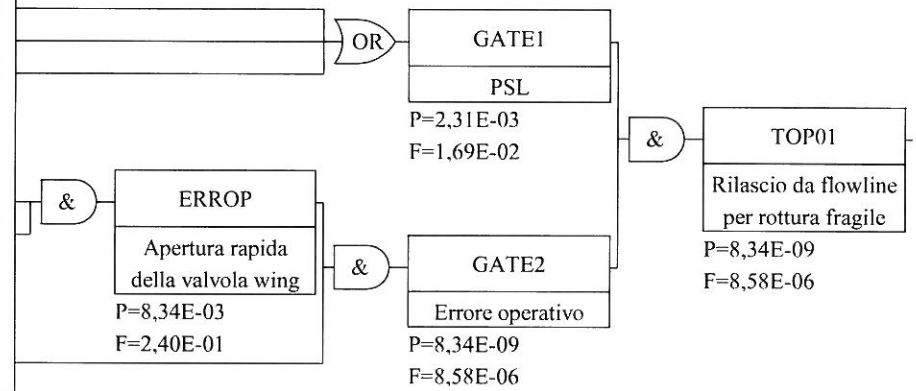


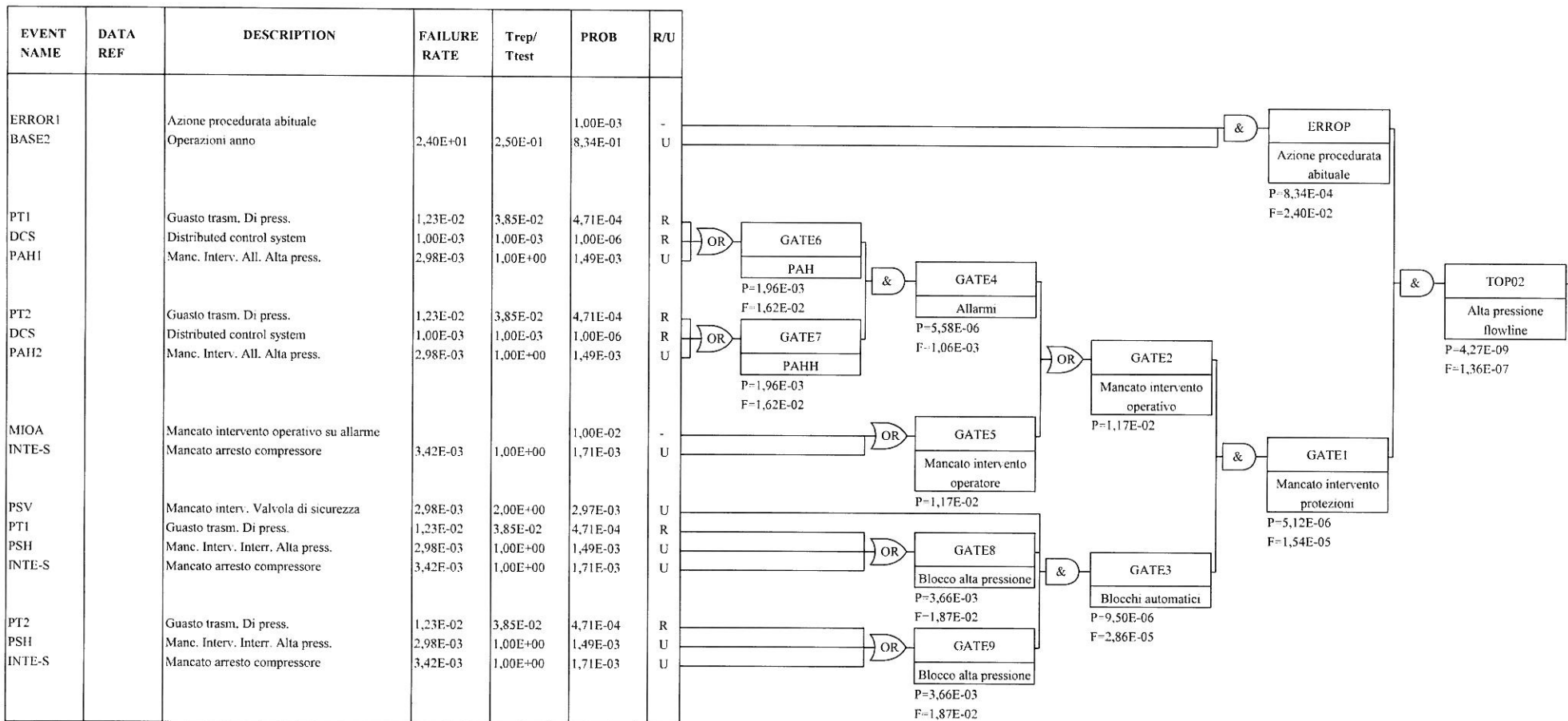
EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
PT		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
ERROR2 BASE1		Azione procedurata non abituale Operazioni/anno	2,40E+01	2,50E-01	1,00E-02 8,34E-01	- U
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 02-04-12 Time: 15.10.08
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGAT\IC15~1.2AL\LOGAN\TOP01
 Cutset Order: 6
 Proof Tests : Simultaneous

Mauro Gotti

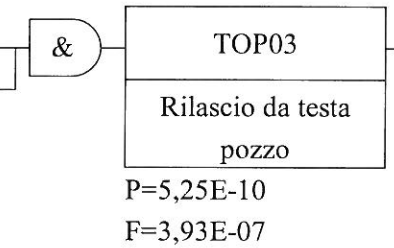
FIGURE . FAULT TREE FOR RILASCIO DA FLOWLINE PER ROTTURA FRAGILE



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 02-04-12 Time: 17.39.49
Fault Tree File : I:\PROGER\1203GA-2\ALLEGATI\VIC15-1.2\ALLOGAN\TOP02
Cutset Order: 6
Proof Tests : Simultaneous

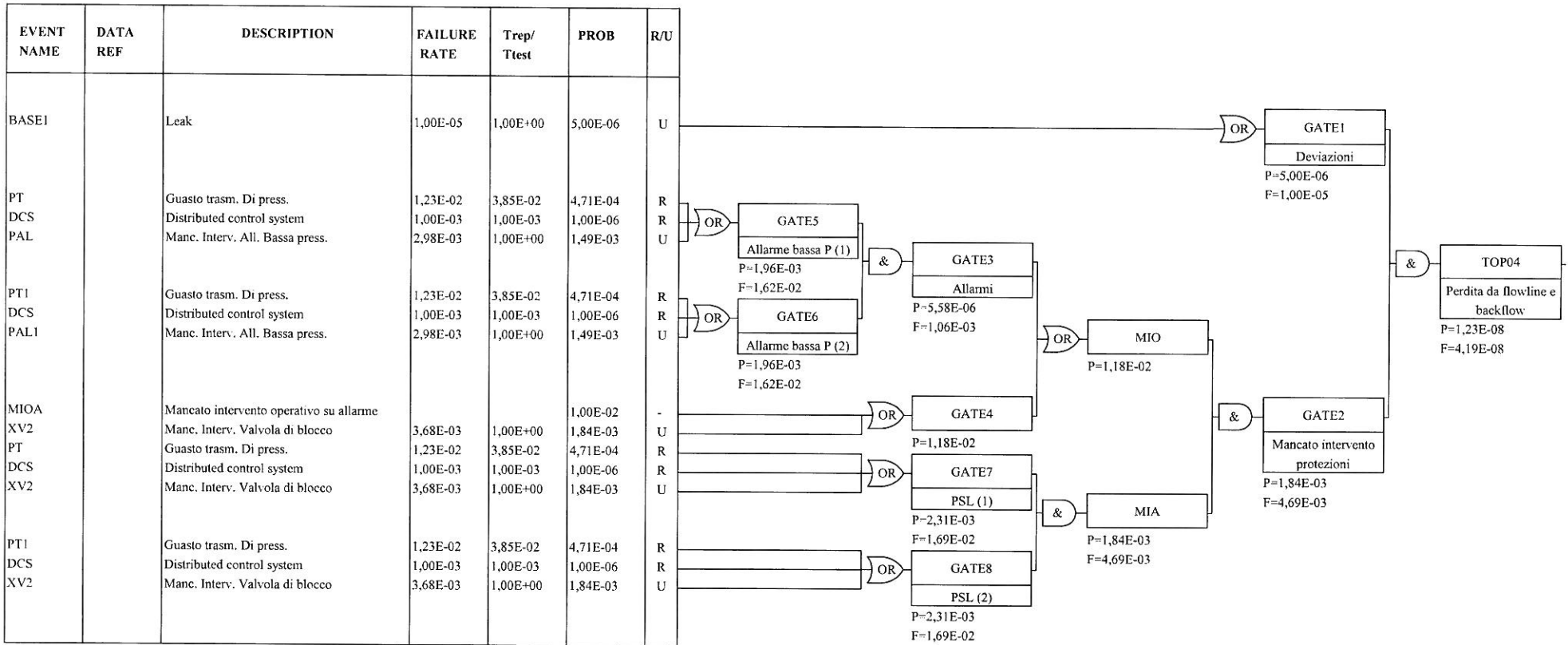
FIGURE . FAULT TREE FOR ALTA PRESSIONE FLOWLINE

