1 4

1.1 4

1.2 4

1.2.1 4

1.2.2 6

1.3 6

1.4 6

1.5 7

2 8

2.1 8

2.2 9

2.3 10

2.4 13

2.5 14

2.6 15

2.7 19

2.8 26

2.9 36

2.9.1 36

2.9.2 38

2.9.3 39

2.10 41

2.11 42

3 48

3.1 48

3.2 48

3.3 50

3.3.1 50

3.3.2 56

3.2.3 59

3.2.4 61

3.4 61

3.5 61

4 63

4.1 63

4.2 63

4.3 63

4.4 64

5 65

5.1 65

5.2 65

5.3 66

5.4 70

18

GB15618-2018

19

20

21

22 2016 12

23 GB18218-2014

1.2.2

1 40 PTPE

2 1200kta

3

1.3

1.4

1.5

1

2

3

2.1-3

2.1-3

		t/a	t/d	
60		60	2000	7200
40 PTPE		40	1333	7200

2.2

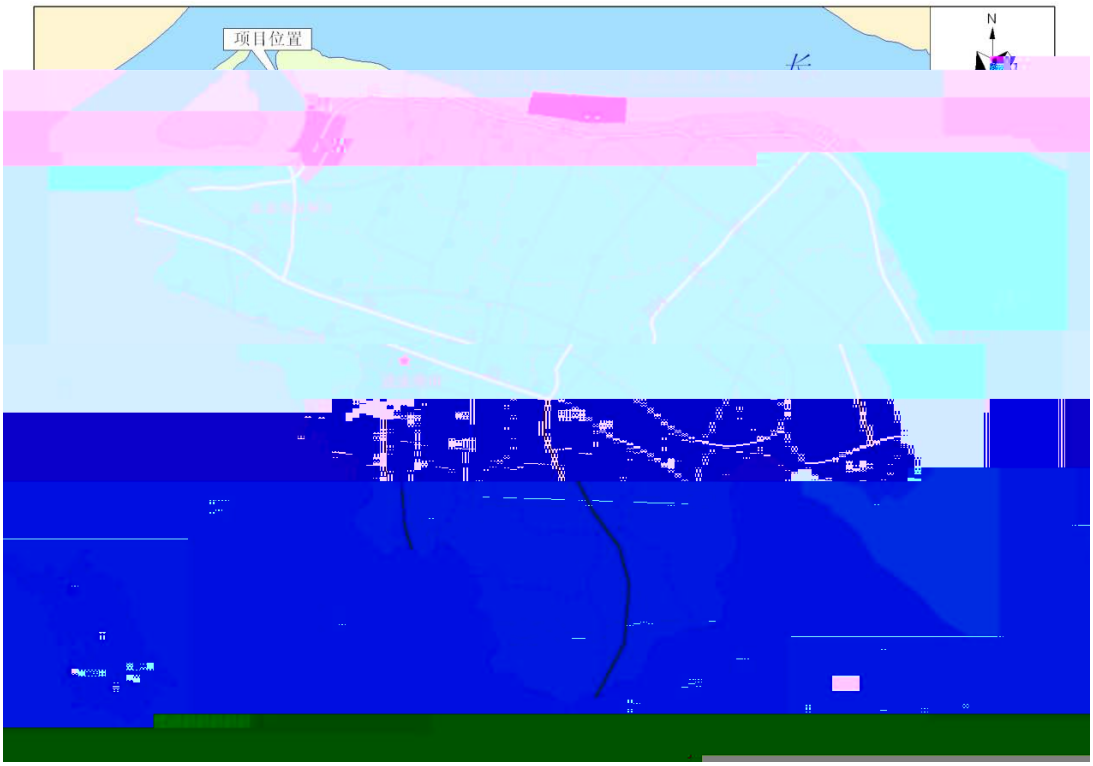
120 21 120 52 31 43 32 02

998.48 785.31 78.65

213.17 21.35 44.58

33.71 183.5

2.2-1



2.2-1

2.3

1

+2.5 +7.5

1993

1 3m 1

1 8 13m

4 5

2 3 14m

10 14

1

20 30 50

2.3-1

2.3-1

		%			%	KPa	
Ⅱ1		37.7	18	1.08	19.7	6	27
Ⅱ2		31.4	18.4	0.89	-	16	3
Ⅲ1		32	18.4	0.92	-	0.13	35

6 g=0.05g

2

15.2 38.1 -11.3

1034.3mm 4-9 71.7%

2080

3.5m/s

30.8 3 10 ~9 22

1

2.3-2

	38.1℃
	-11.3℃
	15.2℃
7	27.8℃
1	2.2℃

2

2.3-3

	1034.3mm
	1342.5mm
	345.2mm
	219.6mm
≥10mm	30.4d
≥50mm	2.8d

3

SE ESE SSE 29% SE ESE

20m/s 8 8.4d 26d

4 28.7d 66d 71h

5 30.8d 3 10

9 22

6 80% 7 8 85%

3

4h

8 12 50

6.38m 0.42m 2.93

m^3/s 9.23 m^3/s 4626m^3/s 24.5

m^3 1.5 m^3 9.45 m^3 5.12 m^3

0.12~0.16mm

4

62

36 8

5

1/20

a

8 20m 3 10m^3/d

1.5 2.5m

b

13 80m 5 10m

15m 80 90m

4 37m

c

90 101m

30 50m 1000

2000m^3/d 5 30m

100 1000m^3/d 100m^3/d

1000 2000m^3/d

50m

80m 88m

50m

d

140 150m 3 100m

500 2000m^3/d 2000m^3/d

2.4

999km 89.8 8

1 2000 24

85 11.45 7602

100% 99.5% 96.6%

43.5% 423

5366 4976 80.82 78.42

83.22

12969

36597 27548

5.84

9591 16256

69.89m

39.30m

2.5

2.2-1

2.5-1 2.5-2

2.5-1

	/m*					
	X	**Y**				**/m**
	0	1800		100	N	1800
	1900	0		140	E	2400
	2400	-1300		1410	SE	2400
	2450	-350		900	E	2450
	2500	-500		4500	SE	2400
	2100	-350		1000	SE	2425
	2150	-450		1508	SE	2480
				m		
			SW	1800	3500t/d	(GB3838-2002)
			SW	2200	20000t/d	
			NE	15000	20 t/d	(GB3838-2002)
			NE	15000	40 t/d	
			W	1700m	14.75	
			N	15.5~16.5km	4.03	

