

1.		-1
2.		-2
	2.1	-2
	2.2	-2
	2.2.1	(Block I-20) -2
	2.2.2	(Block I-17) -6
	2.3	-6
	2.3.1	
		-6
	2.3.2	
		-11
	2.4	-11
	2.4.1	-11
	2.5	-11
	2.5.1	-11
	2.5.2	-14
	2.6	-37
	2.6.1	910 : (Plant & Instrument Air and Nitrogen System) -37
	2.6.2	915 : (Flare System) -38
	2.6.3	920 : (Fuel System) -38
	2.6.4	925 : (Cooling Water System and Water Supply/Usage) -42
	2.6.5	930 : (Drainage and Effluent Treatment System) -43
	2.6.6	940 : (Steam and Condensate System) -52
	2.6.7	 (Power Supply and Emergency Power Supply System) -55
	2.6.8	950 : Sour Water (Sour Water System) -56
	2.6.9	980 : Caustic (Caistic System) -56

( )

2.6.10	935 :		-56
	(Truck Loading System)		
2.6.11	945 :	(Tankage System)	-56
2.6.12		(Road and Pavement)	-57
2.6.13		(Communication System)	-58
2.7			-58
2.7.1			-58
2.7.2			-59
2.8			-59
2.8.1		(Gaseous Waste)	-59
2.8.2		(Liquid Wastes)	-59
2.8.3		(Solid Wastes)	-59
2.9			-67
2.9.1			-67
2.9.2			-67
2.9.3			-68
2.9.4			-69
2.9.5			-69
2.9.6			-70
2.10			-70
3.			-73
3.1			-73
3.1.1			-73
3.1.2			-73
3.1.3			-73
3.1.4			-73
3.1.5			-74
3.2			-75
3.2.1			-75
3.2.2			-75
3.2.3			-75

( )

3.3		-75
	3.3.1	-75
	3.3.2	-76
	3.3.3	-76
	3.3.4	-76
	3.3.5	-76
	3.3.6	-76
3.4		-77
	3.4.1	-77
	3.4.2	-77
	3.4.3	-78
4.		-78
5.		-78
6.		-130
	6.1	-130
	6.2	-130
	6.3	-130
	6.4	-130
	6.5	-131
	6.6	-131
	6.7	-135
	6.8	-135
	6.9	-137

-1	( ) ( )	-3
-2	(Block I-20)	-5
-3	(Block I-17)	-7
-4		-9
-5	( )	-13
-6	Reformer Complex	
	( )	-15
-7	100 : Feed Fractionation	-16
-8	110 : Mercury Removal	-18
-9	130 : LPG Treating	-19
-10	150 : Heavy Naphtha Hydrotreating	-20
-11	200 : CCR Platforming	-21
-12	CCR Platformer Catalyst Regenerator	-23
-13	Aromatic Complex	-24
-14	430 : Feed Preparation	-25
-15	540 : Sulfolane	-27
-16	431 : Benzene-Toluene Fractionation No.1	-28
-17	433 : Benzene-Toluene Fractionation No.2	-29
-18	380 : PX Plus	-30
-19	432 : Xylene Fractionation	-31
-20	500 : Parex	-32
-21	320 : Isomar	-33
-22	390 : TAC 9	-34
-23	370 : Cyclohexane	-36
-24	(Flare)	-39
-25	(Fuel System)	-41
-26	(Oily Water Sewer : O.W.S.)	-45
	Block I-20	

( )

-27		(Surface Water Sewer :SWS)	
	(Surface Water Sewer :SWS)		-46
-28			
	(Closed Aromatics Drain : CAD)	Block I-17	-48
-29		Block I-20	-50
-30	(Vapor Disposal System)	Block I-20	-53
-31		Block I-17	-54
-32			-60
-33		Block I-20	-71
-34		Block I-17	-72
-35		(Block I-17)	-125
-36			
	(Block I-20)		-126
-37		(Block I-17)	-127
-38		(Block I-20)	-128
-39			-129
-40		BLEVE	LPG
	50%	100%	-138

-1				
-2		Block I-17		-8
-3			-10	-10
-4		100 : Feed Fractionation		-12
-5		430 : Feed Preparation		-17
-6		370 : Cyclohexane		-22
-7		(Flare)		-35
-8				-40
-9				-42
-10				-42
-11				-43
-12	Block I-20			-51
-13				-61
-14	US.EPA Tank 2	API		-62
-15				-63
-16				-64
-17		Condensate	Cyclohexane	-79
		( ) ( )		
		Condensate		
	Cyclohexane			-88

-18

Condensate

Cyclohexane

( ) ( )

-93

-19

Condensate

Cyclohexane

( ) ( )

-120

-20

-132

-21

Block I-20

-134

	Condensate ( )	Cyclohexane ( )
--	-------------------	--------------------

1.

