

H.7 Review Comments (70% Design Challenge)



memo

Date: April 29, 2008

To:

Oates, Harry (Design Engr.) *	Jones, David (Operations)
Burchett, Jon (Task MGR)	Rothrock, David (Plant Licensing)
Siapno, Mike (ALARA)	Young, Kenny (RP)
Mayes, David (Welding Engr.)	Mueller, John (Coatings)
Powell, Sid (Reg. Affairs)	Curham, Jack (Fire Protection)
Thompson, Rocky (Chemistry)	Johnson, Ron (E&RC)
Finnell, Jeff (Materials) -Optional	Rick Portmann (IWE/IWL)
Gartner, Bob (Safety)	Harmon, Andy (Procurement)
Dyer, John (Move in/Move out)	Mills, Doug (Safety)
Koralewski, Al (Security)	Sam Franks (Bechtel)
Whetzel, Jim (Scheduling)	Bill Nielsen (QA/QC)
Howell, Chris (maintenance)	Stephenson, John D (Emerg. Plan.)
	Kujak, Scott (MX sys. Engr.) - Optional

*Harry to determine if anyone else in Design Engineering needs to attend this meeting.

Subject: 70% Design Challenge – EC 63016

The Steam Generator Replacement Project will be holding a 70% Design Challenge Tuesday, May 20, 2008 at 3.00pm in the SGR War Room (Northeast corner of the 2nd floor SAB). This meeting will present EC 63016 "Containment Opening" at its 70% completion stage. Short presentations will be given by the Hydrodemolition vendor (Mac & Mac) and the Tendon vendor (Precision Surveillance Corporation). This file can be found at:

\\nt000104\nggshare\Passport Working\CR3\EC\0000060K\0000063016R000

Prior to this meeting, attendees are expected to review the EC through Passport and provide any input / comments deemed applicable to the development of the EC Design Package and the successful installation of the modification. Any significant input / comments should be provided to me by 5/15/08 (2 work days prior to the meeting) so that they can be addressed in the meeting.

If you are an addressee, your group's participation in the Design Challenge is considered to be necessary in order to assure the various aspects of this EC are fully considered and are addressed.

Progress Energy Florida, Inc.



memo

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Date: April 29, 2008

Please plan on attending or have you representative attend in your place. However, after a review of the package, you conclude your sub-group will not significantly contribute to the Challenge, inform Magdy Bishara via e-mail to request a waiver.

If you are CC'd, this invitation is for information only and attendance is at your discretion. Please feel free to contact me with any questions.

John Holliday, Ext. 1526
EC 63016 Responsible Engineer
Steam Generator Replacement Project

CC:

Terry, Jim
Bishara, Magdy
Jopling, Dan
Swenson, Scott
Larramore, Loyd
Lese, Joe
Allen, Parks R
Howard, Tim
Akins, Bryant
Bracewell, Mary
Santonastaso, Lou
Kujak, Scott
Hughes, Lee
Brewer, Bill
Foster, Berry
Whisler, jeff
Keeney, Neil
Salton, Jim

From: CR-SGR
To: Oates, Harry B.; Burchett, Jon; Siapno, Michael M.; Mayes, David;
Powell, Sid; Thompson, Rocky H; Finnell, Jeffrey L.; Gartner Jr, Robert H;
Dyer, John; Koralewski, Alvin; Whetzel, James L; Howell, Chris;
Jones, David; Rothrock, David; Young, Kenneth G; Mueller, John;
Curham, John J.; Johnson, Ron; Portmann, Rick; Harmon, Andy;
Mills, Douglas F; Franks, Sam; Nielsen, William J.;
Stephenson, John D. - (CR3); Kujak, Scott;
cc: Terry Jr, James H.; Bishara, Magdy M.; Jopling, Daniel L.; Swenson, Scott;
Larramore, Loyd; Lese, Joseph A.; Allen, Parks R; Howard, Timothy R;
Akins Jr, Leon B.; Bracewell, Mary; Santonastaso, Louis J; Hughes, Lee;
Brewer, William J.; Foster, Berry J; Whisler, Jeff; Keeney, Neil;
Salton, James;
Subject: Containment Opening 70% design challenge (EC63016)
Start: Tuesday, May 20, 2008 3:00:00 PM
End: Tuesday, May 20, 2008 5:00:00 PM
Location: SGR War Room
Attachments: 70% Challenge LETTER.doc

Gentlemen,

The 70% design challenge for EC63016 "Containment Opening" will be in the SGR War Room Tuesday, 5-20-08, 2nd Floor SAB and will start @ 3:00pm.

Please provide any constructive comments or bring to the meeting for discussion.

Thank you,

John Holliday x1526

<<70% Challenge LETTER.doc>>

Design Challenge EC 63016 Title Containment Opening Date May 20, 2008 Critical Attendees			
Name	Organization	Signature	Phone
Oates, Harry (or designee)	Supt-Design Engineering		
Curham, Jack	Fire Protection	Waiver approved by M.B.*	
Harmon, Andy	Nuc Eng & Services	<i>Andy Harmon</i>	4361
Howell, Chris	Maintenance	<i>Chris Howell</i>	1512
Johnson, Ron	Maj. Proj. Environ. Specialist	<i>Ron Johnson</i>	4568
Jones, Dave	Maj. Proj Operations	<i>Dave Jones</i>	1507
Jopling, Dan	Eng Supv, Civil Lead	<i>Dan Jopling</i>	1537
Kenny Young	Rad Waste		
Koralewski, Al	Maj. Proj Sec. Spec.	<i>Al Koralewski</i>	4248
Kujak, Scott	System Engineer - Misc. Struct.		
Mayes, David	Welding Engineer	<i>David Mayes</i>	1508
Mike Siapno	Maj. Proj - ALARA	<i>Michael Siapno</i>	1040
Powell, Sid	Maj. Proj. Licn.		
Whetzel, Jim	SGR Scheduling	<i>Jim Whetzel</i>	4184
Byers, John	Proj. Task Mgr		
Dyer, John	TM - Health & Safety	<i>John Dyer</i>	1038
Finnell, Jeff	Materials Engr.	<i>Jeff Finnell</i>	3340
Thompson, Rocky	Chemistry	<i>Rocky Thompson</i>	3548
Burchett, Jon	Task Manager	<i>Jon Burchett</i>	1036
Gartner, Bob	Safety	<i>Bob Gartner</i>	2212
Rothrock, David	Plant Licensing	<i>David Rothrock</i>	3319
Portmann, Rick	IWE/IWL Engr.	<i>Rick Portmann</i>	3440

*Magdy Bishara

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Design Challenge EC 63016 Title Containment Opening Date May 20, 2008 Critical Attendees			
Name	Organization	Signature	Phone
Mills, Doug	Safety		
Franks, Sam	Bechtel Proj. Field Engr.	<i>Samuel Franks</i>	EXT 1027
Nielson, Bill	QA/QC		
Stephenson, John	Supv. Emergency Preparedness	Waiver approved by M.B.*	
Mueller, John	Coatings Engr.	<i>John Mueller</i>	3877
Fletcher, MARION	Bechtel	<i>MR Fletcher</i>	1011
Use, Joe	Bechtel	<i>Joe Use</i>	
S. SWENSON	SGRP Design	<i>S. Swenson</i>	1531
Whisler, Jeffery	Bechtel	<i>Jeffery Whisler</i>	1018
HENSHAW, KEITH	ENGINEERING	<i>Keith Henshaw</i>	X1522
Laycock, Mike	RP (for Kenny Young)	<i>Mike Laycock</i>	X3109
Paul C Smith	PSC	<i>Paul C Smith</i>	
Christopher E. Cox	PSC	<i>Christopher E. Cox</i>	
PEARSON, STEVE	BECHTEL	<i>Steve Pearson</i>	
Morrow, A.T.	Bechtel	<i>A.T. Morrow</i>	
Brian Bill	Bechtel	<i>Brian Bill</i>	1029
JERRY MACAEL	MAC & MAC	<i>Jerry MacAel</i>	
BRENT WALDIE	mac & mac	<i>Brent Waldie</i>	
DAVE MACAEL	MAC & MAC	<i>Dave MacAel</i>	1800 665-7172
Stephen/Barkowski	NPC-NAS	<i>Stephen Barkowski</i>	X4211 464-0037
Tom Lewis	Project QA/QC	<i>Tom Lewis</i>	X4194
RICK D. CURRY	MCSS	<i>Rick D. Curry</i>	X4215

*Magdy Bishara

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70% Design Challenge Meeting Minutes

Note: For 30% Challenge Reviewer Comments See H02R0

- **Attendance sheet (See Sheets 4 & 5)**
- **Safety and Human Performance messages will be given by Scott Swenson**
- **Core Design Team and Task Manager introduction**
 - John Holliday – (RE) Structural Design Engineer 1526
 - Jon Burchett – Containment Opening Task Manager 1036
 - Rick Portman – Tendon System Engineer 3440
 - Dave Mayes – Welding Engineer 1508
 - Mike Siapno – ALARA 1040
 - Andy Harmon – Procurement 4361
 - Sid Powell – Licensing 1506
 - Dave Jones – Operations 1507
 - Sam Franks – Installer 1027
 - Jim Whetzel – Scheduling 4184

Also introduce core vendors:

Mac and Mac Hydrodemolition: Dave McNeil, Jerry McNeil and Brent Waldie
PSC (Tendons): Paul Smith and Christopher Cox

Task Manager: Jon Burchett

Dan Jopling will be recording notes/Action Items.

- **Include some type of visual aid (handout or overhead)**
 - Conference room computer overhead projector.
 - Slide show presented by John Holliday
 - Slide show presented by Mac and Mac
 - Slide show presented by PSC
- **Scope**
 - Create a temporary access opening in the post tensioned containment wall and steel liner plate directly above the 22'-7 1/2" diameter equipment hatch, located at the 150 degree azimuth.
 - Restoration of the temporary access Opening so that the containment shell is returned to a condition that meets or exceeds its original design basis acceptance criteria.
- **Basic Design Considerations:**

- To return the containment to a condition that meets or exceeds its original design basis acceptance criteria.
- Use materials that are compatible with the existing materials.
- Account for the difference in material properties between the old and new concrete, specifically the creep differential.
- **Significant open items.**
 - AREVA has been contracted to investigate containment closure requirements during a LODHR accident. Specifically, this may result in (i) the ability to cut the liner plate while still defueling and (ii) start refueling before the liner plate has been welded in place, tested and inspected.
 - Engineering is investigating eliminating radiographic testing of the liner plate welds.
 - Engineering is investigating the alternatives to performing an ILRT (substitute leak chase channels).
- Previous meeting results/action items and how each was addressed.
 - **See H02 for 30% Design Challenge comments and resolution**
- Open discussion.
 - Various comments were discussed and resolved to the satisfaction of attendees. Unresolved comments were added to Action Item List. Individuals were asked and no further comments were obtained.
- **Action Item List and Reviewer Comments follow:**

70% Design Challenge Meeting	Action Items	5/20/08	N
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Item	Comment	Resolution
1	Evaluate the possibilities for a saw cut scribe at the opening outline. Provide technical justification if applicable	Added requirements for a saw cut to Section B.6.10
2	Insure the tendon testing program engineer is in agreement with plans to install the test rigs pre outage. Address placing the equipment (or not) over the BWST	Reviewed plan with Rick Portmann. The work platforms are designed for seismic and hurricane loads while stationary and when moving on the rail system and therefore pose no danger to the BWST. Additionally, the BWST tank is almost 25' away from the outside edge of Buttress #4, so even if the platform fell it cannot hit the top of the tank. The sodium hydroxide storage tanks, just north of the BWST are enclosed by 2'-2" thick reinforced concrete wall and roof enclosure that is a Class I structure, therefore missile protected. The northernmost edge of this structure is 9'-1 5/8" south of the outside edge of buttress #4. Safe load paths have been developed for the Manitowoc 2250 crane that will be lifting the platforms into position on top of the RB roof (Ref. 63016 SK-S001).
3	Evaluate the need for an air flow restriction at the opening while moving fuel. This assumes AREVA will be able to validate the ability to cut the line plate prior to defueling.	Liner plate will not be cut until defueling is complete.
4	If the channel pressure test is used the EC needs to address the unpainted steel under the channel.	Channels will not be used. An ILRT in conjunction with 100% visual, vacuum box and MT will be employed in verifying the liner plate weld and containment leak tightness.
5	Make sure the hurricane protection plan and the hurricane limits and precautions in the EC are in agreement.	Reviewed the violent weather protection plan and the EC is in agreement.
6	The EC needs to specify the acceptable form tie spacing.	Maximum form tie spacing is has been addressed in Section B.6.10
7	Discuss the joint efficiency and approaches for eliminating RT with the ISI lead.	Discussed with David Mayes (welding engr) & Rick Portmann. The RT of the liner plate welds is being eliminated based on ECED 70586 (Cont. Opng Liner Plate Reconciliation doc.)

Discipline/Program Review		Scope of Review	
Multi-Discipline		70% Design Challenge EC63016	
Reviewer	Discipline	Date	Turnover Required?
R. Pinner/R. Thompson	Multi-Discipline	5/20/08	
Item	Comment	Resolution	
1	Section A.5.1.4 page 10 of 33: 1 st paragraph: <i>What are the spill prevention measures that will be taken?</i>	Grease has a high viscosity and will not flow if spilled. Plastic sheeting will be taped to the tendons gallery floor and side walls.	
2	Section A.5.1.12 page 17 of 33: Water Requirements: <i>Where is the "Task Opening Plan"? Who is responsible for ensuring the water supply is available?</i>	The containment opening task plan is located at (\\nt000190\NGGData\Major Projects\CR3 eLibrary SGR\! SGR Documents\SGR Detailed Task Plans. The Containment Opening Task Manager is responsible for water supply and disposal.	
3	Section A.5.1.13 page 17 of 33. Sentence which reads: "Discharge of the water and rubble may continue uninterrupted while samples are being tested and analyzed": <i>The collected water must be sampled and analyzed before the first release of water to the settling pond. The tritium and gamma analyses can be done in parallel, but will take ~ 1 hour to perform. Oil and grease analysis, if this is required, will take up to 3 hours to perform. Ron Johnson to get with Carolyn Johnson to see why she thinks oil & grease analysis is necessary.</i>	<p>Per Mike Siapno all testing for radioactive contamination will be done at the collection tanks, prior to diverting the water to the water treatment plant. Discharge of the water and rubble may continue uninterrupted while samples are being tested and analyzed.</p> <p>Per agreement between Carolyn Johnson, Ron Johnson and Corporate EHSS specialist (Doug Yowell) the following testing is required: Only pH sampling will need to be performed as a pre-requisite for discharge. Contractor should strive to keep the pH between 6.0 and 9.0 (added in installation instructions). Periodic sampling of pH will be needed. A "stop job" limit will be established at pH less than or equal to 2, or pH greater than or equal to 12.5. Recommend that laboratory samples for pH, TSS, and Oil & Grease be collected at about 3 times during project (start, middle, end), and results placed in project file and plant file. These samples are for documentation only, and would not</p>	

		require batch processing of the wastewater, or delay transfer. Grease and oil will be captured in Tank #3 thru absorbent booms.
4	Section A.5.1.13 page 17 of 33. <i>Who will do the radiological testing of the rubble mentioned in the 2nd paragraph from the bottom of the page. Radiation Protection?</i>	Radiation protection will be responsible for radiological testing of the rubble.
5	Section A.5.1.13 page 17 of 33. Last sentence of the page: "Water will be tested before discharge to the settling ponds..." <i>Chemistry will collect a sample before the first release from the last collection tank to the settling pond. Tritium and gamma analysis of the water sample will be performed BEFORE the first release from the last collection tank is made to the settling pond. The last tank will be sampled once per shift after the first release is made, but subsequent releases to the settling pond will not have to wait for the analysis of these samples. Carolyn Johnson will also require pH, total suspended solids, and oil and grease analyses of the last collection tank to be performed BEFORE the first release is made to the settling pond, and once per shift after the first release is made. Ron Johnson to get with Carolyn to find out hwy TSS and O & G are necessary.</i>	Refer to Item #3 above. Only pH sampling will need to be performed as a pre-requisite for discharge. Contractor should strive to keep the pH between 6.0 and 9.0. Periodic sampling of pH will be needed. A "stop job" limit will be established at pH less than or equal to 2, or pH greater than or equal to 12.5. Recommend that laboratory samples for pH, TSS, and Oil & Grease be collected at about 3 times during project (start, middle, end), and results placed in project file and plant file. These samples are for documentation only, and would not require batch processing of the wastewater, or delay transfer.
6	Section A.5.1.13 page 18 of 33: <i>Have Ron Johnson's two comments at the top of the page been resolved?</i>	Yes.
7	Section A.5.1.15 page 19 of 33: Paragraph at the top of the page. <i>What happens to the water that has drained down the tendon sheaths and is collected in the 55 gal. drums in the tendon gallery? It CANNOT go to our normal floor drains.</i>	The floor drains in the tendon gallery must be blocked. Water draining from the tendon sheaths will drain to the tendon gallery sump from where it will be pumped by Bechtel out of the tendon gallery to Mac and Macs water treatment plant before discharge to the settlement ponds. Sump pumps SDP-3A and SDP-3B must be turned off/disabled immediately prior to the start of hydrodemolition. According to PSC, the primary purpose of the 55 gallon drums

		placed in the gallery is to collect any large concrete fragments and dissolved solids. Typically, in other SGRs these drums overflow with water which is collected in the gallery sump and pumped out.
8	Section B.4.6 Environmental Conditions: <i>Can the settling ponds handle the 700K to 2000K waste water that will be produced over a three day period? Can the drain line from CR-3, which is old, be reliably used for this application? Who is coordinating with MPW, the water providing vendor for CR-3, to provide the 2 million gal. of water needed for this project?</i>	Instructions for water delivery, storage and the means of piping it to and from the containment will be addressed in the relevant work orders. The containment opening Task Manager is responsible for investigating and verifying that the settling ponds have adequate storage for the expected 2 million gallons of waste water.
9	Section B.4.12 Chemistry Requirements: <i>Chemistry will collect a sample before the first release from the last collection tank to the settling pond. Tritium and gamma analysis of the water sample will be performed BEFORE the first release from the last collection tank is made to the settling pond. The last tank will be sampled once per shift after the first release is made, but subsequent releases to the settling pond will not have to wait for the analysis of these samples. Carolyn Johnson and Ron Johnson to decide if pH, total suspended solids, and oil and grease analyses of the last collection tank is required to be performed BEFORE the first release is made to the settling pond, and once per shift after the first release is made. Tritium + gamma must be < 1 ECL before first release can be made. Where does the grease go from the tendons being cut? How is the water handled that goes down the tendon sleeves into the tendon gallery?</i>	Refer to Item #3 and #5 above. Waste grease is managed by PSC in accordance with the "Waste Vendor Program" corporate policy (EVC-SUBS-00107). PSC has contracted Heritage Disposal to collect the grease and to dispose of it by burning. Heritage is in the process of becoming an approved PE vendor. All documentation generated as part of the disposal, e.g., manifests, disposal certificates, etc, will be provided to the CR3 waste coordinator (Brian Wood, currently).
10	B.6.6 Environmental Conditions: <i>What is the water treatment performed by the water treatment skid provided by Mac and Mac? Can the treated water be sampled? Is there a volume integrator that tracks the total water volume being treated?</i>	The portable waste water treatment facility consists of three 20,000 gallon tanks that can treat up to 360 gallons of water per minute. These tanks will be sampled by RP for radioactive material prior to their use to establish that they are

		<p>clean. Treatment basically consists of a four step process of settling, flocculation, pH measurement and adjustment, and the capture of grease (if present) in grease traps before discharge. Grease and oil will be captured in Tank #3 thru absorbent booms. Disposal of the grease is PSCs responsibility. Water in each of the tanks can be sampled.</p>
11	<p>B.6.12 Chemistry Requirements: <i>1st paragraph top of page 60, reword sentence "Samples for radiological testing and analysis will be ...tested at the on-site Chemistry", not RP, "laboratory". With regard to the sentence "Discharge of water and rubble may continue uninterrupted while samples are being tested and analyzed", it should be noted that the release of the first batch from the last tank will be not be permitted until it has been sampled and analyzed to ensure that it is OK to release. R. Pinner would like to see the "Containment Opening RP Task Plan" referenced in this section. Who in the Environmental Group has confirmed that discharging the hydrodemolition waste water after treatment by Mac and Mac is allowed by the Industrial Waste Water Permit?</i></p>	<p>RP Laboratory changed to Chemistry Laboratory. Refer to Item #3. Ron Johnson has discussed discharge requirements with Carolyn Johnson and Brian Wood and the corporate EHSS specialist Doug Yowell.</p>

Discipline/Program Review		Scope of Review	
Multi-Discipline		70% Design Challenge EC63016	
Reviewer	Discipline	Date	Turnover Required?
J. Whisler D. Fletcher	Multi-Discipline	5/20/08	

S. Franks		
Item	Comment	Resolution
1	Need installation instruction in section D.2 "Installation Instructions"	Provided.
2	How do we protect the sheathing opening, FME concern. Section A.5	Refer to Section A.5.1.15 for a discussion concerning when and how to protect the sheaths. Also refer to Item #10.
4	What about partial degreasing of horizontal tendons A.5.1 task 1 item 4	Hoop tendons cannot be partially degreased. Only about 60 gallons out of a total of approximately 150 gallons is expected to drain from the vertical tendons with the aid of gravity. When the end caps are removed from the hoops, a negligible amount of grease is expected to drain. Grease must be removed from the hoops during and after hoop tendon removal.
5	Full size mock up will not be required. Need to address. Latest from Task Manager. A.5.1.1	Per John Byers a full size mock-up of the containment opening is required.
6	Need Field & Quality inspection procedures from PSC. A.5.1.1	PSC will provide.
7	Need storage requirements specified for concrete constituent materials. A.5.1.3	This EC will not specify storage requirements. Materials will be delivered to the site prior to EC issue.
8	VT-1s and VT-1Cs need to be addressed in installation instructions. Verify IWL not required on vertical and hoop tendons. A.5.1.5	Addressed in the installation instructions (Section D.2.2.1-2b) and PSC Manual "Post Tensioning System Field and Quality Control Procedure Manual" contained in Attachment Z24 (Ref. AR #00285173)
9	Recommend witnessing platform load capacity tests at PSC A.5.1.9	This is a recommendation from Bechtel and will be discussed with Project management.
10	Review the need to protect the horizontal and vertical sheathing openings during hydro demolition A.5.1.13	PSC has recommended not plugging the vertical tendon sheaths during hydrodemolition. PSC has recommended that plywood covers be bolted to the hoop bearing plates to mitigate water extrusion.
11	Leave fit-up devices on liner partially installed. Cut-off approximately 1/2" above the liner plate. A.5.2.2	Section B.6.9 addresses temporary fit-up devices and the installation instructions have been updated to include installation and removal instructions.
12	Make sure rebar can touch the steel liner plate. A.5.2.5	After a discussion with Jeff Whisler (originator of this comment) it was

		decided that the additional #11 rebars that are being added adjacent to the liner plate will not physically touch the liner plate.
13	Require installation instructions for A.5.2.9 – A.5.2.12	These Sections were not completed when reviewed. Refer to Item #1.

