9. The other inspection results

9-1 Visual inspection, Thickness measurement

Visual inspection results for boiler inside are shown in Table II -12

(Erosion of Water Wall tube around short soot blower)

- Erosion by soot blower were observed at a number of Water Wall tubes around short soot blower.
- The thickness measurement was carried out at the representative eroded portion (2nd short soot blower level) as shown in Table II -13～16.
- Min.thickness was 5.3mm at a rear wall tube around #1 short soot blower from right, that was less than the designed value tsr (thickness required) 6.1mm calculated with designed OD, pressure and allowable stress at the designed temperature.

Erosion of rear wall tube

〔extracted from Table II -12〕

(Erosion of Water Wall tube around burner portion)

- Erosion by soot blower was observed at a number of Water Wall tubes around burner portion.
- The thickness measurement was carried out at the eroded portion as shown in Table II -17.
- Min.thickness was 4.7 mm, that was less than the tsr 6.1mm.

Erosion of Water Wall tube around burner portion 〔extracted from Table II -12〕

(Erosion of Water Wall tube around corner portion)

- Erosion around corner portion at soot blower level was observed.
- The thickness measurement was carried out at the eroded portion as shown in Table II -18.
- Min.thickness was 4.2 mm, that was less than the tsr 6.1mm.

Erosion of Water Wall tube around corner portion〔extracted from Table II-12〕

(Erosion of Platen SH tube at the highest level of soot blower)

- Slight erosion of Platen SH tube was observed at the highest level of soot blower.
- The thickness measurement was carried out at the eroded portion as shown in Table II -19.
- Min.thickness was 9.8mm, that was larger than the designed thickness 9.6 mm.

Erosion of Platen SH tube at the highest level of soot blower〔extracted from Table II-18〕

9-2 OD measurement results

OD measurement results of residual life evaluated portion are shown in Table II -20～23.

- The increase in measured average OD to designed value was less than 1% for each portion, indicating no remarkable creep strain

Table II -24 OD measurement results of each portion
(Increase in measured average OD to designed value)

Components	Location	Material	(Averaged measured value-Designed OD) /Designed OD(%)
Final SH Outlet Header	Circumferential weld at right side	SA335P22	0.74
De-Superheater-Left	Circumferential weld	SA335P12	0.44
De-Superheater-Right	Circumferential weld	SA335P12	0.46
RH Outlet Header	Circumferential weld at left side	SA335P22	0.20
	Circumferential weld at right side,top	SA335P22	0.57
	Circumferential weld at right side,front	SA335P22	
Main Steam Pipe-Right	Circumferential weld, intrados	SA335P22	—
	Circumferential weld, near the stop valve	SA335P22	—
Hot Reheat Pipe-Right	Circumferential weld	SA335P22	0.01

OD measurement was not carried out for Main Steam Pipe-Right, because the OD of Main Steam Pipe was out of the measurement range of prepared outside micrometers.

9-3 SUS scale deposition inspection

Applied equipment and inspection condition are shown in Table Ⅱ-25.

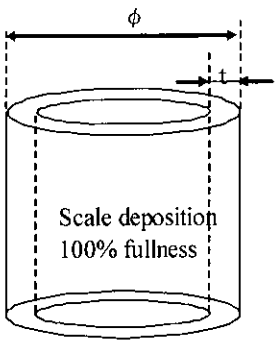
Table II-25 Applied equipment and inspection condition

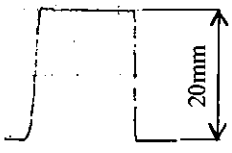
DETECTOR	MAKER・TYPE	UNI-ELECTRONICS,Inc. ・SSD－1
	I.D.№	34A3382 (64SCA02101)
	CHECK DATE・PERSON	2009 June 5th ・Shinichi Aizawa
	VAIDITY DATE	2010 June 4th
RECORDER	MAKER・TYPE	HIOKI E. E. CORPORATION ・8205-10
	I.D.No.	041213164 (64SCZ05102)
	CHECK DATE・PERSON	2009 May 28th ・Shinichi Aizawa
	VAIDITY DATE	2010 May 27th

INSPECTION METHOD	Magnetized scale deposition inspection of tube inside with scale detector
INSPECTION METHOD	Refer to next page
SENSITIVITY LEVEL	The sensitivity is adjusted at 20mm in amplitude of signal with the probe touching right to the reference test piece filled with the white magnetic particle 100% fullness.
SCANNING SPEED	Approx. 0.3m/sec
RECORDING RANGE	1V/cm
RECORDING SPEED	2.5mm/sec
REFERENCE TEST PIECE	Platen SH outermost tube bend portion, bottom tube straight portion ϕ 54.0×t9.5 (ID.No.50-21-1) ϕ 54.0×t5.6 (I.D. No : 50-20-1)

REMARKS

Shape of reference test piece and wave form





Wave form
by reference test piece

SUS scale deposition inspection was carried out at outer most tube bottom bend and horizontal portion of Platen-SH as shown in Fig. II -2.

Platen-SH

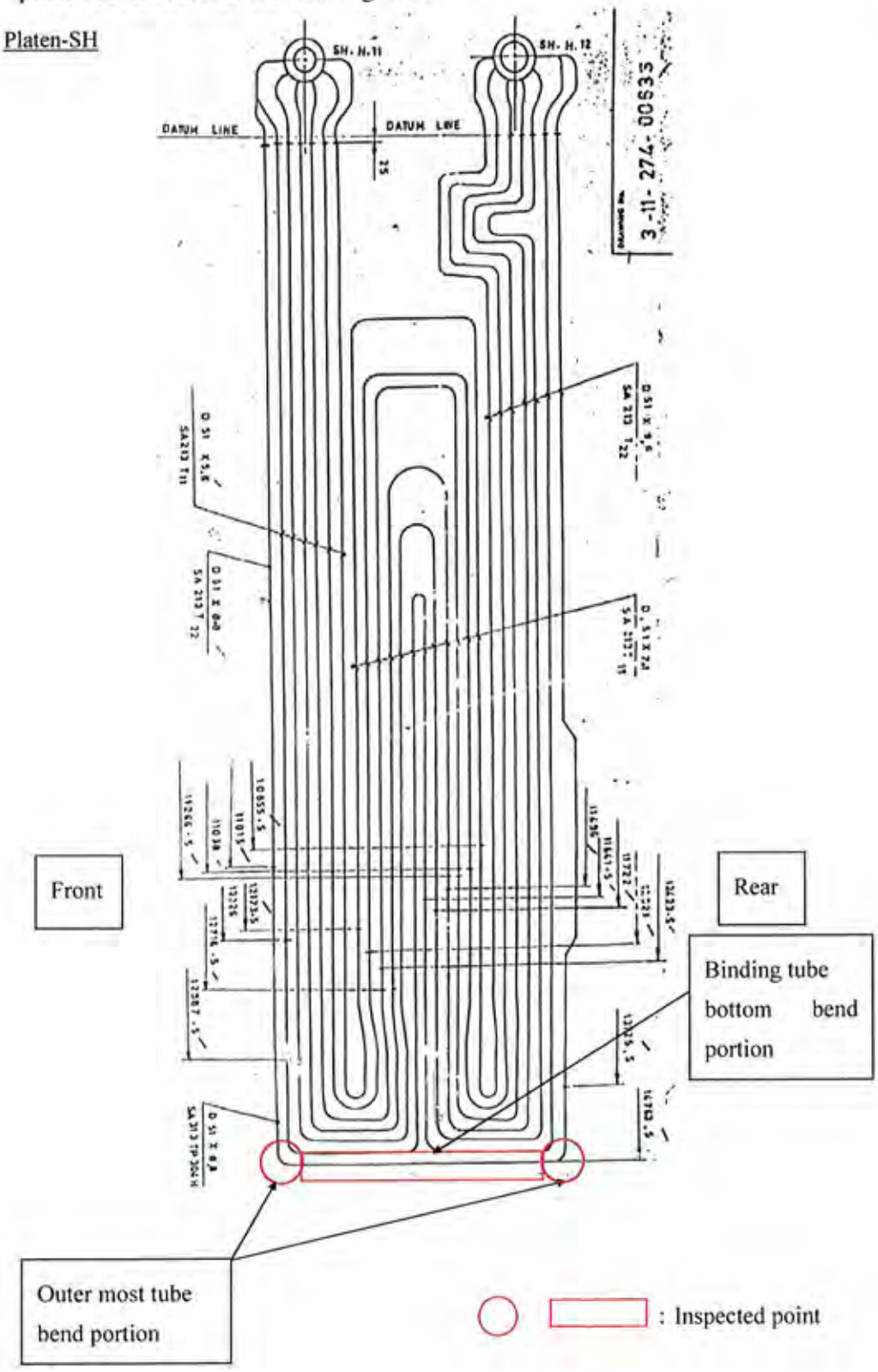


Fig. II -2 Inspection location

SUS scale deposition inspection results are shown in Table Ⅱ-26.

SUS scale deposition was not significant with 15% fullness for 4 points, 10% fullness for 2 points and less than 10% fullness for the other portions.

Table II-26 SUS scale deposition inspection results

Platen Super Heater (Outermost tube bend portion)			
Front		Rear	
Panel No.	Fullness (%)	Panel No.	Fullness (%)
17	10	27	15
18	15		
19	10		
20	15		
22	15		

〔Remarks〕

- Standard curve with ϕ 54.0×t9.5 was used for evaluation of fullness.
- The signal by magnetization of tube material with heat was recognized at front bend, rear bend and horizontal portion.

The representative deposition signal for this inspection is shown in Fig. Ⅱ-3.

The standard curve used is shown in Fig. Ⅱ-4.

