ATTACHMENT B

PROPOSED CHANGES TO APPENDIX A, TECHNICAL SPECIFICATIONS OF FACILITY OPERATING LICENSE DPR-19

DPR-19

3/4.6-23
B 3/4.6-26
B 3/4.6-26a

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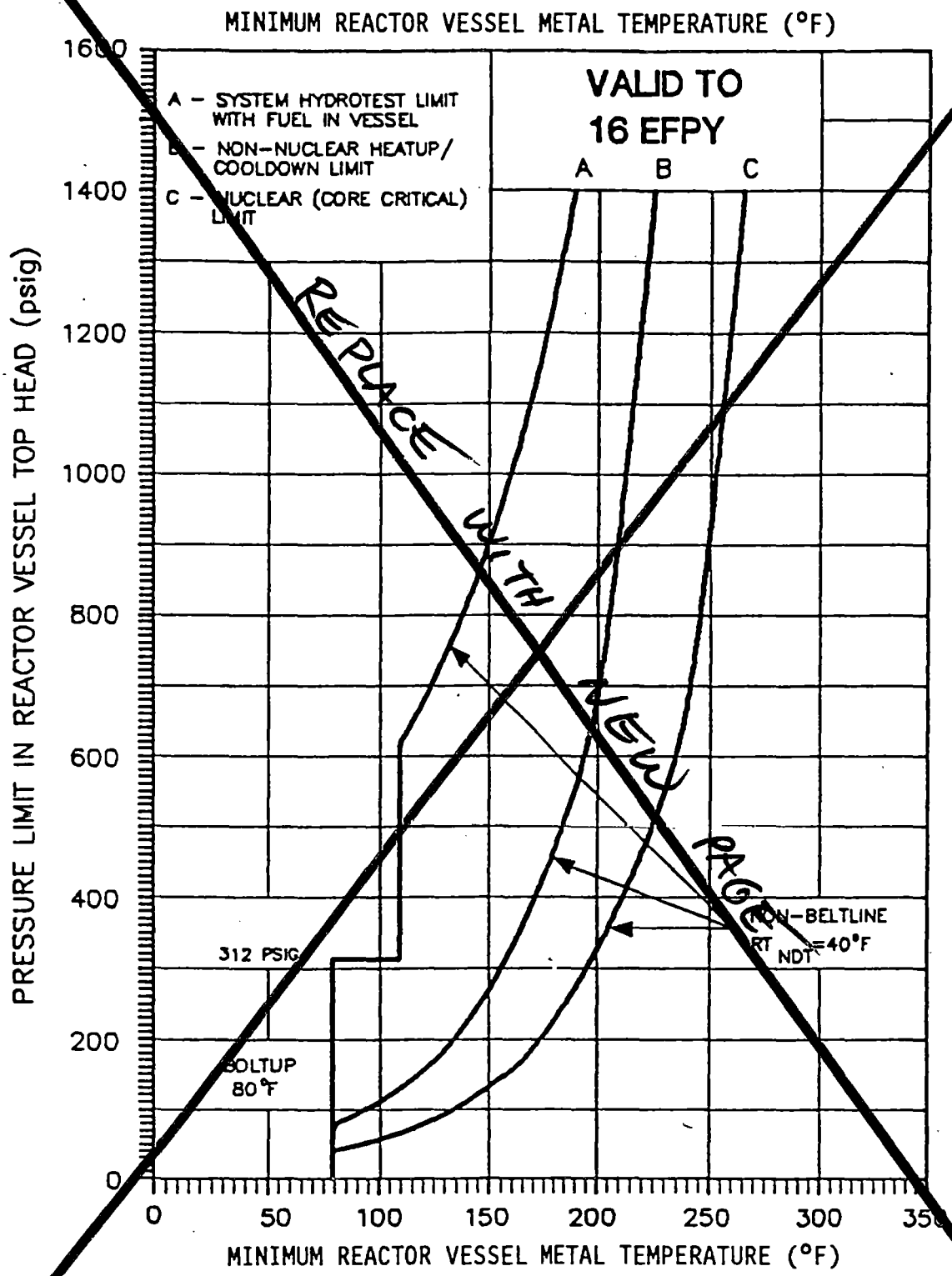

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FIGURE 3.6.1.

