

00

[2002]10

[1999]101

2002 3 1

[1992] 375

50%

50%

o o

1

1.0.1

1.0.2

1

2

1.0.3

1.0.4

1

$\times 1 \pm$

2

3

$\times$

$\times$

4

=

$\times$

1.0.5

1.0.6

1.0.7

1.0.8

, ,

1

1.0.9

$\geq 35$

$\leq -10$

1.2

1.0.10

2000m

2000 3000m 1.1

3001 3500m 1.2

3501 4000m 1.3

4001m

1.0.11

5%

1.0.12

1.0.13

1000 /  
1360 /  
1680 /

1.0.14

4

1.0.15

1.0.1

2

2.1

22

2.2

2.2-1

|  |  |              |              |
|--|--|--------------|--------------|
|  |  |              |              |
|  |  | ≤ 20m        | ≤ 80m        |
|  |  | ≤ 20%        | ≤ 40%        |
|  |  |              |              |
|  |  |              |              |
|  |  | ≤ 5<br>≤ 30% | ≤ 8<br>≤ 50% |

2.2-2

|   |  |  |     |      |      |
|---|--|--|-----|------|------|
|   |  |  | ( ) |      |      |
|   |  |  |     |      |      |
| 1 |  |  |     | 4263 | 4842 |
|   |  |  |     | 3136 | 3565 |
|   |  |  |     | 2737 | 3112 |
|   |  |  |     | 1096 | 1244 |
|   |  |  |     | 728  | 829  |

|   |  |     |        |         |                 |       |        |        |      |
|---|--|-----|--------|---------|-----------------|-------|--------|--------|------|
|   |  |     |        |         | km              | 2818  | 3203   | 4122   |      |
|   |  |     |        |         |                 | 2186  | 2484   | 3196   |      |
|   |  |     |        |         |                 | 1552  | 1764   | 2269   |      |
|   |  |     |        |         |                 | 1086  | 1234   | 1589   |      |
|   |  |     |        |         |                 | 759   | 863    | 1112   |      |
|   |  |     |        |         |                 | 89    | 101    | 131    |      |
|   |  |     |        |         |                 | km    | 877    | 997    | 1283 |
|   |  |     |        |         |                 |       | 438    | 500    | 643  |
|   |  |     |        |         |                 |       | 220    | 250    | 323  |
|   |  |     |        |         |                 |       | 167    | 188    | 242  |
|   |  |     |        |         |                 |       | 111    | 124    | 162  |
|   |  | GPS |        | C       |                 | 3727  | 4274   | 5500   |      |
|   |  |     |        | D       |                 | 3198  | 3632   | 4671   |      |
|   |  |     |        | E       |                 | 2821  | 3203   | 4123   |      |
| 2 |  |     |        | 1:200   | km <sup>2</sup> | 76780 | 102374 | 163795 |      |
|   |  |     |        | 1:500   |                 | 33383 | 44510  | 71216  |      |
|   |  |     |        | 1:1000  |                 | 15174 | 20232  | 32374  |      |
|   |  |     |        | 1:2000  |                 | 6676  | 8901   | 14244  |      |
|   |  |     |        | 1:5000  |                 | 1975  | 2630   | 4210   |      |
|   |  |     |        | 1:10000 |                 | 1109  | 1478   | 2364   |      |
|   |  |     |        |         | 1               | 200   | 1.8    |        |      |
|   |  |     |        |         | 2.0             |       |        |        |      |
| 3 |  |     | 1:200  | km      | 1016            | 1354  | 1864   |        |      |
|   |  |     | 1:500  |         | 785             | 1047  | 1440   |        |      |
|   |  |     | 1:1000 |         | 607             | 809   | 1113   |        |      |
|   |  |     | 1:2000 |         | 468             | 625   | 860    |        |      |
|   |  |     | 1:5000 |         | 362             | 481   | 665    |        |      |
| 4 |  |     |        |         | 2698            | 3372  | 5733   |        |      |

## 2.2-3

|   |     |   |   |   |      |       |
|---|-----|---|---|---|------|-------|
|   |     |   |   |   |      |       |
| 1 | ( ) |   |   |   | 0.6  |       |
| 2 |     |   |   |   | 0.5  |       |
| 3 |     |   |   |   | 0.5  |       |
| 4 |     |   |   |   | 1.2  |       |
| 5 | GPS | C | D | E | 0.6  |       |
| 6 |     |   |   |   | 0.6  | 2.2-2 |
| 7 |     |   |   |   | 0.48 |       |
| 8 |     |   |   |   | 0.7  |       |
| 9 |     |   |   |   | 0.4  |       |

|    |       |         |  |
|----|-------|---------|--|
| 10 | 20cm  | 1.3     |  |
| 11 |       | 1.1     |  |
| 12 | 60%   | 1.2 1.5 |  |
| 13 | 1:200 | 1.6     |  |
| 14 |       | 1.5     |  |

## 2.3

2.3-1

|  |               |               |            |
|--|---------------|---------------|------------|
|  |               |               |            |
|  | ≤ 300m<br>3cm | ≤ 700m<br>2cm | 700m ≤ 2cm |
|  | ≤ 5m          | ≤ 15m         | 15m        |
|  |               | 1.5m          | 1.5m       |
|  |               |               |            |

2.3-2

|   |  |         |     | ( )    |        |        |  |
|---|--|---------|-----|--------|--------|--------|--|
|   |  |         |     |        |        |        |  |
| 1 |  | 1:200   |     | 204748 | 272301 | 382875 |  |
|   |  | 1:500   |     | 89020  | 118396 | 166468 |  |
|   |  | 1:1000  |     | 40464  | 53817  | 75680  |  |
|   |  | 1:2000  |     | 17803  | 23680  | 33294  |  |
|   |  | 1:5000  |     | 5260   | 7002   | 9838   |  |
|   |  | 1:10000 |     | 2955   | 3924   | 5530   |  |
| 2 |  | 1       | 1.5 |        |        |        |  |
| 3 |  | 1:200   |     | 3245   | 4316   | 6474   |  |
|   |  | 1:500   |     | 2636   | 3506   | 5261   |  |
|   |  | 1:1000  |     | 2023   | 2698   | 4046   |  |
|   |  | 1:2000  |     | 1559   | 2075   | 3112   |  |
|   |  | 1:5000  |     | 1268   | 1686   | 2529   |  |

## 2.4

2.4-1

|  |     |     |   |
|--|-----|-----|---|
|  |     |     |   |
|  |     |     |   |
|  |     |     |   |
|  | 1 3 | 4 5 | 5 |

|  |         |         |       |
|--|---------|---------|-------|
|  | km ≤ 10 | km ≤ 20 | km 20 |
|--|---------|---------|-------|

2.4-2

|   |  |    | ( )  |      |      |
|---|--|----|------|------|------|
|   |  |    |      |      |      |
| 1 |  | km | 1206 | 1446 | 1880 |
| 2 |  |    | 1416 | 1700 | 2337 |
| 3 |  |    | 1624 | 1948 | 2599 |

## 2.5

2.5-1

|         |         |       |
|---------|---------|-------|
|         |         |       |
|         |         |       |
| ≥ 2.0 m | ≥ 1.8 m | 1.8 m |
| ≥ 15m   | ≥ 11m   | 11m   |

2.5-2

|  |    | ( )  |      |      |
|--|----|------|------|------|
|  |    |      |      |      |
|  | km | 2698 | 4384 | 6744 |

## 2.6

2.6-1

|   |  |     |  |         |        | ( )  |      |      |
|---|--|-----|--|---------|--------|------|------|------|
|   |  |     |  |         |        |      |      |      |
| 1 |  |     |  | 1:500   | 0.25m² | 459  | 689  | 1102 |
|   |  |     |  | 1:1000  |        | 756  | 1099 | 1732 |
|   |  |     |  | 1:2000  |        | 1049 | 1509 | 2362 |
|   |  |     |  | 1:5000  |        | 1966 | 2739 | 4215 |
|   |  |     |  | 1:10000 |        | 2882 | 3969 | 6066 |
|   |  | 2.0 |  |         |        |      |      |      |
| 2 |  |     |  | 1:2     | 100cm² | 24   | 34   | 56   |
|   |  |     |  | 2:5     |        | 28   | 40   | 72   |
|   |  |     |  | 1.5     |        |      |      |      |
|   |  |     |  | 1:2     |        | 14   | 20   | 36   |
|   |  |     |  | 2:5     |        | 18   | 24   | 41   |
|   |  |     |  |         |        |      |      |      |
| 3 |  |     |  |         |        | 1000 |      |      |
|   |  |     |  |         |        |      |      |      |
| 4 |  |     |  |         |        | 3    | 3    |      |

|   |  |  |  |      |
|---|--|--|--|------|
| 5 |  |  |  | 1000 |
|---|--|--|--|------|

3

3.1

3.1-1

|  |     |
|--|-----|
|  | %   |
|  | 120 |
|  | 100 |
|  | 80  |

1

2.

