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DTondi
HBClayton

AUG 20 1985

MEMORANDUM FOR: Dennis L. Ziemann, Chief
Procedures and Systems Review Branch
Division of Human Factors Safety

William H. Regan, Acting Chief
Human Factors Engineering Branch
Division of Human Factors Safety

FROM: Thomas A. Greene, Nuclear Engineer
Section B - Systems
Procedures and Systems Review Branch
Division of Human Factors Safety

Joel J. Kramer, Sr. Engineering
Psychologist
Section A
Human Factors Engineering Branch
Division of Human Factors Safety

SUBJECT: SUMMARY OF MEETING WITH COMBUSTION ENGINEERING OWNERS GROUP FOR EMERGENCY PROCEDURE GUIDELINES

A meeting between representatives of Combustion Engineering Owners Group (CEOG) for Emergency Procedure Guidelines and the NRC was held on July 31, 1985, in Bethesda. Enclosure 1 contains a list of attendees. The purpose of the meeting was to present draft Set 2 of Revision 3 to Generic Emergency Guidelines, to discuss the status of the SER for Set 1 of Revision 3 to Generic Emergency Guidelines, to discuss the review process of Generic Emergency Guidelines open issues, and to discuss task analysis supporting Emergency Operating Procedures and Detailed Control Room Design Reviews (DCRDR). A summary of the meeting highlights follows:

A. The CEOG stated that draft Set 2 of Revision 3 to CEN-152 was not yet ready. The draft is now being reviewed by the CEOG prior to transmittal, and is expected to be available in September 1985. Since the CEOG internal review process is incomplete, this agenda item was deleted. The CEOG did state that the submittal would address six open items. These items were in the area of: Loss of Off-site Power, Natural Circulation, Station Blackout, MVA expansion, charging pumps, and P/T limits.

B. The staff informed the CEOG that the SSER on Submittal 1 should be completed by the end of August. We noted that the issuance of an SSER was not possible until the staff received the CEOG formal submittal. The CEOG stated that the submittal was sent the early part of July. The CEOG proposed that they send the NRC three copies of their next submittal; one copy to DL, one to the reviewer, and one to the Project Manager.

OFFICE						
SURNAME						
DATE						

8508280283 850820
PDR TOPRP EMVC-E
C PDR

C. It was suggested that some time be added to the schedule so that the staff could review the incorporation of their comments into the guidelines before writing the Safety Evaluation.

D. The CEOG asked whether the reorganization would effect the review process. The staff stated that new personnel may be involved in the review, but it was not known at this time. The CEOG made it clear that they are interested in minimizing the impact of NRR reorganization on the development of guidelines.

E. The CEOG asked about the status of their PRA work relating to the emergency procedure guidelines. The central issue is whether probabilistics can be utilized to resolve one or more of the identified open items. The staff indicated that we would try to obtain an NRC position, but suggested that CEOG not standby idle; in particular, we recommended that CEOG submit the PRA material which was being discussed with RRAB informally.

F. The CEOG presented their methodology and sample results for their "Generic Information and Control Characteristics Review Program" for discussion. Enclosure 2 contains a copy of their viewgraphs. Following a question and answer session, the staff concluded that the CEOG work was responsive to our concerns stated in an August 29, 1984 meeting with the CEOG relative to the DCRDR, Systems Function and Task Analysis requirement of Supplement 1 to NUREG-0737. The staff finds that this work satisfies this Supplement 1 requirement for the generic aspects; each CE plant would have to continue the analysis for plant-specific deviations and include appropriate justification for these deviations. CEOG indicated that a formal submittal of their Generic Information and Control Characteristics Review Program would be made to the NRC.

Original signed by
Thomas A. Greene, Nuclear Engineer
Section B - Systems
Procedures and Systems Review Branch
Division of Human Factors Safety

Original signed by
Joel J. Kramer, Sr. Engineering Psychologist
Section A
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Division of Human Factors Safety

Enclosures:
1. List of Attendees
2. Viewgraphs

DW/TAG2/CE EPG MTG SUM

OFFICE	DHFS:PSRB	DHFS:PSRB	DHFS:HFEB	DHFS:HFEB			
SURNAME	TAGreene:ah	GRMazetis	JJKramer	DTondi			
DATE	8/16/85	8/20/85	8/20/85	8/20/85			

ENCLOSURE 1

LIST OF ATTENDEES
JULY 31, 1985

COMBUSTION ENGINEERING

G. Max
P. Hansen
R. Pearce
G. Bischoff
P. Nelson

COMBUSTION ENGINEERING OWNERS GROUP

J. Tate, SCE
W. Bromley, SCE
D. Van Tassell, FPL
W. Klein, FPL
P. Pieringer, BG&E
J. Prichert, SCE
C. Williams, SCE
J. Becker, NU
W. Windecker, FPL
R. Fenech, CPC
K. Holthaus, OPPD

NRC

T. Greene
G. Mazetis
J. Kramer
W. Regan
R. Ramirez
F. Akstulewicz
D. Houston
L. Beltracchi
R. Eckenrode

OTHER

R. Kirshner, ARD

ENCLOSURE 2

C-E OWNERS GROUP

GENERIC INFORMATION AND

CONTROL CHARACTERISTICS REVIEW

BASED ON THE

COMBUSTION ENGINEERING EMERGENCY

PROCEDURE GUIDELINES [CEN-152, REVISION 02]

JULY, 1985

THE EMERGENCY PROCEDURE GUIDELINE SYSTEM

OVERVIEW

- C-E EPGs DO CONSTITUTE AN ADEQUATE BASIS FOR DETERMINING GENERIC AND PLANT SPECIFIC OPERATOR INFORMATION AND CONTROL REQUIREMENTS.

- BASIS FOR THIS CONCLUSION IS IN THE EPG DEVELOPMENT PROCESS AND DOCUMENTATION

- DEVELOPMENT

  - INGREDIENTS
  - SAFETY FUNCTIONS
  - PROCESS
  - STRATEGY
  - $\overset{\bullet\bullet}{H}$ CONSIDERATIONS

- DOCUMENTATION

  - TECHNICAL ANALYSES
  - TRAINING LESSONS
  - BASES AND IMPLEMENTATION GUIDANCE

- IMPLEMENTATION SUCCESS

EPG DEVELOPMENT PROCESS

- BEST ESTIMATE TECHNICAL ANALYSES
- PRELIMINARY STRATEGY DEVELOPED BY SYSTEMS DESIGNERS AND ANALYSTS
- REVIEWED AND REFINED BY OPERATIONS PERSONNEL, PROCEDURES WRITERS, INSTRUMENTATION AND CONTROLS DESIGNERS, ANALYTICAL SPECIALISTS, TRAINING SPECIALISTS
- EPGs REAUDITED TO ENSURE:
  - COVERAGE OF SAFETY FUNCTIONS
  - CORRESPONDENCE TO STRATEGY CHARTS
  - MAXIMUM AND APPROPRIATE UTILIZATION OF SUCCESS PATHS (CONTROL FUNCTIONS)
  - CONSIDERATION OF ALTERNATIVE SCHEMES O 4ONITORING TRANSIENTS
- NRC REVIEW
- VALIDATION
  - SIMPLE AND COMPLEX (MULTIPLE FAILURE) SCENARIOS

