



Tennessee Valley Authority, Post Office Box 2000, Spring City, Tennessee 37381-2000

JUL 21 2000

10 CFR 50.55a

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Gentlemen:

In the Matter of)

Docket No. 50-390

Tennessee Valley Authority)

WATTS BAR NUCLEAR PLANT (WBN) UNIT 1 - REQUEST FOR ADDITIONAL
INFORMATION REGARDING RELIEF REQUEST ISPT-08, INSULATION REMOVAL
FOR BOLTED CONNECTIONS FOR VT-2 EXAMINATION (TAC NO. MA8568)

The purpose of this letter is to provide TVA's response to NRC's
request for additional information dated May 19, 2000, concerning
the subject relief request.

Enclosure 1 provides TVA's response to NRC concerns. Enclosure 2
provides the revised table from TVA's letter dated March 23, 2000
in which five valves have been deleted because the heat numbers of
the nuts could not be traced. Seven valves were also deleted
following a Rockwell C (R_c) hardness test that resulted in average
values slightly greater than R_c 30, thus did not meet the NRC's
position as stated in the May 19, 2000, letter.

If you should have any questions concerning this matter, please
telephone me at (423) 365-1824.

Sincerely,

R. H. Shell
for P. L. Pace

Manager, Site Licensing
and Industry Affairs

Enclosures
cc: See page 2

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cc (Enclosures):

NRC Resident Inspector
Watts Bar Nuclear Plant
1260 Nuclear Plant Road
Spring City, Tennessee 37381

Mr. Robert E. Martin, Senior Project Manager
U.S. Nuclear Regulatory Commission
One White Flint North
11555 Rockville Pike
Rockville, Maryland 20852

U.S. Nuclear Regulatory Commission
Region II
Sam Nunn Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, Georgia 30303

ENCLOSURE 1

WATTS BAR NUCLEAR PLANT UNIT 1
RELIEF REQUEST ISPT-08
REQUEST FOR ADDITIONAL INFORMATION

TVA submitted a request for relief ISPT-08 on March 23, 2000, concerning insulation removal from bolted connections. NRC reviewed this request and provided their position and request for additional information in a letter dated May 19, 2000. Below is TVA's response to that request.

Provide the following information regarding the Watts Bar relief request:

- (a) Heat Treatment of any SA-194, Grade B6 (410 stainless steel) bolting

RESPONSE

The twenty-six valves for which relief was originally requested use SA-194, Grade B6, nuts in the body to bonnet joint. A search of the documentation provided by the valve vendor revealed that Certified Material Test Report (CMTR)s for the pressure retaining bolting was not included. Therefore, heat treatment temperatures are not readily available. However, for twenty-one of the original twenty-six valves in the March 23, 2000 request, the vendor identified the material supplier and the material supplier's heat code for the pressure retaining bolting on the ASME Form NPV-1 data report. Although the valves currently installed in Unit 1 are not available for hardness testing because the unit is in operation, the valves in Unit 2 are available. A review of the Unit 2 documentation revealed that each heat code used in the twenty-one Unit 1 valves was also used by the same vendor in the analogous Unit 2 valve. Two nuts from each heat of material have been removed from Unit 2 and were tested for hardness. Since no information relating to either heat treatment or hardness of the remaining five valves can be located, the following five valves are being removed from this request for relief: 1-FCV-62-69, 1-FCV-62-70, 1-ISV-68-580, 1-PCV-68-340B, and 1-PCV-68-340D. [see Attachment 1 for a listing of heat code numbers and material suppliers].

Four heat numbers are involved in the twenty-one valves for which a heat number could be identified for the body-to-bonnet nuts. The two nuts from each heat that were removed and tested were ground smooth on one face and three Rockwell C (R_c) hardness readings were taken on the ground face. These three readings were then averaged to obtain an average hardness for each nut. For heat number 60187, both nuts yielded an average hardness that was greater than R_c 30. For this reason, valves assembled with nuts from this heat are being removed from this request for relief. The valves being removed are: 1-CKV-62-638, 1-CKV-62-640, 1-CKV-62-659, 1-CKV-62-660, 1-CKV-62-661, 1-FCV-68-332, and 1-FCV-68-333. The average hardness of both nuts from each of the remaining three heats of material were less than R_c 30.

