

TIE IN POINT FOR PIPE LINES  $\frac{P1}{6}$  ~  $\frac{P11}{1}$   
SEE THE NOZZLES OF CONNECTION LIST

PART NAME		REQ'D NO.	UNIT	REMARKS
NO	NAME OF PART			
1	SMOKE TUBE BOILER	1		6 t/h
2	BURNER	1		-
3	F.D FAN	1		-
4	SUPER HEATER	1		-
5	ECONIMIZER	1		-
6	EXPANSION JOINT	1		-
7	VENT STEAM SILENCER	1		-
8	BLOWDOWN VESSEL	1		-
9	DEAERATOR	1		-
10	FEED WATER PUMP	2		-
11	CHEMICAL DOSING SYSTEM	1		-
12	SAMPLING SYSTEM	1		-
13	BD SUCTION PUMP	2		-
14	CONTAINER	1		-

NOZZLES OF CONNECTION LIST				
NO.	DESCRIPTION	SIZE	FLANGE TYP./CLASS	REMARK
1	SATURATED STEAM OULET	6"	WN RF / #150	
2	DEMI WATER INLET	1 1/2"	WN RF / #150	
3	BLOW DOWN OULET	1 1/2"	WN RF / #150	
4	OIL SUPPLY	1"	WN RF / #150	
5	N2 GAS SUPPLY	1"	WN RF / #150	
6	COOLING WATER SUPPLY	1"	WN RF / #150	FOR SAMPLING SYS.
7	COOLING WATER RETURN	1"	WN RF / #150	FOR SAMPLING SYS.
8	DRAIN	1"	WN RF / #150	FOR SAMPLING SYS.
9	INSTRUMENT AIR SUPPLY	2"	WN RF / #150	
10	SURVICE AIR SUPPLY	1 1/2"	WN RF / #150	
11	PHOSPHATE INJECTION	1"	WN RF / #150	
12	O2 SCANENGER	1"	WN RF / #150	

NO.	DATE	REVISION	DESCRIPTION	DWG. BY	CHK'D BY	APP'D BY
0	2012.03.08		ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG

