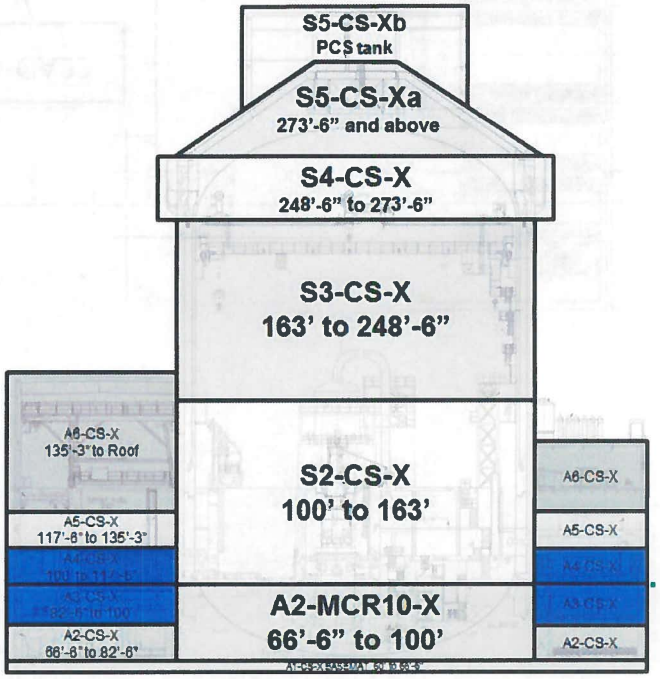
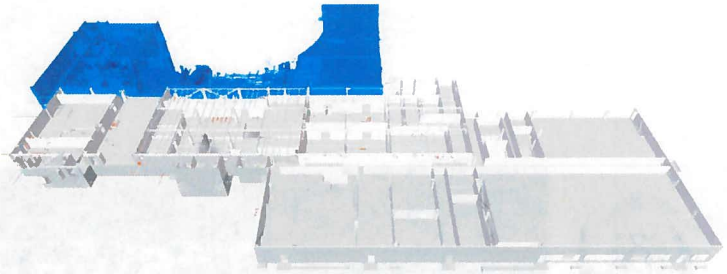
Unit 2 Nuclear Island Annex Building

Engineering

- Auxiliary Building third level civil / structural: A3-CS-X: Concrete from 82'-6" to 100'
  - 654 documents in package
  - 17 technical E&DCRs were issued in August
    - No construction impact to the Annex Building basemat
  - 17 N&Ds were closed in August
    - One initiated in June; Eight in July; Eight in August
    - No construction impact to Annex Building basemat
  - No engineering holds





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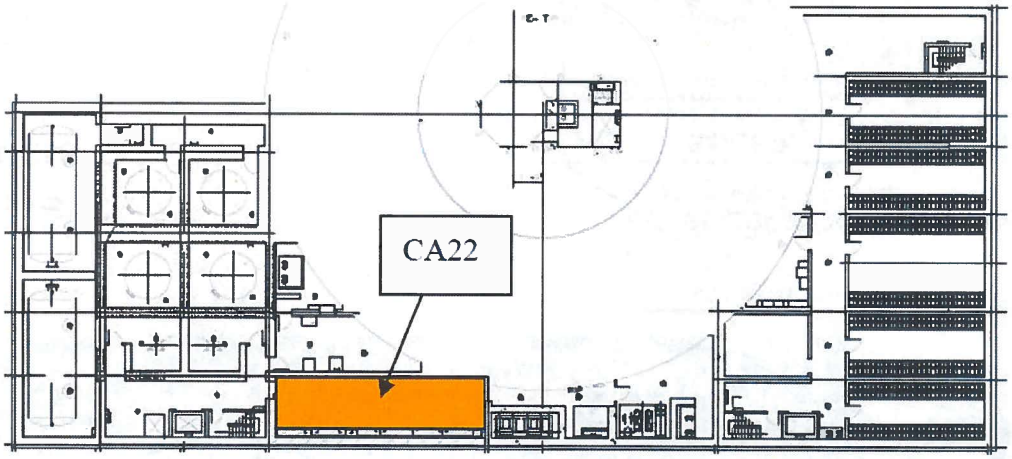
Unit 2 Nuclear Island Annex Building

Engineering

- CA22
  - No technical E&DCRs were issued in August
    - No construction impact to the Annex Building basemat
  - No N&Ds were closed in August
    - No construction impact to Annex Building basemat
  - John Robinson to update by Friday.



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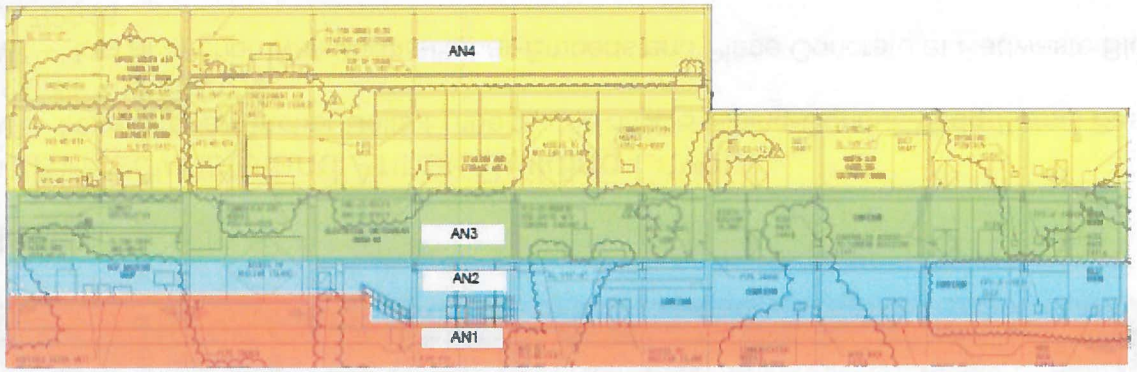
Unit 2 Nuclear Island Annex Building

