

PROCESS FLOW DIAGRAM

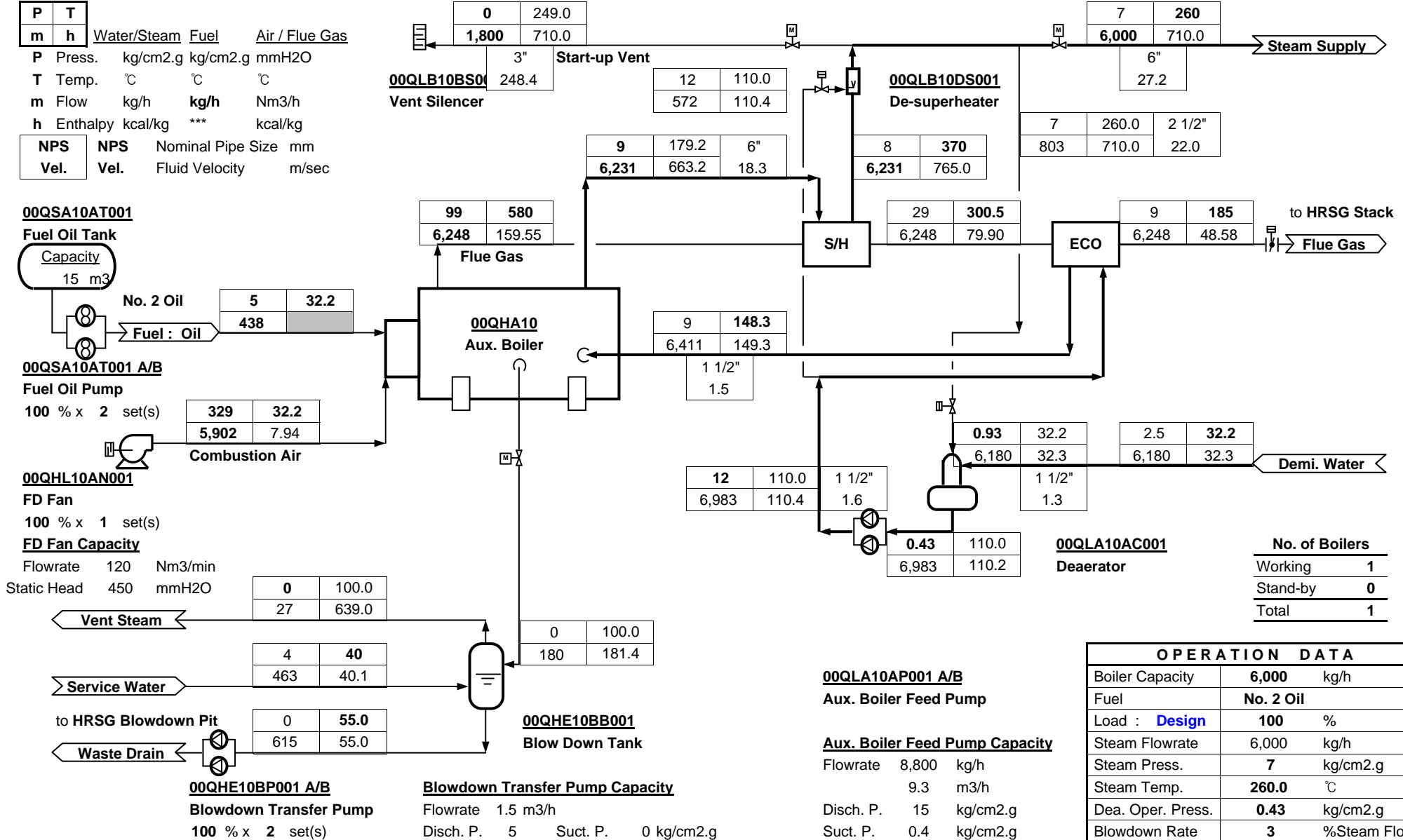
Doc. No.	PFD - FSTB - 100	
Date	2012. 3. 10.	
Revision	0	
Sheet No.	1	of 5

Project Code	Q20051150	Item No.	Later
Project	Nong Saeng Power Plant Project	Service	Auxiliary Boiler

