# ! " # $ % & ' ( ) * +
# $ % , - . / 0 1 2 3 4
# 5 4 6 7 8 $ 9 : ;

! " # $ % & ' ( ) * + , -

! . / 0 1 2

< = > ?

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 2 7 8 9 : * ; < = > ? @ A = > B C * D E
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# 编　委　会

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A　@　)　647　89:　;<=

B　　C　>?7　@　A　BCD　E　F　>GH

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n 6 2 o U p q r s | ) - 2 3 v N

2 3 n 2 4 * 6 2 Q 5 M 6 7 - . / 0 * T 208 8 n 6 2 o U p q r s ^ 9 : " f M * * • ; 2 3 Q 5 # <n 6 2 o U p q r s 5 = > ?t @ A 1yz

o U p q r ^ $ l # 6 2 \ 3 7 8 ~ • B C D E F X z 6 2 Q 5 M 4 1 2 6 2 Y G 5 H I J o U K L A > M N [ - # G J / 0 * 2 O P Q I R S T # o U a U { p q r V W ( u<*?X + X ~ Y * O Z T ) [ \ # O P ] ^ { " | p q r _ # * ` > ^ t @ A 2yz

* ` T ) _ # n 6 2 o U p q r s O a 6 2 Q 5 M b c * a 4 | ) Q # $ 6 2 z

6 2 V W D E d } b c _ # n 6 2 o U p q r s n ( # $ 6 2 z 6 2 Q 5 M | e ) < f g . h ? i 6 * { o U # $ 5 = < o U p q r j f g ?t w k # l • R > E y* ~ m o U n P 2 M \ 3 f o 2 p = > ~ • ! > M q r s m - z

1.

# 业指导书》

Q 5 t x N

6 2 k u N

| p X | g U | p q r t x | p q r v X | H Y |
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2

# 业指设置》

| | |
|---|---|
| 6 2 o U p q r t x | |
| 6 2 o U p q r v X | |
| G J O P N | |

# 表 分

- 7

u o 6 p q v w x y  7


BDYCSY–ZW–01 T U V 0 W < X Y Z [ A B o U p q r 1

BDYCSY–ZW–02 T U V 0 \ ] ^ Y Z [ A B o U p q r 11

BDYCSY–ZW–03 _ V 0 \ ] ^ Y Z [ A B o U p q r 17

BDYCSY–ZW–04 $SF_6$ 0 \ ] ^ Y Z [ A B o U p q r 23

BDYCSY–ZW–05 ` a E ; Y Z [ A B o U p q r 29

BDYCSY–ZW–06 0 P V 8 K Z [ A B o U p q r 37

BDYCSY–ZW–07 GIS t HGIS y Z [ A B o U p q r 43

BDYCSY–ZW–08 b c d G e f g Y Z [ A B o U p q r 51

BDYCSY–ZW–09 0 h Y ! i j : k Z [ A B o U p q r 59

BDYCSY–ZW–10 l m n f A B o U p q r 67

BDYCSY–ZW–11 O o 0 P Y Z [ A B o U p q r 73

BDYCSY–ZW–12 p : Z \ q X A B o U p q r 79

BDYCSY–ZW–13 r s 0 P Y Z [ A B o U p q r 85

BDYCSY–ZW–14 _ V < X Y Z [ A B o U p q r 91

BDYCSY–ZW–15 $SF_6$ E ; Y o U p q r 99

BDYCSY–ZW–16 0 P V 0 X ] ^ Y A B o U p q r 105

BDYCSY–ZW–17 0 t V 0 X ] ^ Y A B o U p q r 111

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TSSY–ZW–03 0 W < X Y Z \ q X A B o U p q r 167

| | | |
|---|---|---|
| TSSY–ZW–04 | 0 W < X Y x y ^ \| 0 X A B } z M { 0 w 8 A B o U p q r | 175 |
| TSSY–ZW–05 | 0 W < X Y ~ R < • A B o U p q r | 184 |
| TSSY–ZW–06 | 0 Z \ q X A B o U p q r | 192 |
| TSSY–ZW–07 | 0 \ ] ^ Y ! " # $ % B o U p q r | 200 |
| TSSY–ZW–08 | 0 X ] ^ Y ! " # $ % B o U p q r | 209 |
| TSSY–ZW–09 | & ' T Z [ A B o U p q r | 219 |

# X Y

1 ( ) % x 3
2 v ^ ; 7 3
3 o U \ 3 3
4 > M q r s ` y z { 4
5 o U • H 5
6 o U a U 6
7 7 8 { k i 6 ! % B ~ • 7

1 Z [ \ ]

7 o U p q r ( ) Q T U V 0 W < X Y z

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys |

3 0 1 a b



4 e j k l m

4.1 0 W < X Y Z [ A 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 #
2 > M r p ` st v w x n n ( 1 2 3 > M q r $ % 2 o * • ; ! e " #
4.2 ` s ^ y T U V T j - 0 . 2 4 T c ( U V ) 1 2 0

2f01056 Tf10.5(•) Tj/F5+3 10.56 Tf10.32 0 TD (qr) Tj/F53 10

5 0 1 n o

5.1 M N p o

` 5-1 0 1 M N p o

| 2 p t x | 2 4 I 2 o V J 1 | + d V J | , D V J |
|---|---|---|---|
| 8 K 8 K 8 KAB 8 K A B | 2 | 1 | 1 |

{"2?(q_#:=+Xz

6.9 $％&F'(yz )aGH$a

w8{|0\y${/XjOU*ABQd/~^B_Bu ^~/B_Bu _~^B/Bu+X*w8|9v?(q_#:=*O％&KL'(*{|0\oD(;<Z[~•#$lz

6.10 $9:; qI:;J54678$9:;!

6.10.1 ~R<•ABz2Q 35kV！uv0X-)<XY*$e)_XA;vhU166kV！u(0X-)<XY*$e)PQR|Uw8~RSTlUz

6.10.2 Z\qXABz{<XY#::j+XZ\qXAB*4ue)462P0X#ABaU*V4ue)^|0X#ABaUzW8e)XoYZ^|qXABaV*4LMAB5HP8z0X-){ 110kV！u(#<XY^37$k[+XZ\qXABzAB0Xo！|}Z[~•+Xz

6.10.3 ~R8M8K#xy^|0XAB}zM{0ABz0X-){ 220kV！u(#<XY*{@>?yBC+X#$xy^|0X}zM{0ABz0X-) 110kV#<XY*\2&'b]^y*$+XzM{0ABz)u％w<XYOM_#23#&'`az

6.10.4 [l0Xv#\7s[ABzdbFac$lPmz

6.10.5 %@"uz%@<XY#"u*BCy01"u,dz

7 A％mKL.r！;Mn

7.1 A％mKL.

7.1.1 T^efJ#gU*`zUTVy|{<XYY6T)*7=$l#y•_a4+XzUfTV_*P89fPY*:_!y;<"fM=％Bz

7.1.2 <XYN\0vw8Pm 1600kVA！uv0X-)R"<XY*4"w(o#"]"o|jQ:!o#41*:•w(o#"]"o|jQ:!o#211600kVAu(R"<XY*4"w(o#"]"o|jQ:!o#211:•w(o#"]"o|jQ:!o#11z

7.1.3 <XY#N\0vyM'vhF:•-wJoQq*"|<GD|％Q211DM'(v0vo D
d}Vt7-1yL)N

$$R_2 = R_1 \frac{T + t_2}{T + t_1}$$ t7-1y

V^N

$R_1$ $R_2$~~'({ $t_1$ $t_2$tiyy#0vo*

` 7-1 O P Q $ R S T U 6 7 $ * N O ~ P Q ?

| ' ( " *K* | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L ) q J *A* | 1.2 | 1.5 | 1.8 | 2.3 | 2.8 | 3.4 | 4.1 | 5.1 | 6.2 | 7.5 | 9.2 | 11.2 |
| Y N 1. > ^ *K* - w ' ( L r 20 i # & 2 o z<br>2. w 8 ' ( u ( s T ' • z | | | | | | | | | | | | |

t 3 y < X Y 0 X - ) 35kV ! u ( * , P 8 4000kVA ! u ( y * | w 8 W + Q z W + Q y h F : • o " Q | + k | " S * { * ' v | D j Q 1.3 1 \ $R_{60s}$ % Q 3000MΩ y * W + Q 4 D o + * P m z

t 4 y < X Y 0 X - ) 220kV ! u ( , P 8 120MVA ! u ( y * $ ) 5000V & ' 0 v > w 8 T G p J z w ( o y h F : • o " Q | + k | " S * { * ' v D j Q 1.3 z \ $R_{60s}$ % Q 10 000MΩ y * T G p J 4 D o + * P m z

7.1.8 w 8 ~ R 8 M 8 K # X 7 K Y Z e K o tan*d* * | w s v p $ l N

t 1 y \ < X Y 0 X - ) 35kV ! u ( , P 8 8000kVA ! u ( y * | w 8 X 7 K Y Z e K o tan*d* z

t 2 y E w ~ R # tan*d* o D | % Q h F : • A B o # 130 1 z

t 3 y \ w 8 y # ' ( y h F : • A B ' ( D w s y * 4 d > 7-2 L ) 3 M , ' ( y # J o + X Q q z

` 7-2 @ A B C D E } F **tan***d* " ! N O ~ P Q ?

| ' ( " *K* | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 |
|---|---|---|---|---|---|---|---|---|---|---|
| L ) q J *A* | 1.15 | 1.3 | 1.5 | 1.7 | 1.9 | 2.2 | 2.5 | 2.9 | 3.3 | 3.7 |
| Y N 1. > ^ *K* - w ' ( L r 20 i # & 2 o z<br>2. w 8 ' ( u ( s T ' • z<br>3. + X q % # ' ( L ) , A B ' 2 ; < 7 # L t u $ l y * | + X v s * ` w E z | | | | | | | | | |

7.1.9 w 8 ~ R 8 M 8 K # N \ { | 0 \ * | w s v p $ l N

t 1 y \ < X Y 0 X - ) 35kV ! u ( * , P 8 8000kVA ! u ( y * | w 8 N \ { | 0 \ z

t 2 y A B 0 X ~ • | w s > 7-3 # $ l z \ 6 ] A B 0 X x 1min y * { / X j O U { | 0 \ z { | 0 \ o D $ ; < > 7-4 # $ l z

` 7-3 O P Q $ R S T U ) a G H : ; $ T M n

| ~ R [ l 0 X<br>kV | 6 y 10 | 20 y 35 | 63 y 330 | 500 |
|---|---|---|---|---|
| N \ A B 0 X<br>kV | 10 | 20 | 40 | 60 |
| Y N 1. ~ R [ l 0 X 13.8kV ! 15.75kV y * d 10kV ) ~ • 1 18kV y * d 20kV ) ~ • 1<br>2. * ) & ' < X Y z d E A ~ R 0 X - ) # ~ • z | | | | |

` 7-4 S T U ) a R T S G H $ a k T U N O V W G H $ a F

| [ l 0 X<br>kV | A B 0 X { o<br>kV | { v p ' ( y # ~ R { \| 0 \ o<br>μA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 10 i | 20 i | 30 i | 40 i | 50 i | 60 i | 70 i | 80 i |
| 2 y 3 | 5 | 11 | 17 | 25 | 39 | 55 | 83 | 125 | 178 |
| 6 y 15 | 10 | 22 | 33 | 50 | 77 | 112 | 166 | 250 | 356 |
| 20 y 35 | 20 | 33 | 50 | 74 | 111 | 167 | 250 | 400 | 570 |
| 63 y 330 | 40 | 33 | 50 | 74 | 111 | 167 | 250 | 400 | 570 |
| 500 | 60 | 20 | 30 | 45 | 67 | 100 | 150 | 235 | 330 |

7.2 A % m K `

` 7-5 A % m K `

| p X | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | < X Y A B | | | \| |

Y N 7 8 { k 7 ^ H N } 2 ~ % 7 1 W N • O 7 1 S N 7 z

| > M T ) * Q/ : N 0 = l | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| # $ [ 1 Z 0 V W , t | | | | | | | |
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| | | | | | | | |
| H Y | | | | | | | |

j k Nt , y 7 & 5 & 55

&55WTj5&55

# X Y

1 ( ) % x 13
2 v ^ ; 7 13
3 o U \ 3 13
4 > M q r s ` y z { 14
5 o U • H 15
6 o U a U 15
7 7 8 { k i 6 ! % B ~ • 16

1 Z [ \ ]

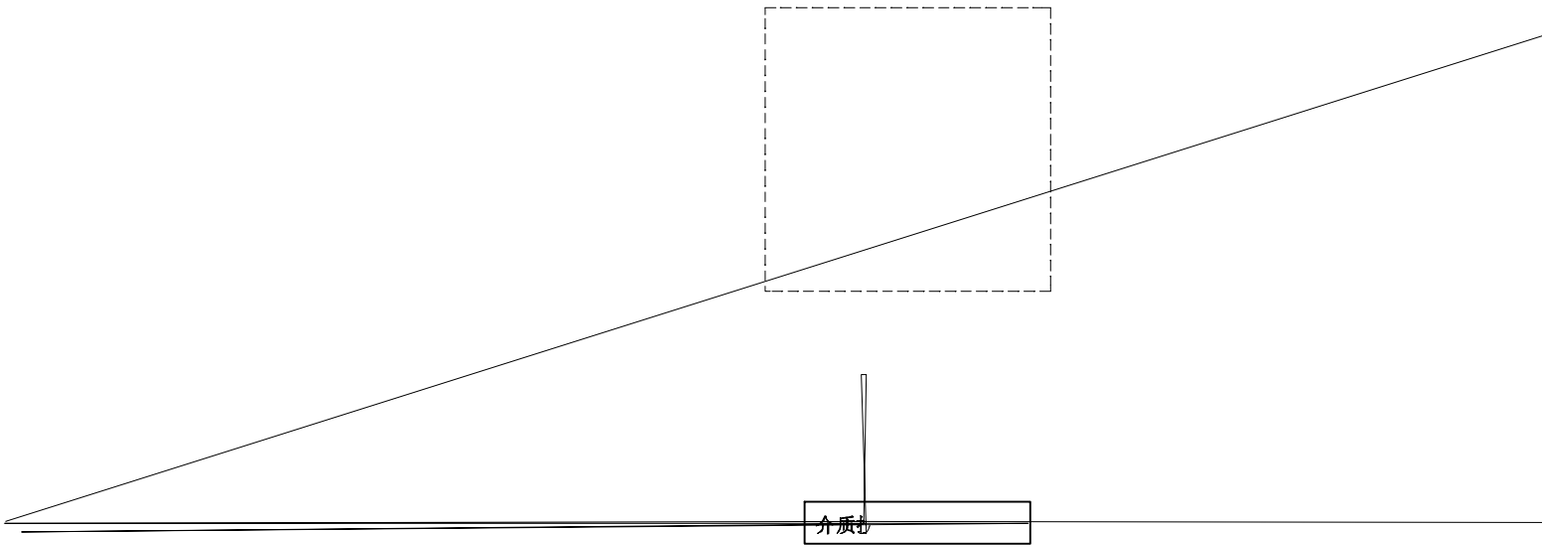
7 o U p q r ( ) Q T U V 0 \ ] ^ Y z

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys |

3 0 1 a b






c3-1 01 /d!abc

4 e f g h i j k l m

4.1 T U V 0 \ ] ^ Y Z [ A B 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y T U V 0 \ ] ^ Y Z [ A B " f o # n 0 1 4 5 > M 6 2 o U & st v w N BDYCSY-ZW-02-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 * O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z > ‡ M 2 e 5 z

| | | | |
|---|---|---|---|
| t ? ~ R @ t S 3 % @ | 3 | 1 | 1 |
| < Q % @ | 2 | 1 | 1 |
| X 7 K Y ! 0 P 8 w 8 | 3 | 1 | 1 |
| Y N o U V J 6 7 G J 2 3 8 $ ] J H z | | | |

5.2 / U q r s U s ` p t

` 5-2 @ ? / U q r s U s ` p t

| p X | t x | $ E / v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 1 | & ' 0 v w A v | | MΩ | 1 | |
| 2 | p 1 V _ ) > | | / | 1 | |
| 3 | X A < X Y | | / | 1 | |
| 4 | ~ • 0 \ ] ^ Y | | / | 1 | |
| 5 | Z \ B > > | | V/A | 2 | |
| 6 | X K w A v | | / | 1 | |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | | | |

6 0 1 # u

A B 4 Z C D 0 \ ] ^ Y > N t ! k l y E F _ G z

6.1 w 8 0 \ ] ^ Y # & ' 0 v z ) 2500V & ' 0 v > w 8 , ? ~ R 2 t ? ! u # & ' 0 v 1 ) 2500V & ' 0 v > * S w 8 t ? ~ R • ! u # & ' 0 v 1 & ' 0 v o D $ _ Q 1000MΩ z

6.2 w 8 0 P V 0 \ ] ^ Y # k l # & ' 0 v * & ' 0 v o D $ j Q 1000MΩ 1 c k l 2 u & ' 0 v j Q 1000MΩ y * | w 8 n tan*d* z

6.3 0 \ ] ^ Y # T 3 % @ z ) A B : Z H 0 I A 0 \ ] ^ Y # , ? ~ R 8 [ * ) p 1 _ ) > t J u { { 3 j 0 \ J ( y# > K * S [ { E w # t ? ~ R j 1 ( zZ H 0 I #< B ?T : I [ 3 , ? ~ R #< L1 ?* M y ) L p 1 _ ) > # p 1 M 5 N e a _ ) * 3 < 0 ? O F z : _ P n H 0 I # < B ? A B : * M y ) L p 1 _ ) > # p 1 M 5 N + a _ ) * 3 < 0 ? O F z

6.4 0 \ ] ^ Y , t ? ~ R N \ 0 v w 8 z

6.5 w 8 ] D R TA # @ t S 3 Q : z A B y 0 X T R @ F ( r * u 0 \ & • * O U 0 X o * N < [ l 0 \ * ] D R | + X S Q A B z

6.6 < Q % @ z { , ? ~ R H " 0 \ * t ? ~ R [ 0 \ > * O U , t ? ~ R 0 \ o z

6.7 X K K Y N J ! 0 P 8 w 8 N , ? ~ R 2 k l # X K o | D % Q : • o # 1301 t T0.51 y* 0 P 8 y : • o # " S D ; : 0511 k l 2 t ? ~ z K o #

7.2 A％mK`

`7-1 A % m K `

| pX | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | TUV0\]^YAB | \| | | |
| YN78{k7^HN}2~%71WN•O71SN 7z | | | | |

7.3 ！；Mn

78%Bdn10kVy500kV 9<0！J02378B+y$l~• L4KN<00=AB23s^# Q/CK

@ A 1 > M 6 2 o U &

B X 8 **BDYCSY-ZW-02-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
|---|---|---|---|---|
| | | | | |

> M q r * ` ! { k i 6

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | E A F c G 0 H | q 0 | ! _ q r | |
| 2 | / X A B < 3 ^ ' 5 0 X 6 7 | 5 H " K | ! ^ - q r | |
| 3 | A B 0 u D H l | 5 H g K | ! ^ - q r | |
| 4 | A B n o a 5 = > M x p | q 0 | ! ^ - q r | |
| 5 | / X A B < 3 ^ % i 6 D 3 u | q 0 | ! / q r | |
| 6 | - / o U > M D i 6 D [ \ | . 2 | ! / q r | |
| 7 | A B 0 u D H l | 5 H g K | ! ^ - q r | |
| 8 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r | |
| 9 | 8 9 : A | 5 H " K | ! ^ - q r | |
| 10 | \| [ A B 0 u y q 0 | V W X Y | ! / q r | |
| 11 | 0 \ ] ^ Y t ? # n ; | 5 H K L | ! ^ - q r | |
| 12 | E T y } 0 5 H > M U | | | |

| > M T ) * Q/ : N 0 = l |
|---|
| |
| # $ [ 1 Z 0 V W , t |
| |
| |
| |
| |
| H Y |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * R y R y

> & 7 y 7 , t t ( y ) Tj / F 9 . 1 2 7 4 n n 5 f 9 . 1 2 0 T D ! M i o y 7

# X Y

1 ( ) % x 19
2 v ^ ; 7 19
3 o U \ 3 19
4 > M q r s ` y z { 20
5 o U • H 21
6 o U a U 21
7 7 8 { k i 6 ! % B ~ • 22

1 Z [ \ ]

7 o U p q r ( ) Q _ V 0 \ ] ^ Y z

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A [ ~ |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 C = N |

3 0 1 a b

c3-1 01 /d!abc

交流耐压

4 e f g h i j k l m

4.1 _ V 0 \ ] ^ Y Z [ A B 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y _ V 0 \ ] ^ Y Z [ A B " f o # n 0 1 4 5 > M 6 2 o U & st v w N BDYCSY-ZW-03-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 * O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z 6 b *62bo* 2 o 1 ]] y 4 M ( ] ) T ] ( F 5 6 . 3 2 0 2 . 9 0 2 D

| | | | |
|---|---|---|---|
| ~RN\0vw8 | 2 | 1 | 1 |
| t?~R@tS3%@ | 3 | 1 | 1 |
| <Q%@ | 3 | 1 | 1 |
| X7KY！0P8w8 | 3 | 1 | 1 |
| Z\qXAB | 4 | 1 | 1 |
| YNoUVJ67GJ238$]JHz | | | |

5.2 /UqrsUs`pt

`5-2 @?/UqrsUs`pt

| pX | t x | $E/vX | ku | J8 | H Y |
|---|---|---|---|---|---|
| 1 | &'0vwAv | | MΩ | 1 | |
| 2 | p1V_)> | | / | 1 | |
| 3 | XA<XY | | / | 1 | |
| 4 | ~•0\]^Y | | / | 1 | |
| 5 | Z\B>> | | V/A | 2 | |
| 6 | k"QXY | | | 1 | |
| 7 | F\Y | | | 1 | |
| 8 | AB<XY | | / | 1 | |
| YNnP2YG！vYv>67GJ238$]JHz | | | | | |

6 01#u

6.1 AB4ZCD0\]^Y>NEF_Gz

6.2 w80\]^Y#&'0vz）2500V&'0v>w8，?~R2t?！u#&'0v1）2500V&'0v>*Sw8t?~R•！u#&'0v1&'0voD$_Q 1000MΩz

6.3 w80\]^Y#kl#&'0v*&'0voD$jQ 1000MΩzckl2u&'0vjQ 1000MΩy*|w8n tan*d*z

6.4 0\]^Y#T3%@z）AB：ZH0IA0\]^Y#，?~R8[*）p1_）>tJu{{3j0\J（y#>K*S[{Ew#t?~Rj1（zZH0I#<B?T：I[3，?~R#<L1?*Myｊ*

b]^y*|./6]#w80*w80\tN\oy,UD$;<[l0\ta!6oy#501z

7.1.3 w8]DR TA#@tS3Q：NMDu0\]^Y#S3"]Qq*|+|V"Sz

7.1.4 <Q%@|yk"•*s"wz

7.1.5 0\]^YqXAB8Mnf7JAB,Q+X*{$lAB0Xv 1min*D72*+(*#oz

7.2 !;Mn

78%Bdn 10kV y 500kV 9<0!J02378B+y$l~• L4KN<00=AB23s ^# Q/CSG > 4-8.1.1 y 4-8.1.3 Q/CSG > 4-8.2.1 y 4-8.2.4 PmFXz

@ A 1 > M 6 2 o U &

v w N **BDYCSY-ZW-03-01/01**

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| > M T ) * Q/ : N 0 = l |
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# 4

# X Y

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2 v ^ ; 7 25
3 o U \ 3 25
4 > M q r s ` y z { 26
5 o U • H 27
6 o U a U 27
7 7 8 { k i 6 ! % B ~ • 28

## 5.1 M N p o

` 5-1 0 1 M N p o

| 2 p t x | 4 I 2 o V J | + d V J | , D V J |
|---|---|---|---|
| & ' 0 v w 8 | 2 | 1 | 1 |
| T 3 % @ | 2 | 1 | 1 |
| ~ R N \ 0 v w 8 | 2 | 1 | 1 |
| t ? ~ R @ t S 3 % @ | 3 | 1 | 1 |
| < Q % @ | 3 | 1 | 1 |
| $SF_6$ = J 8 9 3 A B | 2 | 1 | 1 |
| Z \ q X A B | 4 | 1 | 1 |
| Y N o U V J 6 7 G J 2 3 8 $ ] J H z | | | |

## 5.2 / U q r s U s ` p t

` 5-2 @ ? / U q r s U s ` p t

| p X | t x | $ E / v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 1 | & ' 0 v w A v | | MΩ | 1 | |
| 2 | p 1 V _ ) > | | / | 1 | |

3 461.04 TD (2 ) Tj/* 0 TD17.524 TD (2 ) Tj/* 0 TD17.524 TD (2 )lN2s &'s wAs / 1

7.1 A % m K L .

7.1.1 w 8 & ' 0 v o N | w s $ 3 A • h = > P m z

7.1.2 M u X M $ E M c ? 0 \ ] ^ Y , t ? ~ R # N \ 0 v A : ! o # " ( D $ % Q 10 1 z \ b ] ^ y * | . / 6 ] # w 8 0 \ * w 8 0 \ t N \ o y , U D $ ; < [ l 0 \ t b 1 o y # 50 1 z

7.1.3 w 8 ] D R TA # @ t S 3 Q : N M D u 0 \ ] ^ Y # S 3 " ] Q q * | + | V " S z

7.1.4 < Q % @ | y k " • * s " w t 0 \ ] ^ Y # < Q R Z ( ! " # % B * { : • y b d + X < A B * > ? y D / b < G z { Z [ A B y * 2 < Q A B * c M c Q * 2 3 % @ * D C ) 0 \ ] ^ Y A B Y d % @ yz

7.1.5 0 \ ] ^ Y q X A B 8 M n f 7 J A B , Q + X *{ $ l A B 0 X v 1min *D 7 2 *+ ( * # o z

7.2 A % m K `

` 7-1 A % m K `

| p X | { k 7 | { k a V | | |
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| | | W | H | S |
| 1 | $SF_6$ 0 \ ] ^ Y A B | | | |
| Y N 7 8 { k 7 ^ HN } 2 ~ % 7 1 WN • O 7 1 SN 7 z | | | | |

7.3 ! ; M n

7 8 % B d n 10kV y 500kV 9 < 0 ! J 0 2 3 7 8 B + y $ l ~ • L 4 K N < 0 0 = A B 2 3 s ^ # Q/CSG > 4-7.1.1 y 4-7.1.3 Q/CSG > 4-7.2.1 y 4-7.2.4 P m F X z

@ A 1 > M 6 2 o U &

v w N **BDYCSY-ZW-04-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
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| > M q r * ` ! { k i 6 | | | | |
|---|---|---|---|---|
| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
| 1 | E A F c G 0 H | q 0 | ! _ q r | |
| 2 | / X A B < 3 ^ ' 5 0 X 6 7 | 5 H " K | ! ^ - q r | |
| 3 | 8 9 : A | 5 H " K | ! ^ - q r | |
| 4 | - / o U > M D i 6 D [ \ | . 2 | ! / q r | |
| 5 | A B 0 u D H l | 5 H g K | ! ^ - q r | |
| 6 | / X A B < 3 ^ % i 6 D 3 u | q 0 | ! / q r | |
| 7 | A B n o a 5 = > M x p | q 0 | ! ^ - q r | |
| 8 | [ q $SF_6$ = J < [ ^ \ | e f X B | ! _ q r | |
| 9 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r | |
| 10 | A B 5 H E ? y > M D i 6 D [ \ | 5 H " K | ! / q r | |
| 11 | \| [ A B 0 u y q 0 | V W X Y | ! / q r | |
| 12 | 0 \ ] ^ Y t ? # n ; | V W X c 5 H : 0 T D ( ) T j / F 5 + 1 9 2 T D ( # ) T j / F 5 + 2 9 . 1 F 5 + 1 9 . | | |



12 9.8 146 TD /F5+1 9.154 Ti /F5+1 9.17+3 90 Tc (Xc) Ti /F(V) Ti /F57.1292 0.96 2 Tf 9.8 113.76 /F5+1 9.154 Ti /F5+1 9.17+3 90 Tc (Xc) Ti /F(V) Ti /F57.