	( )	( )	ATC
	31	2540	
xylene)	( Mixed-xylene)	(Benzene)	(Para-xylene)
Naphtha)	(Raffinate)	(LPG)	(Ortho- (Light
(Heavy Aromatics)			(Condensate Residue) (Hydrogen Rich Gas)

Condensate		Condensate
Cyclohexane		
Condensate		
Cyclohexane		

Condensate      Cyclohexane

. . . 2535

- 100 : Feed Fractionation
- 130 : LPG Treating  
LPG
- 430 : Feed Preparation      Oxygen Stripper
- 200 : CCR Platforming      PSA  
Cyclohexane



- 370 : Cyclohexane Cyclohexane
- Cyclohexane Heavy Naptha Heavy Aromatics  
Block I-20 Block I-17 TTT

## 2.

### 2.1

- ( ) ( ) 2 -1
- 156 I-20
- 94 I-17
- I-20 :
- : I-2 ( )
- : I-7 TUNTEX
- : ( )
- I-17 F :
- : I-2 TUNTEX
- : I-4 SSMC Dow Chemicals
- :

## 2.2

### 2.2.1 (Block I-20)

#### 2.2.1.1

- 1) 100 : Feed Fractionation
- 2) 110 : Mercury Removal
- 3) 130 : LPG Treating
- 4) 150 : Heavy Naptha Hydrotreating
- 5) 200 : CCR Platforming
- 6) 250 : CCR Catalyst Regeneration



### 2.2.1.2

- 1) 430 : Feed Preparation
- 2) 540 : Sulfolane
- 3) 431 : Benzene-Toluene Fractionation
- 4) 433 : No.2 Benzene-Toluene Fractionation
- 5) 380 : PX-Plus
- 6) 432 : Xylene Fractionation
- 7) 500 : Parex
- 8) 320 : Isomar
- 9) 390 : TAC9

### 2.2.1.3

- 1) 910 : (Air & Nitrogen System)
- 2) 915 : (Flare)
- 3) 920 : (Fuel System)
- 4) 925 : (Cooling Water & Water Supply System)
- 5) 930 : Block I-20 (Drainage & Effluent Treating System)
- 6) 940 : (Steam and Condensate System)
- 7) 950 : Sour Water Stripping System
- 8) 980 : Caustic (Caustic System)

### 2.2.1.4 ส่วนที่เป็นอาคาร ประกอบด้วย

- 1) อาคารบริหาร (Administration Building)
- 2) (Canteen)
- 3) (Workshop)
- 4) (Warehouse)
- 5) (Laboratory Building)

(Block I-20)                      Condensate                      Cyclohexane  
**-2**

- 100 : Feed Fractionation
- 130 : LPG Treating  
LPG



- 430 : Feed Preparation Oxygen Stripper
- 200 : CCR Platforming PSA
- 370 : Cyclohexane Cyclohexane

**2.2.2 (Block I-17) -3**

2.2.2.1 945 : \_\_\_\_\_ 44 5  
-1

Cyclohexane 3 Condensate Cyclohexane

- Cyclohexane Day Tank 2 785
- Cyclohexane Reprocess Tank 1 2,620
- Cyclohexane Heavy Naphtha Heavy Aromatics  
Block I-20 Block I-17 TTT

2.2.2.2 \_\_\_\_\_

930 : Block I-17  
935 : (Truck Loading System)  
: (Vapor Disposal System)  
: (Metering Station)  
: (Loading Control Center)

**2.3**

**2.3.1**

(Orthoxylene) (Mixed-Xylenes) (Benzene) (Paraxylene)  
-4 Cyclohexane (Cyclohexane)  
-2











(Condensate Residue) (LPG)	(Raffinate)	(Light Naphtha) (Heavy Aromatics) Condensate (Heavy Naphtha)	Cyclohexane <b>-2</b>
-------------------------------	-------------	---	--------------------------

**2.3.2**

Block I-17

(TTT)

**2.4**

**2.4.1**

**-3**

**2.5**

**2.5.1**

2

**-5**

2.5.1.1 \_\_\_\_\_ (Reformer Process) Reformate  
 (Benzene) (Toluene) (Xylenes) (Full Range)  
 Condensate : FRC)

