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# J'',)+&i!F<!N(\$&J''!&H!)L''!)&&%\*+)!

 $7;!3K!\#9A: -!T_F]^!dOAC31/2;!0:313C5!-9;!91!410C6835C01/!A9/0!3K!T?Ui~?!!`-//6 <=>>>?@/8C.?.1K3=! 9::0;;02!Q=FU=F]a!R-.80!/-.;!.;!B332!10>;!31!C915!80@08;^!K3A!0C6835OA;!./!.;!.C60A9/.@0!/3!01B9B0!989! ;0:/3A;!3K!/-0!>3AEK3A:0!.1!3A2OA!/3!K.12!>3AEOA;!/3!K.88!b3M;!912!BA3>!/-0.A!M4;.10;;0;?!)-.;!6A0;01/;!91! 0\:08801/!3663A/41./5!/3!-.A0!/-3;0!>-3!9A0!.1!A0:3@0A5!KA3C!3A!>./-!;4M;/91:0!4;0!2.;3A2OA;!>-3!1002!9! ;0:312!:-91:0?!+/!.;!0;/.C9/02!/-9/!V_i !3K!9248/;!>./-!;4M;/91:0!4;0!2.;3A2OA;!9A0!0C683502!K4880/.C0?! 19/.3198JJ4A@05!31!OA4B!N;0!Y!L098/-a!)-.;!/338E./!.;!91!91;>0A!/3!0C6835OA;!>-3!-9@0!0\6A0;;02!9! 20;.A0!/3!809A1!9M34/!-3>!/3!;4663A/!912!01B9B0!/-0C?!!$ 

)-.;!) 338E./!6A3@.20;!OC68350A;!>./-!/-O!E13>802B0!912!A0; 34A: 0;!/3!; 4;/9.1!9!>3AEK3A: O!3K!.12.@.2498;!
>./-!; 4M; /91: 0!4; 0!2.; 3A2OA; !912!.1!AO: 3@OA5?!+/!.;!34A!-360!/-9/!./!>.88!; 4663A/!OC68350A;!/3!-.AO^!31D
M39A2^!912!AO/9.1!603680!>-3!-9@O!MOO1!91!.C63A/91/!69A/!3K!/-0!>3AEK3A: O^!M4/!>-3!-9@O!3K/01!
19@.B9/02!/-0.A!: 9AOOA; !912!; 4M; /91: 0!4; 0!>./-!; -9C0!912!KO9A!3K!83; .1B!/-0.A!8.@O8.-332?!) -.;!.;!91!
.C63A/91/!; /06!K3A!OC68350A; !/3!/9E0!.1!: AO9/.1B!9!: 48/4AO!3K!>O8810; ;!K3A!/-0.A!OC68350O; ?!RO!.1@./0!534!
/3!b3.1!/-O!BA3>.1B!14CMOA!3K!dOAC31/!OC6835OA;!>-3!9: /.@O85!AO: A4./^!@984O^!912!MO1OK./!KA3C!BA9/OK48!
912!83598!OC68350O; ?!

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 $G"I"H+)J!\&H!L+(+I"h!\$"\&\$\%"!R+)L!JNGJ)7I,"!NJ"!O+J\&(O"(J!7!K3:4;!BA346!>./-!0C68350A;!912!M4;.10;;!92@3:9/0;!>9;!-082!.1!,-.//01201!,341/5!.1!T_F[!912!.201/.K.02!;0@0A98!M010K./;!3K!-.A.1B!603680!>./-!;4M;/91:0!4;0!2.;3A20A;?!$ 

F?!"C683500:!-9@0!9!63:./.@0!>3AE!0/-.:!912!83598/5!/3!/-0.A!0C68350A:!

o (0;09A: -!;4BB0;/;!/-9/!603680!.1!A0: 3@0A5!9A0!3K/01!-.B-&5!C3/.@9/02!/3!>3AE!M0: 94;0! 0C6835C01/!6A3@.20;!64A63;0!912!.201/./5?!!)-05!9A0!83598!912!: 3CC.//02!/3!/-0!0C68350A! >.&.1B!/3!B.@0!/-0C!9!: -91: 0!912!-086!/-0C!9: -.0@0!K.191: .984;3: .984912!60A;3198!;/9M.8./5?!!

- o )-0A0!;!9!K.191:.98!.1:01/.@0!K3A!0C68350A;?!!j, 31;0A@9/.@0!0;/.C9/0;!3K!/-0!:3;/!3K!0C683500! /4A13@0A!9A0!TQi !/3!U\_i !3K!91!0C683500Z;!;989A5?!)-0A0!9A0!M010K./;!A098.g02!.1!A024:02! /A9.1.1B!912!92C.1.;/A9/.@0!:3;/;k!`J7#LJ7a?! -//6;<=>>>?19929:?3AB=9;;0/;=TPFV=;4M;/91:04;0mC.;4;0/338E./]?62K!!
- o )-0A0!;;!91!3663A/41./5!/3!922A0;;!d0AC31/I;!1002!K3A!0C683500;!912!/-0!83>! 410C6835C01/!A9/0;
  - R./-!d0AC31/I;!410C6835C01/!A9/0!9/!91!416A0:0201/02!109A!980/.C0!83>^!
    .12.@.2498;!.1!A0:3@0A5!9A0!91!41/96602!63/01/.98!A0;34A:0?!!7;.20!KA3C!A098.g.1B!9!
    B9.1!K3A!/-0!M4;.10;;^!./!.;!/-0!A.B-/!/-.1B!/3!23?!!!
  - J4M;/91:0!4;0!.;!:3CC31\*!912!/-0!:3;/;!3K!;4M;/91:0!4;0!9A0!-.B-!K3A!0C68350A;?!&K!/-0!T\_!C.88.31!9248/;!:89;;.K.02!9;!-9@.1B!6A3M80C;!>./-!;4M;/91:0!4;0!2.;3A20A;!.1!T\_\_X\*!966A3\.C9/085!FT!C.88.31!`V\_i a!>0A0!0C683502!K488!/.C0?!`"+,'(-\*.L/!T486\*!0(!A(.=,'%)\*!845/0%#)\*!!54/\*XY%0&(#%'!Z4/&#\*//!T.(4,!(#!B\*%'01a!

