

**Diablo Canyon
Independent
Safety Committee**

**Public Meeting
October 19 & 20, 2021**

Avila Lighthouse Suites



July 14 and 15, 2021 Fact-finding Report

Per Peterson, Member, and Richard McWhorter, Consultant

- 1. Observation of Operations Turnover and Focus Meeting**
- 2. Emergency Preparedness Update (remote)**
- 3. Meet with NRC Resident Inspectors (remote)**
- 4. Annual Radioactive Effluent Release and Radiological Environmental Operating Reports**
- 5. Lessons Learned from Texas Extreme Weather Event (remote)**
- 6. Meet with DCPD Officer**
- 7. Program for Plant Changes Under 10 CFR 50.59 (remote)**
- 8. Management Observation Program (remote)**
- 9. Emergency Diesel Generators**
- 10. Plant Tour**
- 11. Refueling Outage 2R22 Safety Plan**
- 12. Observe Nuclear Safety Oversight Committee Exit Meeting**
- 13. Radiation Protection Department Update**



Observation of Operations Turnover and Focus Meeting

- **Shift Manager Turnover**
- **Used Standard Checklist and Notebook**
- **Walkdown of Control Room Panels**
- **Also Observed 0700 Ops Focus Brief (Virtual)**
- **Conclusion – Shift Manager turnover activities and the 0700 Ops Focus Brief were observed to be formal and effective.**



Emergency Preparedness Update (remote)

- Emergency Response Organization (ERO) Consists of Four Teams of Approximately 70 Individuals Each
- ERO Training and Proficiency Maintained During COVID
- Team A Drill in June, Evaluated Exercise Planned for August
- Approximately 100 of 280 Individuals Changed in 18-month Period. “Proficiency Improvement Plan” Implemented to Sustain Performance.
- Mr. Andy Warwick Replaced Mr. Mike Ginn in August.
- Conclusions – DCPD appears to be effectively managing staffing and training for its Emergency Response Organization which has been challenged by a high turnover rate among assigned personnel.



Meet with NRC Senior Resident Inspector (remote)

- **Auxiliary Saltwater Pump 1-1 Motor Failure**
- **Congressman Carbajal's Question Regarding Waivers and Exemptions Approaching Cessation of Power Operations**



Annual Radioactive Effluent Release Report

- 2020 Radioactive Effluents Released Were Small Fractions of Allowable Limits

Liquid	0.000336 milliRem	0.011% of TS
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Gaseous	0.00219 milliRad	0.021% of TS
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- Zero Direct Radiation Exposure Offsite
- Revised 2017-2019 Liquid Release Reports Due to Software Error

Annual Radiological Environmental Operating Report

- Radiation Measurements at 32 Local Locations – No Changes
- Small Amounts of Tritium in Groundwater Being Monitored
- Cumulative Annual Radiation Dose to Public < 1 milliRem



Lessons Learned from Texas Extreme Weather (remote)

- **DCPP Completed Reviews of Operating Experience**
- **DCPP Design Basis Remained Valid and Supported by Past Ambient Temperature Studies**
- **Recent Weather Data Supported Conclusions**
- **Conclusion – DCPP adequately reviewed the Texas extreme weather event and no additional actions were necessary.**

Meeting with Site Vice President Paula Gerfen

- **Discussed Items from the Fact-Finding Meeting and Other Subjects of Interest**

Continued



Program for Changes Under 10 CFR 50.59 (remote)

- **10 CFR 50.59 Provides Mechanism to Make Changes to Physical Facility or Procedures and Programs without Prior Regulatory Approval**
- **Three Stages of Reviews (with Historical Annual Numbers)**
 - **Applicability Determination (1800-2000)**
 - **Screening Evaluation (200-250)**
 - **Full Evaluation (20)**
- **Programmatic Self-Assessment Performed Every Three Years**
- **Conclusion – Program was being properly implemented and ensured that changes were adequately reviewed prior to implementation.**



Management Observation Program (remote)

- **Program Focuses on First Line Supervisors Observing Employees in the Field and Discussing Collaboratively**
- **Observations Rolled Up and Discussed at Bi-Weekly Observation Review Meetings**
- **Performance Improvement Department Monitors for Broader Trends**
- **Conclusion – Program was being properly implemented.**



Emergency Diesel Generators

- **Used to Provide Electric Power During a Shutdown or an Accident Situation with a Loss of Offsite Power**
- **Unit 1 in Good Health (“Green”)**
- **Unit 2 Unhealthy (“Red”)**
 - **Critical Equipment Clock Reset in June 2021 (EDG 2-3)**
 - **Significant Fuel Oil Leak During Maintenance Run**
 - **Forecasted to Return to Green 3Q21**
- **Continuing to Address Minor Problems in Fuel Oil System**
- **Good Reliability and Low Unavailability**
- **Conclusions – Good Health Except for EDG 2-3 Failure; DCISC Should Review Cause Evaluation When Final**



Plant Tour

- **Areas Toured:**
 - Turbine Operating Deck
 - Emergency Diesel Generator 2-2
 - Unit 2 4kV Switchgear
 - Unit 2 12 kV Switchgear
 - Unit 1 Safety Injection Pumps
 - Unit 1 100' Elevation Piping Penetration Area
 - Unit 1 Spent Fuel Pumps
 - Unit 1 Spent Fuel Pool
- **Conclusion – Observed areas were clean, orderly, and well lighted with equipment in excellent condition**
- **Observed Wireless Radiation Monitors in RCA**



UNIT TWO
Date of Commercial Operation: March 15, 1988
Continuous Days
At Full Power
Cycle Capacity Factors
Lifetime Capacity Factor
This Previous Month

Cycle	Capacity Factor	Cycle	Capacity Factor	Cycle	Capacity Factor	Cycle	Capacity Factor
Cycle 1	88.2%	Cycle 7	88.4%	Cycle 13	88.1%	Cycle 19	88.1%
Cycle 2	88.4%	Cycle 8	88.2%	Cycle 14	88.1%	Cycle 20	88.1%
Cycle 3	88.4%	Cycle 9	88.2%	Cycle 15	88.1%	Cycle 21	88.1%
Cycle 4	88.4%	Cycle 10	88.2%	Cycle 16	88.1%	Cycle 22	88.1%
Cycle 5	88.4%	Cycle 11	88.2%	Cycle 17	88.1%	Cycle 23	88.1%
Cycle 6	88.4%	Cycle 12	88.2%	Cycle 18	88.1%	Cycle 24	88.1%

Westinghouse



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Refueling Outage 2R22 Safety Plan

- **Routine Review (Performed Post-Outage in This Case)**
- **Plan Ensures Defense-in-Depth of Key Safety Functions During Shutdown Activities**
- **Classifies Shutdown Conditions Green, Yellow, Orange or Red**
- **Initial Plan Contained Three Yellow and No Orange or Red**
- **Actual Execution Contained Five Yellow (Changing Conditions)**
- **Also Reviewed Timing of Safety Plan Approval**
- **Conclusion – 2R22 Outage Safety Plan and Safety Schedule Appeared Comprehensive and Effective**



Nuclear Safety Oversight Committee Exit Meeting

- **Observed July 15 NSOC Exit Meeting (In Person)**
- **Committee of Six Executive-Level External Industry Peers that Reviews DCPD Performance Three Times Per Year**
- **Findings Generally Similar to DCISC and Other External Organizations**
- **Conclusion – NSOC Appeared Comprehensive in Their Investigations and Candid in Their Reports**



Radiation Protection Department Update

- **Exceptional Performance During 2R22 (Low CRE)**
 - Original Goal – 19 person-Rem; Actual – 10.7 person-Rem
 - Attributed to Source Term Reduction, Real-Time Monitoring, Exposure Tracking, and Shielding Enhancements.
 - Outage Start Delay Also Reduced Source Term
- **Excellence Plan Focused on Maintaining Proficiency and High Standards**
- **No Staffing Issues**
- **Discussed Remote Monitors Observed in RCA During Earlier Plant Tour**
- **Conclusion – Exceptional Performance During 2R22 and Excellence Plan was Appropriately Focused**



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Diablo Canyon Power Plant: State of the Plant Update

Cary Harbor
Station Director
October 2021



Together, Building
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Station Update

Key Upcoming Activities



Plant Operation

- Units 1 & 2 are safely operating at 100% power with a Probabilistic Risk Assessment (PRA) of “Green”
- All NRC Performance Indicators (PIs) are “Green”



Station Update

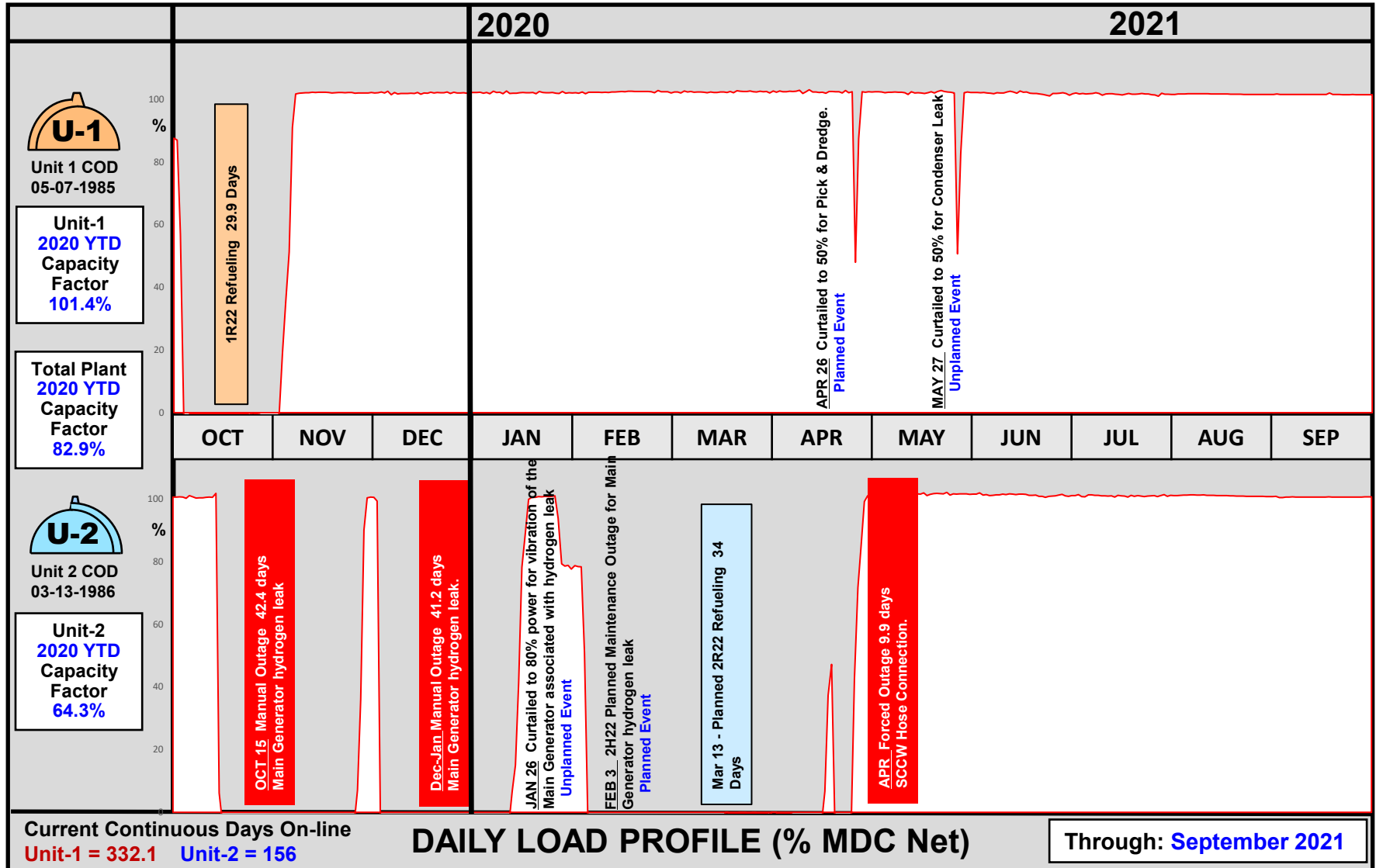
- The Unit 2 main generator is operating safely and reliably
- Commenced Tier 2 retention agreement
 - Attrition rates are in line with projections
- Successfully completed NRC evaluated Emergency Planning exercise & inspection



Diablo Canyon Power Plant

Daily Load Profile: Past 12 Months

Daily Capacity Factor Power History Curves





Station Update

COVID-19 Update

- No impact on Diablo Canyon Power Plant safe operations
- Robust monitoring is in place
- Precautions have been effective – onsite transmission extremely rare
- Approx. 500 employees working remotely
- Partnered with SLO County to distribute vaccinations to over 950 San Luis Obispo Employees





Upcoming Station Activities

- Unit 2 curtailment for tunnel cleaning – Nov. 2021
- Unit 1 refueling outage – Mar. 2022



Station Oversight Committee and Station Excellence Plans

Station Oversight Committee (SOC)

- Provides oversight of station and department excellence plans in addition to other inputs:
 - Monthly review of station and department excellence plans
 - Station safety performance
 - Internal and external audit findings
 - Corporate and station initiative status
- The SOC allows corporate and station leaders to share accountability for building trust and gaining alignment.
- The SOC has met monthly since January 2021 and continues to provide awareness to and oversight of the Station Excellence Plan (SEP).
 - The Station Excellence Plan (SEP) is one input to the SOC meeting, it is intended to be a living document with SMART actions that drive improved performance.