	/m*					
	X	**Y**				**/m**
			W	350m	54.40	
	200					GB3096-2008 3

X Y

2.6

2.6-1

2.6-2

2.6-1

			T	T	T			
1			82.18	2700	8.7		80000m³×2	
2			91.5	0.27	6		1t×6	
3			310	0.93	38	DMD	38m^3	
4	32%		480/PDH1500	5.94	108	2108A/	80m^3	
5			120		60		64m^3	
6			38.65	1288	1.8		3000m^3×12	
8			23.2	0.077	-		--	
9			50	0.14	5.6		--	
10			40	0.005	8		8m³	
11			60	0.0075	40		25m³	

2.6-2

						%	kPa		
C_3H_8	44	-187.6	-42	-104	0.5	9.5	53.3	-187.6 -42.1 -104	
Cl_2	70.91	-101	-34.5	--	1.47	--	506.62		LC_{50}850mg/m^3 1 ( ) 2 5mg/m^3 5 / 1 9

						%	kPa		
								( )	41 97mg/m^3 2 / 3 4 20ppm 20mg/kg(5)
$C_2H_6S_2$	94.2	-84.7	109.6	24	1.06	1.1	--	--	LC50 15,850μg/m3/2H LC50 12,300μg/m3/2H
NaOH	40	318.4	1390	--	2.12	--	0.13		
$C_{10}H_{14}$	134.22	-42.8	183.7	56	0.86	--	1.33		LD_{50}1200mg/kg( )
C_3H_6	42.08	-191.2	-47.7	-108	0.5	--	602.88		15% ×30 35 40%×20 260mg/L×4

						%	kPa		
H_2	2	-259.2	-252.8	-50	0.7	--	13.33		--
$C_6H_{15}Al$ $Al(C_2H_5)_3$	114.17	-52.5	194	-52	0.84	--	0.53		--

2.7

2.7-1　2.7-2

2.7-1

		3000　10800	2
		2200　7100	1
		2500　7200	2
		2300　7200	1
		Q=11235kg/h	1
		-	1
		Q=24.6m^3/h	1
		-	1
	1	4000　15000	1
	2	4000　15000	1
	3	4600　15500	1
	4	5100　15800	1
	1	300000kg/h	1
	2	300000kg/h	1
	3	300000kg/h	1
	4	301000kg/h	1
		2500　6800	1
			1
		3000　9000	1
			4
			2
			1
			1
			1
		3000　9000	1
		2000　3900	1
		1300　3500	1
		1100　3500	1
		1500　2900	1

		Q=349233Nm^3/h 13879kW	1
	/	Q=349233Nm^3/h 14342/16825kW	1
		Q=30.8m^3/h H=20m	1
		Q=30.9m^3/h H=192m	1
		Q=77.88m^3/h H=30m	2
		Q=96.4m^3/h H=37.7m	2
		Q=62.5m^3/h H=29.4m	1
		Q=1030m^3/h H=111.4m	2
		Q=0.037m^3/h H=66.87m	3
		Q=2.54m^3/h H=30.05m	1
		Q=1.0m^3/h H=104.99m	2
		5900 5100	1
		6000 9300	2
		1200 3000	1
		1400 2900	1
		DN3800 4200 /12700 8200	1
			1
			1
			1
		1200 2400	1
		2500 2570	1
		2590 8030	1
		273 385	1
		3200 6400	1
	2	1130 964	1
	5	1000 1860	1
	1	1600 3100	1
	1	1100 1670	1
	2	1600 3100	1
	2	1100 1670	1
	3	1600 3100	1
	3	1100 1670	1
	4	2700 6100	1
	4	1000 1860	1
	1	1130 964	1
		1500 3400	1

			1
			1
			1
			1
	2		1
	3		1
	4		1
			1
			1
			1
	CCR		1
			1
			1
			1
		: 59059m^3/h	1
		: 86942m^3/h	1
		: 95112m^3/h	1
		: 2919m^3/h	1
		: 351m^3/h	1
			1
			1
			8
		2400 8060	2
		2500 3000	1
		2000 2600	1
		1500 2350	1
		3920 7500	1
			3
			1
			1
			6
	SHP	2350 6300	1
	SHP	Q=280Nm^3/h	2
	SHP		1
			2
	SHP		1
	SHP		1
		4800 14400	1
		9300 7300	1

	1	5300 34600	1
	2	2300 46100	1
		500 6000	1
			1
			1
		1800/3800 25100	1
		7000 462000	1
		1900 5700	1
	1		1
	2		1
			1
			2
			1
			1
			1
			2
			1
			1
			1
	/		4
			1
			1
			1
		Q=1360m^3/h	2
	1	Q=78.33/h	2
		Q 114m^3/h	2
		Q 1151m^3/h	2
		Q 338m^3/h	2
		Q 485m^3/h	2
		Q 7.29m^3/h	1
		Q 171m^3/h	2
		Q=0.813m^3/h	2
	-	9700 96400	1
	1		1
		Q=14841Nm^3/h	1
		31000Kw Q=1254820Nm3/h	1
		DN1600 H=6000	1
	PSA H2	DN2400 H=8000	10

