

**EVENT TREE INFORMATION  
FROM NORTH ANNA IPE**



**TABLE 3.1.2-2  
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
A	Large LOCA	Initiating Event-large LOCA
B	Offsite Power Recovery	Failure to recover an ESF bus following station black-out by recovering offsite power.
Ch	Containment Heat Removal	Failure of Service Water to an operable Recirculation Spray heat exchanger.
DG	EDG 1H or 1J Available	Failure of at least one diesel generator to start and run following loss of offsite power leading to station blackout.
Dh	Hot Leg Recirculation	Failure of the operator to switch to hot leg recirculation following a large LOCA.
D1	High Pressure Injection	Failure of Charging Pumps to inject in the appropriate mode.
D2	Accumulators Inject	Failure of Accumulators to inject in the appropriate mode.
D3	Low Head SI	Failure of low head SI pumps to inject.
D4	Emergency Boration	Failure to shutdown following ATWS by boron addition.
Fm	Break Size Partition	Percentage of small breaks not causing a CDA Hi Hi signal.
Hv	ESGR Cooling	Failure to provide HVAC to the ESGR using 1/2 AHUs and 1/3 chillers.
H1	Low Head Recirculation	Failure of low head pumps in the recirculation mode.

**TABLE 3.1.2-2 (Continued)  
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
H2	High Head Recirculation	Failure of low head and charging pumps in the high pressure recirculation mode.
K	Reactor Subcritical	Failure of control rods to insert as result of Reactor Protection System failure.
L	Auxiliary Feedwater System Available	Failure of Auxiliary Feedwater System for transients or small or medium LOCAs with reactor trip.
Lt	Turbine-Driven AFW available	Failure of the Turbine-Driven Auxiliary Feedwater Pump to start and run following station blackout.
M	Main Feedwater System Available	Failure of Main Feedwater.
MS1	Manual Scram	Failure of the operator to remove power from the control rod drive mechanisms.
O	Cooldown and Depressurize	Operator fails to cooldown and depressurize the reactor after a small break or in response to a loss of RCP seal cooling.
O2	Late Cooldown	Failure of operator to cooldown and depressurize in response to a ruptured steam generator.
P	Pressurizer PORVs	Failure of the operator to open 1/2 pressurizer PORVs to cause RCS feed and bleed.
Pr	Pressure Relief	Failure of adequate pressure relief following an ATWS event.

**TABLE 3.1.2-2 (Continued)  
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
Q	RCS Boundary Intact	Failure of pressurizer PORV to close after opening during a transient.
Qs	Quench Spray	Failure of 1/2 trains of Quench Spray.
Rc	Room Cooling Restored	Recovery of ESGR cooling or SW (resulting in reactor trip and loss of emergency power) prior to core uncover and vessel failure, or containment failure.
Rs	Recirculation Sprays Operable	Failure of at least one train of Recirculation Sprays to remove heat from Containment.
Rv	Reactor Vessel Integrity	Consideration of PTS following a rapid RCS cooldown.
RX	Reactor Vessel Rupture	Initiating event is a Reactor Vessel rupture.
SGI	Steam Generator Isolation	Failure to isolate the ruptured Steam Generator.
Slc	No Potential for RCP Seal Failure	Failure to establish seal cooling from operable Unit 2 CC pumps.
S1	Medium LOCA	Initiating event is a medium LOCA (2" to 6").
S2	Small LOCA	Initiating event is a small LOCA (3/8" to 2").
T	Transients	Representative initiating event for general transient event tree.
Tt	Turbine Trip	Turbine fails to trip.

**TABLE 3.1.2-2 (Continued)  
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
T1	Loss of Offsite Power	Initiating event is Loss of of all Offsite Power.
T1A	Station Blackout	Loss of diesel generators 1H and 1J leading to station blackout at Unit 1.
T1Tr	Loss of ESGR Cooling Transfer from T1 Event Tree	Transfer of T1Hv sequence, Loss of Offsite Power with consequential loss of Emergency Switchgear Room Cooling.
T2	Loss of MFW	Initiating event is non-recoverable loss of Main Feedwater.
T2A	Recoverable Loss of MFW	Initiating event is recoverable loss of Main Feedwater following Feedwater isolation.
T2ATr	Loss of ESGR Cooling Transfer from T2A Event Tree	Transfer of T2AHv sequence, recoverable loss of Main Feedwater with coincidental loss of Emergency Switchgear Room Cooling.
T2Tr	Loss of ESGR Cooling Transfer from T2 Event Tree	Transfer of T2Hv sequence, non-recoverable loss of Main Feedwater with coincidental loss of Emergency Switchgear Room Cooling.
T3	Transient with MFW Available	Initiating event is Transient with Main Feedwater available.
T3Tr	Loss of ESGR Cooling Transfer from T3 Event Tree	Transfer of T3Hv sequence, transient with Main Feedwater available, with coincidental loss of Emergency Switchgear Room Cooling.
T4	Loss of RC Pump Seal Cooling	Initiating event is loss of RCP seal injection and thermal barrier cooling.

**TABLE 3.1.2-2 (Continued)  
EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
T5A	Loss of DC Bus I	Initiating event is loss of DC Bus 1-I.
T5B	Loss of DC Bus III	Initiating event is loss of DC Bus 1-III.
T6	Loss of Service Water	Service Water is lost from both the reservoir and Lake Anna.
T7	Steam Generator Tube Rupture	Initiating event is a steam generator tube rupture.
T8	Loss of Emergency Switchgear Room Cooling	Loss of HVAC to the Emergency Switchgear Room.
T9A	Loss of Power from 4160 V Emergency Bus 1H	Loss of feeder power to or failure of 4160 V emergency bus 1H.
T9ATr	Loss of ESGR Cooling Transfer from T9A Event Tree	Transfer of T9AHv sequence, loss of feeder power to or failure of 4160 V Emergency Bus 1H, with consequential loss of Emergency Switchgear Room Cooling.
T9B	Loss of Power from 4160 V Emergency Bus 1J	Loss of feeder power to or failure of 4160V emergency bus 1J.
T9BTr	Loss of ESGR Cooling Transfer from T9B Event Tree	Transfer of T9BHv sequence, loss of feeder power to or failure of 4160 V Emergency Bus 1J, with consequential loss of Emergency Switchgear Room Cooling.
TL	Low power transients (for ATWS)	Initiating event is all transients at power lower than or equal to 40 percent.
TH	High power transients (for ATWS)	Initiating event is all transients at power greater than or equal to 40 percent.

**TABLE 3.1.2-2 (Continued)**  
**EVENT TREE HEADINGS**

<u>Abbreviation</u>	<u>Headings</u>	<u>Description of Event</u>
VX	Interfacing System LOCA	Initiating event is an Inter- facing System LOCA.
Vi	Isolation of LOCA	Failure to isolate interfacing LOCA.
W	RHR Cooling	Failure of 1/2 Residual Heat Removal Trains.
Y	Core Cooling Recovery	Failure of the operator to use steam to rapidly cooldown and depressurize the RCS as directed by 1-FR-C.1 or C.2.



C:\MAPS\ETRES\OLDTRES\A.EVT 1: 00: 02am 12-15-92 MUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 9: 07: 52am TOTAL Cdf = 4.05E-006

LARGE BREAK LOCA	EMERGENCY SWITCHGEAR ROOM COOLING AVAILABLE	ACCUMULATOR INJECTION	LOW HEAD SAFETY INJECTION AVAILABLE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LOW HEAD RECIRCULATION AVAILABLE	HOT LEG RECIRCULATION AVAILABLE	SEQUENCE	SEQUENCE DESCRIPTOR	PDS	FREQUENCY
A	Hv	O2	O3	Os	Rs	Ch	H1	Dh	0		0	
										P01 A	OK	
								CH01 3.88E-03		P02 ADh	12	5.17E-07
							H101 2.51E-03			P03 AH1	13	8.20E-07
					RS01 4.48E-04	CH01 2.87E-03				P04 ACh	1	1.80E-08
										P05 ARs	2	4.20E-09
								CH01 3.88E-03		P06 AOs	OK	
					OS01 4.02E-03		H101 2.51E-03			P07 AOsDh	12	1.69E-09
						CH02 1.77E-02				P08 AOsH1	13	1.80E-09
					RS02 1.06E-02					P09 AOsCh	1	7.54E-11
										P10 AOsRs	2	1.21E-10
						CH01 2.87E-03				P11 A03	13	5.88E-07
			D301 1.20E-03		RS01 4.48E-04					P12 AD3Ch	13	8.41E-10
				OS01 4.02E-03						P13 AD3Rs	13	2.24E-10
										P14 AD3Os	13	1.81E-09
								CH01 3.88E-03		P15 AD2	12	2.12E-06
							H101 2.51E-03			P16 AD2Dh	12	2.07E-09
					RS01 4.48E-04	CH01 2.87E-03				P17 AD2H1	13	2.73E-09
										P18 AD2Ch	1	6.52E-11
										P19 AD2Rs	2	1.57E-11
								CH01 3.88E-03		P20 AD2Os	12	7.68E-09
					OS01 4.02E-03		H101 2.51E-03			P21 AD2OsDh	12	0.00E+00
						CH02 1.77E-02				P22 AD2OsH1	13	0.00E+00
			D201 4.24E-03		RS02 1.06E-02					P23 AD2OsCh	1	0.00E+00
										P24 AD2OsRs	2	0.00E+00
						CH01 2.87E-03				P25 AD203	13	2.28E-09
					OS01 4.02E-03					P26 AD203Ch	13	0.00E+00
			D301 1.20E-03		RS01 4.48E-04					P27 AD203Rs	13	0.00E+00
				OS01 4.02E-03						P28 AD203Os	13	0.00E+00
	HV01 1.30E-03									P29 AHv	TR	3.38E-07 TO

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

A: LARGE BREAK LOSS OF COOLANT ACCIDENT EVENT TREE



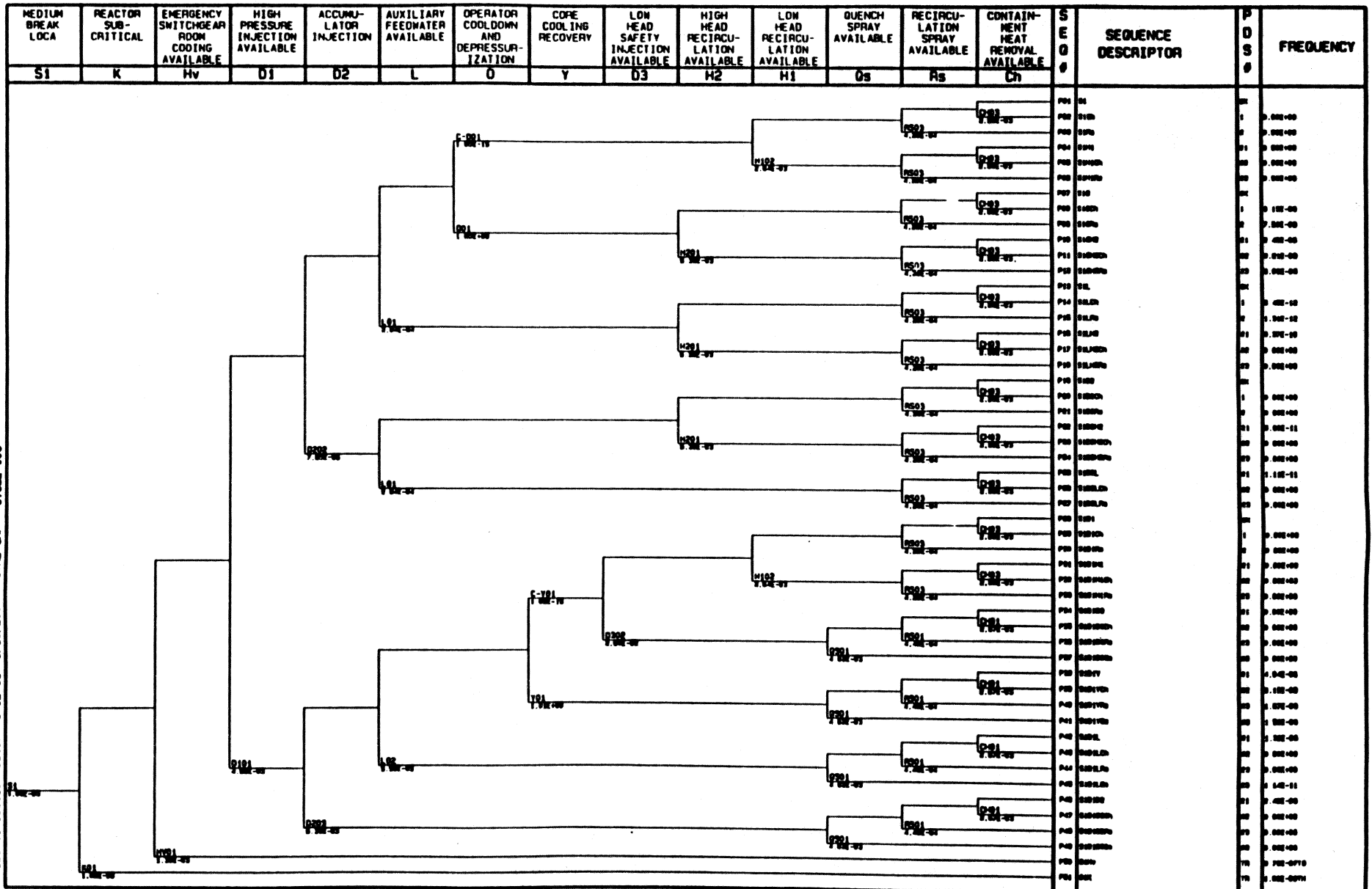
C:\MAPS\ETRES\ALDTRES\RX.EVT 1:00:02am 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 9:27:07am TOTAL CHF = 2.56E-007

