REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR:8102190250. DOC.DATE: 81/02/13 NOTARIZED: NO DOCKET #
FACIL:50-275 Diablo Canyon Nuclear Power Plant, Unit 1, Pacific Ga 05000275
50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Ga 05000323
AUTH.NAME AUTHOR AFFILIATION
CRANE,P.A. Pacific Gas & Electric Co.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: Provides into re shift technical advisor, shift manning, corporate organization, immediate upgrade of reactor operator & senior reactor operator training & qualifications & dissemination of operating experience per NRC request.

Licensing Branch 3

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MIRAGLIA, F.J.

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P.O. BOX 7442 • 77 BEALE STREET, 31ST FLOOR, SAN FRANCISCO, CALIFORNIA 94106 TELEPHONE (415) 781-4211 **TELECOPIER (415) 543-7813**

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February 13, 1981

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Mr. Frank J. Miraglia, Jr., Chief Licensing Branch No. 3 Division of Licensing Office of Nuclear Reactor Regulation U. S. Nuclear Regulatory Commission Washington, DC 20555

Docket No. 50-275 Docket No. 50-323

Diablo Canyon Units 1 and 2

Dear Mr. Miraglia:

The following information is submitted in response to a request by the NRC staff:

Shift Technical Advisor (I.A.1.1)

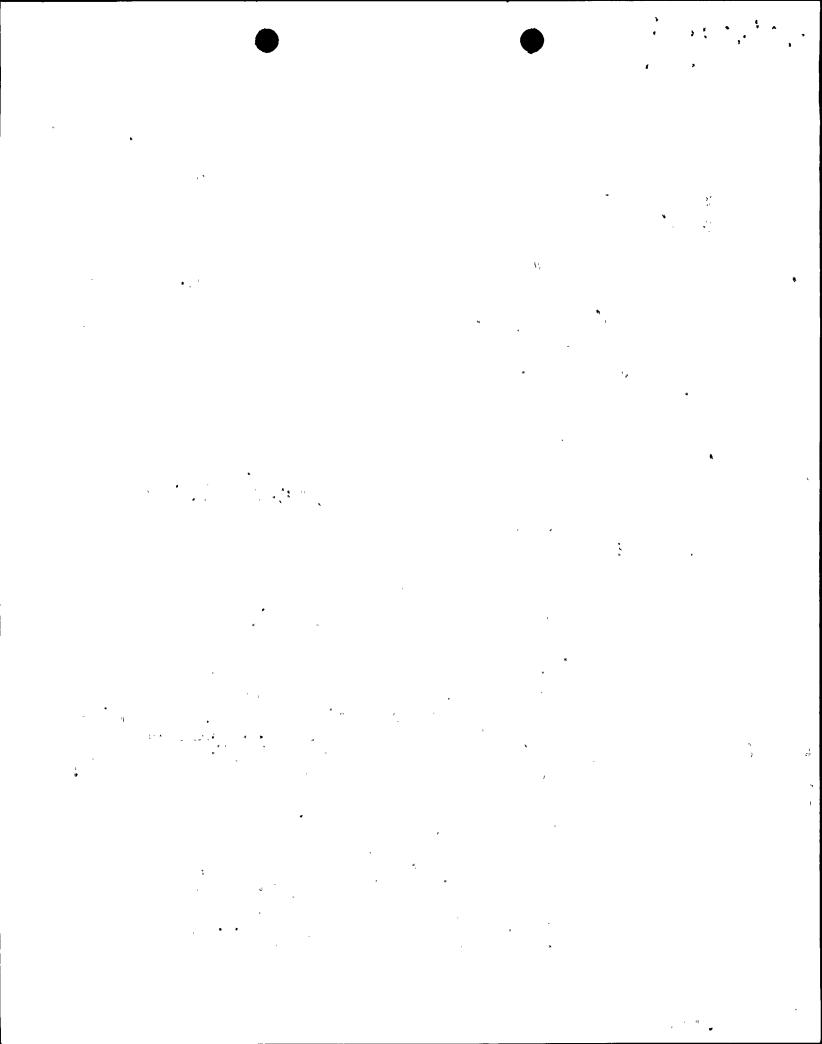
Currently, Diablo Canyon Power Plant (DCPP) has three personnel designated as Shift Technical Advisors (STA) and two designated backup STAs. All personnel have completed a 26-week Westinghouse STA Training Program and satisfy the qualifications and training requirements of the October 30, 1979 letter. A description of the Westinghouse program is attached. Current plans call for STAs to attend regualification programs with license personnel. However, a separate STA requalification program, including simulator training, is being investigated.

For long-term STA training, PGandE Nuclear Plant Administration Procedure, NPAP B-103, details STA selection criteria, qualifications and training requirements. Presently, proposals from three contractors are being evaluated for STA training programs to be conducted at DCPP and an appropriate simulator facility. All three proposed programs have been compared with the INPO document, "Nuclear Power Plant Shift Technical Advisor -Recommendation for Position Description, Qualification, Education and Training" and found to satisfy the recommended quidelines. Current plans are to purchase one of

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February 13, 1981

these programs and begin training four or more personnel as STAs around March or April 1981.

The STA will report functionally and administratively to the Operations Engineering Senior Power Production Engineer.

2. Shift Manning (I.A.1.3)

Thirty-five cold license candidates are in training at DCPP. Ten are management and training personnel, all of whom will take the Senior Reactor Operator Examination. Six are Shift Foremen who will take the Senior Reactor Operator examination. Of the remaining 19, 12 are expected to take the Senior Reactor Operator examination and 7 are expected to take the Reactor Operator examination.

3. Corporate Organization (I.B.1)

The Supervisor of Chemistry and Radiation Protection and his backup will be ANSI 18.1 and Regulatory Guide 1.8 qualified.

4. Immediate Upgrade of RO and SRO Training and Qualifications (I.A.2.1)

The experience of each candidate for the Senior Reactor Operator and Reactor Operator examination is documented in the individual's application for examination which is dated January 23, 1981 and has been submitted to the NRC. This information shows that each individual meets or exceeds the experience requirements.

Formal training for each candidate has included classroom instruction and simulator training. Classroom subjects taught at DCPP include (1) Introduction to Nuclear Power, (2) Reactor Theory, (3) Heat Transfer, Fluid Flow and Thermodynamics; (4) Mitigation of Degraded Core Damage, (5) Plant Systems, (6) Plant Procedures, and (7) Radiation Protection. As discussed in our letter of January 26, 1981 from Philip A. Crane to Frank J. Miraglia, Item II.B.4, operator training has begun in the areas of incore instrumentation, excore instrumentation, primary chemistry, and thermocouples.

The amount of participation in these classroom subjects has been from several to several hundred hours, depending on the individual's background. All candidates have participated in simulator training at the Zion simulator. For information, summary of this training is shown in the table.

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5. Dissemination of Operating Experience (I.C.5)

PGandE will either revise NPAP W-100 or write new procedures to assure that operating experience is disseminated to the entire plant staff as appropriate. In addition, PGandE will provide a positive means to assure that operating experience is incorporated into both the training and requalification programs.

6. Administration of Training Programs (I.A.2.3)

The onsite operator training instructors who teach systems, integrated responses, transient and simulator courses, will demonstrate senior reactor operator qualifications. Their SRO applications were sent to the NRC on January 23, 1981. These instructors are expected to take their license examinations in February-March 1981.

7. Final Recommendations of the B&O Task Force (II.K.3)

The following are PGandE's responses to several of the B&O Task Force's final recommendations.

A. Report on Overall Safety Effect of Power-Operated Relief Valve (II.K.3.2)

The Westinghouse Owners Group is in the process of developing a report (including historical valve failure rate data and documentation of actions taken since the TMI-2 event to decrease the probability of stuck-open PORV) to address the NRC concerns of Item II.K.3.2. This report is scheduled for submittal to the NRC on March 1, 1981, as required by the NRC. This report will be used to support a decision on the necessity of incorporating an automatic PORV isolation system as specified in Task Action Item II.K.3.1.

B. Reporting PORV and SV. Failures and Challenges (II.K.3.3)

As stated in the letter of January 26, 1981, once Diablo Canyon has received its full power operating license, PGandE will promptly report to the NRC any failure of a PORV or SV to close. PGandE Procedure NPAP-C-12 provides for these reporting requirements. In addition, when Diablo Canyon has received a full power operating license, PGandE will report on an annual basis any challenges to the PORVs or the SVs.

C. Automatic Trip of Reactor Coolant Pump During LOCA (II.K.3.5)

PGandE's response to IE Bulletin 79-06C indicated that automatic reactor coolant pump trip is not necessary, as sufficient time is available for manual trip of the RCPs. This information is provided in WCAP-9584.

