



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

JUL 03 1985

Docket Nos.: 50-445
and 50-446

FACILITY: Comanche Peak Steam Electric Station, Units 1 and 2
APPLICANT: Texas Utilities Electric Company
SUBJECT: MEETING HELD ON JUNE 13 AND 14, 1985 IN ARLINGTON,
TEXAS TO DISCUSS THE DEVELOPMENT OF THE APPLICANT'S
PROGRAM PLAN

On June 13 and 14, 1985, a meeting was held with Texas Utilities Electric Company and the NRC staff to discuss the development of the Applicant's Program Plan. The meeting was held at the Arlington-Sheraton hotel and was transcribed. Participants are identified in the transcript. A copy of Applicant's viewgraphs are enclosed, as is a copy of the transcript.

The meeting was requested by the NRC staff to get a status on the development of the Applicant's Program Plan which is to address all issues needed in order for NRC to reach a licensing decision on Comanche Peak. The Program Plan will address all concerns expressed to date from all sources and do sampling in other areas as well in order to provide reasonable assurance that the plant has been both designed and constructed in accordance with regulatory requirements.

As part of the program, Texas Utilities identified some of the following activities:

1. Changes are being made in Texas Utilities management within the nuclear organization.
2. Stone and Webster will be reevaluating all ASME Class 2 and 3 pipe supports larger than 2" (and all Class 1 supports not designed by Westinghouse). This involves about 9000 supports, with a scheduled completion date of December 20, 1985.
3. Ebasco will be reevaluating electrical cable tray and conduit supports.

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PDR ADOCK 05000445
A PDR

JUL 03 1985

5. The Comanche Peak Response Team (CPRT) will be responding to the NRC Technical Review Team findings identified in SSER's 7 through 11 in the areas of QA/QC, protective coatings, test programs, electrical/instrumentation, mechanical/piping, civil/structural and miscellaneous.

The formal program plan will be submitted to NRC for approval in early July 1985.

ORIGINAL SIGNED BY:

Annette L. Vietti, Project Manager
Licensing Branch No. 1
Division of Licensing

Enclosures: As stated

LB#1/DL
AVietti/kab
07/1/85

LB#1/DL
BJYoungblood
07/1/85

CP/RT/DL
STammell
07/1/85

CP/RT/DL
VSNoonan
07/1/85

JUL 03 1985

MEETING SUMMARY DISTRIBUTION

Docket File

NRC PDR

L PDR

NSIC

PRC System

LB#1 Reading File

Project Manager A. Vietti

M. Rushbrook

Attorney, OELD

R. Hartfield*

OPA*

OTHERS

NRC Participants

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R. Martin

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D. Landers

R. Bosnak

L. Shao

J. Calvo

A. Marinos

R. Keimig

J. Milhoan

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S. Black

J. Axelrad

J. Treby

C. Trammell

H. Livermore

J. Gagliardo

P. Check

R. Denise

E. Jordan

R. Vollmer

L. Chandler

A. Patterson

bcc: Applicant & Service List

*Caseload Forecast Panel Visits

TUGCO PRESENTATION

TO NRC

JUNE 13, 1985

MORNING SESSION

MANAGEMENT OVERVIEW OF SAFETY

- 10 C F R
- UNDERSTANDING OF ALL APPLICABLE
CODES/CRITERIA
- PROCEDURE DEVELOPMENT TO
IMPLEMENT 1 AND 2

- TRAINING IN PROCEDURES
- CONSTRUCTION/OPERATION TO THESE
STRICT PROCEDURES
- INSPECTION TO ENSURE PROPER
IMPLEMENTATION

S A F E T Y E T H I C

- MANAGEMENT STATE OF MIND
- GOES BEYOND CODES/CRITERIA
- INSTILLS SAFETY ETHIC IN ALL EMPLOYEES
- CONSERVATIVE - ALWAYS ASKS THE QUESTION
"WHAT WILL HAPPEN IF?"

- ENCOMPASSES "DOING IT RIGHT THE FIRST TIME"
- MUST HAVE A STRICT ADHERENCE TO PROCEDURES
- ENCOURAGE ALL EMPLOYEES TO ADOPT "SAFETY-FIRST" ATTITUDE
- REQUIRES MANAGEMENT TO BE TOTALLY INVOLVED
 - * TO LEAD
 - * TO TRAIN
 - * TO DEVELOP ORGANIZATIONAL SAFETY ETHIC

- WHEN SAFETY SIGNIFICANT DEFICIENCIES
ARE FOUND, CORRECTLY ENGINEER THE FIX
- FOLLOW UP TO ENSURE THAT PROPER
IMPLEMENTATION AND CORRECTIVE
ACTIONS REMOVE THE ROOT CAUSE OF
THE PROBLEM

MANAGEMENT MEETING WITH NRC

JUNE 13 - 14, 1985

PROGRAM PLANS

- COMPREHENSIVE OVERVIEW OF PROGRAM
- DEALS WITH IMPLEMENTATION PLANS
- DEALS WITH ALL CONCERNS, REGARDLESS
OF ORIGIN

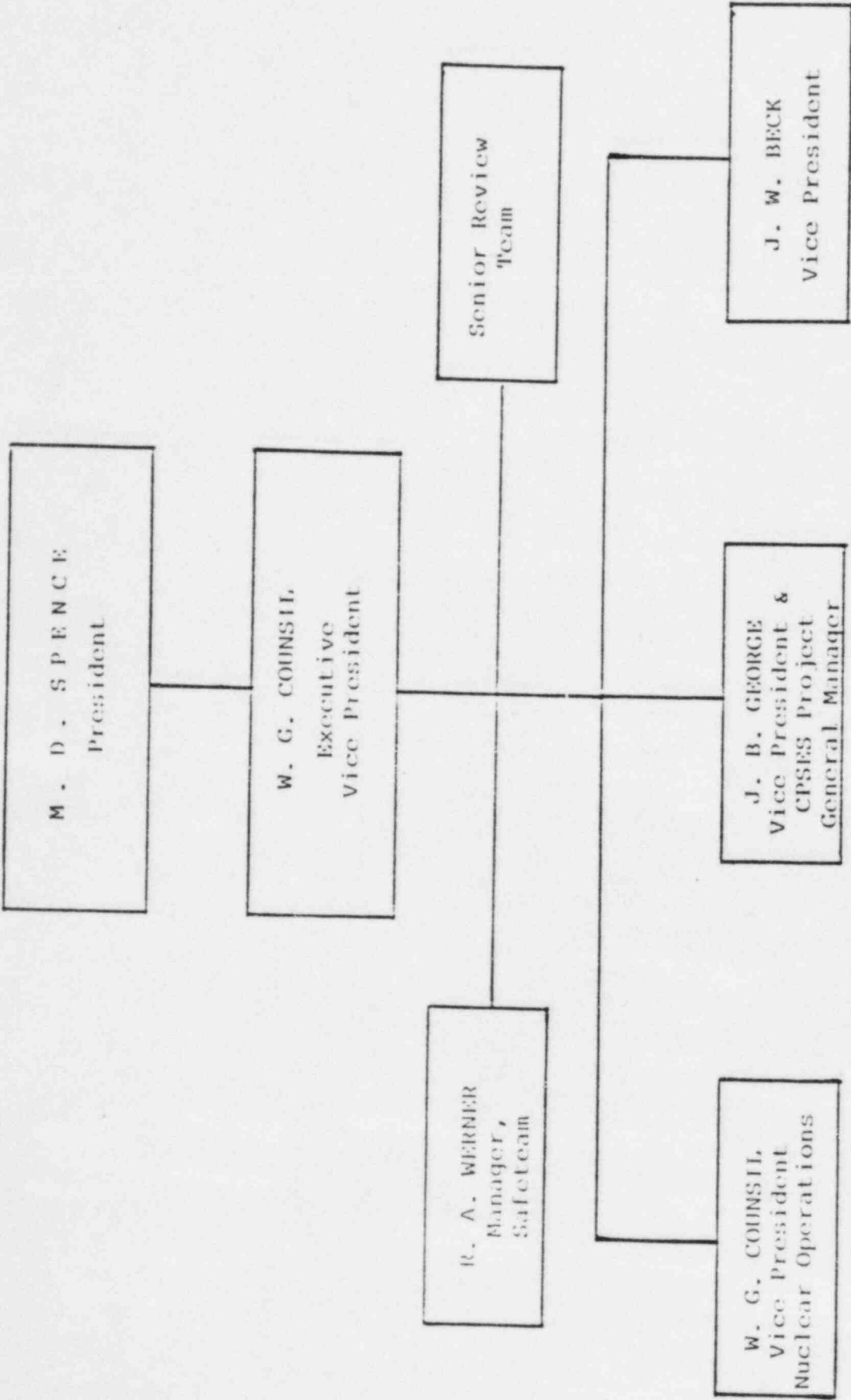
- PROGRAM GOES BEYOND CONCERNS EXPRESSED TO
DATE
- PROGRAM IS DESIGNED TO PROVIDE TUGCO
MANAGEMENT WITH ASSURANCE THAT PLANT IS
PROPERLY CONSTRUCTED AND CAN BE OPERATED
SAFELY
- TUGCO MANAGEMENT WILL NOT ASK NRC FOR
OPERATING LICENSE UNTIL WE ARE SATISFIED
THAT THESE OBJECTIVES HAVE BEEN MET
- TUGCO WANTS NRC CLOSELY INVOLVED WITH
IMPLEMENTATION OF ALL STEPS

PROGRAM IS DESIGNED TO PROVIDE REASONABLE

ASSURANCE THAT THE HEALTH AND SAFETY OF

THE PUBLIC WILL BE PROTECTED

ORGANIZATION

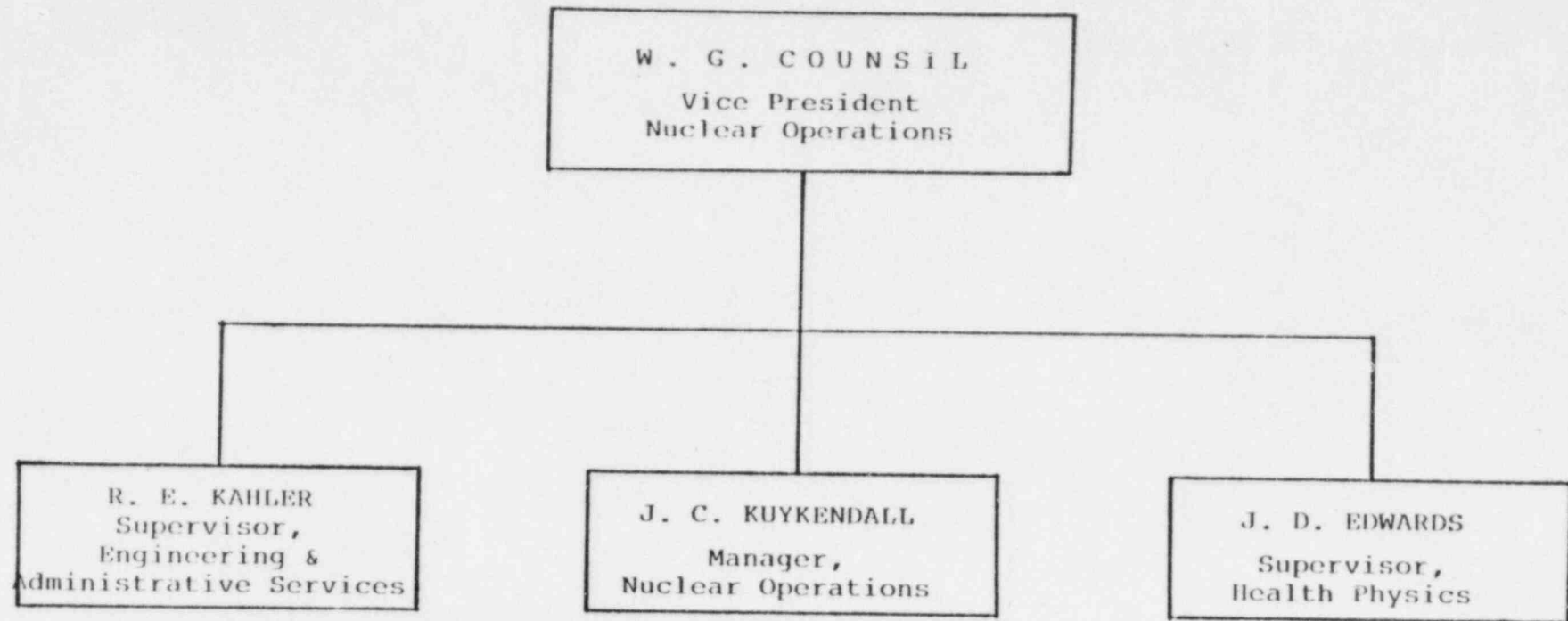


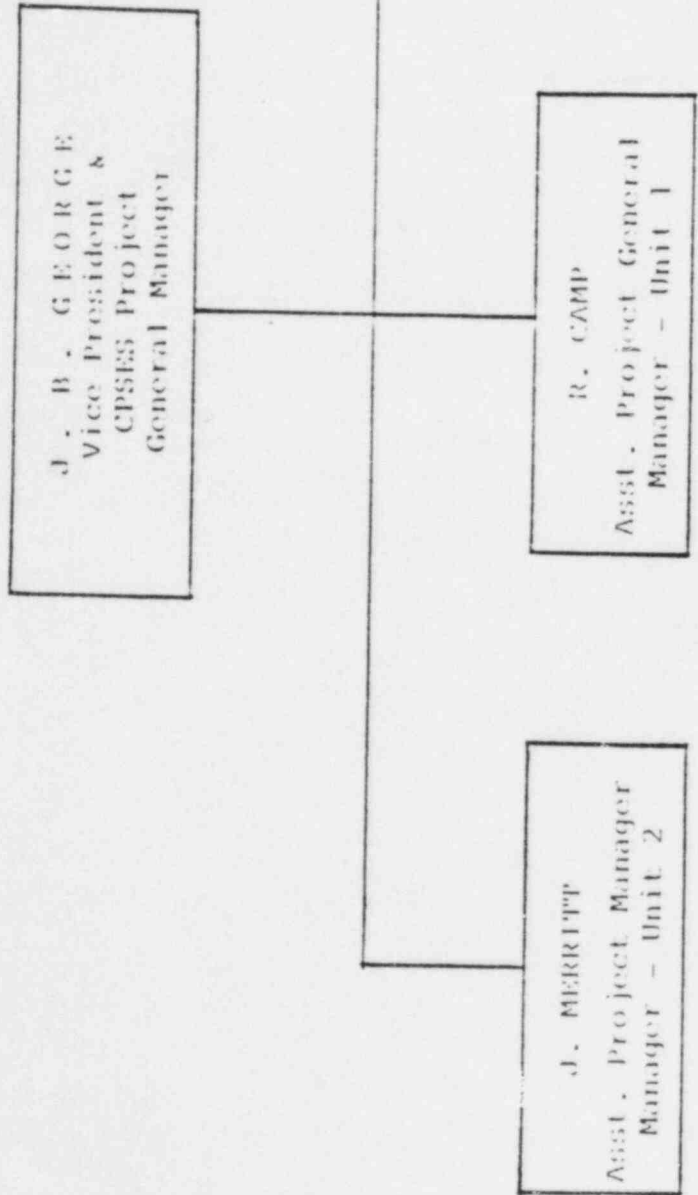
W. G. COUNSIL
Vice President
Nuclear Operations

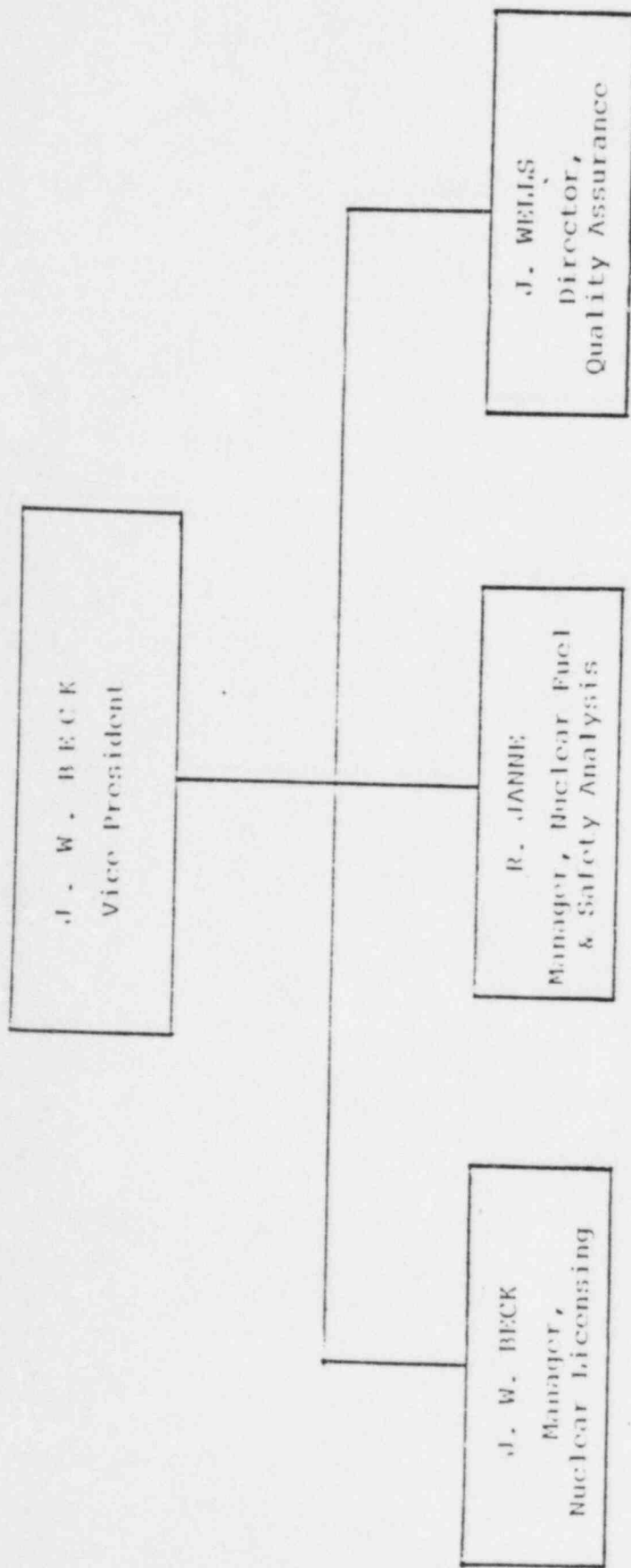
R. E. KAHLER
Supervisor,
Engineering &
Administrative Services

J. C. KUYKENDALL
Manager,
Nuclear Operations

J. D. EDWARDS
Supervisor,
Health Physics







S E N I O R R E V I E W T E A M

John Beck, Chairman

Tony Buhl, Energyx

John French, Delian Corporation

John Guibert, TERA Corporation

*Terry Tyler, Energyx

*Ex officio and CPRT Program Director

S A F E T E A M

Richard Werner, Manager

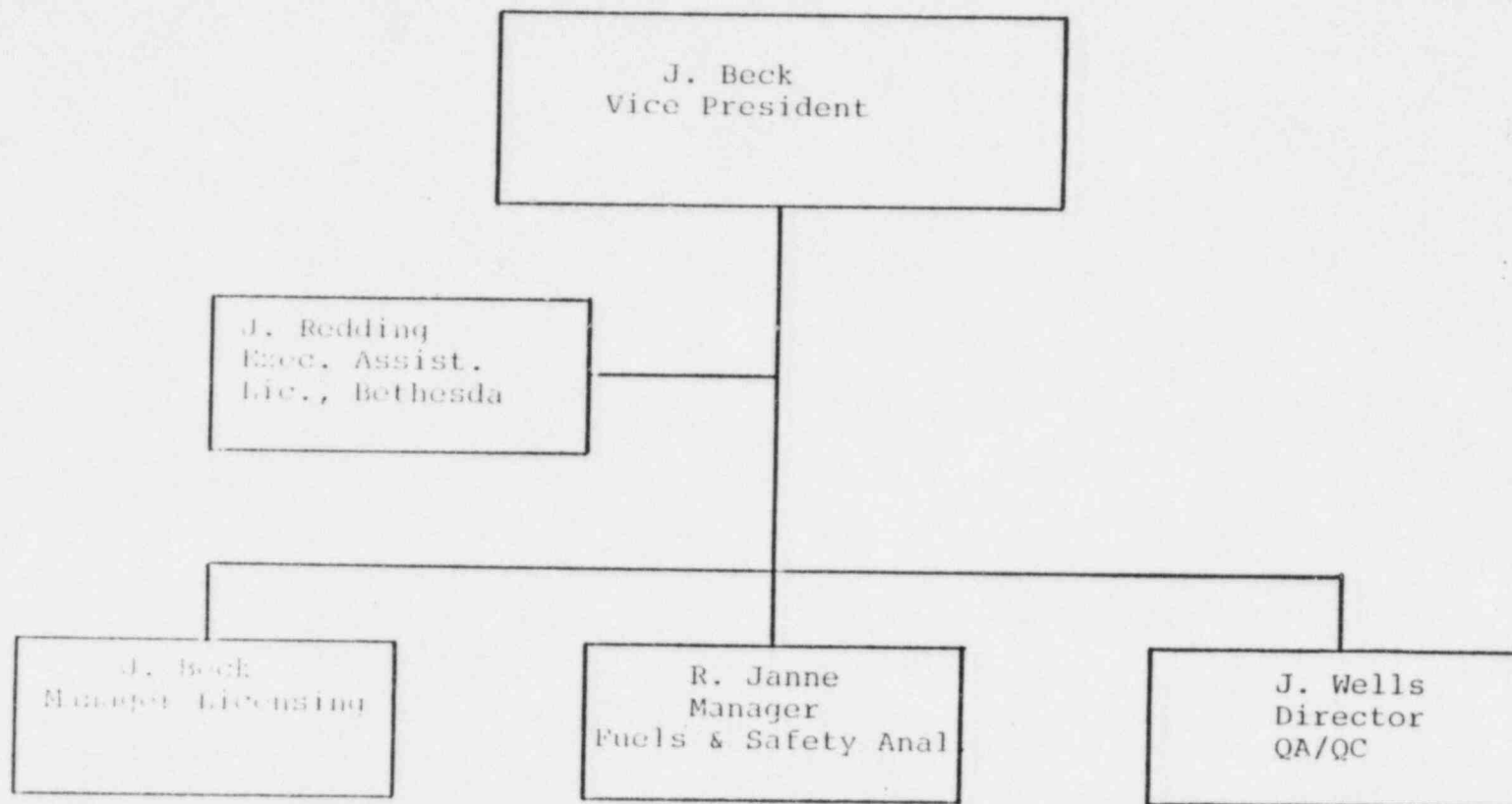
Filianne Green, Interview Coordinator (FMA)

Terry Gibbs, Investigation Coordinator (NIC)