Milestone Summary
Schedule
Construction
Engineering
Licensing
Procurement
Look Ahead
Actions

Engineering (CB&I)

- Annex Building Basemat AN1-CS-X
  - 131 Documents in Package
  - 21 Holds
    - All isometrics associated with WRS Piping (CAR 2015-2691)
  - VC Summer Specific Design Changes completed:
    - E&DCR VS2-CE50-GEF-000030 Issued
  - VC Summer Specific issues open:
    - Basemat reinforcement design drawing



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Unit 2 Nuclear Island Annex Building

Milestone Summary
Schedule
Construction
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Actions

Licensing

- **LAR-2b**: Radwaste and Annex Building Layout
  - **PAR** - Install Rebar-Anchor Bolts-Embeds-WWS/SDS Piping-Conduit-Grdg-Forms Basemat CL 9+10' 8.5" to CL 13 - 11/25/2015
  - **LAR** – Install Interior Wall Forms-Rebar-Embeds and Place Concrete at Radwaste Bldg Rm 50351 – 11/17/2016
  - Submitted to NRC - 2/27/2014
  - PAR received
  - Radwaste Building analysis RAI response submitted – 8/24/2015
- **LAR-18**: Structures Layout (Radwaste and Annex building)
  - Install Rebar-Anchor Bolts-Embeds-WWS/SDS Piping-Conduit-Grdg-Forms Basemat CL 9+10' 8.5" to CL 13 – 11/25/2015
  - Submitted to NRC - 12/4/2014
  - NRC Review on Schedule
- **LAR-30:** Remove MSIV Compartment Vents and Change Penetration Rebar Design/TB Bay Wall 11.2
  - **PAR -** Install Layer 1,2,3 Rebar West ASME III pipe Penetration – Wall at Line 11, P-Q-EL 117'6" – Area 1 – 3/25/2016
  - **LAR -** Place Concrete Wall at Line 11, L to Q - EL 117'6" - Area 1 – 5/31/2016
  - Wall 11.2 tornado missile approach defined
  - NRC Technical Exchange meeting – 9/3/2015
  - Revised Draft LAR review with Owners in Pittsburgh – 9/17 & 9/18
  - Presubmittal meeting – 10/8/2015
  - Submittal to NRC - 11/9/2015

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Unit 2 Nuclear Island Annex Building

Licensing, continued

- **LAR-43:** Tier 2* Changes and Clarifications
  - Place Concrete Wall at Line N, 1 to 4 - EL 100' – 2/11/2016
  - Submitted to NRC - 6/12/2014
  - NRC Review on Schedule
- **LAR-111 –** Address out-of-plane shear for C3J coupler welds
  - Impacts "Fill CA20 Structural Module" –11/17/2015
  - Also addresses C3J couplers which are under CA-20
  - 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

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Unit 2 Nuclear Island Annex Building

Procurement

- No material issues affecting Annex Basemat or CA22

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Unit 2 Nuclear Island Annex Building

Construction

Annex Building Basemat Construction

- CA22 driver for mudmat and basemat starts
- All material on site for basemat
- Now managing outstanding materials for walls
  - Embeds
  - Structural steel by priority on site and deliveries continue
  - Pipe fabrication

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Unit 2 Nuclear Island Annex Building

Milestone Summary

Schedule

Construction

Engineering

Licensing

Procurement

Look Ahead

Actions

Construction

- Wall 11 Main Steam and Feedwater Penetrations (Stargate)

- Mock-up base slab and knee wall sections placed and stripped
- Tracking Materials:
  - All materials now received
  - Complete "matching" of 1st delivered circumferentials to obtain best fit circles.
  - As stir-up welding nears completion will initiate cutting of circumferential bar and prepping for Cad Welding.
- Continued assistance of Harsco evaluating forming options to allow direct injection of concrete into lower and heavily rebar congested areas.
- Also evaluating formwork options for higher concrete placement form pressures (result of using SCC).

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Unit 2 Nuclear Island Annex Building

Construction

Wall 11 Main Steam and Feedwater Penetrations (Stargate) **Cont'd**

- Obstacles to next step-
  - Cutting and welding of #9 & #11 stir-ups (into continuous loop) is time consuming and inconsistent for delivering stir-ups that will "mate" with adjacent bar. Bars maintain slight twist and do not maintain continuous contact.
  - Options:
  - Cutting minimum once for all situations; including very good bars
  - For bad bars, cutting in 2 or 3 locations, which requires adding 1-2 <u>additional</u> weld locations
  - Will have to find "best fit" pairs to install together in contact with one another or provide gap (1" min) to allow concrete flow between stir-ups

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Unit 2 Nuclear Island Annex Building

Construction

Wall 11 Main Steam and Feedwater Penetrations (Stargate) **Cont'd**

- Options cont'd:
  - During the mock-up, the Team will get a feel for what percentage are good versus bad as fabricated by Gerdau.
  - Then will ask for an overage amount to be supplied by Gerdau (i.e. if need 50 and 25% are thought to be bad, ask Gerdau to provide 50+25% or ~65) to a yet to be identified 3rd party welding company to cut and perform welding.
  - For this example, we need 50 or more "best" welded products coming out of 3rd party shop to the site.

