

10CFR71 QA PROGRAM FOR INDUSTRIAL RADIOGRAPHY LICENSE

1. ORGANIZATION

The final responsibility for the Quality Assurance Program for Part 71 Requirements results with Canspec Testing Inc. Design and fabrication of radioactive material shipping packages shall not be conducted under this Quality Assurance Program. The Quality Assurance Program is implemented using the following organization. (see attached chart)

The Radiation Safety Officer is responsible for overall administration of the program, training and certification, document control, and auditing.

The radiographers are responsible for handling, storing, shipping, inspection, test, operating status and record keeping.

2. QUALITY ASSURANCE PROGRAM

The management of Canspec Testing Inc. establishes and implements this Quality Assurance Program. Training for all QA functions, prior to engagement in these functions, is required according to written procedures. QA Program revisions will be made according to written procedures with management and NRC approval. The QA Program will ensure that all defined QC procedures, engineering procedures and specific provisions of the package design approval are satisfied. The QA Program will emphasize control of the characteristics of the package which are critical to safety.

The Radiation Safety Officer shall assure that all radioactive material shipping packages are designed and manufactured under a Quality Assurance Program approved by the Nuclear Regulatory Commission for all packages designed or fabricated after 1 January 1979. This requirement can be satisfied by receiving a certification to this effect from the manufacturer.

3. DOCUMENT CONTROL

All documents related to a specific shipping package will be controlled through the use of written procedure. All document changes will be performed according to written procedures approved by management and the NRC.

The Radiation Safety Officer shall insure that all QA functions are conducted in accordance with the latest applicable changes to these documents.

#### 4. HANDLING STORAGE AND SHIPPING

Written safety procedures concerning the handling, storage and shipping of packages for certain special form radioactive material will be followed. Shipments will not be made unless all tests, certifications, acceptance, and final inspections have been completed. Work instructions will be provided for handling, storage and shipping operations.

Radiography personnel shall perform the critical handling, storage and shipping operations.

#### 5. INSPECTION, TEST AND OPERATING STATUS

Inspection, test and operating status of packages for certain special form radioactive material will be indicated and controlled by written procedures. Status will be indicated by tag, label, marking or log entry. Status of non conforming parts or packages will be positively maintained by written procedures.

Radiography personnel shall perform the regulatory required inspections and tests in accordance with written procedures. The Radiation Safety Officer shall ensure that these functions are performed.