PRINCIPAL AREAS

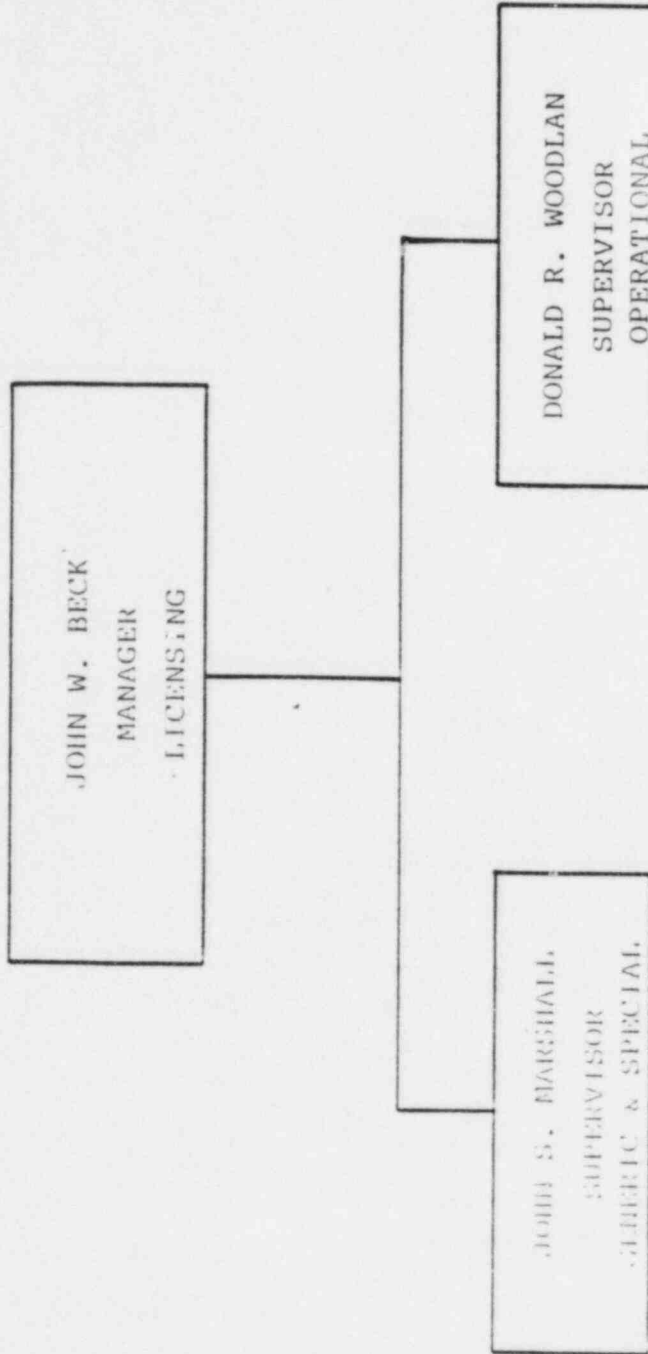
- ° TUGCO ORGANIZATION
- ° NON-CPRT LICENSING ISSUES
- ° CPRT ORGANIZATION
- ° CPRT ISSUES
- ° OVERALL SCHEDULE AND RESOURCE LOADING

JUNE 13, 1985



JUNE 13, 1985

TUGCO ORGANIZATION



JUNE 13, 1985

PRINCIPAL AREAS

- ° TUGCO ORGANIZATION

- ° NON-CPRT LICENSING ISSUES

- ° CPRT ORGANIZATION

- ° CPRT ISSUES

- ° OVERALL SCHEDULE AND RESOURCE LOADING

JUNE 13, 1985

SER OUTSTANDING ISSUES
(NRC ACTION)

INSPECTION PROGRAM FOR PUMPS AND VALVES	SUBMITTED 10/12/83
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REMOTE SAFE SHUTDOWN	SUBMITTED 7/27/84
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HEAVY LOADS	SUBMITTED 1/22/85
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INTEGRATED LEAK RATE TEST	SUBMITTED 12/21/84
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SAFETY PARAMETER DISPLAY	SUBMITTED 5/1/85
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JUNE 13, 1985

LICENSING ISSUES
OTHER THAN CPRT

- SER OUTSTANDING ISSUES
- SER CONFIRMATORY ISSUES
- SER LICENSING CONDITIONS
- SER OPEN CORRESPONDENCE
- SIGNIFICANT ENGINEERING AND CONSTRUCTION ITEMS
- SIGNIFICANT DEFICIENCY ANALYSIS REPORTS
- NRC INSPECTION REPORTS
- PREOPERATIONAL TESTS
- TECHNICAL SPECIFICATIONS
- MISCELLANEOUS

JUNE 13, 1985

SER OUTSTANDING ISSUES
(TUGCO ACTION)

CONTAINMENT ISOLATION DEPENDABILITY	9/30/85
CONTAINMENT SUMP PERFORMANCE	8/1/85
CONTROL ROOM DESIGN REVIEW	DEFERRED UP TO 5% POWER
PRESERVICE AND INSERVICE INSPECTION PROGRAM	PRESERVICE COMPLETE INSERVICE FL + 6 MONTHS

JUNE 13, 1985

SER CONFIRMATORY ISSUES
(NRC ACTION)

TURBINE DRIVEN AUXILIARY
FEEDWATER PUMP TEST

COMPLETED 7/29/84
& 8/31/84

RELIEF AND SAFETY VALVE TESTING

SUBMITTED 5/10/83

ENVIRONMENTAL QUALIFICATION

SUBMITTED 2/15/85

NATURAL CIRCULATION TESTING

SUBMITTED 1/21/85

JUNE 13, 1985

SER LICENSE CONDITIONS ISSUES
(TUGCO ACTION)

ULTRASONIC TESTING OF L.P. TURBINE 7//1/85

ENVIRONMENTAL QUALIFICATION 11/30/85

PREOPERATIONAL TESTING PRIOR TO FUEL LOAD

SECURITY PLAN PRIOR TO FUEL LOAD

JUNE 13, 1985

SER LICENSE CONDITIONS ISSUES
(NRC ACTION)

DIESEL GENERATORS

OWNERS GROUP SCHEDULE

REGULATORY GUIDE 1.97 REV. 2

SUBMITTED 1/28/85

JUNE 13, 1985

SER LICENSE CONDITIONS ISSUES
(TUGCO ACTION)

LICENSED OPERATOR

O.L. TO O.L. + ONE YEAR

MINERAL EXPLORATION CONTROL

ACTION WHEN REQUIRED

INSTRUMENTATION FOR INADEQUATE
CORE COOLING

REMAIN AS LICENSE CONDITION

JUNE 13, 1985

SER OPEN CORRESPONDENCE ISSUES
(TUGCO ACTION)

PURGE AND VENT VALVE OPERABILITY 9/30/85

BREAKER FUSE COORDINATION STUDY 7/1/85

JUNE 13, 1985

SER OPEN CORRESPONDENCE ISSUES
(NRC ACTION)

SPDS OPTICAL ISOLATION

SUBMITTED 1/7/85

SAFE AND ALTERNATE SHUTDOWN

SUBMITTED 5/21/85

REQUIRED ACTIONS BASED ON
GENERIC IMPLICATIONS OF SALEM
ATWS EVENT (GENERIC LETTER 83-28)

SUBMITTED 6/7/85

JUNE 13, 1985

ENGINEERING AND CONSTRUCTION ITEMS

APPENDIX R -- FIRE PROTECTION (9 ITEMS)	9/28/85
EQUIPMENT QUALIFICATION (7 ITEMS)	11/15/85
VENTILATION SYSTEM COMPLETION (3 ITEMS)	10/1/85
DIESEL GENERATOR EXCITATION	6/30/85
MSIV BYPASS VALVES	6/15/85
HOT SHUT DOWN PANEL BOLTS	7/31/85
CONTAINMENT SPRAY VALVES TIMING	10/14/85
SPDS ISOLATORS ANALYSIS	1ST REFUELING
FIRE PROTECTION PANELS	3/31/86

JUNE 13, 1985

SIGNIFICANT DEFICIENCY ANALYSIS REPORTS

ENVIRONMENTAL QUALIFICATION 8/31/85
FOR HIGH ENERGY LINE BREAKS (84-12)

VENTILATION EXHAUST DAMPERS 10/1/85
(84-27)

CONTAINMENT SPRAY HEADER VALVES 7/31/85
(85-04)

CONTROL BOARD MODELING (85-10) 7/12/85

ACTIVE VALVES (85-22) 7/11/85

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INSPECTION REPORTS

COMPLETE CHANGES TO VARIOUS PROCEDURES	8/1/85
COMPLETE HARDWARE AND PROCEDURAL CHANGES ASSOCIATED WITH FIRE PROTECTION	10/1/85
SECURITY COMMUNICATIONS	7/30/85
PERMANENT SECURITY LOCKS	ONE WEEK PRIOR TO FUEL LOAD
SOLID RADIOACTIVE WASTE SYSTEM	AFTER FUEL LOAD
FIRE ALARM PANELS	1ST REFUEL

JUNE 13, 1985

PREOPERATIONAL TESTS

VENTILATION SYSTEMS RETESTS	10/1/85
DIESEL GENERATOR LOAD TEST	TO BE SCHEDULED
SOLID STATE ISOLATION	6/14/85
CONTAINMENT SPRAY SYSTEM RETEST	7/31/85
MAIN STEAM ISOLATION BYPASS VALVES ACTUATORS	6/15/85

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TECHNICAL SPECIFICATIONS

CPSES PROPOSED CHANGES TO FINAL 11/15/84
DRAFT TECHNICAL SPECIFICATIONS

NRC REACTOR SYSTEMS BRANCH 4/9/85
QUESTIONS

JUNE 13, 1985

MISCELLANEOUS ACTIVITIES

ENVIRONMENTAL PROTECTION PLAN	NRC TO ISSUE
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EMERGENCY PLAN IMPLEMENTATION	AUGUST 1985
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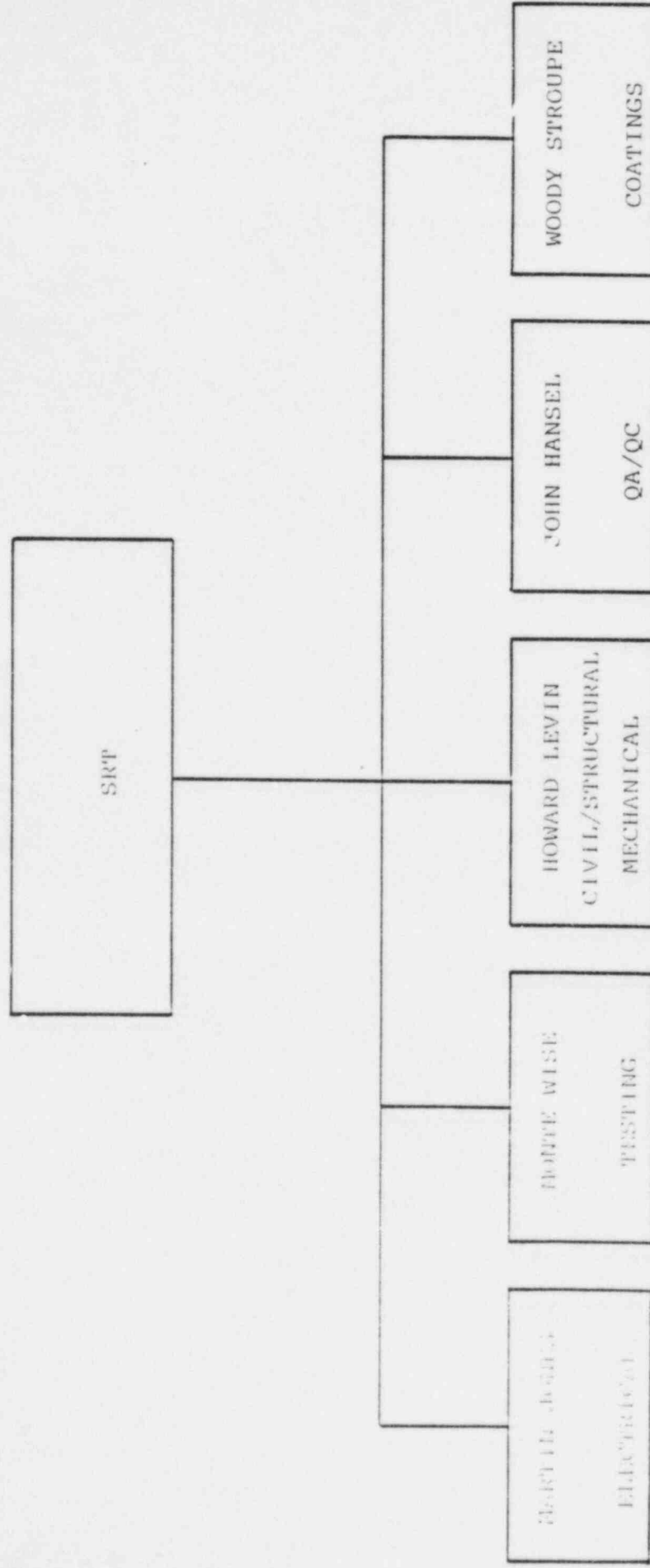
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PRINCIPAL AREAS

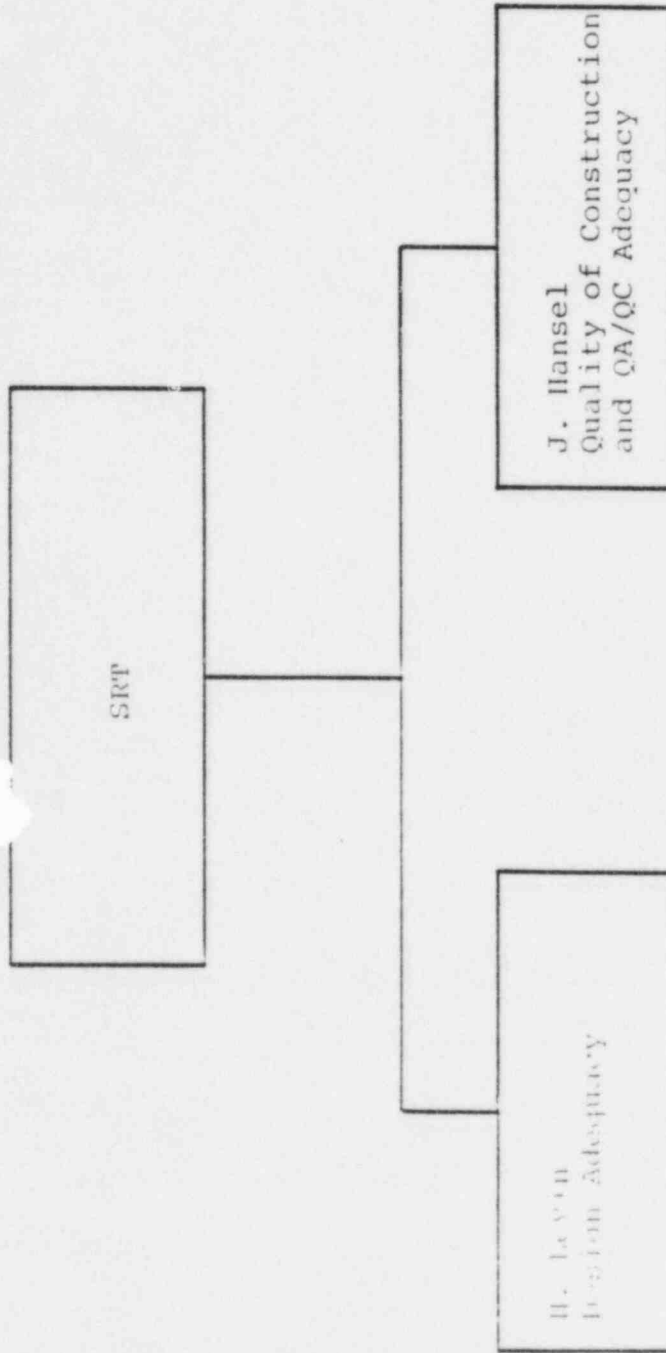
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- ° OVERALL SCHEDULE AND RESOURCE LOADING

JUNE 13, 1985

CPRF ORGANIZATION



JUNE 13, 1985



JUNE 13, 1985

PRINCIPAL AREAS

- ° TUGCO ORGANIZATION
- ° NON-CPRT LICENSING ISSUES
- ° CPRT ORGANIZATION
- ° CPRT ISSUES
- ° OVERALL SCHEDULE AND RESOURCE LOADING

JUNE 13, 1985

CPRT CHARTER

THE CHARTER OF THE CPRT IS TO DEVELOP AND IMPLEMENT
A COMPREHENSIVE REVIEW PROGRAM WHICH WILL ADDRESS
POTENTIAL SAFETY CONCERNS RELATED TO THE DESIGN AND
CONSTRUCTION OF CPSES UNITS 1 AND 2.

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SOURCES OF ISSUES

- ° NRC-TECHNICAL REVIEW TEAM (TRT)
- ° CYGNA INDEPENDENT ASSESSMENT PROGRAM (IAP)
- ° ASLB PROCEEDINGS
- ° OTHER NRC ACTIVITIES (E.G. SIT, CAT, REGION IV)
- ° SELF-INITIATED (TBD)

JUNE 13, 1985

CPRT OBJECTIVES

- ° IDENTIFY ROOT CAUSE AND EVALUATE GENERIC IMPLICATIONS OF CONFIRMED DEFICIENCIES.
- ° DEFINE ACTIONS TO PRECLUDE SIMILAR OCCURENCES IN THE FUTURE.
- ° EVALUATE COLLECTIVE SIGNIFICANCE OF CONFIRMED DEFICENCIES AND CORRECTIVE ACTIONS TO ASSURE THE CONCERNS HAVE BEEN SUFFICIENTLY ADDRESSED.
- ° PROVIDE REASONABLE ASSURANCE THAT CPSES CAN BE OPERATED WITHOUT UNDUE RISK TO THE PUBLIC HEALTH AND SAFETY.

- CPRT PROGRAM PLAN

JUNE 13, 1985

CPRT OBJECTIVITY

- ° KNOWLEDGE AND EXPERIENCE
- ° PERSONAL AND ORGANIZATIONAL INTEGRITY
- ° NO PREVIOUS INVOLVEMENT IN CPSES ACTIVITIES
IN QUESTION

- CPRT PROGRAM PLAN

JUNE 13, 1985

CPRT PRINCIPLES

- ° CPRT HAS FULL AND COMPLETE ACCESS
- ° REVIEW TEAM LEADERS, SUBJECT TO SRT GUIDANCE, HAVE FULL RESPONSIBILITY FOR THEIR TECHNICAL AREAS
- ° ANALYSES AND CALCULATIONS EITHER TO BE PERFORMED BY THOSE PREVIOUSLY UNINVOLVED OR REVIEWED BY THIRD PARTY
- ° INSPECTIONS EITHER BY THOSE PREVIOUSLY UNINVOLVED OR BY THIRD PARTY VALIDATION ON A SAMPLING BASIS
- ° RECORD REVIEWS BY THIRD PARTY OR VALIDATED ON A SAMPLING BASIS BY THIRD PARTY
- ° TESTING AND NDE ACTIVITIES (OTHER THAN PRE-OPS) TO BE CONDUCTED AND CERTIFIED BY THIRD PARTY
- ° CPRT WILL NOT PERFORM INSPECTIONS, CALCULATIONS OR DESIGNS OR RECORD. WHERE APPROPRIATE THIRD PARTY WILL OVERVIEW.

- CPRT PROGRAM PLAN

JUNE 13, 1985

SAFETY-SIGNIFICANCE EVALUATIONS

- ° ALL CONFIRMED DEVIATIONS WILL BE EVALUATED FOR REPORTABILITY AND SAFETY-SIGNIFICANCE
- ° SAFETY-SIGNIFICANCE EVALUATIONS WILL BE PERFORMED IN ACCORDANCE WITH CPRT GUIDELINES
- ° ALL EVALUATIONS WILL BE DOCUMENTED AND RETAINED IN THE CPRT PROJECT FILES
- ° REPORTABILITY EVALUATIONS WILL BE PERFORMED IN ACCORDANCE WITH 10CFR55(e)

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SAMPLING

- ° SAMPLING TECHNIQUES ARE USED IN MANY OF THE CPRT ISSUE-SPECIFIC ACTION PLANS
- ° SAMPLING PROGRAMS WILL BE CONDUCTED IN ACCORDANCE WITH CPRT GUIDELINES [APPENDIX D TO CPRT PROGRAM PLAN]
- ° CPRT SAMPLING GUIDELINES REQUIRE THAT ISAP-SPECIFIC SAMPLING PROGRAMS
 - UTILIZE RANDOM SELECTION METHODS FOR SAMPLES OF DEFINED POPULATIONS
 - UTILIZE SAMPLE SIZES THAT MEET A 95% CONFIDENCE/ 95% PROBABILITY STATISTICAL STANDARD
 - UTILIZE PRE-DEFINED ACCEPT/REJECT CRITERIA
 - IDENTIFY DECISION CRITERIA FOR SAMPLE RESULTS ACCEPTANCE AND SAMPLE EXPANSION

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CPRT ISSUE-RESPONSIVE EFFORTS

WILL LEAD TO CONCLUSION THAT THERE IS REASONABLE ASSURANCE THAT
NO SAFETY SIGNIFICANT DEFICIENCIES, DESIGN OR CONSTRUCTION,
RELATED TO ISSUES RAISED BY OTHERS, EXIST AT CPSES.

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CPRT SELF-INITIATED EFFORTS

- ° PERMITS CONCLUSIONS RE: ISSUE-RESPONSIVE EFFORTS TO BE
EXTENDED TO BALANCE OF SAFETY SIGNIFICANT PLANT.
- ° ENHANCES CONFIDENCE IN CONCLUSIONS.

JUNE 13, 1985

PRINCIPAL AREAS

- ° TUGCC ORGANIZATION
- ° NON-CPRT LICENSING ISSUES
- ° CPRT ORGANIZATION
- ° CPRT ISSUES
- ° OVERALL SCHEDULE AND RESOURCE LOADING

TUGCO PRESENTATION

TO NRC

JUNE 13, 1985

AFTERNOON SESSION

QUALITY OF CONSTRUCTION AND QA/QC ADEQUACY PROGRAM

- INTRODUCTION - OBJECTIVES
- ELEMENTS OF THE PLAN
 - QA/QC ISAPs
 - CATEGORY I - EXTERNAL SOURCES
 - CATEGORY II - SELF-INITIATED PROGRAM
 - INTER-RELATIONSHIPS OF ELEMENTS
 - RELATIONSHIPS TO OTHER ACTIVITIES
 - COLLECTIVE EVALUATIONS
 - QA/QC REVIEW TEAM
 - SCHEDULE
- END PRODUCTS

JUNE 13, 1985

OBJECTIVE: PROVIDE REASONABLE ASSURANCE THAT THERE ARE NO
UNDETECTED AND UNCORRECTED SAFETY SIGNIFICANT
DEFICIENCIES AT CPSES.