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Unit 2 Nuclear Island Annex Building

Engineering – Auxiliary Building

- Auxiliary Building fourth level civil / structural: A4-CS-X: Concrete for 100' to 117'
  - 621 documents in package
  - One engineering hold to close on one document
    - APP-PL03-GEF-850072
      - CB&I hold for unincorporated DCP against a Sanitary Drain System piping isometric
      - Resolved by APP-SDS-GEF-012. Hold can be superseded.
      - No impact to Annex Building basemat construction

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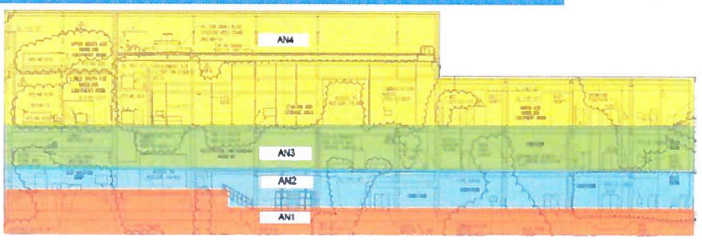
Unit 2 Nuclear Island Annex Building



Milestone Summary

Schedule

Construction

Engineering

Licensing

Procurement

Look Ahead

Actions

Engineering – Annex Building

- AN1-CS-X (100'0" to 107'2")
  - 5 DOS ISOs impacted by Ancillary Diesel Oil
- AN2-CS-X (100'0" to 117'6")
  - 108 Documents in Package
  - 10 Engineering Holds (1 Document Removed from Hold)
    - Hold Removal
      - Non-Seg Bus Duct Lateral Support Supplemental Steel
      - General Arrangement Plans
  - Design issues open:
    - HVAC Stairwell Heaters (S02, S03 and S04)
    - Converting Vogtle E&DCRs (above basemat) to Standard Plant E&DCRs
      - 58 E&DCRs Impacting 35 drawings
      - 27 Complete
      - 17 In Review
    - Electrical Design Completion/Release: Raceway Routing and Grounding
    - Incorporating Final Equipment/Valve Vendor Information
    - Wall Reinforcement Congestion: Area 2 Complete, Area 1 In-Progress
  - Design Removed from Hold/Completed
    - Annex Instrument Location Plans
    - Annex Grounding Design

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Unit 2 Nuclear Island Annex Building

Milestone Summary
Schedule
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Actions

Licensing

- **LAR-112** – Tier 1 Wall Thickness Discrepancy above 100' Elevation
  - NRC agrees this is a Tier 1 inconsistency and construction can proceed.
  - **LAR** - ITAAC 3.3.00.02a.ii.d "Aux Bldg RCA As-Built Concrete Thickness" – 5/23/2017
  - **PAR** may be requested
  - Submittal - TBD
- **LAR-90** - Finned Floors – Impacts "Install CA44 (Finned Floor Module) Room 12401 – EL 117'6" – 7/5/2016
  - Submittal – 10/8/2015
- **NL-0856** - CA20 Leak Chase - Impacts "Fill CA20 Structural Module" – 11/17/2015
  - Transmitted to SCE&G - 1/12/2015

Procurement Tracking

- Annex Steel deliveries ongoing
- Annex Wall Embeds – all plates to elevation 107' are onsite. Embeds for elevation 107'-117'-6 have been fabricated and are being stored at the supplier
- Pipe Fabrication and Delivery – Spool VS2-WWS-PLW-976-1 needed for Annex 102' to 107 – currently in fabrication
- All Wall 11 Main Steam Mock Up Rebar onsite

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Unit 2 Nuclear Island Annex Building

Actions?

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Break

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Priority 4: Turbine Building

08/14/2015

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Unit 2 Turbine Building

Milestone Summary

Turbine building work to support Initial Energization and Hot Functional Testing

- Prioritized Activities:
  - 1st Bay Turbine Building basemat
  - Turbine Building pedestal

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Unit 2 Turbine Building

Schedule

Note:
Current IPS Dates from 9/14/15

Activity	August PRM Date	Current IPS Date	
Place Concrete for Basemat 1st Bay	8/29/2015	9/9/2015	A
Place Backfill - TB Wall Plant W - EL 94' to 100'	9/4/2015	10/12/2015	
TG Pedestal: Concrete Cure Complete	11/21/2015	12/18/2015	

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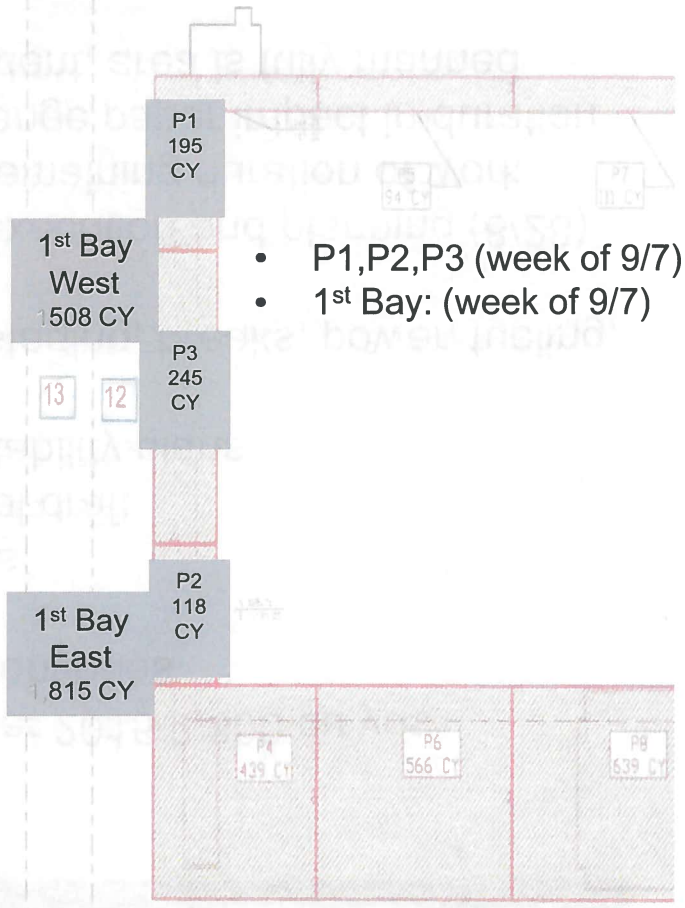
Unit 2 Turbine Building