Discipline/Program Review		Scope of Review	
Rad Control/ALARA	70%		
Reviewer	Discipline	Date	RE
K. Young	RP	05/19/08	J. Holliday
Item	Comment	Resolution	

<p>1</p>	<p>How will the tendon grease be captured, stored and disposed? We need to ensure all grease in tendon gallery does not go to floor drains.</p>	<p>Tendon grease is captured in 55 gallon drums. The grease has a high viscosity and will not flow if spilled. Plastic sheeting will be taped to the tendons gallery floor and side walls (installation instructions have been revised – Section D.2.1.1 - to include adding plastic sheeting in the gallery). Waste grease is managed by PSC in accordance with the “Waste Vendor Program” corporate policy (EVC-SUBS-00107). PSC has contracted Heritage Disposal to collect the grease and to dispose of it by burning. Heritage is in the process of becoming an approved PE vendor. All documentation generated as part of the disposal, e.g., manifests, disposal certificates, etc, will be provided to the CR3 waste coordinator (Brian Wood, currently).PSC manages waste grease disposal</p> <p>The floor drains in the tendon gallery must be blocked. Water draining from the tendon sheaths will drain to the tendon gallery sump from where it will be pumped by Bechtel out of the tendon gallery to Mac and Macs water treatment plant before discharge to the settlement ponds. Sump pumps SDP-3A and SDP-3B must be turned off/disabled immediately prior to the start of hydrodemolition. According to PSC, the primary purpose of the 55 gallon drums placed in the gallery is to collect any large concrete fragments and dissolved solids. Typically, in other SGRs these drums overflow with water which is collected in the gallery sump and pumped out.</p>
<p>2</p>	<p>Comment from 30% review states liner plate will be taken to storage facility for contaminated repair. Provisions must be provided to wrap or contain the liner plates during the transportation process.</p>	<p>Refer to RP Task Plan and associated work orders.</p>

3	Concrete wall debris should be non-contaminated but must be collected in such a manner to not allow debris pieces to be strewn on the berm. Concrete will be analyzed prior to release from RCA.	A safety net will be erected to contain any debris resulting from hydrodemolition activities (Refer to installation activities Section D.2.1.3). Refer to Section B.6.6 and B.6.12 an evaluation of the requirements for testing the concrete debris and waste water.
4	How is negative pressure on the building maintained during hydro-demolition? Need to ensure main RB purge is running once liner is cut.	Liner plate remains intact during hydrodemolition activities, therefore no impact on containment pressure. Operations is responsible for the operation of the RB Purge fans, both before and after the liner is cut (ref. David Jones – Operations)
5	Operations & HP must be notified prior to start of hydro-demolition.	Refer to Section B.6.7

<p>6</p>	<p>How will the project ensure operations does not vent in containment during the liner breach? If a vent were to occur, the release needs to be contained (system piped).</p>	<p>Breaching of the RB liner should be handled in a manner similar to other large RB breaches (i.e. Personnel and Equipment Hatch opened). The CR-3 Offsite Dose Calculation Manual (ODCM) currently contains the plants radioactive effluent controls and radiological monitoring program and specifically ODCM Representative Sampling Method No. 3.1-5 already addresses radiological controls when large openings to outside atmosphere are created in the Reactor Building. The ODCM list requirements such as:</p> <ul style="list-style-type: none"> • The Reactor Building purge exhaust fans are operational • The Reactor Building supply fans are shut down • If the purge exhaust must be shut down then either the personnel hatch or equipment hatch openings must be closed • Monitor the Reactor Building recirculation system by using RM-A6 or by taking general area air samples. <p>Other considerations to be considered when the liner is breached are:</p> <ul style="list-style-type: none"> • Run the main purge long enough to assure cleanup of the RB atmosphere • Degas and depressurize the Reactor Coolant System. <p>A precaution has been added in the installation instructions (Section D.2.1.3) that Operations must be aware that any venting of radioactive material in the RB must with the containment breached must be handled in accordance with the CR3 Offsite Dose Calculation Manual (ODCM).</p>
<p>7</p>	<p>HP needs to take air samples during the containment breach process.</p>	<p>Refer to Section A.5.1.16. Prior to cutting the liner plate the following is required: Appropriate radiological postings installed outside the access Opening Personnel monitoring and air monitoring equipment (radiological) installed and operational outside access Opening.</p>

8	HP needs to verify air flow from outside to inside during containment breach.	Not applicable to this EC. However, RP will continuously monitor and sample the air at the Opening. Refer to the RP Task Plan for specific information regarding this subject.
9	Understanding that most SGRs start the RCA at the dome penetration, CR3 will have most of the area between the MSB and OSB (to be removed) posted as a RCA. <i>Currently</i> , Station HP does not see this as a time restraint for releasing the large equipment planned in this area. The equipment will be evaluated and surveyed as necessary.	Not applicable to this EC. Refer to the RP Task Plan.
10	Until concrete analysis indicates concrete is free of radioactivity, control of equipment and water is necessary. Water must be collected and analyzed prior to its release. Further discussions are necessary between NPC and the Station HP to talk about sampling methodology, location of tank(s) and release of water. Chemistry plans to sample water prior to release to settling ponds for radioactivity and NPDES parameters and will periodically sample thereafter. What is to be done with the concrete slurry/sludge?	<p>Radiation protection will be responsible for radiological testing of the rubble. Samples for radiological testing and analysis will be taken at the collection bins and tested at the on-site RP laboratory. Discharge of the water and rubble may continue uninterrupted while samples are being tested and analyzed. Refer to the Containment Opening RP Task Plan for specific details on handling and testing of the waste generated during hydrodemolition. The large concrete fragments and fine particles that accumulate in the collection tanks are periodically sucked out by a vacuum truck and hauled off-site to a landfill or may be used for beneficial on-site construction purposes, such as road building or for drainage ditches.</p> <p>Only pH sampling will need to be performed as a pre-requisite for discharge. Contractor should strive to keep the pH between 6.0 and 9.0. Periodic sampling of pH will be needed. A "stop job" limit will be established at pH less than or equal to 2, or pH greater than or equal to 12.5.</p> <p>Recommend that laboratory samples for pH, TSS, and Oil & Grease be collected at about 3 times during project (start, middle, end), and results placed in project file and plant file. These samples are for documentation only, and would not require batch processing of the wastewater, or delay transfer.</p>

Discipline/Program Review		Scope of Review	
Environmental, Chemical Control, Waste		70% Design Challenge EC63016	
Reviewer	Discipline	Date	Turnover Required?
Carolyn Johnson	Multi-Discipline	5/19/08	
Item	Comment	Resolution	
1	<p>The Environmental Specialist for NPC is Ron Johnson. We have both discussed this project with Corporate EHSS and Ron will be taking the lead so all questions should be addressed to him. If he has questions concerning the plant, he will contact Carolyn Johnson, the CR3 Plant Environmental Specialist. However, pH, TSS, oil/grease need to be performed due to operational and sludge concerns in the pond. Oil/grease are major concerns due to the tendons-must keep this out of the water. pH must be measured to ensure this is not hazardous waste. TSS is a concerns for equipment.</p>	<p>Per agreement between Carolyn Johnson, Ron Johnson and Corporate EHSS specialist (Doug Yowell) the following testing is required: Only pH sampling will need to be performed as a pre-requisite for discharge. Contractor should strive to keep the pH between 6.0 and 9.0. Periodic sampling of pH will be needed. A "stop job" limit will be established at pH less than or equal to 2, or pH greater than or equal to 12.5. Recommend that laboratory samples for pH, TSS, and Oil & Grease be collected at about 3 times during project (start, middle, end), and results placed in project file and plant file. These samples are for documentation only, and would not require batch processing of the wastewater, or delay transfer. Mac and Macs water treatment plant consists of three 20,000 gallon tanks. Per discussion with Rudy Pinner and Mike Siapno, samples can be taken from the first tank if the tanks are sampled by RP for radioactive material prior to use to establish that they are clean. Grease and oil will be captured in Tank #3 thru absorbent booms.</p>	
2	<p>What size containers will be used to hold the water from the hydrodemolition process? How many will be available?</p>	<p>Mac and Mac may provide either a containment area or an individual container that they will size based on the expected volume of waste water and concrete.</p>	
4	<p>It does not appear that this meets the Water Management conservation requirements for water SWFWMD. What is the accurate quantity of wastewater that is expected from this process? Why are we not implementing conservation for this</p>	<p>Total amount of water is 2,000,000 gallons (conservatively). Cannot recycle water due to excessive treatment costs, possibly employing new technology and processes and resulting risk to project schedule.</p>	

	process? Is there a way to recycle or conserve? This appears to be irresponsible environmental conservation.	
5	I don't see chemical control addressed in this. Refer to CHE-NGGC-0045.	Done.
6	What is the quantity of new grease that will be purchased and what is the quantity of grease waste that is expected from the tendons? What is the plan for disposal?	There will be 9000 gallons of new grease delivered to the site in a road tanker. There will be approximately 150 drums of waste grease. Waste grease is managed by PSC in accordance with the "Waste Vendor Program" corporate policy (EVC-SUBS-00107). PSC has contracted Heritage Disposal to collect the grease and to dispose of it by burning. Heritage is in the process of becoming an approved PE vendor. All documentation generated as part of the disposal, e.g., manifests, disposal certificates, etc, will be provided to the CR3 waste coordinator (Brian Woods, currently).
7	Coatings on support components supplied by vendors must be removed and replaced-how will this be done? What is the process? This is unnecessary waste. What are the coatings comprised of?	The coating in question is applied by PSC to the tendons prior to shipping. This coating does not have to be removed. The coating "1601 Amber" is the same coating used in original construction and is 100% compatible with the tendon grease.
8	Storm drains near this project must be covered	Refer to Section A.5.1.6
9	Will there be spillage onto the berm? How will this be handled?	The 55 gallon drums of waste grease are sealed and loaded onto pallets (usually 4 to a pallet) where they are banded and then loaded onto a trailer and hauled off site. The hauler will secure the pallets and tie a tarp over them for added security. Hence no grease spills should occur on the berm. Waste water is piped by Mac and Mac from the containment opening to their waste treatment facility located west of the plant.
10	Concrete Batch Plant-I received a call on 5-14-2008-chemicals not approved and being ordered. Has this operation and process been thoroughly reviewed-many gaps are identified. Where will this be? How will these chemicals or supplies be stored? What waste will be created?	The batch plant is outside the scope of this EC. Refer to the Containment Opening Task plan and associated work orders for details.

	How will the personnel be protected? Chemical approval permits need to be submitted to ensure this is controlled properly.	
11	Before wastewater from the hydrodemolition is pumped to any pond, it must pass all analytical testing that is established by Ron Johnson and Chemistry	Refer to Item #1.
12	All diesel used on site and equipment brought on site must be reviewed by the NPC Environmental Specialist to ensure compliance with Air Permits. If necessary per the permit, this data will be provided to the CR3 Environmental Specialist	Include in the work orders.
13	Section 12. Is this correct? Discharge of the water and rubble may continue uninterrupted while samples are being tested and analyzed.	Yes. Per Mike Siapno radiation protection will be responsible for radiological testing of the rubble. Samples for radiological testing and analysis will be taken at the collection bin/containment area and tested at the on-site RP/chemistry laboratory. Discharge of the water and rubble may continue uninterrupted while samples are being tested and analyzed. The large concrete fragments and fine particles that accumulate in the collection tank/containment area are periodically sucked out by a vacuum truck before final disposal. Debris will be hauled off-site to a landfill or may be used for beneficial on-site construction purposes, such as road building or for drainage ditches.
14	The plan from the contractor needs to be identified in this document.	Treatment of the waste water is planned per the discussion contained in Item #1 and 13
15	The sludge or slurry that is vacuumed, where is it going to be disposed and is it going to be analyzed?	RP will take samples for testing before releasing to the vacuum truck. Debris will be hauled off-site to a landfill or may be used for beneficial on-site construction purposes, such as road building or for drainage ditches.
16	No grease or oily water from the tendons	Tendon grease is captured in 55 gallon

	<p>to floor drains in the plant. This will cause exceedances for the NPDES permit.</p>	<p>drums. The grease has a high viscosity and will not flow if spilled. Plastic sheeting will be taped to the tendons gallery floor and side walls. Waste grease is managed by PSC in accordance with the "Waste Vendor Program" corporate policy (EVC-SUBS-00107). PSC has contracted Heritage Disposal to collect the grease and to dispose of it by burning. Heritage is in the process of becoming an approved PE vendor. All documentation generated as part of the disposal, e.g., manifests, disposal certificates, etc, will be provided to the CR3 waste coordinator (Brian Wood, currently).PSC manages waste grease disposal</p> <p>The floor drains in the tendon gallery must be blocked. Water draining from the tendon sheaths will drain to the tendon gallery sump from where it will be pumped by Bechtel out of the tendon gallery to Mac and Macs water treatment plant before discharge to the settlement ponds. Sump pumps SDP-3A and SDP-3B must be turned off/disabled immediately prior to the start of hydrodemolition. According to PSC, the primary purpose of the 55 gallon drums placed in the gallery is to collect any large concrete fragments and dissolved solids. Typically, in other SGRs these drums overflow with water which is collected in the gallery sump and pumped out.</p>
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Discipline/Program Review		Scope of Review	
Maintenance		70% Design Challenge EC63016	
Reviewer	Discipline	Date	Turnover Required?
Chris Howell	Multi-Discipline	5/20/08	
Item	Comment	Resolution	
1	Does the EC identify SP affected due to new tendons installed and tensioned. B.15	SP-182, RB Structural Integrity Tendon Surveillance, has been added to the ADL. The procedure will be affected due to the new tendons and revised predicted tendon losses.	
2	EC should give specific plans for water source, storage and delivery	The appropriate work orders will detail the requirements for water delivery, storage and the means of piping it to and from the containment. The containment opening Task Manager is responsible for determining if the settling ponds have adequate storage for the expected 2 million gallons of waste water. ECED 59400 identified the possible source of this water as the well fields located to the east of CR3, operated and maintained by the fossil group at Crystal River South (CRS). Well water would be diverted through existing CRS plant piping or temporary piping to one of the existing abandoned oil storage tanks (Cap. 8,000,000 gallons) which have been successfully used in the past by CRS to satisfy requirements for bulk water storage for other high water demand projects. Water from this storage tank will then be pumped either via temporary piping or existing available plant piping to the hydrodemolition equipment located at the containment access Opening.	
3	B.7 Mechanical Maintenance review is for any impact to Plant Maintenance, not for the installer.	Corrected sentence accordingly.	
4	Should the EC specifically identify the tendons being detensioned and removed during Mode 1 thru 4.	Section A.5.1.10, B.6.10 and the installation instructions identify which three vertical tendons can be removed during modes 1 thru 4.	
	Sorry I'm sending you comments this	Spoke to Jeff Finnell (Materials Engineer)	

<p>way, but I couldn't get the review file to work in Passport. The design spec mentioned the substitution of A514 Grade Q for Grade E or SSS-100, and later mentions substituting A615 Grade 60 for Grade 40. Just wanted to ask if a material design reconciliation had been done for these substitutions. Thanks.</p> <p style="text-align: center;">Received 5/21/08 from Jim Derrico</p>	<p>about the requirements for design reconciliation. Section B.6.8-c contains an explanation about the substitution of ASTM A524 Grade Q material for SSS-100, ASTM A514 Grade E material. Attachment Z01R0 contains an evaluation by Jeff Finnell as to the acceptability of this substitution. Section B.6.8-h contains an evaluation of the acceptability of using Grade 60 material versus Grade 40 material for the concrete reinforcement steel. Jeff Finnell believes that these evaluations are adequate to justify the material substitution and no further reconciliation is required (except at the conclusion of the project when the NIS2s will have to be prepared in accordance with ASTM Section XI).</p>
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Section	Statement	JJC Comment
B.4, Design Inputs		
<p>24. Fire Protection or Resistance Requirements:</p>	<p>No permanent flammable materials are installed per this EC; There is no adverse impact with Station compliance with "Appendix B" to 10CFR50. All work activities will comply with Station Fire Protection Procedures as applicable.</p> <p>Basis: FIR-NGGC-0003 (Ref. 6.10) FIR-NGGC-0004 (Ref. 6.11) AI-2200 (Ref. 7.9)</p>	<p>I believe you mean to say there is no impact to Appendix R of 10CFR50, correct? YES.</p> <p>Your characterization of the CR3 FP Program is too narrow. You should review the Fire Protection Plan (FPP) for what constitutes the "Fire Protection Program". The definition of the program in the FPP includes:</p> <p style="padding-left: 20px;">The components, procedures and personnel utilized in carrying out all activities of fire protection, including such things as fire prevention, detection, annunciation, control, confinement, suppression, extinguishment, administrative procedures, Fire Brigade organization, inspection and maintenance, training, quality assurance, testing, control of combustibles and housekeeping.</p> <p><u>RE Comment:</u> Revised Section B.4 accordingly. Spoke to Jack Curham and got his input.</p>
B.6, Evaluation		
<p>24. Fire Protection or Resistance Requirements:</p>	<p>This EC does not install any permanent flammable material. However, during the implementation of this EC, fire watches, placement of fire extinguishers and/or other appropriate measures, as approved by the Station will be implemented in accordance with applicable plant procedures to ensure adequate fire prevention and mitigation measures are in place.</p> <p>All welding, cutting, or burning shall be per FIR-NGGC-0003, "Hot Work Permit".</p>	<p>This first statement needs clarification. I'm not sure what you are actually saying.</p> <p>I assume by the station you mean someone from the FP Staff, as that staff is defined in the Site Fire Protection Plan (FPP)?</p> <p>We need to be concerned with interaction with the fire brigade. Refer to AI2205E pre-fire plan for the RB (and any other area you may be working in or potentially affecting).</p> <p>Why isn't AI2210 a reference when we discuss use of fire watches?</p>

	<p>Determination of fire loading shall be per FIR-NGGC-0004, "Determination of Combustible Loading and Equivalent Fire Severity".</p> <p>All transient combustibles shall be controlled per AI-2200, "Guidelines for Handling, Use and Control of Transient Combustibles".</p>	<p><u>RE Comment:</u> Revised Section B.6 accordingly. Spoke to Jack Curham and got his input.</p>
<p>B.7, Interfaces</p>		
<p><u>Fire Protection:</u></p>	<p>Fire Protection will review this EC. There is no modification planned that could impact any fire protection equipment. Coatings need to comply with FIR-NGGC-0004</p>	<p>Other than compliance with our CR3 FP Program during and after implementation, nothing in this EC appears to impact the site FP Program and therefore this statement is not necessary. This implies to me we need a FP review form in accordance with EGR-NGGC-0102, but that is not a reference in the reference section, and I do not believe needs to be.</p> <p>Coatings are installed per CPL-XXXX-W-005, Nuclear Power Plant Protective Coating and purchased per CPL-XXXX-W-006, Nuclear Power Plant Protective Coatings Procurement. These document acceptable protective coating systems for nuclear plants and provide requirements for flame spread rating and dry film thickness in order to meet requirements of FIR-NGGC-0004.</p> <p><u>RE Comment:</u> Revised Section B.7 accordingly. Spoke to Jack Curham and got his input.</p>

Discipline/Program Review		Scope of Review	
Multi-Discipline	70% Design Challenge EC63016		
Reviewer	Discipline	Date	Turnover Required?
Ron Johnson	Environmental	5/15/08	
Item	Comment	Resolution	
1	<p>Pg 5, Section A.5, 3rd paragraph, and elsewhere, regarding any discussion related to the discharge of waste water. Add language: "Water will be discharged to the settling ponds in accordance with the site Industrial Waste Water Permit." (Note: parameters and limits listed in the EC do not correlate to the site IWW permit, therefore recommend a more generic statement.) A specific plan for getting the waste water from the work area to the settling ponds is needed. CR3 has a</p>	<p>Have updated the EC accordingly (Section A.5 and A.5.1.13.</p> <p>The appropriate work orders will detail the requirements for water delivery, storage and the means of piping it to and from the containment. The containment opening Task Manager is responsible for determining if the settling ponds have adequate storage for the expected 2 million gallons of waste water. ECED 59400 identified the possible source of this water as the well fields located to the</p>	

