

**[2015 ]**

1958 " " 156

500

150 <sup>2</sup> 35%  
3500 800

86

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2014

2010 113



2015 6 16

1	1
1.1	1
1.2	1
1.2.1	1
1.2.2	2
1.2.3	2
1.3	2
1.4	2
1.4.1	2
1.4.2	3
1.4.3	3
1.5	4
1.6	4
1.7	4
2	6
2.1	6
2.2	6
2.3	7
2.4	8
2.4.1	8
2.4.2	8
2.4.3	9
2.4.4	10
2.4.5	14
2.4.6	15
2.5	16
2.5.1	16
2.5.2	16

2.5.3	.....	17
2.5.4	.....	17
2.5.5	.....	17
2.5.6	.....	18
3	.....	19
3.1	.....	19
3.1.1	.....	19
3.2	.....	21
3.2.1	.....	21
3.2.2	.....	25
3.2.3	.....	26
4	.....	27
4.1	.....	27
4.2	.....	28
4.2.1	.....	28
4.2.2	.....	28
4.2.3	.....	29
5	.....	31
5.1	.....	31
5.2	.....	34
5.2.1	.....	34
5.2.2	.....	35
5.2.3	.....	36
5.2.4	.....	36
5.2.5	.....	36
5.3	.....	37
5.3.1	.....	37
5.3.2	.....	37
5.4	.....	37
6	.....	38
6.1	.....	38

6.2	.....	38
6.3	.....	38
6.3.1	.....	39
6.3.2	.....	39
7	.....	40
7.1	.....	40
7.1.1	.....	40
7.1.2	.....	40
7.1.3	.....	41
7.2	.....	41
7.2.1	.....	41
7.3	.....	50
7.4	.....	50
7.4.1	.....	50
7.4.2	.....	50
7.4.3	.....	50
7.5	.....	51
7.5.1	.....	51
7.5.2	.....	51
7.5.3	.....	51
7.5.4	.....	51
7.6	.....	51
7.7	.....	53
8	.....	56
8.1	.....	56
8.1.1	.....	56
8.1.2	.....	56
8.1.3	.....	56
8.2	.....	57
8.3	.....	57
9	.....	58

10		59
10.1		59
10.2		59
10.3		59
10.4		59
10.5		60
10.6		60
10.7		60
11		61
11.1		61
11.1.1		61
11.1.2		61
11.1.3		61
11.1.4		61
11.1.5		61
11.1.6		61
11.2		61
11.3		61
11.4		62
11.5		62
12		63
12.1		63
12.1.1	1	63
12.1.2	2	63
12.1.3	3	63
12.1.4	4	63
12.1.5	5	63
12.1.6	6	63
12.1.7	7 2008-2014	63
12.1.8	8	63
12.1.9	9	63



12.2	.....	63
12.2.1	1 .....	63
12.2.2	2 .....	63
12.2.3	3 .....	63
12.2.4	4 .....	63
12.2.5	5 .....	63
12.2.6	6 .....	63
12.2.7	7 .....	63
12.2.8	8 .....	63
12.2.9	9 .....	63

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# 1

## 1.1

" "

## 1.2

### 1.2.1

- 1 2014 4 24 2015 1 1
- 2 2008 2 28
- 3 2000 9 1
- 4 2013
- 5 ,
- 6 2007 8 30 2007 11 1
- 7 591 2011 12 1
- 8 2013 101
- 9 2015 4
- 10 17
- 11 2008 59
- 12 2005 11
- 13 2005 46
- 14 2006 24
- 15 2010 72
- 16 2013 309
- 17 2007 18
- 18 2006 55
- 19 1998 4 29
- 20 2008 10 28

2009 5 1

20

2012 98

21

2012 77

2012 7 3

22

2015

23

2008

### 1.2.2

1

/ 169-2004

2

2014 34

3

18218-2009

2009 12 1

4

3095-2012

5

3838-2002

6

8078-1996

7

15297-1996

8

2.1-2007

9

( - 29639-2013)