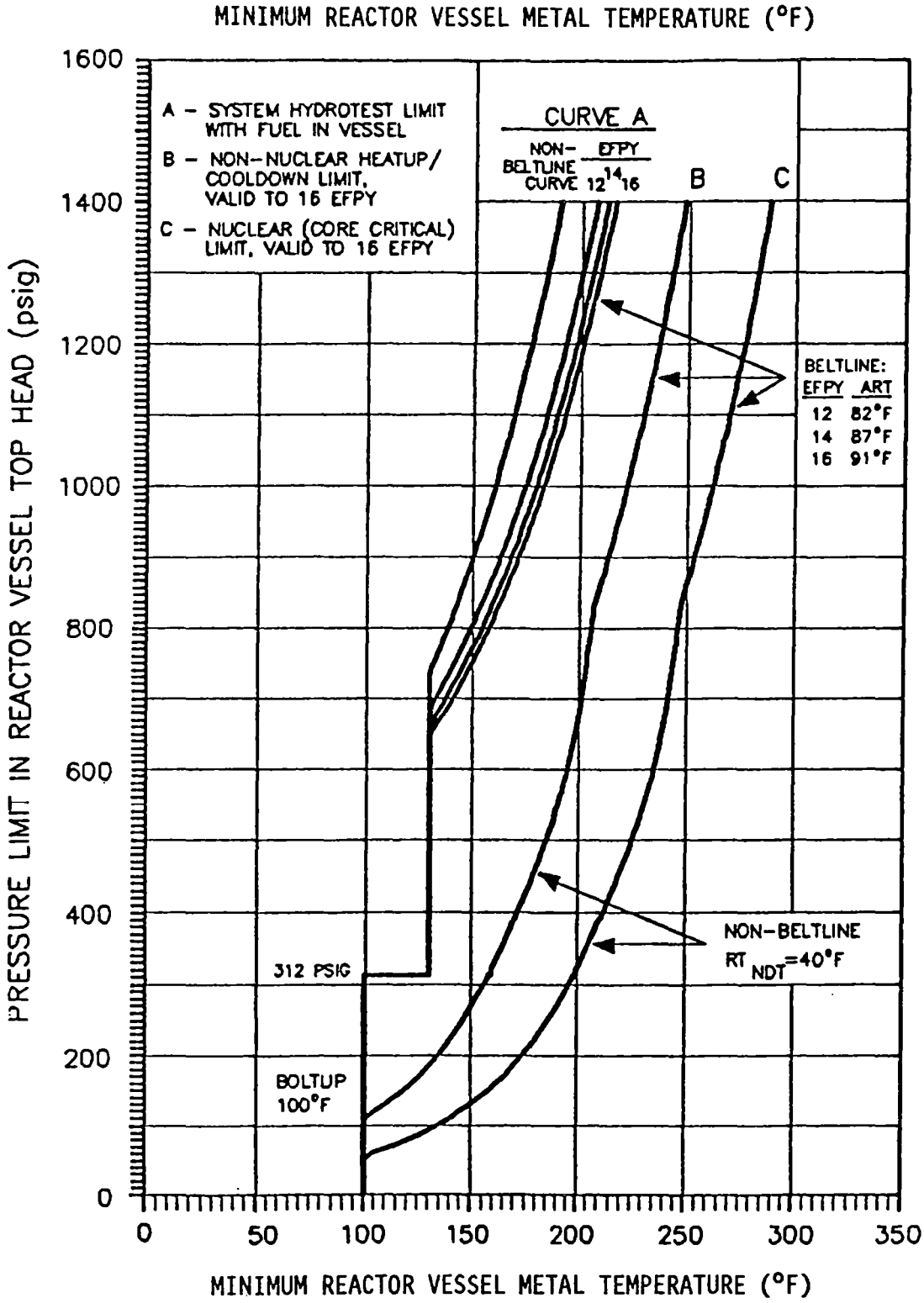
MINIMUM REACTOR VESSEL METAL TEMPERATURE (°F)
A - SYSTEM HYDROTEST LIMIT WITH FUEL IN VESSEL
B - NON-NUCLEAR HEATUP/ COOLDOWN LIMIT, VALID TO 16 EFPY
C - NUCLEAR (CORE CRITICAL) LIMIT, VALID TO 16 EFPY
CURVE A
NON-BELTLINE CURVE
EFPY
12 14 16
B
C
BELTLINE:
EFPY ART
12 82°F
14 87°F
16 91°F
NON-BELTLINE
RT NDT=40°F
312 PSIG
BOLTUP 100°F
PRESSURE LIMIT IN REACTOR VESSEL TOP HEAD (psig)
0
200
400
600
800
1000
1200
1400
1600
0
50
100
150
200
250
300
350
MINIMUM REACTOR VESSEL METAL TEMPERATURE (°F)

FIGURE 3.6.1.