2.5.1.2 \_\_\_\_\_ (Aromatics Process) (Benzene)  
 (Toluene) (Xylenes) B.T.X. (Platformate) (Reformate)

(Pyrolysis Gasoline: Pygas)











**100 : Feed Fractionation****Fired Heater**

100-H1A	Naphtha Splitter Reboiler (New)
---------	---------------------------------

**Fractionation Columns and Flash Drum**

100-V3	Naphtha Splitter Bottom Section Trays (MD Trays Recommended)
100-V5	Debutanizer Bottom Section Trays (MD Trays Recommended)
100-V7	Deethanizer Bottom Section Trays (MD Trays Recommended)
100-V11	Heavy Naphtha Flash Drum (New)

**Heat Exchangers**

Shell and Tube Exchangers	
100-E10	Deethanizer Off Gas Chiller
100-E11	Deethanizer Off Gas Steam Heater
100-E16	Debutanizer Overhead Trim Condenser (New)
100-E17	Heavy Naphtha Rundown Cooler (New)
Air Coolers	
100-EA2	Naphtha Splitter Overhead Condenser
100-EA3	Naphtha Splitter Bottoms Cooler
100-EA4	Debutanizer Overhead Condenser

**Pumps**

100-P1	Depentanizer Overhead Pumps
100-P3	Naphtha Splitter Bottoms Pumps
100-P8	Debutanizer Overhead Reflux Pumps (New)
100-P9	Heavy Naphtha Rundown Pumps (New)
100-P12	Naphtha Splitter Net Overhead Pumps (New)











(6) \_\_\_\_\_ 250 : CCR Catalyst Regeneration 200  
 200 Coke  
 CCR Catalyst Regenerating Coke  
 Coke -12

2.5.2.2 \_\_\_\_\_ (Aromatics Process) -13

(Paraxylene) (Mixed Xylenes) 4 (Benzene) (Orthoxylene)  
 Cyclohexane

(1) \_\_\_\_\_ 430 : Feed Preparation  
 (Platformate) (Reformate) 200 : CCR Platforming  
 2 (<=C7)  
 (> C8) -14

(Reformate)  
 430  
 -5

-5

### 430 : Feed Preparation

#### Fractionation Column and Receiver

430-V8	Oxygen Stripper
430-V9	Oxygen Stripper Receiver

#### Shell and Tube Exchangers

430-E12	Oxygen Stripper Feed-Bottoms Exchanger
430-E13A/B	Oxygen Stripper Reboiler
430-E14A/B	Oxygen Stripper Condenser

#### Pumps

430-P7A/B	Oxygen Stripper Overhead Pumps
430-P8A/B	Oxygen Stripper Bottoms Pumps

#### Miscellaneous

430-ME11	Desuperheater
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(2) 540 : Sulfolane (Aromatics)  
 (Light Platformate) (Solvent Extraction)  
 (Raffinate) Block I-17 (Aromatics)  
 431 : Benzene-Toluene Fractionation **-15**

(3) 431 : Benzene-Toluene Fractionation  
**-16**

(4) 433 : Benzene-Toluene Fractionation No.2  
 431 **-17**

(5) 380 : PX Plus  
 C9  
**-18**

(6) 432 : Xylene Fractionation (Heavy  
 Platformate) 430 C8  
 Fraction (Orthoxylene) (Mixed Xylenes)  
 Parex C9 (C9 Aromatics) (Heavy Aromatics)  
**-19**

(7) 500 : Parex Isomer ( )  
 ) Selective Adsorption (Adsorbent)  
 Isomer (Desorbent)  
**-20**

(8) 320 : Isomar  
**-21**

(9) 390 : TAC 9 C9 Heavy Aromatics Column(432-  
 V5) 432 ( )  
**-22**



















(10)	_____	370 : Cyclohexane			
	<b>-6</b>		Benzene	Cyclohexane	Hydrogenation
Liquid Phase	Catalyst			2	<b>-23</b>
(10.1)	<u>Reaction Section</u>			Hydrogenation	Benzene
	Phase	Cyclohexane			Liquid
		Benzene		Cyclohexane	Reactor
(10.2)	<u>Separation Section</u>				Cyclohexane

**-6**  
**370 : Cyclohexane**

**Vessels**

Drums	
370-V1	Feed Surge Drum
370-V2	Steam Drum
370-V3	HP Separator Drum
370-V4	MP Separator Drum
370-V5	LP Separator Drum
370-V6	H <sub>2</sub> Make-up KO Drum
370-V7	Catalyst Storage Drum
370-V8	Spent Catalyst Drum
370-V9	Steam Blow Down Drum
Reactors	
370-R1	Liquid Phase Reactor
370-R2	Finishing Reactor

