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	FOR SITE GAMA RAY RADIOGRAPHY FOR NDT WELD TEST			
	Company Doc. No. HSEDOCS-NWT-00-000	Contractor Ref. No. QHSE-NWT-0000	Date 00-00-0000	Revision 00

RADIATION SAFETY PROCEDURE FOR SITE GAMA RAY RADIOGRAPHY FOR NDT WELD TEST

Project No:

REVISION HISTORY	ISSUE DATE	DESCRIPTION	REVIEW / STATUS
00			

PREPARED BY:	REVIEWED & APPROVED BY:
QA QC ENGINEER	PROJECT ENGINEER

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1. Purpose

This method of statement describes the specific performance requirement for the safe conduct of industrial gamma ray radiography at a project site.

2. Regulations

The method shall be implemented as per the local regulations concerning Radiation Protection in using sealed radioactive isotopes in Industrial Radiography.

This page gives just general information for basic understanding and should not be considered a specific guide.

3. Responsible Personnel

3.1. Radiation Protection Officer (RPO)

- RPO shall be responsible for the implementation of this procedure on a project site.
- RPO shall be approved and Licensed by MOE (Ministry of Environment).
- RPO is responsible for the mentoring of Radiography works, checking the equipment, Safe Barrier distances, etc.
- He shall make sure that all the permits from higher authorities are in place before starting the job.

RPO shall hold copies of the following documents:

- 1) Safety Manual
- 2) Emergency procedure
- 3) Isotope Decay Chart
- 4) Local Routes
- 5) Survey Meter Calibration Certificates

Industrial Radiographer shall perform the onsite works, he shall hold the qualification of ASNT Level II in Radiography and License from local agencies / MOE.

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4. Safe Distance

The safe distance is the distance where the radiation level does not exceed 7.5 iSv (0.75m R/hr).

Safe distance for 15.00

$C_i = 96.41$ Meters (Without Collimator)

$C_i = 24.85$ Meters (With Collimator)

5. Source Description

The Radioactive source shall be Iridium 192 (Ir-192) an active dimension of 2.0mm x 2.0mm.

6. Emergency Equipment

The following equipment is mandatory to carry with Radioactive Material

- Emergency Tong
- Lead Shot Bags
- Lead Apron
- Emergency source container
- Lead Gloves
- Bolt Cutter
- Warning Signs
- Flash Lights
- Barrier Tapes
- Lead shield
- Radiation Survey Meter

7. Personnel Monitoring TLD and Dosimeter

- Approved TLD shall be worn by all classified workers engaged in work involving the use of ionizing radiation TLD shall be issued every month.
- At the end of the monthly period, TLD shall be returned to the supervisor together with the personnel dosimeter records.

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- The TLD results shall be entered on the personnel dose record and kept in the personnel file.
- Personnel dosimeters shall be worn at all times during working hours by all workers engaged in work involving the use of ionizing radiation.
- Personal dosimeters shall have a measuring range of 0 to 200mR.
- Personal dosimeters shall be zeroed and recharged at the beginning of each working day.
- A personal dosimeter rate record shall be maintained.

7.1. Bleeper (or) Radiation Alarm:

Radiation workers wear a good working condition bleeper or radiation alarm at all times during working hours.

7.1.1. Source Mobilization

- The equipment shall be transported to and from site locations in the appropriately marked transportation container along with the necessary Emergency Equipment.
- Source mobilization shall be informed to MOE in writing before the mobilization.
- Radiation warning placards, black and yellow color shall be displayed on each side and rear of the vehicle.
- The number 7 on the placard is the UN Class number for radioactive material.
- The placard size should not be less than 100 mm X 100 mm.
- The driver shall observe all the regulations that affect the carriage of isotopes by road.

7.1.2. Safety Warning Signs in Work Site

- All accessories required for the safe use of the radiographic source shall be taken along with the projector.
- Warning signs, barriers, and flashing lights shall be placed around the restricted area of the exposure.
- During the exposure barriers shall be monitored, particularly for any change in location or orientation of the source.
- Cordon off the radiation area using a survey meter and move the barrier and warning signs to the new restricted area where the radiation level is less than 7.5pSv/hr.

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7.1.3. Operation of the Radiography

- Radiation sources shall only be operated by classified workers.
- The radiography personnel shall always position himself as far away from the source as possible during exposure.
- All the exposure shall be planned and executed in the minimum possible time.
- During operations, the radiation survey meter duly calibrated shall be used for monitoring the radiation level.
- Collimators shall be used with an isotope since a shielded source is less hazardous, also the primary beam of the collimated exposure shall be directed away from areas of occupancy.
- After completion of the radiography work, the projector and the source shall be securely locked away to avoid accidental exposure due to the opening of the shutter and also to avoid the source dropping out of the projector.
- Radiation workers ensure the Non-classified personnel shall be away from the controlled area before starting the radiography works.
- Non-classified personnel in the supervised area shall be informed of the radiation activity

7.1.4. Emergency Response in Case of Radiation Incident

- When the source becomes stuck outside the projector, the following procedure shall be followed.
- Stop all operations and inform the Radiation Protection Officer (RPO) regarding the accident.
- Cordon – off the radiation area using a survey meter and move the barrier and warning signs to the new restricted area where the radiation level is less than 7.5 micro Sv/hr.
- Try to retract the source or provide radiation shielding such as lead or steel sheets around the source where possible.
- The Radiation Protection Officer (RPO) will assess the nature of the incident and plan for further action taking into consideration the source strength, shielding, dose rates, location, and the other related factors.

Written accident reports shall be prepared that includes:

- ❑ A description of the accidents

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- ☐ Methods used to render the source of the radiation safe
- ☐ Assessment of exposures (to all involved)
- ☐ The case of the accident
- ☐ Corrective actions
- ☐ All the personnel exposed to more than their dose limits shall be sent for medical examination.
- ☐ TLD of the affected personnel shall be sent for dose record.
- ☐ RPO shall investigate and submit the report to the management.
- ☐ Any incident involving ionizing radiation where a dose rate over that permitted is suspected shall be reported immediately.
- ☐ Any source accident involved at the site shall be informed to the RPO and relevant authorities / MOE (Ministry of Environment).