Unit 2 Nuclear Island Shield Building

Schedule

Note:
Current IPS Dates from 9/14/15

Near-Term Milestones	August PRM Date	Current IPS Date	
Place Concrete - Outside Wall Q-line to 7.3 line - Layer F1 - EL 90'6 to 98' East	8/22/2015	8/27/2015	A
Place Concrete - Install Floor 7.3-line to Az 142 - Layer F1 - EL 90'6" to 92'6"	9/1/2015	9/25/2015	
Place Concrete - Layer F2 - EL 96'6 to 103'0 West	9/22/2015	9/27/2015	
Erect course 02 panels and panel assemblies	10/6/2015	10/10/2015	
Place Concrete - Outside Wall 7.3-line to Az 142 - Layer F1 - EL 92'6" to 98'	10/7/2015	11/24/2015	
Place Concrete - Inside Wall Q-line to Az 142 - Layer F1 - EL 90'6" to 98'	10/25/2015	12/31/2015	
Weld 01/02 Girth Seam - (1/4" fabrication mismatch) (Course 02)	11/6/2015	11/11/2015	
Place Concrete at Shield Panels at Column Line N-Q - EL 103' to 113' Course 02	11/18/2015	11/23/2015	

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Unit 2 Nuclear Island Shield Building

Construction – Shield Building

Accomplishments:

- **Layer F1 – Q to 7.3 Outside** – Concrete placed 8/27 72 cu yds
- **Course One (1) West Side**
  - Completed Vertical Seam Weld NDE
- **Courses 2 thru 5**
  - On fabrication pad, completed panel fit up with vertical welding & NDE for all 2 panel assemblies

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Unit 2 Nuclear Island Shield Building

Construction – Shield Building

- **Layer F2 EL 96'6 to 103'0 West**
  - Rebar/Formwork Installation Layer F2 96'6 to 103'0
  - Concrete Placement IP
- **Layer F1 Install Floor 7.3 to Az 142**
  - Install Embeds, Form Savers, Formwork and CV Seal Block Outs
  - Rebar welding
- **Layer F1 Outside Wall 7.3 *to Az 142***

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Unit 2 Nuclear Island Shield Building

Construction – Shield Building West Side

- Layer F1 Inside Wall Q to Az 142
  - Placement is continuous from Az. 345 (Q Line) to Az. 142
  - Formwork installation dependent on F1 Outside Wall Placed
  - Pursuing plan to divide into 3 placements
    1. Az. 345 (Q) to 7.3
       - Requesting new CJ for F1 Inside Az. 345 (Q) to 7.3
       - Allows F1 inside wall to be placed and earlier start on G placement Az. 345 (Q) to 7.3
       - 1 month estimated schedule improvement
    2. 7.3 to Az. 142
    3. Wedge –
       - Driven by CA20 North Wall work
       - Requesting CJ extended to El. 100' to allow separate wedge placement
- Layer G Install Floor Q-line to N-line

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Unit 2 Nuclear Island Shield Building

Construction – CA20 Focus Areas:

1. Support Wedge and Layer G
   - North Wall Straightening work
   - North Wall Repairs (EDCR/N&Ds)
2. Completion of work to Support N Wall
3. Completion of work to Support 1 Line Backfill
   - Coatings – walls, floors
   - Set Effluent Hold-up Tanks
   - E&DCR for Horizontal Joint @ El. 89'
   - CA20 Concrete
   - R104
   - Precast
   - Backfill
4. South Wall
   - Repair

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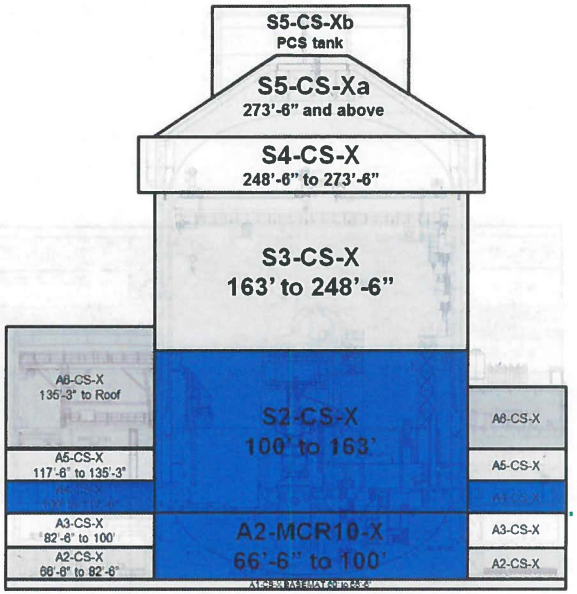
Unit 2 Nuclear Island Shield Building