**Heat Exchangers**

Shell and Tube Exchangers	
370-E1	Pumparound Cooler
370-E2	Boiler Feed Water Preheater
370-E3	Benzene Feed Preheater
370-E4	H <sub>2</sub> Make-up Gas Preheater
370-E5	HP Purge Cooler
370-E6	Effluent Trim Cooler
Air Coolers	
370-EA1	Effluent Cooler
Heaters	
370-H1	LD-143 Catalyst Reduction & Oxidation

**Rotating Machines**

Pumps	
370-P1	Benzene Feed Pumps
370-P2	Pumparound Pumps
370-P3	Seal Pumps
370-P4	Product Pump
370-P5	Catalyst Pumps 1 <sup>st</sup> body
Compressors	
370-C1	Make-up & Recycle Gas Compressor



## 2.6

---

- 10 1
- 1
- Substation 22 KV/6.6 KV 2  
370 PSA Package
- Loading Arms ME 22 C9 Aromatics  
Cyclohexane C9 Aromatics
- Cyclohexane 3
- Cyclohexane Heavy Naphtha Heavy Aromatics  
Block I-20 Block I-17 TTT  
(Block I-20) :

### 2.6.1 910 : (Plant & Instrument Air and Nitrogen System)

2.6.1.1 Centrifugal 3

2 1 3,200 Nm<sup>3</sup>/hr 4,500 Nm<sup>3</sup>/hr

2.6.1.2 (TIG)

( I-20) I-17

50 . .

CCR Catalyst Regeneration

Condensate Cyclohexane

แหล่งที่ใช้ไนโตรเจน	ปริมาณการใช้ (Nm <sup>3</sup> /hr)	
	ปัจจุบัน	ภายหลังดำเนินโครงการ
ก๊าซไนโตรเจน (Block I-20)	700	825
ก๊าซไนโตรเจน (Block I-17)	1000	1,100
ไนโตรเจนเหลว (CCR)	0.36	0.36

### 2.6.2 915 : (Flare System)

<b>-24</b>	(Normal Operation)	Waste Gas (Emergency)
<b>-7</b>	Knock Out Drum (915-V1)	
154	54	(1,372 . .)
Radiation 4,730 W/m <sup>2</sup> (~1500 BTU/hr.ft <sup>2</sup> )		Condensate
Cyclohexane	Dynamic Simulation	Xylene Rerun Column (432-
V7) 432 : Xylene Fractionation		
	Xylene Rerun Column Flare Radiation	<b>-7</b>

### 2.6.3 920 : (Fuel System)

<b>-25</b>	Heater 2	(Pilot)
1.	.(Sales Gas from PTT)	Pilot Gas
Pilot Detector	Pilot Flame	Pilot Flame Main Burner
2.	(Process Off-gas) 2	
2.1 Hydrogen Rich Gas	200 : CCR Platforming	
2.2 Off-gas		Methane Ethane











2.6.4.2 \_\_\_\_\_  
(The Cogeneration Public Company Limited)

2

COCO

1) \_\_\_\_\_

16,000 . . . I-20 I-17

50 . . . I-20 I-17

2) \_\_\_\_\_ COCO

(Clarified Water & Demineralized Water)  
(Cooling Water Make-up)

50%wt Caustic 10% wt Caustic

-10

-10

รายการ	( . / )	
น้ำดิบ	180	180
น้ำใช้เพื่อการอุปโภคและบริโภค	70	70
น้ำสะอาด (Clarified Water)	978	1,077
น้ำปราศจากแร่ธาตุ (Demineralized Water)	280	280

2.6.5 \_\_\_\_\_ 930 : \_\_\_\_\_ (Drainage and Effluent Treatment System)

1)

2)

2

• I-20 :

• I-17 :

2.6.5.1 \_\_\_\_\_ I-20 :

I-20 /

6

2.6.5.1(1) Closed Aromatics Drain (CAD)

I-20 CAD 10

(Reuse)

2.6.5.1(2) Oily Water Sewer (OWS) (

**-26)**

OWS

Lifting Station

I-20

CPI Oil/Water Separator

2.6.5.1(3) Surface Water Sewer(SWS) (

**-27)**

SWS

/

inlet

SWS Diversion Box(930-XC16)

I-20

Oily Water Lifting

Station (930-XC17)