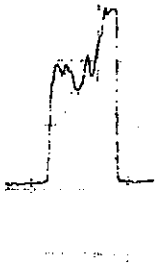
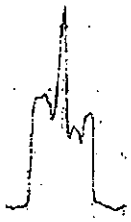
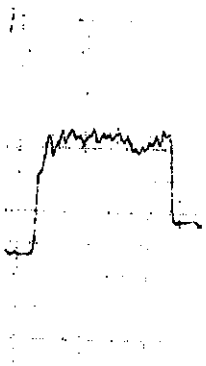
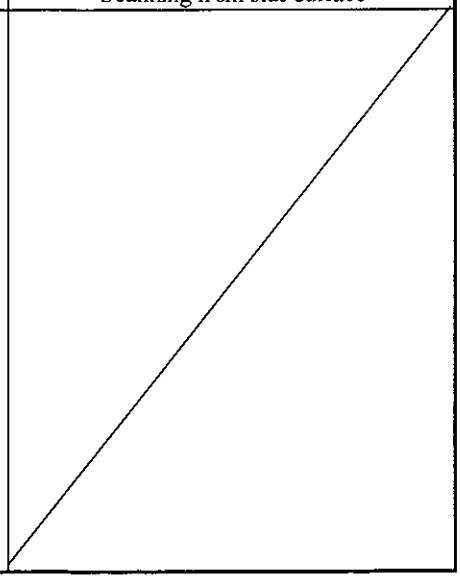
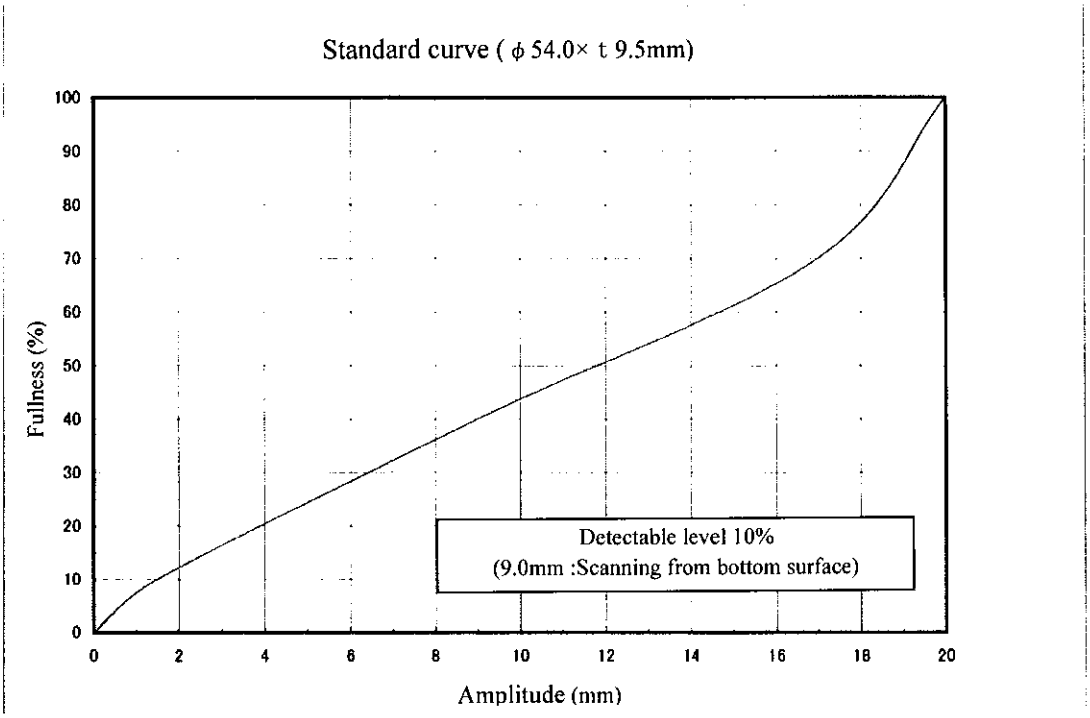
	Scanning from bottom surface	Scanning from side surface
Platen SH outermost tube front bend portion # 20 panel Fullness 15%		
Platen SH outermost tube rear bend portion # 27panel Fullness 15%		
Platen SH bottom straight portion # 14 panel Fullness 0%		

Fig. II-3 Representative deposition signal for this inspection



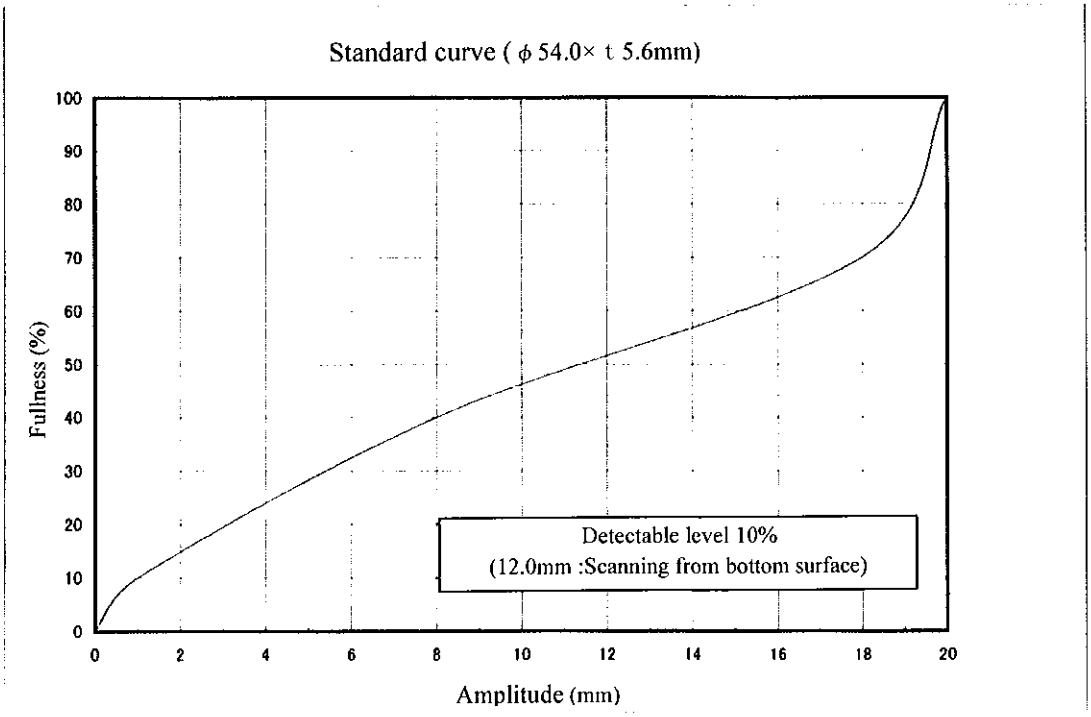


Fig. II -4 Standard curve used for evaluation

9-4 DPT

Applied material and examination condition are shown in Table Ⅱ-27.

Table Ⅱ-27 Applied material and examination condition

APPLIED MATERIAL

APPLIED MATERIAL	PENETRANT	BRAND	Eishin Kagaku Co., Ltd.
		MAKER	R-1A(NT)
	REMOVER	BRAND	Eishin Kagaku Co., Ltd.
		MAKER	R-1S(NT)
	DEVELOPER	BRAND	Eishin Kagaku Co., Ltd.
		MAKER	R-1M(NT)

EXAMINATION CONDITION

EXAMINATION METHOD	Liquid penetrant with removability for solvents - Drying development method
TIME TO EXAMINATION	at periodic inspection
TEMPERATURE OF EXAMINATION SURFACE	Normal temperature (10～50℃)
EXAMINATION SURFACE CONDITION	As weld
PRE-TREATMENT	■Rinse with solvents □Others ( )
PENETRATION METHOD	■Spray □Brush painting □Dipping □Others ( )
PENETRATION TIME	10 minutes
REMOVING OF EXTRA PENETRANT	■Wipe out with wes (using solvent) □Others ( )
DEVELOPMENT METHOD	■Spray □Brush painting □Dipping □Others ( )
DEVELOPMENT TIME	10 minutes
ILLUMINANCE OF EXAMINATION SURFACE／ILLUMINANCE OF ENVIRONMENT	500Lux or more

Inspected location of DPT is shown in Fig. II -5.

DPT inspection were carried out at 4 stub weld portions of #3 panel from right in Platen SH inlet header front side.

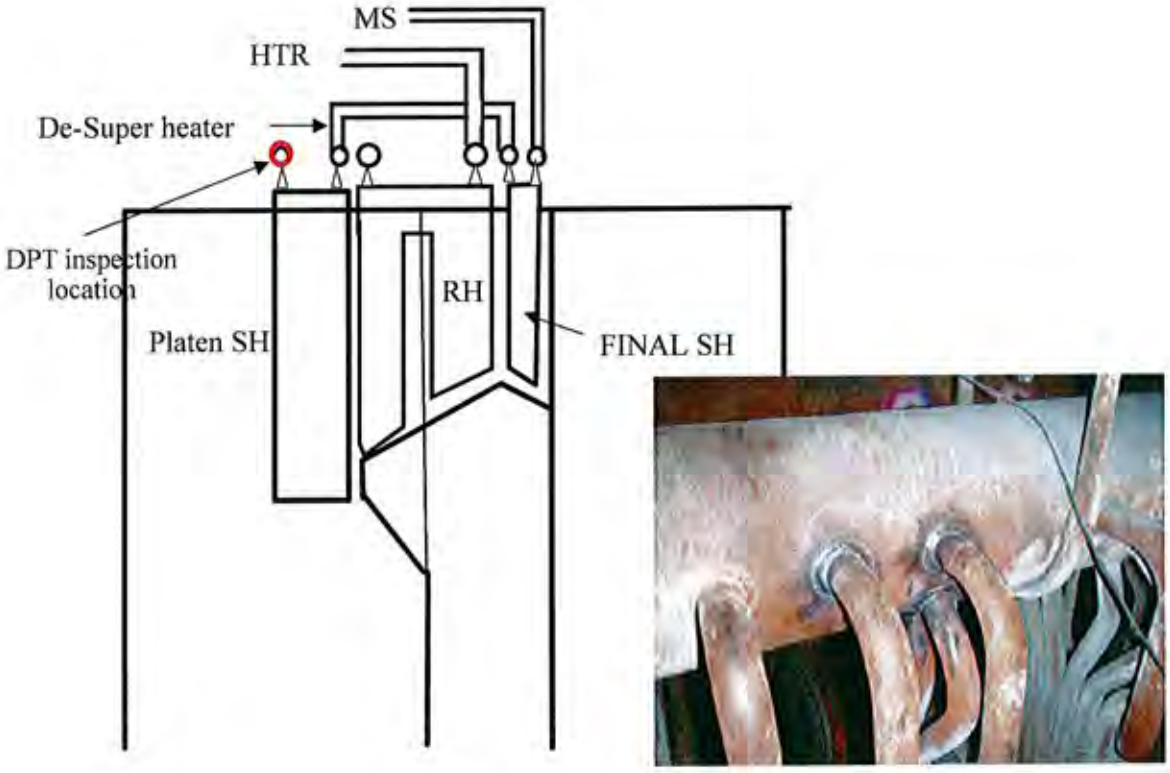
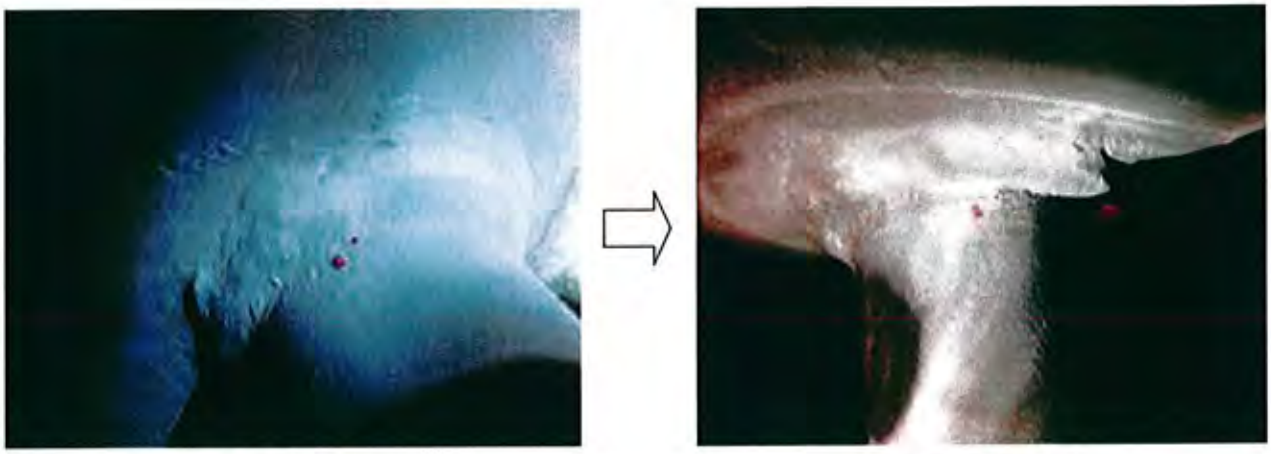


Fig. II -5 DPT inspection location

The indication pattern detected location is shown in Fig. II -6.

Two for each of ϕ 2mm and ϕ 1mm circular indication pattern were detected at 4th tube from front, although no indication pattern was judged as crack. After grinding off these indications, a new ϕ 2mm circular indication pattern appeared. The new indication has been left since it was not judged as crack.