#### 6. QUALITY ASSURANCE RECORDS

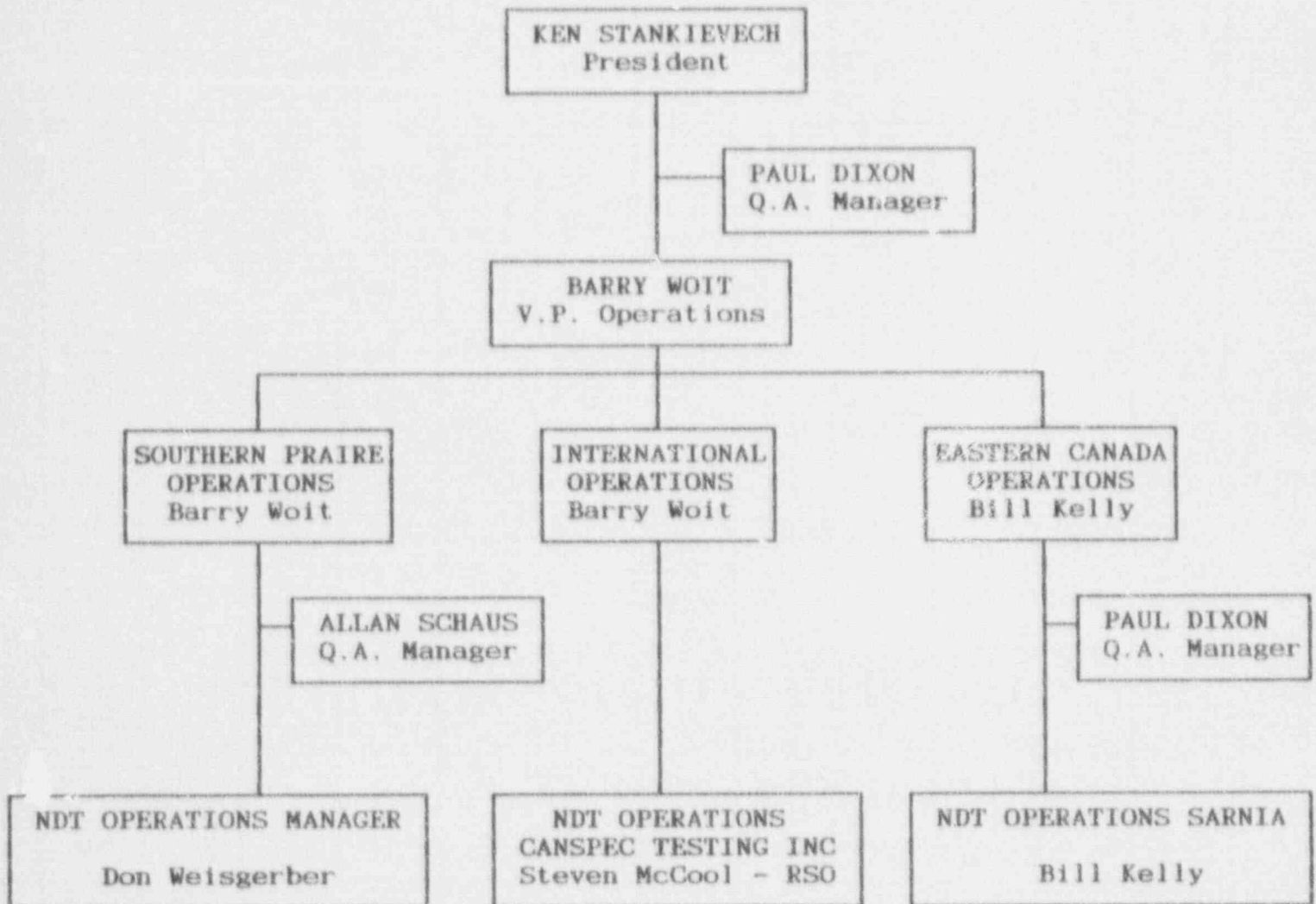
Records of package approvals (including references and drawings), inspections, tests, operating logs audit results, personnel training and qualifications and records of shipments will be maintained. Descriptions of equipment and written procedures will also be maintained.

These records will be maintained in accordance with written procedures. The records will be identifiable and retrievable. A list of these records, with their storage locations, will be maintained by the Radiation Safety Officer.

#### 7. AUDITS

Established schedules of audits of the Quality Assurance Program will be performed using written check lists. Results of audits will be maintained and reported to management. Audit reports will be evaluated and deficient areas corrected. The audits will be dependant on the safety significance of the activity being audited, but each activity will be audited at least once per year. Audit reports will be maintained as part of the quality assurance records. Members of the audit team shall have no responsibility in the activity being audited.

CANSPEC GROUP INC.  
ORGANIZATIONAL CHART



RADIATION SAFETY PROGRAM  
V1 - OPERATING AND EMERGENCY PROCEDURES

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10.0      TRANSPORTATION, SHIPPING & RECEIVING RADIOACTIVE MATERIAL

10.1    OBJECTIVE - The objective of this procedure is to assure the proper methods and practices are used to insure compliance with Federal State and Company regulations which affect the transporting, shipping and receiving of radioactive material.

10.2    APPLICATION - Canspec (Company) personnel transporting, shipping and/or receiving radioactive material outside the confines of the plant or other authorized location of use.

10.3    PROCEDURE

10.3.1    The Radioactive Material (source) Shipping/Receiving Instruction Procedure, described herein, outlines the basic methods and practices used by the Company to meet the objectives of the regulations.

10.3.2    This procedure is your guide for the instructions used whenever you are shipping and/or receiving radioactive material. It shall be made available for review when shipping or receiving source material.

10.3.3    This procedure is subject to modification or revision due to changes in Federal Department of Transportation (DOT), State and/or Company requirements.

10.3.3.1    Procedure modifications or revisions shall be coordinated by the RSO.

10.3.3.2    The RSO is responsible for transmittal of modifications or revisions to all facilities.

10.3.3.3    The RPO/Project Manager shall be responsible for maintaining this procedure on the project.

10.3.4    The RSO shall be made aware of all radioactive shipments.

10.3.5    Used or unwanted sources must only be returned to: the original supplier; a commercial firm licensed by the NRC or an Agreement State to accept radioactive waste from other persons; or, another specific licensee authorized to possess the licensed material.

