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\ · & 9'— GB/T 1.1—2020 É 7 ö F æ , l 1\1G 6 Ö 7 ö F · & , ' 5 ´ ¼CS9y?ô l Ê , ' ?ô Ê
CS9y Ä
 \ · & _ É 8i+XAî 7 º7-Lö @ >F 0;F 5\$3+5 Ê , ' 1\ 4G 6 Ä
B'# ?\ · & , ' Ê µ é 7-#¹ ú C Y Ä \ · & , ' 3 j ´ = ¯ ðAö [C Y , ' CS + Ä
 \ · & +a] -FP8i 0; – J * | , Ä
 \ · & CS9y ... } Ö! – " y*6 W – ÄG W – ÄM7 • J º7-0 ° 9L€ œ (Ä :#§8i8fF EÄ0 –.D0!
p Ä :#§ FQ •FP8i 9L€ œ (Ä
 \ · & k?±CS9y ê Ö , -/ð*d Ä P*Ž Ä ~ 5 ç ÄQ• ... , Ä H Ä ~*X ÄN à Ä) ± · Ä)» ÊE¹ Ä ' >
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8i+XAî 7 º7-Lö @ >F 0;F 5\$ 7 ö5Ô+a 13N© 7 ö4ô @ È#å- ¶8i+XAî 7 º7-Lö @ Q ‡AîAÑ Ã] * Ã
Ä+X Ã5\$ Ô1y ~E÷0; È)B 2«L NÈ 9E³ -,´ 7 , Æ+X Äi ž 4N© 7 ö(©&é È\5Ô 7 ö p#¹ ú,´ µ é 6
j ; 2« Ö

—— *.p j W 7 ö È 5 [É8i+XAî 7 º7-Lö @ >F 0;F 5\$FJ I ÊÉ8i+XAî 7 7Aö5F.1?±"r ÊÉ8i+X
Aî 7 º7-Lö @ M• WAîAÑ?±"r Ê 3N© 7 ö È j >5 µ é È ¢ f W,´ 7 , Ä

——3+5 Lö @ 7 ö È5 [É8i+XAî 7 º7-Lö @ Ĩ I >?±"r Ě8i+XAî 7 ŸLö @ £ FJ+X ° _?±"r Ê
É8i+XAî 7F 0;F 5\$3+5 Ö •?±"r Ê 3N© 7 ö È)8i+XAî 7 º7-Lö @3+5 ,´] * * ¶?±"r Ä

——5\$ Ô « 7 ö È 5 [É8i+XAî 7F 0;F 5\$3+5 ° _?±"r ÊÉ8i+XAî 7 º7-Lö @ >F 0;F 5\$3+5
1\1G 6 Ö(æ 1- #{ ÊÉ8i+XAî 7 º7-Lö @ >F 0;F 5\$3+5 1\2G 6 Ö • ç1Ñ*6 ÊÉ8i+XAî 7 º7-Lö @
>F 0;F 5\$3+5 1\3G 6 Ö?ö ö5\$ Ô Ê É8i+XAî 7 º7-Lö @ >F 0;F 5\$3+5 1\4G 6 Ö<Š F 5\$ Ê5
N© 7 ö È j8i+XAî 7 º7-Lö @3+5 ,´ F >5\$ Ô È 7 , Ä

—— ž1Ñ*6 > Ä+X 7 ö È 5 [É8i+XAî 7F 0;F 5\$ ž1Ñ*6?±"r ÊÉ8i+XAî 7 º7-Lö @ >F 0;F
5\$3+5 1\5G 6 Ö. Aö Ã *Aî?±"r Ê2N© 7 ö È ?ö93 ¶3+5 p#{ ž,´ G÷Lö > 4*6 é ? Ä



$$8o+^{\wedge}A\hat{o} = {}^{\circ}73L\ddot{u} \text{ F DF 0AF } 5^{*}315$$

$$1b4G < \text{Æ} < \bullet \text{ F } 5^{*}$$

1 99 *

\ · &?ô Ê ¶8i+XAî 7<Š F 5\$ f3+ æ´ ã 44ô &,´ î)à È ú<Š F 5\$3+5 ï7-?±"r Ä
 \ · &F2+X ¾8i+XAî 7 º7-Lö @ >F 0;F 5\$3+5]<Š F 5\$ €3+5 ,´ AîAÑ 0 Ä

