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[2006] 3 [2013] 63

[2015] 80

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[2016] 88 [2019] 2 2019

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[2005] 20

[2012] 44

[2013] 63

[2015] 80 2015 7 1

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[2016]11 2016 10 5

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[2011]142

2011 7 1

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[2023] 74 2023 5 5

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[2017]121 2017 11 13

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2014 116 2014 11 13

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> 2021 12 2021 12 31

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[2013] 3 2013 1 15

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180 [2018] 324 2018

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17 [2011]

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[2017] 311 [2021] 341

2021 5 18

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45 GBZ/T230-2010

46 GB/T3608-2008

47 GBZ1-2010

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1 GBZ 2.1-2019/XG1-2022

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GBZ2.2-2007

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GB/T50493-2019

51 GB55036-2022

52 GB50974-2014

53 GB50140-2005

54 GB15630-1995

55 1 GB4053.1-2009

56 2 GB4053.2-2009

57 3

GB4053.3-2009

58 GB/T50062-2008

59 GB50052-2009

60 GB50054-2011

61 AQ3009-2007

62 GB50055-2011

63 GB12158-2006

64 GB/T50115-2019

65 GB50395-2007

66 GB50348-2018

67 GB50343-2012

68 GB/T21447-2018

69 GB50011-2010 2024

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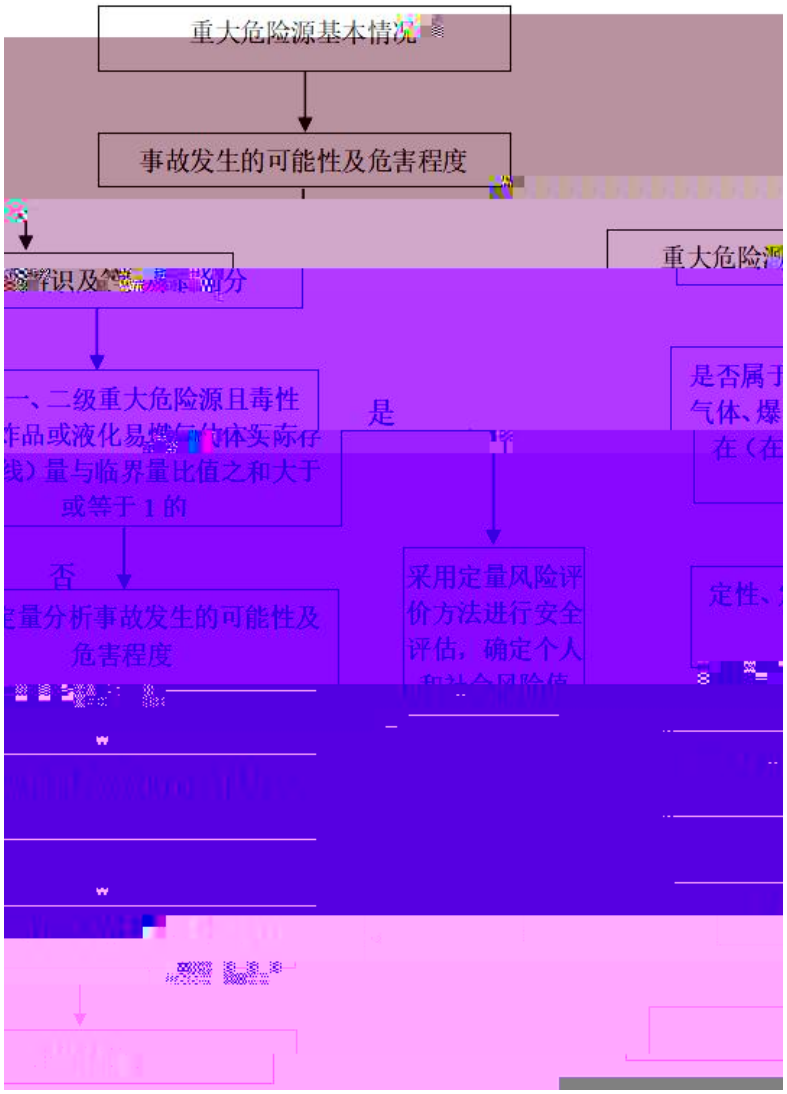

