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August 19, 1996

U. S. Nuclear Regulatory Commission
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Gentlemen: ULNRC-3422

CALLAWAY PLANT
DOCKET NUMBER 50-483
REQUEST FOR ALTERNATIVE EXAMINATION REQUIREMENTS FOR THE CALLAWAY PLANT INSERVICE INSPECTION PROGRAM PLAN

References: 1) NRC letter dated December 20, 1995
2) ULNRC-3378 dated May 15, 1996

Reference 2 transmitted Relief Request ISI-07A to the Callaway Inservice Inspection Program Plan. However, Union Electric has determined that this request would be more appropriate if submitted as a proposed alternative examination. Therefore, ISI-07A has been revised and is resubmitted as ISI-07B per 10CFR50.55a(a)(3). ISI-07B replaces Relief Request ISI-07A in its entirety. Additional component specific information, which supports the alternative examination, is included in the attachment to this letter.

NRC approval of this submittal is requested by October 1, 1996 so that this change may be implemented for Refuel 8. If you have any questions concerning this information, please contact us.

Very truly yours,

Donald F. Schnell

Donald F. Schnell

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A047

WEK/
Attachment

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STATE OF MISSOURI)
) S S
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Donald F. Schnell, of lawful age, being first duly sworn upon oath says that he is Senior Vice President-Nuclear and an officer of Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Donald F. Schnell
Donald F. Schnell
Senior Vice President
Nuclear

SUBSCRIBED and sworn to before me this 19th day of AUGUST, 1996.

JA Clark

JA CLARK
NOTARY PUBLIC STATE OF MISSOURI
COLE COUNTY
MY COMMISSION EXP. OCT 20, 1996

ALTERNATIVE EXAMINATION REQUEST ISI-07B

COMPONENT FUNCTION

Code Class:	1 and 2
Reference:	IWA-5242(a)
Examination Category:	B-P and C-H
Item Numbers:	All Item Numbers Listed Under Examination Categories B-P and C-H
Description:	Alternate Rules for Insulation Removal During IWA-5000 Pressure Tests at Bolted Connections in Systems Borated for the Purpose of Controlling Reactivity
Component Numbers:	Bolted Connections for Components Listed in Table 1

CODE REQUIREMENTS

ASME Section XI, 1989 Edition, Paragraph IWA-5242(a) states, "For systems borated for the purpose of controlling reactivity, insulation shall be removed from pressure retaining bolted connections for visual examination VT-2."

BASIS FOR PROPOSED ALTERNATIVE

Authorization for a proposed alternative is requested from the requirement to remove insulation for visual VT-2 examination of bolted connections during a system pressure test on systems borated for the purpose of controlling reactivity. Union Electric believes that removal of insulation at bolted connections for the sole purpose of visual examination will result in hardship and unusual difficulty without a compensating increase in the level of quality and safety for the reasons listed below per 10CFR50.55a(a)(3)(ii):

1) The visual VT-2 examination of the Reactor Coolant System (RCS) is performed following the majority of all outage maintenance activities and just prior to reactor criticality. The RCS is at a normal operating temperature and pressure (557°F and 2235 psig) during the pressure test as required by IWA-5000. Performance of a visual VT-2 examination for the subject bolted connections, re-installation of insulation, and disassembly of scaffolding under these conditions is a personnel safety hazard.

2) The anticipated exposure for these exams, based on a best case analysis from past experience (best RCS cleanup), is 11 Person-Rem. This is approximately 9% of the total budgeted dose for Refuel 8.

3) Differential thermal expansion occurs when insulation is removed from a bolted connection which creates a greater chance for leakage. When insulation is removed, the flanges expand at a rate greater than the bolts causing stress on the connection. Once the bolts expand, the stress causes the equivalent of reducing the torque for the connection. The connection then has a higher probability of leaking.

4) Code Class 1 and 2 systems borated for the purpose of controlling reactivity are extensive and are located in many areas inside and outside of containment on multiple elevations. Scaffolding will be required to access many of the bolted connections. In addition, many of the bolted connections are located in difficult to access areas and in medium to high radiation areas. Insulation removal combined with scaffolding requirements will increase outage costs. Approximately 590 insulator manhours and 428 scaffolder manhours would be added to Refuel 8 to support the performance of these VT-2 exams. Based on craft hourly labor rates as of June, 1995 for outage work, this equates to $38,495. The VT-2 is performed between modes 3 and 2 ascending, which normally has a duration of six to eight hours. Under the new requirements, critical path time will be extended several hours to accommodate the insulation installation and scaffold removal inside the bio-shield wall and throughout

containment after the examination is complete. Outage cost is currently estimated at $400,000 per day.