### 1.2.3

1

2012 1

2

### 1.3

### 1.4

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**1.4.1**

1

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**1.4.2**

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**1.4.3**

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**1.5**

3

2014 34

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2014 34

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2014 34

A

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10   100				
100				

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**1.6**

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**2.1**

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**2.2**

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12

2-1

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**2-1**

			1	20	1	30	1	30	1	40	—	—
				70			2		3			
			1	38			1	16				—
			1	25			16					
			1	25				1	45			—
					12						—	
						1						
1			1	18			3		3			—
					1				6		—	—
								34				
								20				
							1				—	—

**2-1**

2			12 2 20 1 1	
			2 350 <sup>3</sup> 1 3	— —
			2 6300 A 35000 A	4 1 2
3		12#	20 <sup>2</sup>	
			40 / 1	20
			40 / 1	30
			10 / 1	
			7 / 1	
			1 130000 <sup>3/</sup>	2 5200 5600 4000 6500
				1000
			1000 /	A
		1.5 2 /		
		12#		

**2.3**

1

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## 2.4

### 2.4.1

2-2

#### 2-2

1			56
2			4619
3			404
4			3503
5			17
6			2577

### 2.4.2

2-3

#### 2-3

1			9.8
2			3.4
3			7932
4			1703
5			11.7
6			1.4
7			122

2-4

2-4				
				18218-2009
	:24 30% 2:13 15% 4:1.8 2.4% 2:47 51% 2: <5% 2:<0.4%		2	20
			322	1000
			41	200
			0.2301	500
			0.4576	500
			0.6056	50
			0.05	500
	2.4-		0.1	50
			11	200
			101.295	200
			4.5	200
			1	100
			1	200
			1.768	200
			3	200
			8.5	5

**2.4.3**

2-5

**2-5**

1		1 20	1 30	1 30	1 40	70		
2			2	3				
3			1 38	1 16				
4			1 25	16				
5			1 25	1 45				
6			12					
7			1					
8		1 18	3	3				
9			1	6				
10				34				
11				20				
12				1				
13				12				
14				2 20	1 1			
15				2 350 <sup>3</sup>	1 1			
16				1	1			
17				2 6300 A	35000 A			
18				12#	20 <sup>2</sup>			

20 30 2  
 40 / 1  
 10 / 1  
 7 /

1.5 2 /

2-6

**2-6**

	/	1	40 /	04 25
	/	1	40 /	05 25
	/	1	10 /	
	/	1	7 /	
	/	1	1000 /	01
	/	1	130000 <sup>3/</sup>	--
	/	1	1.5 2 /	07 30