Thank you

Cary Harbor



DCPP Performance Based on NRC Performance Indicators

Jim Morris

Manager, Nuclear Regulatory Services

October 19, 2021



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July 2021– October 2021

- This presentation covers approximately 4 months of NRC inspections involving ~2000 hours of inspection time
- DCPP remains in the highest performance category for all NRC Performance Indicators
- There were no violations of more than minor significance since the last DCISC update

NRC Performance Indicators

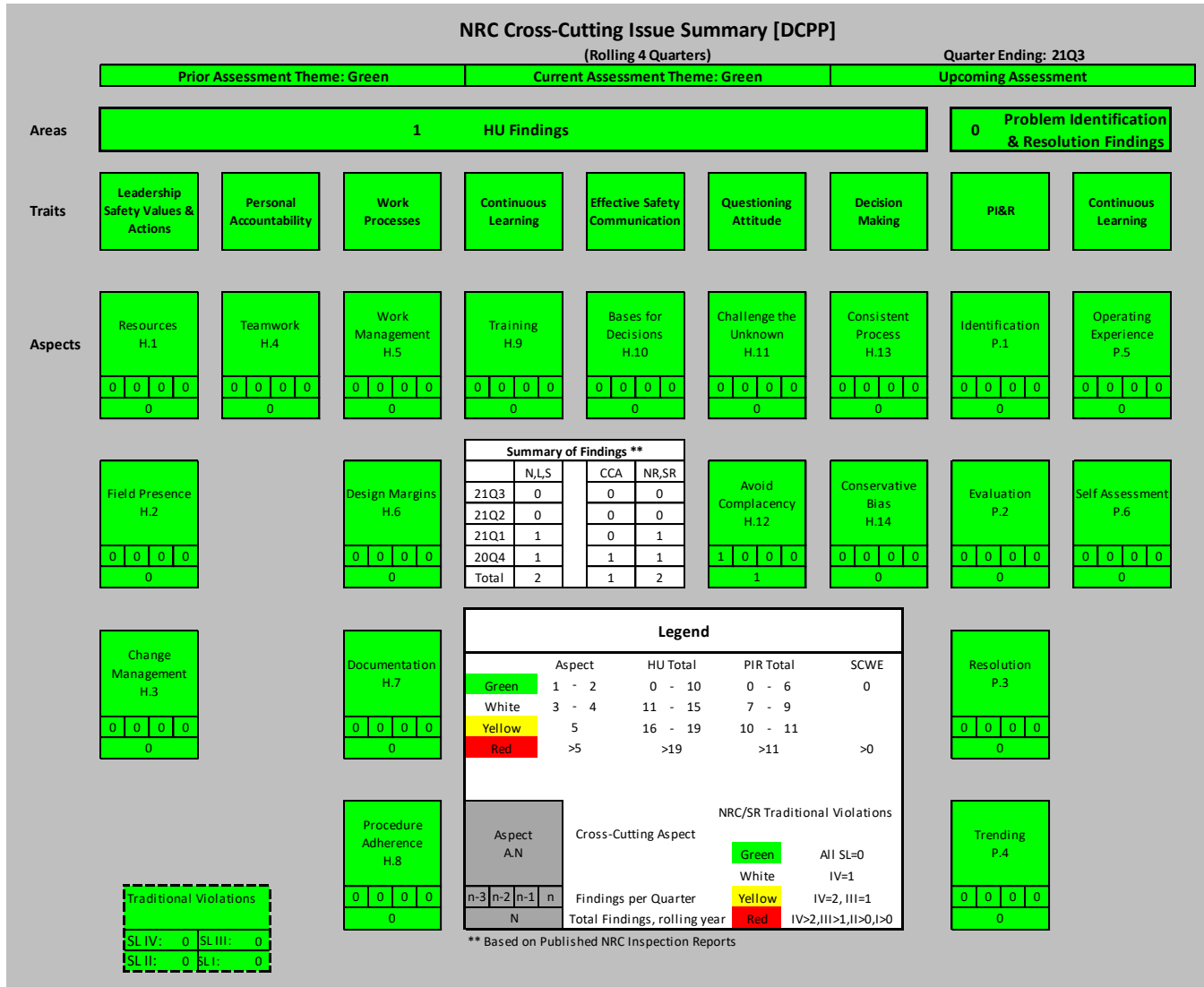
Unit 1	Unit 2	
G	G	Unplanned Scrams per 7000 Critical Hrs
G	G	Unplanned Power Changes per 7000 Critical Hrs
G	G	Unplanned Scrams with Complications
G	G	Safety System Functional Failures
G	G	Mitigating Systems Performance Index, Emergency AC Power System
G	G	Mitigating Systems Performance Index, High Pressure Injection System
G	G	Mitigating Systems Performance Index, Heat Removal System
G	G	Mitigating Systems Performance Index, Residual Heat Removal System
G	G	Mitigating Systems Performance Index, Cooling Water Systems
G	G	Reactor Coolant System Activity
G	G	Reactor Coolant System Leakage
G	G	Drill/Exercise Performance
G	G	ERO Drill Participation
G	G	Alert & Notification System
G	G	Occupational Exposure Control Effectiveness
G	G	RETS/ODCM Radiological Effluent

July 2021 – October 2021

- There have been no findings or violations of more than minor significance since the last DCISC update

NRC Violations – Cross-Cutting Aspects

Rolling 4-Quarter Cross-Cutting Aspect Performance



July 2021 – October 2021

- **One Licensee Event Report (LER) was submitted during this time period**
 - **Unit 2 LER 2021-001-00 was submitted on 9/20/2021, which documented that Emergency Diesel Generator (EDG) 2-3 operated at less than the required Technical Specification minimum frequency when started in automatic. Manual operation was not affected. Subsequent Engineering evaluation determined that the EDG had remained capable of performing its safety function.**



DCPP Performance Summary

July 2021 - October 2021

- DCPD remains in the highest performance category for all NRC Performance Indicators
- The following Inspection Reports have been issued since the last DCISC meeting:
 - 2021 Open Phase Condition Inspection
(2021-012, 07/28/2021)
 - 2nd Quarter 2021 Integrated Inspection Report
(2021-002, 08/02/2021)
 - 2021 Design Basis Assurance Inspection
(2021-011, 09/10/2021)

Status of License Amendment Requests

License Amendment Requests approved since the last DCISC update:

- Amendment 238 was issued on 07/08/2021 to the Unit 1 Operating License, which revised Technical Specification (TS) 3.7.8, “Auxiliary Saltwater System,” to allow on a one-time basis up to an additional 72 hours to replace the ASW Pump 1-1 Motor and restore the Pump to an operable condition.
- Amendments 239 and 240 were issued on 9/02/2021 to the Unit 1 and 2 Operating Licenses respectively, which revised TS 3.2.1, “Heat Flux Hot Channel Factor (FQZ),” and TS 5.6.5, “Core Operating Limits Report,” to implement an improved Westinghouse calculational methodology.

Thank you

Russ Prentice

Update on Emergency Preparedness Programs – NRC Evaluated Exercise Brief

Andrew Warwick

Interim Emergency Preparedness Manager

October 19, 2021



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Emergency Preparedness Exercise

- The purpose of the NRC evaluated exercise is to demonstrate DCPP's ability to protect public health and safety during various emergency conditions.
- On 9/18/2020 the NRC approved the station request to move the on-site portion of the evaluated exercise into 2021.
- The State of CA and San Luis Obispo County Office of Emergency Services (OES) received approval from FEMA to move the off-site portion of the exercise into 2021 as well.



Overall Performance Summary

2021 Evaluated Exercise

Public and Employee Safety

PG&E Emergency Response Organization (ERO) personnel adequately demonstrated reasonable assurance to protect the health and safety of plant employees and the public.

9/14/21 Performance Summary

Performance Definitions:

- SAT: Personnel and equipment generally performed as expected.
- UNSAT: Personnel and equipment were generally able to perform and complete a required function, however, certain aspects failed to meet expectations.
- WEAKNESS: A level of ERO performance demonstrated during an exercise, drill, or training that would preclude effective implementation of the Emergency Plan if it were to occur during an actual radiological emergency.
- GAP: Failure to meet a demonstration criterion or standard.



9/14/21 Focused Area Drill Performance Summary

Performance Strengths:

- The team assessed the Extreme Damage Mitigation Guideline (EDMG) strategies to find the best option, but they also looked ahead to see what other strategies might be needed if their primary option did not work.
- Procedure use and adherence was strong across the team resulting in clear understanding of strategy, risks, and alternate success paths.
- Engineering used the available information to develop trend plots of spent fuel pool (SFP) level. Engineering was also able to use these trend plots to estimate times at which the Alert and Site Area Emergency (SAE) thresholds for SFP level would be met, which helped the team prioritize repair strategies.



9/14/21 Performance Summary

Overall Performance Assessment

PG&E ERO personnel effectively implemented the DCPPE Emergency Plan by demonstrating key knowledge and skills specific to EDMGs.

- **21 of 21 overall objectives SAT**
- **41 of 41 facility objectives SAT**

No weaknesses identified

- Gaps are captured in our critique process for correction and sharing as lessons learned with all ERO teams.



9/15/21 Evaluated Exercise Performance Summary

2021 Evaluated Exercise

Integrated Response

PG&E ERO personnel effectively coordinated and communicated with state and county agencies to support offsite response efforts.

Major Elements Tested

PG&E ERO personnel effectively implemented the DCPPE Emergency Plan testing major elements and demonstrating key knowledge and skills.



9/15/21 Performance Summary

Overall Performance Assessment

PG&E ERO personnel effectively implemented the DCPD Emergency Plan by demonstrating key knowledge and skills specific to their assigned functions.

- **65 of 65 overall objectives SAT**
- **191 of 191 facility objectives SAT**

1 weakness identified in UDAC for validating MIDAS inputs using field monitoring team (FMT) data

- Gaps are captured in our critique process for correction and sharing as lessons learned with all ERO teams.



9/15/21 Strengths

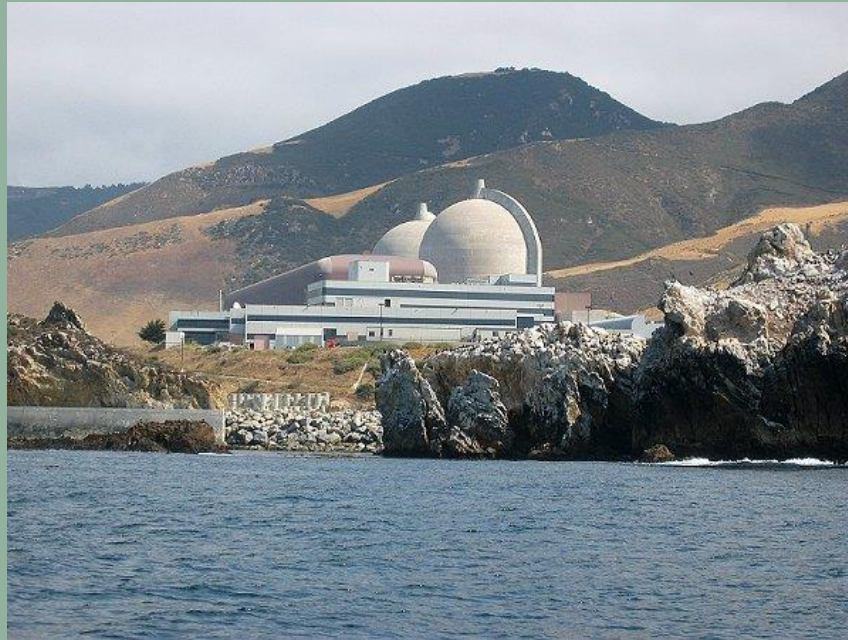
ERO Facility	Strongest Key Skill
Control Room Simulator	Response to operational transients while implementing the Emergency Plan
Technical Support Center	Engineering assessment and repair plan development
Operational Support Center	Protection of workers (radiological or physical) during emergency response
Emergency Operations Facility	Integration of licensee response with Offsite Response Organizations (OROs)
Unified Dose Assessment Center	Assessment of offsite radiological releases
Joint Information Center	Dissemination of information to the public via media channels
All Facilities	Communications between onsite and offsite response facilities

9/15/21 Weakness

Objective	Title / Facility	Description	SAP Notification
I.2.2	Unified Dose Assessment Center (UDAC) - Field Monitoring Team (FMT) readings and sample analysis results were used to corroborate the dose assessment software projections of offsite dose	Standard: Per EP RB-16 Attachment 1, step 19.b, "To validate MIDAS input and FMT survey data go to step 21." Deviation: Dose assessor (DA) and dose assessment coordinator (DAC) did not use the procedural guidance to print the maps required to validate the MIDAS model using FMT survey data.	51131976

Impact: The lead UDAC controller, with concurrence from the drill director, had to use a controller inject informing the DA and DAC of their error. The inject was done to ensure offsite drill objectives required by FEMA were met within the timeframe of the exercise.