February 13, 1981

D. Report on Outages of Emergency Core-Cooling Systems (II.K.3.17)

Prior to ascension to full power, PGandE will provide the NRC staff a plan for data collection relating to outages of ECCS components. The plan will address details on ECCS equipment outages and will include as a minimum:

- (1) outage dates and duration
- (2) cause of outage (including test and maintenance)
- (3) ECCS components involved in the outage
- (4) corrective action taken
- E. Effect of Loss of Alternating Current Power on Pump Seals (II.K.3.25)

Power to component cooling water pumps which provide cooling water to the reactor coolant pump thermal barriers is supplied from vital buses which have emergency on-site backup power. The containment isolation valves involved are water operated and also have emergency on-site backup power. We believe that this design satisfies the concern expressed in this item.

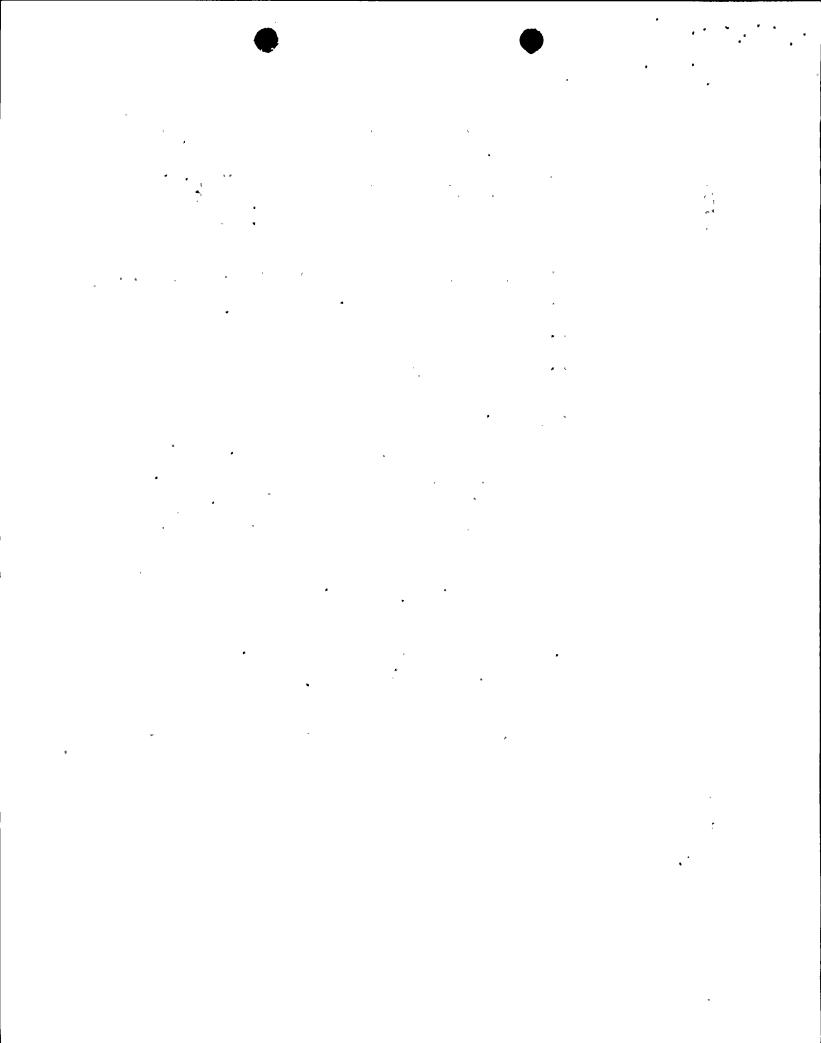
F. Revised Small-Break LOCA Methods to Show Compliance with 10CFR50, Appendix K (II.K.3.30)

WCAP 9600, the present small-break evaluation used by Westinghouse to analyze Diablo Canyon, is in conformance with 10CFR50, Appendix K. However, Westinghouse has indicated to the Westinghouse Owners Group that they will address the specific items contained in NUREG-0611 in a model change, scheduled for completion in January 1, 1982.

Further information will be provided in the attached addendum.