CPI Oil Water Separator

2.6.5.1(4) Sanitary Sewer(SS)

Sanitary Lifting Station

(Sanitary Wastewater Treatment)

2.6.5.1(5) Clean Water Sewer (CWS)

Block I-20

2.6.5.1(6) \_\_\_\_\_

Intermediate Tank Farm

2

:

CWS

OWS

I-20

2.6.5.2 \_\_\_\_\_ I-17 :

I-17

:

**-26**



2.6.5.2(1) \_\_\_\_\_

1) Closed Aromatic Drain (CAD) ( **-28**)  
Truck Loading Sump  
Slops Rerun Tank (945-TK16 A/B) CPI Separator  
I-20 CAD

2) Accidentally Oil Contaminated Sewer (AOC)  
(Holding Basin)  
CPI Separator  
I-20

3) \_\_\_\_\_ (Sanitary Sewer : SS)  
Central Lifting Station 930 I-20

4) \_\_\_\_\_ (Clean Water Sewer : CWS)

5) \_\_\_\_\_ (Tank Bund Water) 2 :  
(CWS)  
Aromatic Drain (CAD) ( I-20) Closed

6) \_\_\_\_\_  
(Mercury Sump)  
OWS (Oily Water Sewer) CPI Separator



2.6.5.3 \_\_\_\_\_ ( -29 -11 )

80 . / .

1,920 . / :

- - (Holding Basin : 930-XC10 A/B)
  - (Lifting Station :930-XC17)
  - CPI (CPI Oil/water Separator : 930-ME1A/B)
  - (Equalization Tank :930-TK2 A/B)
  
- - DAF (Dissolved Air Flootation : DAF Unit)
  - (Aeration Tank : 930-ME12 A/B)
  - (Clarifiers : 930-ME15 A/B)
  - (Sand Filters : 930-ME17 A/B/C)
  - (Off-spec Sump : 930-XC6)
  - (Final Effluent Basin : 930-XC5)
  
- - (Sludge Conditioning)
  - (Sludge Collection Sump : 930-XC7)
  - (Thickener Vessel : 930-ME23)
  - (Sludge Holding Sump : 930-XC9)
  - (Sludge Conditioning Tank : 930-TK3)
  - (Supernatant Sump:930-XC8)
  
- - (Waste Treatment Vapor Disposal System :930-ME4)

<u>พารามิเตอร์</u>	<u>คุณภาพน้ำทิ้ง</u>	<u>ประสิทธิภาพการบำบัด</u>	<u>มาตรฐาน</u>
TSS	2.17 - 16.00 มก./ล.	87.63 - 98.35	ไม่เกิน 50
BOD	2.44 - 12.17 มก./ล.	92.93 - 99.74	ไม่เกิน 20
COD	17.79 - 88.15 มก./ล.	78.34 - 98.68	ไม่เกิน 120
Grease & oil	0 - 0.5 มก./ล.	98.88 - 100	ไม่เกิน 5.0







2.6.5.3(4) \_\_\_\_\_ (Waste Treatment Vapor Disposal System (930-ME4)) ( -30)  
 I-20 7.9 . / . 49° .

- Sump
- /
- 

2.6.5.4 \_\_\_\_\_ I-17 : \_\_\_\_\_ ( -31)

2.6.5.4 (1) \_\_\_\_\_ (Holding Basin) 25 .  
 A.O.C 25 . Overflow Weir  
 I-20

2.6.5.4 (2) \_\_\_\_\_ (Mercury Contaminated Water Treatment)  
 (945-TK17 A/B/C) 2,000 ppb  
 Sump Batch  
 50 ppb 50 ppb  
 I-20

2.6.5.4 (3) \_\_\_\_\_  
 Septic Tanks  
 (930-XC896)  
 Holding Basin Septic Tanks

## 2.6.6 940 : \_\_\_\_\_ (Steam and Condensate System)

- (High Pressure Steam ;HP) : P = 44 barg T = 400°C
- (Medium Pressure Steam ; MP) : P = 13.8 barg T = 238°C
- (Low Pressure Steam ;LP) : P = 2.8 barg T = 142°C





COCO (The Cogeneration Public Company Limited)

	(KMTA)	(KMTA)
HP รับจาก COCO	755	844
HP ผลิตใช้เองภายในพื้นที่โครงการ	446	446
<b>ปริมาณการใช้ HP รวม</b>	<b>1200</b>	<b>1,290</b>
MP รับจาก COCO	603	389
MP ผลิตใช้เองภายในพื้นที่โครงการ	551	746
<b>ปริมาณการใช้ MP รวม</b>	<b>1,140</b>	<b>1,129</b>
LP ผลิตใช้เองภายในพื้นที่โครงการ	191	205
<b>ปริมาณการใช้ LP รวม</b>	<b>191</b>	<b>205</b>

