January 11, 1990

P1-37

Docket No. 50-029

LICENSEE: Yankee Atomic Electric Company

FACILITY: Yankee Nuclear Power Station at Rowe

SUBJECT: MEETING SUMMARY - PLANT LIFE EXTENSION PROGRAM BRIEFING BY LICENSEE

A meeting between Yankee Atomic Electric Company and the NRC occurred on December 13, 1989. At this meeting the licensee presented updated positions on a range of technical and policy issues related to license renewal as they pertained to the Yankee plant at Rowe, Massachusetts. The list of topics discussed included but was not limited to: current licensing basis, severe accidents, compliance with the National Environmental Policy Act, and the contents of an application. Enclosure 1 contains a copy of the presentation made to the staff on license renewal technical and policy issues.

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/s/
Patrick M. Sears, Project Manager
Project Directorate I-3
Division of Reactor Projects I/II

Enclosures:
As stated
cc w/enclosures:
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| Docket File | NRC&Local PDRs | PDI-3 r/f | P. Sears |
| OGC | E. Jordan | B. Grimes | ACRS (10) |
| M. Rushbrook | J. Wiggins, RI | S. Varga | T. Murley |
| R. Wessman | B. Boger | F. Gillespie | F. Akstulewicz |
| W. Travers | K. Manoly | J. Durr, RI | D. Cleary |
| W. Minners | R. Bosnak | J. Vora | G. Mizuno |
| D. Kubicki | | | |

| OFC | :ADSP/STA | :ADSP | :PDI-3 | :PDI-3 | : | : | : |
|---|---|---|---|---|---|---|---|
| NAME | :FAkstulewicz | :WTravers | :PSears | :RWessman | : | : | : |
| DATE | :01/11/90 | :01/ /90 | :01/11/90 | :01/11/90 | : | : | : |

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

January 11, 1990

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Patrick M Sears

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Project Directorate I-3
Division of Reactor Projects I/II

Enclosures:
As stated

cc w/enclosures:
See next page

Mr. George Papanic, Jr.

cc:
Dr. Andrew C. Kadak, President
and Chief Operating Officer
Yankee Atomic Electric Company
580 Main Street
Bolton, Massachusetts 01740-1398

Thomas Dignan, Esquire
Ropes and Gray
225 Franklin Street
Boston, Massachusetts 02110

Mr. T. K. Henderson
Acting Plant Superintendent
Yankee Atomic Electric Company
Star Route
Rowe, Massachusetts 01367

Resident Inspector
Yankee Nuclear Power Station
U.S. Nuclear Regulatory Commission
Post Office Box 28
Monroe Bridge, Massachusetts 01350

Regional Administrator, Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, Pennsylvania 19406

Robert M. Hallisey, Director
Radiation Control Program
Massachusetts Department of Public Health
150 Tremont Street, 7th Floor
Boston, Massachusetts 02111

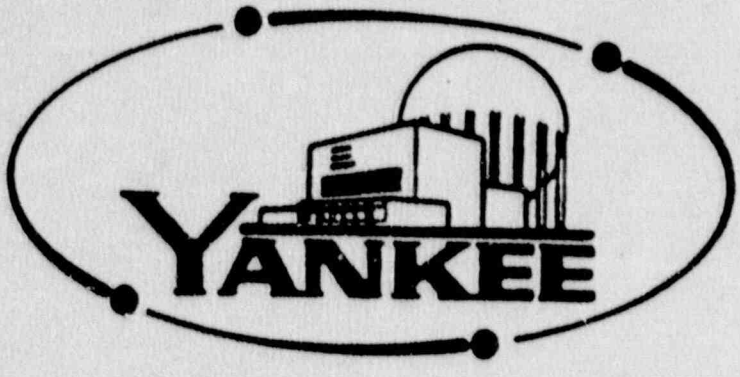
Mr. George Sterzinger
Commissioner
Vermont Department of Public Service
120 State Street, 3rd Floor
Montpelier, Vermont 05602

Yankee Presentation on License Renewal
December 13, 1989
Attendance List

| Name | Organization |
|---|---|
| Francis Akstulewicz | NRR/ADSP |
| Jane M. Grant | Yankee |
| Donnie W. Whitehead | Sandia National Labs/DOE |
| Robert R. McCoy | Yankee Atomic |
| Eric Hale | SERCH/Bechtel |
| J. Rajan | NRR/EMEB |
| Karl Kniel | NRC/RES |
| Jack Burns | NRC/RES |
| G. H. Weidenhamer | NRC/RES |
| Sang Rhow | NRC/SICB |
| Dennis Kubicki | NRC/NRR |
| Chen P. Tan | NRC/NRR |
| Kamal Manoly | NRC/NRR |
| Charles Serpan | NRC/RES |
| Tom Law | EPRI |
| Edward P. Griffing | NUMARC |
| Barry Elliot | NRC/NRR |
| Jacqueline Gilchrist | Northern States Power |
| J. S. Wermiel | NRC/NRR/SPLB |
| Beth Doolittle | NRR/ADSP |
| Tom King | NRC/RES/OSIR |
| Mort Fairtile | NRR/PDI-3 |
| Scott Newberry | NRC/NRR |
| Eric Beckjord | RES |
| Tom Murley | NRR |
| Frank Miraglia | NRR |
| Joe McCumber | Yankee Atomic |
| John Haseltine | Yankee Atomic |
| Paul Norian | RES |
| Jim Partlow | NRR |
| Bill Szymczak | Yankee Atomic |
| Andy Kadak | Yankee Atomic |

# LICENSE RENEWAL
# FOR
# YANKEE NUCLEAR POWER STATION

## NRC UPDATE MEETING
## WITH DR. MURLEY




ROCKVILLE, MARYLAND
DECEMBER 13, 1989

A.C. Kadak

# Yankee Plant License Renewal Policy Issues

- OBJECTIVE
- LICENSE RENEWAL REGULATIONS
- CURRENT LICENSING BASIS
- SEVERE ACCIDENTS
- BACKFIT CONTROLS
- LICENSING PROCESS
- TIMING OF RULE
- NEPA COMPLIANCE
- DRAFT RULE PROBLEMS
- STANDARDS OF ISSUANCE
- ASSURANCE OF COMPLIANCE
- CONTENTS OF APPLICATION
- EVALUATION METHODOLOGY
- FUTURE OF LICENSE RENEWAL

# OBJECTIVE OF LICENSE RENEWAL

- THE OBJECTIVE OF THE RENEWAL EVALUATION IS TO DEMONSTRATE THAT THE PLANT CAN OPERATE SAFELY FOR THE RENEWAL PERIOD - 20 YEARS.

- THE FOCUS OF THE EVALUATION SHOULD BE LIMITED TO STRUCTURES, SYSTEMS, AND COMPONENTS THAT MAY BE SUBJECT TO AGE RELATED DEGRADATION TO DETERMINE ITS SIGNIFICANCE TO SAFETY.

- IT SHOULD NOT BE THE INTENT OF LICENSE RENEWAL TO REDESIGN THE PLANT THAT ALREADY HAS A LICENSE AND IS DEEMED SAFE TO OPERATE.

# LICENSE RENEWAL REGULATIONS

- NRC HAS LEGAL AUTHORITY TO DEVELOP REGULATIONS SPECIFICALLY TAILORED FOR LICENSE RENEWAL

- CONSTRAINED ONLY BY OBLIGATION FOR FINDING, WITH REASONABLE ASSURANCE, THAT THE HEALTH AND SAFETY OF THE PUBLIC IS ADEQUATELY PROTECTED

- MUST FULFILL OBLIGATIONS UNDER ATOMIC ENERGY ACT ONLY - NOT CONSTRAINED BY REQUIREMENTS FOR NEW PLANTS

- RENEWAL REGULATIONS WHICH CONTINUE THE CURRENT LICENSING BASIS (CLB) ARE ENTIRELY DEFENSIBLE

- ALL CURRENTLY OPERATING REACTORS MEET THE REGULATIONS - LICENSING BASIS FOR THESE REACTORS HAVE NRC ACCEPTANCE - FAVORABLE FINDING FROM INITIAL TERM CAN BE ADOPTED FOR THE RENEWAL TERM

  - CLB DOES NOT EXPIRE
  - REGULATIONS ARE LARGELY PERFORMANCE OBJECTIVES WHICH, WHEN MET REMAIN SATISFIED
  - NRC'S COMPREHENSIVE OVERSIGHT ASSURES COMPLIANCE

# FUNDAMENTAL QUESTION

HOW CAN YOU LICENSE A PLANT THAT DOESN'T MEET CURRENT LICENSING CRITERIA?????

ANSWER:

CURRENT CRITERIA ARE DEFINED BY THE STANDARD REVIEW PLAN WHICH IS ONLY ONE WAY TO MEET CURRENT REGULATIONS. STANDARD REVIEW PLANS ARE STAFF INTERPRETATIONS - NOT LEGALLY BINDING.

ALL OPERATING PLANTS MEET "CURRENT REGULATIONS" OR HAVE SPECIFIC EXEMPTIONS.