2000

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m " o

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1 400m³ 1 400m³ 1

1

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30m³ 1

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1500m 2300m

2150m 1620m

2-1 2-2

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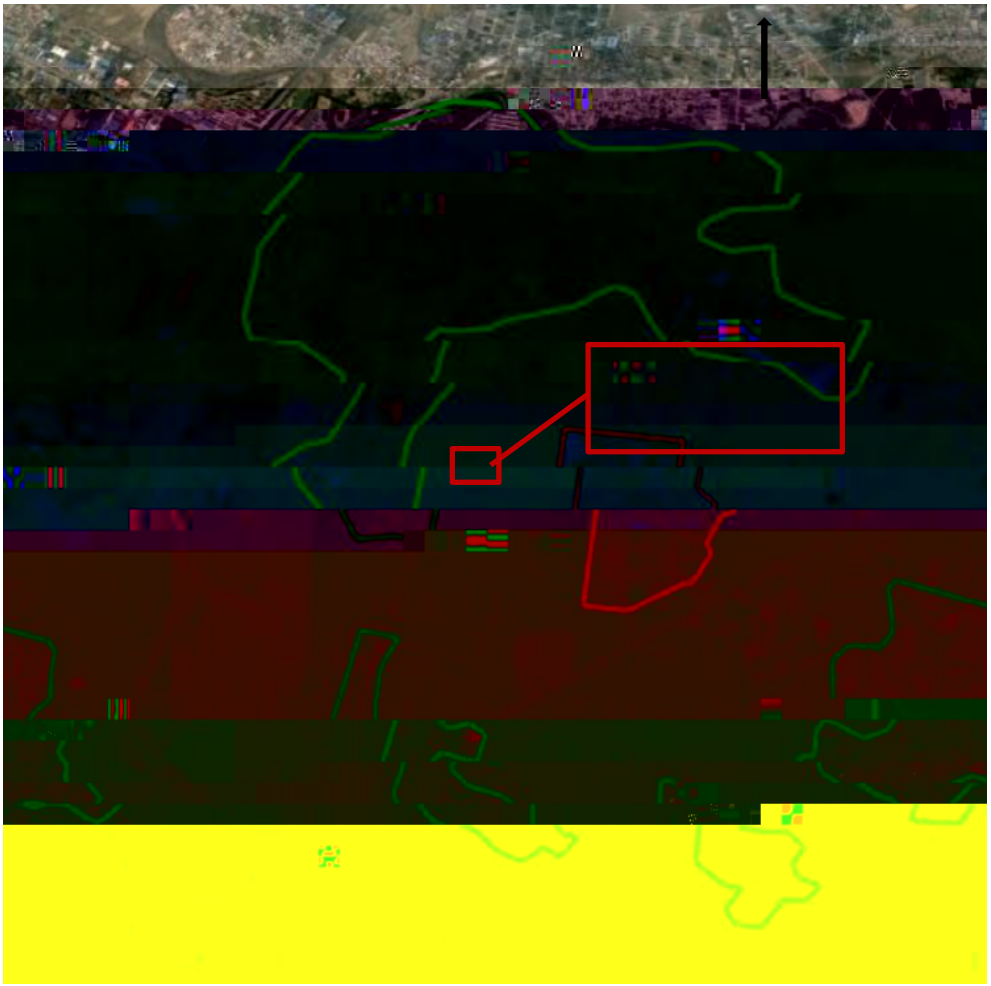
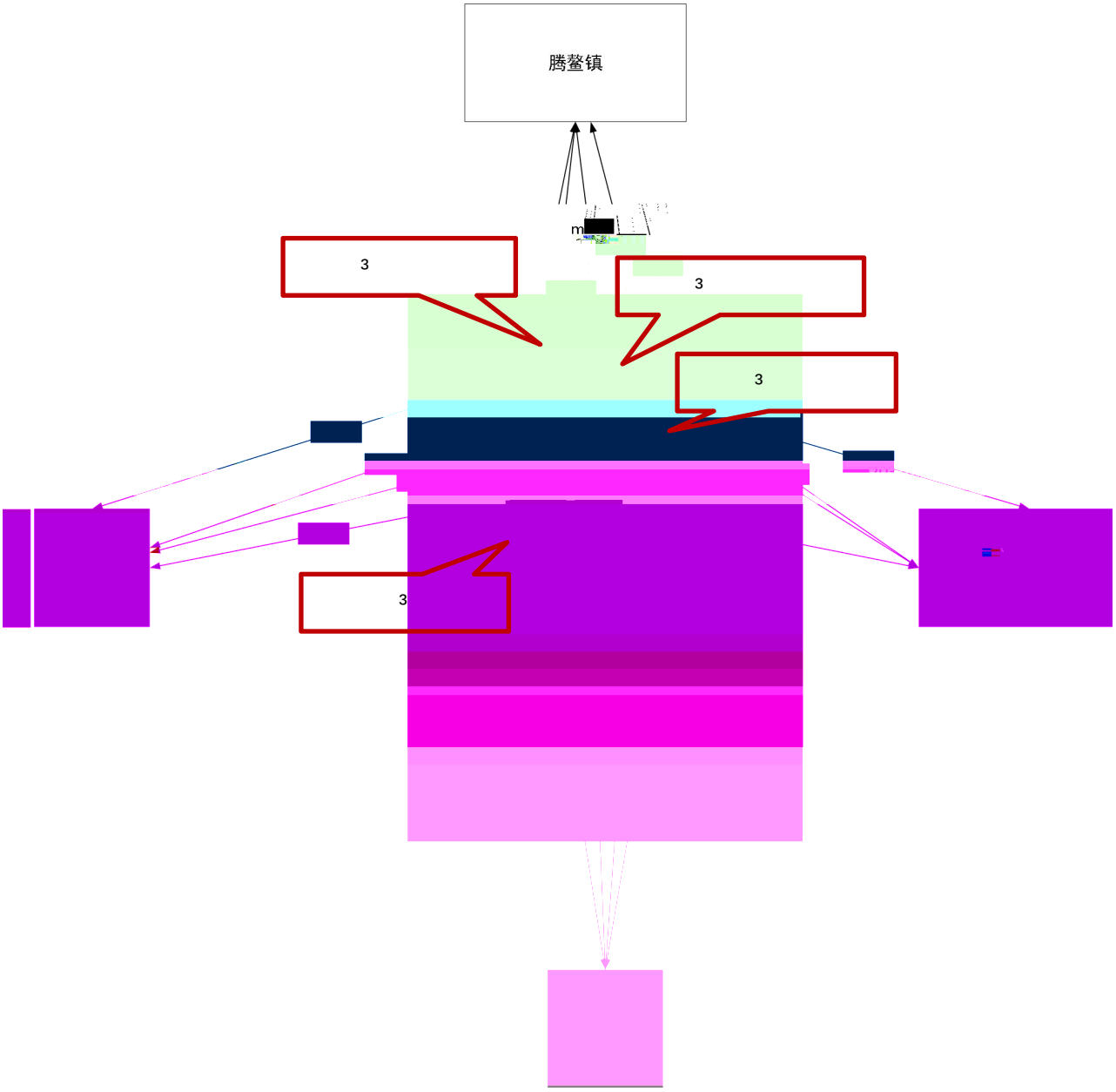
2-3

