



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

January 23, 1997

LICENSEE: Pacific Gas and Electric Company
FACILITY: Diablo Canyon Nuclear Power Plant, Units 1 and 2
SUBJECT: SUMMARY OF MEETING HELD ON OCTOBER 30, 1996, WITH PG&E AND WESTINGHOUSE TO DISCUSS DIABLO CANYON UNITS 1 AND 2 CURRENT AND FUTURE LICENSING ISSUES AND COMMITMENT TRACKING

The NRC staff met with representatives of PG&E on October 30, 1996, at One White Flint North in Rockville, Maryland to discuss (1) current and future licensing issues, and (2) commitment tracking. Attachment 1 contains the list of attendees at this meeting. Attachment 2 contains the handouts used by the licensee for their presentations.

The first topic discussed was upcoming licensing submittals. A particular discussion involved a future submittal on Best Estimate Loss of Coolant (BELOCA). The staff told PG&E that they would have to make a technical specification (TS) change to the methodology section involving the core operating limits report (COLR). Also they would have to talk to Westinghouse to determine which type of plant they are and that this would determine what would have to be referenced in the TS. Next there was a discussion about other current and future TS changes including the conversion to 24 month cycles and also the conversion to the improved Standard Technical Specifications (ISTS). The next topic was a description by PG&E of how their commitment tracking system will work in the future. There was a brief conversation on what is expected of licensees with respect to their 50.54(f) submittals. The staff told them to give as much information as possible. The last topic involved the re-engineering effort ongoing at PG&E. This included the divesting of fossil fuel plants and how this will affect PG&E. There was a discussion of a management transition project that is scheduled to take 3 years.

A handwritten signature in black ink, appearing to read "S.D. Bloom", with a long horizontal line extending to the right.

Steven D. Bloom, Project Manager
Project Directorate IV-2
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

Docket Nos. 50-275
and 50-323

Attachments: 1. List of Attendees
2. Handout

cc w/atts: See next page

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cc w/atts:

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MEETING WITH PACIFIC GAS AND ELECTRIC
LICENSING ISSUES AND COMMITMENT TRACKING

ATTENDEES

October 30, 1996

PACIFIC GAS AND ELECTRIC COMPANY

Mike Angus
Terry Grebel
Jim Tomkins
Ralph Berger

NRC

Steven Bloom
Kris Thomas
Frank Orr



DIABLO CANYON POWER PLANT UNITS 1 & 2

UPCOMING LICENSING SUBMITTALS

Presentation to the NRC

October 1996

Pacific Gas & Electric Company





MAJOR EFFORTS UNDERWAY

- Best Estimate Loss of Coolant Accident
- 24-Month Cycles
- Unit 1 Upgrading





BELOCA

- Supports 24-Month Cycles and Unit 1 Uprate
- Both Units 1 and 2 at 3411 MWt, 24-Month Cycles
- Satisfies Commitment to redo DCCP LBLOCA Analyses by 1998
- Uses methodology of WCAP-12945, "Westinghouse Code Qualification Document for Best Estimate LOCA," approved by NRC 6/28/96

Unit 1-3338



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BELOCA

- No Variation from WCAP-12945 Methodology
- Westinghouse has Reviewed Information Notice 96-39 and Verified Proper Decay Heat Inputs
- Plant Specific Information Limited to Analysis Inputs





BELOCA Major Elements

- Data Development
- Reference Case
- Monte Carlo Runs
- Discretionary Runs
- Report and LAR Submittal





BELOCA -- Data Development

- Data is of two types
 - Single Value
 - Parameter Ranges
- Data was Developed both at PG&E and Westinghouse
 - Calc STA-006 provides single reference document for all PG&E developed data
 - Some Data and Calculation was a Joint Effort between Westinghouse and PG&E





BELOCA -- Data Development

- Philosophy was to Maximize Operability Margins by use of Conservative Data
 - T_{avg} Envelopes possible T_{hot} Reduction
- PG&E placed Conservatism into Reference Case, that other Utilities Opted to put in Discretionary Runs



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BELOCA -- Data Development

32 Parameters are Sampled from Ranges. Most of these are developed by Westinghouse in accordance with WCAP-12945 Methods. These include:

Flow discharge coefficients

Heat transfer coefficients

Decay heat uncertainty

Condensation

F_Q up to max of 2.7

F_H up to max of 1.7





BELOCA -- Data Development

- Plant Specific Parameter Ranges:

P_{BOT}	0.2 - 0.43
P_{MID}	0.25 - 0.45
P_{LPavg}	0.3 - 0.8
T_{avg}	560 - 582.3 F
$P_{zr P}$	2190 - 2310 psia
$RWST T$	68 - 90 F
$Accum T$	85 - 120 F
$Accum Wtr$	814 - 886 ft ³
$Accum P$	579 - 664 psig

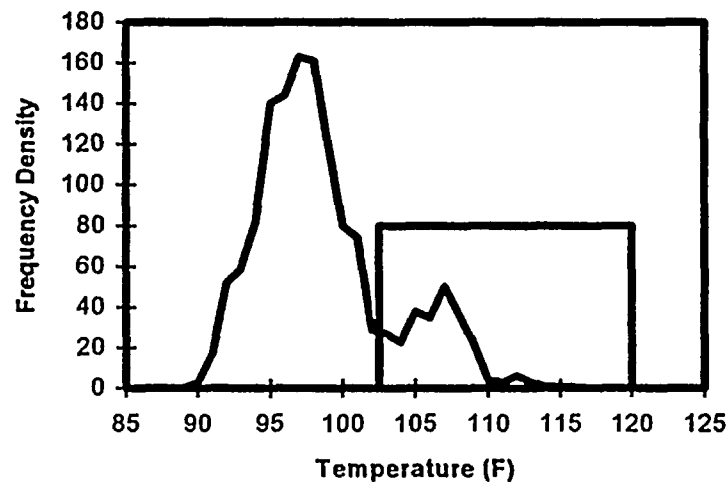




BELOCA -- Data Development

- Accumulator Temperature is Conservative Relative to Containment Temperature History (*assumption is that accumulators are approximately at containment temperature*)

Containment Temperature Data and Sampling Bin



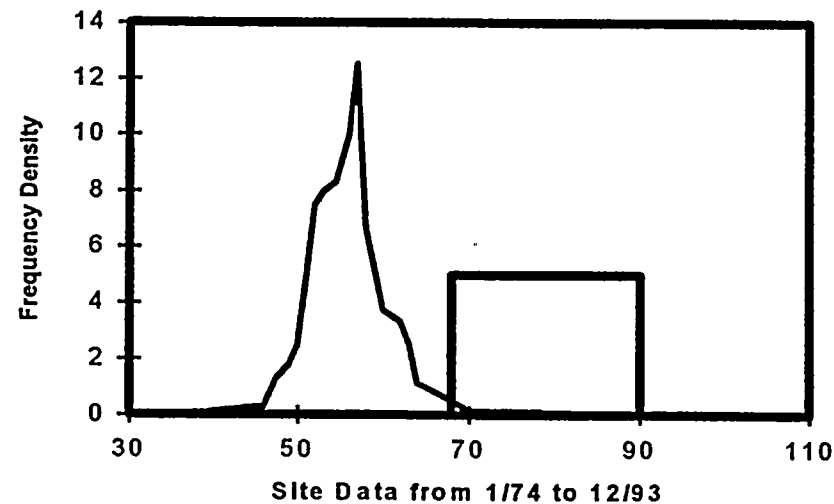
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BELOCA -- Data Development

- RWST Temperature is Conservative Relative to Site Temperature History (*assumption is that RWST is up to 90 F after refueling; thereafter near ambient temperature*)

Site Temperature vs. ECCS Injection
Temperature





BELOCA -- Reference Case

- Deterministic WCOBRA/TRAC
- Limiting Unit (Unit 1)
- Limiting Tube Plugging (15%)
- Limiting Offsite Power Assumption (LOOP)
- 0.3 Power Level in the Outer Assemblies (Limiting)
- High $T_{avg} = 577.3$ F
- 70 - 90% Confidence Level
- Completed June 28, 1996