Immediate Actions: The DA and DAC were coached and remediated during the critique. SAPN written to capture weakness in CAP.



9/15/21 Performance Indicator Summary



Performance Indicator Summary

Classifications, Notifications & Protective Action Recommendations (PARs)

Classifications	3 out of 3 Timely & Accurate
Notifications	3 out of 3 Timely & Accurate
PARs	2 out of 2 Timely & Accurate
PAR Notifications	2 out of 2 Timely & Accurate
Overall Results	10 out of 10 Timely & Accurate



Performance Indicator Summary

Emergency Classifications

Facility	Classification	T = 0	T = End	Timely	Accurate
Control Room	Alert (HA5.1)	0818	0828	10 Minutes	YES
EOF	Site Area Emergency (FS1.1)	1011	1016	5 Minutes	YES
EOF	General Emergency (FG1.1)	1100	1103	3 Minutes	YES
Comments		All emergency declarations included independent peer checks.			



Performance Indicator Summary

Emergency Notifications

Facility	Classification	T = 0	T = End	Timely (PI Time)	Accurate
Control Room	Alert (HA5.1)	0828	0835	7 Minutes	YES
EOF	Site Area Emergency (FS1.1)	1016	1024	8 Minutes	YES
EOF	General Emergency (FG1.1)	1103	1113	10 Minutes	YES
Comments		All notifications were completed in 15 minutes or less to both the county and state, and the NRC immediately after.			



Performance Indicator Summary

Protective Action Recommendations (PARs)

Facility	PAR Type	T = 0	T = End	Timely	Accurate
EOF	Plant Based	1103	1107	4 Minutes	YES
EOF	PAR Upgrade	1156	1206	10 Minutes	YES
Comments		All PARs included independent peer checks.			



Performance Indicator Summary

PAR Notifications

Facility	PAR Type	T = 0	T = End	Timely (PI Time)	Accurate
EOF	Plant Based	1107	1113	6 Minutes	YES
EOF	PAR Upgrade	1206	1212	6 Minutes	YES
Comments		All PAR notifications were completed in 15 minutes or less to both the county and state, and the NRC immediately after.			

Inspection Results

- DCPD response during the exercise was successful at demonstrating the station's ability to prioritize actions needed to assure public health and safety.
- Inspection results: No findings or violations related to the exercise.
- More than 30 items entered in notifications to drive continuous improvement.

Thank you

Andrew Warwick



August 18-19, 2021 Fact-finding Report

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- 5. Institute of Nuclear Power Operations (INPO) Update and INPO Mid-Cycle Evaluation**
- 6. Intake Structure Concrete Inspection Update and Tour**
- 7. Software Quality Assurance**
- 8. Chemistry Update**
- 9. Reactor Coolant System Health**



Observe Plant Health Committee (PHC) [remote]

The PHC is a management team responsible for:

- Continual review of system and program health issues
- Routinely monitoring plant health issues for action status and completion
- Review and approval of action plans to address plant health issues
- Performing Preventive Maintenance Oversight functions
- Approving PHC budget for solutions to plant health issues
- Approving system, component, and program long range plans

Continued



PHC, cont'd

- The two major presentation items reviewed were:
 - Unit 2 Main Turbine Low Pressure “C” Boot Seal Leakage Options – resolved with plan to replace expansion joints
 - Tin Whiskers found in Eagle 21 (E21), Solid State Protection System (SSPS), and Rod Control System (RCS) – resolved with augmented inspection & cleaning program

Continued



PHC, cont'd

- **DCPP's Plant Health Committee appears effective in bringing together the correct people to solve plant system and component problems and to help maintain systems and components in good health.**



**DCISC Member Meeting with Senior Vice President,
Generation and Chief Nuclear Officer, Jim Welsch**
(remote)

- **Discussed Items from the Fact-Finding Meeting and Other Subjects of Interest**



DCPP Safety Culture (in person) and Safety Conscious Work Environment (remote)

- Safety Culture is a key element of safe nuclear plant operations
- Employs Safety Conscious Work Environment
 - Employee Concerns Program provides a venue outside the management chain for employees to raise concerns
- The DCPN Nuclear Safety Culture Monitoring Panel (NSCMP) assesses nuclear safety culture, evaluating the following:
 - Corrective Action Program
 - Performance trends
 - NRC inspections
 - Operating experience
 - Industry evaluations, audits & self-assessments
 - Employee Concerns Program

Continued



DCPP Safety Culture and Safety Conscious Work Environment (Continued)

- **DCISC Conclusion: DCPP Safety Culture is sound and effective**
- **DCPP Safety Culture presentation in this Public Meeting**



Meet with NRC Resident Inspectors

- **Met with Resident Inspector & Acting Senior Resident Inspector**
- **Discussion items:**
 - **DCISC history and role**
 - **Auxiliary Saltwater System Pump emergency license amendment**
 - **Emergency Diesel Generator fuel oil leak**
 - **Tin whiskers**
 - **Upcoming Emergency Exercise on September 15, 2021**



Institute of Nuclear Power Operations (INPO) Update

(Because of its privacy agreement with DCP, the DCISC cannot share the details of the INPO evaluation or subsequent corrective actions.)

- DCP has taken a strong, proactive approach in addressing the results of its June 2019 evaluation by the World Association of Nuclear Operators
- DCP is preparing for its next INPO evaluation in mid-2022



Intake Structure Concrete Inspection Update and Tour

- Inspection program is governed by procedure “Concrete Surveillance Programs for Saltwater Systems.”
- Inspections of non-submerged areas performed every two years
- Inspections of submerged areas be performed when accessible during every Refueling Outage
- Deficiencies found during the inspection documented in the Corrective Action Program
- The corrective actions included repairs of four specific areas
- Group toured the areas of the structure identified for repairs
- DCCP’s concrete inspections and repairs to their Intake Structure appeared comprehensive and effective. The structure was judged to be sound by an expert engineering contractor.

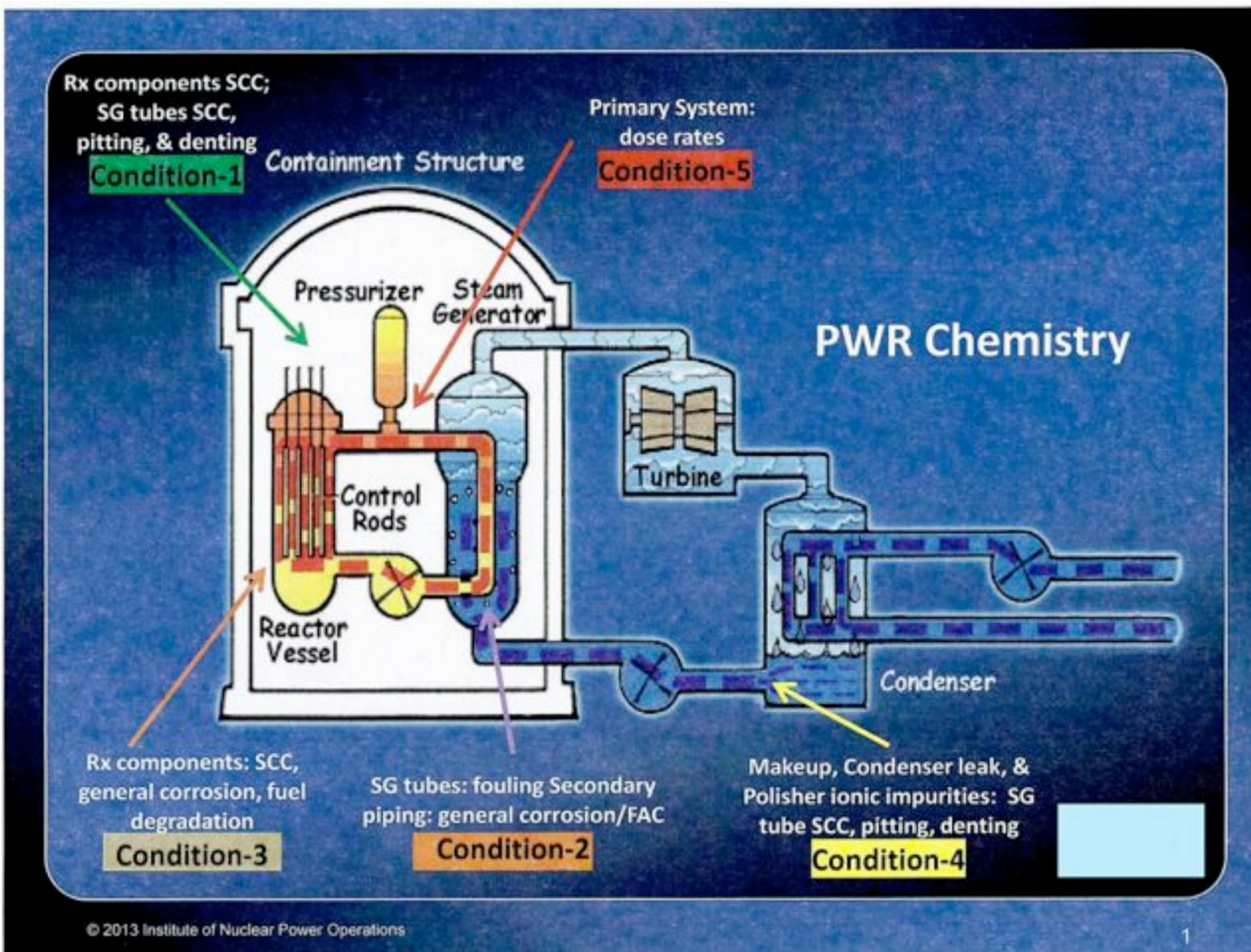


Software Quality Assurance (SQA) Program Update

- Program that defines and assesses the adequacy of software and suitability for their intended purposes
- Procedure “Software Configuration Management for Plant Operations and Operations Support”
- DCPD SQA Program is split into two significant parts:
 - Digital assets that are a part of plant equipment
 - Business-related software that is used in plant activities but does not support plant operations
- FFT reviewed four SQA plans – all satisfactory
- Conclusion: DCPD SQA Program is strong & effective



DCPP Chemistry Program



Continued



Chemistry, cont'd.

- **Chemistry measures its performance with the Chemistry Effectiveness Index (CEI)**
- **Units 1 and 2 CEIs are both rated Green (industry first quartile)**
- **Quality Performance Assessment Report (QPAR) & Quality Digest rate Chemistry as Green and stable**
- **Conclusion: DCCP Chemistry Program is effective**