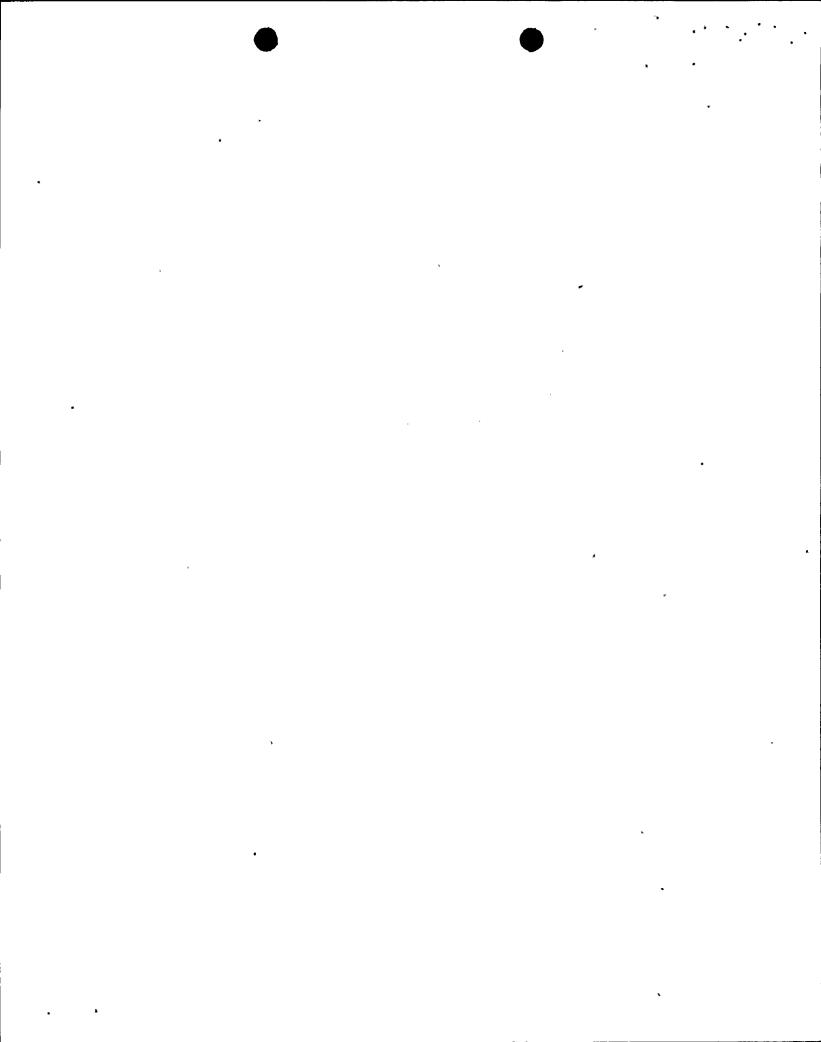
Very truly yours,

Enclosure CC w/enc.: Service List



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^{* -} SRO candidates

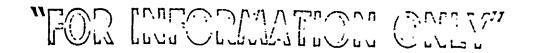


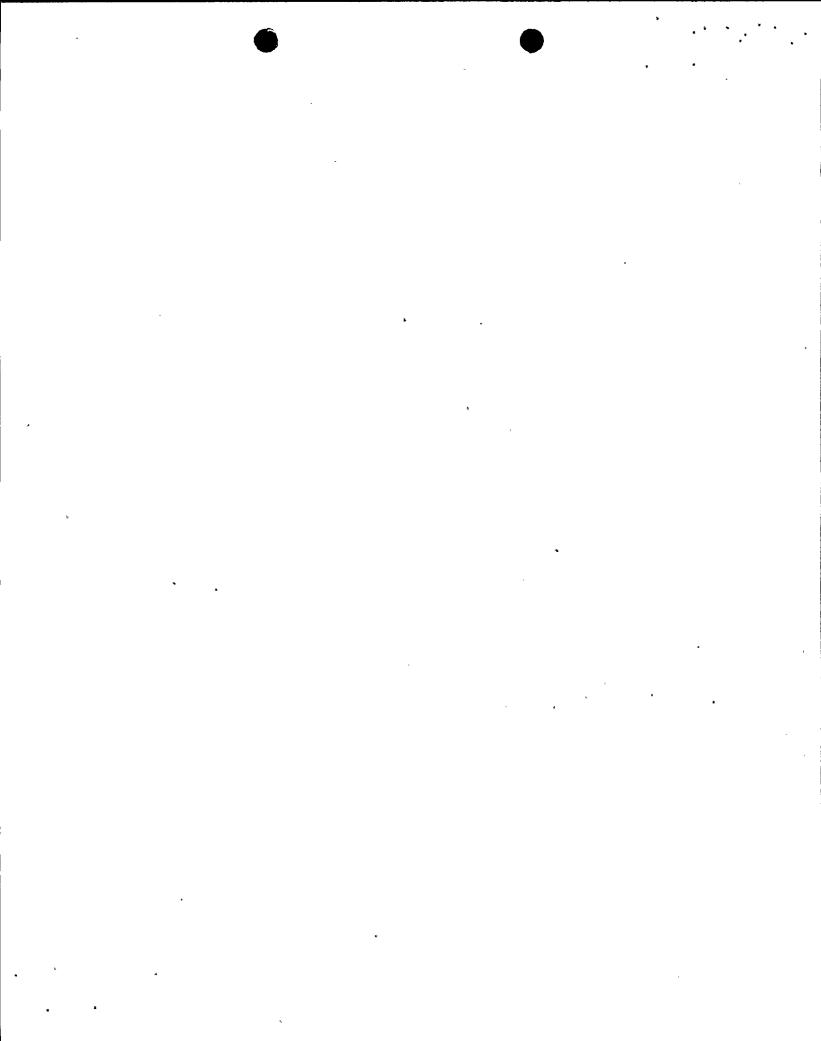
DCPP LICENSE CANDIDATES

HOURS OF CLASSROOM OR FORMAL INSTRUCTION RECEIVED BY DCPP LICENSE CANDIDATES

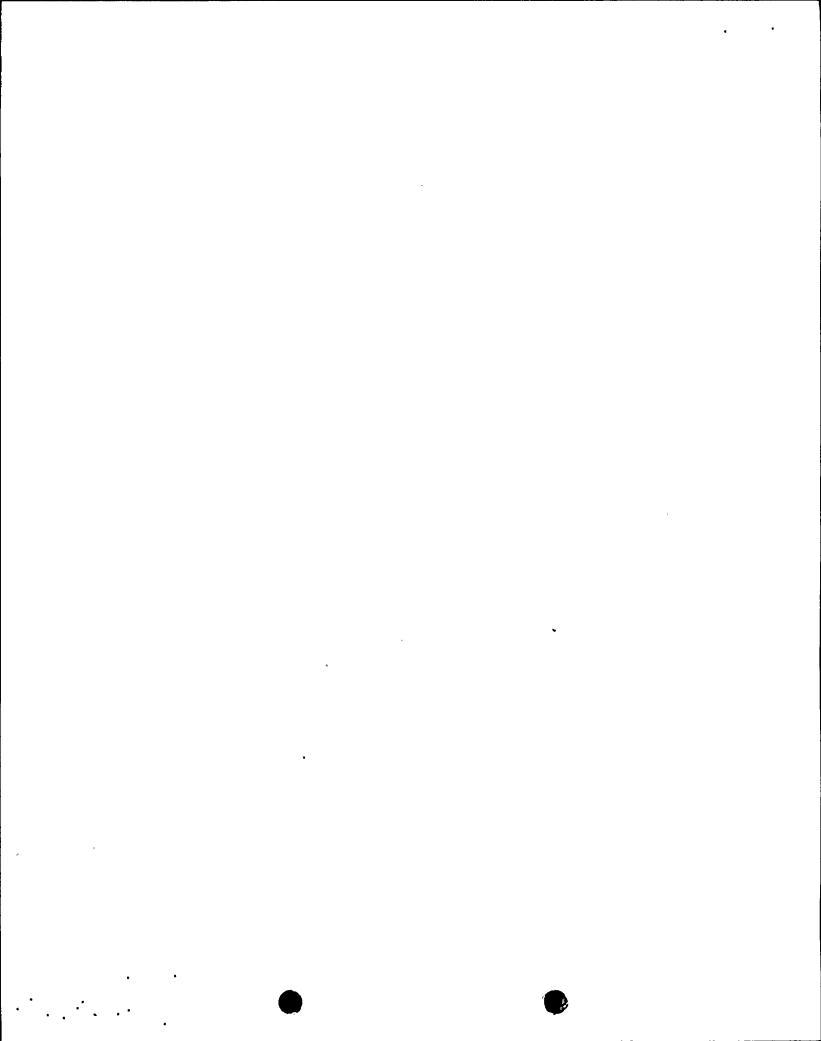
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RAAB*	26	39.5	157	38.5	63.75	15	20		7 days (80)	400	360
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^{* =} SRO candidates



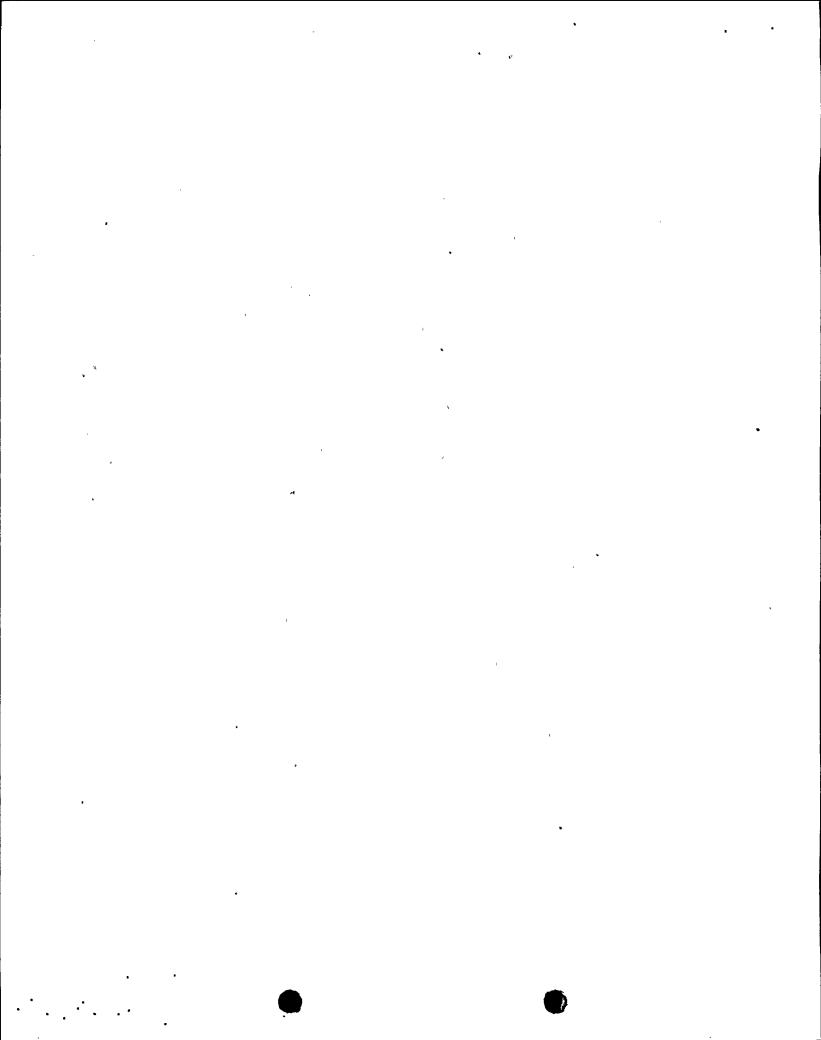


Attachment: Description of STA Training



ONSITE INSTRUCTION SCHEDULE

MONDAY	8:00 - 12:00	SELF STUDY
	12:00 - 12:30	LUNCH .
	12:30 - 1:00	SELF STUDY
	2:30 - 4:30	SITE INSTRUCTOR ADMINISTER W EXAMS
	•	*
ě		
TUESDAY	8:00 - 9:00	EXAM REVIEW
•	9:00 - 12:00	INSTRUCTION
	12:00 - 12:30	LUNCH
,	12:30 - 4:30	INSTRUCTION
	•	
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WEDNESDAY	8:00 - 10:00	INSTRUCTION
	10:00 - 12:00	•
•	12:00 - 12:30	LUNCH
•	12:30 - 4:30	INSTRUCTION
	•	
THURSDAY	8:00 - 10:00	INSTRUCTION
MORSDAT	10:00 - 12:00	SELF STUDY/TUTORING
	12:00 - 12:30	LUNCH
		INSTRUCTION
	12:30 - 4:30	Instruction
		•
FRIDAY	8:00 - 12:00	SELF STUDY
	12:00 - 12:30	LUNCH
	12:30 - 4:30	SELF STUDY



SHIFT TECHNICAL ADVISOR TRAINING SCHEDULE

WEEKS 1-4 (March 3 - March 28)

REACTOR THEORY

REACTOR KINETICS

PWR CORE PHYSICS

WEEKS 5 & 6 (March 31 - April 11) HEAT TRANSFER

FLUID FLOW

THERMODYNAMICS

WEEKS 7-20

(April 14 - July 18)

DETAILED PLANT LECTURE SERIES -

WEEKS 21 & 22 -

(July 30 - August 12)

SIMULATOR TRAINING (ZION, ILLINOIS)