SAFETY FUNCTION STRUCTURE OF EPGs

- INHERENT TOP DOWN APPROACH
  ALL GUIDELINES BASED ON SAFETY FUNCTIONS

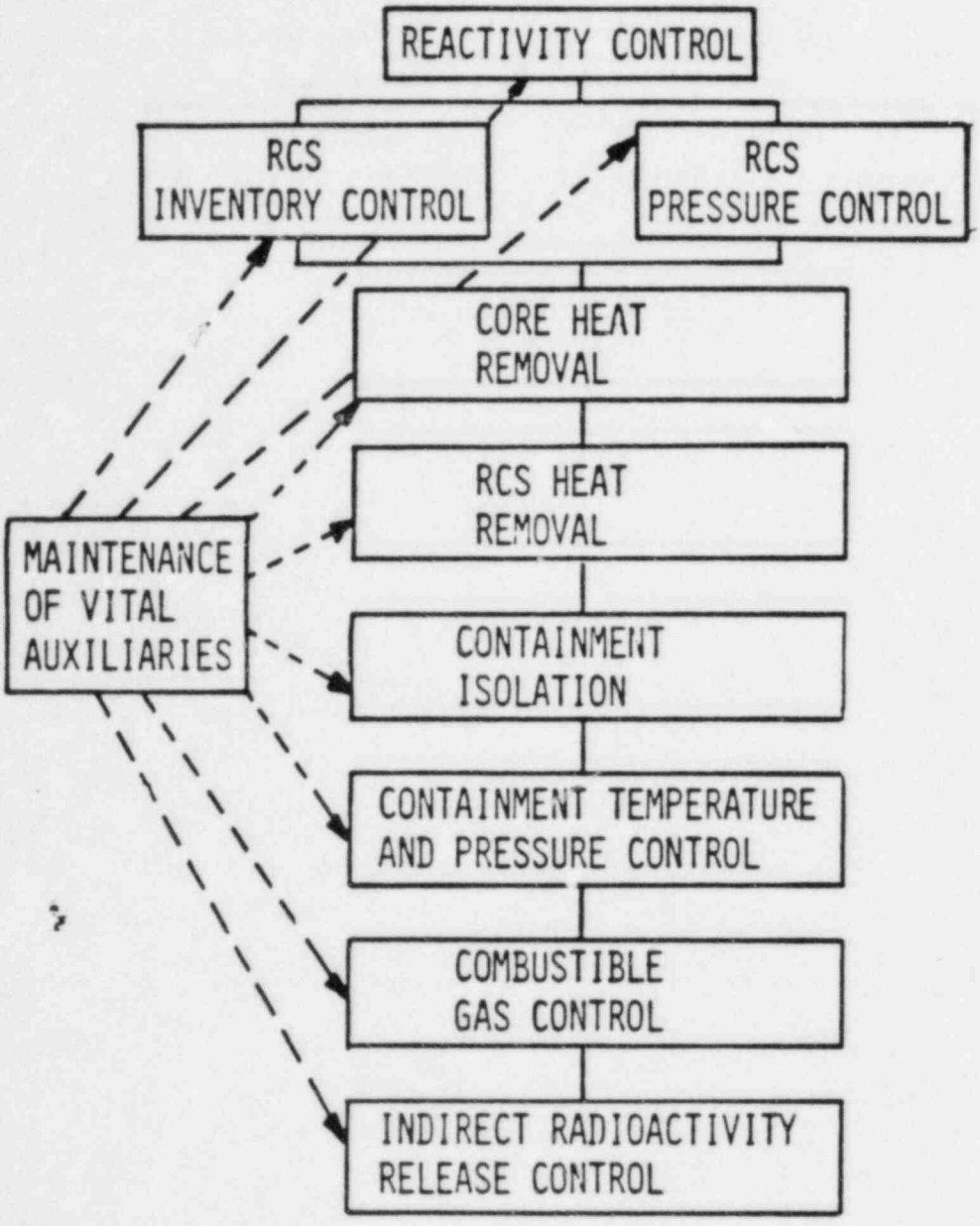
- EACH FUNCTION RELATED TO SUCCESS PATHS

  - SUCCESS PATHS LINK FUNCTION TO PLANT HARDWARE
  - SUCCESS PATHS REFER TO SPECIFIC PARAMETERS AND CONTROLS
  - ALTERNATIVE SUCCESS PATHS PROVIDE BACKUP MEANS OF ASSESSING AND FULFILLING EACH FUNCTION

- NUMERICAL CRITERIA USED THROUGHOUT EPGs

  - SAFETY FUNCTION ASSESSMENT
  - DECISION CRITERIA (E.G., RCP TRIPPING [illegible] TERMINATION)
  - CRITERIA REFERENCED TO SPECIFIC PARAMETERS
  - CORROBORATION BY ALTERNATIVE MEANS REQUIRED