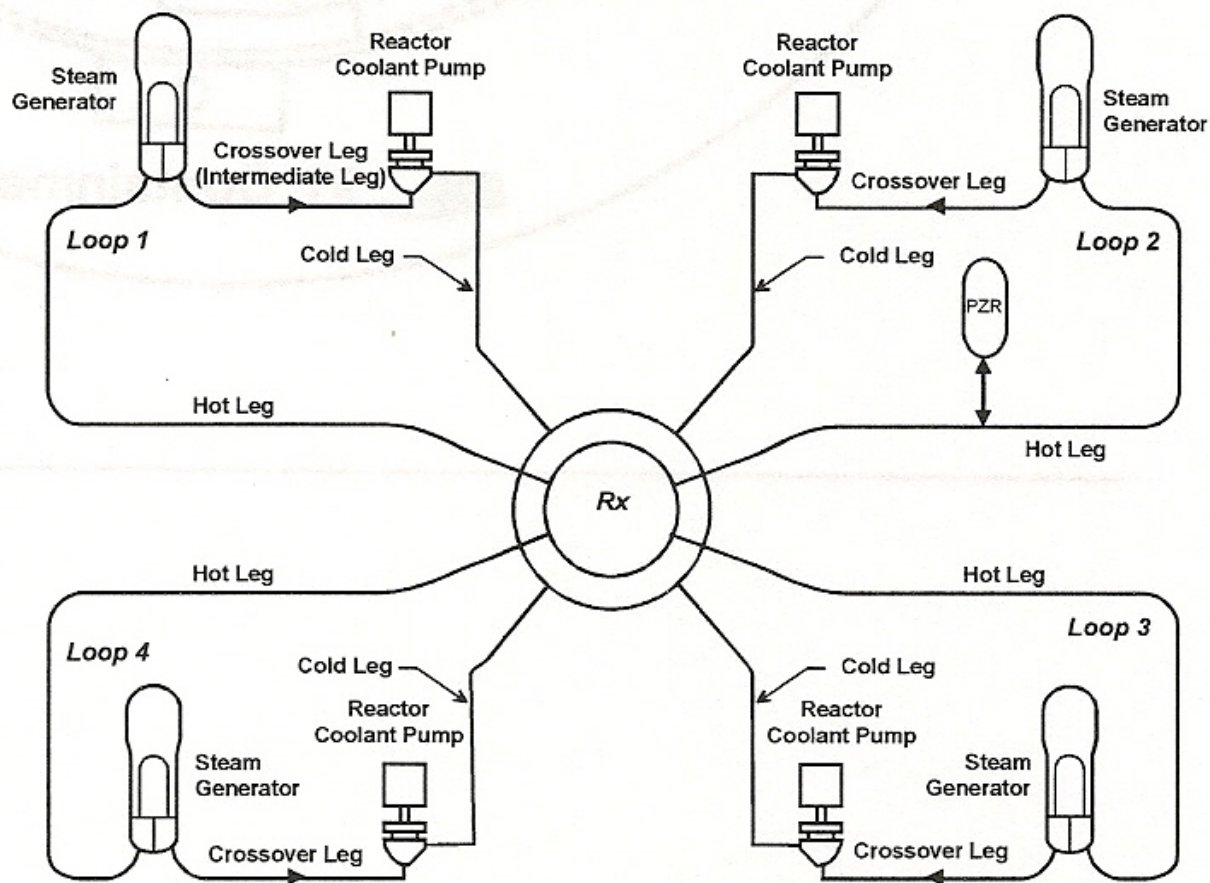
Reactor Coolant System Health

- The purpose of the RCS is to transfer heat generated by the fission process in the reactor core to the secondary plant steam system
- The DCPD Reactor Coolant System is in Green (Good) health with several minor issues which are being tracked and resolved. The system has operated reliably.

Continued



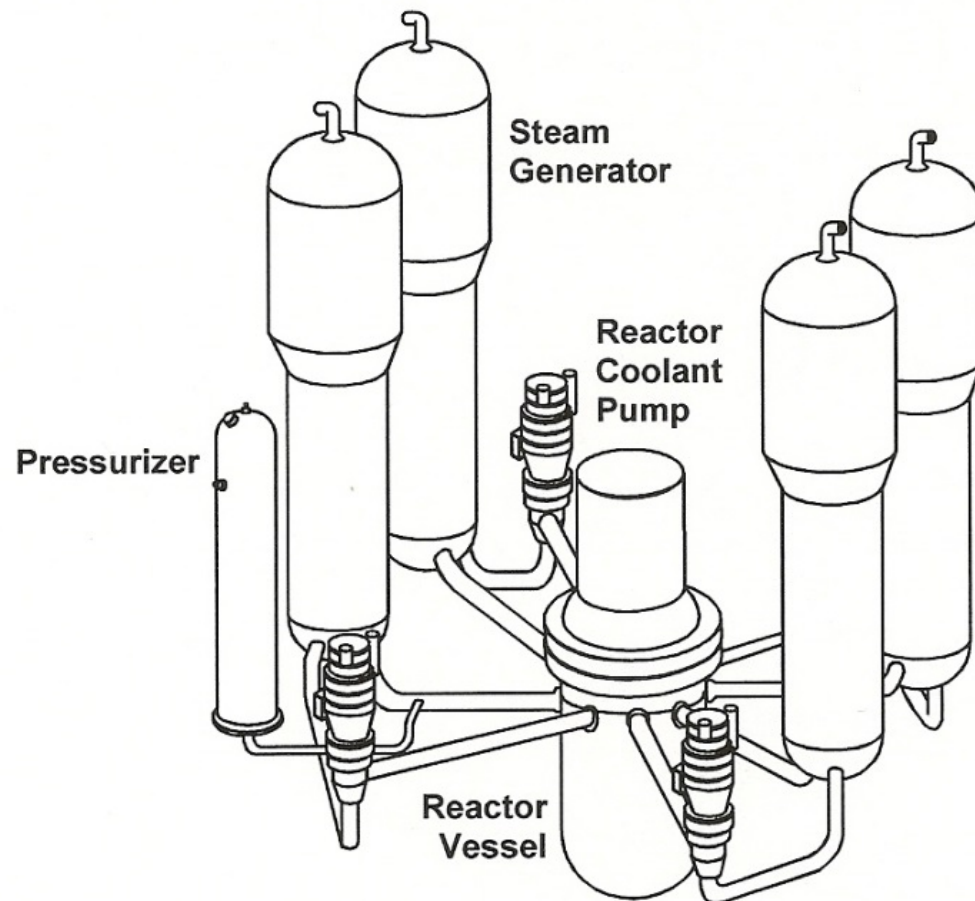
Reactor Coolant System Health, cont'd.



Continued



Reactor Coolant System Health, cont'd.





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Diablo Canyon Power Plant Unit 2 Main Generator

Adam Peck

Diablo Canyon Sr Director Engineering, Technical, and
Emergency Services

Oct 19, 2021



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Unit 2 Main Generator Summary

- Unit 2 is safely operating and producing electricity for our customers
- The main generator is part of the non-nuclear side of the plant; outages were focused on restoring reliable electricity generation
- Not a nuclear safety issue; no impact to the health and safety of employees and the public

Unit 2 Main Generator Summary

- Unit 2 main generator has been back online for approximately six months
- Significant additional instrumentation with enhanced monitoring has been installed – results are very positive
- Root cause evaluation is complete and all immediate corrective actions are complete.
- Validation of effectiveness of corrective actions will occur in upcoming refueling outage (Fall 2022).
- PG&E leveraged industry experts and extensive vendor support to resolve unique technical challenges
- DCP staff executed safe and error free shutdown and restart of the Unit 2 during multiple outages

Timeline

2R21 - Generator Rewind and Rebuild. 9/19 - 12/19

2Y22 - Weld Failure at SCCW Inlet Water box - H₂ Leak. 7/20

2Z22 - Weld Failure at SCCW Parallel Ring. H₂ Leak.
10/20 - 11/20

2G22 - Weld Failure at SCCW Inlet Water Box. H₂ Leak.
12/20 - 1/21

2H22/2R22 - High Vibration on End-Windings and
Electrical Parallel Ring Conductor Break (H₂ Leak). 2/21 - 4/21

Root Cause 1

- **Root Cause 1: Inadequate mitigation of the bore ring assembly stick-slip phenomenon during core installation.**
- **Corrective Action 1: Tighten bore ring bolts during forced outages 2Z22 and 2G22 to eliminate stick-slip and verify sustained in 2H22/2R22.**

Root Cause 2

- **Root Cause 2: Inadequate mitigation of and testing for resonant frequencies on the exciter end parallel rings and end windings.**
- **Corrective Action 2: Perform bump testing and modify the exciter end parallel rings and end-windings as necessary to mitigate any identified resonance. (2H22/2R22)**

July Outage: Hydrogen Leak



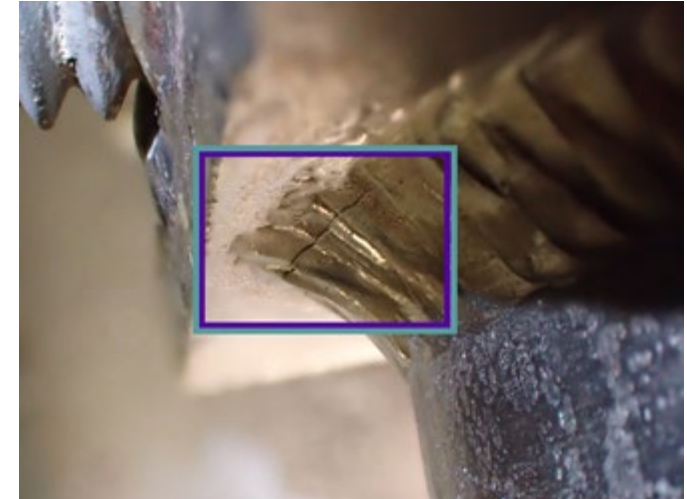
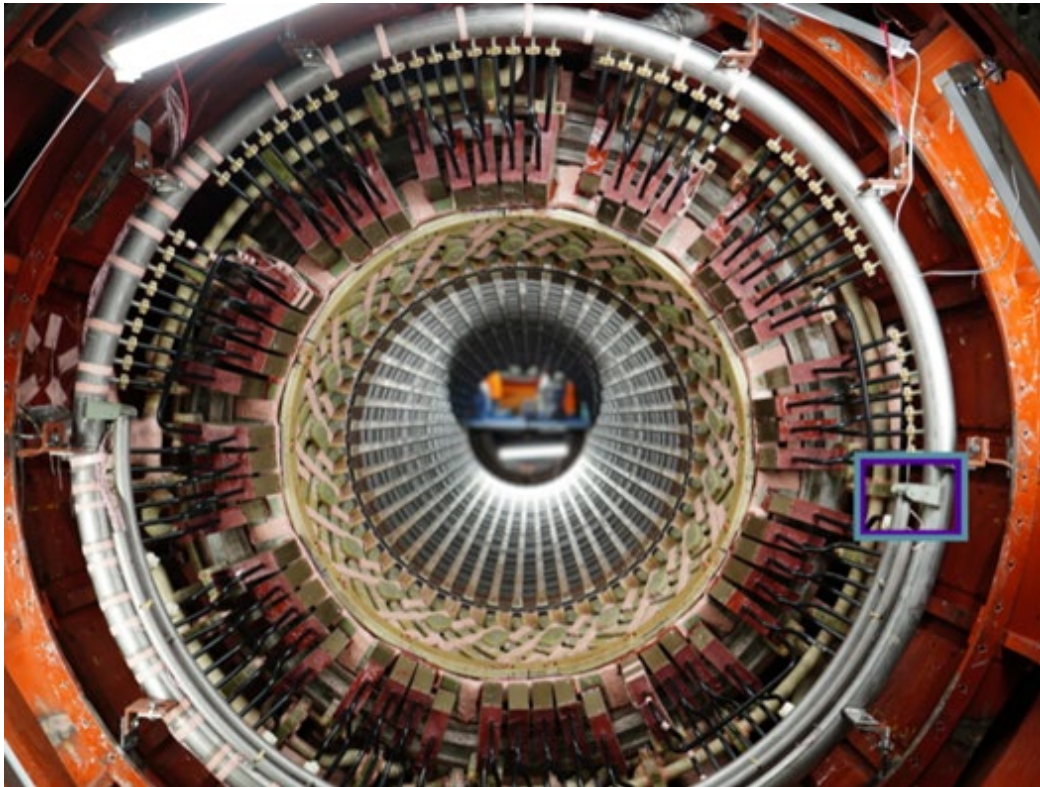
- Crack in fillet weld of transition box to SCCW ring manifold



Corrective Action:

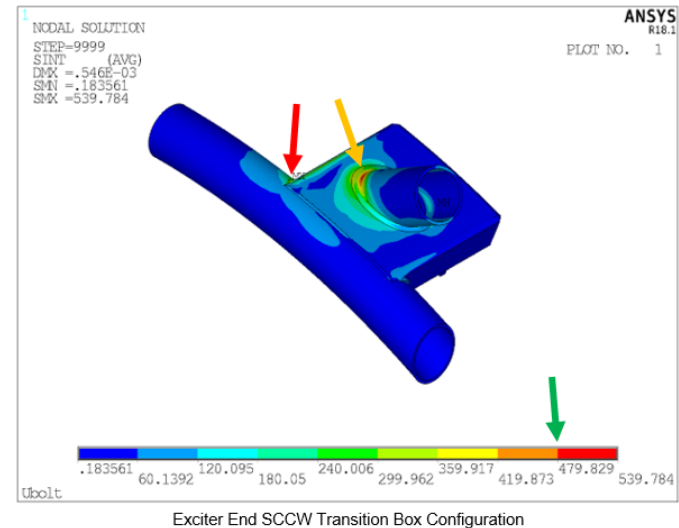
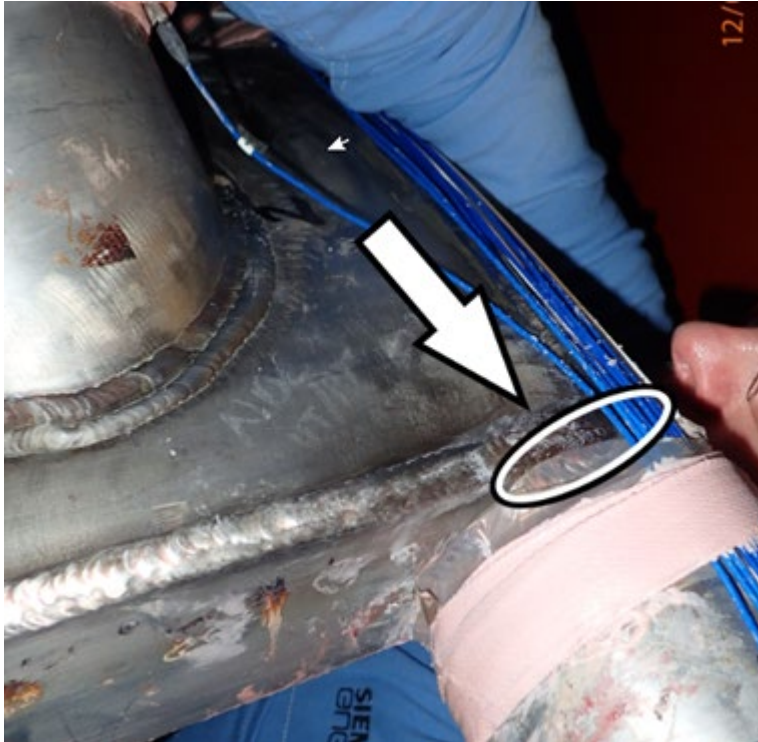
- Repaired in place
- Bump test and finite element analysis