- ° SPECIFIC EXTERNAL ISSUES
- ° ROOT CAUSE/GENERIC IMPLICATIONS FOR EXTERNAL ISSUES
- ° SELF-INITIATED PROGRAM

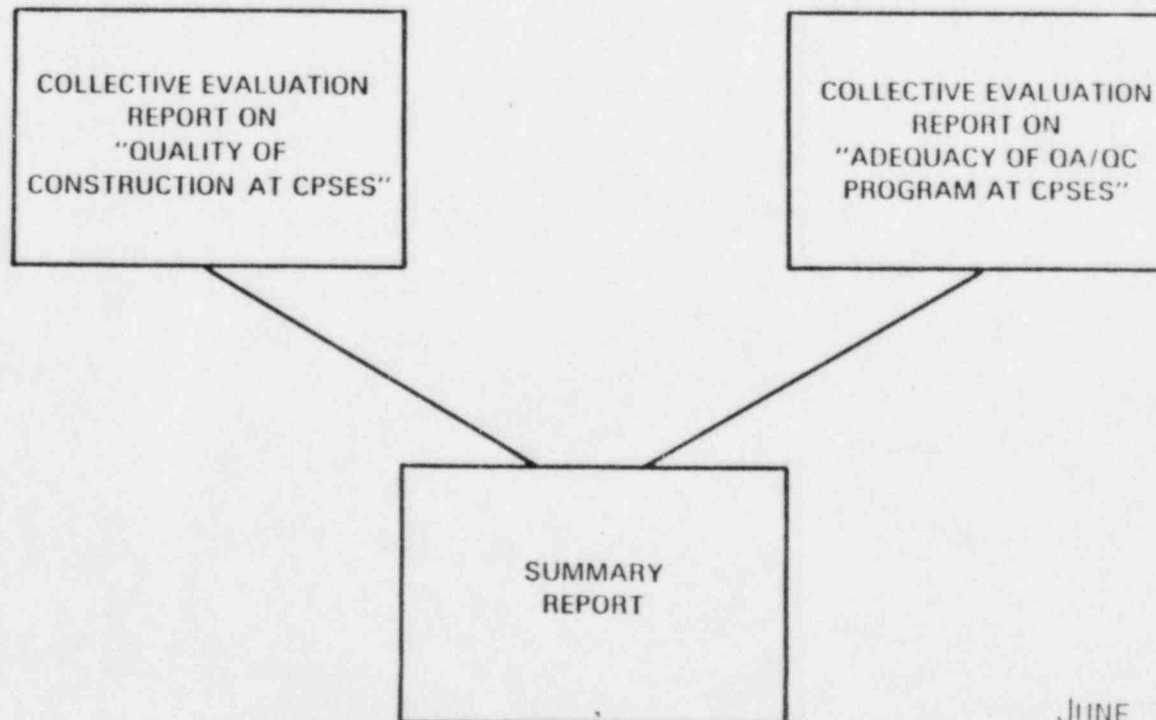
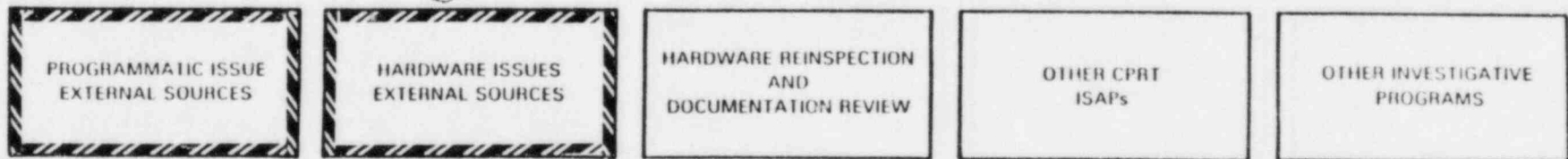
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OBJECTIVE: PROVIDE REASONABLE ASSURANCE THAT THERE ARE NO
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DEFICIENCIES AT CPSES.

- ° SPECIFIC EXTERNAL ISSUES
- ° ROOT CAUSE/GENERIC IMPLICATIONS FOR EXTERNAL ISSUES
- ° SELF-INITIATED PROGRAM

JUNE 13, 1985

Elements of the Plan



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CATEGORY I ISAP'S ADDRESS ISSUES IDENTIFIED BY EXTERNAL SOURCES

- ° REVIEW DOCUMENTS TO IDENTIFY EXTERNAL ISSUES
- ° GROUP ISSUES BY CATEGORY AND SIMILARITIES
 - HARDWARE SPECIFIC
 - PROGRAMMATIC
- ° PREPARE ACTION PLANS

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CATEGORY I ISAP METHODOLOGY Is:

- ° ASSURE ISSUE FULLY DEFINED
- ° SELECT EVALUATION APPROACH AND IMPLEMENT
- ° EVALUATE RESULTS
- ° PROVIDE DATA TO COLLECTIVE EVALUATION PROCESS

JUNE 13, 1985

ISSUE IDENTIFICATION FROM

EXTERNAL SOURCES

- ° SSER's 7, 8, 9, 10, AND 11
- ° NRC SIT REPORT, FEBRUARY 1983
- ° NRC CAT REPORT, APRIL 1983
- ° NRC SPECIAL REVIEW TEAM REPORT, APRIL 1984
- ° CYGNA INDEPENDENT ASSESSMENT PROGRAM
- ° CONCERNS IN CONTENTION BEFORE ASLB
- ° OTHER APPLICABLE REPORTS

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CATEGORY I PROGRAMMATIC ISAP'S

- I.D.1 QA INSPECTOR QUALIFICATION
- I.D.2 GUIDELINES FOR ADMINISTRATION OF QA INSPECTOR TESTS
- VII.A.1 MATERIAL TRACEABILITY
- VII.A.2 NONCONFORMANCE AND CORRECTIVE ACTION SYSTEMS
- VII.A.3 DOCUMENT CONTROL
- VII.A.4 AUDIT PROGRAM AND AUDITOR QUALIFICATION
- VII.A.5 MANAGEMENT ASSESSMENT
- VII.A.6 EXIT INTERVIEWS
- VII.A.7 HOUSEKEEPING AND SYSTEM CLEANLINESS
- VII.A.8 FUEL POOL LINER DOCUMENTATION

JUNE 13, 1985

CATEGORY I HARDWARE ISAP'S

- VII.B.1 ONSITE FABRICATION
- VII.B.2 VALVE DISASSEMBLY
- VII.B.3 PIPE SUPPORT INSPECTIONS
- VII.B.4 HILTI ANCHOR BOLT INSTALLATION
- VII.B.5 ELECTRICAL RACEWAY SUPPORT INSPECTIONS

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EVALUATION ALTERNATIVES

- ° REINSPECTION OF HARDWARE
- ° DOCUMENTATION REVIEW
- ° DATA FROM OTHER CPRT ISAPS
- ° REVIEW/VERIFY OTHER TUGCO ACTIONS
 - CORRECTIVE ACTION PROGRAMS
 - SPECIAL INSPECTIONS/WALKDOWNS
 - TESTING PROGRAMS
- ° ENGINEERING ANALYSIS AND EVALUATION TO DETERMINE SIMILARITY
 - PROCESSES
 - CRAFT
 - INSPECTORS
 - CONTROLS

JUNE 13, 1985

EVALUATE RESULTS

- ° SPECIFIC DEVIATIONS
- ° DETERMINE SAFETY SIGNIFICANCE OR PROGRAMMATIC DEFICIENCY
- ° DETERMINE ROOT CAUSES
- ° DETERMINE GENERIC IMPLICATIONS
- ° PROVIDE INPUT TO COLLECTIVE EVALUATION PROCESS

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ROOT CAUSE EVALUATION

1. CONDITION INITIATING ROOT CAUSE EVALUATION
 - ° SAFETY SIGNIFICANT HARDWARE DEFICIENCIES
 - ° PROGRAMMATIC DEFICIENCIES
 - ° ADVERSE TRENDS (REINSPECTION)
2. POTENTIAL ROOT CAUSE REVIEW
 - ° DESIGN ° INSPECTION
 - ° DOCUMENTATION ° CORRECTIVE ACTION
 - ° WORKMANSHIP ° RECORDS
3. IDENTIFY ROOT CAUSES
4. INITIATE GENERIC IMPLICATION EVALUATION

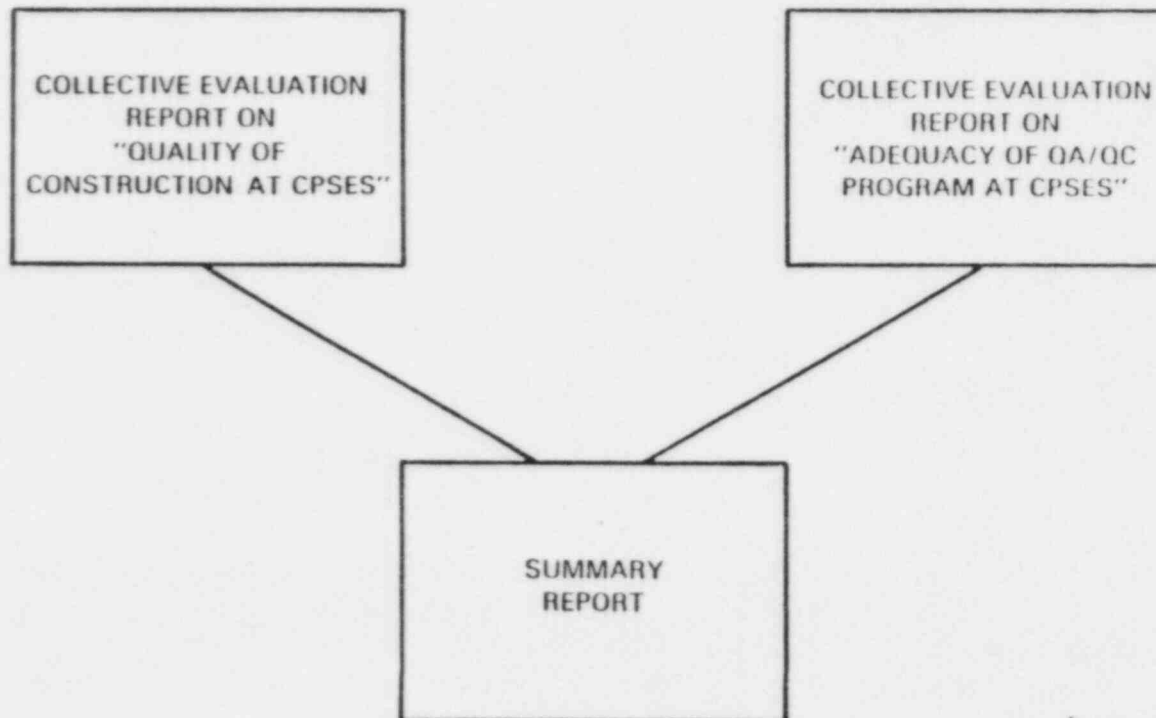
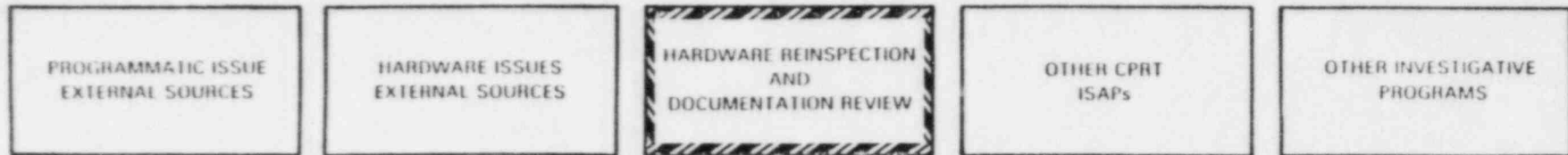
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CATEGORY I ISAP'S WILL HAVE:

- ° IDENTIFIED SAFETY SIGNIFICANT HARDWARE DEFICIENCIES AND PROGRAMMATIC DEFICIENCIES
- ° ANALYZED ROOT CAUSE AND GENERIC IMPLICATION FOR SAFETY SIGNIFICANT HARDWARE DEFICIENCIES AND
- ° PROVIDED REASONABLE ASSURANCE THAT THERE ARE NO UNDETECTED AND UNCORRECTED SAFETY SIGNIFICANT HARDWARE DEFICIENCIES RELATED TO ISSUES FROM EXTERNAL SOURCES.

JUNE 13, 1985

Elements of the Plan



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CATEGORY II ISAP Is SELF-INITIATED:

- ° PROVIDES ADDITIONAL CONFIDENCE IN RESULTS OF CATEGORY I ISAP's.
- ° EXTENDS CONCLUSIONS TO THE ENTIRE POPULATION OF SAFETY RELATED HARDWARE.

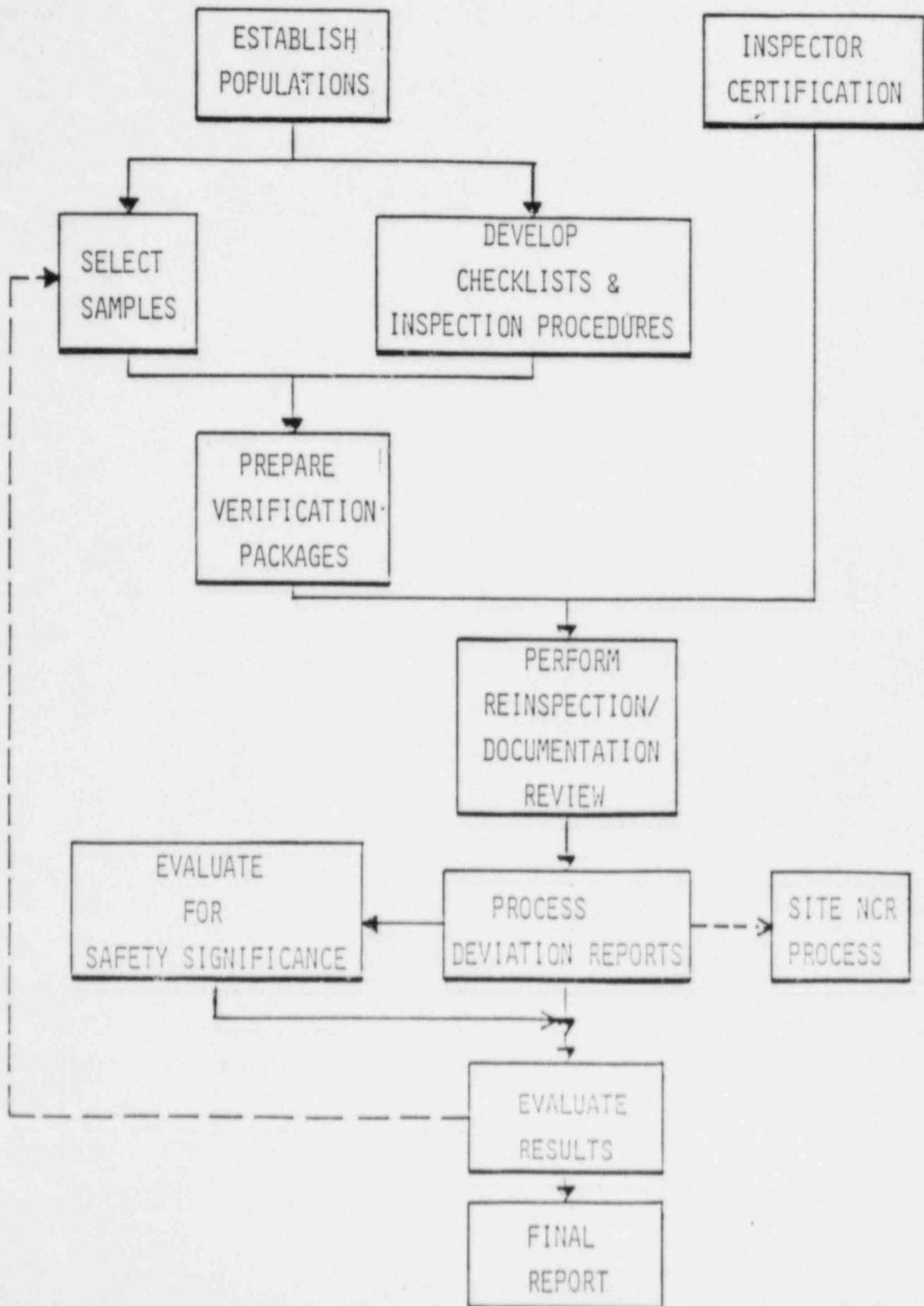
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CATEGORY II ISAP METHODOLOGY INCLUDES:

- ° ESTABLISHING HARDWARE POPULATIONS
- ° SELECTING SAMPLES
- ° INSPECTING/EVALUATING HARDWARE/DOCUMENTATION
- ° EVALUATING RESULTS

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REINSPECTION PROGRAM



PRELIMINARY MASTER POPULATION LIST

<u>DISCIPLINE</u>	<u>POPULATION</u>
STRUCTURAL	CONCRETE PLACEMENT STRUCTURAL STEEL MASONRY WALLS LINERS CADWELDS (DOCUMENTATION ONLY) FILL AND BACKFILL PLACEMENT (DOCUMENTATION ONLY) LARGE BORE PIPE SUPPORTS (RIGID) LARGE BORE PIPE SUPPORTS (NON-RIGID) SMALL BORE PIPE SUPPORTS LARGE BORE PIPE WHIP RESTRAINTS INSTRUMENT PIPE/TUBE SUPPORTS CAT. I CONDUIT HANGERS CAT. I CABLE TRAY HANGERS HVAC DUCT HANGERS AND AUXILIARY STEEL
ELECTRICAL	CONDUIT CABLES CABLE TRAY ELECTRICAL EQUIPMENT INSTALLATION
MECHANICAL	HVAC DUCTS/PLENUMS AND HOUSINGS HVAC EQUIPMENT INSTALLATION MECHANICAL EQUIPMENT FIELD FABRICATION (TANKS) MECHANICAL EQUIPMENT INSTALLATION (INCLUDES NSSS EQUIPMENT) LARGE BORE PIPE - CONFIGURATION SMALL BORE PIPE - CONFIGURATION LARGE BORE - WELDS/MATERIAL SMALL BORE PIPE & INSTRUMENT PIPE/TUBE WELDS/MATERIAL PIPING SYSTEM BOLTED JOINTS/MATERIALS INSTRUMENT PIPE/TUBE JOINTS PIPING SYSTEM BENDS

JUNE 13, 1985

SELECT SAMPLES

- ° DEVELOP LIST OF ALL SAFETY RELATED CONSTRUCTION WORK THAT HAS BEEN COMPLETED AND INSPECTED FOR BOTH UNITS FOR EACH POPULATION.
- ° SELECT RANDOM SAMPLE.
- ° VERIFY ACCESSIBILITY OF RANDOM SAMPLE.
- ° RANDOMLY SELECT ENGINEERING SAMPLE FROM SYSTEMS REQUIRED FOR SAFE SHUTDOWN.
- ° VERIFY ACCESSIBILITY OF ENGINEERING SAMPLE.

JUNE 13, 1985

DEVELOP CHECKLISTS AND INSPECTION PROCEDURES

- ° DEFINE SAFETY SIGNIFICANT ATTRIBUTES AND ACCEPT/REJECT CRITERIA BASED ON REVIEW OF DESIGN AND CONSTRUCTION SPECIFICATIONS, DRAWINGS, REFERENCED CODES AND STANDARDS, PROCEDURES, ETC.

- ° CHECKLISTS AND INSPECTION PROCEDURES DEVELOPED TO PROVIDE DETAILED INSTRUCTIONS TO THE INSPECTORS FOR PERFORMING THE INSPECTIONS.

JUNE 13, 1985

PROCESS DEVIATION REPORTS

- VALIDATE DEVIATIONS

DEVIATIONS MAY BE INVALID IF:

- A. THE CONDITION DESCRIBED IS, IN FACT, IN ACCORDANCE WITH THE APPROVED DESIGN
- B. THE CONDITION DESCRIBED IS DOCUMENTED ON A CONTROLLED DEFICIENCY DOCUMENT (I.E., NCR)
- C. THE CONDITION DESCRIBED IN ACCORDANCE WITH DESIGN APPLICABLE AT THE TIME OF CONSTRUCTION, DOCUMENTATION MUST EXIST EXEMPTING THE SPECIFIC ITEM FROM SUBSEQUENT DESIGN CHANGE REQUIREMENTS
- D. IF THE CONDITION DESCRIBED IS HIGHLY SUBJECTIVE IN NATURE, A LEVEL III INSPECTOR MAY BE REQUESTED TO DETERMINE THE ACCEPTABILITY OF THE ITEM

- ENTER VALID DEVIATIONS INTO SITE NCR SYSTEM

- EVALUATE FOR SAFETY SIGNIFICANCE

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EVALUATE FOR SAFETY SIGNIFICANCE

- REVIEW DEVIATION REPORTS TO DETERMINE IF SUFFICIENT INFORMATION IS PROVIDED.
- PERFORM ENGINEERING EVALUATION OR ANALYSIS TO DETERMINE IF ITEM AS CONSTRUCTED CAN PERFORM INTENDED SAFETY FUNCTION
- DOCUMENT EVALUATION RESULTS

JUNE 13, 1985

EVALUATE RESULTS

- ° SAFETY SIGNIFICANT DEFICIENCIES
 - IF SAFETY SIGNIFICANT DEFICIENCY EXISTS - EXPAND SAMPLE
 - DETERMINE ROOT CAUSE/GENERIC IMPLICATIONS OF SAFETY SIGNIFICANT DEFICIENCIES - EXPAND APPROPRIATELY
- ° TREND ALL DEVIATIONS
 - PERFORM ADDITIONAL EVALUATIONS AS NEEDED

JUNE 13, 1985

POTENTIAL ROOT CAUSE DETAIL

DESIGN

- UNCLEAR/CONFLICTING DESIGN DIRECTION TO FIELD
- OBSERVED CONSTRUCTION DEVIATION CAUSED BY A DESIGN ERROR
- CONSTRUCTABILITY PROBLEMS

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POTENTIAL ROOT CAUSE DETAIL

DOCUMENTATION

- INCOMPLETE DRAWING
- INCOMPLETE PROCEDURE (FABRICATION, INSPECTION,
ADMINISTRATIVE CONTROL)
- CONFLICT BETWEEN DRAWINGS OR PROCEDURES (FAB VS.
INSPECTION)
- INCORRECT DRAWING OR PROCEDURES USED
(ADMINISTRATIVE CONTROL)
- "INACCESSIBLE" DRAWINGS OR PROCEDURES

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POTENTIAL ROOT CAUSE DETAIL

WORKMANSHIP

- INADEQUATE WORKMANSHIP STANDARDS
- UNQUALIFIED CRAFT PERSONNEL
- UNTRAINED CRAFT PERSONNEL (SPECIFIC PROCEDURES)
- SUPERVISION/MANAGEMENT DIRECTION
- PLANNED MANAGEMENT RISK
- INSUFFICIENT TIME
- KNOWING VIOLATION OF PROCEDURES
- INCORRECT MATERIAL

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POTENTIAL ROOT CAUSE DETAIL

INSPECTION

- INADEQUATE INSPECTION STANDARDS
- UNQUALIFIED INSPECTORS
- UNTRAINED INSPECTORS (SPECIFIC PROCEDURES)
- INADEQUATE INSPECTION CHECKLIST
- INADEQUATE SURVEILLANCE
- SUPERVISION/MANAGEMENT
- ERROR IN JUDGEMENT