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# \ ] ^ _ U V W : ; 0 1 2 3 4

v w N BDYCSY-ZW-05

33 7 78{ki6!%B~•

32

31 4 >M

X Y 1 ()%x

3

1 Z [ \ ]

7 o U p q r ( ) Q ` a E ; Y z

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys |

3 0 1 a b 4c 3 9 9 7 1 2 9 T a b c T r e g 1 ¥ e 0 5 4 1 0 5 a E Y Z 5 A B 4 1 6 2 Q 5 M 6 4 Q 5 8 0 2 - 1 2 = 8 4 T D 1 4 5 6 2 F M 8 1 6 2 1 5 2 6 8 3 5 1 8 4 0 c T 1 6 2 1

外观检

| pX | A B t x | qrCD | qr-) | qr{ki6 |
|---|---|---|---|---|
| 5 | AB0uDHl | 5HKL | ^-qr | AB4|)vYw80u0X*\]wsABPm |
| 6 | AB5HE?y>MDi6D[\ | 5HKL | /qr | E?y2oVWBC6O(P gVpME? |

4 _ ) > c 1

)AB<XY QXYR;,D/XZ\);o /XZ\0u**S2E;YC"#s[st2u *[stE#•+XqXABtGJABaU•Sx3ABZ\qXABM*yz

7 A%mKL.r!;Mn

7.1 A%mKL.

7.1.1 w8E;YnqP#* s[y•*w8* s[#M_3*w8s[<3^qP[q_#vZy•z

7.1.2 w8&'Py#&'0vo*D|_Q 1200MΩz

7.1.3 w8C"q0);#0vo|wshF=>#A#$lz

7.1.4 Z\qXABz|{E;Ys[!*[stv+XZ\qXAB1\{s[stv+Xy*AB0X|ws> 7-1 #$l1\{*[stv+Xy*`azj{E#•#AB0X|wshF=>#A#$l*AB^D|'5#23{0z

`7-1 VaRTS :;$T

| [l0X kV | 3/2o0X kV | 1min 2Pq10X {o*kV | | | |
|---|---|---|---|---|---|
| | | "2u | "• | E;YE# | lmE# |
| 3 | 3.6 | 25 | 25 | 25 | 27 |
| 6 | 7.2 | 32 | 32 | 32 | 36 |
| 10 | 12 | 42 | 42 | 42 | 49 |
| 35 | 40.5 | 95 | 95 | 95 | 118 |
| 66 | 72.5 | 155 | 155 | 155 | 197 |
| 110 | 126 | 200 | 200 | 200 | 225 |
| | | 230 | 230 | 230 | 265 |

7.1.5 w8E;YnqP#* s[y•*w8* s[#M_3*w8s[<3^qP[q_#vZy•z

7.1.6 s[<3^qP[q_#vZy•N40.5kV uvE;YD|%Q 2ms 140.5kV !u(E;YD|%Q 3msz

7.1.7 w8|{E;Y[l5o0X!|X#Avz

7.1.8 -wJo|wshF=>#A#$lz

7.1.9 w8* s[:k!s[[qY:k#&'0vo*D|_Q 10MΩ1N\0voyhF:•ABo"Q|+k|"Sz

7.1.10 E;Y5Fgi#AB*|wsvp$lN

t1y s[5o#5o0X{851y1101$U_n$y5Fgi|4<Foz

t2y *[5o#5o0X{%Q651$U_n$y*|4<u*[1\jQ301$U_n$y*D|*[z

7.2 A%mK`

`7-2 A % m K `

| pX | {k7 | {kaV | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | `aE;YAB | \| | | |
| YN78{k7^HN}2~%71WN•O71SN 7z | | | | |

7.3 ！；Ｍｎ

７８％Ｂｄｎ10kVｙ500kV ９＜０！Ｊ０２３７８Ｂ＋ｙ＄ｌ～• Ｌ４ＫＮ＜００＝ＡＢ２３ｓ ^ # Q/CSG ＞ 4-11.1.1 Q/CSG ＞ 4-11.2.1ｙ4-11.2.2 ＰｍＦＸｚ

@A1 >M62oU&

vwN **BDYCSY-ZW-05-01/01**

| 2oy• | 2ou7 | =>W | #$>MW | #$+dV |
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| | | | | |

>Mqr*`!{ki6

| pX | ABtx | qrCD | qr-) | qr{ki6 |
|---|---|---|---|---|
| 1 | ABVW[:<br>^! | 5HgK | !^-qr | |
| 2 | EAFcG0H | q0 | !_qr | |
| 3 | /XAB<3^<br>'50X67 | 5H"K | !^-qr | |
| 4 | AB5Ha[u<br>R[uDb | 5HgK | !_qr | |
| 5 | AB0uDHl | 5HgK | !^-qr | |
| 6 | -/oU>M D<br>i6D[\ | .2 | !/qr | |
| 7 | 5H?{^\|0 | q0 | !^-qr | |
| 8 | AB0uDHl | 5HgK | !^-qr | |
| 9 | ghZFM* | CX.2 | !^-qr | |
| 10 | /XAB<3^<br>%i6D3u | q0 | !/qr | |
| 11 | ABnoa5=<br>>Mxp | q0 | !^-qr | |
| 12 | 89:A | 5H"K | !^-qr | |
| 13 | H | %i6D | | |

>XXF5+6 9.12 Tf 9.12 0 TD (Mx) T0pF5+4 9.12 Tf 18 0 T T8 rersF5+4 9.12 Tf 9.12 0D 4(X



^ABF1 9.12 0 TD (6D) TilF1 9.1212 Tf 9.12 0 TD (Mx) Ti; Tc (12124Tf 8.88 0 T8 re) Ti dF1 9.121

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| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 丰 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 丰 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z

1 Z [ \ ]

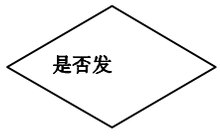
7 o U p q r ( ) Q 0 P V 8 K z

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys |

3 0 1 a b



> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | A B 5 H a [ u R [ u D b | 5 H K L | _ q r | A B 4 * \| \ ` % @ [ u : 8 [ 4 < * [ u b f |
| 2 | A B n o a 5 = > M x p | V W X c | ^ - q r | A B n o B C d $ l 5 = > M x p A ~ r s - > M i 6 * O > > |

6 0 1 # u

6.1 Z 8 K U m A f g n < [ u z

6.2 8 K # & ' 0 v w 8 z ) 2500V & ' 0 v > * S w 8 q 0 D 2 k l A j k l 2 U m t u y # & ' 0 v z

6.3 8 K # X 7 K Y Z e K A 0 P o w 8 z ) X 7 K Y w 8 v * S w 8 8 K # q 0 D 2 j 8 K j 8 K 2 U m X 7 K Y Z e K A 0 P o 1 ) e [ U w 8 q 0 D 2 j 8 K X 7 K Y Z e K A 0 P o 1 ) 6 [ U w 8 k l 2 U m t u y X 7 K Y Z e K A 0 P o z w 8 y P % & A B ' 2 A K L ' ( ? ( z

7 A % m K L . r ! ; M n

7.1 A % m K L .

7.1.1 A B < 3 ^ B C $ & ' 1 I L _ G z

7.1.2 A B 5 H b c 4 5 B C > M 4 < [ u z

7.1.3 A B [ : B C e \ * / X | : W 4 q A * O y A F 8 [ n o * / X : y l K : [ u : D q ~ S Z • z

7.1.4 66kV ! u ( # 0 P u 8 K * | w 8 < t X j 8 K ? 2 U m R < w 8 j 8 K ? 2 U m # & ' 0 v z e ) 2500V & ' 0 v > w 8 * & ' 0 v o D | _ Q 1000MΩ z

7.1.5 w 8 20kV ! u ( _ : 8 K # n & ' X 7 K Y Z e K o tan*d* A 0 P o * | w s v p $ l N { { ' D _ Q 10 i # # A v * 8 K # X 7 K Y Z e K o tan*d* D | % Q > 7-1 # $ l z

` 7-1 y z @ A B C D E } F **tan***d* M n

| 8 K n & ' D u | | tan*d* 3 % o |
|---|---|---|
| 0 P V | T U l | 0.7<br>t 500kV 8 K 0.5 y ! |
| | 3 U l | 0.7 " |
| | 3 # l | 1.0 t 66kV ! u v 0 X - ) 8 K 1.5 y ! " |
| | $ % & ' | 1.5 |
| | = J | 1.5 |
| | b g * s & ' ( | 0.7 |
| ! O p # 0 X q ) ~ x 0 X z<br>" 2 20kV ! u ( 0 P V ) 3 R 3 l 8 K # * h F * n tan*d* o 4 2 R 2.5 z<br>( b g * s & ' 8 K # X K A B * $ { _ + K L v + X z<br>Y N 0 P V 8 K # - w 0 P 8 o y h F * s J o R : • A B o " Q * n " o \| { 0 5 1 % x O z | | |

7.2 A % m K `

` 7-2 A % m K `

| p X | | { k a V |
|---|---|---|

7.3 ！；Ｍｎ

７８％Ｂｄｎ10kVｙ500kV ９＜０！Ｊ０２３７８Ｂ＋ｙ＄ｌ～• Ｌ４ＫＮ＜００＝ＡＢ２３ｓ^# Q/CSG＞4-1.1.10 Q/CSG＞4-1.2.6 Ｐｍ Ｆ Ｘｚ

@A1 >M62oU&

vwN**BDYCSY-ZW-06-01/01**

| 2oy• | 2ou7 | =>W | #$>MW | #$+dV |
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>Mqr*`!{ki6

| pX | ABtx | qrCD | qr-) | qr{ki6 |
|---|---|---|---|---|
| 1 | EAFcG0H | q0 | !_qr | #$oU\|DEFX"f>M$3!>M=>i6*O=7fYlDcQuvi6N |
| 2 | /XAB<3^'50X67 | 5H"K | !^-qr | ![AB4\|)vYw80u0X*\]wsABPmz |
| 3 | /XAB<3^%i6D3u | q0 | !/qr | !AB4*\|\`%@[u:8[4<*[ubfz |
| 4 | ABnoa5=>Mxp | q0 | !^-qr | !n`AB45+dV\`%@AB[:z |
| 5 | AB0uDHl | 5HgK | !^-qr | !ABnoBCd$l5=>MxpA~rs->Mi6*O>tgV+X,Dz |
| 6 | 89:A | 5H"K | !^-qr | !DEd}$l\35oz |
| 7 | ,$t{ $SF_6$=J | ^\ | !_qr | !ABn`y*\|H!@"oUVW*O5=>Mxp*#gV$S15oVW\|%&'!4{$VW*(3)\|4un`*a4FX*3b(*\|+,E0z |
| 8 | $SF_6$=J{\| | %=xy | !4[1#qr | !.)/a:/T 01-/[:*3BCoUVW-/oUy*Oe\.)>M}*234z |
| 9 | -/oU>M Di6D[\ | .2 | !/qr | !oUVW89:YyO2<>M} 234*D(e)>e•V?@2G*BC.)ANe\?@2Gz |
| 10 | AB5Ha[uR[uDb | 5HgK | !_qr | !d}•h=>jkr5o*e\.)2YGz |
| 11 | AB5HE?y>M Di6D[\ | 5H"K | !/qr | !ABVWe\.)BP#&'2G >M D)Fz |
| 12 | \|[AB0uyq0 | VWXY | !/qr | !AB_*\|!y2EAF)*{0*{0)#[u:BC4<[uz |
| | | | | !ABVWfn{=}z |
| | | | | !pM HNgV6O(P1QE4%@EG1oU<3^RSoU$%z |
| | | | | !DEFX0=2o&*2-4Q>Mi6*]6,Dz |
| | | | | !AB['\`%@*\\([\|:d)**+y[u:d(,*#$+-.2GA/e |

| > M T ) * Q/ : N 0 = l |
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| # $ [ 1 Z 0 V W , t | | | | | | | |
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v w N BDYCSY-ZW-07

1 Z [ \ ]

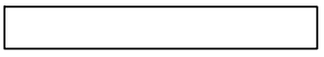
7 o U p q r ( ) Q GIS t HGIS yz

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys |

3 0 1 a b





4 e f g h i j k l m

**4.1** GIS(HGIS) Z [ A B 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

**4.2** d n p ` s ^ y GIS(HGIS) Z [ A B " f o # n 0 1 4 5 > M 6 2 o U & st v w N BDYCSY-ZW-07-01/01 y* ' s # $ - . / 0 + X " ( G * ` *


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CHINA SOUTHERN POWER GRID

| > M T ) * Q/ : N 0 = l |
| --- |
| |
| # $ [ 1 Z 0 V W , t |
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| |
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# X Y

1 ( ) % x 53
2 v ^ ; 7 53
3 o U \ 3 53
4 > M q r s ` y z { 53
5 o U • H 55
6 o U a U 55
7 7 8 { k i 6 ! % B ~ • 56

1 Z [ \ ]

7 o U p q r ( ) Q b c d G e f g Y z

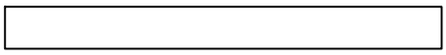
2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|
| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys |

3 0 1 a b

M&• qrp`stvwxnp`syn(123>Mqr$%2o*•;!e"#qr*`>z 4.2 dnp`s^ybcd



4.4 e f . / 0 1 ` a . / b ( M c d e & f / 0 < = : g h i S S j ' k l [ 10 m f n o 10 m p q r s t 0 1 ` f u / 0 v w x y V z X 6 { | o " }

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | A B 5 H a [ u R [ u D b | 5 H K L | _ q r | A B 4 * \| \ ` % @ [ u : 8 [ 4 < * [ u b f |



\

A B

| | | | | | |
|---|---|---|---|---|---|
| 3 | { 0 3 J J B v | | / | 1 | |
| 4 | 2 > > | | D | 1 | |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | | | |

6 0 1 # u

6.1 [redacted]:

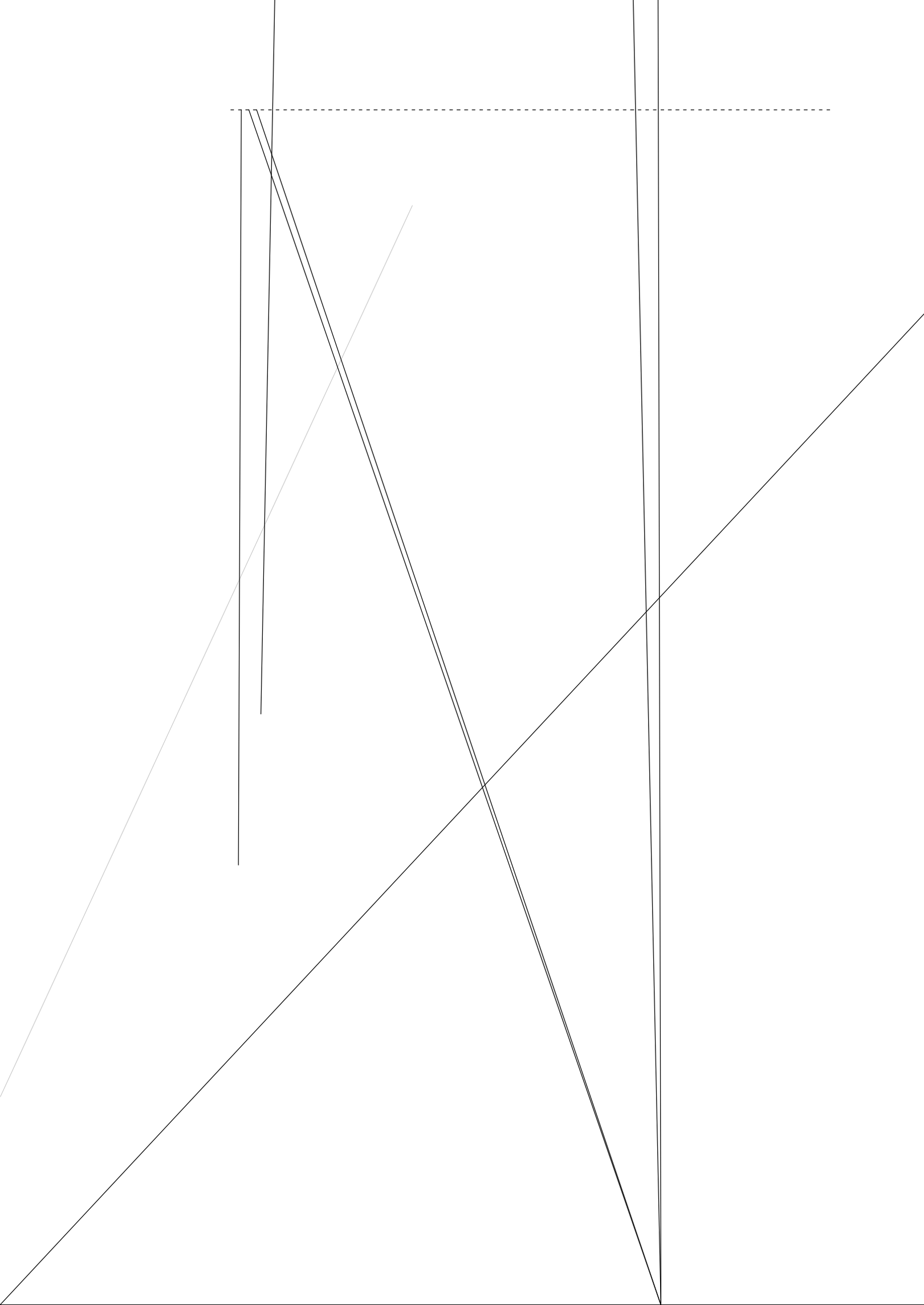
[redacted] A R S f g Y 7 J A 0 K # & ' 0 v w A * G J O P • > 6-1 z

` 6-1 6 7 $ * $ :

| p X | [redacted] 2 o O P | 5 o ! 2 M |
|---|---|---|
| 1 | O { & ' 0 v > & ' 0 v > % @ | 9 v s ( u = * Z & ' 0 v > 9 : { H * A B 4 2 & ' 0 v > 7 W + X % @ |
| 2 | 8 [ w A : A [ u : | Z & ' 0 v > # [ u j y E A f g Y # u : 8 [ *Z } l K # 8 [ : [ 3 E A f g Y w 8 M u t B P y [ ( l K K y |
| 3 | n ` w 8 *O U O % & w 8 ' 2 | b F & ' 0 v > * 9 ) 2500V L w 8 f g Y 7 J A 0 K # & ' 0 v O U 60s # w 8 o O % & |
| 4 | [redacted] 8 *Z E A F A ; { 0 O | } % w 8 * Z E A F A ; { 0 O [ u |

6.2 [redacted] T # $0.75U_{1mA}$ G H $ a $ :

[redacted] U



@ A 1 > M 6 2 o U &

B X 8 **BDYCSY-ZW-08-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
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| | | | | |
| > M q r * ` ! { k i 6 | | | | |

p X A B t x q r C D q r - ) q r { k i 6

| > M T ) * Q/ : N 0 = l |
| --- |
| |

# X Y

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2 v ^ ; 7 61
3 o U \ 3 61
4 > M q r s ` y z { 61
5 o U • H 62
6 o U a U 63
7 7 8 { k i 6 ! % B ~ • 64

| pX | A B t x | qrCD | qr-) | qr{ki6 |
| --- | --- | --- | --- | --- |
| 5 | \|[AB0uyq0 | VWXY | /qr | DEFX0=2o&*2-4Q>Mi6*]6,D |
| 6 | AB0uDHl | 5HKL | ^-qr | AB4\|)vYw80u0X*\]wsABPm |
| 7 | AB5HE?y>MDi6D[\ | 5HKL | /qr | E?y2oVWBC6O(P gVpME? |
| 8 | &'TxyKL | 9xy 2oKLxy | ^-qr | fzT{\| }T~^?{ l7•L |
| 9 | /XAB<3^ %i6D3u | VWXc | /qr | ABn`y*\|H!@"oUVW*O5=> |

6.6 $ % & F ' ( y z @ A B C D E } F tan*d*

6.6.1 A B y * P Z X K v / X A B : ) & ' 3 } h a * D y 0 h Y 5 J [ q z

6.6.2 % & f A B y # K L ' ( * L ) < : • " M ' ( Q q y * D | % Q : • o # 1.3 G z w 8 J 7 3 2 y : • s " r % * | Y H I J 8 K R ) q : l K 8 K * L M 8 K # > N { | 0 \ z w 8 $ { " 2 ? ( q _ # : = + X z

6.7 $ % & F ' ( y z ) a G H $ a

w 8 { | 0 \ y $ { / X j O U * w 8 | 9 v " 2 ? ( q _ # : = * O % & K L ' ( * { | 0 \ o D ( ; < Z [ ~ • # $ l z

6.8 V a R T : ;

{ 0 h Y # : : j + X Z \ q X A B * 4 u e ) 4 6 2 P 0 X # A B a U * V 4 u e ) ^ | 0 X # A B a U z W 8 e ) X o Y Z ^ | q X A B a V * 4 L M A B 5 H P 8 z 0 X - ) { 110kV ! u ( # 0 h Y ^ 3 7 $ k [ + X Z \ q X A B z A B 0 X o ! | } Z [ ~ • + X z 0 h Y Z \ q X A B y * | Y H 8 K TA D ( n ; z

6.9 • ! "

6.9.1 % @ = J C 0 Y > ? [ f * ) 500V & ' 0 v > % @ = J C 0 Y q 7 & ' * b F d v = J C 0 Y A B d ` * % @ = J C 0 Y q 7 D s b f z

6.9.2 % @ W X q g & ' b f * H 0 Z X q g * q g r e \ Z b f W X \ 0 g &' • ! "

6

Y 6 6 * Y b 6 g Z

t 3 y 0 h Y 0 X - ) 35kV ! u ( , P 8 { 4000kVA ! u ( y * | w 8 W + Q z W + Q y h F
: • o " Q | + k | " S * { * ' v | D j Q 1.3 1 \ $R_{60s}$ % T f 1 1 . 0 4 1 . 4 4 T D ( % T f

7.3 ! ; M n

7 8 % B d n 10kV y 500kV 9 < 0 ! J 0 2 3 7 8 B + y $ l ~ • L 4 K N < 0 0 = A B 2 3 s ^ # Q/CSG > 4-3.1.1 Q/CSG > 4-3.2.1 Q/CSG > 4-4.1.1 y 4-4.1.10 Q/CSG > 4-4.2.1 y 4-4.2.3 Q/CSG > 4-5.1.1 Q/CSG > 4-5.2.1 Q/CSG > 4-6.1.1 Q/CSG > 4-6.2.1 P m F X z -