REACTOR VESSEL RUPTURE	QUENCH SPRAY AVAILABLE	LOW HEAD SAFETY INJECTION AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	SEQUENCE	SEQUENCE DESCRIPTOR	PATHS	FREQUENCY
RX	Os	D3	Rs	Ch	0		0	
						P01 RX	12	2.66E-07
				CHO1 2.67E-03		P02 RXCh	12	4.16E-10
			RS01 4.48E-04			P03 RXRs	13	1.13E-10
						P04 RXOs	12	9.71E-10
				CHO1 2.67E-03		P05 RXOsCh	1	0.00E+00
	OS01 4.62E-03		RS01 4.48E-04			P06 RXOsRs	2	0.00E+00
		D301 1.20E-03				P07 RXOsD3	13	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

RX: REACTOR VESSEL RUPTURE EVENT TREE

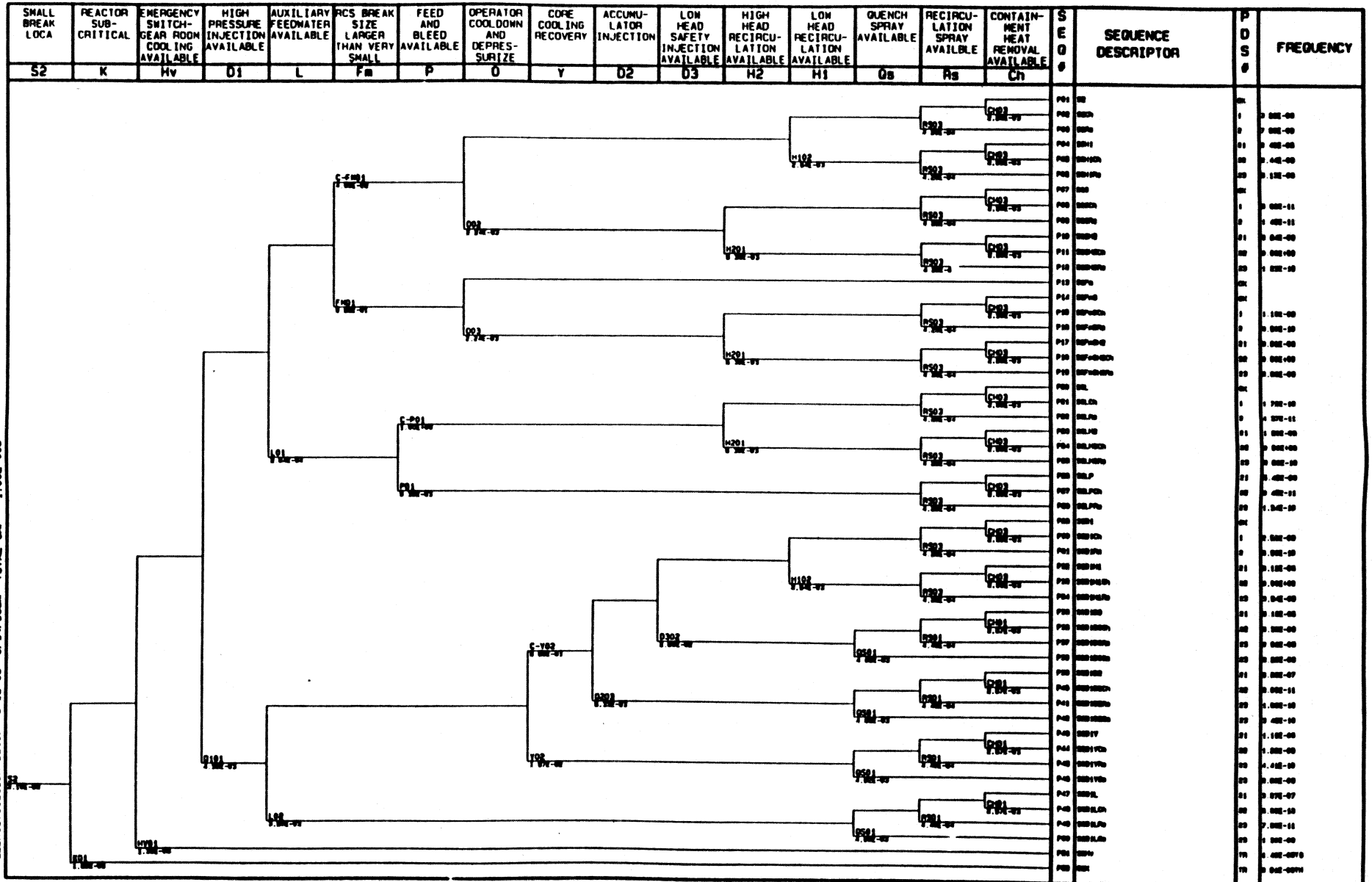
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 Quantification Date: 3-12-93 9: 30: 26am TOTAL CDF = 6.55E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

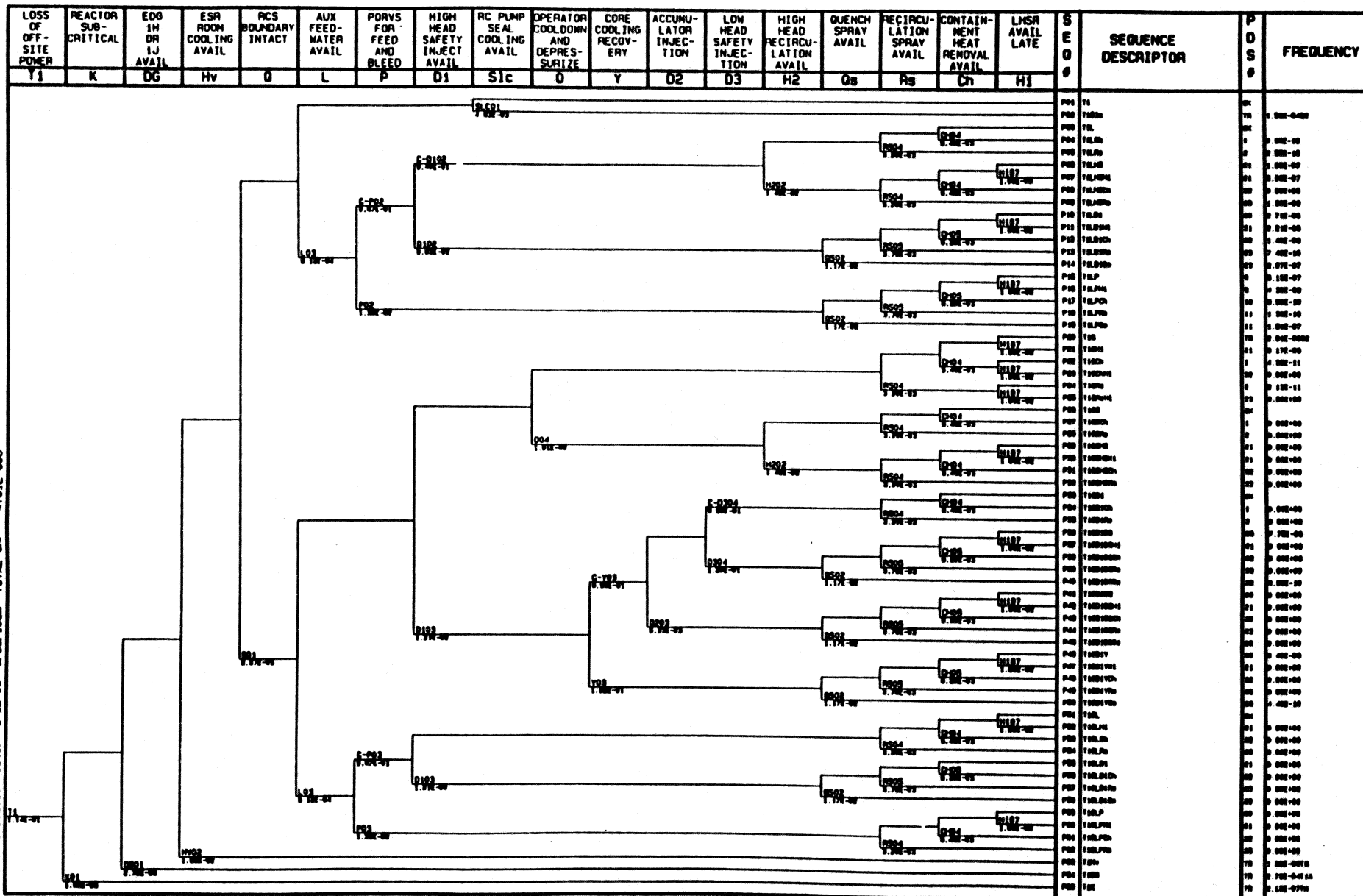
S1: MEDIUM BREAK LOSS OF COOLANT ACCIDENT EVENT TREE

C:\NAPS\ETRES\02.EVT 1:00:02am 12-15-92 NUPRA 2.18 VPMR  
 Quantification Date: 3-12-93 9:34:56am TOTAL CHF = 1.00E-005



NORTH ANNA INDIVIDUAL PLANT EXAMINATION  
 S2: SMALL BREAK LOSS OF COOLANT ACCIDENT EVENT TREE

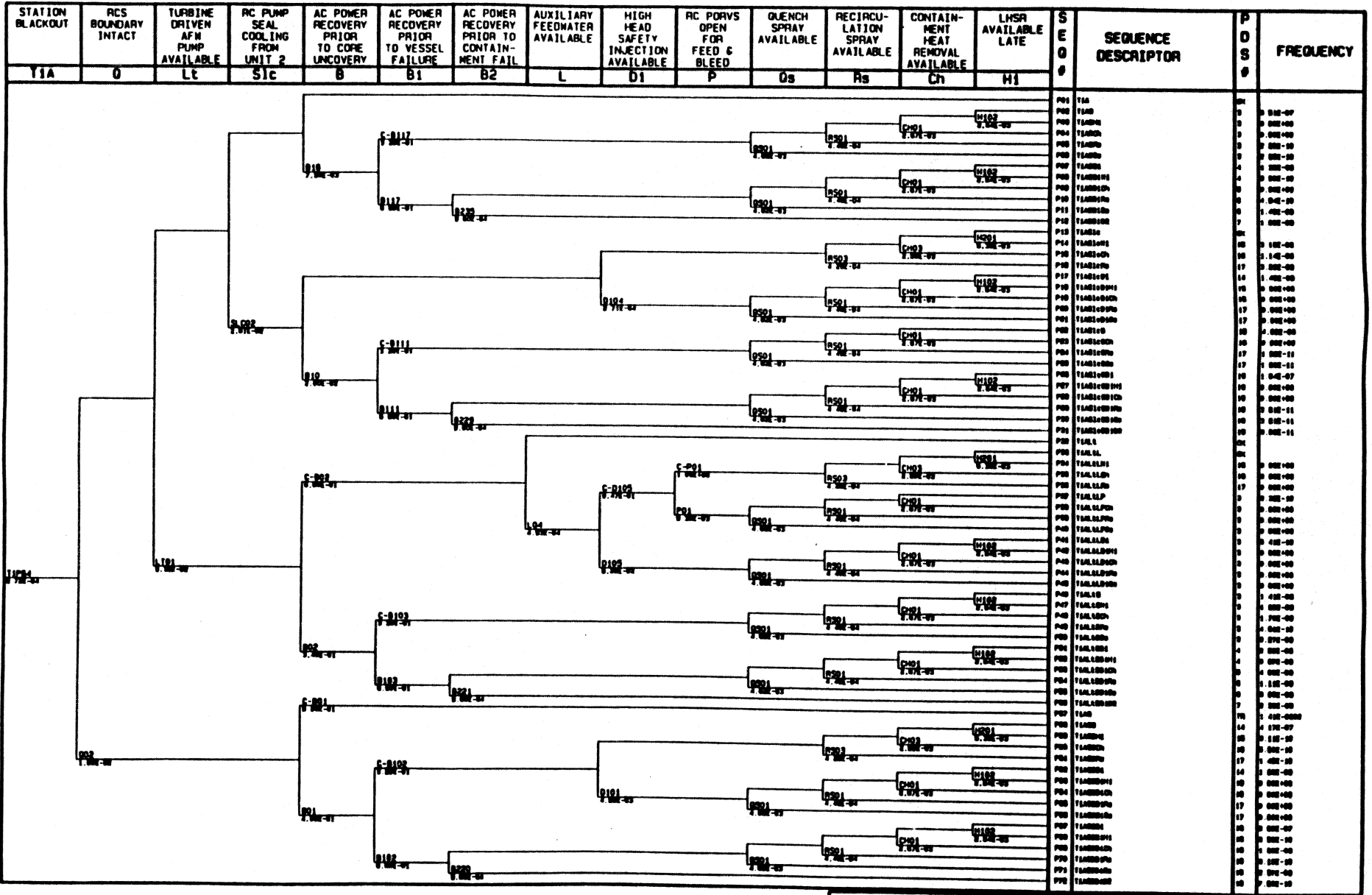
C:\MAPS\ETRES\QLO\ETRES\11.EVT 1:00:02am 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 9:52:10am TOTAL CDF = 4.61E-06