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
BASE1 SCSSV		Troncamento testa pozzo per urto terzi (6 pozzi) Surface controlled sub surface v. fails to close	1,20E-04 2,60E-02	2,70E-03 2,50E-01	1,62E-07 3,24E-03	U U



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 02-04-12 Time: 12.16.59
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2A\LOGAN\TOP03
Cutset Order: 6
Proof Tests : Simultaneous

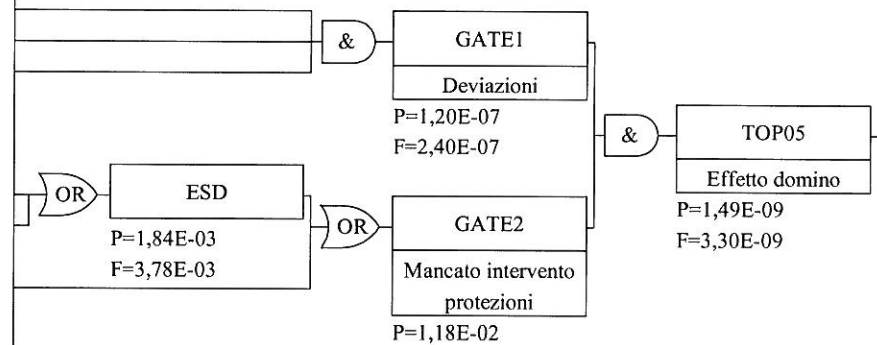
FIGURE . FAULT TREE FOR RILASCIO DA TESTA POZZO



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 14-03-12 Time: 08,46.01
 Fault Tree File : I:\PROGER\203GA~2\ALLEGAT\IC15~1.2A\LOGAN\TOP04
 Cutset Order: 6
 Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR PERDITA DA FLOWLINE E BACKFLOW

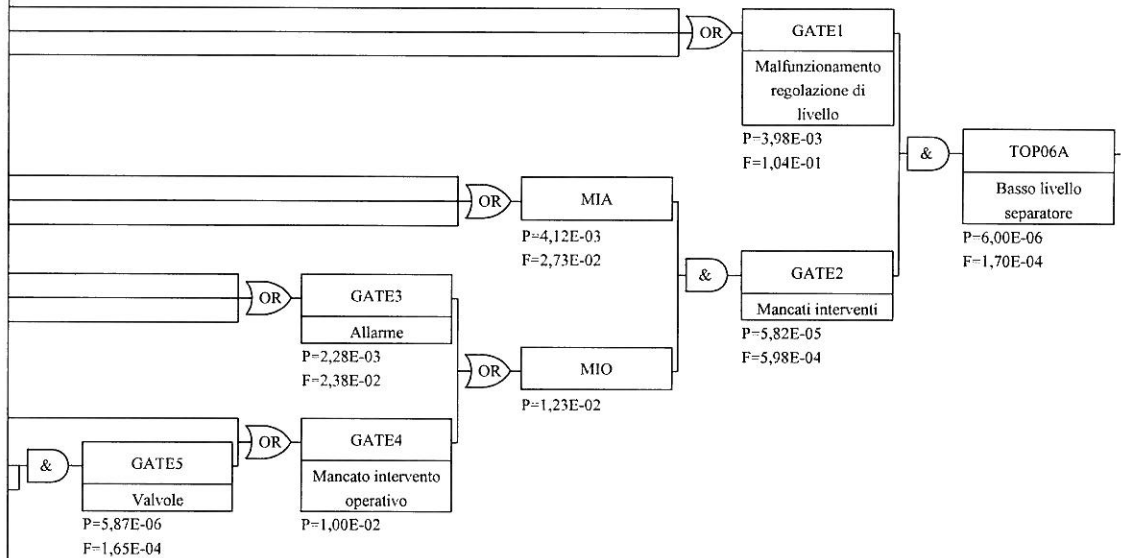
EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
BASE2		Lakage	6,00E-05	1,00E+00	3,00E-05	U
BASE3		Innesco			4,00E-02	-
BASE4		Getto direzionato verso il bersaglio			1,00E-01	-
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
BASE1		Cavo termosensibile			1,00E-02	-



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 10.26.00
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2A\LOGAN\TOP05
Cutset Order: 6
Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR EFFETTO DOMINO

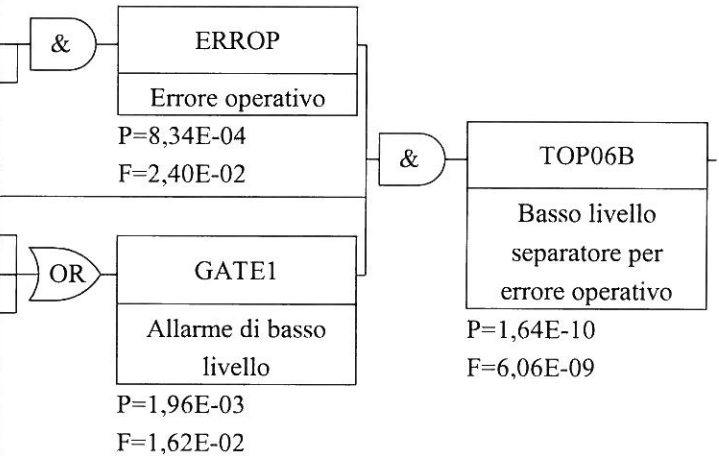
EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
LT		Guasto trasm. Di liv.	2,07E-02	3,85E-02	7,95E-04	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
LV		Valvola di regolazione portata	8,32E-02	3,85E-02	3,19E-03	R
LT2		Guasto trasm. Di liv.	2,07E-02	3,85E-02	7,95E-04	R
LSL		Manc. Interv. Interr. Basso liv.	2,98E-03	1,00E+00	1,49E-03	U
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
LT3		Guasto trasm. Di liv.	2,07E-02	3,85E-02	7,95E-04	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
LAI		Manc. Interv. All. Basso liv.	2,98E-03	1,00E+00	1,49E-03	U
MIOA		Mancato intervento operativo su allarme			1,00E-02	-
LV		Valvola di regolazione portata	8,32E-02	3,85E-02	3,19E-03	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 08.46.34
Fault Tree File : I:\PROGER\1203GA~2\ALLEGAT\1C15~1.2AL\LOGAN\TOP06A
Cutset Order: 6
Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR BASSO LIVELLO SEPARATORE

