

Vogle PEmails

From: Hoellman, Jordan
Sent: Tuesday, July 17, 2018 2:51 PM
To: Vogle PEmails
Subject: ITAAC Index No. 700 Discussion
Attachments: ITAAC 700 info for NRC.PDF; U3 APPENDIX C - 700.pdf

Please see the attached discussion of an inconsistency on ITAAC Index No. 700 and relevant COL pages for discussion at a future public meeting.

The last 3 items in Table 2.7.1-3 are Ancillary Fans that have a specified Control Function to “run” (rather than “start” as the other do in the table). By design, those 3 specific fans do not have MCR displays and controls. SNC is proposing a definition/interpretation of “run” for this application only.

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ITAAC 700

The AC for ITAAC 2.7.01.14, item 12 [700], requires, "Controls in the MCR operate to cause the components listed in Table 2.7.1-3 to perform the listed functions." ITAAC 700 is specific to VBS equipment. The design for three of the VBS fans listed in Table 2.7.1-3; MCR Ancillary Fans, Division B Room Ancillary Fan and Division C Room Ancillary Fan, by design, do not have MCR displays and controls. Per the system specification document, APP-VBS-M3-001, "These devices are used for loss of offsite power beyond 72 hours, are locally operated, powered by the ancillary diesel, and have no PLS interface, so have no interlock sheets." Also from Table 2.7.1-3, the Control Function for these three devices is "Run", whereas for all other VBS devices the Control Function is "Start".

Based on the design function of these ancillary VBS devices, SNC defines the Control Function "Run" as:

1. The ancillary fans are stored in their permanent design locations
2. The portable ductwork is stored in its permanent design locations
3. All mechanical and electrical connection points are verified and labeled
4. Operating procedure exists which controls connection and operation of the ancillary fans.
5. A FT is performed to demonstrate the functional capability of the ancillary fans.

Verification of Steps 1 thru 5 would satisfy the AC for the ancillary fans.

2.7 HVAC Systems

2.7.1 Nuclear Island Nonradioactive Ventilation System

Design Description

The nuclear island nonradioactive ventilation system (VBS) serves the main control room (MCR), control support area (CSA), Class 1E dc equipment rooms, Class 1E instrumentation and control (I&C) rooms, Class 1E electrical penetration rooms, Class 1E battery rooms, remote shutdown room (RSR), reactor coolant pump trip switchgear rooms, adjacent corridors, and passive containment cooling system (PCS) valve room during normal plant operation. The VBS consists of the following independent subsystems: the main control room/control support area HVAC subsystem, the class 1E electrical room HVAC subsystem, and the passive containment cooling system valve room heating and ventilation subsystem. The VBS provides heating, ventilation, and cooling to the areas served when ac power is available. The system provides breathable air to the control room and maintains the main control room and control support area areas at a slightly positive pressure with respect to the adjacent rooms and outside environment during normal operations. The VBS monitors the main control room supply air for radioactive particulate and iodine concentrations and provides filtration of main control room/control support area air during conditions of abnormal "High-1" airborne radioactivity. In addition, the VBS isolates the HVAC penetrations in the main control room boundary on "High-2" particulate or iodine radioactivity in the main control room supply air duct or on a loss of ac power for more than 10 minutes or if main control room differential pressure is below the "Low" setpoint for more than 10 minutes. The Sanitary Drainage System (SDS) also isolates a penetration in the main control room boundary on "High-2" particulate or iodine radioactivity in the main control room supply air duct or on a loss of ac power for more than 10 minutes or if main control room differential pressure is below the "Low" setpoint for more than 10 minutes. Additional penetrations from the SDS and Potable Water System (PWS) into the main control room boundary are maintained leak tight using a loop seal in the piping, and the Waste Water System (WWS) is isolated using a normally closed safety related manual isolation valve. These features support operation of the main control room emergency habitability system (VES), and have been included in Tables 2.7.1-1 and 2.7.1-2.

The VBS is as shown in Figure 2.7.1-1 and the component locations of the VBS are as shown in Table 2.7.1-5.

1. The functional arrangement of the VBS is as described in the Design Description of this subsection 2.7.1.
2.
 - a) The components identified in Table 2.7.1-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements.
 - b) The piping identified in Table 2.7.1-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements.
3.
 - a) Pressure boundary welds in components identified in Table 2.7.1-1 as ASME Code Section III meet ASME Code Section III requirements.
 - b) Pressure boundary welds in piping identified in Table 2.7.1-2 as ASME Code Section III meet ASME Code Section III requirements.