October Outage: Hydrogen Leak



- Crack in SCCW parallel ring fillet weld
- Corrective Actions: Capped/redesigned supports, frame foot loading, Bore Ring Torque (twice) frame vibration analysis

December Outage: Hydrogen Leak

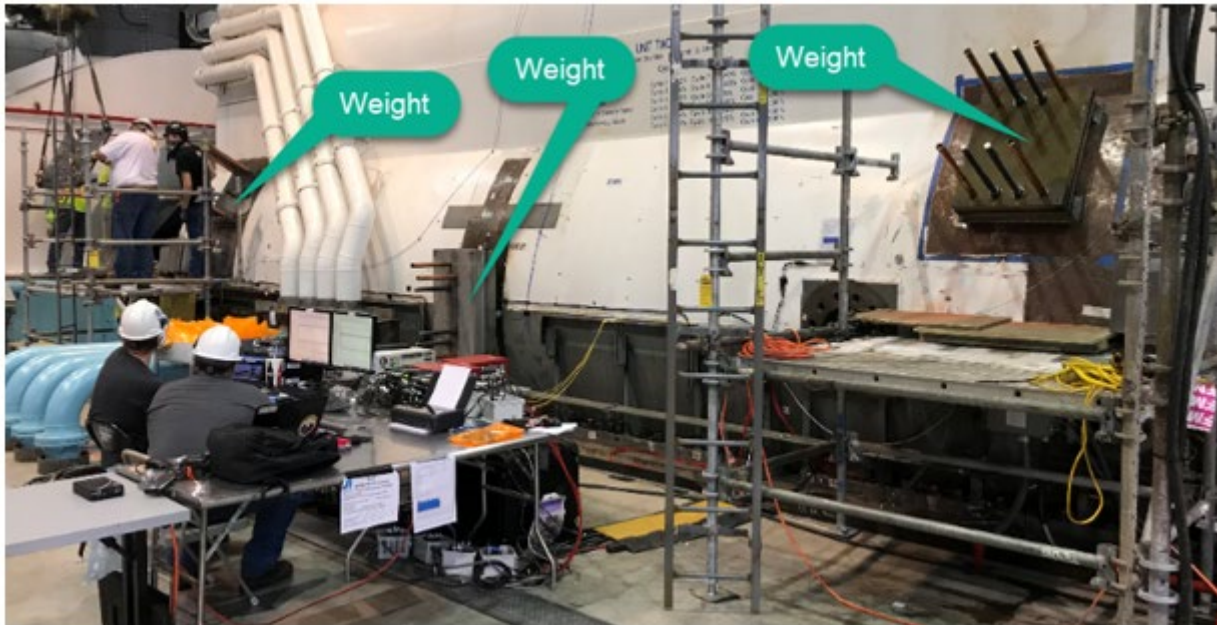


Crack in fillet weld at same location as first repaired crack

December Outage: Corrective Actions

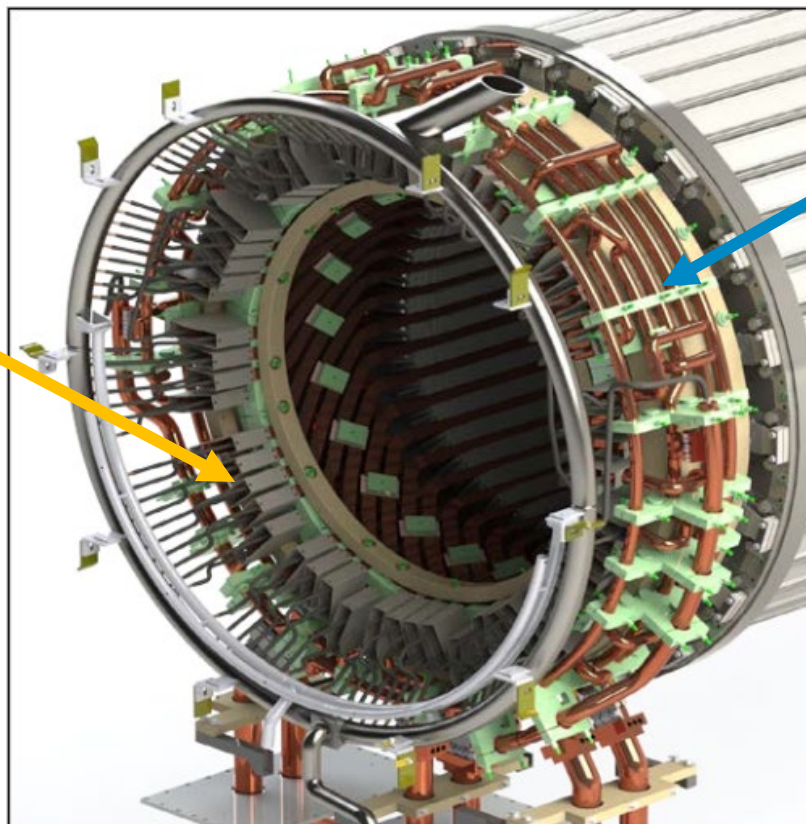


Replaced exciter end SCCW transition box with pipe tee section. Torqued bore ring bolts (third time).



Installed tuning weights to shift frame resonance away from 120 Hz

February Outage: End Winding Vibration



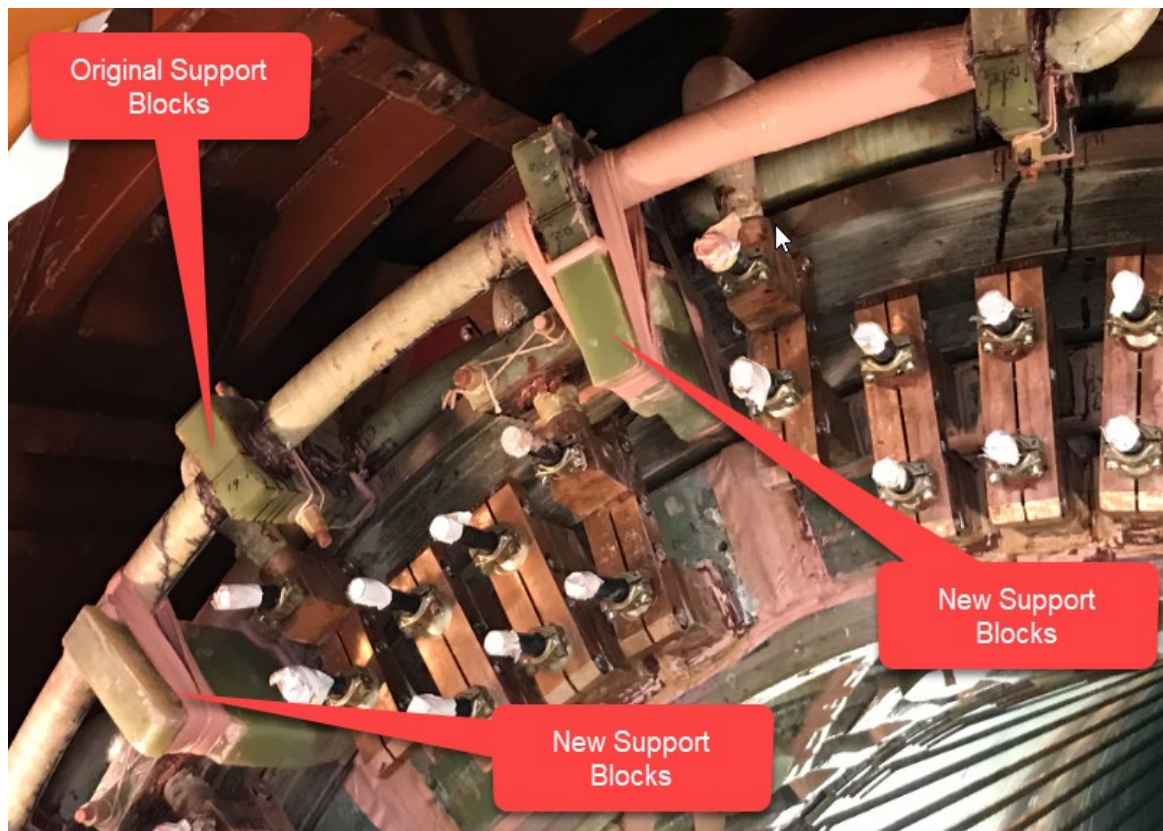
End Windings

Parallel Rings

End winding vibration sensors exceeded vibration threshold

- Ramped unit to 80% power to reduce below threshold
- Took unit off-line to disassemble and Inspect

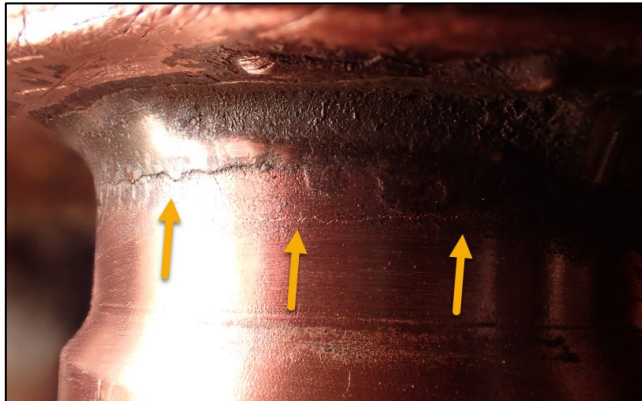
End Winding Vibration: Corrective Actions



Corrective Actions:

- Installed 37 new braces and blocks on parallel rings
- Resolved conditions with the parallel rings and end windings
- Torqued thru bolts and building bolts and verified bore ring bolts

February Outage: End Winding Vibrations – small hydrogen leak corrective actions



Crack in double current conductor brazed connection

- Confirmed by air test
- Found with Helium detection
- Corrective Action: Replace section, radiograph EOC

End Result: Frame Vibration Reduction

- **Vibration on the generator prior to rewind was the baseline**
- **Vibration levels after rewind were higher than baseline but not out of industry experience**
- **Vibration was back to baseline with addition of counter weights**
- **Vibration was below baseline and stable with addition of supports and bracing and core tightening corrective actions**

- **The modifications made have been effective and we continue to monitor to make sure both units are available for our customers**

