

ARTICLE IWE-1000 SCOPE AND RESPONSIBILITY

IWE-1100 SCOPE

This Subsection provides the rules and requirements for inservice inspection, repair, and replacement of Class MC pressure retaining components and their integral attachments, and of metallic shell and penetration liners of Class CC pressure retaining components and their integral attachments in light-water cooled plants.

IWE-1200 COMPONENTS SUBJECT TO EXAMINATION

IWE-1210 EXAMINATION REQUIREMENTS

The examination requirements of this Subsection shall apply to Class MC pressure retaining components and their integral attachments and to metallic shell and penetration liners of Class CC pressure retaining components and their integral attachments. These examinations shall apply to surface areas, including welds and base metal.

IWE-1220 COMPONENTS EXEMPTED FROM EXAMINATION

The following components (or parts of components) are exempted from the examination requirements of IWE-2000:

- (a) vessels, parts, and appurtenances that are outside the boundaries of the containment as defined in the Design Specifications;
- (b) embedded or inaccessible portions of containment vessels, parts, and appurtenances that met the requirements of the original Construction Code;
- (c) portions of containment vessels, parts, and appurtenances that become embedded or inaccessible as a result of vessel repair or replacement if the conditions of IWE-1232 and IWE-5220 are met;
- (d) piping, pumps, and valves that are part of the containment system, or which penetrate or are attached

to the containment vessel. These components shall be examined in accordance with the rules of IWB or IWC, as appropriate to the classification defined by the Design Specifications.

IWE-1230 ACCESSIBILITY FOR EXAMINATION

IWE-1231 Accessible Surface Areas

(a) As a minimum, the following portions of Class MC containment vessels, parts, and appurtenances and Class CC metallic shell and penetration liners shall remain accessible for either direct or remote visual examination, from at least one side of the vessel, for the life of the plant:

- (1) openings and penetrations;
- (2) structural discontinuities;
- (3) single-welded butt joints from the weld side;
- (4) 80% of the surface area defined in Table IWE-2500-1, Examination Category E-A; and
- (5) surface areas identified in IWE-1240.

(b) The requirements of IWE-1232 shall be met when accessibility for visual examination is not from the outside surface.

IWE-1232 Inaccessible Surface Areas

(a) Portions of Class MC containment vessels, parts, and appurtenances that are embedded in concrete or otherwise made inaccessible during construction of the vessel or as a result of vessel repair, modification, or replacement are exempted from examination, provided:

- (1) no openings or penetrations are embedded in the concrete;
- (2) all welded joints that are inaccessible for examination are double butt welded and are fully radiographed and, prior to being covered, are tested for leak tightness using a gas medium test, such as Halide Leak Detector Test;

(3) all weld joints that are not double butt welded remain accessible for examination from the weld side; and

(4) the vessel is leak rate tested after completion of construction, repair, or replacement to the leak rate requirements of the Design Specifications.

(b) Portions of Class CC metallic shell and penetration liners that are embedded in concrete or otherwise made inaccessible during construction or as a result of repair or replacement are exempted from examination, provided:

(1) all welded joints that are inaccessible for examination are examined in accordance with CC-5520 and, prior to being covered or otherwise obstructed by adjacent structures, components, parts, or appurtenances, are tested for leak tightness in accordance with CC-5536; and

(2) the containment is leak rate tested after completion of construction, repair, or replacement to the leak rate requirements of the Design Specifications.

IWE-1240 SURFACE AREAS REQUIRING AUGMENTED EXAMINATION

IWE-1241 Examination Surface Areas

Surface areas likely to experience accelerated degradation and aging require the augmented examinations identified in Table IWE-2500-1, Examination Category E-C. Such areas include the following:

(a) interior and exterior containment surface areas that are subject to accelerated corrosion with no or minimal corrosion allowance or areas where the absence or repeated loss of protective coatings has resulted in substantial corrosion and pitting. Typical locations of such areas are those exposed to standing water, repeated wetting and drying, persistent leakage, and those with geometries that permit water accumulation, condensation, and microbiological attack. Such areas may include penetration sleeves, surfaces wetted during refueling, concrete-to-steel shell or liner interfaces, embedment zones, leak chase channels, drain areas, or sump liners.

(b) interior and exterior containment surface areas that are subject to excessive wear from abrasion or erosion that causes a loss of protective coatings, deformation, or material loss. Typical locations of such areas are those subject to substantial traffic, sliding pads or supports, pins or clevises, shear lugs, seismic restraints, surfaces exposed to water jets from testing operations or safety relief valve discharges, and areas that experience wear from frequent vibrations.

IWE-1242 Identification of Examination Surface Areas

Surface areas requiring augmented examination shall be determined in accordance with IWE-1241, and shall be identified in the Owner's Inspection Program.

Examination methods shall be in accordance with IWE-2500(c).