WEEKS 23 & 24

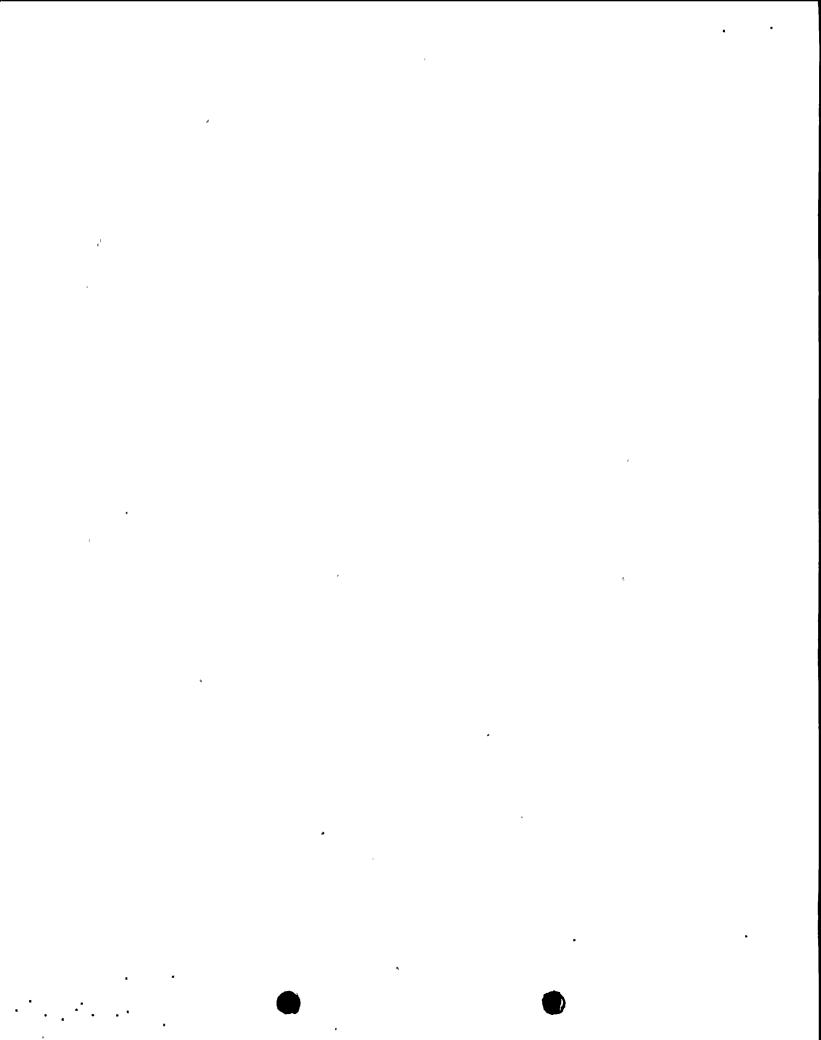
(August 18 - August 29)

HEALTH PHYSICS
PLANT CHEMISTRY

WEEKS 25 & 26

(September 29 - Oct. 10)

ACCIDENT ANALYSIS AND NUCLEAR DESIGNS

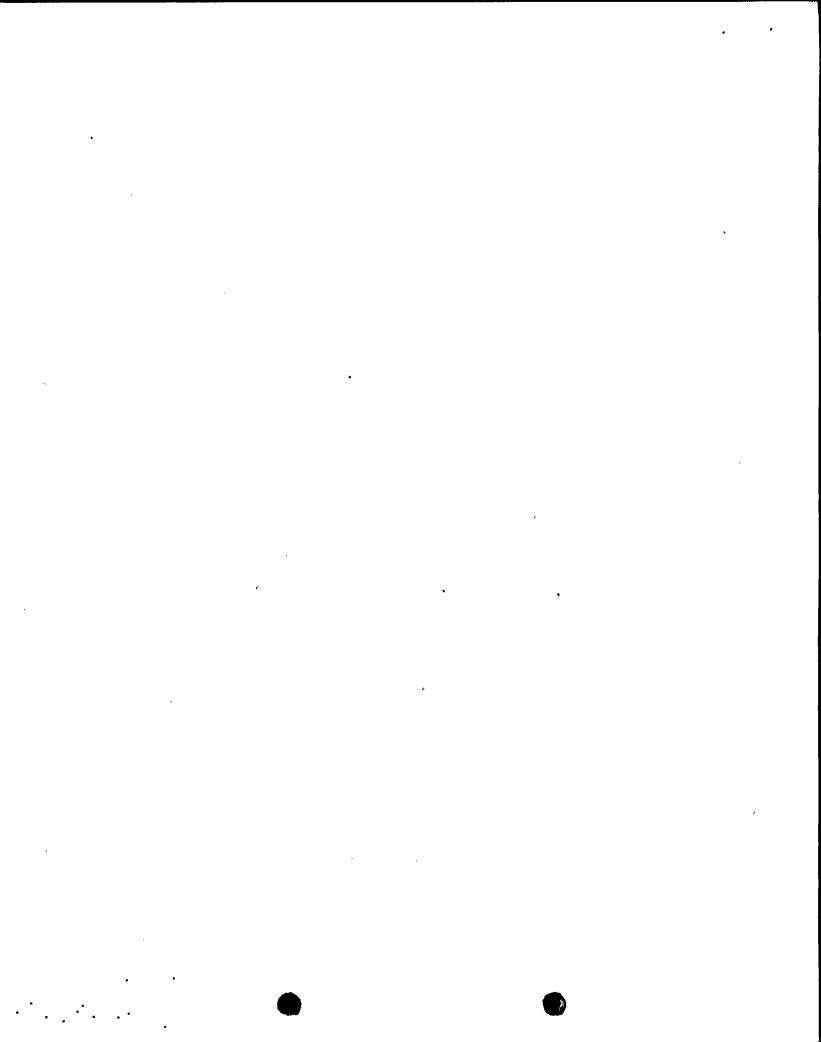


PG&E Diablo Canyon STA Program

INSTRUCTOR - Don Scheef

WESTINGHOUSE NUCLEAR

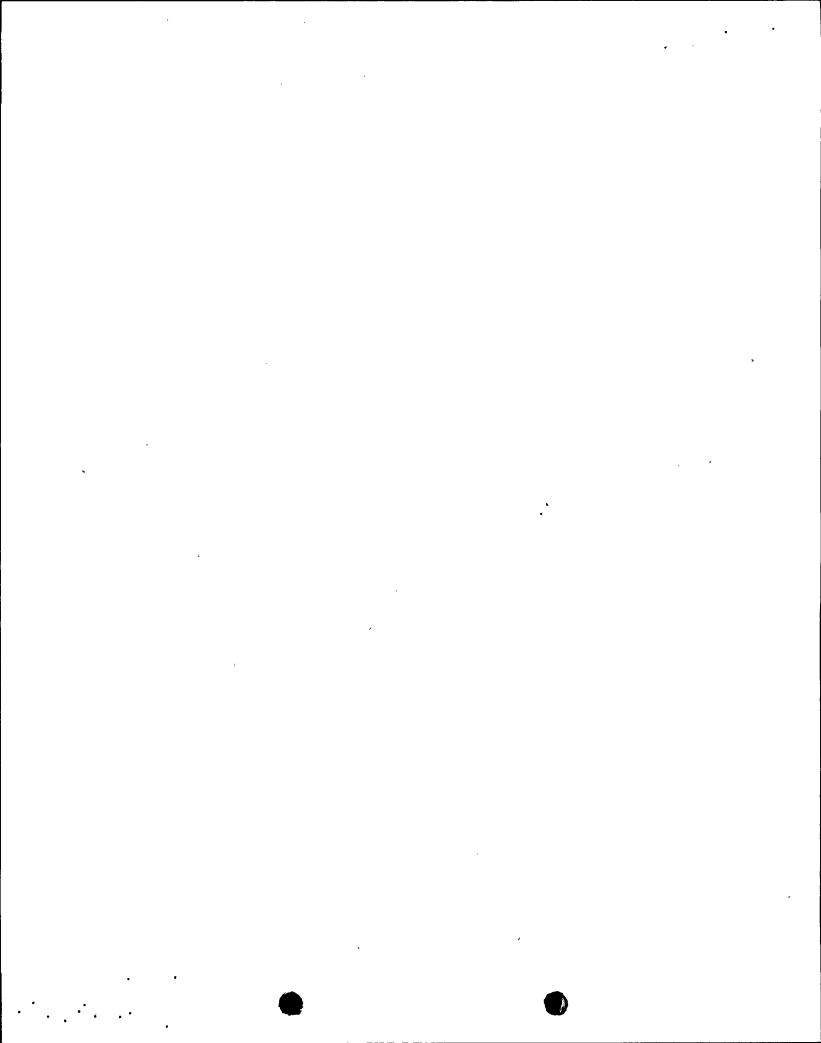
	WEEK 1 WEEK OF	3/3/80 FUNDAMEN	ITAL NUCLEAR REACTOR TO	RAINING	TRAINING CENTER
	MONDAY 3	TUESDAY 4	WEDNESDAY 5	THURSDAY 6	FRIDAY 7
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		A-2 BASIC STRUCTURE & PROPERTIES OF MATTER			
1430			A-4 INTERACTION OF RADIATION WITH MATTER		
1630					



PG&E Diablo Canyon STA Program INSTRUCTOR - Don Scheef

WESTINGHOUSE NUCLEAR

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				A-5	•	A-7 NEUTRON KINETICS		A-8 SUBCRITICAL REACTOR THEORY			•
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1630		•	•	. : '.		:					