**2.4.4**

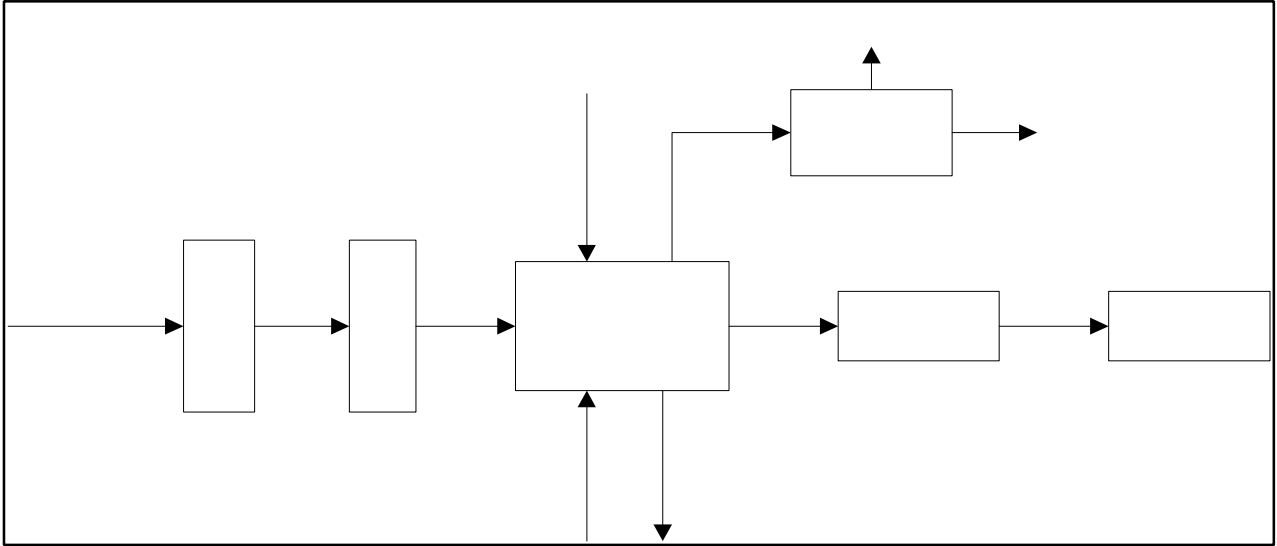
**2.4.4.1**

1 - 2 3 4

2-1

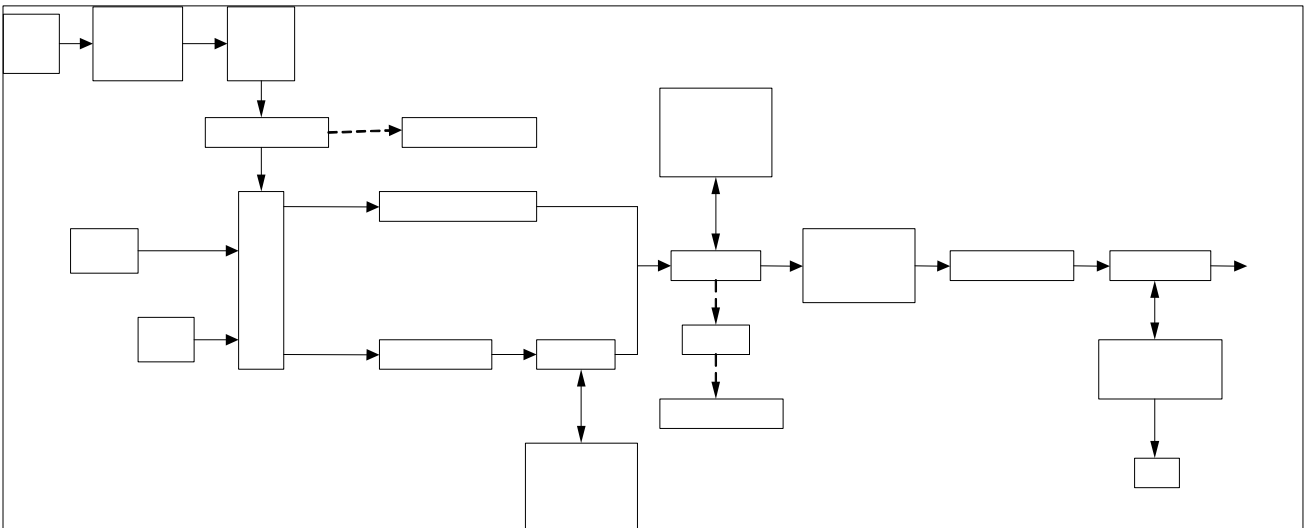


2.4.4.2



2-2

2-2



2-3

$$\begin{aligned}
 & 2 \quad 2 + 2 \quad 3 \quad 3+ \\
 & 2 \quad +2 \quad 3 \quad 5+ \quad + \quad 2 \quad 4 \quad 9+ \\
 & \quad \quad \quad 2 \quad 4 \quad 9+2A. \quad .A \quad +2 \quad + \quad 2 \quad 4 \quad 3+2A. \quad .A \\
 & 2 \quad +2 \quad 3 \quad 2 \quad 2 \quad 3+2 \quad 2 \\
 A. \quad .A \quad 2A. \quad .A \quad + \quad 2 \quad 2A. \quad .A \quad +2 \quad 2
 \end{aligned}$$

