



# Olkiluoto 3 FAC-Program

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1.4.2009

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# Olkiluoto 3

- **EPR-type, third generation NPP**
- **Construction works started in 2004**
- **Scheduled Plant Take Over (PTO) in June 2012**
- **Supplied by Consortium Areva & Siemens**

# The purpose of the FAC-Program

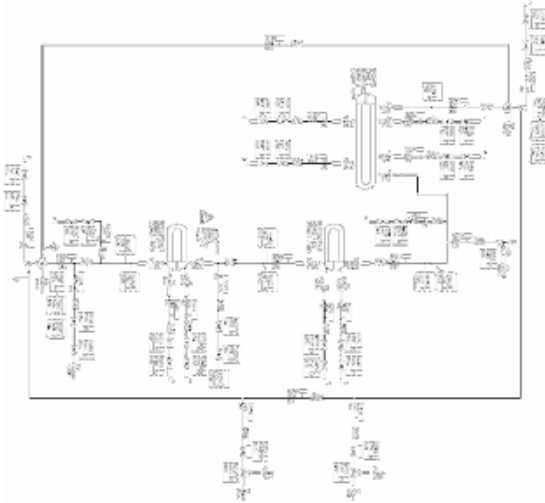
- **To select high risk FAC areas in steam-water cycle**
- **Possibility to compare values before PTO – during operation**
- **Includes pre-service inspections and inservice inspections**

# Overview of the program

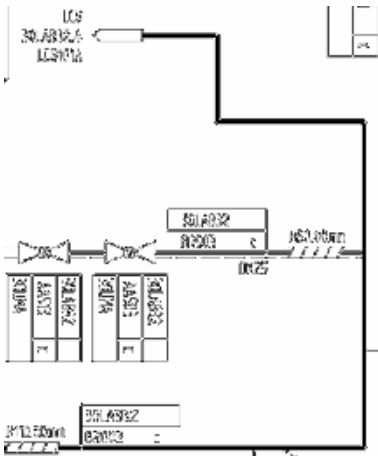
- **The supplier has analyzed FAC-critical systems by COMSY-program**
- **In the FAC-ProgramTVO combines information gathered from Olkiluoto 1 & 2 and provided by COMSY**

# Selection of high risk FAC areas in 3 phase

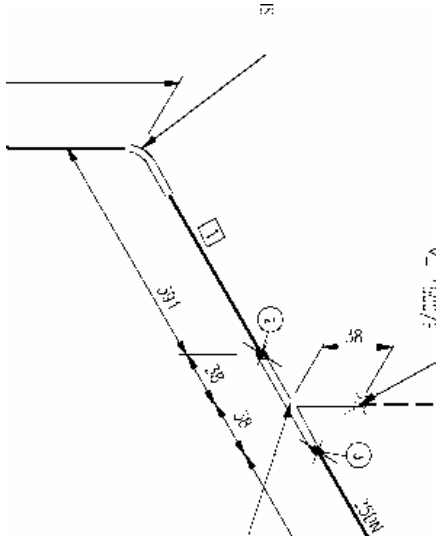
System



Line



Object



# I Phase, Selection of systems

- **Piping material carbon steel or low alloyed steel**
- **Temperature between 100-250 Celcius degrees**
- **Flowing medium water or steam**

# II Phase, selection of lines

## PI-diagrams and system descriptions

- Emergency lines was left out
  - Startup and shutdown lines – only the most important were selected
- 
- **Loading specifications and line lists**
    - Detail information about material, temperature, pressure, DN and wall thickness

## III Phase, selection of objects

- **Elbows, more than 60 degrees**
  - In special cases also elbows less than 60 degrees
- **Valves**
- **Flow measurement devices**
- **Fittings**
- **Extension parts**
  
- **All values shall be checked during operation**

# Calibration lines

- **High risk FAC area**
- **3 lines of different materials were selected**
  - P235GH, 16Mo3, 10CrMo9-10
- **Inspection every year**
- **Easy access**