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- (b) Preload of an SA-453, Grade 660 (A-286), bolted connections

RESPONSE

TVA General Engineering Specification G-29, "Process Specification for Material Fabrication and Handling Requirements for Stainless Steel," Process Specification (PS) 4.M.4.4, provides the requirements for preloading/torquing of bolting at Watts Bar Nuclear Plant. The requirements of this Engineering Specification are implemented through Maintenance Instruction (MI) 0.014, "Pressure Retaining Bolted Connections." Both G-29, PS 4.M.4.4, and MI-0.014 specify a maximum preload/torque value of 45 ksi. Both documents also provide that a different preload/torque value may only be used when specified in the vendor documentation. A review of the vendor documentation [Vendor Manual WBN-VTD-W120-2958] for the fourteen valves remaining in the modified request for relief ISPT-08, revealed no instructions for preloading/torquing that exceeded 100 ksi. Attachment 3 of this enclosure, lists the stud diameters involved in the fourteen valves still involved in this relief request, the torque/preload specified by G-29, PS 4.M.4.4, and the torque/preload specified by the vendor's manual.

- (c) Chromium content of piping, pump casings, and valve bodies

RESPONSE

No pump casings are located in proximity to any of the valves involved in this request for relief. Attachment 2 of this enclosure, summarizes the material specifications used in the construction of the valve bodies and bonnets, and in the piping material in proximity to the valves. The lowest chromium content permitted by any of the subject material specifications is 16%.

- (d) The hold time that will be imposed at operating temperature and pressure prior to conducting the VT-2 examination.

RESPONSE

A four-hour hold time is observed, after reaching nominal operating pressure and temperature, before performing the VT-2 examination.

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ATTACHMENT 1

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Heat Code Numbers and Material Suppliers for SA-194, Grade B6, Nuts
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U1 UNID	U1 Valve Serial Number	U1 Nut Manu.	U1 Heat	U2 UNID	U2 Valve Serial Number	U2 Nut Manu.	U2 Heat	Comments
1-CKV-62-638	03000CS8800000002S710035	SPS Co.	60187	2-CKV-62-638	03000CS8800000002S710148	SPS Co.	60187	Matches
1-CKV-62-640	03000CS8800000002S710033	SPS Co.	60187	2-CKV-62-640	03000CS8800000002S710149	SPS Co.	60187	Matches
1-CKV-62-659	03000CS8800000002S710031	SPS Co.	60187	2-CKV-62-659	03000CS8800000002S710150	SPS Co.	60187	Matches
1-CKV-62-660	03000CS8800000002S710034	SPS Co.	60187	2-CKV-62-660	03000CS8800000002S710315	Valley Todeco	12487	Not used in U1 valves
1-CKV-62-661	03000CS8800000002S710149	SPS Co.	60187	2-CKV-62-661	03000CS8800000002S710151	SPS Co.	60187	Matches
1-CKV-63-558	06000CS8800000000S710089	SPS Co.	817666	2-CKV-63-558	06000CS8800000000S710096	SPS Co.	817666	Matches
1-CKV-63-559	06000CS8800000000S710090	SPS Co.	817666	2-CKV-63-559	06000CS8800000000S710095	SPS Co.	817666	Matches
1-CKV-63-560	10000CS8800000000S710023	SPS Co.	60831	2-CKV-63-560	10000CS8800000000S710017	SPS Co.	60831	Matches
1-CKV-63-561	10000CS8800000000S710022	SPS Co.	60831	2-CKV-63-561	10000CS8800000000S710026	SPS Co.	60831	Matches
1-CKV-63-562	10000CS8800000000S710015	SPS Co.	60831	2-CKV-63-562	10000CS8800000000S710031	SPS Co.	60831	Matches
1-CKV-63-563	10000CS8800000000S710021	SPS Co.	60831	2-CKV-63-563	10000CS8800000000S710032	SPS Co.	60831	Matches
1-CKV-63-622	10000CS8800000000S710020	SPS Co.	60831	2-CKV-63-622	10000CS8800000000S710027	SPS Co.	60831	Matches
1-CKV-63-623	10000CS8800000000S710011	SPS Co.	60831	2-CKV-63-623	10000CS8800000000S710028	SPS Co.	60831	Matches
1-CKV-63-624	10000CS8800000000S710014	SPS Co.	60831	2-CKV-63-624	10000CS8800000000S710029	SPS Co.	60831	Matches
1-CKV-63-625	10000CS8800000000S710016	SPS Co.	60831	2-CKV-63-625	10000CS8800000000S710030	SPS Co.	60831	Matches
1-CKV-63-641	06000CS8800000000S710092	SPS Co.	817666	2-CKV-63-641	06000CS8800000000S710097	SPS Co.	817666	Matches
1-CKV-63-644	06000CS8800000000S710091	SPS Co.	817666	2-CKV-63-644	06000CS8800000000S710093	SPS Co.	817666	Matches
1-FCV-62-69	5737616	Texas Bolt	Not listed	2-FCV-62-69	5737617	Texas Bolt	Not listed	Insufficient information
1-FCV-62-70	5737618	Texas Bolt	Not listed	2-FCV-62-70	5737618	Texas Bolt	Not listed	Insufficient information
1-FCV-68-332	03000GM88FNH00B00S710002	SPS Co.	60187	2-FCV-68-332	03000GM88FNH00B00S710003	SPS Co.	60187	Matches
1-FCV-68-333	03000GM88FNH00B00S710001	SPS Co.	60187	2-FCV-68-333	03000GM88FNH00B00S710004	SPS Co.	60187	Matches
1-FCV-74-1	14000GM88SEH01B00S710002	SPS Co.	536133	2-FCV-74-1	14000GM88SEH01B00S710003	SPS Co.	536133	Matches
1-FCV-74-9	10000GM88SEH00B00S710004	SPS Co.	60831	2-FCV-74-9	10000GM88SEH01B00S710001	SPS Co.	60831	Matches
1-ISV-68-580	1687	Not listed	Not listed	2-ISV-68-580	1681	Not listed	Not listed	Insufficient information
1-PCV-68-340B	5909465	Victor	Not listed	2-PCV-68-340B	5909467	Victor	Not listed	Insufficient information
1-PCV-68-340D	5909466	Victor	Not listed	2-PCV-68-340D	5909468	Victor	Not listed	Insufficient information