		DN2400 H=10000	2
		DN3200 H=12000	2
		Q=27850Nm^3/h	2
		Q=10910Nm^3/h	2
		1000 3700	1
		2400 6000	1
			1
			1
		Q=140m^3/h	2
		Q=50Nm^3/min	3
		Q=50Nm3/min	2
		5000 15000	2
		4000 15000	1
		100t/h	2
		Q=82718m^3/h	1
		Q=138146m^3/h	1
		Q=185m^3/h	2
			1
		Q=160m^3/h	2
		DN200	4
		Q=230--280m^3/h	3
		Q=140m^3/h	4
		V=200m^3	2
		Q=160m^3/h	2
		Q=150m^3/h	2
			1
		1.1MPa	1
		V=12400m^3	2
			8
		Q=8000m^3/h	4
		Q=6600m^3/h	2
		Q=4000m^3/h	1
			2

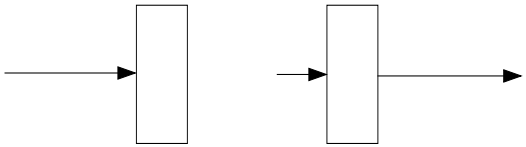
			1
		Q=50m^3/h	3
		Q=20m^3/h	2
			2
			1
	1	Q=3m^3/h	2
	2	Q=3m^3/h	2
	3	Q=3m^3/h	2
		Q=10m^3/h	2
		Q=90m^3/h	3
		Q=4960~7440m^3/h	3
		300m^3 7500 7500	2
		300m^3 7500 7500	1
		80m^3 4500 5400	1
		100m^3 5200 5200	1
		8m^3 1800 2500	1
		1000 12000 16mm	1
		1200 15168(H) 8mm	1
		Q=1.75m^3/h;H=3.5MPa	2
		Q=5.5m^3/h;H=0.5MPa	2
		Q=200L/h	2
		Q=2.0m^3/h;H=40m	2
		Q=4.0m^3/h H=50m	2
			2
		450 9600 6mm	1
		470 9600 4mm	1
		510 9600 4mm	1
		420 9600 4mm	1
		700 4500 6mm	1
		700 4500 6mm	1
		800 4500 6mm	1
		800 1000	1
		1000 1000	1
		800 1000	1
		1.0m^3/h	1

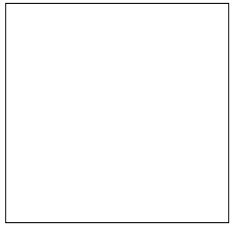
		80 m^3/ h	1
		80 m^3/ h	1
		80 m^3/ h	1
		1.0m^3/h	1
		1.0-3.0m^3/h	1
		1.0-3.0m^3/h	2
		2m	1
		1.5m^3/h	1
		DN500	1
		1800 3.8m^3	1
		DN300	1
		2m^3	1
			2
		DN300 68m	1
			2

2.7-2

	T2	30 0.012MPa G	
	T2	30 0.245MPa G	
		30 0.434MPa G	
		30 0.067MPa G	
		Q=0.08~1.36m^3/h	
		Q=22~68m^3/h	
		40 2.10MPa G	
		40 2.07MPa G	
		20 MD	
		BEM φ1300×8500 2284 φ=19 mm 2mm	
		BKU φ600×2000 342 φ=19 mm 2mm	
		BEU φ700×9500 534 φ=19 mm 2mm	
		Q=103.6~174m^3/h	
		V=0.623m^3	
		V=0.227m^3	
		V=0.804m^3	

		V=4.36m^3	
		V=4.2m^3	
		3.18MPa(G) 68	
		BEM ID2019×12802 2094 OD=25.4 mm 1.65mm	
		BEM ID1000×3000 739 OD=25 mm 2.5mm	
		Q=0.013~1728m3/h	
		1865~4250kW	
		0.0173-0.117MPa(G) 65	
		ID2000/2470×27128/5240(T/T) 65 BEU ID1300×3000	





1

Oleflex 2

24

W1

C4 C4

C4 PSA

C4

S1

S2 S3

W1

2

4 4

4 4

600-650°C 4

DMDS

DMDS

G1

3

S4

HCl H_2S

H_2S DMDS

H_2S SHP

H_2S

S4

S5 S6 W2

4

H_2S

C3

C3

(SHP)