PROJECT  
**GNS NONG SAENG COMBINED CYCLE POWER PLANT**

CLIENT  
**GULF JP NS COMPANY LTD.**

CONTRACTOR  
**MITSUBISHI HEAVY INDUSTRIES., LTD.**

**HANIL HEAVY INDUSTRIES CO., LTD.**  
HEAT TRANSFER & EQUIPMENT DIV.

JOB NO. - DWG. NO. HIHI-DWG-GEN-001-01 SCALE NONE

TITLE  
**BOILER PACKAGE PLOT PLAN DWG FOR 2 PASS BOILER**

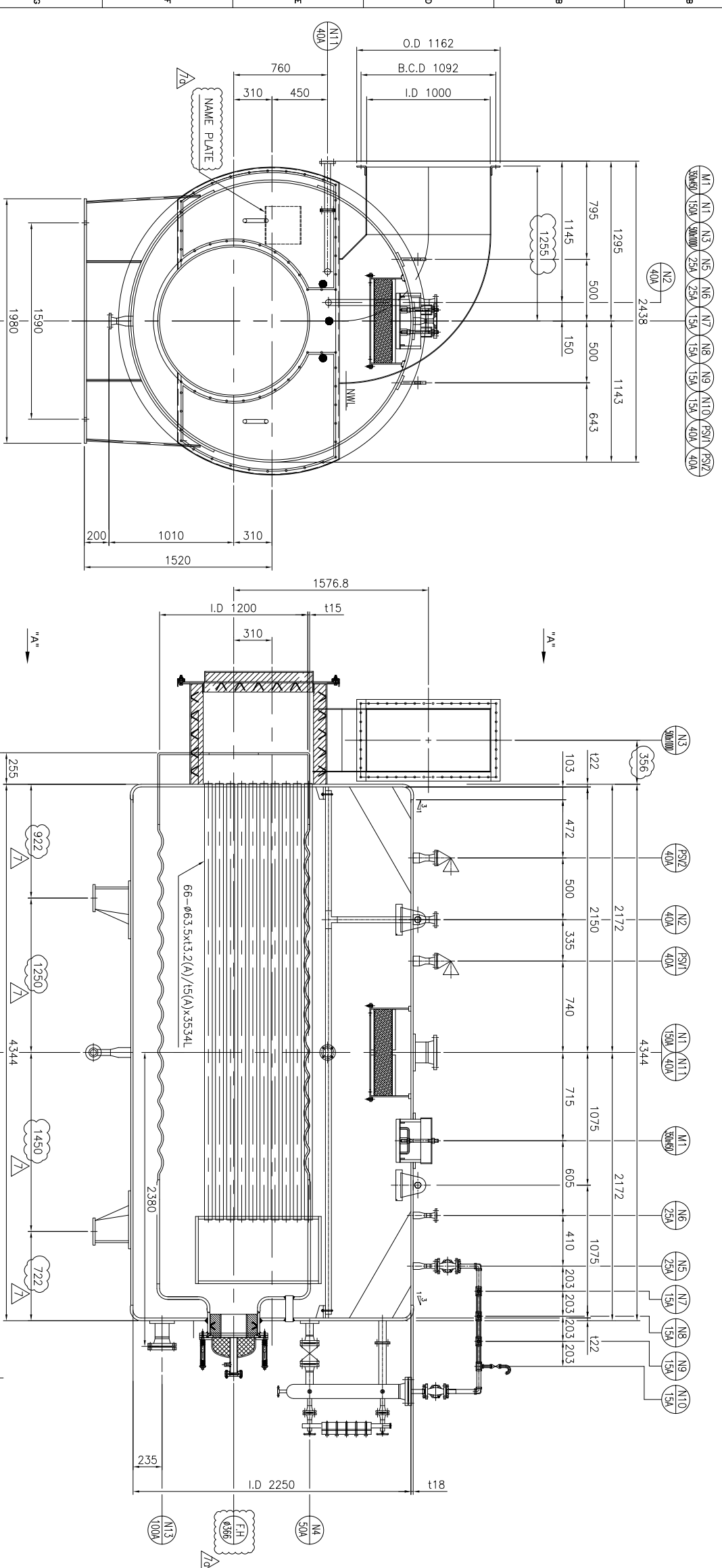
**FOR APPROVAL**

# OUTDOOR FOR APPROVAL

## DESIGN DATA

CODE	ASME SEC. I 2010ED.	
ASME STAMP	N/A	
NO. OF RECD	1 (ONE)	
TAG NO.	900HA00SS101	
CAPACITY	6,000 kg/hr	
DESIGN PRESSURE (IN/OUT)	1.08 / N/A MPa.G	
DESIGN TEMPERATURE	250 °C	
OPERATING PRESSURE	0.88 MPa.G	
OPERATING TEMPERATURE	179.2 °C	
HYDRO. TEST PRESSURE	1.62 MPa.G	
CORROSION ALLOWANCE	3 mm	
JOINT EFFICIENCY (SHELL/HEAD)	0.85/1.0	
P.W.H.T	YES	
INSULATION	100 mm	
WIND DESIGN	ASCE 7-05, 120 km/h	
SEISMIC DESIGN	IBC97, ZONE1	
IMPACT TEST	N/A	
HEATING SURFACE AREA	61 m <sup>2</sup>	
WEIGHT	EMPTY	10,232 kg
	OPERATION	18,225 kg
	FULL	22,266 kg

- NOTE**
- ALL DIMESTION ARE IN mm UNLESS OTHERWISE SPECIFIED.
  - VESSEL FABRICATION TOLERANCES SHALL BE IN ACCORANCE WITH ASME CODE & STD' DWG.
  - BOLT HOLES FOR FLANGES SHALL BE STRADDLED TO EQUIPMENT MAIN AXIS.
  - INSULATION IN HANIL SCOPE.