PGSE Diablo Canyon STA Program INSTRUCTOR - Ron Buchholz

faire

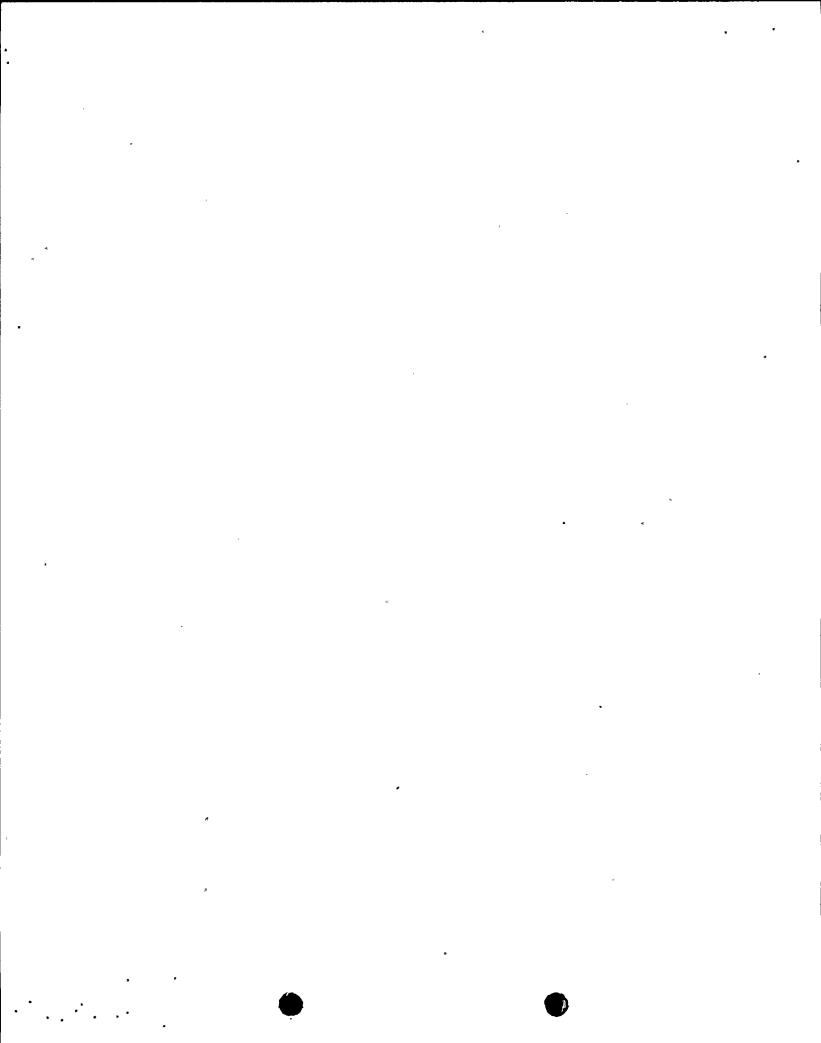
HESTINGHOUSE NUCLEAR

WEEK 3 WEEK OF 3/17/80

FUNDAMENTAL NUCLEAR REACTOR TRAINING

TRAINING CENTER

MONDAY 1	7	🔆 TUESDAY 18	' HEDNESDAY 19	THURSDAY . 20	· FRIDAY 21
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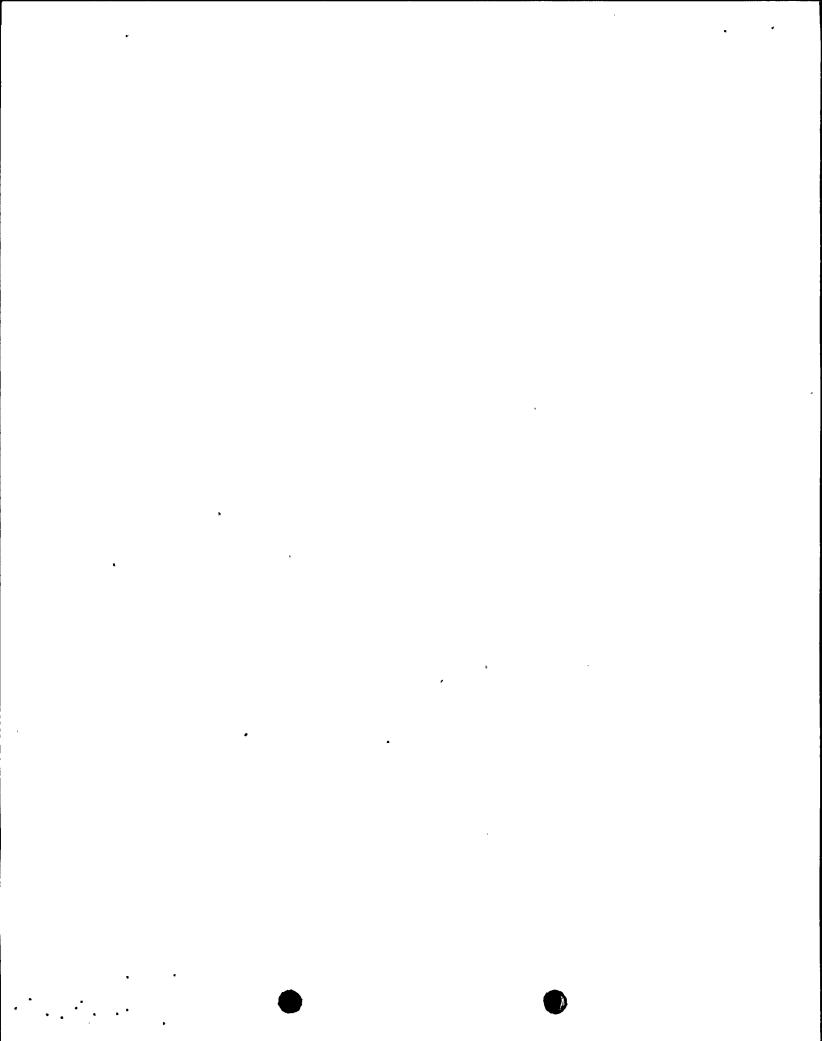
PG&E Diablo Canyon STA Program

INSTRUCTOR - Barry Tumblin

- 1630

WESTINGHOUSE NUCLEAR

,	WEEK 4 WEEL	K OF '	3/24/80 FUNDAMEN	ITAL NUCLEAR REACTOR T	RAINING	TRAINING CENTER
0800	MONDAY	24	TUESDAY 25	WEDNESDAY 26	THURSDAY 27.	FRIDAY 28
	•		B-4 FISSION PRODUCT POISONING REACTIVITY EFFECTS	B-5 CHEMICAL SHIM CONTROL	B-7 ECC & SHUTDOWN HARGIN - CALCULATIONS	•
•				B-6 CONTROL ROD REACTIVITY EFFECTS	•	
1000					· ;	
1200	L		U	н	С	Н
1230		•	B-4 FISSION PRODUCT POISONING REACTIVITY EFFECTS	B-6 CONTROL ROD REACTIVITY EFFECTS	B-7 ECC & SHUTDOHN MARGIN CALCULATIONS	•
1430			B-5 CHEMICAL SHIM CONTROL		B-8 HEATUP AND STARTUP CONSIDERATIONS	
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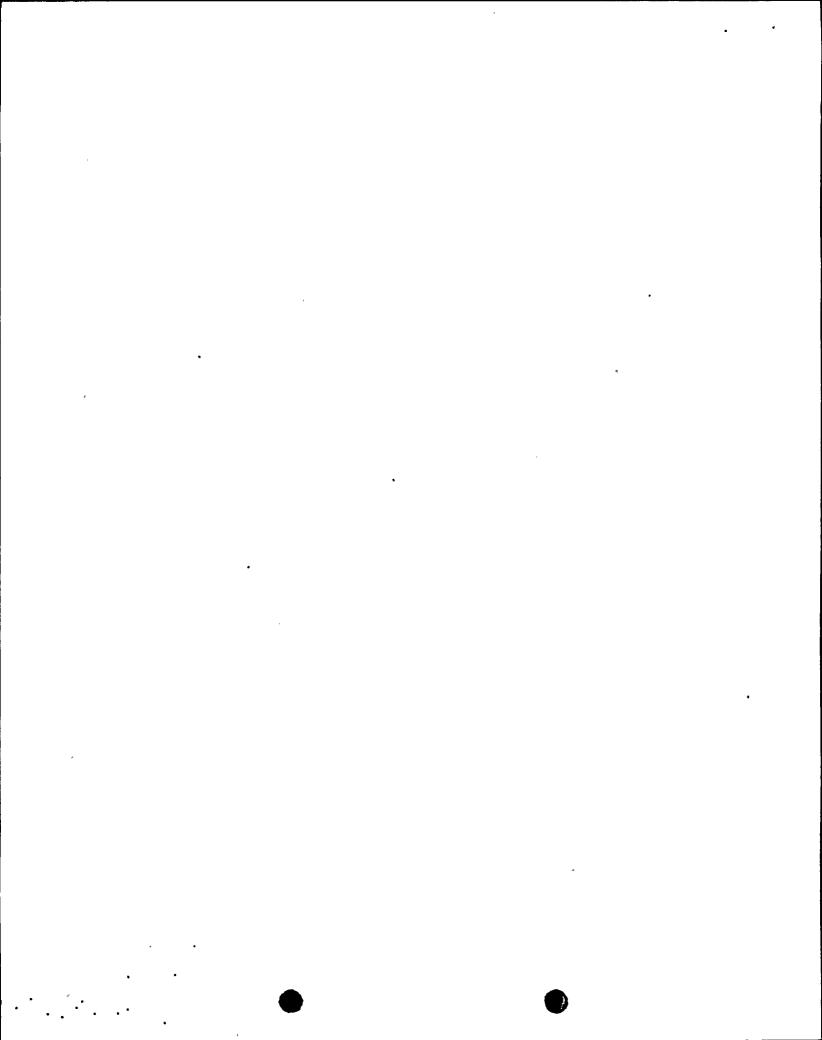