H""OG7, \*!H(&#!, L+))"I O"I!, &NI)'!GNJ+I "JJ"J!
+1!T\_FX^1/-0!, , &7!:3124:/02!.1/0A@.0>;!>./-!, -.//01201!, 341/5!M4;.10;;0;!.201/.K.02!K3A!/-0.A!
6A3BAO;;.@0!966A39:-0;!/3!-.A.1B!.12.@.2498;!.1!AO:3@0A5?!R0!.1/0A@.0>02!83:9&!M4;.10;;0;!/3!4120A;/912!
/-0.A!60A;60:/.@0;!31!-.A.1B!6-.83;36-5^192@91/9B0;^1C919B.1B!A.;E;^1-.A.1B!:31;.20A9/.31;^1912!;4663A/;!
9KK3A202!/-0.A!0C683500;?!!)-0!K3&3>.1B!;4CC9A5!23:4C01/;!34A!K.12.1B;?!

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) -0A0!: 91!M0!: 988!34/; !912!13!; -3>; ^!M4/!M4; .10; ; !3>10A; !912!C919B0A; !n4.: E85!63.1/02!34/!/-9/! /-.; !: 91!M0!6A3M80C9/.: ^!A0B9A280; ;!3K!>-0/-0A!91!.12.@.2498!.; !.1!A0: 3@0A5!3A!13/?!!\$41: /498./5!: 91! M0!91!.; ; 40!.K!91!0C683500!230; !13/!-9@0!9!2A.@0AZ; !8.: 01; 0!912!.K!64M8.: !/A91; 63A/9/.31!.; !2089502?!!!!!

H3A!OC683500;!.1!09A85!A0: 3@OA5^160A; 3198!.;; 40;!: 91!C91.K0; /!9/!> 3AE^1912!/-05!: 91!M0!; 01;./.@0! /3!.1; /A4: /.31!912!: 3AA0: /.31?!!J3C0!OC683500;!-9@0!3M8.B9/.31;!; 4: -!9;!: 341; 08.1B^12A4B!/0; /.1B^1 3A!C02.: 9/.31!9;;;/02!/A09/C01/!9663.1/C01/;!>-.: -!: 91!6A3@0!: -9801B.1B!/3!-313A?!! H4A/-OAC3AO^19:: 3CC329/.1B!AO: 3@OA5!912!FTD

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OA4B!4;0'19M4;0!3A!922.:/.31!9C31B!0C683500;!912!/-0.A!K9C.85!C0CMOA;!:91!:94;0!0\601;.@0!6A3M80C;!
K3A!M4;.10;;0;'1A91B.1B!KA3C!83;/!6A324:/.@./5'19M;01/00.;C'1.1b4A.0;'1K9/98./.0;'1/-0K/!912!83>!0C683500!
C3A980'1/3!91!.1:A09;0!.1!-098/-!:9A0'180B98!8.9M.8./.0;!912!>3AE0A;f!:3C601;9/.31!:3;/;?!

+1!922./.31<sup>1</sup>/<sub>1</sub>9::3A2.1B!/3!I 9/.3198!, 341:.8!31!78:3-38.;C!912!OA4B!O0601201:0!`I , 7OOa<sup>1</sup>/<sub>1</sub>2A4B!C.;4;0!:91!:94;0!6A3M8OC;!9/!>3AE!.1:842.1B<

- o 7K/OADOKKO:/;!3K!;4M;/91:0!4;0!`>./-2A9>9&!9KKO:/.1B!b3M!6OAK3AC91:0?!
- o \$A03::469/.31!>./-!3M/9.1.1B!912!4;.1B!;4M;/91:0;!>-.80!9/!>3AE^!.1/OAKOA.1B!>./-!9//01/.31!912!:31:01/A9/.31?!
- o #80B98!9:/.@./.0;!9/!>3AE!.1:842.1B!;088.1B!.880B98!2A4B;!/3!3/-0A!0C683500;?!
- o \$;5:-383B.: 98!3A!;/AO;;DAO89/O2!OKKO:/;!240!/3!2A4B!4;O!M5!9!K9C.85!COCMOA'!KA.O12!3A!: 3D>3AEOA! /-9/!9KKO:/;!913/-0A!6OA;31f;!b3M!6OAK3AC91:O?!