3.6 LIMITING CONDITION FOR OPERATION BASES (Cont'd.)

B. Pressurization Temperature - The reactor vessel is a primary barrier against the release of fission products to the environs. In order to provide assurance that this barrier is maintained at a high degree of integrity, pressure-temperature limits have been established for the operating conditions to which the reactor vessel can be subjected. Figure 3.6.1 presents the pressure-temperature curves for those operating conditions; Inservice Hydrostatic Testing (Curve A), Non-Nuclear Heatup/Cooldown (Curve B), and Core Critical Operation (Curve C). These curves have been established to be in conformance with Appendix G to 10 CFR 50 and Regulatory Guide 1.99, Revision 2, and take into account the change in reference nil-ductility transition temperature (RT_{NDT}) as a result of neutron embrittlement. The adjusted reference temperature (ART) of the limiting vessel material is used to account for irradiation effects.

Three vessel regions are considered for the development of the pressure-temperature curves: 1) the core beltline region; 2) the non-beltline region (other than the closure flange region); and 3) the closure flange region. The beltline region is defined as that region of the reactor vessel that directly surrounds the effective height of the reactor core (between the bottom and the top of active fuel), and is subject to an RT_{NDT} adjustment to account for irradiation embrittlement. The non-beltline and closure flange regions receive insufficient fluence to necessitate an RT_{NDT} adjustment. These regions contain components which include; the reactor vessel nozzles, closure flanges, top and bottom head plates, control rod drive penetrations, and shell plates that do not directly surround the reactor core. Although the closure flange region is a non-beltline region, it (the closure flange region) is treated separately for the development of the pressure-temperature curves to address 10 CFR 50 Appendix G requirements.

In evaluating the adequacy of the steel which comprises the reactor vessel, it is necessary that the following be established: 1) the RT_{NDT} for all vessel and adjoining materials; 2) the relationship between RT_{NDT} and integrated neutron flux (fluence, at energies greater than one Mev); and 3) the fluence at the location of a postulated flaw.

Boltup Temperature

The initial RT_{NDT} of the main closure flanges, the shell and head materials connecting to these flanges, the connecting welds and the vertical electroslag welds which terminate immediately below the vessel flange are all 20°F or lower. Therefore, the minimum allowable boltup temperature is established as 80°F (RT_{NDT} + 60°F)

have an RT_{NDT} of 40°F

100

which includes a 60°F conservatism required by the original ASME Code of construction.

Curve A - Hydrotesting

As indicated in Curve A of Figure 3.6-1 for system hydrotesting, the minimum metal temperature of the reactor vessel shell is 80°F for reactor pressures less than 312 psig. This 80°F minimum boltup temperature is based on an RT_{NDT} of 20°F for the top head plate (most limiting material) and a 60°F conservatism required by the original ASME Code of construction.

At reactor pressures greater than 312 psig the minimum vessel metal temperature is established as 110°F. The 110°F minimum temperature is based on a closure flange region RT_{NDT} of 20°F and a 90°F conservatism required by 10 CFR 50 Appendix G for pressure in excess of 20% of the preservice hydrostatic test pressure (1563 psig).

At approximately 620 psig reactor pressure the effects of pressurization become more limiting than the boltup stresses at the closure flange region, as shown by the non-linear portion of Curve A intersecting the vertical 110°F line. The non-linear portion of the curve is dependent on the non-beltline region (which is actually more limiting than the beltline region through a vessel exposure of 22 effective full power years), and based on an RT_{NDT} of 40°F.

Curve B - Non-Nuclear Heatup/Cooldown

Curve B of Figure 3.6.1 applies during heatups with non-nuclear heat (e.g., recirculation pump heat) and during cooldowns when the reactor is not critical (e.g., following a scram). The curve provides the minimum reactor vessel metal temperatures based on the most limiting vessel stress (non-beltine stresses).

As indicated by the vertical 80°F line, the boltup stresses at the closure flange region are most limiting below approximately 80 psig. Above appproximately 80 psig, pressurization and thermal stresses become more limiting than the boltup stresses, which is reflected by the non-linear portion of Curve B. The non-linear portion of the curve is dependent on non-beltline region (which is actually more limiting than the beltline region through a vessel exposure of 22 effective full power years), and based on an RT_{NDT} of 40°F.

Curve C - Core Critical Operation

Curve C, the core critical operation curve shown in Figure 3.6.1, is generated in accordance with 10 CFR 50 Appendix G which requires core critical pressure-temperature limits to be 40°F above any Curve A or B limits. Since Curve B is more limiting, Curve C is Curve B plus 40°F.