	<p>pipeline to the ponds, project needs to determine how to access this pipe line.</p>	<p>east of CR3, operated and maintained by the fossil group at Crystal River South (CRS). Well water would be diverted through existing CRS plant piping or temporary piping to one of the existing abandoned oil storage tanks (Cap. 8,000,000 gallons) which have been successfully used in the past by CRS to satisfy requirements for bulk water storage for other high water demand projects. Water from this storage tank will then be pumped either via temporary piping or existing available plant piping to the hydrodemolition equipment located at the containment access Opening.</p>
<p>2</p>	<p>EC discusses the creation of used grease waste, and that the disposal of that waste shall be the responsibility of PSC. 1) Need a better estimate of the amount of used grease that will be generated. 2) Need to verify that Brian Wood (CR3 waste coordinator) is in agreement with allowing PSC to handle disposal, and 3) If PSC is allowed to handle disposal, corporate policy requires that they utilize a Progress Energy approved waste disposal vendor, and that all disposal documentation is provided to Brian Wood for record retention. (If PSC wants to use a vendor not on the approved list, project will need to initiate a request to add that vendor to the approved list in accordance with corporate procedure EVC-SUBS-0107.)</p>	<p>PSC estimates that there will be 150 drums of used grease that will be sent for disposal.</p> <p>Refer to Section A.5.1.6 for details of grease disposal. Ron Johnson, Brian Wood and Carolyn Johnson are in agreement that PSC can manage grease disposal through their sub-contractor Heritage Environmental.</p>
<p>3</p>	<p>Water requirements. EC says that a total of 612,000 gallons of water (300 gpm) will be needed. This differs from previous information given to me that 5 days @ 365,000 (i.e., 1.75 million) gallons would be needed. In other places the EC says 700,000 gallons. Need a worse case estimate for planning purposes. A specific plan for water source and storage needs to be identified</p>	<p>Approximately 2,000,000 gallons of water is required. This amount will provide amply margin.</p> <p>Refer to Item #1 above for discussion concerning water supply and storage.</p>

	and agreed upon with Fossil plant operations. Existing plant water systems do not have the excess production capacity to operate the plants and a high-volume project simultaneously. If the spare water storage tank is used, project will need to plan on cleaning the tank and flushing the lines before storing up water.	
4	Section A.5.1.13. 2 nd paragraph states that "The large concrete fragments and fine particles that accumulate in the collection tanks are periodically sucked out by a vacuum truck and temporarily stored in a holding tank where radiological testing of the rubble is completed before <u>final disposal to an on-site</u> designated waste disposal area." There are no authorized "on-site" disposal areas. If concrete passes rad testing it needs to go to a permitted C&D landfill off site.	Added comment to Section A.5.1.13.
5	Pg. 18 continuing to Pg 19; Section A.5.1.15 comment, if there is a risk of petroleum contaminated water draining down a vertical tendon sheath, AND there is a storm drain in the vicinity where the water will be captured, then the storm drain must be protected with a plug or rubber map cover to prevent oily water from entering the storm drain.	Added sentence to Section A.5.1.6 stating that plastic sheeting will be taped t floor and walls of tendon gallery and that floor drains must be protected from spills. Note that grease has a high viscosity and will basically drop out of the tendon sheaths in "clumps".
6	Pg. 28, Section A.5.2.10, 2 nd paragraph. Add "Also, the batch plant will be permitted in accordance with Florida Department of Environmental Protection regulatory requirements."	Added as requested.
7	Pg. 7, Section B.6 Add to Nuclear Generating Group Procedures: CHE-NGGC0045. All chemicals used for this activity will need to be reviewed pursuant to the nuclear chemical control program.	Done.
8	Pg. 48, Section B.6.7: Reference: "Diesel fuel that will be stored in mobile tanks" Add text to specify that mobile	Added sentence in B.6.6 on Page 48 to address diesel fuel containment.

	diesel tanks and mobile diesel equipment shall have integral secondary containment or be placed within a secondary containment.	

Discipline/Program Review		Scope of Review	
Multi-Discipline		100% Design Challenge EC63016	
Reviewer	Discipline	Date	Turnover Required?
Rick Portmann	ISI Review	5/20/08	
Item	Comment	Resolution	
1	A.5.1 – Task#1: Item# 17 – Need to add a note that the detensioning of the additional 20 vertical and 18 hoop tendon outside the opening in defuel mode only will take place after the SG’s have been removed and replaced.	Added note as requested.	
2	A.5.1.1 (the last mock-up on the list): Visual inspections per IWE/IWL for the tendons and concrete needs to state that the training will need to meet IWL-2300 requirements.	Note added as requested. Also added to installation instructions.	
4	A.5.1.5: Should a caution be added for work in the steam exclusion area while at power since it discusses work on the RB as much as 60 days prior to the start of R16?	Discussion added. Also added to installation instructions.	
5	A.5.1.5: Discusses Missile Shields. Missile Shields were permanently removed in R15. Need to add a discussion that the equipment, rigging and procedures for R16 will not affect or are still bounded by EC/ED 68398 and will	Referenced EC-ED 68398. Since we are moving the 8’x10’ platform to Buttress # 5, it must pass the fuel pools, however, per the EC-ED evaluation it is acceptable to move the 8’x10’ platform past the fuel pools and stage it at Buttress #5.	

	meet NUREG-0612 requirements.	
6	A.5.1.5: Reference to SP-182, Revision 14 - Delete the revision level and section reference.	Done.
7	A.5.1.6: Disposal of the used grease is the responsibility of PSC, should say non-contaminated grease.	Done.
8	A.5.1.7: Reference to SP-182 - Delete the section reference.	Done.
9	A.5.1.8: Discussion on EC 63022 for the Chipping platform, I don't see the platform as part of the scope of 63022. Could this be in the scope of EC 63020?	The chipping platform is installed by EC 63022 (Re. Section B.2.h of EC 63022).
10	A.5.1.10: Reference to SP-182, Rev 14 - Delete the revision level & section refs.	Done.
11	A.5.1.11: Delete "XXXX hours after the reactor has shut down".	Done.
12	A.5.1.12: A discussion of the Hydro vs. Chipping demolition is not needed in the EC, I believe this was discussed in EC 61170.	No discussion found in EC 61170. Left section as is.
13	A.5.1.12: A caution statement needs to be put in about damaging the liner when using mechanical chipping means. (Note: Ft. Calhoun OE can be used as an example here)	Caution statement added.
14	A.5.1.16: The two paragraphs in boxes which discuss the liner thickness need switched.(i.e. have the as-found information prior to the hydrodemolition paragraph). Also the discussion of a 1/16" reduction allowance needs to be deleted and changed to "not to exceed a minimum of 5/16" in thickness"	Changes incorporated.
15	A.5.1.16: Change "form" to "from" [third to last word in section]	Done.
16	B.3 References: Change 1.13 to the 2001 Edition through the 2003 Addenda as amended by 10CFR50.55a. Delete references 1.15 and 1.16.	Done
17	B.4: Item# 21, delete reference to ASME VIII. Item# 25, add Concrete	Done.
18	B.6: Item#5-d(i) needs to address 60 year life	This EC addresses current licensing basis, not extended life. However, the SGR project will address the impact on

		containment at 60 years from the creation and restoration of the opening and predicted tendon forces to 60 years.
19	B.6: Item#9, delete "clear" (clear plastic is not allowed in containment)	Done.
20	B.6: Item#15, last item in Table – Containment pressure test could be changed to" ILRT (or Alternative NRC approved pressure test).	
21	B.6: Item#21, Paragraph needs re-written and updated to a more current understanding.	Section has been updated to reflect current understanding of the Section XI code, i.e. one year testing of the new tendons and then revert to 5 year.
22	General Note: Thru-out the EC is references to VT-1 or VT-1C examinations, these have been replaced in the new code by "General Visual" or Detailed Visual" examinations.	A follow-up discussion with Rick Portmann established that using VT-1 and VT-1C terminology is acceptable.

Discipline/Program Review		Scope of Review	
Third Party		EC 63016 R0 (draft 7/15/08)	
Reviewer	Discipline	Date	Turnover Required?
D. Pandya	Civil		
Item	Comment	Resolution	
1	(Process) EC Module – Attributes not completed	Updated Attributes section	
2	(Process) F00 – Turnover summary not completed. Any caveats?	Turnover section completed.	
3	(Process) EC Module – ADL/AEL not complete	Updated ADL . AEL not affected. Section C05 update.	
4	(Process) ADL and C00 Mark-up section do not match related to document updates	ADL and C00 now match	
5	(Technical) H00 – Risk assessment does not address key risks such as required skill sets not in-house, use of contractors, complex design techniques, infrequently used installation techniques (hydro-demolition), personnel safety, etc.	Added risk assessments as requested.	
6	(Admin) B00 – B.3 – Large number of references have been revised since EC initiated. Need to update revision levels of references to current levels and assess impact to EC as a result of revisions to references prior to issue for site reviews	All revision levels updated.	
7	(Admin) B00 – B.3 – Ref 1.2 reference 8 th or 9 th edition of AISC Manual. Ref. 1.1 references 6 th edition. Which was used when and why the difference?	Deleted reference to the 8 th and 6 th edition. Design of the upper support frames by PSC and liner plate lift frame is per AISC 9 th edition.	
8	(Process) Calc S06-0002, Rev 1 does not have a documented owner review (Rev 0 does). Does the SGR project not perform owner review of revisions performed by the vendor?	Owners Review signature was inadvertently omitted when Rev. 1 was issued. AR #288675 was initiated to rectify this omission. Per document control, the calculation did not require a new revision to add signatures on cover page.	
9	(Process) Calc S06-0003 uses GTSTRUDL. This is not included on the document indexing table. Other calcs may have same trend.	GTSTRUDL added to document indexing table in Calc S06-0002 thru S06-0006. Per document control this can be done without revising the calculations.	
10	(Admin) A00, pg 7 - Elaborate on acronyms first time (e.g., SM&E, PSC). It may also be helpful to list all the contractors/vendors being discussed in the EC in one place with a brief explanation of their task (include under	S&ME is the name of the company, it is not an acronym. A listing of the vendors involved in this EC, acronyms and full company names has been added to Section B.6.7 (Interface Requirements).	

	Interfaces).	
11	(Admin) All referenced documents throughout all sections should be listed in B00, B.3 (e.g., A00, pg 10 uses #EVC-SUBS-00107, ASTM A421 (see B00)). Also, how are these documents retrievable in Progress Energy records? If not in RMS or PassPort, need to provide some mechanism to retrieve them.	Have added difficult to find documents as Attachments, i.e. the SGR Design Letters are now located in Attachment Z16. Certain e-mail and fax correspondence has been put into Attachment Z01, Z03, Z04 and Z05. Third party reviews are in Attachments H04 and H05.
12	(Recommendation) A00, pg 10 – recommend that you do not reference names of individuals in EC for activities to be performed – use title only.	Have removed individual names.
13	(Admin) A00, pg 10 – when tendon numbers are referenced, reference drawing or source document.	Have added reference drawing numbers.
14	(Process) A00, pg 25 - EC Team should have had FP, safety and environmental as team members.	Have added environmental and safety; they should have been on the list originally. Did not add FP because their input was minimal. This EC does not affect FP.
15	(Process) B00, B.3 - Software used (including version) should be added to references (e.g., GTSTRUDL)	Have added GTSTRUDL Version 27 as reference #10.12.
16	(Admin) B00, pg 14 – flexible tendon sheathing – reference A513-69 instead of A513. Add to references	Revised as noted and added to references (Ref. 1.19)
17	(Admin) B00, pg 14 – tendons – DBD references A421-65 and not A421-98a	Revised as noted and added to references (Ref. 1.17)
18	(Admin) B00, B.5 – items listed are not assumptions but requirements.	These ARs track vendor calculations, drawings and manuals that are required before EC is issued. They will be deleted from Assumptions before EC is issued.
19	(Admin) B00, pg. 23 – power level references FSAR 3.6 – not correct reference.	Removed reference to power level.
20	(Admin) B00, pg 25 – throughout the EC, reference made to page numbers of DBD – page numbers not correct.	Removed all references to page numbers of DBD.
21	(Admin) B00, pg 28, reference 50 lb/cu. Ft. – DBD states psf (incorrect – need to correct)	NCR 289428 written to address problem.
22	(Process) B00, pg 37 – 5-m – states aux crane acceptable but no reference to supporting calc.	Added reference (S06-0005).
23	(Admin) B00, pg 50 – reference to Att. 3 of Calc S06-0003 not correct.	Should have been Calc S06-0002. Have revised accordingly.
24	(Process) B00, pg 52, crane evaluation not referenced correctly in interface requirements.	Revised accordingly. Have removed sentence referencing crane evaluations as all information concerning the crane is

		addressed in the referenced EC 63020.
25	(Process) A number of vendor documents/reports (excluding calcs) are included as attachments (e.g., Z013). Have these been owner reviewed and documented?	Documents have been owner reviewed. Owner review cover sheets per EGR-NGGC-0003 have been completed and added to each attachment as applicable.
26	(Technical) B00, pg 55 – there is an equivalency evaluation performed by procurement in an e-mail (not verified or formally documented) in attachment Z01 that is used in the EC. This should be documented in a formal Material Evaluation.	The Reviewer, D. Pandya spoke to the CR3 materials engineer (Jeff Finnell) about the need for a more formal evaluation and it was concluded that the e-mail was sufficient and met current CR3 requirements.
27	(Technical) B00, pg 59 – repair of liner to 5/16" thickness (less than nominal 3/8") has no basis provided.	Revised to repair to a minimum of 3/8".
28	(Process) B00, pg 69 – chemistry requirements not specified in installation section, as stated.	Added requirement that suspended solids (of water for hydrodemolition) must be less than 45ppm to Section D.2.1-3. Also added chemical requirements for the discharged water to Section D.2.1-3.
29	(Technical) B00, pg 70 – operational requirements section has no evaluation provided (only a table of activities).	Added a statement that there is no impact on the operational requirements of the plant and that the Table is added for clarification only and will aid in preparation of the installation instructions.
30	(Process) B00, pg 71 – security requirements not specified in installation section, as stated.	Added requirement to notify security before breaching containment to installation instructions Section D.2.1-3
31	(Technical) B00, pg 72 – maintenance risk assessment for earthquakes lists probabilities. However, no acceptance limits are specified.	Added discussion about acceptance limits.
32	(Technical) B00, pg 72 – probability for earthquake of 2.12E-08 referenced per AR 284485. AR lists this value for tornado loading. Also, AR investigation is not approved yet and it is used as input to EC.	Value of 2.12E-08 is for tornado probability not earthquake. Have revised EC accordingly.
33	(Process) B00, B.7 – this section identifies required reviews. ISI (IWE/IWL, Pressure Testing, Repair and Replacement), installer, reg affairs, environmental, FP, license renewal, Appendix J, Security reviews should be considered/added.	Added identified reviews to Section B.7 and ensured that they have been noted in the Milestone panel of the EC.
34	(Process) B00, B.8 – Quality class should be stated as safety related. Also discuss what aspects are treated as non-safety related.	Quality class added. Also added a description of what components and activities are safety related and which are non-safety related.

35	(Process) D00 – has incomplete statements, references. Also, all installation requirements from B00 have not been added.	Statements completed. Added additional installation instructions to match B00. Instructions per B.6.17 and B.6.24.
36	(Process) D00, D.4 – Parts List – several items does not have “Q status” field completed.	Have completed all required Q status fields.
37	(Process) E00 – concrete testing per Z013 not included.	Added testing requirements for both pre-outage, during restoration of the access opening and post modification.
38	(Process) E00 – For some tests, it is not specified if they are required prior to turnover.	Have added requirements for turnover.
39	(Process) E00 – If there are any anticipated requirements for spare parts (e.g., PSC supplied grease, gaskets), specify in E00.	Per the Task Manager the only spare part will be the liner plate contingency material.
40	(Process) H00 – Validation Plan – This was approved in July 08, however, it appears that the EC was initiated in 2006. Does not meet requirements of EGR-NGGC-0011.	The Validation Plan has been revised several times and the present date shown in Passport reflects the latest revision.
41	(Process) H00, Validation Plan – For such a large scope/complex EC (including use of multiple vendors), post job critique should be specified.	“Checked” post job critique and AR 289302 initiated to track it.
42	(Process) D00 – Did not see where QC Hold Points (not in existing procedures) are clearly identified.	Discussed this item with Bill Nielsen (SGR QA/QC Lead), Jeff Whisler (Bechtel) and Dan Jopling (SGR Design Supervisor) and the consensus is that the QC hold points will be addressed in the work instructions/package. Therefore, no QC hold points have been identified in the EC (D00).
43	(Process) H00 – pre-job brief should have addressed use of checklists, expectations for EC teams and DRB, OE, etc.	Have “checked” appropriate boxes.
44	(Process) Z15 – Contains a specification that is not included in C00 or ADL. Need to follow requirements of EGR-NGGC-0020 for processing the specification approval. The spec also does not meet the formatting requirements of the procedure.	Added new specifications CR3-C-0002 and -0003 to both C00 and the ADL. Revised spec CR3-C-0002 to reflect formatting requirements of EGR-NGGC-0020.
45	(Recommendation) Z13 – contains a vendor report on testing requirements for concrete. Should this not be a Progress Energy specification for testing?	We decided not to make this a specification.
46	(Recommendation) EGR-NGGC-0015 includes inspection requirements for	The IWE/IWL R/R Plans address inspection requirements for all phases of

	<p>containment per IWL/IWE requirements. For inaccessible areas that will now be accessible, is there a requirement or is it prudent to document the inspections? Also, this procedure should be reviewed in the EC for possible impact to the project since repair/replacement activities are being performed.</p>	<p>the project, including exposed concrete and rebar inspections. Section E00 has been revised to include a VT-3 examination of the exposed liner plate (concrete side) prior to pouring concrete to ensure that no damage occurred during reinstallation of the rebar and tendon sheaths.</p>
47	<p>(Recommendation) OE/Lessons Learned – Did the project benchmark any other plants that have undergone a similar evolution? If so, refer to the benchmark report and discuss OE.</p>	<p>OE observations were made at Davis-Besse and TMI and documented as AIMS items. These items and the responses have been reproduced in Section A.6</p>
48	<p>(Admin) The EC and drawings (e.g., 421-326) refers to SSE as 2xOBE interchangeably. Use one term or explain why both are the same.</p>	<p>Drawing has been updated and all reference to 2xOBE has been replaced with SSE</p>
49	<p>(Technical) How are GTSTRUDL error notices reviewed for potential impact to the computer analyses supporting the EC? No documentation found to discuss their impact.</p>	<p>The following explanation is from S&Ls Javad Moslemian (Manager Civil Engr): We have procured the "GTSTRUDL" program under GTSTRUDL's QA program. Anytime, an error is detected by the GTSTRUDL company, GTSTRUDL notifies us of the error. Once the error notification is received by S&L, it is forwarded to the process owner responsible for the GTSTRUDL program. The process owner then reviews the error with the project teams that have utilized the GTSTRUDL program in their work. If it is determined that the noted error affected a given project, the affected utility will be notified of the error and depending upon the nature/effect of the error, additional actions may be taken.</p> <p>The following information is from Chris Sward (S&L Project Manager for PE plants): Our procedure for software control is attached (SOP0204 – proprietary). This procedure outlines all of our requirements for handling vendor software. With regard to error notification, Article 3.5.2 includes the process that Javad described.</p>
49	<p>(Admin) B00, B.6.4 – calc S-00-0006 appears to be incorrect reference.</p>	<p>Corrected to S00-0006.</p>
50	<p>(Technical) B00, B.6.5-p – Calc S06-0002</p>	<p>An expanded discussion regarding why</p>

	states benchmarking acceptance criteria based on 5% max difference. In some cases, differences are large, sometimes > 100%, (e.g., new meridional moment < design basis moment, new meridional force and shear > design basis force) in calc S06-0003. The description for calc S06-0003 in the EC discusses where results are close, but does not explain why such large differences in results for moment can be ignored in demonstrating that the new model is reasonable for use for design purposes. Need to strengthen discussion for why new model is acceptable for use (e.g., state of the art modeling, use of as-built info, manual cross-check, third party reviews, etc.)	the new FEM models are acceptable has been added to Section B.6-p for Calculation S06-0003 (Benchmarking calculation).
51	(Technical) S06-0003, purpose – States that benchmarking of new model was limited to load combination for change in pre-stress. A caution should be added to the calculation that if this model is used for other load cases, additional benchmarking may be required.	This model was used to benchmark dead load + 1.15 accident pressure + prestress because that was the only load case for which existing design basis results are available. Additional benchmarking (against existing design basis calculations is not possible because there are no additional results for other load cases available. Refer to Section B.6-p for an evaluation as to why the FEM models are acceptable. Based on these conclusions the stated purpose of calc S06-0003 is correct.
52	(Process) B00, B.7, B.4 – Need to add EC 63021 under interfaces (man-lift used by this EC)	At the time of issuing this EC it is unknown as to whether EC 63021 will ever be issued. The whole issue of using a man lift is under review.
53	(Process) B00, B.7, B.4 – Need to add EC (ED) 70586 under interfaces (liner plate reconciliation). Shows up on x-ref panel.	Added to Interfaces.
54	(Process) NTM ARs 285173 and 285181 do not have assignments with due dates to track due dates.	Assignments and due dates created in passport.
55	(Process) REG AR 282349 (50.59 screen/eval) not completed. The screen should actually be ready at the 70% design challenge stage.	Screen and 50.59 evaluations are complete and assignments created for review and approval.
56	(Process) Ensure that "Caveat Outst" field is checked if caveats or exclusions (future details, missing documentation, vendor output, etc.) are identified. Per B.7. It appears that there will be a few open	Caveat Oust has been checked. Refer to Section B.5 Assumptions for a listing of outstanding items.