J",)+&I!P<!L&R!,7I!"#\$%&'"(J!JN\$\$&()!"#\$%&'""J!R+)L! JNGJ)7I,"!NJ"!O+J&(O"(J!)

0.19 = 0.19 = 0.01 =

o )-0!H9:/3A:<!

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- "C6835C01/!.;!E05!/3!A0;/3A.1B!9!6A324:/.@0!8.K0!.1!A0:3@0A5^!912!89:E!3K!9!@0-.:80^!912=3A! A0;/A.:/.31;!31!2A.@.1B!912!8.:01;0;!3K/01!:A09/0!;.B1.K.:91/!3M;/9:80;!K3A!603680^!0;60:.9885!.1! 09A85!A0:3@0A5?!
- ) -0!; 4::0;; |3K!/A09/C01/'!0C6835C01/'!912!A0: 3@0A5!A085!-09@.85!31!/-0!9@9.89M.8./5!3K! /A91; 63A/9/.31?!) A9@08!/3!3M/9.1!#02.:9/.31D7;;.;/02!) A09/C01/!`#7) a'1:341; 08.1B'13/-0A!; 4663A/!; 0A@.:0;!.;!/.C0!:31; 4C.1B'1912!A0n4.A0!/-0!>.88.1B10;; !3K!K9C.85!C0CM0A;!912! KA.012; '!>-3; 0!/A91; 63A/9/.31!;./49/.31;!C95!98; 3!M0!8.C./02!3A!419@9.89M80?!
- o J4BB0:/02!\$A9:/.:0:<
  - \$A3@.20!M4;!69;;0;!/3!/A09/C01/!912!9663.1/C01/;!
  - "1:34A9B0!:9A!6338.1B!
  - #01/3A.1B!/3!6A3@.20!0C683500;!>./-!;3C0310!/3!9;;;;/!/-0C!>./-!/A91;63A/9/.31!.;;40;!
  - \$A3C3/0!69A/.:.69/.31!.1!OA.@OA!(0.1;/9/0C01/!095;!>-01!9@9.89M80!!

#### G>!I EEU"88!HB\SE!HI U"!Y""E8!!

o H9:/3A;!

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 $\begin{array}{l} 0./-0A!/-0!60A; 31!3A!/-0!.8810; ??!, \ 31;.20A!: 91: 0A^!K3A!0 \ 9C680?!G5!: 31/A9; /^!C915!603680! \\ C.;/9E0185!M08.0@0!C01/98!-098/-!: 312./.31; ^4.1: 842.1B!; 4M; /91: 0!4; 0!2.; 3A20A; ^19A0!M3/-! \\ >./-.1!9!60A; 317; !: 31/A38!912!69A/.9885!/-0.A!K948/?!) - 0!M0 - 9@.3A!.; !60A: 0.@02!9; !9!: -3.: 0!A9/-0A! \\ /-91!9!; 5C6/3C!3K!/-0!2.; 09; 0?!H3A!/-0; 0!A09; 31; ^4/-05!KA0n401/85!9//9: -!C3A0!; /.BC9; !/3! \\ /-0C?!) - 0!63/01/.98!K3A!; /.BC9!.; !BA09/0A!; /.88! > -01!; 3C0310!.; !4; .1B!91!.880B98!; 4M; /91: 0^! \\ >-.: -!: 9AA.0; !/-0!922./.3198!60A: 06/.31!3K!: A.C.198./5?! \\ ^-//6; <=>>>?; 9C-; 9?B3@=: 96/=; ./0; =20K948/=K.80; =A0; 34A: 0; =; 42D; /.BC9D/338?62K!9:: 0; ;02! \\ U?0?F] a!! \\ -//6; <=>>>?; 9C-; 9?B3@=; ./0; =20K948/=K.80; =6A3BA9C; m: 9C69.B1; =_T?m>0M: 9; /mFmA0; 34A: 0; \\ D0_[?62K!^) A9.1.1B! (0; 34A: 0!h4.20DJ/.BC9a! ] \\ ! \end{array}$ 

 $o \quad \text{HO9A!3K!MO.1B!b42B02!912=3A!2.}; : A.C.19/02!9B9.1; / \\ 4$ 

 $\begin{aligned} &\text{H3Al6O3680!} > ./-!; 4\text{M}; /91: 0!4; 0!2.; 3A20A; ^!; /.BC9!2.; 6A363A/.319/085!.1 K8401: 0; !-098/-! \\ &34/: 3C0; !912!C01/98! > 0800M0.1 B?! H09A!3 K!M0.1 B!b42B02!912=3A!2.; : A.C.19/02!9B9.1; /!: 91! \\ &6A0@01/!603680! > ./-!; 4\text{M}; /91: 0!4; 0!2.; 3A20A; ^!3A! > -3!9A0!9/!A.; E!3K!; 4\text{M}; /91: 0!4; 0!2.; 3A20A; ^!3A! > -3!9A0!9/!A.; E!3K!; 4\text{M}; /91: 0!4; 0!2.; 3A20A; ^!3A! > -3!9A0!9/!A.; E!3K!; 4\text{M}; /91: 0!4; 0!2.; 3A20A; ^!3A! > -3!9A0!9/!A.; E!3K!; 4\text{M}; /91: 0!4; 0!2.; 3A20A; ^!4A00!01/! 9A0B.@0A; !912!3/-0A; !.1!9!63; ./.31!/3! -086!KA3C!6A3@.2.1 B!100202!; 0A@.: 0; ^!1.1842.1 B!C02.: 98!: 9A0?!+1!922./.31!/3!B0//.1 B!-086^*!K09A! 3K!A0b0: /.31!3A!131D.1: 84; .31!3K!/-0!0C683500!: 91!M0!9!6A0; ;4A0!3K!/-0!>3AE689: 0!/-9/! :3C691.0; !: 91!9//012!/3!9; !69A/!3K!/-0!: 48/4A0^!01; 4A.1 B!/-9/!10>!-.A0; !K008!.1: 84202!912! ;4663A/02?!`-//6; <=>>>?; 9C-; 9?B3@=: 96/=; ./0; =20K948/=K.80; =A0; 34A: 0; =; 42D; /.BC9D/338?62K! 9::0;; 02!U?0?F]a! \end{aligned}$ 