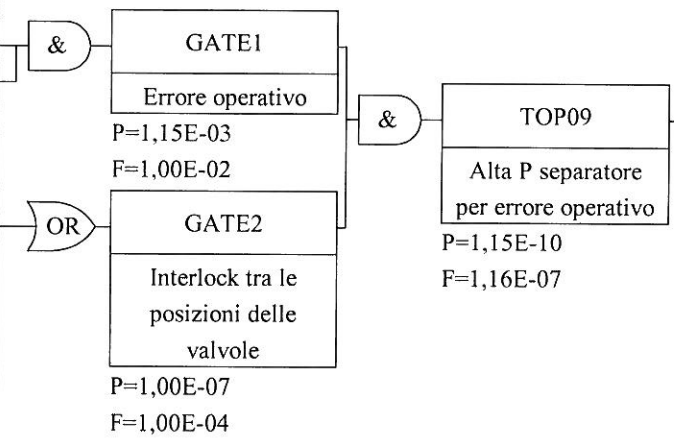
EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
ERROR1 BASE2		Azione procedurata abituale Operazioni/anno	2,40E+01	2,50E-01	1,00E-03 8,34E-01	- U
BASE1 PT		Valvole lucchettate Guasto trasm. Di press.	1,23E-02	3,85E-02	1,00E-04 4,71E-04	- R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
PAL		Manc. Interv. All. Bassa press.	2,98E-03	1,00E+00	1,49E-03	U



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 02-04-12 Time: 15.14.55
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\1C15~1.2AL\LOGANTOP06B
Cutset Order: 6
Proof Tests : Simultaneous

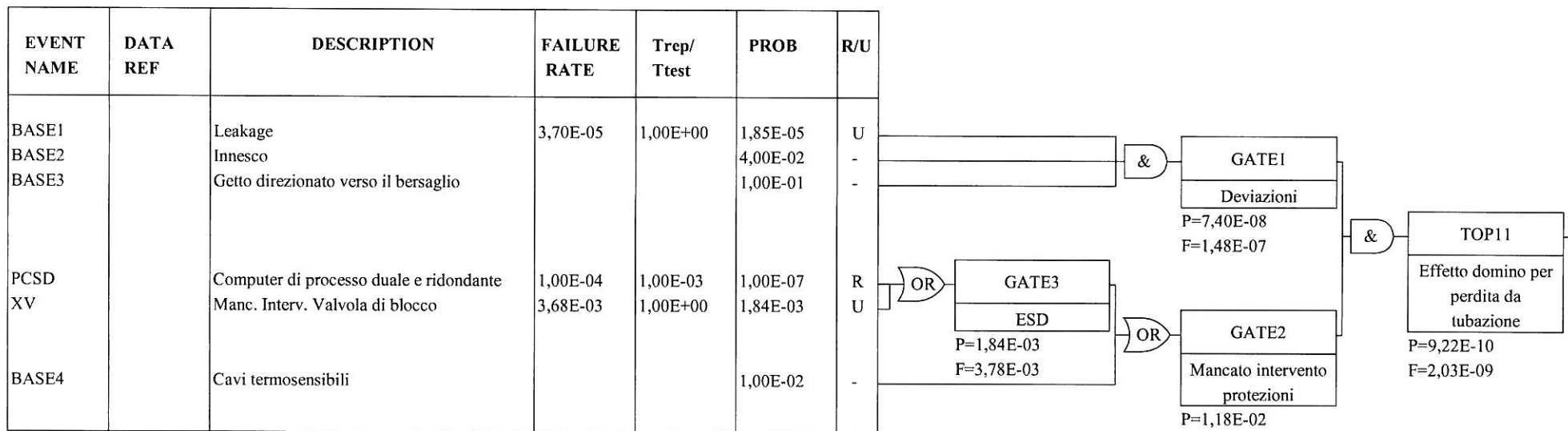
FIGURE . FAULT TREE FOR BASSO LIVELLO SEPARATORE PER ERRORE OPERATIVO

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
ERROR2 BASE1		Azione procedurata non abituale Fattore di utilizzo	1,00E+00	2,50E-01	1,00E-02 1,15E-01	- U
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 08.47.04
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2AL\LOGANTOP09
Cutset Order: 6
Proof Tests : Simultaneous

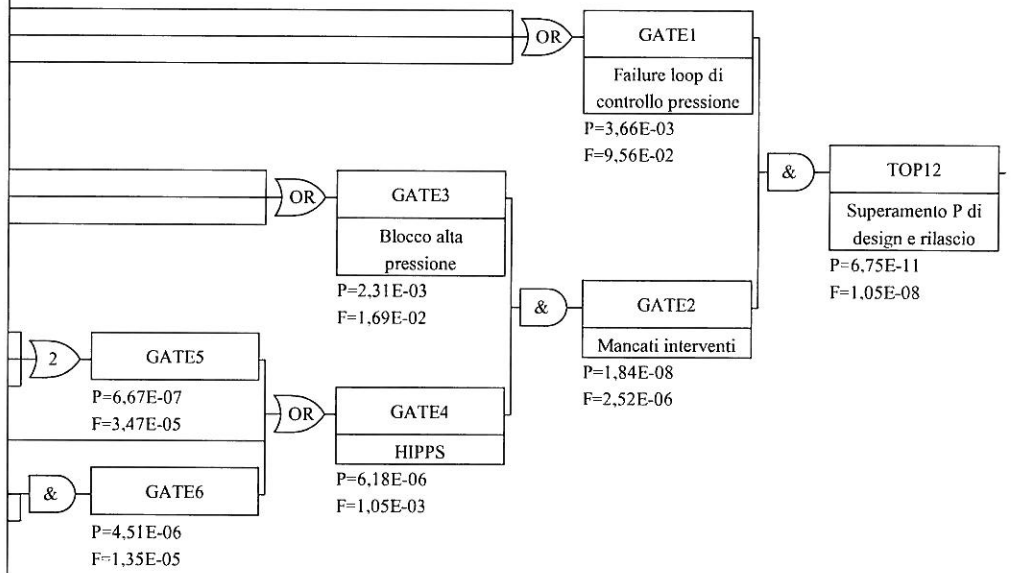
FIGURE . FAULT TREE FOR ALTA P SEPARATORE PER ERRORE OPERATIVO



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 10.33.34
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\MC15~1.2AL\LOGAN\TOP11
Cutset Order: 6
Proof Tests : Simultaneous