Before grinding off

After grinding off

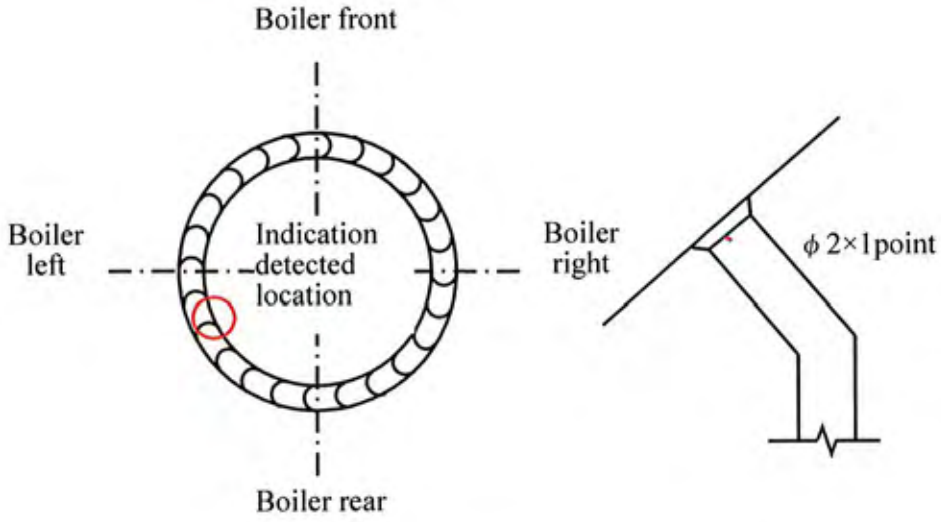


Fig. II -6 The indication pattern detected location

9-5 UT

Applied equipment and examination condition are shown in Table Ⅱ-28.

Table Ⅱ-28 Applied equipment and examination condition

APPLIED EQUIPMENT AND MATERIAL

FLAW DETECTOR	MAKER・TYPE	GE INSPECTION TECHNOLOGIES ・ USM35X		
	SERIAL No.(I.D.№)	994a(61UAA06110)		
	AMPLITUDE LINEARITY	within ±3%		
	TIME SCALE LINEARITY	within ±1%		
	MARGIN OF DETECTION	40dB or more		
	CHECK DATE・PERSON	2008 November 20th ・ Hidekazu Ishihara(UT-2)		
	VAIDITY DATE	2009 November 19th		
PROBE	TYPE	angle beam probe	angle beam probe	
	DESIGNATION	2C14×14A45	2C14×14A60	
	MAKER	KGK	KGK	
	SERIAL No.	XA7426	18421	
	DEAD ZONE	7.5mm	8mm	
	STB ANGLE OF REFRACTION	45 degree	60 degree	
	ACCESIBLE LIMIT DISTANCE	14mm	15mm	
	FAR SURFACE RESOLUTION	7mm	7mm	
	CHECK DATE・PERSON	2009 August 26th Kawazu (UT-2)	2009 May 22th Kawazu (UT-2)	
	VAIDITY DATE	2010 February 25th	2010 February 25th	

EXAMINATION CONDITION

EXAMINATION METHOD	Single angle beam probe technique
TIME TO EXAMINATION	at periodic inspection
SURFACE CONDITION	Grinded surface
COUPLANT	Sonicoat
SPECIFIED SENSITIVITY	RB-41 №2 ϕ 3.0mm side cylindrical hole: H-line
SENSITIVITY CORRECTION	Non
DISREGARD LEVEL	Regarded as flaw that echo hight is over DAC(H-line)
ACCEPTANCE CRITERIA	Crack length is 19mm or less
REFERENCE BLOCK OR CALIBRATION BLOCK	RB-41 №2 RB-41 №2
ANGLE OF REFRACTION IN TEST OBJECT	ANGLE OF REFRACTION : — CALCULATION METHOD : ☐Ratio of sound velocity of STB ☐ V path technique

Inspected location of UT is shown in Fig. II -7.

UT inspection was carried out at circumferential weld of right side in Final-SH Outlet Header.

As a result of UT inspection, no flaw echo exceeding the criteria was detected.

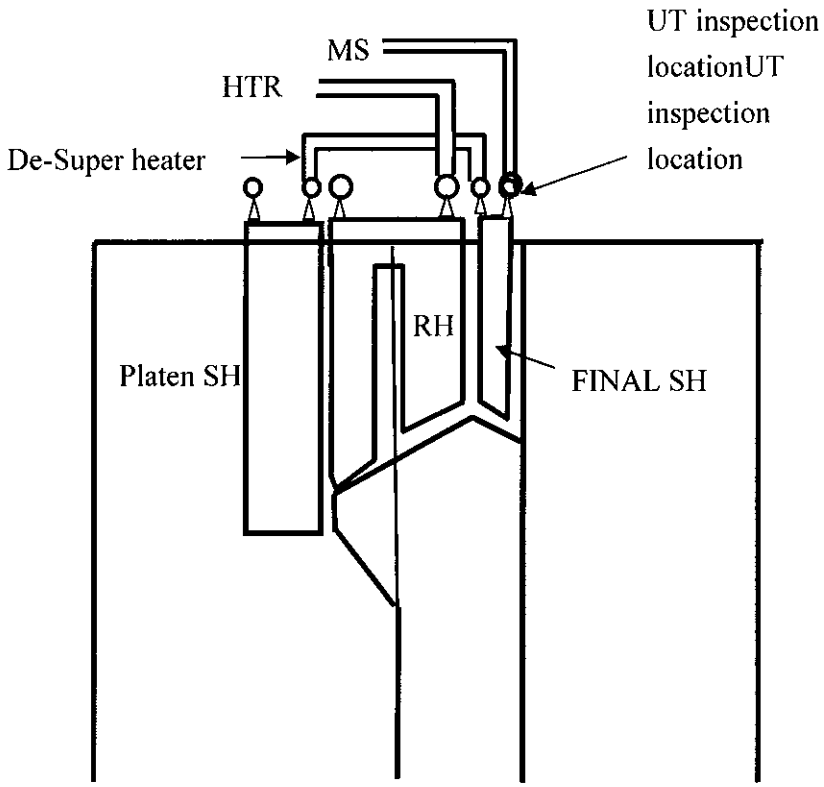


Fig. II -7 Inspected location of UT

9-6 TOFD

Applied equipment and examination condition are shown in Table Ⅱ-29.

TOFD inspection was carried out at the location identical to UT inspection location in Final-SH Outlet Header with three sets of detection in different depth of focal point from surface.

TOFD detection results are shown in Fig. Ⅱ-8～11.

No flaw echo judged as a crack was detected, although continuous subtle flaw echoes were detected at about 80mm in depth from surface.

Table Ⅱ-29 Applied equipment and examination condition

APPLIED EQUIPMENT AND MATERIAL

FLAW DETECTOR	MAKER・TYPE	OLYMPUS NDT μ-Tomoscan
	SERIAL No.(I.D.№)	23918-15(71UAA96105)
PROBE	DESIGNATION	5MHz、φ1/4inch
	WEDGES	60°and 45°
	MAKER	GE INSPECTION TECHNOLOGIES
	SERIAL No.	00CP4M,00B25K

EXAMINATION CONDITION

EXAMINATION METHOD	TOFD technique
TIME TO EXAMINATION	at periodic inspection
SURFACE CONDITION	Grinded surface
COUPLANT	Sonicoat
SPECIFIED SENSITIVITY	φ4.8mm side cylindrical hole ((d=40mm):80%+6dB
SENSITIVITY CORRECTION	Non
DISREGARD LEVEL	————
ACCEPTANCE CRITERIA	————
REFERENCE BLOCK OR CALIBRATION BLOCK	φ4.8mm side cylindrical hole (d=20,40,60,80,100mm)

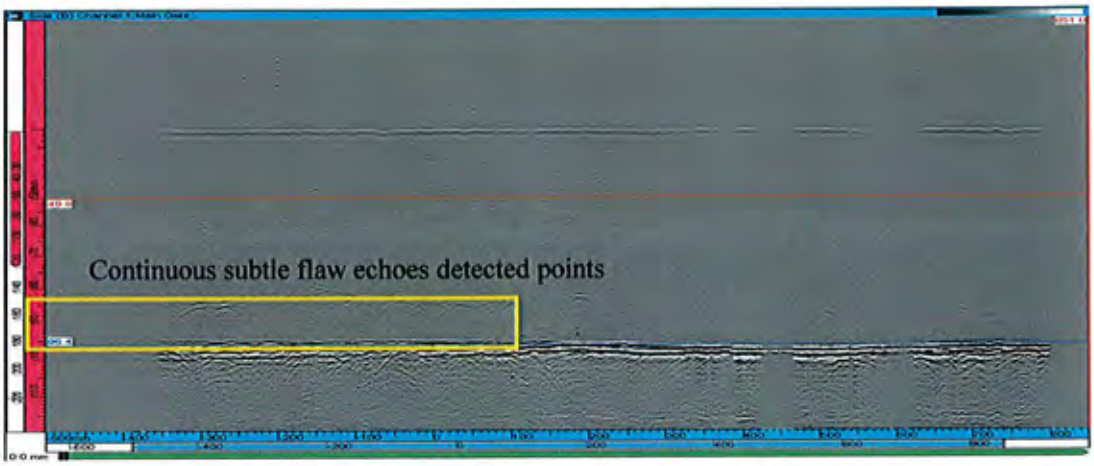


Fig. II -8　Set1 (Monitor range : 50mm～bottom)

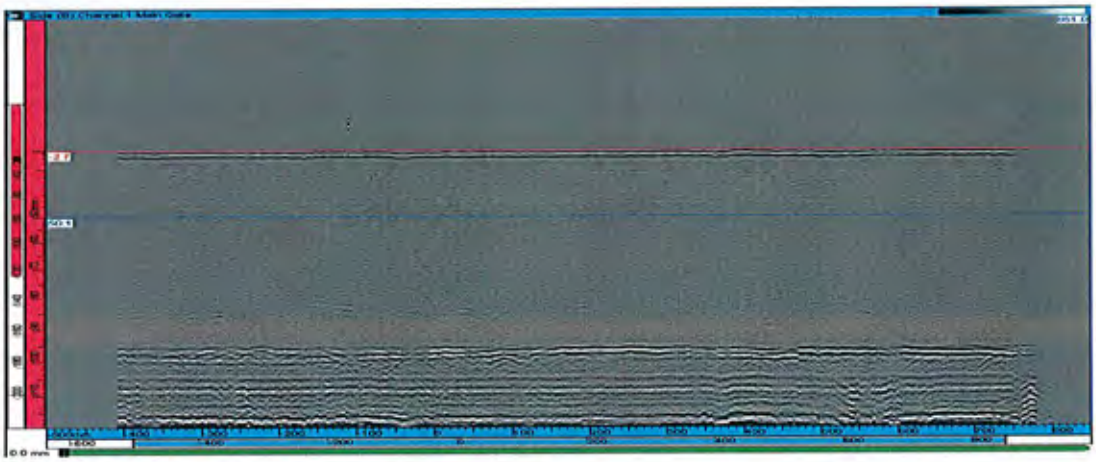


Fig. II -9　Set2 (Monitor range : Surface～50mm)