Construction

- Single placement incorporating P1, P2, P3 and 1st Bay - 2,080 cu yds
- Placement 9/10 - 9/11
- Utilized 2 concrete mixes:
  - F (3/8 aggr. SCC)
  - C2 (conventional mass concrete)
  - F Mix for lower highly congested layer
  - C2 for upper layer incl. finished surface
  - Mock Up performed with F and C2
- Utilized placing boom for first time
- Utilized QC for inspections of rebar wall dowels for the 11.2 column line
- Encountered stiffened concrete in some areas with lower F layer: N&D, CAR issued, surveyed areas, Eng. analyzing



- P1,P2,P3 (week of 9/7)
- 1st Bay: (week of 9/7)

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Unit 2 Turbine Building

Construction - STG Deck

- Placement forecast for mid November 2015 2,300 cu yds
  - Rebar and Embed installation continues
  - Working 2 shifts 6-10s
  - Daily OCC PMO Team meetings
  - Concrete Placement Plan in final draft
    - Finalizing placing constructability plans
    - Thermal control plan
    - Placement day logistics – staging, breaks, power, fueling, emergency planning
  - Corporate cold eyes review of execution and planning (8/28)
    - Reviewed Team plan and remaining duration of work
      - Plan assumes little change paper impact in duration
      - Craft Resource dependent, area is fully manned

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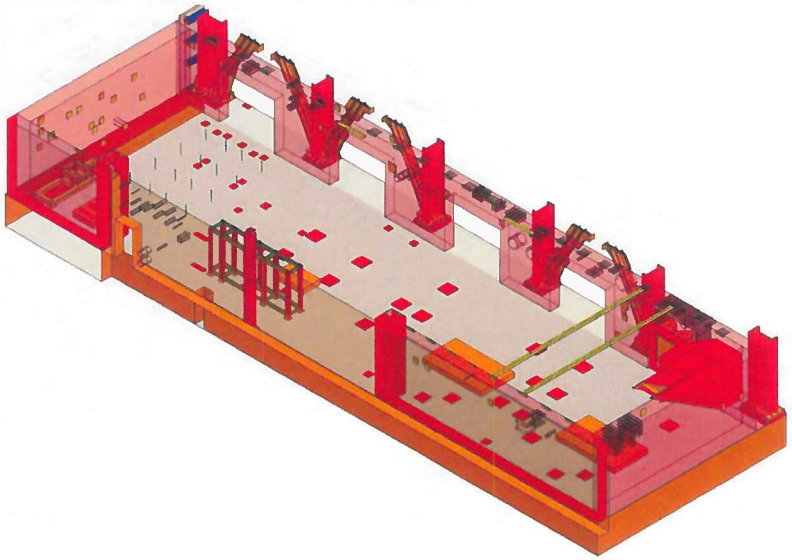
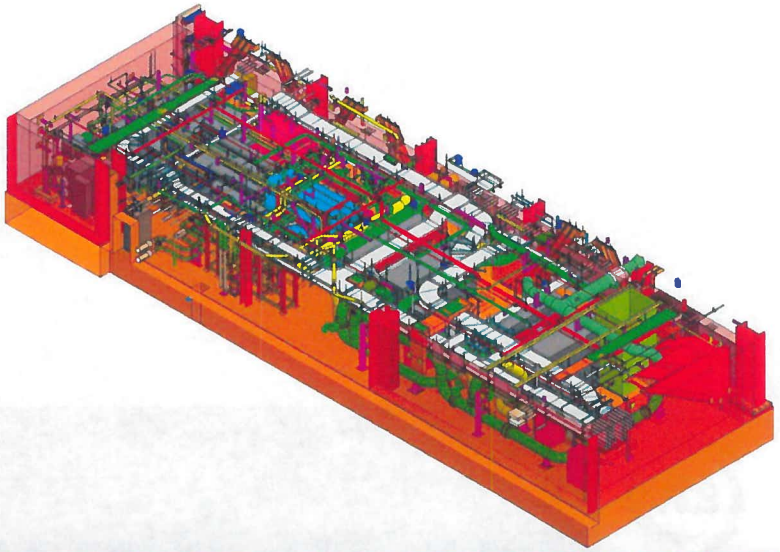
Unit 2 Turbine Building

Engineering

- Turbine Building 1st Bay Basemat T1-FB-X (CSA)
  - 38 Documents in Package
  - No Holds
  - SEG worked with FE to address (Duration August to Beginning of September)
    - 25 E&DCRs (CSA)
    - 5 E&DCRs (Mech/Piping)
    - 12 N&Ds