S7

SHP

-

-

-

5

1# 3#

4# 4# 1#

1#

1# 4#

4# 4#

HCl Cl_2 SO_2

2#

C O

S8 G2 W3

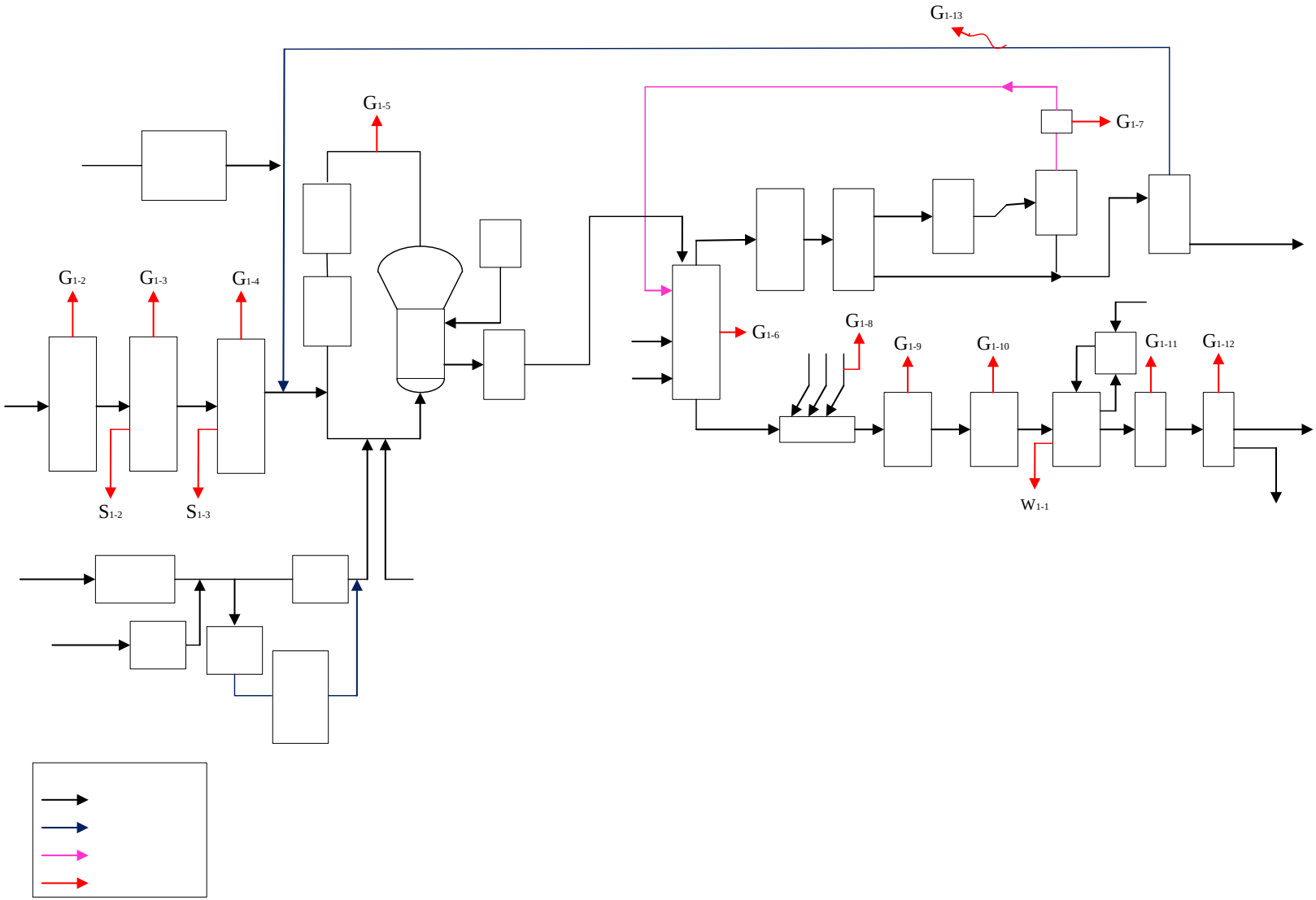
6

. 1

7

PSA

S9


G1-13
G1-5
G1-7
G1-2
G1-3
G1-4
G1-6
G1-8
G1-9
G1-10
G1-11
G1-12
S1-2
S1-3
W1-1

G2-5

3

G2-6

-30

464.73kg/h G2-7

4

Unipol

G2-8

G2-9

G4

G2 G1-2 G2-2 G3-2

C1~C2 TVOC

G8 G1-8 G2-8 G3-8

15

G9 G1-9 G2-9 G3-9

15

G11 G1-11 G2-11 G3-11

15

G12 G1-12 G2-12 G3-12

15

90%

99% 90%

90%

0.05

TVOC 99.5%

NO_X 120mg/m^3

NO_X 120mg/m^3

G1 G2-1 G3-1 TVOC

TVOC N_2

G3 G1-3 G2-3 G3-3

TVOC N_2

G4 G1-4 G2-4 G3-4

TVOC N_2

G5 G1-5 G2-5 G3-5

C3 TVOC N_2

G5’ G5’-3 C3

TVOC N_2

G6 G1-6 G2-6 G3-6

96% N_2 TVOC

G7 G1-7 G2-7 G3-7

80.76% 16.59% 1.81%

0.62% 0.14% 0.08%

G10 G1-10 G2-10 G3-10

96%

G13 G1-13 G2-13 G3-13

TVOC

2.9.2

W2 W1

W3 W2 W1 W3

2.9.3

1

GB18597-2001

GB18599-2001

1.0×10^{-7}cm/s 1.5m

2mm $\leq10^{-10}$cm/s

2

2.8-1 2.8-2 2.8-3 2.8-4

2.9-3

					*
		53612.1	0	53612.1	53612.1
	COD	20.34	0	20.34	4.29
	SS	8.49	0	8.49	3.75
	NH3-N	0.41	0	0.41	0.41
	TP	0.05	0	0.05	0.05
		4.81	3.98	0.83	0.27
	SO2	10.33	8.09	/	2.24
	NOx	223.72	0	/	223.72
		11.192	0	/	11.192
	HCl	6.4	6.208	/	0.192
	Cl2	0.5	0.45	/	0.05
	H_2S	0.08	0.04	/	0.04
		3208	3208	/	0
		40	40	/	0

2.9-4

			23125	0	23125	23125
		COD	6.61	4.76	6.49	1.85
		SS	6.6	6.3	0.3	0.3
			1.49	1.301	0.27	0.189
			0.34	0.151	0.25	0.189
			0.038	0.028	0.01	0.01
			732	717.36	-	14.64
		TVOC	3.345	0	-	3.345
		NO_x	25.02	0	-	25.02
			6.36	6.36	-	0
			20	20	-	0
			26.36	26.36	-	0

2.10

2.10-1

2.10-1

t/a

		t/a	**COD**	**SS**			**BOD_5**	
1		22345	1.7876	1.5641	0.1114	0.0111		0.1117
2		652	0.26	0.13	0	0		
3		600	0.24	0.12	0.021	0.0048		
4		125	0.05	0.025	0.0025	0.0003		
5		72	0.048	0.036	0.003	0.0003		
		23794	2.3856	1.8751	0.1379	0.0165		0.1117

2.11

-

GB50160-2008

1

70 100

20 50

2

3 0.4

4 2 2 0.4

5m

GB50160-2008

35 8

0.4D

GB50016-2006 GB50160-2008

0.4

1

DCS DCS

DCS

DCS SIS

DCS SIS UPS UPS

30

2

DCS

IP54

HART

DCS

1

2

3

4

5

DCS

6

GB50160-2008

660 / ,

1.0

3 6

2 14500 48

/

DN600

15

SS150

60 120

GB50160-2008

GB50016-2006

GB50058-1992

DCS

ABC

1

2

3

4 DCS

DCS

DCS DCS

DCS

DCS

5

6

7

8

9

10

11

12

13

3

3.1

1

2

3.2

3.2-1

3.2-1

		-187.6℃ -42.1℃ -104℃	
		( )	LC_{50}850mg/m^3 1 ( ) 2 5mg/m^3 5 / 1 9 41 97mg/m^3 2 / 3 4 20ppm