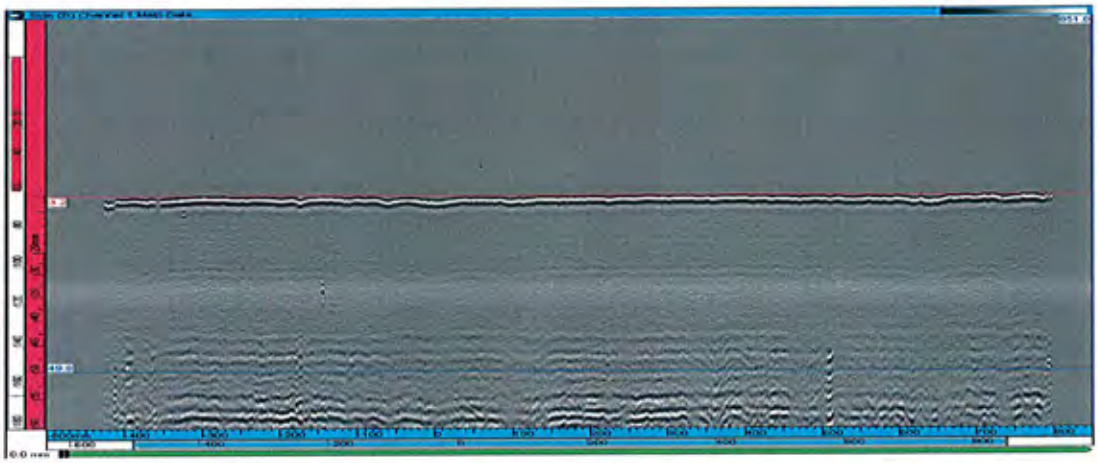


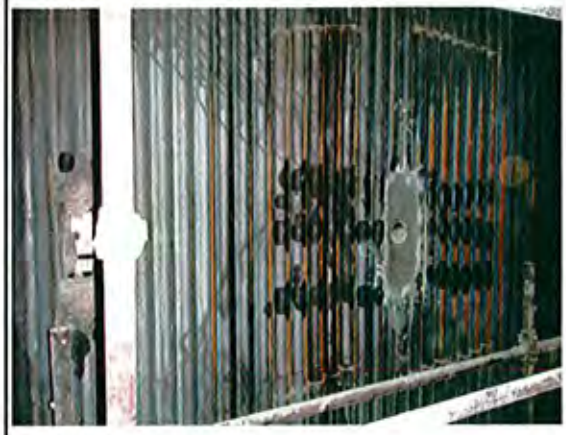
Fig. II -10　Set3 (Monitor range : Near surface〔Weld toe portion, left side〕)

Fig. II -11　Set3 (Monitor range : Near surface〔Weld toe portion, right side〕)

Water wall around burner

・Visual inspection ・Thickness measurement

Water wall around short soot blower



・Visual inspection ・Thickness measurement

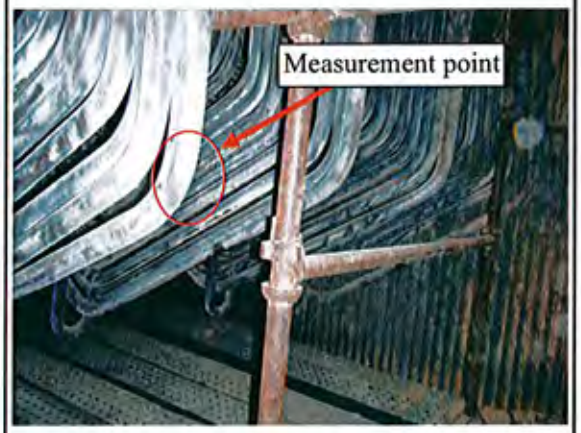
Platen SH at soot blower level

・Visual inspection ・Thickness measurement

Platen SH tube sampling location

・Sample tube inspection
・Creep rupture test

Platen SH SUS scale mesurement point



・SUS scale deposition inspection

RH

・Visual inspection

Photo II -1 Inspection location

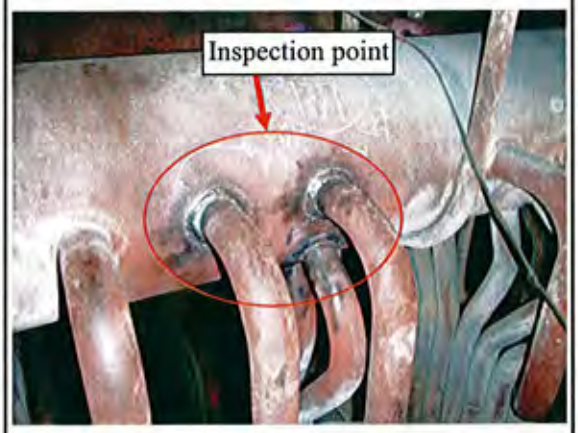
final-SH#1 tube sampling location

・Sample tube inspection

final-SH#119 tube sampling location

・Sample tube inspection
・Creep rupture test

Platen SH intlet Header

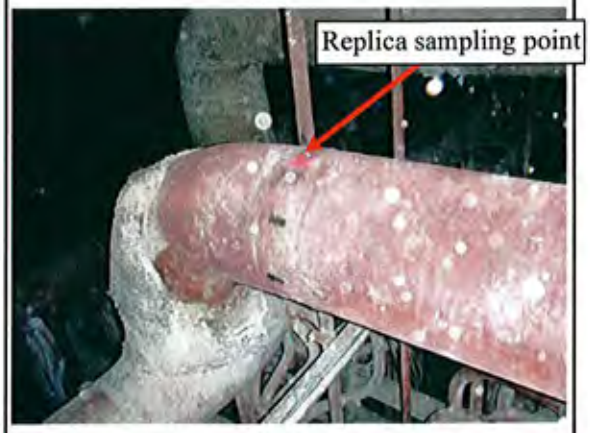


・PT

Final SH outtlet Header

・Replica inspection ・OD measurement
・UT ・TOFD

De-superheater(Boiler left side



・Replica inspection ・OD measurement

De-superheater(Boiler right side

・Replica inspection ・OD measurement

Photo II -2 Inspection location

RH Outlet header(Boiler left side)

・Replica inspection ・OD measurement

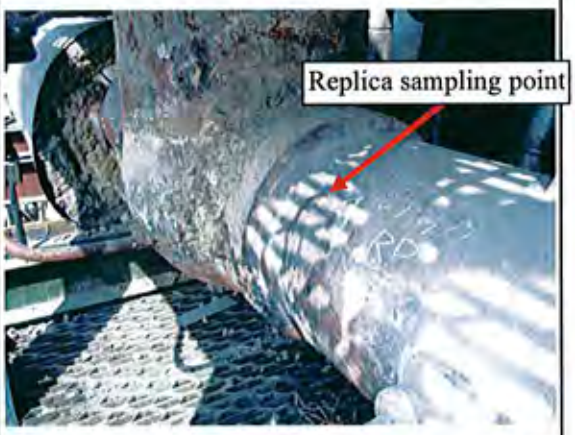
RH Outlet header(Boiler right side)

・Replica inspection ・OD measurement

Main Steam Pipe-Right(intrados)

・Replica inspection

Main Steam Pipe-Right(near the stop valve)



・Replica inspection

Hot Reheat Pipe-Right

・Replica inspection ・OD measurement

Photo II -3 Inspection location

Table Ⅱ-4 Microstructure observation resuluts

Components	Location		Observed region	OM (Optical microscope observation)					
				Microstructural features					
				Precipitation at gain boundary	Precipitates free zone along grain boundary	Granular precipitates in ferrite grain	Rod-shaped precipitates in ferrite grain	Granular precipitates	Coarse granular precipitates
Final SH outlet header (SA 335 P22)	Rightside of header	Circumferential weld	Base metal	Appeared	Not appeared				
			Intercritical zone	Not appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Appeared					
			Weld metal						
De-Superheater pipe (SA 335 P12)	Left de superheater	Circumferential weld	Base metal	Appeared	Not appeared	Not appeared	Not appeared		
			Intercritical zone	Appeared				Remaining	Not appeared
			Fine grain HAZ	Appeared					Not appeared
			Coarse grain HAZ	Not appeared					Not appeared
			Weld metal					Appeared	
	Right de superheater	Circumferential weld	Base metal	Appeared	Not appeared	Not appeared	Not appeared		
			Intercritical zone	Appeared				Remaining	Not appeared
			Fine grain HAZ	Appeared					Not appeared
			Coarse grain HAZ	Appeared					Not appeared
			Weld metal					Appeared	
Reheater outlet header (SA 335 P22)	Left	Circumferential weld	Base metal	Appeared	Not appeared				
			Intercritical zone	Appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Not appeared					
			Weld metal						
	Right	Circumferential weld	Base metal	Appeared	Not appeared				
			Intercritical zone	Appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Appeared					
			Weld metal						
		Circumferential weld (Abnormal microstructure)	Base metal	Appeared	Not appeared				
			Intercritical zone	Appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Appeared					
			Weld metal						
Main steam pipe (SA 335 P22)	Right	Circumferential weld (near the stop valve) intrados side	Base metal	Appeared	Not appeared				
			Intercritical zone	Appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Appeared					
			Weld metal						
	Right	Circumferential weld (near the stop valve)	Base metal	Appeared	Not appeared				
			Intercritical zone	Appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Not appeared					
			Weld metal						
Hot reheat pipe (SA 335 P22)	Right	Circumferential weld	Base metal	Appeared	Not appeared				
			Intercritical zone	Appeared	Not appeared				
			Fine grain HAZ	Appeared					
			Coarse grain HAZ	Appeared					
			Weld metal						
View nos. for each area				×500 (2 views) ×1000 (4 views)					

Table Ⅱ-5 Creep void observation results

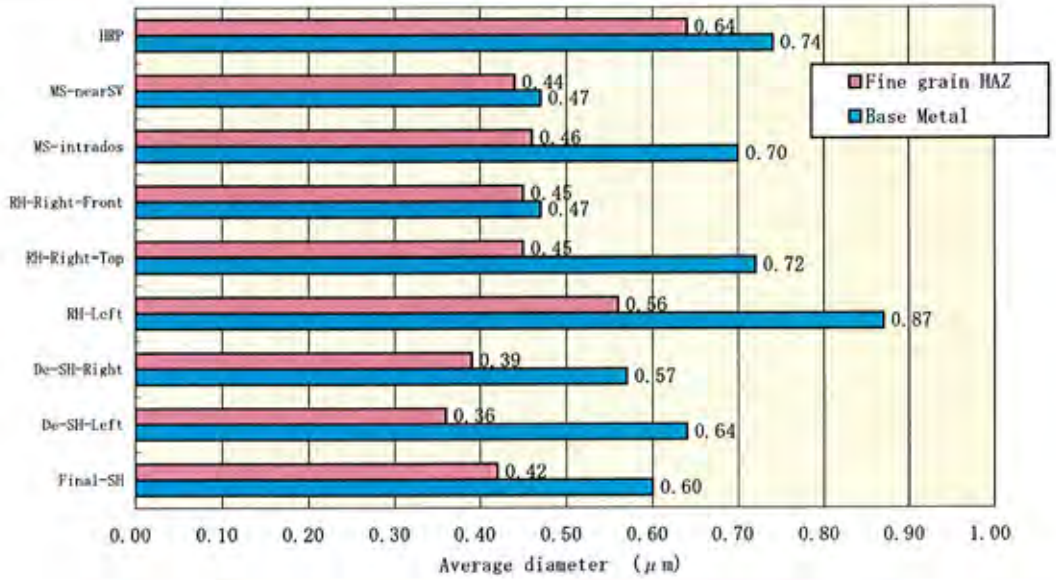
Components	Location		Observed region	SEM (Scanning Electron Microscope observation)
				Ceep void damage
Final SH outlet he	Rightside of header	Circumferential weld	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
De-Superheater pipe (SA 335 P12)	Left de superheater	Circumferential weld	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
	Right de superheate	Circumferential weld	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
Reheater outlet header	Left	Circumferential weld	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
	Right	Circumferential weld	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
		Circumferential weld (Abnormal microstructure)	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
Main steam pipe	Right	Circumferential weld (near the stop valve) intrados side	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
	Right	Circumferential weld (near the stop valve)	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
Hot reheat pipe	Right	Circumferential weld	Fine grain HAZ	No void
			Coarse grain HAZ	No void
			Weld metal	No void
View nos. for each area				×500 (3 views) ×2000 (3 views)