Thank you

Adam Peck

Diablo Canyon Power Plant Decommissioning

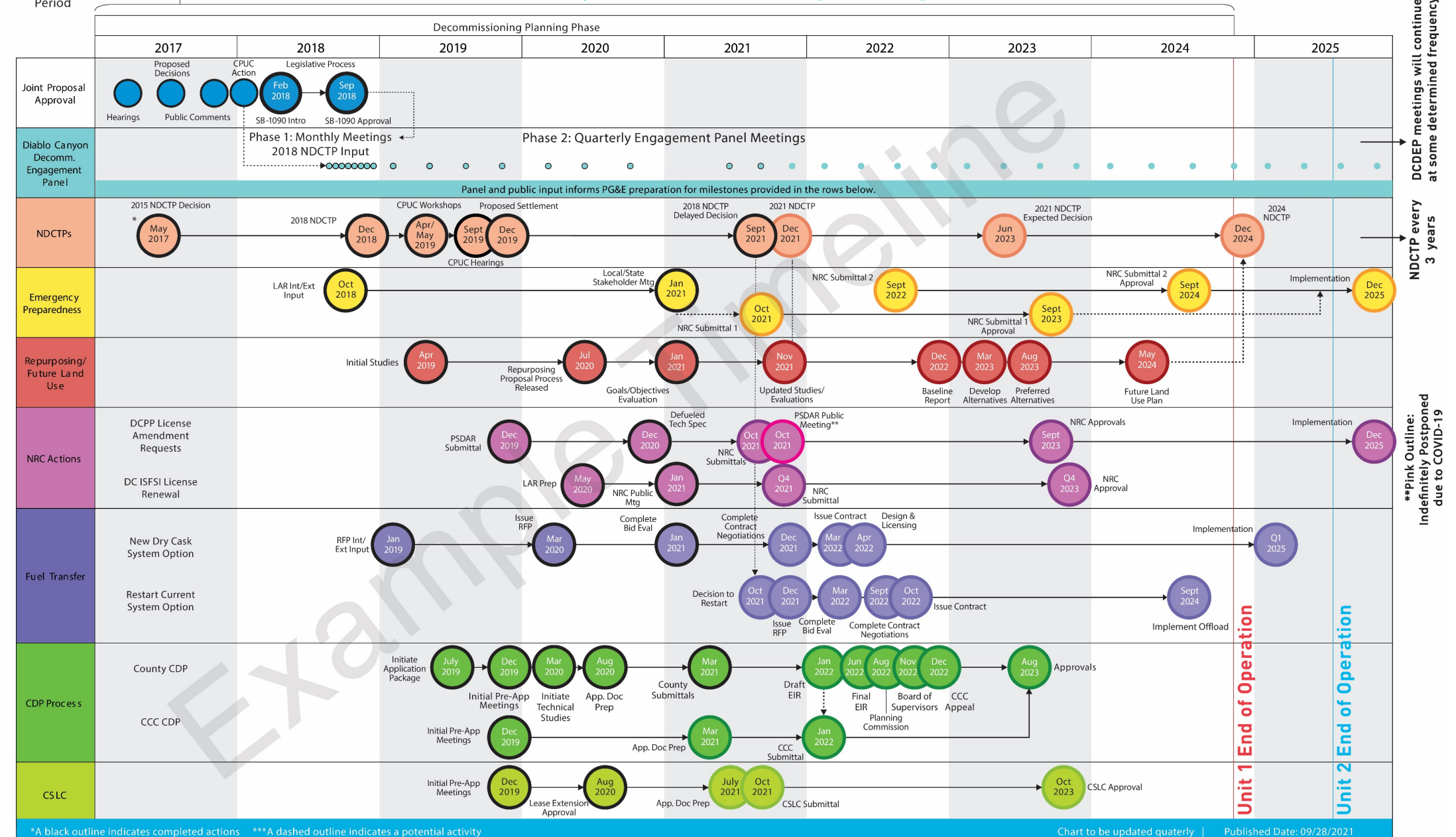
Decommissioning Planning & Spent Nuclear Fuel Storage Update

Presented by
Tom Jones, Director, Strategic Initiatives

October 20, 2021



Diablo Canyon Decommissioning Planning Path



ACRONYMS:

CCC – California Coastal Commission
CDP – Coastal Development Permit
CSLC – California State Lands Commission

CPUC – California Public Utilities Commission
DCPP – Diablo Canyon (DC) Power Plant
EIR – Environmental Impact Report

ISFSI – Independent Spent Fuel Storage Installation
LAR – License Amendment Request
NDCTP – Nuclear Decommissioning Cost Triennial Proceeding

NRC – Nuclear Regulatory Commission
PSDAR – Post-Shutdown Decommissioning Activities Report
RFP – Request for Proposal

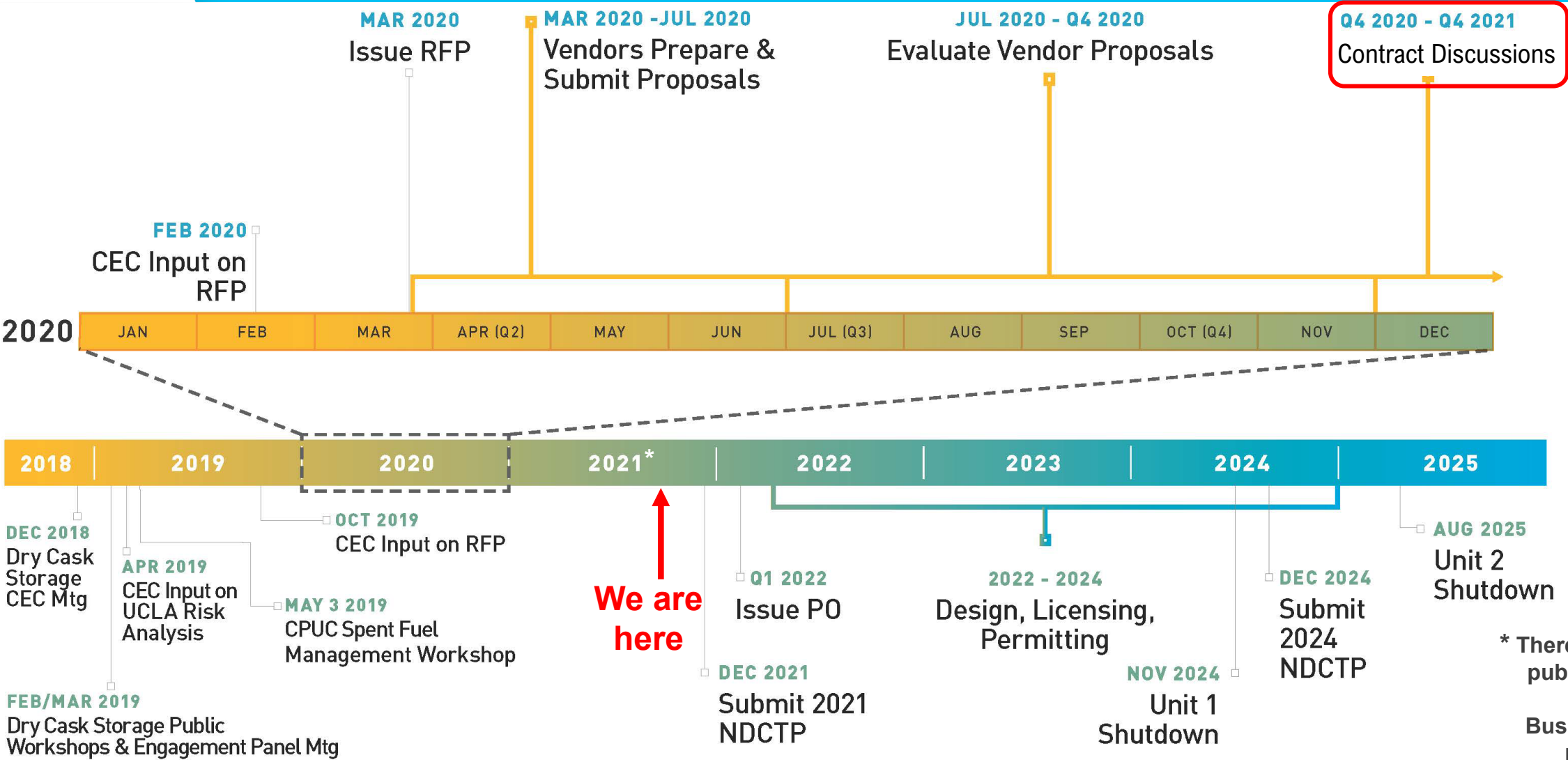


Key Take-aways: Decommissioning Planning Path

- **Regulatory approvals are being sought early to support direct transition into decommissioning**
 - Based on lessons learned from the industry (including San Onofre)
 - Schedule also informed by PG&E's previous permits and licensing activities
- **Early planning results in cost savings (i.e., preservation of the decommissioning trusts)**
- **All permit and licensing actions are on time or early**
- **CPUC funding of \$3.9 billion greatly reduces project and schedule risk**



Dry Cask Storage Request for Proposal Timeline



PG&E will use a request-for-proposal process to develop a holistic GTCC waste and SNF storage strategy.

* There is no anticipated public participation in 2021 due to the Business Confidential portion of the RFP process.