**2.6.7 (Power Supply and Emergency Power Supply System)**

2.6.7.1	(Main Power Supply System)	115 KV	COCO
(Feeder)	2		35 MVA
(Transformers)	115 KV/22 KV	2	22 KV Substation A
	22 KV/6.6 KV		(Substation B, C, D, E and F)
V			22 KV/380
			25 MWH
	27 MWH	8%	Substation
	22 KV/6.6 KV	2	370 PSA Package
2.6.7.2	(Emergency Power Supply System)		
			Shutdown Plant
	Air Compressor		Turbine Drive Compressor

**2.6.8 950 : Sour Water (Sour Water System)**

Sour Water

H<sub>2</sub>S  
NH<sub>3</sub>  
930

**2.6.9 980 : Caustic (Caustic System)**

Caustic 50% Caustic (NaOH) 10%  
NaOH Caustic (Spent  
Caustic) (Neutralized) Sour  
Water Stripper

Caustic Condensate  
Cyclohexane

CCR Catalyst Regeneration	78 ลิตร/ชม.	78 ลิตร/ชม.	ใช้ต่อเนื่อง
LPG Treating Unit	ครั้งละ 6.5 ลบ.ม. ต่อ 3 เดือน	ครั้งละ 10.5 ลบ.ม. ต่อ 3 เดือน	-
Isomar Catalyst Regeneration	ครั้งละ 40 ลบ.ม. ต่อ 5 ปี	ครั้งละ 40 ลบ.ม. ต่อ 5 ปี	-
Steam and Condensate System	เป็นครั้งคราว	เป็นครั้งคราว	-

**2.6.10 935 : (Truck Loading System)**

9 Block I-17 Loading Arms  
Cyclohexane ME 22 C9 Aromatics  
C9 Aromatics

**2.6.11 945 : (Tankage System)**

Block I-17

3

- Cone Roof with Nitrogen Blanket (CRN) 16
- Internal Floating Roof with Nitrogen Blanket (IFRN) 27
- Sphere tank 1

	Condensate		Cyclohexane	
1)	945-TK18B		FRN	Heavy
	Naphtha			
2)		Cyclohexane	3	
	•	Cyclohexane Day Tank 2		
	•	Cyclohexane Reprocess Tank 1		
3)	945-TK15 A/B		C9 Aromatics	
	Cyclohexane			
4)	LPG			
5)				
	•	Cyclohexane	6	Block I-17 TTT
	•	Cyclohexane	4	Block I-20
		Block I-17		
	•	Reprocess Cyclohexane	3	Block I-20
		Block I-17		
	•	Heavy Naphtha	6	Block I-17 TTT
	•	Heavy Aromatics	6	Block I-17 TTT

## 2.6.12 \_\_\_\_\_ (Road and Pavement)

### 2.6.12.1 \_\_\_\_\_ Block I-20 :

- 1) \_\_\_\_\_ ;
- 2) \_\_\_\_\_ (
- 3) \_\_\_\_\_ (Flare)
- 4) \_\_\_\_\_ Board Block

Oxygen Stripper      Cyclohexane      PSA























## 2.9

3 2542

### 2.9.1

ชนิดของอุปกรณ์	จำนวน (ชุด)	
	ปัจจุบัน	ภายหลังการปรับปรุงฯ
1. รองเท้านิรภัย (Safety Shoes)	530	530
2. หมวกนิรภัย/หมวกกอก (Hard Hat/ Helmet)	530	530
3. หน้ากากป้องกันสารเคมี (Chemical Respirator/Mask)	530	530
4. แว่นตานิรภัย (Safety Glasses and Goggles)	530	530

### 2.9.2 5

2.9.2.1

2.9.2.2 2

- Automatic Actuation
- Manual Operation 93

2.9.2.3 50 9.0

Safety

Building Restricted Area

2.9.2.4 2

- Automatic Actuation
  - Manual Operation Mobile
- Foam Unit

2.9.2.5 \_\_\_\_\_

1) _____	Block I-20	1	10,250 . .	
10	Block I-17	1	16,896 . .	
10				400 . . / .
	Block I-17		TOC	24,000 . .

