

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

July 1, 1985

License No. 24-19500-01

D. G. Wiedeman, Chief  
Nuclear Materials Safety  
Section 1  
US Nuclear Regulatory Commission  
Region III  
799 Roosevelt Road  
Glen Ellyn, Illinois 60137

Subject: Response to Safety Inspection June 5 & June 7  
Letter of June 17, 1985

Dear Mr. Wiedeman:

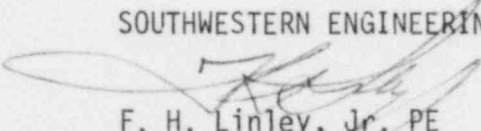
The documents required in items 1 through 4 of your letter of June 17 have been prepared in accordance with our records and are attached. A schedule has been set up for audits by the RSO as well as the review audits of all required information by management.

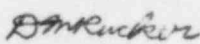
On item 4, we are waiting for approval by both the NRC and DOT of our current programs covering the packaging and QA for isotope transportation. The required documents were sent on June 24, 1985 to DOT and on June 27, 1985 to NRC.

SECO performs radiography only at its 2702 W. 9th St., Joplin, Missouri location. All source transportation will await approval of the program we submitted for item 4.

We appreciate the inspection of our Radiographic Safety Program and hope that with this response to the June 17 letter will assure our compliance with NRC regulations.

SOUTHWESTERN ENGINEERING CO.

  
F. H. Linley, Jr. PE  
Vice-President, Quality Assurance  
& Technical Services

  
D. M. Rucker,  
Radiation Safety Officer

FHL:cj

Encl.

8508010254 850729  
REG3 LIC30  
24-19500-01 PDR

JUL 5 1985

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



Response to Item 1

The following quarterly audits on Radiographers are enclosed:

<u>Date</u>	<u>Auditor</u>	<u>Radiographer</u>
6-14-85	R. M. Duke	Tim Harris
6-13-85	R. M. Duke	D. Rucker
5-16-85	D. Rucker	Tim Harris
5-9-85	R. M. Duke	D. Rucker
3-12-85	D. Rucker	Tim Harris
1-12-85	D. Rucker	Tim Harris
12-12-84	F. H. Linley	D. Rucker
3-17-84	D. Rucker	D. Cox

These audits are covered in the daily log. Audits performed in 1984 have been transcribed to current form.

D. M. Rucker  
D. M. Rucker  
Radiation Safety Officer

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Records in daily log show audits by Don Cox on the following dates. Data logged on these audits is listed below:

			<u>Source</u>	<u>SN #</u>	<u>Curies</u>	<u>Time</u>	<u>Radiographic Tech.</u>
Gamma Century SA	12-14-83	Auditor DRC	IR-192	SN 3103	55.5C	12-12:30	D. Rucker
Gamma Century SA	4-7-84	Auditor DRC	IR-192	SN 52054	63	12-1 a.m.	D. Rucker
Tech OPS T-680	6-14-84	Auditor DRC	CO-60	SN 1978	43	1 a.m.-6	D. Rucker
Tech OPS T-680	6-24-84	Auditor DRC	CO-60	SN 1978	43	5 a.m.-9	D. Rucker
Tech OPS T-680	7-18-84	Auditor DRC	CO-60	SN 1978	40	4-5 a.m.	Tim Harris
Gamma Century SA	10-1-84	Auditor DRC	IR-192	SN 85.084	83	11 a.m.- 1:30	Tim Harris
Gamma Century SA	10-22-84	Auditor DRC	IR-192	SN 85.084	71	7 a.m.-1 p.m.	Tim Harris

A review of all these audits shows that all Radiographers had been audited at least quarterly while performing radiographic assignments.

D. M. Rucker  
Radiation Safety Officer

# Southwestern Engineering Co

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## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location West of Bldg Date 6-14-85 Time 7:00 A.M.

Radiographer Tim Harris Inspector R. M. Duke

Radioisotope Ir 192 Curies 41 Serial No. 13.035

Projector Serial No. A-2-A Projector Model No. Gamma Centrix SA

Survey Meter Model No. 3009 Serial No. 011425 Calibration Due Date 8-22-85

- |   | Yes           | No            |
|---|---------------|---------------|
| 1. Was the radiographer wearing a film badge and dosimeter?   | <u>X</u>      | <u>      </u> |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters?  | <u>N/A</u>    | <u>      </u> |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | <u>X</u>      | <u>      </u> |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | <u>X</u>      | <u>      </u> |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | <u>X</u>      | <u>      </u> |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>X</u>      | <u>      </u> |
| 7. Was the utilization log properly filled out?   | <u>X</u>      | <u>      </u> |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | <u>X</u>      | <u>      </u> |
| 9. Was the radiographer working with defective equipment?   | <u>      </u> | <u>X</u>      |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>X</u>      | <u>      </u> |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>X</u>      | <u>      </u> |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>X</u>      | <u>      </u> |



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## Management Inspection Check List continued

- |  | <u>Yes</u>    | <u>No</u>     |
|--|---------------|---------------|
| 13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? | <u>X</u>      | <u>      </u> |
| 14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).  | <u>      </u> | <u>X</u>      |

Remarks

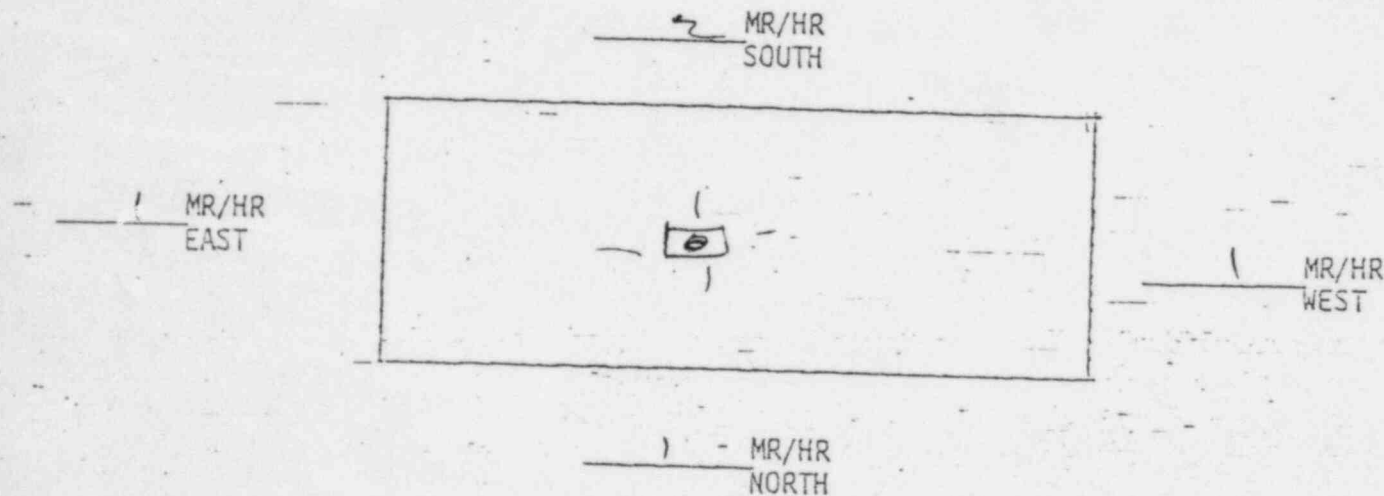
Radiographer was well informed on  
safety measures and followed the  
requirements exactly.

R. M. Duke 6/14/85

# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 6-14-85 JOB NO'S. WT  
 RADIATION SOURCE IR-192 CURIES 41  
 EXPOSURE DEVICE GAMMA CENTRY MODEL NO. A-2-A  
 SERIAL NO. 13.035

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY  
 LOCATION WEST of BLD. BEFORE USE 14 MR/HR 1 ft.  
 TIME 6:30 A.M.



BARRICADE EQUIPMENT USED Ropes, Signs

COLLIMATOR USED YES

SURVEY INSTRUMENTS

Dosimeter CALIB. DATE 5-22-85 MODEL NO. 3009 S/N 011425  
 CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER  
 SAFETY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR N/A LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 14 MR/HR@FT. 1 ft. TIME 8:30 A.M.