1100

2 2

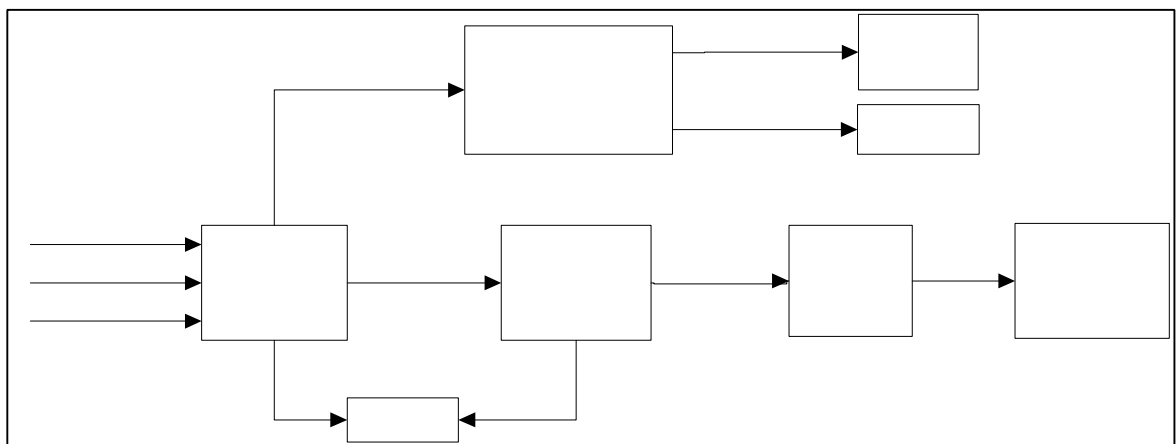
2-3

**2.4.4.3**

2

40

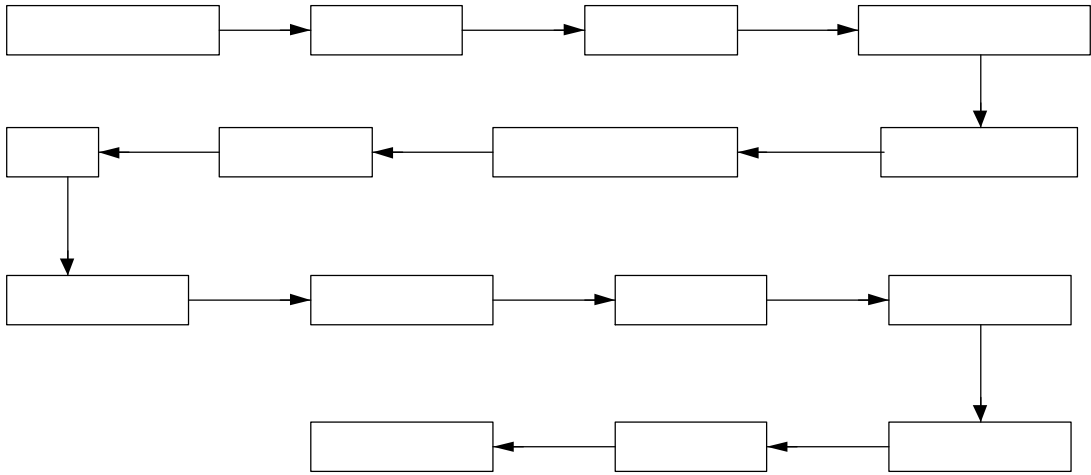
3/



**2-4**

**2.4.4.4**

2-5



2-5

2.4.5

2-7

2-7

				2	50
				2	50
				2	50
		30 40		2	25 04
		20 30		2	25 05

2-7

				2	50
				2	
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**2.4.6**

9

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- 3
- 4



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2015 6

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## 2.5

### 2.5.1

" "

1000

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1

### 2.5.2

20-30

0.30 0.90

6

### 2.5.3

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				m		
11			SW	~540	GB3095-2012	~2700
12			W	~710		~2500
13			W	~960		17063m <sup>2</sup> 264
14			NW	~540		~800
15			SW	~190		~100
16			W	~600		3800~4000
17			W	~600		3000~3200
18			S	~100		1100~1300
19			S	~300		2000~2300
21			S	900	GB3838-2002	15.74km <sup>2</sup>

**2.5.6**

8978-1996

**2-9**

						16297-1996
						1271-2001
						8978-1996
		2				12348-2008
				2		
		4				12348-2008
				4		

**3**

**3.1**

**3.1.1**

" "