2) \_\_\_\_\_ : 2

2.1) (Jockey Pump) : 2  
7

2.2) 3 1 2

3)

Block I-20 Block I-17

	Block I-20			Block I-17		
(Dry Chemical)						
50 . . ( )	45	1	46	21	0	21
9 . . ( )	79	6	85	15	0	15
(Foam System)						
Mobile Foam ( )	9	0	9	39	0	39
Foam Injection( )	6	0	6	44	3	47
Water Hydrant ( )	89	1	90	35	3	38

**2.9.3** \_\_\_\_\_

- Fire & Gas Mimic Display Panel
- Field Flame Detection
- Combustible Gas Detection

- Toxic Gas Detection H<sub>2</sub>S
- Manual Call Point
- Fire Water Deluge System
- Emergency Alarm System

### 2.9.4 \_\_\_\_\_

						1		
4		7	3		4			
		20		50	1		100	3
					TOC	NPC		

### 2.9.5 \_\_\_\_\_

ATC

3

- 1:
- 2:
- 3: /

- 
- 
- 
- 

#### 2.9.5.1 \_\_\_\_\_

Manual Call Point

Shift Manager

2.9.5.2 \_\_\_\_\_ 3 :

1)

2)

3)

2.9.5.3 \_\_\_\_\_

2.9.5.4 \_\_\_\_\_

- /
- 
- 
- 

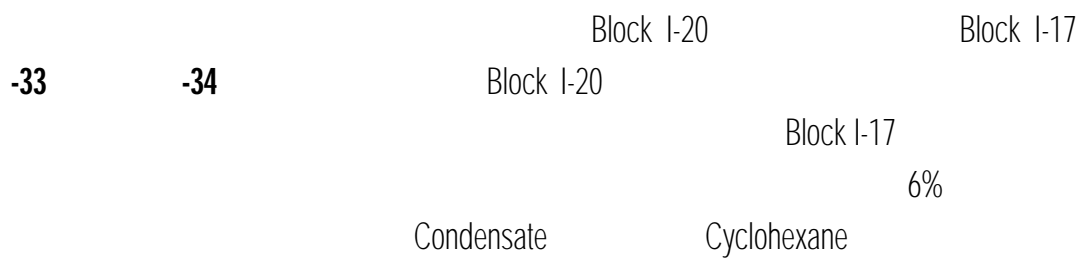
2.9.5.5 \_\_\_\_\_ :

- ATC
- 
- 
- 1

**2.9.6** \_\_\_\_\_

ATC

**2.10** \_\_\_\_\_







### 3.

#### 3.1

##### 3.1.1

##### 3.1.2

##### 3.1.3

2

6

10 . . . 2538

2540

(1-20) ,

10 . . . 2538

##### 3.1.4

3.1.4.1 \_\_\_\_\_

6

4

0.6

2  
4  
8 ( . . 2537) ( ) ( )  
2  
BOD<sub>5</sub>, COD, Grease & Oil, pH, Suspended Solid, TOC Mercury  
4

3.1.4.2 \_\_\_\_\_

Quaternary Unconsolidated Deposit of

Colluvium, Alluvium Beach Sand Aquifers

4

3.1.4.3 \_\_\_\_\_

(Class 7)

2544 2543

2543

**3.1.5**

(Block I-20) 4 ( ) ( ) (Leq. 24 .)

(Block I-17) . . 2540- 15 . . 2540

( 70 dB (A))



4 (Block I-20) 4 29 2547  
L<sub>eq</sub> 24 hr (62.4-77.7 dB (A))

### 3.2

#### 3.2.1

2546 5 74 26-28  
. . 2535

#### 3.2.2

#### 3.2.3

2543  
41 8 Categories Polychaetes, Amphioxus, Molluscs, Crustaceans,  
Echinoderms, Sipunculid, Oligochaets Echiurans 6,311 /  
*Skeletonema* SP.  
*Coscinodiscus* SP., *Rhizosolenia* SP., *Ditylum* SP., *Thalassionema* SP. *Chaetoceros* SP.