Union Electric believes that the Callaway programs and the alternative examination proposed below, provide an acceptable level of safety and quality for bolted connections in systems borated for the purpose of controlling reactivity. This alternate exam satisfies the requirements of 10CFR50.55a(a)(3)(i).

1) In response to NRC Generic Letter 88-05, Union Electric established a program to inspect all boric acid leaks discovered in the containment building and to evaluate the impact of those leaks on carbon steel or low alloy steel components. All evidence of leaks, including boric acid crystals or residue, is inspected and evaluated regardless of whether the leak was discovered at power or during an outage. Issues such as the following are considered in the inspection and evaluation: 1) evidence of corrosion or metal degradation, 2) effect the leak may have on the pressure boundary, 3) possibility of boric acid traveling along the inside of insulation on piping, and 4) possibility of dripping or spraying on other components. Based on this evaluation, appropriate corrective actions are initiated to prevent reoccurrence of the leak and to repair, if necessary, any degraded materials or components.

2) In addition to the nondestructive examinations required by ASME Section XI, Union Electric has committed to the bolting examination requirements of NRC Bulletin 82-02. In accordance with this Bulletin, at least two nondestructive examination techniques (e.g., ultrasonic, liquid penetrant, magnetic particle, or visual VT-1) are performed on bolted connections of the following components: Steam Generator primary manways, Pressurizer primary manway, Pressurizer safety valves, and a total of 22 Reactor Coolant System isolation valves that are greater than 6" NPS. As a minimum, two nondestructive examination techniques are used whenever the bolted connection of one of the subject components is disassembled for maintenance or other inspection. These examinations ensure that degradation mechanisms such as Stress Corrosion Cracking or corrosion do not go undetected in bolted connections critical to reactor safety.

3) All bolted connections on Callaway's Class 1 and 2 borated systems are either SA-564 Grade 630 studs with SA-194 Grade 6 nuts or superalloy SA-453 Grade 660 studs with SA-194 Grade 6 or SA-453 Grade 660 nuts. The stainless steels were designed to be resistant in corrosive applications. This is substantiated for the 410 stainless steels (SA-194) and the 17-4 PH stainless steels (SA-564) by EPRI Report NP-5769 which attests to the resistance of stainless steels to boric acid corrosion.

   EPRI Report TR-102748 further confirms in section 7.2.1 that the 410 stainless steels and 17-4 PH stainless steel are superior to low alloy and carbon steel bolting materials. Material test reports from Armco Steel Corporation and Republic Steel delineate a superior corrosion resistance in the 17-4 PH stainless steel over standard hardenable chromium stainless steels and equivalence to Type 304. The 410 stainless steel is an acceptable nut material because the nuts only experience compressive stress and tensile stresses are required for initiation of stress corrosion cracking. Therefore, only studs comprised of 410 stainless steel are potentially susceptible to stress corrosion cracking.

   EPRI Report TR-102748 also includes the A-286 (SA-453) as a superior fastening material. The superalloy was designed for resistivity to acid corrosion environments due to its high nickel and chrome content and the inclusion of molybdenum specifically to inhibit inorganic acids such as boric acid. These materials have been further evaluated by material selection expert C.P. Dillon who was subcontracted for Union Electric by Nickel Laboratories. His evaluation concludes that "the development of intermediate concentrations of boric acid solution in the flange area (due to minor leaks and evaporation of the water) would not attack the bolting significantly and would be a marked improvement over low-alloy steel assemblies."

To ensure that degradation mechanisms in these metals are mitigated, Union Electric maintains a program at the Callaway Plant that controls materials (insulation, thread lubricant, boron, hydrogen sulfide, molybdenum disulfide etc.) that may come in contact with safety related components, including bolting. This program ensures that impurities are not present in concentrations that would promote development of Stress Corrosion Cracking in stainless steel bolted connections. Additionally, Union Electric places a very high emphasis on leak prevention, which is the root cause of boric acid corrosion concerns in bolted joints. Callaway's leak reduction program is outlined in EPRI Report TR-102748. At Callaway, bolted connections utilizing these fasteners are only preloaded 35% to 50% of their yield stress. This is below the threshold values that causes stress corrosion cracking for these materials. Additionally, the UNC bolting thread form that was evaluated by NUREG CR-3604 is deeper than the code required bolting thread form. Thread form of 8 TPI or finer is utilized at Callaway as required by ANSI B1.1 and the ASTM specifications of each material. This finer thread form further minimizes the potential for stress corrosion cracking.