THE FUNDAMENTAL NRC FINDING IS ADEQUATE PUBLIC PROTECTION - NOT CONFORMANCE TO STAFF INTERPRETATIONS.

# Current Licensing Basis
## What It Means

- THE CURRENT LICENSING BASIS DEFINES THE STRUCTURES, SYSTEMS, AND COMPONENTS, THAT UNIQUELY MEET NRC REGULATIONS FOR EACH PLANT.

- THE CURRENT LICENSING BASIS IS THE BASIS UPON WHICH THE NRC DETERMINES THE PLANT IS SAFE TO OPERATE. NRC REGULATORY OVERSIGHT ASSURES THAT THE CLB IS MAINTAINED.

- FOR THE PURPOSE OF LICENSE RENEWAL, THE CLB IS DEFINED IN THE FSAR, TECHNICAL SPECIFICATIONS, AND OTHER DOCUMENTS WHICH DEFINE STRUCTURES, SYSTEMS, AND COMPONENTS TO ASSURE COMPLIANCE TO NRC REGULATIONS.

- FOR THE PURPOSE OF LICENSE RENEWAL, THIS PORTION OF THE CLB SHOULD BE EVALUATED FOR FINDINGS THAT ARE TIME DEPENDENT.

- RE-ANALYSIS OF HOW THE FACILITY COMPLIES WITH THE LICENSING BASIS IS NOT NECESSARY- IT APPLIES AT ALL TIMES.

# IDENTIFICATION OF CLB FOR LICENSE RENEWAL

- SEARCH THROUGH ENTIRE CLB FOR EQUIPMENT-RELATED REQUIREMENTS/ COMMITMENTS
- REVIEW IDENTIFIED DOCUMENTS FOR TIME DEPENDENCY - INCLUDES EXEMPTIONS
- REVIEW ALL TIME DEPENDENCIES FOR REQUIREMENTS/COMMITMENTS FOR APPLICABILITY TO 20-YEAR RENEWAL TERM
- DOCUMENT RESULTS FOR USE IN EVALUATIONS
- OBJECTIVE IS TO ASSURE THAT TIME DEPENDENCIES ASSOCIATED WITH NRC ACTIONS HAVE BEEN CONSIDERED
- ANALYSIS FOR COMPLIANCE IS UNNECESSARY DUE TO ROUTINE REGULATORY OVERSIGHT

# SEVERE ACCIDENTS

- SEVERE ACCIDENT RESOLUTION SHOULD BE TREATED SEPARATELY FOR ALL LICENSEES.

- BURDENING LICENSE RENEWAL RULE WITH SEVERE ACCIDENTS IS UNNECESSARY SINCE THE NRC CAN CONDITION ANY LICENSE AT ANYTIME.

- MOST PLANTS WILL HAVE RESOLVED SEVERE ACCIDENT ISSUES BEFORE SEEKING LICENSE RENEWALS.

# BACKFIT CONTROLS

- LICENSE RENEWAL DOES NOT MEAN REDESIGN OF PLANTS

- IF PLANT OPERATES SAFELY FOR 40 YEARS AND IF CHANGES CANNOT BE COST JUSTIFIED FOR MEANINGFUL SAFETY IMPROVEMENTS, THEY SHOULD NOT BE DONE

- BACKFIT RULE PROVISIONS SHOULD APPLY TO LICENSE RENEWAL REVIEW PROCESS AS WELL

# LICENSING PROCESS
## THE KEY TO SUCCESSFUL RENEWALS

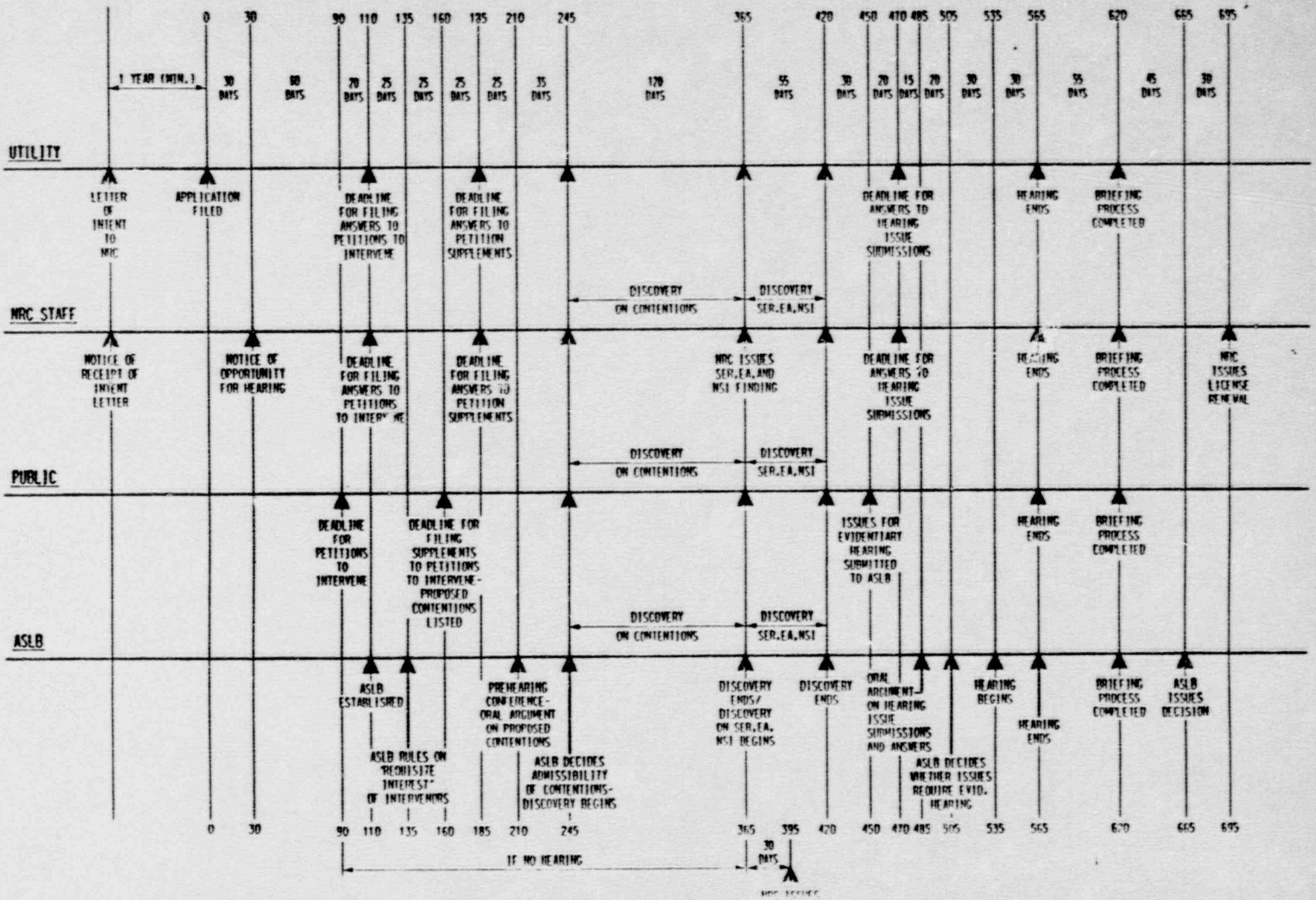
- ATOMIC ENERGY ACT GIVES NRC AUTHORITY TO ESTABLISH A SPECIAL LICENSING PROCESS FOR RENEWAL

- ESTABLISH FIRM SCHEDULES FOR LICENSEE, NRC AND HEARING BOARDS

- ESTABLISH RULES FOR INTERVENTION AND CONTENTIONS MODELED AFTER DISTRICT COURT PRECEDENTS (MAXIMUM THIRTY FIVE INTERROGATORIES LIMITED TO SPECIFIC AGE RELATED ISSUES)

- TAKE ADVANTAGE OF OPPORTUNITY TO SEE IF ANY LICENSING PROCESS WILL WORK (NEW OR RENEW)

# YANKEE PROPOSED HEARING MODEL FOR LICENSE RENEWAL



# TIMING OF RULE

- RULE MUST BE FINAL BEFORE FIRST APPLICATION

- NO REASON WHY FINAL RULE CANNOT BE PUBLISHED IN APRIL 1991

- REGULATORY LIMBO NOT A GOOD PLACE TO BE

# NEPA COMPLIANCE

- CONDUCT AN ENVIRONMENTAL ASSESSMENT TO SUPPORT ISSUANCE OF THE PART 50 SAFETY RULE ON LICENSE RENEWAL.

- IN PARALLEL, CONDUCT A GENERIC ENVIRONMENTAL ASSESSMENT TO SUPPORT PART 51 RULE CHANGE THAT WILL ENVELOPE GENERIC ENVIRONMENTAL IMPACTS TO REDUCE SCOPE AND NUMBER OF ISSUES.