VIEW "A-A"

FRONT VIEW OF BOILER

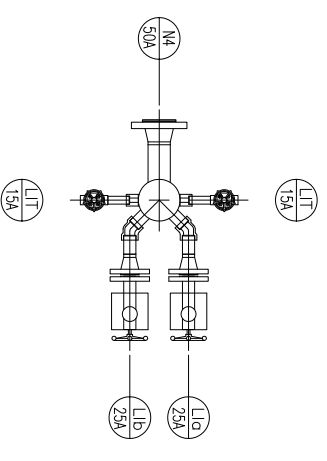
NOZZLE TABLE

MARK	SIZE	NO. REQD	SCH.	RATING	SERVICE
N1	150A	1	40	ASNI #150 WN RF	STEAM OUTLET
N2	40A	1	160	ASNI #150 WN RF	WATER INLET
N3	500X1000	1	t6	-	GAS OUTLET
N4	50A	1	160	ASNI #150 WN RF	WATER COLUMN CONNECTION
N5	25A	1	160	ASNI #150 WN RF	INSTRUMENT CONNECTION
N6	25A	1	160	ASNI #150 WN RF	NZ GAS
N7	15A	1	160	ASNI #150 WN RF	PI
N8	15A	1	160	ASNI #150 WN RF	PI
N9	15A	1	160	ASNI #150 WN RF	PI
N10	15A	1	160	ASNI #150 WN RF	VENT
N11	40A	1	160	ASNI #150 WN RF	CONTINUOUS BLOW DOWN
N12	40A	1	160	ASNI #150 WN RF	INTERMITTED BLOW DOWN
N13	100A	1	40	ASNI #150 WN RF	INSPECTION HOLE
F.H	366	1	t18	ASNI #150 WN RF	FIRE HOLE
PSV1	40A	1	160	ASNI #150 WN RF	PRESS. SAFETY VALVE -1
PSV2	40A	1	160	ASNI #150 WN RF	PRESS. SAFETY VALVE -2
M.H	350X450	1	122	-	MANHOLE

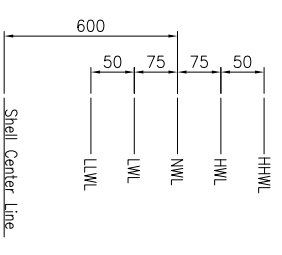
### MATERIAL

ITEM	MATERIAL
SHELL & HEAD	A516-60
TUBE	A240-A1
FURNACE	A516-60
FLANGE	A105
PIPE	A106-B
REINF. PAD	A516-60
BOSS	A105
GASKET	S/W / NON-ASBESTOS
STUD BOLT/NUTS	A193-B7/A194-2H
REINF. PAD	A516-60
WEB/RIB PLATE	A283-C
BASE PLATE	A283-C
NAME PLATE / BRACKET	A516-60/A240-304
EARTH LUG	A240-304
ANCHOR BOLT/NUT	A193-B7/A194-2H

DETAIL OF WATER COLUMN



WATER LEVEL



CONTRACTOR  
**MITSUBISHI HEAVY INDUSTRIES, LTD.**

**HANIL HEAVY INDUSTRIES CO., LTD.**

CLIENT  
**GULF JP NS COMPANY LTD.**

PROJECT  
**GNS NONG SAENG COMBINED CYCLE POWER PLANT PROJECT**

NO.	DATE	REVISION DESCRIPTION	DWG. BY	CHK'D BY	APP'D BY
1	2012.01.15	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
2	2012.01.10	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
3	2012.01.09	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
4	2012.11.02	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
5	2012.10.22	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
6	2012.09.12	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
7	2012.08.30	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
8	2012.06.18	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
9	2012.04.13	FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG

JOB NO. -  
DWG. NO. HH-0WG-BLR-401  
SCALE NONE  
TITLE BOILER  
GENERAL ASSEMBLY DRAWING

DESIGN DATA			
CODE	ASME SEC. I 2010 ED.	TYPE	BARE TUBE
TAG NO.	900MA01AC101	CODE STAMP	NO
PRESSURE	DESIGN	SHELL SIDE	ERECTOR
	OPERAT.	450 mmH <sub>2</sub> O	4328
TEMP. (°C)	DESIGN	79 mmH <sub>2</sub> O	OPERAT.
	OPERAT.	600	4330
TEST PRESSURE (mmHg/MPa)	HYDRO.	580/300.5	FULL OF WATER
	PNEUM.	179.2/370	4899
CORR. ALLOW. (MM)	HYDRO.	1.4	FIRE PROOF. (MM)
	PNEUM.	0	NO
JOINT EFF. (S/H)	INSUL. IN/OUT (MM)	0	SEE SPEC.
	SEAMLESS	SP. GR.	-
P.W.H.T.	SURFACE AREA (M <sup>2</sup> )	0	78.1
	VOLUME (M <sup>3</sup> )	1	-
CONTENT LETHAL	REGULATION	NO	-
	WIND DESIGN	NO	ASCE 7-05, 120KM/H
NO. OF PASS	SEISMIC DESIGN	1	IBC 97, ZONE 1
	3.4	1	-

MATERIAL SPECIFICATION			
NO.	DESCRIPTION	MATERIAL	QTY
1	CASING	A240-304	16
2	TUBE SUPPORT	SUS 304	1
3	TUBE	A213-T22	816
4	HEADER PIPE	A335-P22	2
5	SUPPORT	A36	1
6	ANCHOR B/2N/W	AIS-87/MH-2N/W	12

NOZZLE SCHEDULE			
NO.	QTY	SIZE	SCH. RATING
N1	1	800x1414	16
N2	1	800x1400	16
N3	1	6"	80
N4	1	80	40
NSB	1	3/4"	40

NOTE  
1. ALL DIMENSIONS ARE IN MILLIMETER, UNLESS NOTED OTHERWISE.

FOR APPROVAL

MARK	DATE	REVISION DESCRIPTION	DWG. BY	CHK'D BY	APP'D BY
1	16-JUN-2013	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
2	15-NOV-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
3	20-AUG-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
4	20-JULY-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
5	15-JUN-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG

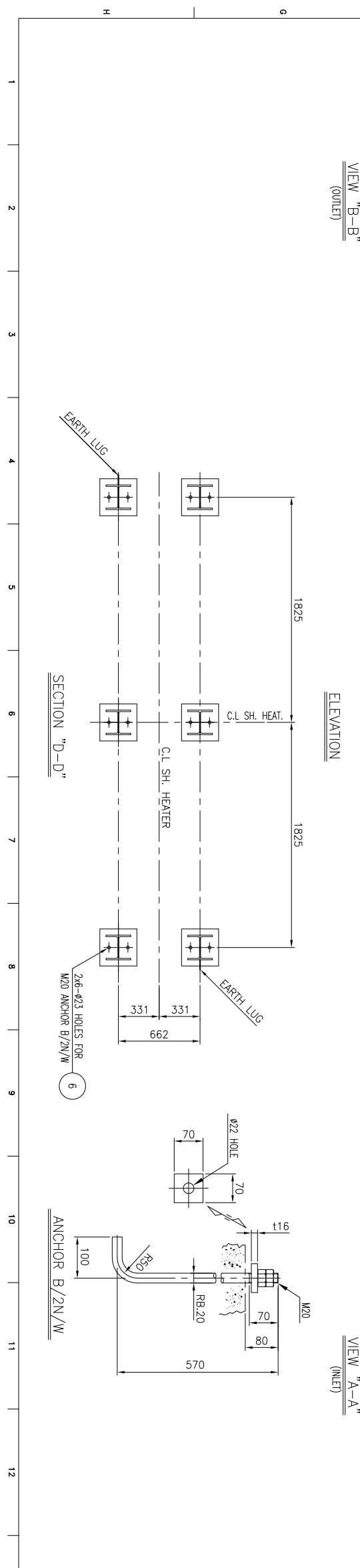
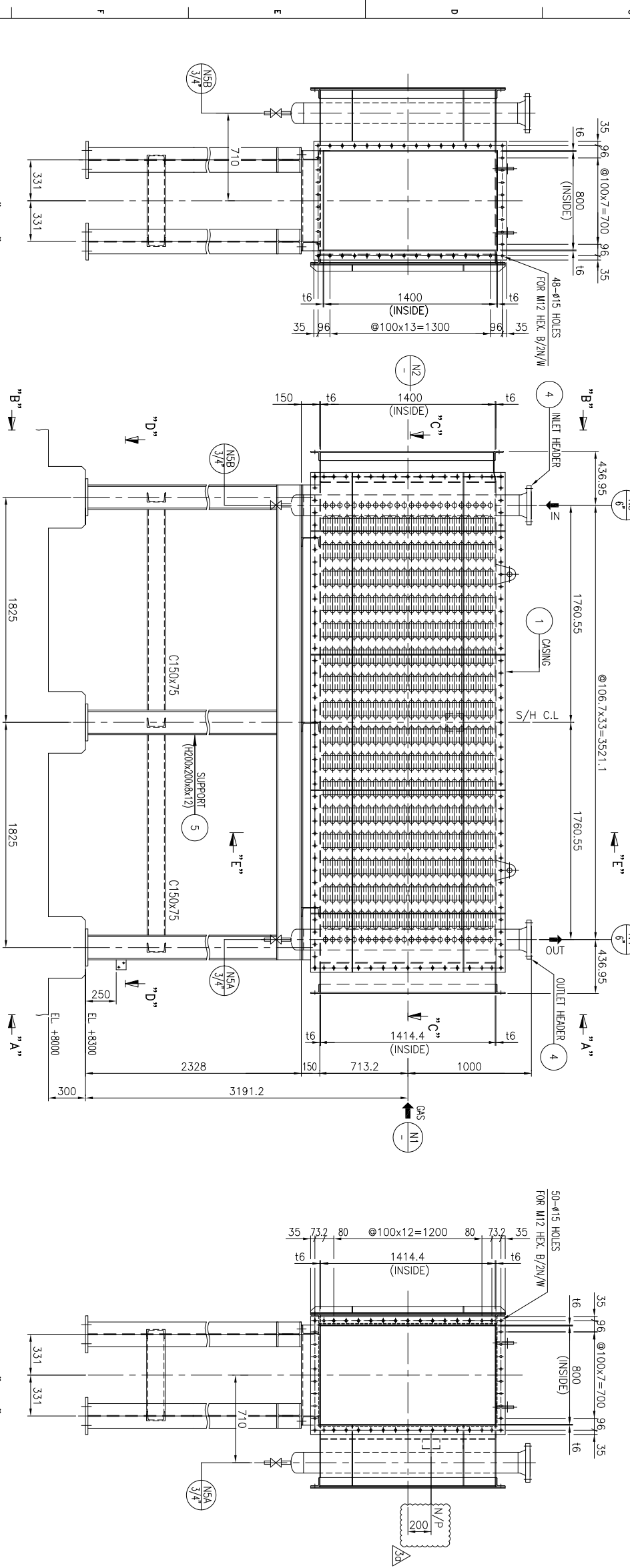
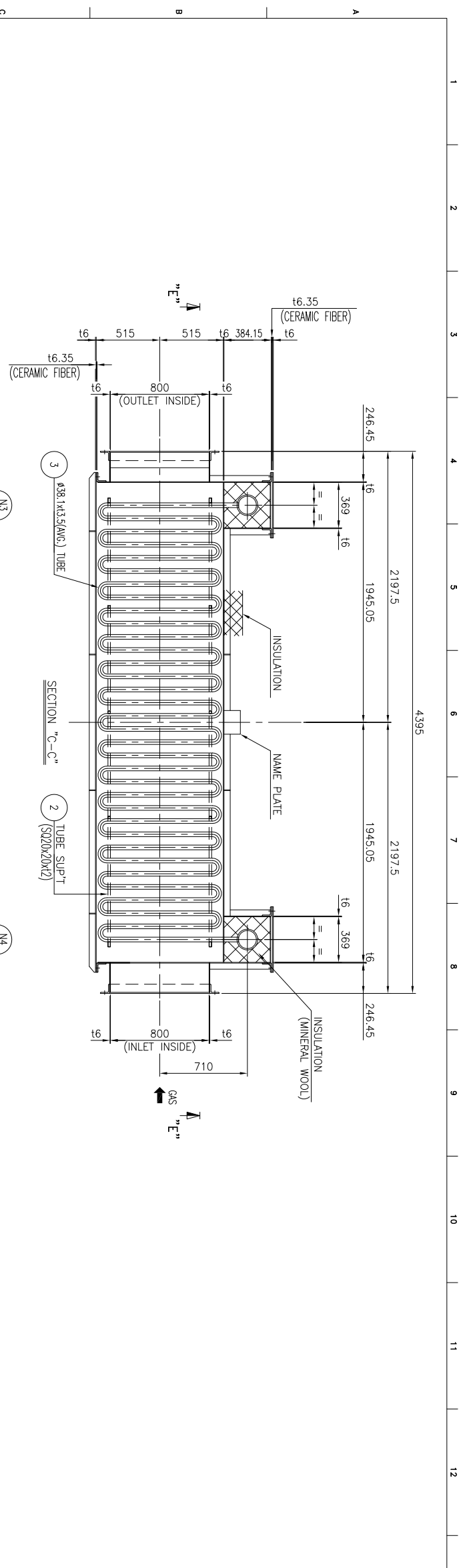
PROJECT  
GNS NONG SAENG COMBINED CYCLE POWER PLANT PROJECT