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T1: LOSS OF OFFSITE POWER EVENT TREE

C:\MAPS\ETRES\OLD\TRES\TIA.EVT 1:00:02am 12-19-92 NUPRA 2.18 VPMR  
 Quantification Date: 3-12-93 10:00:19am TOTAL Cdf = 7.97E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T1A: STATION BLACKOUT EVENT TREE  
 TRANSFER FROM T1 LOSS OF OFFSITE POWER

LOSS OF ESOR COOLING TRANSFER FROM T1 EVENT TREE	RCP SEAL INTACT DUE TO OPER COOLDOWN & DEPRESS	AUX FEEDWATER AVAILABLE AFTER LOSS OF EMERGENCY POWER	ESOR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 10 HOURS	ESOR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 20 HOURS	ESGR COOLING RECOV BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	HHSI/ HHSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LMSR AVAILABLE LATE	SEQUENCE DESCRIPTOR	PROBABILITY	FREQUENCY	
T1Tr	0	Lt	RC1	RC2	RC3	D1	Os	Rs	Ch	H1	SEQ	DS	FREQUENCY	
											P01	T1Tr	OK	
											P02	T1TrRC2	4	0.00E+00
											P03	T1TrRC2Ch	5	0.00E+00
											P04	T1TrRC2Rs	6	0.00E+00
											P05	T1TrRC2Os	6	0.00E+00
											P06	T1TrRC2RC3	7	0.00E+00
											P07	T1TrLt	OK	
											P08	T1TrLtRC1	4	1.29E-09
											P09	T1TrLtRC1Ch	5	6.09E-10
											P10	T1TrLtRC1Rs	6	0.00E+00
											P11	T1TrLtRC1Os	6	0.00E+00
											P12	T1TrLtRC1RC3	7	0.00E+00
											P13	T1TrO	OK	
											P14	T1TrOH1	21	1.01E-06
											P15	T1TrOCh	22	4.28E-09
											P16	T1TrORs	23	1.10E-08
											P17	T1TrOD1	20	4.00E-06
											P18	T1TrOD1H1	21	3.82E-10
											P19	T1TrOD1Ch	22	1.20E-08
											P20	T1TrOD1Rs	23	0.00E+00
											P21	T1TrOD1Os	23	2.22E-06
											P22	T1TrORC1	18	5.15E-10
											P23	T1TrORC1Ch	18	0.00E+00
											P24	T1TrORC1Rs	18	0.00E+00
											P25	T1TrORC1Os	18	0.00E+00
											P26	T1TrORC1RC3	19	0.00E+00

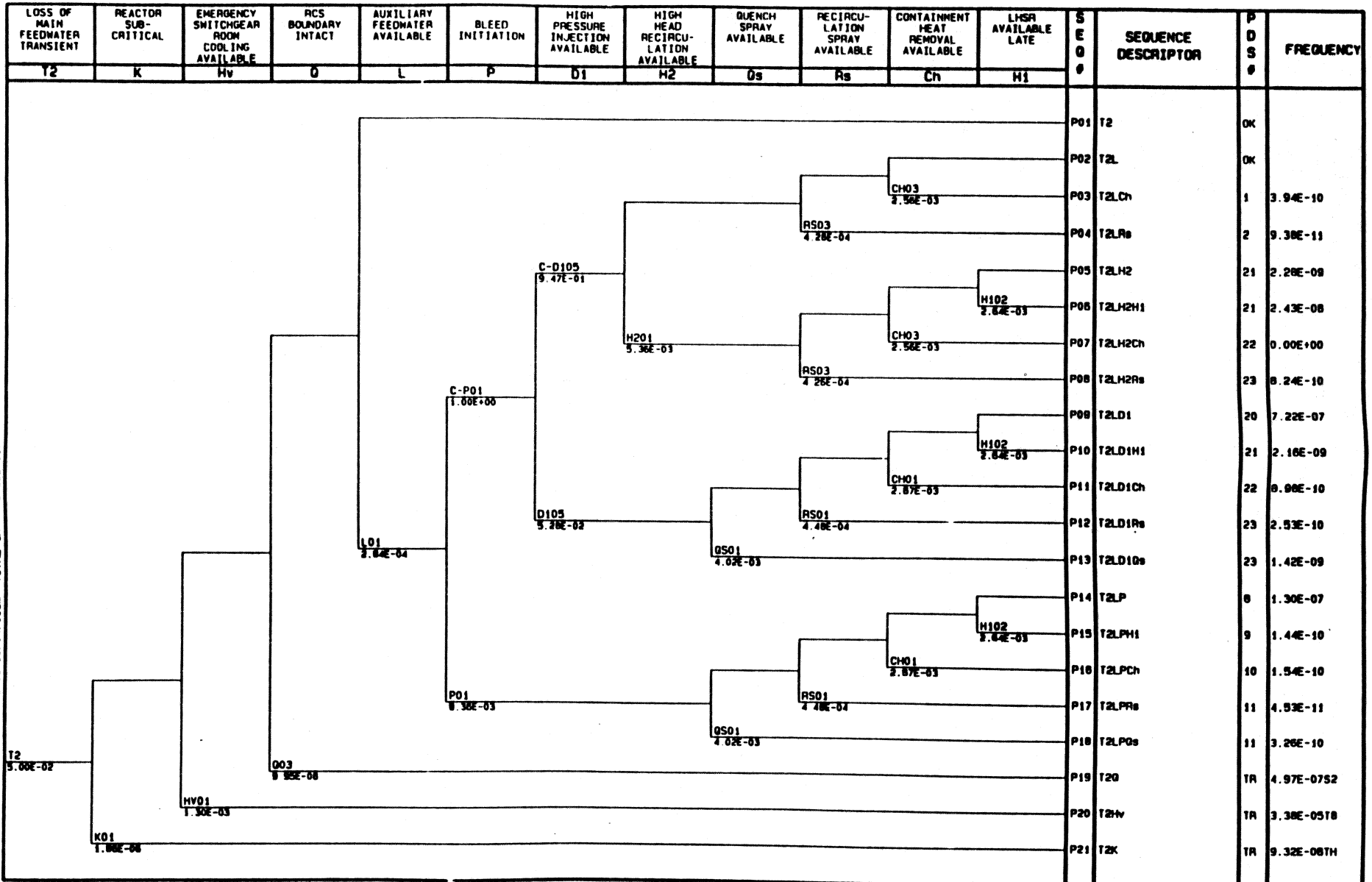
C:\VAP\ETRES\OLD\TRES\T1TR.EVT 1:00:02am 12-15-92 ALPHA 2.1a VPMR  
 Quantification Date: 3-12-93 10:02:21am TOTAL CF = 7.28E-006

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T1Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T1 LOSS OF OFFSITE POWER EVENT TREE



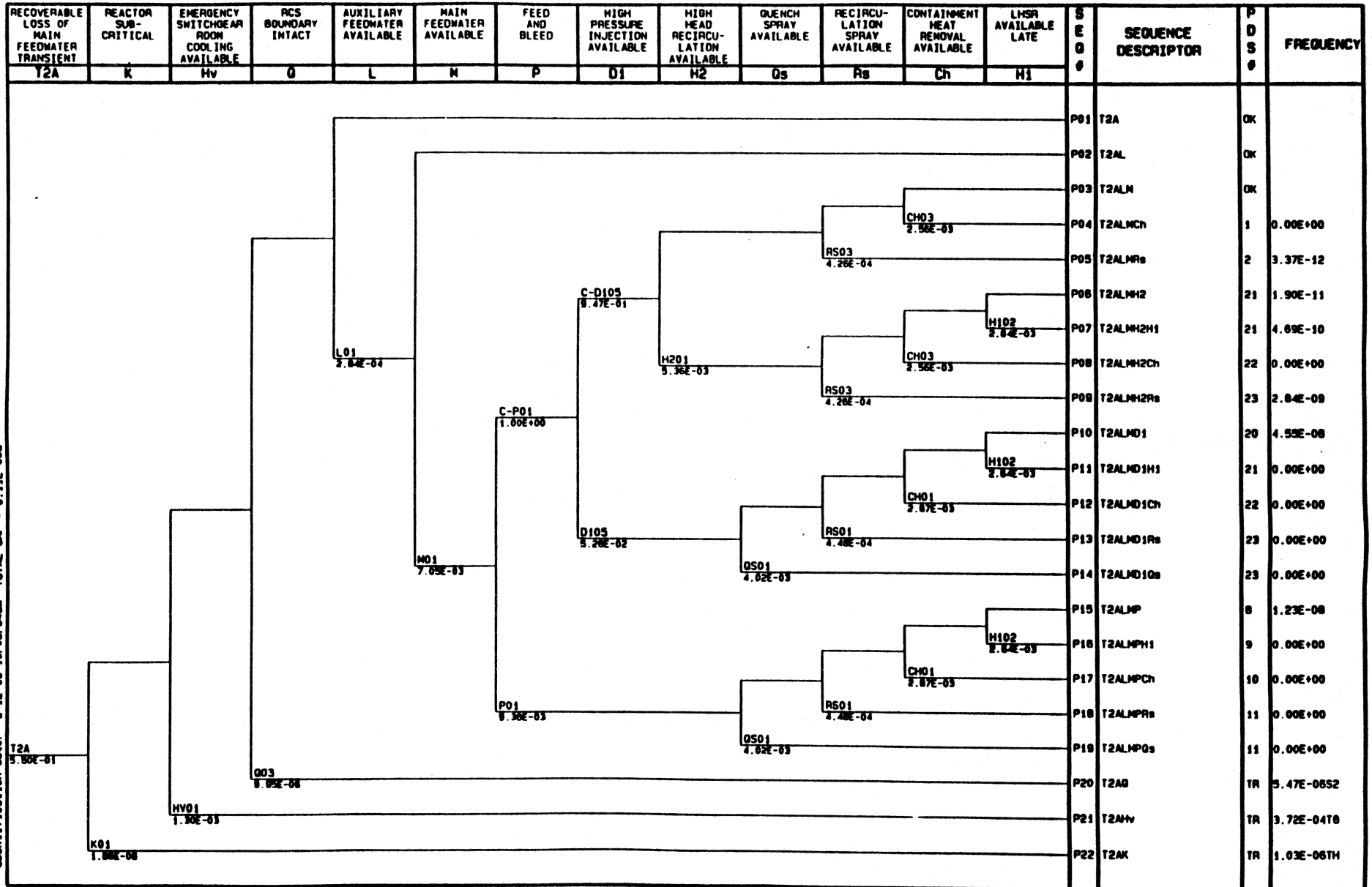
C:\NAPS\ETRES\OLD\ETRES\T2 EVT 1:00:02am 12-15-83 NUPRA 2.1a YPMR  
 Quantification Date: 3-12-83 10:04:01am TOTAL CDF = 8.85E-07



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2: LOSS OF MAIN FEEDWATER EVENT TREE