Engineering (Cont'd)

- Auxiliary Building structural module CR10: A2-MCR10-X (layers F1, F2, and G)
  - No engineering holds or impact to construction with respect to panel fit-up and installation up to 100'
- Auxiliary Building fourth level civil / structural: A4-CS-X:
  - 621 documents in package
  - No engineering holds or impact to construction with respect to panel fit-up and installation between 100' and 117'-6"



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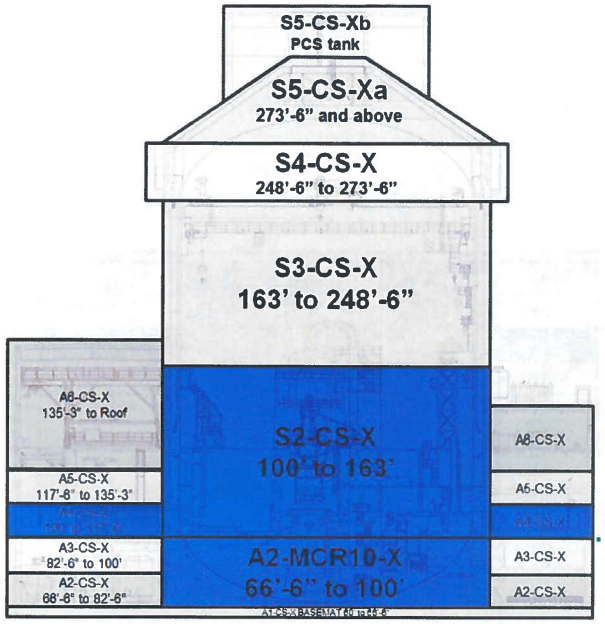
Unit 2 Nuclear Island Shield Building

Engineering (Cont'd)

- Shield Building second level civil / structural: S2-CS-X: Concrete and Steel Panels from 100' to 163'
  - 275 documents in package
  - Eight technical E&DCRs issued
    - Significant E&DCRs were:
    - APP-1220-GEF-428: Adds an embedment plate for a raceway support, due to a tolerance issue.
    - APP-1222-GEF-097: Adds reinforcement around HVAC penetrations due to incomplete details.
    - VS2-1223-GEF-000006: Splits concrete panel into 2 pieces to allow installation around protrusions from the Shield Building wall.
  - Seven N&Ds were closed in August
    - Three initiated in July; Four in August
    - Significant N&Ds were:
      - VS2-CR01-GNR-000360: Multiple nonconforming issues on the top mat of rebar for the 82'-6" slab over the CA22 module: Repair disposition.
      - VS2-CR01-GNR-000335: Repair rebar protruding from Q-Wall that violates minimum clear cover requirements: Repair disposition.
  - No engineering holds



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Unit 2 Nuclear Island Shield Building

Licensing

- **LAR-111** – Address out-of-plane shear for C3J coupler welds
  - Impacts Set Panel 3L – 11/5/2015
  - NRC technical exchange meeting – 8/13/2015
  - Submitted to NRC – 8/21/2015
  - NRC technical audit – 8/26/2015
    - 5 RAIs
    - LAR will be supplemented to include additional information
    - Draft response to Owners – 9/18/2015

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Unit 2 Nuclear Island Shield Building

Procurement

- Shield Panel Deliveries
  - Washers for Upset bars to support F2 Placement – 500 washers of each size arrived on site 12-Sep. Balance of 900 per size to delivery 16-Sep
  - 02M – 19-Oct (Construction Need 14-Sep)
  - 04M – 16-Oct (Construction Need 14-Sep)
  - 03L – 09-Oct (Construction Need 14-Sep)

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Unit 2 Nuclear Island Shield Building

Construction

- CBIS integration
  - Aids - Engineering/Construction
  - MS/FW Weldment & MS Penetration
  - Equipment Hatch & Manway Plan & Installation
  - Vacuum Box Testing on Ring 1
- Electrical Penetration (EPA's) Assembly Work
- Shield Panel Deliveries