- o J4BB0;/02!\$A9:/.:0;<!
  - o )A9.1!;/9KK!31!;/.BC9D>-9/!./!.;^!>-9/!: 91!M0!2310!.1!/-0!>3AE689: 0!/3!922A0;;!./^!912!/-0! .C63A/91: 0!3K!891B49B0?!
  - o "1;4A0!M45D.1!KA3C!;01.3A!C919B0C01/\*!912!>3AE!/3!01;4A0!988!;/9KK!9A0!31!M39A2!>./-!: :A09/.1B!9!;/.BC9DKA00!>3AE689:0?!
  - o "CMA9: 0!603680!K3A!>-3!/-05!9A0!/3295?!J3C0!: 3C691.0;!K3A0B3!M9: EBA3412!: -0: E;!912! 2A4B!;: A001.1B;!912!K3: 4;!31!>-3!/-0!60A; 31!.;!C3A0!; 3!/-91!>-9/!-9660102!.1!/-0.A! 69: /?!!
  - O H3: 4;131!/-0!K./13K!9!60A; 31!>./-!/-0.A!; E.88; !912!/-0!3AB91.g9/.31p!M0!: 31: 0A102!80; ;!>./-! /-0!B96;!.1!/-0.Al69; /!0C6835C01/!-.; /3A5?!&10!>95!/3!922A0; ;!/-.;!.;!>./-!/-0!4; 0!3K! jK41: /.3198!A0; 4C0; k!>-.:-!-.B-8.B-/!; E.88; !809A102!3@0A!/-0!: 34A; 0!3K!9!8.K0D/.C0!A9/-OA! /-91!9!/A92./.3198!: -A31383B.: 98!6A0; 01/9/.31!3K!>3AE!0\60A.01: 0!912!024: 9/.31?!!
  - o "C68350A;!; -3482!833E!/3!0@9849/0!: 912.29/0;!31!10>!: A./OA.9^1; 4: -!9;!/-0!: 34A9B0!912! 202.: 9/.31!/3!3@OA: 3C0!; 4M;/91/.98!3M;/9: 80;?!) -0; 0!/A9./;!>.88!C9E0!9!B332!912!83598! 0C683500;?!

0½] ^^"U!B"I S<B!Z"Y"^\<8!<BI <!; U] Q\E"!H] \_\_; U"B"Y8\Q"!H] Q"UI T"!^] U!8DZ8<I YH"!D8"! E\8] UE"U87!\YHSDE\YT!I ^<"UHI U"!I YE!H] DY8"S\YT;!

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J<sub>2</sub>D8"!; ""U!H] I HB"8!] U!\_"Y<] U8!K<u>AAA>; "I UXQ<>] UT</u>M<]!I 88\8<!A\<B!U"H] Q"U[!I YE! I 88\\_\SI <\YT!\Y<]!I !Y"A!`] Z!I YE!H] \_\_; I Y[>!

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- o J4BB0;/02!\$A9:/.:0;<
  - o )A9.1!;/9KK!912!C919B0A;!31!;/.BC9!912!./;!.C69:/;!.1!3A20A!/3!2.;60&!/-0!C5/-;!/-9/!0\.;/! 9M34/!6036&0!>./-!JNO!.1!534A!3AB91.g9/.31!`R3A2;!#9//0A&!L3>!%91B49B0!, -3.:0!, 91! (024:0!J/.BC9!\_//6;<=>>>?1:M.?1&C?1.-?B3@=6C:=9A/.:&0;=\$#,Q[QPP\_V=a!
  - o "24:9/0!0C683500;!9M34/!/-0!-098/-!.C69:/;!912!6A324:/.@./5!-9g9A2;!3K!;4M;/91:0!4;0!/-A34B-!:3C6915!>08810;;!6A3BA9C;^!912!"C683500!7;;;/91:0!\$A3BA9C;!`"7\$;a!

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722.:/.31;!0\60A/!OA?!(3MOA/!J9: E!3KKOA;!9!60A;60:/.@0!/-9/!.12.@.2498;!.1!A0: 3@0A5!C9E0!0\: 08801/! 0C683500;?!!L0!912!3/-OA;!6A363;0!/-9/!.12.@.2498;!31:0!3@0A>-08C02!M5!2A4B;!3A!98: 3-38!:91!A0.1@01/! /-0C;08@0;!912!M0: 3C0!9!M4;.10;;7;!C3;/!@9849M80!: 3CC32./5?!!j)-0A0!.;!9!BA3>.1B!14CMOA!3K!: 3A63A9/0!