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10.4 PACKAGING - Packaging of radioactive material shall be designated and selected to meet with all the requirements of DOT.

10.5 PREPARATION FOR SHIPPING

10.5.1 A survey meter shall be used every time a person is required to ship radioactive materials.

10.5.2 Inspection of Radiographic Exposure Device (iridium - 192)

10.5.2.1 Survey surface of device for surface radiation levels.

NOTE: No device shall have a reading in excess of 200 mr.

10.5.2.2 If applicable, attach wire seal through safety plug, then to device.

10.5.2.3 Place exposure device in shipping container provided.

a) Exposure Devices having DOT approved Type "A" & "B" Containers.

Type "A" Containers

Master Minder - Model 1

Master Minder - Model 2

Tech Ops - Model 773

Tattletale - Model 1

Type "B" Containers

SPEC-2T - USA/9056/B

SPEC-C1 - USA/9036/B

Tech Ops 660-USA/9033/B

Tech Ops 650-USA/9032/B

Tech Ops 680-USA/9035/B

Tech Ops 741-USA/9027/B

Place above unsuitable shipping container and label with APPLICABLE CERTIFICATE NUMBERS.

b) Exposure Devices Not having DOT approved Containers.

Type "B" Containers

Tech Ops - Model 53<sup>2</sup> requires overpack in DOT approved Type "B" package (yellow drum) labelled with certificate no. 100/9039/B.



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10.5.3 Shipping Container

- 10.5.3.1 Shipping container shall be a DOT approved type "B" package.

10.6

SHIPPING

- 10.6.1 The following instructions are mandatory to meet with the requirements of DOT and/or Company.

- 10.6.1.1. Affix address label on shipping container (remove or cover old label). If shipped by air (Federal Express) - the Airbill can be used as the address label.

- 10.6.1.2 Thoroughly remove Radioactive Yellow Shipping Labels from previous shipment.

- 10.6.1.3 Complete Radioactive Yellow-II or III Labels and place on opposite sides of shipping container. Do not ship without two (2) Radioactive Yellow Labels (on opposite sides of container). For information required on labels see 10.7.0.

- 10.6.1.4 Container shall have affixed a "DANGER" (Do not load in passenger aircraft) Label - for shipments by air f(See 10.8.0).

- 10.6.1.5 Container shall be labelled with the basic description of the material. ("RADIOACTIVE MATERIAL SPECIAL FORM N.O.S. UN 2974").

- 10.6.1.6 Container shall be labelled with certificate number and type of package.

eg: USA/9056/B (SPEC - 2T) or  
USA/9036/B (SPEC Source  
Changer - C1)

- 10.6.1.7 Container shall have affixed a package certificate of approval.

- 10.6.1.8 Complete Radioactive Material Transfer Report - (See 10.9.0 - Exclusive-Use Vehicles, Paragraph 10.6.3.2, are exempt).

Note: Place a copy in the shipping container.

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10.6.2 Shipped By Air - "Cargo Only Aircraft"

10.6.2.1 Complete Air Bill (Federal Express Form - 10.10.0).

- a) Radioactive material shipments can be shipped either Priority One (P-1) or Standard Air.

10.6.2.2 Complete Shipper's Certification for Materials Classified as Radioactive Material (Federal Express Form - See 10.10.0).

10.6.3 Shipped by Truck

10.6.3.1 Common Carrier - complete waybill - (Trucking Bill of Lading - See 10.12.0).

10.6.3.2 Company Vehicles (Exclusive Use Vehicles) - complete Radioactive Material Shipping Document Company Vehicles (see 10.11.0).

10.6.3.3 All company vehicles are equipped with a steel box that is permanently fixed to the vehicle. The steel box is lockable and placed inside the darkroom of the vehicle which is also lockable. When transporting radioactive materials, ensure at all times it remains secured inside the double locked compartments. Prior to shipping an exposure device in a company vehicle, survey the vehicle to ensure that at no point on the surface of the vehicle is the radiation exposure greater than 2 mr/hr. If a reading is found higher than 2 mr/hr then additional shielding must be added to reduce the exposure to a maximum of 2 mr/hr.

10.6.3.4 All pertinent shipping documents shall be kept inside the cab of the vehicle in a pouch located on the driver's side door.