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Unit 2 Nuclear Island Shield Building

Engineering

- Ongoing assessment of impacts from Design Change Proposal (DCP) APP-GW-GEE-5012, Rev. 0, "Relocation of PCS Piping and Raceway to Upper Annulus"
  - Relocated raceways and PCS piping to the inner wall of the Shield Building
    - Recirculation suction line
    - Spent fuel pool line from the PCCWST
    - Distribution bucket line
    - Three conduit banks that provide power and control cabling to the the upper areas of the Shield Building
- PCS Piping Isometrics Embedded in Shield Build Reinforced Concrete Cylindrical Wall below Elevation 146'-10" have been archived and issued to support piping procurement
- Design documents for the electrical penetrations and embedments required to be cast-in-place with the RC Shield Building wall are scheduled to be delivered on 9/30.
- Adding a 3rd personnel basket to support piping inspection
- One engineering hold on three documents
  - APP-PCS-GEF-112
  - Placed PCS piping on hold pending DCP incorporation
  - Supports construction schedule

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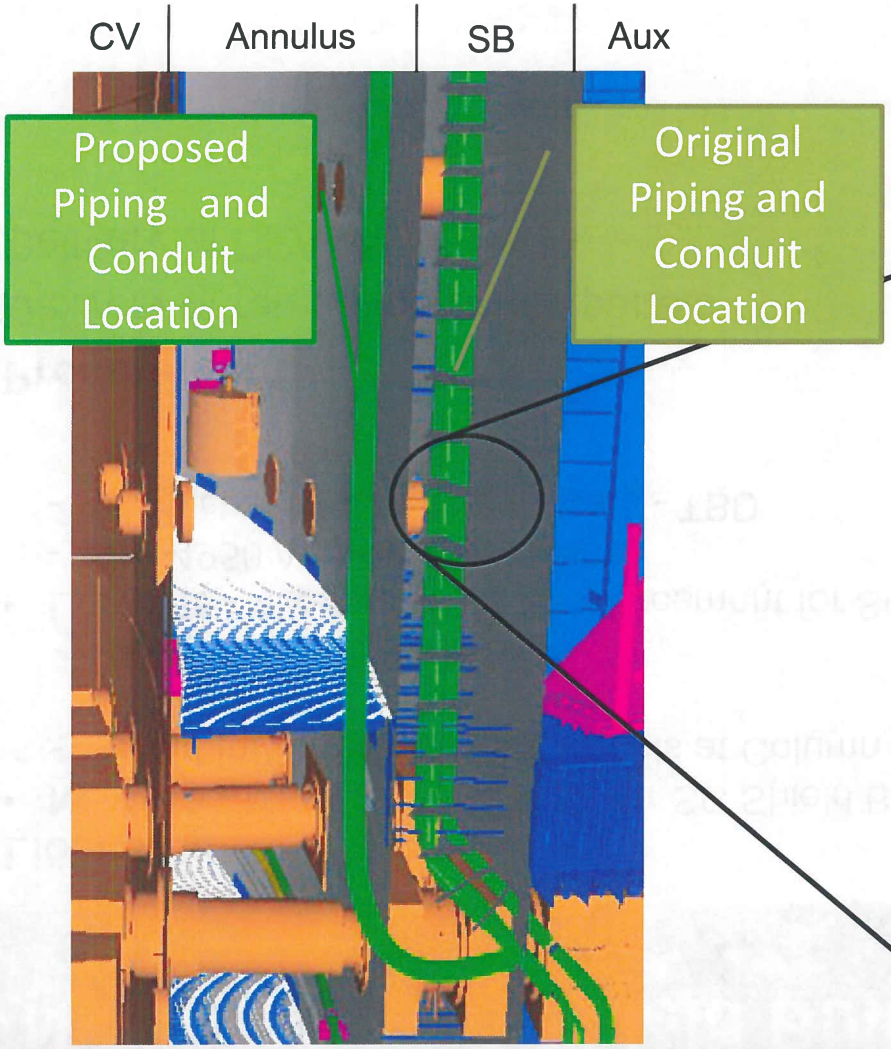
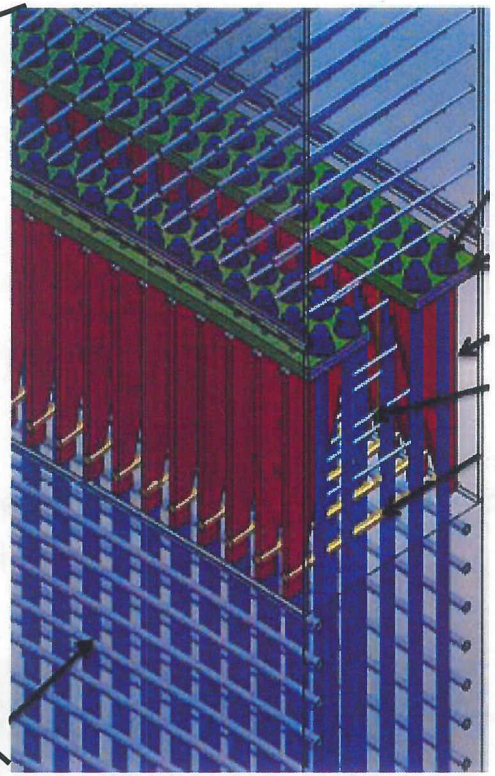
Unit 2 Nuclear Island Shield Building