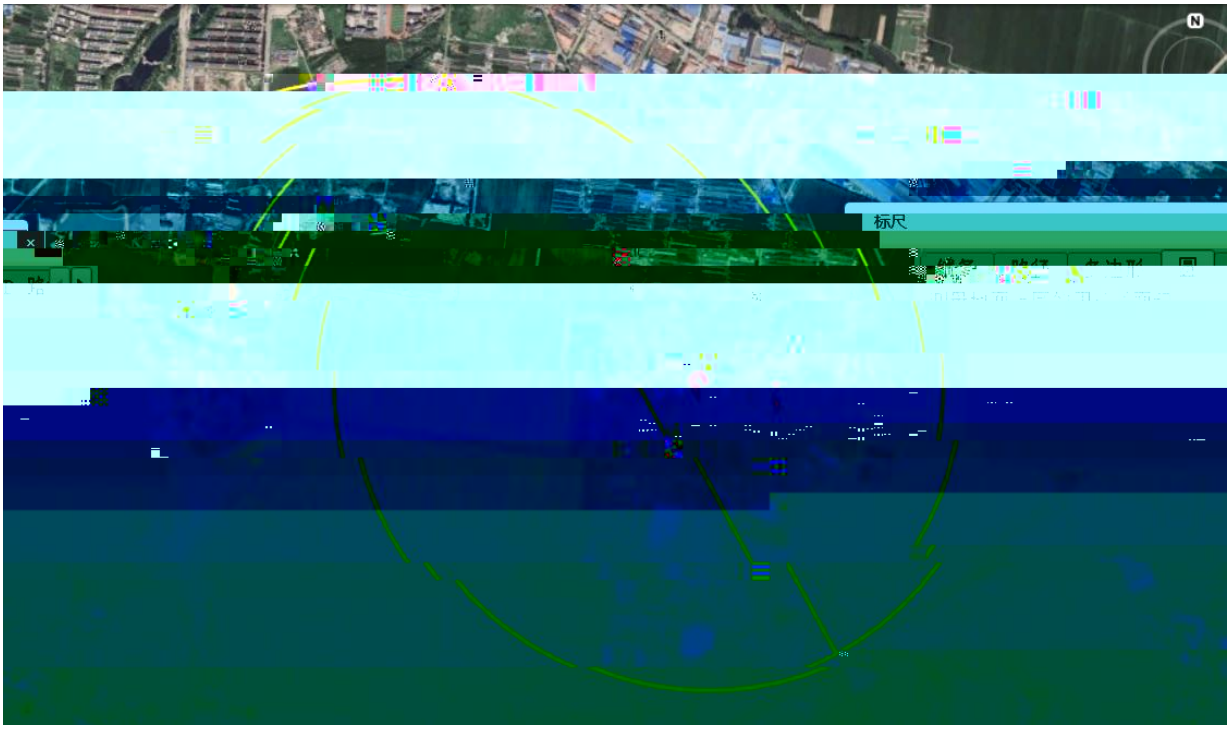
2-4





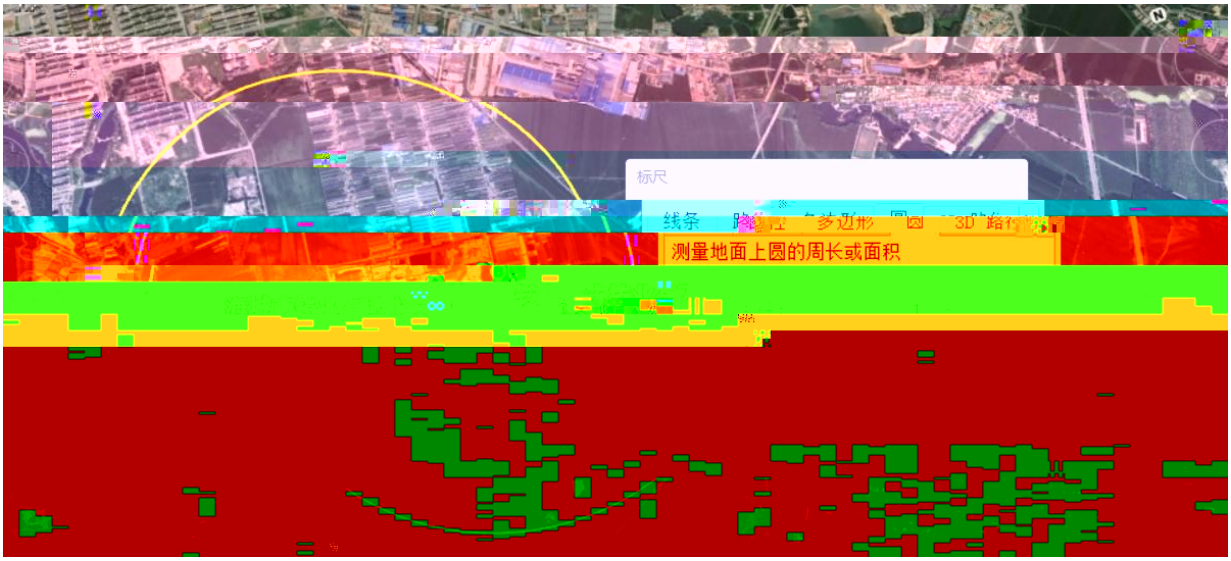
				m	m		
1	400m³			985	25		
				2240	25		
				1950	25		