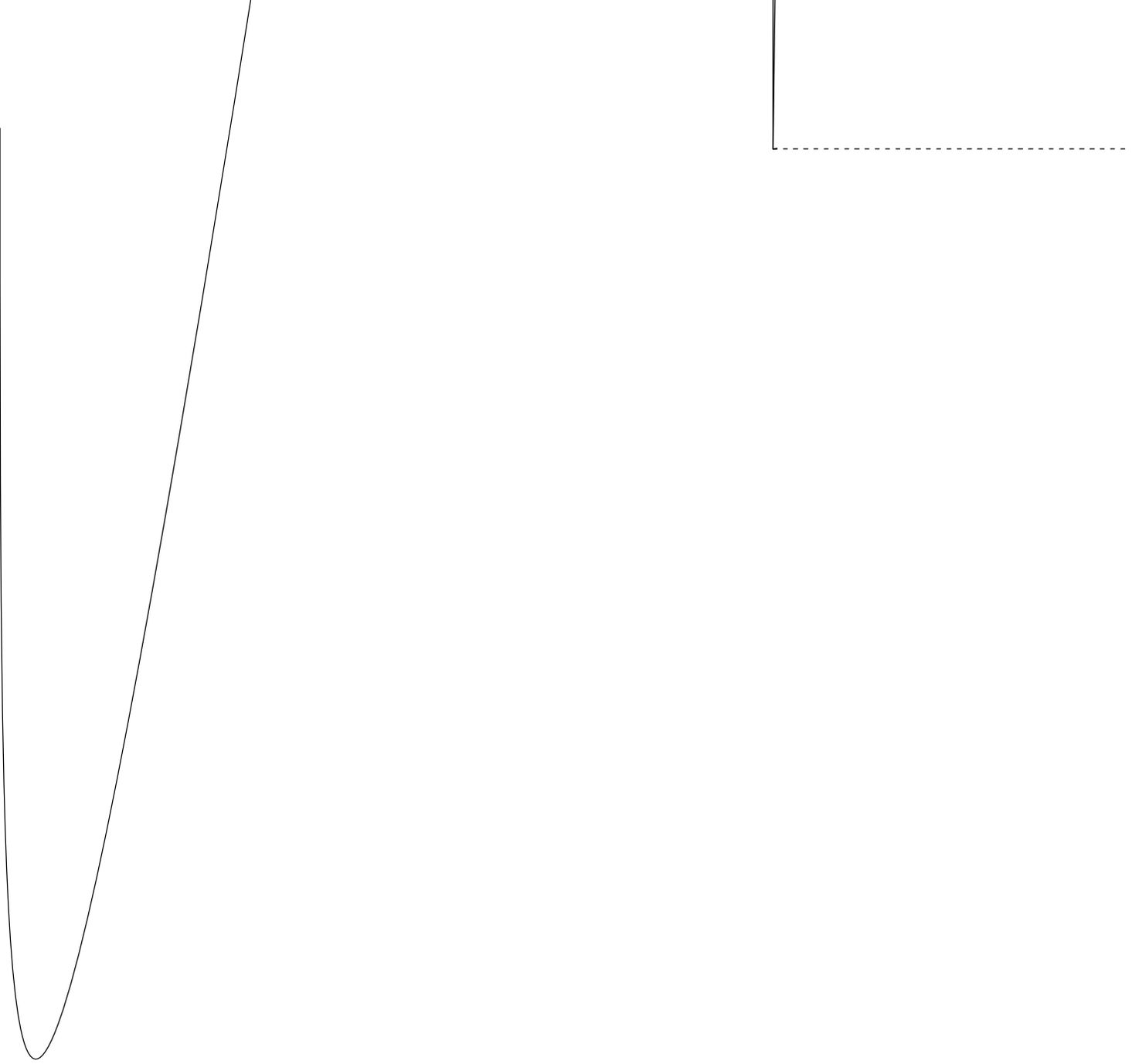
@ A 1 > M 6 2 o U &

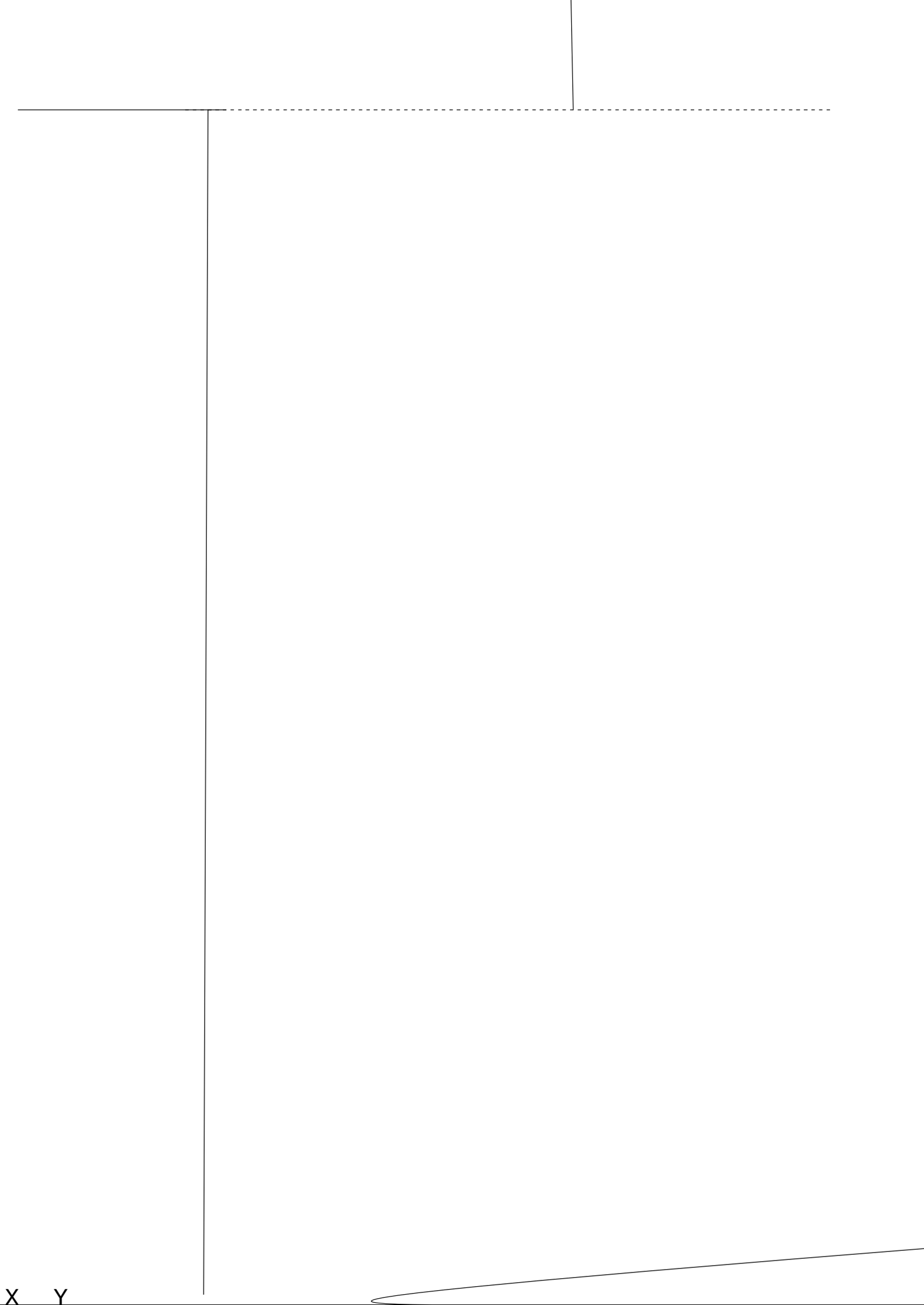
v w N **BDYCSY-ZW-09-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
|---|---|---|---|---|
| | | | | |

> M q r * ` ! { k i 6

| p X `* | o * A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | A B n o a 5 = > M x p | q 0 | ! ^ - q r | # $ o U \| D E F X " f > M $ 3 ! > M = > i 6 * O = 7 f Y l D c Q u v i 6 N |
| 2 | / X A B < 3 ^ % i 6 D 3 u | q 0 | ! / q r | ! A B 4 \| ) v Y w 8 0 u 0 X * \ ] w s A B P m z |
| 3 | E A F c G 0 H | q 0 | ! _ q r | ! { A B 4 * 2 o V W O h i j k r l l * d } P m [ : * O 5 2 o + d V * @ [ : e \ 3 z |
| 4 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r | ! A B n o B C d $ l 5 = > M x p A ~ r s - > M i 6 * O > t g V + X , D z |
| 5 | 8 K E ? F G D H | 5 H K L | ! / q r | ! A B n ` y * \| H ! @ " o U V W * O 5 = > M x p * # g V $ S 1 5 o V W \| % & ' ! 4 { $ V W * ( 3 ) \| 4 u n ` * a 4 F X * 3 b ( * \| + , E 0 z |
| 6 | - / o U > M D i 6 D [ \ | . 2 | ! / q r | ! D E d } $ l \ 3 5 o z |
| 7 | & ' T x y K L | K L x y | ! ^ - q r | ! . ) / a : / T 0 1 - / [ : * 3 B C o U V W - / o U y * O e \ . ) > M } * 2 3 4 z |
| 8 | A B 0 u D H l | 5 H g K | ! ^ - q r | ! o U V W 8 9 : Y y O 2 < > M } * 2 3 4 * D ( e ) > e • V ? @ 2 G * B C . ) A N e \ ? @ 2 G z |
| 9 | / X A B < 3 ^ ' 5 0 X 6 7 | 5 H " K | ! ^ - q r | ! A B _ * \| ! y 2 E A F ) * { 0 * { 0 ) # [ u : B C 8 [ 4 < * [ u b f z |
| 10 | 8 9 : A | 5 H " K | ! ^ - q r | ! f z T { \| } T ~ ^ ? { l 7 • L z |
| 11 | A B 5 H E ? y > M D i 6 D [ \ | 5 H " K | ! / q r | ! A B V W e \ . ) B P # & ' 2 G > M D ) F z |
| 12 | A B V W [ : ^ ! | 5 H g K | ! ^ - q r | ! p M H N g V 6 O ( P 1 Q E 4 % @ E G 1 o U < 3 ^ R S o U $ % z |
| 13 | \| [ A B 0 u y q 0 | V W X Y | ! / q r | ! d } • h = > j k r 5 o * e \ . ) 2 Y G z |
| | | | | ! D E F X 0 = 2 o & * 2 - 4 Q > M i 6 * ] 6 , D z |




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> 4-1 oUe" > M& • qrp `

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| 1 | AB5Ha[uR[uDb | 5HKL | _qr | AB4*\|\`%@[u:8[4<*[ubf |
| 2 | ABVW[:^! | 5HgK | ^-qr | {AB42oVWOhijkr ll*d}Pm[:*Ob2o+dV*@[:e\3 |
| 3 | ABnoa5=>Mxp | VWXc | ^-qr | ABnoBCd$l5=>MxpA~rs->Mi6*O>tgV+X,D |
| 4 | \|[AB0uyq0 | VWXY | /qr | DEFX0=2o&*2-4Q>Mi6*]6,D |
| 5 | 5H?{^\|0 | q0 | ^-qr | e\.)>M D)F |
| 6 | AB0uDHl | 5HKL | ^-qr | AB4\|)vYw80u0X*\]wsABPm |
| 7 | AB5HE?y>MDi6D[\ | 5HKL | /qr | E?y2oVWBC6O(P gVpME? |
| 8 | ghZFM* | VWXc | ^-qr | AB4\]gij•+V2o |
| 9 | /XAB<3^ %i6D3u | VWXc | /qr | ABn`y*\|H!@"oUVW*O5=>Mxp*#gV$S15oVW\|%&'!4{$VW*(3)\|<4un`?_a4FX*3b(*\|+,E0 |
| 10 | -/oU>M Di6D[\ | VWXc | /qr | .)/a:/T 01-/[:*3BCoUVW-/oUy*Oe\.)>M}*234 |
| 11 | /XAB<3^'50X67 | 5HKL | ^-qr | DEd}$l\35o |
| 12 | 89:A | 5HKL | ^-qr | oUVW89:AyO;<>M}*234zD(e)>e•V?@2G*BC.)ANe\?@2G |
| 13 | ?FABi6D3u | CX 5H"K | ^-qr | +X?F4BCH!"f2oVW*O>tVW+X,D |
| 14 | EAFcG0H | VWXc | _qr | AB_*\|!y2EAF)*{0*{0)#[u:BC4<[u |

## 5 01no

### 5.1 MNpo

`5-1 0 1 M N p o

| 2 p t x | 4I2oVJ | +dVJ | ,DVJ |
|---|---|---|---|
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| );0vw8 | 3 | 1 | 1 |
| &'0vw8 | 3 | 1 | 1 |
| Z\qXAB | 3 | 1 | 1 |
| YNoUVJ67GJ238$]JHz | | | |

### 5.2 /UqrsUs`pt

` 5-2 @ ? / U q r s U s ` p t

| p X | t x | $ E/v X | k u | J 8 | H Y |
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| 1 | & ' 0 v > | | c | | |
| 2 | ) ; 0 v w A v | | / | | |
| 3 | Z \ q X A B ? = | | 8 | | |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | | | |

6 0 1 # u

6.1

6.1.1 % @ l m n f # , ? s t * ] O n y } 0 5 H b k | E n 7 z

6.1.2 A B 4 2 o & d n f * V W A B 4 # = > Z 0 y > M Z 0 d [ ; z

6.1.3 , ? 5 H g h M * d > ? [ ; * g h + a b z

6.1.4 l m n f 0 = M * > ? [ ' * G H A B # A z

6.2 | :

6.2.1 6 7 - . # 5 o 0 u * ) Q X Y R A B 0 u Q I 0 u 0 X 3 [ l # 80 1 * 5 F g i 4 < * s z

6.2.2 6 7 - . # 5 o 0 u * ) Q X Y R A B 0 u Q I 0 u 0 X 3 [ l # 110 1 * 5 F g i 4 < * s z

6.3 _ $ * $ :

b F w A v n ` w 8 * ~ w 8 o H l * v Y p r + < G y * % & w 8 0 v o z

6.4 $ % 6 7 $ *

6.4.1 9 v s ( u = * Z & ' 0 v > 9 : { H * A B 4 2 & ' 0 v > 7 W + X % @ z

6.4.2 Z & ' 0 v > # [ u j y E A F # [ u j 8 [ * Z } l K # 8 [ : [ 3 E A F # / X j t B P y [ ( l K K yz

6.4.3 b F & ' 0 v > n ` w 8 * % & 60s y # w 8 o z

6.4.4 } % w 8 * { 0 O [ u z

6.5 R T : ;

6.5.1 9 v s ( u = Z 2 P q X ? = : H { = * Z [ u j 4 < [ u z

6.5.2 A B < 3 ^ | ) L v > < G / 0 * 3 A F : # m n c d 7 2 - ( * / 0 * | + , - X * z f > M i 6 O + X % @ * 6 7 % @ / 0 \ l = @ A B R e % A B z

6.5.3 O U O % & w 8 J 7 ! A B 0 X ] X y • z

6.5.4 } % w 8 * E n 0 u * A ; { 0 O [ u z

7 A % m K L . r ! ; M n

7.1 A % m K L .

7.1.1 w 8 l m n f q 0 ) ; # 0 v o * $ e ) 0 \ D j Q 100A # N \ X - U z w A ' 2 * D | ; < h F = > # A $ l z

7.1.2 Z \ q X A B z

` 7-1 **1min** / R $ T & F kV

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|---|---|---|---|---|---|
| | | : | | o J b g & ' | |
| | | : • | Z [ | : • | Z [ |
| 35 | 40.5 | 100 | 100 | 100 | 90 |

`7-1t9y

| [l0X | 3/2o0X | ffa'1 lmnf | | | |
|---|---|---|---|---|---|
| | | : | | oJbg&' | |
| | | :• | Z[ | :• | Z[ |
| 66 | 69.0 | 165 | 165 | 165 | 148 |
| 110 | 126.0 | 265 | 265 | 265 | 240 |
| 220 | 252.0 | 495 | 495 | 495 | 440 |

7.1.3 %@5Fgi:k#3_Fo0X*|wsk"•#$lz

7.1.4 5Fgi#AB|wsvp$lNFWV5Fgi#* s[5o*\n0XR=X{vp%xy*|]Olmnf#n[gR[unf4<u*[Asz

t1y 0Fg5FgiN\0Fg[:j1#0X{n[l0X#801y1101%xOyz

t2y XQa=5FgiN\=X{n[l=X#851y1101%xOyz

t3y t?{k:kA0tD@?=N\n:k[:j1#0X{n[l0X#801y1101%xOyz

7.1.5 lmnf +Hnf#ghR0=D@?=|•\4<z

7.2 A%mK`

`7-2 A % m K `

| pX | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | lmnfAB | \| | | |
| YN78{k7^HN}2~%71WN•O71SN 7z | | | | |

7.3 !;Mn

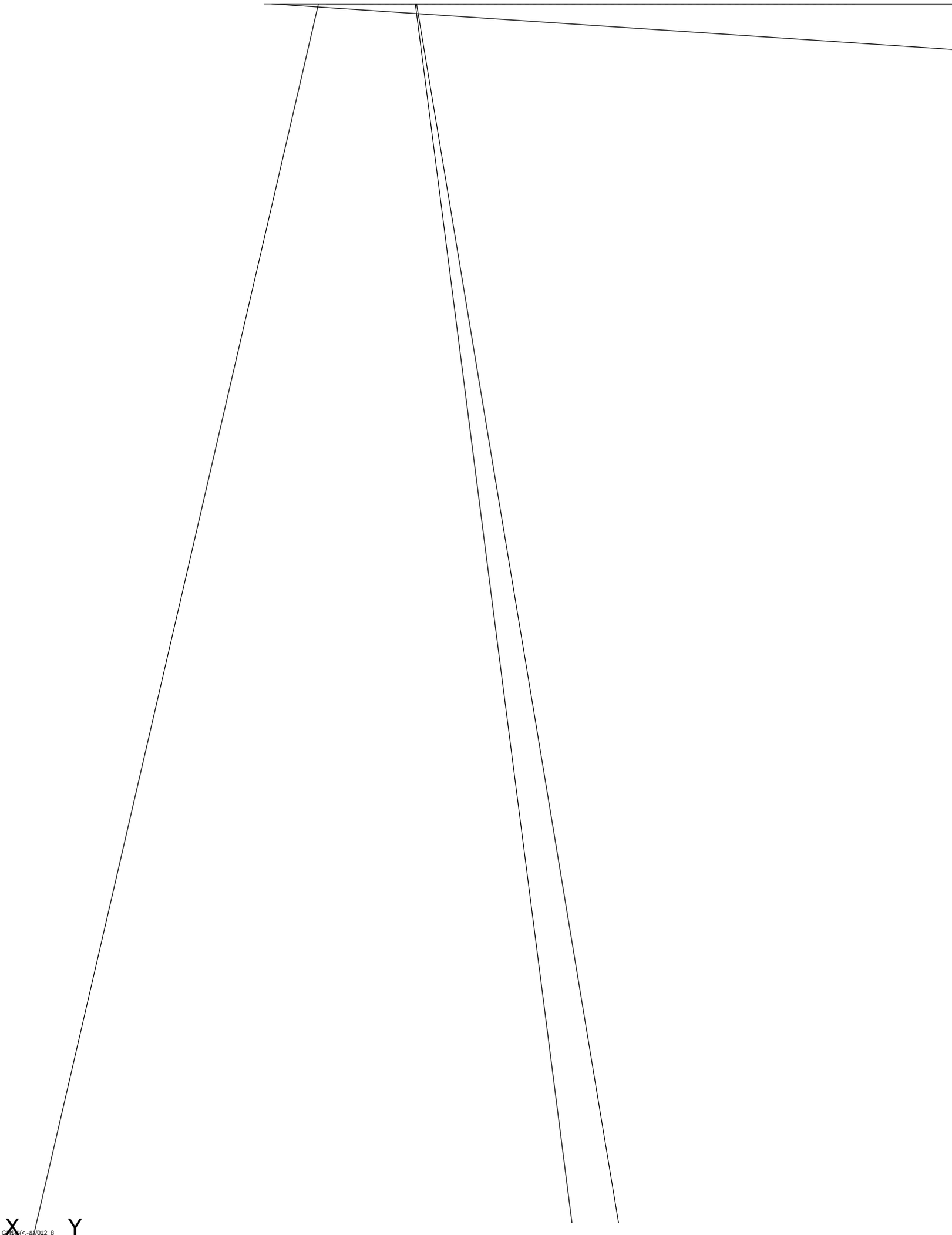
78%Bdn10kVy500kV 9<0!J02378B+y$l~• L4KN<00=AB23s^# Q/CSG > 4-12.1.1 Q/CSG > 4-14.2.1 PmFXz

@ A 1 > M 6 2 o U &

B X 8 **BDYCSY-Z34-.12 Tf230.16 0 TD ( ) T**

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| # $ [ 1 Z 0 V W , t | | | | | | | |
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| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z


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| 2 | DL 408 ~ |

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7.1.2 &'0vwAN

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t3y AB42&'0v>+X<A;?<n;?wA%@z

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t5y AB)#q:|.)&'D8:RlK:z

t6y \`%@wA:A[u:#8[*%@&'0v>#9:j[:z

t7y %&'0v_*qdj0X-_z

7.1.3 Z\qXABN

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t4y 4ABvYO{sLHoz

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'Umz

t6y FXy|no]<AB0Xy]61minz

t7y AB'V*25HP)*{0z

7.1.4 s[\7ABN[l0101X\74P+X&'%@|sE*45HGHsZstz

7.1.5 0PYR^4"0P#3%oA3jo>Q*D|;<1.08z

7.1.6 &'0vD_Q2000"Ωz

7.1.7 Z\qXAB<3^|+mn 72 cd-(*/0*{AB$l0XvABy•1min H<z

7.1.8 Oo0PYR[l0101X\74"0\|:v*"oD;<51*0PY|+(*#oz

7.2 A%mK`

`7-1 A % m K `

| | | |
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| pX | {k7 | {kaV |
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7 k

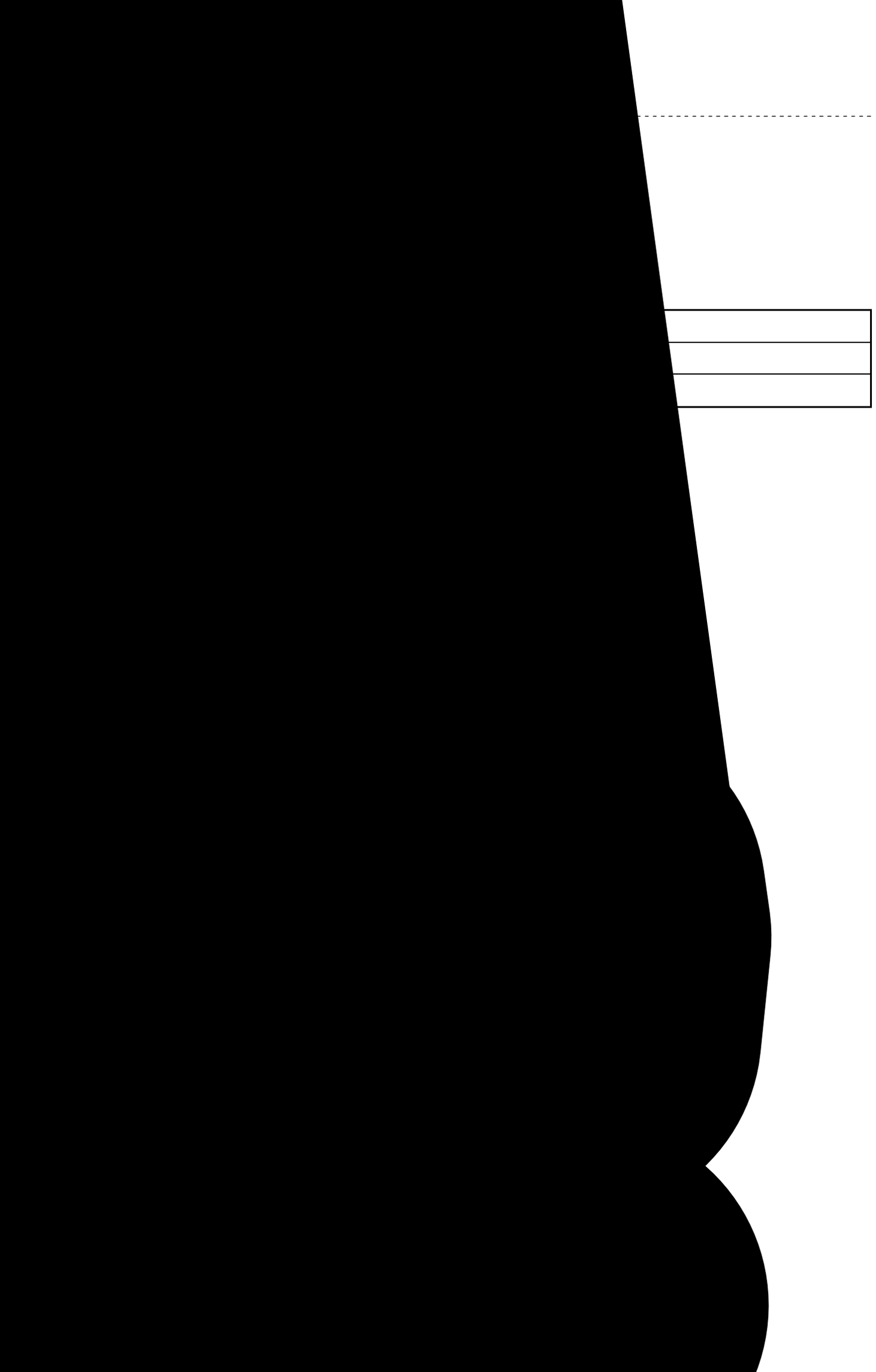
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# X Y

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2 v ^ ; 7 81
3 o U \ 3 81
4 > M q r s ` y z { 82
5 o U • H 83
6 o U a U 83
7 7 8 { k i 6 ! % B ~ • 83



4 e f g h i j k l m

**4.1** p : Z \ q X A B 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y p : Z \ q X A B " f o # n 0 1 4 5 > M 6 2 o U & st v w N BDYCSY-ZW-12-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z @ 6 2 'M M Z M 2

5.2 / U q r s U s ` p t

` 5-2 @ ? / U q r s U s ` p t

| p X | t x | $ E / v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 1 | J ^ V & ' 0 v > | | V | 1 | |
| 2 | q X 5 H | | 8 | 1 | |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | | | |

6 0 1 # u

6.1 0 6 7 $ * $ %

6.1.1 E n p : # 0 u * ( , R E n 2 4 # , K 8 : * O Z n [ u { 0 z

6.1.2 Z & ' 0 v > { = : H * Z & ' 0 v > # [ u j P < E ? y E A F # [ u j " 8 * { } b l K : # w 8 q : # = : A l K : * S y & ' 0 v > # w 8 j P < L ? ! l K j P < G ? " 8 [ t w A \ 4 " y * n x / " A [ [ u y z

6.1.3 [ : [ ; _ * ~ & ' 0 v > J o H l _ * O U & ' 0 v o z

6.1.4 O U & ' 0 v # J o _ * } % & ' 0 v > 2 E A F # & ' # w 8 O E n n [ : * : _ 1 2 E A F + X ) * { 0 z

Y N \ . ) b F & ' 0 v > y * N w F & ' 0 v > < [ l r : t 120r/min y* S y * & ' 0 v > p 1 | p < x ?* 1 Z = : [ < E A F * ~ p 1 H l _ * O U & ' 0 v # J o z O U & ' 0 v # J o _ * N E n [ < E A F # = : * : _ Z & ' 0 v > } % Z r * 3 _ 1 2 E A F + X ) * { 0 z

6.2 0 V a R T : ;

6.2.1 ) & ' q : Z F X < X Y Q X Y 0 X > 0 \ > d [ : l + X e \ 8 [ * : _ y z % @ [ : M 5 e \ + ! z