# DRAFT RULE PROBLEMS

- PHILOSOPHY GOOD - IMPLEMENTATION NOT CONSISTENT WITH PHILOSOPHY
- RULE IS TOUGHER THAN FOR NEW PLANTS
- APPLICATION REQUIRES DETAILED ANALYSIS OF ALL IMPORTANT-TO-SAFETY PLANT COMPONENTS
- APPLICATION CONTENT IS ENORMOUS
- NO CREDIT FOR EXISTING NRC OVERSIGHT OR CURRENT OPERATING LICENSE
- DOES NOT TAKE CREDIT FOR INTELLIGENT SCREENING OF COMPONENTS
- EVERY COMPONENT IN PLANT WILL BE SUBJECT TO "EQ" TYPE DOCUMENTATION - CURRENT PLANTS NOT SUBJECT TO THIS
- CREATES LOTS OF PAPER - MISSES AGE DEPENDENCE AND FUNCTIONAL RELEVANCY
- RULE FOCUSES ON "FORM" VS. "FUNCTION"

# STANDARDS FOR ISSUANCE OF RENEWED LICENSE

- ADOPT FINDINGS, MADE TO SUPPORT ISSUANCE OF FACILITY OPERATING LICENSE, AND THEIR CONTINUED EFFECTIVENESS DURING FACILITY OPERATIONS, EXCEPT FOR EFFECTS OF AGE-RELATED DEGRADATION.

- FIND THAT APPROPRIATE ACTIONS HAVE BEEN OR WILL BE TAKEN TO MANAGE AGE-RELATED DEGRADATION OF SSCs IMPORTANT TO SAFETY.

- FIND THAT APPROPRIATE ACTIONS HAVE BEEN OR WILL BE TAKEN TO EVALUATE AND RESOLVE REGULATORY EXEMPTIONS THAT ARE BASED ON TIME-DEPENDENT CONSIDERATIONS.

# ASSURANCE OF COMPLIANCE

- NRC OVERSIGHT AND LICENSEE PROGRAMS CONTINUE TO ENSURE COMPLIANCE WITH REGULATIONS.

- ADMINISTRATIVE CONTROLS WILL BE USED TO ENSURE THE INTEGRITY OF AGE-RELATED DEGRADATION MANAGEMENT ACTIVITIES.

- CHANGES IMPORTANT TO SAFETY SSCs WILL BE SUBJECT TO AN AGE-RELATED DEGRADATION REVIEW.

- CHANGES TO PROGRAMS AND PROCEDURES RELIED UPON TO MANAGE AGE-RELATED DEGRADATION WILL BE SUBJECT TO A REVIEW TO ENSURE THEIR CONTINUED EFFECTIVENESS.

# CONTENTS OF APPLICATION

- LIST OF CLB DOCUMENTS ASSOCIATED WITH THE FACILITY'S SYSTEMS, STRUCTURES, AND COMPONENTS.
- TIME DEPENDENCIES - IDENTIFIED AND RESOLVED.
- LIST OF FACILITY SYSTEMS AND STRUCTURES THAT ARE IMPORTANT TO SAFETY.
- EVALUATION OF COMPONENTS THAT ARE IMPORTANT TO THE SAFETY FUNCTION OF THE SYSTEM(S) OR STRUCTURE(S) AND THAT ARE NOT COVERED BY AN ESTABLISHED EFFECTIVE PROGRAM AND ARE SUBJECT TO AGE-RELATED DEGRADATION.
- JUSTIFICATION FOR ACTIONS TO MANAGE COMPONENT AGE-RELATED DEGRADATION.
- PROPOSED CHANGES AND TECHNICAL BASES TO THE FACILITY, FOR IMPLEMENTATION OF ACTIONS TO MANAGE AGE-RELATED DEGRADATION.
- ADMINISTRATIVE PROCESS(ES) TO CONTROL CHANGES TO PROGRAMS AND ACTIONS USED TO MANAGE AGE-RELATED DEGRADATION.
- EVALUATION OF THE INCREMENTAL ENVIRONMENTAL EFFECTS OF OPERATION THROUGH THE RENEWAL TERM.

# EVALUATION

# OF

# SYSTEMS

# STRUCTURES

# AND

# COMPONENTS

# SCREENING

OBJECTIVE

IDENTIFY COMPONENTS THAT REQUIRE FURTHER EVALUATION TO ASSURE THE CURRENT LEVEL OF SAFETY IS MAINTAINED DURING A 20 YEAR PLANT LICENSE EXTENSION PERIOD.

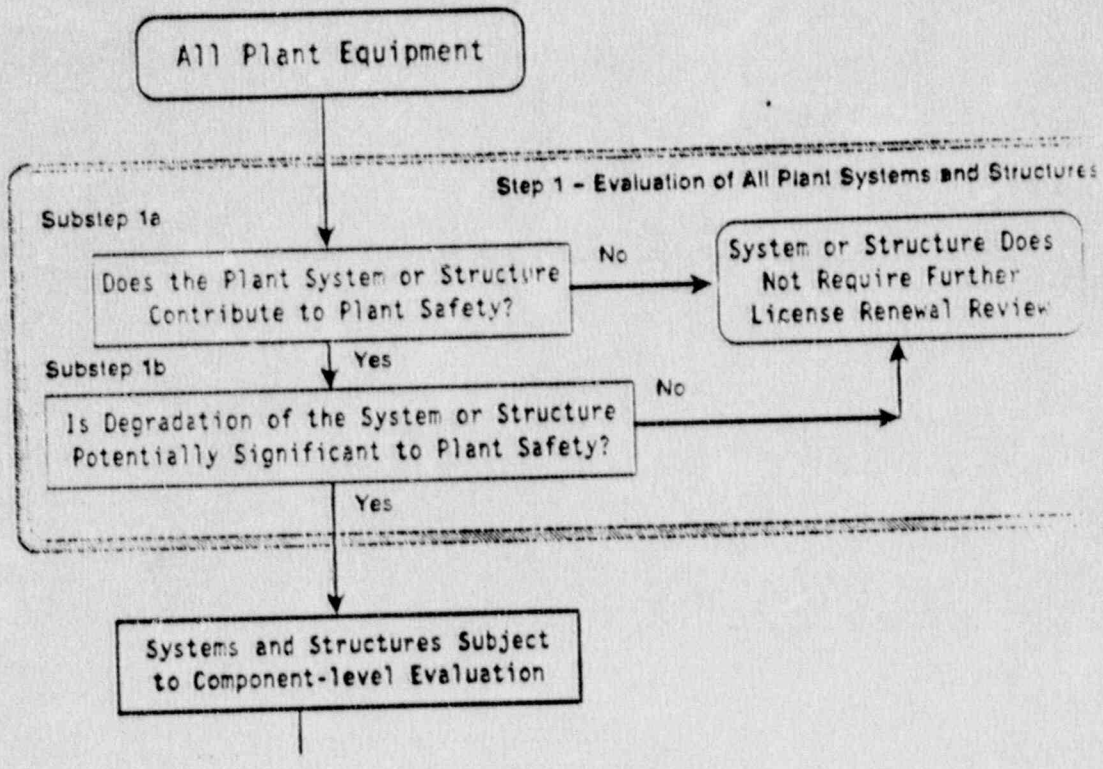
METHOD

COMPONENTS REQUIRING FURTHER EVALUATION SELECTED USING NUMARC/NUPLEX SCREENING METHODOLOGY AND ASSOCIATED IMPLEMENTING CRITERIA

# METHODOLOGY TO EVALUATE PLANT EQUIPMENT FOR LICENSE RENEWAL REVIEW

## STEP 1

## EVALUATION OF PLANT SYSTEMS AND STRUCTURES




## STEP 2

# CONTRIBUTORS TO PLANT SAFETY SCREEN (STEP 1A)

- SAFETY-RELATED BASIS
- LICENSING BASIS
  - MAJOR LICENSING ISSUES (CURRENT LICENSING BASIS)
  - WIDE SPECTRUM
  - OVERLAPPING COVERAGE
- EOP BASIS
  - SYSTEMS CALLED OUT IN EOPs

# LICENSING BASIS

1. FSAR ACCIDENT ANALYSIS
2. TECHNICAL SPECIFICATIONS
3. ENVIRONMENTAL QUALIFICATION (EQ)
4. APPENDIX R
5. FIRE PROTECTION
6. SEISMIC
7. HEAVY LOADS
8. INTERNAL FLOODING
9. EXTERNAL FLOODING
10. RAIN/SNOW
11. TORNADO/WIND
12. HELB
13. RADIATION SHIELDING
14. STATION BLACKOUT

# STEP 1A - DOES THE SYSTEM OR STRUCTURE CONTRIBUTE TO SAFETY

63 OF 78 SYSTEMS CONTRIBUTE TO PLANT SAFETY

33 OF 46 STRUCTURES CONTRIBUTE TO PLANT SAFET

SYSTEMS SCREENED OUT:

- BREATHING AIR SYSTEM
- CHEMICAL FEED SYSTEM
- CORROSION CONTROL SYSTEM
- SANITARY DISPOSAL SYSTEM
- SHIELD TANK CAVITY PURIFICATION SYSTEM
- WATER TREATMENT SYSTEM
- ADMINISTRATION BLDG VENTILATION SYSTEM
- GAS STORAGE ROOM VENTILATION SYSTEM
- PAB NON-FILTERED VENTILATION SYSTEM
- SCREENWELL PUMPHOUSE VENTILATION SYSTEM
- SERVICE BLDG VENTILATION SYSTEM
- SAFETY PARAMETER DISPLAY SYSTEM
- SG BLDN I&C SYSTEM
- TECHNICAL SUPPORT CENTER SYSTEM