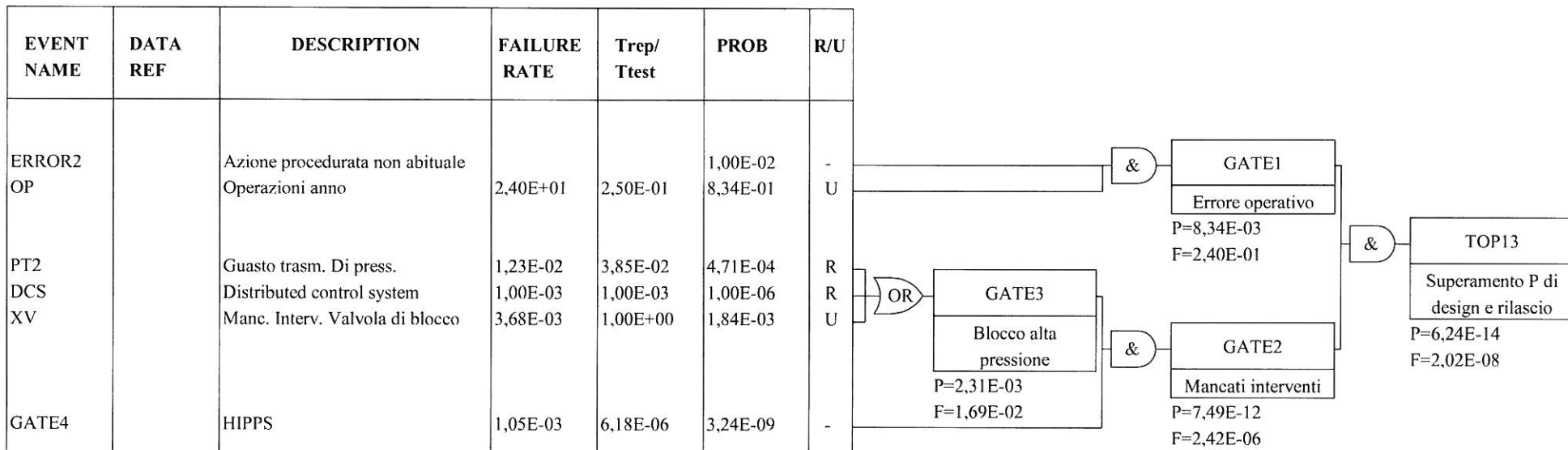
FIGURE . FAULT TREE FOR EFFETTO DOMINO PER PERDITA DA TUBAZIONE

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
PT		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
PV		Valvola di regolazione pressione	8,32E-02	3,85E-02	3,19E-03	R
PT2		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
PT-X1		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
PT-X2		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
PT-X3		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
DCS2		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV-X1		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
XV-X2		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U



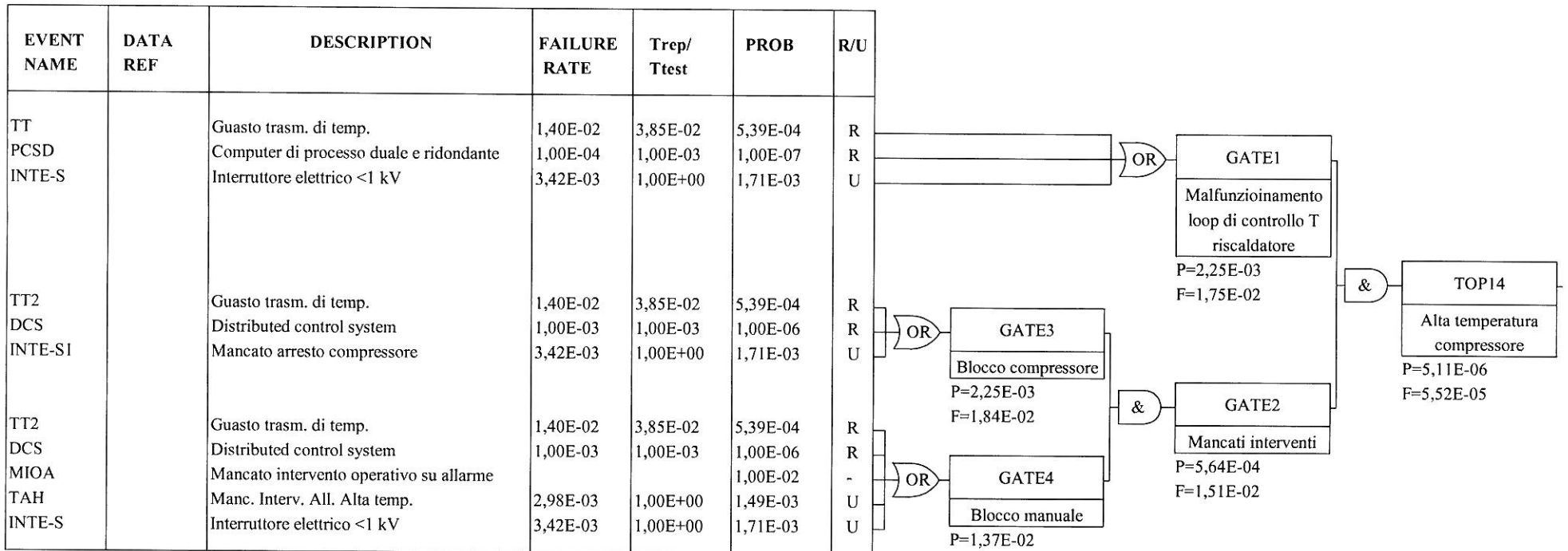
LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 08.47.31
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2A\LOGAN\TOP12
Cutset Order: 6
Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR SUPERAMENTO P DI DESIGN E RILASCIO



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 02-04-12 Time: 15.15.57
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGATM\C15~1.2AL\LOGAN\TOP13
 Cutset Order: 6
 Proof Tests : Simultaneous

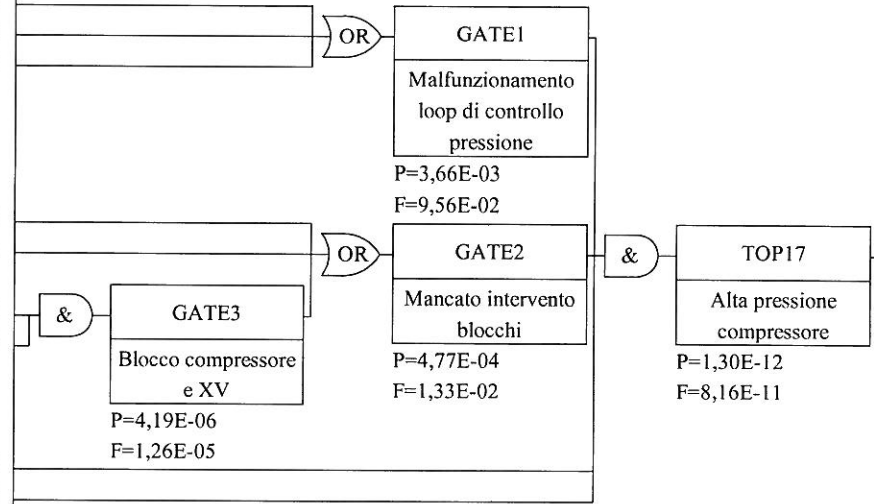
FIGURE . FAULT TREE FOR SUPERAMENTO P DI DESIGN E RILASCIO



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 14-03-12 Time: 08.48.08
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2A\LOGAN\TOP14
 Cutset Order: 6
 Proof Tests : Simultaneous