6.2.2 F X 4 | % @ Q X Y M 5 { R u z F - X < 3 * | , R b f v > 1 ] X < 3 ^ * | 8 K , R / X ) ; * , R E A F z

6.2.3 ] < A B 0 X _ } . 1min * O U { | 0 \ o O % & * 1 n o - _ A B 0 X < R z 2 P Z \ q X A B [ ; _ * | { N Z Q X Y - < R u * : _ E n A B 0 u * 1 E n [ < E A F # e q : * w 8 E A B " # & ' 0 v z n x | 4 / " A B a U " M z

7 A % m K L . r ! ; M n

7.1 A % m K L .

7.1.1 & ' 0 v w 8 # $ 7 8 • O 7 z N S * { ? ( q % # # A v + X w 8 y * 4 { E A F > N ] - 0 u l K z S y { [ : ( P Y H * E A F ( # l K K | [ " ] X # / X : } ~ m [ u M * * L M l K 2 u # > N { | * u z " ; & ' 0 v > < B z

7.1.2 { | 0 \ < G Q # $ 7 8 • O 7 * A B < 3 ^ * c N a = ? ( ' ( > N • x - * | Q E A F > N R a = { 0 * { | 0 \ D H l * | a I J _ + • L _ 1 + X A B z \ { | % y | ) _ + I J # 0 E r E A F f f & ' 1 > N # x *B P y 4 N ) T R n x ( \ # r _ G 8 K > N # B z

7.1.3 \ E A F b g & ' I J * A B _ | + , q * 3 ' # b ' * 6 \ & ' D b * | ! y • L * : _ 1 z A B z

7.2 ! ; M n

7 8 % B d n 10kV y 500kV 9 < 0 ! J 0 2 3 7 8 B + y $ l ~ • L 4 K N < 0 0 = A B 2 3 s ^ # P m F X z

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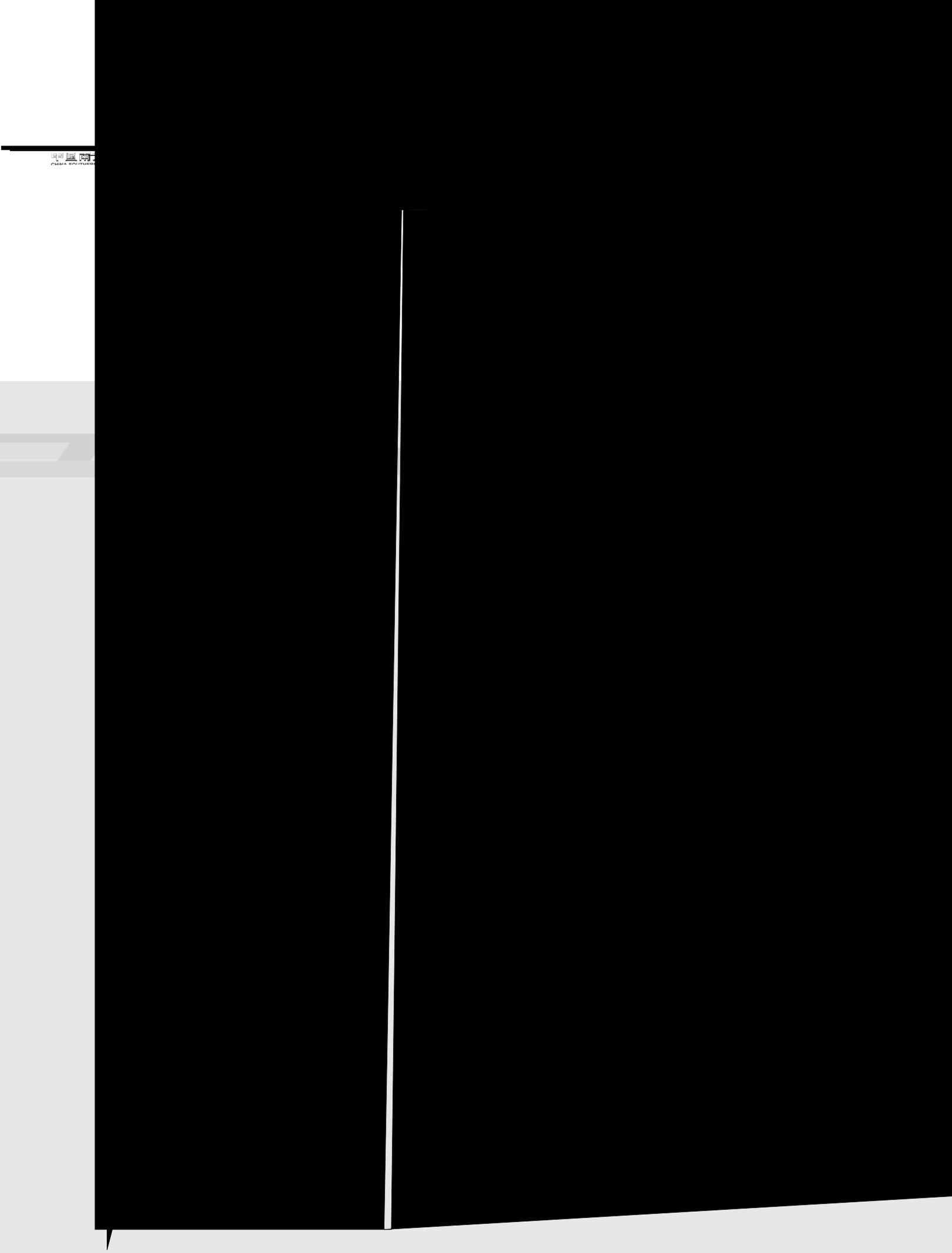
| 2oy• | 2ou7 | =>W | #$>MW | #$+dV |
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>Mqr*`!{ki6

| pX | ABtx | qrCD | qr-) | qr{ki6 |
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| 1 | EAFcG0H | q0 | !_qr | #$oU\|DEFX"f>M$3!>M=>i6*O=7fYlDcQuvi6N |
| 2 | /XAB<3^%i6D3u | q0 | !/qr | !AB4*\|\`%@[u:8[4<*[ubfz |
| 3 | ABnoa5=>Mxp | q0 | !^-qr | ![AB4\|)vYw80u0X*\]wsABPmz<br>!{AB42oVWOhijkr ll*d}Pm[:*O52o+dV*@[:e\3z |
| 4 | -/oU>M Di6D[\ | .2 | !/qr | !ABnoBCd$l5=>MxpA~rs->Mi6*O>tgV+X,Dz |
| 5 | AB5Ha[uR[uDb | 5HgK | !_qr | !ABn`y*\|H!@"oUVW*O5=>Mxp*#gV$S15oVW\|%&'!4{$VW*(3)\|4un`*a4FX*3b(*\|+,E0z |
| 6 | 89:A | 5H"K | !^-qr | !./a:/T 01-/[:*3BCoUVW-/oUy*Oe\.)>M}*234z |
| 7 | AB5HE?y>M Di6D[\ | 5H"K | !/qr | !.)]>[u:z<br>!AB_*\|!y2EAF)*{0*{0)#[u:BC4<[uz |
| 8 | /XAB<3^'50X67 | 5H"K | !^-qr | !ABVWe\.)BP#&'2G >M D)Fz<br>!DEFX0=2o&*2-4Q>Mi6*]6,Dz |
| 9 | \|[AB0uyq0 | VWXY | !/qr | !AB['\`%@*\\([\|:d)**+y[u:d(,*#$+-.2GA/e |
| 10 | 5H?{^\|0 | q0 | !^-qr | |
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j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6
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7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M } > # $ # \y M



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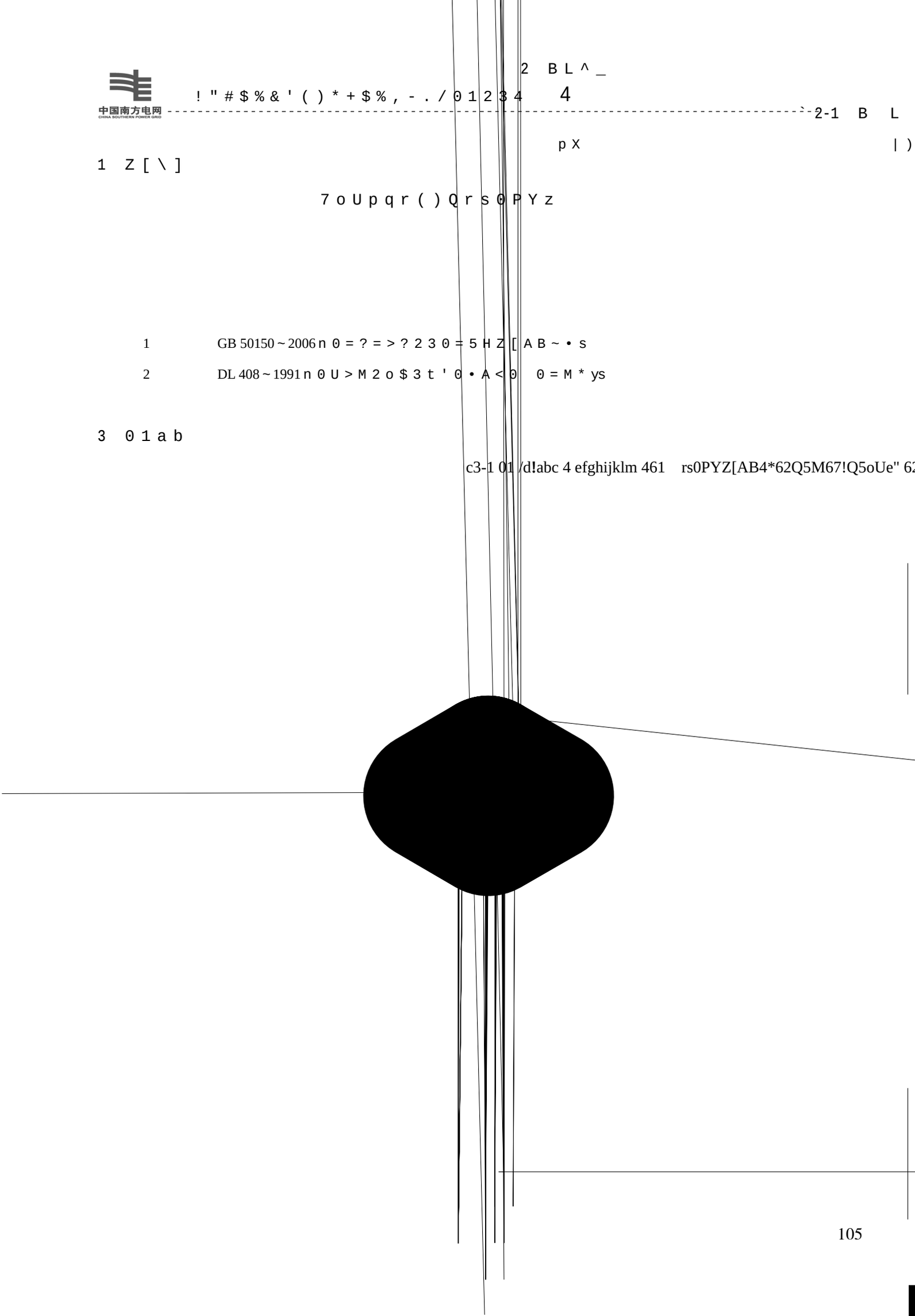
7 o U p q r ( ) Q r s 0 P Y z

1 GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s

2 DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 0 = M * ys

3 0 1 a b

c3-1 01 /d!abc 4 efghijklm 461 rs0PYZ[AB4*62Q5M67!Q5oUe" 62



4.3 6 2 + d V * 2 q r { k i 6 * O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

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| 2 | A B n o a 5 _ M x p | V W X c | ^ _ q | A B n o B C d $ l E = > H x p A T S - > M _ 6 O > t g V + X , D |
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| 3 | 9 v s ( # w 8 0 X | & ' 0 v # w A 9 v & ' 0 v > 2500V J 1 k l 2 u & ' 0 v w A 9 v & ' 0 v > 1000V J |
| 4 | n ` w 8 * O U O % & w 8 ' 2 | b F & ' 0 v > n ` w 8 & ' 0 v * O U 60s # w 8 o |
| 5 | } % w 8 * Z E A F A ; { 0 O [ u | } % w 8 * Z E A F A ; { 0 O [ u |

6.2 **tan***d* r $ = % $ :

` 6-2 **tan***d* r $ = % $ :

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t4y \ ] A F d $ 0 { 0 * % ) 0 0 H { 0 K L & ' 0 v > " ; V W X B * Y H v > \| r d { 0 [ ' * u Z E A F A ; [ u z

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# X Y

1 ( ) % x 93
2 v ^ ; 7 93
3 o U \ 3 93
4 > M q r s ` y z { 93
5 o U • H 94
6 o U a U 95
7 7 8 { k i 6 ! % B ~ • 96

1 Z [ \ ]

7 o U p q r ( ) Q _ V < X Y z

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| p X | | ) } J x |
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| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ B ~ • s |
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4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 :

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5.2 / U q r s U s ` p t sUs`

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6.3.2 [ f w A : * : n v Y 0 u n f 2 E A ~ R ) 0 * O U | r # w 8 o * % & A B ' 2 A ~ R ' ( z

6.4 V a R T : ;

6.4.1 e ) Z \ Q X Y t R Q X j y A b w 8 ~ R # A B < X Y R s A B q ) 1 0 u P Q 50Hz * 0 X • | W 4 q [ " e • z

6.4.2 Z w ' k A [ u * / X ~ R _ X ~ R | : A [ z

6.4.3 / X # ~ R q X A B z Z A B < X Y / X A B : [ < / X ~ R * _ X # ~ R ! C D A o A , O A [ [ u z

6.4.4 _ X # ~ R q X A B z Z A B < X Y / X A B : [ < _ X ~ R * / X # ~ R [ u ! C D A o A , O A [ [ u z

6.4.5 Z Q X Y 4 5 A A B < X Y / X ~ R h j [ u z

6.4.6 w 8 % & E A ~ R # A 4 & ' 0 v * A [ 2 E A F ) * { 0 z

6.4.7 A B y * d 3kV/s # F X : ( : H @ # XQ*Tf1 0 A 0 B 4 0 Tx (X) Tj 0 -1.5 -0.5 0 TD (X) Tj 0 -1.5 -0.5 0 TD (X) Tj 0 -1.5 -0.5 0 TD

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j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l zt 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 zt 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z



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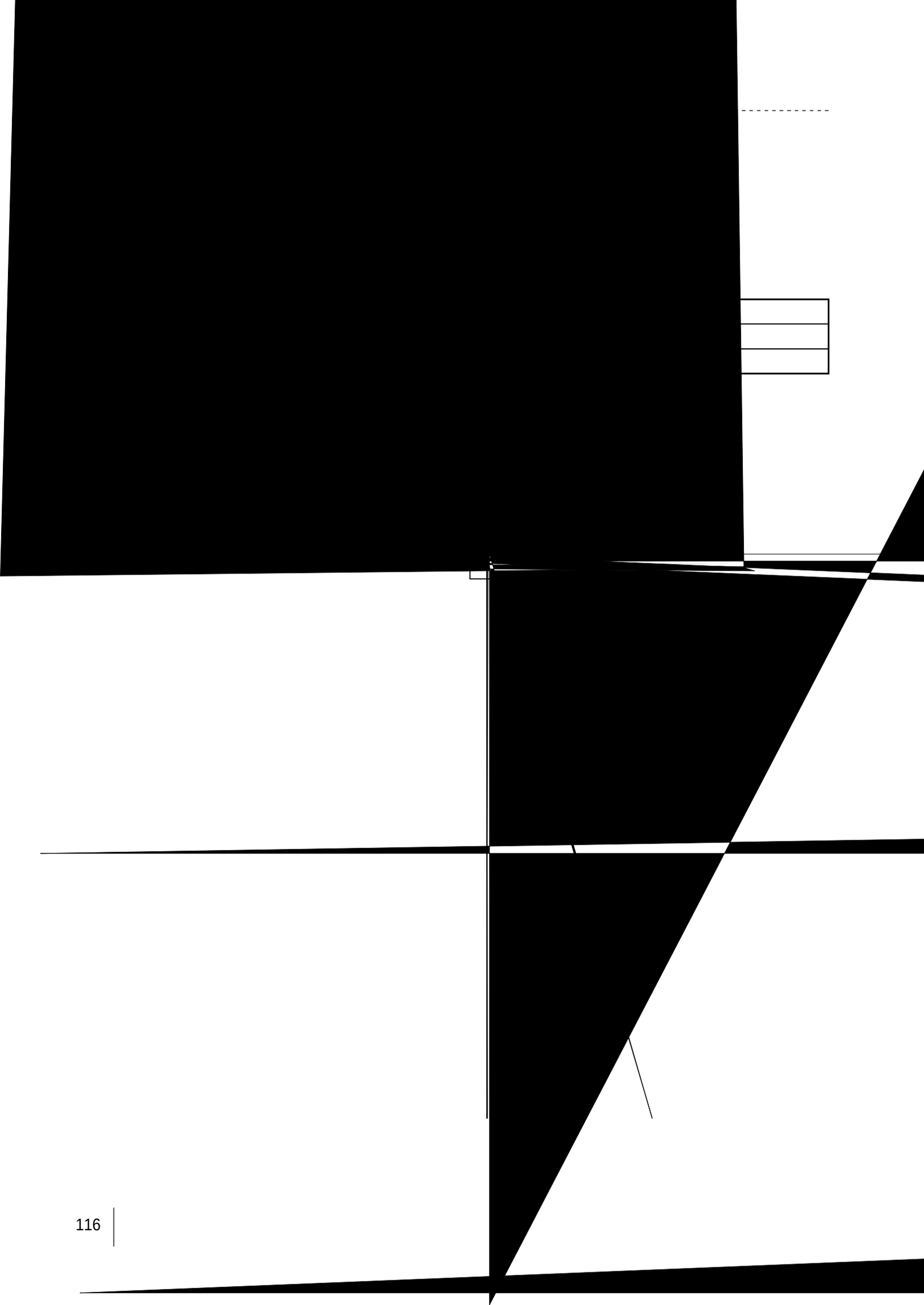
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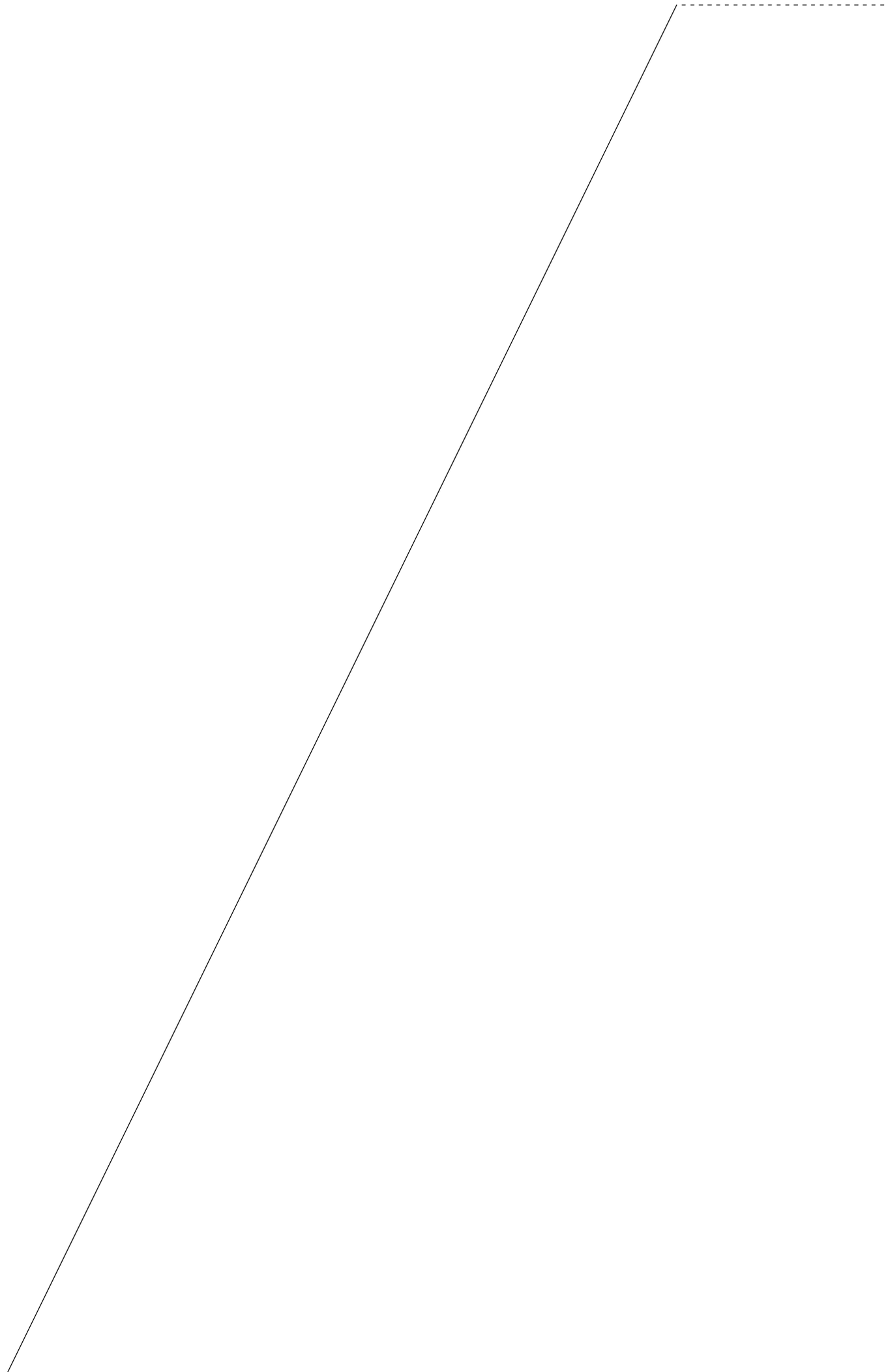
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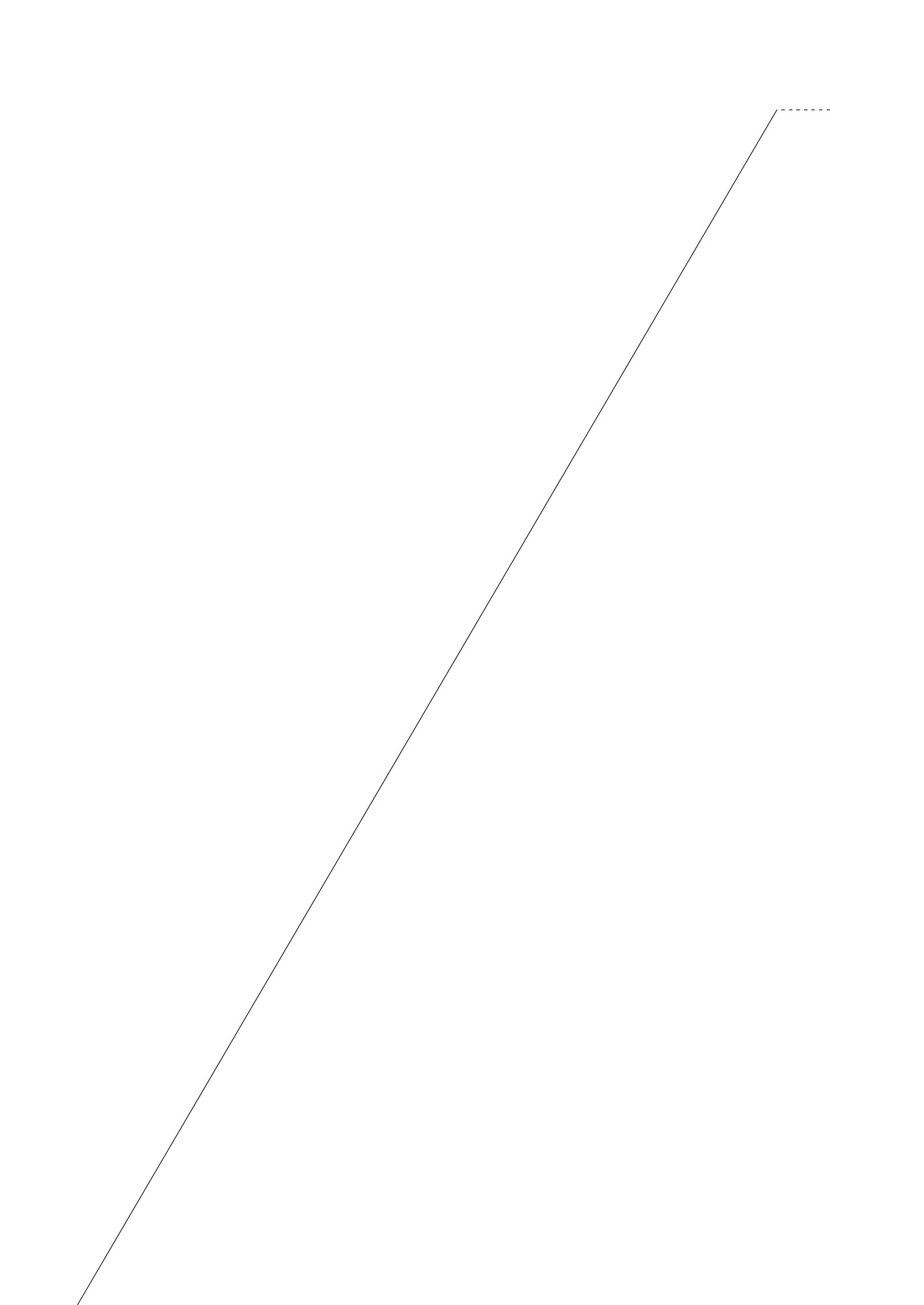
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| 2 | / X A B < 3 ^ ' 5 0 X 6 7 | 5 H " K | ! ^ - q r |
| 3 | 5 H ? { ^ \| 0 | q 0 | ! ^ - q r |
| 4 | A B 0 u D H l | 5 H g K | ! ^ - q r |
| 5 | A B n o a 5 = > M x p | q 0 | ! ^ - q r |
| 6 | A B V W [ : ^ ! | 5 H g K | ! ^ - q r |
| 7 | g h Z F M * | C X . 2 | ! ^ - q r |
| 8 | ? F A B i 6 D 3 u | 5 H " K C X | ! ^ - q r |
| 9 | , $ t { $SF_6$ = J | ^ \ | ! _ q r |
| 10 | $SF_6$ = J { \| | % = x y | ! 4 [ 1 # q r |
| 11 | / X A B < 3 ^ % i 6 D 3 u | q 0 | ! / q r |
| 12 | - / o U > M D i 6 D [ \ | . 2 | ! / q r |
| 13 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r |
| 14 | 8 9 : A | 5 H " K | ! ^ - q r |
| 15 | A B 5 H E ? y > M D i 6 D [ \ | 5 H " K | ! / q r |

