

REQUIREMENTS FOR RADIOGRAPHY OF CASTINGS

THE REQUIREMENTS CONTAINED HEREIN SHALL APPLY TO THE SELLERS AND ANY SUB-TIER SUPPLIERS NDT ACTIVITY PERFORMING RADIOGRAPHY OF CASTINGS

USED IN FULFILLING THE REQUIREMENTS OF THIS PURCHASE ORDER.

A. RADIOGRAPHIC STANDARD SHOOTING SKETCH (RSSS).

1. ALL RADIOGRAPHY OF CASTINGS, WHEN INVOKED BY THIS PURCHASE ORDER OR ANY SUB-TIER DOCUMENTS (I.E., FABRICATION AND MATERIAL SPECIFICATIONS, DRAWINGS, ETC.) MUST BE PERFORMED IN ACCORDANCE WITH AN APPROVED RSSS, WHICH SHOWS FILM PLACEMENTS AND RADIATION DIRECTIONS TO ASSURE ADEQUATE RADIOGRAPHIC COVERAGE AS SPECIFIED BY THE ENGINEERING DRAWING.

2. IF THE SELLER OR THE PERFORMING ACTIVITY DOES NOT HAVE AN APPROVED RSSS FOR A CASTING, THE BUYER SHOULD BE CONTACTED PRIOR TO THE START OF RADIOGRAPHY TO DETERMINE IF A PREVIOUSLY APPROVED RSSS IS AVAILABLE.

3. IF A PREVIOUSLY APPROVED RSSS IS NOT AVAILABLE, THE SELLER OR ACTIVITY PERFORMING THE RADIOGRAPHY SHALL PREPARE AN RSSS IN ACCORDANCE WITH PARAGRAPH 3.3.1.1 AS MODIFIED BY 3.4.14 OF T9074-AS-GIB-010/271 TO AID IN THE PROPER INTERPRETATION OF THE RADIOGRAPHS. A SKETCH, DRAWING, WRITTEN PROCEDURE, OR EQUIVALENT RECORD SHALL BE PREPARED TO SHOW THE SETUP USED TO MAKE EACH RADIOGRAPH. THE INFORMATION SHALL ACCOMPANY EACH RADIOGRAPH (OR A GROUP OF RADIOGRAPHS IF THE SAME INFORMATION APPLIES). THE RSSS MAY BE DEVELOPED INDEPENDENTLY ON A FIRST ARTICLE CASTING OR AS PART OF THE PRODUCTION INSPECTION PROCESS. AS A MINIMUM, THE FOLLOWING INFORMATION SHALL BE INCLUDED IN THE RSSS:

- (A) NUMBER OF FILMS AND FILM TYPE.
- (B) LOCATION OF EACH FILM ON THE RADIOGRAPHED ITEM.
- (C) ORIENTATION OF LOCATION MARKERS.
- (D) LOCATION OF RADIATION SOURCE, INCLUDING SOURCE-TO-FILM DISTANCE AND APPROXIMATE ANGLE OF BEAM.
- (E) THE KILOVOLTAGE AND FOCAL SPOT SIZE (FOR X-RAY MACHINES).
- (F) THE ISOTOPE TYPE, INTENSITY (IN CURIES), AND PHYSICAL DIMENSIONS.
- (G) TYPE OF MATERIAL, AND MATERIAL THICKNESS.
- (H) SHIM OR BLOCK MATERIAL, AND THICKNESS.
- (I) TYPE OF WELD JOINT, FOR EXAMPLE, BUTT WITH BACKING RING.
- (J) WHETHER ORIGINAL OR REPAIR.
- (K) PART AND DRAWING NUMBER.

- (L) MATERIAL GROUPS, PENETRAMETER SIZES AND TYPES (MIL-TYPE OR ASTM-TYPE) AND THE REQUIRED QUALITY LEVEL.
- (M) SOURCE-SIDE OR FILM-SIDE PENETRAMETER.
- (N) SINGLE- OR DOUBLE-WALL VIEWING.
- (O) TYPE AND THICKNESS OF INTENSIFYING SCREENS AND FILTERS.
- (P) APPLICABLE ACCEPTANCE STANDARDS.
- (Q) SIGNATURE OF THE RADIOGRAPHIC OPERATOR.
- (R) APPROVED PROCEDURE IDENTIFICATION.