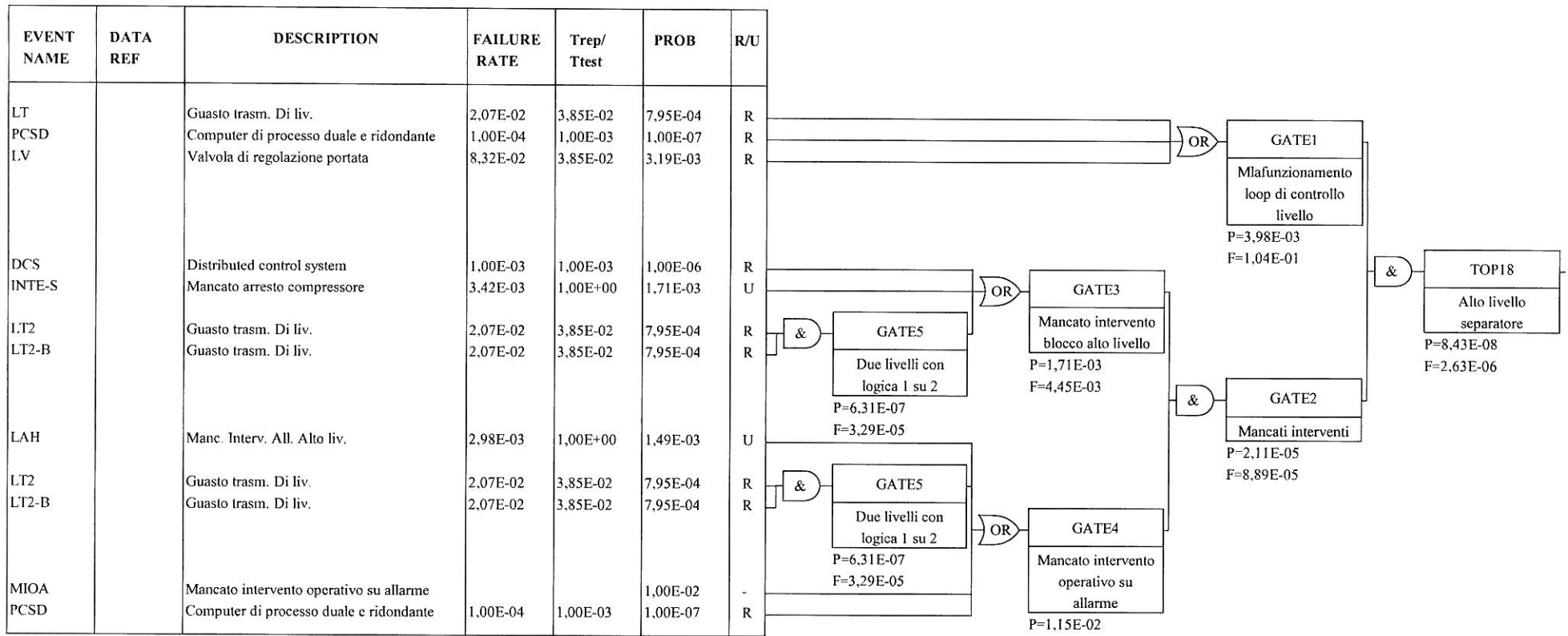
FIGURE . FAULT TREE FOR ALTA TEMPERATURA COMPRESSORE

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
PT		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
PV		Valvola di regolazione pressione	8,32E-02	3,85E-02	3,19E-03	R
PT2		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
INTE-S		Interruttore elettrico <1 kV	3,42E-03	1,00E+00	1,71E-03	U
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
BASE1		Fase di avviamento	2,00E-03	2,50E-01	2,50E-04	U
PSV		Mancato interv. Valvola di sicurezza	2,98E-03	2,00E+00	2,97E-03	U



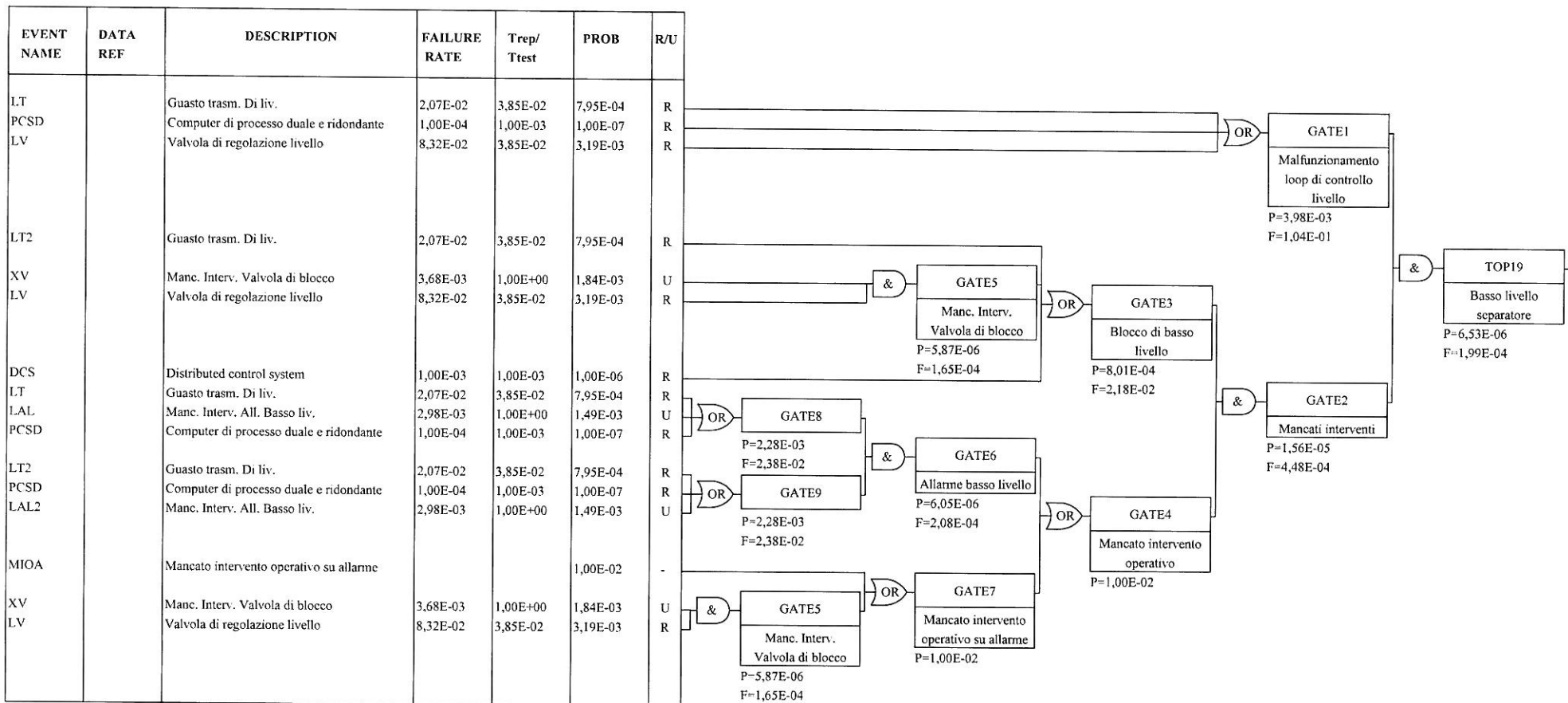
LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 14-03-12 Time: 08.48.22
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2AL\LOGANTOP17
 Cutset Order: 6
 Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR ALTA PRESSIONE COMPRESSORE



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 14-03-12 Time: 08.56.12
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGAT\MC15~1.2\ALLOGAN\TOP18
 Cutset Order: 6
 Proof Tests : Simultaneous

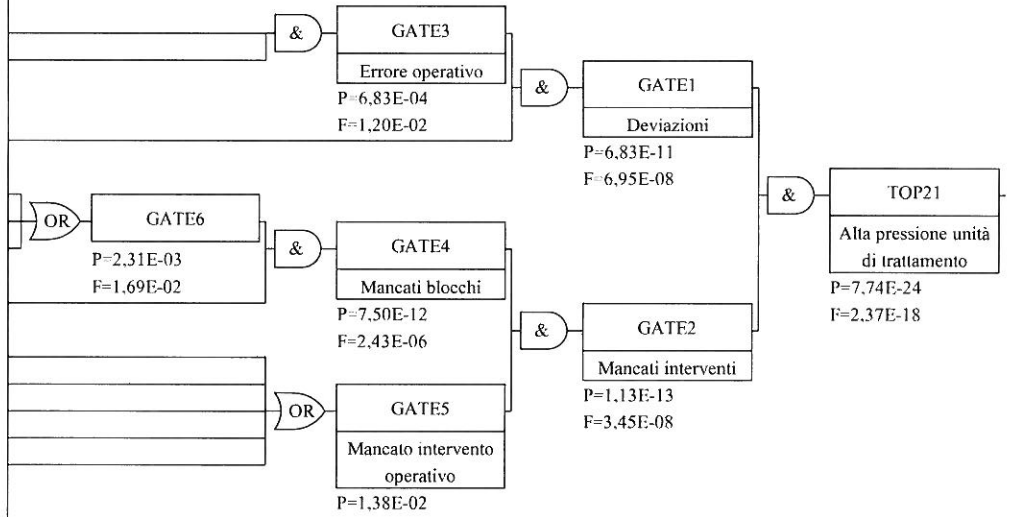
FIGURE . FAULT TREE FOR ALTO LIVELLO SEPARATORE