3.2

3.2-1

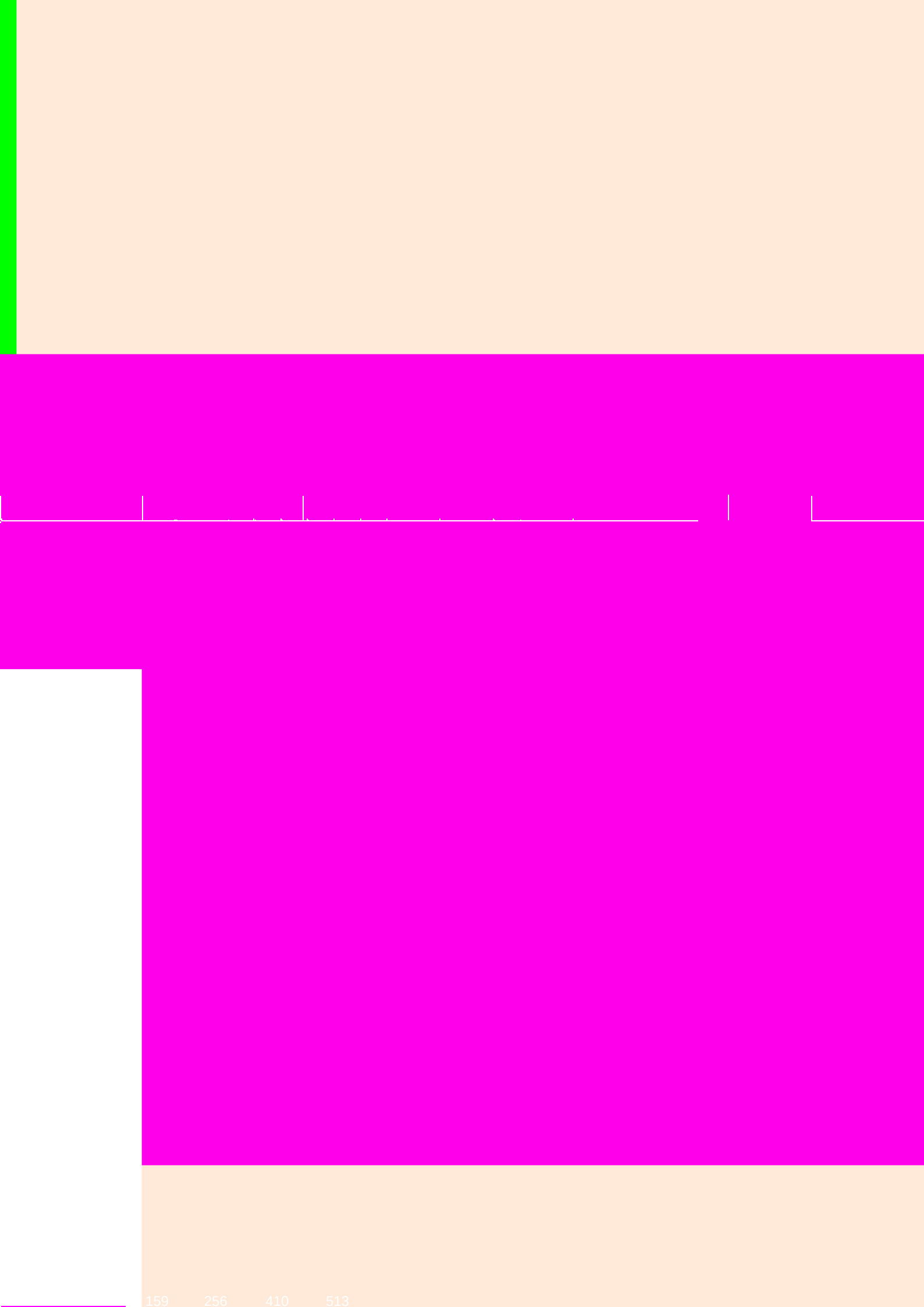
|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

3.2-2

| 1 |  | 1 200   | 16065 22950 34425 |
|---|--|---------|-------------------|
|   |  | 1 500   | 8033 11475 17213  |
|   |  | 1 1000  | 5355 7650 11475   |
|   |  | 1 2000  | 3570 5100 7650    |
|   |  | 1 5000  | 1071 1530 2295    |
|   |  | 1 10000 | 536 765 1148      |
|   |  | 1 25000 | 268 383 574       |
|   |  | 1 50000 | 134 191 287       |
| 2 |  | 1.3     |                   |
| 3 |  | 1.5     |                   |

3.3





### 3.3

[illegible]



|      |  |      |       |        |      |      |       |           |       |         |  |
|------|--|------|-------|--------|------|------|-------|-----------|-------|---------|--|
|      |  | m²   | 400   |        |      |      | 5490  |           | 6040  |         |  |
|      |  |      | 500   |        |      |      | 6400  |           | 7040  |         |  |
|      |  |      | 500   |        |      |      | 4.2-1 |           | 1     |         |  |
|      |  |      |       |        |      |      |       |           |       |         |  |
| 8    |  | m²   |       |        |      |      |       | ≤ 500 kPa |       | 500 kPa |  |
|      |  |      |       |        |      |      |       |           |       |         |  |
|      |  | 0.10 |       |        |      |      | 2775  | 3330      | 3330  | 3996    |  |
|      |  | 0.25 |       |        |      |      | 3965  | 4758      | 4758  | 5710    |  |
| 0.50 |  |      |       | 5156   | 6188 | 6188 | 7425  |           |       |         |  |
| 9    |  |      | (kN)  |        |      |      |       |           |       |         |  |
|      |  |      | ≤ 500 |        |      |      | 6786  |           | 7488  |         |  |
|      |  |      | 1000  |        |      |      | 7424  |           | 8237  |         |  |
|      |  |      | 1000  | 500    | 1.1  |      |       |           |       |         |  |
| 10   |  |      |       |        |      |      | 3978  |           | 4563  |         |  |
|      |  |      |       |        |      |      | 9945  |           | 11412 |         |  |
|      |  |      |       |        |      |      | 8775  |           | 9891  |         |  |
|      |  |      |       |        |      |      | 7020  |           | 7605  |         |  |
| 11   |  |      |       |        |      |      |       |           |       |         |  |
|      |  | /    |       |        |      |      | 29250 |           | 58500 |         |  |
|      |  |      |       |        |      |      | 35100 |           |       |         |  |
| 12   |  |      | D     | D ≤ 20 |      |      | 1753  |           |       |         |  |
|      |  |      |       | D 20   |      |      | 2104  |           |       |         |  |
|      |  |      |       |        |      |      | 409   |           |       |         |  |
|      |  |      |       |        |      |      | 205   |           |       |         |  |
|      |  |      |       |        |      |      |       |           |       |         |  |

### 3.3-5

|   |  |  |  |      |           |     |  |
|---|--|--|--|------|-----------|-----|--|
|   |  |  |  |      |           |     |  |
| 1 |  |  |  |      |           | 1.5 |  |
| 2 |  |  |  |      |           | 2.0 |  |
| 3 |  |  |  |      |           | 1.3 |  |
| 4 |  |  |  |      |           | 1.3 |  |
| 5 |  |  |  |      |           | 3.0 |  |
|   |  |  |  | D(m) | D ≤ 10    | 2.0 |  |
|   |  |  |  |      | 10 D ≤ 20 | 2.5 |  |
|   |  |  |  |      | D 20      | 3.0 |  |

|   |   |   |         |           |
|---|---|---|---------|-----------|
|   |   |   | 1.5     |           |
|   |   |   | 1.2     |           |
| 6 |   |   | 1.2     | 3.3-4 1 6 |
| 7 |   |   | 1.1 1.3 |           |
| 8 |   |   |         |           |
| 9 | 3 | 3 |         |           |

#### 4

#### 4.1

##### 4.1.1

##### 4.1.2

##### 4.1-1

|  | I                                                                |                                                                                       |                                                                      |
|--|------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------|
|  |                                                                  |                                                                                       |                                                                      |
|  | $H \leq 6.0m$                                                    | $6.0m \leq H \leq 12.0m$                                                              | $H \geq 12.0m$                                                       |
|  | $F \leq 1000m^2$<br>$0.5 m/d \leq K \leq 20m/d$<br>$S \leq 7.0m$ | $1000m^2 < F \leq 2000m^2$<br>$0.5m/d \leq K \leq 50m/d$<br>$7.0 m \leq S \leq 13.0m$ | $F > 2000m^2$<br>$K \leq 0.5m/d \leq K \leq 50m/d$<br>$S \leq 13.0m$ |