	items.	
57	(Process) EC X-ref Panel – No NTM AR found to track post-job briefing (per EGR-NGGC-0011).	NTM AR 00289302 has been assigned to John Holliday (RE).
58	(Process) C00 - Identify any impact to the Preventive Maintenance (PM) activities.	No PMs are affected by this EC. The tendon surveillance procedure (SP-182) will be affected and has been addressed in Section B.6.21.
59	(Process) E00 – Testing of carbon content will require a new spec if value above 0.64. How is this item tracked? Should this be a Caveat or open item?	A new welding procedure specification must be developed for welding rebar applicable to the containment opening. NTM AR 289322 has been assigned to David Mayes the SGR welding engineer.
60	(Process) E00 – Plant mode restrictions for testing are not specified.	Plant mode restrictions added as applicable.
61	(Technical) B00 – EGR-NGGC-0005, 9.3.1.5 requires evaluation and documentation of design margins. Document margins after mod implementation clearly.	An evaluation of the applicable design margins and the impact on these margins (None) has been added to Section B.6.3 and B.6.10.
62	(Technical) B00, B.3 – ACI 349-01 used. FSAR, 5.7 references 349-85 and 349-97. Also, AWS D1.1 -1992 used in EC, -84 referenced in FSAR. Document acceptability to use a later version.	Only calculation S06-0006 references ACI 349-01 when calculating the modulus of rupture for concrete. The value shown in ACI 349-01 is the same as that shown in ACI 349-85 and 87 (Ref. Section 9.5.2.3), i.e. $F_r = 7.5(f'_c)^{1/2}$. References to AWS have been deleted. There are no references in the EC to AWS D1.1 or AWS D1.4
63	(Process) C00 – FSAR should be listed on the ADL. I would expect a summary description of the analysis performed to be added to the FSAR.	FSAR has been added to the ADL. FSAR 2008-0017 has been created per CP-216 (Preparation of an FSAR Change Package) that will document all changes to the FSAR resulting from this EC.
64	(Technical) B00, B.6.8-b needs to include evaluation for using different ASTM year for replacement tendons.	Evaluation has been added for addressing the acceptability of using ASTM A421-98a versus ASTM A421-65.
65	(Technical) B.6.8-d – Original tendon grease stated as NO-OX-ID. Design input section lists different grease as original grease. Also, replacement grease in design input listed differs from that in evaluation section (2090-P4). Evaluate basis for replacement.	Reference to NO-OX has been deleted. Per the Containment DBD (Section, Tendon Grease), Visconorust 2090P and 2090P-2 was used to field coat the inside of the tendon conduit and used as bulk filler after tendon insertion. The new grease will be Visconorust 2090-P4 manufactured by the Viscosity Oil Company as specified in SP-182, RB Structural Integrity Tendon Surveillance Program. The P-4 is an improved version of the P-2 grease previously used at CR3. Note that

		the P-2 grease is no longer available and was superseded by the P-4 grease approximately 25 years ago.
66	(Process) B.4.10 – requires Bechtel to confirm operation/discharge volume of temporary sump pumps prior to hydro-demolition. This is not included in the installation requirements (D00).	Added requirement for Bechtel to confirm operation and discharge volume of the temporary sump pumps prior to hydrodemolition in Sections D.2.2.2gand D.2.1.3
67	(Process) – B.4 should contain design input, B.6 has evaluation of design inputs. In B.4.10, evaluation in Calc S06-0007 included. Move to B.6.	Have moved to Section B.6
68	(Process) B00 and E00 – Testing requirements specified in B00, B.6.20 and E00 should be the same.	Have aligned the testing requirements in B.6.20 and E00.
69	(Admin) B.6.23 states that safe load paths have been evaluated. No reference provided.	Sentence re-worded. The paragraph following the list of lifts/loads identifies the calculation that evaluates effects of a load drop.
70	(Process) B.6.24 states that installation instructions will reference the fire protection procedures. None referenced in D00.	Identified relevant procedures in D00 Section D.2.1
71	(Technical) The 50.59 evaluation evaluates use of GTSTRUDL but not TEMCO/PC that is used for evaluating reduction of thermally induced loads. This appears to be a different methodology than that described in the FSAR.	TEMCO was never used in the evaluations.
8/13/08 - D. Pandya review of resolutions provided.		
Mechanical/Civil Design Action Group		
72	Item 1 – Attributes still not completed (e.g., turnover, 50.59)	Completed
73	Item 2 – resolution not provided	Completed
74	Items 3/4 – ADL still does not match Section C (e.g., 2 VTMA's in C not on ADL, drawing 421-032 on ADL not in C, no sheet number for 1 drawing in C). No items on AEL – any required?	Updated.
75	Item 6 – still open	Updated revision levels
76	Item 38 – Turnover section specifies no turnover. Should have turnover since Pri 0 documents. POMs impacted,	Turnover and closeout summaries added
77	Item 41 – was NTM initiated to track? If yes, add to x-ref panel.	AR 289302 was initiated and added to x-ref panel.
78	Item 47 – response incomplete	Updated.
79	Item 57 – add NTM to x-ref panel,	Updated.

Discipline/Program Review		Scope of Review
Regulatory Programs		EC63016 Final Review
Reviewer	Discipline	Date
S. Powell	Regulatory Programs	8/14/08
Item	Comment	Resolution
1	B.2 – the abbreviation CTMT is not defined and is not used consistently	Replaced abbreviation CTMT with containment.
2	B.4.1 – You incorrectly refer to Improved Tech Spec Bases. The Bases give the background information on where the requirements in the LCO's and Required Actions come from. Drop the word Bases and remove the 'Bs' in the next three bulleted items.	Correction made.
3	B.4.28 – The abbreviation PSC has not been defined.	Defined.
4	B.5.1 – It is not our plan to close the risk assessment ARs prior to EC issue. The ARs and individual assignments need to remain open to incorporate changes due to Plant reviews.	Revised to "EC Closure"
5	B.6.1 – The liner thicknesses do not agree with page 17	Should read "liner plate thickness is 3/8" for the cylinder and dome and 1/4" for the base".
6	B.6.5a – should STRUDL be GTSTRUDL?	Yes.
7	B.6.5d(iii) – re: discussion on vertical and horizontal tendon forces – force is given in kips/ft while a similar discussion on the previous page used kips/tendon. Why was it changed here?	Revised to Kip/ft
8	B.6.5f – probability of a tornado strike is given as 2.12ER-08. Why is there an 'R'? Occurs in several places.	"R" removed.
9	Page 47 – inconsistent use of GTSTRUDL vs GT Strudl	Corrected to GTSTRUDL
10	Page 49 – 'E' is not defined. Is it Young's Modulus?	Yes. Defined "E".
11	Page 52 – 'Young's Modulus (E)' should have been defined earlier in the document	Done
12	Page 59 – High slump or low slump? Numerous places to consider which is correct.	Reference to high slump has been removed.
13	Page 60 – pour rate of 4 ft/hr – Is this a vertical measurement within the space of the opening?	Yes. Concrete pour rates are typically stated in units of ft/hr.
14	Page 74 – No more than 60 days – This could be 90 since we cannot startup until the containment is fully qualified	Left at 60 days since.

15	Page 76 – ‘Up to 90 days prior’ is confusing and could be interpreted as this must be done more that 90 days prior. I suggest ‘When there are less than 90 days until’	Changed accordingly.
16	Page 87 – In Table re: ‘Install new tendon sheaths, new and existing rebar’ – this must be done before we load enough fuel to pressurize the building. It should be ‘Defueled or Mode 6 fully flooded Fuel Transfer Canal.’ Applies to the next three items also.	Changed accordingly.
17	Page 89 – <u>problematic</u> risk assessment should be <u>probabilistic</u>	Revised spelling
18	Page 89 – In the sentence containing the probabilities for OBE and SSE – After ‘occurring’ insert ‘that leads to fuel damage’	Done.
19	Page 89 – Remove first ‘CCDP’ and insert ‘conditional fuel damage probability (CFDP)’. Substitute CFDP for CCDP elsewhere.	Done
20	Page 91 – re: Mechanical splices – if this test program does not agree with the FSAR then this should be evaluated in the 50.59 Screen	Discussed with Sid and have added an expanded description of the testing requirements to Section B.6.20. The EC requirements for testing are more conservative than those of ASME Section III, Division 2. No change to the FSAR required.
21	Page 95 – ‘2017 – All tendons’ – you don’t really mean 100% of tendons	Revised.

Discipline/Program Review		Scope of Review	
Regulatory Programs		EC63016 Final Review	
Reviewer	Discipline	Date	Turnover Required?
S. Powell	Regulatory Programs	8/14/08	
Item	Comment	Resolution	
1	Page 1 & 2 – Items 17 thru 21 - Theses must be done in No Mode or Mode 6 fully flooded Fuel Transfer Canal	Revised	
2	Page 3 – Partial degreasing may be started at less than 90 days before the outage.	Left as 60 days after discussion with Sid.	
3	Page 8 – Mode 5 & 6 Activities – The saw cut may be done pre-outage	Revised accordingly	
4	Page 11 – If the reinforcing steel testing program is not consistent with the FSAR this needs to be addressed in the 50.59 Screen	Discussed with Sid and have added an expanded description of the testing requirements to Section B.6.20. The EC requirements for testing are more conservative than those of ASME Section III, Division 2. No change to the FSAR required.	

5	Page 11 – BPI-Grip or Bar-Grip?	Correct as stated “BPI-GRIP”
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Discipline/Program Review		Scope of Review	
Electrical / I&C Design		EC63016 Final Review	
Reviewer	Discipline	Date	Turnover Required?
Vincent LeNoir	Electrical / I&C	8/13/08	N
Item	Comment	Resolution	
1	Installation Instructions, D.1.2 – Change EC 63044 to EC 70377 for Temporary Power Interface.	Done.	

Discipline/Program Review		Scope of Review	
		EC63016 Final Review	
Reviewer	Discipline	Date	Turnover Required?
R. Pinner	Chemistry	8/14/08	no
Item	Comment	Resolution	
B.6	<p>Is it appropriate to defer piping connections for the required water supply and waste water discharge piping to the settling ponds to be handled by work orders?</p> <p>Who will be responsible for handling this?</p> <p>Who is the containment opening task manager and how will he address obtaining the required water volume for the hydrodemolition, i.e. what process will be used to insure that this happens?</p> <p>It should be noted that during plant cool down, CR-3 will begin a condensate release to the settling ponds. As soon as we get to mode 5, we will be releasing condensate as fast as permitted (300 gpm max) in order to drain the secondary system to allow work to commence. This could add approximately 500,000 gallons of condensate to the settling ponds. This needs to be taken into consideration when assessing the available volume in the ponds.</p>	<p>The details for water supply and disposal for concrete removal will be included and approved per Work Order Task 1165094-Task-03. The EC identifies and evaluates the critical characteristics for water supply and disposal in Section B.6.6 and B.6.12, i.e.</p> <ul style="list-style-type: none"> • require 2,000,000 gallons of water with TSS of less than 45ppm delivered at 360 gpm • disposal of maximum 2,000,000 gallons of water, with samples (for RP and chemical testing) being taken at the collection tank prior to delivery to Mac and Macs water treatment plant • Final testing for Ph only, prior to discharge. • Supply and discharge piping will use either existing piping or will be field run. The present plan is for Mac and Mac to supply and field route the discharge piping. <p>We have identified in the installation instructions (D.2.1.3) and Sections B.6.6 and B.6.12 that approximately 500,000 gallons of condensate may be added to the settling ponds during plant cool down.</p>	

		Jon Burchett is the Task Manager and has overall responsibility for ensuring adequate water supply and disposal facilities.
B.12	No where does this section discuss radiological analyses that are required for discharging to the settling ponds. We have to evaluate this waste water for gamma emitting radionuclides and tritium. The concentrations must be < 1 ECL (effluent concentration limit) to allow discharge. Also who is responsible for insuring that the water obtained from Crystal River South (CRS) for hydrodemolition meets the < 45 ppm TSS criteria?	Revised Section B.6.12 to include discussion concerning radiological testing. Discussed with Neil Keeney and Mike Siapno. Requirements for radiological testing will be written into the Containment Opening RP Task Plan. Have initiated AR 292005 and assigned to RP group, thereby tracking issue of RP Plan by 1/30/09 and committing the RP group to include the requirements for testing in the appropriate work orders. Joh Burchett (Containment Opening Task Manager) is responsible for ensuring water delivered to hydrodemolition contractor has a TSS of less than 45ppm.

Discipline/Program Review		Scope of Review	
EC-63016		Containment Opening, Steel Liner Plate, Concrete, Rebar and Tendons – WORK ORDER# 's 1165090, 1165055, 1165094	
Reviewer	Discipline	Date	Turnover Required?
Ralph Medley, Dick Fletcher & Jeff Whisler	Civil / Mechanical	08/19/08	
Item	Comment	Resolution	
	<u>TYPO's</u>		
1	In File A00, page 23 of 30, the last sentence of the second paragraph under A.5.2.10 the word "address" should read "addressed".	Revised.	
2	In File D00, page 11 of 19, item D.2.2.5 this should be Item #2 not Item #7.	Revised.	
3	In File D00, page 12 of 19, item D.2.3 Item #4a should show the concrete specification CR3-C-0003. (same as stated in item #2 above)	Revised.	
4	In File D00, page 5 of 19, under paragraph D.2.2.4 the first item should be 1 not i. The second item should be 2 not 6 and sub items should be a thru f instead of e thru j.	Revised.	

<u>CLARIFICATIONS</u>		
1	In File A00, page 10 of 30, indicates that 30 vertical tendons are to be degreased, therefore this will require a large number of barrels to collect the grease. Who is responsible to supply / buy these? This will be a big cost / ticket item.	Progress Energy is responsible for supplying the drums.
2	In File A00, page 17 of 30, in paragraph A.5.1.15 indicates to not plug the vertical tendon sheaths. Is this correct or shouldn't these be plugged to keep the debris and water out of the gallery?	The EC is correct. This is PSCs recommendation based on previous experience.
3	In File B00, page 21 of 91, do you need to add the grease cap gaskets to the second bullet?	Done.
4	In File B00, page 21 of 91, do you need to add a bullet for 55 gallon drums?	Done and added to BOM.
5	In File D00, page 5 of 19, Item 1 does not address how the platforms are to be installed? Bolted? Welded?	Drawings will be included in Attachment Z23. These drawings and associated calculations will be issued to PE 8/29/08 and included in the EC prior to PGM review. Revised section accordingly.

Discipline/Program Review		Scope of Review	
		EC63016 Final Review	
Reviewer	Discipline	Date	Turnover Required?
Ron Johnson	Environmental	8/19/08	
Item	Comment	Resolution	
1	Section B.3.10.11, (Page 10); insert permit number after the words "Industrial Waste Water Permit"; (FLA016960).	Done	
2	The corporate waste vendor program is referenced in a few locations, but should probably also be specifically listed at Section B.3.10 (Other References): "Progress Energy Procedure, EVC-SUBS-00107, Waste Vendor Program"	Done.	

Scope of Review			
Config. Mgmt.	CM		
Reviewer	Discipline	Date	Turnover Required?
L.S. McGowan	CM	08/21/08	
Item	Comment	Resolution	
1	Att. Z06R0 is incomplete	Title is now clearly included.	
2	Att. Z06R0 thru Z12R0 do not have the EC or Attachment number on the document. I did not review other attachments for this requirement.	Added as requested.	

Discipline/Program Review		Scope of Review	
Procurement	EC63016 Final Review		
Reviewer	Discipline	Date	Turnover Required?
Rick Curry		8/21/08	
Item	Comment	Resolution	
1	Item no. 1 and 2 – Each item specified needs to be a separate line item. So, there should be six line items for this rebar.	Done.	
2	Item no. 4 – Each item specified needs to be a separate line item. So, there should be two line items for this tendon sheathing. The quantity for each item needs to be specified in the Qty/Units column.	Done.	
3	Item no. 6, Screw – McMaster Carr p/n needs to be included in the description not the Catalog ID column.	Done.	
4	Item no. 9, Angle – Detail no. 3 of drawing no. 421-350 shows the angle to be 1' – 3" long (cut to suit). This appears to be a conflict. I need to know what length you want for procurement. Is ten pieces at 10 feet long acceptable or do you want a quantity of 80 at 1'-3"?	Revised to show 85 of each required.	
5	Item no. 12, Vertical Tendon - Each item specified needs to be a separate line item. So, there should be eleven line items for the vertical tendons.	Revised.	
6	Item no. 13, Horizontal Tendon - Each item specified needs to be a separate line item. So, there should be eighteen line	Revised.	

	items for the horizontal tendons.	
7	Item no. 14, 2090-P4 grease – Catalog ID 0001430382 calls this item oil not grease. If oil is the correct term, change the description to match the catalog ID which is OIL, VISCONORUST 2090-P4, TENDON CABLE FILLER COMPOUND.	This item is grease. It is referenced in the tendon surveillance program (SP-182) as grease and is referred to in the industry as grease. A review of the Viscosity Oil Companies web site is not much help. They refer to it as a lubricant or casing filler. Note that its melting point (when it becomes a flowable liquid is 145 degrees F. I think the Cat ID description needs to be revised.
8	Item no. 15, Grease Cap Gasket – Need more information to order such as dimensions and material.	Supplied by PSC. Added Prescon drawing numbers.
9	Item no. 16, Tendon Anchor Head.– Add PSC drawing no. CR-N1009-502 (163 Wire Stressing Washer) to the description.	Done.
10	Item no. 17 thru 23, Shims – The catalog IDs specify MIL-S-16216K not MIL-S-16216 in the description panel (TIMD202 panel).	Done.
11	Item no. 32, Fly ash – Add catalog ID no. 9220174532.	Done.
12	Item no. 33, Silica Fume – Add catalog ID no. 9220174536.	Done
13	Item no. 34, Water Reducing Admixture – Change UCON WR 91 to EUCON WR 91.	Done
14	Item no. 37, Rebar – Clarify the description 4 x 23 x19'-6".	Done
15	Item no. 38, Rebar - Clarify the description 2 x 21 x19'-6".	Done
16	Item no. 39, PVC Pipe - Clarify the length for each of the PVC pipe.	Done.

Discipline/Program Review		Scope of Review	
ISI Containment (IWE/IWL) Program		EC63016 Final Review	
Reviewer	Discipline	Date	Turnover Required?
Rick Portmann	Containment (IWE/IWL) Program Owner	8/21/08 – 8/26/08	
Item	Comment	Resolution	
**	Note: EC Copy from 8/18/08 was reviewed for comment.	**<u>-Bold & underlined comments changed since 8/25/08 version</u>	
1	EC Review/Approval – Per IWE the Responsible Individual (Ref. IWE-2320) & IWL the Responsible Engineer (Ref. IWL-2320 & IWL-4000) needs to approve this	Initiated AR 292796	

	document. Should be tracked by an AR.	
2	A.4, 1 st para. – Change “(FRO16)” to “(RFO16)”	Done
3	A.5, 2 nd para. – Change “up to two months” to “no more than 60 days”	Done
4	A.5.1.1, last bullet – Reword to: “ Visual examinations and QC inspections for the tendons, rebar, liner plate and concrete. Note: Visual examination training must meet IWL-2300 requirements.”	Done
5	A.5.1.6, 3 rd para. – Should we also refer to the Vendor Manual number listed in the AR (VTMA 02580-001) ? 5 th para., Delete “is the responsibility of Precision Surveillance Corporation (PSC)” and “PSCs waste disposal vendor must be a PE approved vendor.” 7 th para., Delete “Per recommendation from Precision Surveillance Corporation” and move “(Refer to Attachment Z14R0)” to the end of the sentence.	No longer a vendor manual. Added as an Attachment to the EC. Did not change per discussion with Magdy Bishara and Dhiran Pandya (Chiefs Group) who believe reference to the main vendors is helpful. Done.
6	A.5.1.7, 1 st para. – Should we also refer to the Vendor Manual number listed in the AR (VTMA 02580-001) ?	Refer to item 5
7	A.5.1.7, 2 nd para. – Add “ The new / replaced anchorage components will also require a pre-service visual examination following replacement.	Done.
8	A.5.1.7, 3 rd para. – Delete “SP-182 states that” Just start the sentence with “During...”	Done
9	A.5.1.9, 1 st para. – Delete “AREVA” [2 places] and Bechtel Field Engineers and re-word these two sentences.	Revised to “construction”.
10	A.5.1.11, 1 st para. – Should we also refer to the Vendor Manual number listed in the AR (VTMA 02580-001) ?	Refer to item 5

11	A.5.1.11, 2 nd para. – Re-word the sentence as follows “If gross damage is identified, removal shall stop and Engineering contacted to determine any potential corrective actions and continuation approval.” Delete “Tendon removal can continue.”	Done
12	A.5.1.15, – Delete “PSC”, PSC recommends” [2], “Bechtel”, “(supplied and operated by Bechtel)”. Re-word sentences as needed.	Did not change per discussion with Magdy Bishara and Dhiran Pandya (Chiefs Group) who believe reference to the main vendors is helpful. Revised “Bechtel” to “construction”
13	A.5.1.16, 2 nd para. – Unless CBI is performing work under their Q.A. Program with site approved procedures, Delete “Chicago Bridge and Iron (CBI) is responsible for cutting, rigging and removal of the liner plate” and replace it with “the liner plate will be cut, rigged and removed” Last sentence delete “CBI will be responsible for any repair and or preparation of the liner plate for reinstallation.” And replace it with “the liner plate will be prepared reinstallation.”	Done
14	A.5.1.17, 2 nd para. – Should we also refer to the Vendor Manual number listed in the AR (VTMA 02580-001) ?	Refer to item 5
15	A.5.2.1 – Delete “CBI” in the 3 bullets and re-word as needed.	Done.
16	A.5.2.4 – Add to the last sentence “and EGR-NGGC-0015.”	Done
17	A.5.2.8, 1 st para. – Should we also refer to the Vendor Manual number listed in the AR (VTMA 02580-001) ?	Refer to item 5
18	A.5.2.8, 2 nd para. – 1 st sentence states that the sheaths need to be inspected and approved by QC. Is this a real requirement? If so it needs to be added to E00.	Added to Section E00.