- /-0!10B9/.@0!.C69:/!3K!2A4B!4;0!31!/-0!>3AE689:0?!`I 9/.3198!, 341:.8!31!78:3-38.;C!912!OA4B! 00601201:0DI, 700a?!
- o "7\$;!/A92./.31985!-9@0!9;;;/02!>3AEOA;!>./-!.;;40;!8.E0!98:3-38!3A!;4M;/91:0!4;0p!-3>0@0A'! C3;/!13>!:3@0A!9!MA392!A91B0!3K!.;;40;!;4:-!9;!:-.82!3A!0820A!:9AO'!A089/.31;-.6!:-9801B0;'! K.191:.98!3A!80B98!6A3M80C;'!>0810;;!C9//0A;!912!/A94C9/.:!0@01/;!8.E0!>3AE689:0!@.3801:0?!

G>!] <B"U!"\_; \$] [\_"Y<!U"\$I <"E!\$] HI \$!8D; ; ] U<8!!!

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- o \$A3BA9C;!;4:-!9;!/-0!N1./02!R95!R3AE.1B!GA.2B0;!\$A3BA9C!

  `-//6;<=41./02>951>@/?3AB=>3AE.1BMA.2B0;a!912!R3AE.1B!H.082;!

  `-//6;<=>>>?>3AE.1BK.082;88:?:3C=a!/3!;4663A/!0C68350A;!.1!/-0!-.A.1B!912!A0/01/.31!3K!

  0C683500;?!!
- o h4.208.10;!K3A!.1/0A@.0>.1B!63/01/.98!0C683500;<!!+1/0A@.0>.1B!.12.@.2498;!.1!A0:3@0A5^!3A!915310! K3A!/-9/!C9//0A^!A0n4.A0;!;E.88!912!E13>802B0!3K!H020A98!912!d0AC31/!;/9/4/0;?!!
- o J/.BC9!3KI; 4M; /91: 0!4; 0!912!89: E!3K!4120A; /912.1B!9M34/!A0: 3@0A5!.; !9!C9b3A!2.; .1: 01/.@0!K3A! .12.@.2498; !/3!; 08KD2.; : 83; 0!.1!91!.1/0A@.0>!912!/3!96685!K3A!63; ./.31; !.1!>-.:-!/-05!9A0!n498.K.02!!! )-0A0!.; !9!A098!912!b4; /.K.02!K09A!3K!-3>!/-05!>.88!M0!60A: 0.@02!912!b42B02?!!7; !69A/!3K!/-0! .1/0A@.0>!6A3: 0; ;!>./-!988!63/01/.98!0C683500; ^!; -9A0!534A!@.; .31!912!638.: .0; !20; .B102!/3!K3; /0A!

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J3C0310!>./-!J4M;/91:0!N;0!O.;3A20A!.;!9!-4;M912^!>.KO^!K9/-OA^!C3/-OA^!;/06D69A01/^!;31^!294B-/OA^!:34;.1^!BA91269A01/^!941/^!41:80!912!9A0!69A/!3K!9!K9C.85!/-9/!;-9A0;!/-0!A9C.K.:9/.31;!3K!/-0!2.;09;0^!M3/-!0C3/.31985!912!K.191:.985?!G5!0C6835.1B!310!60A;31!>./-!;4M;/91:0!4;0!2.;3A20A^!534!9A0!63;./.@085!.C69:/.1B!C915!C0CM0A;!.1!/-0!:3CC41./5?!

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## J0:/.31!Q\_P^!(0-9M.8./9/.31!7:/!3K!F]XU!

 $+/!.;!:A./.:98!/-9/!0C68350A;!E13>!/-0;0!89>;?!)-0;0!89>;!6A3/0:/!9668.:91/;!912!0C683500;!>-3!9A0!\\ n498.K.02!K3A!/-0!b3M'!9A0!.12.@.2498;!>-/-!2.;9M.8./.0;'\%#6!9A0!13/!:4AA01/\%5!01B9B.1B!.;!.\&0B98!2A4B!4;0?!\\ )-3;0!13/!6A3/0:/02!.1:8420!.12.@.2498;!>-3!:4AA01/\%5!4;0!.\&0B98!2A4B;'\63;0!9!2.A0:/!/-A09/!/3!3/-OA;'\!3A!\\ 23!13/!-9@0!9!:4AA01/!3A!69;/!.C69.AC01/?!)-0!707!9668.0;!/3!9\&!;/9/0!912!\&3:9\&B3@0A1C01/9\&0C68350A;'\!912!/3!6A.\@9/0!0C68350A;!>-/-!FQ!3A!C3A0!0C6\&3500;?!)-0!(0-9M.8./9/.31!7:/!9668.0;!/3!H020A9\&0C6\&350A;!\912!3/-0A!64M\&:!912!6A.\@9/0!0C6\&350A;!>-3!A0:0.\@0!H020A9\&BA91/;'\:31/A9:/;'\:31/A9:/;'\:31/A9:/:31!Y!J4M;/91:0!N;0!\\ 0.;3A20Aa!$ 