2300 25



1km

1067m



1km

1085m

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7m 8m

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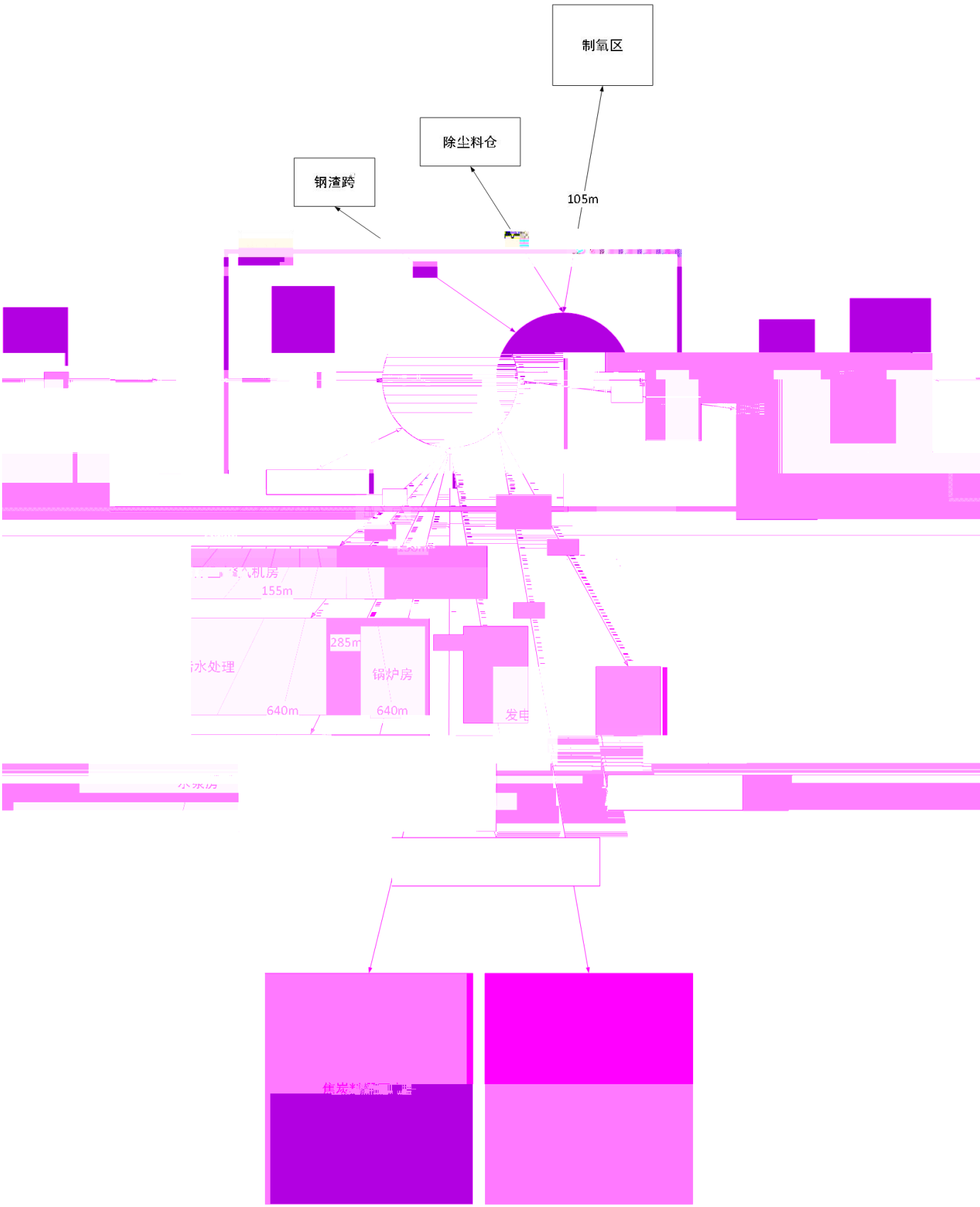