The only carbon steel bolted connections at the Callaway Plant in systems borated for the purpose of controlling reactivity are Steam Generators Manways, Reactor Coolant Pump Bolting and Pressurizer Manways. These areas will be inspected for leakage by plant programs with the insulation removed.

PROPOSED ALTERNATIVE EXAMINATION

Bolted connections fabricated from materials resistant to boric acid corrosion in systems borated for the purpose of controlling reactivity shall receive a visual VT-2 examination during the system pressure tests of IWB-5000 and IWC-5000 with the insulation installed. If evidence of leakage is detected, either by discovery of active leakage or evidence of boric acid crystals, the insulation shall be removed and the bolted connection shall be re-examined and, if necessary, evaluated in accordance with the corrective measures of Subarticle IWA-5250.

Carbon steel bolted connections within the Inservice Inspection boundaries will receive an inspection for boric acid residue with the insulation removed. In addition, a VT-2 inspection will be performed in accordance with ASME Section XI requirements with the insulation installed at normal operating pressure and temperature.

If insulation is removed for planned maintenance, repair, or other inspection at a bolted connection in a system borated for the purpose of controlling reactivity, a visual examination shall be performed on the bolted connection prior to disassembly and, if evidence of leakage is discovered, evaluated in accordance with the corrective measures of Subarticle IWA-5250.

Table 1
Alternative Examination Request ISI-07B

Class 1 Bolted Connections that are insulated on systems borated for the purpose of controlling reactivity.				
Component	Stud Material	Bolt/Stud Processing and Testing Results	Nut Material	Nut Processing and Testing Results
BB8010A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302/321, RC 27	SA-194 Gr 6	1100 °F Tempering, RC 27
BB8010B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302/321, RC 27	SA-194 Gr 6	1100 °F Tempering, RC 27
BB8010C	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302/321, RC 27	SA-194 Gr 6	1100 °F Tempering, RC 27
BB8085	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 288/306	SA-194 Gr 6	1050 °F Tempering, 30/32 RC
BB8948A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 306	SA-453 Gr 660	1650 °F Oil Quench, 1325 °F Hardening Treatment, BHN 311/331
BB8948B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302/321	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302
BB8948C	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 278/313	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment
BB8948D	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302/311	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment
BB8949A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 277/321	SA-194 Gr 6	1125 °F Tempering, RC 29/31
BB8949B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 309/329	SA-193 Gr B6	1100 °F Tempering, RC 41
BB8949C	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 309/329	SA-193 Gr B6	1100 °F Tempering, RC 41
BB8949D	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 309/329	SA-193 Gr B6	1100 °F Tempering, RC 41
BBPCV0455B	SA-453 Gr 660	1650 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 321	SA-194 Gr 6	1075 °F Tempering, RC 25/26
BBPCV0455C	SA-453 Gr 660	1650 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 321	SA-194 Gr 6	1075 °F Tempering, RC 25/26
BBV0008	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0009	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0028	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0029	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0047	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0048	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0065	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0066	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
BBV0067	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
EJHV8701A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 278/291	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment
EJHV8701B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302/311	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment
EM8815	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 313	SA-194 Gr 6	1100 °F Tempering, RC 31-35
EMFE0924	SA-564 Gr 630	1100 °F Tempering, RC 33/34	SA-194 Gr 6	1100 °F Tempering
EMFE0925	SA-564 Gr 630	1100 °F Tempering, RC 33/34	SA-194 Gr 6	1100 °F Tempering
EMFE0926	SA-564 Gr 630	1100 °F Tempering, RC 33/34	SA-194 Gr 6	1100 °F Tempering
EMFE0927	SA-564 Gr 630	1100 °F Tempering, RC 33/34	SA-194 Gr 6	1100 °F Tempering

Note: SA-193 Grade B6 meets the requirements of SA-194 Grade 6 when used as a nut. Both are 410 Stainless Steels.

* = Component is currently being evaluated for permanent removal of insulation.

Table 1
Alternative Examination Request ISI-07B

Class 2 Bolted Connections that are insulated on systems borated for the purpose of controlling reactivity and are located **outside** of containment.