ASSISTING PERSONNEL \_\_\_\_\_ RADIOGRAPHER V. L. Harris II

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## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location WEST END YARD Date 6-13-85 Time 1:30-3pm  
Radiographer D RUCKER Inspector R.M. Duke P.C. Mgr.  
Radioisotope IR-192 Curies 41 Serial No. 13.035 MODEL A-2-A  
Projector Serial No. 1.558 Projector Model No. GAMMA CENTRY SA  
Survey Meter Model No. 3009 Serial No. 011425 Calibration Due Date 8-22-85

- |   | Yes                   | No          |
|---|-----------------------|-------------|
| 1. Was the radiographer wearing a film badge and dosimeter?   | <u>X</u>              | <u>    </u> |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters   | ① <u>See Comments</u> | <u>    </u> |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | <u>X</u>              | <u>    </u> |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | <u>X</u>              | <u>    </u> |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | <u>X</u>              | <u>    </u> |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>X</u>              | <u>    </u> |
| 7. Was the utilization log properly filled out?   | <u>X</u>              | <u>    </u> |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | ② <u>See Comments</u> | <u>    </u> |
| 9. Was the radiographer working with defective equipment?   | <u>    </u>           | <u>X</u>    |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>X</u>              | <u>    </u> |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>X</u>              | <u>    </u> |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>X</u>              | <u>    </u> |

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## Management Inspection Check List continued

13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? (3) Yes No  
See Comments
14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks). — X

Remarks COPY OF Physical Radiation Survey ATTACHED

- ① No other employees were working within the restricted area so dosimeters and film badges not required.
- ② Discussed some of the specific rules and radiographer was well informed.
- ③ The O. and E. procedures are maintained in the storage vault for ready access for information.

R. D. Dub  
6/13/85

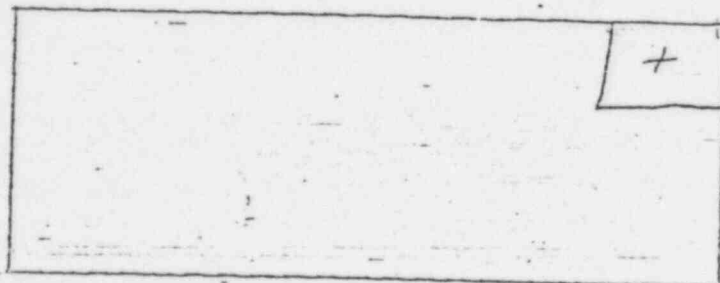
# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 6-13-85 JOB NO'S. TEST PLATES  
 RADIATION SOURCE IR-192 CURIES 41  
 EXPOSURE DEVICE GAMMA CENTRY MODEL NO. A-2A  
 SERIAL NO. 13035

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY  
 LOCATION West End Yard BEFORE USE 13 MR/HR 0.1 ft  
 TIME 130 pm

0.1 MR/HR  
SOUTH

0 MR/HR  
EAST



0.1 MR/HR  
WEST

0 MR/HR  
NORTH

BARRICADE EQUIPMENT USED Ropes & Signs

COLLIMATOR USED Yes

## SURVEY INSTRUMENTS

DOSIMETER CALIB. DATE 5-22-85 MODEL NO. 3009 S/N 011425  
 CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER  
 SAFETY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR N/A LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 13 MR/HR@FT. 1 TIME 3 pm

ASSISTING PERSONNEL \_\_\_\_\_ RADIOGRAPHER DR Rader

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## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location WEST OF BLD Date 5-16-85 Time 10 - NOON  
Radiographer TIM HARRIS Inspector D RUCKER / RSO  
Radioisotope IR-192 Curies 65 Serial No. 13035 MODEL A-2-A  
Projector Serial No. 1,558 Projector Model No. GAMMA CENTURY SA  
Survey Meter Model No. 3009 Serial No. 011425 Calibration Due Date 6-1-85

- |   | Yes           | No                                    |
|---|---------------|---------------------------------------|
| 1. Was the radiographer wearing a film badge and dosimeter?   | <u>✓</u>      | <u>      </u>                         |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters?  | <u>N/A</u>    | <u>NO ONE ELSE IN RESTRICTED AREA</u> |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | <u>✓</u>      | <u>      </u>                         |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | <u>✓</u>      | <u>      </u>                         |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | <u>✓</u>      | <u>      </u>                         |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>✓</u>      | <u>      </u>                         |
| 7. Was the utilization log properly filled out?   | <u>✓</u>      | <u>      </u>                         |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | <u>✓</u>      | <u>      </u>                         |
| 9. Was the radiographer working with defective equipment?   | <u>      </u> | <u>✓</u>                              |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>✓</u>      | <u>      </u>                         |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>✓</u>      | <u>      </u>                         |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>✓</u>      | <u>      </u>                         |



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## Management Inspection Check List continued

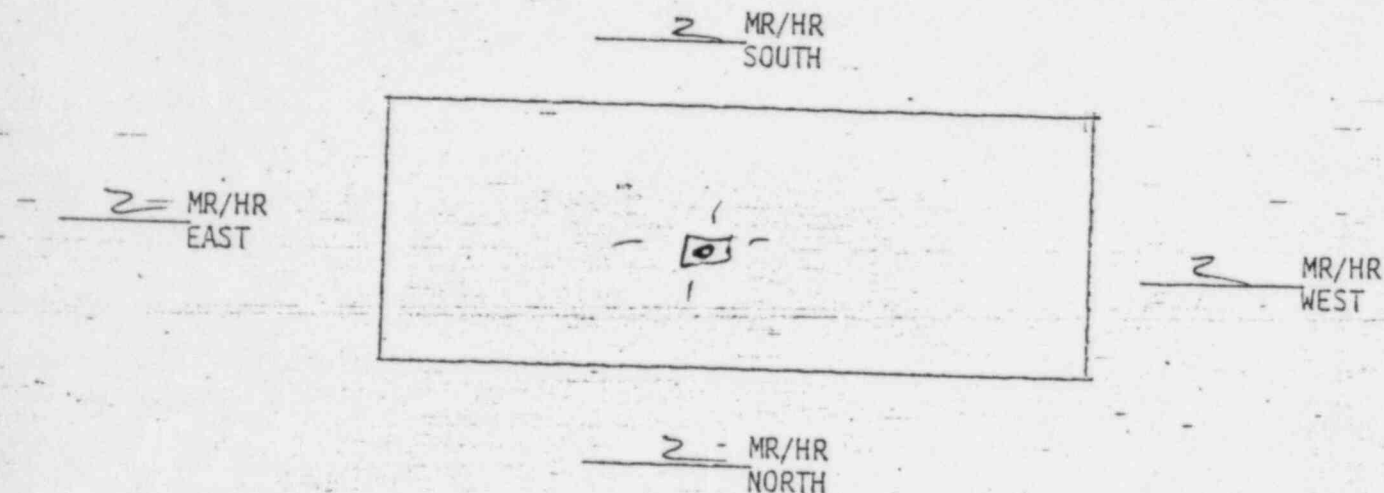
- |  | <u>Yes</u>    | <u>No</u>     |
|--|---------------|---------------|
| 13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? | <u>✓</u>      | <u>      </u> |
| 14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).  | <u>      </u> | <u>✓</u>      |

Remarks ALL ITEM REQUIRED BY NRC REGULATIONS + SECO  
OP-RT-1 WERE PROPERLY CARRIED OUT

# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 5-16-85 JOB NO'S. 33-15-01  
 RADIATION SOURCE TR-192 CURIES 65  
 EXPOSURE DEVICE GAMMA CENTRY MODEL NO. A-2-A  
 SERIAL NO. 13.035

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY  
 LOCATION WEST OF BLD BEFORE USE 18 MR/HR 1 A  
 TIME 10:00 A.M.



BARRICADE EQUIPMENT USED Ropes, Signs

COLLIMATOR USED YES

## SURVEY INSTRUMENTS

Dosimeter CALIB. DATE 3-1-85 MODEL NO. 3009 S/N 011425  
 CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER  
 SAFETY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR N/A LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 18 MR/HR@FT. 1 TIME 12:00 Noon

ASSISTING PERSONNEL \_\_\_\_\_ RADIOGRAPHER [Signature]

AUDITED DMR/RSO  
 5/16/85

# Southwestern Engineering Co

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## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location WEST END SHOP Date 5-9-85 Time 4-5 AM  
Radiographer D RUCKER Inspector R. Duke - Q.C. Mgr.  
Radioisotope IR-192 Curies 64 Serial No. 13.035 MODEL A-2-A  
Projector Serial No. 1.558 Projector Model No. GAMMA CENTURY SA  
Survey Meter Model No. 3009 Serial No. 011423 Calibration Due Date 6-1-85

- |   | Yes                   | No       |
|---|-----------------------|----------|
| 1. Was the radiographer wearing a film badge and dosimeter?   | <u>X</u>              | ___      |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters?  | ① <u>See Comments</u> | ___      |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | ② <u>See Comments</u> | ___      |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | ② <u>See Comments</u> | ___      |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | ② <u>See Comments</u> | ___      |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>X</u>              | ___      |
| 7. Was the utilization log properly filled out?   | <u>X</u>              | ___      |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | <u>X</u>              | ___      |
| 9. Was the radiographer working with defective equipment?   | ___                   | <u>X</u> |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>X</u>              | ___      |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>X</u>              | ___      |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>X</u>              | ___      |

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## Management Inspection Check List continued

- |  | Yes           | No            |
|--|---------------|---------------|
| 13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? | <u>X</u>      | <u>      </u> |
| 14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).  | <u>      </u> | <u>X</u>      |

Remarks SOURCE BEING MOVED FROM BAY 2→3 AT START

OF AUDITS - COPY OF PHYSICAL SURVEY ATTACHED

- ① No other people were working in the area.
- ② Upon arrival at plant, I observed D.M.R. was not shooting and ropes had been dropped and signs removed.