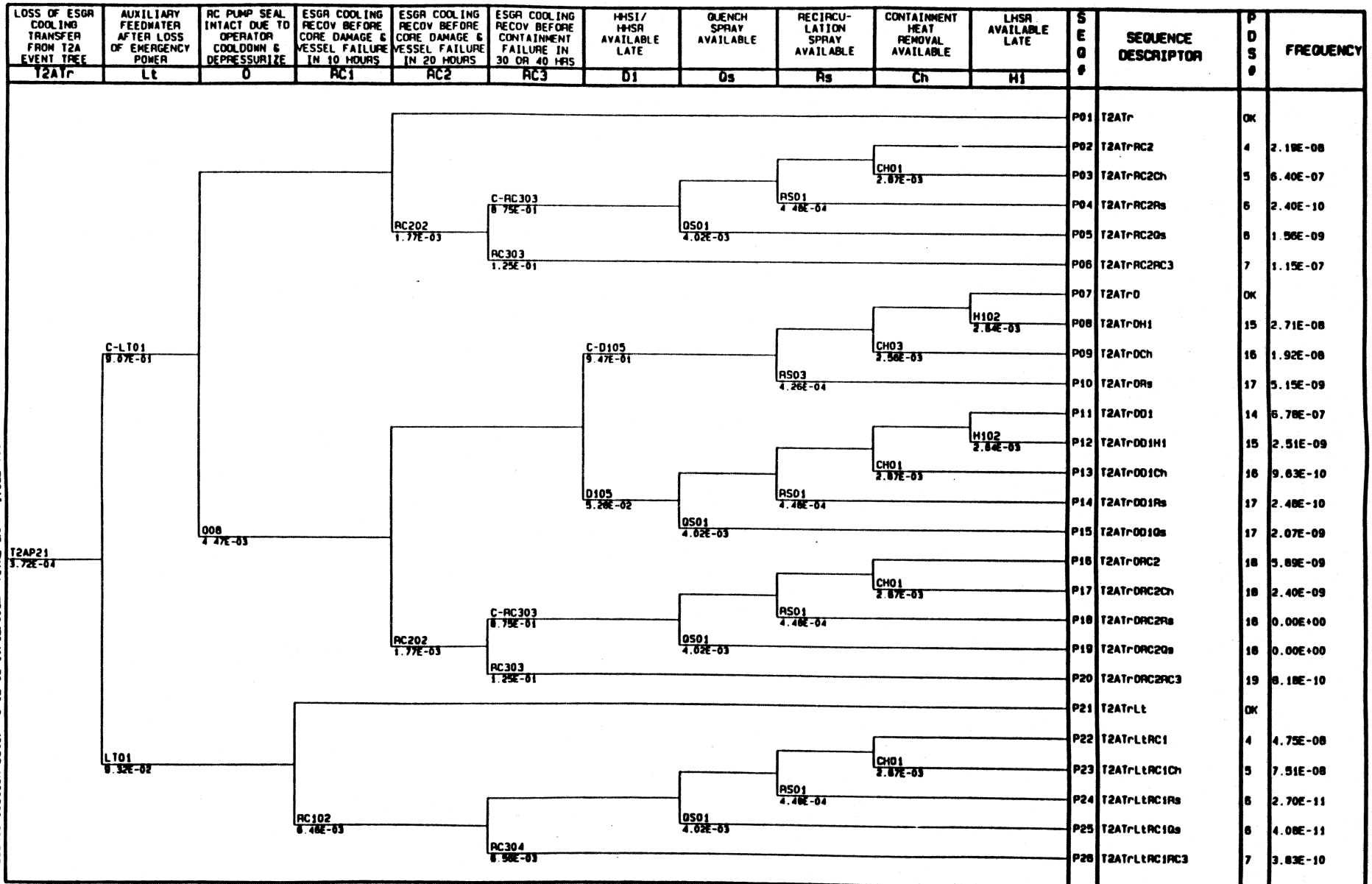
C:\MAPS\ETRES\LOTTRES\T2A.EVT 1:00:02am 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:08:54am TOTAL CDF = 6.11E-08



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2A: RECOVERABLE LOSS OF MAIN FEEDWATER EVENT TREE

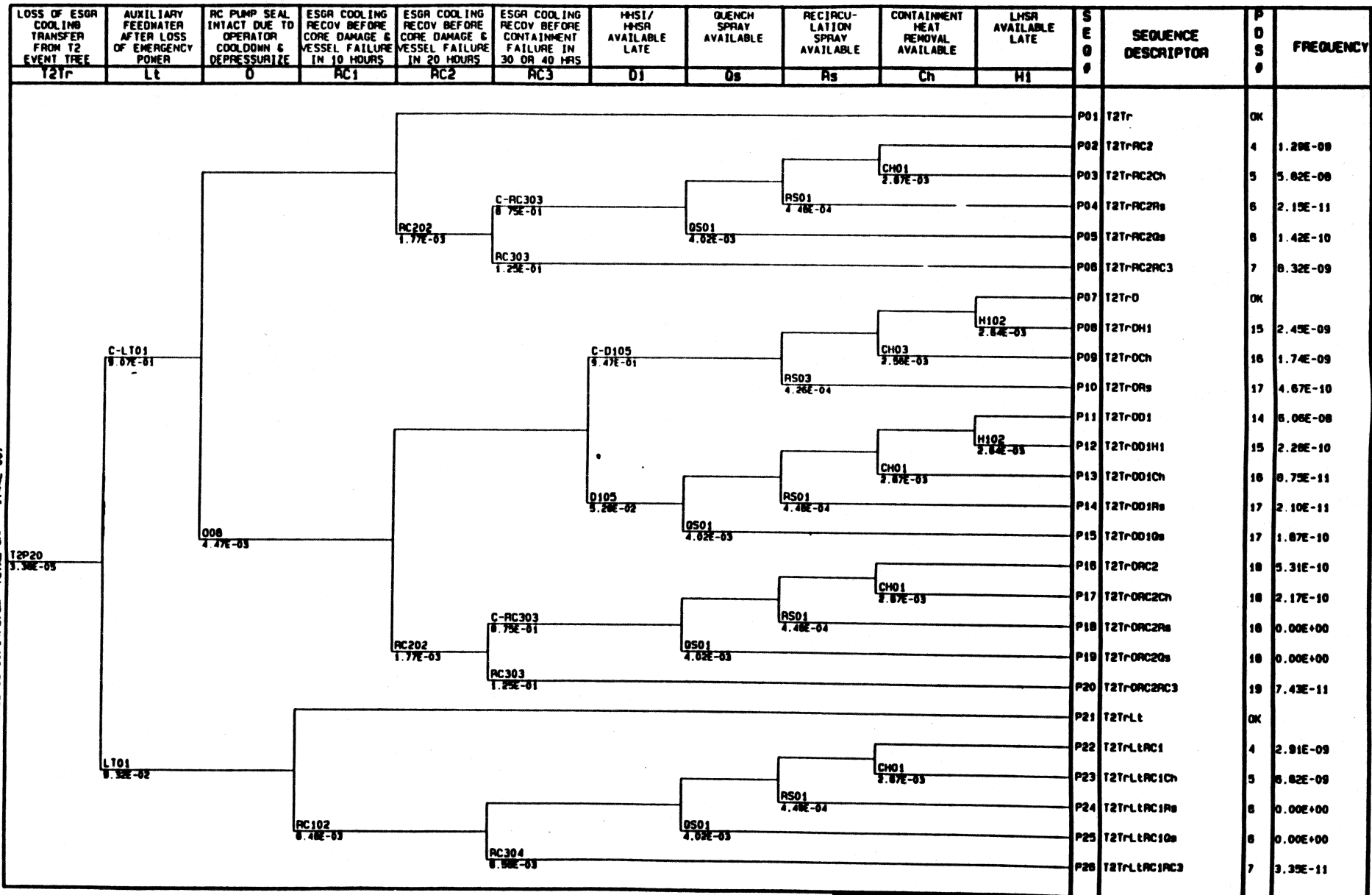
C:\MAPS\ETRES\OLDTRES\T2ATR.LEV 1:00:02am 12-15-92 MUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:12:00am TOTAL CHF = 1.65E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T2ATR: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T2A RECOVERABLE LOSS OF MAIN FM EVENT TREE

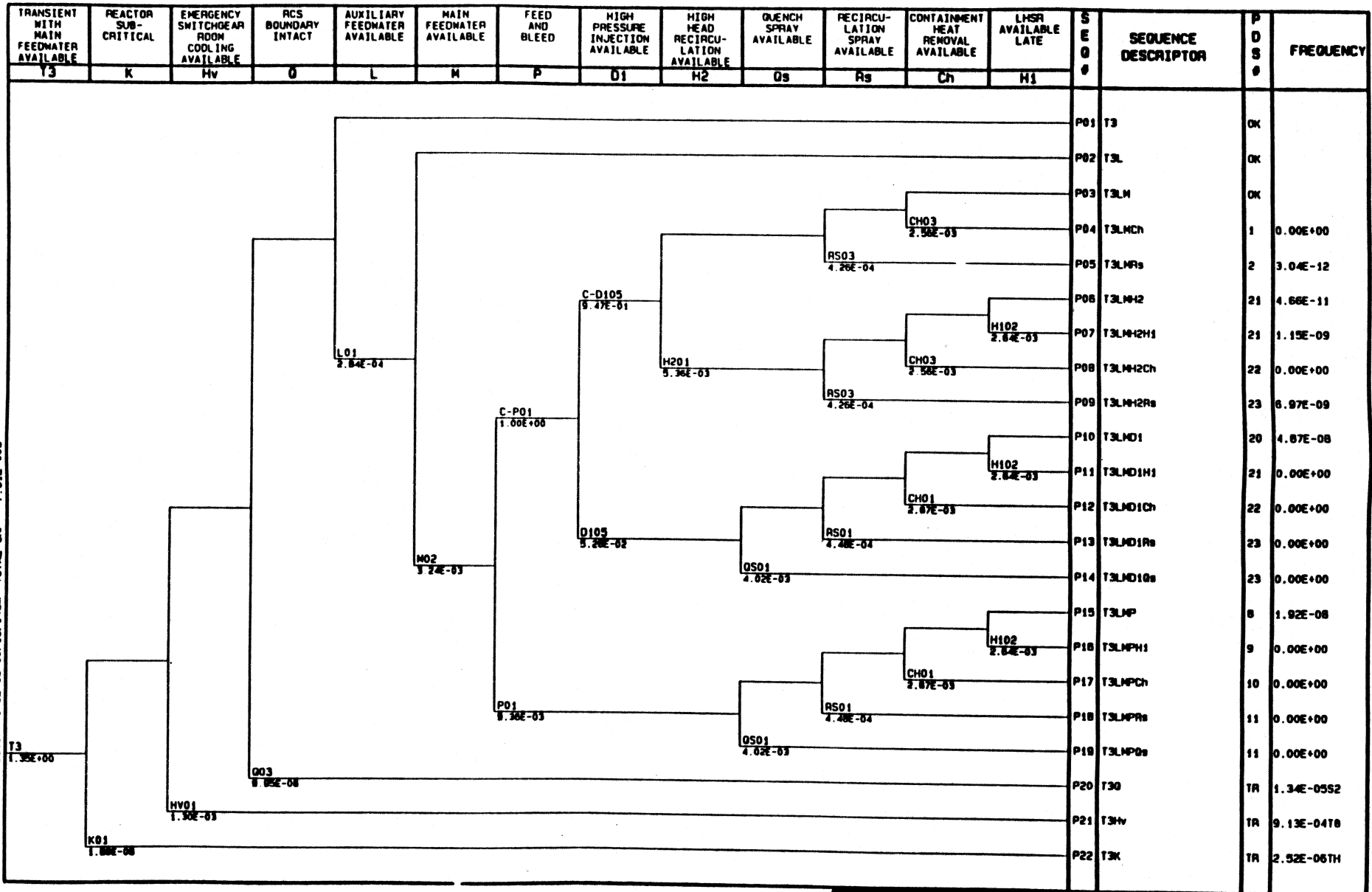
C:\MAPS\ETRES\OLD\ETRES\T2TR.EVT 1:00:02ms 12-15-92 NUPRA 2.1a VPR  
 Quantification Date: 3-12-93 10:14:37am TOTAL CDF = 1.44E-007