• • PGSE Diablo Canyon STA Program

INSTRUCTOR - Dave Ferg

WESTINGHOUSE NUCLEAR

TRAINING CENTER FUNDAMENTAL NUCLEAR REACTOR TRAINING WEEK 5 3/31/80 WEEK OF WEDNESDAY THURSDAY FRIDAY TUESDAY · 1 MONDAY 31 D-1 THERMODYNAMICS D-2 THERMODYNAMICS EXAM REVIEW - FUNDAMENTALS - APPLIED ... B-9 PWR CORE OPERATIONAL CONSIDERATIONS C Н N-U L. D-2 THERMODYNAMICS
- APPLIED D-3 HEAT TRANSFER B-9 PHR CORE B MODULE EXAM OPERATIONAL CONSIDERATIONS D-1 THERMODYNAMICS
- FUNDAMENTALS



PGSE Diablo Canyon STA Program

1HSTRUCTOR - Dale Van Beek

. WESTINGHOUSE NUCLEAR

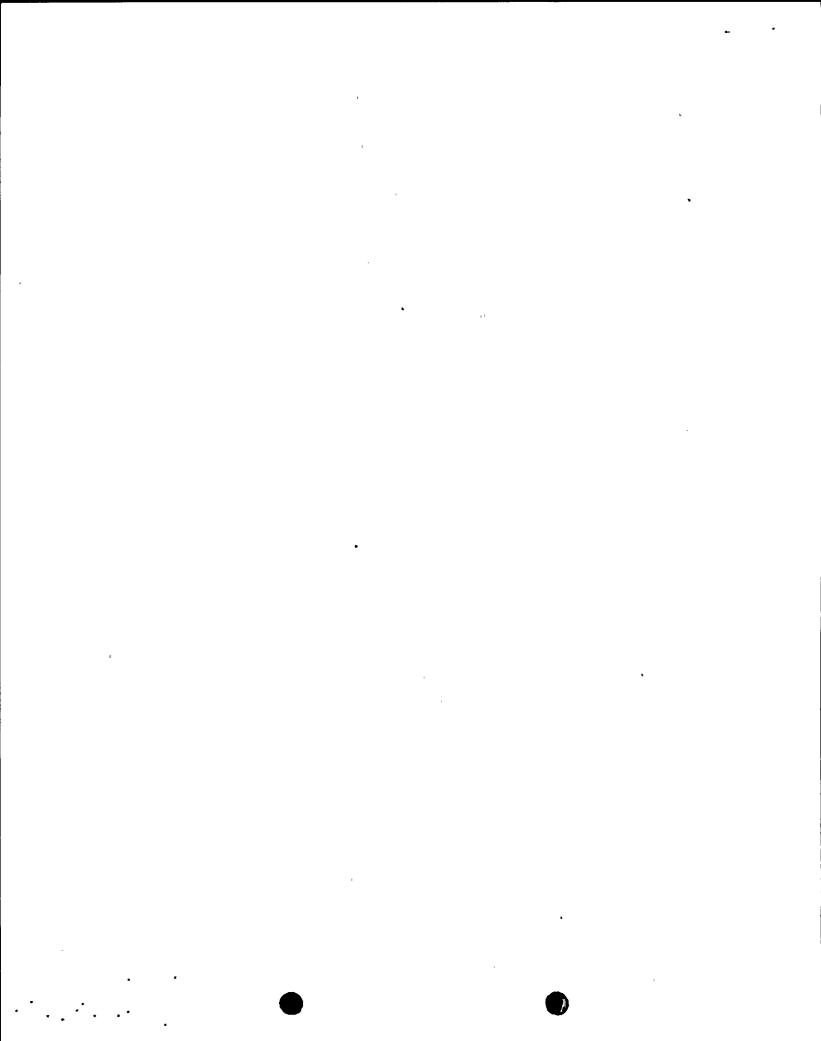
	WEEK	6 ့	WEEK	0F	4/7/80 FUND	AHE	TAL NUCLEAR REACTOR T	RAINING	- TRAINING CENTER
0800		MONE	DAY	7	. TUESDAY	8	WEDNESDAY 9	1 THURSDAY 10	FRIDAY 11
,		•		•	D-3 HEAT TRANSFER	₹	D-4 FLUID FLOW	D-6 CORE THERMAL CONSIDERATIONS	
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1200						-			
1000		L			υ		H	С	. н
1230					D-4 FLUID FLOW		D-5 REACTOR VESSEL CONSIDERATIONS	D-7 INSTRUMENTATION DETECTORS	
-								***	
1530					.	r	D-6 CORE THERMAL CONSIDERATIONS		n. o. S



STA PG & E

On Site System Design Series

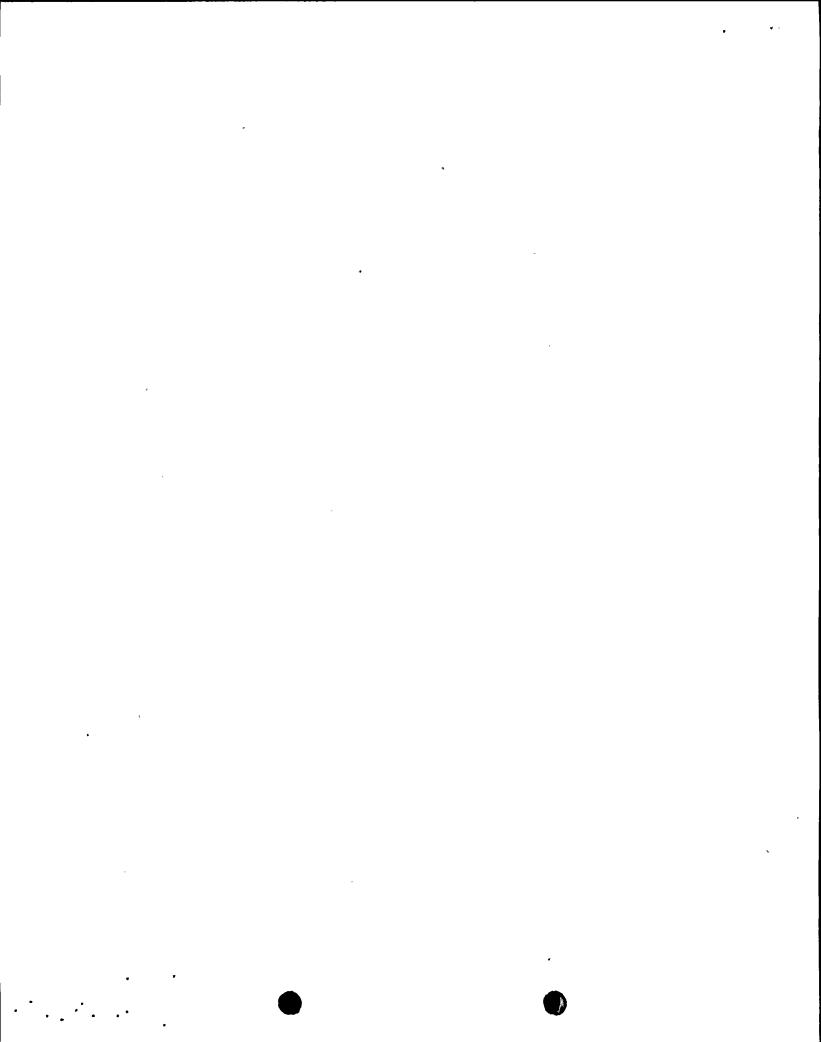
Week #7 —.	(April 15-17) Instructor: Steinke A. Reactor Coolant System B. Reactor Vessel & Internals C. Core Components & Rod Drive Mechanisms D. Incore Instrumentation System
Week #8	(April 22-24) Instructor: Halverson A. Chemical & Volume Control System B. Reactor Makeup System C. Boron Recycle System D. Pressurizer Pressure & Level Control System
Week #9	(April 29-May 1) Instructor: Mowrey A. Reactor Coolant Pumps & Steam Generators B. Component Cooling Pumps C. Residual Heat Removal System
Week #10	(May A-8) Instructor: Estes A. Emergency Core Cooling System B. Containment Spray System C. Containment Structure & Support Systems D. Containment Isolation System E. Iodine Removal System
Week #11	(May 13-15) Instructor: Betts A. Excore Instrumentation System B. Full Length Rod Control System C. Rod Position Indication System
Week #12	(May 20-22) Instructor: Betts A. Temperature Signals & Rod Insertion Limits B. Steam Dump Control System C. Auxiliary Feedwater System