:24 30% 2:13 15% 4:1.8 2.4% 2:47 51% 2: <5% 2:<0.4%

2.4-

13690-2009

2015

3-1

**3-1**

		A			%
1		65996-93-2	1999	--	--
2		7704-34-9	2448	207	--
3		--	--		20% 74%
4		7784-46-5	2027	--	--
5		1327-53-3	1561	--	--
6		151-50-8	1680	--	--
7		1314-62-1	2862	--	--
8	2.4-	51-28-5	1320	--	--
9		10042-76-9	1507	--	--
10		7697-37-2	2031	--	--
11		7722-64-7	1490	--	--
12		3811-04-9	1485	--	--
13		7757-79-1	1486	--	--
14		7601-90-3	1802	--	--
15		7761-88-8	1493	--	--
16		6784-52-2	0222	210	--

18218-2009

3-2

**3-2**

					/
1			2.0	20	0.10000000
2			2.0	20	0.10000000
3			322	1000	0.32200000
4			0.0002301	200	0.20500000
5			0.0004576	500	0.00000460
6			0.0006056	500	0.00002915

**3-2**

					/
7			0.00005	50	0.000000822
8	2.4-		0.0001	500	0.000000100
9			0.011	50	0.000001980
10			0.101295	200	0.000055000
11			0.0045	200	0.000506475
12			0.001	200	0.000022500
13			0.001	100	0.000010000
14			0.001768	200	0.000005000
15			0.003	200	0.000008840
16			0.0085	200	0.000015000

18218-2009 4.2

$$\frac{1}{1} + \frac{2}{2} \dots \geq 1$$

$$1 \quad 2 \quad \text{---}$$

$$1 \quad 2 \quad \text{---}$$

$$\sum \text{---} = 0.728$$

500

20592-2006

( / 169-2004) / 169-2004 1

3-3

**3-3**

		50	50		/ 169-2004
1		--	2069 / 3		
2		5 /	--		
3		10 /	70 / 3/1		
4		41 /	--		
5		31.5 /	8.33 / 48		
6	2,4-	30 / ( )	--	--	
7		2750 / ( )	--	--	--
8		1090 / ( )	--	--	--
9		1870 / ( )	--	--	--
10		3750 / ( )	--	--	--

**3-3**

		50	50		/ 169-2004
11		1100 / ( )	--	--	--
12		50 / ( )	--	--	--
13		4820 / ( )	--	--	--

**3.2**

**3.2.1**

**3.2.1.1**

1

1994      1949      1988

3-4

**3-4**

**P**

/

	1.2 10 <sup>-6</sup>	1.2 10 <sup>-6</sup>	6.7 10 <sup>-6</sup>

4.8      3/      1620× 8

20%

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16.461 /

27%

5.022 /

3-5

**3-5**

	CO
	5.022kg/s
	20%
	5min
	5m
	14.87m <sup>3</sup> /s

**3-5**

	CO
	1.2m/s
	D

2

$$(\sigma_x, \sigma_y, \sigma_z) = \frac{2}{(2\pi)^{3/2} \sigma_x \sigma_y \sigma_z} \left[ -\frac{(\sigma_x - \sigma_x)^2}{2\sigma_x^2} \right] \left[ -\frac{(\sigma_y - \sigma_y)^2}{2\sigma_y^2} \right] \left[ -\frac{(\sigma_z - \sigma_z)^2}{2\sigma_z^2} \right]$$

(0) ( ) ( / 3)

0 0 0

( ) =

$$(\sigma_x, \sigma_y, \sigma_z) = \frac{2}{(2\pi)^{3/2} \sigma_x \sigma_y \sigma_z} \left( -\frac{(\sigma_x - \sigma_x)^2}{2\sigma_x^2} \right) \left\{ -\frac{(\sigma_y - \sigma_y)^2}{2\sigma_y^2} - \frac{(\sigma_z - \sigma_z)^2}{2\sigma_z^2} \right\}$$

( , , ) — ( ) ( , 0)

' — ( ) ' = Δ ( / ) Δ ( )