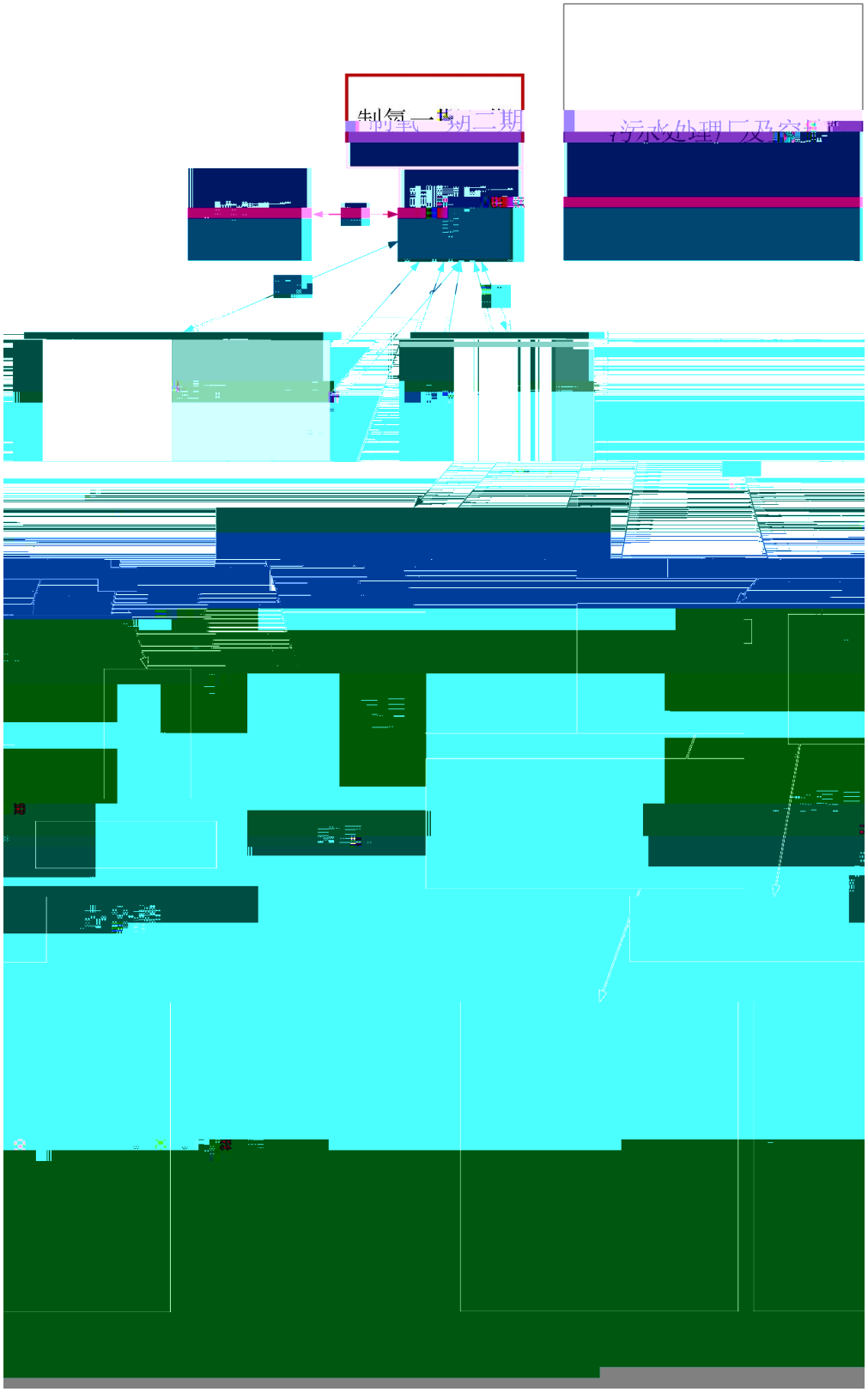
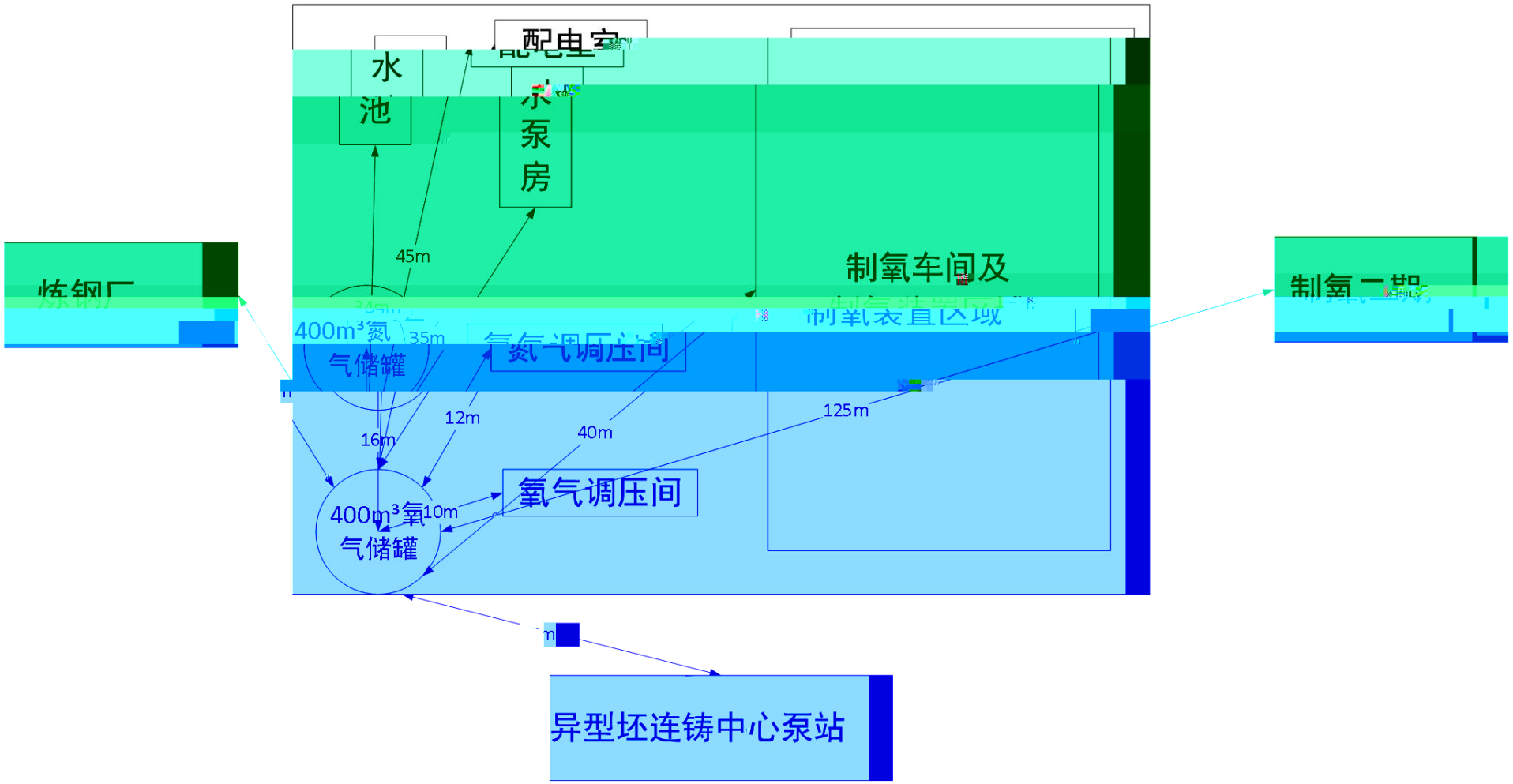
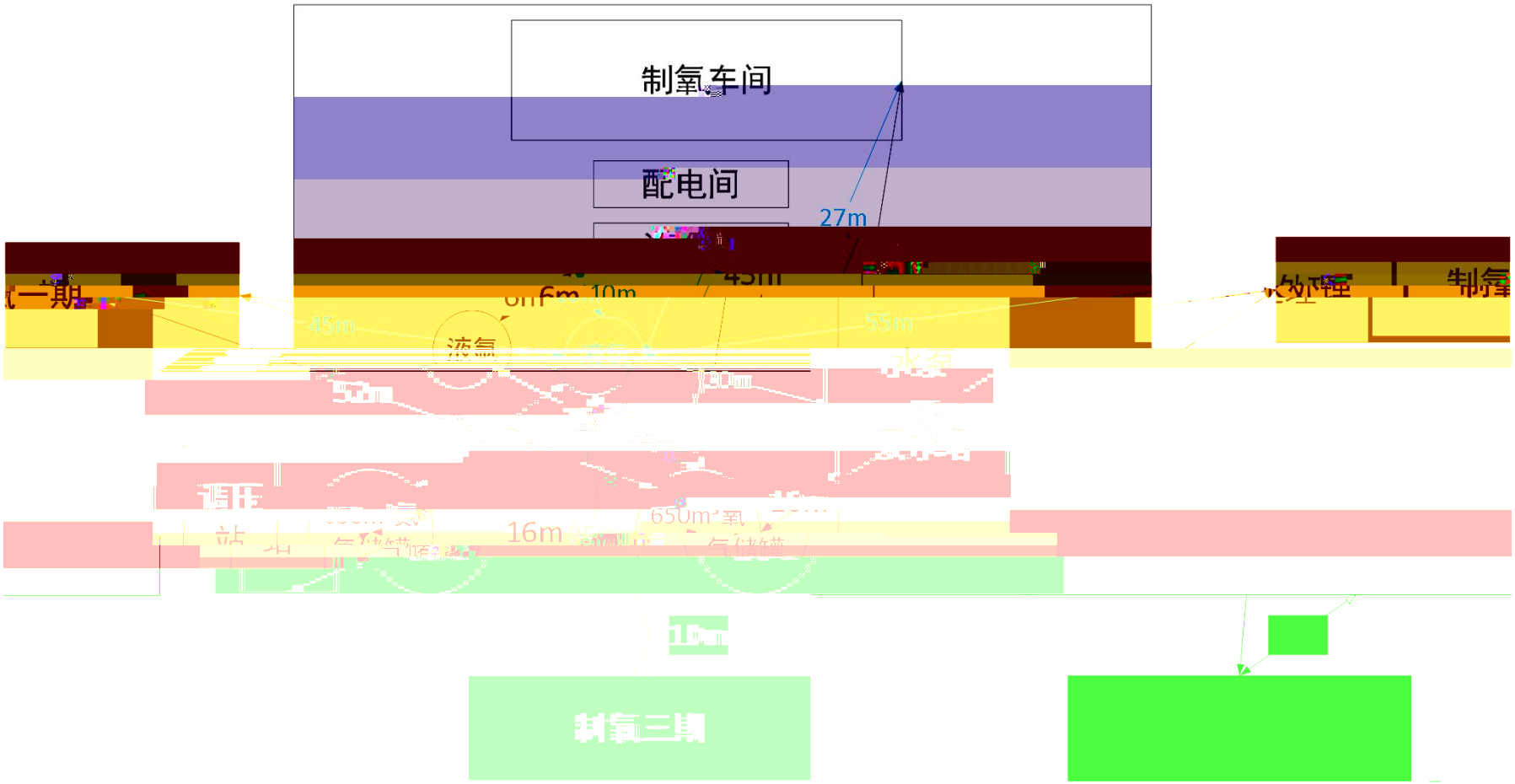
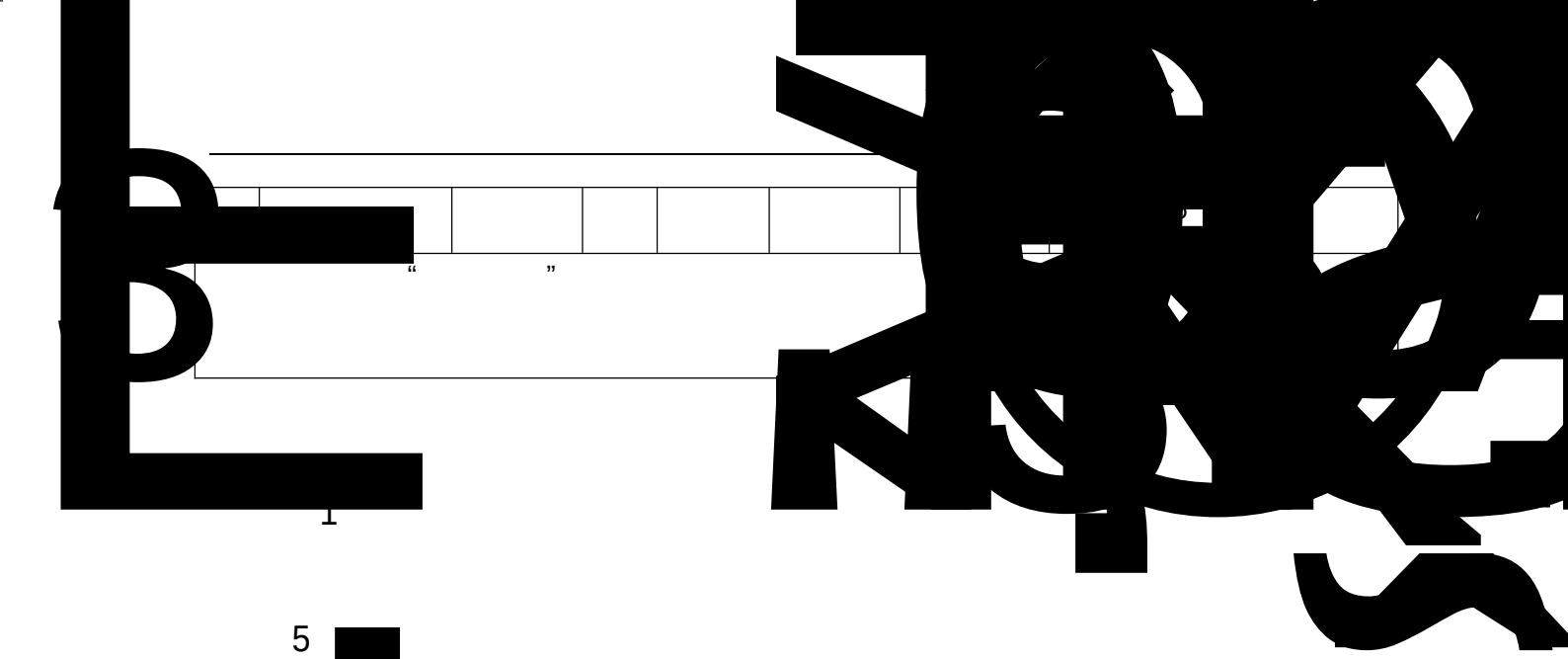
2016 GB50011-2010