JUNE 13, 1985

POTENTIAL ROOT CAUSE DETAIL

CORRECTIVE ACTION

- RECURRING DEFICIENCY
- INADEQUATE ATTENTION TO TRENDS

JUNE 13, 1985

POTENTIAL ROOT CAUSE DETAIL

RECORDS

- ° INCOMPLETE RECORDS
- ° INCORRECT RECORDS
- ° ILLEGIBLE RECORDS
- ° UNAUTHORIZED SIGNATURE

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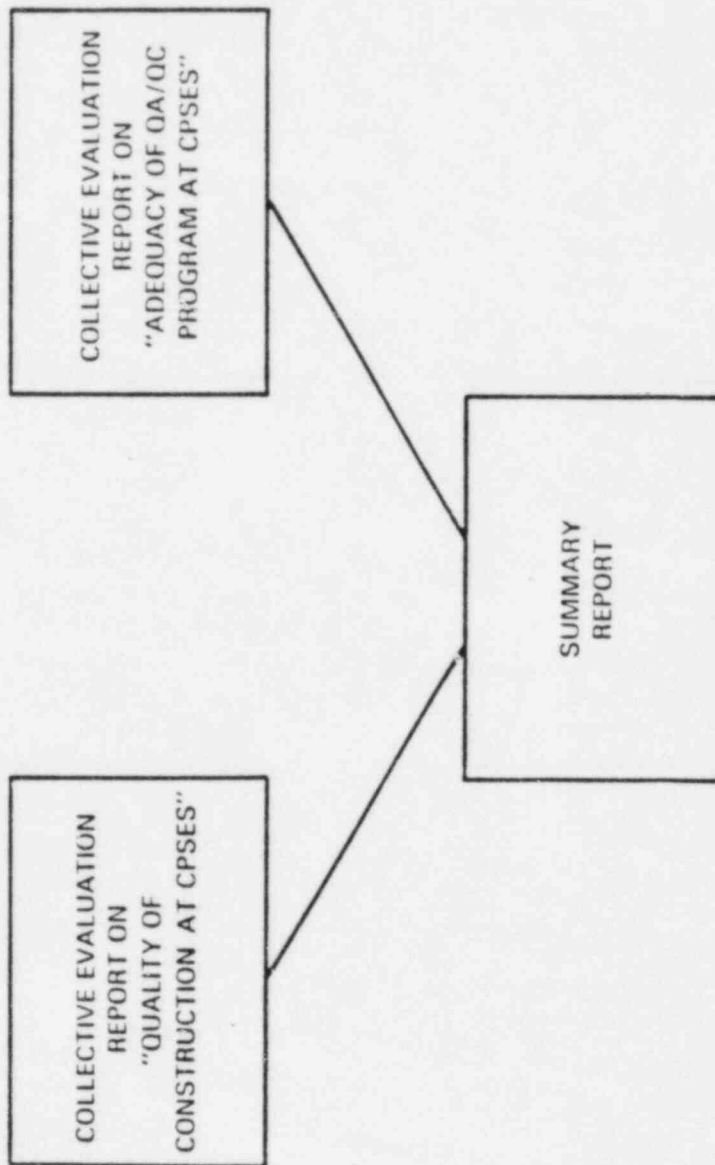
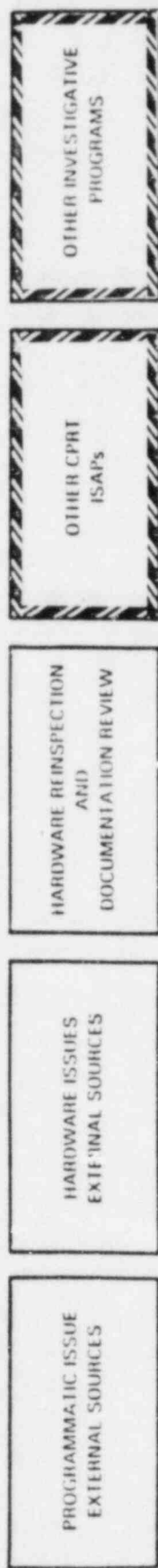
QA/QC TREND PROGRAM

OBJECTIVE

TO IDENTIFY DEVIATIONS WHICH IN THEMSELVES ARE
NOT SAFETY SIGNIFICANT BUT WHEN TAKEN COLLECTIVELY
MAY HAVE SAFETY IMPLICATIONS

JUNE 13, 1985

Elements of the Plan



JUNE 13, 1985

INTERACTION WITH OTHER GROUPS

INTERFACES

- ° SENIOR REVIEW TEAM
- ° CPRT REVIEW TEAM LEADERS AND ISSUE COORDINATORS
- ° DESIGN ADEQUACY GROUP
- ° AUTHORIZED NUCLEAR INSPECTOR
- ° TUGCO/B&R MANAGEMENT
- ° SRT STATISTICIAN

ACTIVITIES

- ° EXCHANGE INFORMATION ON QA/QC ISSUES
- ° ASSIST IN PLANNING INSPECTION/DOCUMENT REVIEW ACTIVITIES
- ° CONDUCT/OVERVIEW REINSPECTIONS/DOCUMENTATION REVIEWS
- ° POPULATION DEFINITION, INSPECTION ATTRIBUTES, SAMPLE SELECTION
- ° DETERMINE SAFETY SIGNIFICANCE OF DEVIATIONS

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COLLECTIVE EVALUATIONS PERMIT THE ASSESSMENT OF THE AGGREGATE OF
THE DATA SO AS TO PERCEIVE TRENDS AND RELATIONSHIPS NOT APPARENT
WHEN DATA IS VIEWED FROM AN ISAP PERSPECTIVE.

- ° ADEQUACY OF QA/QC PROGRAM
- ° ADEQUACY OF INSTALLED HARDWARE

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COLLECTIVE EVALUATION OF CONSTRUCTION ADEQUACY

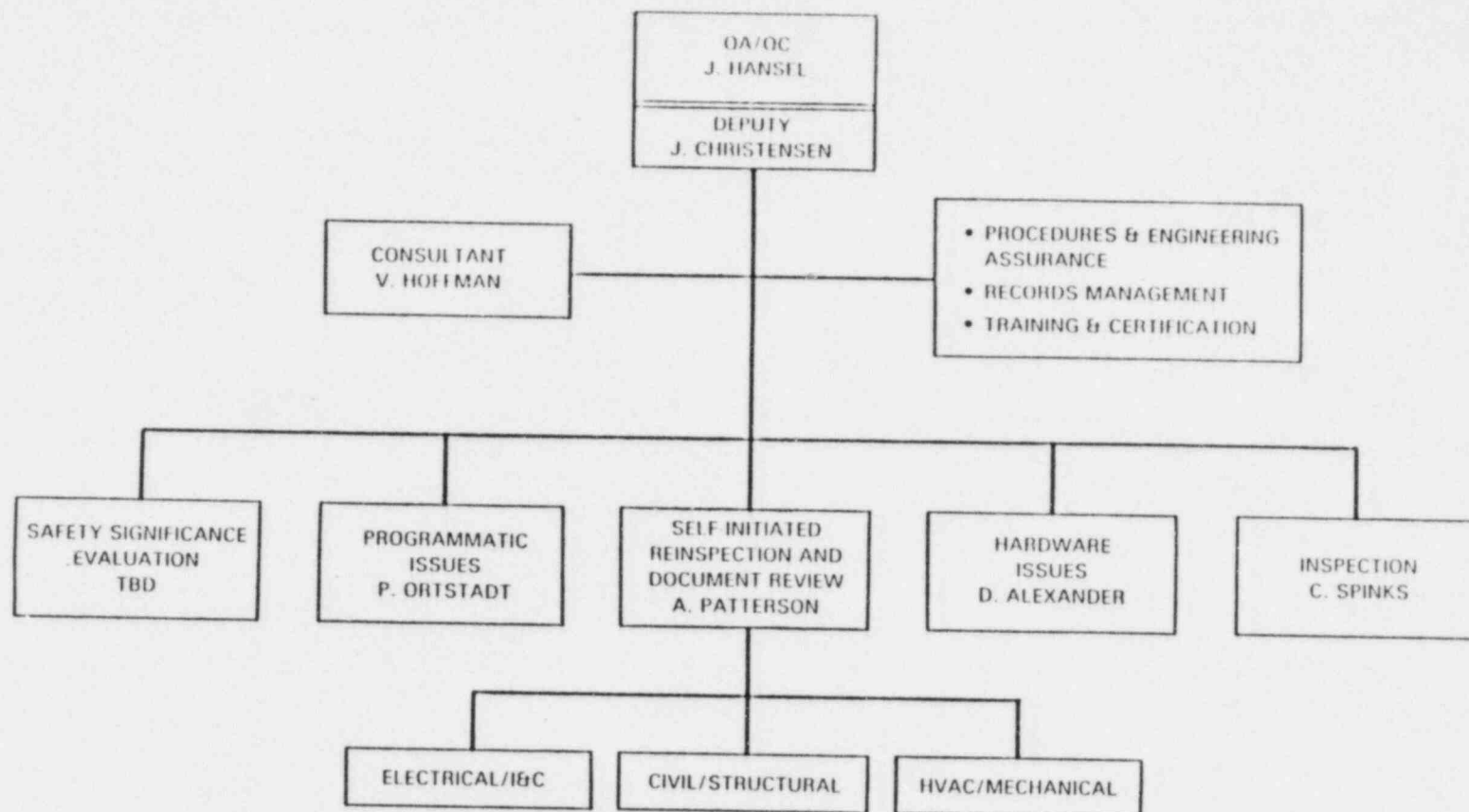
- CONDUCT COLLECTIVE EVALUATION OF THE FOLLOWING ITEMS USING SOURCE INPUTS:
 - ROOT CAUSES AND GENERIC IMPLICATION EVALUATIONS TO IDENTIFY ADDITIONAL HARDWARE ISSUES NOT APPARENT IN INDIVIDUAL EVALUATIONS
 - RESULTS AS THEY RELATE TO EACH HARDWARE POPULATION
- BASED ON THE RESULTS OF THE COLLECTIVE EVALUATION DETERMINE THE FOLLOWING:
 - NECESSITY FOR THE CONDUCT OF ADDITIONAL PROGRAMMATIC OR HARDWARE EVALUATIONS TO RESOLVE NEWLY IDENTIFIED ISSUES
 - ADEQUACY OF INSTALLED HARDWARE INCLUDING THE IDENTIFICATION OF CORRECTIVE ACTIONS NECESSARY TO RESOLVE ANY SAFETY SIGNIFICANT HARDWARE DEFICIENCIES

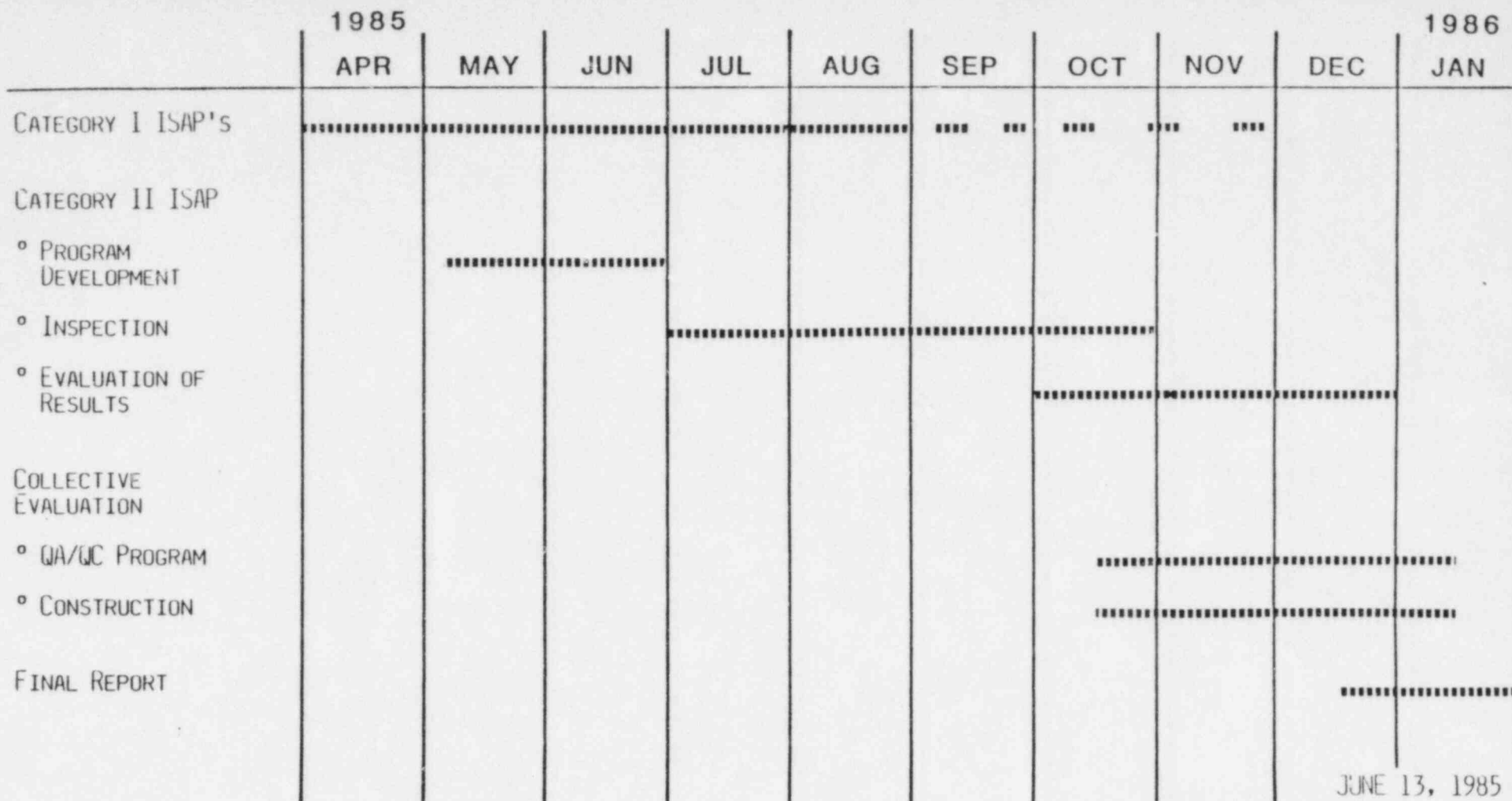
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COLLECTIVE EVALUATION OF CONSTRUCTION QA/QC PROGRAM ADEQUACY

- ° CONDUCT COLLECTIVE EVALUTION OF THE FOLLOWING ITEMS USING SOURCE INPUTS:
 - ° ROOT CAUSES AND GENERIC IMPLICATION EVALUATIONS TO IDENTIFY ADDITIONAL QA/QC PROGRAM ISSUES NOT APPARENT IN INDIVIDUAL EVALUATIONS
 - ° RESULTS AS THEY RELATE TO EACH 10CFR50 APPENDIX B CRITERION
- ° BASED ON THE RESULTS OF THE COLLECTIVE EVALUATION DETERMINE THE FOLLOWING:
 - ° NECESSITY FOR THE CONDUCT OF ADDITIONAL PROGRAMMATIC OR HARDWARE EVALUATIONS TO RESOLVE NEWLY IDENTIFIED ISSUES
 - ° ADEQUACY OF QA/QC PROGRAM INCLUDING THE IDENTIFICATION OF LESSONS LEARNED APPLICABLE TO UNIT 2 CONSTRUCTION AND OPERATIONS.

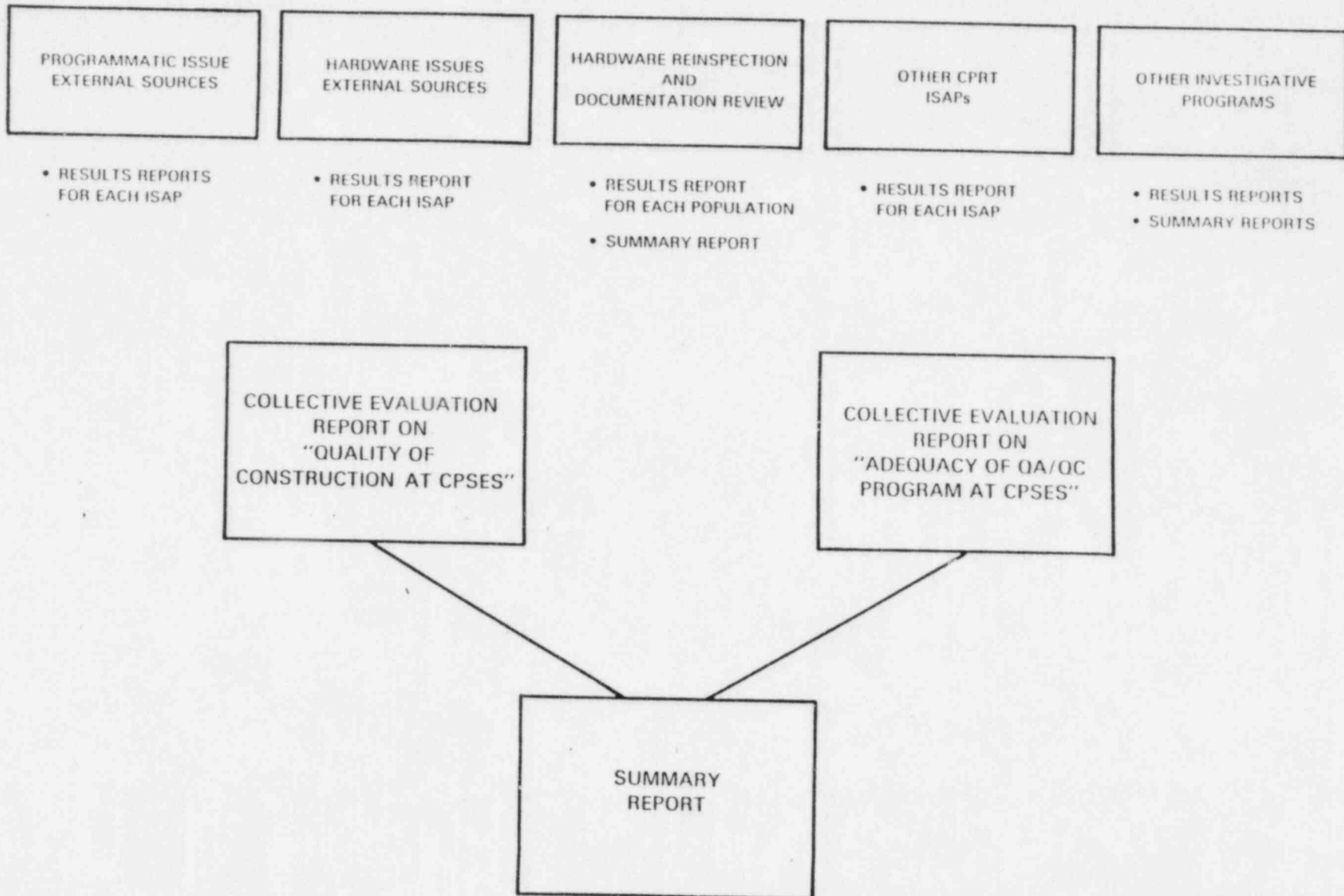
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REPORT STRUCTURE



CPRT DESIGN ADEQUACY PROGRAM

PRESENTATION TO NRC

JUNE 14, 1985

MEETING OUTLINE

DESIGN ADEQUACY PROGRAM

PUBLIC MEETING

JUNE 14, 1985

INTRODUCTION

BACKGROUND

PROGRAM STRUCTURE AND ORGANIZATION

METHODOLOGY

GENERAL METHODOLOGY

EXTERNAL SOURCE ISSUE EVALUATIONS

SELF-INITIATED EVALUATIONS

ROOT CAUSE AND GENERIC IMPLICATIONS

DISCIPLINE REVIEW DESCRIPTIONS

MECHANICAL SYSTEMS

ELECTRICAL/I&C SYSTEMS

PIPING & SUPPORTS

CIVIL/STRUCTURAL

CPRT DESIGN ADEQUACY PROGRAM
INTRODUCTION

- BACKGROUND
 - ISSUES
 - CPRT RESPONSIBILITIES
 - PROGRAM GOAL
 - PROGRAM OBJECTIVES
- PROGRAM STRUCTURE AND ORGANIZATION
 - FUNCTIONAL ELEMENTS
 - ORGANIZATION
 - PERSONNEL
 - ROLES

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CPRT DESIGN ADEQUACY PROGRAM

BACKGROUND

- ISSUES RELATED TO DESIGN AND DESIGN CONTROL HAVE BEEN IDENTIFIED BY EXTERNAL SOURCES SUCH AS:
 - INDEPENDENT ASSESSMENT PROGRAM
 - NRC ASLB PROCEEDINGS
 - NRC LICENSING REVIEW - TRT, SIT, SSERs
 - NRC INSPECTION PROGRAM - R IV, CAT
- TUGCO HAS CHARGED THE CPRT WITH RESPONSIBILITY FOR DEVELOPMENT AND IMPLEMENTATION OF A PROGRAM THAT WILL ADDRESS AND RESOLVE ALL IDENTIFIED ISSUES
- FOR ENHANCED CONFIDENCE, TUGCO HAS EXPANDED THE CPRT RESPONSIBILITY TO ENSURE NO UNDETECTED SAFETY ISSUES

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COMANCHE PEAK RESPONSE TEAM
DESIGN ADEQUACY PROGRAM

GOAL

PROVIDE REASONABLE ASSURANCE THAT
SAFETY SIGNIFICANT DESIGN DEFICIENCIES
HAVE BEEN DETECTED AND RESOLVED.

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COMANCHE PEAK RESPONSE TEAM
DESIGN ADEQUACY PROGRAM

OBJECTIVES

- DEVELOP COMPREHENSIVE PROGRAM THAT:
 - ADDRESSES ALL EXTERNAL SOURCE IDENTIFIED ISSUES
 - PROVIDES REASONABLE ASSURANCE OF DETECTING SIGNIFICANT ISSUES THAT ARE PRESENTLY UNIDENTIFIED
- INVESTIGATE ROOT CAUSE OF SAFETY SIGNIFICANT DEFICIENCIES
- CONSIDER GENERIC IMPLICATIONS OF KNOWN ISSUES
- ASSESS DEGREE OF COMPLIANCE WITH LICENSING COMMITMENTS
- ASSESS SAFETY SIGNIFICANCE (I.E. ABILITY TO MEET FUNCTIONAL PERFORMANCE REQUIREMENTS) OF ALL DEVIATIONS FROM COMMITMENTS AND DEVIATIONS THAT MAY BE IDENTIFIED DURING EXECUTION OF DESIGN ADEQUACY PROGRAM
- CORRECT ANY SAFETY SIGNIFICANT DEFICIENCIES
- TREND NON-SAFETY SIGNIFICANT DEVIATIONS FROM LICENSING COMMITMENTS
- ADDRESS ISSUES IN AN INTEGRATED MANNER

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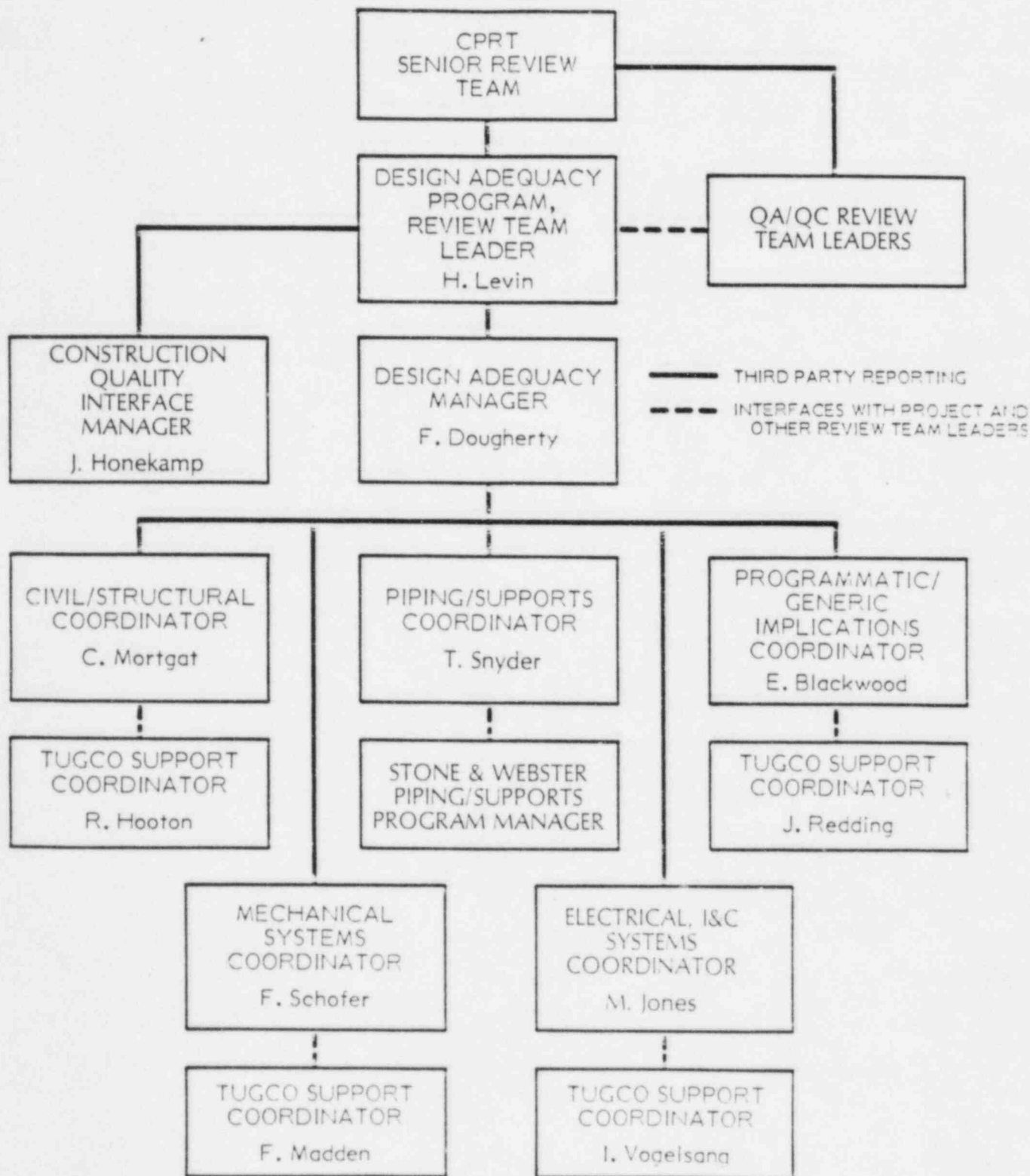
CPRT DESIGN ADEQUACY PROGRAM
PROGRAM DEVELOPMENT