The inside of the Shield Building wall is extremely congested with reinforcement for the US design



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Unit 2 Nuclear Island Shield Building

Licensing

- **NL-0973 -** Modified Weld Joint for SC Shield Building Panels
  - "Weld Int/Ext Shield Wall Panels at Column Line N-Q- El 103'6"-113'6" Course 2" – 9/18/2015
  - Incorporated into UFSAR
- **LAR-105** - Alternative Tie Reinforcement for SC Shield Building Panels
  - DCP-4950 Archived 12/17/2014
  - Expected NRC submittal date - TBD

Procurement

Delivery of remaining shield panels

Delivery of EPAs from Cives

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Unit 2 Nuclear Island Shield Building

Actions?

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Priority 2: Nuclear Island Inside Containment

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Unit 2 Nuclear Island Inside Containment

Milestone Summary

Concrete/Modules & Formwork/Supports for Equipment set – Reactor Vessel, Steam Generators, Pressurizer, Polar Crane, and CV Top Head to support Hot Functional Testing

- Prioritized Activities:
  a) Layer 5 placement (rebar, formwork, embeds, OLPs, CB Panels, and concrete)
  b) CA01 alignment/weld out
  c) CA01 deferred work below 107'
  d) CA01 work inside both SG cubicles to support component installation
  e) Load and install components inside CB65 (KQ10, KQ11, HVAC Duct Door and Shield Door)
  f) Installation of SPL-05

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Unit 2 Nuclear Island Inside Containment

Schedule

Note:
Current IPS Dates from 9/14/15

Near-Term Milestones	August PRM Date	Current IPS Date	
Weld Module CA01 to Embed Plates - EL 83'0	8/18/2015	9/16/2015	
Align & Weld CA01 Structural Module to CA05 Structural Module	9/24/2015	9/28/2015	
Install KQ10 (Reactor Coolant Drain Tank Equipment Module) - EL 71'6	10/7/2015	11/4/2015	
Install KQ11 (WLS-MP-02A/02B) Sump - EL 71'6"	10/9/2015	11/6/2015	
Place Concrete Inside Containment- El 84'6 to 87'6 (Layer 5) West Side	9/27/2015	9/30/2015	
Place Concrete Inside Containment- El 84'6 to 87'6 (Layer 5) East Side	9/27/2015	11/20/2015	