Legend

P	T		
m	h	Water/Steam	Fuel / Air / Flue Gas
P	Press.	kg/cm2.g	kg/cm2.g mmH2O
T	Temp.	°C	°C °C
m	Flow	kg/h	kg/h Nm3/h
h	Enthalpy	kcal/kg	*** kcal/kg
NPS	NPS	Nominal Pipe Size	mm
Vel.	Vel.	Fluid Velocity	m/sec

* During Start-up



No. of Boilers	
Working	1
Stand-by	0
Total	1

OPERATION DATA	
Boiler Capacity	6,000 kg/h
Fuel	No. 2 Oil
Load : Design	100 %
Steam Flowrate	6,000 kg/h
Steam Press.	7 kg/cm2.g
Steam Temp.	260.0 °C
Dea. Oper. Press.	0.43 kg/cm2.g
Blowdown Rate	3 % Steam Flow

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Project Code	Q20051150	Item No.	Later
Project	Nong Saeng Power Plant Project	Service	Auxiliary Boiler

Legend

P	T
m	h

	Water/Steam	Fuel	Air / Flue Gas
P	Press. kg/cm2.g	kg/cm2.g	mmH2O
T	Temp. °C	°C	°C
m	Flow kg/h	kg/h	Nm3/h
h	Enthalpy kcal/kg	***	kcal/kg

00QSA10AT001 Fuel Oil Tank



No. 2 Oil	5	32.2
Fuel : Oil	348	

00QSA10AT001 A/B Fuel Oil Pump

Combustion Air	201	32.2
	4,686	7.94

00QHL10AN001 FD Fan

Vent Steam	0	100.0
	22	639.0

Vent Steam

Service Water

Service Water	4	40
	370	40.1

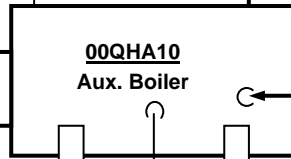
to HRSG Blowdown Pit

Waste Drain

Waste Drain	0	55.0
	492	55.0

00QHE10BP001 A/B Blowdown Transfer Pump

Flue Gas	58	530
	4,961	144.89



Flue Gas	9	179.2
	5,187	663.2

Flue Gas	11	110.0
	256	110.4

Flue Gas	9	179.2
	5,187	663.2

Flue Gas	11	110.0
	5,587	110.4

Flue Gas	0	100.0
	144	181.4

00QHE10BB001 Blow Down Tank

Flue Gas	7	260.0
	643	710.0
Flue Gas	8.36	320.0
	5,187	739.5

Flue Gas	17.0191	262.0
	4,961	69.36

00QLB10SH001 Superheater

Flue Gas	9	135.4
	5,331	136.2

00QLB10DS001 De-superheater

Flue Gas	7	260.0
	643	710.0

00QLA10AC002 Economizer

Flue Gas	5	165
	4,961	43.24

00QLA10AC001 Deaerator

Demi. Water	0.93	32.2
	4,944	32.3
Demi. Water	2.5	32.2
	4,944	32.3

00QLA10AP001 A/B Aux. Boiler Feed Pump

Demi. Water	0.43	110.0
	5,587	110.2

Steam Supply	7	260
	4,800	710.0

Steam Supply

Flue Gas	7	260.0
	643	710.0

Flue Gas	5	165
	4,961	43.24

to HRSG Stack
Flue Gas

Demi. Water	0.93	32.2
	4,944	32.3

00QLA10AC001 Deaerator

Demi. Water	2.5	32.2
	4,944	32.3

OPERATION DATA		
Boiler Capacity	6,000	kg/h
Fuel	No. 2 Oil	
Load	80	%
Steam Flowrate	4,800	kg/h
Steam Press.	7	kg/cm2.g
Steam Temp.	260	°C
Dea. Oper. Press.	0.43	kg/cm2.g
Blowdown Rate	3	%Steam Flow

No. of Boilers	
Working	1
Stand-by	0
Total	1

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Project Code	Q20051150	Item No.	Later
Project	Nong Saeng Power Plant Project	Service	Auxiliary Boiler

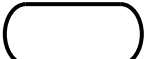
Legend

P	T
m	h

	Water/Steam	Fuel	Air / Flue Gas
P	Press. kg/cm2.g	kg/cm2.g	mmH2O
T	Temp. °C	°C	°C
m	Flow kg/h	kg/h	Nm3/h
h	Enthalpy kcal/kg	***	kcal/kg