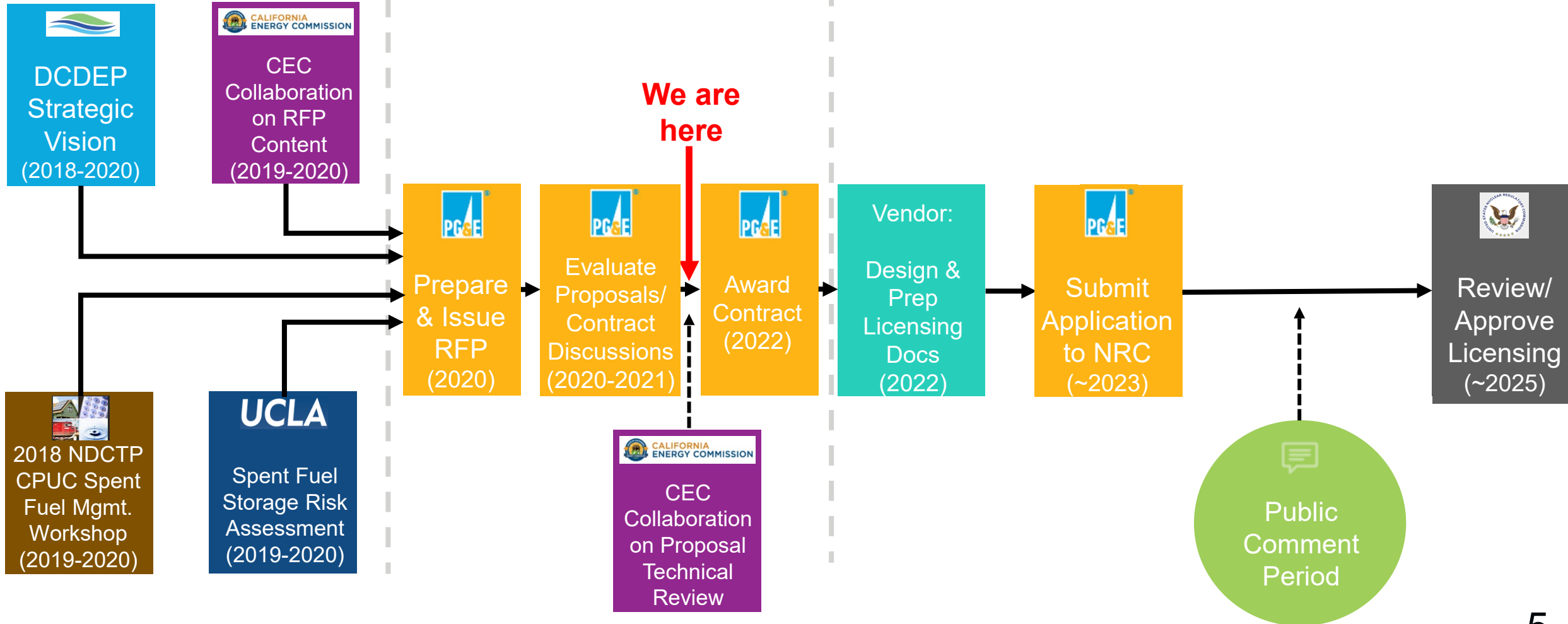


Dry Cask Storage Request for Proposal Process

Public Input: ~2 yrs

Confidential Review: ~2 yr

Design and NRC Approval: 4 yrs

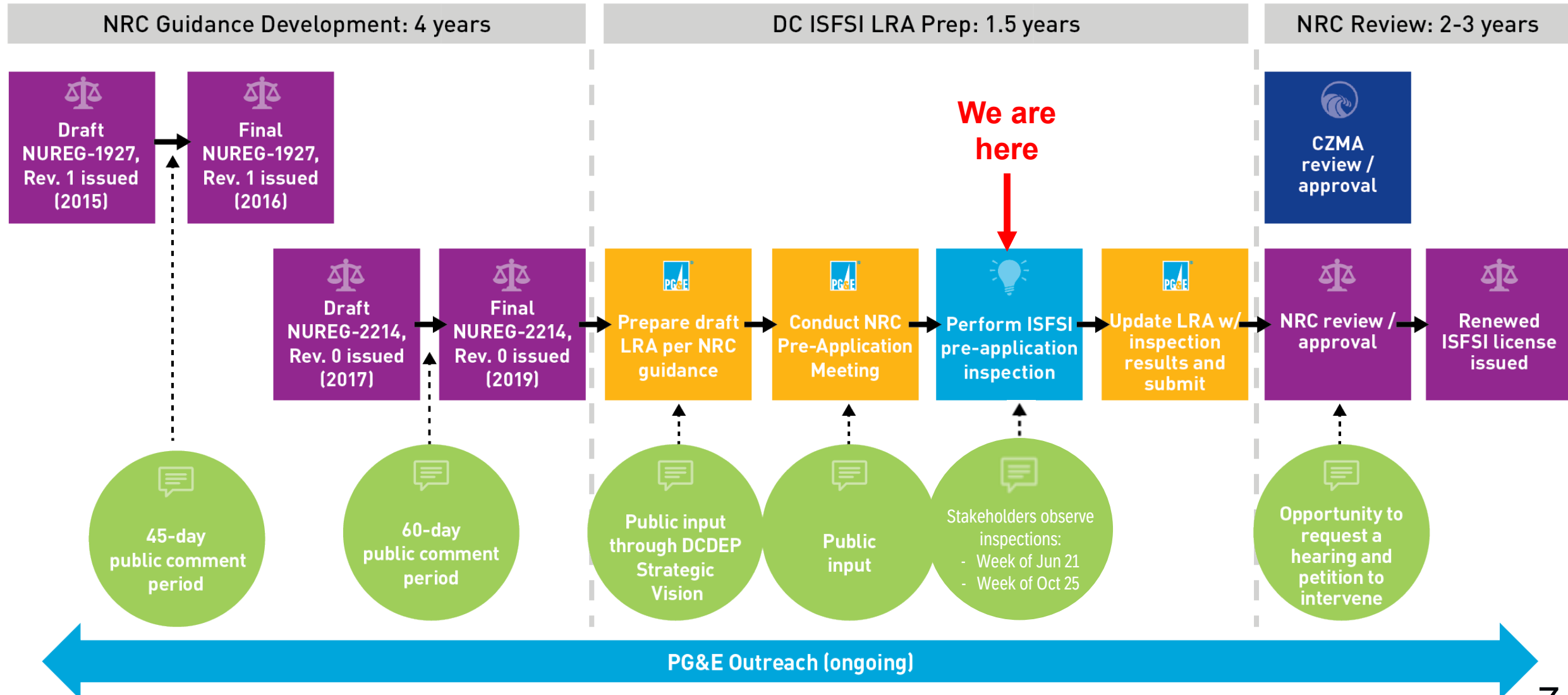




Key Take-aways: Dry Cask Storage Request for Proposal

- **A new or modified dry cask storage system allows PG&E to comply with the 2018 Nuclear Decommissioning Cost Triennial Proceeding (NDCTP) Decision to safely complete final spent fuel offload within 4 years of each unit shutdown**
- **Significantly reduces spent fuel storage time in spent fuel pools:**
 - **Current system technical specifications offload time is estimated up to 13 years**
 - **All proposed current systems will satisfy 4 years as specified in the NDCTP settlement**

DC ISFSI License Renewal Process





California Coastal Commission CZMA Letter for Humboldt Bay ISFSI / Applicability to DC ISFSI

- PG&E has initiated consultation with the California Coastal Commission for DC ISFSI license renewal
- Expect to use the same process as used for the Humboldt Bay ISFSI license renewal

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY GAVIN NEWSOM, GOVERNOR

CALIFORNIA COASTAL COMMISSION
45 FREMONT STREET, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE (415) 904-5200
FAX (415) 904-5400
TDD (415) 597-5885
WWW.COASTAL.CA.GOV



March 20, 2019

Mark Krausse
Director, State Agency Relations
Pacific Gas and Electric Company
1415 L Street, Suite 280
Sacramento, CA 95814

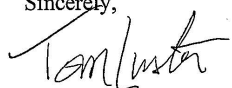
VIA EMAIL:

RE: Request for consistency certification – Nuclear Regulatory Commission license renewal of Pacific Gas & Electric’s (“PG&E’s”) Humboldt Bay Independent Spent Fuel Storage Installation (PG&E Letter HIL-18-007)

Dear Mr. Krausse:

Thank you for your follow-up request regarding PG&E’s July 10, 2018 letter seeking the Coastal Commission’s concurrence that the above-referenced license renewal is consistent with the California Coastal Management Program (“CCMP”) and the federal Coastal Zone Management Act (“CZMA”). We understand that PG&E proposes no new development as part of the license renewal and plans to continue operating the facility as it has since the Coastal Commission first found it consistent with the CCMP and CZMA on September 15, 2005. Pursuant to 15 CFR 930.62, the Commission’s concurrence is presumed if we do not provide a response within six months of the request. You may therefore consider this letter as acknowledgement of the Commission’s concurrence.

Please contact me at 415-904-5248 or tluster@coastal.ca.gov if you have any questions.

Sincerely,

Tom Luster
Energy, Ocean Resources, and Federal Consistency Division



Key Take-aways: DC ISFSI License Renewal

- **ISFSI license renewal process ensures structures and components can safely perform as intended for an additional 40 years**
- **Public is invited to provide input throughout the process**
- **Stakeholder observation of ISFSI inspection activities:**
 - **Inspection part 1: June 2021**
 - **Inspection part 2: scheduled for week of October 25, 2021**
- **The parallel activities of license renewal and a new or modified system will result in all fuel storage licensed until the mid-2060s**

Questions?

Tom Jones

Tom.Jones@pge.com



Cyber Security Program Update

Frank Lee

Manager, Generation NERC Compliance & Cyber Security

October 20th, 2021



Together, Building
a Better California



Cyber Security Rule Implementation

- **DCPP completed full implementation of Cyber Security Rule 10 CFR 73.54**
- **Program fully complies with the Nuclear Regulatory Commission (NRC) approved Cyber Security Plan (CSP) and NEI 08-09, Revision 6 “Cyber Security Plan for Nuclear Power Reactors”**
- **Full implementation completed December 2017**
- **Cyber Security Program continued review and improvement following full implementation**
- **Completed NRC inspection of Cyber Security Program March 2021**
- **Received favorable results from NRC Cyber Security inspection with no findings or violations**



Cyber Security Rule Purpose

- Cyber Security Program protects DCPP Critical Digital Assets to protect the plant and the health and safety of the public
- Specifically, provides protection of Critical Digital Assets (CDAs) or Systems that are associated with
 - I. Safety-related and important-to safety functions;
 - II. Security functions;
 - III. Emergency preparedness functions, including offsite communications; and
 - IV. Support systems and equipment



Program Implementation

- Implemented comprehensive program including procedures and processes to ensure DCPD regulatory requirements are met and maintained
- Implemented Cyber Security Controls to harden Critical Digital Assets
- Implemented cyber security technology and participated in continuous threat intelligence feeds to enhance security posture and provide ongoing monitoring and detection of cyber threats (including but not limited to, NIST National Vulnerability Database (NVD), PG&E corporate Threat Intelligence (SIOC), E-ISAC, DHS, CISA)
- The cyber team participates in yearly technical training through SANS, a world-class training organization focused solely on cyber security. The cyber team also participates in Cyber Shield drill exercises hosted by the US military.

High-Profile Recent Industry Events



- **SolarWinds**
- **Colonial Pipeline**



Continued Path

- Continuously evaluate incoming threat intelligence and participate in first response meetings when threats are identified
- Evaluate logical and physical environment against adversary tactics, techniques and procedures (TTPs) and indicators of compromise (IOCs)
- Implement remediations where applicable
- Capture lessons learned to continuously improve current administrative, logical and physical controls

Thank you



September 13, 14 and 15, 2021 Fact-finding Report **Robert Budnitz, Member, and Richard McWhorter, Consultant**

- 1. Probabilistic Risk Assessment Program**
- 2. Staffing, Retention and Attrition Update**
- 3. Meet with DCPD Officer (remote)**
- 4. COVID-19 Pandemic Response Update**
- 5. Cause Evaluation for Failed Auxiliary Saltwater Pump Motor (remote)**
- 6. Equipment Reliability Process (remote)**
- 7. Meet with NRC Resident Inspectors (remote)**
- 8. Root Cause Evaluation for Unit 2 Main Generator Failures (remote in part)**
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- 12. Emergency Preparedness Exercise Observation**



Probabilistic Risk Assessment Program

- **No Major PRA Model Updates Planned**
- **Post-Shutdown Role for PRA Not Yet Determined**
- **PRA Continues to be Used to Support Decisions**
 - **SDP for ASW Pump 1-1 Motor Failure**
 - **LAR for EDG Fuel Oil Transfer Pump Replacements**
- **PRA Group Split; Previous Members Now Supporting Other Generation Activities**
- **Conclusion – PRA Group Continues to Support DCCP with Excellent Work.**



Staffing, Retention and Attrition Update

- Before 2015, About 150 of 1400 Turned Over Annually
- Current Manning at About 1100, and About 200 Gradually Turned Over Around the End of the Tier 1 Retention Period
- Some Losses Expected November 2021 (First Tier 2 Payment Date) but Do Not Expect a Large Number of Losses
- A Few Areas of Concentrated Losses (ISI Eng., Reactor Eng., Elect. Maint.) Have Been Mitigated
- Also Closely Monitoring and Responding to Leadership Losses
- Conclusion – DCCP's Employee Retention Program was being well managed and generally proceeding as expected.



Meeting with Vice President, Generation Business and Technical Services, Maureen Zawalick (remote)

- **Discussed Items from the Fact-Finding Meeting and Other Subjects of Interest**



COVID-19 Pandemic Response Update

- **Currently About 65% of Plant Employees Vaccinated; Future Vaccination Requirements Unknown at This Time**
- **Site Case Trends Turned Upward Similar to Community**
- **Reinstated Mandatory Masking**
- **Continued Daily Screenings for Each Employee**
- **Few Onsite Transmissions**
- **No Significant Numbers of Employee Absences**
- **Conclusion – DCPD continues to take a strong, proactive approach against the pandemic.**



Cause Evaluation for ASW Pump 1-1 Motor Failure (remote)

- **Ground Alarm Received During Pump Start on July 5, 2021**
- **Pump Declared Inoperable and Motor Replaced (Emergency TS Change Granted by NRC Extending Allowable Outage Time from 72 to 144 Hours)**
- **Motor Heater Known to be Degraded for About a Year; Failed During the Previous Week**
- **Cause Evaluation Focused on Programmatic Issues; Not Yet Complete**
- **Conclusion – DCPD performing a Cause Evaluation and the DCISC should review the corrective actions when final approved.**



Equipment Reliability Process (remote)

- **ER Process Indicator “Yellow” (Needing Improvement) Due Primarily to Unit 2 Generator Failures**
- **DCPP Continuing to Work Through Its ER Excellence Plan**
- **Series of ER Observations Performed; Results Reviewed by an Executive Oversight Board**
- **Conclusion – DCPP continues to work to improve its processes that affect ER, and the trend of ER performance appears to be improving.**



Meet with NRC Resident Inspectors (remote)

- **Change in Senior Resident Inspector**
- **Recent NRC Inspection Results and Concerns**
- **Closure of Open Phase Vulnerability Concerns**
- **Plant Staffing**



Root Cause Evaluation for Unit 2 Main Generator Failures (remote in part)

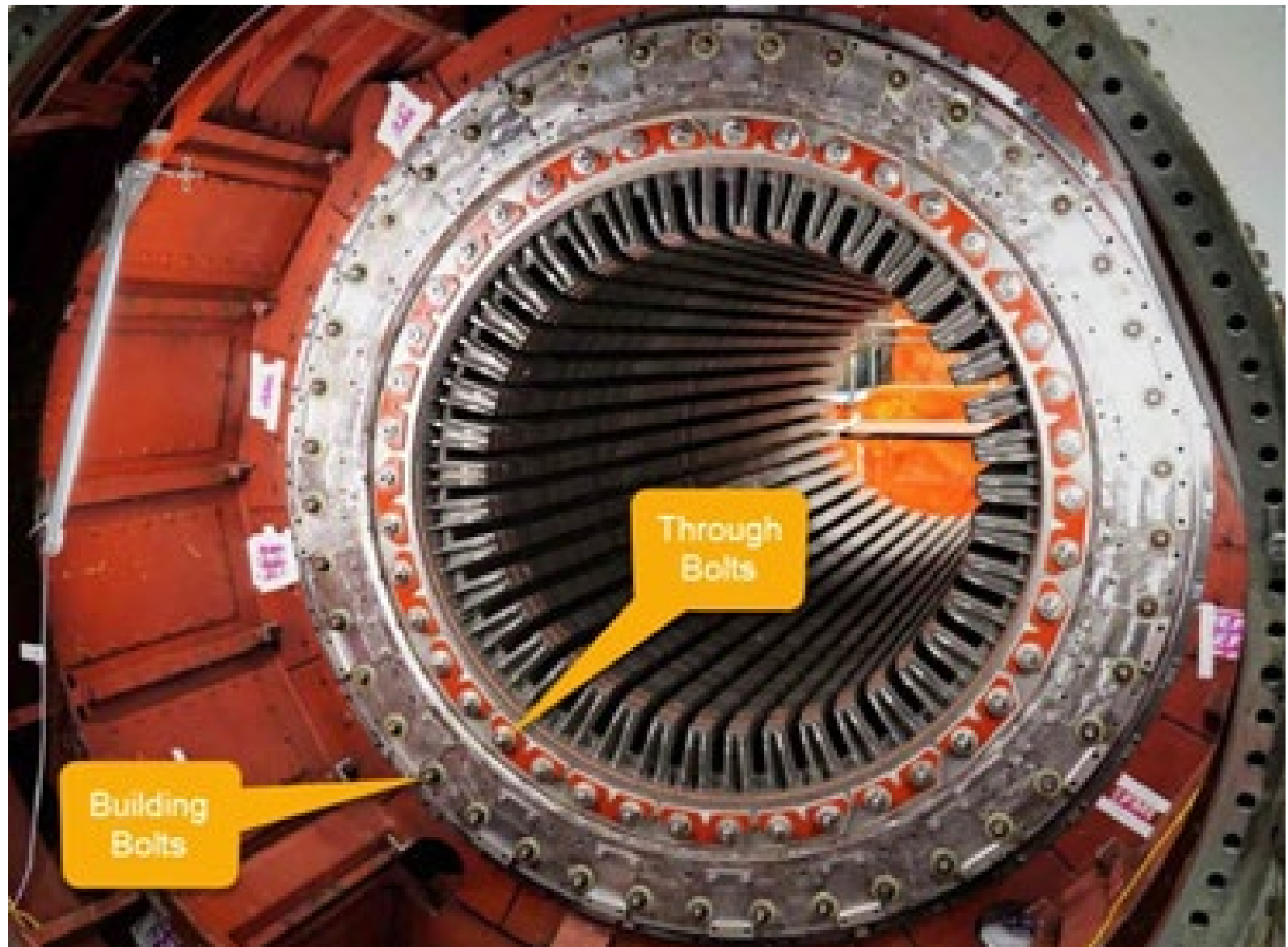
- **History**
 - **Fall 2019 – Unit 2 Main Generator Stator Refurbished**
 - **July 16, 2020 – Hydrogen Leak to Stator Closed Cooling Water System Inside Main Generator, Unit Shutdown (Forced Outage 2Y22)**
 - **October 15, 2020 – Hydrogen Leak, Unit Shutdown (Forced Outage 2Z22)**
 - **December 2, 2020 – Hydrogen Leak, Unit Shutdown (Forced Outage 2G22)**
 - **February 3, 2021 – Vibrations Increasing Unit Shutdown (Forced Outage 2H22, Extended into Refueling Outage 2R22)**
 - **April 19, 2021 – Stator High Temperature; Internal Cooling Water Lines Reversed, Unit Shutdown (Forced Outage 2X23)**