制氧区
除尘料仓
钢渣跨
105m
155m
285m
640m
640m
锅炉房
发电


制氧一、二期
污水处理厂及空压


水池
泵房
45m
制氧车间及
400m³氮
气储罐
35m
氮气调压间
12m
16m
40m
125m
氧气调压间
400m³氧
气储罐
10m
异型坯连铸中心泵站


制氧车间
配电间
27m
45m
6m
10m
45m
55m
液氢
水冷
650m³氢
16m



1

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15mg/m³

12kPa

2-8

-120 -160

+

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90KPa

-195.78 9 '59%

	26			
	1384	--		
	122.4	1		
	60	1		
	228	1		
	216	1		
	1092	1		
	40	1	-	-
	180	1		
400m³	42.25	1	-	
650m³	42.25	1	-	
	42.25	1	-	
	42.25	1	-	
	30.25	1	-	
	45	1		

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				3	
				3	
				3	
				3	
				3	

40 × 4 1m

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-118.4

-183 “ ”

21% 40%

40%~60%

80%

60kpa~100kpa(40%

ž

2.2

33% 50%

75%

30min

30

CO CO_2 N_2 H_2 O_2

3-2

	CO	CO_2	N_2	H_2	O_2
V%	60 80	15 20			

d BT1

650 700

12.5% 74% 1.25kg/m³

60 80%

2013

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1000m³ 2 1000m³

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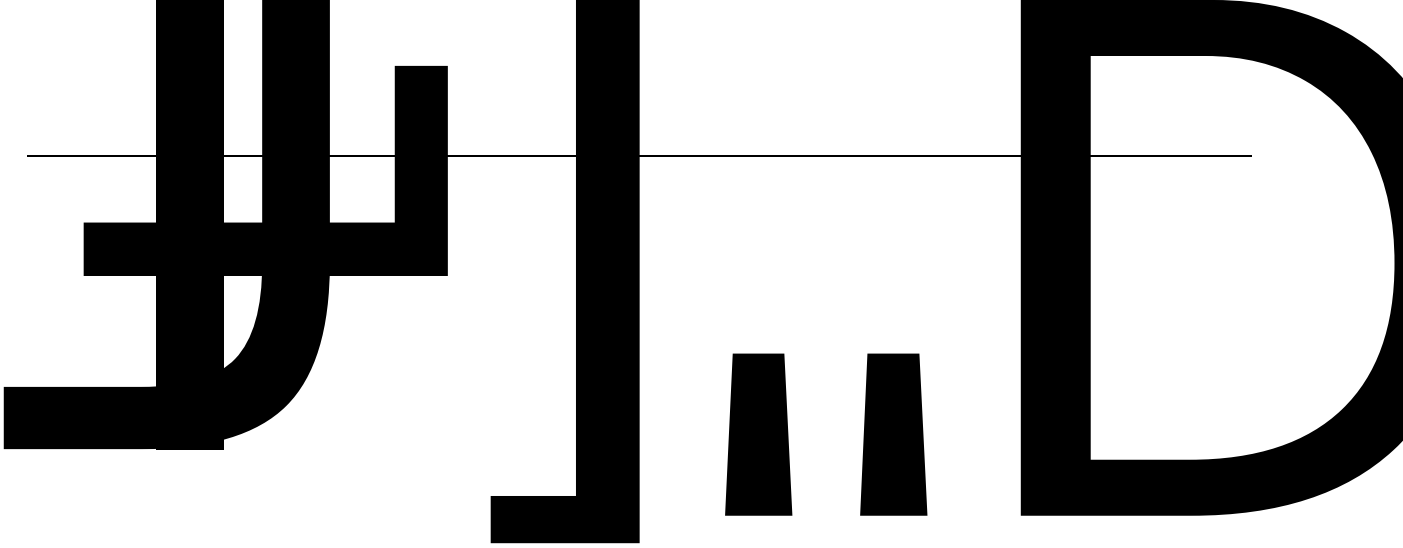
20mg/m³(PC-TWA) 30mg/m³(PC-STEL)



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	3×10^{-7}	3×10^{-6}
	3×10^{-6}	1×10^{-5}
	1×10^{-5}	3×10^{-5}

N F

F-N

3

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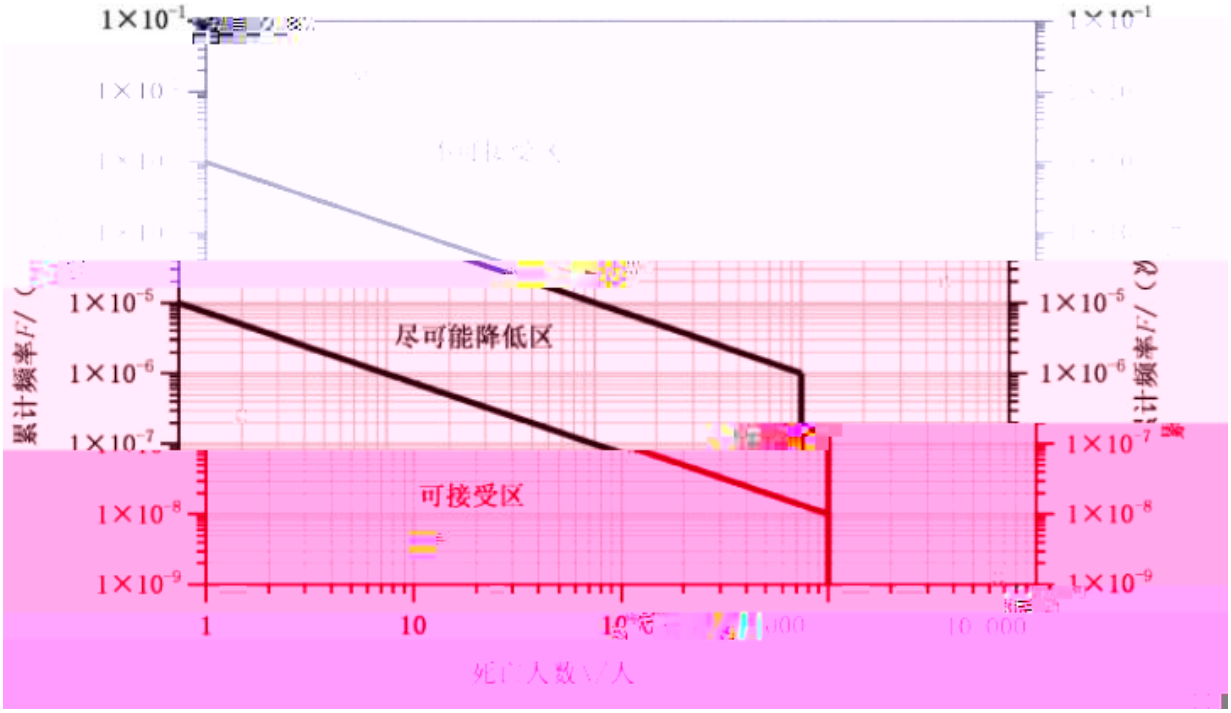

1

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	3.00E-05	
	1.00E-05	
	3.00E-06	