Component	Stud Material	Bolt Heat Treatment	Nut Material	Nut Heat Treatment
EJ8724A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 285/306	SA-194 Gr 6	1800 °F 1 hr. Oil Quench, 575 °F 2 hr. Tempering, 41/42 RC
EJ8724B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 291/306	SA-194 Gr 6	1100 °F Tempering, RC 32/34
EJ8730A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302	SA-193 Gr B6	1100 °F Tempering, BHN 248/352
EJ8730B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302	SA-193 Gr B6	1100 °F Tempering, RC 27/32
EJ8856A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
EJ8856B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
EJ8958A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 285/298	SA-193 Gr B6	1100 °F Tempering, RC 41
EJ8958B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 285/298	SA-193 Gr B6	1100 °F Tempering, RC 41
EJFCV0610	SA-564 Gr 630	1100 °F Tempering, RC 34/35	SA-194 Gr 6	1050 °F Tempering, RC 24/25
EJFCV0611	SA-564 Gr 630	1100 °F Tempering, RC 34/35	SA-194 Gr 6	1050 °F Tempering, RC 24/25
EJFCV0618	SA-564 Gr 630	1100 °F Tempering, RC 35.2	SA-194 Gr 6	1100 °F Tempering, RC 26/27
EJFCV0619	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
EJFE0610	SA-564 Gr 630	1100 °F Tempering, BHN 341	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EJFE0618	SA-564 Gr 630	1100 °F Tempering, BHN 341	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EJFE0619	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EJFE0988	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EJFE0611	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EJFO0007	SA-564 Gr 630	1100 °F Tempering, BHN 341/352	SA-194 Gr 6	1100 °F Tempering, RC 27/28
EJFO0008	SA-564 Gr 630	1100 °F Tempering, BHN 341/352	SA-194 Gr 6	1100 °F Tempering, RC 27/28
EJHCV0606	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
EJHCV0607	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment	SA-194 Gr 6	1100 °F Tempering
EJHV8716A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 311/321	SA-194 Gr 6	1100 °F Tempering, RC 43
EJHV8716B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 311/321	SA-194 Gr 6	1100 °F Tempering, RC 32/34
EJHV8804A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 311/332	SA-194 Gr 6	1100 °F Tempering, RC 40/41
EJHV8804B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 306/329	SA-194 Gr 6	1100 °F Tempering, RC 43
EJHV8809A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 278	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302
EJHV8809B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 291/338	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 302
EMFE0917A	SA-564 Gr 630	1100 °F Tempering, RC 39	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EMFE0917B	SA-564 Gr 630	1100 °F Tempering, RC 39	SA-194 Gr 6	1105 °F Tempering, RC 27/28
EMHV8801A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 288/306	SA-194 Gr 6	1100 °F Tempering, RC 30/32
EMHV8801B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 288/306	SA-193 Gr B6	1100 °F Tempering, BHN 248/352
EMHV8803A	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 288/306	SA-193 Gr B6	1100 °F Tempering, BHN 248/352
EMHV8803B	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 288/306	SA-193 Gr B6	1100 °F Tempering, BHN 248/352
PEJ01A	SA-564 Gr 630	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 269/302	SA-193 Gr B6	1100 °F Tempering, BHN 269/277
*EJSS0002	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1100 °F Tempering, RC 27/28
PEJ01B	SA-564 Gr 630	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 321/332	SA-193 Gr B6	1100 °F Tempering, BHN 262/269
*EJSS0001	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1100 °F Tempering, RC 27/28

Note: SA-193 Grade B6 meets the requirements of SA-194 Grade 6 when used as a nut. Both are 410 Stainless Steels.

* = Component is currently being evaluated for permanent removal of insulation.

Table 1
Alternative Examination Request ISI-07B

Class 2 Bolted Connections that are insulated on systems borated for the purpose of controlling reactivity and are located **inside** containment.

Component	Stud Material	Bolt Heat Treatment	Nut Material	Nut Heat Treatment
BGHV8146	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 311/332	SA-194 Gr 6	1100 °F Tempering, RC 27/33
BGHV8147	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 311/332	SA-194 Gr 6	1100 °F Tempering, RC 27/33
BGHV8145	SA-453 Gr 660	1800 °F Liquid Quench, 1325 °F Hardening Treatment, BHN 341	SA-194 Gr 6	1100 °F Tempering, RC 27/28
EJF01	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1100 °F Tempering, RC 27/28
EJF02	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1100 °F Tempering, RC 27/28
EJF03	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1100 °F Tempering, RC 27/28
EJF04	SA-564 Gr 630	1100 °F Tempering, BHN 331/341	SA-194 Gr 6	1100 °F Tempering, RC 27/28

Note: SA-193 Grade B6 meets the requirements of SA-194 Grade 6 when used as a nut. Both are 410 Stainless Steels.

* = Component is currently being evaluated for permanent removal of insulation.