I observed his first shot and requirements of this check list were followed.

R. M. Duke

5/9/85

# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 5-9-85 JOB NO'S. 83-15-07, 83-15-03

RADIATION SOURCE IR-192 CURIES 64

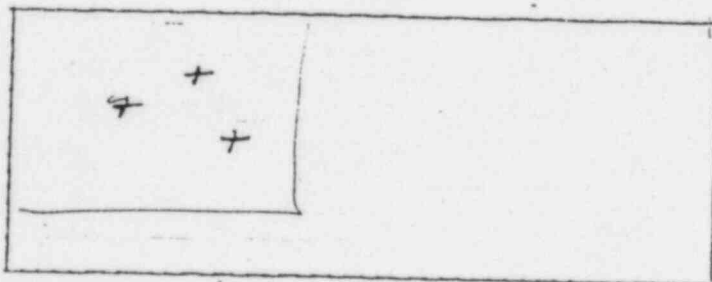
EXPOSURE DEVICE GAMMA CENTRY MODEL NO. A-2-A

SERIAL NO. 13.035

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY

LOCATION East End BEFORE USE 18 MR/HR 11pm  
TIME 11:00 pm

0.3 MR/HR  
SOUTH



BARRICADE EQUIPMENT USED Ropes Signs - Locked Doors

COLLIMATOR USED YES

## SURVEY INSTRUMENTS

DOSIMETER CALIB. DATE 3-1-85 MODEL NO. 3009 S/N 011423

CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

## INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER

SAFETY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR N/A LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 18 MR/HR@FT. 1 TIME 6pm

ASSISTING PERSONNEL \_\_\_\_\_ RADIOGRAPHER Don Kuehn III

# Southwestern Engineering Co

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## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location BAY 3 Date 3-12-85 Time 11 AM  
Radiographer TIM HARRIS Inspector D. RUCKER <sup>ASSNT</sup> RSO  
Radioisotope IR-192 Curies 99 Serial No. MODEL A-2A SN13035  
Projector Serial No. 1.558 Projector Model No. GAMMA CENTURY SA  
Survey Meter Model No. 3009 Serial No. 011423 Calibration Due Date 3-24-85

- |   | Yes           | No                       |
|---|---------------|--------------------------|
| 1. Was the radiographer wearing a film badge and dosimeter?   | <u>✓</u>      | <u>      </u>            |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters?  | <u>N/A</u>    | <u>NO OTHERS WORKING</u> |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | <u>✓</u>      | <u>      </u>            |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | <u>✓</u>      | <u>      </u>            |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | <u>✓</u>      | <u>      </u>            |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>✓</u>      | <u>      </u>            |
| 7. Was the utilization log properly filled out?   | <u>✓</u>      | <u>      </u>            |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | <u>✓</u>      | <u>      </u>            |
| 9. Was the radiographer working with defective equipment?   | <u>      </u> | <u>✓</u>                 |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>✓</u>      | <u>      </u>            |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>✓</u>      | <u>      </u>            |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>✓</u>      | <u>      </u>            |



# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



## Management Inspection Check List continued

- |  | <u>Yes</u>    | <u>No</u>     |
|--|---------------|---------------|
| 13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? | <u>✓</u>      | <u>      </u> |
| 14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).  | <u>      </u> | <u>✓</u>      |

Remarks

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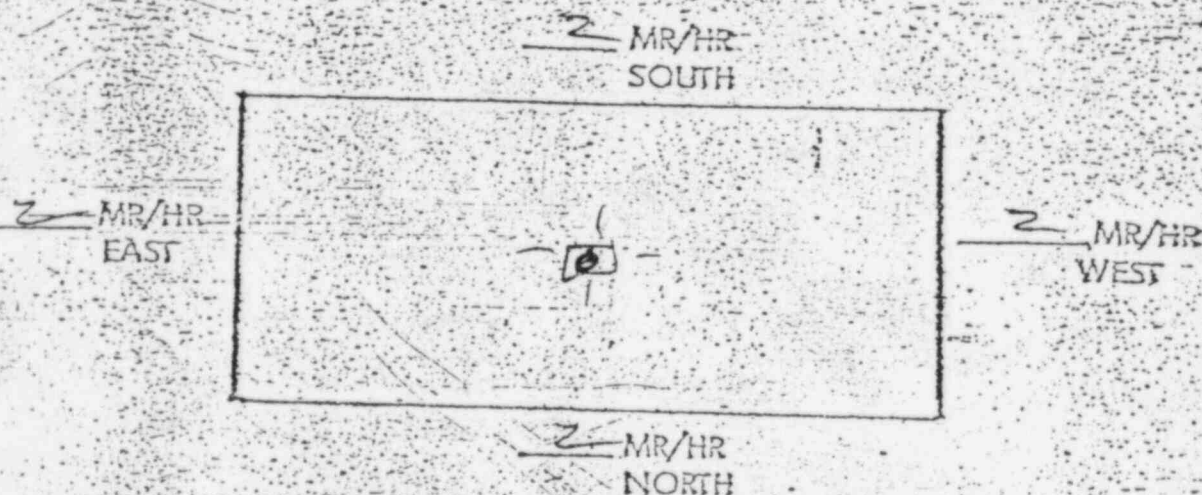
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# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 3-12-85 JOB NO'S 84-43-03, 04  
 RADIATION SOURCE IR-192 CURIES 99  
 EXPOSURE DEVICE GAMMA CENTRY MODEL NO. A-2A  
 SERIAL NO. 13,035

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY  
 LOCATION BAY #3 BEFORE USE 22 MR/HR  
 TIME 11:00 A.M.



BARRICADE EQUIPMENT USED ROPES, SIGNS  
 COLLIMATOR USED YES  
 SURVEY INSTRUMENTS  
DOSIMETER CALIB. DATE 1-24-85 MODEL NO. 3009 S/N 011123  
 CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER.  
 SAFETY PLUGS OK CRANK ASSEMBLY OK  
 OPERATION OK POSITION INDICATOR N/A LOCKING DEVICE OK  
 TUBES OK TUBE CONNECTORS OK LABELS OK  
 WIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 22 MR/HR @ 1 FT. TIME 12:30 P.M.

ASSISTING PERSONNEL \_\_\_\_\_

RADIOGRAPHER P. L. H.

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location TEST FLOOR Date 1-12-85 Time 2 AM - 6 AM  
Radiographer TIM HARRIS Inspector D RUCKER ASST RSO  
Radioisotope IR-192 Curies 28 Serial No. 85.084 MODEL A-2-A  
Projector Serial No. 1,558 Projector Model No. GAMMA CENTURY SA  
Survey Meter Model No. 3009 Serial No. 011418 Calibration Due Date 3-3-85

- |   | Yes           | No  |
|---|---------------|---|
| 1. Was the radiographer wearing a film badge and dosimeter?   | <u>✓</u>      | <u>      </u>                                   |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters?  | <u>N/A -</u>  | <u>NO ONE ELSE</u><br><u>IN RESTRICTED AREA</u> |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | <u>✓</u>      | <u>      </u>                                   |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | <u>✓</u>      | <u>      </u>                                   |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | <u>✓</u>      | <u>      </u>                                   |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>✓</u>      | <u>      </u>                                   |
| 7. Was the utilization log properly filled out?   | <u>✓</u>      | <u>      </u>                                   |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | <u>✓</u>      | <u>      </u>                                   |
| 9. Was the radiographer working with defective equipment?   | <u>      </u> | <u>✓</u>  |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>✓</u>      | <u>      </u>                                   |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>✓</u>      | <u>      </u>                                   |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>✓</u>      | <u>      </u>                                   |

# Southwestern Engineering Co

A SUBSIDIARY OF CRONIS INDUSTRIES, INC.