00QSA10AT001

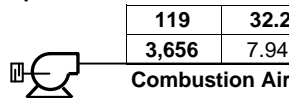
Fuel Oil Tank



No. 2 Oil	5	32.2
Fuel : Oil	260	

00QSA10AT001 A/B

Fuel Oil Pump



Combustion Air	119	32.2
	3,656	7.94

00QHL10AN001

FD Fan

Vent Steam	0	100.0
	16	639.0

Vent Steam

Service Water	4	40
	278	40.1

Service Water

to HRSG Blowdown Pit

Waste Drain	0	55.0
	369	55.0

Waste Drain

00QHE10BP001 A/B

Blowdown Transfer Pump

Flue Gas	33	475
	3,862	128.63

Flue Gas

Aux. Boiler	9	126.8
	4,143	127.4

Aux. Boiler

De-superheater	10	110.0
	47	110.4

De-superheater

Superheater	9	179.2
	4,035	663.2

Superheater

Economizer	2	147
	3,862	38.37

Economizer

Deaerator	0	100.0
	108	181.4

Deaerator

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

Steam Supply	7	260
	3,600	710.0

Steam Supply

De-superheater	7	260.0
	482	710.0

De-superheater

Superheater	8.64	276.0
	4,035	716.9

Superheater

Economizer	9.44222	230.0
	3,862	60.55

Economizer

Deaerator	0.93	32.2
	3,708	32.3

Deaerator

Aux. Boiler Feed Pump	10	110.0
	4,190	110.4

Aux. Boiler Feed Pump

Blow Down Tank	0.43	110.0
	4,190	110.2

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

De-superheater	7	260.0
	482	710.0

De-superheater

Superheater	8.64	276.0
	4,035	716.9

Superheater

Economizer	9.44222	230.0
	3,862	60.55

Economizer

Deaerator	0.93	32.2
	3,708	32.3

Deaerator

Aux. Boiler Feed Pump	10	110.0
	4,190	110.4

Aux. Boiler Feed Pump

Blow Down Tank	0.43	110.0
	4,190	110.2

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

Blow Down Tank	0	100.0
	108	181.4

Blow Down Tank

No. of Boilers	
Working	1
Stand-by	0
Total	1

OPERATION DATA		
Boiler Capacity	6,000	kg/h
Fuel	No. 2 Oil	
Load	60	%
Steam Flowrate	3,600	kg/h
Steam Press.	7	kg/cm2.g
Steam Temp.	260	°C
Dea. Oper. Press.	0.43	kg/cm2.g
Blowdown Rate	3	%Steam Flow

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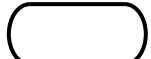
Legend

P	T
m	h

	Water/Steam	Fuel	Air / Flue Gas
P	Press. kg/cm2.g	kg/cm2.g	mmH2O
T	Temp. °C	°C	°C
m	Flow kg/h	kg/h	Nm3/h
h	Enthalpy kcal/kg	***	kcal/kg