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

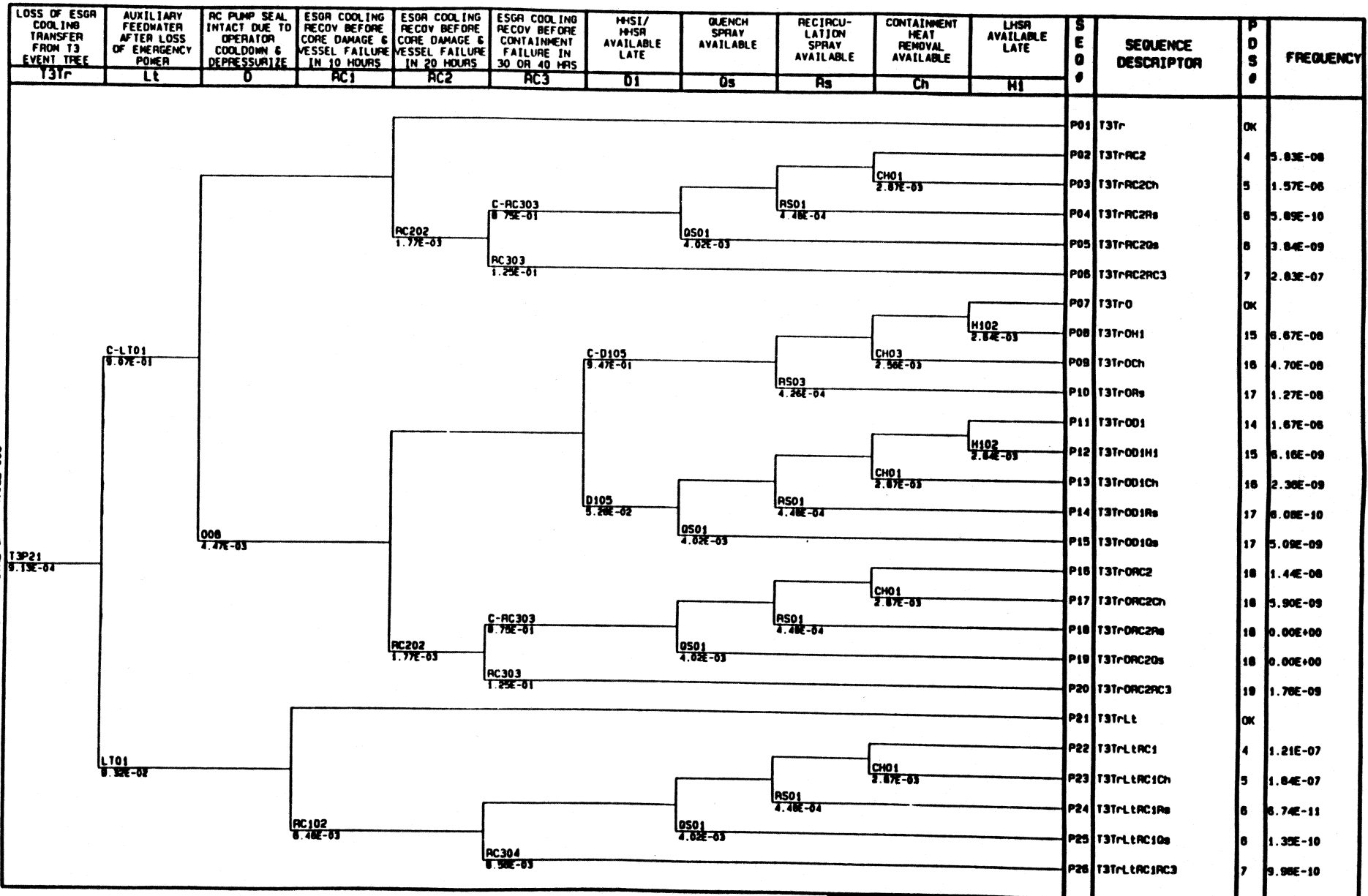
T2Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T2 LOSS OF MAIN FEEDWATER EVENT TREE

C:\NAPS\NETRES\UO\TRES\T3.EVT 1:00:02pm 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:18:14am TOTAL CHF = 7.61E-08



NORTH ANNA INDIVIDUAL PLANT EXAMINATION  
 T3: TRANSIENT WITH MAIN FEEDWATER AVAILABLE EVENT TREE

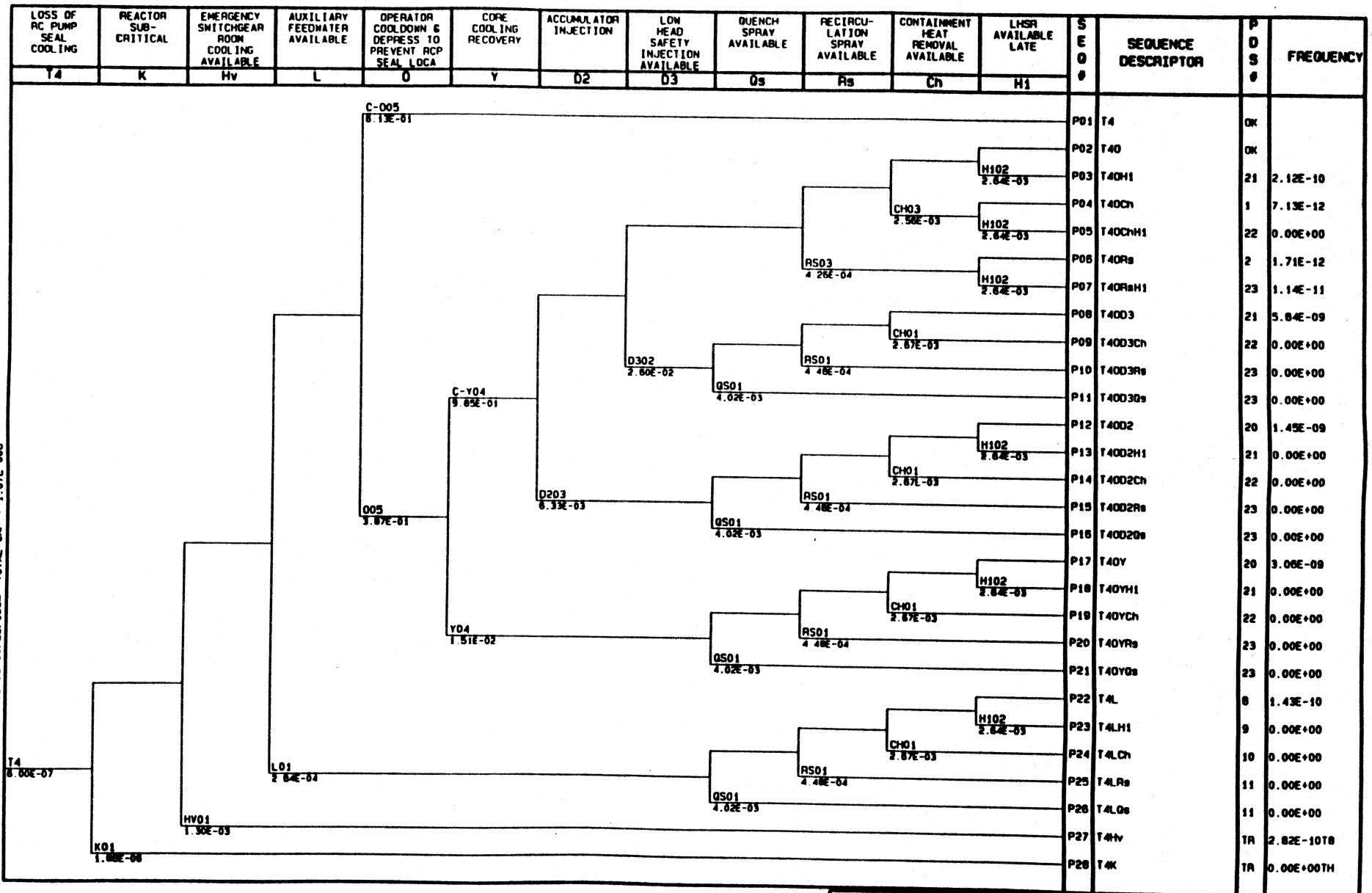
C:\NAPS\ETREES\ADITREES\T3TR.EVT 3:00:02pm 12-15-92 MUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:18:23am TOTAL CDF = 4.02E-06



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T3Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING  
 TRANSFER FROM T3 TRANSIENT WITH MFW AVAILABLE EVENT TREE

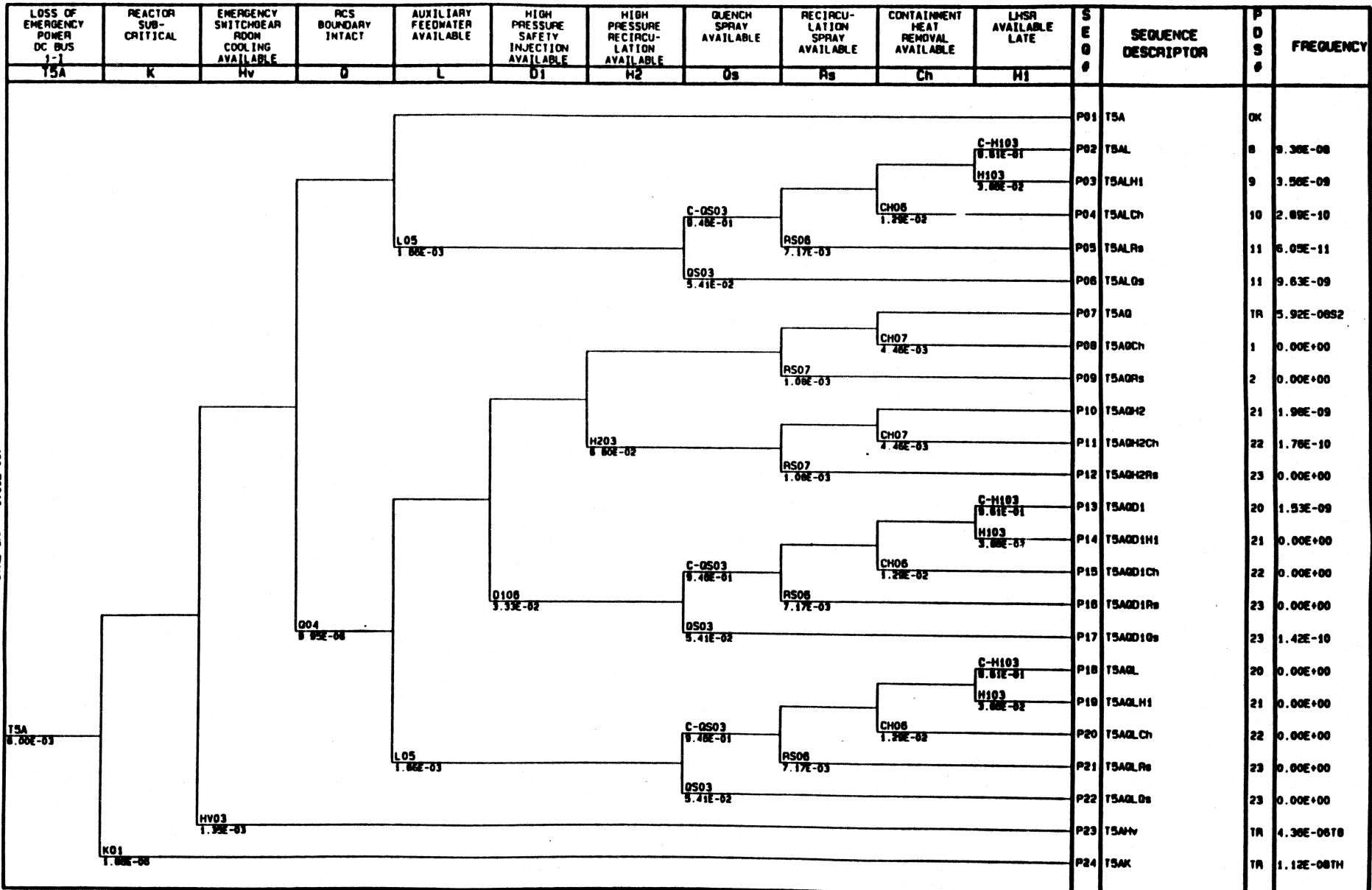
C:\NAPS\ETRES\OLDTRES\T4.EVT 1:06:02am 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:22:19am TOTAL CDF = 1.07E-008



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T4: LOSS OF REACTOR COOLANT PUMP SEAL COOLING EVENT TREE

C:\MAPS\ETRES\ADITRES\TSA.EVT 1:00:02pm 12-15-93 NUPRA 2.13 VPMR  
 Quantification Date: 3-12-93 10:24:25am TOTAL CDF = 1.11E-07