10.6.4 Only those individuals qualified (by training) to handle radioactive material shall prepare and sign shipments.

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**VI - OPERATING AND EMERGENCY PROCEDURES**

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10.6.4.1 Qualified individuals are: Examiners, Project Managers, Monitors, Radiographers or designated individuals by the RSO/RPO, and only after receiving required training.

The following six (6) pages contain samples of various shipping forms including:

- 10.7.0 - Radioactive Yellow Labels
- 10.8.0 - Cargo Aircraft Only Labels
- 10.9.0 - Radioactive Material Transfer Report
- 10.10.0 - Restricted Articles Air Bill
- 10.11.0 - Company (Exclusive Use) Vehicle Form
- 10.12.0 - Common Carrier - Truck Shipping Form

All shipping documents shall include the company name and a 24 hour telephone number in the event of an emergency.

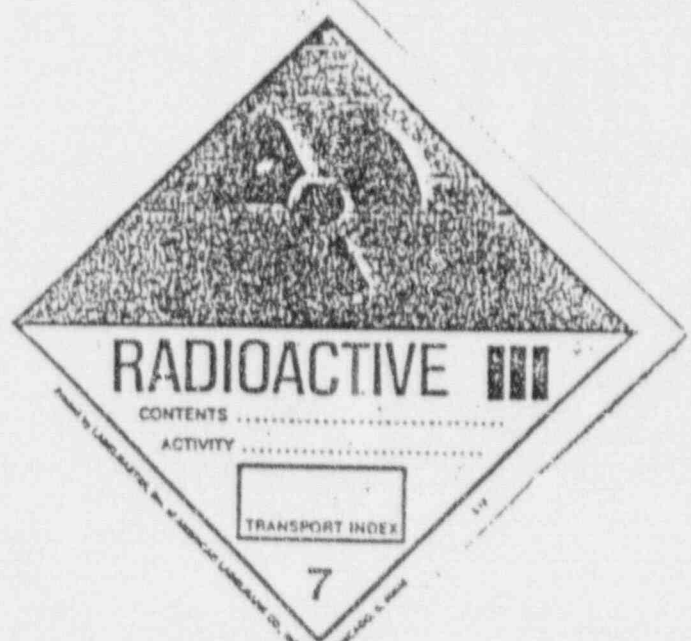
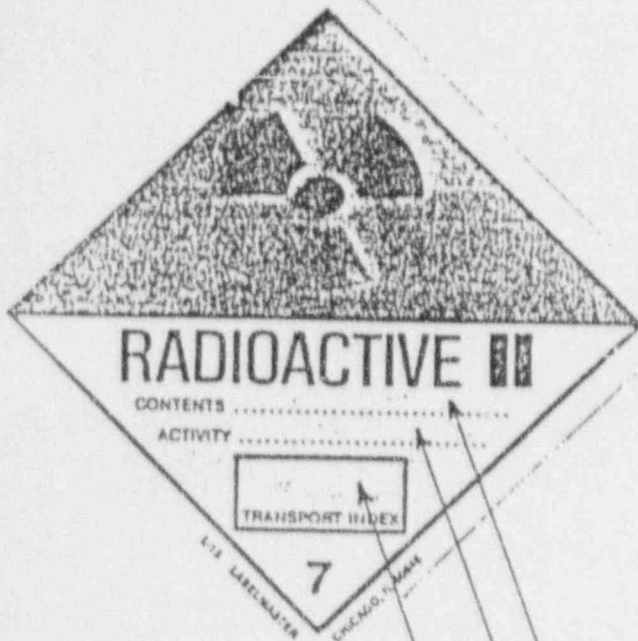


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10.7.0 RADIOACTIVE YELLOW LABELS

"RADIOACTIVE YELLOW - II"  
0.5 to 50 mrem/hr. on the surface.  
Not over 1.0 mrem/hr. at 3 feet.

"RADIOACTIVE YELLOW - III"  
50 mrem/hr. on surface but not to exceed 200 mr/hr  
1.0 mrem/hr. at 3 ft. but not to exceed 10 mr/hr



Contents:  
No. of Curies:  
Transport Index:

Iridium-192 or Cobalt-60  
Amount of Curies of Shipment  
See Example Below

Transport Index:

The highest amount of radiation measured at 36" from any surface of the shipping container.