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-9AC!A024:/.31^!912!L+d=L, d!/0;/.1B!912!A0;34A:0;?!J/0A.80!;5A.1B0;!9A0!98;3!9@9.89M80!9/!d0AC31/!
6-9AC9:.0;!>./-34/!9!6A0;:A.6/.31?!722./.3198!B4.291:0!31!)&1#!' ## ($#!(/)%+)&$!.;!9@9.89M80!9/!C915!3K!
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) - 0!O.@.; .31!3k!78: 3 - 38!Y!0A4B!7M4; 0!\$A3BA9C;!3@0A;00;!9!10/>3AE!3k!-098/-!6A3C3/.31^!6A0@01/.31^! .1/0A@01/.31^!/A09/C01/!912!A0: 3@0A5!; 0A@.: 0;?!&4A!C.;; .31!.;!/3!6A0@01/^!A024: 0!912!08.C.19/0!/-0! 6A3M80C;!: 94; 02!M5!98: 3 - 38!912!2A4B!4; 0?!R0!>3AE!>./-!19/.3198^!;/9/0!912!: 3CC41./5DM9; 02! 3AB91.g9/.31;!/3!C9E0!6A3@01!6A3BA9C;!912!; 0A@.: 0;!9@9.89M80!/3!d0AC31/0A;?!R0!4; 0!29/9!/3!6891!912! B4.20!6A3BA9C!.C6A3@0C01/;^912!/3!; 4663A/!d0AC31/1;!;/9/0>.20!;5;/0C!3k!6A3@.20A;?!

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## 7%, &L&%!&(!O(Nh!NJ"!

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$$\label{eq:continuous} \begin{split} &1\ 3!\ C9//0A! > -0A0!.1!\ d0AC31/!534!9A0^?/-0A0!9A0!A0;\ 34A:\ 0;\ !/3!-0&6?!H.12!9!\&.1E!/3!9!A0;\ 34A:\ 0!.1!534A!9A09^?\\ &3A!4;\ 0!31\&.10!912!6-310!;\ 0A@.:\ 0;\ !/3!B0/!534! > -0A0!534!1002!/3!B3?!!HA3C!;\ 4663A/!BA346;\ ^1/3!/A09/C01/!\\ &:\ 01/0A;\ ^1/3!:\ 3CC41./5!024:\ 9/.31^!534! > .88!K.12!/-0C!-0A0?! \end{split}$$

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; 4663A/!; 0A@.: 0;!.;!/-9/!0@0A5!: -.82!BA3>;!46!.1!9!; 9KO^!; 0: 4A0!912!83@.1B!K9C.85?!!!) -0.A!41.n40!912!9>9A2D
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) > 3DMO2!-3C0!.; !9!A0; .201/.98!: A.;.; !A0; 6./0!912!-3; 6./98!; OA@.: O!K41202!M5!/-0!d) !0069A/C01/!3K!#01/98! L098/-?!!+/!.; !600A!A41!912!20; .B102!K3A!603680!>-3!1002!; -3A/D/OAC!; 4663A/!>-.80!>3AE.1B!31!A0: 3@0A5! 912!2.;: 3@0A5?!!7@0A9B0!801B/-!3K!; /95!.;!; O@01!295; ?!

#### Q\$?))\*>!

'&N)L!, &NI J"%+I h!Y!H7#-%'!JN\$\$&()!J"(d+, "!&(h7I +v7)+&I J!; I U"Y<!D;!Q"U\_]Y<!

#### B&, #' -!V%!P#, >+' -!

H"Y<"U;]\Y<!I E]S"8H"Y<!<U"I<\_"Y<!8"UQ\H"8!

#### `[\_Ta!PP[DXXFF!

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, 01/0A63.1/!6A3@.20; !9!K4&!9AA95!3K!/A09/C01/!Y!024:9/.319&!; 4663A/; !912!6A3BA9C; !/3!/001; ^!5341B! 924&/; ^!912!/-0.A!K9C.8.0; !K9: 02!>./-!0C3/.319&'!M0-9@.3A9&'!C01/9&!-09&/-^!; 4M; /91: 0!9M4; 0^!3A!; 60: .9& 809A1.1B!1002; ?!

J#'-#,%+/'-!Q(+\$#)=#'-!W,#&->#'-!C#,./=#)

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I 3A/-09;/0A1!H9C.85!+1;/./4/0'!d)!`I H+!d)a!.;!9!6A.@9/0'!1316A3K./!9B01:5!/-9/!;0A@0;!d0AC31/!K9C.8.0;! >-3;0!:-.82A01!;/A4BB80!>./-!;0@0A0!0C3/.3198'!M0-9@.3A98!912!C01/98!-098/-!:-9801B0;?!)-0!C9b3A./5!3K!:-.82A01!>-3!:3C0!/3!I H+!-9@0!9!-.;/3A5!3K!13/!K41:/.31.1B!>088!9/!-3C0'!.1!;:-338!912!.1!/-0!:3CC41./5?!