ARTICLE IWE-2000

EXAMINATION AND INSPECTION

IWE-2200 PRESERVICE EXAMINATION

(a) Examinations listed in Table IWE-2500-1 shall be completed prior to initial plant startup. These preservice examinations shall include the pressure retaining portions of components not exempted by IWE-1220.

(b) When visual examinations are required, these examinations shall be performed in accordance with IWE-2600, following the completion of the pressure test required by the Construction Code and after application of protective coatings (e.g., paint) when such coatings are required.

(c) When surface examinations are required by Table IWE-2500-1, shop or field examinations in accordance with NE-5000 for Class MC or CC-5500 for Class CC may serve in lieu of the on-site preservice examinations, provided:

(1) the examinations are conducted by the same method with equipment and techniques equivalent to those that are expected to be employed for subsequent inservice examinations;

(2) the shop or field examination records are, or can be, documented and identified in a form consistent with those required in IWA-6000; and

(3) the examinations are performed after the pressure test required by the Construction Code has been completed.

(d) When a vessel, liner, or a portion thereof is repaired or replaced during the service lifetime of a plant, the preservice examination requirements for the vessel repair or replacement shall be met.

(1) When the repair or replacement is performed while the plant is not in service, the preservice examination shall be performed prior to the resumption of service.

(2) When the repair or replacement is performed while the plant is in service, the preservice examination may be deferred to the next scheduled plant outage, provided nondestructive examination in accordance with the approved repair program is performed.

(3) When a system leakage test is required by IWE-5220, the preservice examination may be performed either prior to or following the test.

(e) Welds made as part of a repair or a replacement program shall be examined in accordance with the requirements of IWA-4000, except that for welds joining Class MC or Class CC components to items designed, constructed, and installed to the requirements of Section III, Class 1, 2, or 3, the examination requirements of IWB-2000, IWC-2000, or IWD-2000, as applicable, shall apply.

(f) Preservice examination for a repair or replacement may be conducted prior to installation provided:

(1) the examination is performed after the pressure test required by the Construction Code has been completed;

(2) the examination is conducted under conditions and with equipment and techniques equivalent to those that are expected to be employed for subsequent inservice examinations; and

(3) the shop or field examination records are, or can be, documented and identified in a form consistent with that required by IWA-6000.

(g) When paint or coatings are reapplied, the condition of the new paint or coating shall be documented in the preservice examination records.

IWE-2400 INSPECTION SCHEDULE

IWE-2410 INSPECTION PROGRAM

Inservice examinations and system pressure tests may be performed during plant outages such as refueling shutdowns or maintenance shutdowns. The requirements of either Inspection Program A or Inspection Program B shall be met.

IWE-2411 Inspection Program A

(a) With the exception of the examinations that may be deferred until the end of an inspection interval, as

TABLE IWE-2411-1
INSPECTION PROGRAM A

Inspection Interval	Inspection Period, Calendar Years of Plant Service	Minimum Examinations Completed, %	Maximum Examinations Credited, %
1st	3	100	100
2nd	7	33	67
	10	100	100
3rd	13	16	34
	17	40	50
	20	66	75
	23	100	100
4th	27	8	16
	30	25	34
	33	50	67
	37	75	100
	40	100	100

specified in Table IWE-2500-1, the required examinations shall be completed during each successive inspection interval, in accordance with Table IWE-2411-1. Following completion of Program A after 40 years, successive inspection intervals shall follow the 10 year inspection interval of Program B.

(b) The inspection period specified in IWE-2411(a) may be decreased or extended by as much as 1 year to enable an inspection to coincide with a plant outage, within the limitations of IWA-2430(c).

IWE-2412 Inspection Program B

(a) With the exception of the examinations that may be deferred until the end of an inspection interval, as specified in Table IWE-2500-1, the required examinations shall be completed during each successive inspection interval, in accordance with Table IWE-2412-1.

(b) The inspection period specified in IWE-2412(a) may be decreased or extended by as much as 1 year to enable an inspection to coincide with a plant outage, within the limitations of IWA-2430(d).

IWE-2420 SUCCESSIVE INSPECTIONS

(a) The sequence of component examinations established during the first inspection interval shall be repeated during each successive inspection interval, to the extent practical.

(b) When component examination results require evaluation of flaws, areas of degradation, or repairs in

TABLE IWE-2412-1
INSPECTION PROGRAM B

Inspection Interval	Inspection Period, Calendar Years of Plant Service, Within the Interval	Minimum Examinations Completed, %	Maximum Examinations Credited, %
1st	3	16	34
	7	50	67
	10	100	100
Successive	3	16	34
	7	50	67
	10	100	100

accordance with IWE-3000, and the component is found to be acceptable for continued service, the areas containing such flaws, degradation, or repairs shall be reexamined during the next inspection period listed in the schedule of the inspection program of IWE-2411 or IWE-2412, in accordance with Table IWE-2500-1, Examination Category E-C.