INSERT A

At approximately 650 psig the effects of pressurization are more limiting than the boltup stresses at the closure flange region, hence a family of non-linear curves intersect the 130 ^{o}F vertical line. Belt-line as well as non-beltline curves have been provided to allow separate monitoring of the two regions. Beltline curves as a function of vessel exposure for 12, 14, and 16 effective full power years (EFPY) are presented to allow the use of the appropriate curve up to 16 EFPY of operation.

INSERT B

As indicated by the vertical 100 ^{o}F line, the boltup stresses at the closure flange region are most limiting for reactor pressures below approximately 110 psig. For reactor pressures greater than approximately 110 psig, pressurization and thermal stresses become more limiting than the boltup stresses, which is reflected by the non-linear portion of Curve B. The non-linear portion of the curve is dependent on non-beltline and beltline regions, with the beltline region temperature limits having been adjusted to account for vessel irradiation (up to a vessel exposure of 16 EFPY). The non-beltline region is limiting between approximately 110 psig and 830 psig. Above approximately 830 psig, the beltline region becomes limiting.

ATTACHMENT C

SIGNIFICANT HAZARDS CONSIDERATION

Commonwealth Edison has evaluated the proposed Technical Specification Amendment and determined that it does not present a significant hazards consideration. Based on the criteria for defining a significant hazards consideration established in 10 CFR 50.92, operation of Dresden Nuclear Power Station Unit 2 in accordance with the proposed amendment will not:

Involve a significant increase in the probability or consequences of an accident previously evaluated because:

> Neither the probability nor the consequence of a previously evaluated accident is increased due to the correction of the pressure-temperature (P-T) curve for Dresden Unit 2. The adjusted reference temperature of the limiting beltline material was used to correct the beltline P-T curves to account for irradiation effects. Thus, the operating limits are adjusted to incorporate the initial fracture toughness conservatism present when the reactor vessel was new. The updated curves provide assurance that brittle fracture of the reactor vessel is prevented.

Create the possibility of a new or different kind of accident from any accident previously evaluated because:

> The updated P-T operating limits will not create the possibility of a new or different kind of accident than previously evaluated. The revised operating limits update Dresden Unit 2 to the limits currently prescribed for Dresden Unit 3 and have been shown to be conservative. The current Dresden Unit 3 limits take into account the effects of irradiation embrittlement utilized criteria defined in Regulatory Guide 1.99, Rev. 2. The updated P-T curve conservatively account for the effects of irradiation on the limiting reactor vessel material. No physical changes to the plant are being proposed; therefore, no new modes of plant operation are being proposed.

Involve a significant reduction in the margin of safety because:

> The P-T operating limits for Dresden Unit 3 were designed to provide an adequate margin of safety for the reactor pressure vessel. These same limits are conservatively being applied to Dresden Unit 2. The required margin is specified in ASME Boiler and Pressure Vessel Code, Section XIII, Appendix G and 10 CFR 50 Appendix G. The revised curves are based on the latest NRC guidelines and the latest actual neutron fluence/flux data for the site. The new limits retain the margin of safety to a level similar to that

margin devised for the new vessel when the fracture toughness was slightly greater. The new operating limits account for irradiation embrittlement effects, thereby maintaining a conservative margin of safety.

Guidance has been provided in "Final Procedures and Standards on No Significant Hazards Considerations," Final Rule, 51 FR 7744, for the application of standards to license change requests for determination of the existence of significant hazards considerations. This document provides examples of amendment which are and are not considered likely to involve significant hazards considerations. This proposed amendment most closely fit the example of an administrative change to the Technical Specifications.

This proposed amendment does not involve a significant relaxation of the criteria used to establish safety limits, a significant relaxation of the based for the limiting safety system settings or a significant relaxation of the based for the limiting conditions for operations. Therefore, based on the guidance provided in the Federal Register and the criteria established in 10 CFR 50.92(c), the proposed change does not constitute a significant hazards consideration.

ATTACHMENT D

ENVIRONMENTAL ASSESSMENT

Commonwealth Edison has evaluated the proposed changes against the criteria for the identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.20. It has been determined that the proposed changes meet the criteria for a categorical exclusion as provided under 10 CFR 51.22(c)(9). This conclusion has been determined because the proposed changes do not pose a significant hazards consideration or do not involve a significant increase in the amounts, and no significant changes in the types, of effluents that may be released offsite. This request does not involve a significant increase in the individual or cumulative occupational radiation exposure. Therefore, the Environmental Assessment Statement is not applicable for these changes.