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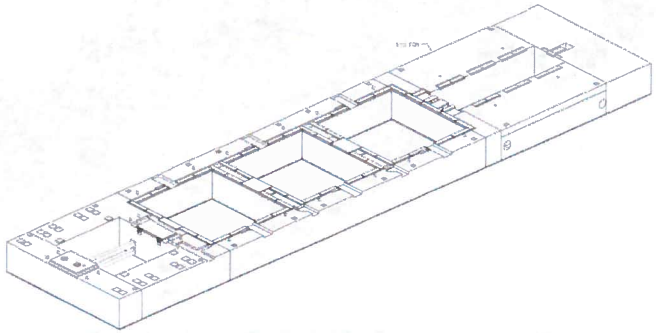
Unit 2 Turbine Building

Engineering

- Turbine Building Pedestal (T5-M81-X)
  - 55 Documents in Package
  - No Holds
- SEG working with FE to address congestion as specific needs are identified
  - No Open E&DCRs/N&Ds



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Unit 2 Turbine Building

Licensing

- **LAR-30** - Remove MSIV Compartment Vents and Change Penetration Rebar Design/TB Bay Wall 11.2
  - Wall 11.2 tornado missile approach defined
  - First bay basemat concrete placement
    - Enhanced quality requirements
    - Wall 11.2 wall dowel development length and spacing
  - NRC Technical Exchange meeting – 9/3/2015
  - Revised Draft LAR review with Owners in Pittsburgh – 9/17 & 9/18
  - LCP Presubmittal meeting – 10/8/2015
  - Submittal to NRC - 11/9/2015

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Unit 2 Turbine Building

Procurement

- There are no outstanding material needs to support Turbine First Bay or Turbine Pedestal

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Unit 2 Turbine Building

Construction

- Completion of Structural Steel up to 170'
- Set crane columns and verts
- Set mechanical/electrical equipment up to 170'
- Setting of Transformers
- Start Dead End Structure to support initial energization
- Start ISO phase bus foundations

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Unit 2 Turbine Building

Engineering

- Incorporating Final Equipment/Valve Vendor Information
- Auxiliary Building Tornado Missile Evaluation (LAR 30)
- Issuing FWS and MSS Piping Revised Design (Incorporating approved Wall 11 Loads)
- HVAC Stairwell and Unit Heater

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Unit 2 Turbine Building

Engineering

- Turbine Building Elevation 82'9" (T2)
  - 2609 Documents, 25 Documents Added to Package, 32 Removed from Hold, 18 Holds Added, 206 Holds Remain
    - 3 Electrical Holds
    - 187 Piping Holds
    - 6 CSA Holds
- Turbine Building Elevation 100'0" (T3)
  - 5103 Documents, 51 Documents Added to Package, 67 Removed from Hold, 66 Holds Added, 504 Holds Remain
    - 144 Electrical Holds (Note: EC Package Moved to T6)
    - 360 Piping Holds
    - No CSA Holds
- Turbine Pedestal, Elevation 170'0" (T5-M81-X)
  - 55 Documents
  - No Holds

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Unit 2 Turbine Building

Licensing

- **LAR-67** – Turbine Bldg Switchgear Room and Office Area Layout Change – Impacts "Construct Rm: Switchgear Room 2 – EL 141_subArea2" –1/28/2016
  - NRC review on schedule
- **FL-0002** – VWS Chiller Relocations – "Install Rebar for Equip Pads on Slab @ EL120_subArea 2" –11/24/2015
  - Transmitted to SCE&G -1/13/15

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Unit 2 Turbine Building

Procurement

- Pipe Support Deliveries
- Redesigned Pipe Spools

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Unit 2 Turbine Building

Actions?

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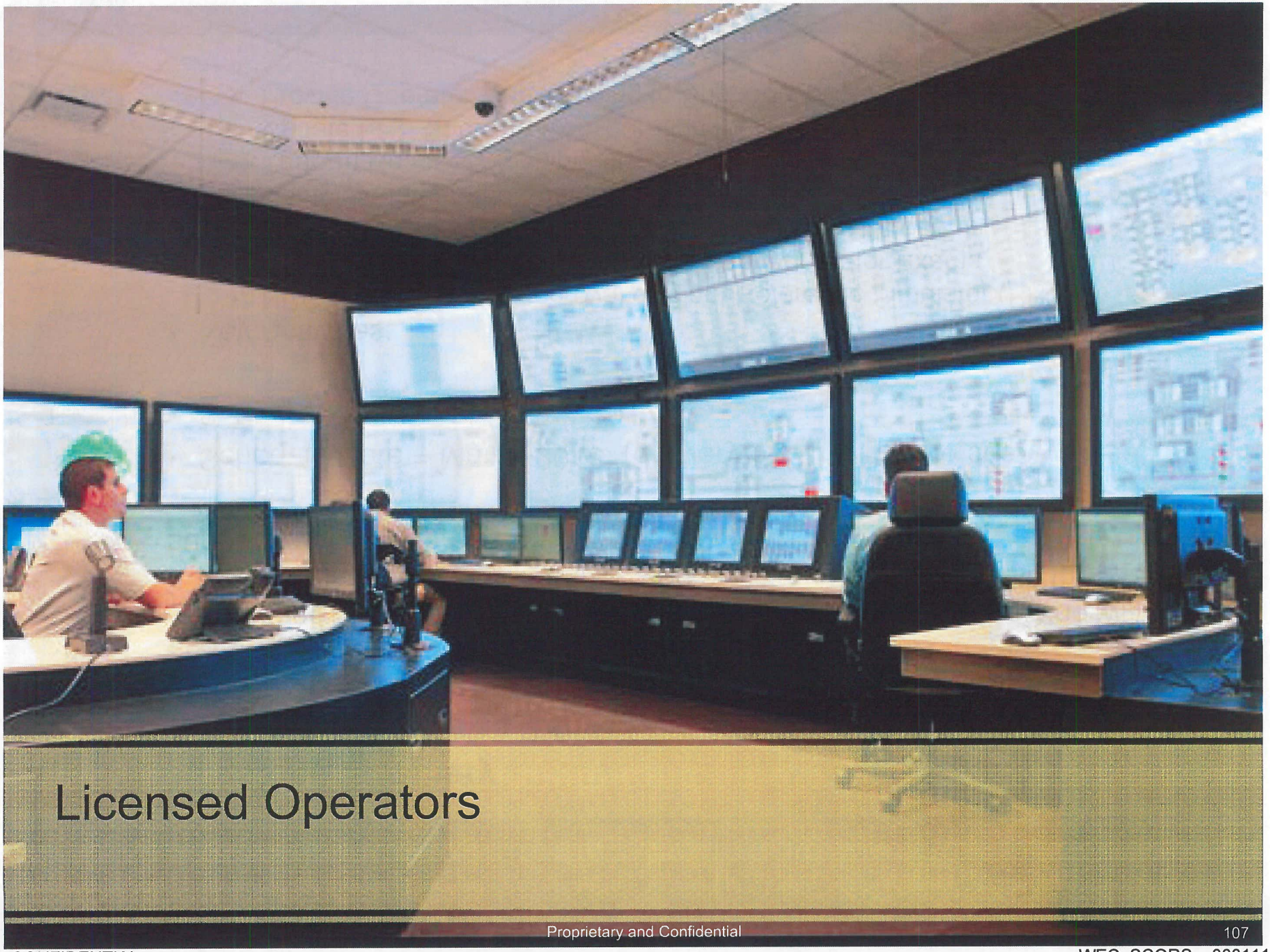