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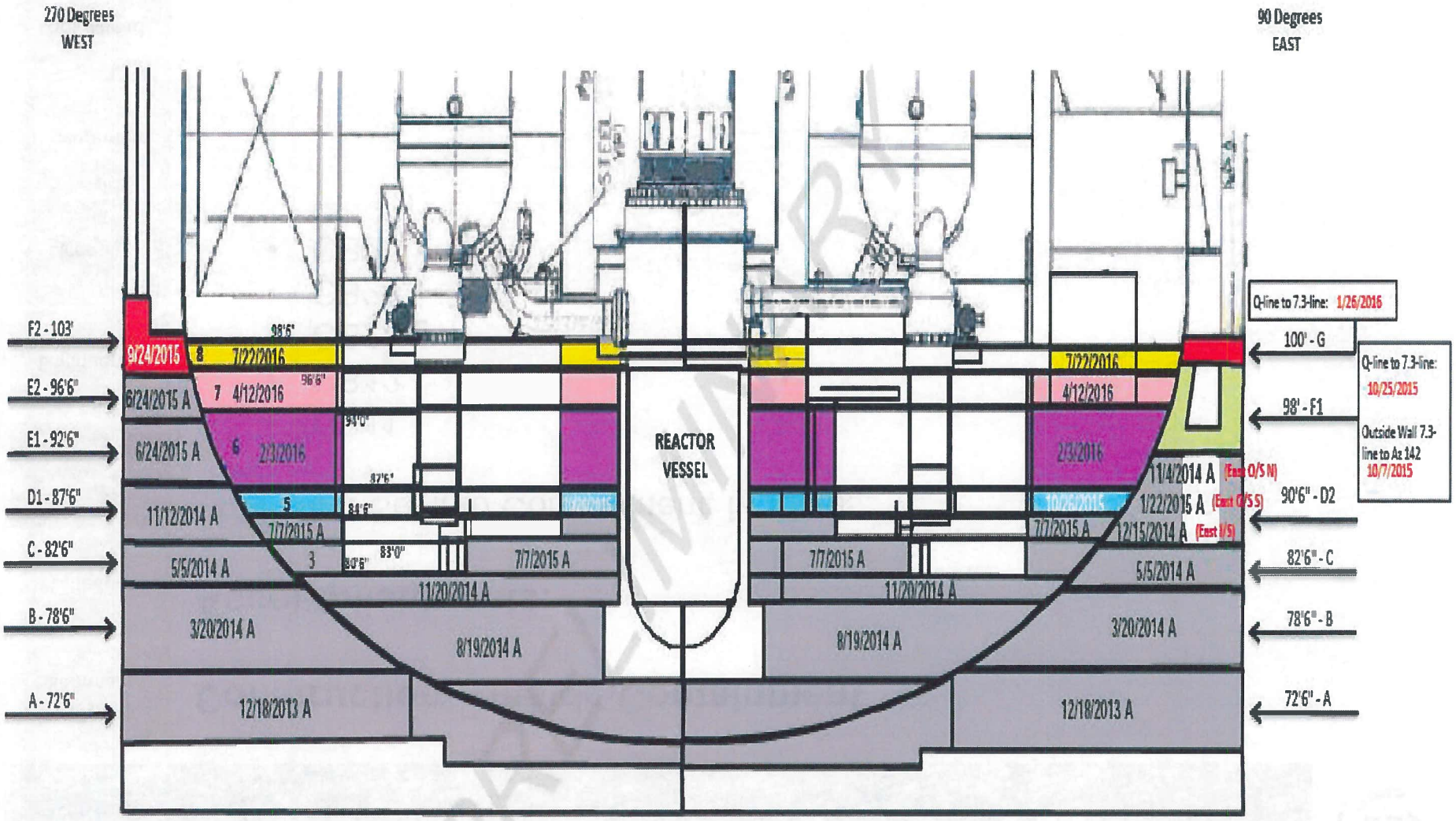
Unit 2 Nuclear Island Inside Containment



CONCRETE CONSTRUCTION JOINTS

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Unit 2 Nuclear Island Inside Containment

Construction – Inside Containment

Accomplishments:

- Lift and Set into Containment, Modules:
  - CB11
  - CB12
  - CB21
  - CB24
  - CB25

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Unit 2 Nuclear Island Inside Containment

Construction

- **CA01 Set and Weld out**
  - Weld out CA01 to Base Plates
  - Weld CA01 to CB50 Series Modules
- **Layer 5 West**
  - Install rebar 83' – 86'
  - 21 Dowels in Layer 3 not installed, needed for Layer 5 W
    - Plan being worked to utilize hydroblasting to ensure proitection of rebar
    - Readiness Review
- **Layer 5 East**
  - Install B plates