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| 3 | o U \ 3 | 107 |
| 4 | > M q r s ` y z { | 108 |
| 5 | o U • H | 109 |
| 6 | o U a U | 109 |
| 7 | 7 8 { k i 6 ! % B ~ • | 110 |

1 Z [ \ ]

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` 2-1 B L ^ _

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| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 |

4 e f g h i j k l m

**4.1** 0 P V 0 X ] ^ Y Z [ A B 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y 0 P V 0 X ] ^ Y Z [ A B " f o # n 0 1 4 5 > M 6 2 o U & st v w N BDYCSY-ZW-16-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

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| XKwA | 3 | 1 | 1 |
| t?~RqX | 3 | 1 | 1 |
| YNoUVJ67GJ238$]JHz | | | |

5.2 /UqrsUs`pt

`5-2 @?/UqrsUs`pt

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| 2 | p1V_)> | | c | 1 | |
| 3 | k"QXY | | / | 1 | |
| 4 | Z\B>> | | c | 1 | |
| 5 | <QwAv | | / | 1 | |
| 6 | AB TV | | / | 1 | |
| 7 | XKwAv | | / | 1 | |
| YNnP2YG!vYv>67GJ238$]JHz | | | | | |

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6.1.4 Ob.)#w8v>!a%BsE*O{%l$_Oz

6.2 :;#u

6.2.1 w80X]^Y, t?~R#&'0vN) 2500V &'0v>w8&'0v1) 2500V &'0v>w8t?~R>•!2u#&'0vz

6.2.2 0X]^Yt^•0Xj1d|:y#T3%@N)AB:ZH0IA0X]^Y^•<XY#,?~R8[*)p1_)>tJu{{3j0#.561 10.56 Tf42 0 TD (^)110 T

7.1.1 w 8 4 ] ^ Y ~ R # & ' 0 v o * | w s v p $ l N ] ^ Y # & ' 0 v o * w 8 , ? ~ R 2 t ? ~ R ! 4 5 4 t ? ~ R • ! n 2 4 5 # & ' 0 v 1 & ' 0 v D $ _ Q 1000MΩ 1 & ' 0 v w 8 | . ) 2500V & ' 0 v > z

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j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l zt 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 zt 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z

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3 o U \ 3 113
4 > M q r s ` y z { 114
5 o U • H 115
6 o U a U 115
7 7 8 { k i 6 ! % B ~ • 116

1 Z [ \ ]

7 o U p q r ( ) Q 0 t V 0 X ] ^ Y z

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| p X | | ) } J | x |
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| 1 | GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ | B ~ • s |
| 2 | DL 408 ~ 1991 n 0 U > M 2 o $ 3 t ' 0 • A < 0 | 0 = M * ys |

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| X K w A | 3 | 1 | 1 |
| t ? ~ R q X | 3 | 1 | 1 |
| Y N o U V J 6 7 G J 2 3 8 $ ] J H z | | | |

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` 5-2 @ ? / U q r s U s ` p t

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| 2 | p 1 V _ ) > | | c | 1 | |
| 3 | k " Q X Y | | / | 1 | |
| 4 | Z \ B > > | | c | 1 | |
| 5 | < Q w A v | | / | 1 | |
| 6 | A B TV | | / | 1 | |
| 7 | X K w A v | | / | 1 | |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | | | |

6 0 1 # u

6.1 0 1 • "

6.1.1 0 X ] ^ Y d a > ? [ * o l n o * 4 ) % @ * O b b m I W e z

6.1.2 t ? [ · A 5 H [ u [ * / X | : a 8 [ R d f + " 5 H z f [ u % ^ | q 0 z

6.1.3 # K 6 @ A B + X A B $ O D ( ; b | V # Z N \ 4 d 0 t $ _ z

6.1.4 O b ) # w 8 v > ! a T D ( 8 ) 0 T j / F 5 + 4 1 0 4 1 0 . 5 6 T f 1 6 0 T

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6.2.7 ]^Ｙｔ?~ＲＺ\ｑＸＡＢｚ．)ＡＢTV Ｒ;ＦＸ);*6]ｔ?);+Ｘ2ｕＺ\ｑＸＡＢ*ＡＢ0Ｘ 2500V ＡＢｙ• 1min*+{072#o H<ｚ

## 7 A％mKL．r！;Mn

### 7.1 A％mKL．

7.1.1 ｗ84]^Ｙ~Ｒ#&'0ｖｏ*|ｗｓｖｐ$ｌＮ]^Ｙ#&'0ｖｏ*ｗ8,?~Ｒ2ｔ?~Ｒ！45 4ｔ?~Ｒ•！ｎ245#&'0ｖ1&'0ｖＤ$_Ｑ 1000MΩ1&'0ｖｗ8|.) 2500V &'0ｖ>ｚ

7.1.2 %@]^Ｙ#Ｒ"[:ＲＳＡｋ"]^Ｙ|::#Ｔ3*ＢＣｗｓ53Ｐｍ*Ｏ|ｙ*ｓ(#~%Ａ45(#ｗＸ"ｗｚ

7.1.3 0Ｘ]^Ｙ~Ｒ#Ｎ\0ｖｗ8ｚ,?~ＲＮ\0ｖｗ8ｏ*ｙＬ)3Ｍ,'(ｖ#:•ｏＱｑ*""Ｄ$％Ｑ 1011ｔ?~ＲＮ\0ｖｗ8ｏ*ｙＬ)3Ｍ,'(ｖ#:•ｏＱｑ*""Ｄ$％Ｑ 151ｚ

7.1.4 <Ｑ%@zＯｗ(#<Ｑ|ｙ*ｓ(#Ｊｏ"ｗ*2ｍｔＰ#]^Ｙ*4ｃ%@.)*[Ｐ#<Ｑｚ

7.1.5 0ｔＶ0Ｘ]^Ｙ#@ｔＱ:ｗ8*|ｗｓｖｐＰｍＮ

t1y )Ｑ@ｔＱ:ｗ8#ｖ> ａ！6ｏ>*ｃ'5ｗ8'2ｙ:•ＡＢＧ'ＡｕＶＡＢＧ'ｂｑ%:"ｔ 301ｙｙ*|*2.)#ｖ>ＣＤＭ5ｅ\ｚ

t2y ,Ｕ/0ｖ*@ｔＱ:ｗ87 [ｌ0Ｘ#201 501 801 1001Ａ1201ｚ2Ｑ^37Ｎ[[ｕ#0Ｘ]^ＹｔＮｊ[ｕｙ*0Ｘ-) 35kV！ｕｖ0Ｘ-)#0Ｘ]^Ｙ3/ｗ87 1901１0Ｘ-) 66kV！ｕ(#0Ｘ]^Ｙ3/ｗ87 1501ｚ

t3y 2Ｑ[ｌ0Ｘｗ87ｔ1001ｙ*@ｔ0\Ｄ$％Ｑｎ:•ＡＢＧ'ＡｕＶＡＢＧ'#ｗ8ｏ#301*Ｍｃ? ＭｕＸ Ｍ$Ｅ0Ｘ]^ＹＳ7#@ｔ0\Ｄ$""301ｚ

### 7.2 A％mK`

`7-1 A % m K `

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| 1 | 0ｔＶ0Ｘ]^ＹＡＢ | | | |

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@ A 1 > M 6 2 o U &

v w N **BDYCSY-ZW-17-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
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| | | | | |

> M q r * ` ! { k i 6

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | E A F c G 0 H | q 0 | ! _ q r | # $ o U \| D E F X " f > M $ 3 ! > M = > i 6 * O = 7 f Y l D c Q u v i 6 N |
| 2 | A B 5 H a [ u R [ u D b* | 5 H g K | ! _ q r | ! A B 4 * \| \ ` % @ [ u : 8 [ 4 < * [ u b f z |
| 3 | A B n o a 5 = > M x p | q 0 | ! ^ - q r | ! [ A B 4 \| ) v Y w 8 0 u 0 X * \ ] w s A B P m z<br>! { A B 4 2 o V W O h i j k r l l * d } P m [ : * O 5 2 o + d V * @ [ : e \ 3 z |
| 4 | - / o U > M D i 6 D [ \ | . 2 | ! / q r | ! A B n o B C d $ l 5 = > M x p A ~ r s - > M i 6 * O > t g V + X , D z |
| 5 | A B 0 u D H l | 5 H g K | ! ^ - q r | ! A B n ` y * \| H ! @ " o U V W * O 5 = > M x p * # g V $ S 1 5 o V W \| % & ' ! 4 { $ V W * ( 3 ) \| 4 u n ` * a 4 F X * 3 b ( * \| + , E 0 z |
| 6 | 8 9 : A | 5 H " K | ! ^ - q r | ! D E d } $ l \ 3 5 o z |
| 7 | / X A B < 3 ^ ' 5 0 X 6 7 | 5 H " K | ! ^ - q r | ! . ) / a : / T 0 1 - / [ : * 3 B C o U V W - / o U y * O e \ . ) > M } * 2 3 4 z |
| 8 | / X A B < 3 ^ % i 6 D 3 u | q 0 | ! / q r | ! o U V W 8 9 : Y y O 2 < > M } * 2 3 4 * D ( e ) > e • V ? @ 2 G * B C . ) A N e \ ? @ 2 G z<br>! . ) ] > [ u : z |
| 9 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r | ! A B _ * \| ! y 2 E A F ) * { 0 * { 0 ) # [ u : B C 4 < [ u z |
| 10 | \| [ A B 0 u y q 0 | V W X Y | ! / q r | ! A B V W e \ . ) B P # & ' 2 G > M D ) F z<br>! p M H N g V 6 O ( P 1 Q E 4 % @ E G 1 o U < 3 ^ R S o U $ % z |
| | | | | ! d } • h = > j k r 5 o * e \ . ) 2 Y G z |
| | | | | ! D E F X 0 = 2 o & * 2 - 4 Q > M i 6 * ] 6 , D z |
| | | | | ! A B [ ' \ ` % @ * \ \ ( [ \| : d ) * * + y [ u : d ( , * # $ + - . 2 G A / e |
| | | | | |

Y N < A B t x ? , p ^ * } b < * ? ~ % # * j k S A B S { G H & 4 q ) \| ' < * T z

| > M T ) * Q/ : N 0 = l |
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| 7y |
| # $ [ 1 Z 0 V W , t |

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| H Y | | | | | | | |

# X Y

1 ( ) % x 121
2 v ^ ; 7 121
3 o U \ 3 121
4 > M q r s ` y z { 121
5 o U • H 122
6 o U a U 123
7 7 8 { k i 6 ! % B ~ • 125

1 Z [ \ ]

7 o U p q r ( ) Q u 1 [ u 0 v w 8 z

2 B L ^ _

` 2-1 B L ^ _

| p X | | ) } J t x |
|---|---|

1 DL/T 475 ~ TT5T32 Tc (Tl8) Tj/F5Lw(BL^_) Tj/F14 1 9.12 T ( TD (Z[\]) Tj/3 ( ) Tj/F2+1 10.56 Tf-0.1046496($) Tj0 ) T

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | A B 5 H a [ u R [ u D b | 5 H K L | _ q r | A B 4 * \| \ ` % @ [ u : 8 [ 4 < * [ u b f |
| 2 | A B n o a 5 = > M x p | V W X c | ^ - q r | A B n o B C d $ l 5 = > M x p A ~ r s - > M i 6 * O > t g V + X , D |
| 3 | / X A B < 3 ^ % i 6 D 3 u | V W X c | / q r | A B n ` y * \| H ! @ " o U V W * O 5 = > M x p * # g V $ S 1 5 o V W \| % & ' ! 4 { $ V W * ( 3 ) \| < 4 u n ` ? _ a 4 F X * 3 b ( * \| + , E 0 |
| 4 | 0 : > M | V W X c | _ q r | 1. A B V W 0 : < 3 ^ \| Y H f { X T * z f H r i 6 1<br>2. A B : < ; • P ) 7 I J R 1<br>3. 5 : C l 50m P 5 g V f S 1<br>4. 0 \ T 0 X T P 5 g V f S O 5 H r s 1<br>5. < 0 O 0 : D > Q F w A : |
| 5 | 5 H ? { ^ \| 0 | V W X c | ^ - q r | . ) D V ] > [ u : |

## 5 0 1 n o

### 5.1 M N p o

` 5-1 0 1 M N p o

| 2 p t x | 4 I 2 o V J | + d V J | , D V J |
|---|---|---|---|
| [ u 1 0 = [ I 3 w A | 4 | 1 | 1 |
| [ u 0 v w 8 | 3 | 1 | 1 |
| Y N o U V J 6 7 G J 2 3 8 $ ] J H z | | | |

### 5.2 / U q r s U s ` p t

` 5-2 @ ? / U q r s U s ` p t

| p X | t x | $ E / v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 1 | l m < X Y | | / | 1 | |
| 2 | Z \ 0 \ > | | / | 1 | |
| 3 | / O v 0 X > | | / | 1 | |

` 5-2 t 9 y

| p X | t x | $ E / v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 4 | ~ • 0 \ ] ^ Y | | / | 1 | |
| 5 | a = n f | | D | 1 | |
| 6 | 0 X T w A : | | 6 | c _ | |
| 7 | 0 \ T w A : | | 6 | c _ | |

| | | | | | |
|---|---|---|---|---|---|
| 8 | 0 X T \| : | | 6 | c _ | |
| 9 | 0 \ T \| : | | 6 | c _ | |
| 10 | u 1 q H 0 v w A v | | / | 1 | |
| 11 | b 6 V GPS | | c | 2 | |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | | | |

6 0 1 # u

6.1 W g % $ 9 v 5 $ :

6.1.1 $ : ~ •

t 1 y # $ # A N [ u 1 d d 5 3 P m k o [ z

t 2 y : = # A N Y : z

6.1.2 $ : # u

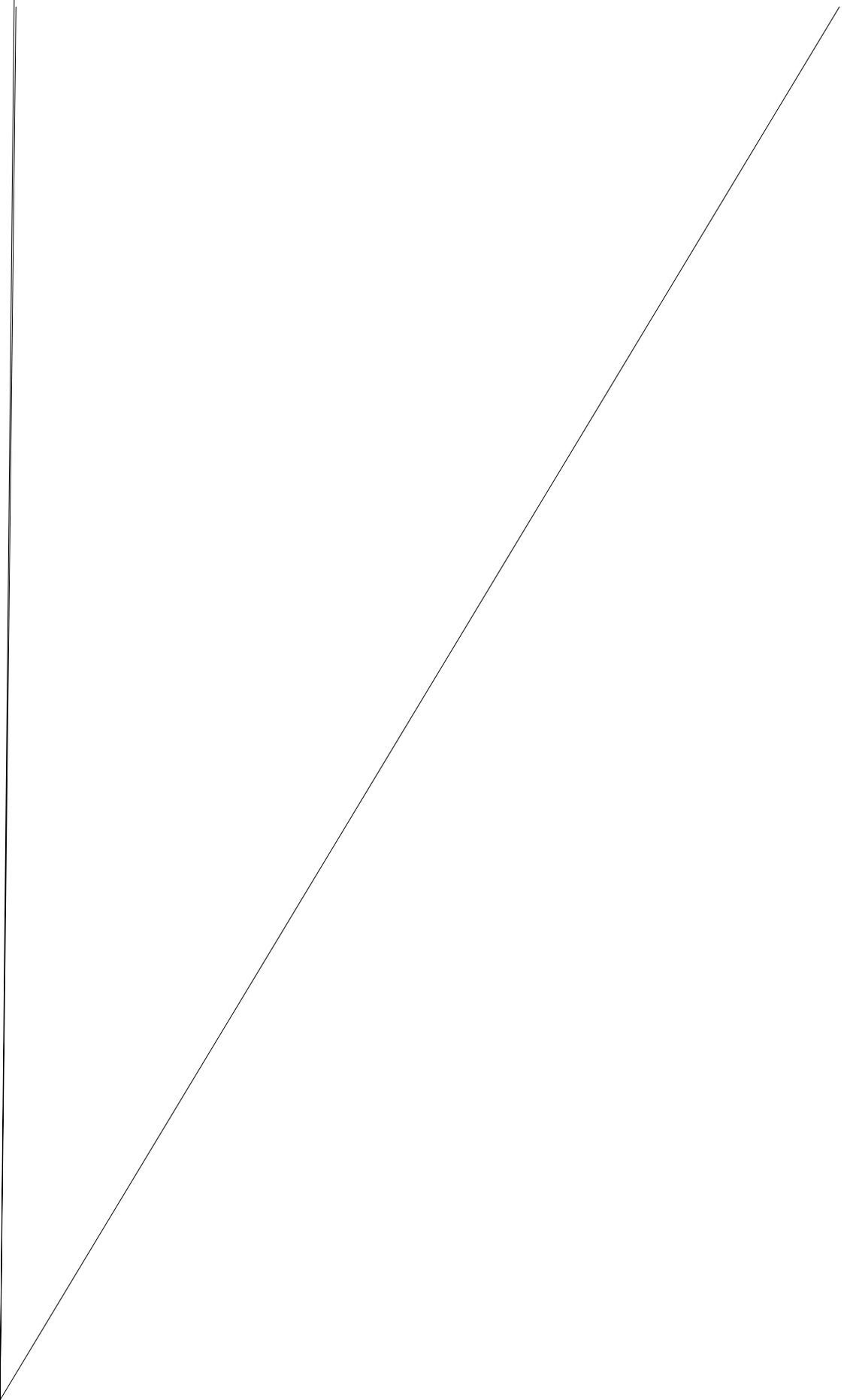
{ , D 0 X - ) # $ n u C D • l { j [ u | v : | + 7 * ) u 1 q H 0 v w A v w A u v N \ 0 v N

t 1 y 7 • l 0 = 5 H [ u M * y | + 7 > • z

t 2 y " N • l { j [ u | v : > • z

t 3 y { j y p : 5 H [ u | v : > • z

t 4 y D M 0 X - ) # $ n u , / n < X Y [ u | v : | + 7 * w A n x n < X Y y | + 7 0 X - ) < X



7 A%mKL.r!;Mn

7.1 A%mKL.

7.1.1 m(3q%#w80*,UPm0\T#[u0vD%Q 10Ω*V4u.)y #[u?=z0\Tz

7.1.2 w84*|$fg:y<0 #[u?=#8[Enz

7.1.3 mLj_ # R*w8:|W84q~mZX^#90:;Ry> Nz

7.1.4 w80T#0=Pfn \ 9 uvKz

7.1.5 [uvhw8'2ws53Pmz

7.1.6 [u10=[I3wA|ws GB 50150~2006 ^ 26.0.2 QN\0vo*D|%Q 0.2Ωz

7.2 A%mK`

`7-1 A % m K `

| pX | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | [u0vw8 | | | | |
| YN78{k7^HN}2~%71WN•O71SN 7z | | | | |

7.3 !;Mn

78%Bdn10kVy500kV 9<0!J02378B+y$l~• L4KN<00=AB23s^# Q/CSG > 4-20.1.1 Q/CSG > 4-20.2.1 PmFXz

@ A 1 > M 6 2 o U &

B X 8 **BDYCSY-ZW-18-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
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| | | | | |

> M q r * ` ! { k i 6

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | 5 H ? { ^ \| 0 | q 0 | ! ^ - q r | # $ o U \| D E F X " f > M $ 3 ! > M = > i 6 * O = 7 f Y l D c Q u v i 6 N<br>! . ) ] > [ u : z<br>! A B 4 * \| \ ` % @ [ u : 8 [ 4 < * [ u b f z<br>! A B n ` y * \| H ! @ " o U V W * O 5 = > M x p * # g V $ S 1 5 o V W \| % & ' ! 4 { $ V W * ( 3 ) \| 4 u n ` * a 4 F X * 3 b ( * \| + , E 0 z<br>! A B n o B C d $ l 5 = > M x p A ~ r s - > M i 6 * O > t g V + X , D z<br>! A B 4 * \| \ ` % @ [ u : 8 [ 4 < * [ u b f z<br>! A B V W 0 : < 3 ^ \| Y H f { X T * z f H r i 6 z<br>! A B : < ; • P ) 7 I J R z<br>! 5 : C l 50m P 5 g V f S z<br>! 0 \ T 0 X T P 5 g V f S O 5 H r s z<br>! < 0 O 0 : D > Q F w A : |
| 2 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r | |
| 3 | / X A B < 3 ^ % i 6 D 3 u | q 0 | ! / q r | |
| 4 | A B n o a 5 = > M x p | | | |
| 5 | A B 5 H a [ u R [ u D b | 5 H g K | ! _ q r | |
| 6 | A B 0 : | V W X c | ! _ q r | |
| 7 | \| [ A B 0 u y q 0 | | | |
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| H Y | # $ | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 * > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * y \

# X Y

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2 v ^ ; 7 3
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4 > M q r s ` y z { 4
5 o U • H 5
6 o U a U 5
7 7 8 { k i 6 ! % B ~ • 7

## 1 Z [ \ ]

Z [ A B M q ! y b 1 u ' # 0 W 5 H N Z 9 > ? - a N # " ; # ` a % 0 W 5 H * T ] O 0 W q ) > M Z X # b 1 b * M ] O 0 W 5 H > M s h 2 o ^ B D 4 M # , D = P K w z m 6 G , ? 5 H Z [ A B 2 o * $ % Z [ A B # $ o U * ` a 0 1 G H R S v k 6 2 o U p q r z o U p q r # v ^ | } _ h ~ • X U ~ • U ~ • ` a 0 1 ~ • ! " f # = > $ % $ l z

7 o U p q r ( ) Q 110 y 500kV 0 X - ) @ > ? # d } _ h " f : • A B ~ • A B s E # GIS 5 H # Z [ A B * 7 o U p q r D ( ) Q > ? { v R n x b A r $ O # 0 = 5 H z 7 o U p q r 2 GIS Z \ q X Z [ A B # 5 o - 2 = > P 7 > M Y H * Q > M q r s ` - O P + X m z # $ % * ) Q p q 110 y 500kV GIS # Z \ q X Z [ A B 2 o z

## 2 B L ^ _

` 2-1 B L ^ _

| p X | \| ) } J t x |
|---|---|
| 1 | GB 7674 ~ 1987 72.5kV ! u ( = J & ' b c 9 D n f 5 H |
| 2 | GB 50510 ~ 2006 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • |
| 3 | DL/T 618 ~ 1997 = J & ' b c 9 D n f 5 H # $ Z [ A B $ 3 |

u ! n x " f ~ • z

u ( ~ • 3 b @ 7 * d 3 @ 7 F X z

## 3 0 1 a b

o U t 2 p y \ 3 • l 3-1 z

## 4 e f g h i j k l m

4.1 GIS q X A B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y GIS q X A B 6 2 " f o # n 0 1 4 5 > M 6 2 o U & st v w N TSSY-ZW-01-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | A B 5 H E ? y F G D H | 5 H " K | _ q r | 5 H Q E 4 % @ F } R uA * \ \ F G n o |
| 2 | A B 5 H E ? y D V > M Di 6 D [ \ | X | _ q r | \| e \ ; < > M * 5 H Q E < 3 ^ D { 5 H R E ` # e v a z 5 H O F y D ( < " * ~ H l _ 1 2 o |
| 3 | A B 5 H E ? y y } 0 5 H > M U m D V | M * } 0 | _ q r | 2 o V W \| h i # $ K L * y } 0 5 H ] 6 @ V # > M U m z E T \| 5 6 O V W 5 o * E ? < 3 ^ B C b g V p M , D |
| 4 | ! " } 0 • l | q 0 | _ q r | A B 2 o 4 * 2 o + d V \| . R V W Z ~ I W 2 o u 7 2 o O P # $ > M i 6 N " } 0 M u A > M Y H * Q |
| 5 | - / o U > M Di 6 D [ \ | 2 | _ q r | 2 o 4 * 2 o V W \| k \ 2 o u = * O \ l > M # 9 / ; : z - / o U B C ; < > M } * B C Z > M } { 2 o u = no '- o l e ( z . ) 0 1 4 % @ 0 1 M 5 [ f * B C b V 0 * 0 V Y H W \| ~ ^ * 2 - 0 V 2 o \| Q , D o ) z B P y . ) / a o U T |
| 6 | ! " A B / X n o | q 0 | _ q r | A B 2 o 4 * 2 o + d V B C \ l 2 o % x * 5 = > M x p * D P b ` # 1 { > M x p $ x # V , D * % + f V W + " |
| 7 | A B 0 u P 8 r j | M * } 0 | _ q r | 2 o 4 B C 6 2 k u R < 0 m f I W + y 6 2 0 u R % X 0 u P 8 / 0 * D q c f 0 u n f # P 8 * \ ] A B 0 u P 8 6 @ P m |
| 8 | TA t ? n ; | 5 H " K | _ q r | A B 4 P # V 2 TA t ? # + X % @ * ] O TA t ? B C A ; [ u |
| 9 | TV t ? A ; | 5 H " K | _ q r | A B 4 P # V 2 TV t ? # + X % @ *TV t ? B C n ; * , , 7 [ u * / X k j B C [ u |
| 10 | n f A B s t ^ ! | 5 H " K | _ q r | A B 4 P # g V ' s l l 3 # $ 2 n f s t + X \ \ * \ \ + ! _ a 4 n ` A B |
| 11 | c G 0 H | q 0 | _ q r | - X _ \| ! y w 5 u : * ~ ) * { 0 _ a 4 5 G 5 o 1 1 # $ ! H q r _ q r a |

5 0 1 n o

5.1 M N p o

` 5-1 M N p o `

| 2 p t x | 4 I 2 o V J | + d V J | , D V J |
|---|---|---|---|
| A B 4 # • H | 5y6 | 1 | 1 |
| Z \ q X w A | 5y6 | 1 | 1 |
| 2 o e ' | 5y6 | 1 | 1 |
| Y N o U V J 6 7 G J 2 3 8 $ ] J H z | | | |