			20mg/kg(5)
		--	LC50 15,850μg/m^3/2H LC50 12,300 /m^3/2H
	32%NaOH		
			LD_{50}1200mg/kg( )
			15% ×30 35 40%×20 260mg/L×4
			--
			--
			LD50 900mg/kg LC50 8300mg/m^3
			LD50 2140mg/kg LC50 510mg/m^3 2 320mg/m^3 2
			HW49 900-041-49
		Cu	HW29 900-022-29
		SiO_2 Al_2O_3	HW49 900-041-49
			HW06 900-404-06

		Al_2O_3	HW49 900-041-49
		Al_2O_3	HW49 900-041-49
		Al_2O_3	HW50 251-016-50
		Al_2O_3	HW50 251-016-50
			HW49 900-041-49
			HW49 900-041-49
		Al_2O_3	HW49 900-041-49
			54
			HW13 900-015-13
		-	99

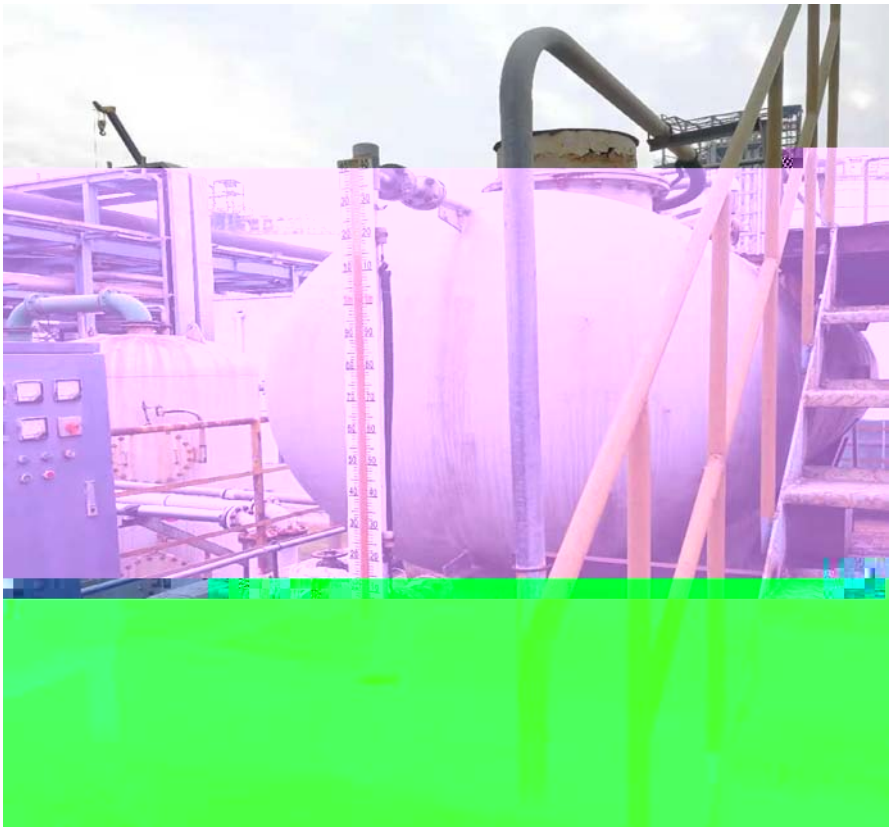
3.3

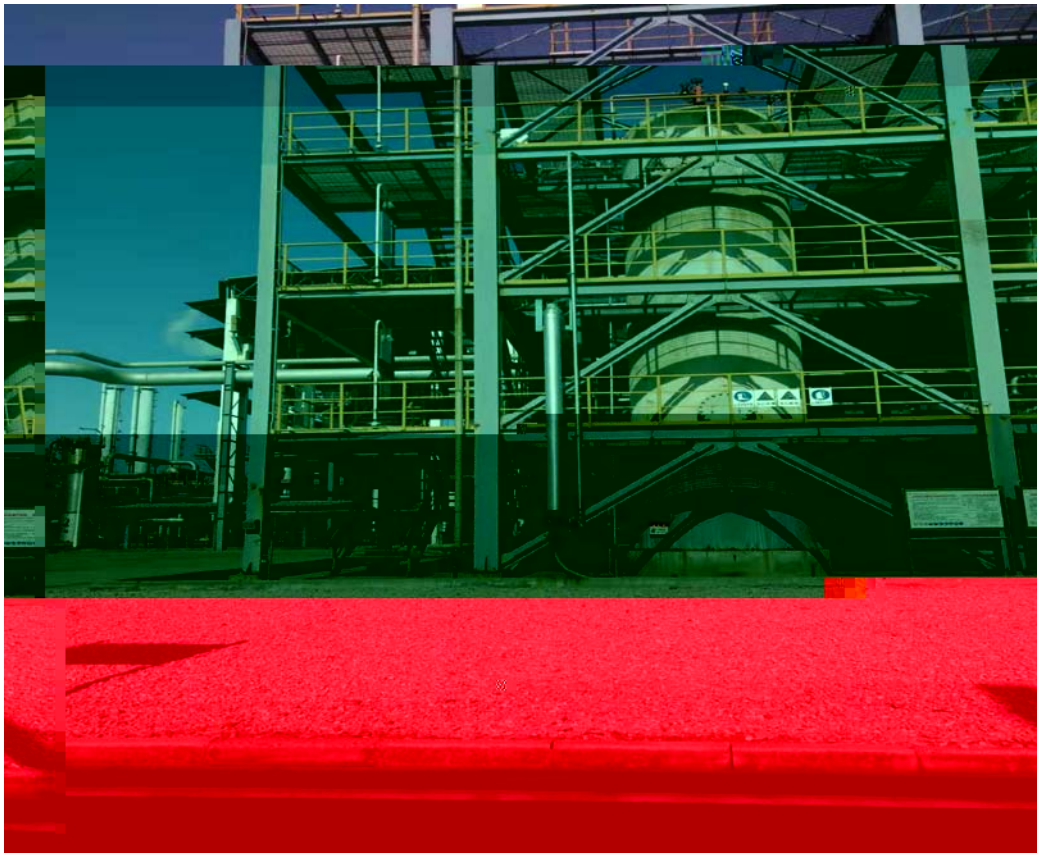
3.3.1

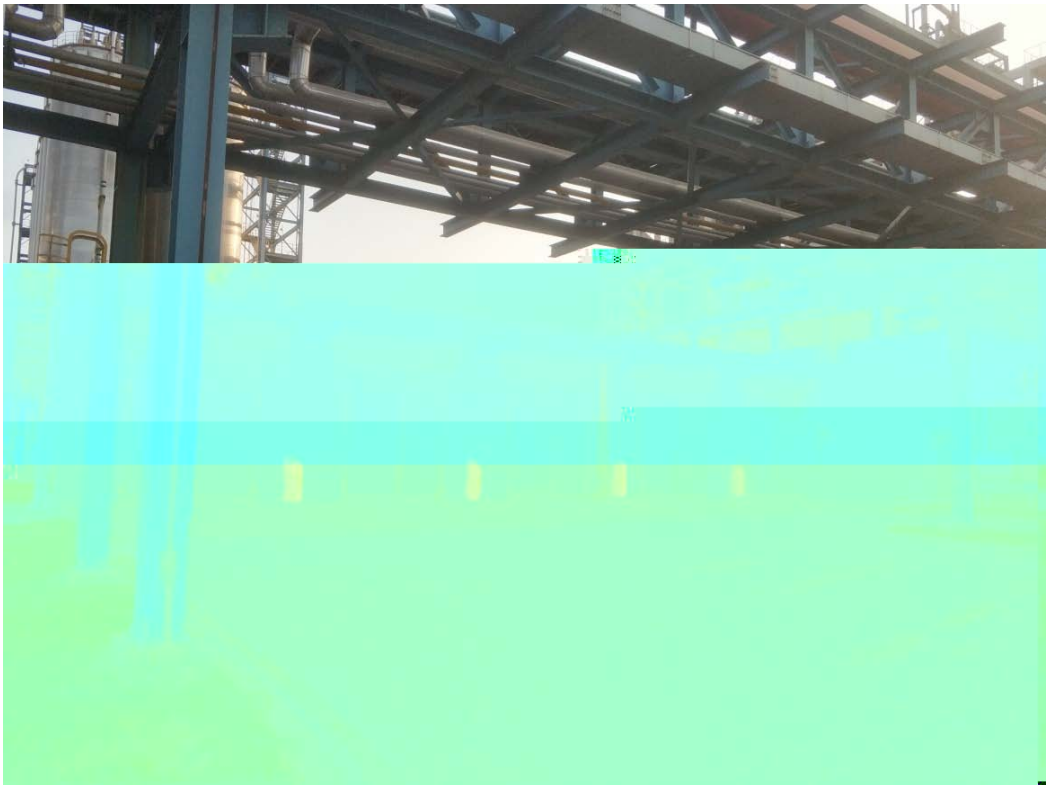
3.3-1

		/					
				--			
	Q245R/			--			

( )							
(PDH)	Q245R/			--			
	Q345R			--			
				--			
	Q345R/PE			--			







2.7m

3.3.2

1

1

2

3

3.3-2

	/			/		

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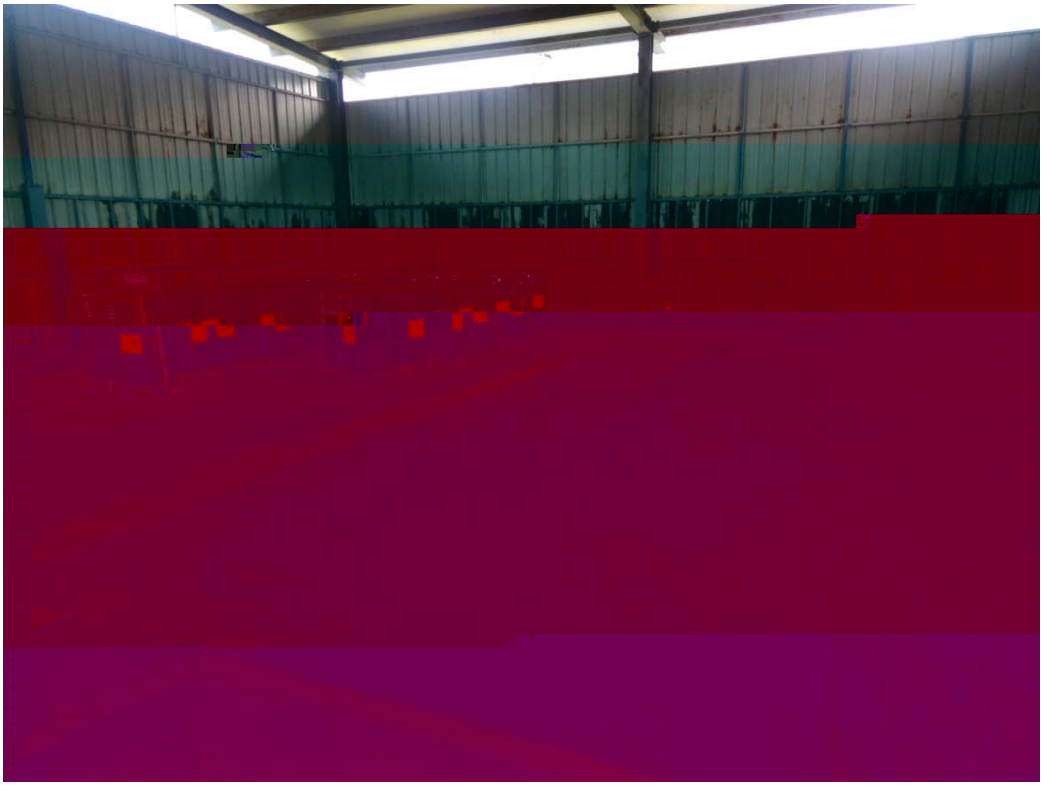