## Management Inspection Check List continued

- |  | <u>Yes</u>    | <u>No</u>     |
|--|---------------|---------------|
| 13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? | <u>✓</u>      | <u>      </u> |
| 14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).  | <u>      </u> | <u>✓</u>      |

Remarks

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# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 1-18-85 JOB NO'S WT

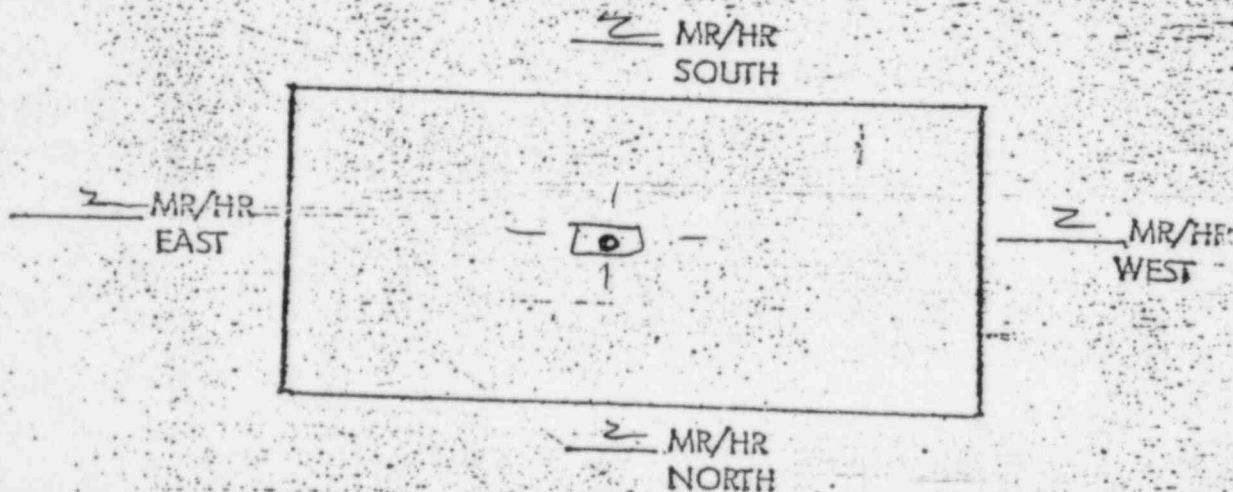
RADIATION SOURCE IR-192 CURIES 28

EXPOSURE DEVICE GAMMA CENTRY MODEL NO. A-2-A

SERIAL NO. 85,084

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY

LOCATION TEST FLOOR BEFORE USE 10 MR/HR  
TIME 2:00 A.M.



BARRICADE EQUIPMENT USED Ropes, Signs

COLLIMATOR USED YES

SURVEY INSTRUMENTS

DOSIMETER CALIB. DATE 12-3-85 MODEL NO. 3005 S/N 011418

CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER.  
SAFETY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR OK LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 10 MR/HR@1FT. TIME 6:06 AM

ASSIGNED BY \_\_\_\_\_ AUDITED 1/20

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location BAY 3 / TEST FLOOR Date 12-11, 12-84 Time 11 PM - 7 AM

Radiographer D RUCKER

<sup>AUDITOR</sup>  
Inspector R H LINDLEY, JR.

Radioisotope IR-192 Curies 43 Serial No. 85,084 MODEL A-2-A

Projector Serial No. 1.558 Projector Model No. GAMMA CENTURY SA

Survey Meter Model No. 3009 Serial No. 011423 Calibration Due Date 12-26-85

BETWEEN 6:30 & 7 AM 12/12/84

Yes No

1. Was the radiographer wearing a film badge and dosimeter? ✓
2. Were other individuals working within the restricted area wearing film badges and dosimeters? N/A NO OTHERS  
WORKING IN RESTRICTED  
AREA
3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs? ✓
4. Was the restricted area properly controlled to prevent unauthorized entry? ✓
5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs? ✓
6. Did the radiographer have a calibrated and properly operating survey meter? ✓
7. Was the utilization log properly filled out? ✓
8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.) ✓
9. Was the radiographer working with defective equipment? ✓
10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? ✓
11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal? ✓
12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs? ✓



# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



## Management Inspection Check List continued

13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation?

Yes

No

✓  
IN FILE #  
IN ISOTOPIC STORAGE  
VAULT

14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).

— Not to  
MY KNOWLEDGE

Remarks

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# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 12-11-84 <sup>12-11-84 7420</sup> JOB NO'S 84-14-02 84-20-02 04

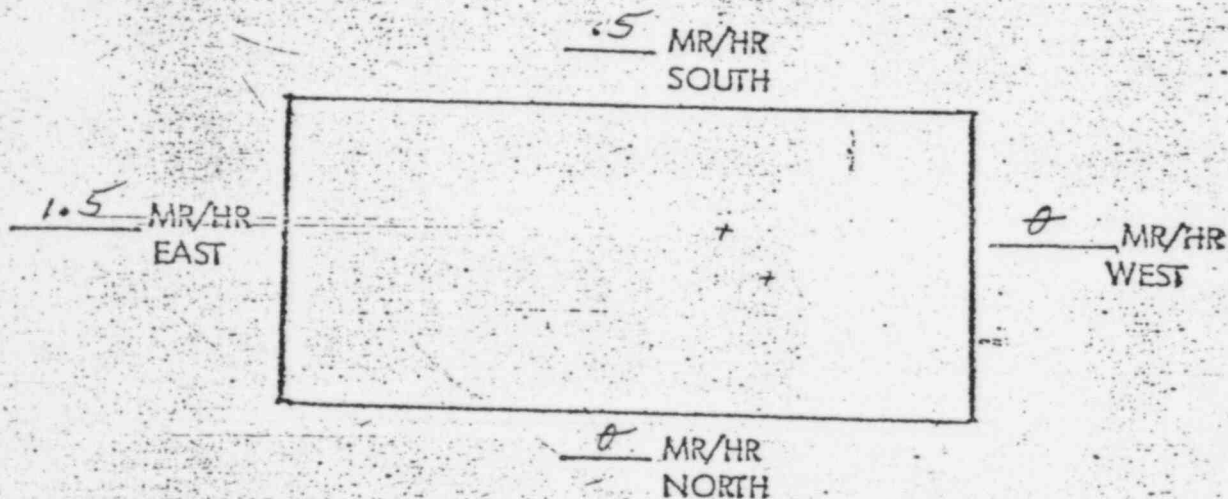
RADIATION SOURCE 1R-192 CURIES 43 CI

EXPOSURE DEVICE GAMMA CENT MODEL NO. A-2-A

SERIAL NO. 85084

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY

LOCATION BAY 3 / Test floor BEFORE USE 15 MR/HR  
TIME 11 pm



BARRICADE EQUIPMENT USED Ropes & Signs

COLLIMATOR USED N/A

SURVEY INSTRUMENTS

DOSIMETER CALIB. DATE 9-25-84 MODEL NO. 3009 S/N 011423

CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER.

SAFETY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR N/A LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 15 MR/HR@1FT. TIME 6:30/7  
922

ASSISTING PERSONNEL AUDITED BY FHL

RADIOGRAPHER Ed Parker



## MANAGEMENT INSPECTION CHECK LIST

Radiographic Location BAY 3 Date 3-17-84 Time 1200-69M  
 Radiographer DON COX Inspector D RUCKER / ASSNT RSO  
 Radioisotope CO 60 Curies 44 Serial No. 1978  
 Projector Serial No. 293 Projector Model No. T-690  
 Survey Meter Model No. 3009 Serial No. 011425 Calibration Due Date 5-18-84

- |   | Yes                              | No            |
|---|----------------------------------|---------------|
| 1. Was the radiographer wearing a film badge and dosimeter? ~   | <u>✓</u>                         | <u>      </u> |
| 2. Were other individuals working within the restricted area wearing film badges and dosimeters?  | <u>N/A - NO ONE ELSE IN AREA</u> | <u>      </u> |
| 3. Was the restricted area posted with "CAUTION (or DANGER) RADIATION AREA" signs?  | <u>✓</u>                         | <u>      </u> |
| 4. Was the restricted area properly controlled to prevent unauthorized entry?   | <u>✓</u>                         | <u>      </u> |
| 5. Was the high radiation area posted with "CAUTION (or DANGER) HIGH RADIATION AREA" signs?   | <u>✓</u>                         | <u>      </u> |
| 6. Did the radiographer have a calibrated and properly operating survey meter?  | <u>✓</u>                         | <u>      </u> |
| 7. Was the utilization log properly filled out?   | <u>✓</u>                         | <u>      </u> |
| 8. Did the radiographer have sufficient knowledge of safety rules? (Ascertained by oral questions.)   | <u>✓</u>                         | <u>      </u> |
| 9. Was the radiographer working with defective equipment?   | <u>      </u>                    | <u>✓</u>      |
| 10. Did the radiographer properly survey the source projector and source tube and take a radiation reading 1 foot (0.3 m) in front of the source following the radiographic exposure? | <u>✓</u>                         | <u>      </u> |
| 11. Were radioactive isotopes stored properly and kept locked to prevent unauthorized removal?  | <u>✓</u>                         | <u>      </u> |
| 12. Was the storage area posted with "CAUTION (or DANGER) RADIOACTIVE MATERIAL" signs?  | <u>✓</u>                         | <u>      </u> |