BELOCA -- Reference Case

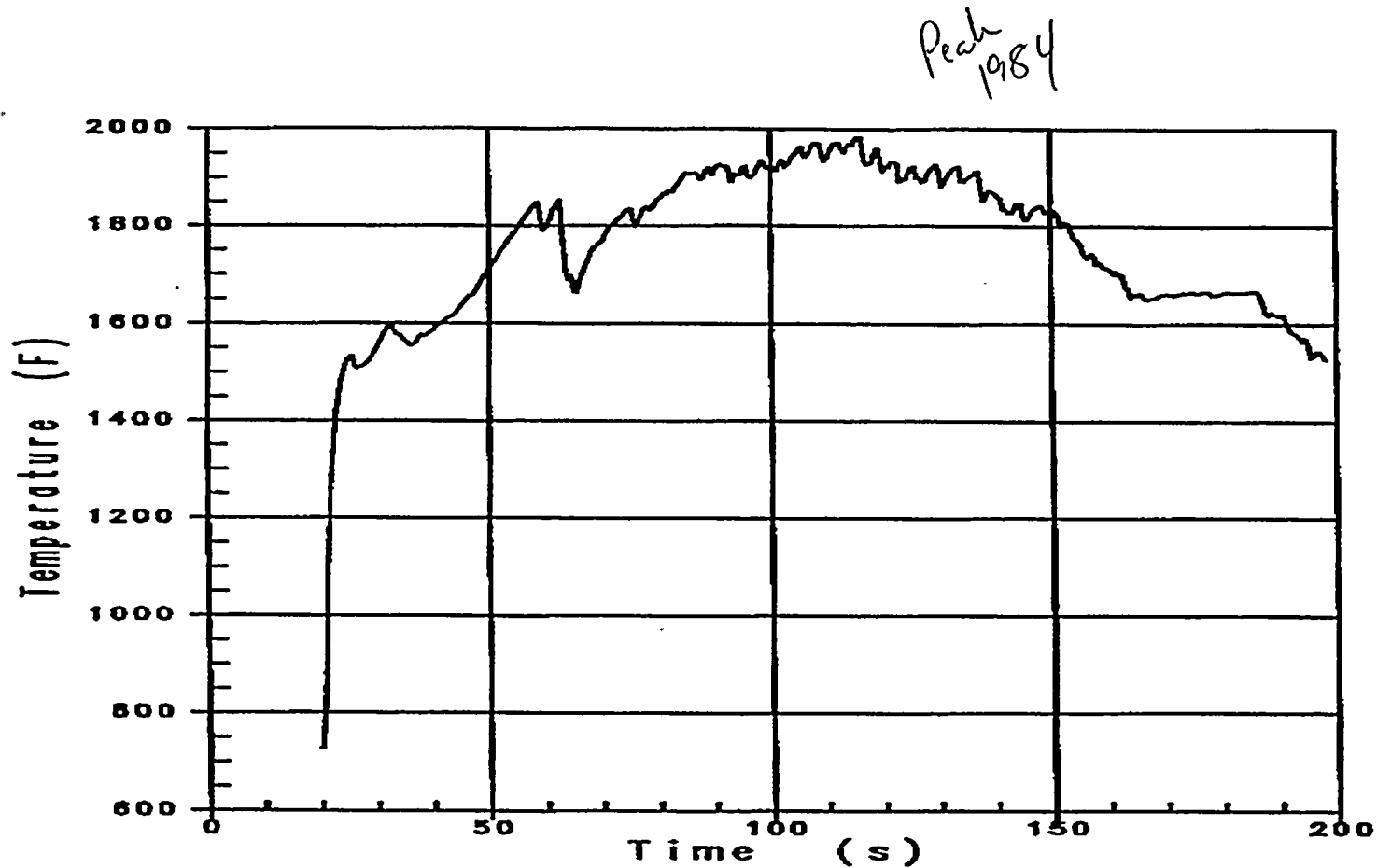


Figure 5-3-1. Final Reference Transient - Hot Rod PCT





BELOCA -- Reference Case

- PCT for Reference Case is 1984 °F
(compares to 2042 °F for Unit 1 and 2108 °F for Unit 2 in current FSAR)
- 95% Confidence PCT will be higher
- No Second Reflood Peak
- Limited by Unit 1, LOOP