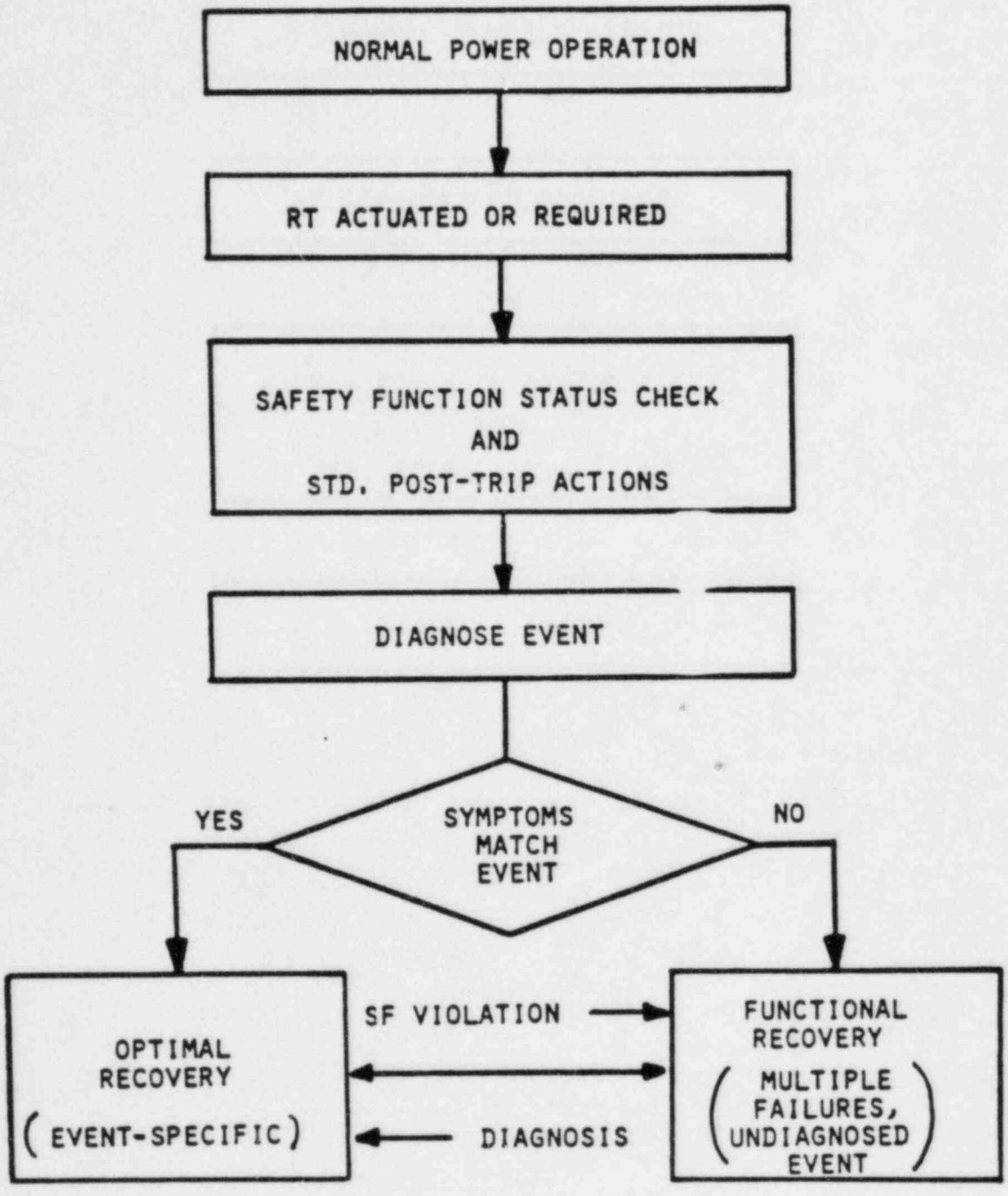
HIERARCHY OF SAFETY FUNCTIONS



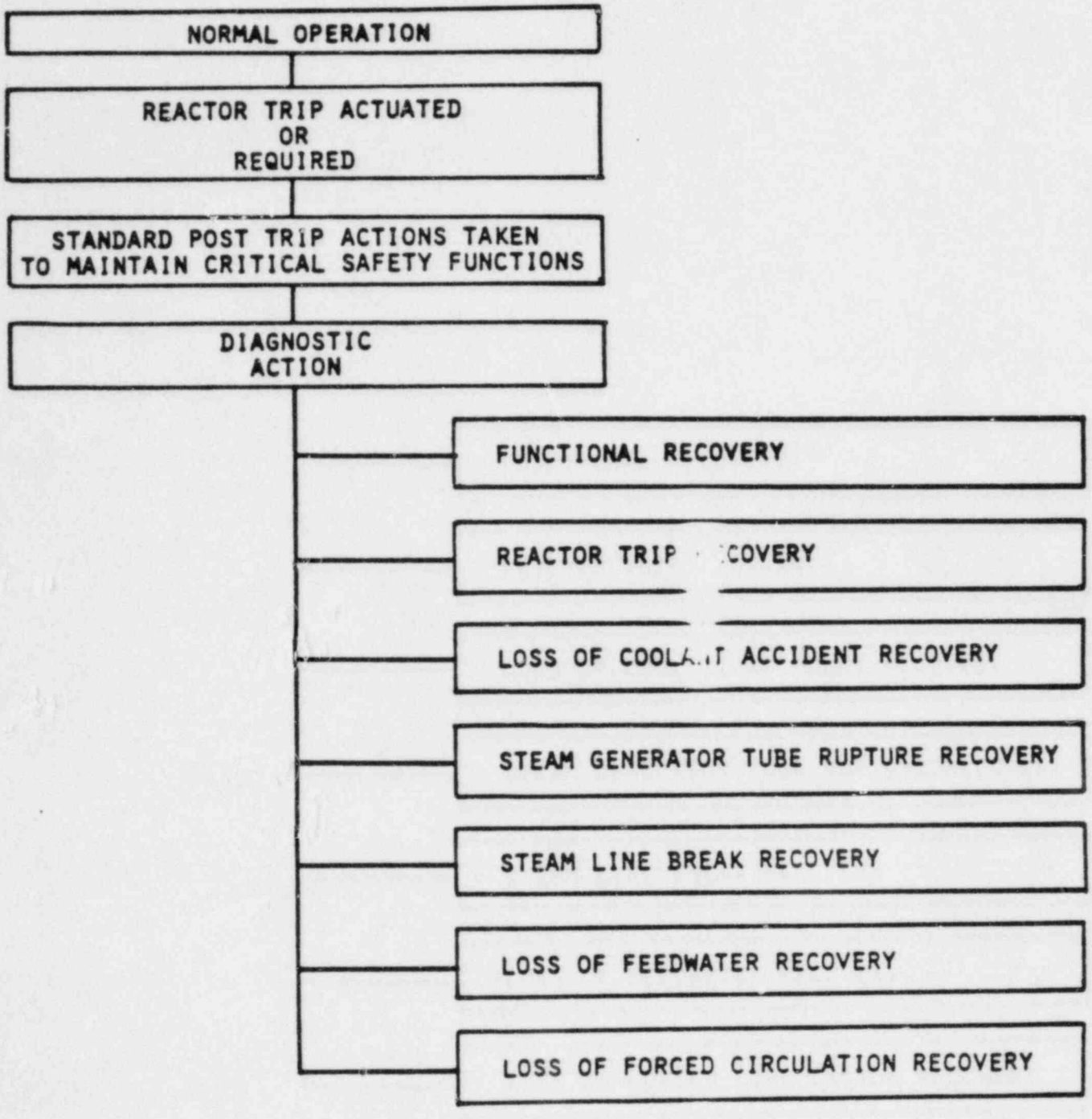
C-E EPG FRAMEWORK ELEMENTS

- STANDARD POST-TRIP ACTIONS
  - IMMEDIATE ACTIONS FOR ANY POST-TRIP OR ESF ACTUATIONS
- OPTIMAL RECOVERY GUIDELINES
  - TREAT SPECIFIC SYMPTOM SETS
- FUNCTIONAL RECOVERY GUIDELINES
  - MAINTAIN PLANT IN SAFE, STABLE CONDITION
  - IF UNABLE TO IDENTIFY SYMPTOM SET
  - IF SYMPTOM TREATMENT INADEQUATE
- STRATEGY CHARTS
- SAFETY FUNCTION STATUS CHECKS
- RECENT TECHNICAL ISSUES

EMERGENCY PROCEDURE GUIDELINE SYSTEM



OVERVIEW OF THE EMERGENCY PROCEDURE GUIDELINE SYSTEM



OPTIMAL RECOVERY GUIDELINE

- STRATEGIC APPROACH FOR SPECIFIC SYMPTOM SET
  - EMPHASIZES SPECIFIC SUCCESS PATHS
- SAFETY FUNCTION STATUS CHECK
- JOB PERFORMANCE AIDS
- SAFE SHUTDOWN
- PREVENT CORE DAMAGE, MINIMIZE RELEASES
- TASK SPECIFICATION

FUNCTIONAL RECOVERY GUIDELINE

- MAINTAIN SAFE, STABLE CONDITION
- PREVENT CORE DAMAGE, MINIMIZE RELEASES
  - INDEPENDENT OF SPECIFIC SYMPTOM SET
- PURELY FUNCTIONAL OR SYMPTOMATIC APPROACH
  - SUCCESS PATHS
- SAFETY FUNCTION STATUS CHECK

SUMMARY

- NRC/CEOG/C-E MEETING OF AUGUST 29, 1984

  - BASIC PARAMETERS AND CONTROL FUNCTIONS NEEDED TO SATISFY SAFETY FUNCTIONS ARE IDENTIFIED IN CEN-152

  - TASK SPECIFICATION IN CEN-152 IS NOT SUFFICIENTLY DETAILED TO SUPPORT GENERIC OR PLANT SPECIFIC ICCR

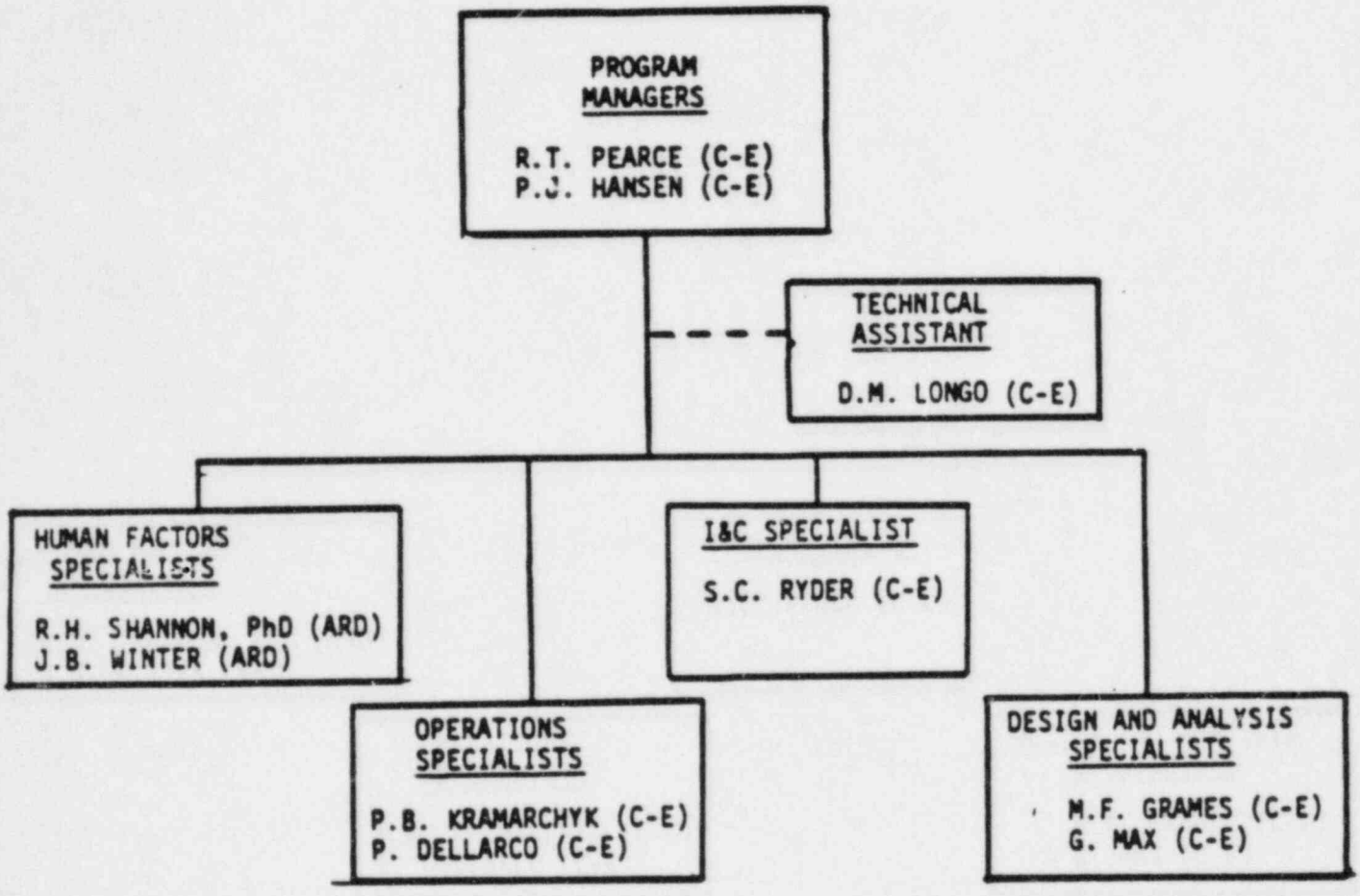
INFORMATION AND CONTROL CHARACTERISTICS REVIEW (ICCR)