##### 4.1-2

|  |    |    |     |     |      |      |
|--|----|----|-----|-----|------|------|
|  | 10 | 50 | 100 | 500 | 1000 | 2000 |
|--|----|----|-----|-----|------|------|

- 1.
2.                      0.5                      0.5
3.                      2000                      I                      3.5%                      4.5%                      5.0%
4.                                      4.1.1.1

## 4.2

### 4.2.1

22%

### 4.2.2

4.2-1

|   |  |        |                 |          |       |
|---|--|--------|-----------------|----------|-------|
|   |  |        |                 |          |       |
| 1 |  | (kn)   | ≤ 500           |          | 6400  |
|   |  |        | 1000            |          | 10000 |
|   |  |        | 3000            |          | 15000 |
|   |  |        | 5000            |          | 25000 |
|   |  |        | 10000           |          | 40000 |
|   |  |        | 15000           |          | 55000 |
|   |  |        | 20000           |          | 70000 |
|   |  |        | 20000      5000 |          | 1.25  |
|   |  | φ (mm) | φ ≤ 500         |          | 5000  |
|   |  |        | 500             | φ ≤ 800  | 7000  |
|   |  |        | 800             | φ ≤ 1000 | 9000  |
|   |  |        | φ    1000       |          | 12000 |
|   |  |        |                 |          |       |
| 2 |  |        |                 | 500      |       |
|   |  | (kn)   | ≤ 1000          | 3500     |       |
|   |  |        | 3000            | 4500     |       |
|   |  |        | 5000            | 6000     |       |
|   |  |        | 10000           | 9000     |       |
|   |  |        | 10000      5000 | 1.25     |       |
|   |  |        |                 |          |       |
| 3 |  | D(m)   | D<30            |          | 1200  |
|   |  |        | 30    D ≤ 40    |          | 1500  |
|   |  |        | 40    D ≤ 50    |          | 1800  |
|   |  |        | 50    D ≤ 60    |          | 2200  |
|   |  |        | D    60         |          | 2600  |
| 4 |  |        |                 | 60       |       |
|   |  |        |                 | 100      |       |

|  |  |  |  |             |             |  |      |
|--|--|--|--|-------------|-------------|--|------|
|  |  |  |  |             |             |  | 1000 |
|  |  |  |  |             | $D \leq 30$ |  | 500  |
|  |  |  |  | $D \leq 30$ |             |  | 1.1  |
|  |  |  |  | $D \leq 10$ |             |  |      |
|  |  |  |  |             |             |  |      |

4.2-2

|  |  |  |
|--|--|--|
|  |  |  |
|  |  |  |

4.2-3

|  |  |  |  |  |      |      |      |
|--|--|--|--|--|------|------|------|
|  |  |  |  |  |      |      |      |
|  |  |  |  |  |      |      |      |
|  |  |  |  |  |      |      |      |
|  |  |  |  |  | 3272 | 2618 | 4593 |
|  |  |  |  |  | 2181 | 1745 | 3062 |
|  |  |  |  |  | 1606 | 1285 | 2253 |
|  |  |  |  |  | 1402 | 1122 | 1968 |
|  |  |  |  |  | 1459 | 1167 | 1980 |
|  |  |  |  |  | 1216 | 973  | 1650 |
|  |  |  |  |  | 1029 | 823  | 1386 |
|  |  |  |  |  | 538  | 430  | 802  |
|  |  |  |  |  | 91   | 163  | 135  |
|  |  |  |  |  | 74   | 134  | 112  |
|  |  |  |  |  | 62   | 112  | 93   |
|  |  |  |  |  | 53   | 95   | 78   |
|  |  |  |  |  | 59   | 91   |      |
|  |  |  |  |  | 50   | 74   |      |
|  |  |  |  |  | 42   | 62   |      |

|   |  |   |    |
|---|--|---|----|
| 5 |  | . | 23 |
|---|--|---|----|



5.3-1

|   |  |  |                 | ( )  |      |      |
|---|--|--|-----------------|------|------|------|
|   |  |  |                 |      |      |      |
| 1 |  |  | km <sup>2</sup> | 760  | 1080 | 1400 |
| 2 |  |  |                 | 608  | 864  | 1120 |
|   |  |  |                 | 730  | 1037 | 1344 |
|   |  |  |                 | 1094 | 1555 | 2016 |
|   |  |  |                 | 1216 | 1728 | 2240 |
|   |  |  |                 | 912  | 1296 | 1680 |

5.3-2

|  |  |          |  | ( ) |     |      |       |
|--|--|----------|--|-----|-----|------|-------|
|  |  |          |  |     |     |      |       |
|  |  | 1:5000   |  | 768 | 960 | 1152 | 2.2-1 |
|  |  | 1:10000  |  | 640 | 800 | 960  |       |
|  |  | 1:25000  |  | 512 | 640 | 768  |       |
|  |  | 1:50000  |  | 384 | 480 | 576  |       |
|  |  | 1:100000 |  | 320 | 400 | 480  |       |
|  |  | 1:250000 |  | 256 | 320 | 384  |       |
|  |  | 1:500000 |  | 192 | 240 | 288  |       |

## 5.4

5.4-3

|  |  |             |     |
|--|--|-------------|-----|
|  |  |             |     |
|  |  | D ≤ 50      | 1.2 |
|  |  | 50 D ≤ 100  | 1.0 |
|  |  | 100 D ≤ 150 | 1.2 |
|  |  | 150 D ≤ 200 | 1.4 |
|  |  | 200 D ≤ 250 | 1.7 |

|   |  |             |          |  |     |
|---|--|-------------|----------|--|-----|
| 6 |  |             |          |  | 420 |
| 7 |  |             |          |  | 170 |
|   |  | L<br><br>km | L ≤ 5    |  | 20  |
|   |  |             | 5 L ≤ 10 |  | 40  |
|   |  |             | L 10     |  | 50  |
|   |  | 1.3         |          |  |     |
| 8 |  | 3.3-3       |          |  |     |

## 5.6

5.6-1

|   |  |  |          |               |   |       |
|---|--|--|----------|---------------|---|-------|
|   |  |  |          |               |   | ( )   |
| 1 |  |  | D<br>(m) | D ≤ 300       |   | 840   |
|   |  |  |          | 300 D ≤ 1000  |   | 6800  |
|   |  |  |          | 1000 D ≤ 2000 |   | 10200 |
|   |  |  |          | D 2000        |   | 13600 |
|   |  |  |          | D ≤ 300       | M | 20400 |
|   |  |  |          | D 300         |   | 3400  |
|   |  |  |          | D ≤ 100       |   | 5100  |
|   |  |  |          | 100 D ≤ 200   |   | 30    |
|   |  |  |          | D 200         |   | 40    |
|   |  |  |          |               |   | 50    |
| 2 |  |  |          | D ≤ 200       |   | 20000 |
|   |  |  |          | 200 D ≤ 1000  |   | 30000 |
|   |  |  |          | 1000 D ≤ 1500 |   | 40000 |
|   |  |  |          | D 1500        |   | 50000 |
|   |  |  |          |               |   |       |

5.6-2

|   |  |       |            |       |
|---|--|-------|------------|-------|
|   |  |       |            | ( )   |
| 1 |  |       |            | 840   |
|   |  |       |            | 8000  |
|   |  |       |            | 2000  |
|   |  |       |            | 4500  |
| 2 |  | D (m) | D ≤ 50     | 5000  |
|   |  |       | 50 D ≤ 100 | 10000 |
|   |  |       | D 100      | 15000 |
| 3 |  |       |            |       |

## 6

### 6.1

6.2

6.2-1

|  |  |  |  |
|--|--|--|--|
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

6.2-2

|   |  |  |  | ( )    |        |        |
|---|--|--|--|--------|--------|--------|
|   |  |  |  |        |        |        |
| 1 |  |  |  | 54600  | 78100  | 109300 |
|   |  |  |  | 6900   | 9900   | 13900  |
|   |  |  |  | 29100  | 41700  | 58400  |
|   |  |  |  | 32800  | 46900  | 65600  |
|   |  |  |  | 9100   | 13000  | 18300  |
|   |  |  |  | 16400  | 23400  | 32900  |
|   |  |  |  | 102100 | 145800 | 204100 |
|   |  |  |  |        |        |        |
| 2 |  |  |  | 47400  | 67700  | 94800  |
|   |  |  |  | 91200  | 130200 | 182300 |
|   |  |  |  | 47400  | 67700  | 94800  |
| 3 |  |  |  | 51000  | 72900  | 102100 |
|   |  |  |  | 76500  | 109500 | 153200 |
|   |  |  |  | 12400  | 17800  | 24800  |
| 4 |  |  |  | 21900  | 31300  | 43800  |
|   |  |  |  | 32900  | 47000  | 65600  |
|   |  |  |  | 3300   | 4900   | 6800   |
|   |  |  |  | 2700   | 3900   | 5400   |