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GB36894-2018

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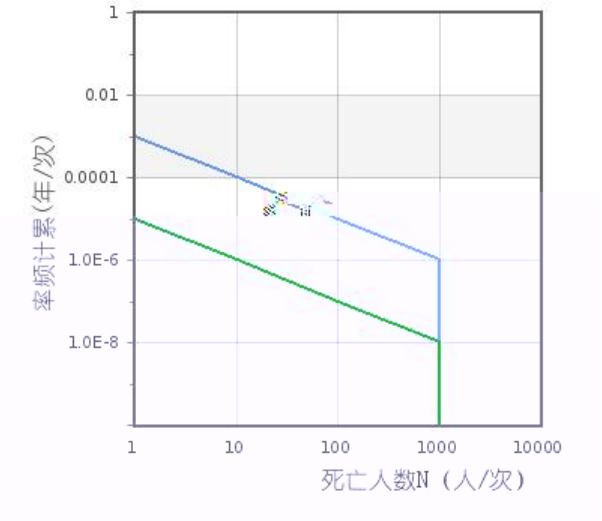

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4-3

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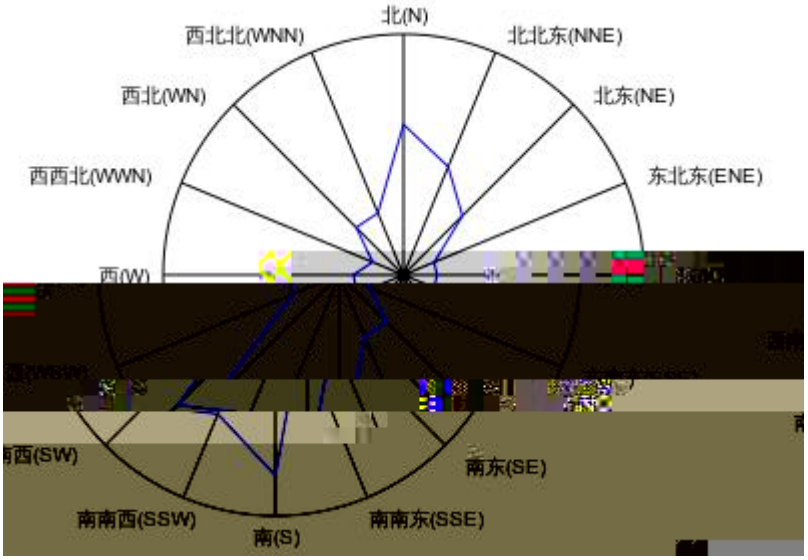

5

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317.98,652.98

10kg/s<= <=100kg/s

UVCE , LEAK

( )