σ<sub>x</sub>, σ<sub>y</sub>, σ<sub>z</sub>, — ( )

$$\sigma_x^2 = \sum_{i=1}^n \sigma_{xi}^2 \quad ( = , , )$$

$$\sigma_x^2 = \sigma_x^2 ( ) - \sigma_x^2 ( -1)$$

$$= , ( - -1) + \sum_{i=1}^{-1} , ( - -1)$$

$$= , ( - -1) + \sum_{i=1}^{-1} , ( - -1)$$

$$(\dots, 0) = \sum_{i=1}^n (\dots, 0, \dots)$$

$$+1(\dots, 0) \leq \sum_{i=1}^n (\dots, 0, \dots)$$

1

3

1700 / 3

4

0

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0

15

10

3-6

**3-6**

**CO**

	/ 3			/ 3	/
0:00:00	0.0	1	0:07:40	472.0	219
0:00:10	0.0	10	0:07:50	421.5	234
0:00:20	0.1	19	0:08:00	378.4	246
0:00:30	38.3	31	0:08:10	341.1	258
0:00:40	296.3	37	0:08:20	308.8	272
0:00:50	736.2	43	0:08:30	280.6	284
0:01:00	1177.1	49	0:08:40	255.9	299
0:01:10	1525.3	55	0:08:50	234.2	311
0:01:20	1778.3	55	0:09:00	214.9	323
0:01:30	1958.1	61	0:09:10	197.8	337
0:01:40	2077.9	61	0:09:20	182.5	349
0:01:50	2152.4	61	0:09:30	168.8	361
0:02:00	2208.8	67	0:09:40	156.4	375
0:02:10	2248.8	67	0:09:50	145.3	387
0:02:20	2275.6	67	0:10:00	135.3	399
0:02:30	2294.2	67	0:10:10	126.2	411
0:02:40	2307.3	67	0:10:20	117.9	426
0:02:50	2316.8	67	0:10:30	110.3	438
0:03:00	2323.8	67	0:10:40	103.4	450
0:03:10	2329.0	68	0:10:50	97.1	462
0:03:20	2333.1	68	0:11:00	91.2	474
0:03:30	2336.4	68	0:11:10	85.9	486
0:03:40	2338.9	68	0:11:20	81.0	498
0:03:50	2340.9	68	0:11:30	76.4	510
0:04:00	2342.5	68	0:11:40	72.2	522
0:04:10	2343.9	68	0:11:50	68.3	534
0:04:20	2345.0	68	0:12:00	64.7	546
0:04:30	2345.9	68	0:12:10	61.3	558
0:04:40	2346.6	68	0:12:20	58.2	570
0:04:50	2347.3	68	0:12:30	55.2	582
0:05:00	2347.8	68	0:12:40	52.5	594
0:05:10	2348.3	68	0:12:50	50.0	606
0:05:20	2348.7	68	0:13:00	47.6	618
0:05:30	2349.0	68	0:13:10	45.3	630
0:05:40	2331.7	71	0:13:20	43.3	642



<b>3-6</b>		<b>CO</b>			
	/ <sup>3</sup>			/ <sup>3</sup>	/
0:05:50	2199.0	78	0:13:30	41.3	654
0:06:00	1955.6	90	0:13:40	39.4	666
0:06:10	1688.4	102	0:13:50	37.7	675
0:06:20	1441.8	114	0:14:00	36.1	687
0:06:30	1229.4	126	0:14:10	34.5	699
0:06:40	1052.4	140	0:14:20	33.1	711
0:06:50	905.8	152	0:14:30	31.7	723
0:07:00	785.0	167	0:14:40	30.4	735
0:07:10	684.8	179	0:14:50	29.2	745
0:07:20	601.3	193	0:15:00	28.0	757
0:07:30	531.2	207			