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



## Management Inspection Check List continued

- |  | <u>Yes</u> | <u>No</u>     |
|--|------------|---------------|
| 13. Did the radiographer possess a copy of the applicant's operating and emergency procedures and, as applicable, State or NRC rules and regulations for protection against radiation? | <u>✓</u>   | <u>      </u> |
| 14. Were there any items of noncompliance other than those listed on this form? (If any, explain in remarks).  | <u>✓</u>   | <u>      </u> |

Remarks \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

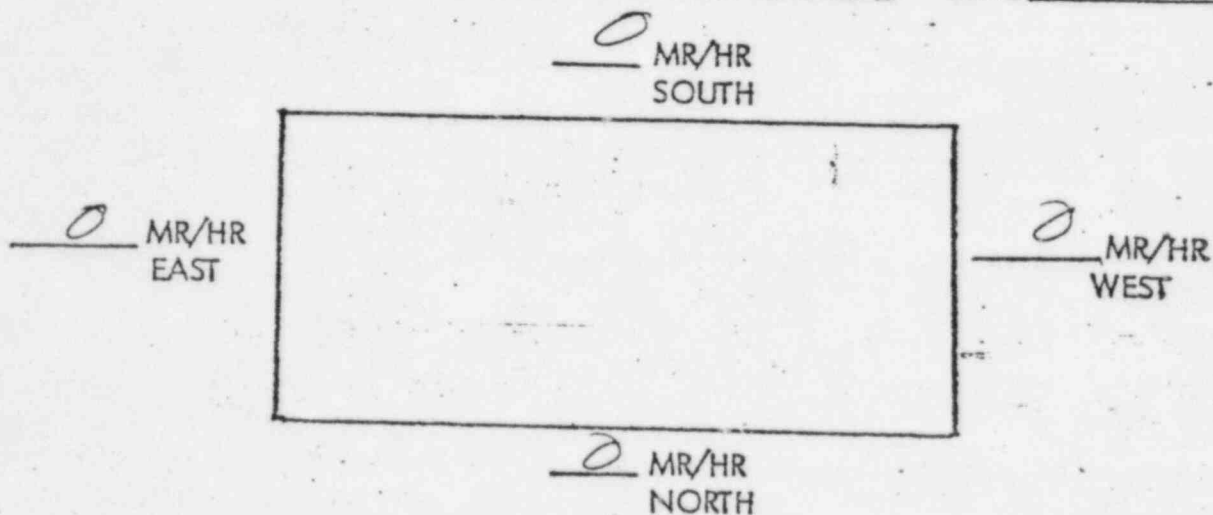
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# PHYSICAL RADIATION SURVEY REPORT

DATE OF USE 3-17-84 JOB NO'S 82-27-11, 83-55, 83-51-01  
 RADIATION SOURCE Co 60 CURIES 44  
 EXPOSURE DEVICE TechOps T-680 MODEL NO. 424-14  
 SERIAL NO. 1978

EXPOSURE AREA DIAGRAM AND RADIATION SURVEY READINGS. SEALED SOURCE SURVEY  
 LOCATION Bay 3 BEFORE USE 37 MR/HR  
 TIME 0600



BARRICADE EQUIPMENT USED Ropes & Signs  
 COLLIMATOR USED No

## SURVEY INSTRUMENTS

Dosimeter Co-A CALIB. DATE 2-19-84 MODEL NO. 3009 S/N 011425  
 \_\_\_\_\_ CALIB. DATE \_\_\_\_\_ MODEL NO. \_\_\_\_\_ S/N \_\_\_\_\_

INSPECTION OF EXPOSURE DEVICE AND STORAGE CONTAINER.  
 SAFTY PLUGS OK CRANK ASSEMBLY OK

OPERATION OK POSITION INDICATOR OK LOCKING DEVICE OK

TUBES OK TUBE CONNECTORS OK LABELS OK

PIGTAIL CONNECTION OK

REMARKS \_\_\_\_\_

FINAL SURVEY OF SEALED SOURCE BEFORE STORAGE 36 MR/HR@1FT. TIME 0600

ASSISTING PERSONNEL AUDITED RMR ASST RADIOGRAPHER R. S. O.

# **Southwestern Engineering Co**

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



Response to Item 2

Attached are quarterly inspection reports for CO-60 Tech Ops T-680 SR 293

<u>1983</u>	<u>Inspector</u>
12-6-83	D. M. Rucker
<u>1984</u>	
3-7-84	D. M. Rucker
6-7-84	D. R. Cox
9-7-84	D. R. Cox
12-1-84	D. M. Rucker
<u>1985</u>	
2-28-85	D. M. Rucker
5-19-85	D. M. Rucker

These reports cover all required inspections.



# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.

5-19-85

TECH OPS EAK

SN-293



## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he is not available).

Exposure Devices:

Mfg. TECH OPS MODEL T-680 SER. NO. 293

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey device for any radiation. Survey Reading < 5 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly ☒ Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture specification attachment)  
OK ☒ Damaged ☐

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper operation  
YES ☐ NO ☒

### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly OK COUNTER AT 000

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification attachment)  
OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐



QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

V. Source Drive Cable:

B. (cont.d)

- 2. Wear
- 3. Rust
- 4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	
Yes		No	<input checked="" type="checkbox"/>
Yes		No	<input checked="" type="checkbox"/>

C. Mechanical operating abilities.

- 1. Does source pigtail assembly and cable fit properly.

Yes ☒ No

- 2. Is there any possibility of an accidental disconnection.

Yes No ☒

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 5-19-85

Time 7 AM

Location PAINT BOOTH + VAULT

REMARKS

David M. Ruckert  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2-28-85

TECH OPS *SMR*

SN-293

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

Exposure Devices:

Mfg. TECH OPS MODEL T-680 SER. NO. 293

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 2.05 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly ☒ Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ☒ Damaged ☐

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES ☐ NO ☒

### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly  
0 SETTING  
OK

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐



Page 2 of 2

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

### V. Source Drive Cable:

#### B. (cont.d)

2. Wear
3. Rust
4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	
Yes		No	<input checked="" type="checkbox"/>
Yes		No	<input checked="" type="checkbox"/>

#### C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes	<input checked="" type="checkbox"/>	No	
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2. Is there any possibility of an accidental disconnection.

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment 2) will be used to make above safety inspection.

Inspection Date 2-28-85 Time 6AM  
Location PAINT BOOTH VAULT

REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

David M. Ruckel RSO  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



12-1-84  
TECH OPS *EMR*  
SN-293

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

Exposure Devices:

Mfg. TECH OPS MODEL T-680 SER. NO. 293

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 4.5 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly ☒ Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ☒ Damaged ☐

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES ☐ NO ☒

### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly OK  
- POINT WAS ADJUSTED  
C SETTING ADJUSTED

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐



## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

### V. Source Drive Cable:

#### B. (cont.d)

2. Wear
3. Rust
4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged
Yes		No <input checked="" type="checkbox"/>
Yes		No <input checked="" type="checkbox"/>

#### C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes ☒ No

2. Is there any possibility of an accidental disconnection.

Yes No ☒

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment 2) will be used to make above safety inspection.

Inspection Date 12-1-84 Time 6 AM  
Location PAINT BOOTH + VAULT

REMARKS

David M. Rucker RSO 12-1-84  
RADIATION SAFETY OFFICER





9-7-84

Tech ops  
T-680 4N 293

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he is not available).

I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey device for any radiation. Survey Reading < .05 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly Yes Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components OK ☒ Damaged ☐
- F. Condition of Labeling OK ☒ Damaged ☐

II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture specification attachment) OK ☒ Damaged ☐

III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors OK ☒ Damaged ☐
- C. Condition of Source Stop OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper operation  
Yes ☐ No ☒

IV. Crank Assembly:

- A. Does it operate properly Yes ☒ No ☐
- B. Any excessive wear or damaged components Yes ☐ No ☒
- C. Source indicator operate properly Yes ☒ No ☐

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont'd)

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification attachment.)  
OK ☒ Damaged ☐
- B. Remove cable and inspect for:
- |                 |  |  |
|-----------------|--|--|
| 1. Flexibility  | OK <input checked="" type="checkbox"/> | Damaged <input type="checkbox"/>       |
| 2. Wear         | OK <input checked="" type="checkbox"/> | Damaged <input type="checkbox"/>       |
| 3. Rust         | Yes <input type="checkbox"/>           | No <input checked="" type="checkbox"/> |
| 4. Broken Wires | Yes <input type="checkbox"/>           | No <input checked="" type="checkbox"/> |
- C. Mechanical operating abilities.
1. Does source pigtail assembly and cable fit properly.  
Yes ☒ No ☐
2. Is there any possibility of an accidental disconnection.  
Yes ☐ No ☒

Clean, lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 9-7-84 Time 0800 AM  
Location Bunker

REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

MR. [Signature] RSO  
RADIATION SAFETY OFFICER



6-7-84

Tech ops  
T-680 S/N 293

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he is not available).