STRUCTURES SCREENED OUT:

- ADMIN BUILDING
- CAMERA AND LIGHTING POLES
- DECONTAMINATION ROOMS
- FENCES AND GATES
- GATEHOUSE
- HEATING BOILER VENT STACK
- NON-ESSENTIAL UPS BUILDING
- PCA BUILDINGS 1&2
- POLE BARN
- SEAL PIT
- TRAINING AREA BLDGS

# DEGRADATION POTENTIALLY SIGNIFICANT SCREEN (STEP 1b)

- RADIOACTIVE RELEASE
  - FSAR/TECH SPEC RELEASE LIMITS
- BARRIER FAILURE
  - -MAIN COOLANT SYSTEM
  - -CONTAIMENT
- CRITICAL SAFETY FUNCTIONS
  - -ALLOWANCE FOR DETECTION

# STEP 1b IS DEGRADATION POTENTIALLY SIGNIFICANT TO SAFETY?

43 OF REMAINING 63 SYSTEMS SIGNIFICANT

27 OF REMAINING 33 STRUCTURES SIGNIFICANT

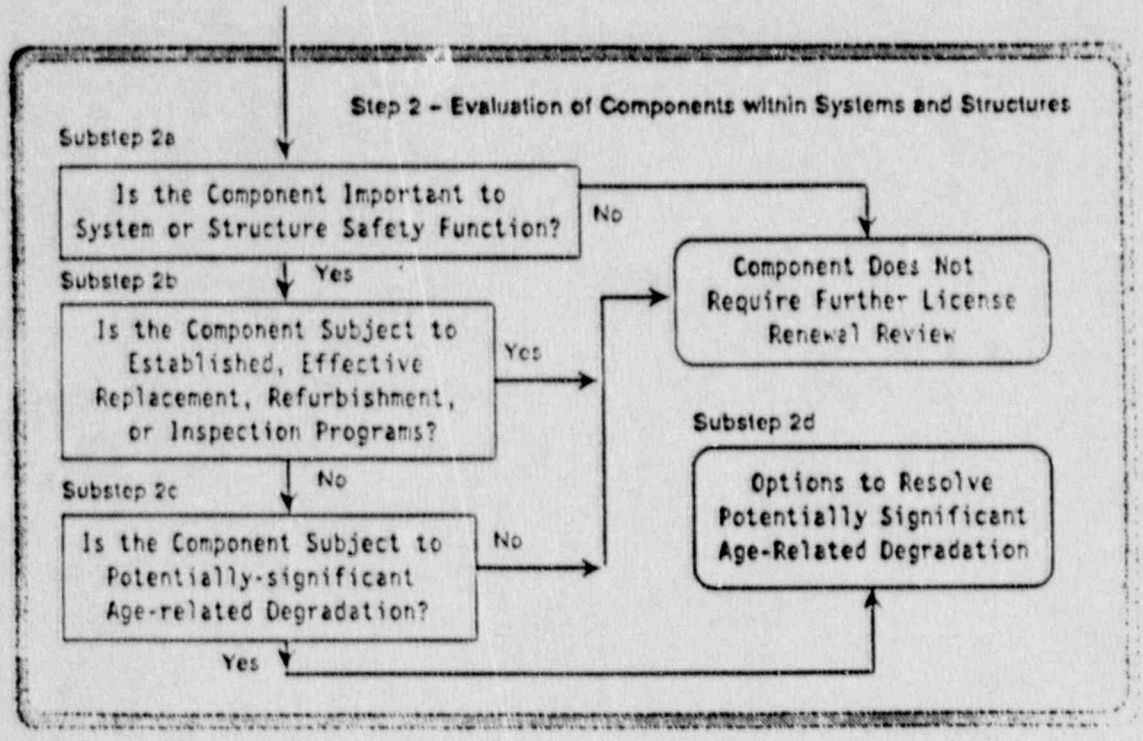
ADDITIONAL SYSTEMS SCREENED OUT:

AIR REMOVAL
CIRCULATING WATER
EXTRACTION STEAM
FLOOR DRAINAGE
GENERATOR GAS
GENERATOR SEAL OIL
HEATING STEAM
LUBRICATING OIL
POTABLE WATER
TURBINE/GENERATOR
BATTERY RM NO.3 VENTILATION
BATTERY RMS 1+2 VENTILATION
NRV ENCLOSURE VENTILATION
TURBINE BLDG VENTILATION
GENERATION & TRANSMISSION
FIXED INCORE DETECTION
MOVABLE INCORE DETECTION
SECURITY SYSTEM
ENVIRONMENTAL SYSTEM

ADDITIONAL STRUCTURES SCREENED OUT:

METEOROLOGICAL TOWER
PLANT MODULAR OFFICE BLDG
SLE DIESEL GENERATOR BLDG
SERVICE BLDG
STORES WAREHOUSE
SWITCHYARD STRUCTURE

# STEP 2
# COMPONENT REVIEW



# COMPONENT SYSTEM SAFETY FUNCTION SCREEN (Step 2a)

COMPONENTS ARE DESIGNATED IMPORTANT TO SYSTEM OR STRUCTURE SAFETY FUNCTION *UNLESS*:

- IT IS NORMALLY ISOLATED AND DOES NOT PERFORM A MITIGATION FUNCTION

OR

- ITS FAILURE WOULD NOT DEFEAT ONE OR MORE SYSTEM TRAINS

AND

- NOT REDUCE STRUCTURAL SUPPORT OF OTHER IMPORTANT COMPONENTS

AND

- NOT PHYSICALLY DAMAGE OTHER IMPORTANT COMPONENTS

# COMPONENT SYSTEM SAFETY FUNCTION SCREEN CONT.

- FLUID, ELECTRICAL AND STRUCTURAL COMPONENTS EVALUATED FOR IMPORTANCE USING CRITERIA DIRECTLY

- I&C COMPONENTS IMPORTANT TO SYSTEM SAFETY FUNCTION ARE THOSE IDENTIFIED IN THE FOLLOWING DOCUMENTS:

  REG GUIDE 1.97 (POST-ACCIDENT MONITORING)
  TECHNICAL SPECIFICATIONS
  SAFETY CLASS MANUAL
  EQ PROGRAM
  APPENDIX R
  SAFE SHUTDOWN SYSTEM INSTRUMENTATION

## EFFECTIVE REPLACEMENT, REFURBISHMENT, OR INSPECTION PROGRAM SCREEN (Step 2b)

A COMPONENT IS CONSIDERED TO BE SUBJECT TO AN ESTABLISHED EFFECTIVE REPLACEMENT, REFURBISHMENT, OR INSPECTION PROGRAM *IF*:

- o PROGRAM IS DOCUMENTED, APPROVED, AND ROUTINELY IMPLEMENTED IN ACCORDANCE WITH PLANT ADMINISTRATIVE PROCEDURES

AND

- o PROGRAM PROCEDURES ENSURE THAT ALL OF THE COMPONENT'S SIGNIFICANT SAFETY FUNCTIONS ARE PROPERLY ADDRESSED

AND

- o CRITERIA AND ACTIONS FOR NONCONFORMANCE ARE CLEARLY DEFINED

FOR YANKEE:

- PROCEDURES OVERLAP MULTIPLE COMPONENTS
- PROCEDURE REVIEW INCLUDED:

| | |
|---|---|
| COMPONENTS AFFECTED | TECH SPECS |
| SPECIFIC ACTIVITIES | VENDOR MANUALS |
| ACCEPTANCE CRITERIA | INSPECTION METHODS |
| FREQUENCY | |

YANKEE ATOMIC ELECTRIC COMPANY
7OPS - PLEX
DETAILED PLANT PROCEDURE REPORT - SORTED BY TAG NO/LINE NO - SPECIFIC TAG NO/LINE NO