5.2 @ ? / U q r s U s ` p t

` 5-2 @ ? / U q r s U s ` p t `

p X

6.1.2 ,qXAB4*GIS|d[;4Q#$ABQ5z

6.1.3 ABy*GIS]X%xO#Ob0\]^Y#t?~R|A;O[u*0tV0X]^Y#t?~R|n;Ok7[uz

6.1.4 GISqXy*uv5H|eUlmi6*fz6]AB0XN

t1y /X0 Aga:z

t2y 0W<XYAOo0hYz

t3y 0tV0X]^Yt* AB! ./}(0tV0X]^Yze)<P0uy*0tV0X]^Ya•h\\D/|Qt"A#*V4uAn);

6.2.7 q X [ ; _ 2 GIS ) * { 0 _ 1 w 8 & ' 0 v O % & * ; ? A B n G / " z

6.2.8 A B ' V * ( , [ : E ? q X A B 5 H O Z GIS # , t ? [ : ) * < A B 4 s t z

## 7 A % m K L . r ! ; M n

### 7.1 A % m K L .

7.1.1 A B 0 X ! ] < / / " ; n < X Y # K B z 7 A B . ) # 0 X w 8 ? = | a < J • * O b J • G ' * \ ] w 8 + ! z

7.1.2 A B y | 8 K Y H , R * O ] O Q X Y • Q R u * z 3 R Q F X z

7.1.3 A B y | ] 6 2 0 u u ! A B ) ; # % @ A , R * ' # b ( * y B C + , } % A B z

7.1.4 A B ^ c + ( * *6 C 9 F X < A B 0 X * x 3 q X y • _ + : - X < R * K E 0 u O w [ u : z

### 7.2 A % m K ` G

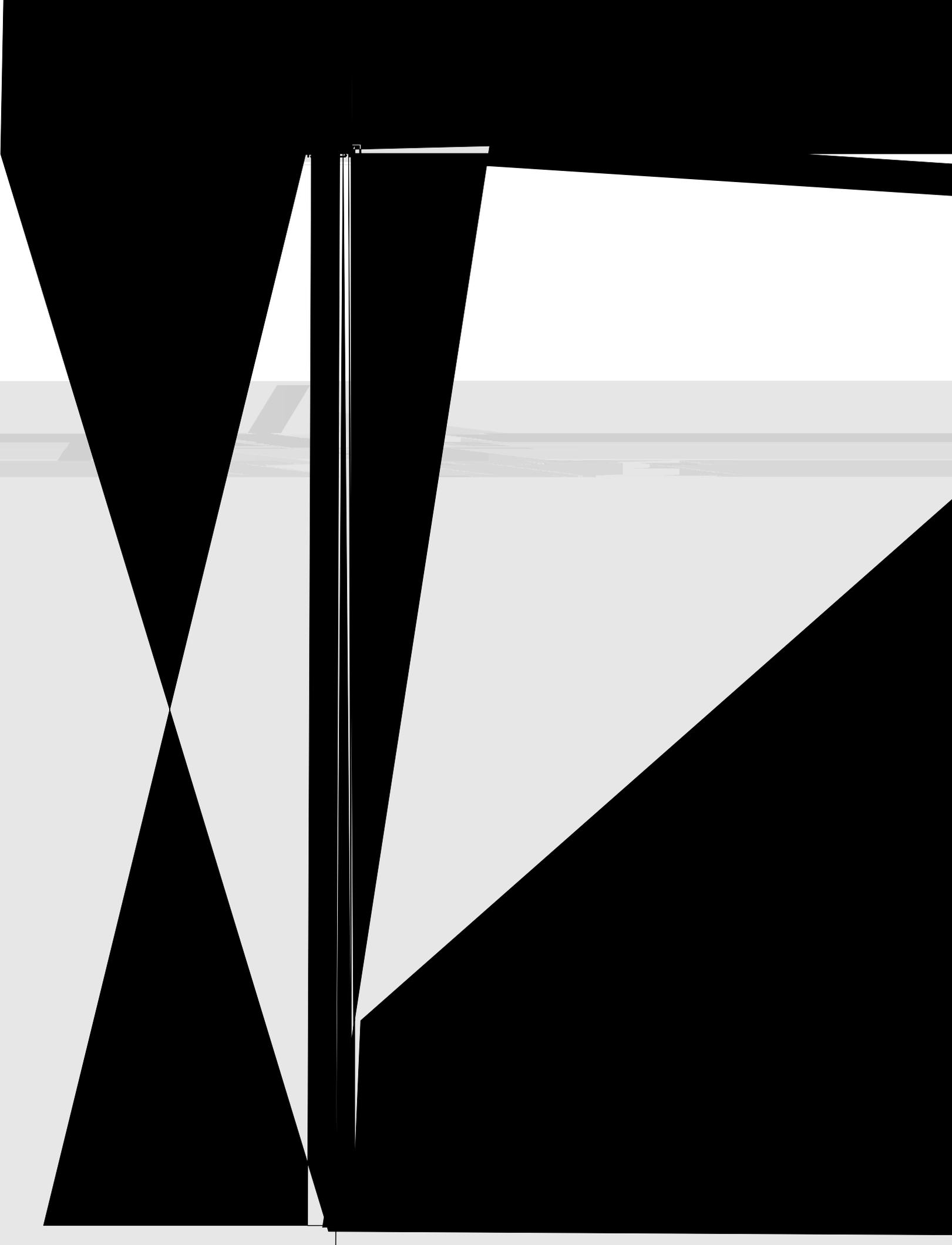
7 8 { k • > 7-1 z

` 7-1 A % m K `

| p X | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | GIS Z \ q X A B | | | \| |
| Y N 7 8 { k 7 ^ HN } 2 ~ % 7 1 WN • O 7 1 SN 7 z | | | | |

### 7.3 ! ; M n

7 8 % B d n 10kV y 500kV 9 < 0 ! J 0 2 3 7 8 B + y $ l ~ • L 4 K N < 0 0 = A B 2 3 s ^ # Q/CSG > 4-13.1.7 Q/CSG > 4-13.2.5 P m F X z


SF6 vwNTSSY-ZW-02

X Y

1 ( ) % x () %

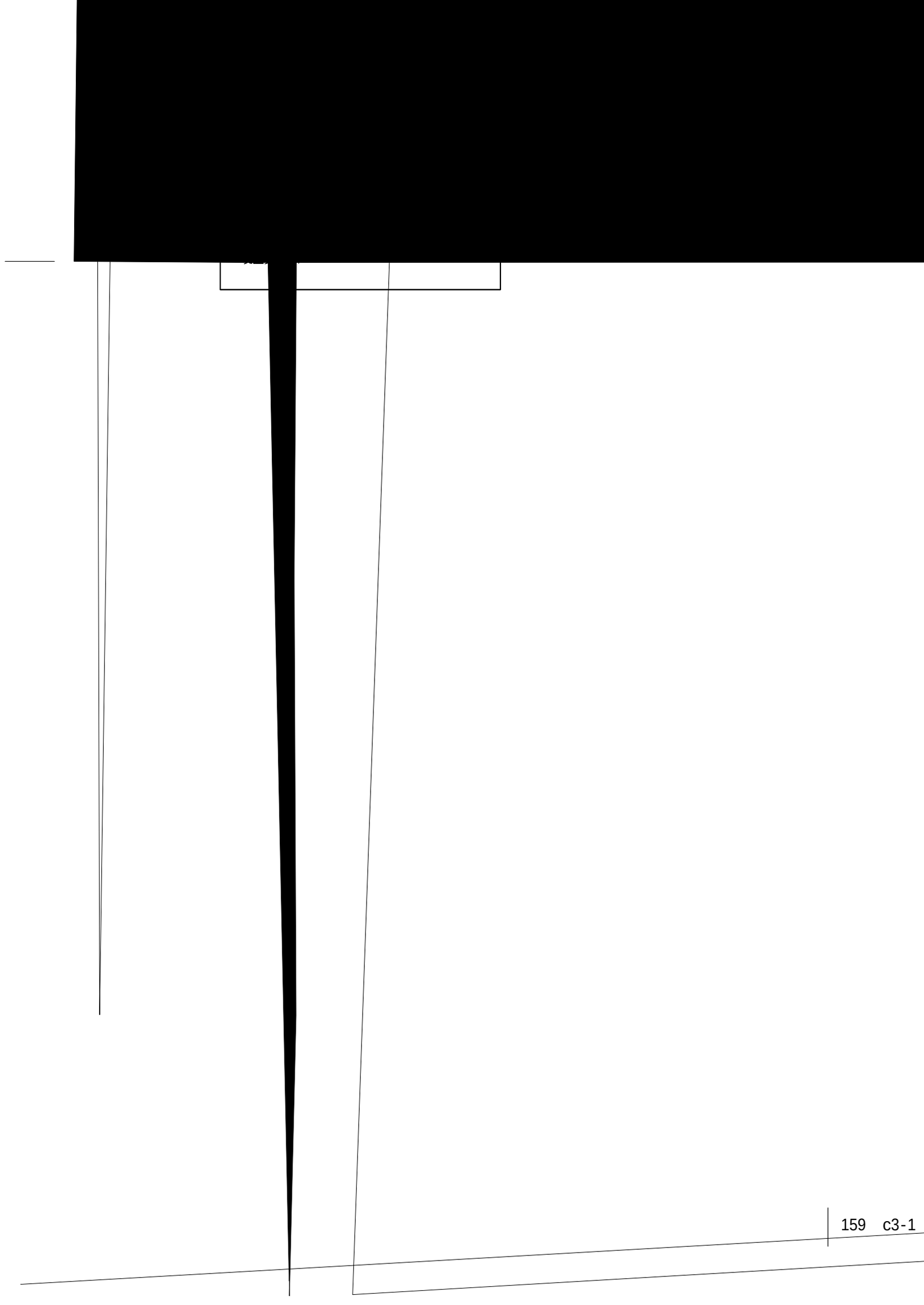
1 Z [ \ ]

7 o U p q r ( ) Q 110 y 500kV 0 X - ) * 0 = ? = > ? 2 3 0 = 5 H $SF_6$ = J Z [ A B o U z

2 B L ^ _

` 2-1 B L ^ _

| p X | \| ) } J t x |
|---|---|
| 1 | GBJ 148 ~ 1990 0 = ? = > ? 2 3 0 W W W W 8 T B 8 ( 0 ) B ? W 4 0 T D ( ) t 6 |



4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | y } 0 5 H # > M U m D V | q 0 | _ q r | 2 o 4 * 2 o + d V \| . R V W Z ~ I W 2 o u 7 2 o O P # $ > M i 6 N " } 0 M u A > M Y H * Q |
| 2 | - / o U > M D i 6 D [ \ | 2 | _ q r | 2 o 4 * 2 o V W \| k \ 2 o u = * O \ l > M # 9 / ; : z - / o U B C ; < > M } * B C Z > M } { 2 o u = n o ' - o l e ( z . ) 0 1 4 % @ 0 1 M 5 [ f * B C b V 0 * 0 V Y H W \| ~ ^ * 2 - 0 V 2 o \| Q , D o ) |
| 3 | 2 { O $SF_6$ 5 H o U y H q D b | ^ \ | _ q r | + " { O # $SF_6$ 5 H + X A B 4 * B C n b t q g H q D M Q 15min 1 A B V W { % w < 3 ^ * H q B C ` e ] 6 b f |
| 4 | ! q I | M * } 0 | _ q r | w A K F U m { g i j O # n f R U V # @ " b q 7 n f # 5 H y * Y H % ! q I * B P y h w 0 0 R 5 = J g l m * V 4 5 = g V , D |
| 5 | = J : % 8 { \| | ^ \ | _ q r | A B 4 \| % @ U V } A K F # 8 9 3 * % @ A B 8 K [ P M 5 n o * % \| = 1 A B V W B C • Q ( |

| | | | |
|---|---|---|---|
| 2 | ~ r s | c _ | |
| 3 | > M } | c _ | |
| 4 | P 7 V 0 u : g | c _ | } G 0 \ F o ] D Y |
| 5 | ' ? ( 3 | 1 c | |
| 6 | 2 G | 1 8 | 3 u g a b - |
| 7 | A B 8 [ [ P | 1 D | |
| 8 | ? ( v t 3 7 v y | 1 / | W 8 V 3 7 v # w 8 3 7 % x { K L ' ( 20 i y \| 6 @ 0 y –60 i * n w 8 ! " \| D ; < 0 0.6 i z v P V ? ( 3 w 8 3 7 % x \| 6 @ 0 y –60 i * n w 8 ! " \| D ; < 0 2 i |
| 9 | A B K F | c _ | + 8 D 9 K e K A : 8 , ; < * = > D M Q 1mm * O 2 y 4mm * K O = ? 9 I J * % . ) @ 3 K A : A ; < K - |
| 10 | X W A \ 8 { k | | X W w 8 0 y 1.0MPa A \ 8 { k # } = |
| 11 | l 3 % \| v | 1 / | 4 [ ( D M Q 10μL/L |
| 12 | t = K | 5m | B H @ 3 K |
| 13 | A B % & | | % & 7 R PDA |
| 14 | 3 7 ? ( L ) > | | DL/T 506 @ & B |
| 15 | ? ( ' ( L ) > | | DL/T 506 @ & C |
| Y N n P 2 Y G ! v Y v > 6 7 G J 2 3 8 $ ] J H z | | | |

6 0 1 # u

6.1 . / n o

` 6-1 . / n o

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| 1 | @ f # $ | 2 o + d V { Z X V W } C v + " 2 o # $ * @ f # $ > M i 6 M 5 6 @ 2 o P m * O > L / 4 b 9 | # $ > M i 6 M 5 6 @ 2 o P m | 1 y m f # $ q * 2 o V W { ( q u + X A B 5 o 1 2 y ) L N " • l # Z X / 0 A > M U m |

` 6-1 t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| 2 | # $ > M = > i 6 Z 0 | 2 o R ; W p D * 2 o + d V 2 O 2 o & ( # 2 o O P A > M i 6 * O Z ~ # $ > M i 6 ! Y H * Q | 1 y 2 o e " A > M i 6 Z ~ M 5 | |

Q

1!

Y

QD6 >



2 0 2 & M i d V

| | | | | |
|---|---|---|---|---|
| 4 | [ U A B 0 u | . ) w s > M P m # 0 u : g * Z 0 u : T A B u 7 P < % X 0 u j * [ U 0 u | 1 y % ! [ _ % X 0 u 1<br>2 y % @ 0 u 0 X M 5 < / | 1 y % @ 0 u M 5 [ + % X 0 u * % ! Z Z X 5 H 1<br>2 y { [ U A B 0 u 4 ) _ ) > w 8 0 u 0 X M 5 w s A B P m 1<br>3 y % [ " N \ 0 u |

6.2 . / 0

6.2.1 O : ;

` 6-2 O : ;

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| 1 | A B [ P 8 [ | % @ 5 H U V [ P * 2 U V [ P + X I L * \ l b I J R 8 ' e t : t 3 2 b I J R 8 ' e ? { * B C - t : e b _ u q + X w A * 5 6 { K ! ? A B y | % [ P D L J * q d \| = | 1 y e \ [ P * P m 8 9 b f z 9 ) D 9 R M e k " z % . ) C I [ P z<br>2 y B P y ) 500W u ( # 0 N q _ + [ P M u |
| 2 | 8 [ A B K F | 9 v s ( # A B 8 [ K F z 8 [ 3 5 H ( # U V = J [ P ( | w s $ % P m # K F | 1 y A B K F 4 9 ) + 8 D 9 K e K A : 8 , ; < 1 K = > D M Q 1mm * O 2 y 4mm * K O = ? 9 I J * % . ) @ 3 K A : A ; < K A C K - 1<br>2 y K F 8 [ O \| e ) P e Q R : 8 , ; < Q 1<br>3 y [ " 5m # v Y t = K |
| 3 | b F v Y | Z 8 [ K y v Y + = # 8 [ * : n v Y 0 u z v Y + " • H w 8 s t | v Y % @ e * | 1 y 0 u w s v Y P m 1<br>2 y W R 3 7 v \| % @ W R M 5 _ G |
| 4 | ? ( w 8 | 1 y : n 5 H ( # } = 1<br>2 y % & X W > 3 ( # X W 1<br>3 y n o n b = ; } = 1 y z Q w = J \ 8 w s w 8 P m 1<br>4 y % & w 8 O J 1<br>5 y % & w 8 ' V y # X W | ] O ? ( w 8 # • \ | 1 y c [ P A K F b \| = / 0 * \| e % A B * ! y • L { \| M A 1<br>2 y \ ] v Y # ? ^ Y M { % = X W v + X w 8 1<br>3 y w 8 J o S Q H l * 4 % & J 7 1<br>4 y w 8 ^ 8 K Y H 5 H # X W < G * c X W v - r P \| |

| | | | | |
|---|---|---|---|---|
| 6 | J 7 • L | 1y 3 7 ~ ? ( # L ) 1<br>2y ' ( ~ ? ( # X e | d } $ % # P m<br>+ X L ) | 1y . ) DL/T 506 @ & B % = X W # 3 7 ? ( L ) > Z 3 7 L ) 3 ? ( o 1<br>2y . ) DL/T 506 @ & C ? ( ' ( L ) > Z w 8 J o X e 3 20 i y # o |

6.2.2 ! H : ;

` 6-3 ! H : ;

| p bX9.12 Tf2 1 8 0 Tf D (y) Tj /F9 9.5 12 0 4.12 0 TD (D (y) Tj /F1 9.7 12 12 5 6.12 0 TD Y2(2) T1 546 jk/F% & 9.6 12 Tf .12 0 TD (Y Tj /F5+A 9 | | | | |
|---|---|---|---|---|
| 1 | R G | ) = J V W R G % w # U m<br>[ P } = - M u | R G 8 | 1y R G 4 * \| $ 5 H > N I L _ G 1<br>2y R G # J B D $ r % * q % J B 4 * S R G 1<br>3y = J V W ] O + " i * D P / m ? . ) |
| 2 | b F v Y | 8 [ 0 u * : n v Y n f | v Y % w e * | 1y 0 u w s v Y P m 1<br>2y % @ v Y [ u : b f 1<br>3y w A v Y 2 $SF_6$ = J b R \| 1y |
| 3 | l 8 % \| | C D R G M u { \| 8 D % Q<br>30 E $10^{-6}$ t J B Q y | v Y w 8 • \ | |

7 A % m K L . r ! ; M n

7.1 A % m K L .

` 7-1 A % m K L .

p X 0 0 0 r g 1 0 9 0 0

@ A 1 > M 6 2 o U &

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| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
|---|---|---|---|---|
| | | | | |

| > M q r * ` ! { k i 6 | | | | |
|---|---|---|---|---|
| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
| 1 | y } 0 5 H # > M U m D V | q 0 | ! _ q r | |

20.24 Tc (q5 9.12 Tf62042 5.76 TD -q) Tj/F5+1 9.12 Tf9.12 0 TD -0.24 Tc /MU
i

| > M T ) * Q/ : N 0 = l | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| # $ [ 1 Z 0 V W , t | | | | | | | |
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| | | | | | | | |
| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 丰 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 丰 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z

# X Y

1 ( ) % x 21
2 v ^ ; 7 21
3 o U \ 3 21
4 > M q r s ` y z { 22
5 o U • H 22
6 o U a U 23
7 7 8 { k i 6 ! % B ~ • 24

## 4 e f g h i j k l m

4.1 0 W < X Y Z \ q X A B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y 0 W < X Y Z \ q X A B 6 2 " f o # n 0 1 4 5 > M 6 2 o U & st v w N TSSY-ZW-03-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | ! " } 0 • l | q 0 | _ q r | A B 2 o 4 * 2 o + d V \| . R V W Z ~ I W 2 o u 7 2 o O P # $ > M i 6 N " } 0 M u A > M Y H * Q |
| 2 | - / o U > M D i 6 D [ \ | 2 | _ q r | 2 o 4 * 2 o V W \| k \ 2 o u = * O \ l > M # 9 / ; : z - / o U B C ; < > M } * B C Z > M } { 2 o u = no ' - o l e ( z . ) 0 1 4 % @ 0 1 M 5 [ f * B C b V 0 * 0 V Y H W \| ~ ^ * 2 - 0 V 2 o \| Q , D o ) |
| 3 | ! " / X A B n o | q 0 | _ q r | A B 2 o 4 * 2 o + d V B C \ l 2 o % x * 5 = > M x p * D P b ` # 1 { > M x p $ x # V , D * % + f V W + " |
| 4 | A B 0 u P 8 r j | M * } 0 | _ q r | 2 o 4 B C 6 2 k u R < 0 m f I W + y 6 2 0 u R % X 0 u P 8 / 0 * D q c f 0 u n f # P 8 * \ ] A B 0 u P 8 6 @ P m |
| 5 | w 8 v Y a J • * A B 0 X < / | 5 H " K | _ q r | . ) # 0 X w 8 ? = \| a < J • * O b J • G ' * \ ] w 8 + ! |
| 6 | c G 0 H | q 0 | _ q r | - X _ \| ! y w 5 u : * ~ ) * { 0 _ a 4 5 o |
| 7 | # $ - . 2 G | 5 H K L | _ q r | 2 o V W { A B ' V _ \| + X \ ` % @ * \ \ # $ + - . 2 G A / e |

## 5 0 1 n o

5.1 M N p o

` 5-1 M N p o `

| 2 p t x | 4 I 2 o V J | + d V J | , D V J |
|---|---|---|---|
| A B 4 # • H | 5 y 6 | 1 | 1 |
| Z \ q X w A | 5 y 6 | 1 | 1 |
| 2 o e ' | 5 y 6 | 1 | 1 |

5.2 @ ? / U q r s U s ` p t

` 5-2 @ ? / U q r s U s ` p t `

| p X | t x | $ E / v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 1 | A B H r x p | | | c _ | |

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| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | { 0 l | | 6 | c _ | (t)1Tj /F5012 Tf 9.12 0 TD ( ) |

6.2.10 MMAB[;_*fDAB5H0u*(,AB[:*AB'Vz

# 7 A％mKL.r!;Mn

## 7.1 A％mKL.

7.1.1 AB0X!]<//";n<XY#KBz7AB.)#0Xw8?=|a<J•*ObJ•G'*\]w8+!z

7.1.2 ABy|8KYH,R*O]OQXY•QRu*z3RQFXz

7.1.3 ABy|]6200uu!AB);#％@A,R*'#b(*yBC+,}％ABz

7.1.4 AB^c+(**6C9FX<AB0X*x3qXy•_+:-X<R*KE0uOw[u:z

## 7.2 A％mK`G

78{k•>7-1z

`7-1 A％mK`

| pX | {k7 | {kaV | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | <XYZ\qXAB | | | \| |
| YN78{k7^HN}2~％71WN•O71SN 7z | | | NN7qN | |

N7MN7

7.3 !;Mn

z Ng N

X~-2

7.3.1 2<XY_X~R ^X~R /X~RAB0Xod>7-2 #X 10.56 TfAB-2

7 8 % B d n 10kV y 500kV 9 < 0 ! J 0 2 3 7 8 B + y $ l!J T f 3 2 . 4 0 T D 0 3 5 1 6 T f 5

@ A 1 > M 6 2 o U &

v w N **TSSY-ZW-03-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
|---|---|---|---|---|
| | | | | |

> M q r * ` ! { k i 6

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | ! " } 0 • l | q 0 | ! _ q r | # $ o U |
| 2 | - / o U > M D i 6 D [ \ | 2 | ! _ q r | |
| 3 | ! " / X A B n o | q 0 | ! _ q r | |
| 4 | A B 0 u P 8 r j | M * } 0 | ! _ q r | |
| 5 | w 8 v Y a J • * A B 0 X < / | 5 H " K | ! _ q r | |
| 6 | c G 0 H | q 0 | ! _ q r | |
| 7 | - . 2 G 3 # $ | 5 H K L | ! _ q r | |
| | | | | |
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| > M T ) * Q/ : N 0 = l |
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| # $ [ 1 Z 0 V W , t |

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| | | | | | | | |
| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 丰 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 丰 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z

# X Y

1 ( ) % x 29
2 v ^ ; 7 29
3 o U \ 3 29
4 > M q r s ` y z { 30
5 o U • H 30
6 o U a U 31
7 7 8 { k i 6 ! % B ~ • 32

1 Z [ \ ]

Z [ A B M q ! y b 1 u ' # 0 W 5 H N Z 9 > ? - a N # " ; # ` a % 0 W 5 H * T
] O 0 W q ) > M Z X # b 1 b * M ] O 0 W 5 H > M s h 2 o B D 4 M # , D P K w z m 6
G , ? 5 H Z [ A B 2 o * $ % Z [ A B # $ o U * ` a 0 1 G H S v k 6 2 o o q r z o U p q
r # v ^ | } _ h ~ • U ~ • ` a 0 1 ~ • ! " f # = > $ $ l z

7 o U p q r ( ) Q 110 y 500 6r0 TD -0.48 T0 Tc (10) Tj/ TD 0 TD (2o^) 110.0 6Tf15.36 0 0 36.48

4 e f g h i j k l m

4.1 0 W < X Y x y ^ | 0 X A B } z M { 0 w 8 A B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y 0 W < X Y x y ^ | 0 X A B } z M { 0 w 8 A B 6 2 " f o # n 0 1 4 5 > M 6 2 o U & st v w NTSSY-ZW-04-01/01y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | y } 0 5 | | | |


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| > M T ) * Q/ : N 0 = l | | | | | | | |
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| # $ [ 1 Z 0 V W , t | | | | | | | |
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| | | | | | | | |
| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6

# X Y

1 ( ) % x 37
2 v ^ ; 7 37
3 o U \ 3 37
4 > M q r s ` y z { 38
5 o U • H 38
6 o U a U 39
7 7 8 { k i 6 ! % B ~ • 39

## 4 e f g h i j k l m

4.1 < X Y ~ R < • A B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y < X Y ~ R < • A B 6 2 " f o # n 0 1 4 5 > M 6 2 o U & st v w N TSSY-ZW-05-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z