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Licensed Operators

Near Term Milestone: Licensed Operators for Unit 2 Fuel Load

Milestone Summary

Critical Path for securing licensed operators goes through NRC inspection and approval of the Plant Reference Simulator. Three classes of candidates are planned to sit for operator license exams to support the requirement of 45 licensed operators for Unit 2 Fuel Load. Additional gap training will be provided based on plant updates, and additional classes will sit for exams to support Unit 3 requirements.

- Schedule Date = March 2018 (delivery of BL 8 PRS to site)
- Schedule need date = June 2017

- Key Activities:
  - NRC Inspection and approval of Plant Reference Simulator (PRS)
  - First Wave of Candidates sit for Licensed Operator Exams
  - Secure 45 Licensed Operators prior to Unit 2 Fuel Load
  - Complete Integrated System Validation (ISV) ITAAC
  - Perform Reactivity Manipulations
  - Update PRS Software Configuration for Fuel Load
  - Provide Operator Gap Training to Support Unit 2 Fuel Load

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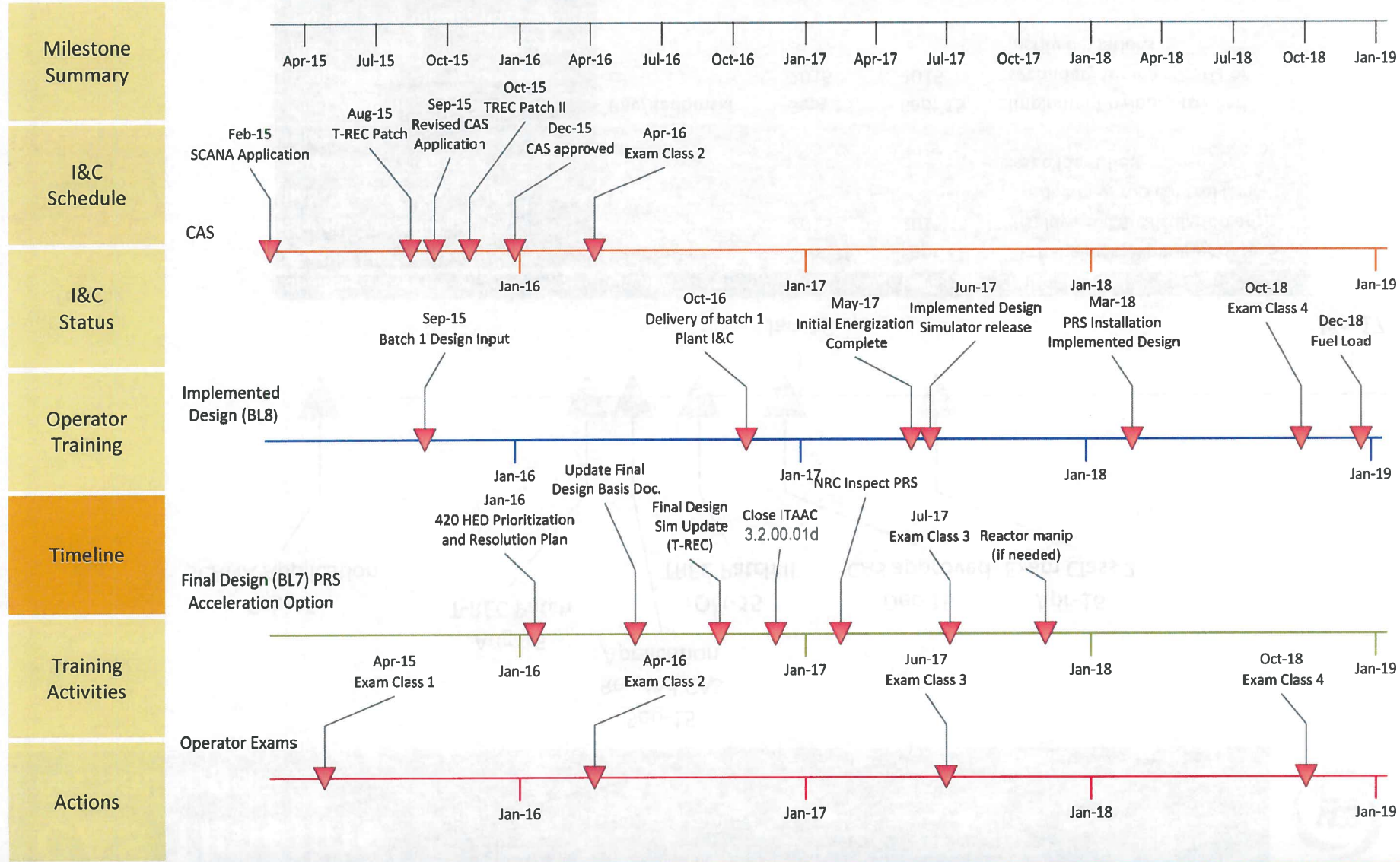
Overview Simulator Updates