- MULTIDISCIPLINARY TEAM
- MODEL
- PROCESS
- EXAMPLE OF PROCESS
- PLANT SPECIFIC CONVERSION

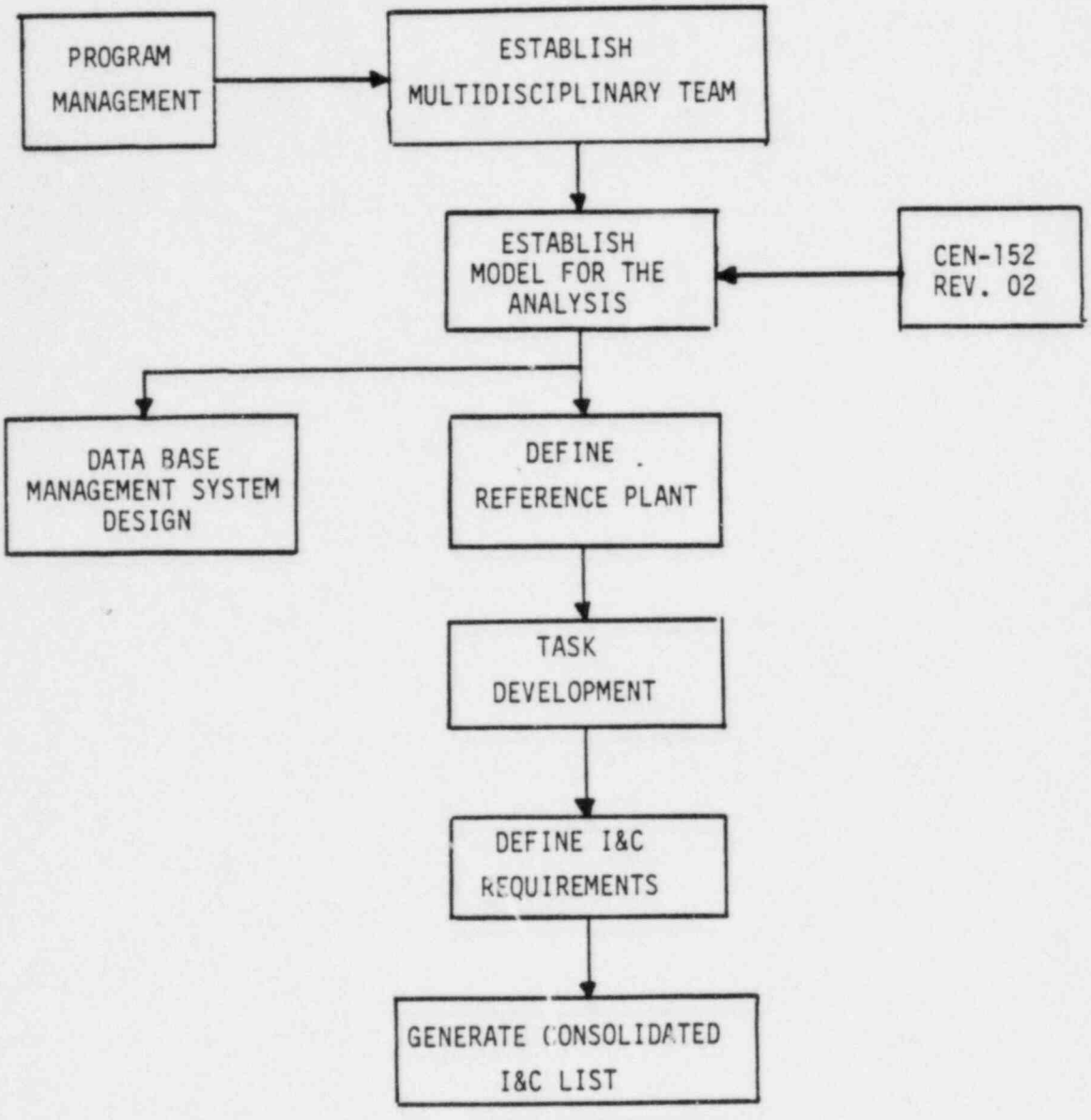
MULTIDISCIPLINARY TEAM

- NUREC-0801 SPECIFIES QUALIFICATIONS AND STRUCTURE
- REACTOR OPERATIONS
- INSTRUMENTATION AND CONTROLS ENGINEERING
- HUMAN FACTORS SPECIALIST
- OTHER SUBJECT MATTER EXPERTS
  - SYSTEMS ANALYST EXPERTS
  - OPERATIONS EXPERTS

GENERIC ICCR ORGANIZATION CHART



OVERVIEW OF PROCESS



ICCR MODEL

ICCR MODEL

- GOAL OF ANALYSIS DEFINED
- EPGs AS STARTING POINT (FUNCTIONAL ANALYSIS)
- EXISTING FUNCTIONAL ALLOCATION ASSUMED
- PROCESS DEFINED
- REFERENCE PLANT
  - HARDWARE BASIS
- TASK CRITERIA
- TASK ELEMENT CRITERIA
- I&C REQUIREMENT CHARACTERISTICS DEFINED
  - CAPTURED IN DBMS CODING SCHEME

GOAL OF ANALYSIS

TO IDENTIFY THE FUNCTIONAL CHARACTERISTICS OF THE OPERATOR INFORMATION AND CONTROL REQUIREMENTS NEEDED TO SUPPORT EMERGENCY OPERATIONS (AVAILABILITY AND SUITABILITY)

- RELIABLY
- VALIDLY
- IN A MANNER WHICH SUPPORTS PLANT SPECIFIC APPLICATION

REFERENCE PLANT DEFINITION

- SUPPORTS THE DEFINITION OF TASK ELEMENTS
- SOURCE - DESIGN INFORMATION FOR C-E 2700 MW(t) PLANT
- SYSTEM DESCRIPTION FOR EACH SYSTEM
- SIMPLIFIED SYSTEM DIAGRAM FOR EACH SYSTEM
- COMPONENT LISTINGS

SYSTEMS OF GENERIC ICCR

SYSTEM	ABBREVIATION
MISCELLANEOUS	MISC
REACTOR COOLANT SYSTEM	RCS
REACTOR COOLANT PUMPS	RCP
STEAM GENERATOR	S/G
MAIN STEAM SYSTEM	MSS
SAFETY INJECTION SYSTEM	SIS
CONTAINMENT ATMOSPHERE CONTROL SYSTEM	CACS
CONTAINMENT ISOLATION SYSTEM	CIS
FEEDWATER SYSTEMS	FWS
CHEMICAL AND VOLUME CONTROL SYSTEM	CVCS
PRESSURIZER SYSTEM	PZR
PRESSURIZER AND REACTOR VESSEL GAS VENT SYSTEM	RGVS
REACTIVITY CONTROL (CEA'S, CEDM'S, RPS)	RXCS
ELECTRICAL DISTRIBUTION SYSTEM	EDS
COMPONENT COOLING WATER SYSTEM	CCWS
COMPRESSED AIR SYSTEM	CAS
INTAKE COOLING WATER SYSTEM	ICWS
STEAM GENERATOR BLOWDOWN SYSTEM	DGBS
SHUTDOWN COOLING SYSTEM	SCS
RCS AND STEAM GENERATOR SAMPLING SYSTEM	SS
NONE	NONE