2 ?ú99] K+^ ½ ,

\ · &"Ñ 9?ô93 W E+X · & Ä

3 eB# Â Ð •

; G _B ¼ Ê yF2+X ¾ \ · & Ä

3.1

<• F 5* virtual operation and maintenance

î f>ô 7 X<Š 0ªL\$],´ P 4 È _Aî 7F >| ÄAú Ý ã5\$ Ô ã5\$ 1yE÷0; ,´ ± F f)à Ä

3.2

<• 0°L* virtual space

>(™*6 î f0ªL\$-() Ä,´ ² % ÈÄ+X ± F ° _¼(™*6,,5° ° _1y xF ° _ È*0ûC\$ •,´ > î f0ªL\$
 X0ªL\$... £3+ Ä±3P-(Â Æ+X1y éM'-(08\$,´ ± FKÆ y0ªL\$ Ä

3.3

! • +U digital twins

)à 9,´(™*6 î f)B',´ ± Q » ÈFJE÷ î#{ Ä/-O ¼ ž 6 Ä • î & O. ÄAú Ý ÄN'#{(™*6 î f)
 B',´(æ 1 ÈFJE÷ H F ¼ 7 •B3 ×(™*6 î f)B',´>| j ÈFJE÷-(£ ± Q »L\$,´-(Â - ••F F8 DÛ È
 < & iF Y,û-(£ é X(™*6 î f)B'+O - ~ O µ,´ ã1† Ä

3.4

<• F 5* C × virtual operation and maintenance services

<Š F 5\$ = Ñ _)<Š F 5\$Lö @ × f Ä+XE÷0; JM' A8i+XAî 7F 5\$ J Ñ pM0,´ 42« ž ÄQ » Ä1Ç
 # Ä/-O Ä5 ì1yF >| = Ñ F 1>ô È ! Ä+XEÿ & F0+ Ø1 App ,´ ' ? È5 44x+X g È î)à) = Ñ,´
 ï § ú 9M0 ¯+X Ä

3.5

Ô %oF 5*Eý0A entity operation and maintenance process

8i+XAî 7 X(™*60ªL\$] îLuF >| >5\$ Ô, E÷0; Ä

3.6

<• F 5* +U %o



b)



- a) $M^+ A < \tilde{S} \hat{f} \tilde{E}, Q \gg 1 \tilde{N}^* 6 = \tilde{N} \tilde{E}^2 * Q / - O = \tilde{N} \tilde{A} Q \gg 46 > \delta > = \frac{1}{2} 8 = \tilde{N} 1y \times$
b) $M^+ A < \tilde{S} F 5\$ \$ + O \tilde{z} \tilde{E}, \tilde{z} 1 \tilde{N}^* 6 > 4^* 6 = \tilde{N} \tilde{E}^2 \tilde{z} \$ 5 \# G \tilde{A} \tilde{E} 6,, \tilde{A} F \tilde{E} \tilde{A} = \frac{1}{2} 8 1y = \tilde{N} \times$
c) $M^+ A F \tilde{O} \tilde{E}, 5, 8 F \tilde{O} = \tilde{N} \tilde{E}^2 \tilde{z} G \div L \tilde{o} = \tilde{N} \tilde{A} O. \tilde{O} \bullet = \tilde{N} \tilde{A} \tilde{z} P E \tilde{A} = \tilde{N} \tilde{A} \bullet A P = \tilde{N} \tilde{A} \tilde{O} = \tilde{N} 1y \tilde{A}$