I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey device for any radiation. Survey Reading 4.5 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged \_\_\_\_\_
- C. Check locking Mechanism:  
Operates properly Yes Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged \_\_\_\_\_
- E. Condition of hold Down Components OK ☒ Damaged \_\_\_\_\_
- F. Condition of Labeling OK ☒ Damaged \_\_\_\_\_

II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture specification attachment) OK ☒ Damaged \_\_\_\_\_

III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes \_\_\_\_\_ No ☒
- B. Condition of tube connectors OK ☒ Damaged \_\_\_\_\_
- C. Condition of Source Stop OK ☒ Damaged \_\_\_\_\_
- D. Is there any kinks, crushed section or anything to prevent proper operation  
Yes ☒ No \_\_\_\_\_

IV. Crank Assembly:

- A. Does it operate properly Yes ☒ No \_\_\_\_\_
- B. Any excessive wear or damaged components Yes \_\_\_\_\_ No ☒
- C. Source indicator operate properly Yes ☒ No \_\_\_\_\_

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont'd)

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification attachment.

OK ☒ Damaged ☐

- B. Remove cable and inspect for:

1. Flexibility

OK ☒ Damaged ☐

2. Wear

OK ☒ Damaged ☐

3. Rust

Yes ☐ No ☒

4. Broken Wires

Yes ☐ No ☒

- C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes ☒ No ☐

2. Is there any possibility of an accidental disconnection.

Yes ☐ No ☒

Clean, lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 6-7-84 Time 100 PM  
Location BUNKER

REMARKS ITEM III ONE GUIDE TUBE SCRAPPED  
DUE TO BROKEN COIL ON ID 10" FROM  
OUTLET END.

D. Coy RSO  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

3-7-87  
277K

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

### Exposure Devices:

Mfg. TECH OPS (FOR CO 60) MODEL T-680 SER. NO. 293

#### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 6.5 mr/hr mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly YES Firm attachment YES
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

#### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ☒ Damaged ☐

#### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper  
operation - ONE SOURCE  
TUBE Replaced  
YES ☐ NO ☒

#### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly  
YES ☒ NO ☐

#### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

## V. Source Drive Cable:

## B. (cont.d)

2. Wear
3. Rust
4. Broken Wires

OK	<u>✓</u>	Damaged	
Yes		No	<u>✓</u>
Yes		No	<u>✓</u>

## C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes	<u>✓</u>	No	
-----	----------	----	--

2. Is there any possibility of an accidental disconnection.

Yes		No	<u>✓</u>
-----	--	----	----------

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 3-7-84 Time 2 AM  
Location X-RAY VAULT WITH COLUMNATOR

REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

David M. Rucker  
RADIATION SAFETY OFFICER



# Southwestern Engineering Co

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2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

12-6-83

DMK

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

### Exposure Devices:

Mfg. TECH OPS (for CO GO) MODEL T-680 SER. NO. 293

#### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading < .5 m/r mr/hr.
- B. Inspect safety plug for proper condition OK ✓ Damaged \_\_\_\_\_
- C. Check locking Mechanism  
Operates properly YES Firm attachment YES
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ✓ Damaged \_\_\_\_\_
- E. Condition of hold Down Components  
OK ✓ Damaged \_\_\_\_\_
- F. Condition of Labeling  
OK ✓ Damaged \_\_\_\_\_

#### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ✓ Damaged \_\_\_\_\_

#### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes \_\_\_\_\_ No ✓
- B. Condition of tube connectors  
OK ✓ Damaged \_\_\_\_\_
- C. Condition of Source Stop  
OK ✓ Damaged \_\_\_\_\_
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES \_\_\_\_\_ NO ✓

#### IV. Crank Assembly:

- A. Does it operate properly  
YES ✓ NO \_\_\_\_\_
- B. Any excessive wear or damaged components  
YES \_\_\_\_\_ NO ✓
- C. Source indicator operate properly  
YES ✓ NO \_\_\_\_\_

#### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ✓ Damaged \_\_\_\_\_
- B. Remove cable and inspect for:  
1. Flexibility  
OK ✓ Damaged \_\_\_\_\_

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

## V. Source Drive Cable:

## B. (cont.d)

- 2. Wear
- 3. Rust
- 4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	
Yes		No	<input checked="" type="checkbox"/>
Yes		No	<input checked="" type="checkbox"/>

## C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes ☒ No ☐

2. Is there any possibility of an accidental disconnection.

Yes ☐ No ☒

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 12-6-83 Time 1 AMLocation PAINT BOOTH

REMARKS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Daniel M. Rucker

RADIATION SAFETY OFFICER

# **Southwestern Engineering Co**

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



Response to Item 2

Attached are Quarterly Inspection Reports for IR-192 Gamma Centry SA  
Model A-2-A S/N 1558

<u>1983</u>	<u>Inspector</u>
10-18-83	D. M. Rucker
<u>1984</u>	
1-16-84	D. M. Rucker
4-13-84	D. R. Cox
7-16-84	D. R. Cox
10-5-84	D. M. Rucker
<u>1985</u>	
1-4-85	D. M. Rucker
3-14-85	D. M. Rucker
5-31-85	D. M. Rucker

These reports cover all required inspections.

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.

5-31-85

GAMMA CENTRY SA

MODEL A-2-A

S/N 1558



## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

Exposure Devices:

Mfg. GAMMA CENTRY SA MODEL A-2-A SER. NO. 1558

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 4.5 mr/hr.
- B. Inspect safety plug for proper condition OK ✓ Damaged
- C. Check locking Mechanism  
Operates properly ✓ Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ✓ Damaged
- E. Condition of hold Down Components  
OK ✓ Damaged
- F. Condition of Labeling  
OK ✓ Damaged

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment)  
OK ✓ Damaged

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes        No ✓
- B. Condition of tube connectors  
OK ✓ Damaged
- C. Condition of Source Stop  
OK ✓ Damaged
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES        NO ✓

### IV. Crank Assembly:

- A. Does it operate properly  
YES ✓ NO
- B. Any excessive wear or damaged components  
YES        NO ✓
- C. Source indicator operate properly  
N/A - NOT ON THIS UNIT  
NOTE - CRANK ASSEMBLY  
Replaced

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment)  
OK ✓ Damaged
- B. Remove cable and inspect for:  
1. Flexibility  
DRIVE CABLE Replaced EAR  
OK ✓ Damaged



QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

V. Source Drive Cable:

B. (cont.d)

- |                 |                   |     |   |         |   |
|-----------------|-------------------|-----|---|---------|---|
| 2. Wear         | DRIVE CABLE       | OK  | ✓ | Damaged |   |
| 3. Rust         | +                 | Yes |   | No      | ✓ |
| 4. Broken Wires | CRANK<br>REPLACED | Yes |   | No      | ✓ |

C. Mechanical operating abilities.

- |   |     |   |    |   |
|---|-----|---|----|---|
| 1. Does source pigtail assembly and cable fit properly.     | Yes | ✓ | No |   |
| 2. Is there any possibility of an accidental disconnection. | Yes |   | No | ✓ |

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 5-31-85 Time 6 AM  
Location PAINT BOOTH + VAULT

REMARKS GAMMA CENTRY TYPE CRANK REPLACED  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

David M. Rucker RSO  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



3-14-85

GAMMA CENTRY SA

MODEL A-2-A

S/N 1558

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

Exposure Devices:

Mfg. GAMMA CENTRY SA MODEL A-2-A SER. NO. 1558

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 0.5 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly ☒ Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ☒ Damaged ☐

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES ☐ NO ☒

### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly  
N/A - NOT ON THIS UNIT  
NOT ON THIS UNIT

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐





Page 2 of 2

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

V. Source Drive Cable:

B. (cont.d)

- 2. Wear
- 3. Rust
- 4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	_____
Yes	_____	No	<input checked="" type="checkbox"/>
Yes	_____	No	<input checked="" type="checkbox"/>

C. Mechanical operating abilities.

- 1. Does source pigtail assembly and cable fit properly.

Yes ☒ No \_\_\_\_\_

- 2. Is there any possibility of an accidental disconnection.

Yes \_\_\_\_\_ No ☒

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment 2) will be used to make above safety inspection.

Inspection Date 3-14-85 Time 4 AM  
Location PAINT BOOTH

REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

David M. Rucker 3-14-85  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.