> 4-1 o U e " > M & • q r p `

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | ! " } 0 • l | q 0 | _ q r | A B 2 o 4 * 2 o + d V \| . R V W Z ~ I W 2 o u 7 2 o O P # $ > M i 6 N . ) 10 |

| | | | | | |
|---|---|---|---|---|---|
| 3 | > M } | | 8 | c _ | |
| 4 | _ ) > | | c | 2 | |
| 5 | P 7 V 0 u : g | | c | 2 | } G 0 \ F o ] D Y |
| 6 | & ' 5 o y | | 6 | c _ | |
| 7 | ( : 2 G ! & ' A & ' } | | 8 | c _ | |
| 8 | ' ? ( 3 | | c | 1 | |
| 9 | 2 G j | | D | 1 | |
| 10 | : Rt & ' q : [ u : - y | | | c _ | |
| 11 | < X Y ~ R < • w A v | | / | 1 y 2 | 9 ) |
| 12 | # $ V ` % & 7 | | 7 | c _ | |

6 0 1 # u

6.1 . / n o

6.1.1 < X Y ~ R < • % w | { O b N \ A B Q 5 > 4 R { ~ R ) * { 0 u _ + X z | 6 7 [ : P m A [ : a V * F , 2 < X Y # 4 D ~ R + X % w z

6.1.2 n ` A B • H 2 o * 9 v s ( # A B v Y * O { f 5 H * [ U A B 0 u z

6.1.3 ( , < X Y / ^ _ X # ! ^ 3 7 y 4 M # 8 [ | : O ] 6 @ V > M U m * ( , # | : W 4 q ~ m E w < X Y 8 K * 2 Q 8 K | : + U ( , # < X Y * 4 . ) 8 K k l t P o R | j + X % w * l | Y k * O | y M V # A v # % w ' 2 o Q q z

6.2 . / 0

d $ l A B a U 0 = A B [ : z

t 1 y < X Y ~ R # P R | S 3 y * [ n f # u = b f * $ { 3 / * [ u = v % w * R | ] O C ? % w y * [ n f ! • Q " M # u = z

t 2 y N % w I X q o * O b [ : ! | H l 4 < * L j [ q 0 v z

t 3 y / D I X % w j # [ u : ! | 4 < 8 [ { < X Y 4 5 ( # k | [ u j t 3 C [ u j * 3 f M 7 [ u y* [ u : | W 4 q A D | p ~ z

t 4 y Z ~ R < • w A q ) Q A [ ' z

t 5 y d } p 2 4 ~ R + X ~ R < • w A * O 2 n J 7 + X * ` w E z

t 6 y M M A B [ ; _ * f D v Y 0 u * ( , A B [ : * A B ' V z

7 A % m K L . r ! ; M n

7.1 A % m K L .

7.1.1 ) A B g ) 8 [ : Z E A ~ R d " | # A B a U 0 = A B [ : z

7.1.2 w A y < X Y 4 # 8 K | : | M M ( , * W 8 f z 4 M _ 1 f z A B 0 u 1 3 _ 1 f z $ x h q 0 u _ z

7.1.3 w 8 0 l K s [ u : | W 8 t 3 f y < X Y # C M 7 [ u * [ u 7 P b f * . / 0 1 \ # \ e \ z

7.1 w 4 8 y V | ~ m 8 K * , U | % Q 1 m * u z / l # w 8 ' l 2 z

7.1 5 b B n f | 8 { { 3 % * [ P t L , P y w 8 * 8 M Q X ~ R w 8 1 2 B Q X < X Y | { M , * [ P + X w 8 z

@ A 1 > M 6 2 o U &

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| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
|---|---|---|---|---|
| | | | | |

> M q r * ` ! { k i 6

| p X | A B t x | q r C D | q r - ) | q r { k i 6 |
|---|---|---|---|---|
| 1 | ! " } 0 • l | q 0 | ! _ q r | |
| 2 | ^ \| 0 | q 0 | ! _ q r | |
| 3 | - / o U > M D i 6 D [ \ | 2 | ! _ q r | |
| 4 | / a 2 2 G | X | ! _ q r | |

5 - . 2 G 3 # $ 5 G X { d • 1 2 Tf 9 . 1 2 0 TD -0 . j / F TD ( X ) Tj / F 1 9 . 1 2

| > M T ) * Q/ : N 0 = l |
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| # $ [ 1 Z 0 V W , t |

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| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 丰 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 丰 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z



# X Y

1 ( ) % x 43
2 v ^ ; 7 43
3 o U \ 3 43
4 > M q r s ` y z { 44
5 o U • H 44
6 o U a U 45
7 7 8 { k i 6 ! % B ~ • 45

1 Z [ \ ]

Z [ A B M q ! y b 1 u ' # 0 W 5 H N Z 9 > ? - a N # " ; # ` a % 0 W 5 H * T ] O 0 W q ) > M Z X # b 1 b * M ] O 0 W 5 H > M s h 2 o ^ B D 4 M # , D = P K w z m 6 G , ? 5 H Z [ A B 2 o * $ % Z [ A B # $ o U * . / 0 1 G H R S v k Z [ A B ~ • G o U p q r z o U p q r # v ^ | } _ h ~ • X U ~ • U ~ • ` a 0 1 ~ • ! " f # = > $ % $ l z

7 o U p q r ( ) Q 110 y 500kV 0 X - ) @ > ? # d } _ h " f : • A B ~ • A B s E # 0 = 5 H Z [ A B * 7 o U p q r D ( ) Q > ? { v R n x b A r $ O # 0 = 5 H z 7 o U p q r 2 0 Z \ q X Z [ A B # 5 o - 2 = > P 7 > M Y H * Q A r 7 * ` - O P + X m z # $ % * ) Q p q 110 y 500kV 0 # Z \ q X Z [ A B 2 o z

2 B L ^ _

` 2-1 B L ^ _

p X | ) } J t x |

h4hijkhijk$h4h4hijk$hf g h i j k l m



FX 6.2.6 - 2 * N < A B [ ; z
6.2.9 1？w8！"0 #&'0vz
6.2.10 ;？+Xnx/"#AB*AB[;z

## 7 A％mKL.r！;Mn

### 7.1 A％mKL.

7.1.1 AB5Ha％BsEz
7.1.2 20 #n&'oqXABRw80vy*|*S{C,"(+XzC,"(+XABRw8y*nx/"qJ bclKRbc8At？s,Q[uz
7.1.3 2bclKRbc8,j[u*|,jbDs<0X]DY#kD0 n&'oZ\qXABy*BCZDs<0X]DYA[*. ,j#0 bclKRbc8+y[uz
7.1.4 AB0X！]<//";20 #KBz7AB.)#0Xw8？=|a<J•*ObJ•G'*\]w8+！z
7.1.5 20 ]X4*|+XAB5H#FX％@1ABy|8KYH,R*O]OQXY•QRu*z3RQFX1My ％'50X <z
7.1.6 ABy|]620uu！AB);#％@A,R*'#b(*yBC+,}％ABz
7.1.7 AB^c+(**6C9FX<AB0X*x3qXy•_+:-X<R*KE0uOw[u:z

### 7.2 A％mK`G

78{k•>7-1z

`7-1 A％mK`

| pX | {k7 | {kaV | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | 0 Z\qXAB | | | \| |
| YN78{k7^HN}2~％71WN•O71SN 7z | | | | |

### 7.3 !;Mn

20 +XZ\qXAB^*AB<3+mn {0-(*/0*6ABH<z0 Z\qXAB0XAy•3>7-2 Orz

`7-2 $ VaRT:;$T#S

| [l0X $U_N$/$U$tkVy | A B 0 X | y•tminy |
|---|---|---|
| 18/30！uv | 2.5$U_N$tR2$U_N$y | 5tR60y |
| 21/35y64/110 | 2$U_N$ | 60 |
| 127/220 | 1.7$U_N$tR1.4$U_N$y | 60 |
| 190/330 | 1.7$U_N$tR1.3$U_N$y | 60 |
| 290/500 | 1.7$U_N$tR1.1$U_N$y | 60 |

78％Bdn10kVy500kV 9<0！J023788B+y$l~• L4KN<00=AB23s^# Q/CSG > 4-16.1.1 Q/CSG > 4-16.2.1y4-16.2.4 PmFXz

@A1 >M62oU&

BX8TSSY-ZW-06-01/01

| 2oy• | 2ou7 | =>W | #$>MW | #$+dV |
|---|---|---|---|---|
| | | | | |

>Mqr*`!{ki6

| pX | ABtx | qrCD | qr-) | qr{ki6 |
|---|---|---|---|---|
| 1 | AB5HE?y FGDH | 5H"K | !_qr | #$oU\|DEFX"f>M$3!>M=>i6*O =7fYlDcQuvi6N |
| 2 | AB5HE?y DV>M Di6 D[\ | X | !_qr | !2oVW\|e\2<>M 2o4A&'b8z<br>!5HQE4%@F}R uA*\\FGnoz |
| 3 | AB5HE?y y}05H>M UmDV | M*}0 | !_qr | !5HQE<3^D {5HRE`#evaz5H OFyD(<"*~Hl_12oz<br>!2oVW\|hi#$KL*y}05H]6@V#> MUmzET\|56OVW5o*E?<3^BCb gVpM ,Dz |
| 4 | !"}0•l | q0 | !_qr | |
| 5 | -/oU>M Di6D[\ | 2 | !_qr | !AB2o4*2o+dV\| .RVWZ>IW2o u7 2oOP #$>Mi6*N"}0MuA> MYH*Qz |
| 6 | !"/XAB no | q0 | !_qr | !2o4*2oVW\|k\2ou=*O\l>M#9 /;:z-/oUBC2<>M}*BCZ>M} {2ou= no '-ole(z.)014%@ 01M5[f*BCbV 0* 0VYHW\|~^* 2-0V2o\|Q,Do)z |
| 7 | AB0uP8 rj | M*}0 | !_qr | |
| 8 | nfABst ^! | 5H"K | !_qr | !AB2o4*2o+dVBC\l2o%x*5=> Mxp*DPb`#*{>Mxp$x#V,D* %+fVW+"z<br>!2o4BC 62kuR<0 mfIW+y620 uR%X0uP8/0*Dqcf0unf#P8* \]AB0uP86@Pmz |
| 9 | cG0H | q0 | !_qr | |
| 10 | -.2G3#$ | 5HKL | !_qr | !AB4P#gV'sll3#$2nf g[st+ X*\\+!_a4n`ABz<br>!-X_\|!yw5u:*~)*{0_a45oz |
| | | | | !2oVW{AB'V_\|+X\`%@*\\#$+ -.2GA/e |
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| | > M T ) * Q/ : N 0 = l |
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| | # $ [ 1 Z 0 V W , t |

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>W/F1 9.15+3 Tf18.24 re8080 #$/F1 9.15+2 Tf18.24 080 6D/F1 9.15

# $aYZU cd!;

# 01234

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1 Z [ \ ]

7 o U p q r ( ) Q ` a 0 1 G H % x O @ ? 5 ! Z X ^ # 3 8 ) 0 \ ] ^ Y t R 0 \ ] ^ Y 3 8 ~ R y ! " # # $ % B z

2 B L ^ _

` 22

4 e f g h i j k l m

4.1 0 \ ] ^ Y ! " # $ % B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y 0 \ ] ^ Y ! " # $ % B 6 2 " f o # n 0 1 4 5 > M 6 2 o U & st v w N

TSSE0.56 Tf8 807 TD (242) Tj 1 0 E56 (Tf) 16 TD 8/01 TD 50124 0.56 Tf10.8 84 TD (Q) T Tc (sy) Ty*/F5+4 10.56 Tf

e H X z V ` % & > E t | + y • DL/T 506 @ & A z

6.2.5 w t t 4 9 y z , U P m { f g / 0 v + X ! " % B * \ ' # E A 0 \ ] ^ Y # ! " ; " y * . / + X w t _ 1 % B z 3 # w t a U | d ~ s ( ~ Y # R = > W A ^ O $ l # w t a U A P m $ z 3 k " • a z $ l * $ . ) D ; w t z

D ; w t U N { 0 \ ] ^ Y # t ? # [ , D " \ Q n [ l + H 10 y 20 G # 4 < 0 v *, ? H u 2 P Z \ 0 \ * Z 0 \ T R : 9 u F < [ l 0 \ o # 120 1 * 1 Z 0 \ ! O n o u - < R * : _ ; ? L j 4 < 0 v < n o # 1/2 1/5 1/10 * = * ( ; < 3 z

2 Q m ? ) # 0 \ ] ^ Y * w t y n G C # t ? ~ R ! | A ; 1 \ M , D C ^ b m D t ? ~ R y * E % # t ? ~ R [ w t 0 v * n G # t ? ~ R n ; z

6.2.6 ! ; t } 3 8 ) 0 \ ] ^ Y t R 0 \ ] ^ Y # 3 8 ~ R y # • \ ( - ) 0.2 R 0.2S ) * n . / ! " • > 6-1 z w E E A 0 \ ] ^ Y # ! " M 5 s E * | u X _ # J 7 • z ! " # X • l • > 6-2 z

` 6-1 $ a Y Z U ' F

| • \ - ) | $I_P/I_n$ t 1 y | 1 | 5 | 20 | 100 | 120 |
|---|---|---|---|---|---|---|
| 0.2 | Q o " t 0 1 y | | 0.75 | 0.35 | 0.2 | 0.2 |
| | " u " t 0 y | | 30 | 15 | 10 | 10 |
| 0.2S | Q o " t 0 1 y | 0.75 | 0.35 | 0.2 | 0.2 | 0.2 |
| | " u " t 0 y | 30 | 15 | 10 | 10 | 10 |

` 6-2 ? _

| • \ - ) | Q o " | " u " |
|---|---|---|
| 0.2 R 0.2S | 0.02 | 1 |

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7.1 A % m K L .

2 3 8 ) # 0 \ ] ^ Y R 0 \ ] ^ Y # 3 8 ~ R * ! " w 8 y O U # Q o " ] . 3 0.001 1 * " u " ] . 3 0.01 z w E E A # 0 \ ] ^ Y M 5 s E * | f n { [ l + B A v c + B y # ! " M 5 w s > 6-1 # P m z

2 w 8 ^ ! " ; < > 6-1 # P m * l D ; < 1.5 G y * | ! + X * w z

7.2 A % m K ` G

7 8 { k • > 7-1 z

` 7-1 A % m K `

| p X | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | 0 \ ] ^ Y A B | | | \| |
| Y N 7 8 { k 7 ^ H N } 2 ~ % 7 1 W N • O 7 1 S N 7 z | | | | |

7.3 ! ; M n

0 \ ] ^ Y ! " # $ % B | R U JJG 1021 ~ 2007 n 0 W ] ^ Y s# Q/CSG > 4-7.1.3 Q/CSG > 4-7.2.2 Q/CSG > 4-8.1.3 Q/CSG > 4-8.2.2 P m + X z


中国南方电网
CHINA SOUTHERN POWER GRID

| > M T ) * Q/: N 0 = l |
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| # $ [ 1 Z 0 V W , t |

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| H Y | | | | | | | |

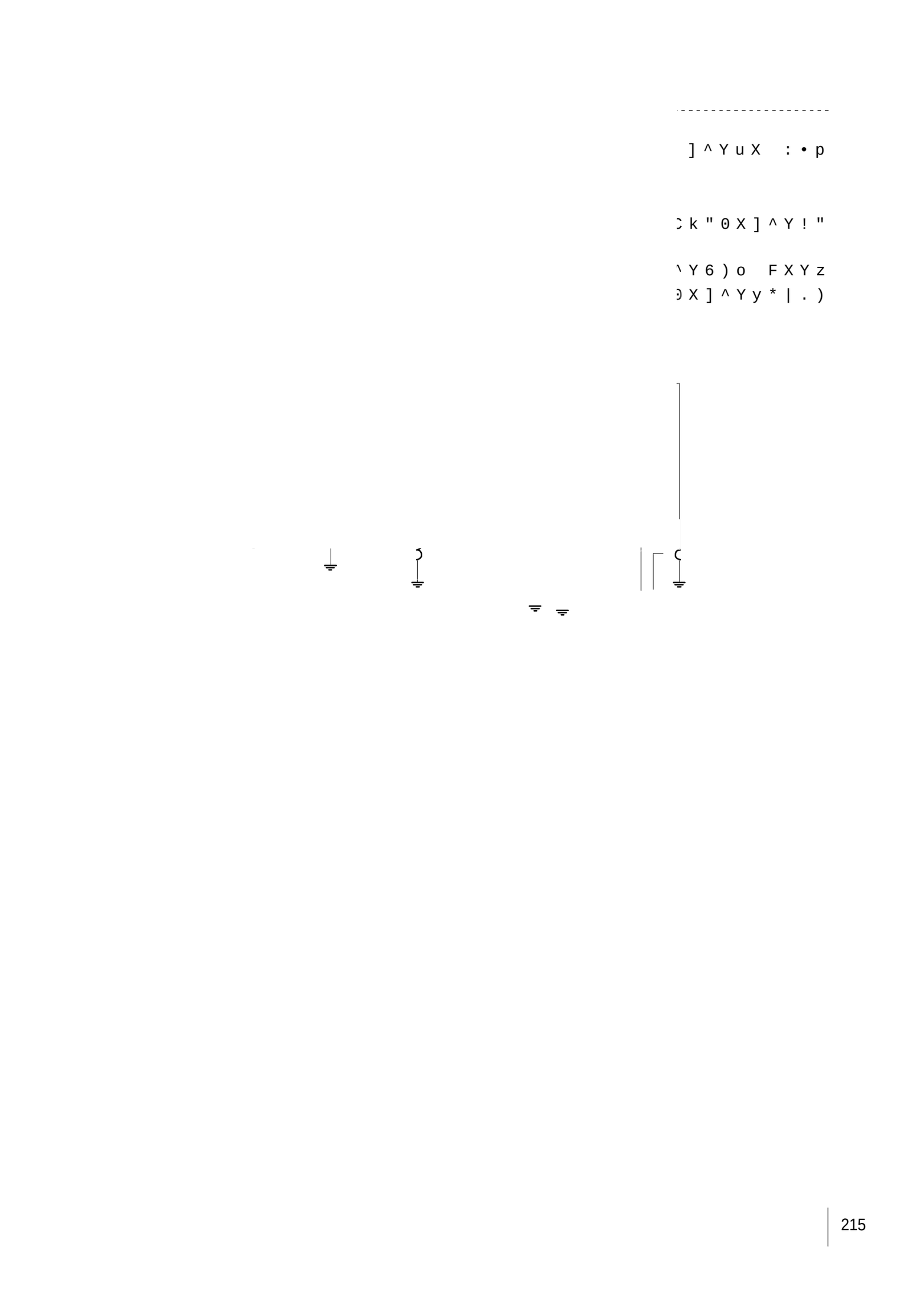
j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 丰 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 丰 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z

# X Y

1 ( ) % x 57
2 v ^ ; 7 57
3 o U \ 3 57
4 > M q r s ` y z { 58
5 o U • H 58
6 o U a U 59
7 7 8 { k i 6 ! % B ~ • 61

4 e f g h i j k l m

4.1 0 X ] ^ Y ! " # $ % B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5
6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % T c 4 ( ` 4 ) T j -2 5 . 2 8 T( f 3 1 . 4 4



t3y A F 2 M 3 / X g a : # / X | : B C ( , * ( , y B C ) g ) [ u : $ g a : [ u z ( ,
_ # g a : ) & ' A o * y A F # U m N 500kV - ) D j Q 2m

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| | " u " t 0 y | 10 | 10 | 10 |

* 500kV 110 1 n 4 l S 2 5 1 . 5 X 9 . 1 2 T f 2 . 8 8 0 T D ( y ) T $ 7 T D ( ) T j / F 1 .

| > M T ) * Q/ : N 0 = l | | | | | | | |
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| # $ [ 1 Z 0 V W , t | | | | | | | |
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| | | | | | | | |
| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M *

# X Y

1 ( ) % x 65
2 v ^ ; 7 65
3 o U \ 3 66
4 > M q r s ` y z { 67
5 o U • H 69
6 o U a U 71
7 7 8 { k i 6 ! % B ~ • 90

1 Z [ \ ]

& ' X M ) T 0 = 5 H ^ = P # X 7 > , * G b & ' W X I B J A ] D C ~ R !

3 0 1 a b

o U t 2 p y \ 3 • l 3-1 z c3-1 01 /d!abc

## 4 e f g h i j k l m

4.1 & ' T Z [ A B 6 2 4 * 6 2 Q 5 M 6 7 ! Q 5 o U e " 6 2 # A * | } n 0 1 4 5 6 2 > M & • q r p ` st v w x n p ` sy n ( 1 2 3 > M q r $ % 2 o * • ; ! e " # q r * ` > z

4.2 d n p ` s ^ y & ' T Z [ A B 6 2 " f o # n 0 1 4 5 > M 6 2 o U & st v w N TSSY-ZW-09-01/01 y* ' s # $ - . / 0 + X " ( G * ` * \ l q r - ) * # $ = > W ] ^ > M 6 2 o U & * > M W b * * 6 2 + d V , ' z

4.3 6 2 + d V * 2 q r { k i 6 *O { - . / ( 2 M J o U V W + X > M Z 0 * [ 1 Z 0 # o U V W + d Z > M i 6 2 - 3 4 o U e " A - 2 ^ z

4.4 > M 6 2 o U & 5 6 2 + d V # $ 6 b * 2 o O P u 7 D < y 4 8 9 . ) 10 : * ; < 10 : C = @ > L o U & * { 2 o [ ; _ ( Z Q 5 M ] ? H @ z ]

## 5.1 M N p o

`5-1 M N p o `

| 2 p t x | 4 I 2 o V J | + d V J | , D V J |
|---|---|---|---|
| U V 4 • H | < M 2 | 1 | |
| U V | < M 2 | 1 | 1 |
| U V % & | < M 2 | 1 | |
| A B 4 • H t 1 Q y | < M 1 | 1 | |
| & ' T A B t 1 Q y | < M 1 | 1 | |
| A B J 7 % & y * ` | < M 1 | 1 | |
| Y N o U V J 6 7 G J 2 3 8 $ ] J H z | | | |

## 5.2 @ ? / U q r s U s ` p t

`5-2 @ ? / U q r s U s ` p t `

| U V 2 Y G ! v Y v > | | | | | |
|---|---|---|---|---|---|
| p X | t x | $ E / v X | k u | J 8 | H Y |
| 1 | ~ r s | P m $ E | D | c _ | |
| 2 | > M | P m $ E | 2 | c _ | |
| 3 | > M } A - / 2 G t 0 y | P m $ E | # t $ y | c _ | / a o U R B P y . ) |
| 4 | a b K 1 u g - * ) 2 G | P m $ E | $ | , 8 | |
| 5 | ' ? ( 3 | ~ • | c | 1 | |
| [redacted] | | | | c _ | |
| 7 | R g ) b c U V 250mL ( g ) U V G t y A = J V W O Q 20 y 100mL Y \ Y ) b c R H } k 3 K t q T y Y \ Y P M ) j 3 P | P m $ E | D t f y | c _ | |

8

` 5-2t 9 y

| p X | t x | $ E/v X | k u | J 8 | H Y |
|---|---|---|---|---|---|
| 24 | A | t t & • A y t t & • A y d G t * ` y t * ` * " 2 8 ( 1.19 y1 T t * ` y t * ` y t t A ! \| + X _ + *_ + ' ( 100 i y 110 i | | c _ | |
| 25 | 8 7 v | { ' y –60 i | / | 1 | |
| 26 | ^ j | { ' y 300 i | / | 1 | |

t 4 y ) T 0 # 8 K O + X T # A B y * 4 d GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [
A B T c ( . / ) T j 0 ( = ) T j / F 5 + 1 1 0 . 5 6 T f 1 0 . 3 2 0 T j /

` 6-3 t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| 7 | 3 ) * ` w 8 ' 2 | U 6 ? 8 9 w l # 7 2 0 X o # ) > : ! o * o : ! 7 2 0 X o | 6 7 D M # 0 T D u * w E A B ' 2 | D M A B a U P m # A B 0 T D M * 7 2 0 X ' 2 b " ( N<br>1 y GB/T 507 M e ) u u / C 0 T 1<br>2 y DL/T 429.9 a U M e ) : g u 0 T 1<br>3 y GB/T 7595 ~ 2000 ^ # A B P m : g 0 T w l o 1<br>4 y . ) 3 C D M • s 0 T w ( # 7 2 0 X > • # " ( • ~ • # @ & |
| 2 o e ' | | | | |
| 1 | % @ 4 Q A B ' 2 | % & J 7 O , t | w 8 J 7 • \ | % @ 4 Q A B Q 5 J 7 M 5 = M J 7 % & M 5 • \ * 2 o + d V ! 4 A B V W { A B % & ( , t \ \ |
| 2 | I J 2 o | I J 0 T ! T | 0 T A T J G | I J 0 T A T *3 2 A V # A B ' 2 D s E *\| ! ) I J # T \ _ 3 . |
| 3 | 0 T T # ? { | C ? 2 o [ ; _ * T Y " J G # T t 0 T { T ^ y | 0 T M M U " { J G # T ^ | ) J G T U " 0 T |
| 4 | I L # $ ' V 2 o | I L N A B 2 o } h 5 # / e * A B _ # } T z f 8 9 / \ ? { | f z x y K L | Z d . ) # + 0 - E F e ~ ^ 3 x y e + ~ • * } T z f 8 9 ? { |
| o U ^ 4 q : # # n P ( * # o ! 2 0 | | | | |
| 1 | 7 2 0 X A B | w A J 7 ( * | 1 y + , U V # A M 5 w s P m 1<br>2 y + , ? T Y G M 5 I J _ + 1<br>3 y + , A B T M 5 1 4 ? D s E V F R 1<br>4 y 0 T F * . 0 T • U L j m 1<br>5 y = @ U V + X A B | |

6.2.3 g U * ` t • > 6-4 yz

` 6-4 ) * 7 j `

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B 4 • H 2 o | | | | |
| 1 | @ f ; % T V | A B V W % @ O ; V F M 5 $ % | 1 y V F R 9 ~ , % & [ I 1<br>2 y V F w s P m 1<br>3 y V F { b 1 _ O | 1 y % @ V F R 9 ~ , % & 1<br>2 y % @ V F M 5 w s P m 1<br>3 y % @ U V y • |
| 2 | % @ O • H v Y | 1 y n g 4 N % @ g U v 4 8 [ 0 [ u : u ! 4 = ; 8 [ M 5 • \ b f z B P y 7 L + V # 7 3 Q z<br>2 y : n = = a = k } ! 4 L X } * Z X W 9 : Q < 8 / Q v Y 2 o y O O X W z<br>3 y z Q w v Y 4 = ; H X } * . 4 = ; X W \ 8 w s v Y 2 o P m | 1 y = J + { \| 1<br>2 y = J X W e * 1<br>3 y X W \ 8 w s v Y 2 o P m | 1 y : n 4 = J _ ) % \| \| % @ 4 = J k } L X } u ! 4 = ; 8 [ M u \ \ + = J { \| 1<br>2 y % @ \ \ = J X W 9 : Q < 8 / Q v Y 2 o y O O X W 1<br>3 y % @ \ \ v Y 4 = ; X W \ 8 w s v Y 2 o P m |