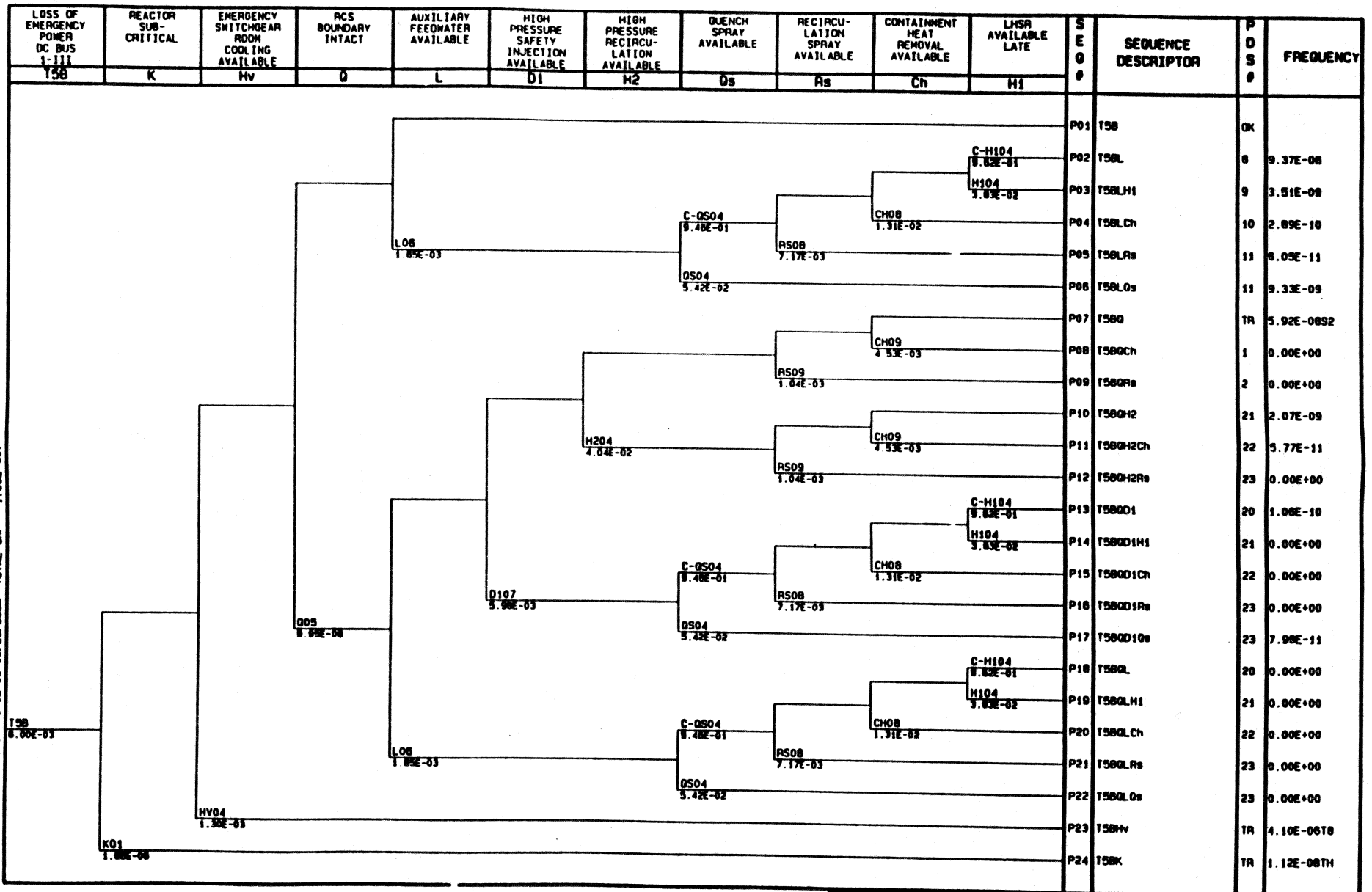


NORTH ANNA INDIVIDUAL PLANT EXAMINATION

TSA: LOSS OF EMERGENCY POWER DC BUS 1-1 EVENT TREE



C:\NAPS\ETRES\OLD\TRES\T58.EVT 1:00:02am 12-15-92 NUMRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:28:36am TOTAL CHF = 1.09E-007

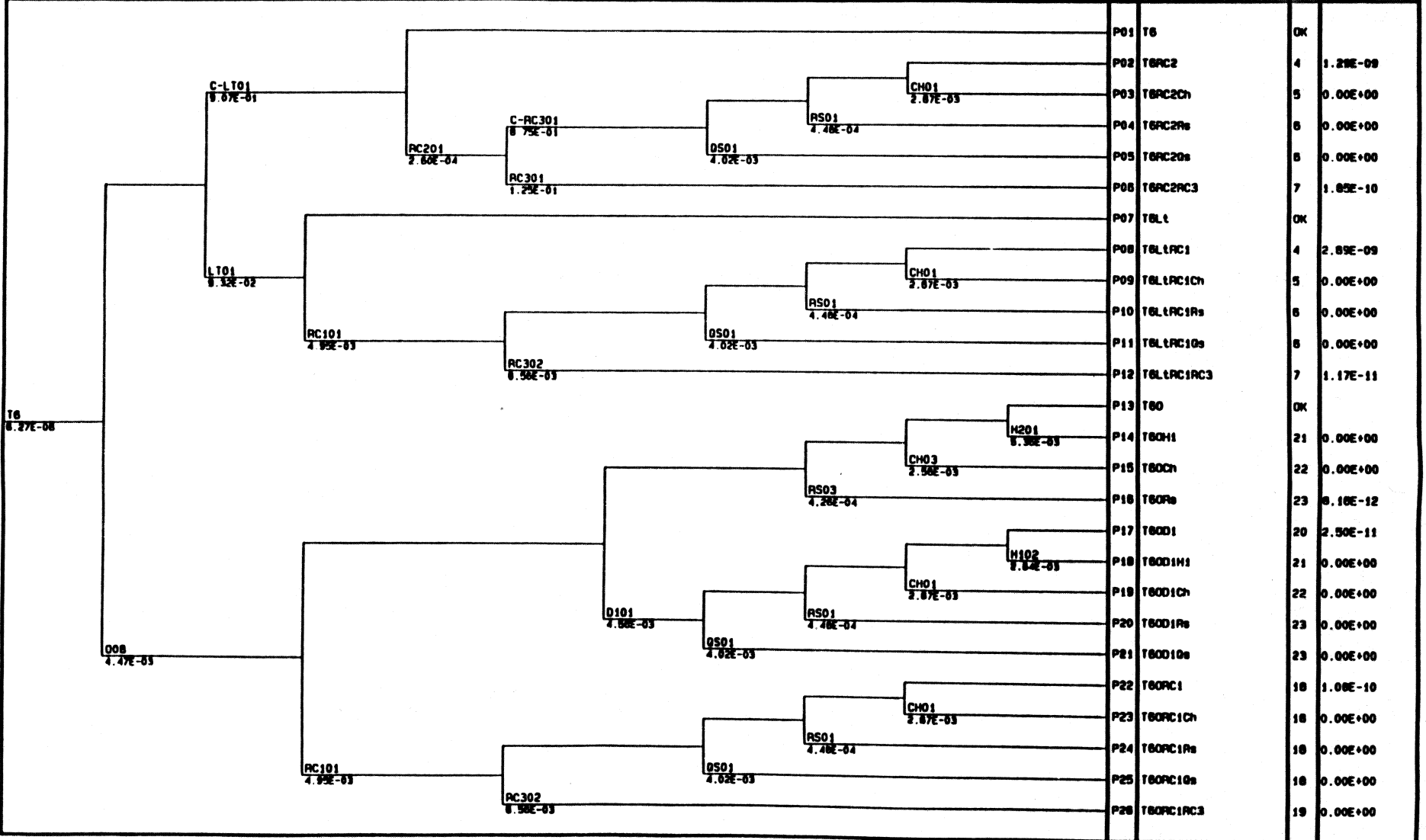


NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T58: LOSS OF EMERGENCY POWER DC BUS 1-III EVENT TREE

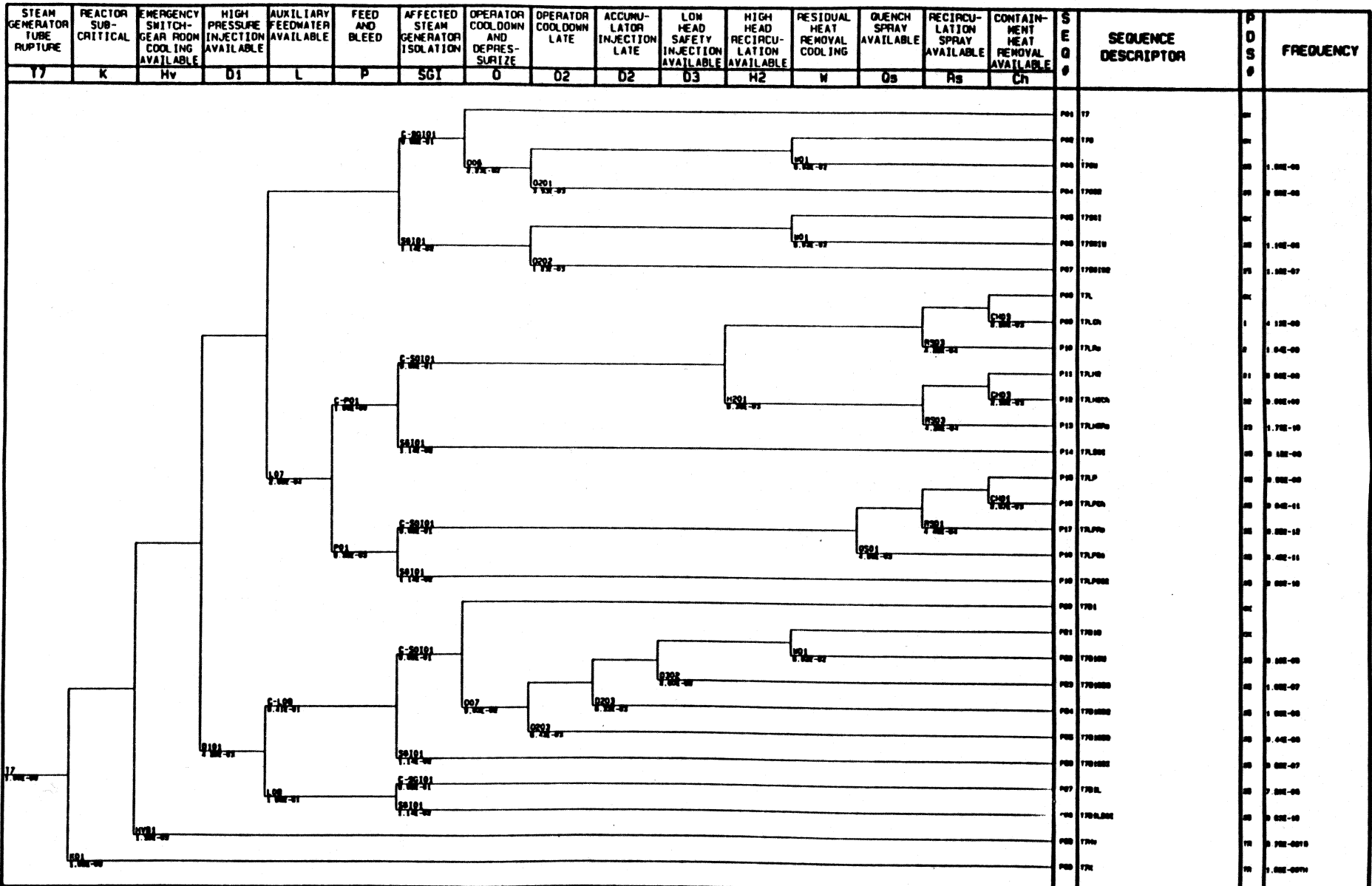
LOSS OF SERVICE WATER	RCP SEAL INTACT DUE TO OPER COOLDOWN & DEPRESS	AUX FEEDWATER AVAILABLE AFTER LOSS OF EMERGENCY POWER	SW RECOVERY BEFORE CORE DAMAGE & VESSEL FAIL IN 10 HOURS	SW RECOVERY BEFORE CORE DAMAGE & VESSEL FAIL IN 20 HOURS	SW RECOVERY BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	M/SI/ M/HSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LHSR AVAILABLE LATE	SEQUENCE	SEQUENCE DESCRIPTOR	POS	FREQUENCY
T6	0	Lt	RC1	RC2	RC3	D1	Qs	Rs	Ch	H1	0		0	

C:\NAPS\ETRES\ADTRES\T6.EVT 1:00:02am 12-15-82 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-83 10:28:03am TOTAL CF = 4.93E-009