ENCLOSURE 1
ATTACHMENT 2

WATTS BAR NUCLEAR PLANT UNIT 1
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Body, Bonnet, and Adjacent Piping Material Specifications
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IDENTIFIER	CONTRACT	DRAWING	SIZE	COMPONENT	DESCRIPTION	STUD	NUT	PIPE	FITTING	BODY	BONNET
1-CKV-62-638	54114-01	934D183	3"	Check valve	CVCS Normal Charging Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-CKV-62-640	54114-01	934D183	3"	Check valve	CVCS Alternate Charging Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-CKV-62-659	54114-01	934D183	3"	Check valve	CVCS Normal Charging Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-CKV-62-660	54114-01	934D183	3"	Check valve	CVCS Alternate Charging Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-CKV-62-661	54114-01	934D183	3"	Check valve	CVCS Charging to RCS Spray Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-CKV-63-558	54114-01	934D185	6"	Check valve	Hot Leg 4 Safety Injection Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-559	54114-01	934D185	6"	Check valve	Hot Leg 2 Safety Injection Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-560	54114-01	934D187	10"	Check valve	Cold Leg 1 Injection Header Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-561	54114-01	934D187	10"	Check valve	Cold Leg 2 Injection Header Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-562	54114-01	934D187	10"	Check valve	Cold Leg 3 Injection Header Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-563	54114-01	934D187	10"	Check valve	Cold Leg 4 Injection Header Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-622	54114-01	934D187	10"	Check valve	SIS Cold Leg Accumulator 1 Outlet Check	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-623	54114-01	934D187	10"	Check valve	SIS Cold Leg Accumulator 2 Outlet Check	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-624	54114-01	934D187	10"	Check valve	SIS Cold Leg Accumulator 3 Outlet Check	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316
1-CKV-63-625	54114-01	934D187	10"	Check valve	SIS Cold Leg Accumulator 4 Outlet Check	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 316	SA-403 TP 304 or TP 316	SA-182 F316	SA-240 TP 316

ENCLOSURE 1
ATTACHMENT 2

WATTS BAR NUCLEAR PLANT UNIT 1
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Body, Bonnet, and Adjacent Piping Material Specifications
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IDENTIFIER	CONTRACT	DRAWING	SIZE	COMPONENT	DESCRIPTION	STUD	NUT	PIPE	FITTING	BODY	BONNET
1-CKV-63-641	54114-01	934D185	6"	Check valve	Hot Leg 1 Injection Header Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-CKV-63-644	54114-01	934D185	6"	Check valve	Hot Leg 3 Injection Header Check Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-240 TP 316
1-FCV-62-69	54114-01	54A0242	3"	Globe Valve	CVCS Letdown Isolation Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-FCV-62-70	54114-01	54A0223	3"	Globe Valve	CVCS Letdown Isolation Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-FCV-68-332	54114-01	115E010	3"	Gate Valve	Pressurizer PORV Block Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-FCV-68-333	54114-01	115E010	3"	Gate Valve	Pressurizer PORV Block Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-FCV-74-1	54114-01	115E622	12"	Gate Valve	Loop 4 Hot Leg to RHR Suction Isolation	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-FCV-74-9	54114-01	1167E79	10"	Gate Valve	1-FCV-74-1 Bypass RHR Suction Isolation	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-ISV-68-580	54114-01	E73-035-R	3"	Gate Valve	RCS Loop 3 Letdown Isolation Valve	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316
1-PCV-68-340B	54114-01	54A0278	4"	Gate Valve	RCS Loop 2 Pressurizer Spray Line Isolation	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316 Note 1
1-PCV-68-340D	54114-01	54A0278	4"	Gate Valve	RCS Loop 1 Pressurizer Spray Line Isolation	SA-453, Grade 660	SA-194, Grade B6	SA-376 TP 304	SA-403 TP 304	SA-182 F316	SA-182 F316 Note 1