3.3.3

3.3.3.1

W2 W1

W3 W2 W1 W3

1

2

3.3-3

	/					
	---	---	---			

3.3.3.2

2.8.1

15

10% NaOH

70

3.3.3.3

3.3.4

3.3.4.1

3.3.4.2

3.4

1

2

3

3.5

1

2

3

4

5

6

1 pH VOCs SVOC

2 VOCs

3 pH

4

4.1

4.2

1

2

3

4.3

1

2

3

4.4

1

1

2

3

4

5

6

1

2

3

4

2

5

5.1

1-2 2-3

403330

T10 5-1 5-2

2019 11 25

0.2m

10

0-20cm

5.2

1

4

3 2019 12 6 12 9

12 10 5-1 5-2

1 1.5m

2

3

4 1m

3

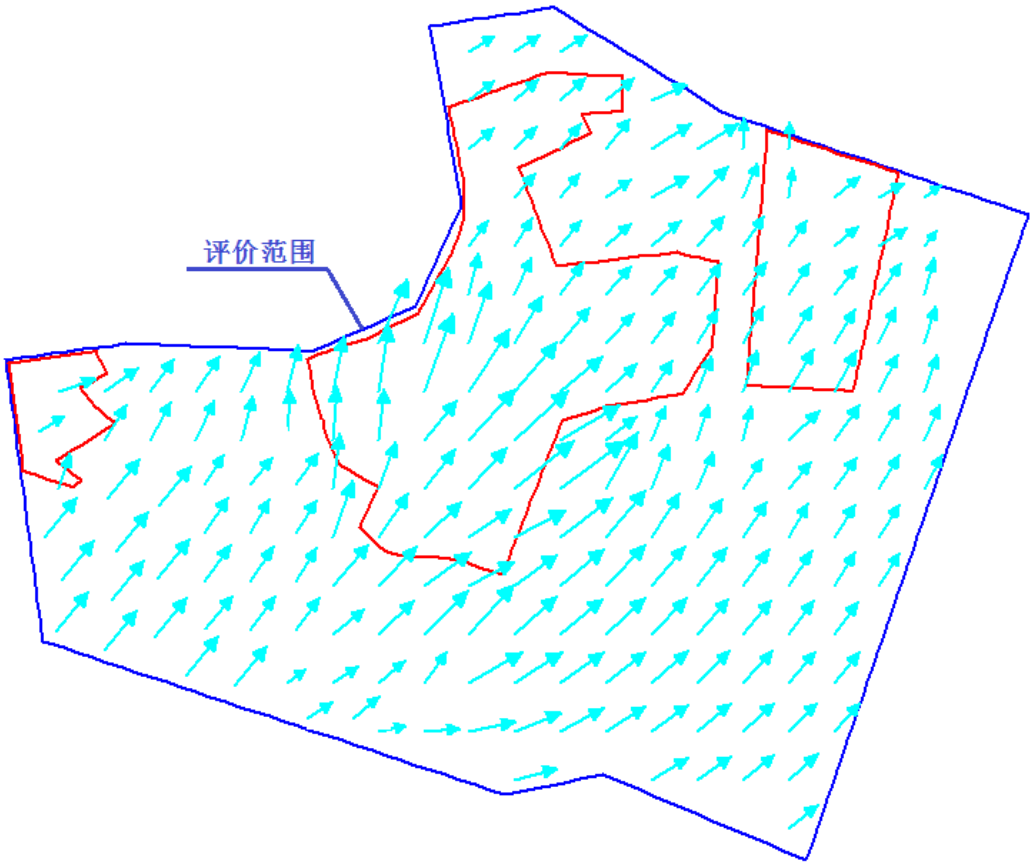
1

2

3

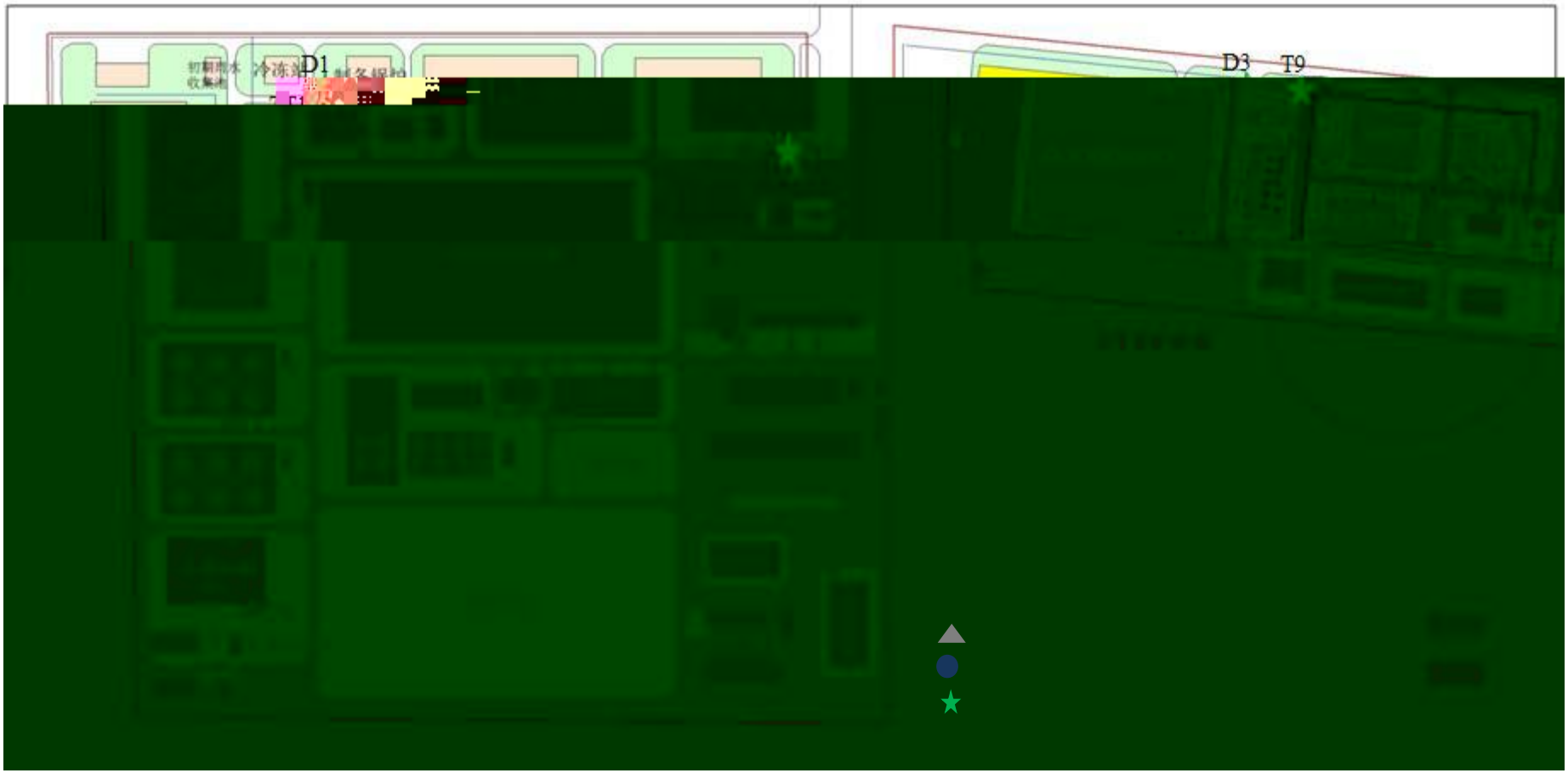
4

3



5-3

5-1



5-2

5.4

1 pH

1,1- 1,2- 1,1- -1,2-

-1,2- 1,2- 1,1,1,2- 1,1,2,2-

1,1,1- 1,1,2- 1,2,3-

1,2- 1,4- +

2- [a] [a] [b]

[k] [a,h] [1,2,3-cd]

2 VOCs

3 K^++Na^+ Ca^{2+} Mg^{2+} CO_3^{2-} HCO_3^- Cl^- SO_4^{2-}

pH

5.5

5.5--1

		m		
	10	0.2	10	17
	4	1.0m	4	
	3	6	3	

5.6

“ ”

PTFE 10ml

5.7

CMA

5.8 QA/QC

1

2 10%

3

5.9 QA/QC

1 CNAL/AC01:2006

2

3 /

6

6.1

6.1.1

GB36600-2018

GB50137 R

A33 A5 A6

G1 GB 50137

M W

B S U

A A33 A5 A6 G G1

6.1.2

10 10

6.1-1

GB36600-2018 1,4-

1,2- a k a 1,2,3-cd

6.1-1 **mg/kg**

	mg/kg	**mg/kg**			
	(0-0.2m)	**(0-0.2m)**			
	29	24 21	18000	0	0
	45	34	900	0	0
	40.7	25.2	800	0	0
	1.13	0.75	65	0	0
	0.646	0.304	38	0	0