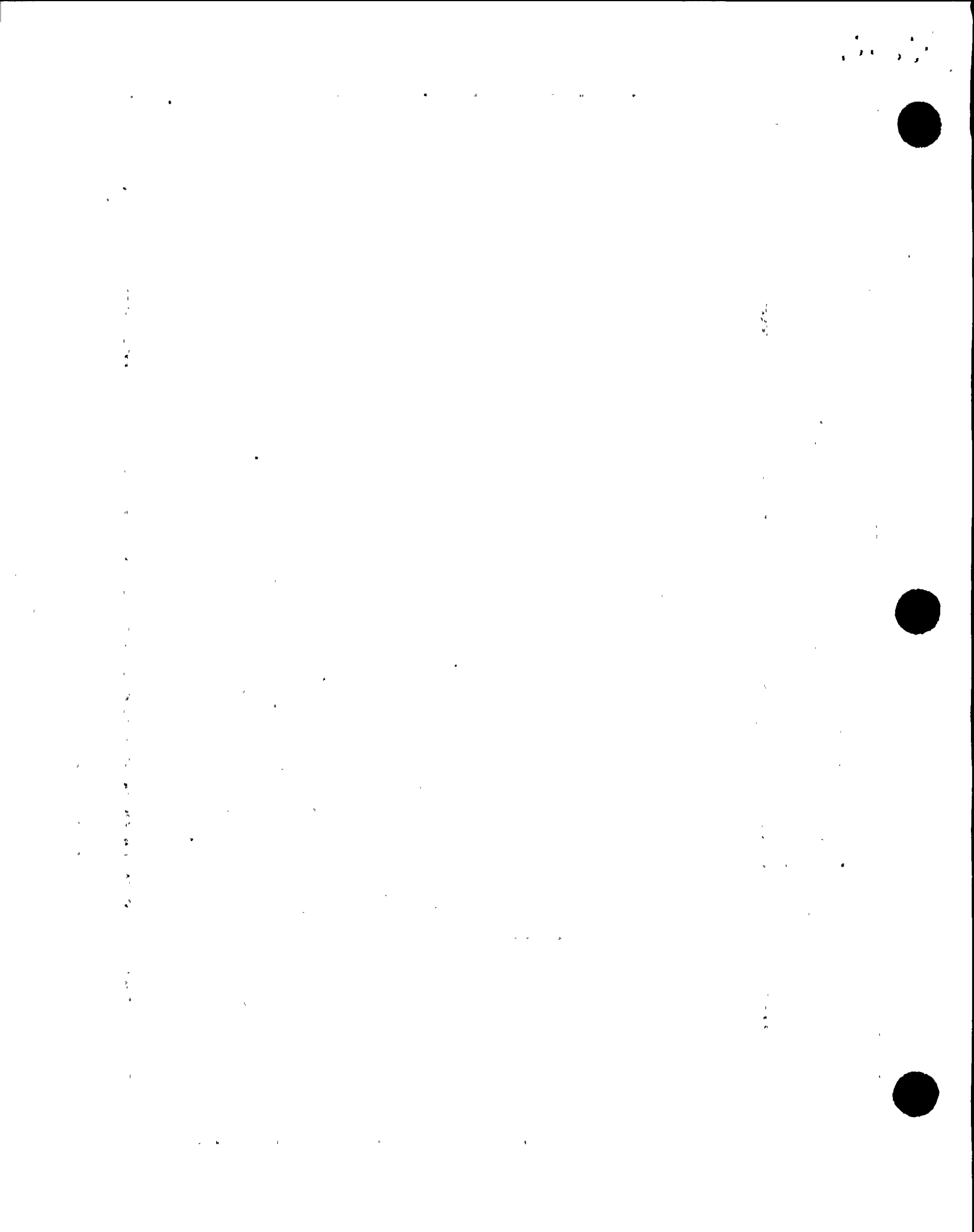
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3 3 2 3