K 323

pa 107325

kg/m³ 0.5

0~1 1

0~1 0.8

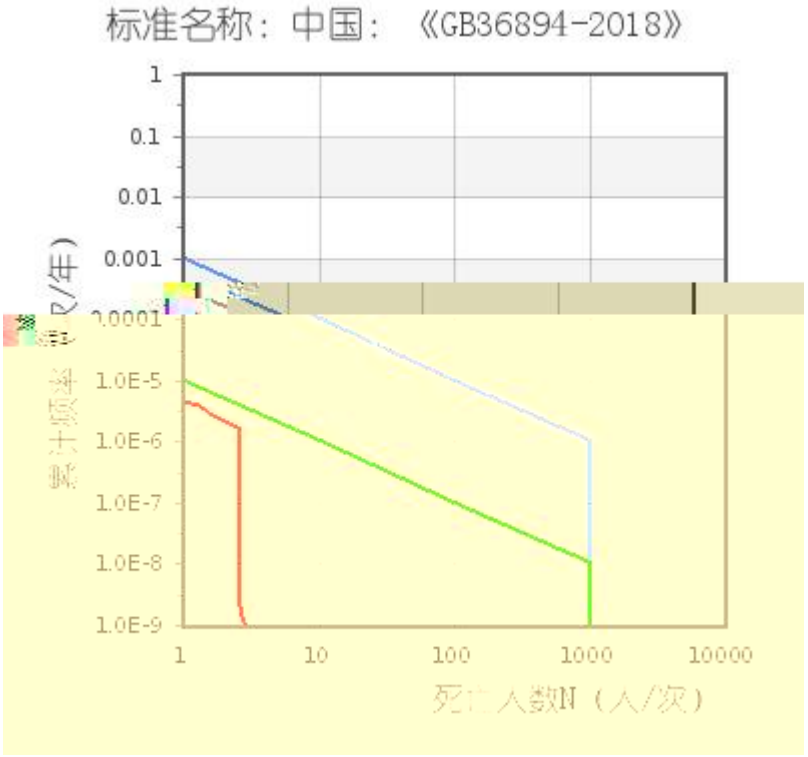
Kj/Kg 18250

-5 1 10^{-5}

× -6

7

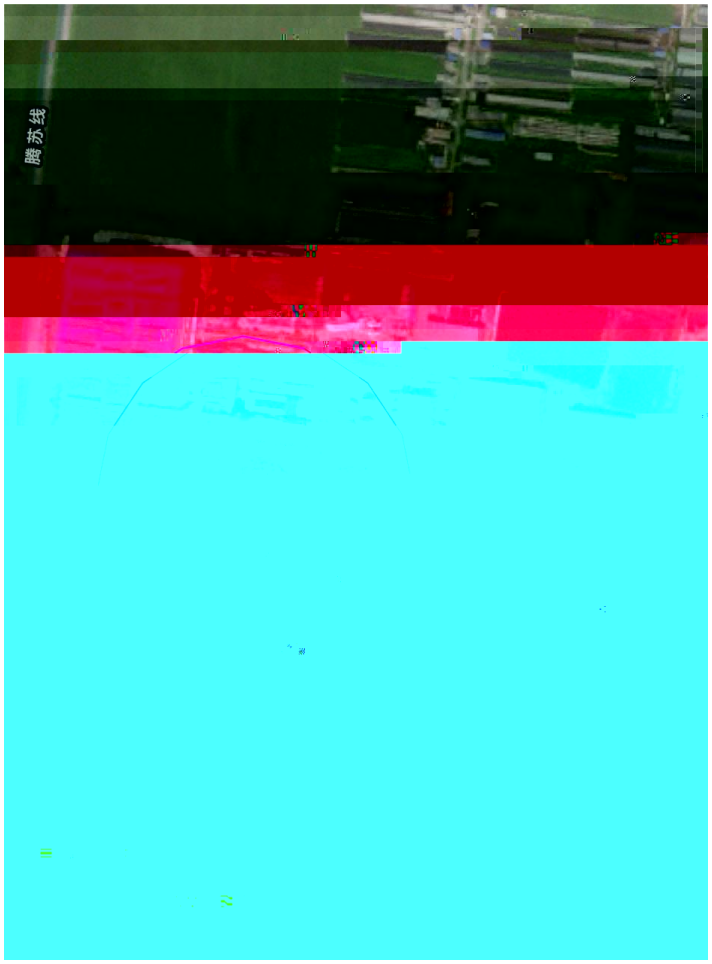
F/N 4-5



1 3 1 10^{-5} /

1×10^{-6} /

4-6

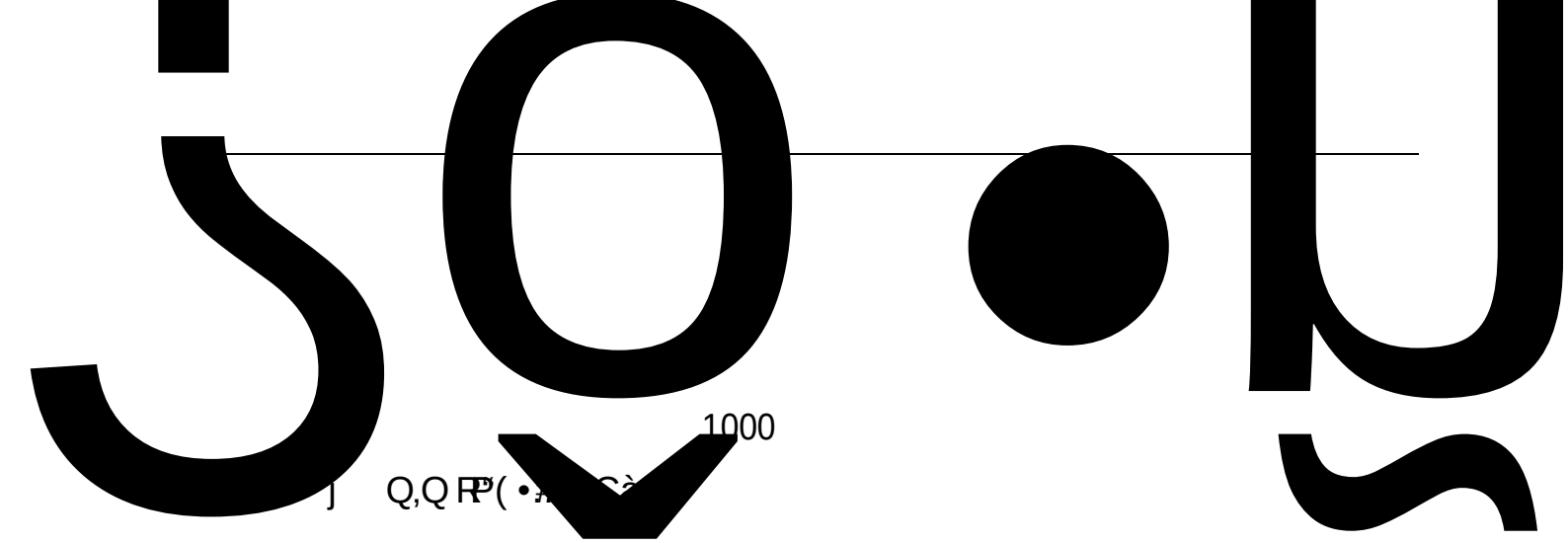


( ) 17.24m

( ) 50.5m

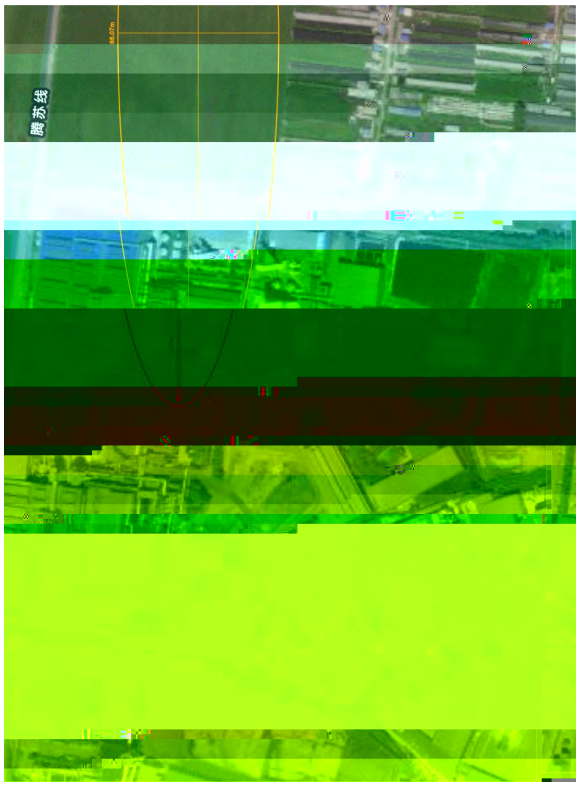
( ) 138.28m

1000m



1000

2.2.2



m 644

m 86.07

79285.99

2

(m) 644m (m) 86.07m

NW

$S=q_1/Q_1+q_2/Q_2……+q_n/Q_n \geq 1$

S—

q_1 q_2…q_n— t

Q_1 Q_2…Q_n— t

1 2 1

1 1

2

R

1 R

	R ≥ 100
	100>R ≥ 50
	50>R ≥ 10
	R 10

6-4

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0.1m³ 10m³ W=PVM/RT W

P V M R

T ,

2.5×10^{6}Pa × 0.8m³ × 32g/mol/8.3145 × 273+25 ≈0.052t 50t

10m³ × 1.14t/m³=11.4t 200t

2

0.1m³ 10m³ W=PVM/RT W
P V M R
T ,
2.5×10^{6}Pa×0.8m³×32g/mol/8.3145× 273+25 ≈0.052t 50t
10m³×1.14t/m³=11.4t 200t

2
1
400m³ 1 2.5MPa
W=PVM/RT W P V M
R T , 2×
1000m³
2.5×10^{6}Pa×400m³×32g/mol/8.3145× 273+25 ≈12.919t
50t
50m³×1.14t/m³=57t 200t

2
650m³ 1 2.5MPa XXXm³
W=PVM/RT W P
V M R T
, 2×1000m³
2.5×10^{6}Pa×650m³×32g/mol/8.3145× 273+25 ≈20.993t
50t
100m³×1.14t/m³=114t 200t

31 3.0×10^{3}Pa $1.01\times$
10^{5}Pa 25
$PV/T=P_1V_1/T_1V=P_1V_1/T_1\cdot T/P$

V =[1.01×10^{5}+3.0×10^{3} $\times3.0\times10^{4}$]/ 31+273.15 × 25+273.15 / 1.01×10^{5} =3.028×10^{4}m³

1.25kg/m³

M =1.25×10-3×3.028×104=37.85t 20t

20t 37.85t

37.85÷20=1.9 1.9 1

β 2 α 1.0 α 500

R =1.0×(2×37.85/20)=3.785 10 R 10

1 1 6-5

		R			
		10			

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25ppm

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1	30		DCS SIS 90	
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b

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13	a b	4.7.5		
14		4.7.7.3		
15		4.7.13		
16	a b c	4.8.2		
17	7d 30d 7d 1	4.9.5	90 1	
18	7d	4.9.11		

/

19

4.1

20

Ex-d

4.2.1

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	Ω	8.3		
28		10.1	CCTV	
29		12.2		
30		12.3.4		

7.4

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	/		5
	/		5
	/		1
	/		2

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3			8.3	
4				

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