

## MANDATORY APPENDIX I

### RADIOGRAPHY EXAMINATION: PROCEDURE AND ACCEPTANCE STANDARDS

#### I-1 RADIOGRAPHY PROCEDURE

##### I-1.1

ASTM E 94, Recommended Practice for Radiographic Testing, and ASTM E 142, Controlling Quality of Radiographic Testing, shall be used as a guide.

##### I-1.2

The film shall be as close as practical to the part being radiographed.

##### I-1.3

Any commercially available intensifying screen, except those of the fluorescent type, may be used.

##### I-1.4

All film shall bear identification markers to properly orient the film for interpretation and to denote the actual part under examination. Film shall be marked to identify the organization producing the radiograph and the date exposed.

##### I-1.5

Penetrators shall be used on each radiograph. Penetrators shall conform to the requirements of ASTM E 142.

##### I-1.6

Any commercially available film may be used, provided it is equal to or finer grained than Type 2, ASTM E 94.

##### I-1.7

The manufacturer, at his option, may use a double film technique and a combination of a single and double viewing so as to cover a greater latitude in part thickness with a single exposure.

##### I-1.8

Radiographs shall be within the following photographic (H & D) density range:

- (a) single film viewing — 1.5 min., 4.0 max.
- (b) superimposed viewing of double film, each single film — 1.00 min., 2.5 max., with a double film — 4.0 max.

##### I-1.9

Surfaces shall be such that radiographic contrast due to surface condition cannot mask or be confused with that of any defect.

##### I-1.10

Single wall thickness shall be radiographed wherever practical.

##### I-1.11

The radiographic sensitivity shall be 2-4T for thickness up to and including 19 mm (0.75 in.) and 2-2T for thickness greater than 19 mm (0.75 in.).

#### I-2 ACCEPTANCE STANDARDS

##### I-2.1

For wall thickness  $t \leq 50$  mm ( $t \leq 2$  in.) the comparative plates of ASTM E 446 define acceptable indications as shown in Table I-1.

##### I-2.2

For wall thickness  $50$  mm  $\leq t < 115$  mm ( $2$  in.  $\leq t < 4.5$  in.) the comparative plates of ASTM E 186 define acceptable indications as shown in Table I-2.

##### I-2.3

For wall thickness  $115$  mm  $\leq t \leq 305$  mm ( $4.5$  in.  $\leq t \leq 12$  in.) the comparative plates of ASTM E 280 define acceptable indications as shown in Table I-3.



**Table I-1**  
**Acceptance Criteria for Thickness per para. I-2.1**

Discontinuity Type	Category	Acceptable Comparative Plate ASTM E 446
Gas	A	A2
Sand	B	B3
Shrink, Type 1	C	CA2
Shrink, Type 2	C	CB3
Shrink, Type 3	C	CC3
Shrink, Type 4	C	CD3
Hot tears and cracks	D & E	None
Inserts (chills, chaplets)	F	None

**Table I-3**  
**Acceptance Criteria for Thickness per para. I-2.3**

Discontinuity Type	Category	Acceptable Comparative Plate ASTM E 280
Gas Porosity	A	A3
Sand and slag inclusions	B	B3
Shrink, Type 1	C	CA3
Shrink, Type 2	C	CB3
Shrink, Type 3	C	CC3
Crack	D	None
Hot tear	E	None
Insert	F	None

**Table I-2**  
**Acceptance Criteria for Thickness per para. I-2.2**

Discontinuity Type	Category	Acceptable Comparative Plate ASTM E 186
Gas Porosity	A	A3
Sand and slag inclusions	B	B3
Shrink, Type 1	C	CA3
Shrink, Type 2	C	CB3
Shrink, Type 3	C	CC3
Crack	D	None
Hot tear	E	None
Insert	F	None