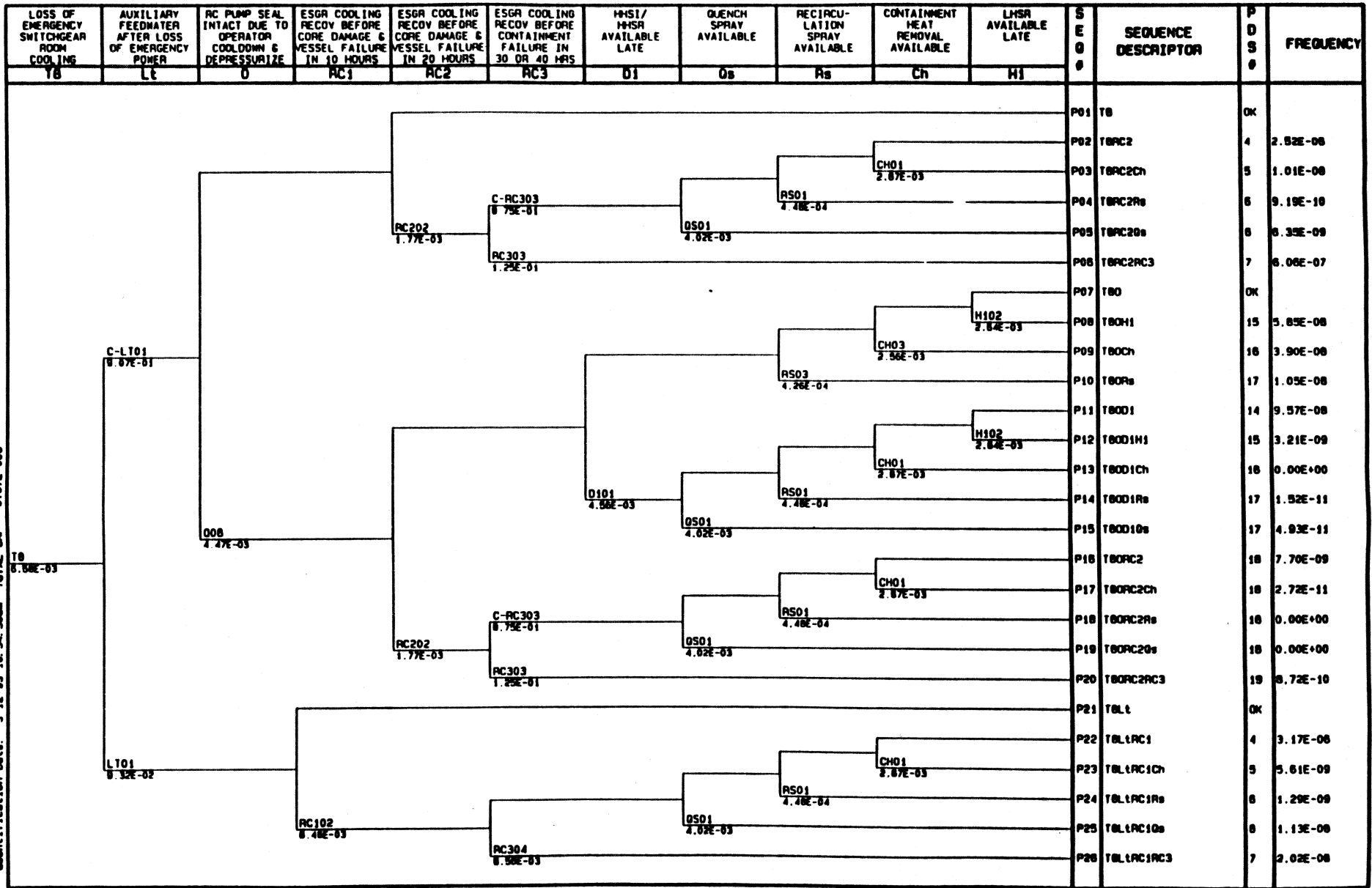
NORTH ANNA INDIVIDUAL PLANT EXAMINATION  
 T6: LOSS OF SERVICE WATER EVENT TREE

C:\NAPS\IPEES\LOITRES\17.EVT 1:00:02am 12-15-92 MUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:31:32am TOTAL CHF = 7.01E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION  
 17: STEAM GENERATOR TUBE RUPTURE EVENT TREE

C:\VAPS\ETRES\QLOTTRES\TB.EVT 1:00:02am 12-15-92 MUPA 2.1a VWER  
 Quantification Date: 3-12-93 10:34:30am TOTAL CDF = 6.57E-006



NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T8: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING EVENT TREE

C:\VAP\ETRES\QLOTTRES\TSA.EVT 1:00:02 on 12-15-92 NUPRA 2.18 VPMR  
 Quantification Date: 3-12-93 10:37:26am TOTAL CDF = 4.15E-07

LOSS OF EMERGENCY POWER 4160 V BUS 1H	REACTOR SUB-CRITICAL	EMERGENCY SWITCHGEAR ROOM COOLING AVAILABLE	RCS BOUNDARY INTACT	AUXILIARY FEEDWATER AVAILABLE	HIGH PRESSURE SAFETY INJECTION AVAILABLE	HIGH PRESSURE RECIRCULATION AVAILABLE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONFINEMENT HEAT REMOVAL AVAILABLE	LHSP AVAILABLE LATE	SEQUENCE DESCRIPTOR	POS	FREQUENCY	
T9A	K	Hv	O	L	D1	H2	Os	Rs	Ch	H1	SEQ #			
											P01	T9A	OK	
										C-H105 8.48E-01	P02	T9AL	B	1.72E-07
										H105 5.12E-02	P03	T9ALH1	9	1.72E-09
										CH10 1.55E-02	P04	T9ALCh	10	0.00E+00
											P05	T9ALRs	11	0.00E+00
											P06	T9ALOs	11	6.25E-09
											P07	T9AQ	TR	2.29E-0692
											P08	T9AQCh	1	0.00E+00
											P09	T9AQRs	2	0.00E+00
											P10	T9AQH2	21	1.31E-07
											P11	T9AQH2Ch	22	0.00E+00
											P12	T9AQH2Rs	23	0.00E+00
											P13	T9AQD1	20	1.02E-07
										C-H105 8.48E-01	P14	T9AQD1H1	21	4.36E-10
										H105 5.12E-02	P15	T9AQD1Ch	22	0.00E+00
										CH10 1.55E-02	P16	T9AQD1Rs	23	0.00E+00
											P17	T9AQD1Os	23	1.90E-09
											P18	T9AQL	20	0.00E+00
										C-H105 8.48E-01	P19	T9AQLH1	21	0.00E+00
										H105 5.12E-02	P20	T9AQLCh	22	0.00E+00
										CH10 1.55E-02	P21	T9AQLRs	23	0.00E+00
											P22	T9AQLOs	23	0.00E+00
											P23	T9AHv	TR	4.00E-03TB
											P24	T9AK	TR	3.18E-06TH

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T9A: LOSS OF EMERGENCY POWER 4160 V BUS 1H EVENT TREE

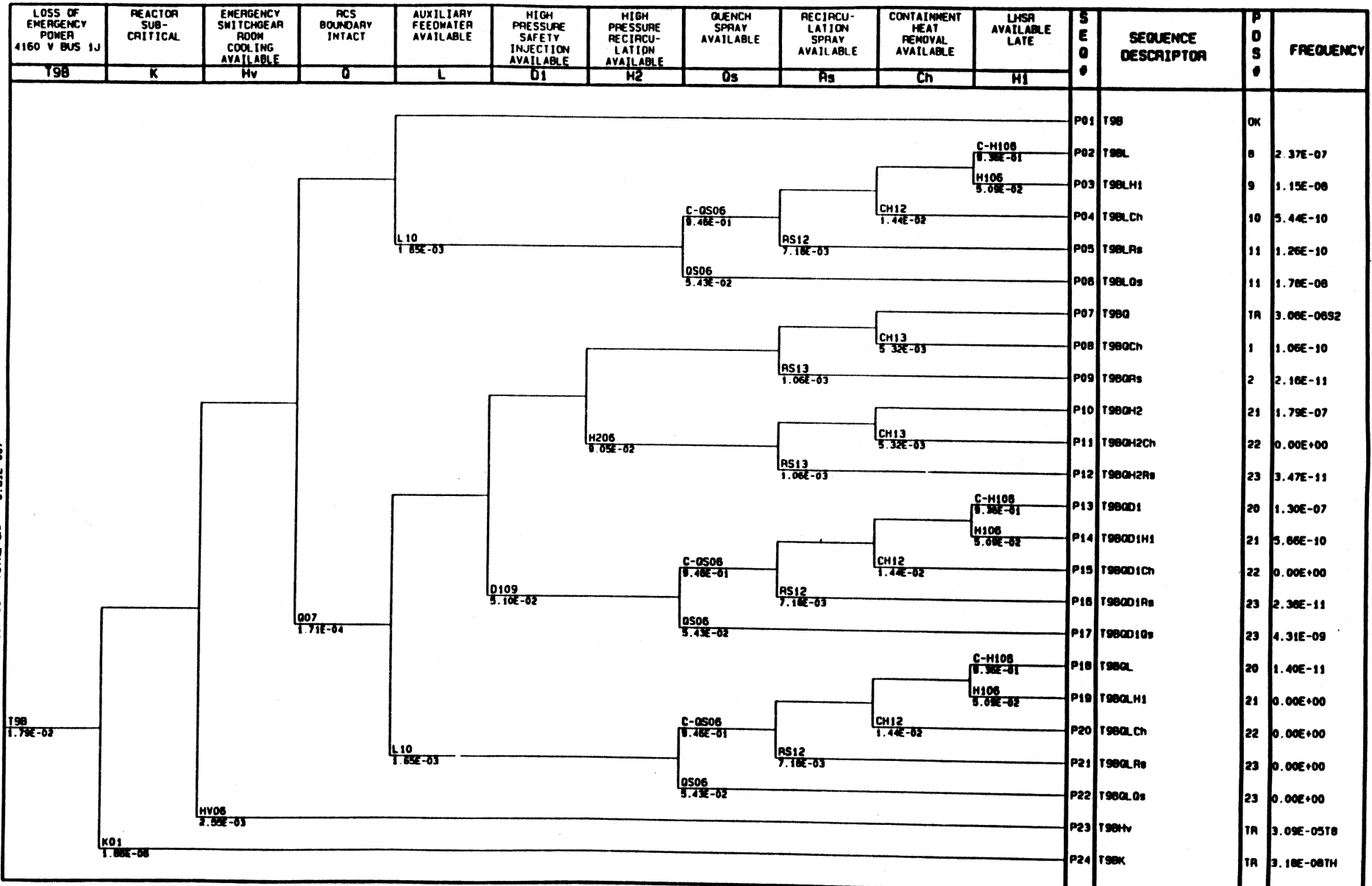
C:\MAPS\ETRES\OLD\TRES\TSATR.EVT 1:00:02pm 12-15-92 MAFRA 2.10 VPMR  
 Quantification Date: 3-12-93 10:38:17am TOTAL CDF = 3.28E-06

LOSS OF ESGR COOLING TRANSFER FROM T9A EVENT TREE	RCP SEAL INTACT DUE TO OPER COOLDOWN & DEPRESS	AUX FEEDWATER AVAILABLE AFTER LOSS OF EMERGENCY POWER	ESGR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 10 HOURS	ESGR COOLING RECOV BEFORE CORE DAMAGE & VESSEL FAIL IN 20 HOURS	ESGR COOLING RECOV BEFORE CONTAINMENT FAILURE IN 30 OR 40 HRS	HHSI/HHSR AVAILABLE LATE	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LNSR AVAILABLE LATE	SEQUENCE DESCRIPTOR	POS	FREQUENCY	
T9ATr	0	Lt	RC1	RC2	RC3	D1	Os	Rs	Ch	H1				
											P01	TSATr	OK	
											P02	TSATrRC2	4	8.33E-07
											P03	TSATrRC2Ch	5	1.07E-08
											P04	TSATrRC2Ra	6	0.00E+00
											P05	TSATrRC20a	6	1.17E-08
											P06	TSATrRC2RC3	7	1.07E-07
											P07	TSATrLt	OK	
											P08	TSATrLtRC1	4	1.53E-06
											P09	TSATrLtRC1Ch	5	8.22E-10
											P10	TSATrLtRC1Ra	6	0.00E+00
											P11	TSATrLtRC10a	6	1.89E-08
											P12	TSATrLtRC1RC3	7	0.00E+00
											P13	TSATrD	OK	
											P14	TSATrDH1	21	3.88E-07
											P15	TSATrDCh	22	0.00E+00
											P16	TSATrDRa	23	9.42E-10
											P17	TSATrDD1	20	3.07E-07
											P18	TSATrDD1H1	21	0.00E+00
											P19	TSATrDD1Ch	22	1.69E-06
											P20	TSATrDD1Ra	23	0.00E+00
											P21	TSATrDD10a	23	8.77E-09
											P22	TSATrDRC1	18	2.01E-08
											P23	TSATrDRC1Ch	18	0.00E+00
											P24	TSATrDRC1Ra	18	0.00E+00
											P25	TSATrDRC10a	18	0.00E+00
											P26	TSATrDRC1RC3	19	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