1-4-85 RMR

GAMMA CENTRY SA

MODEL A-2-A

S/N 1558



## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

Exposure Devices:

Mfg. GAMMA CENTRY SA MODEL A-2-A SER. NO. 1558

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading < .5 mr/hr.
- B. Inspect safety plug for proper condition OK ✓ Damaged \_\_\_\_\_
- C. Check locking Mechanism  
Operates properly ✓ Firm attachment YES
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ✓ Damaged \_\_\_\_\_
- E. Condition of hold Down Components  
OK ✓ Damaged \_\_\_\_\_
- F. Condition of Labeling  
OK ✓ Damaged \_\_\_\_\_

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ✓ Damaged \_\_\_\_\_

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes \_\_\_\_\_ No ✓
- B. Condition of tube connectors  
OK ✓ Damaged \_\_\_\_\_
- C. Condition of Source Stop  
OK ✓ Damaged \_\_\_\_\_
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES \_\_\_\_\_ NO ✓

### IV. Crank Assembly:

- A. Does it operate properly  
YES ✓ NO \_\_\_\_\_
- B. Any excessive wear or damaged components  
YES \_\_\_\_\_ NO ✓
- C. Source indicator operate properly  
N/A - NOT ON THIS UNIT YES N/A NO NO POSITION INDICATOR

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ✓ Damaged \_\_\_\_\_
- B. Remove cable and inspect for:  
1. Flexibility  
OK ✓ Damaged \_\_\_\_\_



Page 2 of 2

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

V. Source Drive Cable:

B. (cont.d)

- 2. Wear
- 3. Rust
- 4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	
Yes		No	<input checked="" type="checkbox"/>
Yes		No	<input checked="" type="checkbox"/>

C. Mechanical operating abilities.

- 1. Does source pigtail assembly and cable fit properly.

Yes ☒ No

- 2. Is there any possibility of an accidental disconnection.

Yes No ☒

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 1-4-95 Time 5AM  
Location PAINT BOOTH + VAULT

REMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

David M Rucker RSO  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

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10-05-84 *EMR*

GAMMA CENTRY SA

MODEL A-2-A

S/N 1558

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

### Exposure Devices:

Mfg. GAMMA CENTRY SA MODEL A-2A SER. NO. 1558

#### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 0.5 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly ☒ Firm attachment YES
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

#### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment)  
OK ☒ Damaged ☐

#### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES ☐ NO ☒

#### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly  
N/A - NOT ON THIS UNIT  
N/A NO POSITION INDICATOR

#### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment)  
OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐



## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

### V. Source Drive Cable:

#### B. (cont.d)

2. Wear
3. Rust
4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	
Yes		No	<input checked="" type="checkbox"/>
Yes		No	<input checked="" type="checkbox"/>

#### C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

2. Is there any possibility of an accidental disconnection.

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 10-05-84

Time 6 AM

Location PAINT BOOTH + VAULT

REMARKS

David M. Rucker RSO  
RADIATION SAFETY OFFICER



7-16-84  
GAMMA Cent 5A  
Model A-2-A  
S/N 1558

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he is not available).

### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey device for any radiation. Survey Reading 2.05 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly Yes Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components OK ☒ Damaged ☐
- F. Condition of Labeling OK ☒ Damaged ☐

### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture specification attachment) OK ☒ Damaged ☐

### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors OK ☒ Damaged ☐
- C. Condition of Source Stop OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper operation  
Yes ☐ No ☒

### IV. Crank Assembly:

- A. Does it operate properly Yes ☒ No ☐
- B. Any excessive wear or damaged components. Yes ☐ No ☒
- C. Source indicator operate properly Yes ☒ No ☐



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## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont'd)

### V. Source Drive Cable:

A. Inspect connector proper condition (See Mfg. specification attachment.)

OK ☒ Damaged ☐

B. Remove cable and inspect for:

1. Flexibility

OK ☒ Damaged ☐

2. Wear

OK ☒ Damaged ☐

3. Rust

Yes ☐ No ☒

4. Broken Wires

Yes ☐ No ☒

C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes ☒ No ☐

2. Is there any possibility of an accidental disconnection.

Yes ☐ No ☒

Clean, lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 7-16-84 Time 200 PM

Location BUNKER

REMARKS \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

McKay RSO  
RADIATION SAFETY OFFICER



4-13-84

GAMMA Century SA  
Model A-2-A  
S/N 1558

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he is not available).

I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey device for any radiation. Survey Reading <.02 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly Yes Firm attachment Yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components OK ☒ Damaged ☐
- F. Condition of Labeling OK ☒ Damaged ☐

II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture specification attachment) OK ☒ Damaged ☐

III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors OK ☒ Damaged ☐
- C. Condition of Source Stop OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper operation  
Yes ☐ No ☒

IV. Crank Assembly:

- A. Does it operate properly Yes ☒ No ☐
- B. Any excessive wear or damaged components Yes ☐ No ☒
- C. Source indicator operate properly Yes ☐ No ☐

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-792-5080

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont'd)

### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification attachment.)  
OK ☒ Damaged \_\_\_\_\_
- B. Remove cable and inspect for:
- |                 |  |  |
|-----------------|--|--|
| 1. Flexibility  | OK <input checked="" type="checkbox"/> | Damaged _____                          |
| 2. Wear         | OK <input checked="" type="checkbox"/> | Damaged _____                          |
| 3. Rust         | Yes _____                              | No <input checked="" type="checkbox"/> |
| 4. Broken Wires | Yes _____                              | No <input checked="" type="checkbox"/> |
- C. Mechanical operating abilities.
1. Does source pigtail assembly and cable fit properly.  
Yes ☒ No \_\_\_\_\_
2. Is there any possibility of an accidental disconnection.  
Yes \_\_\_\_\_ No ☒

Clean, lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment 8) will be used to make above safety inspection.

Inspection Date 4-13-84 Time 1000 AM  
Location BUNKER

REMARKS NONE  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

OKloy RSO  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

1-16-84  
DMK

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

### Exposure Devices:

Mfg. GAMMA CENTURY FOR MODEL A-2-A SER. NO. 3103 <sup>SINCE 01-1-82</sup> 1558  
SA IR-192

#### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading 0.5 mr/hr.
- B. Inspect safety plug for proper condition OK ☒ Damaged ☐
- C. Check locking Mechanism  
Operates properly ☒ Firm attachment ☐
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ☒ Damaged ☐
- E. Condition of hold Down Components  
OK ☒ Damaged ☐
- F. Condition of Labeling  
OK ☒ Damaged ☐

#### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ☒ Damaged ☐

#### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes ☐ No ☒
- B. Condition of tube connectors  
OK ☒ Damaged ☐
- C. Condition of Source Stop  
OK ☒ Damaged ☐
- D. Is there any kinks, crushed section or anything to prevent proper  
operation ONE GUIDETUBE  
REMOVED FROM SERVICE FOR REPAIR  
YES ☐ NO ☒

#### IV. Crank Assembly:

- A. Does it operate properly  
YES ☒ NO ☐
- B. Any excessive wear or damaged components  
YES ☐ NO ☒
- C. Source indicator operate properly  
YES ☒ NO ☐

#### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment.)  
OK ☒ Damaged ☐
- B. Remove cable and inspect for:  
1. Flexibility  
OK ☒ Damaged ☐

QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

## V. Source Drive Cable:

## B. (cont.d)

- 2. Wear
- 3. Rust
- 4. Broken Wires

OK <input checked="" type="checkbox"/>	Damaged _____
Yes _____	No <input checked="" type="checkbox"/>
Yes _____	No <input checked="" type="checkbox"/>

## C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes ☒ No \_\_\_\_\_

2. Is there any possibility of an accidental disconnection.

Yes \_\_\_\_\_ No ☒

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

Inspection Date 1-16-84 Time 7am  
Location VAULT / POINT SOUTHREMARKS \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_David M. Rucker  
RADIATION SAFETY OFFICER

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

10-18-63

RMR

## QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

This inspection is to be performed by the Radiation Safety Officer of  
SOUTHWESTERN ENGINEERING COMPANY or appointed Assistant, (only if he  
is not available).