I.LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 14-03-12 Time: 08.56.32
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2\ALLOGANTOP19
 Cutset Order: 6
 Proof Tests : Simultaneous

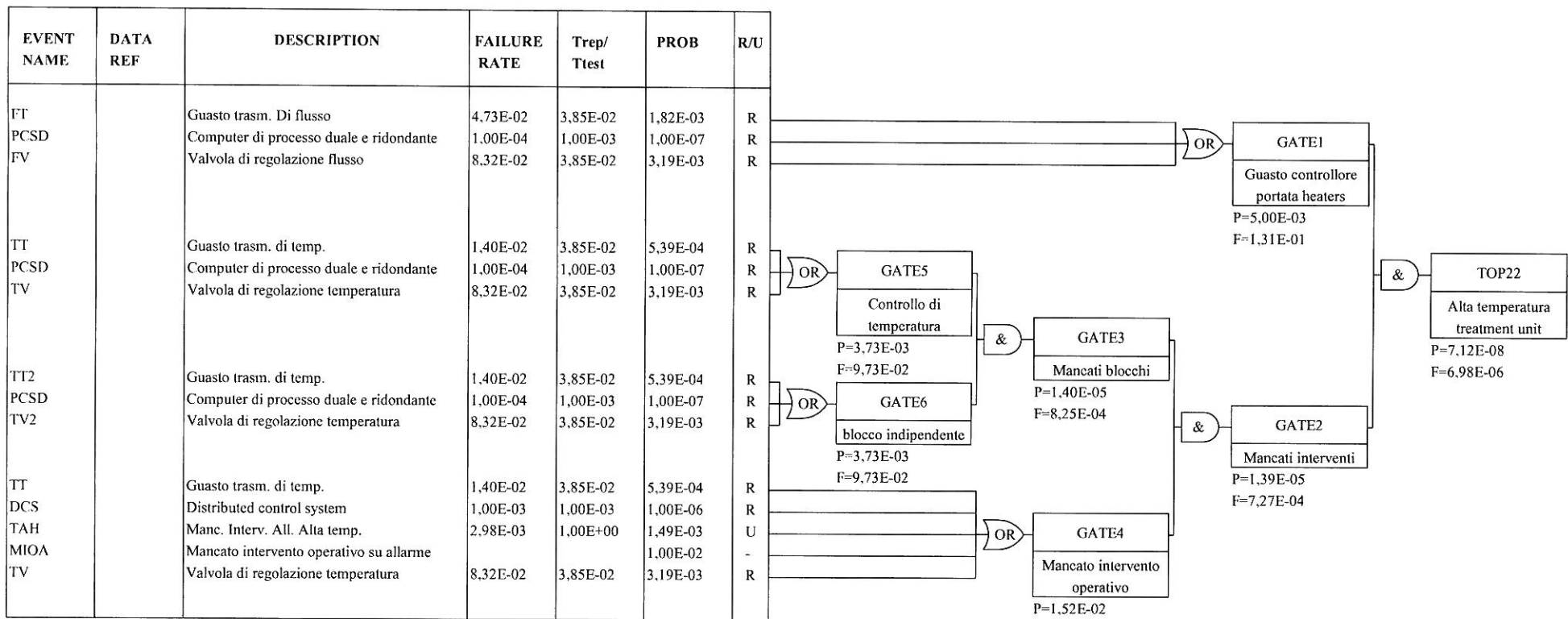
FIGURE . FAULT TREE FOR BASSO LIVELLO SEPARATORE

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
ERRORI BASE1		Azione procedurata abituale Operazioni anno	1.20E+01	2.50E-01	1.00E-03 6.83E-01	- U
PCSD		Computer di processo duale e ridondante	1.00E-04	1.00E-03	1.00E-07	R
PT		Guasto trasm. Di press.	1.23E-02	3.85E-02	4.71E-04	R
DCS		Distributed control system	1.00E-03	1.00E-03	1.00E-06	R
XV		Manc. Interv. Valvola di blocco	3.68E-03	1.00E+00	1.84E-03	U
HIPPS		HIPPS	1.05E-03	6.18E-06	3.24E-09	U
PT2		Guasto trasm. Di press.	1.23E-02	3.85E-02	4.71E-04	R
DCS		Distributed control system	1.00E-03	1.00E-03	1.00E-06	R
PAH		Manc. Interv. All. Alta press.	2.98E-03	1.00E+00	1.49E-03	U
MIOA		Mancato intervento operativo su allarme			1.00E-02	-
XV2		Manc. Interv. Valvola di blocco	3.68E-03	1.00E+00	1.84E-03	U



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 02-04-12 Time: 15.35.46
Fault Tree File : I:\PROGERM\203GA-2\ALLEGAT\MIC15-1.2A\M\LOGAN\TOP21
Cutset Order: 6
Proof Tests : Simultaneous

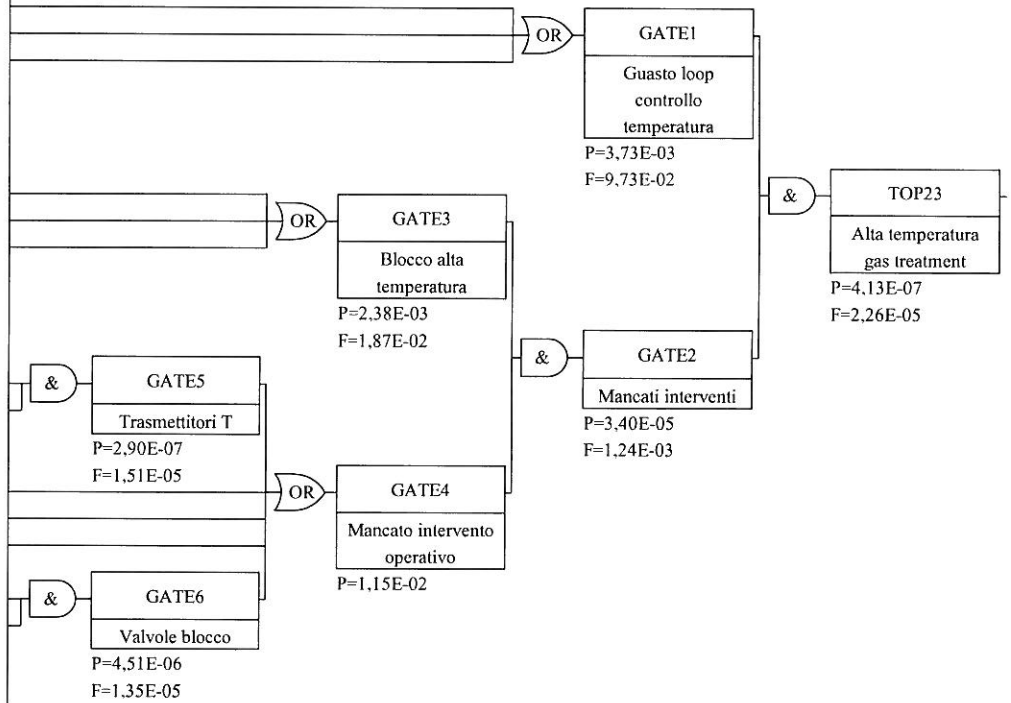
FIGURE . FAULT TREE FOR ALTA PRESSIONE UNITÀ DI TRATTAMENTO



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 14-03-12 Time: 08,57,21
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2A\LOGAN\TOP22
 Cutset Order: 6
 Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR ALTA TEMPERATURA TREATMENT UNIT