SAMPLE SYSTEM DIAGRAM

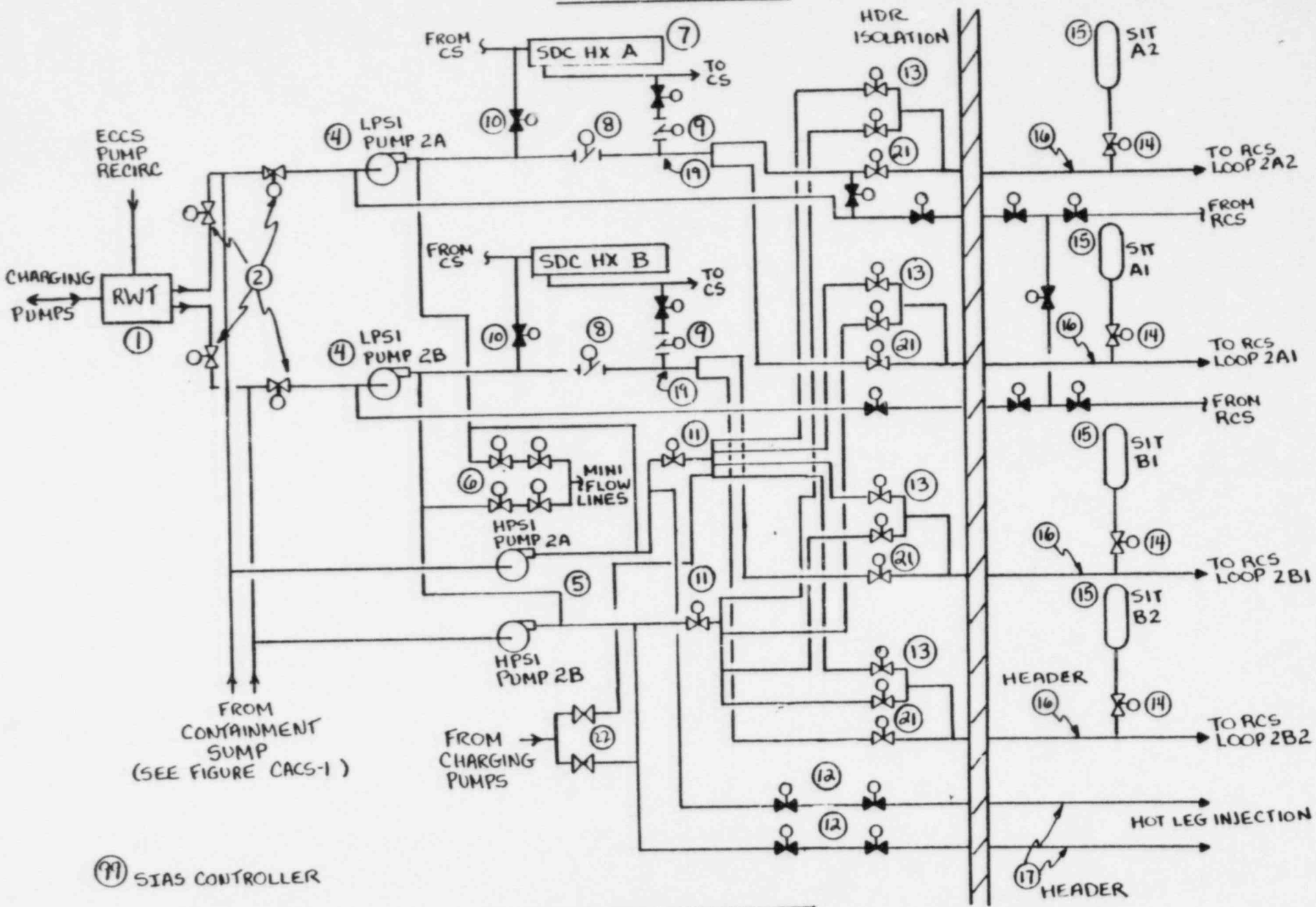


FIGURE SIS-1

SAFETY INJECTION SYSTEM

SAMPLE COMPONENT LISTING FOR
SAFETY INJECTION (SIS-05)

1. REFUELING WATER TANK
2. RWT ISOLATION TANK (4)
3. BLANK
4. LPSI PUMP (2)
5. HPSI PUMP (2)
6. HPSI AND LPSI MINIFLOW ISOLATION VLAVE (4)
7. SCS HEAT EXCHANGER (2)
8. SCS HEAT EXCHANGER BYPASS FLOW CONTROL VALVE (2)
9. SCS HEAT EXCHANGER OUTLET VALVE (2)
10. SCS HEAT EXCHANGER INLET FLOW CONTROL VALVE (2)

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CRITERIA FOR DEVELOPING TASK STATEMENTS

1. TASKS ARE A SMALL, CONVENIENTLY ANALYZABLE UNIT OF WORK CONDUCTED IN THE CONTROL ROOM WITH RESPECT TO SYSTEMS IDENTIFIED IN THE REFERENCE PLANT DESCRIPTION.

2. A TASK IS A UNIT OF CONTROL ROOM WORK WHICH IS INDEPENDENT OF THE PRECEDING OR FOLLOWING TASK. THAT IS, ITS CONTENTS AND SEQUENCE OF ACTIVITIES WILL REMAIN THE SAME REGARDLESS OF THE OPERATIONAL TRANSIENT IN WHICH THE TASK APPEARS.

3. A TASK STATEMENT IS BEGUN WITH ONE OF THE TASK VERBS IDENTIFIED IN THE VERB LIST FOLLOWED BY THE OBJECT OF THE VERB. THE OBJECT OF THE VERB MAY BE A PARAMETER (E.G., "DETERMINE PRESSURIZER LEVEL") OR A COMPONENT, SYSTEM OR SUBSYSTEM (E.G., "ALIGN THE SIS FOR COLD LEG INJECTION" OR "ENSURE PROPER HPSI PUMP OPERATION").

4. TASKS ARE COMPOSED OF 15 OR FEWER UNITS OF HUMAN ACTIONS (TASK ELEMENTS).

5. TASKS SHOULD BE IDENTIFIABLE WITH NO MORE THAN ONE PLANT SYSTEM OR SUBSYSTEM.

6. THE PURPOSE OF THE TASK (USUALLY IMPLICIT) IS TO MAINTAIN OR RESTORE ONE OR MORE RELATED SAFETY FUNCTIONS.

CRITERIA FOR DEVELOPMENT OF TASK ELEMENTS

1. TASK ELEMENTS FOLLOW THE SAME VERB - OBJECT FORMAT AS TASK STATEMENTS. THE VERBS ARE CHOSEN FROM THE TASK ELEMENT VERBS ON THE VERB LIST.

2. TASK ELEMENTS ARE ELEMENTARY HUMAN ACTIONS NEEDED TO ACCOMPLISH A PARTICULAR TASK.

3. TASK ELEMENTS ARE WRITTEN ONLY FOR HUMAN ACTIONS IN THE CONTROL ROOM WHICH REQUIRE THE USE OF A CONTROL ROOM INFORMATION OR CONTROL FUNCTIONS.

4. A TASK STATEMENT MAY BE USED AS A TASK ELEMENT INSIDE ANOTHER TASK OF GREATER COMPLEXITY.

5. TASK ELEMENT VERBS MAY BE DIVIDED INTO SENSORY - COGNITIVE OR BEHAVIORAL. THESE CATEGORIES ARE RELATED, RESPECTIVELY, TO INFORMATION AND CONTROL REQUIREMENTS.

6. EACH TASK ELEMENT REFERS TO ONE AND ONLY ONE INFORMATION OR CONTROL REQUIREMENT.

SCOPE OF TASK ELEMENT SPECIFICATION

- COMPONENT LEVEL
- LIMITED TO CONTROL ROOM INSTRUMENTS AND CONTROLS
- BASED ON INFORMATION FROM PRIMARY SOURCE DOCUMENTS SUCH AS:
  - BEST ESTIMATE TRANSIENT ANALYSES
  - FSAR ANALYSIS
  - BASIC DESIGN DOCUMENTATION
- ALL PRACTICAL ALTERNATIVES ARE SPECIFIED

SAMPLE VERB LIST FOR ICCR

TASK/ TASK ELEMENT	VERB	DEFINITION
T.	ALIGN	- TO ARRANGE OR CONFIGURE COMPONENTS SO AS TO LET FLOW OR CURRENT PASS.
T.	BLOCK	- MANIPULATION OF INSTRUMENTATION OR CONTROLS WHICH EITHER RESULTS IN BLOCKING OF THE AUTOMATIC INITIATION OF SYSTEM OR COMPONENT OPERATION.
T.	BYPASS	- ESTABLISHES A PIPING PATH THAT AVOIDS OR IS AUXILIARY TO THE MAIN PATH.
te.	CALCULATE	- TO MAKE A COMPUTATION. SUGGESTS THE USE OF SIMPLE MATHEMATICS AND RESULTS IN A DETERMINABLE RESULT; E.G., CALCULATE THE RCS BORON CONCENTRATION.
T.	COMPARE EVALUATE	- TO EXAMINE IN ORDER TO NOTE SIMILARITIES OR DIFERENCES
te.	CLOSE	- TO SHUT.
T.	CONTROL	- THE ACT OF REGULATING A PLANT PARAMETER. CONTROL IS USUALLY PERFORMED BY WAY OF AN INSTRUMENT OR APPARATUS WHICH IS AVAILABLE IN THE CONTROL ROOM, WHICH IN TURN REGULATES A MECHANISM.