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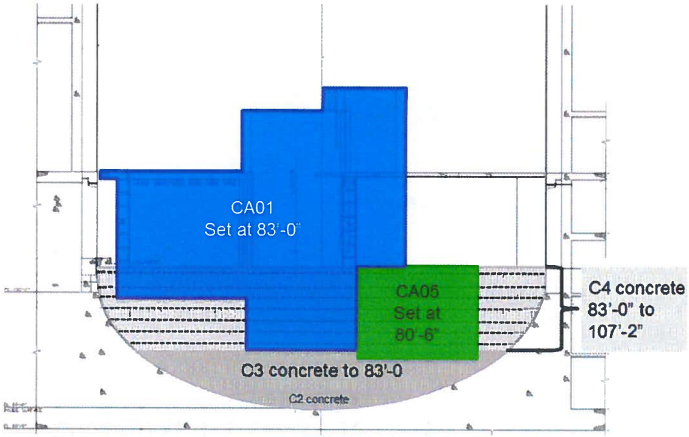
Unit 2 Nuclear Island Inside Containment

Engineering

- Containment fourth level civil / structural: C4-CS-X: Concrete and platforms from 83' to 107'-2" (Layer 5 is 83' to 87'-6")
  - 360 documents in package
  - Seven technical E&DCRs issued
    - The significant E&DCRs were:
    - APP-WLS-GEF-332: modifies leak chase piping on CA02 due to module configuration
    - APP-1110-GEF-105: adds vertical construction joint through Layer 5 to speed construction
  - No N&D opened and closed in August
  - No engineering holds



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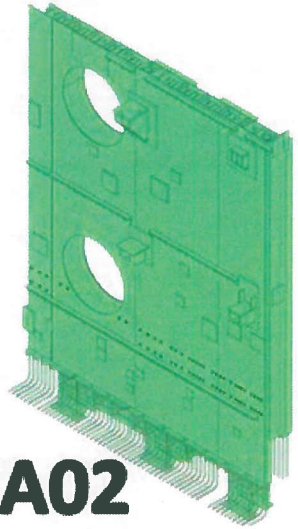
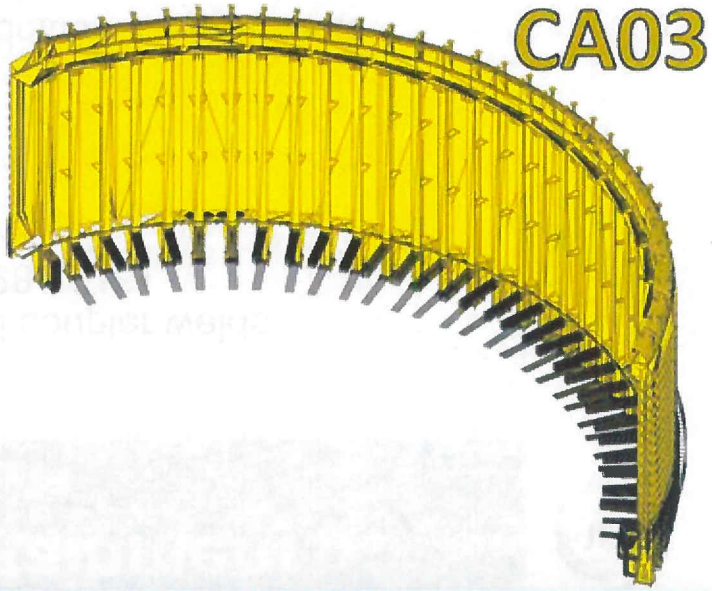
Unit 2 Nuclear Island Inside Containment

Engineering (Con't)

- CA02 Module Design and Assembly
  - Lands at 94'-0" (in blockout in Layer 6)
  - 110 documents
  - Two technical E&DCRs issued
    - The significant issue was:
    - APP-CA02-GEF-087: adds or revises coordinates for 8 overlay plates to avoid internal interferences
  - Four N&D closed in August
    - One initiated in July, and Three in August
    - No impact to construction
  - No engineering holds
- CA03 Module Design and Assembly
  - Lands at 96'-0" (above Layer 6)
  - 190 documents
  - Six technical E&DCR issued
    - No impact to construction
  - One N&D was initiated and closed in August
    - No impact to construction
  - No engineering holds





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Unit 2 Nuclear Island Inside Containment

Licensing

- **LAR-111** – Address out-of-plane shear for C3J coupler welds
  - Impacts Set CA02 (2/4/2016) and CA03 (4/28/2016)
  - NRC technical exchange meeting – 8/13/2015
  - Submittal to NRC – 8/21/2015
  - NRC technical audit – 8/26/2015
    - 5 RAIs
    - LAR will be supplemented to include additional information
    - Draft response to Owners – 9/18/2015