4. a) The components identified in Table 2.7.1-1 as ASME Code Section III retain their pressure boundary integrity at their design pressure.
b) The piping identified in Table 2.7.1-2 as ASME Code Section III retains its pressure boundary integrity at its design pressure.
5. The seismic Category I equipment identified in Table 2.7.1-1 can withstand seismic design basis loads without loss of safety function.
6. a) The Class 1E components identified in Table 2.7.1-1 are powered from their respective Class 1E division.
b) Separation is provided between VBS Class 1E divisions, and between Class 1E divisions and non-Class 1E cable.
7. The VBS and SDS provide the safety-related function to isolate the pipes that penetrate the MCR pressure boundary.
8. The VBS provides the following nonsafety-related functions:
 - a) The VBS provides cooling to the MCR, CSA, RSR, and Class 1E electrical rooms.
 - b) The VBS provides ventilation cooling to the Class 1E battery rooms.
 - c) The VBS maintains MCR and CSA habitability when radioactivity is detected.
 - d) The VBS provides ventilation cooling via the ancillary equipment in Table 2.7.1-3 to the MCR and the division B&C Class 1E I&C rooms.
9. Safety-related displays identified in Table 2.7.1-1 can be retrieved in the MCR.
10. a) Controls exist in the MCR to cause the remotely operated valves identified in Table 2.7.1-1 to perform their active functions.
b) The valves identified in Table 2.7.1-1 as having protection and safety monitoring system (PMS) control perform their active safety function after receiving a signal from the PMS.
11. After loss of motive power, the valves identified in Table 2.7.1-1 assume the indicated loss of motive power position.
12. Controls exist in the MCR to cause the components identified in Table 2.7.1-3 to perform the listed function.
13. Displays of the parameters identified in Table 2.7.1-3 can be retrieved in the MCR.
14. The background noise level in the MCR and RSR does not exceed 65 dB(A) when the VBS is operating.

Table 2.7.1-2				
Line Name	Line Number	ASME Code Section III	Leak Before Break	Functional Capability Required
Main Control Room Supply	VBS-L311	Yes	No	No
Main Control Room Exhaust	VBS-L312	Yes	No	No
Main Control Room Toilet Exhaust	VBS-L313	Yes	No	No
Main Control Room Sanitary Vent Line	SDS-PL-L016	Yes	No	No
Main Control Room Sanitary Drain Line	SDS-PL-L179	Yes	No	No
Main Control Room Sanitary Drain Line	SDS-PL-L182	Yes	No	No
Main Control Room Water Line	PWS-PL-L319	Yes	No	No
Main Control Room Water Line	PWS-PL-L320	Yes	No	No
Main Control Room Waste Water Line	WWS-PL-L808	Yes	No	No
Main Control Room Water Line	WWS-PL-L851	Yes	No	No

Table 2.7.1-3			
Equipment	Tag No.	Display	Control Function
Supplemental Air Filtration Unit Fan A	VBS-MA-03A	Yes (Run Status)	Start
Supplemental Air Filtration Unit Fan B	VBS-MA-03B	Yes (Run Status)	Start
MCR/CSA Supply Air Handling Units (AHU) A Fans	VBS-MA-01A VBS-MA-02A	Yes (Run Status)	Start
MCR/CSA Supply AHU B Fans	VBS-MA-01B VBS-MA-02B	Yes (Run Status)	Start
Division "A" and "C" Class 1E Electrical Room AHU A Fans	VBS-MA-05A VBS-MA-06A	Yes (Run Status)	Start
Division "A" and "C" Class 1E Electrical Room AHU C Fans	VBS-MA-05C VBS-MA-06C	Yes (Run Status)	Start
Division "B" and "D" Class 1E Electrical Room AHU B Fans	VBS-MA-05B VBS-MA-06B	Yes (Run Status)	Start

Table 2.7.1-3			
Equipment	Tag No.	Display	Control Function
Division "B" and "D" Class 1E Electrical Room AHU D Fans	VBS-MA-05D VBS-MA-06D	Yes (Run Status)	Start
Division "A" and "C" Class 1E Battery Room Exhaust Fans	VBS-MA-07A VBS-MA-07C	Yes (Run Status)	Start
Division "B" and "D" Class 1E Battery Room Exhaust Fans	VBS-MA-07B VBS-MA-07D	Yes (Run Status)	Start
MCR Ancillary Fans	VBS-MA-10A VBS-MA-10B	No	Run
Division B Room Ancillary Fan	VBS-MA-11	No	Run
Division C Room Ancillary Fan	VBS-MA-12	No	Run