(c) When the reexaminations required by IWE-2420(b) reveal that the flaws, areas of degradation, or repairs remain essentially unchanged for three consecutive inspection periods, the areas containing such flaws, degradation, or repairs no longer require augmented examination in accordance with Table IWE-2500-1, Examination Category E-C.

IWE-2430 ADDITIONAL EXAMINATIONS

(a) Examinations performed during any one inspection that reveal flaws or areas of degradation exceeding the acceptance standards of Table IWE-3410-1 shall be extended to include an additional number of examinations within the same category approximately equal to the initial number of examinations during the inspection.

(b) When additional flaws or areas of degradation that exceed the acceptance standards of Table IWE-3410-1 are revealed, all of the remaining examinations within the same category shall be performed to the extent specified in Table IWE-2500-1 for the inspection interval.

IWE-2500 EXAMINATION AND PRESSURE TEST REQUIREMENTS

(a) The method of examination for the components, parts, and items (e.g., seals, gaskets, and bolts) of the pressure retaining boundaries shall comply with those

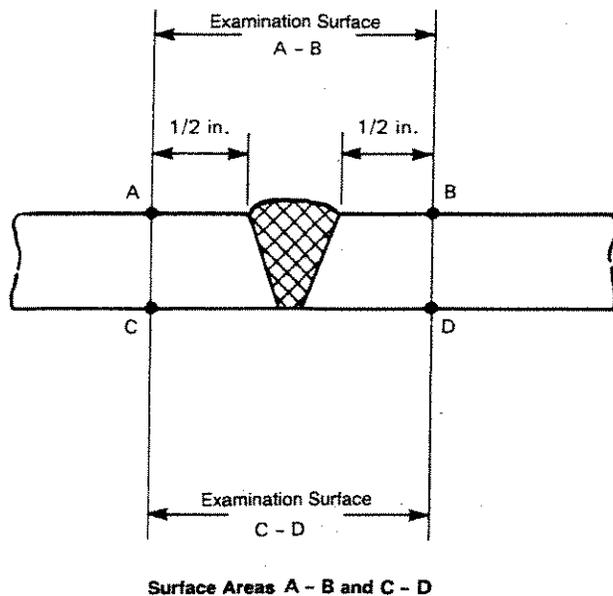


FIG. IWE-2500-1 DISSIMILAR METAL WELDS

tabulated in Table IWE-2500-1, except where alternate examination methods are used that meet the requirements of IWA-2240.

(b) When paint or coatings are to be removed, the paint or coatings shall be visually examined in accordance with Table IWE-2500-1 prior to removal.

(c) Examination methods for surface areas for augmented examination in IWE-1242 shall comply with the following criteria.

(1) Surface areas accessible from both sides shall be visually examined using a VT-1 visual examination method.

(2) Surface areas accessible from one side only shall be examined for wall thinning using an ultrasonic thickness measurement method in accordance with Section V, T-544.

(3) When ultrasonic thickness measurements are performed, one foot square grids shall be used. The number and location of the grids shall be determined by the Owner.

(4) Ultrasonic measurements shall be used to determine the minimum wall thickness within each grid. The location of the minimum wall thickness shall be marked such that periodic reexamination of that location can be performed in accordance with the requirements of Table IWE-2500-1, Examination Category E-C.

IWE-2600 CONDITION OF SURFACE TO BE EXAMINED

(a) When a containment vessel or liner is painted or coated to protect surfaces from corrosion, preservice and inservice visual examinations shall be performed without the removal of the paint or coating.

(b) When removal of paint or coating is required, it shall be removed in a manner that will not reduce the base metal or weld thickness below the design thickness. Reapplied paint and coating systems shall be compatible with the existing system, and shall be examined in accordance with IWE-2200(g).