Major Pathways



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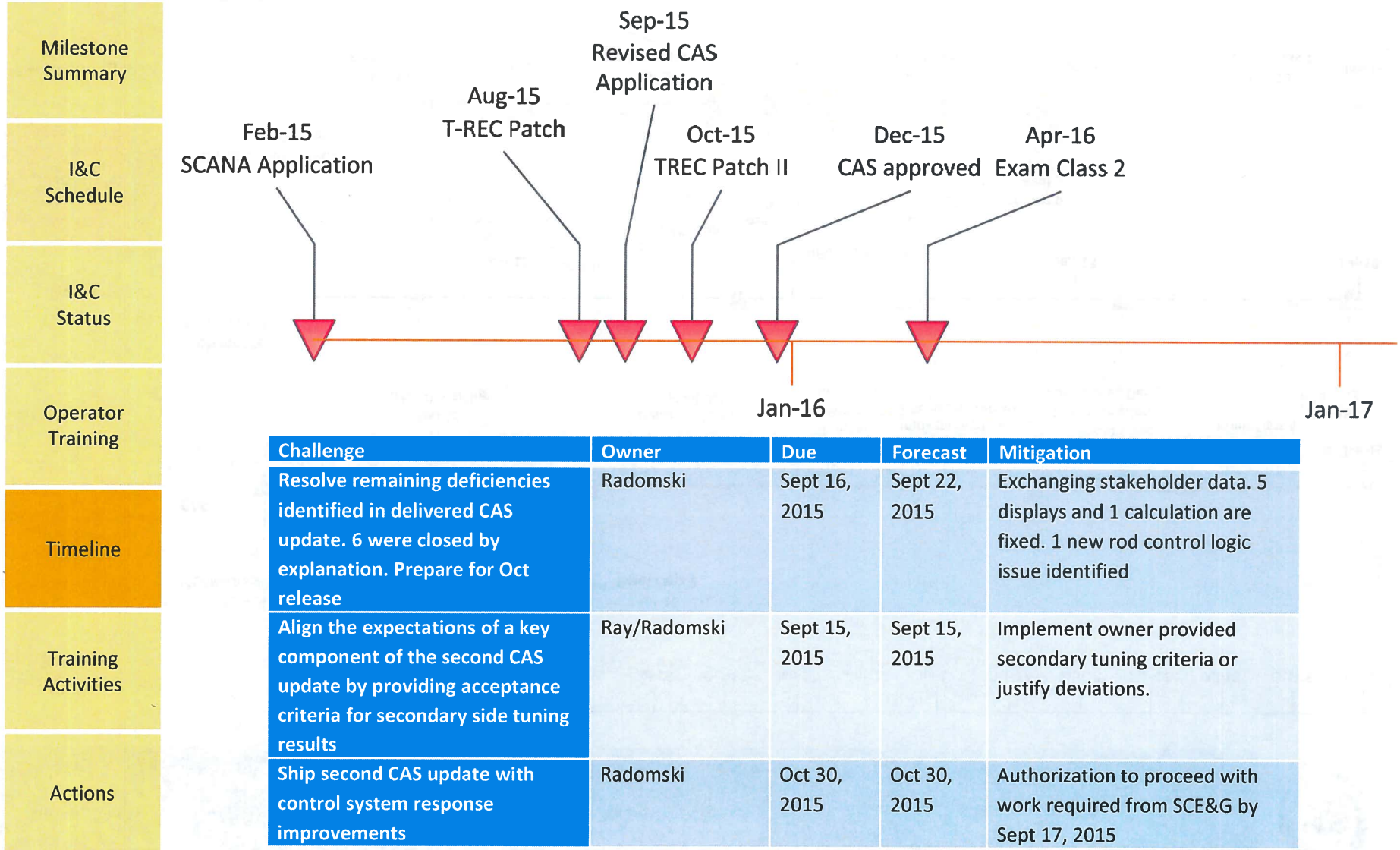
CAS Timeline
& challenges



Challenge	Owner	Due	Forecast	Mitigation
Resolve remaining deficiencies identified in delivered CAS update. 6 were closed by explanation. Prepare for Oct release	Radomski	Sept 16, 2015	Sept 22, 2015	Exchanging stakeholder data. 5 displays and 1 calculation are fixed. 1 new rod control logic issue identified
Align the expectations of a key component of the second CAS update by providing acceptance criteria for secondary side tuning results	Ray/Radomski	Sept 15, 2015	Sept 15, 2015	Implement owner provided secondary tuning criteria or justify deviations.
Ship second CAS update with control system response improvements	Radomski	Oct 30, 2015	Oct 30, 2015	Authorization to proceed with work required from SCE&G by Sept 17, 2015

