 202, Pub. L. 93-438, 88 Stat. 1242, 1244 (42 U.S.C. 5841, 5842) sec. 161, as amended, Pub. L. 83-703, 68 Stat. 948 (42 U.S.C. 2201))

[39 FR 43532, Dec. 16, 1974, as amended at 40 FR 8785, Mar. 3, 1975; 40 FR 14085, Mar. 28, 1975; 41 FR 18302, May 3, 1976; 42 FR 25721, May 19, 1977; 42 FR 28896, June 6, 1977; 43 FR 692, Feb. 17, 1978]

UNITED STATES NUCLEAR REGULATORY COMMISSION
Washington, D.C. 20555

NOTICE TO EMPLOYEES

YOUR EMPLOYER'S
RESPONSIBILITY

Your employer is required to—

1. Apply these NRC regulations and the conditions of his NRC license to all work under the license.
2. Post or otherwise make available to you a copy of the NRC regulations, licenses, and operating procedures which apply to work you are engaged in, and explain their provisions to you.
3. Post Notices of Violation involving radiological working conditions, proposed imposition of civil penalties and orders.
4. Refrain from discriminatory acts against employees who provide information to NRC.

YOUR RESPONSIBILITY
AS A WORKER

You should familiarize yourself with those provisions of the NRC regulations and the operating procedures which apply to the work you are engaged in. You should observe their provisions for your own protection and protection of your co-workers.

WHAT IS COVERED BY
THESE NRC REGULATIONS

1. Limits on exposure to radiation and radioactive material in restricted and unrestricted areas.
2. Measures to be taken after accidental exposure.
3. Personnel monitoring, surveys and equipment.
4. Caution signs, labels, and safety interlocks equipment.
5. Exposure records and reports.
6. Options for workers regarding NRC inspections.
7. Identifies "protected activities" that employees may engage in.
8. Prohibits discrimination against employees who engage in these protected activities.
9. Identifies the Department of Labor as a source of relief in the event of discrimination, and
10. Related matters.

REPORTS ON YOUR
RADIATION EXPOSURE
HISTORY

1. The NRC regulations require that your employer give you a written

report if you receive an exposure in excess of any applicable limit as set forth in the regulations or in the license. The basic limits for exposure to employees are set forth in Section 20.101, 20.103, and 20.104 of the Part 20 regulations. These Sections specify limits on exposure to radiation and exposure to concentrations of radioactive material in air.

2. If you work where personnel monitoring is required pursuant to Section 20.202:
 - (a) your employer must give you a written report of your radiation exposures upon the termination of your employment, if you request it, and
 - (b) your employer must advise you annually of your exposure to radiation, if you request it.

INSPECTIONS

All activities under the license are subject to inspection by representatives of the NRC. In addition, any worker or representatives of workers who believes that there is a violation of the Atomic Energy Act of 1954, the regula-

STANDARDS FOR PROTECTION AGAINST RADIATION (PART 20), NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS, INSPECTIONS (PART 19); EMPLOYEE PROTECTION

The Nuclear Regulatory Commission (NRC) in its Rules and Regulations: Part 20 has established standards for your protection against radiation hazards from radioactive material under license issued by the NRC; Part 19 has established certain provisions for the options of workers engaged in NRC licensed activities; Parts 30, 40, 50, and other parts containing provisions related to employee protection.

POSTING REQUIREMENTS Copies of this notice must be posted in a sufficient number of places in every establishment where activities licensed by the NRC are conducted, to permit employees to observe a copy on the way to or from their place of employment.

tions issued thereunder, or the terms of the employer's license with regard to radiological working conditions in which the worker is engaged, may request an inspection by sending a notice of the alleged violation to the appropriate United States Nuclear Regulatory Commission Regional Office (shown on map below). The request must set forth the "specific grounds for the notice, and must be signed by the worker or the representative of the workers. During inspections, NRC inspectors may confer privately with workers, and any worker may bring to the attention of the inspectors any past or present condition which he believes contributed to or caused any violation as described above.

EMPLOYEE PROTECTION

If an employee believes that discrimination has occurred due to engaging in the "protected activities" said employees may, within 30 days of the discriminatory act, file a complaint with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor shall conduct an investigation

and shall, where discrimination has occurred, issue an order providing relief to the employee if relief is not provided by other means of settlement.

PROTECTION OF
INSPECTORS

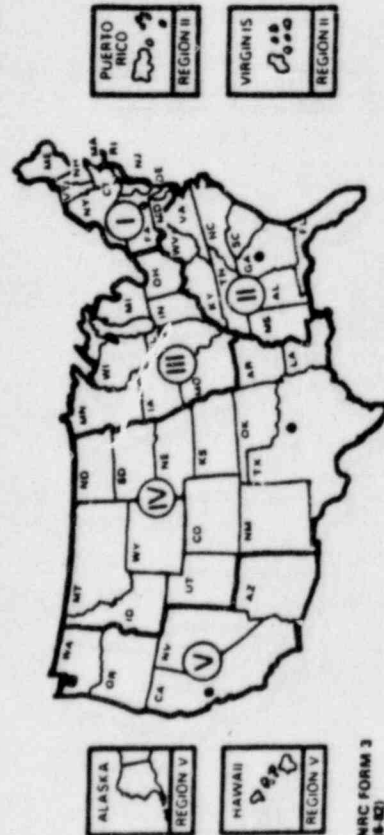
The amended Atomic Energy Act, section 235, provides criminal penalties against any individual who opposes, impedes, intimidates or interferes with any person who performs any inspections which (1) are related to any activity or facility licensed by the Commission, and (2) are carried out to satisfy requirements under the Atomic Energy Act or under any other Federal law covering the safety of radioactive facilities or the safety of radioactive materials. The acts described above are criminal not only if taken against inspection personnel who are engaged in the performance of such inspection duties, but also if taken against inspection personnel on account of such duties.

SABOTAGE OF NUCLEAR
FACILITIES OR FUEL

The amended Atomic Energy Act, section 236, provides criminal penalties against any individual who intentionally and willfully destroys or causes physical damage, or attempts to do so, to any production, utilization, or waste storage facility licensed under the act, or any nuclear fuel or spent fuel regardless of location.

UNITED STATES NUCLEAR REGULATORY COMMISSION REGIONAL OFFICE LOCATIONS

A representative of the Nuclear Regulatory Commission can be contacted at the following addresses and telephone numbers. The Regional Office will accept collect telephone calls from employees who wish to register complaints or concerns about radiological working conditions or other matters regarding compliance with Commission rules and regulations.



Regional Offices

REGION	ADDRESS	TELEPHONE
I	U.S. Nuclear Regulatory Commission Region I 631 Park Avenue King of Prussia, PA 19406	216 337-5000
II	U.S. Nuclear Regulatory Commission Region II 101 Marietta St., N.W., Suite 3100 Atlanta, GA 30303	404 221-4503
III	U.S. Nuclear Regulatory Commission Region III 799 Roosevelt Road Glen Ellyn, IL 60137	312 932-2500
IV	U.S. Nuclear Regulatory Commission Region IV 611 Ryan Plaza Drive, Suite 1000 Arlington, TX 76012	817 465-8100
V	U.S. Nuclear Regulatory Commission Region V 1450 Maria Lane, Suite 210 Walnut Creek, CA 94596	415 943-3700