Notes:

- The part identified by the manufacturer as the bonnet does not come in contact with the contained fluid, and is not identified on the ASME Code NPV-1 form as a pressure retaining item. Instead, it serves as the attachment bracket to connect the operator to the valve. The part of the valve that does perform a pressure retaining function, is identified as such on the ASME NPV-1 Form, is in contact with the contained fluid, and forms the other half of the "body-to-bonnet" connection is identified by the manufacturer as the packing box. The packing box is bolted directly to the body and forms the pressure retaining boundary. The material specifications listed in the bonnet column is the one associated with the part identified by the manufacturer as the packing box.

ENCLOSURE 1
ATTACHMENT 2

WATTS BAR NUCLEAR PLANT UNIT 1
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Body, Bonnet, and Adjacent Piping Material Specifications
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Adjacent Material Specifications	Grade	Chromium Content
SA-376	TP304	18-20%
SA-376	TP316	16-18%
SA-403	TP304	18-20%
SA-403	TP316	16-18%
Body Material Specifications	Grade	Chromium Content
SA-182	F316	16-18%
Bonnet Material Specifications	Grade	Chromium Content
SA-182	F316	16-18%
SA-240	TP 316	16-18%

ENCLOSURE 1
ATTACHMENT 3

WATTS BAR NUCLEAR PLANT UNIT 1
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RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Summary of Bolting Preload/Torque Values
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Stud Diameter	Preload Value [Torque] Specified by G-29, PS 4.M.4.4	Preload Value [Torque] Specified by the Vendor's Manual
0.875"	45 ksi [240 ft-lbs]	41.25 ksi [220 ft-lbs]
1.000"	45 ksi [368 ft-lbs]	61.14 ksi [500 ft-lbs]
1.250"	45 ksi [750 ft-lbs]	54 ksi [900 ft-lbs]
1.625"	45 ksi [1650 ft-lbs]	57.27 ksi [2100 ft-lbs]
1.875"	45 ksi [3000 ft-lbs]	52.5 ksi [3500 ft-lbs]

ENCLOSURE 2

WATTS BAR NUCLEAR PLANT UNIT 1
RELIEF REQUEST ISPT-08
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION
REVISED TABLE

TABLE
CODE CLASS 1 BOLTED CONNECTIONS INSIDE THE POLAR CRANE WALL

IDENTIFIER	SIZE	COMPONENT	DESCRIPTION	STUD	NUT	RFO2 Dose Rate ¹	Estimated Man-Hours ²	Projected RFO3 Dose ²
1-CKV-63-558	6"	Check valve	Hot Leg 4 Safety Injection Check Valve	↑	↑	70/30/25	↑	↑
1-CKV-63-559	6"	Check valve	Hot Leg 2 Safety Injection Check Valve			200/30/20		
1-CKV-63-560	10"	Check valve	Cold Leg 1 Injection Header Check Valve			140/100/80		
1-CKV-63-561	10"	Check valve	Cold Leg 2 Injection Header Check Valve			250/140/40		
1-CKV-63-562	10"	Check valve	Cold Leg 3 Injection Header Check Valve			160/80/40		
1-CKV-63-563	10"	Check valve	Cold Leg 4 Injection Header Check Valve			GA 30-50		
1-CKV-63-622	10"	Check valve	SIS Cold Leg Accumulator 1 Outlet Check	SA-453	SA-194	GA 10-20	668	4.02
1-CKV-63-623	10"	Check valve	SIS Cold Leg Accumulator 2 Outlet Check	Grade 660	Grade B6	10/10/10		
1-CKV-63-624	10"	Check valve	SIS Cold Leg Accumulator 3 Outlet Check	↓	↓	GA 10-20		
1-CKV-63-625	10"	Check valve	SIS Cold Leg Accumulator 4 Outlet Check			GA 10-20		
1-CKV-63-641	6"	Check valve	Hot Leg 1 Injection Header Check Valve			GA 40-50		
1-CKV-63-644	6"	Check valve	Hot Leg 3 Injection Header Check Valve			GA 60		
1-FCV-74-1	12"	Gate Valve	Loop 4 Hot Leg to RHR Suction Isolation			GA 50-100	↓	↓
1-FCV-74-9	10"	Gate Valve	1-FCV-74-1 Bypass RHR Suction Isolation			GA 50-100		

Notes:

- Where three numbers are presented, separated by a slash, they represent Dose on contact/Dose at 30 centimeters/General area dose. Numbers preceded by the letters GA are general area dose rates in the vicinity of the component. All dose rates are expressed in mrem/hour.
- Man-hour and dose estimates are for insulation removal and replacement only.