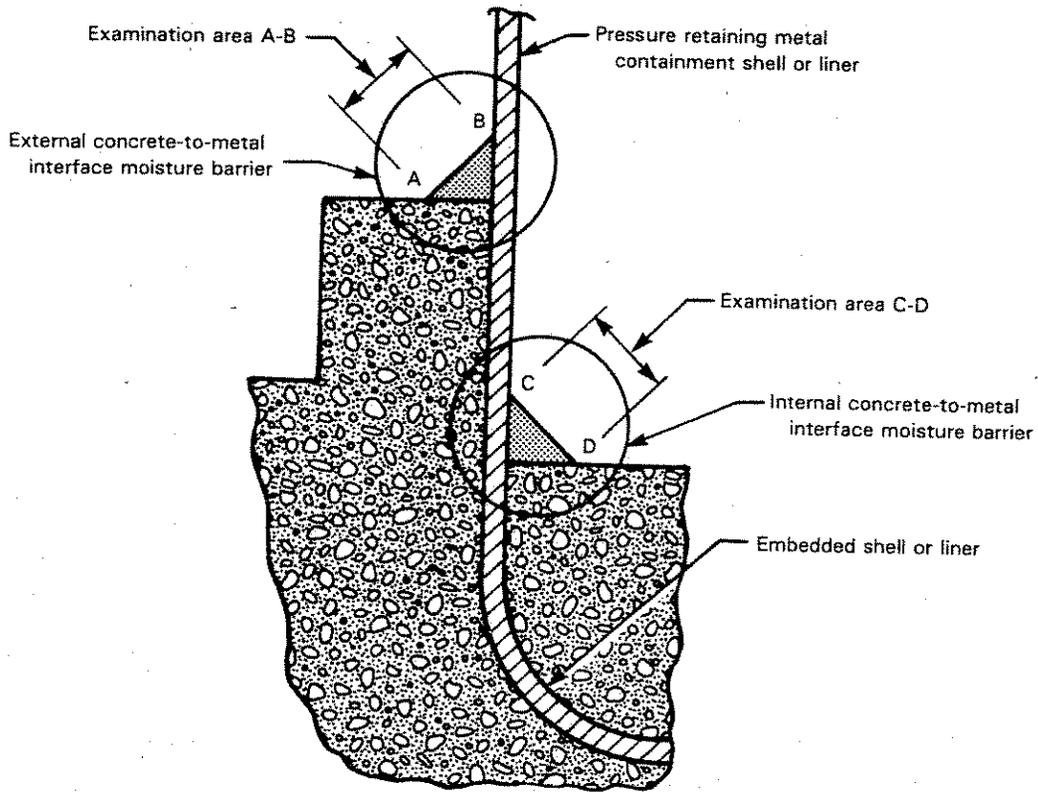


FIG. IWE-2500-2 EXAMINATION AREAS FOR MOISTURE BARRIERS

92A

TABLE IWE-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY E-A, CONTAINMENT SURFACES							
Item No.	Parts Examined	Examination ¹ Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Interval ⁹
					1st Inspection Interval	Successive Inspection Intervals	
E1.10	Containment Vessel Pressure Retaining Boundary						
E1.11	Accessible Surface Areas ^{2,3,5}	IWE-3510.1	General Visual ⁷	IWE-3510.1	100% Prior to each Type A test ⁸	100% Prior to each Type A test ⁸	Not permissible
E1.12	Accessible Surface Areas ^{2,4,5}	IWE-3510.2 IWE-3510.3	Visual, VT-3	IWE-3510.2 IWE-3510.3	100% End of Interval	100% End of Interval ⁸	N/A
E1.20	Vent System Accessible Surface Areas ^{2,4,5,6}	IWE-3510.2 IWE-3510.3	Visual, VT-3	IWE-3510.2 IWE-3510.3	100% End of Interval	100% End of Interval	N/A

NOTES:

- (1) Examination may be made from either the inside or outside surface.
- (2) Examination shall include structures that are parts of reinforcing structure, such as stiffening rings, manhole frames, and reinforcement around openings.
- (3) Not including surface areas that are submerged or insulated.
- (4) Including the wetted surfaces of submerged areas and the portions of insulated surface areas that are necessary to meet the requirements of IWE-1231(a)(4).
- (5) Examination shall include the attachment welds between structural attachments and the pressure retaining boundary or reinforcing structure, except for nonstructural and temporary attachments as defined in NE-4435 and minor permanent attachments as defined in CC-4543.4. Examination shall include the weld metal and the base metal for 1/2 in. beyond the edge of the weld.
- (6) Includes flow channelling devices within containment vessels.
- (7) Refer to IWE-3510.1 for General Visual examination method requirements.
- (8) Refer to IWE-5220 for test requirements.
- (9) Deferral of inspection is not permissible in the 4th and successive inspection intervals.

TABLE IWE-2500-1 (CONT'D)
EXAMINATION CATEGORIES

NOT REQUIRED BY RULE

EXAMINATION CATEGORY E-B, PRESSURE RETAINING WELDS							
Item No.	Parts Examined	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Interval?
					1st Inspection Interval	Successive Inspection Intervals ⁴	
E3.10	Containment Penetration Welds ^{1,5}		Visual, VT-1	IWE-3511	25% of the total number of welds ^{1,2}	25% of the total number of welds ^{1,2}	Permissible
E3.11	Longitudinal						
E3.12	Circumferential						
E3.13	Flued Head and Bellows Seal Circumferential Welds Joined to the Penetration						
E3.20	Flange Welds (Category C) ⁶		Visual, VT-1	IWE-3511	25% of the total number of welds ^{1,2}	25% of the total number of welds ^{1,2}	Permissible
E3.30	Nozzle-to-Shell Welds (Category D) ⁶		Visual, VT-1	IWE-3511	25% of the total number of welds ^{1,2}	25% of the total number of welds ^{1,2}	Permissible

NOTES:

- (1) Examination shall include the weld metal and the base metal for 1/2 in. beyond the edge of the weld.
- (2) Welds shall be randomly selected throughout the containment and representative of the type of welds described by each item number.
- (3) Examination shall include welds made in accordance with Section III, Class MC, including those Class MC welds shown in Figs. NE-1120-1 and NE-1132-1.
- (4) Different welds shall be selected for examination each inspection interval.
- (5) Includes only those welds subject to cyclic loads and thermal stress during normal plant operation.
- (6) Welded Joint categories are as defined in NE-3351 for Class MC and CC-3840 for Class CC.
- (7) Deferral of inspection is not permissible in the 4th and successive inspection intervals.