19	A.5.2.8, 2 nd para. – Delete the last sentence, it is a repeat of the prior sentence.	Done
20	A.5.2.9, next to last sentence – States that the formwork supplier will engineer and provide the calculations and installation instructions. This is an outstanding action that needs a tracking AR documented here and contained as an attachment to the EC upon review and acceptance. [Same Item & comment as for B.6, para 10, and D.2.2.5.1.c] (Similar to the E-Mail on the DRB meeting about the missing PSC Manual(s), these calculations and instructions should be identified as being needed prior to PGM approval and a placeholder put into the EC attachments.)	Created AR 293932
21	A.5.2.11, 1 st para. – Should we also refer to the Vendor Manual number listed in the AR (VTMA 02580-001) ?	Refer to item 5
22	A.5.2.11, 2 nd para. – Delete “per the requirements of PSC Manual Post Tensioning System Field and Quality Control Procedure Manual” [2 locations]. Also delete “ provided by PSC” and replace it with “installed”	Done
23	A.5.2.13 – Delete “concurrently with the IWL-5000 pressure test.”	Done
24	A.6, 2 nd para. of OE14720 [Causes] – fix the spacing (an extra return exists) 3 rd para. – How the issue is to be address states that a note will be added to the precautions and limitations section, ? section of what ?	Done Added to Installation Instructions (Section D.2.1-3)
25	A.7 – Correct Rick Portmann (2 n’s in last name) also change “Tendon System Engineer” to “Containment (IWE/IWL) Program Engineer”	Done
26	B.3, Para. 1.7 – Change “...2001edition with 2003 Addenda...” to “...2001 Edition through the 2003 Addenda...”	Done

27	B.3, Para. 1.8 – States “Spare”, yet it is referenced within B00R0 for ASME Section III, Division 2 (see pg. 87 under Rebar Splice Quality Control Requirements – 2 locations)	Reference was added later. Para 1.8 is correct referencing ASME.....
28	B.3, Para. 4.29 thru 4.33 – Each of these drawings reference a specific page only of the drawing (i.e. 2 of 3, 3 of 3 etc.). Suggest removing the specific page reference.	If I remove the sheet number then the titles will be identical and may confuse someone. I have therefore left the sheet numbers.
29	B.4, Para. 8 – Tendon Split shims says “modified Armco VNT (Proposed ASTM A633-E)” is this correct terms (Proposed)? Or should it be “ARMCO VNT (ASTM A633, Grade E)” Should we also add the PEERE 987 equivalents that have been used since original construction? (Armor Plate HY-80?)	This statement is straight out of the FSAR. Without considerable investigation I cannot state that “modified Armco VNT” was indeed incorporated into ASTM A633-E. The PEERE is discussed in Section B.6.8-c
30	B.4, Para. 8 – Tendon Grease – Add the equivalents that have been used since original construction (2090-P4 ?).	Discussed in Section B.6.8-d. Note: The intended purpose of Section B.4, para 8 is to identify only the original materials used in construction.
31	B.4, Para. 10, 1 st para. – We state that each of the unique structural configurations must be evaluated. Should we list the evaluations (calcs, etc) here? The remaining paragraphs in this section reference to other sections or calculations in support.	Added a sentence that references other Sections of the EC for a description of the configurations and associated calculations.
32	B.4, para. 14 – Delete “Areva”	Done
33	B.4, para. 20 – Add Containment components (concrete, rebar, tendons, tendon anchorage assemblies).	Done
34	B.4, para. 21 – Delete the last sentence as it does not apply (“ISI Requirements for the liner plate weld must also be determined).	Done
35	B.4, para. 23 – Should reference be made to Nureg-0612 be added to the basis?.	Added
36	B.4, para. 28 – References to Bechtel Safety and Bechtel Safety Department should be removed. Reference to all work activities being performed in accordance with PSC procedures needs removed (we will be working to CR3 work orders and procedures)	Removed reference to Bechtel. Have reworded sentence concerning PSCs procedures.

37	B.5, para. 4 – Suggest deleting the due date and stating the new welding procedures will be completed prior to work order implementation. Para.'s 5, 6, 8-10 also have due dates that you may want to change to some project milestone etc. to eliminate EC changes for due dates. Also delete "David Mays"	Done
38	B.5, para. 12 – Discusses a new calculation to document the containment shell with 3 tendons detensioned (post mod), needs an action tracking mechanism added to complete calc S08-xxxx.	AR 293703 initiated (Para. 14). This item is now listed as a Caveat Out-Standing (#3)
39	B.5, last para. – Should this be para. 13? Also states that calc. S07-0003 has evaluated the tendon forces to end of plant life. Has the calculation revision to 60 years been completed or should we add the tracking mechanism to track this outstanding item?	This scope of this EC is per current licensing requirements, i.e. to 40 years. The 60 year evaluation will be a separate calculation and independent of this EC.
40	B.6, para 1. – 6 th paragraph starts with "S&L has created several..." Deleted S&L has created" and start the sentence with "Several"	Refer to item 12 Did not change.
41	B.6, para 5a & 5-b – In the first sentence of each para. delete "generated by S&L" Also change the para reference from "5a" to "5-a"	Refer to item 12 Left reference to S&L Changed to 5-a
42	B.6, para 5-b – 3 rd para. Delete the 4 th sentence "The containment shell.....pages 35 through 44." Sentence is not telling us anything and EC will need revised if the specification page numbers change.	Done
43	B.6, para 5-d (i) – 1 st sentence delete "page 17 of" Also the end of plant life forces discussed are at 40 years. Does this need updated to discuss the 60 year EOL? If so an action tracking mechanism needs added.	Done Refer to Item 39.
44	B.6, para 5-d (ii) – 2 nd para delete "Per pages 32 and 33 of"	Changed to "Section 4.2.1"

45	<p>B.6, para 5-d (iii) – 2nd para delete “Per pages 4 and 6 of” and change “pages 32 and 33” to “and”.</p> <p>Also the end of plant life forces discussed are at 40 years. Does this need updated to discuss the 60 year EOL? If so an action tracking mechanism needs added.</p>	<p>Changed pages 32 and 33 to “Section 4.2.1”, however, left page reference in S80-0002 as this calculation will not be changed.</p> <p>Refer to item 39</p>
46	B.6, para 5-h – 3 rd para delete “from page 13”	Done
47	B.6, para 5-i – 5 th ? para delete “page 4 of” and “page 5 of”. 8 th para. delete “page 5 of”	Done
48	B.5, para 5-k – 2 nd para change “on page 1 of Gilbert Associates, Inc.” to “within”	Done
49	B.6, para 5-l – 2 nd para delete “prepared by Mammoet” and change “(Ref. page 5 of 10 of Calc S06-0009)” to “referenced in Calc S06-0009.”	Left reference to Mammoet (Did not change per discussion with Magdy Bishara and Dhiran Pandya (Chiefs Group) who believe reference to the main vendors is helpful.
50	B.6, para 5-l.2 – Delete “, Revision 1”	Done
51	B.6, para 5-l.3 – Delete “, Revision 2”	Done
52	<p>B.6, para 5-o – 1st para, Reword “The vendor supplying.....AR#00285181” to something like “Calculations are currently being prepared, reference AR#00285181”</p> <p>3rd para? change “DBD 011” to “Tab 1/1” or just reference 2.1</p>	Done
53	B.6, para 5-p – Delete “by S&L”	Refer to Item 12 – left S&L as-is
54	B.6, para 5-p – Calculation #S06-0003, 1 st para. Delete “by S&L”. 2 nd para. Delete “page 18”	<p>Refer to Item 12 – left S&L as-is</p> <p>Removed page #</p>
55	<p>B.6, para 5-p – Calculation #S06-0004, 1st para. Delete “by Sargent and Lundy”.</p> <p>4th para. Delete “by S&L and Progress Energy”, Change “Gilbert Commonwealth used in their” to “was used in the” Delete “Page 15”</p>	<p>?? Already reworded.</p> <p>Left as is – Refer to item 12</p>
56	B.6, para 5-p – Calculation #S06-0004, 3 rd para states the prestress at end of life includes the prestress from retensioning the replaced/detensioned hoop and vertical tendons to 70% of GUTS. Was this prestress discussed meant to be the Lock-Off prestress? (The initial prestress is 80% of GUTS) Should probably state which prestress this is.	Added “i.e., lock-off prestress”

57	<p>B.6, para 5-p – Calculation #S06-0004, Model #1, 1st para. states “original prestress, i.e. 70% GUTS. Should probably state that this is Lock-Off as the initial prestress is 80% GUTS.</p> <p>Also discussed is 40 year end of life. Is this Calc being revised or will a new calc be provided for the 60 year end of life?</p>	<p>Added “i.e., lock-off prestress”</p> <p>New calculation will be provided outside the scope of this EC.</p>
58	<p>B.6, para 5-p – Calculation #S06-0003, 4th ? para. states to “retension to the initial pre-stress level of 70% Fu” What is “Fu” ? Shouldn’t this be Lock-off level of 70% GUTS or initial pre-stress of 80%?</p>	Done
59	<p>B.6, para 5-p – Calculation #S06-0003, Conclusion. Discusses a new formula for the 9th and 10th Surveillance. Shouldn’t it also have been created for the 1 year Surveillance on the new & retensioned tendons?</p>	Revised accordingly.
60	<p>B.6, para 5-p – Calculation #S06-0007, Simplified Elastic and Rigorous Plastic Analysis of Liner for postulated LODHR accident, 2nd para. Delete “Revision 0 of” and “stated that S&L”</p>	Required for historical clarity-no change.
61	<p>B.6, para 5-p – Calculation #S06-0007, add a space above “Calculation S06-0007 Conclusion”. 3rd para. suggest deleting “However, the liner plate is to be restored to the originally specified 3/8” thickness” This will preclude an EC revision if we evaluate minor thickness reductions as acceptable.</p>	<p>Done</p> <p>The intent is to restore the liner plate to the minimum of 3/8”.</p>
62	<p>B.6, para 6 – 2nd para. Reword “he develops all these activities and adds them” to “ these activities are developed and added”.</p>	<p>This paragraph has been rewritten and additional information added. It is important to make it very clear that the containment opening task manager is responsible for these tasks.</p>
63	<p>B.6, para 6 – 3rd para. Reword “ According to MAC & Mac it will take their equipment” to “It will take”</p>	Refer to Item 12 – left as-is
64	<p>B.6, para 6 – 7th para. Delete “provided by MAC & Mac”</p>	Refer to Item 12 – left as-is
65	<p>B.6, para 6 – 12th para.? Tendon Grease Disposal. Delete “by PSC (tendon vendor)”</p>	Done

<p>66</p>	<p>B.6, para 7 – <u>Interface Requirements</u>: Vendor /Contractor section. Suggest deleting in its entirety, too many statement in it are not 100% accurate (i.e. PSC is responsible for all activities related to inspection of the affected tendons [CR3 qualified and certified personnel will be performing these activities IAW CR3 approved work orders or procedurs], CBI is responsible for weld repair of damaged ares of the liner [CR3 is responsible as this work will be done by PE Welding procedures using personnel qualified to PE procedures], etc.)</p>	<p>This section was added based on a recommendation from Dhiren Pandya (Chiefs Group). Have reworded to better reflect vendor responsibilities. Have not removed.</p> <p>CBI personnel are responsible for cutting, rigging and welding of the liner plate. Welding will be per CR3 welding procedures.</p>
<p>67</p>	<p>B.6, para 8-a – 3rd sentence. Delete “S&Ls”. 2nd para. Delete (as identified by S&L and their consultant), change “S&ME” to “Concrete Testing Laboratory” 3rd. para. Delete “is the responsibility of Sargent and Lundy and their consultant working in conjunction with a concrete testing laboratory (S&ME) and” Phase 1: Change “S&ME” to “the Concrete Testing Laboratory” and delete the last sentence. Phase 2: Change “S&ME” to “the Concrete Testing Laboratory” and delete the last sentence. Phase 3: Delete the first sentence.</p> <p>[Same Comment as A.5.1.2]</p>	<p>Have not deleted any company names – Refer to Item 12.</p> <p>Deleted all reference to consultant.</p> <p>Only Phase 1 and 3 are done under S&MEs 10CFR50 Appendix B Program. This sentence therefore has t ostay.</p>
<p>68</p>	<p>B.6, para 8-b – 3rd ? para. Delete “by PSC (Precision Surveillance Corporation). Also delete, “PSC Transmittal #2 (N1009-503) contained in”. Change “fabricated at PSC’s manufacturing facility” to “fabrication”. Last sentence delete “and are supplied by PSC”</p>	<p>Did not remove “by PSC (Precision Surveillance Corporation)” – Refer to Item 12.</p> <p>Removed “PSC Transmittal #2 (N1009-503) contained in” and PSC.</p>
<p>69</p>	<p>B.6, para 8-c – 8-c is used to identify <u>Tendon Anchor Heads</u> and the same paragraph identifier 8-c is used in the next para. to identify <u>Tendon Split Shims</u>. Need to correct the para. identifiers for the 2nd 8-c and the subsequent paragraphs through 8-j are verify that these are not referenced elsewhere in the EC.</p>	<p>Done.</p>

70	B.6, para 8-c – (Tendon Anchor Heads) 2 nd sentence delete “CR3 and PSC procurement departments identified” and change “as” to “is”. 4 th sentence delete “a term that both procurement departments have problems identifying”. Last sentence delete “and are supplied by PSC”	Done. Refer to Item 12. I think leaving this information in the EC helps clarify and document the historical background to identifying this material.
71	B.6, para 8-c – (Tendon Split Shims), Last sentence delete “and are supplied by Progress Energy”	Done
72	B.6, para 8-d – Last sentence delete “and is supplied by PSC”	Done
73	B.6, para 8-e – Last sentence delete “and are supplied by PSC”	Done
74	B.6, para 8-f – Last sentence delete “and are supplied by PSC”	Done
75	B.6, para 8-g – Last sentence delete “and are purchased by Progress Energy”	Done
76	B.6, para 8-h – Last sentence delete “and is purchased by Progress Energy”	Done
77	B.6, para 8-i – 2 nd para. Delete “as manufactured by BarSplice Products, Inc. Dayton OH.” 1 st bullet – Delete “and are purchased by Progress Energy”	Left as-is. This is the only cold swaged spice allowed by the NRC. Done.
78	B.6, para 8-j – 1 st sentence, last word, uncapitalize “Opening” 1 st bullet – Delete “and is purchased by Progress Energy” 2 nd bullet – Delete “and purchased by Progress Energy”	Done

79	<p>B.6, para 9 – 4th para? (Boxed info) Change the last sentence to “Damaged areas must be evaluated for potential repair and/or replacement actions.” [Not all damage may need repair] 1st bullet – delete “in this EC” 2nd bullet – delete “Rev. 82” 4th bullet, 2nd sub-para. If these welds are left as permanent welds then the EC and Drawings will have to be revised to show these welds, work and welding instructions will have to be done as if the weld may become a permanent weld, applicable Inspections and NDE Examinations will have to be performed. We may not want this option, suggest deleting not enough control or adding more information?. 7th bullet – This paragraph appears to be in a wrong location, this is not a design or code item, suggest deleting or shorten the information and refer to the RP Task Plan. 8th bullet – 2nd sentence change “his” to “this”</p>	<p>Done</p> <p>Done</p> <p>These welds are made at the front end of the outage and the welds are safety related and will require NDE examinations. Per Jim Terry the attachments on the inside face of the liner plate will be removed. Attachments on the concrete side of the liner will be cut-off approximately ½” above the liner plate and left in-place. These welds will be examined as necessary to ensure that the underlying liner material is intact. Section updated.</p>
80	<p>B.6, para 9 – <u>Evaluation of Sump Pump requirements in the Tendon Gallery.</u> Change “MAC and MAC [2 locations] to “the”. Reword “Bechtel must confirm.... Pump they supply” to “steps must be taken to verify that the temporary sump pump is correct for the operation and the discharge volume is sufficient for this application.”</p>	Done
81	<p>B.6, para 10 – <u>General overview/evaluation of the methodology used in structural calculations:</u> 1st bullet, 2nd para., 1st sentence Delete Per SP-182 (Ref. 7.2). 2nd sentence Delete “SP-182 also states that” and capitalize “During”. Last sentence un-capitalize “opening” [Note: The capitalization of the word opening appears to be through-out the EC]</p>	Done

<p>82</p>	<p>B.6, para 10 – <u>Evaluation of the replacement concrete/concrete mix</u>: 2nd para., 2nd sentence, Delete :prepared by S&L and located in” 4th sentence change “by S&ME based on initial constituent material selection made by S&L and will be” to “and”</p>	<p>Done.</p>
<p>83</p>	<p>B.6, para 10 – <u>Evaluation of concrete formwork for outside face of the containment wall</u>: 4th sentence needs reworded to something like “The design of the formwork will be contained in [attachment # xxx or calculation S08-xxxx]. AR# is generated to track the completion of this [attachment / calc] by xx/xx/xx.” [Same Item & comment as for A.5.2.9 and D.2.2.5.1.c]</p>	<p>Done. Initiated AR 293932. Have reserved calculation S08-0021 thru which to issue formwork calculations.</p>
<p>84</p>	<p>B.6, para 10 – <u>Evaluation of the design and use of the tendon work platforms and upper support frames</u>: Delete “supplied by Precision Surveillance Corporation (PSC). Reword “PSC has qualified all four USF’s....” to “All four USF’s are qualified...them on the rail (Ref. Attachment xxx (or Calc S08-xxx)” [Note: For the time being this is assumed as the calculations have not yet been received per AR# 00285181, we need to identify what mechanism will capture the PSC calc (Attachment or Calculation?)]</p> <p>Reword “ Additionally, as previously noted, PSC calculation (AR#00285181) has qualified all platformson the rail system” to “As previously noted, all platforms have been qualified.....on the rail system (Ref. Attachment xxx [or Calc S08-xxxx])”</p> <p>Delete “SP-182 (Ref. 72) states that” and capitalize “During”</p> <p>Delete “However, Precision Surveillance Corporation (PSC) has stated that” and capitalize “All”</p> <p>Conclusion: <u>Pre-construction Qualification Testing of Mechanical Splices</u>: Should the tests listed here be captured in Section E00R0 ?</p>	<p>Reference to PSC has not been changed. Refer to Item 12.</p> <p>Revised. Referenced attachment Z34</p> <p>Revised. Referenced attachment Z34</p> <p>Done</p> <p>Have not changed. Refer to Item 12</p>

		Added test requirements to E00.
85	<p>B.6, para 12 – 1st para. Delete (MAC and MAC). 4th para, Setence between the 1st and second bullet, and the 2nd -4th bullet: This should contain our site requirements for discharge waste water to meet our chemistry and environmental requirements? Not a “should meet” statement by MAC & MAC. Need to rewrite to state the discharge waste water will meet the requirements of the IWWP.</p> <p>Tendon Grease Disposal: Delete “by PSC (tendon vendor)”</p>	<p>Left reference to Mac and Mac as-is-refer to item 12.</p> <p>Done.</p> <p>Done</p>
86	B.6, para 14 – Delete “Areva” [2 places] and reference the work instructions that did the layout. Reference to the work instructions may come in handy if a problem is detected.	Done
87	B.6, para 15 – <u>Operational Requirements under various Conditions:</u> (Table) This table needs to be re-looked at for applicable modes and dates etc. The first 2 activities state that the work can be done 90 days prior to Mode 5, yet the elsewhere in the EC this is stated as no more than 60 days prior.	The table was previously changed to 60 days.
88	<p>B.6, para 20 – Test Requirements: Should the Rebar testing of A.5.1.1.4 and B00R0 pg 74 & 74 (ACI318-05, ACI-349-01, ASME III need added?</p> <p>Concrete tests needs added?</p> <p>6th bullet – Delete “by MAC and MACs water treatment plant”</p> <p>7th bullet – states that PE will supply the test weights. Does the BOM for this EC identify and procure the material and make the test weights?</p>	<p>Added testing requirements for Qualification of the Mechanical Splicing System</p> <p>Concrete testing added.</p> <p>Added test weight material to BOM</p>
89	B.6, para 23 – 3 rd para., Delete “(Manitowoc M2250)” [Not in the scope of this EC and could get changed due to unavailability]	Done
90	B.7 – Add an Interface review for the designated Responsible Person/Engineer per IWE/IWL. (also list the tracking AR as this review will not be performed until	Done

	later)	
91	B.8 – Delete “Revision 4”	Done
92	D.1 – Pre-Outage: Move task #4 to after existing task #7 and duplicate task as a new task #10 in Modes 5 and 6.	Done
93	D.1.23 – Add IWE inspections “IWE and IWL”	Done
94	D.2.1.2 – 5 th bullet, change “be taped to” to “line”. 9 th bullet, Change “of by PSC” to in accordance with EVC-SUBS-00107” 10 th bullet, Delete “is the responsibility of Precision Surveillance Corporation (PSC) and” also delete “PSCs waste disposal vendor must be a Progress Energy approved vendor”	Done
95	D.2.1.3 – 2 nd bullet, states that the water “will be” stored, Was this a “may be” stored in other sections of the EC? We may not want to make it mandatory. 4 th bullet, Delete “Mac and Mac” 6 th bullet, This needs re-wored in its entirety, I believe what we want to state here is that communication with the Control Room is vital to ensure that radiological releases are not performed while personnel are working in elevated areas around on on the containment building. The current statement is a Federal Requirement and realy has nothing to do with what we are doing here. 7 th bullet, Why do we only think we will have only 500,000 gallons added to the settling ponds when we say we will be using as much as 2,000,000 gallons of water? (Also we say “Condensate” in this para. and I don’t think we are using condensate, we say elsewhere we are using well water) 12 th bullet, Reword “Steps must be taken to verify that the temporary sump pump installed in the tendon gallery is correct for the operation and the discharge volume is sufficient for this application prior to the start of hydrodemolition.” 14 th bullet, Delete “Mac and Mac”	Done Added This water is from the condenser. Have added sentence to clarify. Done Done
96	D.2.1.4 – Add a 3 rd bullet to notify Security prior to removal of the liner plate.	Done

97	D.2.2.1.1.a – Delete “supplied by Precision Surveillance Corporation(PSC)”	Left as-is Refer to Item 12
98	D.2.2.1.2.b – Delete the last sentence “Refer to PSC Manual.....”	Done
99	D.2.2.1.3.b – Delete in its entirety, we are detensioning in step a.	References PSC procedures which is OK.
100	D.2.2.1.3.b – Delete “as noted in PSC Manual.....”	Done
101	D.2.2.2 – Boxed area, Delete “Mac and Mac”	Left as-is Refer to Item 12
102	D.2.2.2.1.i – Delete “Mac and Mac”. Reword last sentence similar to comment B.6 para. 9 and D.2.1.3. “Steps must be taken to verify that the temporary sump pump installed in the tendon gallery is correct for the operation and the discharge volume is sufficient for this application prior to the start of hydrodemolition.”	Done.
103	D.2.2.2.2.c –Delete “Mac and Mac”	Done.
104	D.2.2.2.2.d – Change “Mac and Mac” to Hydrodemolition Contractor”	Done.
105	D.2.2.3.1.d – Delete “provided by CB&I”	Left as-is Refer to Item 12
106	D.2.2.3.2.a – Delete “provided by CB&I”	Left as-is Refer to Item 12
107	D.2.2.3.2.d - 2nd sub-para. If these welds are left as permanent welds then the EC and Drawings will have to be revised to show these welds, work and welding instructions will have to be done as if the weld may become a permanent weld, applicable Inspections and NDE Examinations will have to be performed. We may not want this option, suggest deleting not enough control or adding more information?.	Welds will be left on outside face only (per Jim Terry). Have added that they must be examined as necessary t ensure underlying liner material is intact.
108	D.2.2.5.1.c - sentence needs reworded to something like “The design of the formwork will be contained in [attachment # xxx or calculation S08-xxxx]. AR# is generated to track the completion of this [attachment / calc] by xx/xx/xx.” [Same Item & comment as for A.5.2.9 and B.6 para. 10]	Done. Initiated AR 293932. Have reserved calculation S08-0021 thru which to issue formwork calculations.
109	D.2.3.1.a – Need to add inspections for the new replacement anchorage components.	Done.