BELOCA -- Monte Carlo

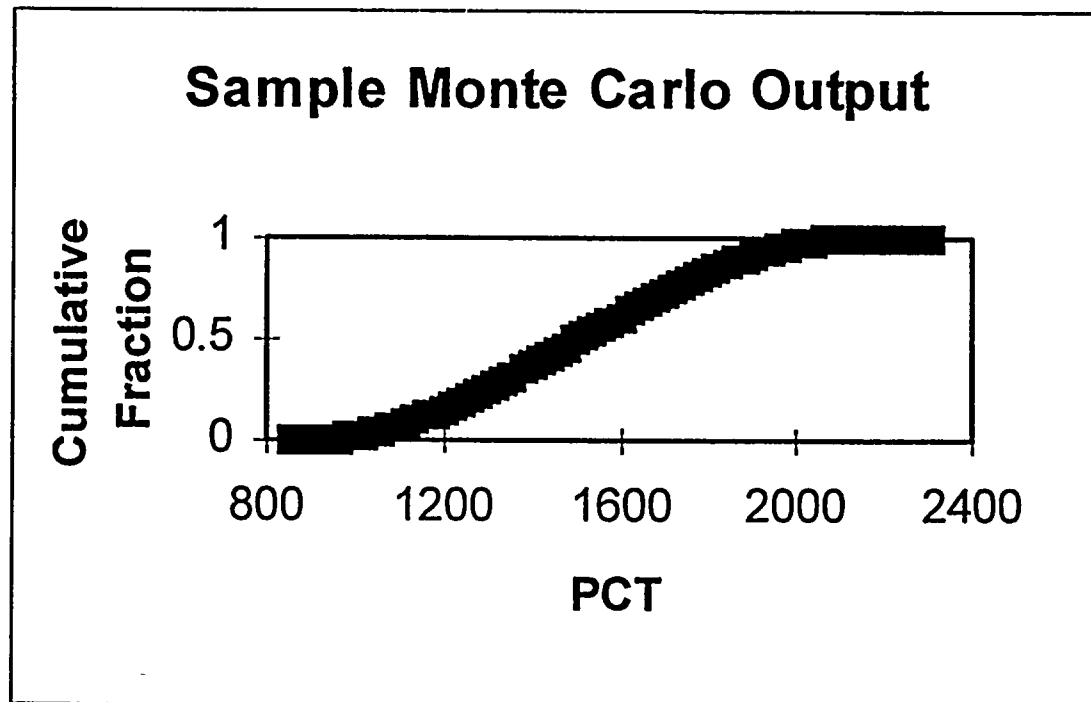
- Variables Selected by Random Sampling from within Parameter Ranges
- Delta-PCT Terms generated based on sensitivity of parameter variation from the Reference Case
- PCT for one trial is Reference PCT plus delta due to power distribution variables plus delta due to initial condition variables plus delta due to modeling variables
- $PCT_j = PCT_j^b + dPCT_{PDj} + dPCT_{ICj} + dPCT_{MODj}$
- Normally done for $j = 1$ (blowdown) and $j = 2, 3$ (reflood peaks), but DCCP has no second peak





BELOCA -- Monte Carlo

- The 95% Cumulative Value is compared to allowable PCT limit of 2200 °F



11 11



BELOCA -- Discretionary Runs

- Five Additional Runs for Operability Evaluation
- Actions that can be taken to Lower PCT
- PCT Penalty Associated with Off Normal Operation



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BELOCA -- Discretionary Runs

- *Evaluate PCT Benefit*
 - *1/3rd Cycle Burnup*
 - *Current Peaking Factors*
 - *Lower Power*
 - *Unit 2 Internals*
- *Evaluate PCT Penalty*
 - *No High Head Injection*



100-100000



BELOCA -- Schedule

	D	J96	F	M	A	M	J	J	A	S	O	N	D	J97	F	M
Data Development	█															
Reference Case					█											
Monte Carlo Runs							█									
Discretionary Runs										█						
W Report												█				
LAR Development													█			
LAR Submittal																●



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BELOCA -- Comparison to Industry

- Lead Plant -- Indian Point 2, 4-loop 17x17 fuel
 - Extensive Review
 - Similar to DCCP
- Other Westinghouse BELOCAs in 1996
 - Indian Point 3
 - Turkey Point 3 & 4
- Other Westinghouse BELOCAs in 1997
 - Farley 1 & 2
 - V.C. Summer
 - Watts Bar