| Tag No : P-48-1 | Description : LOW PRESSURE SI PUMP | COMPONENT CODE : P | | | |
|---|---|---|---|---|---|
| Procedure No | Specific Activity/Acceptance Criteria | Frequency | Technical Specification | VTM Nos | Insp Method Branching Proc |
| OP-4204 | Verify that each LPSI pump starts from the control room (Unless already running) | At Least Every 31 days (Staggered test basis) | 4.5.2.a.2.a | | FUNC |
| OP-4204 | Verify that each LPSI pump develops a discharge pressure >= 250 psig on recirculation flow through CS-MOV-532/Out of Spec-OP-5356 | At Least Every 31 days (Staggered test basis) | 4.5.2.a.2.b | | FUNC OP-5356 |
| OP-4204 | Verify that each LPSI pump operates for at least 15 minutes | At Least Every 31 days (Staggered test basis) (OP-4204 one each week) | 4.5.2.a.2.c | | FUNC |
| OP-4205 | Verify that each HPSI and LPSI pump starts automatically on a safety injection signal/Actuation of the safety injection system "BL" relays closes the six safety injection pump ACB's in proper sequence | Every 18 months | 4.5.2.e.3 | | FUNC |
| OP-4208 | Verify that all combinations of two LPSI pumps develop a combined flow/>= 2100 GPM, running amps (= 386 | Following completion of flow characteristic altering system modifications | 4.5.2.g.1 | | FUNC CM |
| OP-4204 | Verify ECCS subsystem leakage outside containment/ (= 50 GPD (T.S.3.5.5) | Concurrent with T.S. 4.5.2.a (OP-4204 each week w/15 min run) | 4.5.5 | | VTI |
| OP-4204 | Check lubrications, vibration, running amps/Vibration out of Spec-OP-5356 | Monthly (Staggered) Modes 1-3 and Modes 4.5 -)300 PSIG | | | VIB CM OP-5356 |
| OP-4204 | Bearing temperature/Out of Spec-OP-5356 | Annually --25Z | | | RTA OP-5356 |
| OP-5356 | 1) Lub, suction/discharge prss. and vib 2) Bearing temp /)= 250 PSIG; other, see OP-Pg 3 | 1) Monthly (not bearing temp ) 2) Annually --25Z (bearing temp ) | 4.5.2.a.2 | | FUNC VIB OP-4204 RTA |
| OP-4274 | Running amps >= 386 amps Common header flow " 2100 GPM inp. loop hdr flow " 500 GPM | Refueling | ISI | | FUNC CM |
| OP-5352 | Maintenance inspection a) vibration b) megger | As required | | 1875-05,MV 14-059 | VIB VTI RC |

# COMPONENT AGE-RELATED DEGRADATION SCREEN (Step 2c)

- o DETERMINE AGE DEGRADATION MECHANISM
- o DETERMINE CONTROLLING PARAMETERS
- o ESTABLISH ACCEPTANCE CRITERIA
- o COMPARE WITH PLANT OPERATING PARAMETERS

  - FLUID COMPONENTS
    - USE EXPERT SYSTEM - CoDAT
    - 20 DEGRADATION MECHANISMS
    - CERTAIN MECHANISMS EVALUATED SEPARATELY (e.g., FATIGUE)

  - I&C AND ELECTRICAL COMPONENTS NOT SUBJECT TO AN EFFECTIVE PROGRAM ARE ASSUMED TO BE SUBJECT TO AGE-RELATED DEGRADATION. THESE COMPONENTS WILL BE EVALUATED, GENERICALLY IF POSSIBLE.

  - STRUCTURAL COMPONENTS ARE GENERICALLY ASSESSED FOR AGE-DEGRADATION. THESE ASSESSMENTS FORM THE BASIS FOR FOCUSED WALKDOWNS OF PLANT STRUCTURES. FOLLOW-UP EXAMINATIONS AND TRENDING PERFORMED AS WARRANTED.

# DEGRADATION MECHANISMS

FOR FLUID COMPONENTS, CoDAT ASSESSES THE POTENTIAL FOR:

| | |
|---|---|
| GENERAL CORROSION | THERMAL EMBRITTLEMENT |
| EROSION/CORROSION | NEUTRON EMBRITTLEMENT |
| TWO PHASE EROSION | HYDROGEN EMBRITTLEMENT |
| MIC | SELECTIVE LEACHING |
| IGSCC | GALVANIC CORROSION |
| TGSCC | IASCC |
| IGA | |

NOTE: Other degradation mechanisms, such as fatigue, are assessed separately.

# STRUCTURAL COMPONENT GENERIC ASSESSMENTS

- PROVIDE FOCUS FOR PLANT WALKDOWN
- IDENTIFY AGE RELATED DEGRADATION MECHANISMS APPLICABLE TO STRUCTURAL COMPONENTS
- DESCRIBE CONDITIONS WHICH LEAD TO DEGRADATION AND HOW DEGRADATION IS MANIFESTED
- ASSESSMENTS:
  - CONCETE STRUCTURAL COMPONENT
  - STRUCTURAL STEEL COMPONENTS
  - SEALANTS, ROOFING, AND WATERPROOFING BARRIERS
  - EQUIPMENT SUPPORT COMPONENTS

# WALKDOWN OF PLANT STRUCTURES

- PERFORMED IN ACCORDANCE WITH DETAILED WORK INSTRUCTIONS
- APPROXIMATELY 6 MANWEEKS OF PREPARATION
  - STUDYING ASSESSMENTS AND PLANT DRAWINGS
  - PREPARING DATA SHEETS AND PLANS
- WALKDOWN TEAM
  1 YANKEE
  2 STONE & WEBSTER
  1 BECHTEL
  (OVER 80 YEARS TOTAL COMBINED CIVIL ENGINEERING EXPERIENCE)
- TWO WEEKS ON SITE
  - FOCUSED EXAMINATION OF AREAS IDENTIFIED IN GENERIC ASSESSMENTS
  - EXAMINED ALL ACCESSIBLE AREAS
  - VIDEOTAPED CONDITIONS FOR DOCUMENTATION AND AS THE BASELINE FOR FUTURE TRENDING OF MATERIAL CONDITION, AS DETERMINED NECESSARY

# PILOT STUDY

# COMPONENT SCREENING

# STEP 2

# SAFETY INJECTION SYSTEM

# IDENTIFICATION OF COMPONENTS

- FLOW DIAGRAMS
- TAG NUMBER
- DESCRIPTION
- LINE NUMBER
- OTHER AVAILABLE INFORMATION
- 392 SI FLUID COMPONENTS
- 168 SI I&C COMPONENTS
- 100 EMERGENCY ELECTRICAL SYSTEM COMPONENTS
- 3 STRUCTURES ASSESSED

# PILOT SYSTEM COMPONENT SCREENING RESULTS

| SI SYSTEM | FLUID | I&C | ELECT |
|---|---|---|---|
| TOTAL # COMPONENTS | 392 | 168 | 100 |
| IMPORTANT COMPONENTS (STEP 2a) | 377 | 97 | 88 |
| NOT SUBJECT TO EFFECTIVE PROGRAM (STEP 2b) | 377• | 43 | 25 |
| SUBJECT TO AGE DEGRADATION (STEP 2c) | 18•• | 43 | 25 |
| # COMPONENTS REQUIRING EVALUATION | 18 | 43 | 25 |

• Operability function of 58 active components covered by effective program. Pressure boundary function assessed for all important SI fluid components.

•• Six components identified by CoDAT as having potential age-related degradation. Twelve components identified as having potentially active degradation mechanisms.

# BALANCE OF PLANT SYSTEMS AND STRUCTURES

- IT IS RECOGNIZED THAT OTHER PLANT SYSTEMS AND STRUCTURES WARRANT FURTHER REVIEW BEYOND THE SCOPE OF LICENSE RENEWAL
  - POTENTIAL TRANSIENT INITIATION
  - PERSONNEL SAFETY
  - ECONOMIC CONSIDERATIONS
- THESE AREAS ARE BEING REVIEWED AS PART OF YANKEE'S OVERALL PLEX EFFORT
- INDUSTRY AND PLANT SPECIFIC RISK STUDIES ARE USED TO FOCUS REVIEW

# COMPONENT EVALUATION SUMMARY

- ONLY 5% OF SI FLUID SYSTEM COMPONENTS REQUIRE FURTHER EVALUATION
  - BASED ON SI SYSTEM MATERIALS, STANDBY SERVICE, AND EXTENSIVE MAINTENANCE AND SURVEILLANCE
  - AVERAGE FOR ALL SYSTEMS IS APPROX. 50%
- MANY ELECTRICAL COMPONENTS HAVE BEEN DISPOSITIONED BASED ON EFFECTIVE PROGRAMS (i.e. MCC'S AND SWITCHGEAR)
  - HOWEVER, ANY SPECIFIC ISSUES WHICH MAY BE IDENTIFIED IN GENERIC EVALUATIONS OF SUBCOMPONENTS WILL BE ADDRESSED
- STRUCTURAL WALKDOWN FOUND PLANT IN GENERALLY VERY GOOD CONDITION
  - FOLLOW-UP EXAMINATIONS, MATERIAL CONDITION TRENDING, AND FURTHER EVALUATION WILL BE RECOMMENDED, AS APPROPRIATE, BASED ON WALKDOWN RESULTS
- PROCEDURE ENHANCEMENTS FOR I&C COMPONENTS IN THE AREAS OF FORMALIZED CONDITION ASSESSMENT AND INCREASED TRENDING ARE BEING CONSIDERED

# FUTURE OF LICENSE RENEWAL

- DEPENDS MORE ON LICENSING PROCESS THAN TECHNICAL CONSIDERATIONS
- PROCESS MUST BE AN IMPROVEMENT OVER NEW PLANT LICENSES
- SHOULD BE STRAIGHTFORWARD AND SIMPLE
- RECOGNIZE EXISTING LICENSE AS BASIS
- FOCUS SHOULD BE ON ABILITY TO MAINTAIN SAFETY FUNCTION OVER TIME USING TECHNIQUES OF INSPECTION, REPLACEMENT, REFURBISHMENT AND MONITORING
- SHOULD RECOGNIZE CONTINUING NRC AND LICENSEE OVERSIGHT OF STRUCTURES, SYSTEMS, AND COMPONENTS