Table Ⅱ-6 Precipitates distribution observation results

Components	Location		Observed region	TEM (Transmission Electron Microscope observation)							
				Precipitates features							
				Precipitates free zone along grain boundary	Featherlike precipitates	Fine needlelike and granular precipitates	Needlelike precipitates	Fine needlelike and granular precipitates in bainite grain	Bainite structure disintegration	Attenuated plate-shaped precipitates	Rod-shaped precipitates, spherodized precipitates
Final SH outlet header (SA 335 P22)	Left outlet header	Circumferential weld	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Partially disappeared			
			Fine grain HAZ				Remaining				
			Coarse grain HAZ			Remaining					
			Weld metal			Remaining					
De superheater pipe	Left de superheater	Circumferential weld	Base metal	Not appeared		Remaining in ferrite grain			Disintegrated	Not appeared	
			Fine grain HAZ			Remaining				Not appeared	Coexist
			Coarse grain HAZ			Remaining					Dcrease of rod-shaped precipitates and spherodized
			Weld metal			Remaining					
	Right de superheater	Circumferential weld	Base metal	Not appeared		Remaining in ferrite grain			Disintegrated	Not appeared	
			Fine grain HAZ			Remaining				Not appeared	Coexist
			Coarse grain HAZ			Remaining					Coexist
			Weld metal			Remaining					
Reheater outlet header (SA 335 P22)	Left	Circumferential weld	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Partially disappeared			
			Fine grain HAZ				Disappeared				
			Coarse grain HAZ			Disappeared					
			Weld metal			Remaining					
	Right	Circumferential weld	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Partially disappeared			
			Fine grain HAZ				Spherodized				
			Coarse grain HAZ			Remaining					
			Weld metal			Remaining					
	Right	Circumferential weld (Abnormal microstructure)	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Partially disappeared			
			Fine grain HAZ				Spherodized				
			Coarse grain HAZ			Remaining					
			Weld metal			Remaining					
Main steam pipe (SA 335 P22)	Right	Circumferential weld (near the stop valve) intrados side	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Disappeared			
			Fine grain HAZ				Disappeared				
			Coarse grain HAZ			Disappeared					
			Weld metal			Disappeared					
	Right	Circumferential weld (near the stop valve)	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Disappeared			
			Fine grain HAZ				Spherodized				
			Coarse grain HAZ			Remaining					
			Weld metal			Remaining					
Hot reheat pipe (SA 335 P22)	Right	Circumferential weld	Base metal	Appeared	Disappeared		No decrease in ferrite grain	Partially disappeared			
			Fine grain HAZ				Disappeared				
			Coarse grain HAZ			Disappeared					
			Weld metal			Disappeared					
View nos. for each area				×2000 (2 views) , ×10000 (4 views)							

Table Ⅱ-7 Quantitative evaluation of grain boundary precipitates

Component	Evaluated location	Material	Average diameter (μm)		Volume fraction	
			Base Metal	Fine grain HAZ	Base Metal	Fine grain HAZ
Final SH Outlet Header	Circumferential weld at right side	SA335P22	0.60	0.42	0.021	0.025
De-Suerheater-Left	Circumferential weld	SA335P12	0.64	0.36	0.024	0.017
De-Suerheater-Right	Circumferential weld	SA335P12	0.57	0.39	0.026	0.024
RH Outlet Header	Circumferential weld at left side	SA335P22	0.87	0.56	0.056	0.054
	Circumferential weld at right side,top	SA335P22	0.72	0.45	0.037	0.031
	Circumferential weld at right side,front	SA335P22	0.47	0.45	0.016	0.032
Main Steam Pipe-Right	Circumferential weld,intrados	SA335P22	0.70	0.46	0.044	0.028
	Circumferential weld,near the stop valve	SA335P22	0.47	0.44	0.017	0.028
Hot Reheat Pipe-Right	Circumferential weld	SA335P22	0.74	0.64	0.049	0.048



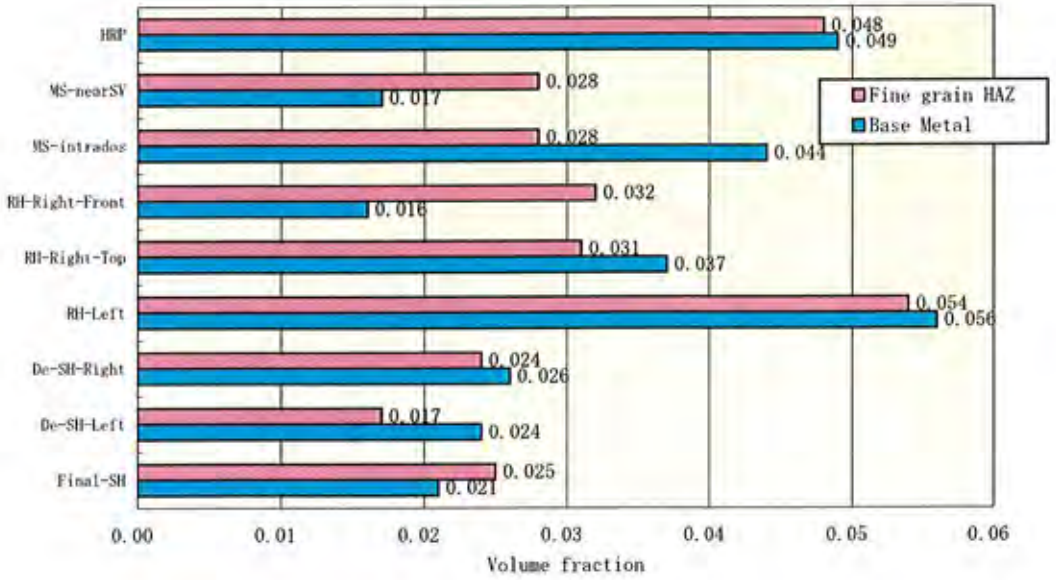


Table Ⅱ-8 Precipitates free band width along grain boundary

Component	Evaluated location	Material	Precipitates free band width (μm) ※1
			Base Metal
Final SH Outlet Header	Circumferential weld at right side	SA335P22	0.87
RH Outlet Header	Circumferential weld at left side	SA335P22	0.85
	Circumferential weld at right side,top	SA335P22	0.89
	Circumferential weld at right side,front	SA335P22	1.04
Main Steam Pipe-Right	Circumferential weld,intrados	SA335P22	0.81
	Circumferential weld,near the stop valve	SA335P22	0.93
Hot Reheat Pipe-Right	Circumferential weld	SA335P22	1.23

※1 : Average value of 10 measured points

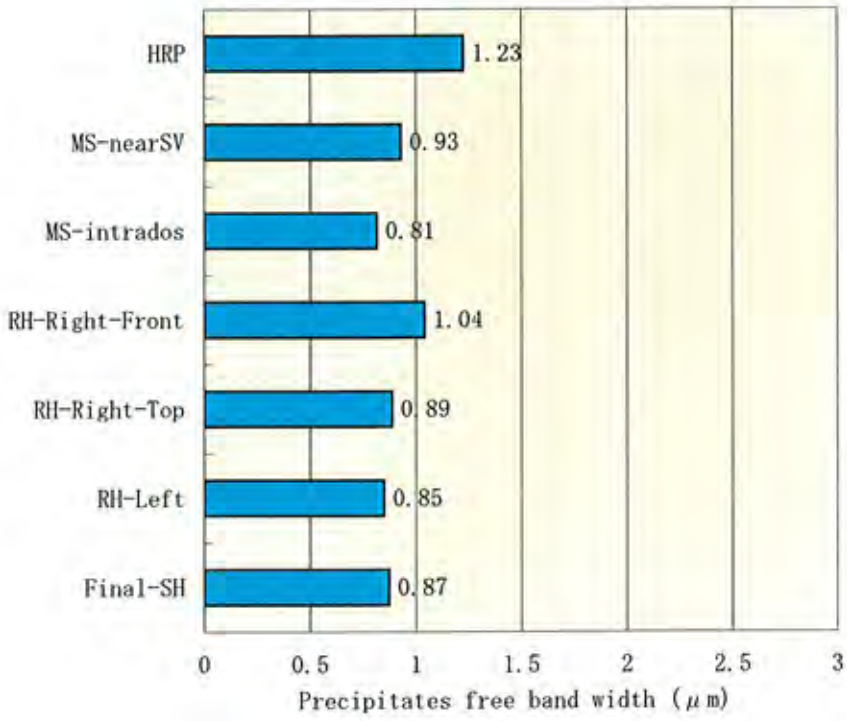
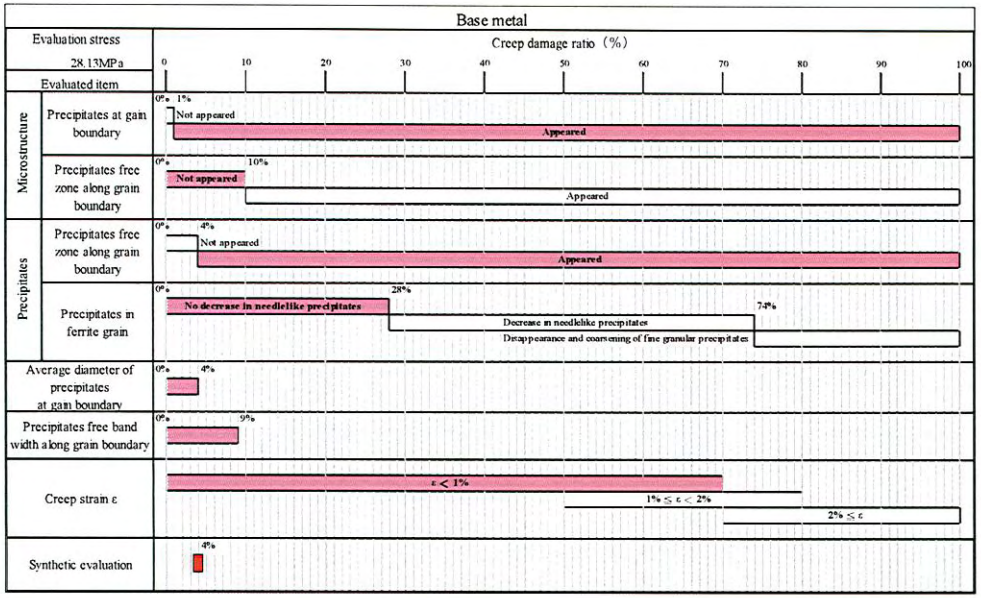
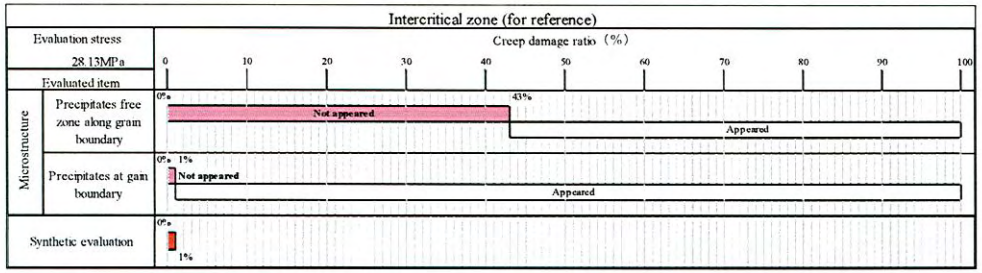
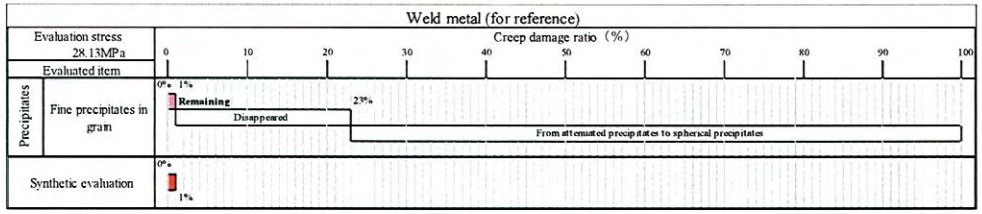