Table 2.7.1-4 Inspections, Tests, Analyses, and Acceptance Criteria				
No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
677	2.7.01.01	1. The functional arrangement of the VBS is as described in the Design Description of this subsection 2.7.1	Inspection of the as-built system will be performed.	The as-built VBS conforms with the functional arrangement described in the Design Description of this subsection 2.7.1.
678	2.7.01.02a	2.a) The components identified in Table 2.7.1-1 as ASME Code Section III are designed and constructed in accordance with ASME Code Section III requirements. 2.b) The piping identified in Table 2.7.1-2 as ASME Code Section III is designed and constructed in accordance with ASME Code Section III requirements. 3.a) Pressure boundary welds in components identified in Table 2.7.1-1 as ASME Code Section III meet ASME Code Section III requirements. 3.b) Pressure boundary welds in piping identified in Table 2.7.1-2 as ASME Code Section III meet ASME Code Section III requirements.	Inspection will be conducted of the as-built components and piping as documented in the ASME design reports. Inspection of the as-built pressure boundary welds will be performed in accordance with the ASME Code Section III.	The ASME Code Section III design reports exist for the as-built components and piping identified in Tables 2.7.1-1 and 2.7.1-2 as ASME Code Section III. A report exists and concludes that the ASME Code Section III requirements are met for nondestructive examination of pressure boundary welds.

Table 2.7.1-4
Inspections, Tests, Analyses, and Acceptance Criteria

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
698	2.7.01.12	Not used per Amendment No. 113		
699	2.7.01.13	Not used per Amendment No. 113		
700	2.7.01.14	<p>8.d) The VBS provides ventilation cooling via the ancillary equipment in Table 2.7.1-3 to the MCR and the division B&C Class 1E I&C rooms.</p> <p>9. Safety-related displays identified in Table 2.7.1-1 can be retrieved in the MCR.</p> <p>10.a) Controls exist in the MCR to cause the remotely operated valves identified in Table 2.7.1-1 to perform their active functions.</p> <p>10.b) The valves identified in Table 2.7.1-1 as having PMS control perform their active safety function after receiving a signal from the PMS.</p> <p>11. After loss of motive power, the remotely operated valves identified in Table 2.7.1-1 assume the indicated loss of motive power position.</p> <p>12. Controls exist in the MCR to cause the components identified in Table 2.7.1-3 to perform the listed function.</p> <p>13. Displays of the parameters identified in Table 2.7.1-3 can be retrieved in the MCR.</p> <p>14. The background noise level in the MCR and RSR does not exceed 65 dB(A) when the VBS is operating.</p>	<p>Testing will be performed on the components in Table 2.7.1-3.</p> <p>Inspection will be performed for retrievability of the safety-related displays in the MCR.</p> <p>Stroke testing will be performed on the remotely operated valves identified in Table 2.7.1-1 using the controls in the MCR.</p> <p>Testing will be performed using real or simulated signals into the PMS.</p> <p>Testing of the remotely operated valves will be performed under the conditions of loss of motive power.</p> <p>Testing will be performed on the components in Table 2.7.1-3 using controls in the MCR.</p> <p>Inspection will be performed for retrievability of the parameters in the MCR.</p> <p>The as-built VBS will be operated, and background noise levels in the MCR and RSR will be measured.</p>	<p>The fans start and run.</p> <p>Safety-related displays identified in Table 2.7.1-1 can be retrieved in the MCR.</p> <p>Controls in the MCR operate to cause the remotely operated valves identified in Table 2.7.1-1 to perform their active functions.</p> <p>The valves identified in Table 2.7.1-1 as having PMS control perform their active safety function after receiving a signal from PMS.</p> <p>Upon loss of motive power, each remotely operated valves identified in Table 2.7.1-1 assumes the indicated loss of motive power position.</p> <p>Controls in the MCR operate to cause the components listed in Table 2.7.1-3 to perform the listed functions.</p> <p>The displays identified in Table 2.7.1-3 can be retrieved in the MCR.</p> <p>The background noise level in the MCR and RSR does not exceed 65 dB(A) when the VBS is operating.</p>