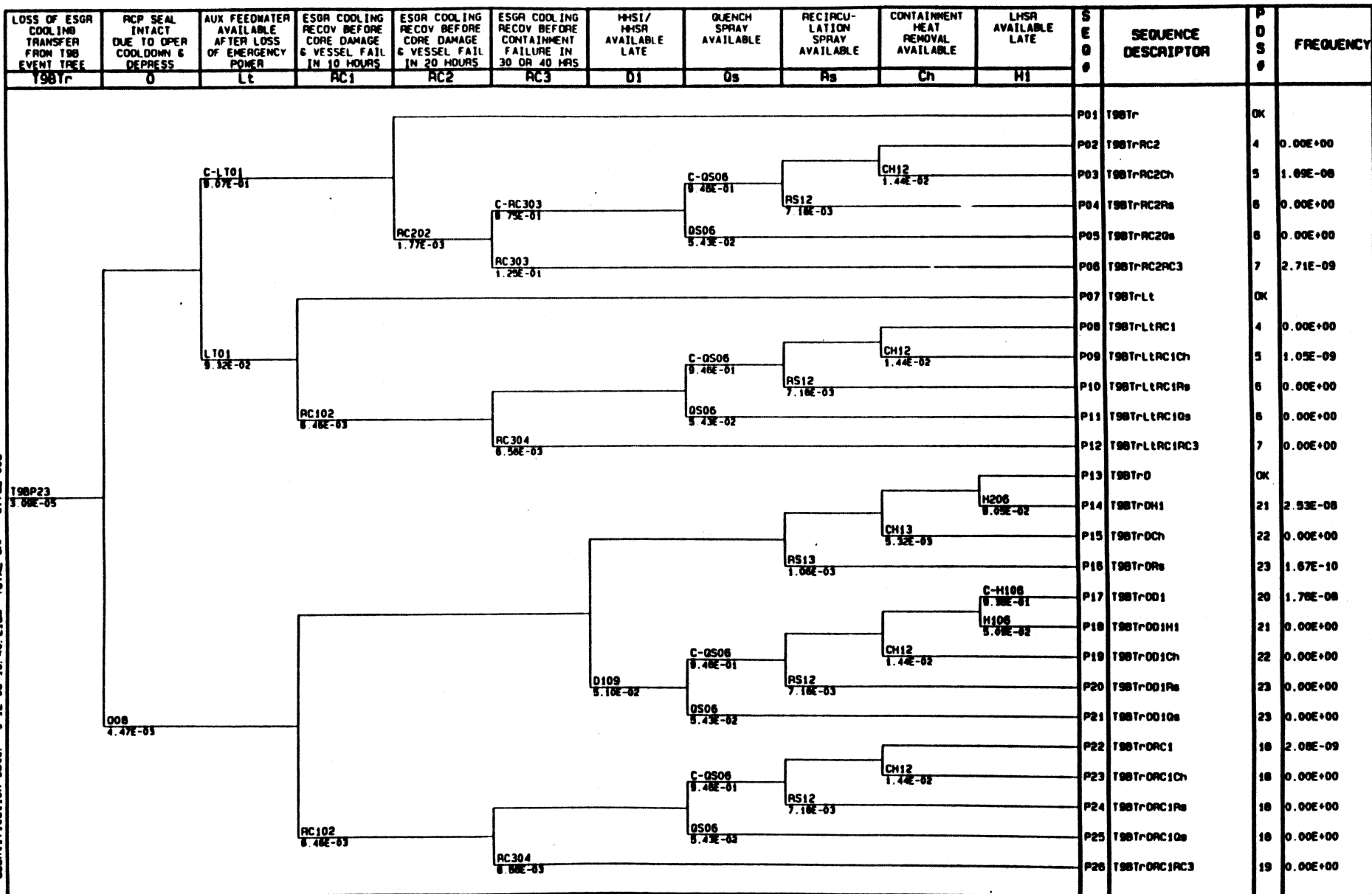
TSATR: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T9A LOSS OF 4160 V BUS 1H EVENT TREE

C:\NAPS\ETRES\OLD\ETRES\T98.EVT 1:00:02pm 12-15-92 NUPRA 2.18 VPMR  
 Quantification Date: 3-12-93 10:36:49am TOTAL CDF = 5.81E-007



NORTH ANNA INDIVIDUAL PLANT EXAMINATION  
 T98: LOSS OF EMERGENCY POWER 4160 V BUS 1J EVENT TREE

C:\MAPS\ETREES\LOITREES\T98TR EVT 1: 00: 02sec 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10: 40: 21am TOTAL CDF = 6.78E-008

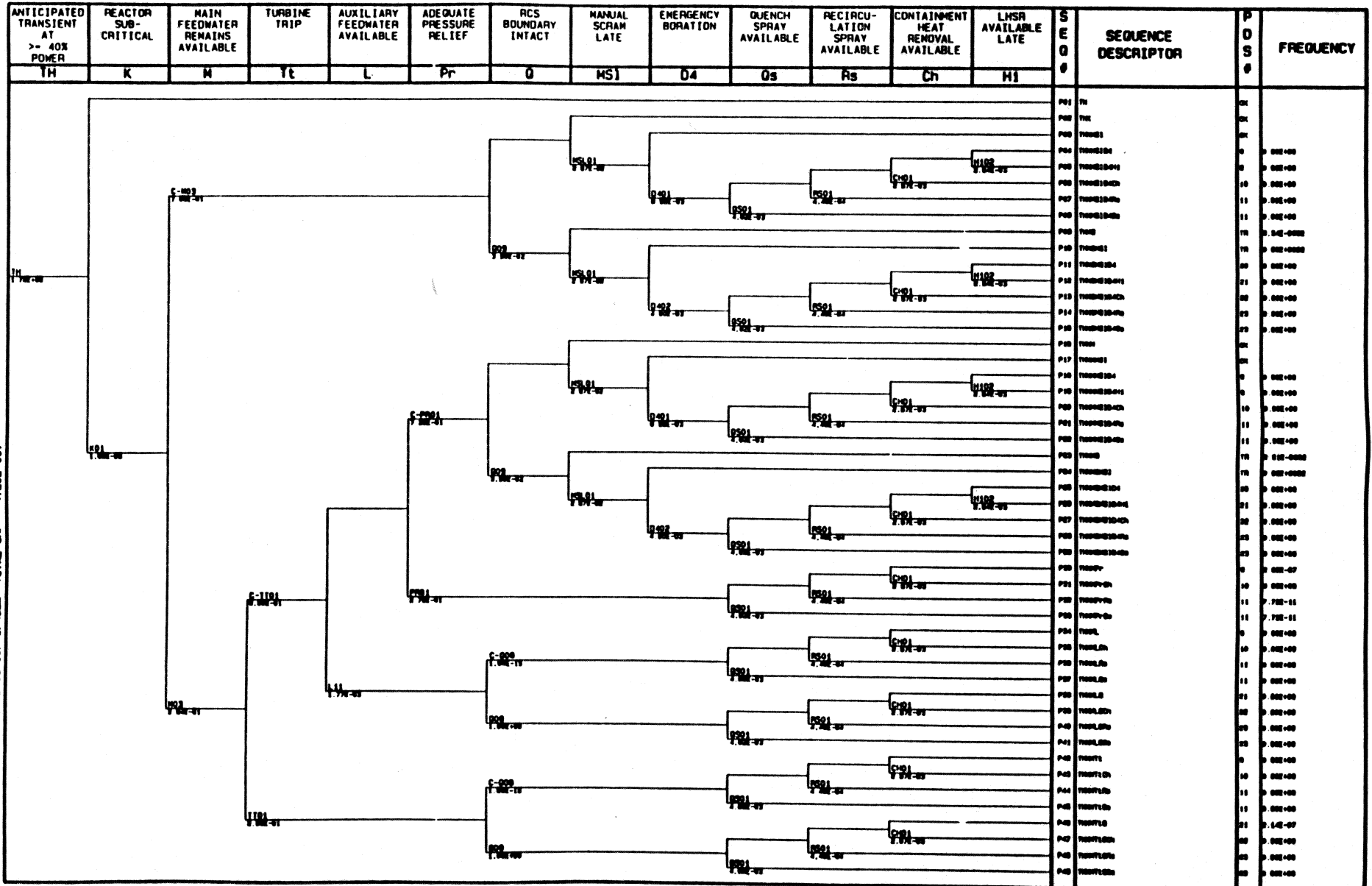


NORTH ANNA INDIVIDUAL PLANT EXAMINATION

T98Tr: LOSS OF EMERGENCY SWITCHGEAR ROOM COOLING TRANSFER FROM T98 LOSS OF 4160 V BUS 1J EVENT TREE



C:\MAPS\ETRES\IPE\IPE.EVT 1:00:02 on 12-15-92 MURRA 2.13 VPMR  
 Quantification Date: 3-12-93 10:45:43am TOTAL CDF = 4.20E-007



NORTH ANNA INDIVIDUAL PLANT EXAMINATION  
 TH HIGH POWER ATMS EVENT TREE  
 (ANTICIPATED TRANSIENT WITHOUT SCRAM AT 40% OR MORE POWER)

C:\NAPS\NETRES\OLD\RES\TL.EVT 1:00:02pm 12-15-92 NUPRA 2.1a VPMR  
 Quantification Date: 3-12-93 10:48:42am TOTAL CHF = 0.00E+000

ANTICIPATED TRANSIENT AT < 40% POWER	REACTOR SUB-CRITICAL	MAIN OR AUXILIARY FEEDWATER AVAILABLE	RCS BOUNDARY INTACT	MANUAL SCRAM LATE	EMERGENCY BORATION	QUENCH SPRAY AVAILABLE	RECIRCULATION SPRAY AVAILABLE	CONTAINMENT HEAT REMOVAL AVAILABLE	LMSR AVAILABLE LATE	SEQUENCE	SEQUENCE DESCRIPTOR	PROBABILITY	FREQUENCY
TL	K	L	O	MS1	D4	Os	Rs	Ch	H1	0		0	
TL 3.80E-01  KO1 1.80E-08  L12 5.81E-04  O09 3.80E-02										P01	TL	OK	
										P02	TLK	OK	
										P03	TLKMS1	OK	
										P04	TLKMS1D4	8	0.00E+00
										P05	TLKMS1D4H1	9	0.00E+00
										P06	TLKMS1D4Ch	10	0.00E+00
										P07	TLKMS1D4Rs	11	0.00E+00
										P08	TLKMS1D4Os	11	0.00E+00
										P09	TLKQ	TR	0.00E+00S2
										P10	TLKMS1	TR	0.00E+00S2
										P11	TLKMS1D4	20	0.00E+00
										P12	TLKMS1D4H1	21	0.00E+00
										P13	TLKMS1D4Ch	22	0.00E+00
										P14	TLKMS1D4Rs	23	0.00E+00
										P15	TLKMS1D4Os	23	0.00E+00
										P16	TLKL	8	0.00E+00
										P17	TLKLH1	9	0.00E+00
										P18	TLKLCh	10	0.00E+00
										P19	TLKLRs	11	0.00E+00
										P20	TLKLOs	11	0.00E+00
										P21	TLKLG	20	0.00E+00
										P22	TLKLOH1	21	0.00E+00
										P23	TLKLOCh	22	0.00E+00
										P24	TLKLORs	23	0.00E+00
										P25	TLKLOOs	23	0.00E+00

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

TL: LOW POWER ATMS EVENT TREE  
 (ANTICIPATED TRANSIENT WITHOUT SCRAM, LESS THAN)

(MER)

INTERFACING SYSTEM LOCA	BREAK SIZE LARGER THAN VERY SMALL	EMERGENCY SWITCHGEAR ROOM COOLING AVAILABLE	HIGH PRESSURE INJECTION AVAILABLE	AUXILIARY FEEDWATER AVAILABLE	OPERATOR COOLDOWN AND DEPRESSURIZATION	ISOLATION OF BREAK	SE	SEQUENCE DESCRIPTOR	POS	FREQUENCY
VX	Fm	Hv	D1	L	O	V1	0		0	
VX	1.80E-08	FV01 1.30E-03	D101 4.56E-03	L01 2.84E-04	O01 1.00E+00	V101 1.00E+00	P01	VX	0K	
							P02	VXV1	24	0.00E+00
							P03	VXD	24	7.88E-08
							P04	VXL	24	1.34E-11
	C-FM01 4.80E-02						P05	VXD1	24	2.70E-10
							P06	VXV	24	1.97E-12
	FV01 1.52E-01						P07	VXFa	24	1.52E-06

C:\NAPS\ETREES\OLOTRES\VX.EVT 1:00:02am 12-15-92 NUPRA 2.18 VPMR  
Quantification Date: 3-12-93 10:48:58am TOTAL CDF = 1.60E-006

NORTH ANNA INDIVIDUAL PLANT EXAMINATION

VX: INTERFACING SYSTEM LOCA EVENT TREE