STA DETAILED PLANT LECTURE SERIES (PG&E)
Diablo Canyon

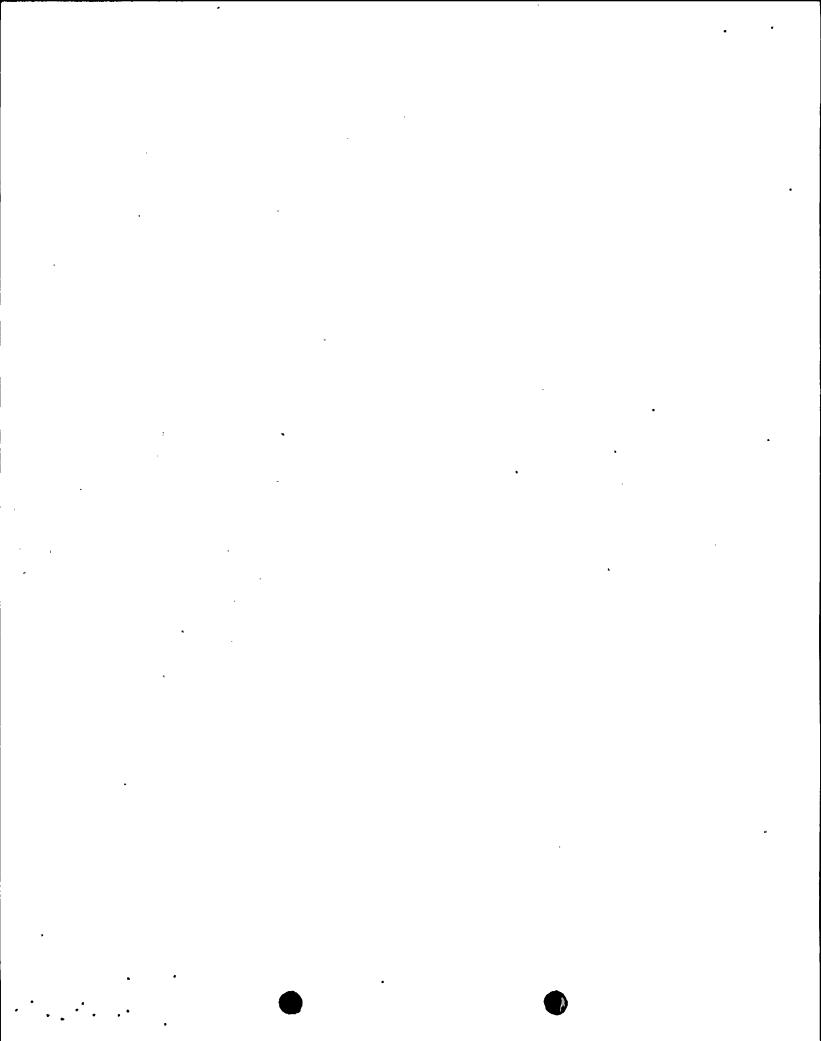
Weeks 13 - 15 May 26 - Oct. 10, 1980

HONDAY	•	TUESDAY	, · 1	HEDNESDAY		THURS	DAY ·	FRIDA	1
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SELF STUDY (TRAVEL)	· ·	Process Contro Logic Diagr		Protection an guards Logi Diagram		I&C S	•	SELF (Travel	
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SELF STUDY	, •	Hain Steam Sy Auxiliary Ste	•	Condensate	System .	Feed Sys	tem	SELF 4	
(TRAVEL) .		naxifiary sec					•	(Trave)	Home) .
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STA DETAILED PLANT LECTURE SERIES (PG&E).
Diablo Canyon

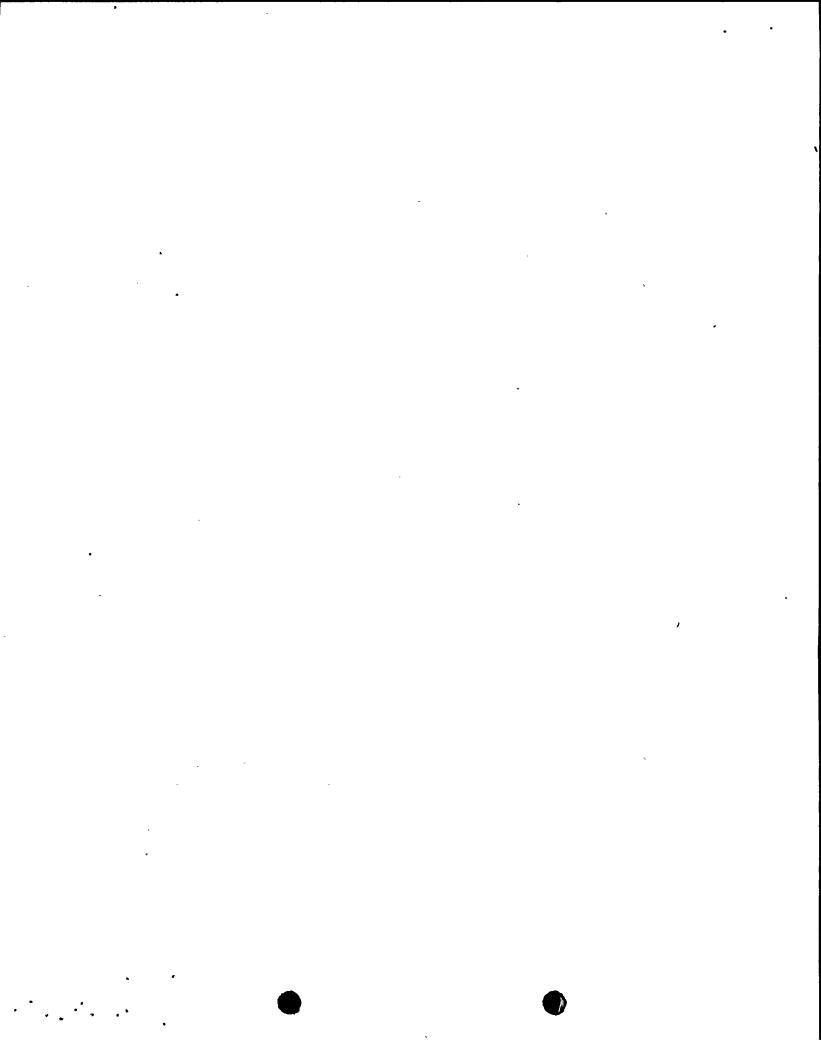
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Į.	SELF STUDY (TRAVEL)	•	Electrical Dist - Vital & Non- Inverters		Elect. Dist	•	D/G and S Distrib	-	SELF S	STUDY
	•		- AC and DC sy	stems '				į	(TRAVEL	. HOME)
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-	SELF STUDY (TRAVEL)	••	- Fuel Handling - Spent Fuel Po - Spent Fuel Po . Cooling	01	- Service W - Ventilati - Inst, & S Systems	on Sys. ervice Air	Fire Proto S/G Blowd Sampling:	own Systems	-,SELF S	STUDY . HOME) .
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STA DETAILED PLANT LECTURE SERIES (PG&E)
Diablo Canyon