# Total quantity

- **13 systems**
- **95 lines**
- **578 objects**

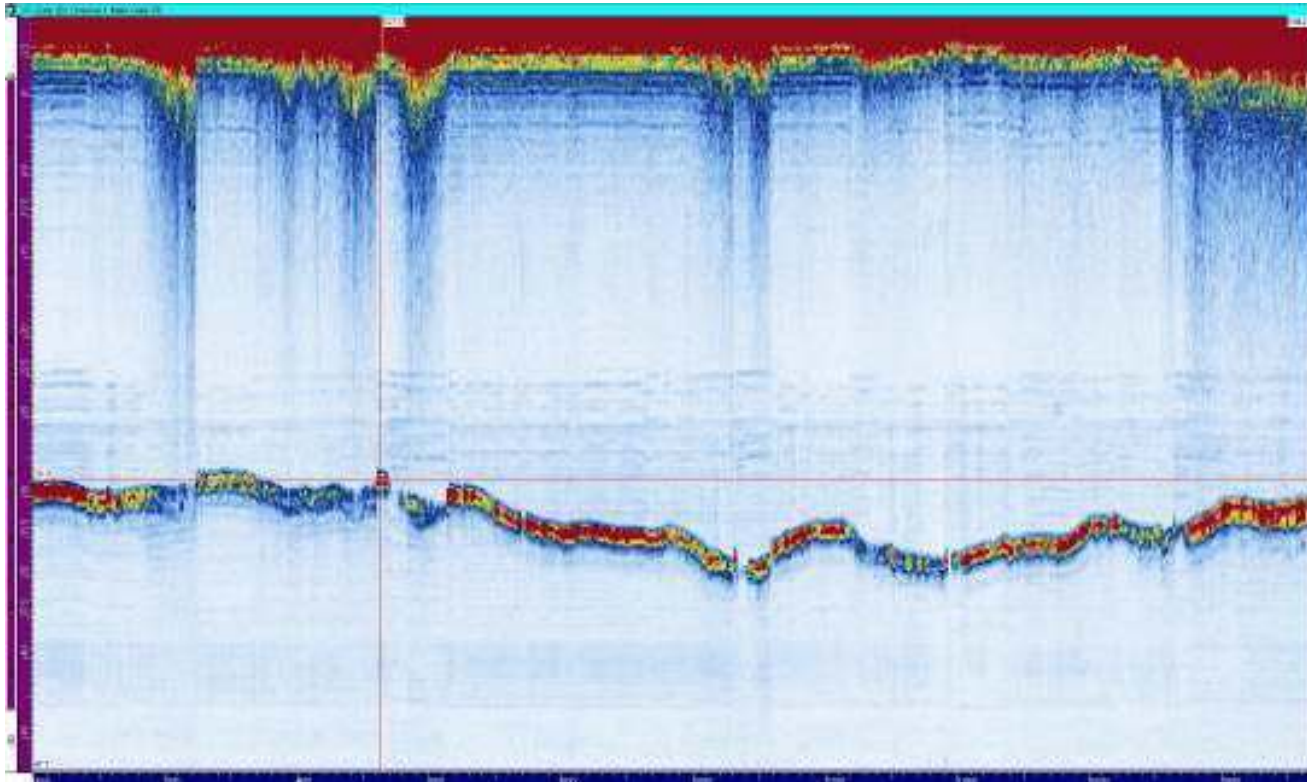
# Excel-sheet

LAB	DN	s[mm]	Material	t [C]	P [bar]	Usability factor >5%	Objects	
30LAB11 BR001	700	10	P235GH	177	9	1	2	Elbow part 5, elbow p
30LAB11 BR002	700	10	P235GH	177	9	1	3	Valve part 30LAB11A
30LAB11 BR003	600	16	P235GH	177	32	1	6	Sheet 1: Fitting to
30LAB11 BR004	600	16	P235GH	177	32	1	1	Fitting to the pump 30LA
30LAB11 BR010	800	10	P235GH	177	9	1	3	Fitting to the tank 30LA

# NDT 1/2

- **The main NDT method is phased array ultrasonic**
- **Grid according to EPRI's recommendation  $\pi D/12$**
- **Results are in numeric mode and compatible with COMSY**

# Phased array UT, picture



## NDT 2/2

- **X-ray and visual inspection**
- **Only for small and extremely large diameter pipe spools**
- **Not before PTO, only during operation**

# Future

- **Inspections are scheduled for 8 years after PTO**
- **Some systems may be left out of inspections already in this period**
- **The quantity of inspections shall be quite stably about 100 / year**

# Questions or Comments?

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Thank you

