ENTE PER LE NUOVE TECNOLOGIE, L'ENERGIA E L'AMBIENTE
Associazione ENEA-EURATOM sulla Fusione

FUSION DIVISION
NUCLEAR FUSION TECHNOLOGIES

PRELIMINARY ACTIVITY FOR JET DATA COLLECTION ON SINGLE COMPONENT MALFUNCTIONS AND FAILURES

FUSION TECHNOLOGY TASK AT JET
JWO-FT-5.4
EFDA Contract 01/608
Deliverable 1

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OBJECTIVES

- **To develop a fusion specific data collection with data coming from operating experiences gained in the Joint European Torus (JET) and Tritium Laboratory of Karlsruhe (TLK).**

- **A functional analysis, categorisation and compilation of maintenance/failure rate statistics under the perspective of the ITER design requirements will be the final result.**

- **The overall set of information related to the "out of normal" operating experience (where they exist) will be searched in the site of the fusion facilities.**

- **Statistical data pointed out from "data events" will be recorded in the "Fusion Component Failure Rate Database".**

Summary

The following information will be treated to evaluate statistical/probabilistic values on component malfunctions and failures:

- **Number of individualised failures**
- **Number of components**
- **Number of damaged components**
- **Number of failure/component**
- **Mean working time/component (h)**
- **Global working time (h)**
- **Global number of demands**
- **Real global time of Component Unavailability (h)**
- **Real mean time of Component Unavailability (h)**
- **Real mean time of System Unavailability (h)**
- **Test interval (h)**
- **First date of failures**
- **Last date of failures**

Failure rates, failure probability on demand and repair rate will be estimated, where possible, with mean values and uncertainty distributions.

AGHS

Description	N°.	Description	N°.	Description	N°.
Air Actuated Valve	577	Heater	97	PE Amplifier	9
Air Ejector	2	Heater Contactor	1	Penning Gauge	1
Bakeout Heater	19	Heater Enable	1	Power Controller	40
Blower	1	Heater ON Indication	1	Press. Control Valve	3
Carbon Resistor	1	Heating Bath	1	Pressure Gauge	28
Circuit Breaker	2	Helium Reservoir	6	Pressure Regulator	78
CLT-S	1	HTU-5719 ON	1	Pressure Switch	927
Contact Manometer	2	Humidity Electronics	3	Pressure Transducer	161
Contactor	54	Humidity Element	3	Pressure Transmitter	204
Control Unit	1	I/P Convertor	1	Pump Control Unit	33
Control Valve	2	Ind. Trip Amplifier	73	Rupture Disc	50
Convertor	3	Indicate When Tripped	48	Safety Relief Valve	6
Cooling Fans	2	Ionization Chamber	36	Seal-off Valve	8
D.O.C. Indication	525	Ionization Gauge	2	Selected Heater	2
Diaphragm Pump	1	Isolator	15	Selector	24
Diff. Press. Transmitter	15	Katharometer	8	Signal Amplifier	1
Diff. Temp. Element	4	Keylock Switch	2	Signal Convertor	167
Door Switch	1	Key-Switch	32	Software Command	101
Downstream Press. Reg.	2	Lamp Heater - Quartz	24	Software Convert	31
Electrical Switch	30	Level Indication Transmitter	2	Software selector	1
Electronics Unit	74	Level Probe	1	Solenoid Valve	646
Emergency Shutdown	1	Level Switch HI	14	Solid State Relay	15
Emergency Stop Button	1	Level Transducer	2	Sputter Pump	4
Enable HTU-5719	1	Local Controller	14	Surface Mounted RTD	5
Energise Filament	1	Local Indicator	23	T2 Alarm Switch	6
Energise Heater	37	Manual Valve	626	Tape Heater	2
F&P	2	Mech. Limit Switch	198	TCV-5709 Control	1
Fan Control Unit	2	Metal Bellows Pump	5	Temp. Controller	1
Filter	3	Micro DCI Input	4	Temperature Switch	2
Filter Regulator	21	Micro Filter	2	Thermocoax Heater	5
Flow Element	7	Motorized Valve	1	Thermocouple (K)	176
Flow Indicating Transmitter	15	Non-Return Valve	48	Transformer	7
Flow Switch	1	Oil Mist Filter	2	Trip Amplifier	19
Flow Transducer	23	Omegatron	1	Turbo-Molecular Pump	11
Flowmeter	15	On/Off Control	1	Vacuum Pump	10
Getter Pump	5	Open Command	1	Vacuum Switch	49
Heat Exchanger	1	P.I.D. Loop	54		