00QSA10AT001

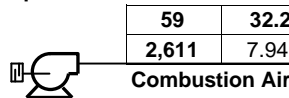
Fuel Oil Tank



No. 2 Oil	5	32.2
Fuel : Oil	171	

00QSA10AT001 A/B

Fuel Oil Pump



00QHL10AN001

FD Fan

Vent Steam	0	100.0
	11	639.0

Vent Steam

Service Water	4	40
	185	40.1

Service Water

to HRSG Blowdown Pit

Waste Drain	0	55.0
	246	55.0

Waste Drain

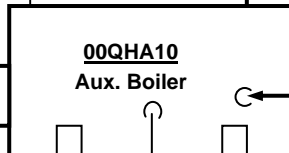
00QHE10BP001 A/B

Blowdown Transfer Pump

00QHE10BB001	0	100.0
Blow Down Tank	72	181.4

16	425
2,746	113.88

Flue Gas



9	120.5
2,800	120.9

9.5	110.0
0	110.4

9	179.2
2,728	663.2

8.84	238.0
2,728	696.9

00QLB10SH001
Superheater

4.09052	207.0
2,746	54.15

S/H

7	234.5
328	696.8

00QLB10DS001
De-superheater

7	234.5
328	696.8

Steam Supply

1	134
2,746	34.79

ECO

0.93	32.2
2,472	32.3

00QLA10AC002
Economizer

2.5	32.2
2,472	32.3

to HRSG Stack
Flue Gas

9.5	110.0
2,800	110.4

00QLA10AC001
Deaerator

0.43	110.0
2,800	110.2

00QLA10AP001 A/B
Aux. Boiler Feed Pump

0.43	110.0
2,800	110.2

Demi. Water

OPERATION DATA

Boiler Capacity	6,000	kg/h
Fuel	No. 2 Oil	
Load	40	%
Steam Flowrate	2,400	kg/h
Steam Press.	7	kg/cm2.g
Steam Temp.	234.5	°C
Dea. Oper. Press.	0.43	kg/cm2.g
Blowdown Rate	3	%Steam Flow

No. of Boilers	
Working	1
Stand-by	0
Total	1

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Project Code	Q20051150	Item No.	Later
Project	Nong Saeng Power Plant Project	Service	Auxiliary Boiler

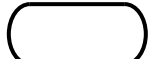
Legend

P	T
m	h

	Water/Steam	Fuel	Air / Flue Gas
P	Press. kg/cm2.g	kg/cm2.g	mmH2O
T	Temp. °C	°C	°C
m	Flow kg/h	kg/h	Nm3/h
h	Enthalpy kcal/kg	***	kcal/kg

00QSA10AT001

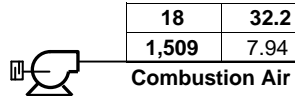
Fuel Oil Tank



No. 2 Oil	5	32.2
Fuel : Oil	86	

00QSA10AT001 A/B

Fuel Oil Pump



00QHL10AN001

FD Fan

Vent Steam	0	100.0
	5	639.0

Vent Steam

Service Water	4	40
	93	40.1

Service Water

to HRSG Blowdown Pit

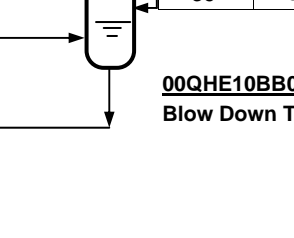
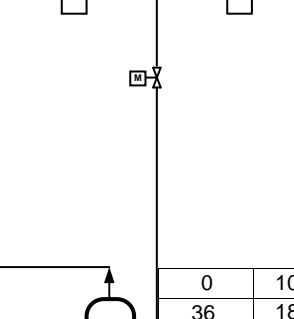
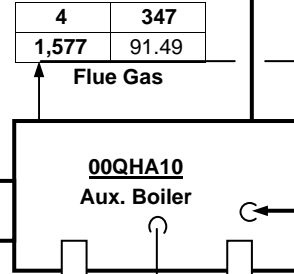
Waste Drain	0	55.0
	123	55.0

Waste Drain

00QHE10BP001 A/B

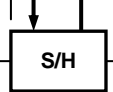
Blowdown Transfer Pump

00QHE10BB001	0	100.0
Blow Down Tank	36	181.4



	9.1	110.0
	0	110.4

	9	179.2
	1,371	663.2

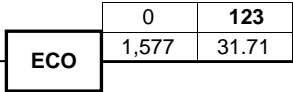


	8.96	197.0
	1,371	674.1

	7	192
	1,200	674.0

Steam Supply

	7	192.0
	171	674.0



to HRSG Stack
Flue Gas

	9.1	110.0
	1,407	110.4

	0.93	32.2
	1,236	32.3

	2.5	32.2
	1,236	32.3

Demi. Water

00QLA10AC001

Deaerator

	0.43	110.0
	1,407	110.2

00QLA10AP001 A/B

Aux. Boiler Feed Pump

OPERATION DATA		
Boiler Capacity	6,000	kg/h
Fuel	No. 2 Oil	
Load	20	%
Steam Flowrate	1,200	kg/h
Steam Press.	7	kg/cm2.g
Steam Temp.	192	°C
Dea. Oper. Press.	0.43	kg/cm2.g
Blowdown Rate	3	%Steam Flow

No. of Boilers	
Working	1
Stand-by	0
Total	1