Heeks 19 - 21
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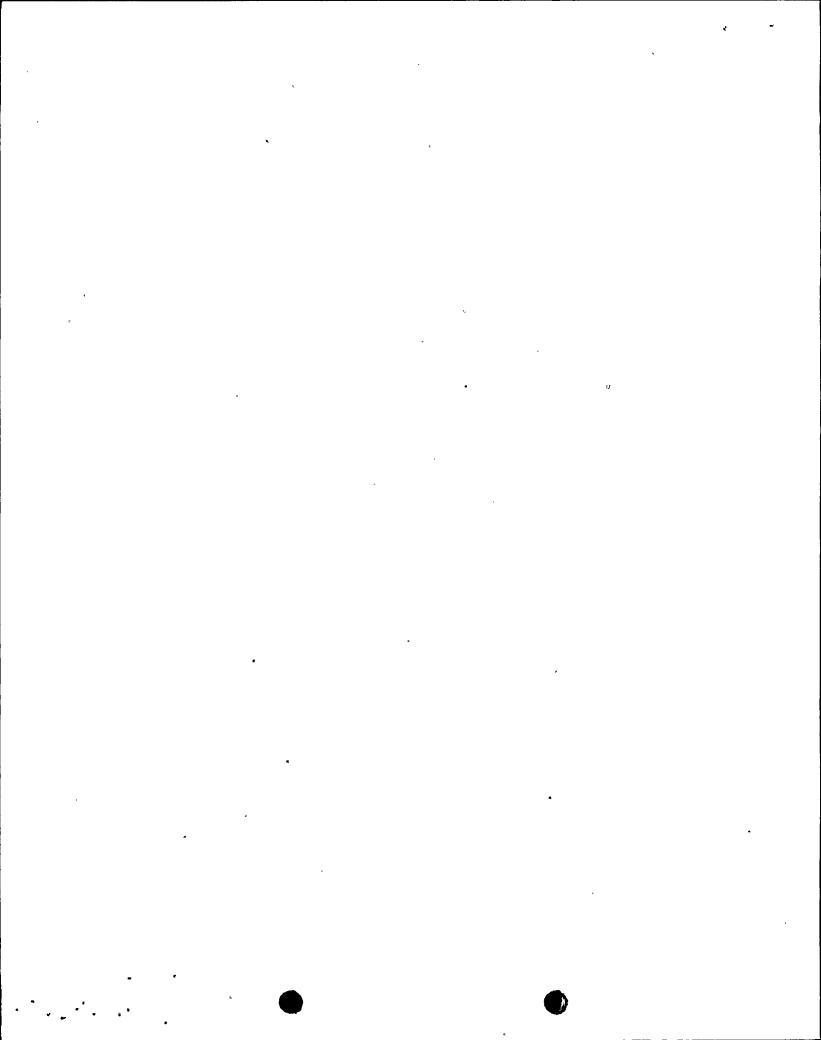
MONDAY		TUESDAY	· 	WEDNE	SDAY	_1	THUR	DAY	FRIDA	Y
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SELF STUDY (Travel)	•	- Liquid Waste Collection Dis System	sposal		aste (Cont'd. Haste System)		Waste (Cont'd.) ite Disposal		STUDY '
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JULY.	·14	JULY	15	JULY	16		JULY	. 1.7	JULY]8
SELF STUDY (TRAVEL) TULY 30 TO Aug. JULY 19 - Aug. 17		PLANT COMPUTER SIMULATOR TRAINING BREAK		Technical	Specificatio	ns	Technical	Specifications		STUDY L HOME)
AliG	18	AUG. :	19	AUG.	2	0	AUG,	21	AUG.	. 22
SELF STUDY (TRAVEL)		Health physics & Chemistry	-	8	Physics istry ,			h Physics & emistry		STUDY L HOME)



Hay 26 - Oct. 10, 1980 ..

STA DETAILED PLANT LECTURE SERIES (PG&E) Diablo Canyon

MONDAY	. TUESDAY	anyon WEDNESDAY -	THURSDAY	i FRIDAY	
AUG 25	AUG. 26	AUG. 27	AUG** 28	AUG - 29	
SELF STUDY (TRAVEL)	Health Physics & Chemistry	Health Physics & Chemistry	Health.Physics & Chemistry	SELF STUDY (TRAVEL HOME)	
SEPT. 29	SEPT. 30	0cT. 1	Oct. :2	ort 3	
lant Systems Summary & Integration Systems Review and Interface Control and Protection System Review	Transient Analysis Reactor S/U Comp to 100% power 5%/min up power	- Transient Analysis (cont'd.) - Abnormal Transients - Instrument Failure	Instrument Failure Transient Analysis	Introduction to Accident Analysis - Classes - Design Accident Study Assumptions Accident Analysis - Reactivity Excursion Accidents	
Oct. 6	OCT. · 7	OCT. 8	OCT. 9	OCT. ' 10	
- Accident Analysis (Cont'd.) - Increase in Secondary Heat Removal - Decrease in Secondary Heat Removal	from Secondary Brea	- Accident Analysis (Cont'd.) - Over Pressure Protect. k - ATHT's - LOCA	- Accident Analysis (Cont'd.) - Small LOCA (M CAP-9600) - S/G.Tube Rupture	- Accident Analysis (Cont'd.) Radiological Assessmer Course Summary	



ADDENDUM

Immediate Upgrade of RO and SRO Training and Qualifications (I.A.2.1)

Training programs have been modified in accordance with the letter from H. R. Denton, NRC, to all Power Reactor Applicants and licensees, dated March 28, 1980. License candidates have received training as discussed below.

1. Heat Transfer, Fluid Flow and Thermodynamics

This was a five-day course taught by a consultant (ECI) in December 1980. An examination was given at the end of the course. The course included the following subjects:

A. Basic Properties of Fluids and Matter

Concepts such as temperature, density, viscosity, specific heat and latent heat of vaporization were presented.

B. Fluid Statics

Subject matter included topics which addressed pressure, temperature and volume effects on fluids in systems. Principles of hydraulics, saturation temperature and pressure, and the concept of subcooling, were covered.

C. Fluid Dynamics

Fluid flow in systems with resultant head loss was covered. Also, concepts such as NPSH, carry-over and two phase flow were included.

D. Heat Transfer by Conduction, Convection and Radiation

The fundamentals of heat transfer by the three different processes were covered. Heat transfer characteristics under different operating conditions were included.

E. Change of Phase - Boiling

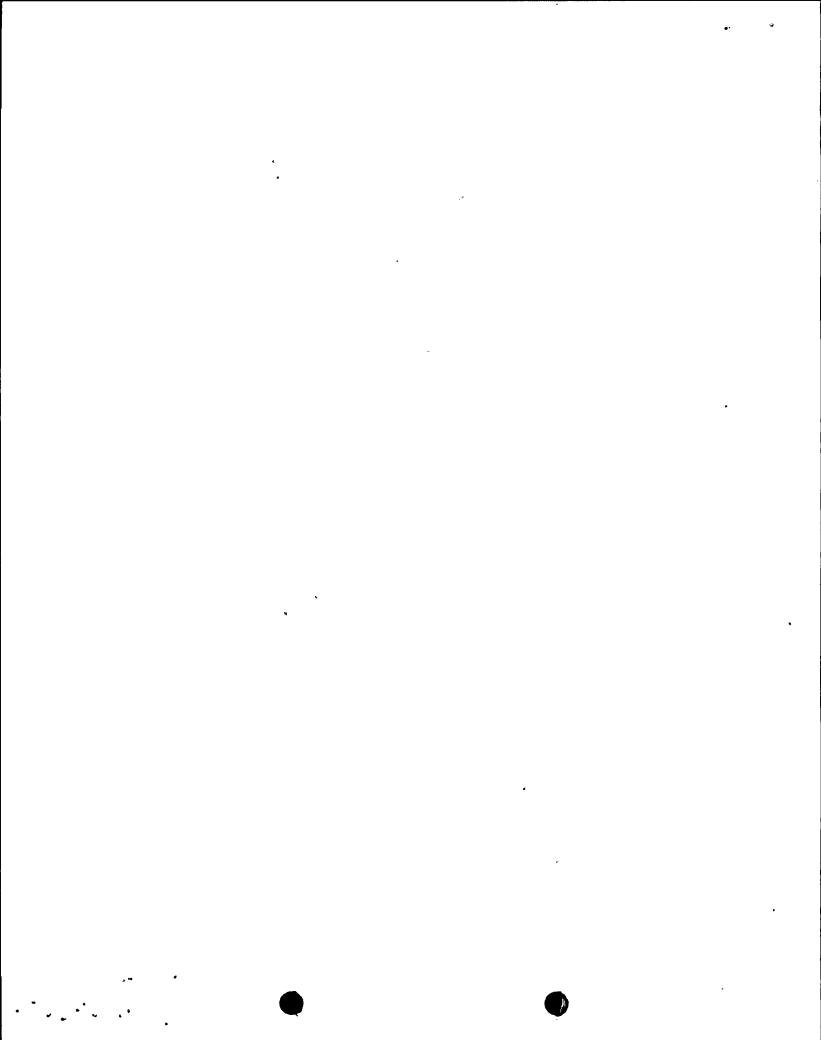
Different types of boiling were discussed. Basic thermodynamic properties such as enthalpy and entropy were covered and sample calculations involving these quantities were performed for two-phase conditions.

F. Burnout and Flow Instability

Description of critical heat flux, DNP ratio and hot channel factors was covered and techniques for calculating these quantities were demonstrated.

G. Reactor Heat Transfer Limits

Heat transfer limits were related to core design. The basis of various limits such as axial power distribution and the effect on these limits by variables such as xenon and rod position were covered.



- 2. Use of Installed Plant Systems to Control or Mitigate an Accident in Which the Core is Severely Damaged
 - A three-hour course was prepared and presented by plant engineering personnel. This course covered the following subjects:
 - ä. Incore instrumentation operation and use
 - b. Excore nuclear instrumentation response during an accident
 - c. Primary chemistry expected results during accident conditions
 - d. Gas generation during an accident

The use of vital instrumentation, failure modes and alternatives was covered separately. This material was included in several different lectures on instrumentation.

It is planned that a contractor will conduct an expanded course on this subject matter in April 1981.

3. Increased Emphasis on Reactor and Plant Transients

Since the TMI accident, all license candidates have received training on the Zion simulator. This training has emphasized reactor and plant transients and accidents.

Administration of Training Program (I.A.2.3)

All instructors will participate in an ongoing retraining program to ensure that they are cognizant of current operating problems, procedural changes and changes to administrative documents.

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