24 Month Cycle 1995-97 Submittals

- First Request (December 1995)
 - 34 Tech Spec Surveillance Interval Increases
- Second Request (July 1996)
 - 21 Tech Spec Surveillance Interval Increases and 43 Setpoint Evaluations
- Third Request (September 1996)
 - 31 Tech Spec Surveillance Interval Increases and 35 Setpoint Evaluations
- Fourth Request (January 1997)
 - 23 Tech Spec Surveillance Interval Increases and 19 Setpoint Evaluations



1 2 3 4 5 6 7 8 9 10 11 12



24 Month Cycle -- Schedule

- 20-Month Cycle in effect now at Unit 2, Cycle 8
- Phase III Analysis 1998
- 24-Month Cycles begin Unit 2, Cycle 11, in 2001



2 2 2 2 2

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24 Month Cycle -- Phase 3 Analyses

- Steam Generator Tube Rupture, Overfill and Dose
- DNBR Analyses using RTDP
- Non-LOCA impacted by new Peaking Factors, increased Boron concentration, and increased PMTC





Unit 1 Uprate

- From 3338 MWt to 3411 MWt (2.2%)
- Makes Unit 1 and Unit 2 Equal Thermal Rating
- Satisfies Commitment to redo SBLOCA by 1998
- Single Component Analysis Set for both Units
- Single LBLOCA Analysis for both Units





Unit 1 Uprate -- Major Elements

- Component Analysis
- Balance of Plant
- Accident Analysis
- License Amendment





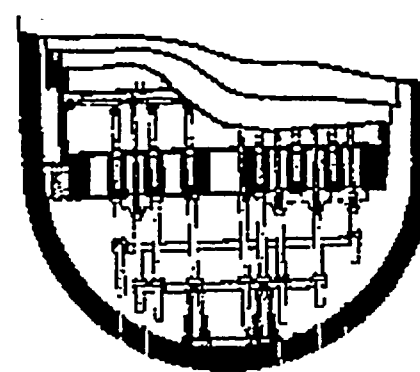
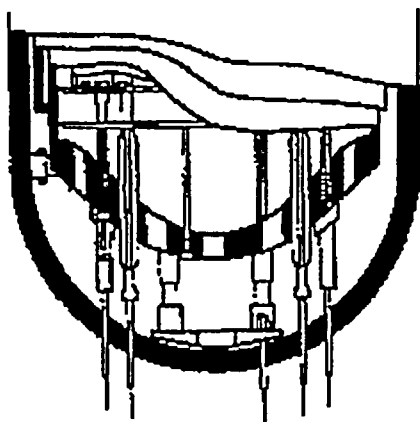
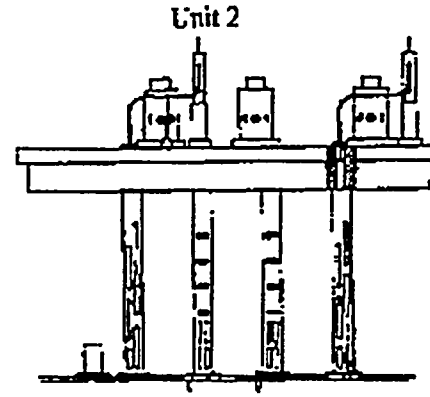
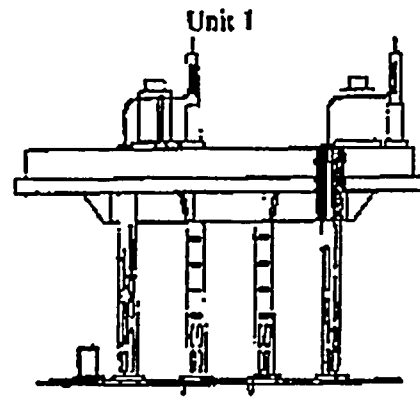
Unit 1 Uprate -- Analysis

- Many Analyses Already Performed for Limiting Unit
- Balance of Plant Near Identical for Units 1 & 2
- Unit 1 Minimum Flow is 87,700 gpm per loop, Unit 2 Minimum Flow is 89,000 gpm per loop.
- Unit 1 is Limiting for DNBR and LOCA





Upgrading -- Unit to Unit Differences





Unit 1 Uprate -- Schedule

	D	J96	F	M	A	M	J	J	A	S	O	N	D	J97	F	M	A	M
Data Development	█																	
Component Analysis			█															
Balance of Plant				█					▨									
Accident Analysis				█					▨									
BELOCA	█								▨									
LAR Development														▨				
LAR Submittal																		●