# FUTURE OF LICENSE RENEWAL

(CONTINUED)

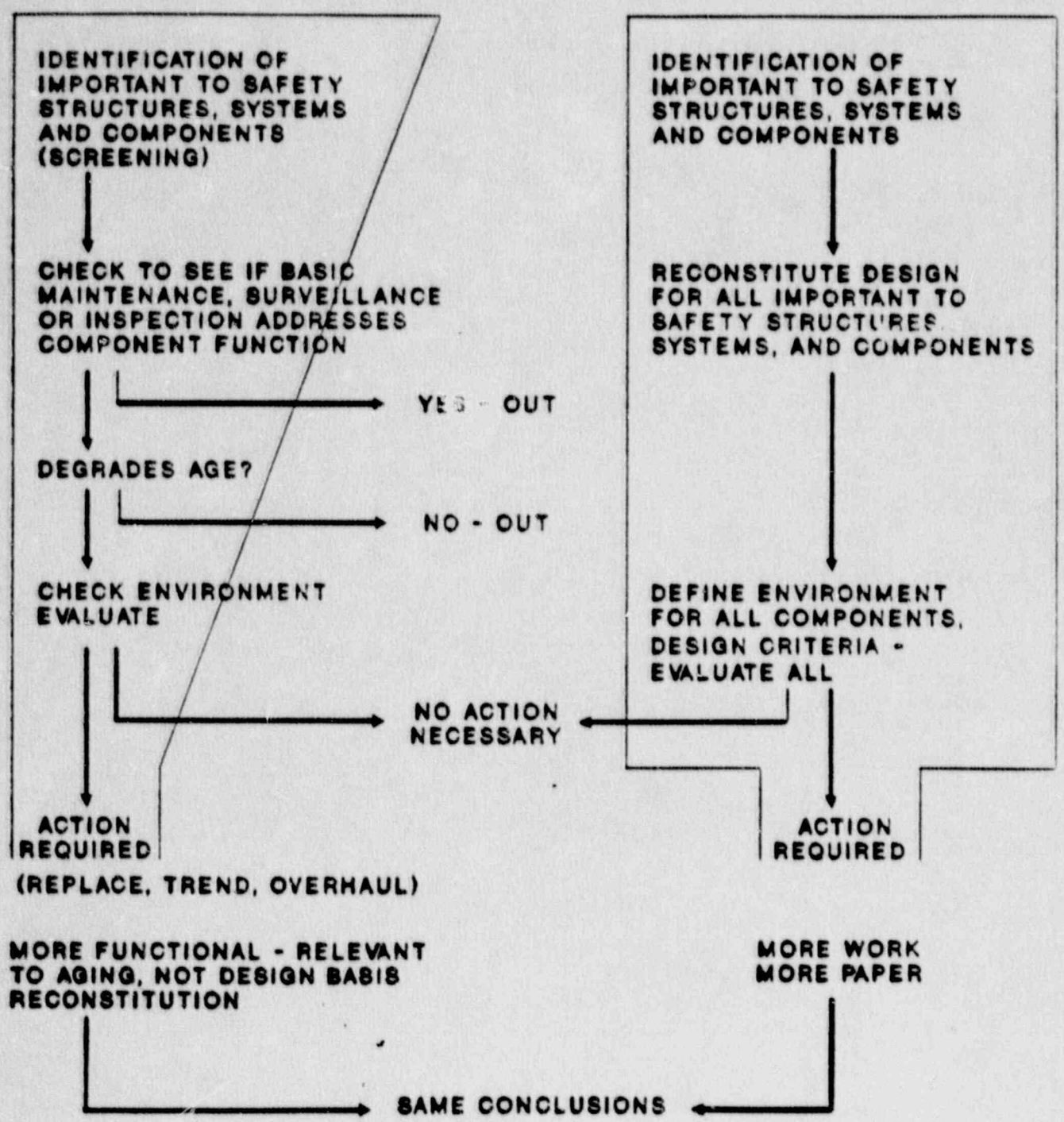
- NEED TO MAKE LICENSE RENEWAL DESIRABLE WITHOUT RISK OF DELAY, UNNECESSARY, NON-AGE RELATED BACKFITS AND A REOPENING OF ENTIRE LICENSING BASIS

- LICENSE RENEWAL SHOULD BE ROUTINE

- PROCESS SHOULD NOT IMPOSE MORE REQUIREMENTS THAN EXISTS TODAY TO ASSURE SAFETY

- WE CAN DO IT, PROVIDED WE FOCUS ON FUNCTION, NOT FORM

# SCREENING COMPARISON



ENCLOSURE 2

# YANKEE - NRC
# PILOT EVALUATION REPORT MEETING
# DECEMBER 13, 1989

## EVALUATION
## OF
## COMPONENTS

BY
JOSEPH T. MCCUMBER
YANKEE ATOMIC ELECTRIC COMPANY

# OBJECTIVES

DEMONSTRATE THROUGH A FORMAL PROCESS THAT:

- ALL COMPONENTS REQUIRING LICENSE RENEWAL REVIEW ARE IDENTIFIED
- ANY AGE RELATED DEGRADATION WHICH COULD RESULT IN A COMPONENT'S INABILITY TO PERFORM ITS REQUIRED SAFETY FUNCTIONS, DURING THE RENEWAL PERIOD, IS RECOGNIZED AND PROPERLY MANAGED

# PROCESS KEY POINTS

- COMPONENT IDENTIFICATION AND EVALUATION PERFORMED IN ACCORDANCE WITH DETAILED WORK INSTRUCTIONS
- UTILIZED A SCREENING METHODOLOGY AND CRITERIA TO FOCUS EFFORTS
- PROVIDE DESIGN INFORMATION, ENVIRONMENTAL CONDITIONS, AND ASSOCIATED DOCUMENTATION ONLY AS NEEDED TO SUPPORT JUSTIFICATION OF CONTINUED SAFETY
- VARIOUS METHODS USED TO DETERMINE THE POTENTIAL FOR AGE RELATED DEGRADATION IN THE MANAGEMENT OF SUCH DEGRADATION

# SCOPE

COMPONENT REVIEW OF EXAMPLE SYSTEMS AND STRUCTURES COVERING BROAD RANGE OF COMPONENTS:

- SAFETY INJECTION FLUID SYSTEM AND I&C COMPONENTS
- EMERGENCY ELECTRICAL POWER SYSTEM
- PRIMARY AUXILIARY BUILDING, DEISEL GENERATOR BUILDING, AND BATTERY ROOM NO. 3 BUILDING