THREE FUNCTIONAL ELEMENTS ARE REQUIRED:

- EXTERNAL SOURCE ISSUES EVALUATION AND RESOLUTION
- SELF-INITIATED EVALUATION
- ROOT CAUSE AND GENERIC IMPLICATIONS EVALUATIONS

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CPRT DESIGN ADEQUACY PROGRAM ORGANIZATION



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ORGANIZATIONAL ROLES
WITHIN CPRT
DESIGN ADEQUACY PROGRAM

THIRD PARTY

- DEFINE OVERALL PROGRAM PLAN
- IN-PROCESS OVERVIEW AND GUIDANCE TO PROJECT DURING EXECUTION OF PROJECT TASKS DEFINED WITHIN THE DESIGN ADEQUACY PROGRAM PLAN
- CONCURRENCE WITH PROJECT QUALITY PROGRAMS, DESIGN PROCEDURES AND SPECIFICATIONS GOVERNING CURRENT CPRT WORK
- SELECTIVE VERIFICATION OF PROJECT IMPLEMENTATION OF DESIGN BASIS ACTIVITIES
 - DESIGN CRITERIA
 - DESIGN ANALYSES
 - DRAWINGS AND SPECIFICATIONS
- EVALUATION OF ROOT CAUSE, GENERIC IMPLICATIONS AND SAFETY SIGNIFICANCE

PROJECT

- EXECUTION OF DESIGN BASIS ANALYSES AND DESIGNS
- COLLECTION OF HISTORICAL INFORMATION FOR USE BY THE THIRD PARTY
- IMPLEMENTATION OF CORRECTIVE ACTION

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CPRT DESIGN ADEQUACY PROGRAM METHODOLOGY

- OVERVIEW
 - ACTION PLAN INITIATIVES
 - ISSUE CLASSIFICATION
 - DOCUMENTATION
- EXTERNAL SOURCE ISSUES EVALUATION
 - DESCRIPTION OF APPROACH
 - IDENTIFICATION OF ACTION PLANS
- SELF-INITIATED EVALUATIONS
 - DETERMINATION OF SCOPE
 - DESCRIPTION OF APPROACH
 - IDENTIFICATION OF ACTION PLANS
- ROOT CAUSE AND GENERIC IMPLICATIONS EVALUATION
 - PURPOSE
 - SCOPE/INPUTS
 - DESCRIPTION OF APPROACH
 - CONCLUSIONS
- CLOSURE

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ISSUE CLASSIFICATION
TYPES/DEFINITIONS

- DISCREPANCY

INCONSISTENCIES IN CRITERIA OR DOCUMENTATION
(E.G., TYPO, MATH ERROR)

- DEVIATION

FAILURE TO MEET CRITERIA
(E.G., FSAR COMMITMENT NOT MET)

- DEFICIENCY

A DEVIATION WITH SAFETY SIGNIFICANCE
(E.G., SINGLE FAILURE CRITERION NOT MET)

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DOCUMENTATION OF REVIEW
PROCESS AND CONCLUSIONS

- CHECKLISTS

ENSURE COMPLETENESS OF REVIEW PROCESS AND TRACEABILITY OF
ITEMS REVIEWED.

- ENGINEERING EVALUATIONS

DOCUMENTATION OF REVIEW OF ACTION PLAN SEGMENT

- RESULTS REPORTS

DOCUMENTATION OF RESULTS OF ACTION PLAN

- DESIGN ADEQUACY REPORT

DOCUMENTATION OF OVERALL CONCLUSIONS REGARDING DESIGN
ADEQUACY OF CPSES

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CPRT DESIGN ADEQUACY PROGRAM

SELF-INITIATED EVALUATION

PURPOSE

- ° VERIFICATION THAT DESIGN-RELATED ISSUES AS IDENTIFIED BY VARIOUS EXTERNAL SOURCES DO NOT EXIST IN THE SAME OR SIMILAR FORM
- ° COMPLEMENT SCOPE OF EXTERNAL SOURCE ISSUES EVALUATION SUCH THAT THE COMBINED SCOPE ADDRESSES
 - DESIGN DISCIPLINES
 - DESIGN AREAS
 - DESIGN ACTIVITIES/PROCESSES

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CPRT DESIGN ADEQUACY PROGRAM
DETERMINATION OF SCOPE

INITIAL DETERMINATION: PHASE 1

EVALUATION OF INDUSTRY/NRC DESIGN VERIFICATION
PROGRAMS (i.e. IDVPs, IDI, etc.)

- IDENTIFICATION OF DESIGN AREAS ADDRESSED:
- PROFILE PAST CPSES EFFORTS (e.g. IAP, NRC-
TRT) AGAINST THESE DESIGN AREAS, ADDRESSING:
BREADTH
DEPTH
FINDINGS
- COMPARISON WITH INITIAL DAP SCOPE

PRODUCT: GENERAL SPECIFICATION OF DESIGN AREAS
WITHIN SCOPE AND DEPTH OF REVIEW

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CPRT DESIGN ADEQUACY PROGRAM
DETERMINATION OF SCOPE

INITIAL DETERMINATION: PHASE 2

EVALUATION OF SELECTED DAP SYSTEMS

- IDENTIFICATION OF GENERAL ATTRIBUTES FOR SAFETY-RELATED SYSTEMS (e.g. DESIGN CRITERIA, HARDWARE TYPES, ORGANIZATIONS, INTERFACES, etc.)
- IDENTIFICATION OF SAFETY-RELATED MECHANICAL AND ELECTRICAL SYSTEMS

PRODUCT: CONFIRMATION THAT DAP SYSTEMS ARE
REPRESENTATIVE OF SAFETY-RELATED SYSTEMS

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CPRT DESIGN ADEQUACY PROGRAM
DETERMINATION OF SCOPE

FINAL DETERMINATION: PHASE 3

EVALUATION OF A-E DESIGN SCOPE AND DESIGN PROCESS

- IDENTIFICATION OF ALL PRINCIPAL DESIGN ACTIVITIES
- ASSOCIATION OF DESIGN CRITERIA, METHODS OF IMPLEMENTATION AND DESIGN PRODUCT ATTRIBUTES WITH EACH IDENTIFIED DESIGN ACTIVITY
- CORRELATION OF INITIAL DAP SCOPE WITH A-E DESIGN ACTIVITIES

DEVELOPMENT OF CHECKLISTS

SUPPLEMENTATION OF DAP SCOPE, AS REQUIRED

PRODUCT: CONFIRMATION OF COVERAGE (BREADTH)
AND MINIMUM DEPTH OF FINAL DAP SCOPE
AND ABILITY TO EXTRAPOLATE RESULTS TO
OTHER SAFETY-RELATED SYSTEMS

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CPRT DESIGN ADEQUACY PROGRAM
DETERMINATION OF SCOPE

FINAL DETERMINATION: PHASE 4

EVALUATION OF DAP FINDINGS (i.e. DEVIATIONS AND DEFICIENCIES)

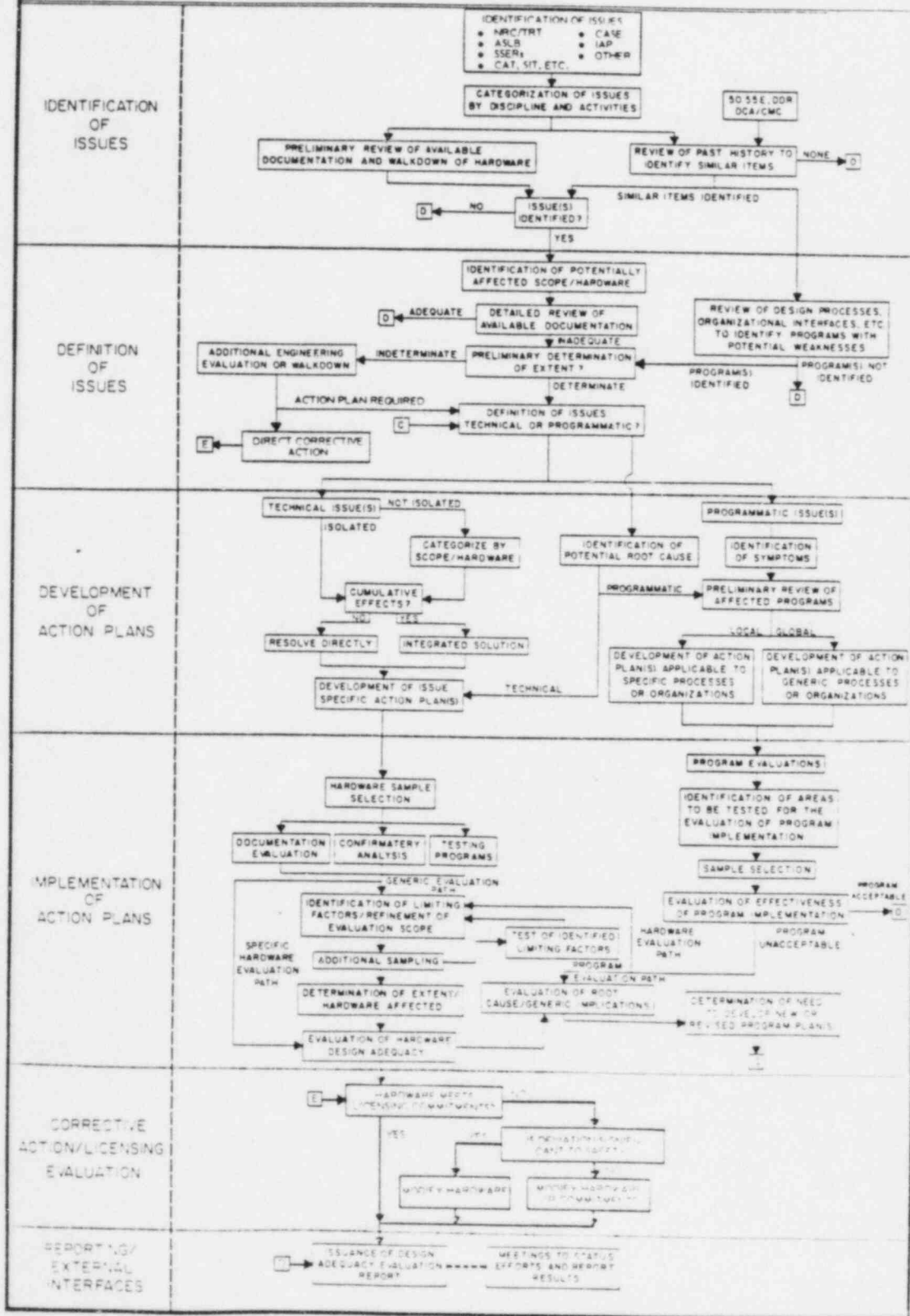
- CONFIRMATION OF BASES FOR SAMPLE SELECTION/EXPANSION
- EXECUTION OF ROOT CAUSE/GENERIC IMPLICATIONS EVALUATIONS
- DETERMINATION OF COLLECTIVE SIGNIFICANCE

SUPPLEMENTATION OF DAP SCOPE AS REQUIRED

PRODUCT: CONFIRMATION OF DEPTH OF FINAL DAP
SCOPE AND REASONABLE ASSURANCE THAT SAFETY
SIGNIFICANT DEFICIENCIES COULD NOT REMAIN
UNDETECTED

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CERT DESIGN ADEQUACY EVALUATION METHODOLOGY FOR EXTERNAL SOURCE ISSUES

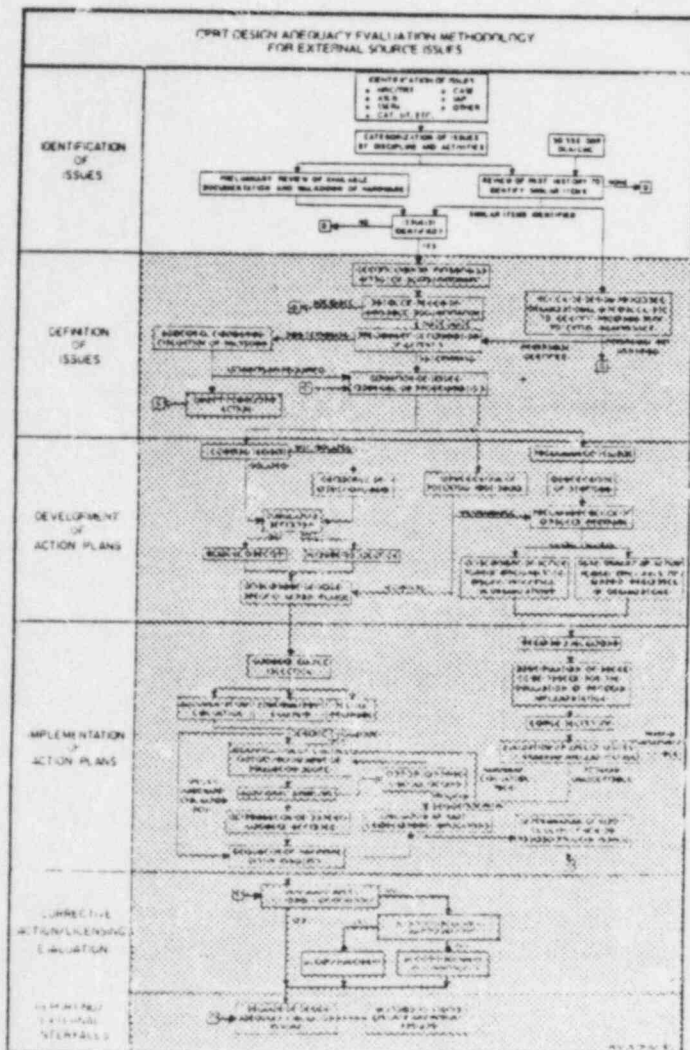


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EXTERNAL ISSUES METHODOLOGY IDENTIFICATION OF ISSUES

LOGIC

DESCRIPTION



OBJECTIVE

- ° CAPTURE POTENTIAL ISSUES (E.G., NCR/TRT, IAP, ASLB, CASE)

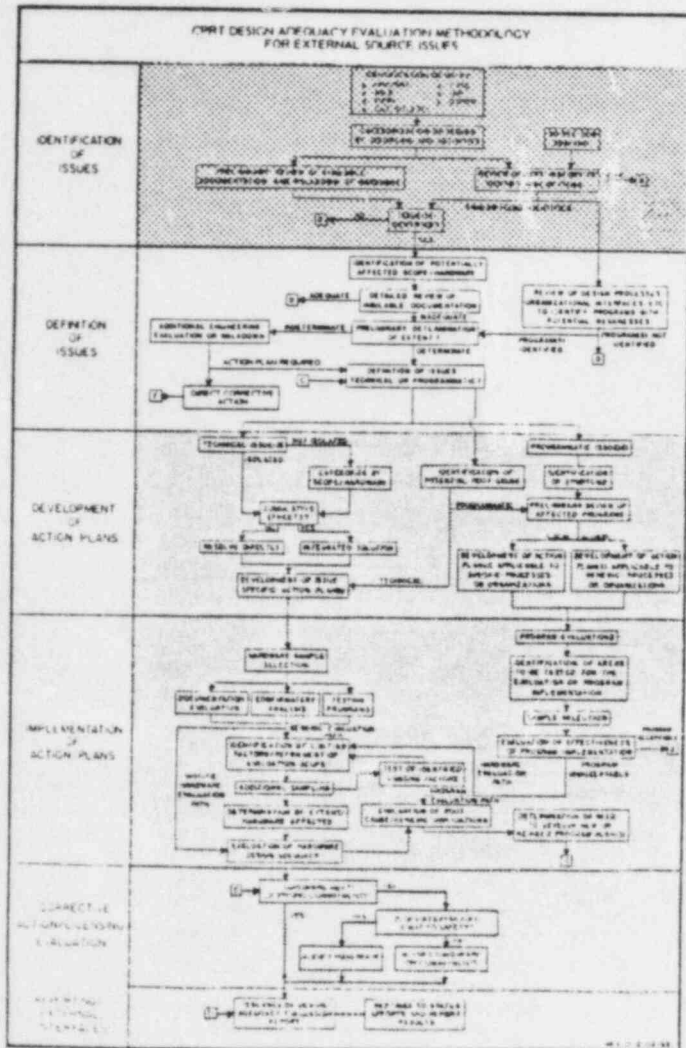
PROCESS

- ° REVIEW DOCUMENTATION TO IDENTIFY POTENTIAL ISSUES
- ° DETERMINE ISSUES FOR FURTHER REVIEW

EXTERNAL ISSUES METHODOLOGY DEFINITION OF ISSUES

LOGIC

DESCRIPTION



OBJECTIVES

- IDENTIFY POTENTIALLY AFFECTED SCOPE AND HARDWARE

- GROUP OF ISSUES

PROCESS

- DETAILED REVIEW OF DOCUMENTATION

- EVALUATIONS OR WALKDOWNS

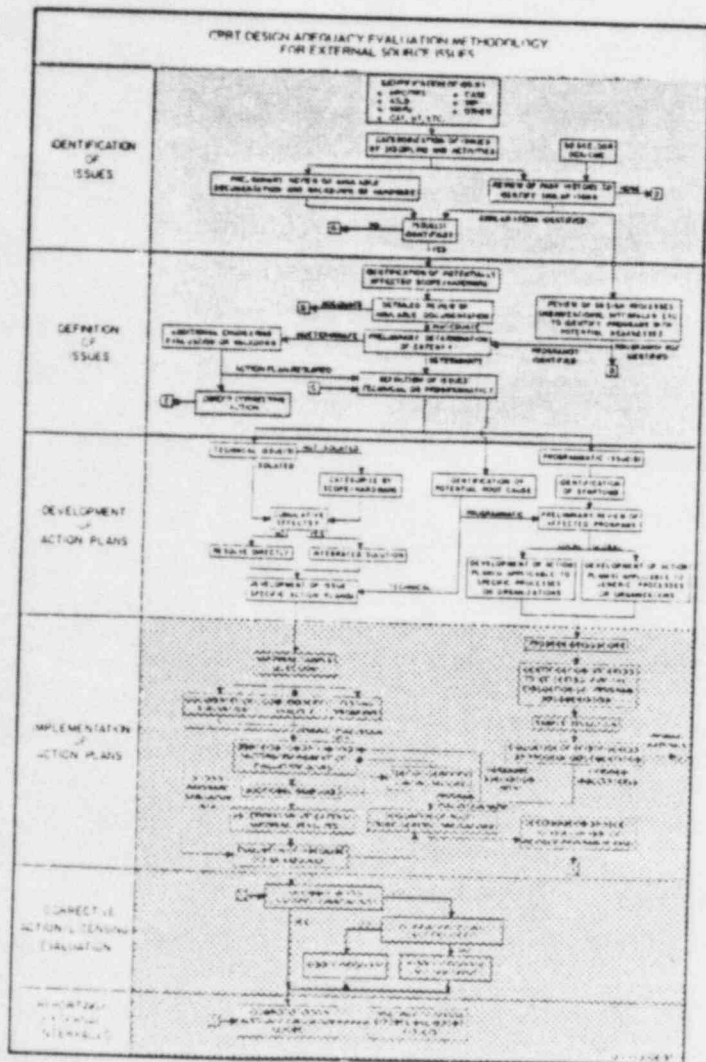
- CONSIDER DIRECT CORRECTIVE ACTION

- IDENTIFY PROGRAMMATIC AND TECHNICAL ISSUES

EXTERNAL ISSUES METHODOLOGY DEVELOPMENT OF ACTION PLANS

LOGIC

DESCRIPTION



OBJECTIVES

- DEFINE INITIATIVES, LOGIC, AND RESPONSIBILITIES

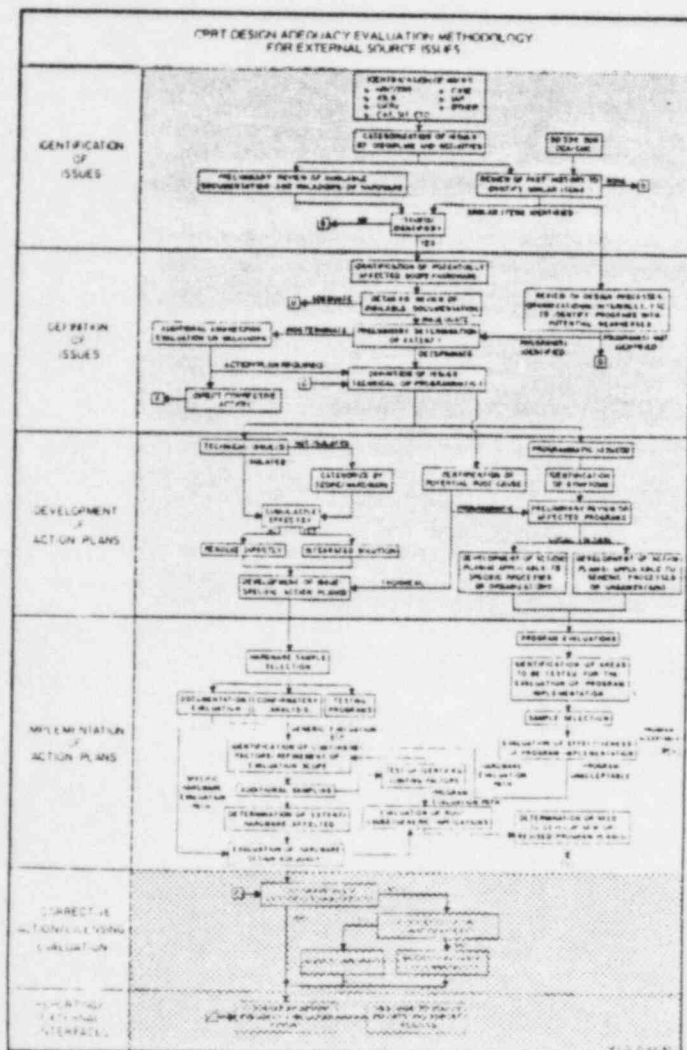
PROCESS

- CONSIDER ALTERNATIVES, POTENTIAL ROOT CAUSES, CUMULATIVE EFFECTS
- DEVELOP ISSUE SPECIFIC OR PROGRAMMATIC ACTION PLANS

EXTERNAL ISSUES METHODOLOGY IMPLEMENTATION OF ACTION PLANS

LOGIC

DESCRIPTION



OBJECTIVE

- DETERMINE NEED FOR CORRECTIVE ACTION

PROCESS

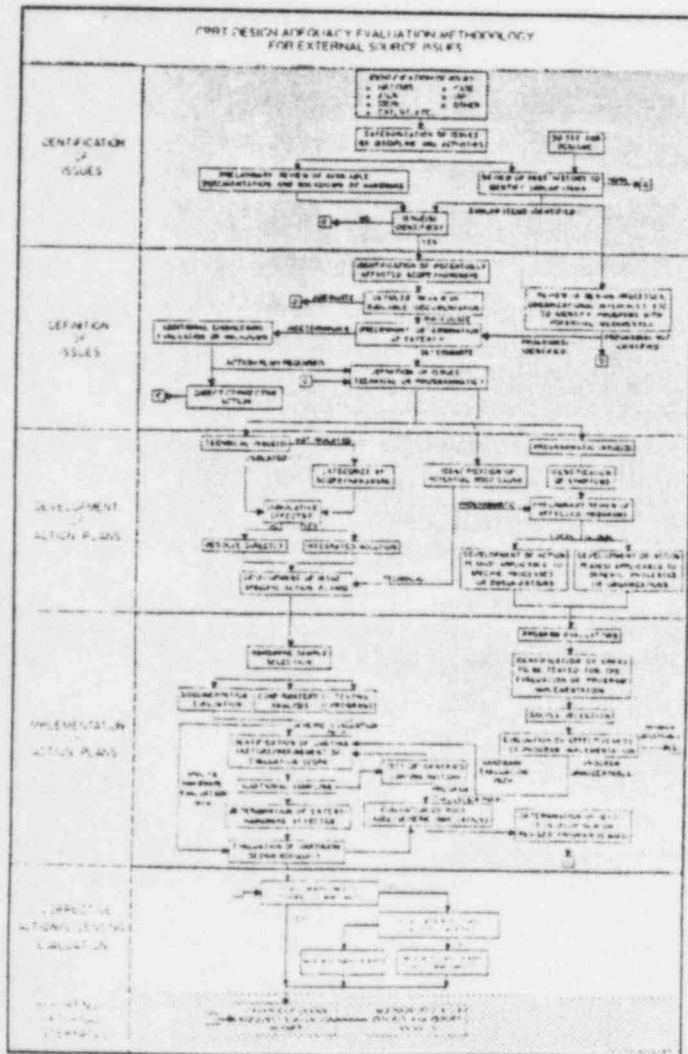
- PERFORM ACTION PLAN TASKS
- EXPAND SCOPE AS NECESSARY
- INVESTIGATE ROOT CAUSE AND GENERIC IMPLICATIONS