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Unit 2 Nuclear Island Inside Containment

Procurement

Layer 5

- Embeds - 90% delivered. All embeds for Layer 5 West Onsite. Anchor Bolts and 2 Plates left to ship. Delivery 18-Sep
- CB Overlay Plates - CB21 – 3 plates left to ship 19-Sep, CB24 – 3 plates left to ship 19-Sep, CB25 – 1 plate left to ship 11-Sep

CA01

- Overlay plates 18 of 308 Left to Ship 1-Oct
- Building Caps 10 of 19 Left To Ship 2-Oct

Layer 6

- CB Modules: CB33 8-Jan (Need 18-Oct), CB41 2-Oct (Need 18-Oct), CB43 8-Jan (Need 20-Oct), CB32 21-Dec (Need 20-Oct), CB42 25-Sep (Need 19-Oct)
- CB42 Overlay Plates – 2 left to ship 24-Sep
- Rebar – Detailing Complete – Several loads onsite. Vendor to fabricate and deliver based upon need date (Need date 14-Nov)

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Unit 2 Nuclear Island Inside Containment

Construction

- Layer 6
  - Start piping installation
  - Start rebar work
- CA01 Deferred work below 107'
- CA01 Work inside both SG cubicles to support component installation
- Load and install components inside CB65 (KQ10, 11, HVAC Duct Door and Shield Door)
- Installation of SPL-05

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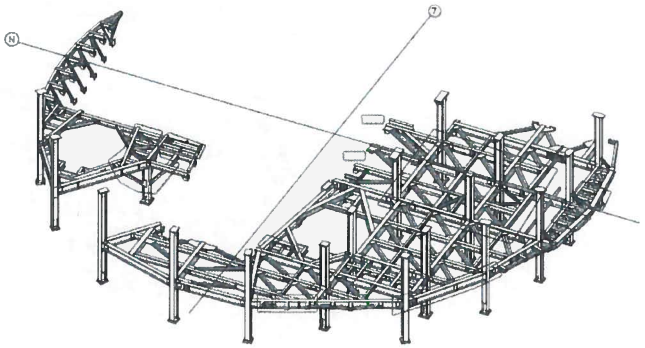
Unit 2 Nuclear Island Inside Containment

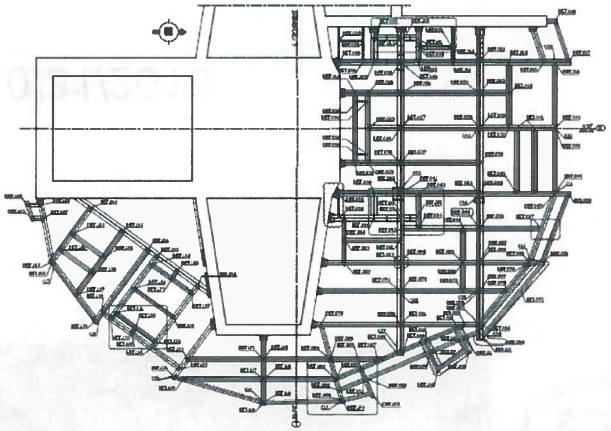
Engineering (cont'd)

- SPL18 Grating Floor Areas 2,3,4 at 118'-6"
  - One engineering hold on 16 documents
    - APP-1140-GEF-115
      - Resolution of module beam seat issues to be complete by 10/30/15
- SPL51 Operating Floor Areas 2,3,4 at 135'-3"
  - One engineering hold on 15 documents
    - APP-1140-GEF-115
      - After review, SPL51 was not impacted by this issue, hold removal in progress.
- Meeting conducted on 9/9/15 with CB&I, PVS, SDI and WEC to review comments for 2nd set of procurement documents
- Discussion continues between WEC, CB&I and PVS/SDI to sort through fabricator's "wants" vs. "needs"

SPL18



SPL51



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Unit 2 Nuclear Island Inside Containment

Licensing

- **LAR-49 -** Module Clip Angle –
  - PAR - "Install CA36" – 7/15/2016
  - LAR – "mass concrete at 107' 2"" – 10/31/2016
  - Submittal – 10/2015
- **LAR-7 -** Ventilation Systems Design Changes – Impacts "Install Recirculation Fans & Coils" – 8/12/2016
  - Submittal – 10/1/2015