	3.59	3.08	60	0	0
	0.0576	ND	270	0	0
1,4-	0.192	ND	20	0	0
1,2-	3.02	ND	560	0	0
a	0.1	ND	15	0	0
	0.2	ND	1293	0	0
k	0.1	ND	151	0	0
a	0.1	ND	1.5	0	0
1,2,3-cd	0.1	ND	15	0	0
C_{10}-C_{40}	1110	31 29	4500	0	0

6.1.3

4 4

6.1-2

32 1.2-

DB11/T 1278—2015 B

6.1-2

		3	3	3		%
1		2	ND	/	0	0
2		12.4	2.2	/	0	0
3		1.3	ND	/	0	0
4		2	ND	/	0	0
5		126	21.2	/	0	0
6		5.4	2.4		0	0
7		172	53.8	/	0	0
8		372	190	/	0	0
9	1,2-	1.6	ND	/	0	0
10	2- -	1.3	ND	/	0	0
11		41.3	12.1	/	0	0
12	1,1-	12.2	1.1	/	0	0
13		36.4	10	/	0	0
14		48.1	13.3	/	0	0
15		2.3	ND	/	0	0
16		77.9	18	1132	0	0
17		4.9	0.6	/	0	0
18	1,2-	19.1	2.6	5788	0	0
19		3.2	ND	3946	0	0
20		1.4	ND	1002	0	0
21	1,2-	5.9	ND	/	0	0
22		0.7	ND	/	0	0

23	4- -2-	7.1	1.8	/	0	0
24		56.2	11.3	/	0	0
25	1,1,2-	2.3	ND	/	0	0
26		182	29	14446	0	0
27		7.7	1	/	0	0
28	/	18	1.4	/	0	0
29		7	1.2	/	0	0
30		5.3	0.8	/	0	0
31	1,2,4-	1.3	ND	/	0	0
32	1,4-	2.7	ND	/	0	0

6.2

6.2.1

GB/T14848-2017

6.2.2

3 3

D14

6.2-1 6.2-2 D1 D2

D3 D3 D3

6.2-2 mg/L

	$K+Na^{+}$	Ca^{2+}	Mg^{2+}	CO_3^{2-}	HCO_3^{-}
D1	33.55	169	28.0	ND	812
D2	24.32	175	30.2	ND	581
D3	55.86	279	36.0	ND	746

7

7.1

17 10 4 3

1,4- 1,2-

a k a 1,2,3-cd

32

1.2-

DB11/T 1278—2015 B

D1 D2 D3 D3 D3

D1 D2 D3 D3

D3

7.2

7.3