TABLE IWE-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY E-C, CONTAINMENT SURFACES REQUIRING AUGMENTED EXAMINATION							
Item No.	Parts Examined	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Interval ³
					1st Inspection Interval	Successive Inspection Intervals	
E4.10	Containment Surface Areas				100% of Surface Areas Identified by IWE-1242 ¹	100% of Surface Areas Identified by IWE-1242 ²	Not Permissible
E4.11	Visible Surfaces		Visual, VT-1	IWE-3512.1 IWE-3512.2			
E4.12	Surface Area Grid, Minimum Wall Thickness Location		Volumetric	IWE-3512.3	100% of Minimum Wall Thickness Locations during each Inspection Period, established in accordance with IWE-2500(c)(3) ² and IWE-2500(c)(4) ²	100% of Minimum Wall Thickness Locations during each Inspection Period, established in accordance with IWE-2500(c)(3) ² and IWE-2500(c)(4) ²	Not Permissible

NOTES:

- (1) Containment surface areas requiring augmented examination are those identified in IWE-1240.
- (2) The extent of examination shall be 100% for each inspection period until the areas examined remain essentially unchanged for three consecutive inspection periods. Such areas no longer require augmented examination in accordance with IWE-2420(c).
- (3) Deferral of inspection is not permissible in the 4th and successive inspection intervals.

4) Add Component as needed per IWE-2420
Notice
Link @ Desat Plan Category EC per 5.6.6

TABLE IWE-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY E-D, SEALS, GASKETS, AND MOISTURE BARRIERS							
Item No.	Parts Examined ¹	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Intervals ⁵
					1st Inspection Interval	Successive Inspection Intervals	
E5.10	Seals ¹		Visual, VT-3	IWE-3513	100% of each item	100% of each item	Not permissible
E5.20	Gaskets ¹		Visual, VT-3	IWE-3513	100% of each item	100% of each item	Not permissible
E5.30	Moisture Barriers ^{2,3,4}	IWE-2500-2	Visual, VT-3	IWE-3513	100% of each item	100% of each item	Not permissible

NOTE:

- (1) Examination shall include seals and gaskets on airlocks, hatches, and other devices that are required to assure containment leak-tight integrity.
- (2) Examination shall include internal and external containment moisture barrier materials at concrete-to-metal interfaces intended to prevent intrusion of moisture against the pressure retaining metal containment shell or liner.
- (3) Containment moisture barrier materials include caulking, flashing, and other sealants used for this application.
- (4) Examination shall include all accessible surfaces of internal and external containment moisture barriers.
- (5) Deferral of inspection is not permissible in the 4th and successive inspection intervals.

TABLE IWE-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY E-F, PRESSURE RETAINING DISSIMILAR METAL WELDS							
Item No.	Parts Examined ^{3,5}	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Intervals
					1st Inspection Interval	Successive Inspection Intervals ⁴	
E7.10	Dissimilar Metal Welds	IWE-2500-1	Surface	IWE-3514	50% of the total number of welds ^{1,2}	50% of the total number of welds ^{1,2}	Permissible

NOTES:

- (1) Examination shall include the weld metal and the base metal for 1/2 in. beyond the edge of the weld.
- (2) Welds shall be randomly selected throughout the containment and representative of the type of welds described by each item number.
- (3) Includes dissimilar metal welds between the following combinations:
 - (a) carbon or low alloy steels to high alloy steels
 - (b) carbon or low alloy steels to high nickel alloys
 - (c) high alloy steels to high nickel alloys
- (4) Different welds shall be selected for examination each inspection interval.
- (5) Includes only those welds subject to cyclic loads and thermal stress during normal plant operation.
- (6) Deferral of inspection is not permissible in the 4th and successive inspection intervals.