CLIENT  
GULF JP NS COMPANY LTD.

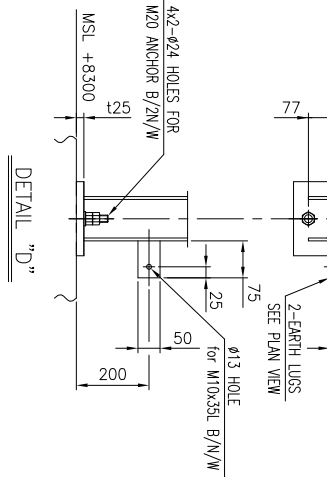
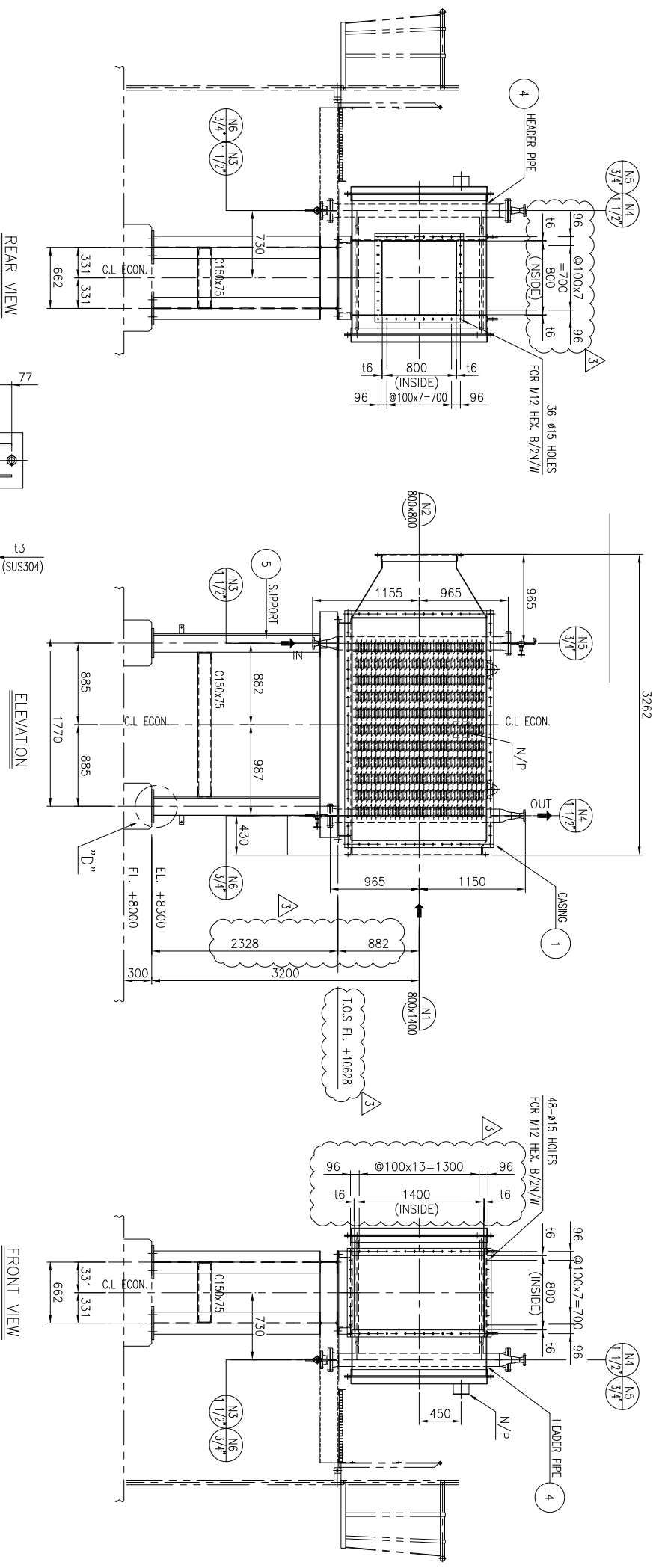