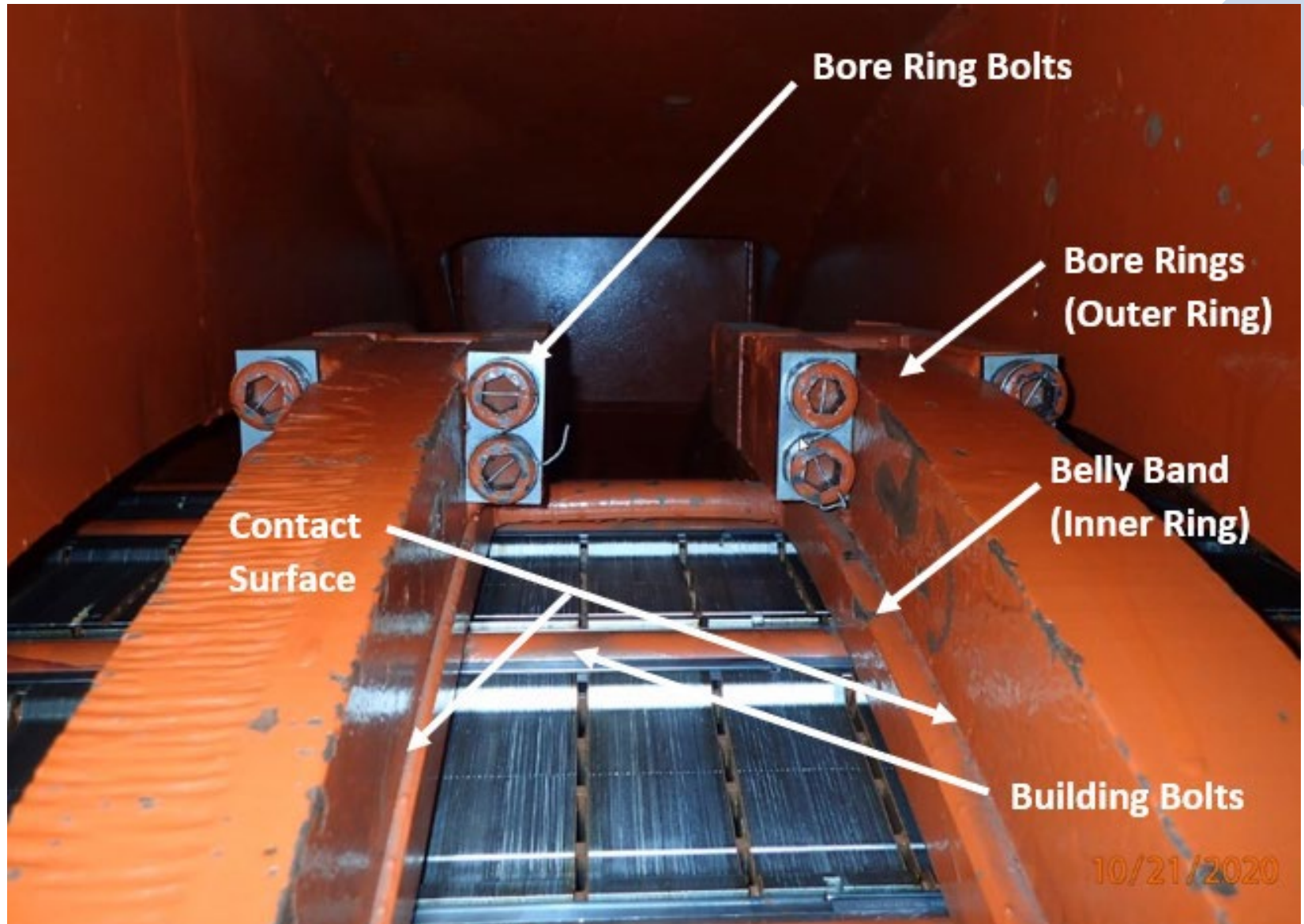
Continued



Root Cause Evaluation for Unit 2 Main Generator Failures (Continued)

- **Root Cause Results:**
 - **Root Cause 1: “Inadequate mitigation of the bore ring assembly stick-slip phenomenon during core installation.”**
 - **Root Cause 2: “Inadequate mitigation of and testing for resonant frequencies on the exciter end parallel rings and end windings.”**







Root Cause Evaluation for Unit 2 Main Generator Failures (Continued)

- **Conclusions:**
 - **The RCE for multiple Unit 2 Main Generator forced outages was well performed with regards to its overall approach and conclusions.**
 - **There were no nuclear safety concerns identified as most of the equipment causes and corrective actions involved components that were not related to nuclear safety and there were no significant programmatic deficiencies that extended into safety-related areas.**



Cybersecurity Program (remote)

- **Identifies and Implements Protection for About 4,000 Critical Digital Assets at DCPD**
- **Full Program Implemented in 2017; Now Considered Mature and Focusing on Maintaining Effectiveness**
- **NRC Inspection Deferred from April 2020 to March 2021**
- **DCPD Near Last to Receive; Very Detailed NRC Inspection; No Negative Findings**
- **DCPD is Protected From External Threats Similar to Recent Publicly Known Cybersecurity Incidents**
- **Conclusion – Program Appears to be Effectively Managed.**



Auxiliary Feedwater (AFW) Systems

- **Systems Used to Provide Feedwater to Steam Generators During Shutdown, Startup, Low Power, and Accident Conditions**
- **Both Systems on Both Units Good Health (“Green”)**
- **Modifications to Replace Chemical Addition Skids Completed**
- **Corrective Actions for Corrosion Under Insulation Completed**
- **Conclusion – AFW Systems continue to receive close attention and are rated as Green (Healthy).**



Plant Tour

- **Areas Toured:**
 - 140' Turbine Building (Operating Deck)
 - 85' Auxiliary Building (RCA Entry Point)
 - 100' Auxiliary Building (Both Units' AFW Pumps, FLEX Pumps, AFW Chemical Addition Pumps, and Boric Acid Transfer Pumps)
 - Unit 1 Pipe Rack Outside Auxiliary Building/Containment (AFW, Main Steam, and Main Feedwater Pipes and Valves)
 - 104' Turbine Building
 - 85' Turbine Building
- **Conclusion – All Observed Areas Were Clean, Orderly, and Well Lighted with Equipment in Excellent Condition**



Emergency Preparedness Exercise Observation

- **Consultant Observed September 15 Emergency Planning Exercise (Control Room Simulator, EOF, JIC)**
- **Classifications, Notifications, and Protective Action Recommendations Were All Timely**
- **PG&E's Metrics:**
 - **65 of 65 overall emergency response objectives sat**
 - **191 of 191 individual facility objectives sat**
 - **892 of 909 demonstration criteria were sat**
- **Conclusion – Emergency Preparedness Exercise was successfully designed and implemented by PG&E, and it demonstrated that DCP's staff could effectively implement the facility's Emergency Plan.**



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Overview of Nuclear Safety Culture, SCWE and ECP

Jeff Harker

Manager, Maintenance & Technical Training

October 20, 2021



Together, Building
a Better California

Nuclear Safety Culture Definition

The Core values and behaviors resulting from a collective commitment from leaders and individuals to emphasize safety over competing goals to ensure the protection of people and the environment.

A work environment where employees are encouraged to raise safety concerns and where concerns are promptly reviewed, given the proper priority based on their potential safety significance, and appropriately resolved with timely feedback to the originator of the concerns and to other employees as appropriate.

Employee Concerns Program Definition

An alternate avenue for reporting concerns that is independent of line management. The ECP may be used by individuals to report nuclear safety concerns or concerns dealing with harassment, intimidation, retaliation or discrimination, without fear of retribution.

Traits of a Healthy Nuclear Safety Culture

- **Individual Commitment to Safety**
 - Personal Accountability
 - Questioning Attitude
 - Effective Safety Communication
- **Management Commitment to Safety**
 - Leadership Safety Values and Actions
 - Decision-Making
 - Respectful Work Environment
- **Management Systems**
 - Continuous Learning
 - Problem Identification and Resolution
 - Environment for Raising Concerns
 - Work Processes

The Nuclear Safety Culture Monitoring Panel (NSCMP) assesses nuclear safety culture using the recommendations of NEI 09-07, “Fostering a Healthy Nuclear Safety Culture,” which places primary responsibility on management to provide an ongoing holistic, objective, transparent and safety-focused process. The process evaluates inputs from:

- Corrective Action Program
- Performance trends
- NRC inspections
- Industry evaluations, audits, and Operating Experience
- Independent and self-assessments
- Employee Concerns Program

- Monitors these inputs to identify early indications of potential concerns in the work environment that merit additional attention by the organization
- Process is directed by station procedures
- Comprised of experienced personnel with diverse backgrounds
- Membership is limited to protect the confidentiality of personal information
- Reports are provided to the Site Leadership Team

Employee Concerns Program



The Employee Concerns Program (ECP) is an acceptable alternative path, independent of the line management process, for employees (including contractors) to seek intervention, consultation, or independent investigation and resolution to nuclear safety and nuclear quality concerns.

3 Independent, qualified team members



Industry Evaluations

- NRC Inspection Procedure 71152, Identification and Resolution of Problems (Sept. 2020)
- Self-Assessments- Nuclear Quality Management Leadership NECE-Guid-001 (July 2020)

NRC: Statistics on Allegations*

Site	2021
Diablo Canyon	2

*Allegations received from all sources external to the NRC

Employee Concerns Program

Remote Pulsing

A Remote Pulsing Plan was implemented in March 2020 to “pulse” Nuclear Generation employees through remote methods to understand workforce challenges or concerns, and to evaluate or investigate concerns as necessary.



- 254 employee touchpoints to date
- 100% of employees state a willingness to raise nuclear safety and/or nuclear quality issues
- 100% of employees state an understanding of alternate avenues available to report concerns

NRC's Problem Identification and Resolution Inspection Results

- A team of NRC inspectors reviewed the station's programs to establish and maintain a safety conscious work environment (including the ECP) and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews, the team found no evidence of challenges to the station's safety-conscious work environment. The team did not identify any concerns with the ECP.

Nuclear Safety Culture Status

Summary

DCPP has undergone a number of NRC inspections that examined our nuclear safety culture. The latest concluded in September 2020. The NRC inspections, as well as recent NSCMP assessments and ECP Self-Assessments indicate that DCPP continues to exhibit the traits of a healthy nuclear safety culture.

Speak Up, Listen Up, Follow Up



PG&E is a safer, better company when all employees are encouraged to speak up; the leadership team is committed to listening up, and following up

- Nothing is more important than safety.
- Maintaining a culture where everyone feels comfortable sharing their ideas and concerns is essential to operating safely
- Whenever employees see a safety issue or concern, they are encouraged to speak up immediately

Thank you

Jeff Harker