TABLE IWE-2500-1 (CONT'D)
EXAMINATION CATEGORIES

EXAMINATION CATEGORY E-G, PRESSURE RETAINING BOLTING							
Item No.	Parts Examined	Examination Requirements/ Fig. No.	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Intervals
					1st Inspection Interval	Successive Inspection Intervals	
E8.10	Bolted Connections ¹	Surfaces	Visual, VT-1	IWE-3515	100% of each bolted connection ^{2,4}	100% of each bolted connection ^{2,4}	Permissible ³
E8.20	Bolted Connections		Bolt torque or tension test ⁵	IWE-3515	100% of bolts	100% of bolts	Permissible

NOTES:

- (1) Examination shall include bolts, studs, nuts, bushings, washers, and threads in base material and flange ligaments between threaded stud holes.
- (2) Examination of bushings, threads, and ligaments in base material of flanges is required only when the connection is disassembled.
- (3) Examination shall not be deferred when the connection is disassembled or when the bolting is removed.
- (4) All visible surfaces shall be examined. Bolting may remain in place under tension when disassembly is not otherwise required.
- (5) Bolt torque or tension test is required only for bolted connections that have not been disassembled and reassembled during the inspection interval.
- (6) Deferral of inspection is not permissible in the 4th and successive inspection intervals.

TABLE IWE-2500-1
EXAMINATION CATEGORIES

EXAMINATION CATEGORY E-P, ALL PRESSURE RETAINING COMPONENTS							
Item No.	Parts Examined	Examination/ Test Requirements	Examination Method	Acceptance Standard	Extent and Frequency of Examination		Deferral of Inspection to End of Interval
					1st Inspection Interval	Successive Inspection Intervals	
E9.10	Containment Vessel Pressure Retaining Boundary ²	System leakage test	10 CFR 50, Appendix J	10 CFR 50, App. J	Each repair, modification, or replacement	Each repair, modification, or replacement	Not permissible ¹
E9.20	Containment Penetration Bellows	10 CFR 50, Appendix J (Type B test)	10 CFR 50, Appendix J	10 CFR 50, App. J	10 CFR 50, Appendix J	10 CFR 50, Appendix J	Not permissible ¹
E9.30	Airlocks	10 CFR 50, Appendix J (Type B test)	10 CFR 50, Appendix J	10 CFR 50, App. J	10 CFR 50, Appendix J	10 CFR 50, Appendix J	Not permissible ¹
E9.40	Seals and Gaskets	10 CFR 50, Appendix J (Type B test)	10 CFR 50, Appendix J	10 CFR 50, App. J	10 CFR 50, Appendix J	10 CFR 50, Appendix J	Not permissible

NOTES:

- (1) Leakage tests may be deferred until the next scheduled leakage test, if allowed by IWE-5222.
- (2) If leak chase channels are utilized, they shall be unplugged or tested in accordance with 10 CFR 50, Appendix J, Type B test.

ARTICLE IWE-3000

ACCEPTANCE STANDARDS

IWE-3100 EVALUATION OF NONDESTRUCTIVE EXAMINATION RESULTS

IWE-3110 PRESERVICE EXAMINATIONS

IWE-3111 General

The preservice examination required by IWE-2200 and performed in accordance with the procedures of IWA-2200 shall be evaluated by the acceptance standards specified in Table IWE-3410-1. Acceptance of components for service shall be in accordance with IWE-3112, IWE-3114, and IWE-3115.

IWE-3112 Acceptance

(a) Components whose examination either confirms the absence of or reveals flaws or areas of degradation that do not exceed the acceptance standards of Table IWE-3410-1 shall be acceptable for service, provided the flaws or areas of degradation are recorded in accordance with the requirements of IWA-1400(h) and IWA-6220 in terms of location, size, shape, orientation, and distribution within the component.

(b) Components whose examination reveals flaws or areas of degradation that do not meet the acceptance standards of Table IWE-3410-1 shall be unacceptable for service unless such flaws or areas of degradation are removed or repaired, to the extent necessary to meet the acceptance standards, prior to placement of the component in service.

IWE-3114 Repairs and Reexaminations

Repairs and reexaminations shall comply with the requirements of IWA-4000. Reexamination shall be conducted in accordance with the requirements of IWA-2200; the recorded results shall demonstrate that the repair meets the acceptance standards specified in Table IWE-3410-1.

IWE-3115 Review by Authorities

(a) The repair program and the examination results shall be subject to review by the enforcement authorities having jurisdiction at the plant site.

(b) Evaluation of examination results may be subject to review by the regulatory authority having jurisdiction at the plant site.

IWE-3120 INSERVICE NONDESTRUCTIVE EXAMINATIONS

IWE-3121 General

Inservice nondestructive examination results shall be compared with recorded results of the preservice examination and prior inservice examinations. Acceptance of the components for continued service shall be in accordance with IWE-3122, IWE-3124, and IWE-3125.

IWE-3122 Acceptance

IWE-3122.1 Acceptance by Examination. Components whose examination results meet the acceptance standards listed in Table IWE-2500-1 shall be acceptable for continued service. Verified changes of flaws or areas of degradation from prior examinations shall be recorded in accordance with IWA-1400(h) and IWA-6220. Components that do not meet the acceptance standards of IWE-3000 shall be corrected in accordance with the provisions shown in IWE-3122.2, IWE-3122.3, or IWE-3122.4.