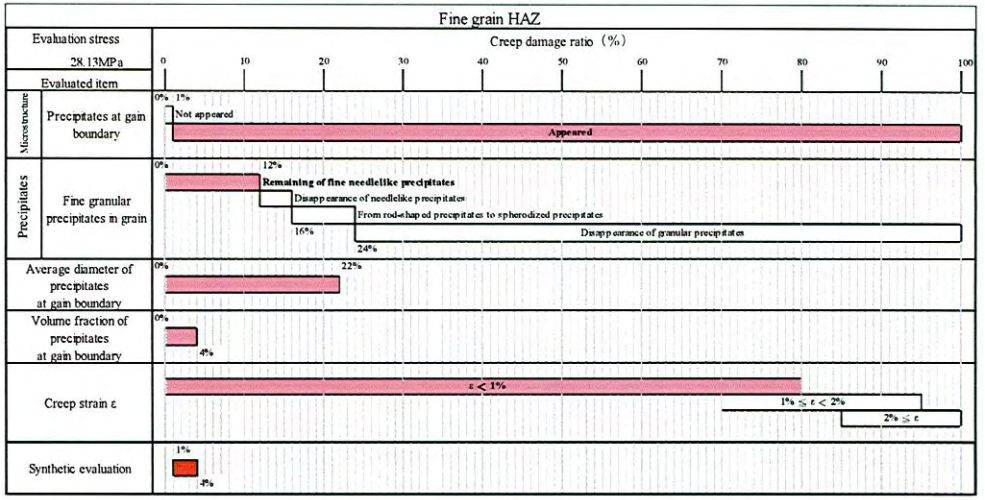
Table Ⅱ-9 Operational condition of evaluated components(Unchahar)

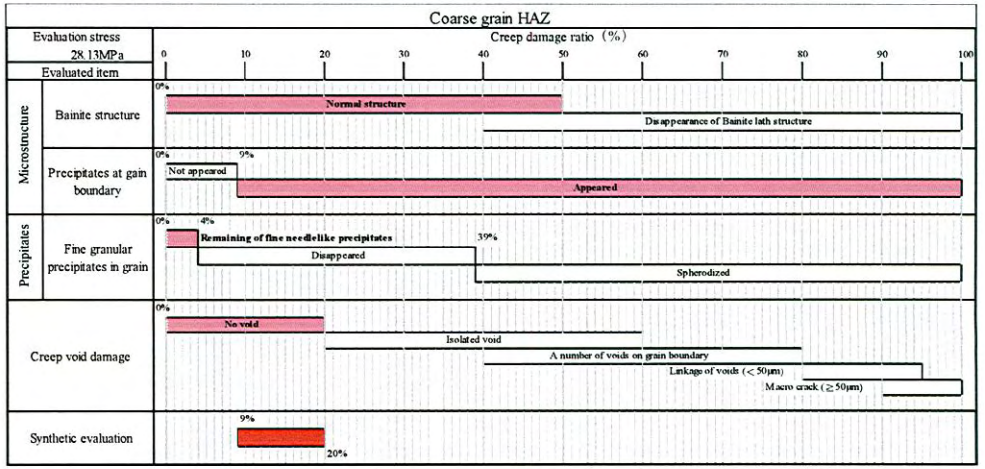
Component	Location	Material		Designed					Hoop Stress	
				O.D.	t	Temperature	Pressure			
		ASME	JIS	(mm)	(mm)	(℃)	(MPa)	(kg/cm^2)	(MPa)	(kg/mm^2)
Final SH Outlet Header	Circumferential weld at right side	SA335P22	STPA24	457.2	100.0	555	15.75	160.6	28.13	2.87
De-Suerheater-Left	Circumferential weld	SA335P12	STPA22	406.4	45.0	450	16.44	167.6	66.00	6.73
De-Suerheater-Right	Circumferential weld	SA335P12	STPA22							
RH Outlet Header	Circumferential weld at left side	SA335P22	STPA24	558.8	45.0	555	4.32	44.1	24.69	2.52
	Circumferential weld at right side,top	SA335P22	STPA24							
	Circumferential weld at right side,front	SA335P22	STPA24							
Main Steam Pipe-Right	Circumferential weld, intrados side	SA335P22	STPA24	355.6	50.3	540	15.74	160.5	47.77	4.87
	Circumferential weld,near the stop valve	SA335P22	STPA24							
Hot Reheat Pipe-Right	Circumferential weld	SA335P22	STPA24	508.0	28.0	540	3.69	37.6	31.61	3.22



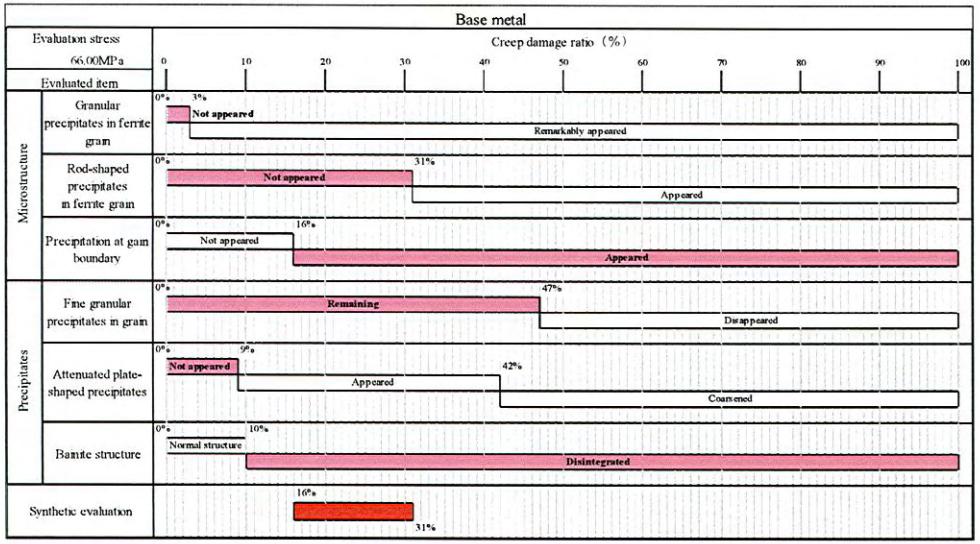


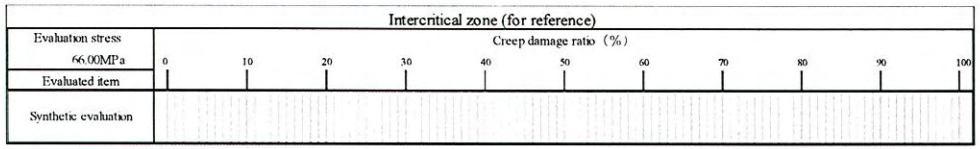


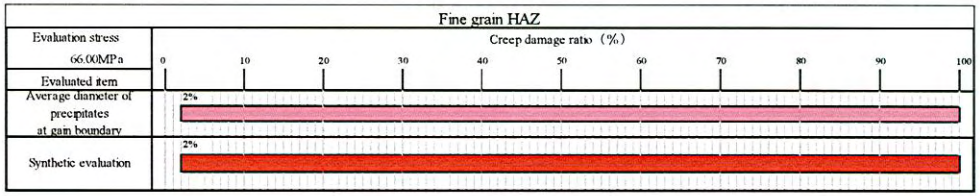


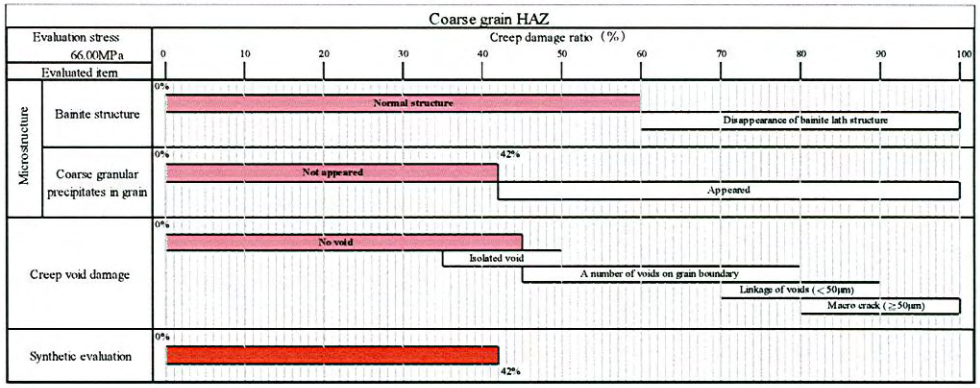


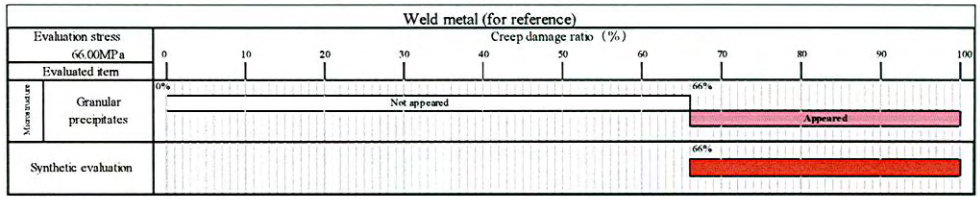
Evaluation Results Ⅱ－1　Final SH Outlet Header Circumferential weld at right side