7.2 $P \times]C \times$

J Ñ W = Ñ Ä+XEÿ & Ã0+ Ø1 Apply ' ?% Cã8i+XAî 7F 0:F 5\$ = <+X qM0"r Ä k?± 5 Ö

- a) $M' A4\emptyset 1)\grave{a} j \acute{y} \mathbb{E} \hat{e} \hat{~}, \acute{y} \mathbb{E} 7, = \tilde{N} \hat{E}^2 \ddot{Y} B \tilde{A} < \tilde{S} > \delta G \} \tilde{A} \hat{A} \hat{I} 75\$ 5\$ \hat{O} = \tilde{N} 1y \times$
- b) $M' A C J \circ _ \hat{e} \hat{~}, C J F \circ _ = \tilde{N} \hat{E}^2 F 0; F 5\$ \hat{A} \hat{I} 7 \bullet \mathfrak{c} \hat{A} \hat{O} \hat{~} = \tilde{N} \tilde{A} \hat{A} \hat{I} 7 \times f 1 \hat{t} + \bullet = \tilde{N} \tilde{A} B 3$
 $\hat{O} = \tilde{N} \tilde{A} \hat{~} / - O = \tilde{N} 1y \times$
- c) $M' A F 0; F 5\$ \tilde{N}^* 6 \tilde{a} \hat{1} \hat{t} 65, \acute{a} 7 - \tilde{a} \hat{1} \hat{t} = \tilde{N} \hat{E}^2 > | W 6 \hat{A} = \tilde{N} \tilde{A} \hat{N} p L^{\text{TM}} \hat{A} \hat{O} \hat{~} = \tilde{N} \tilde{A} \hat{C} \gg i N' \# \{ = \tilde{N} 1y \times$
- d) $M' A4\emptyset 1 + X g, \acute{x} \hat{n} = \tilde{N} \hat{E}^2 + X g \hat{I} 7 - f P \frac{1}{4} = \tilde{N} \tilde{A} < \tilde{S} \rangle \hat{A} \acute{Y} = \tilde{N} \tilde{A} \hat{F} 0; 5\$ = \tilde{N} 1y \hat{A}$

8 +U | a1x* < © &

8.1 $\leq F 5^* + U \mid \alpha$

8.1.1 $(\ddot{Y}^* < \hat{O} \%_0 \mid \square$

(TM*6 î f ž k?± 5 8i8fAî 7(TM*6 î f?ô l Ãĩ7- ÃW7- Ã£3+1y(TM*6?±3P Ž W ž È ú y P
8i+XAî 7(TM*6 î fF >|(æ ã ã Â î & W7- Ã)ß ³ ò Ã0± Ø1y Ø 1E÷0; ž Ä

8.1.2 <• W Á | □

<Š 0 » ž k?±5 Ö

- a) ... j (Ã>õG} £3+ Ã }5ž1y ... Q »-(£ ž ×
b) € É Ž W ÆE-9š Ã(© ±1y(™*6 Q »-(£ ž ×
c) P_i Ø 3P Ã)ß³ Ø ÆF >| j f1y>| j Q »-(£ ž ×
d) 4Ö • Ã?ô | Æ £6,, £3+1y?ô | Q »-(£ ž ×
e) *¾ :F Q » 0 ..., 'E÷0; /-O Ã>| j /-O ÆE÷0; P¼Añ ÆAô ` Æ 6 À ÆN'#|1y, ' /-O ž Æ

8.1.3 $C \times \mathbb{R}$

$$= \tilde{N} \quad \check{z} \quad k?_{\pm 5} \quad \ddot{O}$$

- a) $\tilde{I}7 - W = \tilde{N} - (\pounds \quad \check{z} \check{E}^2 1 \check{C} \# \quad \tilde{A} Q \gg \tilde{A} \quad \check{z} 4^6 \acute{e} \# 1 y \times$
b) $J \tilde{N} W = \tilde{N} - (\pounds \quad \check{z} \check{E}^2 \times f \tilde{A} \tilde{a} 1 \dagger \tilde{A} \hat{I} 7 1 \tilde{N}^* 6 \quad \check{z} 1 y \tilde{A}$

8.1.4 . Aü | æ

. Aö ž5 C æ. Aö Ã>| J 7 ö Ã?ô l4Ö • Ã Ø*6 ØAê Ã h+X1C# Ã > Q » Ã1y Ä

8.1.5 $\nabla f + U|_{\Sigma}$

>}+O ž _)(™*6îf ž Ā<Š îf ž Ā=Ń ž Ā. Aö žF>| žEæ' ĀN' 4*6 Ā 62« Ā
£6,, ĀLö @ Ā=½ 8 Ā/-O1y-(£ 4*6 > Ç `,' ž È5 /-O Ç `,' Āî 7 Q 1 ž ĀĀ Ē Ā . ž Ā\$Y
Öj ž1y Ā