119	<p>A.5.1.2– 2nd para., 2nd sentence. Delete “prepared by Sargent and Lundy (S&L)”. 3rd para. Delete (as identified by S&L and their consultant), change “S&ME” to “Concrete Testing Laboratory” 4th para., Change “S&ME” to “Concrete Testing Laboratory” Phase 1: Change “S&ME” to “the Concrete Testing Laboratory” and delete the last sentence. Phase 2: Change “S&ME” to “the Concrete Testing Laboratory” and delete the last sentence. Phase 3: Delete the first sentence.</p> <p>[Similar Comments as in B.6, para 8-a]</p>	<p>Refer to item 12. Deleted reference to “their consultant”</p> <p>Last sentence is correct.</p> <p>First sentence is correct</p>
120	<p>A.5.1.5 – 1st para. Delete “supplied by Precision Surveillance Corporation (PSC). 2nd para., Change “PSC” to “the vendor”</p>	<p>Refer to item 12.</p>
121	<p>A.5.1.12 – 3rd para., Delete “Mac and Mac Hydrodemolition Services Inc. was awarded the contract for all hydrodemolition activities associated with creating the opening in the 42” thick concrete containment wall.” Box below 4th para., Change “Mac and Mac” to “The hydrodemolition contractor”</p>	<p>Refer to item 12.</p>

Discipline/Program Review		Scope of Review	
Structural	EC63016 Final Review for technical adequacy and procedural compliance.		
Reviewer	Discipline	Date	Turnover Required?
Joe A. Lese	Civil/Structural	8/26/08	N
Item	Comment	Resolution	
1	A list of minor typographical/editorial; comments was provided to the originator for incorporation.	Incorporated as requested.	
2	Add a sketch depicting the buttress layout scheme to assist those unfamiliar with the CR3 nomenclature who might be using this package.	Incorporated as requested.	
3	To the Closeout Summary of Section “F”, add that all Work Orders will be CLOSED or COMPLETED and all AR’s will COMPLETE prior to closeout.	Incorporated as requested.	

I.1 Design Verification

Design Verification Review		<input checked="" type="checkbox"/>	Engineering Review	<input type="checkbox"/>	Owner's Review	<input type="checkbox"/>
Design Review		<input checked="" type="checkbox"/>	Scope of Review			
Alternate Calculation		<input type="checkbox"/>	EC 63016, Rev.0			
Qualification Testing		<input type="checkbox"/>				
Special Engineering Review		<input type="checkbox"/>				
Reviewer		Discipline		Date		
Casaba Ranganath		Civil/Structural		8/15/08		
Item	Comment		Resolution			
1	<p>Section A.4 : Option #2- 160' concrete slab, should this be slab at Elev 160'-0" instead of 160' slab.</p> <p>The primary activities/scope should go under Scope section.</p>		Revised to Elevation 160'			
2	<p>Section A.5: In the first paragraph explain why it is required to detension and retension additional tendons adjacent to the opening.</p> <p>Reword the second line second paragraph "Any of three adjacent "</p> <p>In the third paragraph last sentence will the treated water be tested for any contamination before discharging the water to the settling ponds.</p> <p>In the last paragraph on page 4 the opening in the concrete is indicated as approximately 18" larger than the liner. However, drawings 421-349 and 421-350 indicate that the opening in concrete is about 12" in the bottom, 6" on the top and 1'-3" on either side larger than liner plate on the inside face of Containment. Need to clarify this.</p> <p>Reword the first sentence first paragraph "As soon as the concrete demolition is complete and the reactor defueled" to be consistent with the sequence of activities.</p> <p>In the second paragraph Page 5 explain why it is required to detension additional tendons adjacent to the opening.</p> <p>Tendon sleeves, conduit and sheathing has been used in this EC interchangeably, suggest using one name sheathing throughout the document or clarify that sleeves and conduits are</p>		<p>Explanation added.</p> <p>Done.</p> <p>Previous sentence discusses radiological testing.</p> <p>Revised to read "approximately 12" larger".</p> <p>Done.</p> <p>Done.</p> <p>Changed to sheathing.</p>			

	same as sheathing.	
3	Section A.5.1 Task #1: Under Item 6, why is it required to degrease the vertical tendons that are not required to be removed. The Pre-Outage, Modes 5 and 6, and Defueled activities identified in Page 6 are not consistent with the title of the activities shown in subsequent pages in this section to describe these activities and vice versa. Make this consistent.	These tendons have to be detensioned. In order to detension them the grease has to be drained out or else it would leak out after the end caps are removed. Done.
4	Section A.5.1.1: add under mock-ups and training category "Mechanical splicing of tendon sheaths". In the last bullet under mock-ups and training add liner plate and rebar and IWE -2300.	Done. Done.
5	Section A 5.1.2: In the second paragraph first sentence add after strains "and controlling concrete placement temperature."	Done.
6	Section A 5.1.4: Identify which EC will provide the mast climber material hoist.	At this time we do not know if it is going to be an EC.
7	Section A 5.1.7: The last sentence before the bullets indicates that following 20 vertical tendons require IWL inspections. Are we inspecting the tendons or just the button heads, end caps and the anchorage assembly. In order to inspect the tendons, it will have to be removed and inspected. Clarify. Also identify these are de-tensioned tendons. Same comment for the 18 hoop tendons identified in Page 11.	Revised to state "20 vertical detensioned (only) tendon anchorages (including the surrounding concrete)..... Repeated for the hoops.
8	Section A 5.1.8: add at the end "This EC will cover Hydrodemolition Support Frame, design and installation of the chipping platform accessible ladder, waste chute, and the protective screen."	Done.
9	Section A 5.1.14: Delete 100% VT-1 examination and indicate as "Detailed visual" since ASME Section XI IWL does not have VT-1 or any VT examination requirements. Reference 2.10 in this section should be 2.1.	Done.
10	Section A 5.1.16: Indicate in this section the bottom part of the cut liner plate will have two cut out sections as shown in Drawing 421-349. This cut out section is to provide clearance for the HTS	Done.

	runways.	
11	Section A.5.1.17: This section has a reference to Attachment Z23 for PSC manual. This attachment is presently empty. Also AR#00285173 referenced in this section presently has no information in the AR and what is F&Q 8.1 mentioned here.	The PSC manual will not be issued to CR3 until 8/22/08. F&Q 8.1 is the section in PSCs manual that addresses Ram Tendon Detensioning. I have added the PSC manuals List of Contents section to Z23 for the reviewers clarification. This will be replaced with the manual before issuing the EC. AR 285173 Assignment 1 was initiated to track that PSCs manual is in fact issued to CR3 before 9/05/08.
12	Section A5.2.7: Replace "100% VT-1" with "Detailed visual."	Done.
13	Section A 5.2.8: Same comment as Item 11 above on Attachment Z 23. In addition provide a reason why the tendon insertion should be stopped at the commencement of concrete placement and not start till the concrete attains minimum 3000 psi concrete and what is the basis for starting after reaching 3000 psi concrete strength. The 3000 psi concrete strength is not consistent with Section D. 2.2.1, Item 4, Step I, Page 7 that mentions 2000 psi.	Refer to Item 11 above. Reason added. Tendon sheathing could displace during insertion and disturb the newly placed concrete. Section D.2.2.1 Item 4 has been revised to 3000 psi.
14	Section A.5.2.10: Replace "VT-1" with "Detailed"	Done.
15	Section A.5.2.11: See comment on AR#00285713 provided under Item11. Change Reference Drawing 431-352 to 421-352.	Refer to resolution for Item 11. Done.
16	Section A.6: Page 27 AIMS ID #574: Conclusion Statement: In the last line after EC add "in the installation instructions" and under Update to above conclusions statement, in the second sentence change Drawing to Drawings and add Drawing 421-349.	Done.
17	Section B.2: Suggest rewording the second paragraph to be close to the work activity sequence as follows "Creation and restoration of the access opening will require removal of the concrete, rebar, tendons, tendon sheaths, and liner plate within the boundaries of the Opening and splicing of existing rebars. In addition requires installation of a new reinforcing cage comprising of 2 layers of #11 rebars at 11" center to center spacing, in both	OK as-is.

	the hoop and vertical directions in the opening and reinstallation of liner plate and concrete before detensioning of additional vertical and hoop tendons adjacent to the concrete opening. These new rebars will not be spliced to any existing rebars that may be protruding from the sides of the Opening.”	
18	Section B.4.4: The operating temperature inside containment is shown as 90 to 110 degrees and operating temperature outside containment is shown as 25 to 100 degrees. These temperatures are also identified in DBD. Calculation S06-0006 (Page 35) that evaluates containment wall after restoration of containment opening till end of life uses inside wall temperature of 99 degree and outside wall temperature of 37 degrees, which are winter temperatures as per DBD. Need to verify if the thermal gradient used in Calculation S06-0006 for the thermal range is acceptable based on the operating temperatures identified in Section B.4.4.	The temperatures identified in B.4.4 are the ambient air temperatures. The design basis operating and accident temperature profiles through the containment wall are shown in the Containment DBD in the section for “Containment-General” under the heading “Thermal”. The Table of design temperatures shown in that section of the DBD are for the winter condition because this will yield the worst case temperature differential between the inside of containment and the outside.
19	Section B.4.6: Tendon Grease disposal: Provide a basis for 200 drums (11,000 gallons) of waste tendon grease estimation.	Added PSC
20	Section B.4.8: Mechanical requirements: The containment closure is required as per ITS during Mode 6 only, why then the containment closure should be capable of withstanding internal pressure due to LODHR during Mode 5.	As stated in B.4.8 “AP-404, Loss of Decay Heat Removal (LODHR), requires containment closure capable of withstanding an 8 psi (5.14 psi per Ref.10.3) internal pressure should Decay Heat Removal be lost in Modes 5 or 6”. Licensing and Operations has therefore conservatively interpreted this requirement of AP-404 as requiring containment closure capable of withstanding internal pressure due to LODHR during Mode 5.
21	Section B.4.12: Waste Water requirements: What is the basis for the 2,000,000 gallons of clean water requirement for hydrodemolition at the rate of 360gpm.	Hydrodemolition contractor. Also note that Section B.6.6 evaluates the water requirements.
22	Section B.4.15: Same comment as Section B.4.8 above.	Refer to Item #20 above.
23	Section B.4.24: Provide any document number or location to find the Station Fire	Station Fire Protection Plan (FPP, Revision 25), added.

	Protection Plan identified under Basis.	
24	Section B.6.3: Under Design Margins it mentions about thickened area around equipment hatch. Is this area that is already existing, since this EC did not modify the equipment hatch area, clarify. Also the reference to Ref.1 at the end of Design Margins is not correct, it should be Ref. 5.7.	The existing area around the equipment hatch is thickened since this is a large penetration thru containment. The analyses investigated this area because it is directly below the SGR access opening. Revised Ref. number.
25	Section B.6.4: See comment regarding containment wall inside and outside temperature in Item 18 Section B.4.4. In addition the calculation reference S00-0006 is not correct, it should be S06-0006	Refer to Item 18 resolution. Calc S00-0006 is correct.
26	Section B.6.5a: Should the reference 5.12 identified here be 5.11, verify.	
27	Section B.6.5-b: Page 27 second paragraph mentions about use of applicable acceleration from the response spectrum, to simulate equivalent static load at each segment. How are these acceleration values developed. Is it the ZPA at each segment, clarify.	RS are from Ref. 3.1 as stated in B.6.5-b. The ZPA at each floor is used in the analysis. Have added to this section a reference to the "ZPA"
28	Section B.6.5-c: The page number referenced in last bullet for wind pressure should be 11. The page numbers associated with Reference 2.1 identified throughout this EC seems to be not correct, verify. Also Reference 2.1 (DBD) is not the latest version identified in this EC. Need to verify the impact of the new version of DBD on EC.	Eliminated page numbers Rev. 5 is latest revision as shown in Section B.3.
29	Section B. 6.5-d: ii) Reduced Prestress During SGR: In the last line of first paragraph it is indicated that the effective prestress in the tendon were calculated taking into account losses due to friction in addition to other sources identified here. However, review of Calculation S06-0006 indicates that the loss due to friction was not considered. ACI 318-63 Section 1607 also requires to consider friction loss and loss due anchorage slippage in addition to other sources that have been identified in this section of EC. In addition review of original Calculation 1.01.7 and 1.01.16 indicates that friction losses had been considered in accordance with ACI 318-63. Clarify why these losses were not considered.	Friction losses are accounted for as a result of retensioning the tendon to 0.8 GUTS and then locking off at 0.7 GUTS. It is recognized that the tension in the tendon varies along its length due to friction. By tensioning to 80% and then backing off to 70%, the tension in the tendon at the buttress will be at 70% but between buttress's it may be at 75%, therefore the average is around 70%. This is industry wide normal practice. If any additional information is required, suggest contacting Dr. Howard Hill.

<p>30</p>	<p>Section B. 6-5-f: Tornado Wind While Defueled: In the title after HTS add “/TLD” and revise Item (i) as follows “rigging the SGs into and out of containment using TLD on the HTS and”. Also the weight of Auxiliary Crane is shown as 527 kips, as per Mammoet Calculation 001004168-C40 Appendix C Page 1, the total weight of the crane including counter weights and the cart is 322.347 kips. Need to revise this and mention that the load used is higher and hence the design is conservative. Also the AR identified here presently does not have any information in the passport.</p>	<p>TLD added.</p> <p>Removed reference to TLD in sentence.</p> <p>Also refer to Attachment Z33</p> <p>Load removed. Added sentence to Section B.6.5-m</p>
<p>31</p>	<p>Section B.6-5-g: Tornado Depressurization While Defueled thru Refuel (Page 32): The first paragraph last line mentions that this activity includes re-tensioning of tendons. However, at Stage 2 Prestress as per definition in Page 28 the tendons will be detensioned, needs clarification. Also the tangential wind velocity in Reg Guide 1.76 is shown as 230 mph for Region 1 and CR3 is in Region 1 compared to 212 mph identified here, need verification.</p>	<p>Covers period from start of retensioning to completion of retensioning, therefore conservative.</p> <p>As noted, we are only reviewing for III concerns and have used the latest editions of Reg. Guide 1.76 (Revision 1) to determine pressure drop and the Enhanced Fujita Scale as approved for use by the NRC in NUREG/CR-4461. The load combinations are per NUREG-0800 SRP 3.3.2. Note that during this time period there is no fuel in the reactor. Additionally, tornado is not a design basis accident load (Refer to Table 5.3 in the FSAR).</p>
<p>32</p>	<p>Section B.6.5-i: Thermal Loads: Page 34 shows that the design temperatures are as per Ref 2.1 under the parameter “Thermal”. Could not locate this section in Ref 2.1. Design temperatures are shown in design input section of this EC Section B.4.4. Why are these design temperatures not used in the containment wall analysis in Calc S06-0006.</p>	<p>It's there.</p> <p>Refer to Item 18 resolution.</p>
<p>33</p>	<p>Section B.6.5-i: Temperature from full restoration of access Opening until end of plant life (Page 35): It is mentioned that Table 6-3 of Ref. 2.1 provides design basis temperature for the containment shell for various conditions. Table 6-3 only provides winter temperature condition and Page 35 of Ref. 2.1 provides the operating temperature,</p>	<p>Should have been reference 2.1.</p> <p>Refer to Item 18 resolution.</p>

	which is also mentioned in Design Input Section B.4.4. Why is this temperature not used in the analysis. Also provide a basis for the statement that says that the noted temperatures for the winter accident condition will not be concurrent with the maximum peak pressure within containment building.	Refer to discussion in Section 5-i concerning peak temperature and pressure.
34	Section B.6.5-j: Pressure Loads: In the second paragraph in the first sentence after building add "(Reference: Progress Energy Letter No.SGR 06-0054 from D. L. Jopling and R. Lemberger to Chris Sward, Subject : RB Pressure and Temperature, dated August 9,2006.)"	Done. Also added letter to Attachment Z16.
35	Section B.6.5-k: What is the reference for auxiliary crane load of 527 kips shown in second controlling load. See comment provided in Item 30. The auxiliary crane load is also shown as 160 tons in EC 63020 File D 020R0.	Refer to Attachment Z33
36	Section B.6.5-m: same comment as Item 35 for auxiliary crane load.	Refer to Attachment Z16 PE letter SGR 07-026
37	Section B.6.5-0: This review cannot be completed as the calculations are not available yet.	Calculations provided to verifier.
38	Section B.6.5-p: Calculation S06-0004 Page 30 table of concrete properties lists Existing and Original concrete properties separately. What is the difference between the existing and original concrete. Does the existing concrete include the proposed concrete opening, need clarification.	Definition is on page 6 of S06-0004.
39	Section B.6.5-p: Calculation S06-0004 Section 4.2 Page 44: In FEM Model B the first bullet mentions Model #1, should this be Model A. Also in the last bullet under this FEM Model B should 1-2 be A-B.	Changed to Model A No. Should be B1-B2
40	Section B.6.5-p: Calculation S06-0004 Conclusion: In the conclusion it is mentioned that after Calculation S06-0004 was completed for all future analysis a reduced E value =2500ksi would be used, however it did not indicate the effect of this reduced E value on the prestress levels in and around the opening after re-tensioning will they be at levels similar to those before the SGR outage as concluded earlier in this	Different E values will have no affect on membrane results, so long as the same E is used. The prestress levels are calculated in calculation S06-0005 and compared.

	<p>section. Could not locate this conclusion in the calculation S06-0004. Is the concrete material used is compatible with the original constituent concrete material. In addition Bechtel in their review of Creep Effects on Behavior of Restored Containment Structures provided in Attachment H04 recommend evaluation of wall at the opening and in the in the vicinity by using a variation of +/- 20% variation in the resulting concrete stiffness compared to the "ideal" values. Could not verify if the calculation has considered this aspect.</p>	<p>Concrete is compatible. Higher strength but with low creep properties. Existing concrete is "creeped-out" due to age.</p> <p>Varying the properties by +/-20% is not realistic; would have resulted in a huge number of results; which one would be acceptable? The code allowable's that we use for design have built in factors of safety, any structural analysis is just our best estimate of the structures response.</p>
41	<p>Section B.6.5-p: Calculation S06-0005: Page 13 of calculation mentions about defueled mode as mode 6. Defueled mode is supposed to be no mode. Need to correct this and verify if this has any effect on the calculation.</p>	<p>Calculation evaluates containment for both modes 5 and 6 and defueled. Calc is correct.</p>
42	<p>Section B.6.5-p: Calculation S06-0005, Page 47. The last Stage 2 Prestress while Refueling is not part of this calculation and it is covered under Calculation S07-0007 as indicated in Page 46. It is not clear from Calculation S06-0005 Page 1 whether it covers the time period between the installation of the liner plate and the placement of concrete.</p>	<p>This calculation has to evaluate the containment with the opening, full of wet concrete and conservatively stage 2 prestress. During restoration, which can occur while defueled or in mode 6, we have to assume stage 2 prestress. Page 1 of the calc is correct.</p>
43	<p>Section B.6.5-p: Calculation S06-0006, Page 49. Model #1- Why the tendon prestress losses do not include loss due to friction and anchorage slippage as required by AC 318-63 Section 2607.</p>	<p>Refer to item 29.</p>
44	<p>Section B.6.5-p: Calculation S07-0003, Page 50. Add a sentence after first paragraph "Steam Generator Replacement will not impact the dome tendons, hence the prediction of end anchor forces for these tendons shall be per the existing methodology.</p>	<p>Done</p>
45	<p>Calculation S07-0003 : Same comment as Item 43 regarding the losses in tendon prestress due to friction and anchorage slippage.</p>	<p>Refer to item 29.</p>
46	<p>Calculation S07-0003: Page 51- Will the creation of new sequencing for the 30 verticals and 35 hoop tendons in and around the opening affect the original</p>	<p>They are already installed, cannot affect their original sequence.</p>

	sequencing.	
47	Calculation S07-0003 Conclusions: Same comment as Item 43 regarding the losses in tendon prestress due to friction and anchorage slippage.	Refer to item 29.
48	Calculation S06-0007: Page 52: Simplified Elastic and Rigorous Plastic Analysis of liner for postulated LODHR accident: Add after first sentence the following: "ASME Section III Div.2 Paragraph CC-3110 (e) provides that the design of the metal containment portion not backed by concrete for load carrying purposes, such as access opening liner plate carrying the LODHR accident pressure load, shall meet the requirements of ASME Section III Division 1, Subsection NE.	Done.
49	Calculation S06-0007: Page 54, Conclusion states that the liner thickness is 3/16" at 5.14 psi. It should be identified here that the design temperature for this condition is 173 degrees as per Page 40 of Calculation S06-0007.	Removed reference temperature. As noted in the discussion for S06-0007, per Table NE-3221-1 thermal load evaluation is not required for Service Level D, therefore, the liner plate in the access opening is evaluated for LODHR internal pressure only.
50	Section B.6.6 : Environmental Conditions: Water requirements: Provide reference to the total requirements and the number of hours required for hydro-demolition mentioned in first paragraph.	Added reference Z24
51	Section B.6.6: Water requirements: ECED 59400 mentions about diverting the water from treatment plant to oil tanks well in advance prior to usage. May need to include this requirement in installation.	As noted in B.6.6, the delivery and disposal of water is outside the scope of this EC.
52	Section B.6.6 : Waste water disposal: In the first sentence in the second paragraph add after water "that has been found acceptable through test"	This is not really true. The waste water is continually pumped from the collections bins to the treatment plant. There will be no waiting for radiological results.
53	Section B.6.8: Material Requirements: 8-a Concrete: Phase 3: Page 58, Add after ASTM C 512 " to confirm the acceptability of the concrete mix for intended application."	Done
54	Section B.6.8: Material Requirements: 8-b: Tendons: Page 59, after disposal add a sentence "The disposal shall be in accordance with the requirements of corporate procedure EVC-SUBS-00016 (Hazards Waste Management)."	Tendons are not a hazardous material.