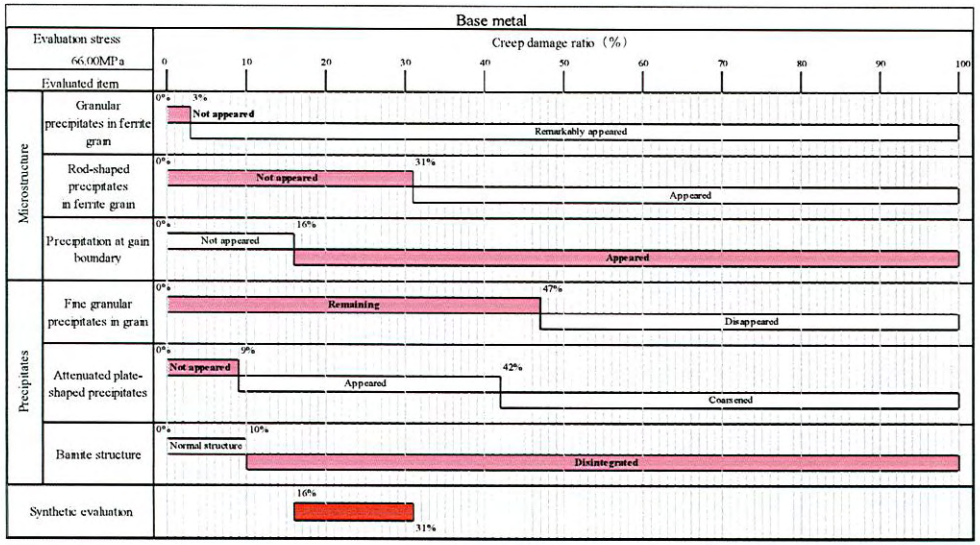


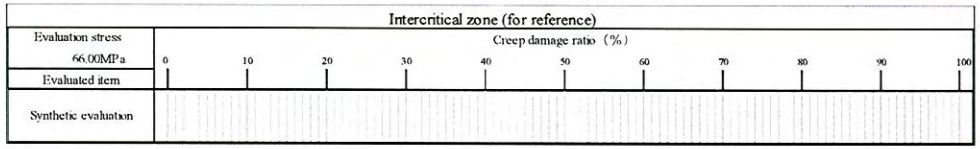


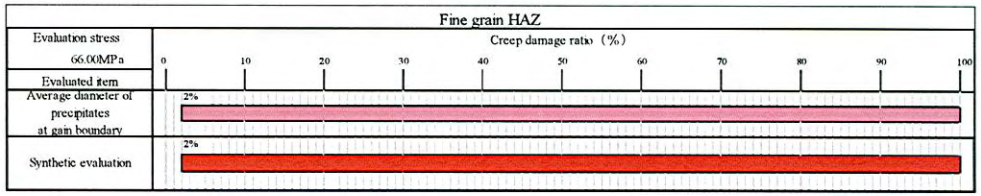


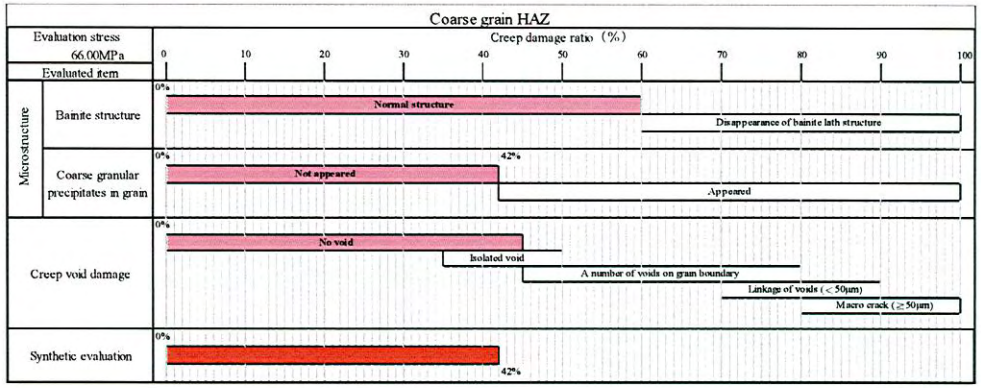


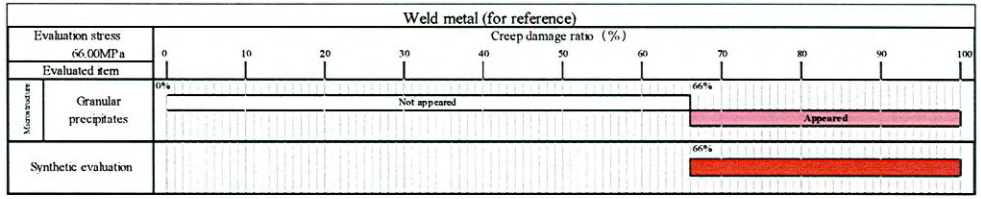
Evaluation Results Ⅱ－2　De-Suerheater-Left　Circumferential weld



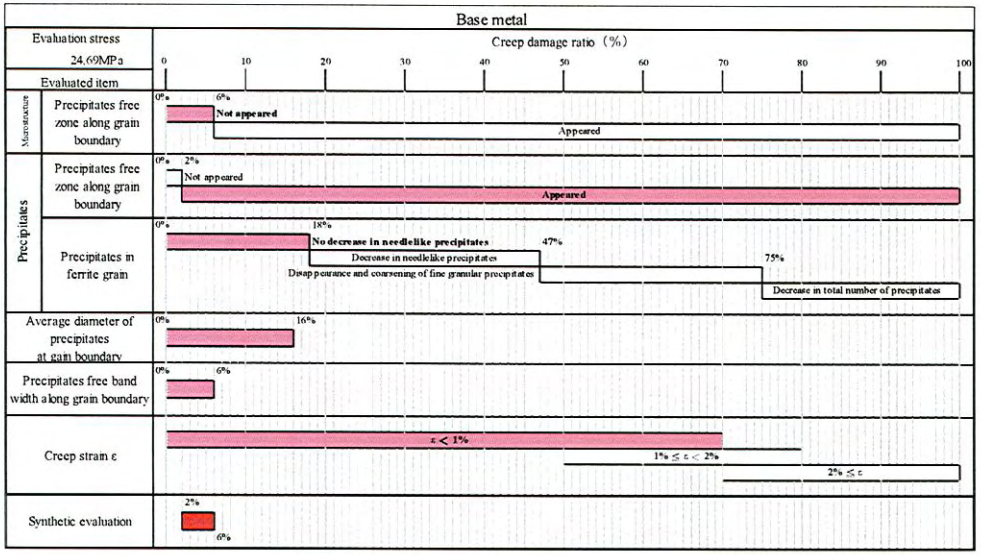


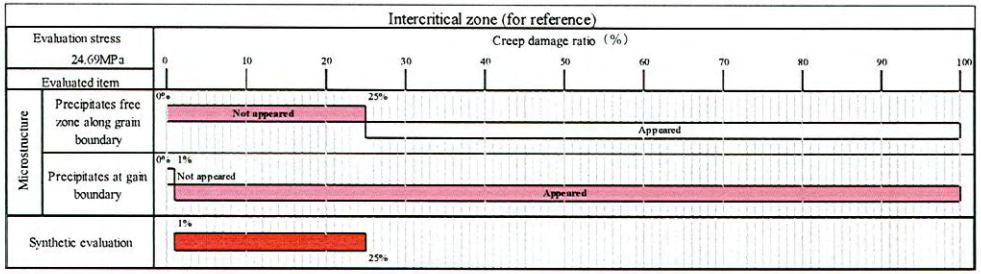


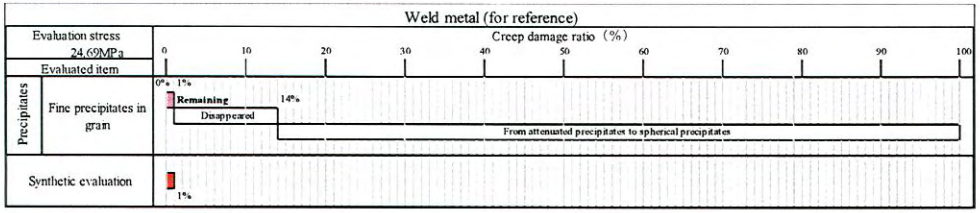


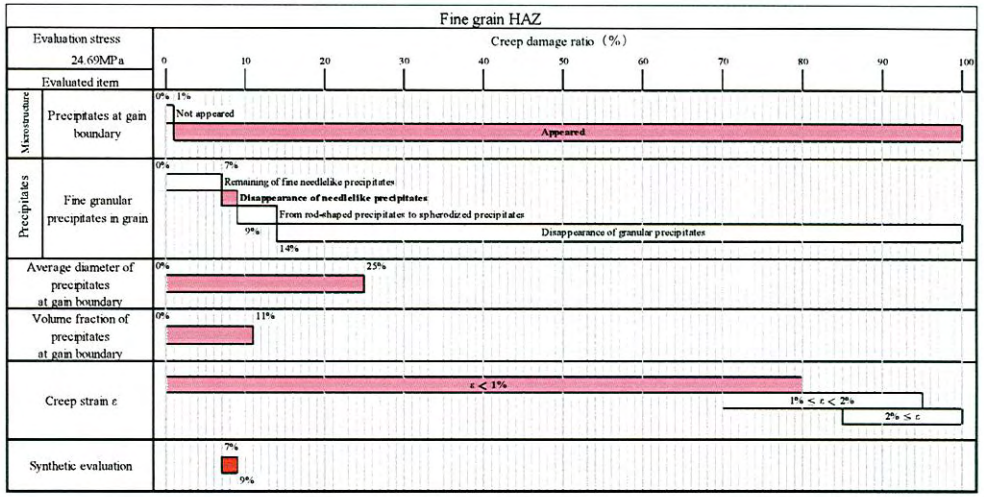


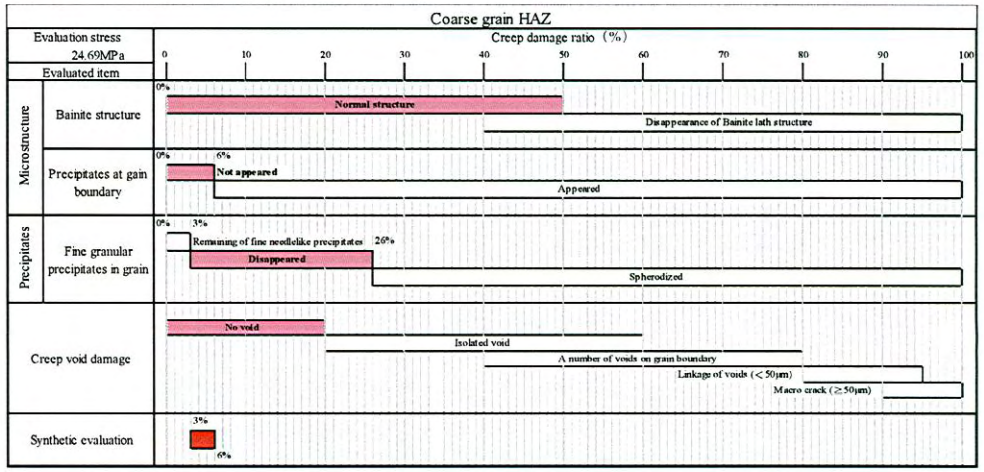
Evaluation Results Ⅱ－3　De-Suerheater-Right　Circumferential weld