EXTERNAL ISSUES METHODOLOGY

CORRECTIVE ACTION

LOGIC

DESCRIPTION



OBJECTIVE

- ° DETERMINE CORRECTIVE ACTIONS REQUIRED

PROCESS

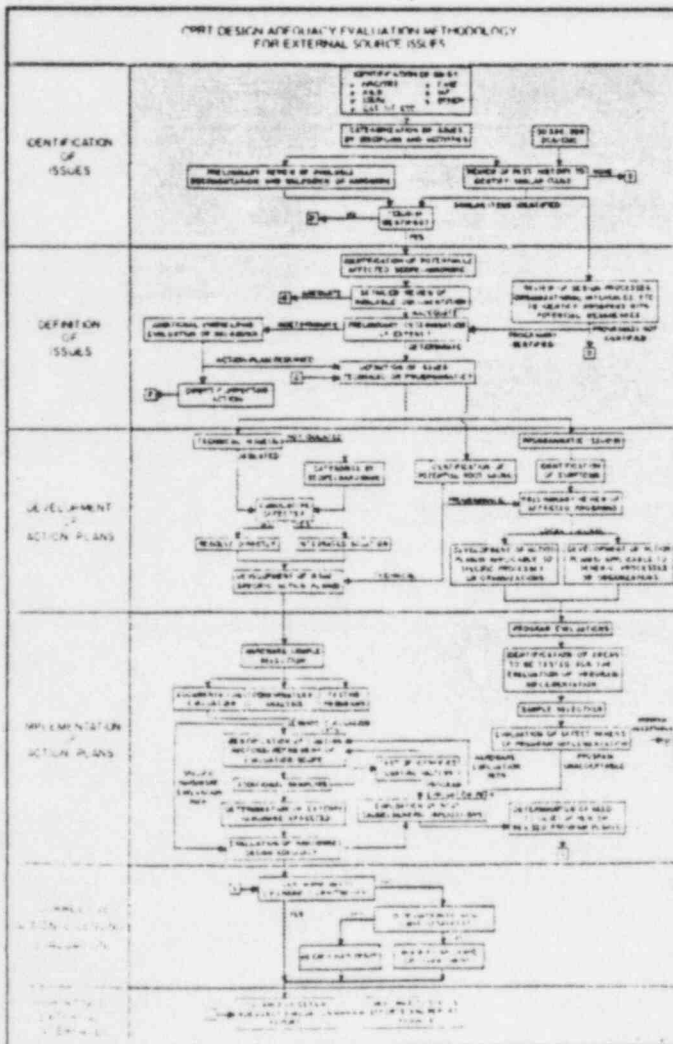
- ° FOR DEVIATIONS, DETERMINE SAFETY SIGNIFICANCE, MODIFY HARDWARE OR DOCUMENTATION, AS NECESSARY
- ° FOR DEFICIENCIES, MODIFY HARDWARE AND DOCUMENTATION

EXTERNAL ISSUES METHODOLOGY

REPORTING

LOGIC

DESCRIPTION



OBJECTIVE

- DOCUMENT RESULTS

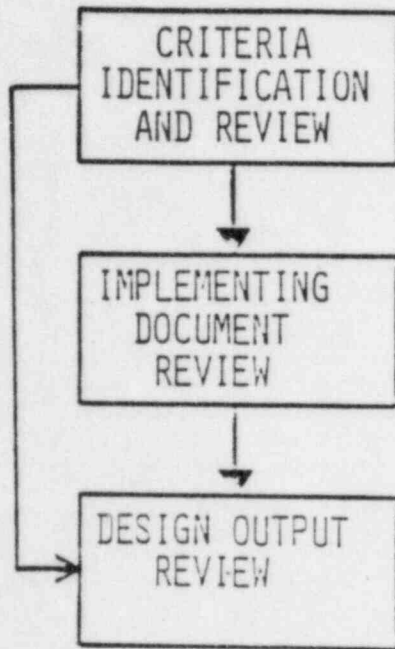
PROCESS

- ISSUE ACTION PLAN RESULTS REPORTS
- ISSUE DESIGN ADEQUACY REPORT

GENERAL APPROACH
SELF-INITIATED ACTIONS

SELF-INITIATED ACTION

ANSI N45.2.11 TERMINOLOGY



DESIGN INPUTS
(E.G., REGULATIONS, FSAR COMMITMENTS,
CODES/STANDARDS, OTHER DESIGN BASES)

DESIGN ANALYSES
(E.G., CALCULATIONS, EVALUATIONS, ETC.)

DESIGN OUTPUTS
(E.G., DRAWINGS, SPECIFICATIONS)

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CRITERIA IDENTIFICATION AND REVIEW

OBJECTIVES

- DETERMINE CRITERIA THAT DESIGN SHOULD MEET FOR USE IN SUBSEQUENT REVIEWS
- ASSESS COMPLETENESS AND CONSISTENCY OF CRITERIA

PROCESS

- IDENTIFY DESIGN INPUTS FROM FSAR, REGULATIONS, CODES/STANDARDS, WESTINGHOUSE INTERFACE CRITERIA, ETC.
- REVIEW IDENTIFIED SET OF DESIGN INPUTS FOR CONSISTENCY

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IMPLEMENTING DOCUMENT REVIEW

OBJECTIVES

- DETERMINE WHETHER IMPLEMENTING DOCUMENTS CORRECTLY USE CRITERIA (DESIGN INPUTS)
- IDENTIFY AND EVALUATE ADDITIONAL DESIGN INPUTS AND ASSUMPTIONS INTRODUCED INTO THE DESIGN THROUGH IMPLEMENTING DOCUMENTS
- EVALUATE THE ADEQUACY OF ANALYSES AND EVALUATIONS

PROCESS

- IDENTIFY RELEVANT DOCUMENTS (E.G. CALCULATIONS, EVALUATIONS OTHER DOCUMENTS)
- CROSS REFERENCE DESIGN INPUTS TO DOCUMENTS
- IDENTIFY DESIGN INPUTS AND ASSUMPTIONS
- EVALUATE DESIGN DOCUMENT IMPLEMENTATION AND USE OF DESIGN INPUTS INCLUDING CRITERIA AND ASSUMPTIONS (E.G. REVIEW OF CALCULATIONS, ALTERNATE CALCULATIONS, ETC.)

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DESIGN OUTPUT REVIEW

OBJECTIVE

- DETERMINE CONSISTENCY OF DESIGN OUTPUTS WITH DESIGN INPUTS AND IMPLEMENTING DOCUMENTS

PROCESS

- IDENTIFY DOCUMENTS RELEVANT TO SYSTEM/STRUCTURE /COMPONENT UNDER REVIEW
- CROSS REFERENCE DESIGN OUTPUTS WITH CRITERIA AND IMPLEMENTING DOCUMENT RESULTS

EVALUATE WHETHER DESIGN OUTPUTS ARE CONSISTENT WITH CRITERIA AND IMPLEMENTING DOCUMENTS

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USE OF PROGRAMMATIC REVIEWS
IN DESIGN ADEQUACY PROGRAM

EMPLOY UNDERSTANDING OF GIBBS & HILL PROCESSES TO EVALUATE
ADEQUACY OF DAP SCOPE

EVALUATE PROGRAMMATIC DEFICIENCIES AS POTENTIAL ROOT CAUSES

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GENERIC IMPLICATIONS PROGRAM

PURPOSE

SCOPE/INPUTS

DESCRIPTION OF APPROACH

CONCLUSION

JUNE 24, 1965

GENERIC IMPLICATIONS PROGRAM

PURPOSE

TO ESTABLISH A FRAMEWORK FOR SYSTEMATIC IDENTIFICATION AND EVALUATION OF GENERIC IMPLICATIONS RELATED TO CPSES DESIGN PROGRAMS, PROCESSES, OR CONTROLS

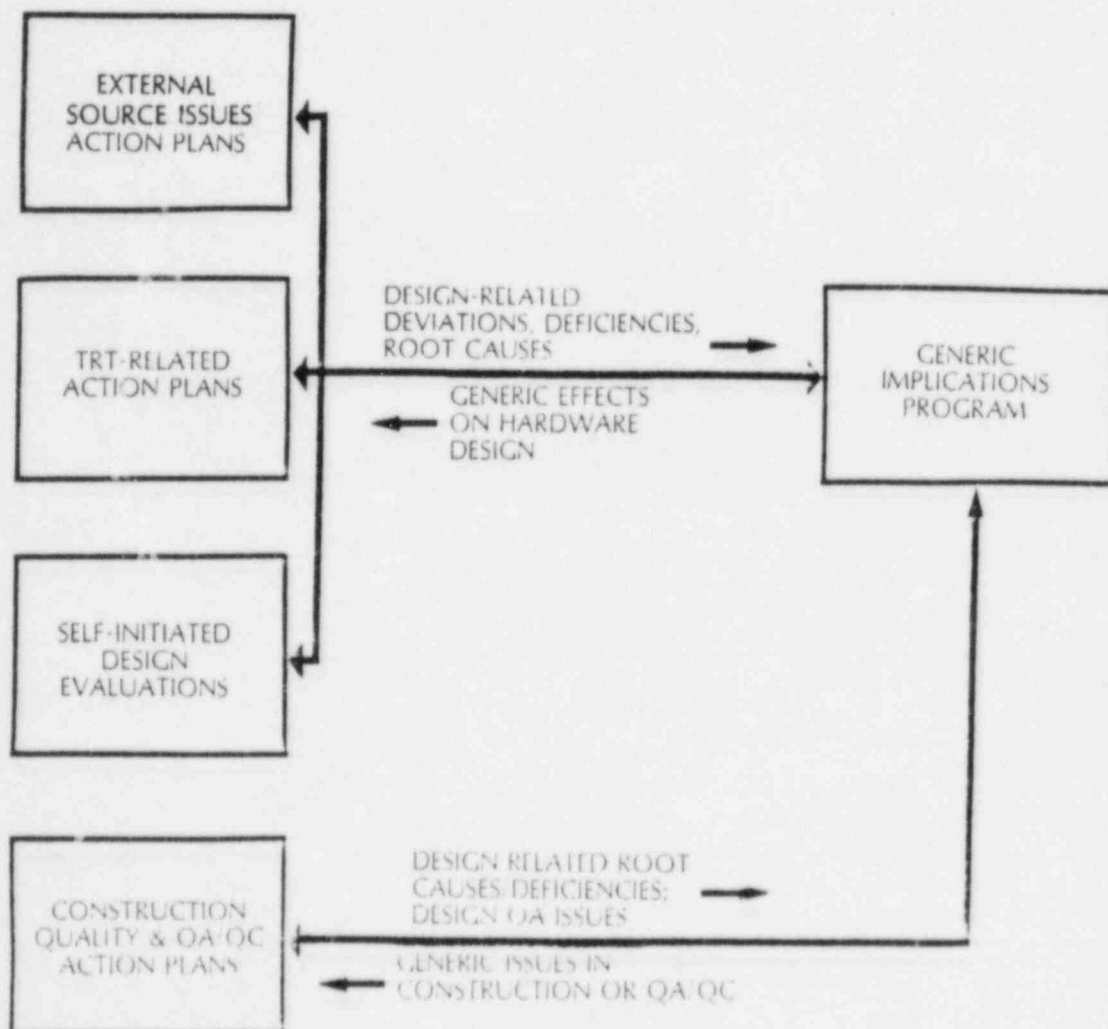
TO DEVELOP ACTIONS PLANS OR EXPAND SELF-INITIATED ACTION PLANS

- TO EVALUATE POTENTIAL GENERIC IMPLICATIONS OF DESIGN-RELATED DEVIATIONS, DEFICIENCIES AND THEIR POTENTIAL ROOT CAUSES
- TO DETERMINE THE EXTENT OF APPLICABILITY OF DESIGN-RELATED DEFICIENCIES AND POTENTIAL ROOT CAUSES.
- TO ENSURE THAT ANY RESULTING ADVERSE EFFECTS ON HARDWARE ARE EVALUATED AND RESOLVED
- TO IDENTIFY NECESSARY CORRECTIVE ACTIONS TO PRECLUDE RECURRENCE.

TO PROVIDE REASONABLE ASSURANCE THAT GENERIC EFFECTS OF ROOT CAUSES AND DESIGN DEFICIENCIES HAVE BEEN IDENTIFIED AND RESOLVED

JUNE 14, 1985

CPRT DESIGN ADEQUACY PROGRAM
GENERIC IMPLICATIONS PROGRAM
SOURCES OF INPUT



GENERIC IMPLICATIONS PROGRAM

DEFINITION OF ISSUES

OBJECTIVE: IDENTIFY COMMON ATTRIBUTES AMONG IDENTIFIED
DEVIATIONS, DEFICIENCIES, AND POTENTIAL ROOT CAUSES

ATTRIBUTES:

- SOURCES
- SYMPTOMS
- BOUNDS
- AFFECTED ORGANIZATIONS, DISCIPLINES, PROCESSES OR
PROGRAMS
- INTERRELATIONSHIP WITH OTHER ISSUES
- POTENTIAL SAFETY SIGNIFICANCE
- ROOT CAUSE

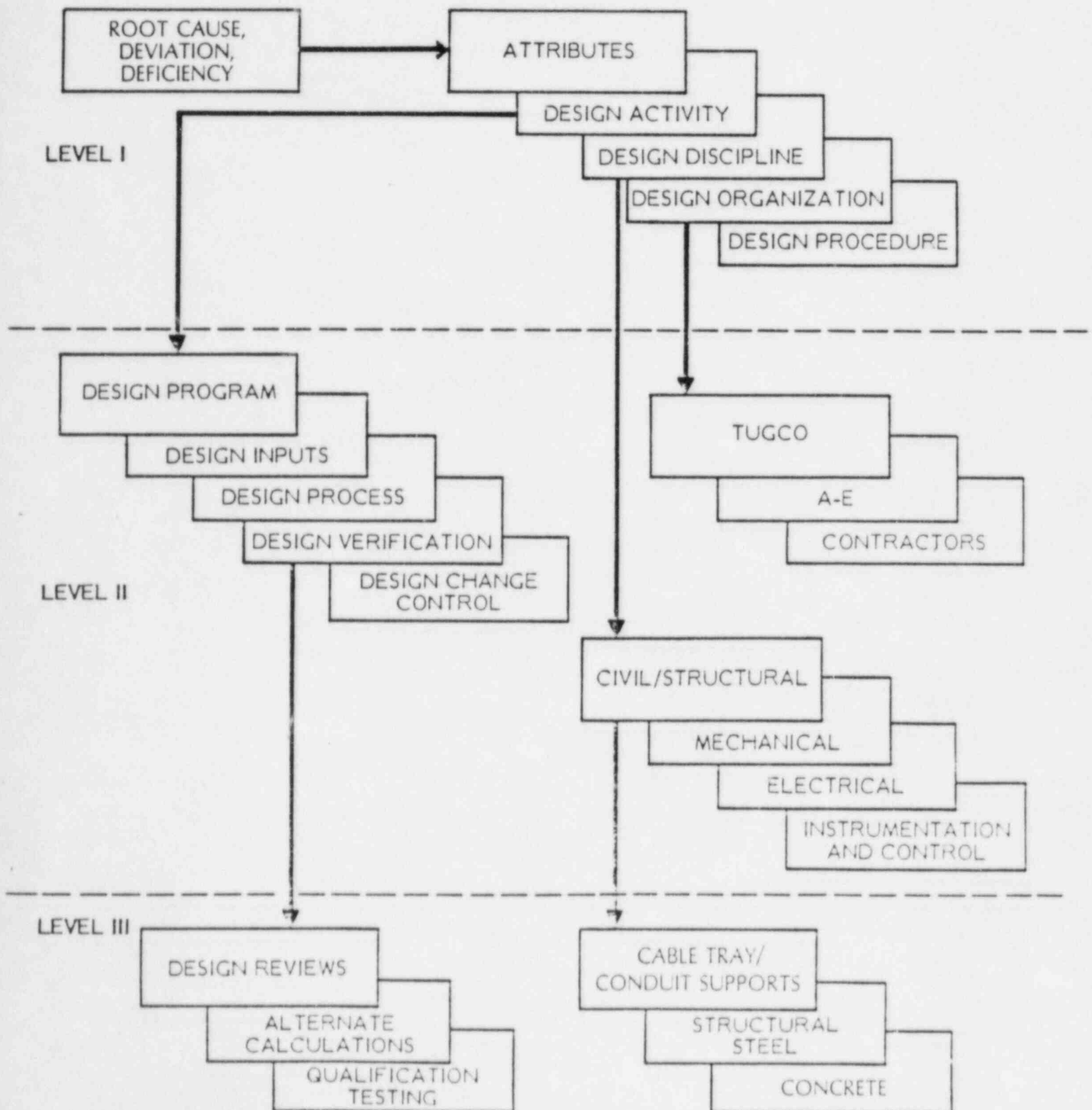
WHAT COMMON ATTRIBUTES EXIST AMONG THE INPUTS?

WHERE ELSE HAVE DEVIATIONS OR DEFICIENCIES SURFACED?

WHERE ELSE COULD DEVIATIONS OR DEFICIENCIES EXIST?

JUNE 14, 1985

GENERIC IMPLICATIONS
COMMON ATTRIBUTES MATRICES
(CONCEPTUAL DESIGN)



GENERIC IMPLICATIONS PROGRAM

EVALUATION OF ISSUES

OBJECTIVE: DETERMINATION OF AFFECTED DESIGNS

ALTERNATIVES FOR MANAGING TECHNICAL EVALUATIONS:

ISSUE SPECIFIC ACTION PLANS

SELF-INITIATED DESIGN EVALUATIONS

EVALUATION TECHNIQUES MAY INCLUDE:

SAMPLING

EXPANSION OF DEPTH OR BREADTH OF REVIEW

OUTPUTS:

BOUNDARIES OF ISSUE (EXTENT)

IMPACT ON HARDWARE DESIGNS

RECOMMENDATIONS FOR IMPROVEMENT OF DESIGN PROGRAMS, PROCESSES
OR CONTROL

JUNE 14, 1985

GENERIC IMPLICATIONS PROGRAM
RESOLUTION AND CLOSURE OF ISSUES

GENERIC ISSUES ARE RESOLVED AND CLOSED WHEN:

BOUNDARIES OF ISSUES (EXTENT) ARE DETERMINED, CORRECTIVE
ACTION IS DEVELOPED, CLEARLY DEFINED AND EVALUATED
ACCEPTABLE BY THIRD PARTY

CORRECTIVE ACTION

- COULD APPLY TO DESIGN PROCESS, PROGRAM, OR DESIGN CONTROL
- HARDWARE DEFICIENCIES ARE REFERRED TO AFFECTED DISCIPLINES

IN EITHER CASE, RESULTS OF GENERIC IMPLICATIONS PROGRAM ARE FED
BACK TO SELF-INITIATED DESIGN EVALUATIONS

RESULTS REPORT IS ISSUED

JUNE 14, 1985

CPRT DESIGN ADEQUACY PROGRAM

SCOPE EXPANSION

REASONS

- ° TO INVESTIGATE TRENDS OF DEVIATIONS
- ° TO INVESTIGATE ROOT CAUSE
- ° TO IDENTIFY THE RANDOM OR PROGRAMMATIC NATURE OF DEFICIENCIES
- ° TO PROVIDE REASONABLE ASSURANCE THAT ALL DEFICIENCIES ARE IDENTIFIED AND CORRECTED (I.E., AREAS REVIEWED BOUND THE PROBLEM)

CONDITIONS REQUIRING EXPANSION

- ° DEFICIENCIES
- ° DEVIATION(S) THAT WOULD BE A DEFICIENCY(IES) IF OCCURRING ELSEWHERE
- ° IDENTIFIED ROOT CAUSES THAT CAN AFFECT DESIGN ACTIVITIES OUTSIDE OR INSIDE THE SCOPE OF REVIEW

AFFECTED POPULATION

- ° SCOPE WOULD BE EXTENDED TO SIMILAR DESIGNS OR PROCESSES BASED ON THE NATURE OF THE POTENTIAL ROOT CAUSE

JUNE 14, 1985

CPRT DESIGN ADEQUACY PROGRAM

BASIS FOR CLOSURE

- ° CLOSURE OCCURS WHEN THIRD-PARTY ACTIVITIES ASSOCIATED WITH A SPECIFIC ISSUE OR GROUP OF ISSUES PROVIDES REASONABLE ASSURANCE THAT NO SIGNIFICANT DESIGN DEFICIENCIES REMAIN UNDETECTED

JUNE 14, 1983

CPRT DESIGN ADEQUACY PROGRAM

CONDITIONS FOR CLOSURE

ISSUE CLOSURE:

- ° WHEN
 - SAFETY SIGNIFICANT DEFICIENCIES (AND TRENDS OF NON-SAFETY SYSTEM DEVIATIONS) IDENTIFIED
 - CONCLUSIONS REGARDING ROOT CAUSE(S) AND GENERIC IMPLICATION(S) REACHED.
 - DETERMINATIONS FOR CORRECTIVE ACTIONS MADE.