6.3

6.3-1

|  |  |
|--|--|
|  |  |
|--|--|

|   |  |  |      |      |       |
|---|--|--|------|------|-------|
| 1 |  |  | 5600 | 8000 | 11300 |
| 2 |  |  | 5500 | 7800 | 11000 |
| 3 |  |  | 3300 | 4900 | 6800  |
| 4 |  |  | 5000 | 7300 | 10200 |
| 5 |  |  | 1800 | 2600 | 3600  |
| 6 |  |  | 5500 | 7800 | 11000 |

7

7.1

22%

7.2

7.2-1

|   |  |  |           |  |    |       |  |
|---|--|--|-----------|--|----|-------|--|
|   |  |  |           |  |    |       |  |
| 1 |  |  |           |  |    | 18    |  |
|   |  |  |           |  |    | 25    |  |
|   |  |  |           |  |    | 45    |  |
|   |  |  |           |  |    | 220   |  |
|   |  |  |           |  |    | 130   |  |
|   |  |  |           |  |    | 260   |  |
|   |  |  |           |  |    |       |  |
| 2 |  |  |           |  | km | 18    |  |
|   |  |  |           |  |    | 14400 |  |
|   |  |  |           |  |    | 21600 |  |
|   |  |  | D ≤ 10    |  |    | 1800  |  |
|   |  |  | 10 D ≤ 20 |  |    | 2520  |  |
|   |  |  | 20 D ≤ 30 |  |    | 3240  |  |
|   |  |  | 30 D ≤ 50 |  |    | 4320  |  |

|     |    |
|-----|----|
|     |    |
|     |    |
|     |    |
|     |    |
| 4   | 3  |
| 5   | 5  |
| 3   | 6  |
| 2   | 10 |
| 3   |    |
| 0   |    |
| 0   |    |
| 0   |    |
| 0   |    |
| 0.5 |    |

7.2-1

|    |    |
|----|----|
|    |    |
| 20 |    |
| 14 |    |
|    |    |
|    | 20 |

|    |  |                     |          |               |  |    |      |  |  |  |  |  |
|----|--|---------------------|----------|---------------|--|----|------|--|--|--|--|--|
|    |  | 2.4-1      3      3 |          |               |  |    |      |  |  |  |  |  |
| 14 |  |                     |          |               |  | km | 3600 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 4500 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 3600 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 3600 |  |  |  |  |  |
|    |  | 3                   | 3        |               |  |    |      |  |  |  |  |  |
| 15 |  |                     |          |               |  |    | 1440 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 2160 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 3600 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 4500 |  |  |  |  |  |
|    |  |                     |          |               |  |    | 6300 |  |  |  |  |  |
|    |  |                     |          |               |  |    |      |  |  |  |  |  |
| 16 |  |                     |          |               |  | m  | 23   |  |  |  |  |  |
|    |  |                     |          |               |  |    | 27   |  |  |  |  |  |
|    |  |                     |          |               |  |    | 45   |  |  |  |  |  |
|    |  |                     |          |               |  |    | 41   |  |  |  |  |  |
|    |  |                     |          |               |  |    | 108  |  |  |  |  |  |
|    |  |                     |          |               |  |    | 108  |  |  |  |  |  |
|    |  |                     | D<br>(m) | D ≤ 100       |  |    | 14   |  |  |  |  |  |
|    |  |                     |          | 100   D ≤ 300 |  |    | 27   |  |  |  |  |  |
|    |  |                     |          | 300   D ≤ 500 |  |    | 32   |  |  |  |  |  |
|    |  |                     |          | D   500       |  |    | 45   |  |  |  |  |  |
|    |  |                     |          |               |  |    |      |  |  |  |  |  |
|    |  |                     |          |               |  |    |      |  |  |  |  |  |
|    |  |                     |          |               |  |    |      |  |  |  |  |  |

7.2-1

|  |  |  |  |  |  |  |  |  |  |  |     |
|--|--|--|--|--|--|--|--|--|--|--|-----|
|  |  |  |  |  |  |  |  |  |  |  | ( ) |
|--|--|--|--|--|--|--|--|--|--|--|-----|

|  |  |  |  |      |  |         |
|--|--|--|--|------|--|---------|
|  |  |  |  | D 50 |  | 14400   |
|  |  |  |  |      |  | 1.3     |
|  |  |  |  |      |  | 1.2 3.0 |

8

8.1

10

8.2

8.2-1

|    |  |  | ( ) |         |
|----|--|--|-----|---------|
| 1  |  |  | 8   |         |
| 2  |  |  | 8   |         |
|    |  |  | 18  |         |
| 3  |  |  | 19  |         |
| 4  |  |  | 26  |         |
|    |  |  | 40  |         |
|    |  |  | 70  |         |
|    |  |  | 49  | 0.002mm |
| 5  |  |  | 47  | 12      |
|    |  |  | 23  |         |
|    |  |  | 15  |         |
| 6  |  |  | 30  |         |
| 7  |  |  | 23  |         |
| 8  |  |  | 14  |         |
| 9  |  |  | 52  |         |
| 10 |  |  | 319 |         |
|    |  |  | 638 |         |
| 11 |  |  | 55  |         |
|    |  |  | 29  |         |
| 12 |  |  | 264 | 1.3     |
|    |  |  | 497 |         |
| 13 |  |  | 40  | 12      |
|    |  |  | 116 | 15      |
| 14 |  |  | 53  |         |
| 15 |  |  | 23  |         |
| 16 |  |  | 137 | 5       |
|    |  |  | 56  | 2       |
| 17 |  |  | 413 |         |



|    |                       |         |  |      |    |
|----|-----------------------|---------|--|------|----|
|    | $\leq 600\text{kPa}$  |         |  | 775  |    |
|    |                       |         |  | 930  |    |
|    |                       |         |  | 1240 |    |
| 18 |                       |         |  | 29   | 17 |
|    |                       |         |  | 56   |    |
| 19 |                       |         |  | 49   | 30 |
|    |                       |         |  | 71   |    |
|    |                       |         |  | 99   |    |
| 20 |                       |         |  | 133  |    |
| 21 |                       |         |  | 14   |    |
| 22 |                       |         |  | 27   |    |
| 23 |                       |         |  | 36   |    |
| 24 |                       |         |  | 56   |    |
| 25 |                       |         |  | 258  |    |
| 26 |                       |         |  | 30   |    |
| 27 | $\leq 600\text{ kpa}$ | ( ) ( ) |  | 4341 |    |
|    |                       | ( ) ( ) |  | 9096 |    |
|    |                       | ( )     |  | 1447 | ,  |
|    |                       | ( )     |  | 3514 |    |

8.3

8.3-1

|  |  |  |     |
|--|--|--|-----|
|  |  |  | ( ) |
|--|--|--|-----|



## 8.4

8.4-1

|   |      |                 |  | ( ) |
|---|------|-----------------|--|-----|
| 1 | (mm) | Φ50 70          |  | 19  |
|   |      | 50 × 50 × 50    |  | 35  |
|   |      | 50 × 50 × 100   |  | 38  |
|   |      | 70 × 70 × 70    |  | 43  |
|   |      | 100 × 100 × 100 |  | 69  |
| 2 | (mm) | 50 × 50 × 50    |  | 38  |
| 3 | (mm) | 50 200          |  | 16  |
| 4 |      |                 |  | 14  |
| 5 |      |                 |  | 27  |
|   |      |                 |  | 59  |

8.4-2

|    |  |  | ( )  |      |
|----|--|--|------|------|
| 1  |  |  | 14   |      |
| 2  |  |  | 47   |      |
| 3  |  |  | 14   |      |
|    |  |  | 14   |      |
|    |  |  | 18   |      |
| 4  |  |  | 47   | 3    |
| 5  |  |  | 117  |      |
| 6  |  |  | 47   |      |
|    |  |  | 70   |      |
| 7  |  |  | 185  |      |
|    |  |  | 233  |      |
| 8  |  |  | 760  | 5    |
| 9  |  |  | 93   | 3    |
| 10 |  |  | 269  | 5    |
|    |  |  | 289  |      |
| 11 |  |  | 26   |      |
| 12 |  |  | 2455 | 25 3 |
| 13 |  |  | 52   |      |