### Exposure Devices:

Mfg. GAMMA CENTURY <sup>IN</sup> (1R-1A2) MODEL A-2-A SER. NO. 1558

#### I. Exposure Device:

- A. Crank source out of exposure device to a shielded area. Then survey  
device for any radiation. Survey Reading < .5 mr/hr.
- B. Inspect safety plug for proper condition OK ✓ Damaged \_\_\_\_\_
- C. Check locking Mechanism  
Operates properly ✓ Firm attachment yes
- D. Check proper alignment of "S" Tube with entrance and exit port.  
OK ✓ Damaged \_\_\_\_\_
- E. Condition of hold Down Components  
OK ✓ Damaged \_\_\_\_\_
- F. Condition of Labeling  
OK ✓ Damaged \_\_\_\_\_

#### II. Pigtail Assembly:

- A. Inspect connector for proper condition (See manufacture  
specification attachment) OK ✓ Damaged \_\_\_\_\_

#### III. Source Tubes:

- A. Is there any rust, dirt or sludge build up inside tubes.  
Yes \_\_\_\_\_ No ✓
- B. Condition of tube connectors  
OK ✓ Damaged \_\_\_\_\_
- C. Condition of Source Stop  
OK ✓ Damaged \_\_\_\_\_
- D. Is there any kinks, crushed section or anything to prevent proper  
operation  
YES \_\_\_\_\_ NO ✓

#### IV. Crank Assembly:

- A. Does it operate properly  
YES ✓ NO \_\_\_\_\_
- B. Any excessive wear or damaged components  
YES \_\_\_\_\_ NO ✓
- C. Source indicator operate properly  
YES N/A NO ✓  
*N/A - NOT ON THIS UNIT*

#### V. Source Drive Cable:

- A. Inspect connector proper condition (See Mfg. specification  
attachment) OK ✓ Damaged \_\_\_\_\_
- B. Remove cable and inspect for:  
1. Flexibility  
OK ✓ Damaged \_\_\_\_\_



QUARTERLY INSPECTION OF RADIOGRAPHIC DEVICES

(cont.d)

## V. Source Drive Cable:

## B. (cont.d)

2. Wear
3. Rust
4. Broken Wires

OK	<input checked="" type="checkbox"/>	Damaged	
Yes		No	<input checked="" type="checkbox"/>
Yes		No	<input checked="" type="checkbox"/>

## C. Mechanical operating abilities.

1. Does source pigtail assembly and cable fit properly.

Yes	<input checked="" type="checkbox"/>	No	
-----	-------------------------------------	----	--

2. Is there any possibility of an accidental disconnection.

Yes		No	<input checked="" type="checkbox"/>
-----	--	----	-------------------------------------

Clean, Lubricate and replace any damaged part at this time.

The manufacture inspection and maintenance guide (Attachment B) will be used to make above safety inspection.

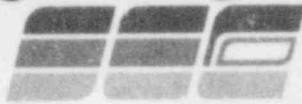
Inspection Date 10-18-83 Time 8 pm  
Location PAINT BOOTH

REMARKS

David M. Rucker  
RADIATION SAFETY OFFICER

# **Southwestern Engineering Co**

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



## Corrective Action Item 3

Attached are the required quarterly inventories of all sources in house.

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

## PHYSICAL INVENTORY

SOURCE	MODEL #	SN #	LOCATION	INTENSITY CURIES	DATE	REMARKS
IR-192	A-2-A	15415	CALIF PLANT VAULT 6HIE BANDINI	4 CI SHIPPED TO JOPLIN	9-26-83	LAST DAY OF IR SOURCE UNDER CALIF LISC <del>DMR</del>
CO-60	424-14	1978	CALIF PLANT VAULT 6HIE BANDINI	44 CI SHIPPED TO JOPLIN	10-13-83	LAST DAY OF CO SOURCE UNDER CALIF LISC <del>DMR</del>
IR-192	A-2-A	3103	2702 W 9TH ST VAULT JOPLIN, MO	94 CI	10-18-83	NEW SOURCE <del>DMR</del>
IR-192	A-2-A	15415	2702 W 9TH ST VAULT JOPLIN, MO	2.9 CI IN C-10 CHANGER	10-18-83	<del>DMR</del>
IR-192	A-2-A	15415	2702 W 9TH ST VAULT JOPLIN, MO	0.9 CI IN C-10 CHANGER	1-6-84	SOURCE RETURNED TO MFG <del>DMR</del>
CO-60	424-14	1978	2702 W 9TH ST VAULT JOPLIN, MO	44 CI	1-6-84	<del>DMR</del>
IR-192	A-2-A	52.024	2702 W 9TH ST VAULT JOPLIN, MO	96.4 CI	2-21-84	NEW SOURCE <del>DMR</del>
IR-192	A-2-A	52.024	2702 W 9TH ST VAULT JOPLIN, MO	64.2 CI	4-5-84	<del>DMR</del>
CO-60	424-14	1978	2702 W 9TH ST VAULT JOPLIN, MO	41 CI	4-5-84	<del>DMR</del>
IR-192	A-2-A	52.024	2702 W 9TH ST VAULT JOPLIN, MO	27 CI	7-2-84	<del>DMR</del>
CO-60	424-14	1978	2702 W 9TH ST VAULT JOPLIN, MO	40 CI	7-2-84	<del>DMR</del>
IR-192	A-2-A	85.084	2702 W 9TH ST VAULT JOPLIN, MO	102 CI	8-23-84	<del>DMR</del> NEW SOURCE
IR-192	A-2-A	52.024	2702 W 9TH ST VAULT JOPLIN, MO	16 CI IN C-10 CHANGER	8-30-84	<del>DMR</del> SOURCE RETURNED TO MFG
CO-60	424-14	1978	2702 W 9TH ST VAULT JOPLIN, MO	39 CI	10-1-84	<del>DMR</del>
IR-192	A-2-A	85.084	2702 W 9TH ST VAULT JOPLIN, MO	72 CI	10-1-84	<del>DMR</del>

Note: IR-192 Source is contained in Gamma  
Century SA Camera SN#1558 (Unless  
otherwise noted)

CO 60 Source is contained in Tech Ops Model 680  
SN #293

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2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-732-5080

## PHYSICAL INVENTORY

[illegible]

Note: IR-192 Source is contained in Gamma  
Century SA Camera SN#1558 (Unless  
otherwise noted)

CO 60 Source is contained in Tech Ops Model 680  
SN #293

**Southwestern Engineering Co**

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



Response to Item 4

Attached are the required letters to the NRC and DOT for both QA program approval and Certificate of Compliance use.

# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

NRC License #24-19500-01

June 27, 1985

Certified Mail

Director, Office of Nuclear Material  
Safety & Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Sir:

As required by 10 CFR 71.12 (a),(b),(c)3, we are submitting our "SECO Transportation Instruction & QA Manual" for the packages we intend to use.

Southwestern Engineering Co. NRC License #24-19500-01 is applying to use the following certificates of competent authority.

Certificates of compliance and NRC approval are as listed below:

Gamma Industries Certificate #USA/9135/B(U)T Rev. 0 for the Gamma Century SA Camera containing up to 100 curies of an A-2-A Iridium-192 Radioactive source. This unit can be used at our 2702 W. 9th St. address at Joplin as well as our 11th & Wall St. address at Joplin, Missouri 64801.

For shipment of package model #6717-B covered by Certificate USA/6716/B(U)T Rev. 1 and Model C-10 Shipping Container (DOT 7A Type A) Source Encapsulation Certificate USA/0166/S Rev. 4 for single encapsulated A-2-A source (Planto double encapsulate in future).

For our Tech OPS Model #689 Source container with A424-14 source, we are enclosing Certificate USA/0165/S Rev. 1.

Attached is a copy of the letter already sent to the Department of Transportation for use of this packaging.

SOUTHWESTERN ENGINEERING CO.

David M. Rucker  
RSO/Level III

DMR:cj

Encl.



# Southwestern Engineering Co

A SUBSIDIARY OF CRONUS INDUSTRIES, INC.



2702 WEST 9th STREET  
JOPLIN, MISSOURI 64801  
TELEPHONE • 417-782-5080

June 24, 1985

Certified Mail

Richard R. Rawl  
Chief, Radioactive Materials Branch  
Office of Hazardous Materials Regulation  
Materials Transportation Bureau  
400 Seventh St., S.W.  
Washington, D. C. 20590

Dear Sir:

Southwestern Engineering Co. NRC License #24-19500-01 is applying to use the following certificates of competent authority.

Gamma Industries Certificate #USA/9135/B(U)T Rev. 0 for the Gamma Century SA Camera containing up to 100 curies of an A-2-A Iridium-192 Radioactive source. This unit can be used at our 2702 W. 9th St. address at Joplin as well as our 11th & Wall St. address at Joplin, Missouri 64801.

For shipment of package model #6717-B covered by Certificate USA/6716/B(U)T Rev. 1 and Model C-10 Shipping Container (DOT 7A Type A) Source Encapsulation Certificate USA/0166/S Rev. 4 for single encapsulated A-2-A source (Planto double encapsulate in future).

For our Tech OPS Model #680 Source container with A424-14 source, we are enclosing Certificate USA/0165/S Rev. 1.

We would also like to order copies of the latest DOT regulations dealing with the transport of radioactive materials.

SOUTHWESTERN ENGINEERING CO.

*David M. Rucker*

David M. Rucker  
RSO/Level III

DMR:cj

Encl.