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I&C CHARACTERISTICS DEFINITION

- TASK ELEMENT POINTS TO THE REQUIREMENT
  - AVAILABILITY
- CHARACTERISTICS DEFINE SUITABILITY
  - FUNCTIONAL CHARACTERISTICS
- INFORMATION CHARACTERISTICS
  - TYPE OF DISPLAY
  - RANGE
  - UNITS
  - ACCURACY
  - AVAILABILITY
  - RESPONSE TIME
  - INTERVALS
  - DIVISIONS
- CONTROL CHARACTERISTICS
  - TYPE OF CONTROL
  - MODE OF CONTROL
  - RANGE
  - UNITS
  - AVAILABILITY
  - RESPONSE TIME
- DBMS CODING SCHEME
  - FORCED CHOICE FORMAT

DATABASE MANAGEMENT SYSTEM (DBMS)

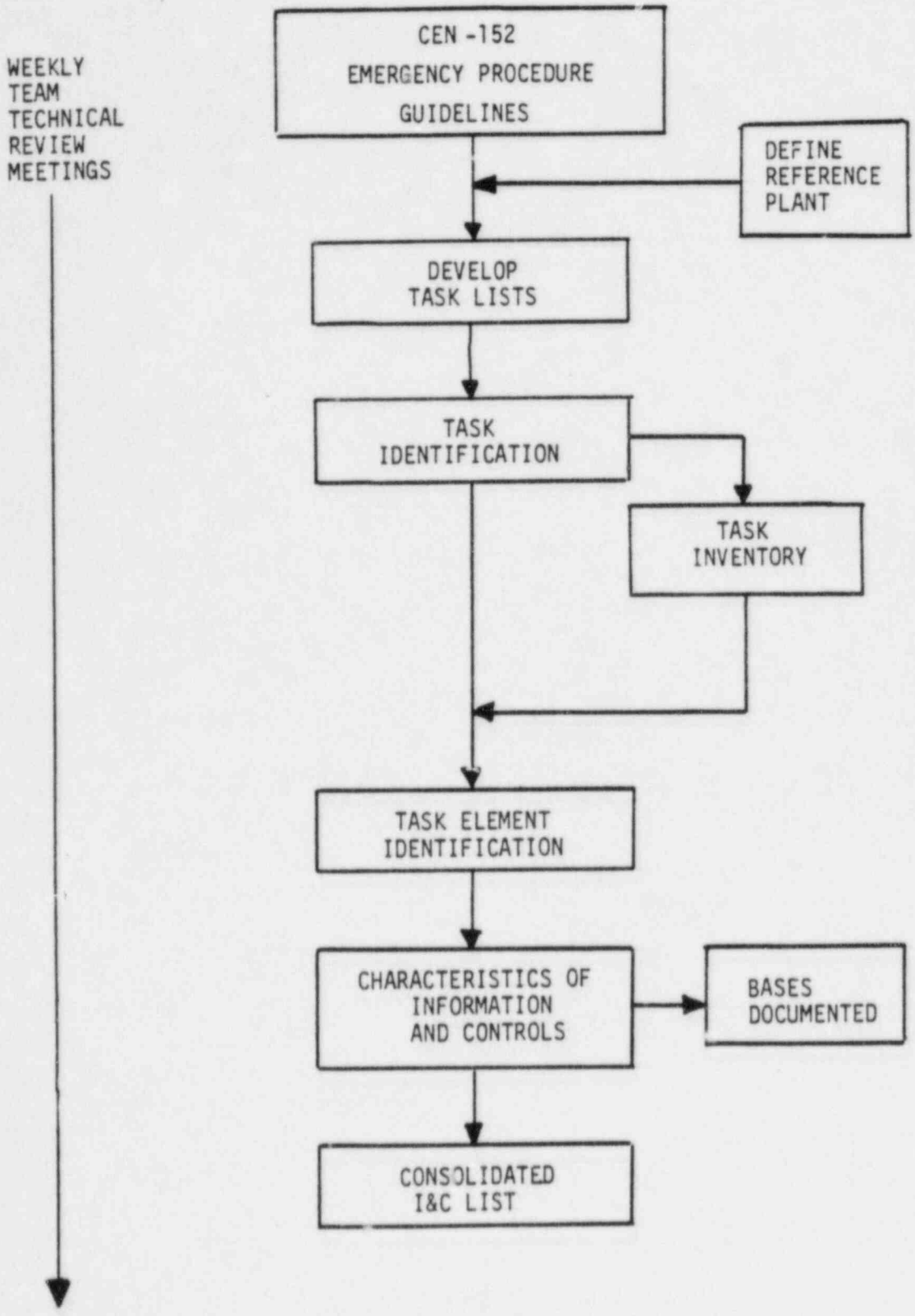
- SUPPORTS ENTIRE ICCR PROCESS
- IBM PC, DISKETTE AND HARD DISK
- FLEXIBILITY
- INPUT: CODED TASK DATA
  - TASK
  - PURPOSE
  - CUE(S)
  - AFFECTED SAFETY FUNCTION(S)
  - TASK ELEMENTS
  - AFFECTED COMPONENT
  - AFFECTED SYSTEM
  - I&C CHARACTERISTICS
  - BASES
- OUTPUT/SORTING CAPABILITIES
  - TASK BREAKDOWN
  - TASK ELEMENT INFO/CONTROL
  - TASK LISTING
  - I&C COMPONENT LISTING
  - CONSOLIDATION
- USER FRIENDLY (MENU DRIVEN)

ICCR PROCESS

ICCR PROCESS

- WELL DEFINED IN THE MODEL
- PROCESS EMBODIED IN DATA BASE SYSTEM
- WEEKLY TEAM TECHNICAL REVIEW MEETINGS
- PROCESS BOUNDED BY PRE-ESTABLISHED CRITERIA, CODING AND FORMATS