8.4-3

|   |  |  | ( ) |
|---|--|--|-----|
| 1 |  |  | 23  |
| 2 |  |  | 81  |
| 3 |  |  | 70  |

|    |                                |  |  |     |
|----|--------------------------------|--|--|-----|
| 4  | SiO <sub>2</sub>               |  |  | 103 |
| 5  | R <sub>2</sub> O <sub>3</sub>  |  |  | 52  |
| 6  | Fe <sub>2</sub> O <sub>3</sub> |  |  | 14  |
| 7  | Al <sub>2</sub> O <sub>3</sub> |  |  | 21  |
| 8  | CaO                            |  |  | 26  |
| 9  | MgO                            |  |  | 5   |
| 10 | MnO                            |  |  | 29  |
| 11 | TiO <sub>2</sub>               |  |  | 29  |
| 12 | K <sub>2</sub> O               |  |  | 65  |
| 13 | NaO                            |  |  | 52  |
| 14 | P <sub>2</sub> O <sub>5</sub>  |  |  | 18  |
| 15 | SO <sub>3</sub>                |  |  | 23  |

10.1.3

× 1±

× × ×

10.1.4

10.1.5

10.1.6

15 20%

10.2

10.2—1

| % | 60 | 68 | 68 | 73 | 73 |
|---|----|----|----|----|----|
| % | 10 | 4  | 4  | 3  | 3  |
| % | 30 | 28 | 28 | 24 | 24 |

10.2—2

|   |  |           |
|---|--|-----------|
|   |  |           |
| 1 |  | 1.40      |
| 2 |  | 1.04      |
| 3 |  | 1.70      |
| 4 |  | 0.5 0.55  |
| 5 |  | 0.8       |
| 6 |  | 0.3 0.4   |
| 7 |  | 0.84 0.92 |
| 8 |  | 0.76 0.88 |

10.3

10.3 1

|   |          |           |    |   |  |         |    |
|---|----------|-----------|----|---|--|---------|----|
|   |          |           |    |   |  |         |    |
| 1 | H<br>(m) | H<30      | -5 | 6 |  |         | -2 |
|   |          | 30≤H 50   | -2 |   |  |         | 1  |
|   |          | 50≤H 70   | 1  |   |  |         | 2  |
|   |          | 70≤H 150  | 3  |   |  |         | 3  |
|   |          | 150≤H 250 | 5  | 7 |  | 10 m    | -2 |
| 2 |          |           | -1 |   |  | 10 20 m | 1  |

|   |  |      |    |    |  |                        |    |
|---|--|------|----|----|--|------------------------|----|
|   |  |      | 1  |    |  | 20 40 m                | 2  |
|   |  | 3 km | 2  |    |  | 40 60 m                | 4  |
|   |  |      | 3  | 8  |  |                        | -2 |
|   |  |      | 4  |    |  |                        | 1  |
| 3 |  |      | -2 |    |  |                        | 2  |
|   |  |      | 0  |    |  |                        | 3  |
|   |  |      | 1  | 9  |  | 10 m <sup>3</sup>      | 0  |
|   |  |      | 2  |    |  | 10 100 m <sup>3</sup>  | 2  |
| 4 |  | X    | 3  |    |  | 100 500 m <sup>3</sup> | 3  |
|   |  |      | -2 |    |  | 500 m <sup>3</sup>     | 4  |
|   |  |      | 1  | 10 |  |                        | -1 |
|   |  |      | 2  |    |  |                        | 2  |
| 5 |  |      | 3  |    |  |                        | 3  |
|   |  |      | -2 | 11 |  |                        | -1 |
|   |  |      | 1  |    |  |                        | 1  |
|   |  |      | 2  |    |  |                        | 3  |
|   |  |      |    |    |  |                        |    |
|   |  |      |    |    |  |                        |    |
|   |  |      | 3  |    |  |                        |    |

### 10.3 2

|  |       |       |      |
|--|-------|-------|------|
|  |       |       |      |
|  | ≤ 3   | 3 10  | ≥ 10 |
|  | ≤ 30% | ≤ 60% | 60%  |
|  | ≤ 30% | 60% ≤ | 60%  |
|  |       |       |      |
|  |       |       |      |

### 10.3 3

|   |  |  |     |
|---|--|--|-----|
|   |  |  |     |
| 1 |  |  | 0.7 |

2

|   |  |             |          |
|---|--|-------------|----------|
| 4 |  |             | 1.2      |
| 5 |  | 60 m        | 1.1      |
| 6 |  | ≥ 8         | 1.1 1.2  |
| 7 |  | 250 m       | 1.1      |
| 8 |  | 1000 m 8 km | 1.2      |
| 9 |  |             | 1.05 1.5 |

#### 10.4

10.4 1

|    |           |          |
|----|-----------|----------|
|    |           |          |
| 1  | 200       | 9        |
| 2  | 500       | 20.9     |
| 3  | 1,000     | 38.8     |
| 4  | 3,000     | 103.8    |
| 5  | 5,000     | 163.9    |
| 6  | 8,000     | 249.6    |
| 7  | 10,000    | 304.8    |
| 8  | 20,000    | 566.8    |
| 9  | 40,000    | 1,054.0  |
| 10 | 60,000    | 1,515.2  |
| 11 | 80,000    | 1,960.1  |
| 12 | 100,000   | 2,393.4  |
| 13 | 200,000   | 4,450.8  |
| 14 | 400,000   | 8,276.7  |
| 15 | 600,000   | 11,897.5 |
| 16 | 800,000   | 15,391.4 |
| 17 | 1,000,000 | 18,793.8 |
| 18 | 2,000,000 | 34,948.9 |

2,000,000

1.7

#### 11.

##### 11.1

##### 11.1.1

##### 11.1.2

× ×

##### 11.1.3

×

11.1-1

|   |         |       |         |       |         |       |
|---|---------|-------|---------|-------|---------|-------|
|   |         |       |         |       |         |       |
|   | ≥ 300MW | 300MW | ≥ 330kV | 330kV | ≥ 330kV | 330kV |
| % | 15      | 17    | 20      | 23    | 17      | 20    |

11.2

11.2.1

11.7-1

11.2.2

11.7-2

11.3

11.3-1

| MW   |  |  |        |        |        |        |         |
|------|--|--|--------|--------|--------|--------|---------|
|      |  |  |        |        |        |        |         |
| 1000 |  |  | 303.66 | 425.12 | 607.31 | 880.60 | 1093.16 |
| 1000 |  |  | 274.27 | 383.98 | 548.54 | 795.38 | 987.37  |
| 800  |  |  | 241.62 | 338.27 | 483.24 | 700.70 | 869.83  |
| 600  |  |  | 204.07 | 285.70 | 408.14 | 591.80 | 734.65  |
| 300  |  |  | 163.26 | 228.56 | 326.51 | 473.44 | 587.72  |
| 200  |  |  | 25.71  | 175.99 | 251.42 | 364.56 | 452.56  |
| 100  |  |  | 83.27  | 116.57 | 166.53 | 241.47 | 299.75  |
|      |  |  |        |        |        |        |         |

11.4

11.4-1

| kV   |  |  |       |       |       |       |       |
|------|--|--|-------|-------|-------|-------|-------|
|      |  |  |       |       |       |       |       |
| 500  |  |  | 18.35 | 25.69 | 36.70 | 53.22 | 66.06 |
| 330  |  |  | 14.85 | 20.79 | 29.70 | 43.07 | 53.46 |
| 220  |  |  | 7.90  | 11.06 | 15.80 | 22.91 | 28.44 |
| 110  |  |  | 4.75  | 6.65  | 9.50  | 13.78 | 17.10 |
| ≤ 35 |  |  | 2.85  | 3.99  | 5.70  | 8.27  | 10.26 |
|      |  |  | 0.8   |       |       |       |       |

11.4-2

| 1 |  |  |  | 0.80 |              |
|---|--|--|--|------|--------------|
| 2 |  |  |  | 1.35 |              |
| 3 |  |  |  | 1.15 |              |
| 4 |  |  |  | 1.10 |              |
| 5 |  |  |  | 0.67 |              |
| 6 |  |  |  | 0.15 |              |
| 7 |  |  |  | 0.41 |              |
| 8 |  |  |  | 0.24 | 11.2-3 300MW |
| 9 |  |  |  | 0.42 |              |

|    |  |                    |      |  |
|----|--|--------------------|------|--|
| 10 |  | 30m                | 1.05 |  |
| 11 |  | 0.4km <sup>2</sup> | 100m |  |
| 12 |  |                    | 1.10 |  |
| 13 |  |                    | 1.80 |  |
| 14 |  |                    | 0.30 |  |
| 15 |  |                    | 0.60 |  |
| 16 |  |                    | 0.05 |  |
|    |  |                    |      |  |