# METHODOLOGY AND CRITERIA

- BASED ON NUMARC NUPLEX METHODOLOGY
- COMPONENTS REQUIRING REVIEW ARE EQUIVALENT TO "IMPORTANT TO SAFETY" SCOPE

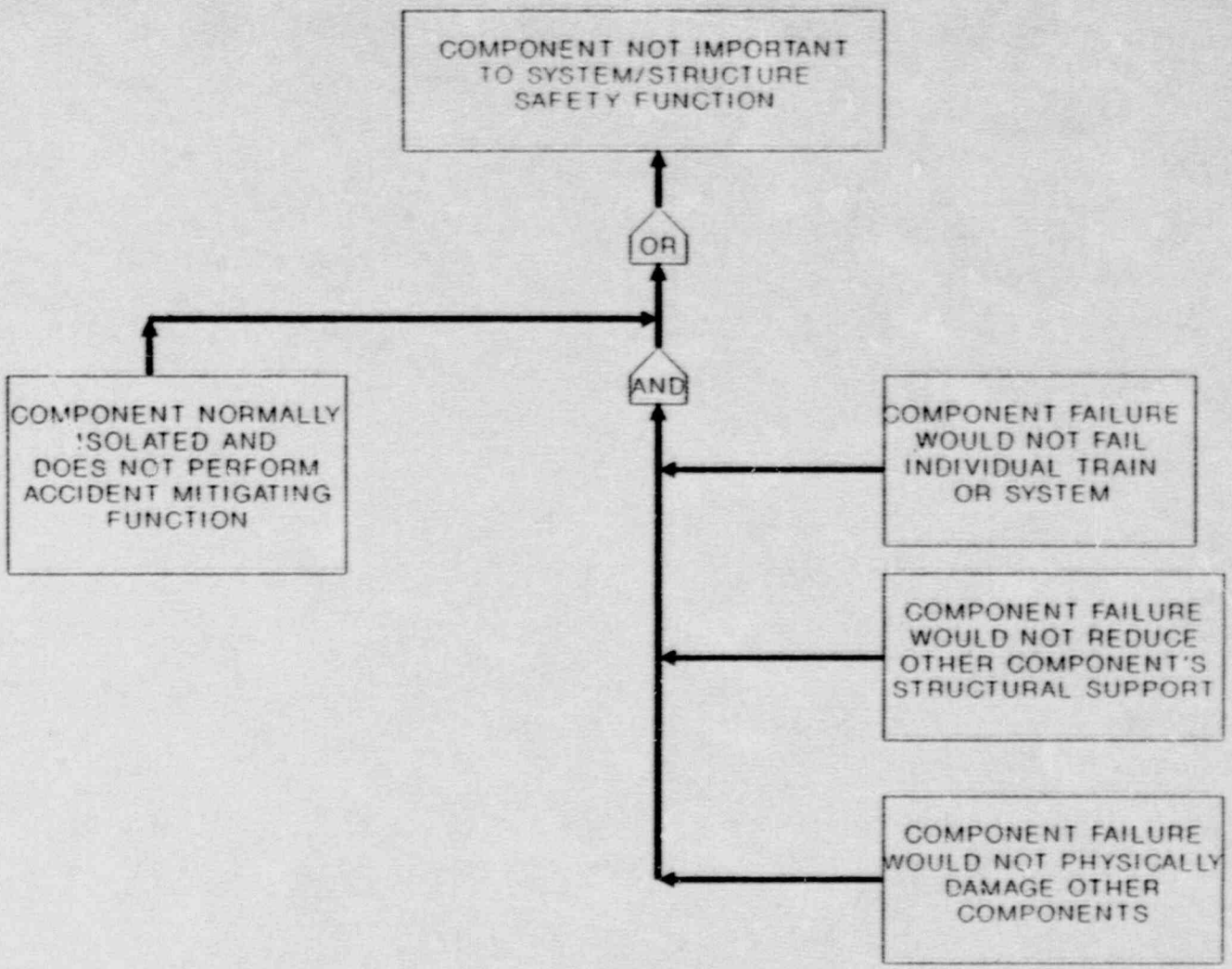



**FIGURE _**
CRITERIA FOR IDENTIFYING COMPONENTS
NOT IMPORTANT TO SYSTEM/STRUCTURE SAFETY FUNCTION

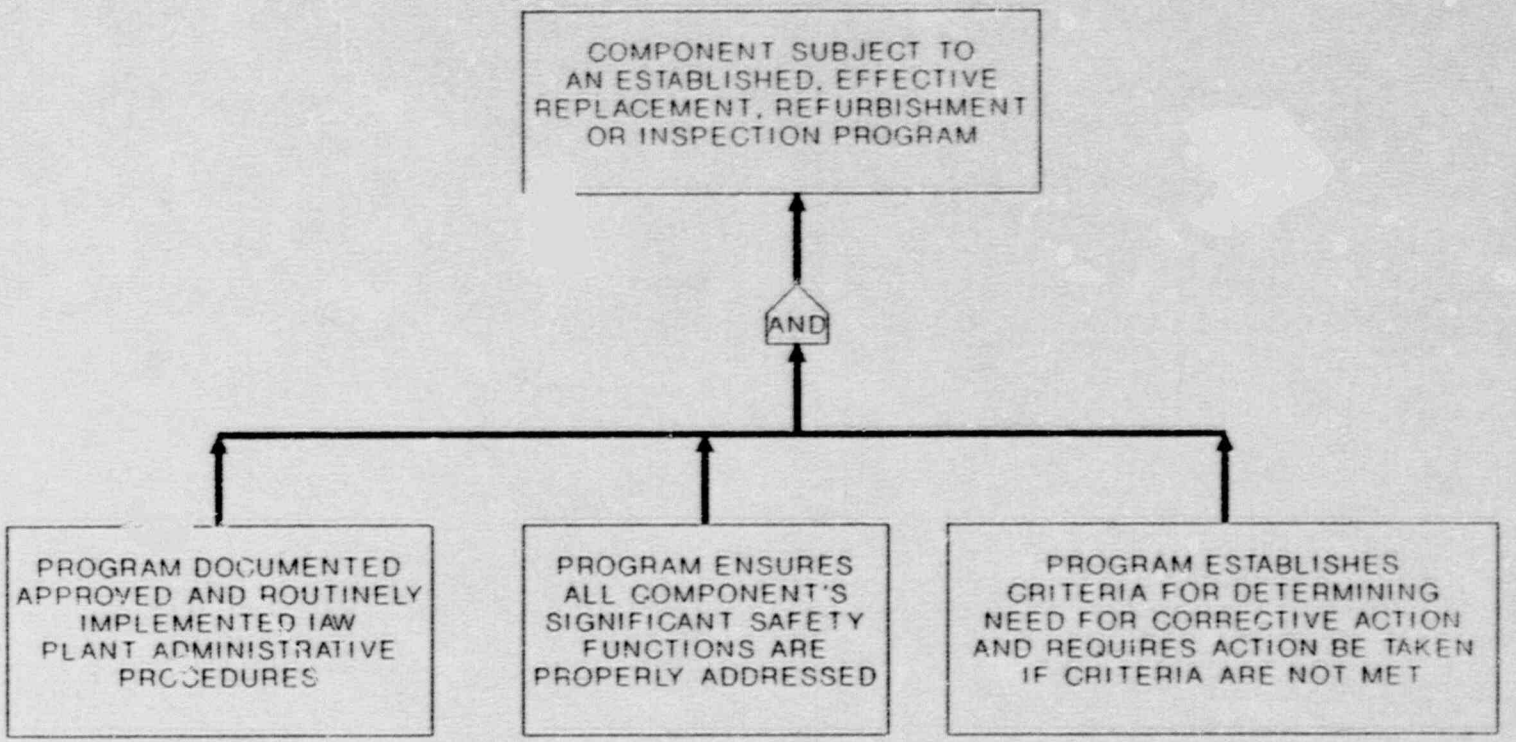



**FIGURE ---**

CRITERIA FOR IDENTIFYING COMPONENTS SUBJECT TO ESTABLISHED, EFFECTIVE, REPLACEMENT, REFURBISHMENT OR INSPECTION PROGRAMS

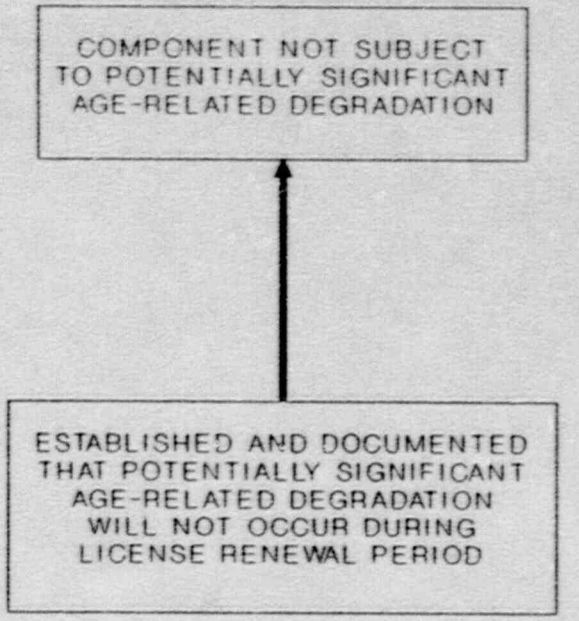



**FIGURE --**

CRITERIA FOR IDENTIFYING COMPONENTS NOT SUBJECT TO POTENTIALLY SIGNIFICANT AGE-RELATED DEGRADATION

# FLUID SYSTEM COMPONENT REVIEW

- MOST FLUID SYSTEM COMPONENTS ARE CONSIDERED SIGNIFICANT TO SYSTEM SAFETY FUNCTION.
- SAFETY FUNCTIONS: Operability
  Pressure Boundary
- IN GENERAL, SURVEILLANCE AND TEST PROCEDURES PROPERLY MANAGE OPERABILITY FUNCTION.
- EXPERT SYSTEM USED TO ACCESS DATABASE INFORMATION TO DETERMINE POTENTIAL AREAS OF PRESSURE BOUNDARY DEGRADATION.

# EXPERT SYSTEM OVERVIEW

- CREATED ON COMMERCIAL SHELL
- SIMPLE 'IF - THEN' RULE STRUCTURE
- RULES BASED ON LOGIC DIAGRAMS DEVELOPED FOR EACH MECHANISM
- APPROXIMATELY 330 RULES
- EVALUATES 20 DEGRADATION MECHANISMS
- ACCESSES MULTIPLE DATA BASES TO RETRIEVE DATA

EXPERT SYSTEM NAMED CoDAT

# DEGRADATION MECHANISMS

FOR FLUID COMPONENTS, CoDAT ASSESSES THE POTENTIAL FOR:

GENERAL CORROSION
EROSION/CORROSION
TWO PHASE EROSION
MIC
IGSCC
TGSCC
IGA
THERMAL EMBRITTLEMENT
NEUTRON EMBRITTLEMENT
HYDROGEN EMBRITTLEMENT
SELECTIVE LEACHING
GALVANIC CORROSION
IASCC

NOTE: Other degradation mechanisms, such as fatigue, are assessed separately.