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 $$A3K0;; .3198!: A.; .; !912!: 341; 08.1B!; 0A@.: 0; !/3!: -.82A01!912!9248/; p!; 4663A/.@0!; 0A@.: 0; !/3!.12.@.2498; !>./-!94/.; C!912!20@0836C01/98!2.; 9M.8./.0; !>-3!1002!-086!>./-!024: 9/.31^!0C6835C01/^!912!8.K0!C9.1/0191: 0!; E.88; p!: 341; 08.1B!912!C02.: 98!; 0A@.: 0; !K3A!/-3; 0!; /A4BB8.1B!>./-!; 4M; /91: 0!9M4; 0p!912!.1/01; .@0!.1/0A@01/.31; !K3A!9248/; !>./-!; 0A.34; !912!60A; .; /01/!C01/98!-098/-!: -98001B0; !$ 

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`[_Ta![PXD___!
)-0.A!C01/98!-098/-!;60:.98/.0;!A91B0!KA3C!34/69/.01/!:341;08.1B!K3A!:-.82A01!912!9248/;!912!/3!.169/.01/!
: 9A0!K3A!9: 4/0!C01/98!.8810;;!912!TP=X!:A.;.;!A0;631;0!;0A@.: 0?!%09A1!C3A0!9M34/!C01/98!-098/-!6A3BA9C;!
9/!/-0!Nd#!#02.:98!, 01/0A!
N1.@OA;./5!3K!dOAC31/!#02.:98!, 01/0A^!#01/98!L098/-!JOA@.:0;!
BIAIUE!H"Y<"U!
`[_Ta!PP[DV__F!
$A3K0;;.3198!:A.;.;!912!:341;08.1B!;0A@.:0;!/3!:-.82A01!912!9248/;p!;4663A/.@0!;0A@.:0;!/3!.12.@.2498;!>./-!
94/.: C!912!20@0836C01/982.: 9M.8./.0:!>-3!1002!-086!>./-!024: 9/.31^!0C6835C01/^!912!8.K0!C9.1/0191: 0!
; E.88; p!: 341; 08.1B!912!C02.: 98!; 0A@.: 0; !K3A!/-3; 0!; /A4BB8.1B!>./-!; 4M; /91: 0!9M4; 0p!912!.1/01; .@0!
.1/0A@01/.31;!K3A!9248/;!>./-!;0A.34;!912!60A;;/01/!C01/98!-098/-!:-98801B0;!
"+U&, (!J#' -#,!
SI_]\SS"!H]DY<[!_"Y<IS!B"IS<B!KSH_BM!
`[_Ta![[DQ_TV!
%9C3.880!, 341/5!#01/98!L098/-!6A3@.20;!:3C6A0-01;.@0!:3CC41./5!C01/98!-098/-^!:-.82A01^!K9C.85^!912!
60A; 31D: 01/0A02!20@0836C01/98!2.; 9M.8./5!; 0A@.: 0;?!
%9C3.80!, 341/5!#01/98!L098/-!
Y]U<B"18<!a\YTE]_!BD_1Y!8"UQ\H"8!KY"aB8M!
`[_Ta!XP[DFV[U!
&KKOA;!.1/080:/498!20@0836C01/98!2.;9M.8./51;4M;/91:0!4;0!912!3/-0A!C01/98!-098/-!Y!6;5:-.9/A.:!;0A@.:0;!
I 3A/-09;/!*.1B23C!L4C91!J0A@.:0;!`I *LJa!
Y]U<BA"8<"UY!a\YTE]_!BD_1Y!8"UQ\H"8!KY"aB8M!
` [_Ta!QTQDVQQPp!` [__a! [UPDXX]U!
`>#,@#'=?!)#,./=#!1+,!&'?+'#!#^%#,/#'=/'@!&!%)?=6/&-,/=!+,!#>+-/+'&$!=,/)/)!,#a*/,/'@!/>>#(/&-#!
&--#' -/+'
X+,-6U\#)-\#,'!J+*')\#\$/'@!\&'(!C*\%\%+,-!C\#,./=\#)!KXJCC0!
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## `[\_Ta!TT]D\_Q]F!

, A.;.;!; 0A@.:0;  $^1.9248$ /!C01/98!-098/ $-^1.20$ @0836C $01/98!912!:-.82^1.534$ /-!912!K9C.85!; 0A@.:0;! 0.98/0.98

H] DY8"S\YT!8"UQ\H"!] ^!I EE\8] Y!H] DY<[!KH8I HM!

## `[\_Ta!U[[DXVPF!

R0!3KK0A!9! > .20!A91B0!3K!6A3K0;; .3198!C01/98! -098/-!912!20@0836C01/98; 0A@.:0; !20; .B102!/3!/3!C00/!/-0! 1002; !3K!/-3; 0!; 00E.1B! -086?!N; .1B!9!C48/.D!