IWE-3122.2 Acceptance by Repair. Components whose examination results reveal flaws or areas of degradation that do not meet the acceptance standards listed in Table IWE-2500-1 shall be unacceptable for continued service until the additional examination requirements of IWE-2430 are satisfied, and the flaw or area of degradation is either removed by mechanical

methods or the component repaired to the extent necessary to meet the acceptance standards of IWE-3000.

IWE-3122.3 Acceptance by Replacement. As an alternative to the repair requirement of IWE-3122.2, the component or the portion of the component containing the flaw or area of degradation shall be replaced in accordance with IWE-7000.

IWE-3122.4 Acceptance by Evaluation

(a) Components whose examination results reveal flaws or areas of degradation that do not meet the acceptance standards listed in Table IWE-3410-1 shall be acceptable for service without the removal or repair of the flaw or area of degradation or replacement if an engineering evaluation indicates that the flaw or area of degradation is nonstructural in nature or has no effect on the structural integrity of the containment. When supplemental examinations of IWE-3200 are required, if either the thickness of the base metal is reduced by no more than 10% of the nominal plate thickness or the reduced thickness can be shown by analysis to satisfy the requirements of the Design Specifications, the component shall be acceptable by evaluation.

(b) When flaws or areas of degradation are accepted by engineering evaluation, the area containing the flaw or degradation shall be reexamined in accordance with IWE-2420(b) and (c).

(c) When portions of later editions of the Construction Code or Section III are used, all related portions shall be met. The engineering evaluation shall be subject to review by the enforcement and regulatory authorities having jurisdiction at the plant site.

IWE-3124 Repairs and Reexaminations

Repairs and reexaminations shall comply with the requirements of IWA-4000. Reexaminations shall be conducted in accordance with the requirements of IWA-2200 and the recorded results shall demonstrate that the repair meets the acceptance standards of Table IWE-3410-1.

IWE-3125 Review by Authorities

The repair program and the reexamination results shall be subject to review by the enforcement authorities having jurisdiction at the plant site.

IWE-3130 INSERVICE VISUAL EXAMINATIONS

Components, whose visual examination as specified in Table IWE-2500-1 reveals areas that are suspect, shall be unacceptable for continued service unless, fol-

lowing verification of the suspect areas by the supplemental examination as required by IWE-3200, the requirements of IWE-3120 are satisfied.

IWE-3200 SUPPLEMENTAL EXAMINATIONS

Examinations that detect flaws or evidence of degradation that require evaluation in accordance with the requirements of IWE-3100 may be supplemented by other examination methods and techniques (IWA-2240) to determine the character of the flaw (i.e., size, shape, and orientation) or degradation. Visual examinations that detect surface flaws or areas that are suspect shall be supplemented by either surface or volumetric examination.

IWE-3400 STANDARDS

IWE-3410 ACCEPTANCE STANDARDS

The acceptance standards of Table IWE-3410-1 shall be applied to evaluate the acceptability of the component for service following the preservice examination and each inservice examination.

IWE-3430 ACCEPTABILITY

Flaws or areas of degradation that do not exceed the allowable acceptance standards of IWE-3500 for the respective examination category shall be acceptable.

IWE-3500 ACCEPTANCE STANDARDS

IWE-3510 STANDARDS FOR EXAMINATION CATEGORY E-A, CONTAINMENT SURFACES

IWE-3510.1 Visual Examinations — General

(a) The General Visual Examination shall be performed by, or under the direction of, a Registered Professional Engineer or other individual, knowledgeable in the requirements for design, inservice inspection, and testing of Class MC and metallic liners of Class CC components. The examination shall be performed either directly or remotely, by an examiner with visual acuity sufficient to detect evidence of degradation that may affect either the containment structural integrity or leak tightness.

(b) Prior to proceeding with a Type A test, conditions that may affect containment structural integrity or

TABLE IWE-3410-1
ACCEPTANCE STANDARDS

Examination Category	Component and Part Examined	Acceptance Standard
E-A	Containment surfaces	IWE-3510
E-B	Pressure retaining welds	IWE-3511
E-C	Containment surfaces requiring augmented examination	IWE-3512
E-D	Seals, gaskets, and moisture barriers	IWE-3513
E-F	Pressure retaining dissimilar metal welds	IWE-3514
E-G	Pressure retaining bolting	IWE-3515
E-P	All pressure retaining components	10 CFR 50, Appendix J

leak tightness shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122.

IWE-3510.2 VT-3 Visual Examinations on Coated Areas. The inspected area, when painted or coated, shall be examined for evidence of flaking, blistering, peeling, discoloration, and other signs of distress. Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation.

IWE-3510.3 VT-3 Visual Examinations on Non-coated Areas. The inspected area shall be examined for evidence of cracking, discoloration, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities. Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation.