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Unit 2 Nuclear Island Inside Containment

Procurement

- CA03
  - Last submodule kit eta 21-Oct
  - CA03-10 Forecast Delivery 18-Sep
- CA02
  - Basemat connections – Last shipment eta 14-Oct
- Layer 7
  - CB Modules: CB27 eta 14-Dec (Need date 19-Sep), CB37 eta 11-Jan (Need date 18-Jan), CB38 eta 15-Jan (Need date 18-Jan), CB39 eta 15-Jan (Need date 18-Jan)
- CB65 Components
  - KQ10 – 16-Oct (Need 15-Sep), CB65 Doors 6-Nov (Need 16-Sep)
- SPL05 – arrived onsite 8-Sep

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Unit 2 Nuclear Island Inside Containment

Actions?

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Priority 3: Nuclear Island Annex Building

2015/08/12

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Unit 2 Nuclear Island Annex Building

Milestone Summary

Civil, Structural, Equipment, and Commodity work to support Initial Energization

- Prioritized Activities:
  a) CA22 placement and interior auxiliary building walls
  b) Annex building basemat

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Unit 2 Nuclear Island Annex Building

Schedule

Note:
Current IPS Dates from 9/14/15

Activity	August PRM Date	Current IPS Date	
Place Concrete Floor for CA22 - EL 82'6	9/5/2015	9/19/2015	
Aux Bldg Structural Backfill Along Col Line I to EL 95'0 Completed	10/14/2015	10/28/2015	
Place Mudmat Annex Bldg Basemat CL 4.1-12' to CL 9+10' 8.5" Area 2 (419 cy)	10/27/2015	11/11/2015	
Place Mudmat Annex Bldg Basemat CL 9+10' 8.5" to CL 13 - Area 1 (310 cy)	11/2/2015	11/18/2015	
Place Concrete Annex Bldg Basemat CL 4.1-12' to CL 9+10' 8.5" Area 2 (1537 cy)	12/7/2015	12/22/2015	
Place Concrete Annex Bldg Basemat CL 9+10' 8.5" to CL 13 - Area 1 (1084 cy)	1/6/2016	1/21/2016	

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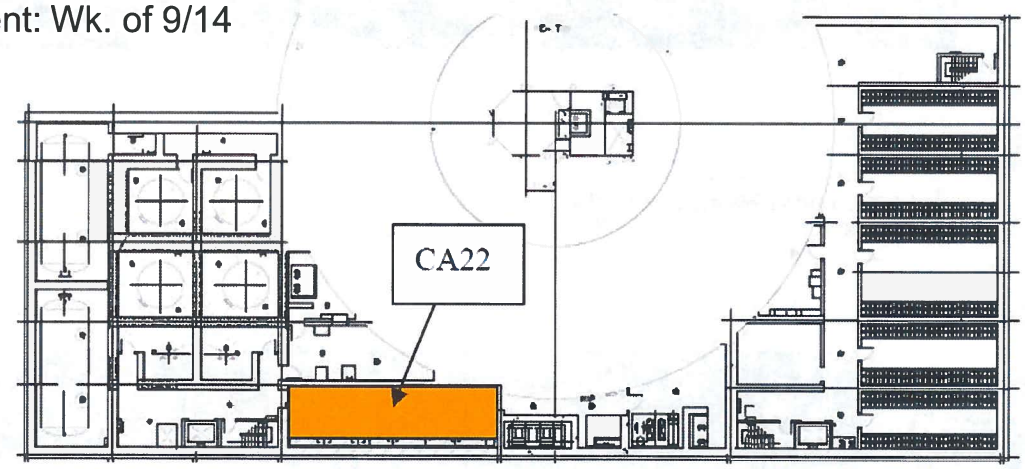
Unit 2 Nuclear Island Annex Building

Milestone Summary
Schedule
Construction
Engineering
Licensing
Procurement
Look Ahead
Actions

CA-22

- Engineering
  - All E&DCRs and N&Ds dispositioned
  - Non-contact lap splice rebar-to-plate EOC holds have been placed
  - Technical plan forward to be determined based in part on construction need date
- Construction
  - Working 2 shifts and weekends
  - Daily OCC meetings
  - Target Concrete Placement: Wk. of 9/14



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