4. IF A PREVIOUSLY APPROVED RSSS IS AVAILABLE, THE SELLER OR ACTIVITY SHALL PERFORM THE RADIOGRAPHY IN ACCORDANCE WITH THE APPROVED RSSS. DEVIATIONS FROM AN APPROVED RSSS, EXCEPT FOR THE PERMISSIBLE VARIATIONS AS NOTED BELOW, SHALL BE SUBMITTED TO THE BUYER FOR RE-APPROVAL. REVISIONS TO AN APPROVED RSSS TO REFLECT USE OF NAVSEA TECHNICAL PUBLICATION T9074-AS-GIB-010/271 OR NAVSEA TECHNICAL PUBLICATION T9074-AR-GIB-010/278 ARE NOT MANDATORY. PERMISSIBLE VARIATIONS NOT REQUIRING SUBMITTAL ARE EITHER A SUBSTITUTION FOR, OR A CHANGE IN THE FOLLOWING:

- SOURCE STRENGTH.
- FILM QUANTITY AND SIZE, PROVIDED INTENDED THICKNESS RANGE AND AREAS ARE SHOWN.
- FILM TYPE PROVIDED APPLICABLE QUALITY LEVEL IS OBTAINED.
- PENETRAMETER SIZE (SMALLER THAN APPROVED ONLY).
- REDUCTION OF SOURCE-TO-FILM DISTANCE, IF WITHIN THE LIMITATION OF THE REQUIRED SPECIFICATION INVOKED BY THE PURCHASE ORDER.
- SOURCE TYPE, IF ALLOWED BY SOURCE SUBSTITUTE TABLE BELOW:

SOURCE SUBSTITUTE TABLE

SOURCE SHOWN ON RSSS	ALLOWABLE SUBSTITUTES (SEE NOTE A)
COBALT-60	IRIDIUM-192, X-RAY (ANY VOLTAGE), BETATRON
BETATRON	IRIDIUM-192, X-RAY (ANY VOLTAGE), COBALT-60
IRIDIUM-192	COBALT-60, X-RAY 400 KV MAXIMUM (SEE NOTE B)
X-RAY, 400 KV MAXIMUM	IRIDIUM-192
X-RAY, OVER 400 KV	IRIDIUM-192, X-RAY (ANY VOLTAGE), COBALT-60, BETATRON

NOTES:

A. WHERE A SUBSTITUTE SOURCE IS USED, THE MATERIAL THICKNESS VERSUS ENERGY RANGES USED MUST BE CONSISTENT WITH THOSE REQUIRED BY FIGURES 1, 2 AND 3 OF T9074-AS-GIB-010/271.

B. IF THE APPROVED RSSS ALLOWS 4T SENSITIVITY FOR IRIDIUM-192, THIS ALLOWANCE DOES NOT APPLY TO THE SOURCE SUBSTITUTED.

5. THE SELLER SHALL FORWARD TO THE BUYER THE RSSS, AS WELL AS ALL QUALIFYING RADIOGRAPHS, VIA A PROPERLY COMPLETED VENDOR PROCEDURE APPROVAL REQUEST (VPAR, EB FORM 84-01-2974). THE BUYER MUST APPROVE THE RSSS PRIOR TO SHIPMENT OF HARDWARE. ALL RADIOGRAPHS REQUIRED TO APPROVE THE RSSS AT THE BUYER'S FACILITY MUST BE SENT TO THE ATTENTION OF THE BUYER'S PURCHASING DEPARTMENT.

B. RADIOGRAPHY OF MORE THAN ONE CASTING PER FILM IS PROHIBITED.

C. A SYSTEM OF POSITIVE IDENTIFICATION OF THE FILM SHALL BE USED AND EACH FILM SHALL HAVE A UNIQUE IDENTIFICATION RELATING IT TO THE ITEM BEING INSPECTED, AS A MINIMUM, THE FOLLOWING ADDITIONAL INFORMATION SHALL APPEAR ON EACH RADIOGRAPH OR IN THE RECORDS ACCOMPANYING EACH RADIOGRAPH:

1. IDENTIFICATION OF THE ORGANIZATION MAKING THE RADIOGRAPH.

2. DATE OF EXPOSURE.

3. IDENTIFICATION OF THE PART, COMPONENT, OR SYSTEM AND, WHERE APPLICABLE, THE WELD JOINT IN THE PART, COMPONENT, OR SYSTEM.

4. WHETHER THE RADIOGRAPH IS OF THE ORIGINAL AREA OR A REPAIR AREA.

D. RADIOGRAPHY OF A REPAIRED AREA SHALL BE IN ACCORDANCE WITH THE SAME TECHNIQUE AS USED FOR ORIGINAL RADIOGRAPHY.

RADIOGRAPHS SHALL BE IDENTIFIED WITH THE SAME SERIAL NUMBER USED FOR ORIGINAL RADIOGRAPHS FOLLOWED BY THE LETTER R AND A NUMERAL 1, 2, ETC., TO INDICATE THE NUMBER OF TIMES THE AREA INVOLVED HAS BEEN REPAIRED. (NOTE: ONLY ONE RT NUMBER PER CASTING).