IWE-3511 Standards for Examination Category E-B, Pressure Retaining Welds

IWE-3511.1 VT-1 Visual Examinations on Coated Areas. The inspected area, when painted or coated, shall be examined for evidence of flaking, blistering, peeling, discoloration, and other signs of distress. Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations

in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation:

IWE-3511.2 VT-1 Visual Examinations on Non-coated Areas. The inspected area shall be examined for evidence of cracking, discoloration, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities. Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation.

IWE-3512 Standards for Examination Category E-C, Containment Surfaces Requiring Augmented Examination

IWE-3512.1 VT-1 Visual Examinations on Coated Areas. The inspected area, when painted or coated, shall be examined for evidence of flaking, blistering, peeling, discoloration, and other signs of distress. Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation.

IWE-3512.2 VT-1 Visual Examinations on Non-coated Areas. The inspected area shall be examined for evidence of cracking, discoloration, wear, pitting, excessive corrosion, arc strikes, gouges, surface discontinuities, dents, and other signs of surface irregularities. Areas that are suspect shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental

examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation.

IWE-3512.3 Ultrasonic Examination. Containment vessel examinations that reveal material loss exceeding 10% of the nominal containment wall thickness, or material loss that is projected to exceed 10% of the nominal containment wall thickness prior to the next examination, shall be documented. Such areas shall be accepted by engineering evaluation or corrected by repair or replacement in accordance with IWE-3122. Supplemental examinations in accordance with IWE-3200 shall be performed when specified as a result of the engineering evaluation.

IWE-3513 Standards for Examination Category E-D, Seals, Gaskets, and Moisture Barriers

IWE-3513.1 VT-3 Visual Examinations. Seals, gaskets, and moisture barriers shall be examined for wear, damage, erosion, tear, surface cracks, or other

defects that may violate the leak-tight integrity. Defective items shall be repaired or replaced.

IWE-3514 Standards for Examination Category E-F, Pressure Retaining Dissimilar Metal Welds

IWE-3514.1 Surface Examinations. The acceptance standards of IWB-3514 shall apply within the examination boundary of Fig. IWE-2500-1.

IWE-3515 Standards for Examination Category E-G, Pressure Retaining Bolting

IWE-3515.1 Visual Examinations. Bolting materials shall be examined in accordance with the material specification for defects which may cause the bolted connection to violate either the leak-tight or structural integrity. Defective items shall be replaced.

IWE-3515.2 Bolt Torque or Bolt Tension. Either bolt torque or bolt tension shall be within the limits specified for the original design. If no limits have been specified, acceptable bolt torque or bolt tension limits shall be determined and utilized.

ARTICLE IWE-4000

REPAIR PROCEDURES

IWE-4100 SCOPE

The rules of IWA-4000 apply.

ARTICLE IWE-5000

SYSTEM PRESSURE TESTS

IWE-5200 SYSTEM TEST REQUIREMENTS

IWE-5210 GENERAL

Except as noted in IWE-5240, the requirements of IWA-5000 are not applicable to Class MC or Class CC components.

IWE-5220 TESTS FOLLOWING REPAIR, MODIFICATION, OR REPLACEMENT

IWE-5221 Leakage Test

Except as noted in IWE-5222, repairs or modifications to the pressure retaining boundary or replacement of Class MC or Class CC components shall be subjected to a pneumatic leakage test in accordance with the provisions of Title 10, Part 50 of the Code of Federal Regulations, Appendix J, Paragraph IV.A, which states:

"Any major modification, replacement of a component which is part of the primary reactor containment boundary, or resealing a seal-welded door, performed after the preoperational leakage rate test shall be followed by either a Type A, Type B, or Type C test, as applicable for the area affected by the modification. The measured leakage from this test shall be included in the report to the Commission, required by V.A. The acceptance criteria of III.A.5.(b), III.B.3., or III.C.3., as appropriate, shall be met. Minor modifications, replacements, or resealing of seal-welded doors, performed directly prior to the conduct of a scheduled Type A test do not require a separate test."

IWE-5222 Deferral of Leakage Tests

Leakage tests for the following minor repairs or modifications to the pressure retaining boundary may be deferred until the next scheduled leakage test, provided nondestructive examination is performed in accordance with the approved repair program:

(a) welds of attachments to the surface of the pressure retaining boundary;

(b) repair cavities, the depth of which does not penetrate the required design wall by more than 10%; and

(c) welds attaching penetrations that are NPS 1 or smaller.

IWE-5240 VISUAL EXAMINATION

The requirements of IWA-5246 for visual examinations are applicable.

IWE-5250 CORRECTIVE MEASURES

If the leakage test requirements of IWE-5221 cannot be satisfied, the source of leakage shall be located and the area shall be examined to the extent necessary to establish the requirements for corrective action. Repairs shall be performed in accordance with the rules of IWE-4000 and leakage testing shall be reperformed as required by IWE-5220, prior to returning the component to service.

ARTICLE IWE-7000 REPLACEMENTS

IWE-7100 GENERAL REQUIREMENTS

The rules of IWA-4000 apply.