` 6-4 t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| 4 | v Y ~ l | v Y # ~ l N e ) 4 ~ l 8 U z ) 1mL Y \ Y D • \ t : d ! 4 R * Y ( # ~ • s = J 1mL t R 0.5mL y + X ~ l z T ( 3 # g U l ( % & 4 R * # { N B $A_{i*s}$ t R { / $h_{i*s}$ y z ~ l v Y \| { v Y Z X 2 0 H l , " M # # A v + X * < M = * 5 o 2 ? * 2 ? ~ l # = * 3 \| { : ! o # 0 2 1 u O * U n : ! o o v Y ~ l # ' 2 z C ? A B ! \| ~ l v Y | v Y ~ B | l |

6.2.4 T ^ N = 8 * ` t • > 6-5 y

` 6-5 O 9 % 7 j `

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B 4 • H 2 o | | | | |
| 1 | @ f ; % T V | A B V W % @ O ; V F M 5 $ % | 1y V F R 9 ~ , % & [ I 1<br>2y V F w s P m 1<br>3y V F { b 1 _ O | 1y % @ V F R 9 ~ , % & 1<br>2y % @ V F M 5 w s P m 1<br>3y % @ U V y • |
| 2 | % @ O • H v Y | 1y n g 4 N % @ g U v 4 8 [ 0 [ u : u ! 4 = ; 8 [ M 5 • \ b f z B P y 7 L + V # 7 3 Q z<br>2y : n = = a = k } ! 4 L X } * Z X W 9 : Q < 8 / Q v Y 2 o y O O X W z<br>3y z Q w v Y 4 = ; H X } * . 4 = ; X W \ 8 w s v Y 2 o P m z 7 L + V # 7 3 Q t B P y y | 1y = J + { \| 1<br>2y = J X W e * 1<br>3y X W \ 8 w s v Y 2 o P m | 1y : n 4 = J _ ) % \| \| % @ 4 = J k } L X } u ! 4 = ; 8 [ M u \ \ + = J { \| 1<br>2y % @ \ \ = J X W 9 : Q < 8 / Q v Y 2 o y O O X W 1<br>3y % @ \ \ v Y 4 = ; X W \ 8 w s v Y 2 o P m |
| 3 | n b A B v Y | 1y \ \ d : n 4 = J _ : n v Y 0 u n f * n b 9 q g * : n 4 ' ( { k Y F ' n f * 5 l R % @ s ` { TCD FID ! : q ; r G Y ' ( z<br>1s ` { T( F F ; q n y \ G Y - . 2 9 4 - 1 8 . 2 4 - 1 1 . 7 6 = c ( y \ ) T j / F 5 + 3 9 . 1 2 6 1 | | |

` 6-5t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| 3 | r < : v = | 1 y A = Y \ Y # • H N U 5mL Y \ Y C * t U M 8 A T \ _ Y B O = 1 y 2 ? _ * W " 0.5mL A T * 8 ( @ 3 9 * " B P 1 P * 1 P N ( z Z Y \ Y O # a = A A T o o t : * . A T ) 6 Y \ Y O = 8 ? } D d c ? a = z 2 y r < : v = N Z Y \ Y A T Z & ^ U : * + , Z n ^ # : v = H < B P 1 P r < 3 Y \ Y C O t \| e ) 2 e X U r < yz { ' v { = 2min * • \ % & n J B t • \ < 0.1mL y* u H g U * ` ) | 1y Y \ Y C d t U M 8 A T \ _ Y B O = 1 2 y r < : v = e ) 2 e X U r < | 1y \ \ Y \ Y C d t U M 8 A T \ _ Y B O = O w s P m 1 2 y \ \ r < : v = d e ) 2 e X U r < |
| 4 | v Y ~ l | v Y # ~ l N e ) 4 ~ l 8 U z ) 1mL Y \ Y D • \ t : d ! 4 R * Y ( # ~ • s = J 1mL t R 0.5mL y + X ~ l z T ( 3 # g U l ( % & 4 R * # { N B $A_i$ t R { / $h_{i*s}$ yz ~ l v Y \| { v Y Z X 2 0 H l , " M # # A v + X * < M = * 5 o / ? * / ? ~ l # = * 3 \| { : ! o # 0 2 1 u O * U n : ! o o v Y ~ l # ' 2 z C ? A B ! \| ~ l v Y | v Y ~ l d { v Y Z X 2 0 H l , " M # # A v + X \ \ v Y ~ l d { v Y Z X 2 0 H l , " M # # A v + X |
| 5 | V F * ` | A V * ` N ) 1mL Y \ Y D T Y \ Y C ^ • \ t : V F = 1mL t R 0.5mL y* + X * ` z + V y 5 o z 3 + 1 P 1 P U 1 P z T ( 3 # g U l ( % & 4 R * # { N B $A_i$ t R { / $h_i$ yz V F * ` \| y v Y ~ l . ) M , f + V Y \ Y * U " M + V J B | 1y + V y 5 o w s P m 1 2y V F * ` y v Y ~ l . ) M , f + V Y \ Y A U " M + V J B | 1y + V y 5 o z 3 + 1 P 1 P U 1 P 1 2y \ \ V F * ` \| y v Y ~ l . ) M , f + V Y \ Y * U " M + V J B |
| 6 | ' 2 * ` 3 ) | d G V 3 ) T ^ 4 * ` R * Y ( t R 5 g U 2 o [ ; y | | |
| 7 | % & * ` ' 2 | { g U 2 o N ) L * ` d =t $O_2$ y =t $N_2$ y , d G t CO y t d G t $CO_2$ y # : { / 0 * % & 4 = J R * N 8 * d G V 3 ) T ^ N = 8 | | |
| 8 | * ` ! w E | d } GB/T 7252 n < X Y T ^ e f = J * ` A w E q 6 s R DL/T 722n < X Y T ^ e f = J * ` A w E q 6 s + X * ` w E | | |
| A B e ' | | | | |
| 1 | % @ A B J 7 % & | A B V W % @ A B J 7 % & M 5 • \ [ I z 2 o + d V ! A B V W { A B % & ( , t \ \ | 1y / ? = * A B ' 2 # " o D ; < . / " o 1 2y A B J 7 % & • \ [ I | 1y % @ \ \ / ? = * A B ' 2 # " o w s P m 1 2y % @ O \ \ A B J 7 % & • \ [ I |

` 6-5 t 9 y

| | | |

` 6-6 t 9 y

p X 2 o O P 5 o ! 2 M 7 8 { k 7 { k i 6 78 78

` 6-6 t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| o U ^ 4 q : # # n P ( * # o ! 2 0 | | | | |

3 2 x D 3 P m * 4 q M 5 Q N W v Q w D \

1 a I o w l w 8 9 y a = # > N W y n 3
) ' 2 D 6 @ 71y72mN/m # P m

` 6-7t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B e ' | | | | |
| 1 | % @ 4 Q A B J 7 % & | % & J 7 O , t | w 8 J 7 • \ [ I | % @ 4 Q A B Q 5 J 7 M 5 = M J 7 % & M 5 • \ * 2 o + d V ! 4 A B V W { A B % & ( , t \ \ |
| 2 | A B ' V * f D v Y 0 u * + v Y O I L A B # $ | 1 y N f D 0 t 4 5 Y n f * : _ f D v Y 0 u n f 1 2 y I L A B # $ 1 3 y Y \ Y { ) V u | v Y 0 u f D | % @ \ \ v Y 0 u d f D |
| o U ^ 4 q : # # n P ( * # o ! 2 0 | | | | |
| 1 | v Y Q A A J e * T V * ` | 1 y v Y n b _ x y • D : v 1 2 y Y " A T _ w l y • q x , J o s _ | = @ 7 L 0 f \| * ~ v Y : v _ = @ w l | |

6.2.7 m 7 w 8 t • > 6-8 yz

` 6-8 . h $ % `

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B 4 • H 2 o | | | | |
| 1 | % @ ; % T V | A B V W % @ O ; V F M 5 $ % | 1 y V F R 9 ~ , I [ I 1 2 y V F { b 1 _ O | 1 y % @ V F R 9 ~ , I \| [ I 1 2 y ; V \| ! y |
| 2 | % @ O • H v Y | 1 y % @ D # m 7 w l v 0 u : - M 5 d 8 [ [ f 1 2 y % @ = L X } ! K F M 5 8 [ [ f | 1 y A B v Y \| 4 < [ u 1 2 y = { \| | 1 y A B V W \| N % @ [ u / 0 1 : n v Y 0 u 1 2 y \ \ K F 8 9 b f |
| A B 2 o | | | | |
| 1 | V F * ` | 1 y T ) A T _ 1 y 2 ? z 2 y A V Y " T * ^ A V P ? 6 3 K s ~ % • *: _ ( I J _ + # * " ' ( 3 * { + w A v z 3 y : n v Y 0 u n f A 7 = ) = n f *z 5 s ( # m 7 ' ( z 4 y A B n ` ] : ( P ! O ( F * O P D E + X 4 5 z < z _ m 7 4 20 i y * F ' : ( { k { C * X F / 2 y 3 i * O P D E + X 4 5 z 5 y Z v Y 7 = Y = \| = 7 * O Z = < Q I 3 [ " • * n N 3 y 4mm z 6 y A V ' ( 3 x z _ m 7 4 10 i y * 2 Q m 7 / Q 104 i A V C F / 2 i 7 = , ? * 2 Q _ Q 104 i A V C F / 1 i 7 = , ? * N < m = % * % & w l ' 2 | 1 y ] 6 T J G 1 2 y = < N Q I w s P m 1 3 y A B < 3 = \ R | 1 y ) A T Z T _ _ G 1 2 y Z = < Q I 3 [ " • * n N 3 y 4mm 1 3 y A B \| { H q Y O + X * O f D t q g A 4 g * f z = \ R |

` 6-8t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B e ' | | | | |
| 1 | % @ 4 Q A B J 7 % & | % & J 7 O , t | w 8 J 7 • \ [ I | % @ 4 Q A B Q 5 J 7 M 5 = M J 7 % & M 5 • \ * 2 o + d V ! 4 A B V W { A B % & ( , t \ \ |
| 2 | A B ' V * f D v Y 0 u * = u + v Y O I L A B # $ | 1y $ A B [ _ T O # T C 3 g ) } T t } y O * l _ ~ ^ • L z A B T { ) V u z 2y f D v Y 0 u z 3y f D = L X } n f ! = K : # n f z 4y I L A B # $ | = L X } n f ! = K : # n f d f D | % @ \ \ = L X } n f ! = K : # n f d f D |
| o U ^ 4 q : # # n P ( * # o ! 2 0 | | | | |
| 1 | m 7 t D # y w l t i y | 1y m 7 v } % 4 5 1 2y 7 = Y 4 1 3y 7 = Y = < g z | 1y % @ m 7 v } % 4 5 7 = Y 4 # V N O o • L * e * _ = @ U T V A B 1 2y % @ = X W > M 5 = d ) [ M 5 N a = \ r % N z * @ k V N O o • L _ = @ U T V A B | |

6.2.8 o w l t • > 6-9 yz

/F5+3 9.6

` 6-9 / @-9XW 5 4 9 . 3 6 ) 1 2 0 . 5 4 2 0 ( 6 ) 4 8 ■ e f 1

6.2.9 9 e 3 A B t • > 6-10 yz

` 6-10 0 5 / : ;

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B 4 • H 2 o | | | | |
| 1 | % @ ; % T V | A B V W % @ O ; V F M 5 $ % | 1 y V F R 9 ~ , I [ I 1<br>2 y V F { b 1 _ O | 1 y % @ V F R 9 ~ , I \| [ I 1<br>2 y ; V \| ! y |
| 2 | • H 4 C v Y Y A | 1 y Z • * \| \| Q g K N ) _ + X I _ * 1 ) E d 9 \ _ * 3 _ ) 9 _ G * ^ _ W X _ H ) 1<br>2 y % @ A B ) 9 t pH 6.0 y 7.0 * 0 q Q j Q 3μS/cm y A 4 C A pH p r pH ~ • n \ e \| \| w s 7 8 P m O { b 1 _ O 1<br>3 y % @ 9 ] Z v 0 u - 8 [ : | 1 y Y w s P m 1<br>2 y A w s P m | 1 y \ \ Z • * \| \| Q g K w s P m 1<br>2 y \ \ A B ) 9 A 4 C A pH p r pH ~ • n \ e \| w s P m R { b 1 _ O |
| 3 | pH p r J k t • > 6-11 y | 1 y G J J k a U • 4 ^ 2 y 1<br>2 y J k f # pH p r \| ] { D 8 # O g A O * ] ? { L ] • | pH p r w s P m | Q I pH y P o o ] " e |
| 4 | pH ~ • n \ e \| J k t • > 6-12 y | 1 y 0.2mol/L t e \| J k N x U 40.846g t * e Q ( 8 , 9 t R t ? 9 y* < " 1000mL P 8 * 1 ) , 9 t R t ? 9 y e f < ) ( 1<br>2 y 0.2mol/L t e \| J k N x U 27.218g t * e Q ( 8 , 9 t R t ? 9 y* < " 1000mL P 8 *1 ) , 9t R t ? 9 y e f < ) ( 1<br>3 y 0.1mol/L J k N ) 8 B 8 U 16.8mL Y Y " 1000mL P 8 * ) , 9 t R t ? 9 y e f < ) ( t S e \| Y ( 0.2mol/L y* 1 ) g ~ + 9 + 9 R d ! # " " Y ( # ~ • ` e \| + X ~ l * : _ e f ; 0.1mol/L 1<br>4 y 0.1mol/L d G e \| J k N + : x U 8g d G { " j g ^ * ] " 50 y 60mL 9 . n e f *< " 1000mL P 8 *1 ] 2 y 3mL 10 1 # A G h e \| u [ \ * : _ 1 ) 9 e f < ) ( * 7 = i I z U ( s I \| t S e \| Y ( 0.2mol/L y* ) t R d ! # " " Y ( # ~ • e \| + X ~ l * : _ e f ; 0.1mol/L 1<br>5 y d ( ; 3 y > Q E ) ( ; e \| J k ; pH o D M # pH ~ • n \ e \| | pH ~ • n \ e \| w s P m | d P m J k pH ~ • n \ e \| |

` 6-10 t 9 y

| p X | 2 o O P | 5 o ! 2 M | 7 8 { k 7 | { k i 6 |
|---|---|---|---|---|
| A B 2 o | | | | |
| 1 | 9 e 3 A B t ) Q g • Q g y | 1 y 8 U 50mL A T Q 250mL Z • O * ] " - J B z N < # 9 * ] t ) k = y < 70 y 80 i * O { S ' ( v 2 F 5min t R { { 9 ] Z v ( o l 2 F 5min y1<br>2 y Z Z • ^ # \| J C " * \| \| O * ~ * s O W < { ' _ * U 10mL 9 t : \| ] " Q g K ^ * \| * S U pH3.6 y 5.4 % x # D M pH ~ • n \ e \| 10mL * S ] " n x # Q g K ^ *M y { ( ; 4 Q g K ^ ] " 0.25mL p r t D M pH ~ • n \ e \| J ; g ! y* 2 O _ { " Q g • + X Q g * % & n pH o 1<br>3 y \ T # pH o % Q 5.4 y * d > 6 j / e ) P R o p r | 1 y { k ] ' ( A Z y • 1<br>2 y * \| \| 8 9 [ f | 1 y d P m 5 o ! 2 M P m + X 5 o 1<br>2 y \ \ * \| \| ` D \| \| * B P y ) , l E _ G ` O = @ @ ( 8 9 ' t R ) a b c y |
| 2 | 9 e 3 A B t ) + Q g 3 Q g y | 1 y M 7 > p X 1 5 o a U 1 y1<br>2 y Z Z • ^ # \| J C " * \| \| O * ~ * s O W < { ' _ * U 10mL 9 t : \| ] " Q g K ^ * M y ] " 0.3mL p r * 2 O _ { " + Q g 3 # Q g & y Q g & + X Q g * % & n pH o 1<br>3 y \ T # pH o % Q 5.4 y * 4 ) o p r | 1 y { k ] ' ( A Z y • 1<br>2 y * \| \| 8 9 [ f | 1 y d P m 5 o ! 2 M P m + X 5 o 1<br>2 y \ \ * \| \| ` D \| \| * B P y ) , l E _ G ` O = @ @ ( 8 9 ' t R ) a b c y |

A B e ' \| 5 R B \| R B @ ` R

` 6-11 **pH** 2 1 p K

| p r t x | < g % x | J k a U |
|---|---|---|
| | 3.8 y 5.4 M y | Z 0.1g y 7.5mL0.02mol/L d G , Q i O * ) , 9 e f < 250mL z 1 Q I pH 4.5 y 5.4 Y N 3 e ) + Q g U * p r Q I pH 5.4 |
| P | 5.2 y 6.8 M y P | Z 0.1g P e Q 9.25mL0.02mol/L d G ^ * ) , 9 e f < 250mL z 1 Q I pH 6.0 |
| t y | 6.0 y 7.6 M y | Z 0.1g e Q 8.0mL0.02mol/L d G ^ * ) , 9 e f < 250mL z 1 Q I pH 6.0 Y N 3 e ) + Q g U * p r Q I pH 7.0 |

` 6-12 M n 2 0 3 `

| pH | 0.1mol/L mL | 0.2mol/L t mL | 0.1mol/L d G mL | 0.2mol/L t mL | e f < J B mL |
|---|---|---|---|---|---|
| 3.6 | 6.3 | 25 | | | 100 |
| 3.8 | 2.9 | 25 | | | 100 |
| 4.0 | 0.1 | 25 | | | 100 |
| 4.2 | | 25 | 3.0 | | 100 |
| 4.4 | | 25 | 6.6 | | 100 |
| 4.6 | | 25 | 11.1 | | 100 |
| 4.8 | | 25 | 16.5 | | 100 |
| 5.0 | | 25 | 22.6 | | 100 |
| 5.2 | | 25 | 28.8 | | 100 |
| 5.4 | | 25 | 34.1 | | 100 |
| 5.6 | | 25 | 38.8 | | 100 |
| 5.8 | | 25 | 42.3 | | 100 |
| 6.0 | | | 5.6 | 25 | 100 |
| 6.2 | | | 8.1 | 25 | 100 |
| 6.4 | | | 11.6 | 25 | 100 |
| 6.6 | | | 16.4 | 25 | 100 |
| 6.8 | | | 22.4 | 25 | 100 |
| 7.0 | | | 29.1 | 25 | 100 |

6.2.10 x y ( w 8 z

t 1 y * ` V W + " J G { | W 2 _ G I % k t l b $ P ' ( O < ( _ G y* L 4 z 5 o y ; < D R z

t 2 y T V t = N Z ? b T V # e V t a b 9 y { " d Y " _ G 9 # ; & I _ Y O t U " 2/3 y* n b Z F t = 1 y 3min * : _ U : V E F _ G z

t 3 y w A N w A v G J 5 o O a v Y • h + X Y Z s E z n g _ * Q I 5 = v Y 5 o | J * F - S % v Y X W < ( s % t n P M { k \ : yz , U { k % w y • 30s [ ; 1 ? w A z = * w A 3 ? * U n : ! o o A B ' 2 z

t 4 y I _ v Y 1 U v w A T * X W Q w S < R * ? ( I _ | A t q • I _ | y* { k X W + X I _ 2 y 3 ? * 7 L I _ | B t _ G I _ | y 1 I _ 2 y 3 ? * 1 L ( a I J { k X W N

3min _ + v Y H ) z
t5y wA'2)S\lzT^ #•s,U 3CDuN! •1" m •Rl•1( D$
6m •zvYwl# M4C•s s #-1 N z$T^ *0#wA'2
2}n_ AS1638 IJ(*)~•t•> 6-13y* \lTV# NAS -)*O3):100mL T
^o5μm # JzYH2}~•yPmC, *0%x# JDq;<~•^"|*
0# Jco*56z-)•Lz

` 6-13 NAS O45O76Mn

| *) t J/100mL y | p q *μm | | | | |
|---|---|---|---|---|---|
| | 5y15 | 15y25 | 25y50 | 50y100 | >100 |
| 00 | 125 | 22 | 4 | 1 | 0 |
| 0 | 250 | 44 | 8 | 2 | 0 |
| 1 | 500 | 89 | 16 | 3 | 1 |
| 2 | 1000 | 178 | 32 | 6 | 1 |
| 3 | 2000 | 356 | 63 | 11 | 2 |
| 4 | 4000 | 712 | 126 | 22 | 4 |
| 5 | 8000 | 1425 | 253 | 45 | 8 |
| 6 | 16 000 | 2850 | 506 | 90 | 16 |
| 7 | 32 000 | 5700 | 1012 | 180 | 32 |
| 8 | 64 000 | 11 400 | 2025 | 360 | 64 |
| 9 | 128 000 | 22 800 | 4050 | 720 | 128 |
| 10 | 256 000 | 45 600 | 8100 | 1440 | 256 |
| 11 | 512 000 | 91 200 | 16 200 | 2880 | 512 |
| 12 | 1 024 000 | 182 400 | 32 400 | 5760 | 1024 |
| YNn_rar:2Uos/tAIAyNAS1638N1984I1\|'0z | | | | | |

7 A%mKL.r!;Mn

7.1 A%mKL.
GJ78{ki6• 6.2y6.10 GJ#uz

7.2 A%mK`G
78{k•> 7-1z

` 7-1 A % m K `

| pX | { k 7 | { k a V | | |
|---|---|---|---|---|
| | | W | H | S |
| 1 | n<XYAB | | | \| |
| 2 | /XOo0hY | | | \| |
| 3 | TUV0\]^YAB | | | \| |
| YN78{k7^HN}2~%71WN•O71SN 7z | | | | |

T A B Q 5 A P m • > 7-4 z

t 1 y & ' T Z [ A B t s " Z X 4 y o U t 2 p y & ' T 4 Q A B % B ~ • | w s GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s ^ > 20.0.1 A > 20.0.2 $ l z ) T 0 ! @ A O A X W j ^ # & ' T 4 Q A B % B ~ • | w s > 18.0.8 $ l z b B Q X K L ? = & ' T Y " K L n f T j 4 7 2 0 X | w s > 20.0.1 $ l z

t 2 y < X Y 0 h Y T ^ e f = J # g U * ` 4 ? w ( # ; D k s N 8 z | + k | " S z @ ? < X Y 0 h Y T ^ $H_2$ y s D = J N 8 t μL/L y e , Q D $ ; < v p J o N k s N 20 * $H_2$ N 10 * $C_2H_2$ N 0 z

t 3 y 0 X - ) 66kV ! u ( # T U V 0 X ] ^ Y * ^ | q X A B 4 _ * | 4 + X , ? & ' T # g U * ` * / ? w ( # o " Q D | b k | " S z 2 & ' 3 q b ] ^ # 0 X - ) 66kV ! u ( # T U V ] ^ Y * | + X T ^ e f = J # g U * ` z T ^ e f = J R * N 8 t μL/L y D $ ; < v p e , o * k s N 10 * $H_2$ N 50 * $C_2H_2$ N 0 z

t 4 y 0 X - ) 500kV # 8 K & ' T { T ) R 7 L y * $ + X T ^ e f = J # g U * ` 1 T ^ e f = J R * N 8 t μL/L y D $ ; < v p e , o * k s N 10 * $H_2$ N 150 * $C_2H_2$ N 0 z

t 5 y 0 X - ) 500kV # < X Y 0 h Y * d } $ l y • 7 = _ U V w 8 T ^ # N = 8 * n o D | % Q 1 1 t J B * J y z

t 6 y 500kV ! u ( Z \ < X Y T ( $ { k { N s Z 4 t T U K _ y 100mL T ^ % Q 5μm # J T 2000 D * 500kV ! u ( N \ L \ < X Y s Z 4 t T U K _ y ( $ { k { N 100mL T ^ % Q 5μm # J T 1000 D z

t 7 y & ' T \ O P + X s y * { s 4 * | d T # - . . ) Q E N U T V + X * ` * n ' 2 | w s GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s > 20.0.1 ^ L 3 11 Q # $ l z T _ t | d GB 50150 ~ 2006 n 0 = ? = > ? 2 3 0 = 5 H Z [ A B ~ • s > 20.0.2 ^ 1 # 0 $ l + X j & 4 1 T # 0 A B 5 z =

0 . 4 T f 2 1 . 1 2

t 8 y 2 +

@ A 1 > M 6 2 o U &

v w N **TSSY-ZW-09-01/01**

| 2 o y • | 2 o u 7 | = > W | # $ > M W | # $ + d V |
|---|---|---|---|---|
| | | | | |
| > M q r * ` ! { k i 6 | | | | MCD |

p X A B t x q r C D q r - ) q r { k i 6 q * M i

| > M T ) * Q/ : N 0 = l | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| # $ [ 1 Z 0 V W , t | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| H Y | | | | | | | |

j k Nt , y 7 & 5 # $ = > W ] ^ * # $ > M W b * * # $ + d V , ' 5 1 z # $ + d V n 2 4 * 2 q r { k i 6 O 2 O zt t y 2 o O P u 7 > M i 6 D < y 7 & 3 x 4 . ) 4 : * 5 6 | = @ > & * ) _ ( Z H @ 1 \ V W ' 5 < 7 y * | { H Y p % & < 7 / 0 z 2 @ S V W + X Z 0 * O , t \ \ zt R y | 6 7 # $ # A % x A K L * T ) > M * Q R : N 0 = l 丰 8 y \ q r - ) y & • q r - ) D , d y * Q 5 M | R S " f V W = @ + X q r $ % O k l i 6 丰 9 y & • q r - ) y q r { k i 6 { n 2 4 # $ : < ; ?zt < y , t D = M t N > , t # y ! o } & • L z