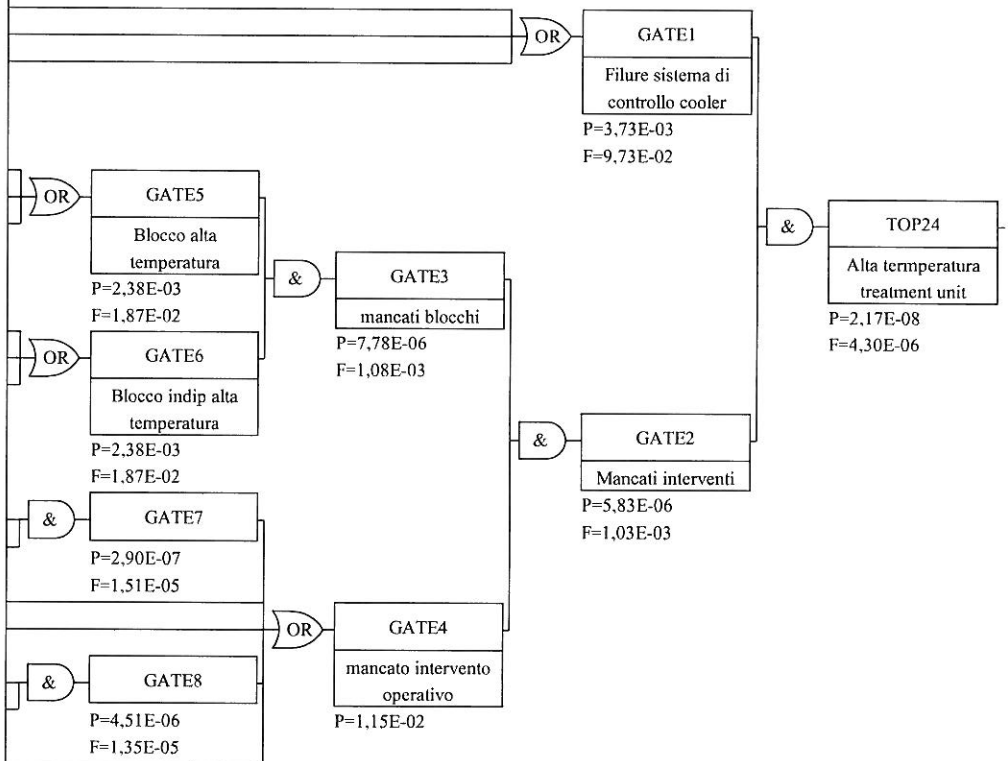
EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
TT		Guasto trasm. di temp.	1,40E-02	3,85E-02	5,39E-04	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
TV		Valvola di regolazione temperatura	8,32E-02	3,85E-02	3,19E-03	R
TT2		Guasto trasm. di temp.	1,40E-02	3,85E-02	5,39E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
TT		Guasto trasm. di temp.	1,40E-02	3,85E-02	5,39E-04	R
TT2		Guasto trasm. di temp.	1,40E-02	3,85E-02	5,39E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
TAH		Manc. Interv. All. Alta temp.	2,98E-03	1,00E+00	1,49E-03	U
MIOA		Mancato intervento operativo su allarme	-	-	1,00E-02	-
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
XV2		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 08.57.41
Fault Tree File : I:\PROGER\1203GA~2\ALLEGAT\1C15~1.2A\LOGAN\TOP23
Cutset Order: 6
Proof Tests : Simultaneous

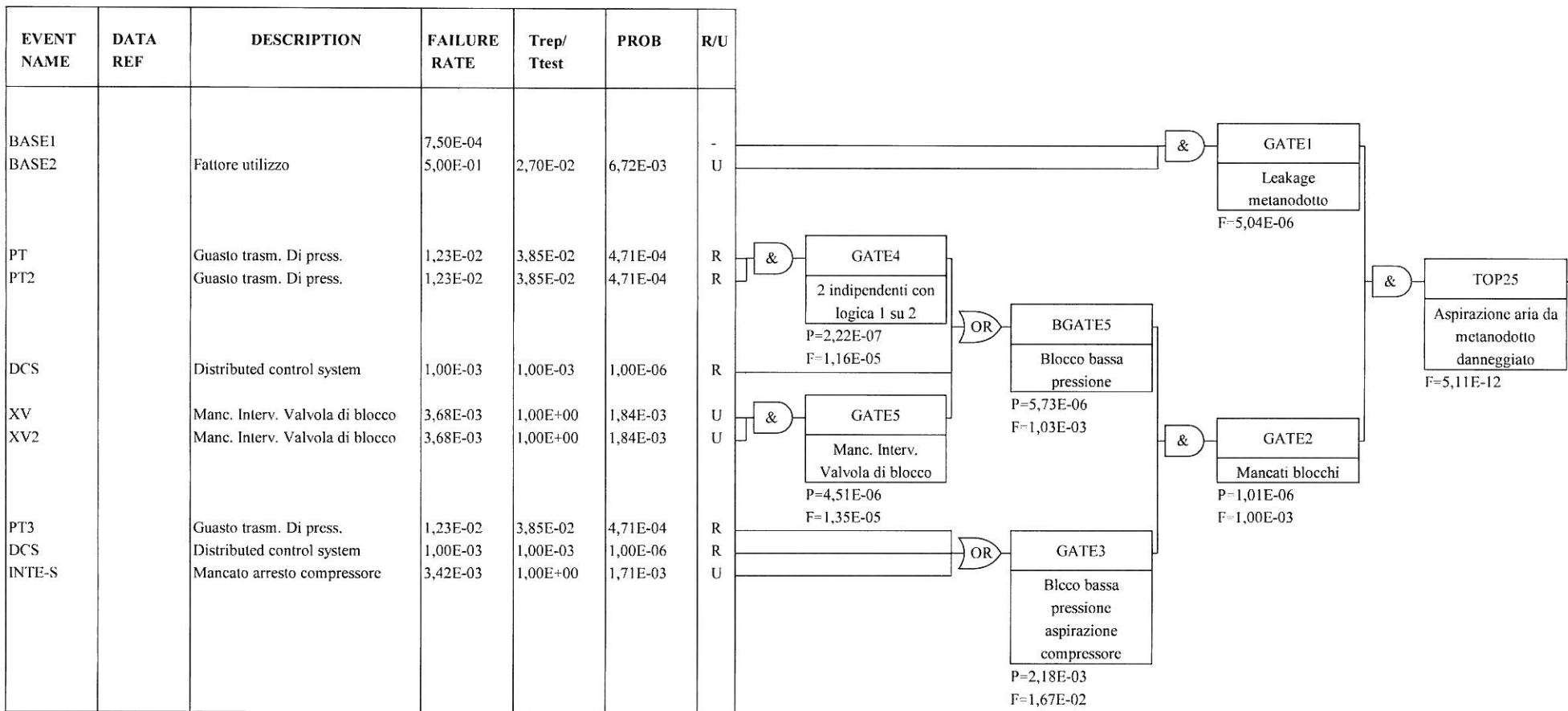
FIGURE . FAULT TREE FOR ALTA TEMPERATURA GAS TREATMENT

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
TT		Guasto trasm. di temp.	1.40E-02	3,85E-02	5,39E-04	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
TV		Valvola di regolazione temperatura	8,32E-02	3,85E-02	3,19E-03	R
TT1		Guasto trasm. di temp.	1.40E-02	3,85E-02	5,39E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
TT2		Guasto trasm. di temp.	1.40E-02	3,85E-02	5,39E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV2		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
TT1		Guasto trasm. di temp.	1.40E-02	3,85E-02	5,39E-04	R
TT2		Guasto trasm. di temp.	1.40E-02	3,85E-02	5,39E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
TAH		Manc. Interv. All. Alta temp.	2,98E-03	1,00E+00	1,49E-03	U
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
XV2		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
MIOA		Mancato intervento operativo su allarme			1,00E-02	-