8.2 +U | $\alpha 1x^* < \odot$ &

š+O ž1Ñ*6 £ k?± î)à ž=½ 8 È žN´ 4*6 È ž F È È ž Ä+X 4 Z İ7- È% Cã :?±"r Ö

- a) ž=½ 8 Ö Ä _1) • 8 (™*60aL\$ ><Š 0aL\$, ' Q » ž Ā /-O ž Ā ĬŇ*6 ž Ā Āô ` ž Ĭ
&G÷Lö |F >|=½ 8 ×
- b) žN' 4*6 Ö Ä _1 ž, 'Eé5HN' 4*6, ² ž\$5#G Ā žLö @ Ā žEœ ' Ā ž?ôäÖ1y ×
- c) ž F È Ö Ä _1 ž5 AŇ > 6 Ä Ĭ7- Ä ĬG÷+X ê ª7-1y é# F >| ž 6 Ä F È ĬĬ ` 62« Ā
N#{ Ā6Š2«,' x Ĭ ×

- d) $\check{z} \hat{O} \hat{A} \hat{A} + X \ddot{O} \hat{A} _1) F 5\$) B'F > |(\ae 1, \acute{A} \hat{O} \hat{A} \ddot{F} J E \div -(\hat{A} \hat{O} F > |(\odot \pm 4 \times \frac{1}{4} \tilde{a} 1 \dagger 4 \times, \acute{z} \hat{A} + X \ddot{E} j \hat{f} \hat{A} \hat{i} 7 F 5\$ \frac{1}{4} < \check{S} \check{s} + O f, \acute{H} F \ddot{E} \acute{I} \check{z} \hat{A}$

9 F Û

9.1 Ô %F 5*Eý0A Â<• F 5* +U %,°F Û

$\hat{I} f F 5\$ E \div 0; \frac{1}{4} < \check{S} F 5\$ \check{s} + O f, \acute{F} \ddot{O} \hat{A} \% C \check{a} ; ? \pm " r \ddot{O}$

- a) $\check{A} 7 - 6 G \div L \ddot{o} \acute{,} \hat{I} f F 5\$ E \div 0; \hat{I} \& \check{z} P E \check{A} 8 \# < \check{S} \check{s} + O f \ddot{E} \$ \grave{a} Q ! " 42 \ll \ddagger Q \gg \times$
 b) $\check{A} 7 - 6 < \check{S} \hat{I} f / - O 6 \hat{A} 1 y \check{z} E \ae F j \times f 7 \ddot{E}; E \hat{i} 8 \# (\text{TM} * 6 \hat{I} f \longrightarrow | \sim \ddot{E} \hat{I}) \grave{a}) \hat{I} f E \div 0; , \acute{I} \& \times f \hat{A}$

9.2 Ô %F 5*Eý0A Â C × © &,°F Û

$\hat{I} f F 5\$ E \div 0; \frac{1}{4} = \check{N} \pounds , \acute{F} \ddot{O} \hat{A} \% C \check{a} ; ? \pm " r \ddot{O}$

- a) $\check{A} 7 - 6 G \div L \ddot{o} \acute{,} (\text{TM} * 6 \hat{I} f \hat{I} \& \check{z} P E \check{A} 8 \# = \check{N} \pounds \ddot{E} \hat{I}) \grave{a}) \pounds = \check{N}, \acute{\$} \grave{a} > H F \times$
 b) $= \check{N} \pounds \times + O, \acute{y} \ae 7, \check{A} C J 6 \hat{A} \check{A} \tilde{a} 1 \dagger H F 1 y 5 \grave{I} \check{A} 7 - \check{A} + X E \check{Y} \& F 0 + \emptyset 1$
 $\ddot{E} 5 + X g \ddot{E} F J E \div \hat{e} F 8 \emptyset y \ae \hat{I}) \hat{I} f F 5\$ E \div 0; , \acute{B} 3 \times \hat{A}$

App, ' ' ?

9.3 <• F 5*ótí7,°f × &0X4 F Û