### 3.3

#### 3.3.1

( 27.04) ,  
( 23.5) ( )( 12.5)

3.3.2

3.3.3

( )

3.3.4

3

2

2547

3.3.5

3.3.6

### 3.4

3.4.1 -

3.4.1.1 \_\_\_\_\_

. . 2524

537,434 (31 2545) 147 /

295 98 419,741 / /

44.19 GPP

3.4.1.2 \_\_\_\_\_

5  
1 24,666 5,663  
( 2545) 165.59

3.4.2

3.4.2.1 \_\_\_\_\_

12 82 1 6  
9

/  
/

3.4.2.2 \_\_\_\_\_

( 525 ) ( 30 ) 19  
4

**3.4.3**

2-3

**4.**

**-16**

**5.**

**-17**

**18**

-

**-19**

**6.**

**6.1**

		Condensate	
Cyclohexane			
	Condensate	Cyclohexane	
			2544

**6.2**

- 1)
  - 2)
  - 3)
- (Probability & Consequence)

**6.3**

**6.4**

- 1)
  - 2)
  - 3)
  - 4)
  - 5)
- Safety Review, HAZOP

## 6.5

	(Process Area)	Block I-20	
6			9
Condensate	Cyclohexane		
370 : Cyclohexane			
	<b>-20</b>		
	(Tankage Area)	44	
Condensate	Cyclohexane	Cyclohexane	3
47	<b>-21</b>		

## 6.6

	( )	( )		
	(Preliminary Safety , Health and Environment Assessment)			
	HAZOP	HAZOP		
		Condensate	Cyclohexane	Safety
Review	Preliminary HAZOP	Foster Wheeler		
HAZOP Study				

- 
- 
- 
- 

200 : CCR Platforming









6.7

Handbook of Chemical Hazard Analysis Procedures

/	$4.6 \times 10^{-3}$
/	$5.0 \times 10^{-3}$

6.8

370 : Cyclohexane

200 : CCR Platforming

Rich Gas	H <sub>2</sub> Rich Gas Compressor 3	63°C	34.75 bar a	H <sub>2</sub>
----------	---	------	-------------	----------------

- |   |                   |                         |                           |
|---|-------------------|-------------------------|---------------------------|
| • | (Partial Rupture) | H <sub>2</sub> Rich Gas | 0.3041 kg/s               |
|   |                   | UFL 1                   | LFL 19.6                  |
|   | Jet Flame         |                         | (37.5 kW/m <sup>2</sup> ) |
|   | (Horizontal) 15   |                         |                           |

- |   |                 |                         |                           |
|---|-----------------|-------------------------|---------------------------|
| • | (Total Rupture) | H <sub>2</sub> Rich Gas | 7.6 kg/s                  |
|   |                 | UFL 3                   | LFL 98                    |
|   | Jet Flame       |                         | (37.5 kW/m <sup>2</sup> ) |
|   | 66.7            |                         | (Horizontal)              |

390 : TAC 9

Gas	H <sub>2</sub> Rich Gas Compressor 4	56.82°C	30.33 bar a	H <sub>2</sub> Rich
-----	---	---------	-------------	---------------------

- |   |                   |                         |                           |
|---|-------------------|-------------------------|---------------------------|
| • | (Partial Rupture) | H <sub>2</sub> Rich Gas | 0.3587 kg/s               |
|   |                   | UFL 1                   | LFL 24                    |
|   | Jet Flame         |                         | (37.5 kW/m <sup>2</sup> ) |
|   | (Horizontal) 15.6 |                         |                           |

- (Total Rupture) H<sub>2</sub> Rich Gas 8.968 kg/s  
 UFL 3.75 LFL 123.8  
 Jet Flame (37.5 kW/m<sup>2</sup>) (Horizontal)  
 72

**370 : Cyclohexane**

3 21,957  
 157.3°C 24.1 bar g

- (Partial Rupture) 7.197 kg/s  
 21,957 kg/hr 6.1 kg/s  
 6.1 kg/s 5  
 5.7 Pool Fire  
 (37.5kW/m<sup>2</sup>) 11.7  
 157.3°C

(Dense Cloud)

- (Partial Rupture) Shutdown  
 5

391 **LPG** LPG 849 . . .  
 10% 40 Condensate  
 50% 195  
 4 8 4.5 bar a

- (Partial Rupture) 8 LPG  
 1.41 kg/s LPG  
 UFL 4.5 LFL 20.44  
 LPG

LPG 19 Jet Flame LPG

- (Total Rupture)  
Classification of Hazardous Locations (1990)  
Rupture  $3 \times 10^{-7}$  100 . . .  
 $10^{-7}$  8 (203.2 . .) 300 . . . Rupture LPG

- BLEVE  
50% BLEVE LPG 50%  
(195 ) 100% (~390 )  
298 400 **-35**

Internal Floating Roof with Nitrogen Blanket Cone Roof  
with Nitrogen Blanket LPG

## 6.9

Moderate BLEVE LPG Minor  
Handbook of Chemical Hazard Analysis Procedure(1990)  
Unlikely  
**-17** **-18**