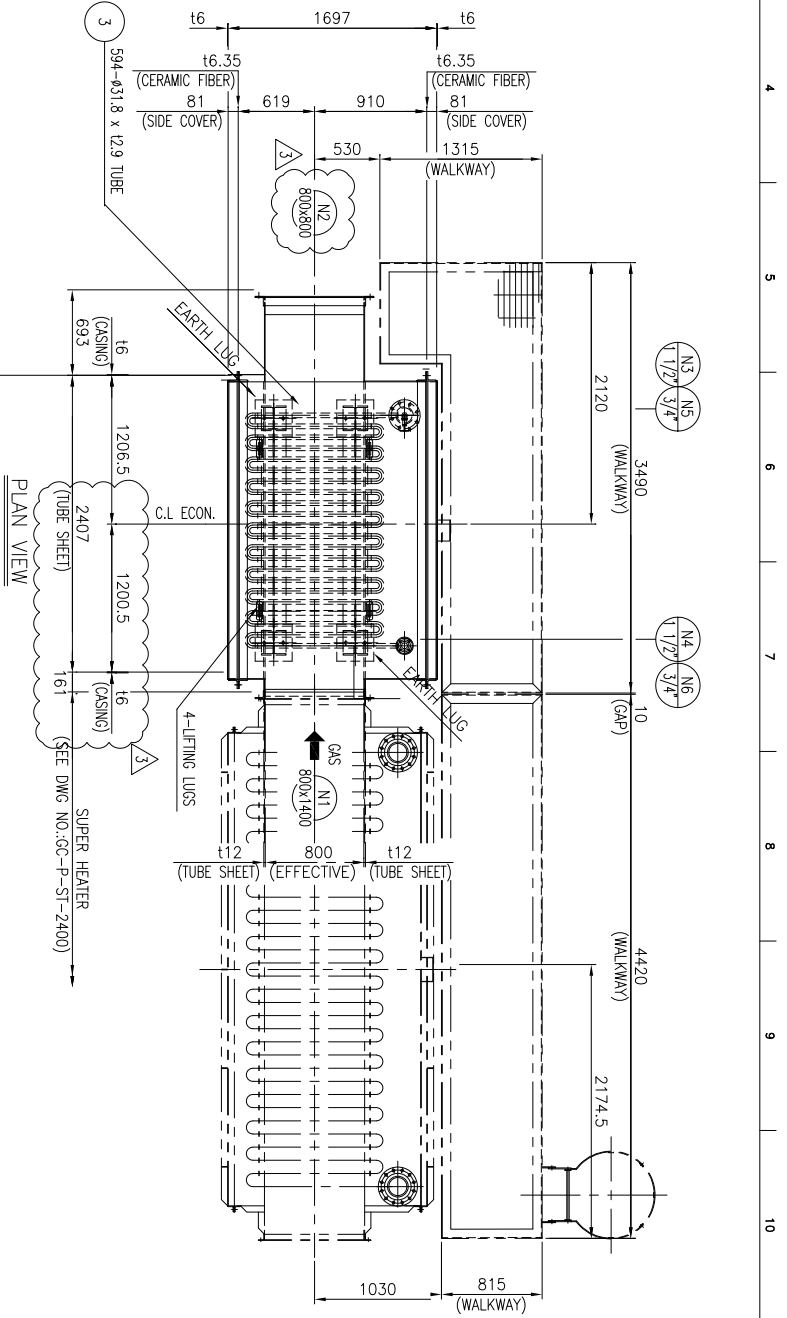
CONTRACTOR  
MITSUBISHI HEAVY INDUSTRIES, LTD.