Example:

If the meter reads .5 mr/hr at 36", place a .5 in the box. If the meter reads .8 mr/hr. place .3 in the box, etc. Transport Index of more than 10 - Do Not ship material - Contact the RSO/RPO.

"Radioactive Yellow II"

Does not require vehicle placards for shipment by highway.

"Radioactive Yellow III"

Requires vehicles placards on all four (4) sides.

Description:

Label is Yellow, Black and White with Red Bars.

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DANGER - CARGO AIRCRAFT ONLY

10.8.0



All air shipments require shipping containers to have affixed (one) "Danger - Cargo Aircraft Only" Label.

This label is not required for ground shipments.

Label is Orange and Black in color.

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10.9.0  
RADIOACTIVE MATERIAL TRANSFER REPORT Form 18

Enter location (job site, lab, project, etc.) of shipping device	Job site _____	Date _____
Enter date of shipment _____	Isotope _____	Curies _____
Enter radioactive content - <u>Example:</u> Iridium-192 or Cobalt-60	<u>EXPOSURE DEVICES</u>	
Enter number of Curies - <u>Example:</u> 100 Curies		
Enter make, model and serial number of device _____	Make _____ Model _____ S.N. _____	
Enter location (job site, lab, project, etc.) device is being transferred <u>From</u> and <u>To</u> _____	Transferred From _____ To _____	
Check the appropriate box describing reason for transfer _____	Reason For Transfer: _____	
Note all device defects and/or malfunctions _____	New Source Requested _____ Device Returning _____ Malfunction or Damaged _____	
Signature of individual preparing shipment _____	List any Mechanical Defects or Malfunctions _____	
Enter individual's name authorizing shipment _____	Shipment Prepared by _____ Authorized By _____	
Item 1 - Enter S/N of shipping container - Item 2 - Enter condition as <u>Good</u> , <u>OK</u> or <u>Poor</u> . Items 3 through 8 - Enter <u>Yes</u> or <u>No</u> and mark the appropriate box for type of Yellow Label.	<u>SHIPPING CONTAINER</u>	
<u>Note:</u> If condition of shipping container is listed as <u>Poor</u> (Item 2.) or <u>No</u> (Items 3 through 8) is entered <u>Do Not</u> ship until condition is corrected.	Container shall be a Type B designed to meet the requirements of DOT.	
Enter mr/hr. of the surface of the device _____	1. Shipping Container S.N. _____	
Enter mr/hr. of the surface of the shipping container _____	2. Condition of Shipping Container _____	
Enter the mr/hr. at 36" from the surface of the shipping container which is also the Transport Index (TI) _____	3. Danger - Do not load in passenger aircraft Label Affixed _____ (if shipped by air).	
Enter date shipment is received _____	4. Labelled with "Radioactive Material Special Form N.O.S. UN 2974" _____	
Signature of individual receiving shipment _____	5. Labelled with "Type B" _____	
<u>Note:</u> Monitoring shipment shall be performed as soon as practicable after receipt, but no later than three hours after the package is received during normal working hours or eighteen hours if received after normal working hours (10CFR Part 20.205).	6. Shipping Label Affixed _____	
	7. Package Certificate Affixed _____	
	8. Radioactive Yellow Labels Affixed _____	
	Type of Label: _____	
	Yellow II _____	
	Yellow III _____	
	<u>SURVEY OF MATERIAL PRIOR TO SHIPMENT</u>	
	Surface of Device _____ mr/hr. _____ At 36" _____	
	Surface of Container _____ mr/hr. _____ At 36" _____	
	<u>SURVEY OF MATERIAL AS RECEIVED</u>	
	Surface of Device _____ mr/hr. _____ At 36" _____	
	Surface of Container _____ mr/hr. _____ At 36" _____	
	Date Received _____ Received By _____	

(Shipper complete top half of report and ship with exposure device. Individual receiving material complete bottom (Survey of Material as Received) and return by mail to originator (job site) with a copy to the RSO).

## VI - RADIATION SAFETY PROGRAM

10.10.0

RESTRICTED ARTICLES AIRBILL

NOTE: Sample -  
(See Instructions on back)

**EXPRESS**

PLEASE COMPLETE ALL INFORMATION IN THE 5 BLOCKS OUTLINED BY ORANGE  
SEE BACK OF FORM SET FOR COMPLETE PREPARATION INSTRUCTIONS

APRIL NUMBER 1968 968 5000

Enter Fedex Acct. No. 1108-0244-0 here.