Uprating -- Comparison to Industry

- Other Recent Upratings
 - Indian Point 2 (1990), 2758 MWt to 3071 MWt
 - Calloway (1993), 3411 MWt to 3565 MWt
 - Vogtle (1993), 3411 MWt to 3565 MWt
 - Peach Bottom (1994), 3293 MWt to 3458 MWt
 - Limerick (1995), 3293 MWt to 3458 MWt
 - 21 units in all
- DCPP by comparison brings Unit 1 up just 78 MWt to match Unit 2 Power





Other Analysis Activities Under Consideration

- T_{HOT} Reduction
 - Improved Steam Generator Life
- RCS Minimum Flow Requirement Reduction
 - Response to possible SG tube plugging





Upcoming Analysis Activities

	1996	1997	1998
<i>BELOCA</i>	■		
<i>24-Month, Phase 3</i>		■	
<i>Unit 1 Uprate</i>	■		
<i>Thot Reduction</i>		■	
<i>RCS Flow Reduction</i>		■	





Upcoming Analysis Activities

	1996	1997	1998
<i>BELOCA</i>	■		
<i>24-Month, Phase 3</i>		■	
<i>Unit 1 Uprate</i>	■		
<i>Thot Reduction</i>		■	
<i>RCS Flow Reduction</i>		■	





CONCLUSION

- BELOCA LAR, March 1997
- 24-Month Cycle LARs, 3rd and 4th On Schedule for late fall 1996 and early 1997
- Unit 1 Uprate LAR, May 1997





Why these four plants?

- Morro Bay: will need to be fully competitive in new market.
- Separation of Pittsburg and Contra Costa not advisable for many reasons.
- Moss Landing, Hunters Pt., and Oakland, with MBPP, add up to the right number of megawatts.



What can employees expect?

- Safety is our first priority in our working environment.
- About a three-year transition period -- during which we will run the plants safely and reliably.
- Fair and equitable treatment for all employees.
- Answers as soon as we have them.

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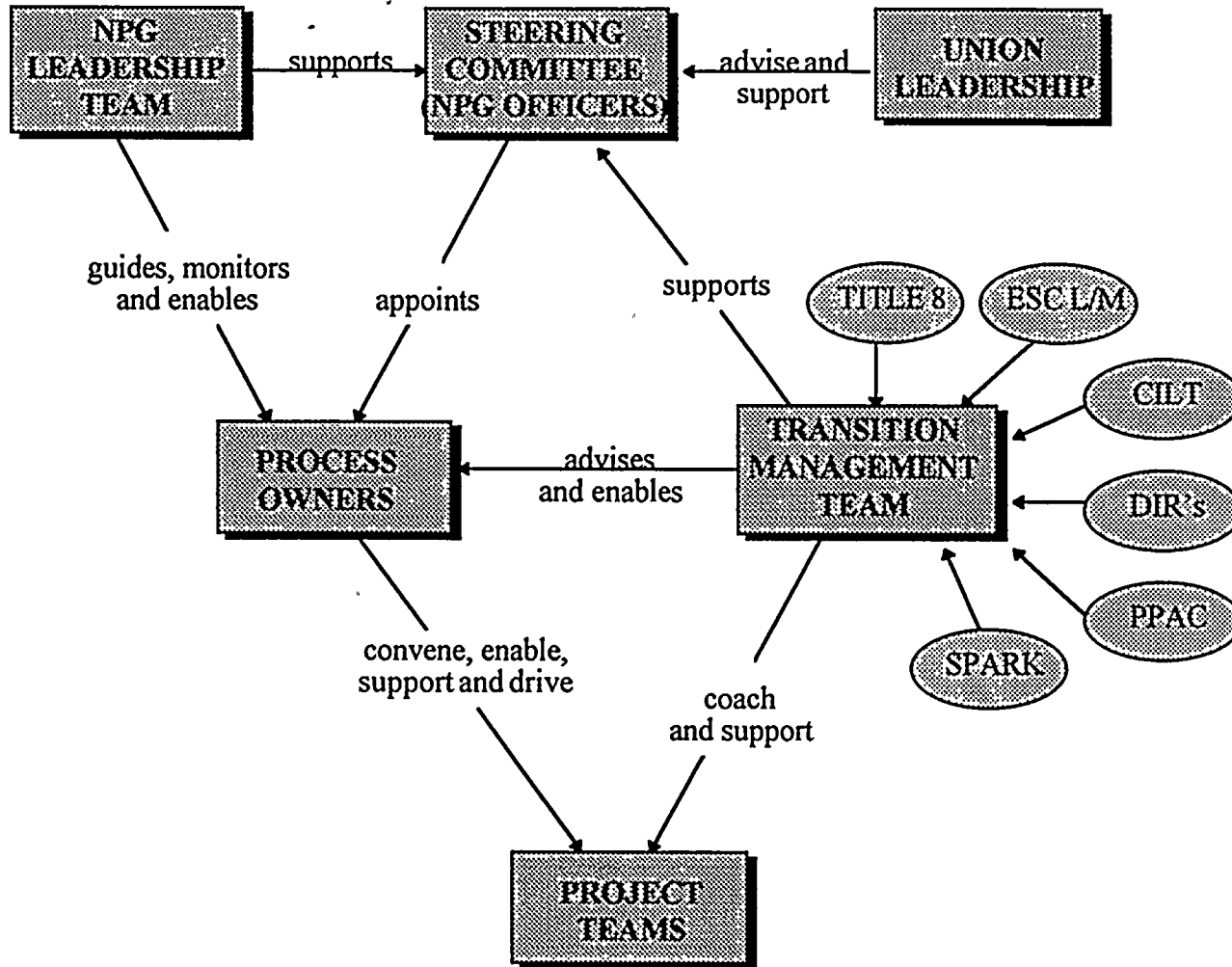
More specifically...