PROGRAM CLOSURE:

- ° WHEN
 - ALL ISSUED CLOSED
 - INTEGRATED ASSESSMENT COMPLETED BY THE THIRD-PARTY ENABLING RECOMMENDATIONS FOR IMPROVEMENT OF CONSTRUCTION AND OPERATIONAL MANAGEMENT AND QUALITY PROGRAMS

JUNE 14, 1985

CPRT DESIGN ADEQUACY PROGRAM
DISCIPLINE REVIEW DESCRIPTIONS

- MECHANICAL SYSTEMS
 - ORGANIZATION
 - EXTERNAL SOURCE ISSUES EVALUATION
 - SELF-INITIATED EVALUATION
- ELECTRICAL, I&C SYSTEMS
 - ORGANIZATION
 - EXTERNAL SOURCE ISSUES EVALUATION
 - SELF-INITIATED EVALUATION
- PIPING/SUPPORTS
 - PROJECT ACTIVITIES
 - THIRD - PARTY VERIFICATION
- CIVIL/STRUCTURAL
 - ORGANIZATION
 - EXTERNAL SOURCE ISSUES EVALUATION
 - SELF-INITIATED EVALUATION

JUNE 14, 1985

CPRT DESIGN ADEQUACY PROGRAM STRUCTURE AND INITIAL SCOPE

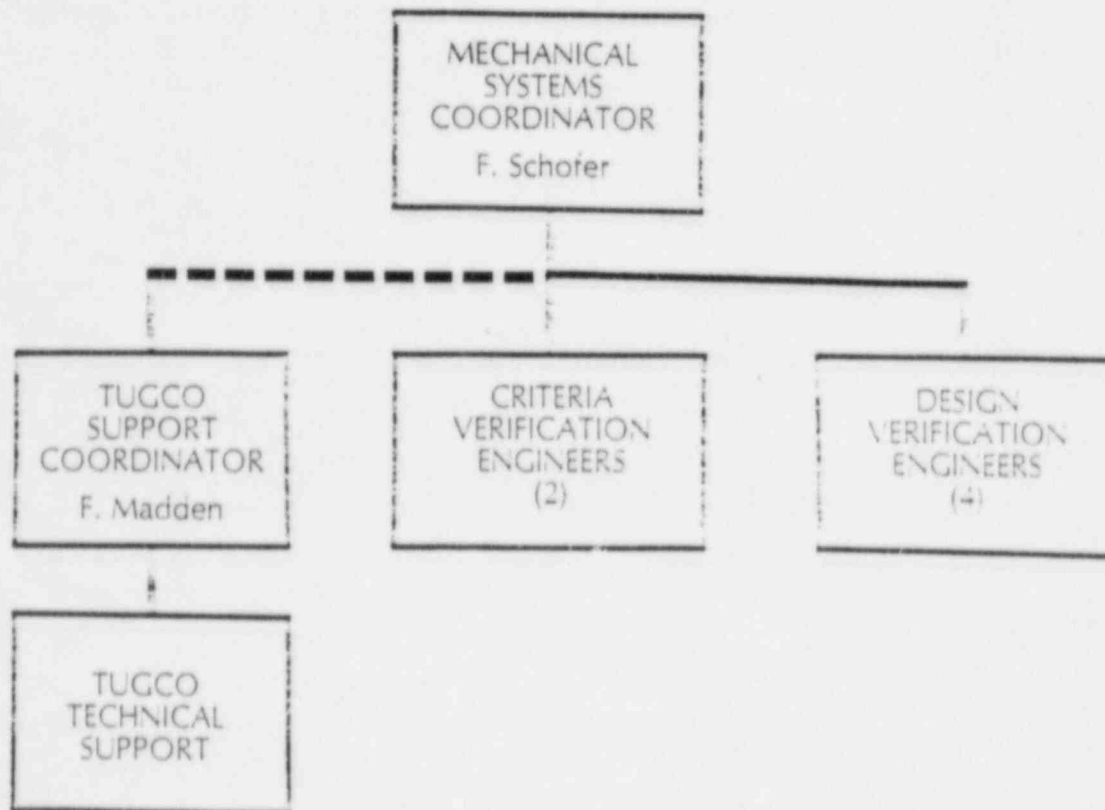
DISCIPLINES

TYPE OF EVALUATION	CIVIL/ STRUCTURAL	PIPING/ SUPPORTS	MECHANICAL SYSTEMS	ELECTRICAL/ I&C SYSTEMS
EXTERNAL SOURCE ISSUES IAP, ASLB ISSUES	CABLE TRAYS SUPPORTS CONDUIT/SUPPORTS	LARGE BORE PIPING/SUPPORTS SMALL BORE PIPING/SUPPORTS	CLASS 5 PIPING* CCW SYSTEM MAX. TEMPERATURE* RADITION MONITOR FUNCTION CHANGES SINGLE FAILURE*	INSTRUMENTATION P/I RATINGS*
IRI DESIGN-RELATED ISSUES IDENTIFIED TO DATE	STEAM GENERATOR RESTRAINTS (ITEM V.B) DESIGN OF SEISMIC CAT. II ITEMS (ITEM II.D)	PIPING ISOLATION (ITEM V.C)		COMPONENT FUNCTIONAL REQUIREMENTS (ITEMS I.A.3, I.B.1, I.B.2)
SELF-INITIATED	HVAC SUPPORTS CONCRETE DESIGN STEEL DESIGN	NONE, SCOPE ALREADY ADDRESSED AS PART OF EXTERNAL SOURCE ISSUES EVALUATION	AUXILIARY FEEDWATER SYSTEM COMPONENT FUNCTIONAL REQUIREMENTS AND DESIGN	I&C DESIGN AND COMPONENT FUNCTIONAL (AUX. FEEDWATER SYSTEM AND POWER SUPPLIES) UNSITE EMERGENCY POWER SYSTEM & DC POWER SYSTEM DESIGN AND FUNCTIONAL REQUIREMENTS

* ADDRESSED WITHIN SELF-INITIATED REVIEW

JUNE 14, 1985

MECHANICAL SYSTEMS
DESIGN ADEQUACY PROGRAM ORGANIZATION



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MECHANICAL SYSTEMS

ACTION PLANS FOR CYGNA-IDENTIFIED ISSUES

SYSTEM TEMPERATURES

- THIRD-PARTY ACTIONS:
- REVIEW OF AFW SYSTEM
 - REVIEW OF D/G AUXILIARY SYSTEMS

CCW SURGE TANK ISOLATION

- PROJECT ACTIONS:
- REVIEW OF RAD MONITOR FUNCTION CHANGES

- THIRD PARTY ACTIONS:
- VERIFICATION OF PROJECT ACTIONS
 - AFW REVIEW INCLUDES WESTINGHOUSE CRITERIA AS INPUT

CLASS 5 PIPING

- THIRD PARTY ACTIONS:
- EVALUATE FUNCTIONAL REQUIREMENTS FOR CLASS 5 PIPING IN AFW SYSTEM

SINGLE FAILURE

- THIRD PARTY ACTIONS:
- SINGLE FAILURE AND FMEA REVIEWS INCLUDED IN AFW AND POWER REVIEWS

JUNE 14, 1985

CPRT
SELF-INITIATED EVALUATION
MECHANICAL SYSTEMS

OBJECTIVES:

- o EVALUATION OF WHETHER CYGNA-IDENTIFIED ISSUES OCCUR IN ANOTHER SYSTEM
- o DETERMINE WHETHER OTHER ISSUES MANIFEST THEMSELVES IN AFW

SCOPE: REVIEW OF AFW SYSTEM

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AFW SYSTEM

BASES FOR SELECTION

- o IMPORTANCE TO SAFETY
- o INTERFACES:
 - WESTINGHOUSE
 - BOP
- o DIVERSITY,
 - MOTOR/STEAM DRIVES
 - AC/DC POWER REQUIREMENTS
- o COMPONENTS INSIDE/OUTSIDE CONTAINMENT

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TYPICAL
SOURCES OF AFW
CRITERIA/REQUIREMENTS

FSAR

OTHER REGULATORY COMMITMENTS (REG. GUIDES, BTPs, ETC.)

WESTINGHOUSE-SUPPLIED INTERFACE CRITERIA

REGULATIONS

SSERS

CODES/STANDARDS

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TYPICAL
AFW IMPLEMENTING
DOCUMENTS

CALCULATIONS

- o FLOW REQUIREMENTS
- o CONDENSATE STORAGE REQUIREMENTS
- o PRESSURE DROPS/NPSH
- o SYSTEM PRESSURES/TEMPERATURES

FLOW DIAGRAM

INSTRUMENT AND CONTROL DIAGRAM

SINGLE FAILURE/FAILURE MODES AND EFFECTS EVALUATIONS

PIPE BREAK/FLOODING STUDIES

FIRE PROTECTION EVALUATION

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TYPICAL
AFW DESIGN
OUTPUTS

SPECIFICATIONS

- o AFW PUMPS AND DRIVERS
- o ISOLATION VALVES
- o POWER-OPERATED VALVES

DRAWINGS

- o PIPING
- o VENDOR DRAWINGS
- o VENDOR MANUALS AND INSTRUCTIONS

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PRELIMINARY AFW SYSTEM REVIEW MATRIX

Review Topic	Criteria Identification and Review	Implementing Document Review	Design Output Review
SYSTEM OPERATING MODES			
o Startup/Shutdown	X	X	
o Accident Conditions	X	X	
o System Alignment/Switchover	X	X	
OPERATING LIMITS			
o NPSH	X	X	X
o Maximum Conditions	X	X	X
o Minimum Conditions	X	X	X
o Overpressure Protection	X	X	X
o Steam Flow Requirements	X	X	X
HEAT REMOVAL CAPABILITY			
o Heat Removal Bases	X	X	
o Flow Requirements	X	X	
WATER SUPPLIES			
o Sources	X	X	
o Stored Volume	X	X	
COMPONENT FUNCTIONAL REQUIREMENTS			
o Pumps and Drivers	X	X	X
o Valves and Operators	X	X	X
o I&C Components	X	X	X

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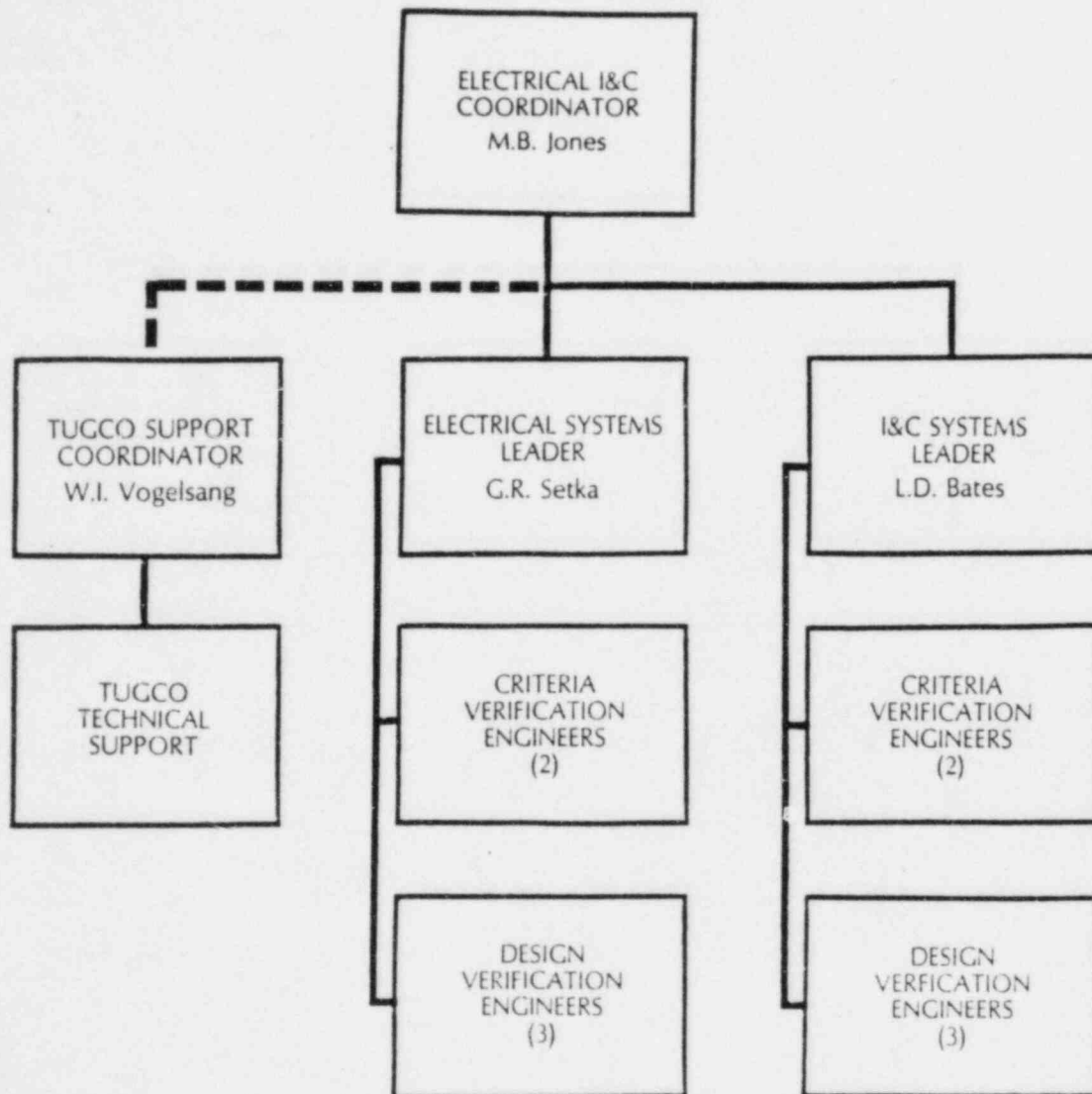
PRELIMINARY AFW SYSTEM REVIEW MATRIX

(Continued)

Review Topic	Criteria Identification and Review	Implementing Document Review	Design Output Review
SINGLE FAILURE/FMEA	X	X	
ELECTRICAL ASPECTS	(See Self-Initiated Electrical/I&C Matrix)		
INSTRUMENTATION AND CONTROL	(See Self-Initiated Electrical/I&C Matrix)		
SUPPORT SYSTEMS			
o HVAC	X	X	
o Cooling Water	X	X	
MULTI-DISCIPLINE CONSIDERATIONS			
o High Energy Line Breaks	X	X	
o Internal Flooding	X	X	
o Fire Protection	X	X	
o Missile Protection	X	X	
o Environmental Qualification	X	X	

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ELECTRICAL/I&C SYSTEMS
DESIGN ADEQUACY PROGRAM ORGANIZATION



**ELECTRICAL/INSTRUMENTATION
AND CONTROL (I&C)**

EXTERNAL SOURCES

- TRT-IDENTIFIED ISSUES
- CYGNA-IDENTIFIED ISSUES

SELF-INITIATED PLANS

JUNE 14, 1985

TRT-IDENTIFIED ISSUE
ELECTRICAL COMPONENT FUNCTIONAL
REQUIREMENTS PROGRAM

- OVERVIEW/BACKGROUND
- TWO NRC ACTION ITEMS QUESTIONED COMPONENT QUALIFICATION:
 - QUALIFICATION OF AMP BUTT SPLICES
 - USE OF SERVICAIR FLEXIBLE METALLIC CONDUIT FOR SEPARATION
- USE OF THESE TWO COMPONENTS WAS APPROVED PRIOR TO CONFIRMATION OF THEIR FUNCTIONAL QUALIFICATION
- QUALIFICATION OF BUTT SPLICE NOT REVIEWED
- QUALIFICATION OF CONDUIT FOR PANEL SEPARATION NOT ADEQUATELY ADDRESSED

JUNE 14, 1985

**ELECTRICAL COMPONENT FUNCTIONAL
REQUIREMENTS PROGRAM
(CONTINUED)**

TECHNICAL DESCRIPTION OF KEY ISSUE

**THE ISSUE IS THAT THE SITE ENGINEERING
ORGANIZATION INITIATED THE USE OF OTHER SAFETY-
RELATED COMPONENTS WHICH DO NOT HAVE A DOCUMENTED
ENGINEERING REVIEW**

PROGRAM OBJECTIVE

**PROVIDE ASSURANCE THAT COMPONENTS WHICH WERE
SELECTED BY SITE DURING CONSTRUCTION MEET
THE APPROPRIATE FUNCTIONAL REQUIREMENTS**

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ELECTRICAL COMPONENT FUNCTIONAL
REQUIREMENTS PROGRAM
(CONTINUED)

DESCRIPTION OF ACTION PLAN

- IDENTIFY COMPONENTS SELECTED BY SITE DURING CONSTRUCTION
- IDENTIFY SET OF ABOVE THAT DID NOT HAVE FORMAL QUALIFICATION REVIEW AT TIME OF SELECTION
- IDENTIFY FUNCTIONAL CRITERIA FOR COMPONENTS THAT DID NOT HAVE QUALIFICATION REVIEW
- EVALUATE COMPONENT AGAINST CRITERIA
- DEVELOP CORRECTIVE ACTION FOR IDENTIFIED DEFICIENCIES
- INPUT RESULTS TO GENERIC IMPLICATIONS AND ROOT CAUSE PROCESS.

JUNE 14, 1985

ELECTRICAL
CYGNA-IDENTIFIED DESIGN ISSUE

TEMPERATURE/PRESSURE RATINGS OF INSTRUMENTS

**THIRD PARTY ACTIONS: DEVELOP ACTION PLANS TO
ADDRESS CYGNA CONCERNS
THAT SIMILIAR SITUATIONS
MAY ALSO HAVE OCCURRED IN
OTHER SYSTEMS**

JUNE 14, 1985

ELECTRICAL/I&C REVIEW
SELF-INITIATED EVALUATION
BASES FOR SYSTEM SELECTION

ELECTRICAL POWER SUPPLIES

IMPORTANCE TO SAFETY
DESIGN INTERFACES
DIVERSITY OF SYSTEMS AND EQUIPMENT

AFW SYSTEM

IMPORTANCE TO SAFETY
REPRESENTATIVE MULTI-DISCIPLINE SYSTEM
INTERFACES
CONSISTENCY WITH MECHANICAL SYSTEM REVIEW

JUNE 14, 1985

**CPRT
SELF-INITIATED EVALUATION
ELECTRICAL/INSTRUMENTATION
AND CONTROL SYSTEMS**

OBJECTIVES:

- DETERMINE WHETHER DESIGN DEVIATIONS EXIST IN THE ELECTRICAL/INSTRUMENTATION AND CONTROL AREAS

INITIAL SCOPE:

- REVIEW OF INSTRUMENTATION AND CONTROLS FOR
 - AFW SYSTEM
 - ELECTRICAL POWER SUPPLIES
- REVIEW OF ELECTRICAL POWER SUPPLIES
 - OFFSITE POWER FROM STARTUP TRANSFORMER TO 6.9 KV BUS TO 480 VOLT MOTOR CONTROL CENTERS
 - BOP 118 VAC UNINTERRUPTIBLE POWER SUPPLIES FROM INVERTERS TO DISTRIBUTION PANELS
 - 125 VDC POWER SUPPLIES FROM BATTERIES TO DISTRIBUTION PANELS
 - ALL INTERCONNECTIONS BETWEEN AFW, OFFSITE, STANDBY, 118 VAC AND 125 VDC POWER SYSTEMS

**TYPICAL SOURCES OF ELECTRICAL/I&C
DESIGN CRITERIA**

- NRC REQUIREMENTS (10CFR50)
- FSAR
- OTHER REGULATORY COMMITMENTS
 - REG GUIDES, BTP'S, I&E
BULLETINS, SSERs, etc.
- VENDOR INTERFACES
 - WESTINGHOUSE NSSS
 - SIEMENS (TURBINE-GENERATOR)
 - OTHERS
- INDUSTRY CODES AND STANDARDS
- PLANT UNIQUE
 - SYSTEM ELECTRICAL PARAMETERS
 - SITE ENVIRONMENTAL CONDITIONS

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ELECTRICAL/I&C
TYPICAL IMPLEMENTING DOCUMENTS

- EVALUATIONS
 - SINGLE FAILURE/FAILURE MODES AND EFFECTS
 - HELBA
 - FLOODING
 - MISSILES FIRE HAZARDS ANALYSIS
- CALCULATIONS
 - LOAD CAPACITY
 - VOLTAGE PROFILE
 - SHORT CIRCUIT
 - INSTRUMENT SETPOINTS
 - CABLE SIZING
- DRAWINGS
 - ONE LINE DIAGRAMS
 - INSTRUMENTATION AND CONTROL DRAWINGS (LOGIC)
 - FLOW DIAGRAMS

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**ELECTRICAL/I&C
TYPICAL DESIGN OUTPUTS**

- SPECIFICATIONS
 - DGs (ELECTRICAL/I&C PORTION)
 - SWITCHGEAR, MCCs, RELAYS, ETC.
 - ELECTRICAL ELECTION SPECIFICATION
- VENDOR DOCUMENTATION
 - DRAWINGS
 - MANUALS
 - CERTIFICATIONS
 - DESIGN DATA
- CONSTRUCTION DRAWINGS
 - 3-LINE DIAGRAMS
 - SCHEMATICS
 - WIRING DIAGRAMS
 - INTERCONNECTION DIAGRAMS
 - INSTRUMENT DATA SHEETS
 - PHYSICAL LAYOUT DRAWINGS
 - CABLE ROUTING SHEETS

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**ELECTRICAL/I&C REVIEW
MAJOR ELEMENTS OF
CALCULATION REVIEWS**

- APPROPRIATENESS OF CALCULATION REFERENCES
- CALCULATION ASSUMPTIONS
- CALCULATION INPUTS
- CALCULATION METHODOLOGY - MATH
- CONFORMANCE WITH CRITERIA - FSAR, STANDARDS & CODES, ETC.
- REASONABLENESS OF RESULTS
- APPLICATION OF RESULTS
- ADHERENCE TO DESIGN CONTROL REQUIREMENTS

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AFW AND
POWER SUPPLIES
PRELIMINARY REVIEW MATRIX

Review Topic	Criteria Identification and Review	Implementing Document Review	Design Output Review
SYSTEM OPERATING LIMITS			
• Voltage	X	X	
• Time	X	X	
• Current	X	X	
• Frequency	X	X	
SYSTEM OPERATING MODES			
• Normal/Startup-Shutdown	X	X	
• LOCA/Loss of Offsite Power	X	X	
• Station Blackout	X	X	
ELECTRICAL CHARACTERISTICS			
• Voltage Profiles	X	X	
• Short Circuit Currents	X	X	
• Terminal Voltages	X	X	X
• Cable Sizing	X	X	X
ELECTRICAL LOAD CAPACITY			
• Offsite Power	X	X	
• Standby Power Supplies (DGs)	X	X	X
• Inverters	X	X	X
• Batteries/Chargers	X	X	X
• Transformers	X	X	
LOAD SEQUENCING, SHEDDING AND TRANSFERS	X	X	X
PROTECTIVE RELAYING	X	X	X
CONTROL			
• System Interlocks	X	X	X
• Automatic Initiation/Operation	X	X	X
• Manual Operation	X	X	X
• Process Control	X	X	

AFW AND
POWER SUPPLIES
PRELIMINARY REVIEW MATRIX

(Continued)

Review Topic	Criteria Identification and Review	Implementing Document Review	Design Output Review
INSTRUMENTATION			
• Status Indication			
• Operational Surveillance	X	X	X
• Alarm	X	X	X
• Protective Devices/Settings	X	X	X
COMPONENT FUNCTIONAL REQUIREMENTS			
	X	X	X
SINGLE FAILURE/FMEA			
• Redundancy	X	X	
• Independence	X	X	
• FMEA	X	X	X
• Separation/Cable Routing	X	X	X
SUPPORT SYSTEMS – I&C			
• DG Fuel Oil Transfer	X	X	
• DG Cooling Water Requirements	X	X	
• HVAC	X	X	X
MULTI-DISCIPLINE CONSIDERATIONS			
• High & Moderate Energy Line Break	X		
• Environmental Qualification	X	X	X
• Internal Flooding	X		
• Fire Protection	X	X	
• Missile Protection	X		
• Seismic Qualification	X	X	X

6/14/85

PROJECT PIPING AND SUPPORTS

PROGRAM PRESENTATION

- E. SISKEN

JUNE 14, 1985

OBJECTIVE

STONE & WEBSTER ENGINEERING CORPORATION (SWEC) WILL QUALIFY ALL ASME CLASS 2 AND 3 PIPING SYSTEMS AND SUPPORTS IN ACCORDANCE WITH ACCEPTABLE PROCEDURES, PRACTICES, TECHNICAL TECHNIQUES AND CONTROLS.