YOUR FEDERAL EXPRESS ACCOUNT NUMBER

DATE

**DOMESTIC AIRBILL PORTION**

Simplified selection of Priority 1 or Standard Air Service for ORM's and Radioactive Material Only.

Restricted Articles Service is prechecked

o-follow instructions k of form.

Airbill # cross-ref. on shipper's certification portion. Makes each airbill a complete record of shipment for regulatory compliance.

Activity - Net Quantity Enter the number of c.u.'s

Category of Labels Enter Yellow II or Yellow III

Transport Index Enter TI as recorded on Yellow Label

**SHIPPER'S CERTIFICATION PORTION**

FOR CUSTOMER ASSISTANCE ANYTIME CALL 1-800-238-6355

ADDITIONAL DESCRIPTION REQUIREMENTS FOR RADIOACTIVE MATERIALS (SEE BACK)

IRIDIUM 192 SPECIAL FORM 20 CL YELLOW II 0.2 TYPE B

THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR PASSENGER AIRCRAFT

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR IN CONNECTION TO, RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT.

I HEREBY CERTIFY THAT THE CONTENTS OF THIS SHIPMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME AND ARE CLASSIFIED, PACKED, MARKED, AND LABELED, AND IN PROPER CONDITION FOR CARRIAGE BY AIR ACCORDING TO APPLICABLE NATIONAL GOVERNMENTAL REGULATIONS.

EXPRESS

TO (Recipient's Name)

COMPANY

STREET ADDRESS (P.O. BOX NUMBERS PERMISSIBLE)

CITY

STATE

ZIP

FROM (Your Name)

COMPANY

STREET ADDRESS

CITY

STATE

ZIP

YOUR NOTES/REFERENCE NUMBERS (FIRST 12 CHARACTERS MUST NOW APPEAR ON INVOICE)

PAYMENT ☒ BY SHIPPER ☐ BY ADDRESSEE ☐ BY PAYEE (F.E.D. Acct.) ☐ BY CREDIT CARD

INSURANCE ☒ 100% ☐ 50% ☐ 25% ☐ 10% ☐ 5% ☐ 1% ☐ NONE

WEIGHT (LBS.)

VOLUME (CU. FT.)

CLASSIFICATION

ACTIVITY

CATEGORY

TRANSPORT INDEX

NET QUANTITY

DATE

SIGNATURE

SHIPPER'S CERTIFICATION FOR RESTRICTED ARTICLES (TYPE OR PRINT)

365968680

IRIDIUM 192 SPECIAL FORM 20 CL YELLOW II 0.2 TYPE B

THIS SHIPMENT IS WITHIN THE LIMITATIONS PRESCRIBED FOR PASSENGER AIRCRAFT

IF ACCEPTABLE FOR PASSENGER AIRCRAFT, THIS SHIPMENT CONTAINS RADIOACTIVE MATERIAL INTENDED FOR USE IN OR IN CONNECTION TO, RESEARCH, MEDICAL DIAGNOSIS OR TREATMENT.

I HEREBY CERTIFY THAT THE CONTENTS OF THIS SHIPMENT ARE FULLY AND ACCURATELY DESCRIBED ABOVE BY PROPER SHIPPING NAME AND ARE CLASSIFIED, PACKED, MARKED, AND LABELED, AND IN PROPER CONDITION FOR CARRIAGE BY AIR ACCORDING TO APPLICABLE NATIONAL GOVERNMENTAL REGULATIONS.



# RADIATION SAFETY PROGRAM VI - OPERATING AND EMERGENCY PROCEDURES

10.11.0

## (EXCLUSIVE USE) DOCUMENTATION

Enter date for the period ending

The Radiographer  
completing form will  
sign in column provided.

### RADIOACTIVE MATERIAL SHIPPING DOCUMENT Company (Exclusive Use) Vehicle IRIDIUM - 191

Period Ending

Enter date the Device is  
transported.

Enter the field site  
address where the Device  
is to be used.

Enter Serial No. of Device.

Enter the number of curies.