# FLUID SYSTEM
# SAFETY INJECTION SYSTEM

| TOTAL COMPONENTS | 392 |
|---|---|
| TANKS | 2 |
| PUMPS | 6 |
| MOV'S | 24 |
| MANUAL VALVES | 192 |
| CHECK VALVES | 27 |
| PIPING | 76 |
| INSTRUMENTS | 52 |
| SUBCOMPONENTS | 13 |

# FLUID SYSTEM COMPONENTS REQUIRING FURTHER EVALUATION

- GENERAL CORROSION OF ALUMINUM SI TANK DUE TO FLUID PH
- CREVICE PITTING AND MIC OF BURIED PIPING
- GENERAL CORROSION OF SI ACCUMULATOR TANK SHELL
- OPERABILITY OF SELECTED MOVs AND SAFETY VALVES

# SI FLUID
# SYSTEM RESULTS

| | |
|---|---|
| TOTAL COMPONENTS | 392 |
| NOT IMPORTANT TO SAFETY FUNCT. | 15 |
| COVERED BY PLANT PROGRAMS | 0 (58 OF 70 ~~PRESSURE BOUNDARY~~ OPERABILITY) |
| NOT SUBJECT TO DEGRADATION | 371 |
| REQUIRING FURTHER EVALUATION | 18 (6 PRESSURE BOUNDARY<br>12 OPERABILITY) |

# GENERAL FLUID SYSTEM DEGRADATION MECHANISM RESULTS

| DEGRADATION MECHANISM | % |
|---|---|
| GENERAL CORROSION | 37 |
| MIC | 20 |
| GALVANIC CORROSION | 17 |
| CREVICE/PITTING CORROSION | 12 |
| TGSCC | 8 |
| IGSCC | 7 |
| EROSION/CORROSION | 5 |
| THERMAL EMBRITTLEMENT | 5 |
| OTHERS | <2 |

PRELIMINARY

# I&C AND ELECTRICAL COMPONENT REVIEW

- MANY COMPONENTS HAVE BEEN REPLACED IN RECENT YEARS
- EXISTING PROGRAMS ( i.e. EQ, CALIBRATION AND TESTING) HAVE BEEN EFFECTIVE IN ENSURING CONTINUED SAFETY
  - ENHANCEMENTS IN THE AREAS OF FORMALIZED CONDITION ASSESSMENT AND INCREASED TRENDING ARE BEING CONSIDERED
- COMPONENTS NOT DEMONSTRATED AS COVERED BY PLANT PROGRAMS REQUIRE FURTHER EVALUATION
- MANY COMPONENTS WILL BE GROUPED FOR GENERIC EVALUATION

# I&C SYSTEM
# SAFETY INJECTION SYSTEM

| TOTAL COMPONENTS | 168 |
|---|---|
| TRANSMITTERS | 22 |
| INDICATORS | 46 |
| SWITCHES | 27 |
| ALARMS | 4 |
| RELAYS | 10 |
| MONITORS | 21 |
| RECORDERS | 1 |
| POWER SUPPLIES | 5 |
| VALVES | 24 |
| MISC. ELECTRONICS | 8 |

# I&C COMPONENTS
# IMPORTANT TO SYSTEM SAFETY FUNCTION

ALL INSTRUMENTS COVERED BY THE FOLLOWING ARE CONSIDERED IMPORTANT TO SYSTEM SAFETY FUNCTION:

EQ PROGRAM

SAFETY CLASS MANUAL

TECHNICAL SPECIFICATION

REGULATORY GUIDE 1.97 (POST ACCIDENT MONITORING)

APPENDIX R REQUIRED INSTRUMENTATION

SAFE SHUTDOWN SYSTEM INSTRUMENTATION

# I&C
# SYSTEM RESULTS

| | |
|---|---|
| TOTAL COMPONENTS | 168 |
| NOT IMPORTANT TO SAFETY FUNCT. | 71 |
| COVERED BY PLANT PROGRAMS | 54 (4 UNDER EQ PROGRAM) |
| NOT SUBJECT TO DEGRADATION | 0 |
| REQUIRING FURTHER EVALUATION | 43 |

# ELECTRICAL SYSTEM
# EMERGENCY ELECTRICAL POWER SYSTEM

| TOTAL COMPONENTS | 100 |
|---|---|
| SWITCHGEAR | 34 |
| MOTORS | 55 |
| BREAKERS/SWITCHES | 5 |
| SOLENOIDS | 3 |
| INVERTERS | 2 |
| TRANSFORMERS | 1 |

# ELECTRICAL COMPONENTS IMPORTANT TO SYSTEM SAFETY FUNCTION

ALL ELECTRICAL EQUIPMENT IS CONSIDERED IMPORTANT TO SYSTEM SAFETY FUCTION EXCEPT FOR:

- LOADS DETERMINED NOT IMPORTANT TO FLUID SYSTEM SAFETY FUNCTION
- COMPONENTS NORMALLY ELECTRICALLY DISABLED
- COMPONENTS USED ONLY FOR MAINTENANCE OR REFUELING

# ELECTRICAL SYSTEM RESULTS

| TOTAL COMPONENTS | 100 |
|---|---|
| NOT IMPORTANT TO SAFETY FUNCT. | 12 |
| COVERED BY PLANT PROGRAMS | 63 (23 UNDER EQ PROGRAM) |
| NOT SUBJECT TO DEGRADATION | 0 |
| REQUIRING FURTHER EVALUATION | 25 |

# ELECTRICAL EQUIPMENT GROUPINGS FOR FURTHER EVALUATION

| CATEGORY | EQUIPMENT |
|---|---|
| COMMUNICATIONS | ANNUNCIATORS |
| | PHONES |
| | SIRENS/HORNS |
| CONDUCTORS | CABLE |
| | PENETRATIONS |
| | BUS DUCT |
| CONTROL AND PROTECTION | BREAKERS |
| | RELAYS |
| | FUSE HOLDERS |
| | GROUNDING/SURGE PROT. |
| | SWITCHES/SHUNTS |
| DC SUPPLY GENERATORS | BATTERIES |
| | DIESELS |
| LOADS | MOTORS |
| | HEATERS |

# ELECTRICAL EQUIPMENT GROUPINGS FOR FURTHER EVALUATION (CONT.)

| CATEGORY | EQUIPMENT |
|---|---|
| TERMINATIONS | LUGS |
| | SPLICES |
| | TERMINAL BLOCKS |
| TRANSFORMERS | DRY |
| | LIQUID FILLED |
| | VOLTAGE REGULATORS |

# PLANT STRUCTURES EVALUATED

PRIMARY AUXILIARY BUILDING
- TWO STORY MIXED REINFORCED CONCRETE AND BRACED STEEL FRAME BUILDING
- REINFORCED CONCRETE FOUNDATION
- MASONRY AND REINFORCED CONCRETE WALLS

DIESEL GENERATOR BUILDING
- REINFORCED CONCRETE FOUNDATION
- SINGLE STORY BRACED STEEL FRAME BUILDING
- MASONRY WALLS

BATTERY ROOM NO.3 BUILDING
- REINFORCED CONCRETE FOUNDATION AND ROOF SLAB
- STEEL REINFORCED MASONRY WALLS

# STRUCTURAL COMPONENT GENERIC ASSESSMENTS

- PROVIDE FOCUS FOR PLANT WALKDOWN
- IDENTIFY AGE RELATED DEGRADATION MECHANISMS APPLICABLE TO STRUCTURAL COMPONENTS
- DESCRIBE CONDITIONS WHICH LEAD TO DEGRADATION AND HOW DEGRADATION IS MANIFESTED
- ASSESSMENTS:
  - CONCETE STRUCTURAL COMPONENTS
  - STRUCTURAL STEEL COMPONENTS
  - SEALANTS, ROOFING, AND WATERPROOFING BARRIERS
  - EQUIPMENT SUPPORT COMPONENTS

# WALKDOWN OF PLANT STRUCTURES

- PERFORMED IN ACCORDANCE WITH DETAILED WORK INSTRUCTIONS
- APPROXIMATELY 6 MANWEEKS OF PREPARATION
  - STUDYING ASSESSMENTS AND PLANT DRAWINGS
  - PREPARING DATA SHEETS AND PLANS
- WALKDOWN TEAM
  1 YANKEE
  2 STONE & WEBSTER
  1 BECHTEL
  (OVER 80 YEARS TOTAL COMBINED CIVIL ENGINEERING EXPERIENCE)
- TWO WEEKS ON SITE
  - FOCUSED EXAMINATION OF AREAS IDENTIFIED IN GENERIC ASSESSMENTS
  - EXAMINED ALL ACCESSIBLE AREAS
  - VIDEOTAPED CONDITIONS FOR DOCUMENTATION AND AS THE BASELINE FOR FUTURE TRENDING OF MATERIAL CONDITION, AS DETERMINED NECESSARY

# WALKDOWN FINDINGS

- BUILDINGS ARE GENERALLY IN VERY GOOD CONDITION
- STRUCTURAL STEEL - AREAS WITH INITIATION OF MINOR CORROSION WERE OBSERVED, POINTING TO THE NEED FOR INCREASED ATTENTION TO MAINTENANCE PAINTING
- CONCRETE - A FEW INSTANCES OF DEGRADATION WERE OBSERVED (i.e. MINOR CRACKING). FURTHER EVALUATION WILL DETERMINE THE NEED AND EXTENT OF FOLLOW-UP EXAMINATION OR REFURBISHMENT
- ROOFING DEGRADATION WAS NOTED, WITH SOME REPLACEMENT IN PROGRESS. FURTHER EVALUATION OF ROOFING WILL BE PERFORMED