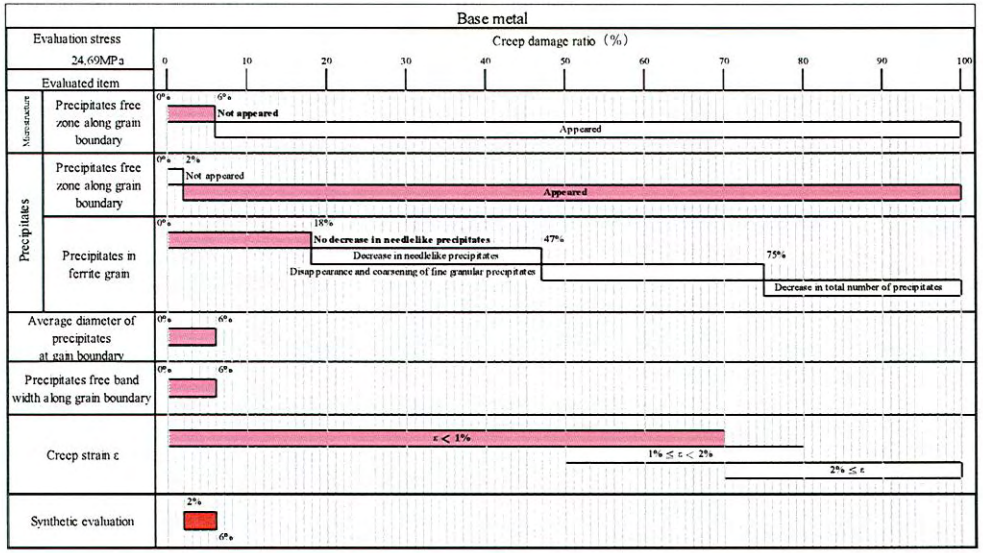


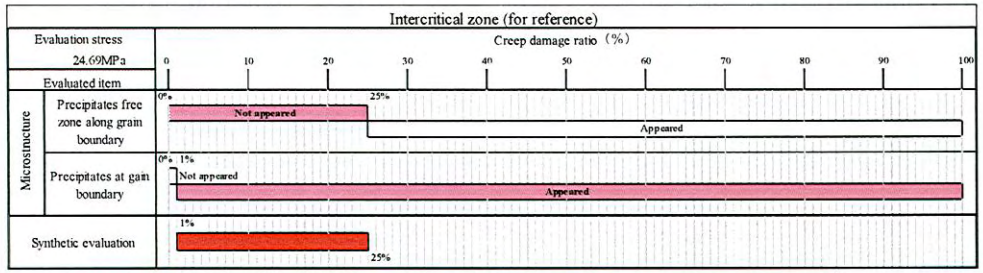


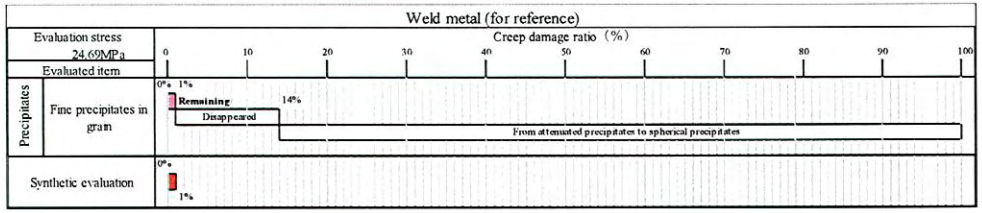


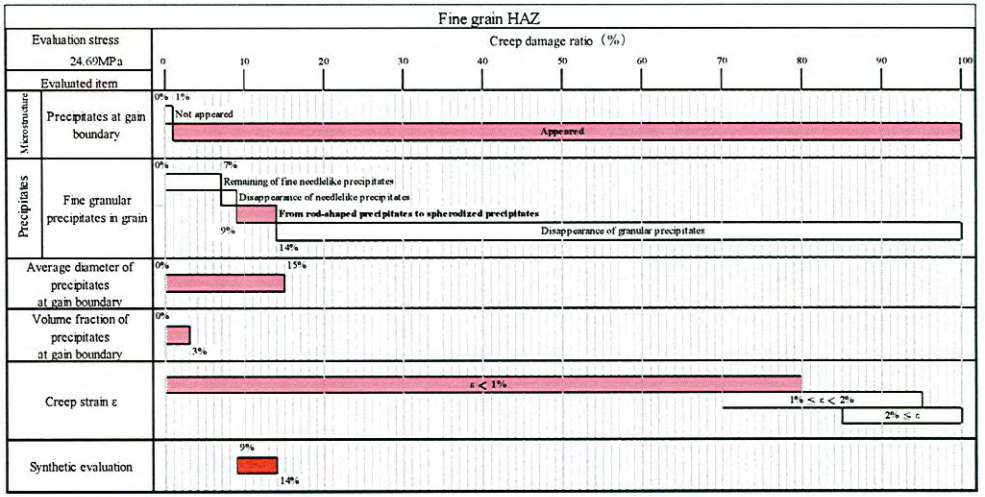


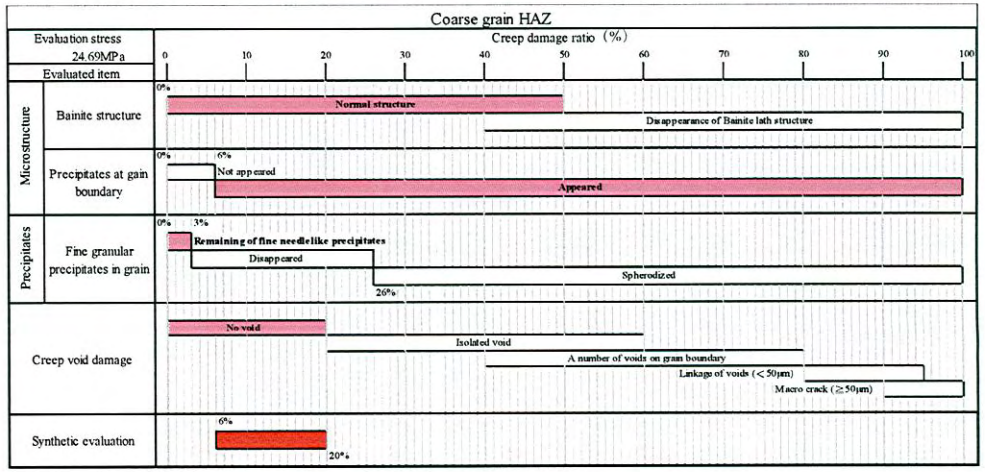
Evaluation Results Ⅱ－4　RH Outlet Header　Circumferential weld at left side



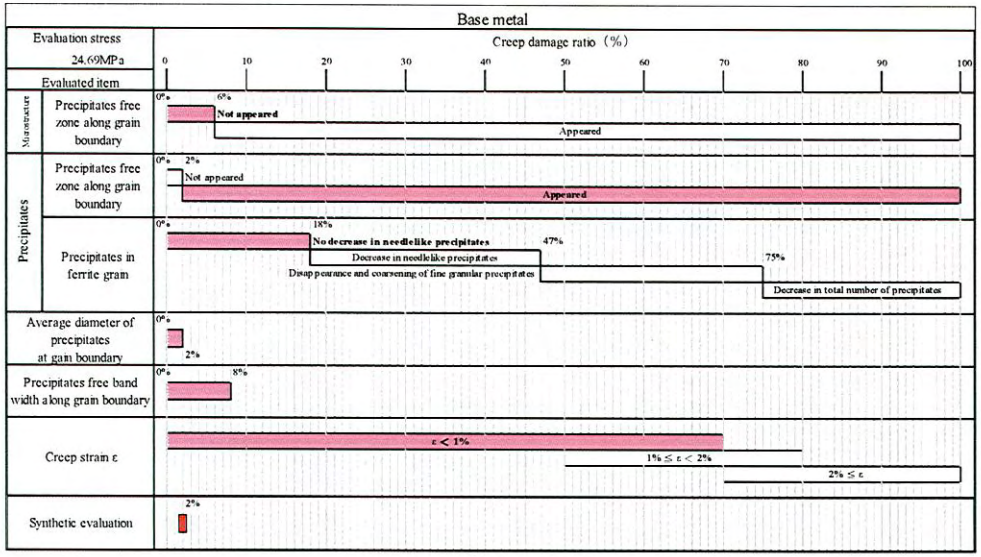


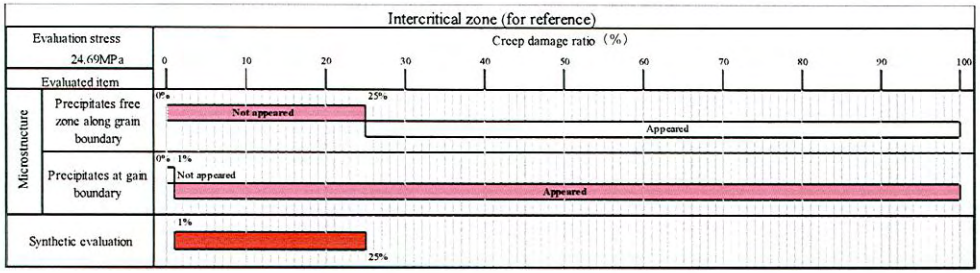


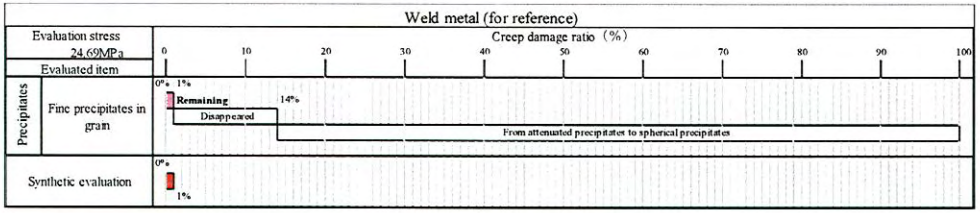


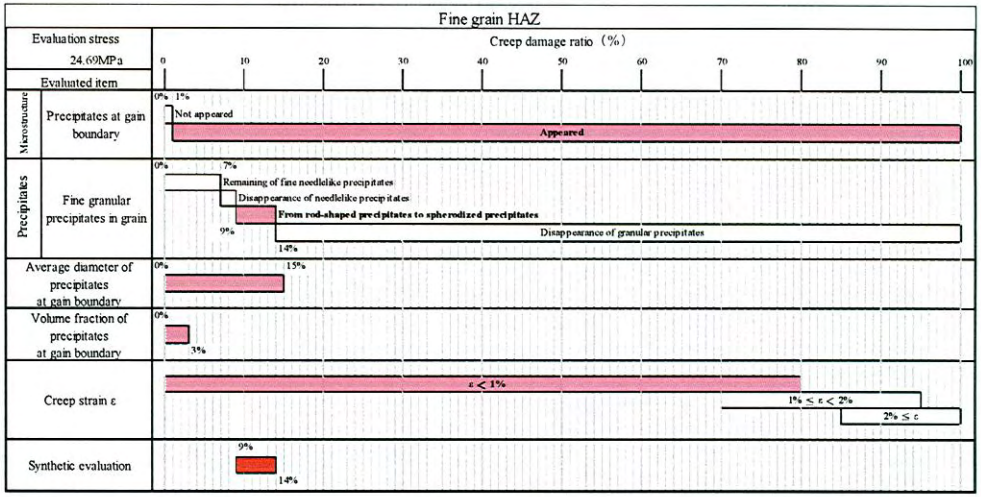


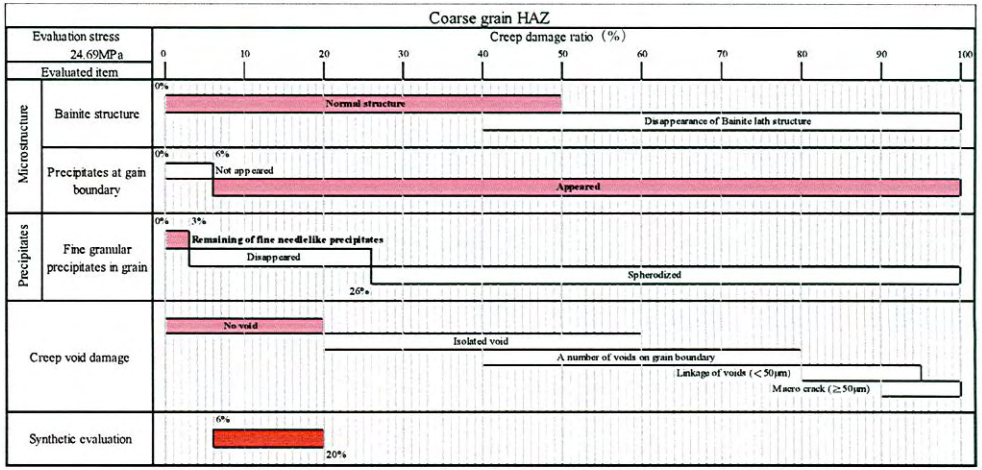
Evaluation Results Ⅱ－5　RH Outlet Header　Circumferential weld at right side, top











Evaluation Results Ⅱ－6　RH Outlet Header　Circumferential weld at right side, front