- **Management employees:** focus now on current work and future transition programs; also placement assistance, severance programs.
- **IBEW employees:** partnership talks are scheduled to begin immediately.
- **ESC employees:** Union/management talks are going on now. Also, many opportunities are available in other PG&E departments.

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NPG Transition Management



<u>Steering Committee:</u>
(NPG Officers)
Greg Rueger
Bob Powers
Larry Womack

<u>NPG Leadership Team:</u>	
NPG Officers	Dave Miklush
Mike Angus	Jim Molden
Fernando Bosseloo	Dave Oatley
Bill Crockett	Greg Rogers
Rod Curb	Dave Tateosian
Steve Fridley	Raymond Thierry

<u>Transition Team:</u>
Rod Curb
Jacque Hinds
Julie Krisell
Steve Meyer
Arlene Morris-Versaw
Kent Oliver

7153



Proposed Project Timeline

- Based on a number of constraints, the team developed a proposed transition project timeline. Given a resource constraint of 75 full-time equivalent employees working full-time on these projects at any time (based on resources dedicated to current initiatives), the nineteen projects can be designed and implemented by the end of year 2000. All high business value projects will be designed by the end of 1998, and the projects with high risk have been balanced throughout the proposed transition plan.
- The project timeline depicted below reflects the prioritization of transition projects based on business value combined with logical sequencing required by both the implementation timeline and the expected needs of the competitive market. An example of this logical sequence is designing the Market and Trade Energy process which is not a business requirement prior to actual market competition, but which must be timed for successful implementation by 2002.

Projects:	1996		1997				1998				1999				2000				
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Develop eureka vision and operating strategy		X																	
Adapt and implement procure and control materials and services process		X																	
Optimize manage nuclear fuel process																			
Innovate and implement control work process			X																
Innovate and implement manage information process																			
Optimize manage secure plant sub-process																			
Adapt and implement manage strategy and assets process																			
Optimize train employees sub-process																			
Develop it vision and strategy																			
Design and implement business training																			
Adapt and implement manage regulatory commitments																			
Design and implement project management tools and approach																			
Design and implement performance measures																			
Design and implement compensation and competency models																			
Optimize manage environment sub-process																			
Optimize manage chemistry sub-process																			
Optimize manage radiation protection sub-process																			
Develop and implement administer revenues and expenses process																			
Develop and implement market and trade energy process																			
Report outages																			

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