## 11.5

11.5-1

|   | kV  |  |    |      |      |      |      |      |
|---|-----|--|----|------|------|------|------|------|
|   |     |  |    |      |      |      |      |      |
| 1 | 500 |  | km | 1303 | 1902 | 2605 | 3777 | 4950 |
|   | 330 |  |    | 1107 | 1615 | 2213 | 3209 | 4205 |
|   | 220 |  |    | 651  | 950  | 1302 | 1888 | 2474 |
|   | 110 |  |    | 495  | 723  | 990  | 1436 | 1881 |
| 2 |     |  |    | 4.0  |      |      |      |      |

11.5-2

| 1  | 35kV        | 0.43 | 11.4-1 110kV |
|----|-------------|------|--------------|
| 2  |             | 1.00 | 11.4-1       |
| 3  | 110kV 220kV | 1.20 |              |
| 4  |             |      |              |
| 5  |             |      |              |
| 6  |             | 1.15 |              |
| 7  |             |      |              |
| 8  |             | 1.10 |              |
| 9  |             | 0.40 |              |
| 10 | 50%         | 1.30 |              |
| 11 |             | 1.5  |              |
| 12 | 10km 10km   |      |              |

## 11.6

### 11.6.1

### 11.6.2



# 11.7

11.7-1

|  |  |            |       |            |          |            |           |            |      |            |
|--|--|------------|-------|------------|----------|------------|-----------|------------|------|------------|
|  |  |            |       |            |          |            |           |            |      |            |
|  |  |            |       |            |          |            |           |            |      |            |
|  |  | 1<br>1/1   | ≤ 20m | 3<br>3/3   | ≤<br>80m | 5<br>6/6   | ≤<br>150m | 7<br>10/10 | 150m | 9<br>14/14 |
|  |  | 1<br>1/10  | ≤ 20% | 2<br>5/16  | ≤ 40%    | 4<br>8/22  | ≤ 50%     | 6<br>12/28 | 50%  | 8<br>16/36 |
|  |  | 1<br>(1/1) |       | 2<br>(2/2) |          | 3<br>(3/3) |           | 4<br>4/4   |      | 5<br>(5/5) |
|  |  | ≤ 5%       |       | ≤ 10%      | ≤ 25%    |            | ≤ 40%     |            | >40% |            |
|  |  | 1<br>5/2   |       | 3<br>15/5  |          | 5<br>25/8  |           |            |      | 9<br>45/14 |

|  |  |       |  |       |  |       |  |       |   |       |
|--|--|-------|--|-------|--|-------|--|-------|---|-------|
|  |  |       |  |       |  |       |  |       |   |       |
|  |  | (1/1) |  | (2/2) |  | (3/3) |  | (4/4) | ; | (5/5) |

1.

2.

11.7-2

|  |  |    |    |    |    |    |
|--|--|----|----|----|----|----|
|  |  |    |    |    |    |    |
|  |  | 9  | 18 | 35 | 52 | 73 |
|  |  | 12 | 21 | 34 | 50 | 67 |

11.7-3

|  |   |    |    |    |    |
|--|---|----|----|----|----|
|  |   |    |    |    |    |
|  | 4 | 10 | 15 | 20 | 25 |

12

12.1

12.1.1

12.1.2

12.1.3

× ×

12.2

12.2.1

11.7-1

12.2.2

11.7-3

12.3

12.3-1

|   |  |    |      |      |      |      |      |
|---|--|----|------|------|------|------|------|
|   |  |    | ( )  |      |      |      |      |
|   |  |    |      |      |      |      |      |
| 1 |  | Km | 0.22 | 0.33 | 0.51 | 0.77 | 1.11 |
| 2 |  |    | 0.71 | 1.08 | 1.67 | 2.52 | 3.64 |

## 13.1

### 13.1.1

### 13.1.2

### 13.1.2

### 13.1.3

13.1.4 1 2000

0.4

0.6

0.2

13.1.5

x

x

## 13.2

### 13.2.1

11.7-1

### 13.2.2

11.7-3

### 13.3

13.3-1

|   |  |  |      |      |       |       |       |
|---|--|--|------|------|-------|-------|-------|
|   |  |  | ( )  |      |       |       |       |
|   |  |  |      |      |       |       |       |
| 1 |  |  | 2.46 | 3.16 | 4.64  | 6.30  | 8.50  |
| 2 |  |  | 3.00 | 3.86 | 5.66  | 8.67  | 11.67 |
| 3 |  |  | 5.46 | 7.02 | 10.30 | 14.97 | 20.17 |

1.

2.

13.3-2

|    |         |          |  |
|----|---------|----------|--|
|    |         |          |  |
| 1  |         | 0.8      |  |
| 2  |         | 0.6      |  |
| 3  |         | 1.1      |  |
| 4  |         | 1.0      |  |
| 5  |         | 0.6 0.9  |  |
| 6  |         | 1.05     |  |
| 7  |         | 1.15     |  |
| 8  |         | 1.05     |  |
| 9  |         | 0.8 1.05 |  |
| 10 |         | 0.7      |  |
| 11 | 160 200 | 1.3      |  |
| 12 | 30      | 1.5      |  |
| 13 |         | 1.0      |  |

1.



## 15.

### 15.1

### 15.2

15.2-1

|  |    |  |    |
|--|----|--|----|
|  |    |  |    |
|  |    |  |    |
|  | PH |  | PH |
|  |    |  |    |

### 15.3

15.3-1

|  |    |    |    |
|--|----|----|----|
|  |    |    |    |
|  |    |    |    |
|  | 80 | 40 | 60 |
|  | 80 | 60 | 40 |

### 15.4

15.4-1

|   |  |                         |    | (    ) |      |  |
|---|--|-------------------------|----|--------|------|--|
| 1 |  | $L \leq 0.2$            | km | 1000   |      |  |
|   |  | $0.2 \leq L < 1.0$      |    | 1000   |      |  |
|   |  | $1.0 \leq L < 3.0$      |    | 3560   |      |  |
|   |  | $3.0 \leq L < 5.0$      |    | 9026   |      |  |
|   |  | $5.0 \leq L < 10.0$     |    | 12760  |      |  |
|   |  | $10.0 \leq L < 50.0$    |    | 20095  |      |  |
|   |  | $L \geq 50.0$           |    | 68095  |      |  |
| 2 |  | $L \leq 1.0$            |    | 2500   |      |  |
|   |  | $1.0 \leq L < 50.0$     |    | 2500   |      |  |
|   |  | $50.0 \leq L < 200.0$   |    | 58360  |      |  |
|   |  | $200.0 \leq L < 1000.0$ |    | 206860 |      |  |
|   |  | $L \geq 1000.0$         |    | 926860 |      |  |
| 3 |  | $L \leq 1.0$            |    |        | 2000 |  |
|   |  | $1.0 \leq L < 10.0$     |    |        | 2000 |  |

|   |  |                |    |        |  |
|---|--|----------------|----|--------|--|
|   |  | 10.0 L ≤ 50.0  |    | 15770  |  |
|   |  | L 50.0         |    | 60970  |  |
| 4 |  | L ≤ 1.0        | km | 3130   |  |
|   |  | 1.0 L ≤ 5.0    |    | 3130   |  |
|   |  | 5.0 L ≤ 20.0   |    | 13010  |  |
|   |  | L 20.0         |    | 43010  |  |
|   |  |                |    |        |  |
| 5 |  | L ≤ 5.0        |    | 8500   |  |
|   |  | 5.0 L ≤ 20.0   |    | 8500   |  |
|   |  | 20.0 L ≤ 50.0  |    | 31000  |  |
|   |  | 50.0 L ≤ 100.0 |    | 72100  |  |
|   |  | L 100.0        |    | 137100 |  |

1.

2.

3m

3m

3.

1.2

4.