55	Section B.6.8: 8-c: Tendon Split Shims: What is PEERE 987 and it should also be identified in Reference Section.	PEERE = Plant Equipment Equivalency Replacement Evaluation and is a Quality Record in document control. Added to Reference section.
56	Section 8-d and 8-e: Grease cap, Grease Cans, and End Caps have been used interchangeably. We may want to use End Caps as specified in SP-182 and Drawing 5EX-003 or mention that Grease cans, Grease caps, and end caps all refer to same item.	Revised to "Caps"
57	Section B.6.9: Page 64, Last paragraph third sentence mentions that water will probably evaporate. Delete probably to make a positive statement. Also in same paragraph it is mentioned that it is assumed that oxygen behind the liner plate to be very limited. Delete assumed and state that the oxygen will be very limited.	Done.
58	Section B.6.10: Structural Requirements: Page 66 at the end it is mentioned about the possibility of corrosion of liner plate due to wet concrete is not a problem. Is there any OE that can confirm this or if no OE is available state that there are no OEs to indicate this as a problem.	Done.
59	Section B.6.10: Evaluation of the design and use of the tendon work platforms and upper support frame: are there any drawings for these structures. Page 70: Provide reference to PSC statement that all work associated with moving and staging the platforms at buttress numbers 2,3 and 5 can be achieved by personnel working and staying within the boundaries of the RB roof and define what is RB boundary roof.	Added Attachment Z34 This is a statement by PSC and it is stated in the work instructions that no work can be done in these areas pre-outage. Outside edge of the roof. There is handrail around the outside edge of the roof.
60	Section B.6.10; Page 70- Provide reference to 85 psf stored platform loads on IB roof. Is there a document to ensure that USF's and associated equipment will be stored securely on the containment roof both before and during SGR outage for adverse weather conditions.	Added. Work instructions contain direction for storing the platforms on the IB roof. Note that the area where they will be stored, on the north side of the RB is shielded on three sides by the TB and RB and the fourth side is partially shielded.
61	Section B.6.12 : Water requirements Page 75: What is TSS and is there any	TSS= Total Suspended Solids, have added to EC.

	<p>reference to 45 ppm requirement. Waste Water: Page 75: Why is the need to check the pH value only before discharge. It conflicts with the requirements for waste water discharge identified by Mac and Mac in this section. Why not use the APHA, Standard methods for examination of water and waste water as specified in SP-182.</p>	<p>Requirement is per Mac and Mac</p> <p>As stated in this section the only requirement for testing the water prior to discharge to the ponds is pH testing. This is what the site's Industrial Waste Water Permit (IWWP) requires.</p> <p>There are no conflicts. Mac and Mac have identified what limits their equipment is capable of filtering. These limits meet out requirements as previously stated, i.e., pH of between 6 and 9. The IWWP controls CR3s industrial releases.</p>
62	<p>Section B.6.19: Page 78: Failure effects Item (ii): An estimate of CCDP is not provided here as stated. The estimate provided is for the probability of OBE or SSE occurring for the stated time interval and also the reference 9.1 mentioned here for CDF is not correct. Need to provide estimate of CCDP and the reference for SPRA and add this reference to the Reference section of this EC.</p>	<p>The two probabilities given are the CFDP. Reference 9.7 added.</p>
63	<p>Section B.6.19: Page 79: Failure effects Item (ii): The probability of tornado occurring is shown as 2.12E-08. This probability should it be probability of tornado striking CR-3 containment in less than 90 days. Verify.</p>	<p>Clarified.</p>
64	<p>Section B.6.19: Page 79: Failure effects Item (iii): This section mentions load combinations per Table 6 of FSAR. There is no Table 6 in FSAR Chapter 5, verify if it should be Table 5-3.</p>	<p>Revised.</p>
65	<p>Section B.6.19: The failure effects on the structural requirements for the RB after restoration of the opening and before retensioning of the tendons (Stage 2 prestress) should be addressed.</p>	<p>They are in Section iv.</p>
66	<p>Section B.6.20: Containment pressure test: After IWL 5000 add IWE 5000. Revise the next sentence as follows: "All examinations shall be in accordance with IWL-5250 and IWE -5220, which requires detailed examinations of the restored concrete surface and liner plate in accordance with IWL-2310 (b) and IWE-</p>	<p>Discussed with Casaba and revised accordingly.</p>

	2310 prior to the start of the pressurization, during test pressure and following the completion of the pressurization.” Also add SP-178 identified here to the Reference section of this EC.	
67	Section B.6.20: Liner Plate: Delete reference to IWL, since liner plate is not part of IWL scope.	Done.
68	Section B.6.20: Hydrodemolition water effluent testing prior to discharge: What is the reason for pH sampling of water before discharge. Also the water should be discharged in accordance with the requirements of station procedure EVC-SUBS-0016.	The only requirement for testing the water prior to discharge to the ponds is pH testing. This is what the site’s Industrial Waste Water Permit (IWWP) requires. The IWWP controls requirements for water discharge.
69	Section B.6.20: Functional testing of the hydro-demolition equipment: What thickness steel sheets will be required.	Added “1/2” thick”.
70	Section B.6.21: ISI Requirements for the Liner Plate Welds: Delete VT-3 visual inspection and replace with Detailed Visual Inspection or VT-1for liner plate.	Revised accordingly.
71	Section B.6.23: Page 84: Why only the load drops associated with coils, tendons and tendon ram will be addressed in AR#00284485 and not the rebar and liner plate. Also want to add in the last paragraph to state that “The actual weights and radii will not be significantly different from the weights and radii shown on the safe load path drawings”	Plant will be in No Mode during these lifts. Added.
72	Section B.6.28: What are the PSC work procedures.	Added “Attachment Z23”
73	Section B.8 : Under Safety Classification of activities: Add installation of work platform and USF and chipping platform chute and safety curtain as non safety related activities. Tensioning of tendons and addition of grease in the tendon sheath are safety related activities and should be included.	Done. This section is for components and materials.
74	Section C.2: ARs 277358,289322,289302, and 290111 are in Other References in the Reference section of this EC, however, they are not in passport Xref.	They were previously added.
75	Section C.2 VTMA 02580-0001 and	They have been removed. These two

	VTMA 02584-001 are in Section C.2 but are not in ADL of passport.	VTMAs are not being used in this EC
76	Dwg: 421-346. In the defueled Stage 1 Prestress the sketch indicates detensioning of tendons adjacent to opening, which is not correct and should be deleted. Also in Load combination 35a for defueled Stage 1 prestress, it shows 1.45 DL and in load case Defueled Stage 2 prestress excluding SGs in Load combination 35c, it shows 1+/- 1.45 DL. Does not seem consistent, verify. See additional comments marked on the drawing.	Revised accordingly. Changed to 1.45.
77	Section D.2.1: Item 2 Page 3. Drawing 63016-SK-S001 does not mention about lifting the USF. Should this be identified in the drawing. Also it is mentioned that the work platform will be lowered to the ground or on top of Intermediate Building and secured in case of severe weather. Is there any procedure or drawing, which shows how the platform will be secured.	Has been added to drawing. No drawings have been prepared. Added reference to site procedure EM-220, Violent Weather.
78	Section D.2.1: Consider adding following additional Prerequisites / Precautions: 1) Project Task Manager shall ensure that all applicable environmental permits are obtained and in place before implementation of activities associated with this EC. 2) Work planning shall ensure that activities associated with this EC are in compliance with the applicable portions of EVC-CRNF-00003, "Use Crystal River Nuclear Plant Site-Specific Environmental Compliance Manual". 3) Work planning shall coordinate with the Radiation Protection as to any special training requirements for personnel necessary to efficiently implement this EC. 4) All painted surfaces of any SSC to be removed per this EC shall be tested for the presence of lead in accordance with Procedure SAF-SUBS-00013 and AI-1831 and any other plant or corporate	Done. Done. RP is responsible for identifying this training, not this EC NA

	<p>procedure or process.</p> <p>5) Any hazardous waste that is produced by activities implemented per this EC shall be handled and shipped in accordance with Procedures EVC-SUBS-00016, EVC-SUBS-00008, AI-1820, and any other applicable plant or corporate procedure or process.</p> <p>6) Any non-hazardous waste that is produced by activities implemented per this EC shall be handled and shipped in accordance with Procedure AI-1820 and any other applicable plant or corporate procedure or process.</p> <p>7) All chemicals and other consumables shall be approved and properly labeled per CHE-NGGC-0045 and any other applicable plant and / or corporate procedure or process.</p> <p>8) All lifting and rigging shall be performed in accordance with AI-650, "Rigging, Lifting, and Material Handling Program", or any other applicable plant and / or corporate procedure or process.</p> <p>9) All welding shall be performed per NGGM-PM-0003, Corporate Welding Manual.</p> <p>10) Work to be performed inside the reactor Building and in the yard inside Radiological Controlled Area (RCA) will require RWP. An ALARA pre-job brief may also be required for specific tasks.</p> <p>11) Standard inspection criteria for structural steel, welding, and bolting apply, per NUA-NGGC-1530 unless noted otherwise.</p> <p>12) Special care shall be taken to minimize damage to existing applied protective coatings. Care shall taken during rigging, handling, unloading, and erecting structural steel and components. Any damage done to protective coating should be repaired in</p>	<p>Done.</p> <p>Done.</p> <p>Done.</p> <p>Done.</p> <p>Done.</p> <p>RP will specify</p> <p>Done.</p> <p>Done</p>
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	<p>accordance with site procedure.</p> <p>Note: If any of above requirements are added, need to ensure that the procedures identified in these requirements are included in the Reference section of this EC, if they are not already identified.</p>	Done.
79	Section D. 2.1: Item 2 Page 3: Identify two other violent weather warnings, Tropical storm and Hurricane as mentioned in Section B.6.10 Evaluation of tendon work platforms and USF.	Done
80	Section D.2.1: Item 3 Page 4: identify two other requirements for waste water discharge as mentioned Section B.6.12	Only pH is required.
81	Section D.2.1 Item 4 Page 5: Identify two other requirements for liner removal as mentioned in Section A.5.1.16	Done.
82	Section D.2.2.1 Item 1: Tendon Service Platform Installation: Step b. references safe load path drawing as Attachment Z12. Attachment Z12 drawing is for tendon retensioning sequence, Z12 does not appear to be the right reference.	Changed to G01
83	Attachment Z13 R0 –Concrete testing does not mention about water/cement ration requirements for concrete. Is this not an important factor in getting a proper concrete mix.	The final water/cement ratio will be identified after the completion of the concrete mix testing.
84	<p>Section D.1 : Pre-outage: Step 8: Add another line “ Test the temporary pumps to ensure that they are operable and have sufficient capacity “</p> <p>Add a note at the end of pre outage to indicate that the activities identified during pre-outage with the exception of Survey and Layout of basic geometry of the opening cannot start more than 90 days before Mode 5.</p>	<p>Done.</p> <p>This information is included in the installation requirements. Note that the time is different for certain activities.</p>
85	Section D.1: Defueled – After Removal and Reinstallation of the OTSG.... : Add another step after step 15 “IWL inspection of tendon anchorage of the detensioned tendons”	Done.
86	<p>Section D.1 :</p> <p>During Refueling activities but Prior to Mode 4: Change “three” to “Two” in Step</p>	We are installing three layers.

	<p>17 and add another step after Step 18 "Install one layer of reinforcing steel" Step 21: Suggest reword as follows "Retension detensioned tendons and re-grease detensioned vertical and replaced vertical and hoop tendons" Add after Step 22 another step "Retension replaced vertical and hoop tendons"</p>	<p>OK as-is.</p>
<p>87</p>	<p>Section D.2.1: 2 Limitations on Tendon activities: Under Bullet 4 add at the end "and the USF shall be secured safely on top of RB floor." 3 Prerequisites / Precautions to Hydrodemolition activities: In Bullet 3 expand NPC and add after air permits another sentence to mention that the compliance shall be in accordance with "Crystal River Fossil Plant Site-Specific Environmental policies, Permits, Registrations, Certificates and Plans" currently located at : http://Progressnet/C3/C17/Crystal River Energy Complex/Site Specific Manuals / Crystal River Fossil Site-Specific Manual pdf. Also need to add this reference to the Reference Section of this EC. Bullet under Sump Pumps SDP-3A and 3B , suggest adding a hold point in the work package to ensure that the pumps are disabled prior to start of demolition. In the bullet under safety net add a line at the end "Safety net to be provided and installed by Mac and Mac Hydro-demolition contractor."</p>	<p>OK as-is.</p> <p>The NPC Environmental specialist is responsible for verifying compliance with air permits.</p> <p>We do not specify Hold points. The planners will do this.</p>
<p>88</p>	<p>Under bullet that mentions about reducing water pressure, need to determine the workable water pressure to ensure that this pressure will not buckle the liner plate through prior testing or based on OE.</p>	<p>Will not know water pressure affects on containment concrete until actual implementation. No existing OE for Mac and Mac; this is the first nuclear job they have done. What a workable minimum water pressure is, is unknown at this time, we will have t determine during actual hydrodemolition.</p>
<p>89</p>	<p>Section D.2.2.1 : 1. Tendon Service Platform Installation: Step f: Identify the sequence in which platforms 2,3 and 5 will be rolled clockwise around the roof from their initial position at AZ 150 degrees.</p>	<p>Sequence added.</p>

<p>90</p>	<p>Section D.2.2.2 Hydro-demolition: 2. Mode 5 & 6 activities: In Step e it is mentioned that operation of the hydro-demolition equipment is in accordance with Mac & Mac work instructions (Attachment Z24). Review of this work instructions shows that the hydro-demolition work track frame will be mounted on CTMT wall, however, as per Sketch G05R0 the track is mounted on steel frame supported on Chipping Platform. In addition the work instruction also mentions that the concrete work height will be 24', which is less than 27' required as per Drawing 421-347. Need to correct this in Mac & Mac work instructions.</p>	<p>Revised accordingly by adding e-mail message to Attachment Z24 from Mac and Mac. Frame is not attached to containment wall.</p>
<p>Note: The Lead Reviewer signature on the EC DV milestone panel signifies that a lead review has been performed in accordance with EGR-NGGC-0003 and that errors/deficiencies (for all reviews performed) have been resolved and included in the EC package.</p>		

Design Verification Review		<input checked="" type="checkbox"/>	Engineering Review	<input type="checkbox"/>	Owner's Review	<input type="checkbox"/>
Design Review		<input checked="" type="checkbox"/>	Scope of Review			
Alternate Calculation		<input type="checkbox"/>				
Qualification Testing		<input type="checkbox"/>	Mechanical DV			
Special Engineering Review		<input type="checkbox"/>				
Reviewer		Discipline		Date		
Charlie Karrh		Mechanical		8/21/08		
Item	Comment	Resolution				
1	A.3 Revision Summary Original revision. Section/Pages affected by this revision: ADD "ALL"	RESOLVED ADDED				
2	<u>B.2 Scope Description</u> (LAST PARAGRAPH) ↓WHY IS THIS HIGHLIGHTED?? During the SGR outage the creation and restoration...	RESOLVED HIGHLIGHTING REMOVED				
3	<u>B.3 Specifications:</u> ADD... G/C Inc. Specifications SP-5569 and SP-5618	RESOLVED SPECS ADDED				
4	<u>B.3 Plant Procedures:</u> 7.1 SAF-ESGX-00002, Fall Protection REV. LEVEL?? ↑IS THIS A "PLANT" PROCEDURE? ADD... AI-2210 AI-2205E	RESOLVED SAF-ESGX-00002 ELIMINATED ADDED AI-2210 ,AI-2205E				
5	B.3 FOR CONSISTANCY WE SHOULD PROBABLY USE EITHER EC XXXXXRX ↓OR EC XXXXX, <u>REVISION X</u> 8.0 <u>Plant Change Documents:</u> ...ALSO... EC 61170, Methodology Study – SG Transport Through Containment REV. LEVEL??	RESOLVED CONSISTANT W/ EC XXXXXRX				

	<p>EC 63021, Temporary Man-lift Outside RB to the Roof. REV. LEVEL??</p> <p>EC 64487R ← ???</p> <p>8.1 EC-ED 0068398R0 ADD... EC 63020</p>	
<p>6</p>	<p><u>B.3</u> <u>Regulatory Documents:</u></p> <p>FSAR, Revision 29 THE CURRENT REVISION IS 31cc</p> <p style="text-align: center;">↓SPACE</p> <p>NUREG/CR-4461, Revision2 "Tornado Climatology of the Contiguous USA".</p> <p>Improved Technical Specifications REV. LEVEL??</p> <p style="text-align: center;">TECHNICAL SPECIFICATION BASES REV. LEVEL??</p>	<p>RESOLVED REV LEVELS CORRECTED, ADDED</p>
<p>7</p>	<p><u>B.3</u> <u>Other References</u></p> <p>INTERFACE EC AR #'S??</p> <p>POST-JOB BRIEF NTM??</p> <p>THE FOLLOWING REFERENCES ARE LISTED IN SECTION</p>	<p>RESOLVED (NO INTERFACE AR'S)</p>

	<p>B.4-6, BASIS</p> <p>ADD... Offsite Dose Calculation Manual, Industrial Waste Water Permit (IWW) Mac and Mac (hydrodemolition contractor) documents.</p> <p>WE PROBABLY NEED A DOCUMENT OF SOME SORT THAT WE CAN REFERENCE FOR WATER SUPPLY / DISCHARGE INFRASTRUCTURE / ACTIVITIES.</p>	<p>SEE AR 292151 TO TASK MANAGER AND WO 1165094-03</p>
<p>8</p>	<p><u>B.4</u></p> <p><u>Basic Functions of Each Structure, System and Component:</u></p> <p>GENERALLY SPEAKING, IT IS NOT A GOOD IDEA TO INCLUDE THE REVISION LEVEL WHEN REFERENCING A DOCUMENT, EXCEPT IN SECTION B.3. (ERROR TRAP ADDITIONAL WORK IF YOU NEED TO CHANGE A REFERENCED DOCUMENT REV. LEVEL.)</p> <p>↓</p> <p>Basis: Design Basis Document for the Containment, Revision 4 (Tab 1/1), G/C Inc. Specifications SP-5569 and SP- 5618, Improved Technical Specifications Section 3.6 and 3.9.</p> <p>ADD... AI-504</p>	<p>RESOLVED REV LEVELS CONFINED TO SECTION B.3 AI-504 ADDED</p>
<p>9</p>	<p><u>B.4</u></p> <p><u>Loads such as Seismic, Wind, Thermal, and Dynamic:</u></p> <p>Basis: Design Basis Document for the Containment, Revision 4 (Tab 1/1), ACI 318-63, Parts IV-B and Part V References 5.18 thru 5.23. ← FOR CONSISTANCY, SHOULD WE LIST THESE REFERENCES BY NAME AS WE HAVE IN THE CASE OF THE</p>	<p>RESOLVED</p> <p>BASIS REWRITTEN</p>

<p>10</p>	<p>DBD ABOVE??</p> <p>B.4 <u>Waste water disposal requirements:</u> The current plan is to discharge this water into the Crystal River South percolating ponds (Refer to Section B.6.12 for chemical testing requirements). THERE IS NO DISCUSSION OF THE TASK MANAGERS ROLE IN SECTION B.6-6.↓ The containment opening task manager is responsible for water delivery, storage and the means of piping it to and from the containment</p> <p>ADD... AND IS OUTSIDE THE SCOPE OF THIS EC.</p>	<p>RESOLVED</p> <p>SECTION B.4,6 & B.6.6 REWRITTEN</p>
<p>11</p>	<p><u>B.4</u> <u>Interface Requirements:</u></p> <p>WE PROBABLY NEED A DOCUMENT OF SOME SORT THAT WE CAN REFERENCE FOR WATER SUPPLY / DISCHARGE INFRASTRUCTURE / ACTIVITIES.</p>	<p>RESOLVED</p> <p>SEE AR 292151 TO TASK MANAGER AND WO 1165094-03</p>
<p>12</p>	<p><u>B.4</u> <u>Mechanical Requirements:</u> The inside surface of the reactor building is lined with a carbon steel liner to ensure a high degree of leak tightness during operating and accident conditions. PER..... the nominal liner plate the temporary access ↓LOWER CASE?</p>	<p>RESOLVED REFERENCE ADDED, TYPOs CORRECTED REWORDED</p>