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Implemented Design (BL8)

Challenges

Milestone Summary

I&C Schedule

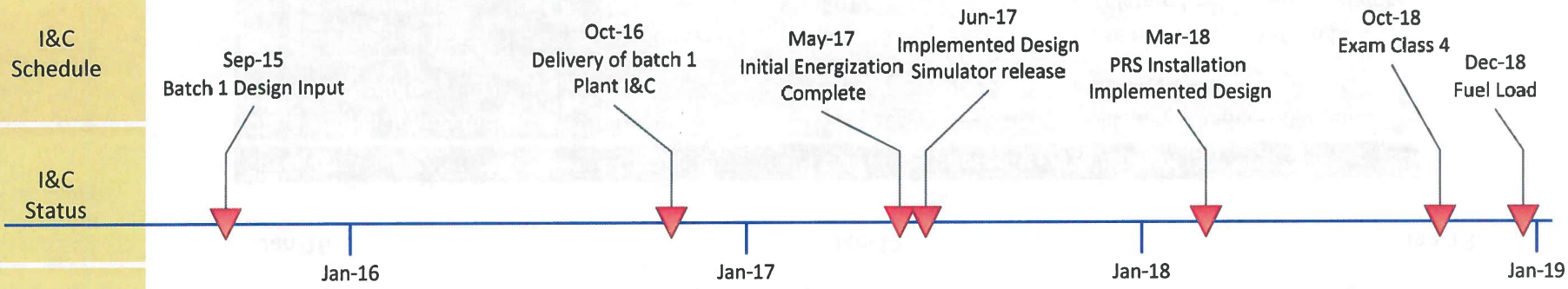
I&C Status

Operator Training

Timeline

Training Activities

Actions



Challenge	Owner	Due	Forecast	Mitigation
Obtain design inputs for I&C to support schedule	Nydes	Sept 16, 2015	Sept 16, 2015	Hold daily schedule adherence meetings (SAM)
Does not support license operator exam needs	Radomski	Jun. 15, 2017	TBD	Close HFE (420) ITAAC and accelerate final design simulator – Owner reviews in progress
Close out HFE 420 ITAAC	Harris	Dec. 15, 2017	Dec. 15, 2017	Initiate close out activities on the first internal simulator release May 2017

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HFE ITAAC & Final Design (BL7) Simulator

Challenges

Milestone Summary

I&C Schedule

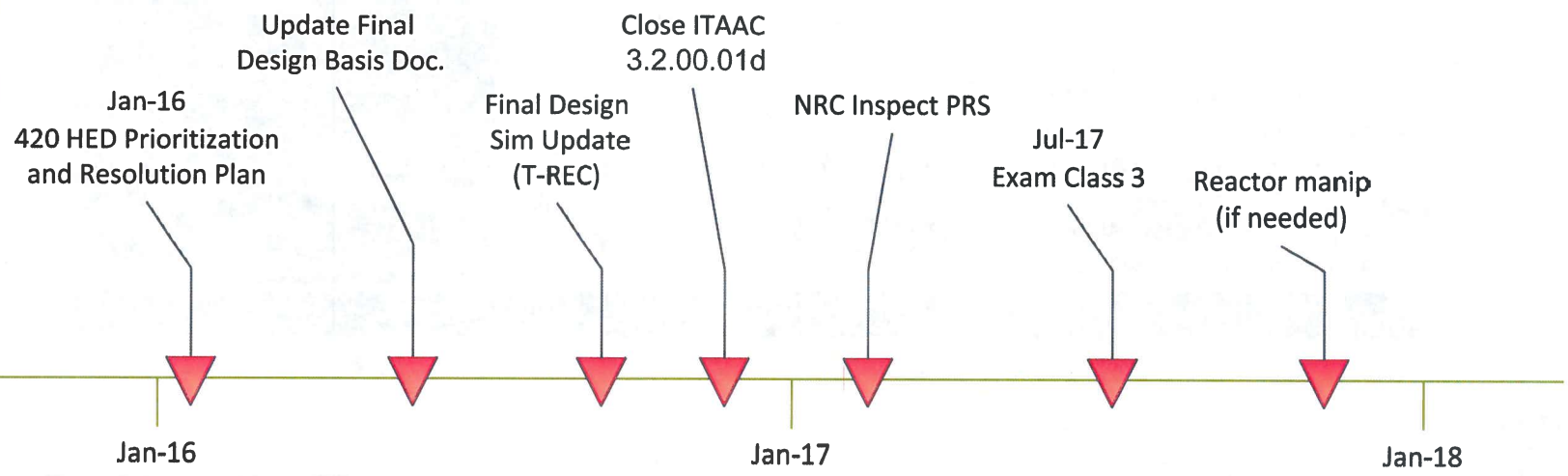
I&C Status

Operator Training

Timeline

Training Activities

Actions



Challenge	Owner	Due	Forecast	Mitigation
Obtain design inputs for I&C to support schedule	Nydes	Sept 16, 2015	Sept 16, 2015	Hold daily schedule adherence meetings (SAM)
Does not support license operator exam needs	Radomski	Jun. 15, 2017	TBD	Close HFE (420) ITAAC and accelerate final design simulator – Owner reviews in progress
Close out HFE 420 ITAAC	Harris	Dec. 15, 2017	Dec. 15, 2017	Initiate close out activities on the first internal simulator release May 2017

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