THE COMPLETE INTEGRATED QUALIFICATION OF PIPING AND SUPPORTS WILL RESULT IN PROVEN CONSERVATIVE DESIGNS.

JUNE 14, 1985

SCOPE

THE SCOPE OF THE PIPING AND SUPPORT PROGRAM WILL INCLUDE :

- 100% OF ALL ASME CLASS 2 & 3 PIPING LARGER THAN 2"
- 100% OF ALL LARGE BORE PIPE SUPPORTS INCLUDING SUPPORT DESIGNS FOR CLASS 1 SYSTEMS
- REANALYSIS OF SMALL BORE (2" & UNDER) PIPING AND SUPPORTS ON A SAMPLING BASIS TO VERIFY ADEQUACY
- VERIFICATION OF ALL STRUCTURAL & SYSTEM INPUTS TO ENSURE COMPLETE INTEGRITY OF THE PIPING & SUPPORT PROCESS
- VERIFY VALIDITY OF DATA PROVIDED BY, TO OTHER DESIGN ENTITIES

JUNE 14, 1985

DESIGN PROCESS CONTROL

THE ENGINEERING MECHANICS RELATED TASKS WILL BE ISOLATED AND ENCAPSULATED FOR DESIGN CONTROL PURPOSES. A FIRM COMPREHENSIVE DESIGN CONTROL PROCESS WILL BE INSTITUTED TO COVER ALL ASPECTS OF THE TESTING AND SUPPORTS ANALYSIS PROGRAM. THIS WILL INCLUDE VERIFICATION OF THE DESIGN SPECIFICATION, STRUCTURAL MODEL, ALL LOADS INCLUDING SYSTEM MODES OF OPERATION, AND ALL OTHER INPUTS AFFECTING THE DESIGN.

JUNE 14, 1985

APPROACH

PIPING AND SUPPORTS WILL BE ANALYZED USING EXISTING SWEC PROVEN STANDARDS. THESE STANDARDS WILL BE REVIEWED TO ENSURE THEY ENCOMPASS FEATURES AND ISSUES RELATED TO PIPING AND SUPPORTS AT COMANCHE PEAK.

PROCEDURES ARE BEING DEVELOPED TO :

- DEFINE TECHNICAL DESIGN AND ANALYSIS CRITERIA CONSISTENT WITH NRC AND FSAR REQUIREMENTS AND SWEC STANDARDS
- VERIFY AS-BUILT PIPING & SUPPORTS CONFIGURATION
- CONTROL DOCUMENTATION REQUIREMENTS
- VERIFY SYSTEM DESIGN CRITERIA
- REVIEW/DEVELOP FLUID TRANSIENT REQUIREMENTS
- IMPLEMENT SWEC QUALITY ASSURANCE AND ENGINEERING ASSURANCE REQUIREMENTS
- ESTABLISH AND CONTROL ALL NECESSARY INTERFACES
- ENSURE ALL UNRESOLVED ISSUES HAVE BEEN EMBRACED OR SPECIFICALLY ADDRESSED

EXPERIENCE CONCERNS

BY REANALYZING PIPING AND SUPPORTS WITH PROVEN TECHNIQUES CONSISTENT WITH REASONABLE PRACTICES AND IIRC REQUIREMENTS, MANY OUTSTANDING PROBLEMS ARE NO LONGER RELEVANT.

IN THE INITIAL PHASE OF THE PIPING AND SUPPORTS QUALIFICATION PROGRAM, IF AN ISSUE IS NOT ADEQUATELY DEVELOPED BY EXISTING PROCEDURES AND CRITERIA, SPECIFIC ACTION WILL BE TAKEN TO RESOLVE THAT ISSUE. THESE FIRST HIGH PRIORITY

* STUDIES

* SPECIAL ANALYSIS

* REEVALUATION

* MODIFICATION

ORGANIZATION

- INTEGRATED ORGANIZATION FOR PIPING
 & SUPPORTS
- COMPLETE CORPORATE ENGINEERING ASSURANCE
 & QUALITY ASSURANCE IMPLEMENTATION
- OPTIONS REVIEW COMMITTEE

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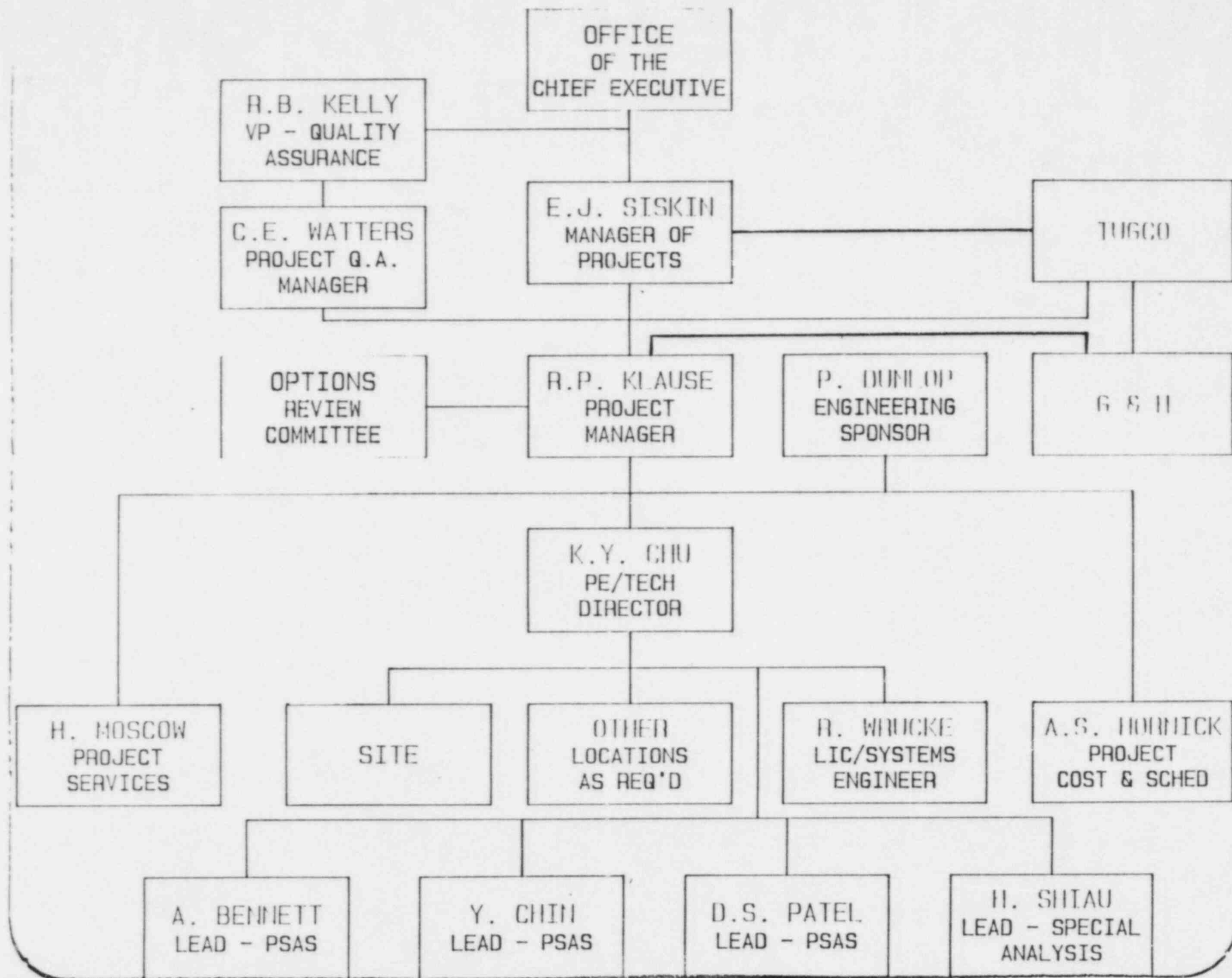
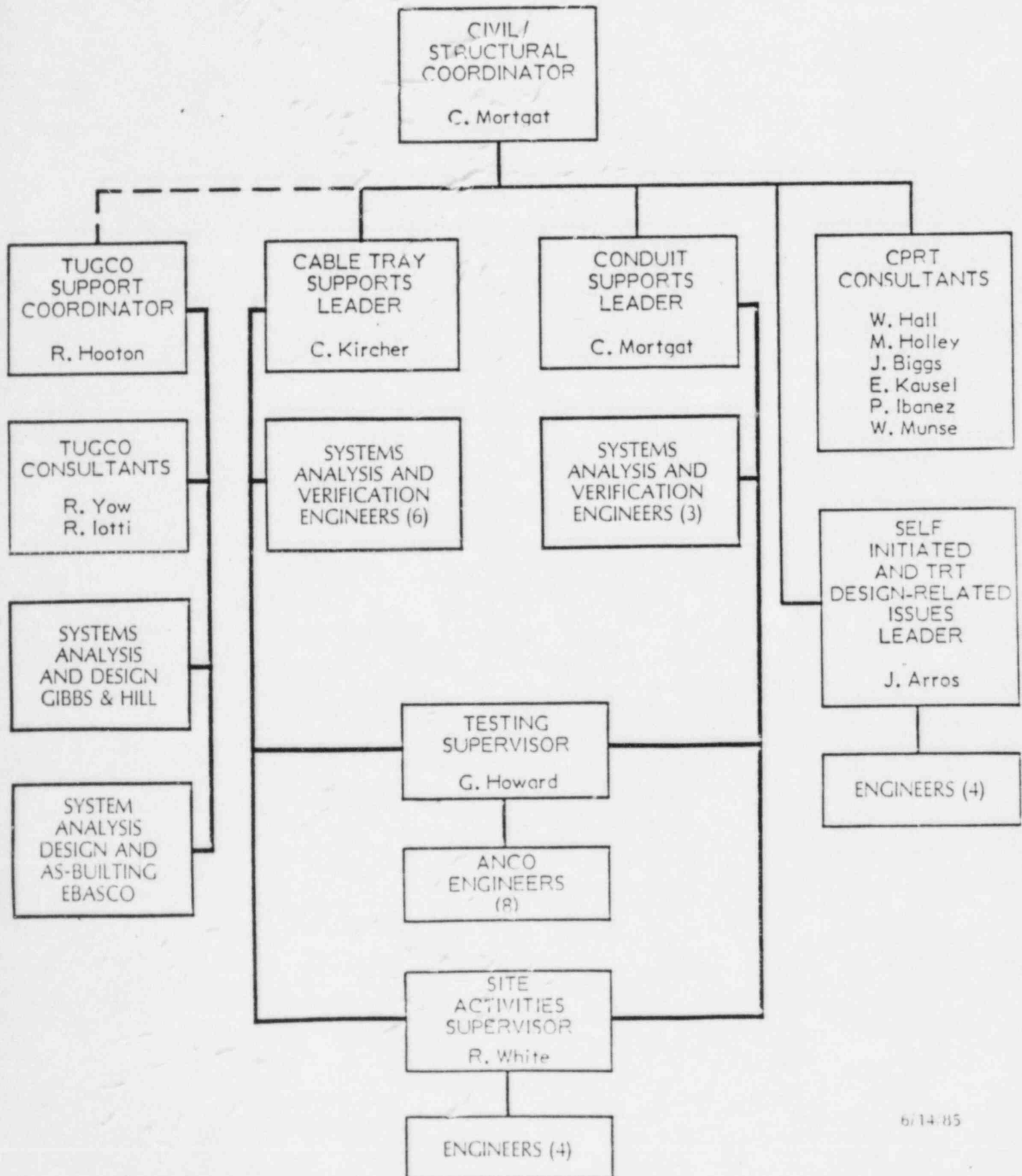


FIGURE A-8
CIVIL/STRUCTURAL
DESIGN ADEQUACY PROGRAM ORGANIZATION



AREAS OF REVIEW

AREAS WITH IDENTIFIED ISSUES

- CABLE TRAYS SUPPORTS
- CONDUIT SUPPORTS
- STEAM GENERATOR RESTRAINTS (TRT ISSUE V.b)
- DESIGN OF SEISMIC CATEGORY II ITEMS (TRT ISSUE II.d)

SELF-INITIATED EVALUATIONS

- CONCRETE DESIGN
- STEEL DESIGN
- HVAC SUPPORTS

APPROACH
EMPHASIS DIFFERENT FROM AREA TO AREA

I CABLE TRAY/CONDUIT SUPPORTS

- EXTENSIVE REVIEW
- GENERIC ISSUES HAVE BEEN IDENTIFIED
- LOW PROBABILITY OF UNIDENTIFIED ISSUES
- EMPHASIS PLACED ON ANSWERING CONCERNS IN COMPREHENSIVE MANNER

II TRT-RELATED AREAS

- SPECIFIC AREA
- FOCUSED ISSUES IDENTIFIED
- ADDRESS SPECIFIC ISSUES
- CONSIDER ISSUES IN AN INTEGRATED MANNER WITH RELATED AREAS

III SELF-INITIATED EVALUATIONS

- NO ISSUES IDENTIFIED
- ORGANIZE REVIEW TO DETECT ANY SIGNIFICANT/GENERIC ISSUES
 - SAMPLE - RANDOM
 - ENGINEERING BASIS

CABLE TRAY/CONDUIT SUPPORT

BACKGROUND

DESIGN PHILOSOPHY

- ° SUPPORTS DESIGNED AS ACTING INDEPENDENTLY OF EACH OTHER (NO SYSTEM APPROACH)
 - LONGITUDINAL (LONGITUDINAL LOAD)
 - TRANSVERSE (TRANSVERSE & VERTICAL LOAD)
 - MULTIDIRECTIONAL (LOADS IN THREE DIRECTIONS)
- ° GENERIC SUPPORTS
 - ENVELOPING SPECTRUM ALL BUILDINGS, ALL ELEVATIONS
 - MAXIMUM DEAD WEIGHT
- ° SPECIAL SUPPORTS
 - SPECTRUM USED VARIES, AT TIMES ENVELOP, AT TIMES SPECIFIC ELEVATION
 - ACTUAL DEAD WEIGHT

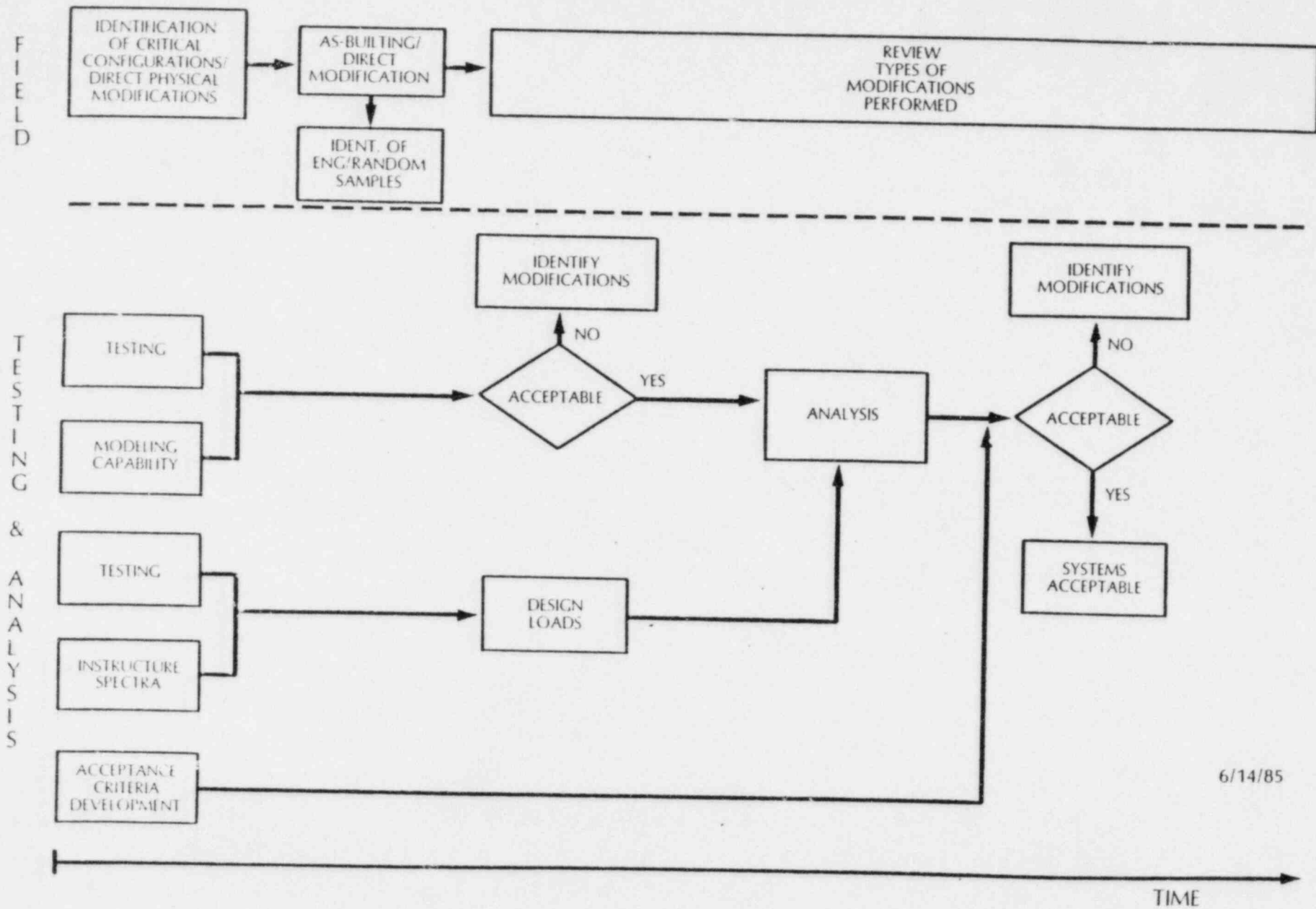
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**CABLE TRAY/CONDUIT
SUPPORTS**

BACKGROUND

- THE DESIGN PHILOSOPHY SHOULD PROVIDE CONSERVATIVE DESIGN
- HOWEVER A NUMBER OF ISSUES HAVE BEEN RAISED THAT DECREASE THE MARGIN
- PROGRAM DEVELOPED
 - TO CONFIRM THAT EXISTING SUPPORTS HAVE SUFFICIENT MARGIN OR
 - TO MODIFY SPECIFIC SUPPORT TYPES

CPRT PROGRAM APPROACH CABLE TRAY/CONDUITS SUPPORTS



6/14/85

CABLE TRAY/CONDUIT SUPPORT

- IDENTIFICATION OF CRITICAL PARAMETERS AND DIRECT PHYSICAL MODIFICATIONS
 - SAMPLE AS BUILT IN UNIT 1
 - 100% AS BUILT IN UNIT 2
 - ON GOING TESTING PROGRAM
 - ISSUES RAISED BY REVIEWERS
 - ANALYSIS INITIATED TO ANSWER SOME OF THE ISSUES

TRT RELATED ISSUE
STEAM GENERATOR RESTRAINTS

SCOPE OF REVIEW

- UPPER AND LOWER LATERAL RESTRAINTS
- BEAMS
- ANCHORAGE
- WALLS

JUNE 14, 1985

STEAM GENERATOR RESTRAINTS

DEPTH OF REVIEW

- LOADS
 - DEVELOPMENT OF STEAM GENERATOR TO BEAM FORCES (PIPE-RUPTURE, SEISMIC, THERMAL)
 - LOAD COMBINATION (PIPE-BREAK, SEISMIC, DIFFERENTIAL COMPARTMENT PRESSURES) FOR WORST CASE ANALYSIS OF ANCHORAGE
- FORCES AND MOMENTS RESULTANT ON BEAM, WALL AND ANCHORAGE
- REVIEW OF CONCRETE WALL DESIGN
- REVIEW OF BEAM DESIGN
- ADEQUACY OF BOLT AND PLATE CONNECTION (REQUIRED THREAD ENGAGEMENT, MINOR PLATE THREAD DAMAGE)
- ADEQUACY OF REBARS AND CADWELDS ANCHORING THE EMBEDMENT

AREAS OF REVIEW

AREAS WITH IDENTIFIED ISSUES

- CABLE TRAYS SUPPORTS
- CONDUIT SUPPORTS
- STEAM GENERATOR RESTRAINTS (TRT ISSUE V.b)
- DESIGN OF SEISMIC CATEGORY II ITEMS (TRT ISSUE II.d)

SELF-INITIATED EVALUATIONS

- CONCRETE DESIGN
- STEEL DESIGN
- HVAC SUPPORTS

**REASONS FOR SELF-INITIATED
EVALUATIONS**

- EXPAND SCOPE TO PROVIDE MORE COMPLETE COVERAGE OF THE CIVIL STRUCTURAL DESIGN SCOPE
- FOCUS ON OTHER AREAS IMPORTANT TO SAFETY THAT HAVE NOT BEEN REVIEWED

SELF-INITIATED EVALUATIONS

TYPICAL REVIEWS AREAS

- LOADS AND LOAD COMBINATIONS
- MODEL AND BOUNDARY CONDITIONS
- COMPUTER CODES USED FOR ANALYSIS AND DESIGN
- DESIGN PROCEDURES
- ACCEPTANCE CRITERIA

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CONCRETE DESIGN

INITIAL SCOPE OF REVIEW

- CONTAINMENT
 - SHELL WALL
 - THREE AREAS WITH DISCONTINUITIES
 - PENETRATION AREA
 - WALL/DOME INTERFACE
 - WALL/FOUNDATION INTERFACE
- AUXILIARY BUILDING AND FUEL BUILDING
 - FIVE SLAB AND FIVE WALL CALCULATION PACKAGES RANDOMLY SELECTED
 - TEN ADDITIONAL CALCULATION PACKAGES SELECTED
 - EITHER RANDOMLY
 - OR BASED ON FINDINGS (IF ANY) OF PREVIOUS REVIEW

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STRUCTURAL STEEL DESIGN

INITIAL SCOPE OF REVIEW

- TWO SECTIONS OF STRUCTURAL STEEL FRAME OF CABLE SPREADING ROOM
- APPROXIMATELY TEN STRUCTURAL STEEL COMPONENTS

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HVAC SUPPORTS

INITIAL SCOPE OF REVIEW

- TWO HVAC SYSTEMS SELECTED RANDOMLY
- ONE IN CONTROL ROOM
- ONE ELSEWHERE
- SUPPORTS INCLUDED IN THESE SYSTEMS WILL BE REVIEWED

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