	<p>Opening could WILL result in a new pathway.... THE FOLLOWING SOUNDS MORE LIKE EVALUATION THAN DESIGN INPUT ↓ During hydrodemolition of the concrete containment wall, water will drain down the exposed vertical tendon sheaths into the tendons gallery where it is collected in 55 gallon drums. However,...</p>	
<p>13</p>	<p><u>B.4</u> <u>Hydraulic Requirements:</u> None.???... THE PUMPS AND ASSOCIATED PIPING SUPPLIED FOR THE HYDRODEMOLITION OPERATION MUST BE CAPABLE OF PROVIDING AND RECOVERING THE WASTE WATER NEEDED FOR THE OPERATION???</p>	<p>RESOLVED DISCUSSION OF PUMPS ADDED</p>
<p>14</p>	<p><u>B.4</u> <u>Chemistry Requirements:</u> <u>Waste water requirements:</u> Waste water from the hydrodemolition process (approximately 2,000,000 gallons over a three day period) will be tested before discharge to the CR South percolating ponds ← I'M NOT SURE THAT WE SHOULD SAY THIS SINCE THE DISPOSAL OF THE WATER IS OUTSIDE THE SCOPE AND CONTROL OF THIS EC to ensure it meets Plant and the State of Florida permit requirements including the Industrial Waste Water Permit (IWW). WHAT ABOUT ANY CHEMICALS USED DURING THE MODIFICATION OR CONTAINED WITHIN EQUIPMENT USED BEING APPROVED FOR USE AT CR3?</p>	<p>RESOLVED REWORDED RESOLVED DISCUSSION ADDED</p>
<p>15</p>	<p><u>B.4</u> <u>Access and Administrative Control for Plant Security:</u> RECOMMENDED REWORD... ...containment building which will require that Plant Security implement compensatory measures THAT THEY DEEM APPROPRIATE such—as stationing a guard at the Opening</p>	<p>RESOLVED REWORDED</p>

	while the containment liner is breached.	
16	<p><u>B.4 Redundancy, Diversity, & Separation Requirements of Structures, Systems and Components:</u></p> <p>None – Refer to Evaluation Section.← THIS STATEMENT APPEARS UNDER THIS DESIGN INPUT BUT NOT OTHERS THAT NOT APPLICABLE (...CONSISTANCY)</p>	RESOLVED REWORDED
17	<p><u>B.4 ADD...↓ Test / NDE / Inspection Requirements:</u></p>	RESOLVED REWORDED
17a	<p><u>B.4 Accessibility, Maintenance, Repair, and ISI Requirements:</u></p> <p>ARE THERE ANY ISI REQUIREMENTS FOR LINER PLATE WELD INSPECTION?</p>	RESOLVED DISCUSSION ADDED
18	<p><u>B.4 Fire Protection or Resistance Requirements:</u></p> <p>Basis: ADD... AI-2210 AI-2205E</p>	RESOLVED ADDED AI-2210,AI-2205E
19	<p><u>B.4 Handling, Storage, and Shipping Requirements:</u></p> <p>Basis: ADD...FSAR Table 1-3</p>	RESOLVED ADDED FSAR Table 1-3
20	<p><u>B.4 Materials, Processes, Parts, and Equipment Suitability for Application:</u></p> <p>Basis: ADD... CPL-XXXX-W-005 (Ref. 3.2)</p>	RESOLVED ADDED CPL-XXXX-W-005
21	<p><u>B.5 Assumptions:</u></p> <p>THE ITEMS LISTED IN THIS SECTION DON'T APPEAR TO BE PHRASED AS ASSUMPTIONS.</p> <p>ALSO... THE ASSUMPTIONS SECTION SHOULD ADDRESS EC INTERFACE AR'S AND</p>	RESOLVED NO INTERFACE AR'S

	<p>NEED FOR CAVEAT OUTST</p> <p>FAILURE MODES AND EFFECTS EVALUATION...???</p>	<p>CAVEAT ADDRESSED</p> <p>RESOLVED DISCUSSION ADDED</p>
22	<p><u>B.6</u> <u>Loads such as Seismic, Wind, Thermal, and Dynamic:</u></p> <p><u>Model #3</u> Calculation S06-0006:</p> <p>⚠MISMATCHED BULLETS??</p> <ul style="list-style-type: none"> • Seismic (Refer to Section B.6.5-b for seismic design basis parameters) • Vertical and hoop re-tensioning forces (Refer to Section B.6.5-d) • Operating temperature (Refer to B.6.5-i for description of thermal loads) <p>(For accident temperature loads refer to "Liner Plate Model" below).</p> <ul style="list-style-type: none"> ➤ Accident pressure of 55 psi 	<p>RESOLVED BULLETS STANDARDIZED</p>
23	<p><u>B.6</u> <u>Loads such as Seismic, Wind, Thermal, and Dynamic:</u></p> <p>Calculation S07-0003: Vertical Tendons:</p> <p>...The original 144 vertical tendons were split into 31 sequences and the 282 hoops into 60 sequences. Calculation</p>	<p>RESOLVED RE EXPLAINED TO DV THAT RED TEXT WAS IN PLACE AS A REMINDER</p>

	<p>S07-003 creates 5 new vertical sequences (I thru V) with 6 vertical tendons in each sequence (total of 30 verticals) and 6 new hoop sequences (I thru VI) with 6 hoops in each sequence, except one sequence has 5 hoops (total 35 hoops).</p> <p>↑THIS RED TEXT IS NOT A CJK COMMENT, DO YOU MEAN FOR IT TO BE RED?</p>	
<p>24</p>	<p><u>B.6</u> <u>Loads such as Seismic, Wind, Thermal, and Dynamic:</u></p> <p>Calculation S06-0007 Conclusions: ...The calculation also determined that the minimum acceptable liner thicknesses to assure structural and leak-tight integrity of the liner plate, without any vertical stiffeners, under two postulated LODHR accident scenarios were:</p> <p style="padding-left: 40px;">5.14 psi.....3/16" thickness</p> <p style="padding-left: 40px;">8.00 psi.....1/4" thickness</p> <p>The above thicknesses may be used during the SGR outage to qualify the "as-found" extent of condition of the liner plate for damaged areas where the thickness is < 3/8".....</p> <p>ADD... HOWEVER THE LINER PLATE IS TO BE RESTORED TO THE ORIGINALLY SPECIFIED 3/8" THICKNESS.</p>	<p>RESOLVED WORDING ADDED RE: 3/8" THICKNESS.</p>
<p>25</p>	<p><u>B.6</u> <u>Environmental Conditions:</u> <u>Water requirements</u></p> <p>RECOMMENDED REWORDING... ...Well water would could be diverted through existing CRS plant piping or temporary piping to one of the existing abandoned oil storage tanks (Cap. 8,000,000 gallons) which have</p>	<p>RESOLVED REWORDED</p>

	<p>been successfully used in the past by CRS to satisfy requirements for bulk water storage for other high water demand projects. Water from this storage tank will could then be pumped either via temporary piping</p>	
<p>26</p>	<p>B.6 <u>Environmental Conditions:</u> <u>Waste water disposal:</u> RECOMMENDED REWORDING...</p> <p style="text-align: center;">↓WE ARE NOT CONTROLLING THIS ACTIVITY</p> <p>...Waste water will CAN be routed via existing plant piping or temporary piping and discharged to the south percolation ponds which have been determined (by CR3 and corporate environmental) to be within the current definition of wastewaters under the Plant Industrial Waste Water Permit....</p> <p>MAYBE ADD A STATEMENT LIKE "THE SOURCE AND STORAGE OF SUPPLY WATER, THE USE OF EXISTING PLANT PIPING / FACILITIES, THE ERECTION / SUPPORT OF TEMPORARY PIPING THE DISPOSAL OF WASTE WATER IS OUTSIDE THE SCOPE OF THIS EC AND WILL BE ADDRESSED BY...."</p>	<p>RESOLVED REWORDED</p>
<p>27</p>	<p>B.6 <u>Mechanical Requirements:</u> (IN BOX ↓)</p> <p>Any damage to the 3/8" thick liner plate that occurs during hydrodemolition, and/or just prior to cutting the plate is acceptable if the reduced thickness of the plate is $\geq 3/16"$. ← WHY NOT 1/4"</p>	<p>RESOLVED</p> <p>REWORDED</p>

	<p>REQUIRED FOR 8 PSI (BECAUSE PLATE ALONE WILL SEE ONLY NO-MODE CONDITIONS)?? Damaged areas must be repaired such that the minimum thickness is $\geq 5/16$" thick. WE SHOULD REQUIRE THE FULL 3/8" AS ORIGINALLY SPECIFIED SO THAT ANY INSPECTED THICKNESS DOWN TO 5/16" COULD BE ACCEPTABLE DUE TO THE +/- 1/16" TOLERANCE. ALSO...</p> <ul style="list-style-type: none">• Refueling operations shall not commence until the liner plate has been re-installed and welded back <p style="text-align: center;">ADD ↓</p> <p>in-place, new concrete IS in the Opening placed and the tendons around the Opening re-tensioned (at a minimum).</p> <p>ALSO...</p> <p>....As noted in Section B.4.9 sump pumps SDP-3A and SDP-3B must be turned off/disabled immediately prior to the start of hydrodemolition operations to ensure that effluent that drains into the tendon gallery does not contaminate the plants waste water system.</p> <p>WHAT WILL PRECLUDE THE POSSIBILITY OF WATER RUNNING DOWN BETWEEN THE LINER PLATE AND THE EXISTING CONTAINMENT CONCRETE BELOW THE CONTAINMENT OPENING?</p> <p>Temporarily turning these pumps off during hydrodemolition of the concrete wall has no impact on plant operations. WILL WE KNOW IF FLUIDS OTHER THAN THE WASTE WATER FROM THE HYDRODEMOLITION OPERATION ARE BEING ROUTED TO THIS SUMP AND WILL THESE FLUIDS BE A CONCERN (RADIOACTIVE CONTAMINATION OR OTHER CONCERN)?</p>	<p>CORRECTED</p> <p>DISCUSSION ADDED</p> <p>DISCUSSION ADDED</p>
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28	<p>B.6 Structural Requirements:</p> <p>....The calculation also determined that the liner plate within the Opening was acceptable to use as formwork during the placement of high slump concrete with form-ties attached to the vertical angle stiffeners at a spacing of 3'-0", with a maximum pour rate of 4ft/hour. The maximum tensile load at a form-tie is 6 kips per tie, anchored at a vertical angle stiffener at the liner and to the outer formwork. WILL THIS (OR ANOTHER PRECAUTIONARY ACTION) PRECLUDE THE POSSIBILITY OF CONCRETE RUNNING DOWN BETWEEN THE LINER PLATE AND THE EXISTING CONTAINMENT CONCRETE BELOW THE CONTAINMENT OPENING?</p>	RESOLVED DISCUSSION ADDED
29	<p>B.6 <u>Chemistry Requirements:</u></p> <p>...These requirements will be specified in the installation instructions, limits and precautions.</p> <p>WHAT ABOUT ANY CHEMICALS USED DURING THE MODIFICATION OR CONTAINED WITHIN EQUIPMENT USED BEING APPROVED FOR USE AT CR3?</p> <p>ALSO... <u>Water requirements:</u> The 2,000,000 gallons of clean potable water must be sampled by Chemistry to ensure it meets the normal requirements for potable water.</p> <p>IS UNTREATED WELL WATER, FROM POSSIBLY UNSANITARY TANKS AND PIPING CONSIDERED POTABLE? (REFERENCE REQUIREMENTS OF 42CFR PART 72 OR REQUIRMENTS OF THE</p>	RESOLVED DISCUSSION ADDED REWORDED

	LOCAL AUTHORITY HAVING JURISDICTION)	
30	<p>B.6 <u>Test Requirements (INCLUDING NON-DESTRUCTIVE EXAM INATIONS):</u></p> <p>The following tests AND NDE will, at a minimum be required to support this EC:</p> <p>ALSO... SHOULD WE SPECIFY THAT A FUNCTIONAL TEST BE RUN ON THE HYDRODEMOLITION WATER HANDLING EQUIPMENT TO CONFIRM THAT THE EQUIPMENT IS CAPABLE OF FUNCTIONING PROPERLY IN THE CONFIGURATION REQUIRED?</p>	<p>RESOLVED WORDS ADDED</p> <p>DISCUSSION ADDED</p>
31	<p>Section C. DELETE BROWN TEXT</p>	<p>RESOLVED BROWN TEXT REMOVED</p>
32	<p>Section D. <u>LOWER CASE RED TEXT BELOW ARE NOT CJK COMMENTS</u></p>	<p>RESOLVED RE EXPLAINED TO DV THAT RED TEXT WAS IN PLACE AS A REMINDER</p>
33	<p>D.2.1 Prerequisites / Precautions ...Mock-ups and Associated Training for Complex Work Activities Required for the Creation and Restoration of the Access Opening.</p> <p>...Several mock-ups that will simulate complex work activities associated with the creation and restoration of the access Opening will be required and are considered essential to the successful completion of the project. These simulations aid in training the craft in executing these activities in a safe and expeditious manner. MOCK-UPS SHOULD INCORPORATE ANY RADIATION PROTECTION / ALARA CONSIDERATIONS DEEMED APPROPRIATE BY RP.</p>	<p>RESOLVED</p> <p>DISCUSSION ADDED</p>
34	<p>D.2.1 Prerequisites / Precautions ...Verify the settling ponds are available AND IN A PHYSICAL CONDITION / CONFIGURATION to receive the discharge from the hydrodemolition activities</p>	<p>RESOLVED</p> <p>DISCUSSION ADDED</p>

<p>35</p>	<p>D.2.2.1 Tendon Detensioning, Removal, Reinstallation and Retensioning</p> <p>2.Tendon Degreasing and Tendon Removal ...After hoop and vertical tendons have been removed from within the opening, the tendon sheaths shall be degreased to the extent practical. ↑??? WHY YELLOW HIGH LIGHTING?</p>	<p>RESOLVED HIGHLIGHTING REMOVED</p>
<p>36</p>	<p>D.2.2.2 Hydrodemolition</p> <p>2. Mode 5 & 6 activities</p> <p>...Install a water collection system in the tendon gallery to collect and pump water from the vertical tendons to the Mac & Mac water treatment equipment (DO NOT PLUG THE VERTICAL TENDONS DURING HYDRODEMOLITION). SHOULD WE TEST HYDRODEMOLITION EQUIPMENT PRIOR TO STARTING DEMOLITION OPERATION?</p>	<p>RESOLVED</p> <p>DISCUSSION ADDED TO "Pre-outage activities" 1.i</p>
<p>37</p>	<p>2.Liner Plate Reinstallation</p> <p>a. Reattach the lifting / rigging frame supplied by CB&I</p> <p>b. The liner plate can be reinstalled after the HTS Structure has been removed (ref EC 63016)</p> <p>WHY HIGHLIGHTING ???↑</p>	<p>RESOLVED HIGHLIGHTING REMOVED</p>
<p>38</p>	<p>D.2.2.5 Formwork and Concrete Placement</p> <p>1 Concrete Form Work Installation</p> <p>a. After the reinforcing steel has been installed and inspected formwork installation can commence</p> <p>b. Insure the containment opening is clean and</p>	<p>RESOLVED</p> <p>REWORDED TO ADDRESS DWGS</p>

	<p>acceptable for concrete placement</p> <p>c. Install the formwork in accordance with vendor requirement and drawings</p> <p>DETAILS ON FORMS ARE DIPCIED ON ...??</p>	
39	<p>D.4</p> <p>ADD ITEM #'S BELOW ITEM 22</p> <p>ADD CONCRETE FORM MATERIAL</p>	<p>RESOLVED</p> <p>ADDED</p>
40	<p>E.1 Testing Requirements</p> <p><u>Unique Prerequisites, Precautions, Limitations, Initial Conditions, and Outage Requirements:</u></p> <p><u>Test and Acceptance Criteria:</u></p> <p>DELETE BROWN TEXT</p>	<p>RESOLVED</p> <p>BROWN TEXT DELETED</p>
41	<p>SECTION F.</p> <p>DELETE BROWN TEXT</p> <p>COMPLETE SECTION F</p>	<p>RESOLVED</p> <p>BROWN TEXT DELETED</p> <p>SECTION F COMPLETED</p>
42	<p>H.1</p> <p>H.1 Validation Plan</p> <p>ATTACHMENT 1</p> <p>VALIDATION PLAN</p> <p>Sheet 1 of 2</p> <p>EXPECTATION...</p> <p>CROSS-REFERENCE STATEMENTS / PROMISES MADE WITH AREAS OF THE EC WHEREIN THE STATEMENT / PROMISE IS ADDRESSED.</p> <p>(EXAMPLE... formation of a Project Team...The project team members are documented in EC Section A.7...</p> <p>OR ...Project kick-off meeting attendance sheet , comments and resolutions are documented in EC Section)</p> <p>ALSO</p> <p>POST-JOB BRIEF, CRITIQUE? BOTH?</p> <p>WE ARE MISSING MEETING ATTENDANCE SHEETS</p> <p>COMMENTS / RESOLUTIONS (KICK-OFF AND 0%)</p> <p>WHERE IS POST-JOB BRIEF REQUIREMENT CAPTURED??</p>	<p>RESOLVED</p> <p>VARIOUS STATEMENTS IN VALIDATION PLAN HAVE BEEN CROSS-REFERENCED TO SECTIONS OF THE EC.</p> <p>ONLY POST-JOB CRITIQUE WILL BE ACCOMPLISHED.</p> <p>MISSING NOTES NOTED FILE H01</p>

	NEED NTM.	NTM # DOCUMENTED IN SECTION H.1 VALIDATION PLAN
43	Z00 Attachment A DELETE BROWN TEXT SUGGEST ADDING WORDS LIKE "FOR ATTACHMENTS, SEE "Z__" FILES LISTED IN THE CONTENTS SECTION OF THIS EC. "	RESOLVED BROWN TEXT DELETED REWORDED
<p>Note: The Lead Reviewer signature on the EC DV milestone panel signifies that a lead review has been performed in accordance with EGR-NGGC-0003 and that errors/deficiencies (for all reviews performed) have been resolved and included in the EC package.</p>		

I.1 Design Verification

Design Verification Review		<input checked="" type="checkbox"/>	Engineering Review	<input type="checkbox"/>	Owner's Review	<input type="checkbox"/>
Design Review		<input checked="" type="checkbox"/>	Scope of Review			
Alternate Calculation		<input type="checkbox"/>	EC 63016 Rev.3			
Qualification Testing		<input type="checkbox"/>				
Special Engineering Review		<input type="checkbox"/>				
Reviewer		Discipline		Date		
Casaba Ranganath		Civil/Structural		7/27/09		
Item	Comment			Resolution		
1	<p>File A00: A.3 Revision Summary- Revision 3:</p> <ul style="list-style-type: none"> a) A.5.2.6, Page 23 should be Page 25: A.5.2.12, Page 27 should be Page 29 b) After B.6.5-j add B.6.5.o, Page 47: Revised Tendon work platform size at buttress #5 from 8'x10' to 6'X8'. c) B.6.8-a, Page 65: Add Attachment Z25 after CR3-C-0003. d) B.6.9, Page 75: Provided optional material for access opening curtain and add reference to Section B.6.10. e) B.6.10: Change page 80 to 81. f) B.6.10, Page 90 to 92, Page 92 to Page 93, Page 93 to Page 94, Page 98 to page 100, Page 101 to page 102, and Page 103 to Page 105. g) COO C.2, page 1: add after ODCM, "AI-504, and CP-341". h) D00: Under D.4, Page 23 add "added Item #80, HKB 3 anchor bolts". i) Attachments Z06 to Z12 do not have the revised drawings. j) Under Pages Added include the following: Added Attachments Z55 and Z 59. 			<p>Incorporated all comments except b). The platform size is not required to be changed, since 8'x10' size is acceptable</p>		
2	<p>File B00: Section B.6.10, Page 82: Add reference calculation S08-0021 for evaluation of form work for severe weather. Presently there is no attachment Z55 in EC for formwork drawing.</p>			<p>Comment incorporated..</p>		
3	<p>File B00: Section B.6.10, Page 87, what is the basis for 62 mph velocity of the</p>			<p>$V^2 = U^2 + 2 a s$</p>		

	falling object. Provide reference to allowable live load in IB roof and how does it relate to maximum 500 lbs tool load.	Based on distributed load over a 8' x 10' area (smallest platform footprint).
4	File B00: Section B.6.10, Page 88: Provide reference for the statement that decrease in leakage has been seen by PSC since the use of P4 grease.	Based on industry experience as provided by PSC and Bechtel.
5	File B00: Section B.6.10, Page 88: Under two primary methods for determining grease fill under ii) add the following at the end "The tendon net duct volume is the gross duct volume minus the volume taken by the tendon wires and components".	Clarification not required, since it is industry standard wording.
6	File B00: Section, Page 92: In Pre-Construction Qualification Testing ... title change ASTM to ASME and add after Div: "2 Subsection"	Comment incorporated.
7	File D00: D.4, Items 48A and 48B reference to sketch in attachment Z52. Attachment Z52 is about admixtures and does not have any sketch. Provide the correct reference.	The correct reference provided.
<p>Note: The Lead Reviewer signature on the EC DV milestone panel signifies that a lead review has been performed in accordance with EGR-NGGC-0003 and that errors/deficiencies (for all reviews performed) have been resolved and included in the EC package.</p>		

Attachment A

For Attachments see "Z01 thru Z40" files listed in the contents section of this EC.