HANIL HEAVY INDUSTRIES CO., LTD.  
HEAT TRANSFER & EQUIPMENT DIV.

JOB NO.	DWG. NO.	SCALE
GC-P-ST-2400	HHI-ECO-DWG-406	1/20



TITLE  
GENERAL ASSEMBLY DRAWING (1/2)



### DESIGN DATA

CODE	ASME SEC. I 2010 ED.	TYPE	BARE TUBE
TAG NO.	900HA01AC102	CODE STAMP	NO
	SHELL SIDE	TUBE SIDE	ERECTOR
DESIGN	450 mmH2O	1.5 MPaG	2246
OPERAT.	29 mmH2O	0.98 MPaG	2527
TEMP. (°C)	DESIGN 350	OPERAT. 300.5 / 185	FULL OF WATER 2546
	TEST PRESSURE (mmH2O)	675	
	CORR. ALLOW. (MM)	1.6	
	JOINT EFF. (S/H)	0.7	
	P.W.H.T.	NO	
	CONTENT LETHAL	NO	
	NO. OF PASS	1	

### MATERIAL SPECIFICATION

NO.	DESCRIPTION	MATERIAL	QTY	SIZE	REMARK
1	CASING	A36	1	16	
2	TUBE SHEET	A283-C	2	112	
3	TUBE	A210-A1	994	0.031 x 62.91	
4	HEADER PIPE	A106-B	2	5" SCH.80 / 1 1/2" SCH.40	
5	SUPPORT	A36	1	H200x200x8x12	
6	ANCHOR B/2N/W	A89-B7/194-20K8	8	M20-570L	

### NOZZLE SCHEDULE

NO.	QTY	SIZE	SCH.	RATING	TYPE	FACING	PAID (t)(#)	DESCRIPTION	*PROJ.
N1	1	800x1400	t6	-	-	-	-	FLUE GAS INLET	SEE DWG.
N2	1	800x800	t6	-	-	-	-	FLUE GAS OUTLET	SEE DWG.
N3	1	1 1/2"	40	ANSI 300#	W.N.R.F.	-	-	FEED WATER INLET	SEE DWG.
N4	1	1 1/2"	40	ANSI 300#	W.N.R.F.	-	-	FEED WATER OUTLET	SEE DWG.
N5	1	3/4"	80	ANSI 300#	W.N.R.F.	-	-	VENT	SEE DWG.
N6	1	3/4"	80	ANSI 300#	W.N.R.F.	-	-	DRAIN	SEE DWG.

### FOR APPROVAL

NO.	DATE	REVISION DESCRIPTION	DWG. BY	CHK'D BY	APP'D BY
1	15-JUN-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
2	20-JULY-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
3	24-OCT-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG
4	24-OCT-2012	ISSUE FOR APPROVAL	M.S.KANG	J.H.LEE	H.KANG

**CLIENT**  
GULF J P NS COMPANY LTD.

**CONTRACTOR**  
MITSUBISHI HEAVY INDUSTRIES, LTD.

**HANIL HEAVY INDUSTRIES CO., LTD.**  
HEAT TRANSFER & EQUIPMENT DIV.

**JOB NO.** GC-P-ST-2400    **DWG. NO.** HH-E00-DWG-407    **SCALE** 1/30

**TITLE** ECONOMIZER    **GENERAL ASSEMBLY DRAWING**