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 08.57.54
Fault Tree File : E:\PROGER\1203GA~2\ALLEGAT\1C15-1.2A\LOGAN\TOP24
Cutset Order: 6
Proof Tests : Simultaneous

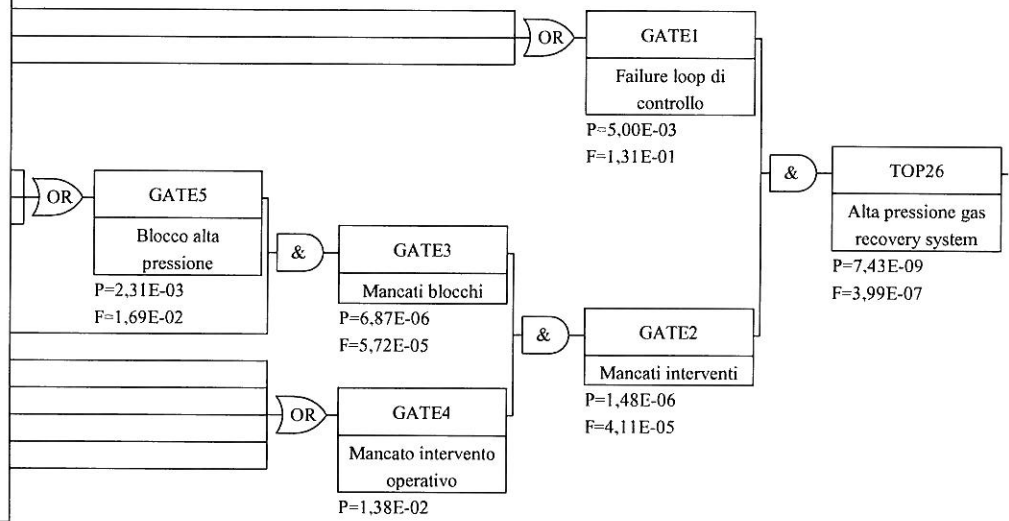
FIGURE . FAULT TREE FOR ALTA TERMPERATURA TREATMENT UNIT



LOGAN Version 5.13 Serial No. 5111
 Date (dd-mm-yy): 02-04-12 Time: 12.42.50
 Fault Tree File : I:\PROGER\1203GA~2\ALLEGAT\IC15~1.2\ALLOGAN\TOP25
 Cutset Order: 6
 Proof Tests : Simultaneous

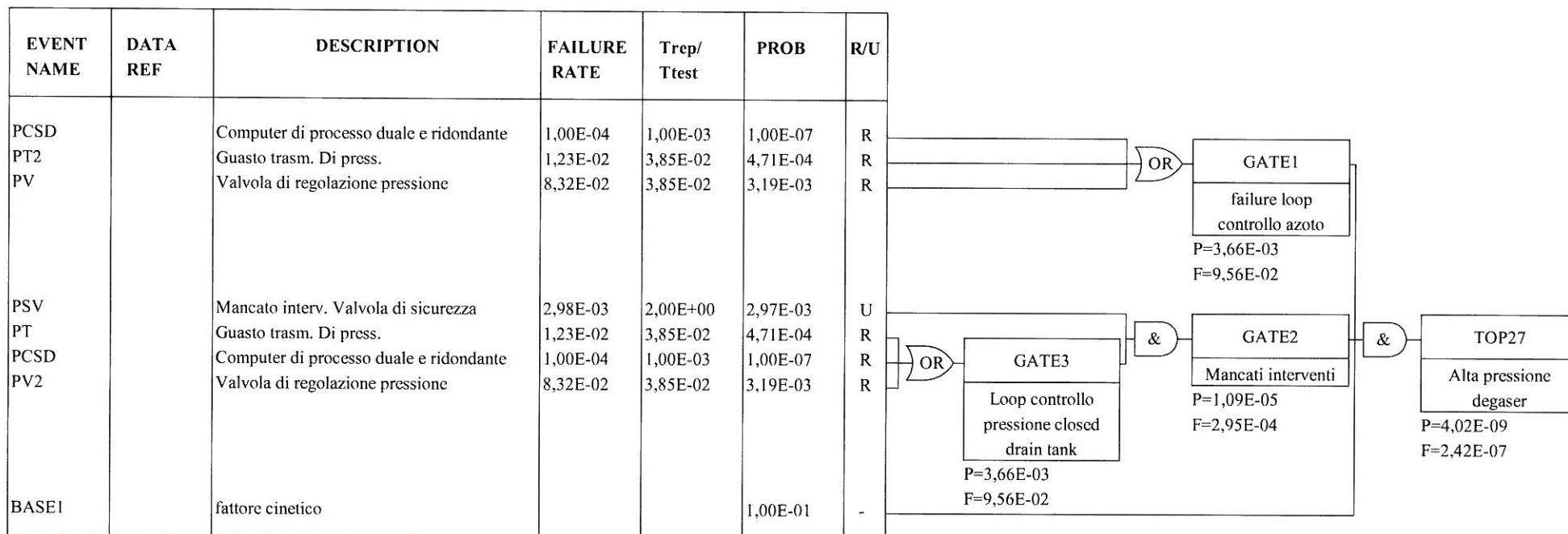
FIGURE . FAULT TREE FOR ASPIRAZIONE ARIA DA METANODOTTO DANNEGGIATO

EVENT NAME	DATA REF	DESCRIPTION	FAILURE RATE	Trep/ Ttest	PROB	R/U
FT		Guasto trasm. Di flusso	4,73E-02	3,85E-02	1,82E-03	R
PCSD		Computer di processo duale e ridondante	1,00E-04	1,00E-03	1,00E-07	R
FV		Valvola di regolazione flusso	8,32E-02	3,85E-02	3,19E-03	R
PT		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
XV		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U
PSV		Mancato interv. Valvola di sicurezza	2,98E-03	2,00E+00	2,97E-03	U
PT		Guasto trasm. Di press.	1,23E-02	3,85E-02	4,71E-04	R
DCS		Distributed control system	1,00E-03	1,00E-03	1,00E-06	R
PAH		Manc. Interv. All. Alta press.	2,98E-03	1,00E+00	1,49E-03	U
MIOA		Mancato intervento operativo su allarme			1,00E-02	-
XV2		Manc. Interv. Valvola di blocco	3,68E-03	1,00E+00	1,84E-03	U



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 14-03-12 Time: 09.44.34
Fault Tree File : I:\PROGER\1203GA~2\ALLEGATI\C15~1.2A\LOGAN\TOP26
Cutset Order: 6
Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR ALTA PRESSIONE GAS RECOVERY SYSTEM



LOGAN Version 5.13 Serial No. 5111
Date (dd-mm-yy): 02-04-12 Time: 15.58.41
Fault Tree File : I:\PROGER\1203GA~2\ALLEGAT\MC15~1.2A\LOGAN\TOP27
Cutset Order: 6
Proof Tests : Simultaneous

FIGURE . FAULT TREE FOR ALTA PRESSIONE DEGASER