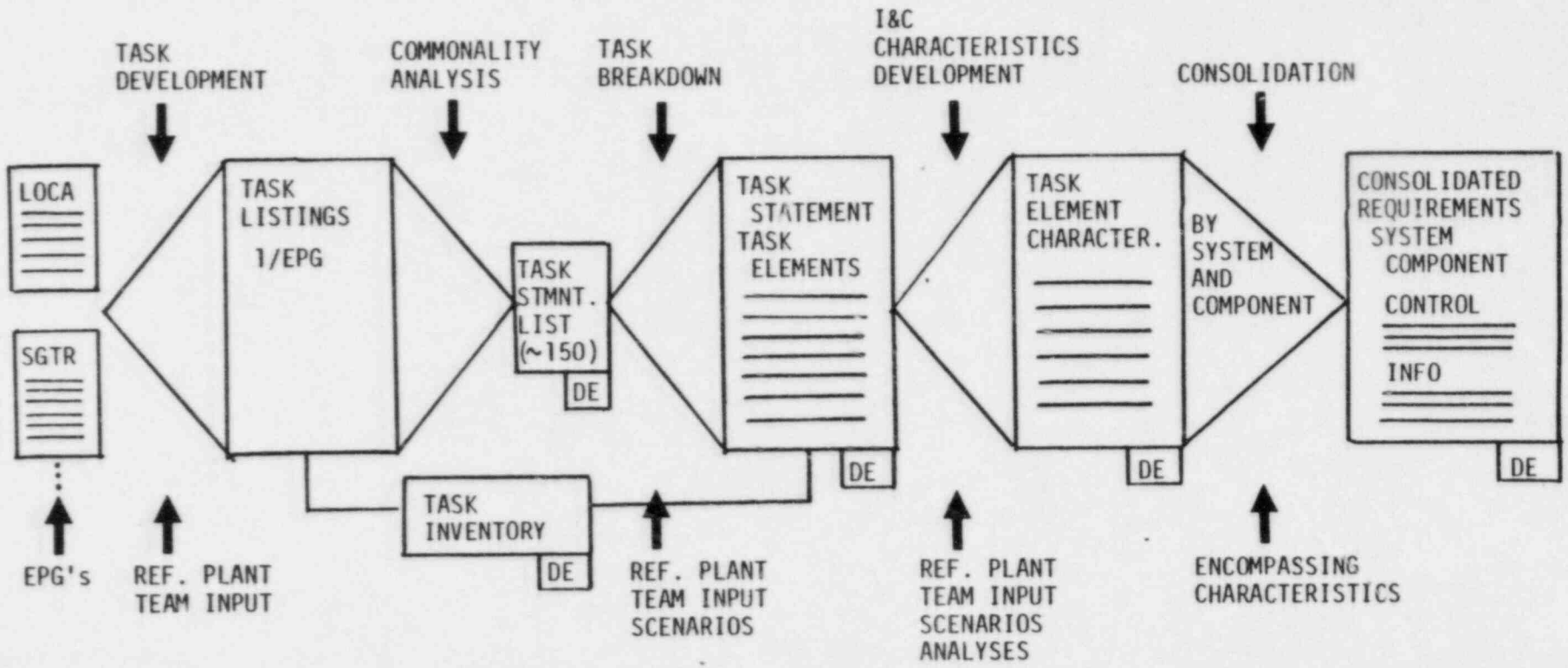
GENERIC ICCR PROCESS



EXAMPLE OF THE PROCESS

- EACH STEP WILL BE DEMONSTRATED
  - ACTUAL DATA SHEETS

GENERIC ICCR PROCESS



*34. [Monitor containment radiation levels in order to evaluate environmental releases. It may be desirable to reduce airborne radiation levels in the containment to minimize environmental releases.]

35. If the CSAS has been actuated and containment pressure subsequently falls below [7 psig], Then containment spray should be terminated. Upon termination, the CSS must be realigned and reset for automatic actuation. The CSS may be manually restarted to control iodine levels in the containment.

36. If plant conditions permit, Then bypass automatic initiation of [MSIS by lowering the setpoint as the cooldown and depressurization proceed.]

37. At [2-4 hours] after the start of the loss of coolant event, the alignment of the [SIS] for simultaneous hot and cold leg injection should be made, unless the criteria of step 38 can be met before the [4 hour] time limit. In that case, go to step 38. Verify SIS flow per Figure 5-3.

*38. Determine if the conditions for entering shutdown cooling system operation can be established by the following criteria:

a) Pressurizer level is greater than [100"] and constant or increasing
b) The RCS is at least [20°F] subcooled
c) RCS activity level within [plant specific limits]
d) Condensate inventory adequate per Figures 5-4 and 5-5.
e) [Other plant specific information insert here, (e.g., component cooling water, instrument air, valve control power).]

* Step performed continuously.

33. Control RCS inventory

    156. Determine HPSI pump flow to RCS
    157. Stop charging pumps
    158. Stop HPSI pumps
    159. Determine if SIS termination criteria are met

34. Maintain containment isolation

    160. Determine containment area radiation status
    161. Start containment spray system operation
    162. Stop containment spray system operation

35. Control containment temprature and pressure

    163. Determine containment pressure
    164. Stop containment spray system operation
    165. Determine containment airborne radiation level
    166. Start containment spray system

36. Bypass undesired automatic initiation of plant protection signals

    167. Determine if plant conditions permit bypassing MSIS
    168. Block MSIS

37. Control RCS and core heat removal

    169. Record time
    170. Align SIS for simultaneous hot and cold leg injection
    171. Determine HPSI pump flow to RCS

38. Control RCS and core heat removal

    172. Determine pressurizer level
    173. Determine RCS subcooling
    174. Determine RCS fluid radioactivity level
    175. Determine condensate inventory
    176. [Plant specific]

PORTION OF TASK STATEMENT TABLE

CODE	TASK STATEMENT
0507	DETERMINE HPSI PUMP FLOW TO RCS
0508	ENSURE PROPER SIS VALVE ALIGNMENT
0509	ALIGN SIS FOR SIMULTANEOUS HOT & COLD LEG INJECT
0510	ALIGN SIS FOR COLD LEG INJECTION
0511	ENSURE SIAS
0512	BLOCK SIAS
0513	DETERMINE CONTAINMENT SUMP LEVEL
0514	STOP HPSI PUMPS
0515	ENSURE RAS
0516	ISOLATE SITs
0517	VENT SITs
0518	DRAIN SITs
0519	DETERMINE IF SIAS IS PRESENT
0520	ENSURE PROPER LPSI OPERATION
0521	DETERMINE LPSI PUMP FLOW TO RCS
0522	ALIGN CHARGING PUMPS TO INJECT THROUGH SIS
0601	ENSURE PROPER OPERATION OF CNTMT AIR COOLERS
0602	ENSURE PROPER CNTMT SPRAY OPERATION
0603	DETERMINE CNTMT SPRAY FLOW
0604	START CNTMT SPRAY SYSTEM OPERATION
0605	STOP CNTMT SPRAY SYSTEM OPERATION

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PORTION OF TASK INVENTORY TABLE

TASK CODE TABLE

SYSTEM NUMBER	TASK CODE	EPG TITLE NUMBER	EPG SEQUENCE NUMBER	EPG SECTION NUMBER
05	0507	03	171	0037
05	0507	04	077	0002
05	0507	04	034	0002
05	0507	05	022	0002
05	0507	05	033	0002
05	0507	06	015	0002
05	0507	06	024	0002
05	0507	15	027	0007
05	0507	15	035	4C01
05	0507	18	026	0007
05	0507	18	036	AC01
05	0507	24	078	0015
05	0507	24	088	4C01
05	0507	25	024	0007
05	0507	25	031	AC01
05	0507	32	041	0003
05	0507	32	085	0004
05	0507	32	091	0004
05	0507	32	134	0005
05	0507	32	186	0005
05	0508	03	062	0010
05	0508	04	076	0020
05	0508	05	070	0013
05	0508	15	009	0003
05	0508	20	031	0007
05	0508	24	040	0008
05	0509	03	170	0037
05	0509	03	191	0045
05	0509	32	024	0001
05	0509	32	140	0007
05	0509	32	180	0008
05	0510	03	178	0045
05	0510	03	229	0048
05	0510	06	187	0019
05	0510	32	023	0001
05	0510	32	030	0001
05	0510	32	059	0003
05	0510	32	067	0003
05	0510	32	089	0004
05	0510	32	107	0004
05	0510	32	202	0005
05	0511	01	026	0005
05	0511	11	011	0002
05	0511	15	003	0001
05	0511	18	003	0001
05	0511	21	005	0002
05	0511	24	003	0001

TASK BREAKDOWN REPORT

EPS TITLE	EPG SECTION	AFFECTED SAFETY FUNCTIONS
LOCA	0037	INVENTORY CONTROL RCS HEAT REMOVAL REACTIVITY CONTROL

TASK STATEMENT	TASK CODE	SEQ NUMBER	CUE	INFO CODE	PURPOSE
ALIGN SIS FOR SIMULTANEOUS HOT & COLD LEG INJECT	0509	170	2	0000740501	TO PREVENT THE CONCENTRATION AND PRECIPITATION OF BORIC ACID IN THE REACTOR VESSEL

TASK ELEMENTS	AFFECTED SYSTEM
CLOSE THE HOT LEG INJECTION ORIFICE BYPASS VALVE	SIS
OPEN HPSI HOT LEG INJECTION FLOW CONTROL VALVE	SIS
ENSURE PROPER SIS VALVE ALIGNMENT (TASK CODE 0508)	NONE
DETERMINE HPSI FLOW TO RCS (TASK CODE 0507)	NONE