Enter the highest mr/hr.  
reading at 36" from the  
shipping container

Enter surface reading of  
the shipping container

Date	Job site Location	Exposure Device Y/N	No of Curies	Surface mr/hr of Container	(T1) mr/hr. at 36"	Signature of Radiographer
1/18						
2/18						
3/17						
4/18						
5/19						
6/19						
7/21						
8/22						
9/22						
10/24						
11/28						
11/30						
12/27						
14/27						
18/29						
18/30						
09/31						

#### DESCRIPTION OF PIECE AND CONTENTS

Radioactive Material Special Form N.O.S. Un 2974  
Iridium 191 105 Curies Maximum  
Yellow Label II - Transport Index Not Over

This is to certify that the above named materials are properly classified, described, packaged, marked, labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

"Radioactive Yellow-II Label" - 0.5 to 40 mrem/hr. on the surface and not over 1.0 mrem/hr. at 3 ft. Yellow-II Label does not require vehicle placards for shipment by highway.

#### NOTE

DO NOT TRANSPORT if surface of container is over 40 mrem/hr and/or over 1.0 mrem/hr. at 3 ft (additional shielding shall be required to meet shipping requirements of "Radioactive Yellow-II Label"). If there is any question on the correct procedure, DO NOT TRANSPORT. Call the Radiation Safety Officer (RSO) for clarification.



# RADIATION SAFETY PROGRAM VI - OPERATING AND EMERGENCY PRO

10.12.0

## COMMON CARRIER - TRUCK SHIPMENTS

**ALWAYS LIST HAZARDOUS MATERIALS FIRST IN DESCRIPTION OF ARTICLES COLUMN**

Weight (lbs) of material being shipped

STRAIGHT BILL OF LADING - SHORT FORM - Original Not Negotiable  
RECEIVED, subject to the conditions and terms in effect on the date of issue of this Original B/L of Lading.

NOT to be used for ORDER NOTIFY SHIPMENTS.

DATE

**YELLOW FREIGHT SYSTEM, INC. YFSY**

NOTE: DRIVER AFFIX PRO NUMBER LABEL HERE

Number of packages 1

When shipping Iridium-192 Devices use this sample.

When shipping cobalt-60 devices use this sample

the number of at the time the shipment

### TRANSPORT INDEX

The highest amount of radiation measured at 30" from any surface of the shipping container. Same as recorded on Yellow II labels.

### SHIPPER'S CERTIFICATION

Must appear on bill of lading.

CUSTOMER P.O. NO.		ROUTE		NOTE: DRIVER AFFIX PRO NUMBER LABEL HERE	
TO: CONSIGNEE Company's Name and Address to OR CDD SHIPMENTS (the latter "CDD" must appear before consignee's name)				FROM SHIPPER	
STREET which material is being shipped.				STREET Location's Complete Address	
CITY, STATE, ZIP				CITY, STATE, ZIP	
C.O.D. AMT. \$		FEE PPD. <input type="checkbox"/> COL. <input type="checkbox"/>		IS CUSTOMER'S CHECK ACCEPTABLE FOR C.O.D.? YES <input type="checkbox"/> NO <input type="checkbox"/>	
QTY SHIPPED (1) 1	UNIT (2) LBS	KIND OF PACKAGING, DESCRIPTION OF ARTICLES, SPECIAL MARKS AND EXCEPTIONS (IF 1ST HAZARDOUS MATERIALS FIRST)		WEIGHTS	
		1 Radioactive material Special Form			
		N.O.S. UN 2974			
		Iridium 192 - Curies / Cobalt 60 - curies			
		Yellow II or III (as applicable)			
		Transport Index			
This is to certify that the above named materials are properly classified, described, packaged, marked, labeled & are in proper condition for transportation according to the applicable regulations of The Department of Transportation.					
TOTAL		TOTAL			
<p>RECEIVED, subject to the conditions and terms in effect on the date of this bill of Lading, the property described herein is received in good order, subject to noted exceptions and condition of packages and contents, marked, numbered, and described as indicated herein which said number shall remain the same whether the property is received in good order or otherwise. It is hereby agreed that the shipper warrants that the property is in good order and condition, and that the shipper shall be responsible for any loss or damage to the property during its transit.</p> <p>SHIPPER'S CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked, labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.</p>					
SHIPPER'S		YELLOW FREIGHT SYSTEM, INC.			
PER:		DRIVER		TRAILER	
		PIECES		DRI	

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MARK "X" IN "TM" COLUMN FOR HAZARDOUS MATERIALS