0.8

15.4-2

|  |  |  |     |
|--|--|--|-----|
|  |  |  | ( ) |
|--|--|--|-----|

|                |  |      |
|----------------|--|------|
| $D_s \leq 150$ |  | 2876 |
|----------------|--|------|

- 1.
2. 100000 100000

### 16.3

16.3 1

| $D_s$ m            |    | ( )  |
|--------------------|----|------|
| 5 $D_s \leq 20$    | km | 2373 |
| 20 $D_s \leq 50$   |    | 2157 |
| 50 $D_s \leq 100$  |    | 2373 |
| 100 $D_s \leq 150$ |    | 2588 |
| $D_s \leq 150$     |    | 3020 |

15km 15km

### 16.4

16.4 1

|   |  | $D_s$ m           |  | ( )   |
|---|--|-------------------|--|-------|
| 1 |  | $D_s \leq 150$    |  | 2192  |
|   |  | 50 $D_s \leq 150$ |  | 3396  |
|   |  | 5 $D_s \leq 50$   |  | 6208  |
| 2 |  | $D_s \leq 150$    |  | 4386  |
|   |  | 50 $D_s \leq 150$ |  | 6792  |
|   |  | 5 $D_s \leq 50$   |  | 12417 |

1.15 1.30

### 16.5

16.5 1

|   |   |   |           | ( )          |
|---|---|---|-----------|--------------|
| 1 |   | / |           | 49000/310000 |
| 2 | 5 | / | 50000/30® | 50000/300000 |

16.7

16.7 1

|  |                        |                      |                              |                     |
|--|------------------------|----------------------|------------------------------|---------------------|
|  |                        |                      |                              |                     |
|  | $D_s \text{ m}$        | $5 \leq D_s \leq 10$ | $10 \leq D_s \leq 20$        | $D_s \geq 20$       |
|  |                        |                      |                              |                     |
|  | $T \text{ m}$          | $T \leq 2$           | $2 \leq T \leq 3$            | $T \geq 3$          |
|  | $V_{\max} \text{ m/s}$ | $V_{\max} < 2.5$     | $2.5 \leq V_{\max} \leq 3.5$ | $V_{\max} \geq 3.5$ |
|  |                        | 0 1                  | 2                            | 2                   |

1.

2.

16.7 2

|   |  |  |       |       |       |
|---|--|--|-------|-------|-------|
|   |  |  | ( )   |       |       |
|   |  |  |       |       |       |
| 1 |  |  | 12000 | 14000 | 18000 |
| 2 |  |  | 6000  | 6000  | 7000  |
| 3 |  |  | 7000  | 7000  | 8000  |



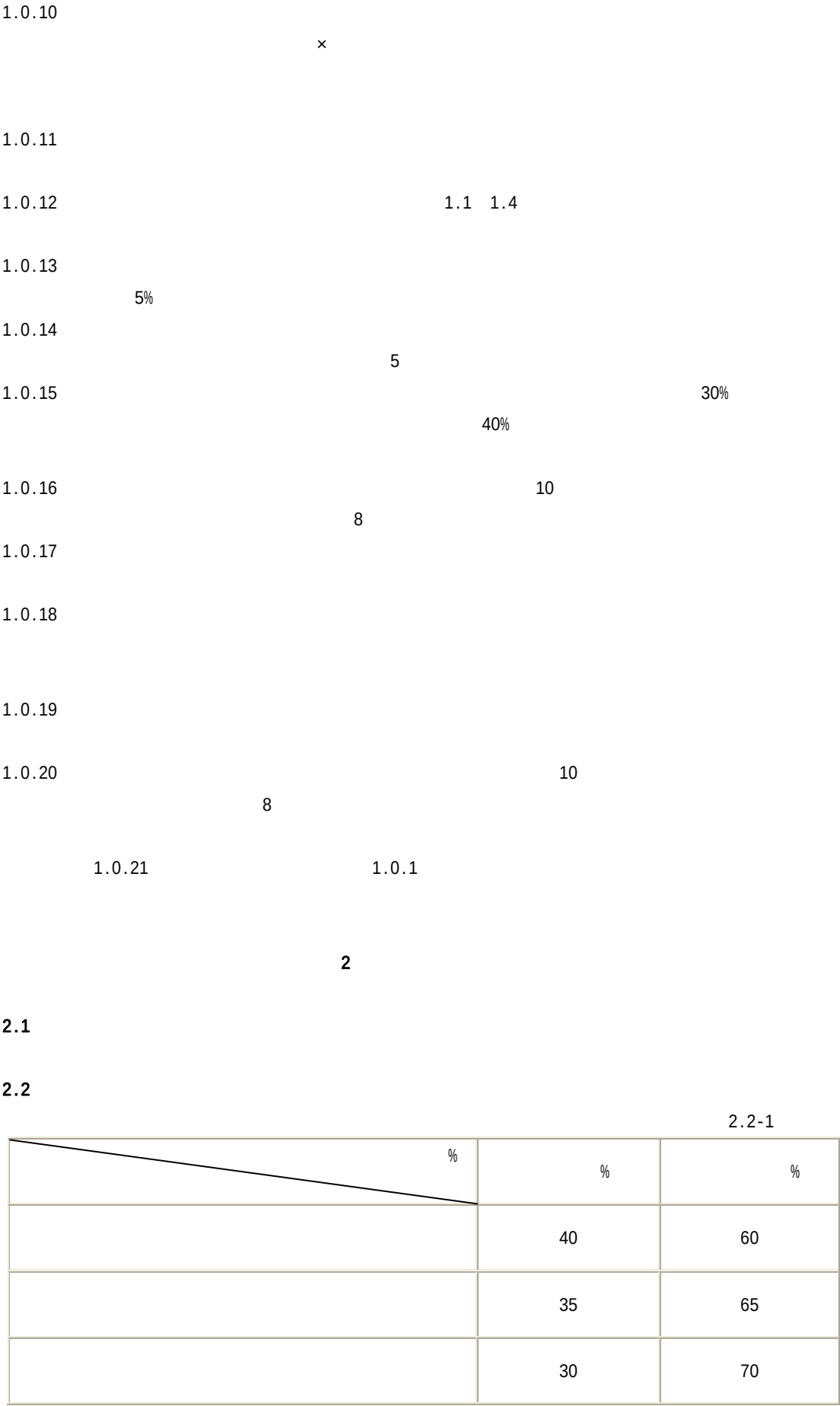
16.10

16.10 1

|   |  |    |          |
|---|--|----|----------|
|   |  |    | ( )      |
| 1 |  |    | 1954     |
| 2 |  |    | 16.4-1 1 |
| 3 |  |    | 2128     |
| 4 |  | .  | 85000    |
| 5 |  | Km | 2157     |

1.
2. 5
3. 500

|       |   |          |   |         |   |
|-------|---|----------|---|---------|---|
|       |   | <b>1</b> |   |         |   |
| 1.0.1 |   |          |   |         |   |
| 1.0.2 |   |          |   |         |   |
| 1.0.3 |   |          |   |         |   |
|       | 1 |          | × | $1 \pm$ |   |
|       | 2 |          |   |         |   |
|       | 3 |          | × | ×       | × |
| 1.0.4 |   |          |   |         |   |
| 1.0.5 |   |          |   |         |   |
| 1.0.6 |   |          |   |         |   |
| 1.0.7 |   |          |   |         |   |



2.3

2.3.1

| 2.3-1                      |             |
|----------------------------|-------------|
|                            |             |
| 1.<br>2.<br>3.             | ≤ 3         |
| 1.<br>2.<br>3.<br>4.       | 500m<br>≥ 4 |
| 1.<br>2.<br>3.<br>4.<br>5. |             |

2.3.2

| 2.3-2                      |                |
|----------------------------|----------------|
|                            |                |
| 1.<br>2.<br>3.<br>4.<br>5. | 120m<br>6m     |
| 1.<br>2.<br>3.<br>4.<br>5. | ≥ 120m<br>6 9m |
| 1.<br>2.<br>3.<br>4.<br>5. | 3000m<br>9m    |

2.3.3

| 2.3-3    |  |
|----------|--|
|          |  |
| 1.<br>2. |  |

|  |                      |
|--|----------------------|
|  | 3.                   |
|  | 1.<br>2.<br>3.       |
|  | 1.<br>2.<br>3.<br>4. |

|       |                          |
|-------|--------------------------|
| 2.3.4 |                          |
|       | 2.3-4                    |
|       |                          |
|       | 1.<br>2.<br>3.<br>4.     |
|       | 1.<br>2.<br><br>3.<br>4. |
|       | 1.<br>2.<br><br>3.<br>4. |

|       |                           |
|-------|---------------------------|
| 2.3.5 |                           |
|       | 2.3-5                     |
|       |                           |
|       | 1.<br>2. $\leq 50m$<br>3. |
|       | 1<br>2 2<br>50 100m<br>3  |
|       | 1<br>2 2                  |



|  |  |
|--|--|
|  |  |
|  |  |

3.2

3.2-1

|                          |                          |                          |
|--------------------------|--------------------------|--------------------------|
| <div></div> <div>%</div> | <div></div> <div>%</div> | <div></div> <div>%</div> |
|                          | 35                       | 65                       |
|                          | 40                       | 60                       |