0:05:30

2349.0 / <sup>3</sup>

68

1700 / <sup>3</sup>

0:01:20 0:06:00

61 78

200

30 / <sup>3</sup>

735

### 3.2.1.2

3-1

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3-7

**3-7**

	( )		( )	( )	( )	( )	
	2	716.81	12.02	35.1	61.5	25.2	300
						61.5	

**3.2.2**

3-8

**3-8**

	2			

**3.2.2.1**

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**3.2.2.2**

**3.2.3**

3-9

**3-9**

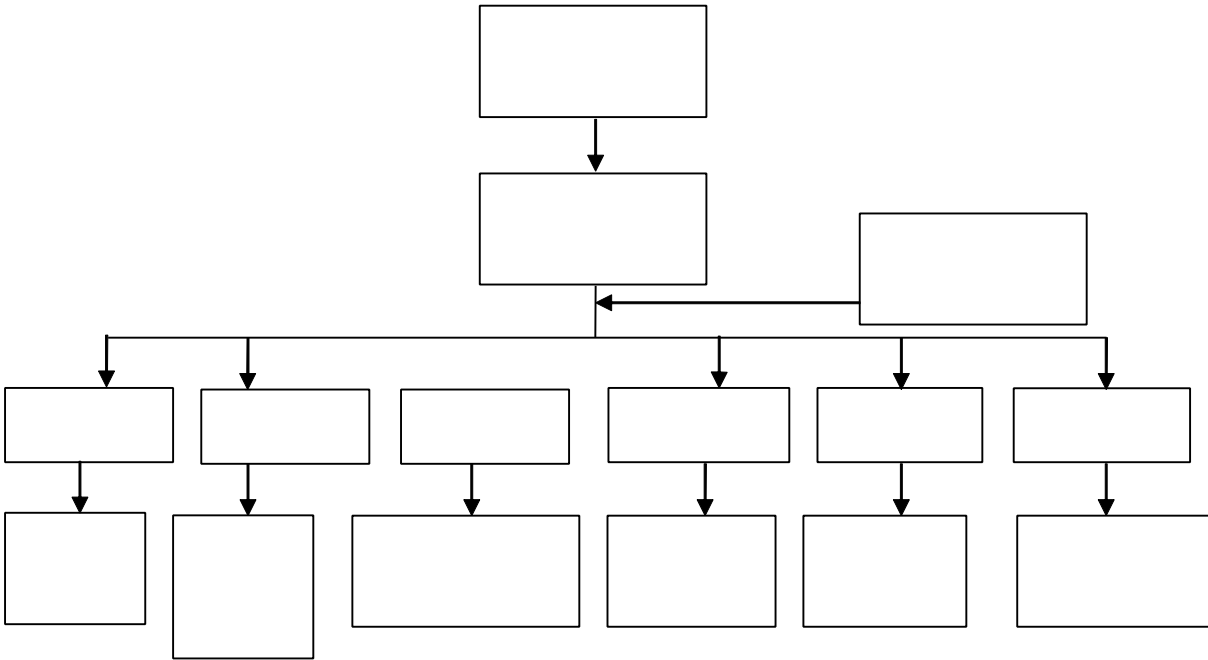
<b>3-9</b>						
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4

4.1

4-1



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## 4.2

### 4.2.1

5

4-1

#### 4-1

			68861658	13607163281
			68861858	13907185793
			68861535	15926299070
			68861520	13720305236
			68861500	13971276088
			68861900	13971530468
			68861563	13986017931
			68861968	13907181601

### 4.2.2

1

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12

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14

**4.2.3**

4-2

**4-2**

		1 2 3 4 5 6 7 8 9 10
		1 2 3 4 5 6
		1 2 3 4 5 6
		1 2 3 4
		1 2

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**4-2**

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		1 2
		3
		1 2 3 4
		1 2 3 4 5 6

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**4.2.3.1**

1

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3

4

5

5.1

5-1

5-2

5-1

5-1			
		--	--
			" "
			" "
			" "
			" "
2.4-			" "
			" "



**5-1**

			35	85%
			35	85%
			35	85%
			35	85%
			35	85%
			35	85%
			35	85%

**5-1**

			35	85%
				80
				30
				" "
			35	85%
			1	
			2	
			3	
			4	
			5	
			6	
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## **7**

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## **7.2**

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## **7.3**

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## **7.5**

### **7.5.1**

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**12.1.9 9**

**12.2**

**12.2.1 1**

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**12.2.4 4**

**12.2.5 5**

**12.2.6 6**

**12.2.7 7**

**12.2.8 8**

**12.2.9 9**