TASK ELEMENT INFO/CONTROL CHARACTERISTICS

TASK STATEMENT	TASK CODE
ALIGN SIS FOR SIMULTANEOUS HOT & COLD LEG INJECT	0509

TASK ELEMENT	AFFECTED SYSTEM	COMP NUMB	INFO/CONTROL CHARACT. ITEM	VALUE	REMARKS
OPEN HPSI HOT LEG INJECTION FROM CONTROL VALVE	SIS	12	CONTROL		
			T.D.C.	DISCRETE	
			MODE	MANUAL	
			RANGE		
			MIN:	SHUT	
			MAX:	OPEN	
			R.T.	1-5 SEC	
			AVAIL.	LOOP	

INFO/CONTROL CHARACTERISTICS BASES

TASK STATEMENT	TASK CODE
ALIGN SIS FOR SIMULTANEOUS HOT & COLD LEG INJECT	0509

TASK ELEMENT	ELEMENT NUMBER	AFFACTED SYSTEM	COMPONENT NUMBER
OPEN HPSI HOT LEG INJECTION FLOW CONTROL VALVE	02	SIS	12

INFO/CONTROL CHARACT. ITEM	VALUE	BASES FOR EACH REQUIREMENT
CONTROL		
T.O.C.	DISCRETE	THIS VALVE POSITION CONTROL IS A DISCRETE FUNCTION, EITHER OPEN OR SHUT.
MODE	MANUAL	THIS VALVE REQUIRES ONLY MANUAL OPERATION IN THIS SEQUENCE
RANGE		0 - 100 PERCENT IS EQUIVALENT TO FULLY SHUT TO FULLY OPEN
MIN:	SHUT	
MAX:	OPEN	
R.T.	1 - 5 SEC	VALVE IS A 3 INCH GLOBE VALVE, CONTROL TIME OF 1 - 5 SEC SHOULD ADEQUATELY CONTROL HPSI FLOW
AVAIL.	LOOP	REQUIRED FOLLOWING A LOSS OF MAIN GRID POWER, CONTROLLER IS LOCATED OUTSIDE OF CONTAINMENT AND THEREFORE DOES NOT NEED TO WITHSTAND A HARSH ENVIRONMENT

CONSOLIDATED REPORT

AFFECTED SYSTEM	AFFECTED COMPONENT
SIS	HPSI HOT LEG INJECTION CONTROL VALVE

I&C REQUIREMENTS

CONTROL

HPSI HOT LEG INJ FLOW VALVE CONTROL

TYPE OF CONTROL:	CONTINUOUS
MODES:	MANUAL
RANGE:	
MIN:	0
MAX:	100
UNITS	%
AVAILABILITY:	LOOP
REACTION TIME:	1-5 SEC

INFORMATION

HPSI HOT LEG INJ FLOW VALVE POS IND

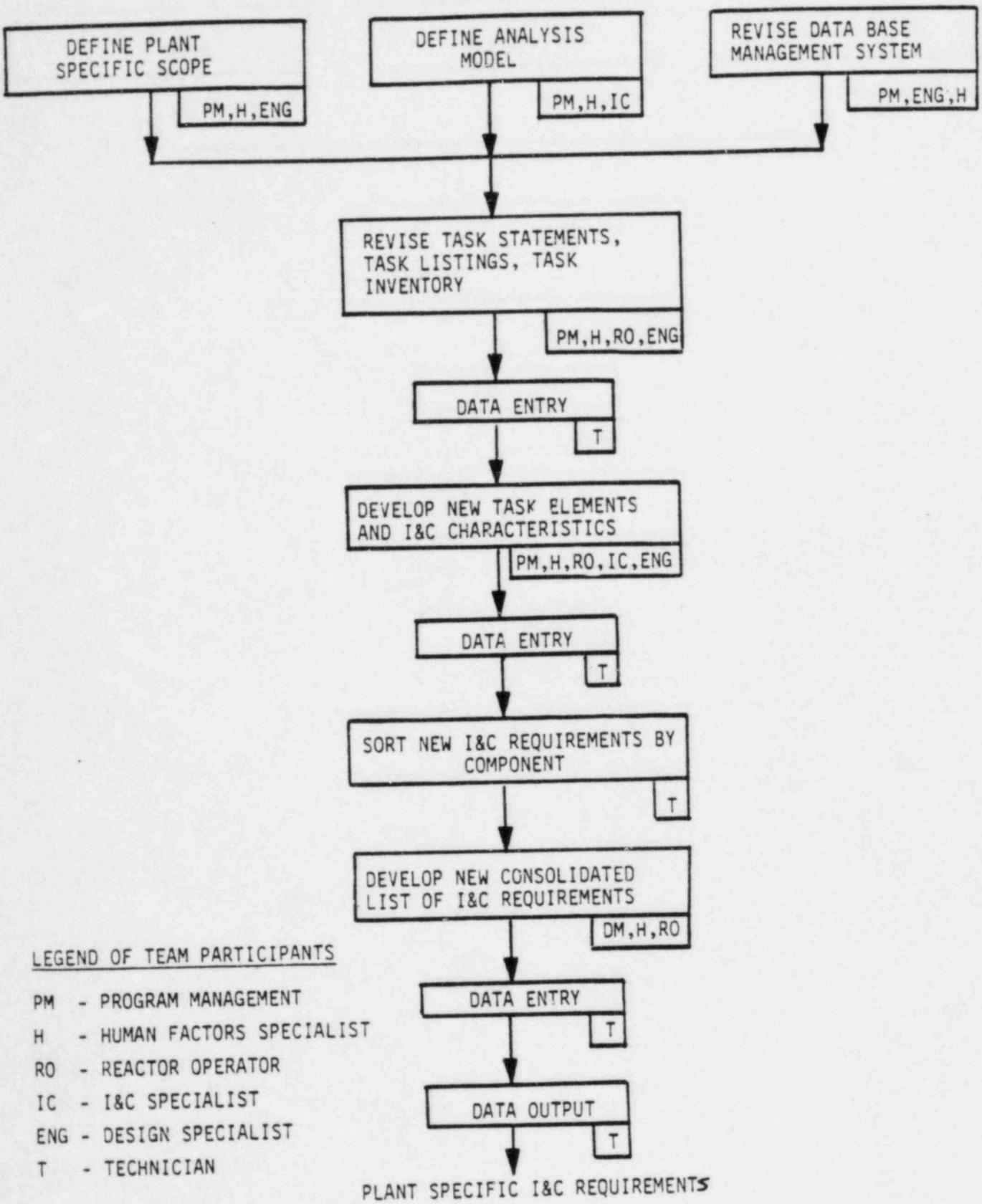
TYPE OF DISPLAY:	VALUE
RANGE:	
MIN:	0
MAX:	100
UNITS:	%
ACCURACY:	0 - 15%
INTERVALS:	20
DIVISIONS:	3
AVAILABILITY:	LOOP
REACTION TIME:	1-5 SEC

PRODUCTS

- ICCR REPORT WHICH INCLUDES
  - PURPOSE
  - BACKGROUND
  - ICCR METHODOLOGY
  - RESULTS (CONSOLIDATED LIST)
  - METHOD FOR CONVERSION TO PLANT SPECIFIC ICCR
  - SUPPORTING DOCUMENTATION
  - REFERENCE PLANT DESCRIPTION
  - DBMS DESCRIPTION
- DISKETTE COPY OF DATA BASE
- HARD COPY OF DATA BASE
  - TASK STATEMENT LIST
  - EPG TASK LISTINGS
  - TASK INVENTORY
  - TASK BREAKDOWN REPORTS
  - I&C CHARACTERISTICS

PLANT SPECIFIC CONVERSION

GENERIC TO PLANT SPECIFIC ICCR: RECOMMENDED CONVERSION PROCESS



LEGEND OF TEAM PARTICIPANTS

PM - PROGRAM MANAGEMENT
H - HUMAN FACTORS SPECIALIST
RO - REACTOR OPERATOR
IC - I&C SPECIALIST
ENG - DESIGN SPECIALIST
T - TECHNICIAN

SUMMARY

- C-E EPGs PROVIDE FUNCTIONAL ANALYSIS

- GENERIC ICCR IDENTIFIES GENERIC I&C REQUIREMENTS
  - PROVIDES MODEL
  - PROVIDES METHOD AND FORMAT
  - PROVIDES DBMS

- PLANT SPECIFIC CONVERSION
  - DEVELOPS INFORMATION AND CONTROL REQUIREMENTS FOR EMERGENCY OPERATIONS
  - SUPPORTS DCRDR AND EOP EFFORTS