3.3

3.3-1

|    |             |
|----|-------------|
|    |             |
| 1  | 3000t       |
| 2  |             |
| 3  |             |
| 4  |             |
| 5  |             |
| 6  |             |
| 7  |             |
| 8  |             |
| 9  |             |
| 10 |             |
| 1  | 3000 10000t |
| 2  |             |
| 3  |             |
| 4  |             |
| 5  |             |
| 6  |             |
| 7  |             |
| 8  |             |
| 9  |             |
| 10 |             |
| 11 |             |
| 12 |             |
| 13 |             |
| 14 |             |
| 1  | 2000t       |

|    |         |
|----|---------|
| 2  | 10000t  |
| 3  |         |
| 4  |         |
| 5  |         |
| 6  | 1000    |
| 7  |         |
| 8  |         |
| 9  |         |
| 10 |         |
| 11 |         |
| 12 | ≥ 2000t |
| 13 |         |
| 14 |         |

1. 2.5%
2. 2.5%

4

4.1

4.2

4.2-1

| % | %  | %  | %  | %  |
|---|----|----|----|----|
|   | 35 | 65 | 50 | 50 |
|   | 50 | 50 | 60 | 40 |
|   | 40 | 60 | 50 | 50 |
|   | 60 | 40 | 65 | 35 |

- 1.
- 2.

4.3

4.3-1

|   |         |
|---|---------|
|   |         |
| 1 | 50000m³ |
| 5 |         |





|  |  |    |    |    |
|--|--|----|----|----|
|  |  | 45 |    | 55 |
|  |  | 25 | 20 | 55 |
|  |  | 45 | 20 | 35 |
|  |  | 25 | 20 | 55 |
|  |  | 55 | 10 | 35 |
|  |  | 60 |    | 40 |
|  |  | 70 | 10 | 20 |

### 5.3

#### 5.3.1

5.3-1

|      |               |
|------|---------------|
|      |               |
| 1    | 4             |
| 2    | 110kV         |
| 3    | ≤ 20          |
| 1    | 2 4 50MW 50MW |
| 2    | 220kV 330kV   |
| 3    | 20 20         |
| 1    | 2 4           |
| 50MW |               |
| 2    | 500kV         |
| 3    |               |
| 4    | ≥ 20          |

1

1.1

2

#### 5.3.2

5.3-2

|         |     |
|---------|-----|
|         |     |
| 1.      | 30% |
| 2.      | 30% |
| 3.      |     |
| 4.      |     |
| 5.      |     |
| 1       | 30% |
| 60%     |     |
| 2       |     |
| 30% 60% |     |



|  |                            |   |
|--|----------------------------|---|
|  | :                          | 4 |
|  | 70m 25000m <sup>3</sup> /s | 4 |
|  | ,                          | 3 |

## 6

### 6.1

### 6.2

6.2-1

| % |  | %  | %  |
|---|--|----|----|
|   |  | 45 | 55 |
|   |  | 40 | 60 |
|   |  | 45 | 55 |
|   |  | 45 | 55 |
|   |  | 45 | 55 |

### 6.3

#### 6.3.1

6.3-1

|    |  |
|----|--|
|    |  |
| 1  |  |
| 1  |  |
| 2  |  |
| 1  |  |
| 2. |  |
| 3  |  |
| 4  |  |

1.89

“ 1 ”

0.61

#### 6.3.2

6.3-2

|   |                          |
|---|--------------------------|
|   |                          |
| 1 | 1000m 15m 30 50m 30 50m  |
| 2 | 500m                     |
| 1 | 1000m 15m 30 50m 30 100m |
| 2 | 500 1000m                |
| 3 |                          |



|  |  |  |      |      |
|--|--|--|------|------|
|  |  |  | 1.95 | 2.44 |
|  |  |  | 2.58 | 3.23 |
|  |  |  | 3.26 | 4.07 |
|  |  |  | 4.05 | 5.08 |
|  |  |  | 0.52 | 0.64 |
|  |  |  | 0.45 | 0.54 |

- 
- 1.2  
1.1 ;
- , ,
- 0.6 1.0 ;
- 1.5  
( ) 1040 ;
- $\times 0.8$
- $\times 0.6$   $\times 0.8$
- 160 200km , 1.3
- 1.1  
0.6
- 30km 5km 1.5
- ,  
1.5 ;
- 0.92
- 0.85
- 1.0.8 2.5%
- 1.1
- 
- 6.4.2

|       |      |      |
|-------|------|------|
| 6.4-2 |      |      |
|       |      |      |
| %     | 0.58 | 0.72 |

- 0.8
- 1.0.8
- 10km 6.4.1 “ ”
-

7.1

7.2

7.2-1

| % |  | %  | %  | %  |
|---|--|----|----|----|
|   |  | 10 | 30 | 60 |
|   |  | 15 | 30 | 55 |
|   |  | 20 | 30 | 50 |







8.2-1

|  |  | %   | %  |
|--|--|-----|----|
|  |  | 40  | 60 |
|  |  | 100 |    |
|  |  | 80  | 20 |
|  |  | 70  | 30 |
|  |  | 60  | 40 |
|  |  | 50  | 50 |
|  |  | 30  | 70 |

8.3

8.3-1

|  |   |          |  |       |  |        |  |          |  |          |        |
|--|---|----------|--|-------|--|--------|--|----------|--|----------|--------|
|  |   |          |  |       |  |        |  |          |  |          |        |
|  | 1 | 5m       |  | 1/500 |  |        |  |          |  |          |        |
|  | 2 |          |  |       |  |        |  |          |  |          |        |
|  | 3 |          |  |       |  |        |  |          |  |          |        |
|  | 4 |          |  |       |  |        |  |          |  |          |        |
|  | 5 | 500m     |  |       |  | 20km   |  | 150000ha |  |          |        |
|  | 6 | 100000m  |  |       |  |        |  |          |  |          |        |
|  | 1 | 5        |  | 50m   |  | 1/500  |  | 1/100    |  |          |        |
|  | 2 |          |  |       |  |        |  |          |  |          |        |
|  | 3 |          |  |       |  |        |  |          |  |          |        |
|  | 4 |          |  |       |  |        |  |          |  |          |        |
|  | 5 | 500      |  | 1000m |  |        |  | 20       |  | 30km     | 150000 |
|  | 6 | 350000ha |  |       |  | 100000 |  | 300000m³ |  |          |        |
|  | 1 | 50m      |  | 1/100 |  |        |  |          |  |          |        |
|  | 2 |          |  |       |  |        |  |          |  |          |        |
|  | 3 |          |  |       |  |        |  |          |  |          |        |
|  | 4 |          |  |       |  |        |  |          |  |          |        |
|  | 5 | 1000m    |  |       |  | 30km   |  | 350000ha |  | 300000m³ |        |
|  | 6 |          |  |       |  |        |  |          |  |          |        |

|           |           |          |
|-----------|-----------|----------|
|           |           |          |
|           |           |          |
| 1         | 200       | 9.0      |
| 2         | 500       | 20.9     |
| 3         | 1,000     | 38.8     |
| 4         | 3,000     | 103.8    |
| 5         | 5,000     | 163.9    |
| 6         | 8,000     | 249.6    |
| 7         | 10,000    | 304.8    |
| 8         | 20,000    | 566.8    |
| 9         | 40,000    | 1,054.0  |
| 10        | 60,000    | 1,515.2  |
| 11        | 80,000    | 1,960.1  |
| 12        | 100,000   | 2,393.4  |
| 13        | 200,000   | 4,450.8  |
| 14        | 400,000   | 8,276.7  |
| 15        | 600,000   | 11,897.5 |
| 16        | 800,000   | 15,391.4 |
| 17        | 1,000,000 | 18,793.8 |
| 18        | 2,000,000 | 34,948.9 |
| 2,000,000 |           | 1.6      |

|   |     |
|---|-----|
|   |     |
| 1 |     |
|   | 1.1 |
|   | 1.2 |
|   | 1.3 |
| 2 |     |
|   | 1.0 |
|   | 1.1 |
|   | 1.2 |
|   | 1.3 |
| 3 |     |
|   | 1.2 |
|   | 1.6 |
| 4 |     |

|  |     |
|--|-----|
|  | 0.8 |
|  | 1.0 |
|  | 1.2 |
|  | 1.6 |

5' ξ

|  |   |  |
|--|---|--|
|  | 3 |  |
|  | 4 |  |
|  | 5 |  |
|  | 6 |  |
|  | 7 |  |

1. 1.3

2. ( ) ( ) 0.3