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H3A!C01^!9B0!F [DTT!AO/4A1.1B!KA3C!.1:9A: 0A9/.31!
J4CC0A!J/A00/!
`[_Ta!VTTD_TFF!#9.1p!`[_Ta!PXXDFUTF!#9A5!7110!&>01^!O.A?!
8\"UUI!B]D8"!K<UIY8\<\]YISMf!];"UI<"E!Z[!AI8B\YT<]Y!H]DY<[!__"Y<IS!B"IS<B!
J&N)L!G7(("!
U\8"R; B] "Y\b!B] D8"!K<UI Y8\<\] YI SM!
H3A!#01?!!7BA00!/3!: 341;08.1B?!0&, !;460A@.;.31!
Q[_!J34/-!G9AAO!(392!
`[ Ta!TQXDPVXX!
b-01g08 \times 6-301. -34; 0?3AB!
G"%%&RJ!H7%J!
U\8"R; B] "Y\b!B] D8"!K<UI Y8\<\] YI SM!
FF!N120A-.88!7@0?!
`[_Ta!TQXDPVXX!
b-01q08 \times 6-301. -34;0?3AB!
O&, !912!707$!.1K3AC9/.31!: 31/9: /!(3M.1!G982.108). [_Ta!PVUD] [QF!
G(7)%"G&(&!
U(8"R; B] "Y(b!B] D8"!K<UI Y8<[] YI SMX!^] U!__"Y!
PUQ!R0:/0A1!7@0?!
` [ Ta!TQXDPVXX!
b-01g08 \times 6-301. -34;0?3AB!
O&, !912!707$!.1K3AC9/.31!: 31/9: /! (3M.1!G982.1088.!` [_Ta!PVUD] [QF!
U(8"R; B] "Y(b!B] D8"!K<UI Y8(<)] YI SM!^] U!A] _ "Y!
FX[!%.1201!J/?!
`[_Ta!TQXDPVXX!
b-01g08 \times 6-301. -34;0?3AB!
O&, !912!707$!.1K3AC9/.31!: 31/9: /!(3M.1!G982.1088.!`[_Ta!PVUD][QF!
TU1 DYEA 1 Ua8!H1 SSI Z1 UI <\Q"!
H3A!R3C01!
`[_Ta!TQXD_VVV!\FF_]!
>>>?BA3412>3AE;@/?3AB!
GN(%+Ih)&I!
98<!8<";!KU"H]Q"U[!B]D8\YTM!
H3A!C01'113!C9.1/0191:0'!/>3!0&, !M02;!
XX!R9814/!J/?!
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`[\_Ta![TQDP]XXp!L34;0!\$-310</i>

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H3A!R3C01^!13!C9.1/0191:0^!F=U!O&,!:8.01/;!
PT!GA.B-/!J/?!
`]X[a!UUQDF[P[p!L34;0!`[_Ta!U]]DT_Q[!
O&,!Y!7O7$!.1K3AC9/.31!:98!(3M.1!G982.1088.!`[_Ta!PVUD][QF!\!VU]_!
!
Q"U__]Y<!^]DYEI<\]Y!]^!U"H]Q"U[!ZDUS\YT<]Y!B]D8"!KU"H]Q"U[!B]D8\YTM!
H3A!#01?!O&,!:8.01/;!983>02!
X]!%5C91!7@0?!`:3A1OA!3K!%5C91!7@0?!Y!$.10!J/?a!
`[_Ta!XUQDPUP_!
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(N)%710!
IYEISI!B]D8"!K<UIY8\<\]YISM!
H3A!>3C01?!!%31BD/OAC!/A91;./.3198!
[[!$9AE!J/AOO/!
`[_Ta!XXTDX[_T!
81 YH<D1 U[!B] D8"!
U_!R9; -.1B/31!J/A00/!
`[ Ta![QQD[ FQ!
OA.: C;91:/49A5×BC9.87:3C!
Tui h"!B] D8"!KU"H] Q"U[!B] D8\YTM!
UQ!R9; -.1B/31!J/A00/!
`[_Ta!PPVDTVP_!
E\8_ | 8!K<U| Y8\<\7 Y| S!B7 D8\YTM!
H3A!#01!Y!R3C01?!!, 3AA0:/.31;!
F U!$9AE!J/AOO/!
`[_Ta!XXQDQQU]!
J&N)L!GN(%+I h)&I!
Q"U_{1}Y<!^{1}DYEI<!^{1}I''=1
H3A!R3C01?!!0&, !:8.01/;!Y!#9.1/0191:0!983>02!
[T!J4M4AM91!Jn49A0!
`[_Ta!XUQDPUP_!
.1K3 \times @OAC31/K34129/.313KA0: 3@OA5?3AB!
J$(+I hH+"%0!
<DUY\YT!; ]\Y<!U"H]Q"U[!H"Y<"U!]^!8; U\YT^\"SE!K<UI Y8\<\] YI SM!</pre>
X!#3AB91!J/A00/!
`[_Ta![[QDPVV[!
;6A82/4A1.1B63.1/\times BC9.8?:3C!
J)?!7%G71 J!
Q"U_{1}Y<!^{1}DYEI<!^{1}I''=1
H3A!#01?!!O&, !:8.01/;!Y!#9.1/0191:0!983>02!
FUQ!%9E0!J/A00/!
`[_Ta!XUQDPUP_!
.1K3 \times @OAC31/K34129/.313KA0: 3@OA5?3AB!
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70d"(J"!, L+%OL&&O!"r\$"(+"I, "J!`7, "Ja!+J!)L"!)"(#!NJ"O!)&!
O"J, (+G"!7%%!)' \$"J!&H!7GNJ"^!I "h%", )^!7I O!&)L"(!\$&)"I)+7%"!)(7N#7)+,!"r\$"(+"I, "J!)L7)!&,, N(!)&!
\$"&\$\"!NI O"(!)L"!7h"!&H!F[?!7Od"(J"!, L+%OL&&O!"r\$"(+"I, "J!L7d"!G""I!

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\$"(J+J)"|)|+|)"(\$"(J&I 7%!\$(&G%"#J?!)L+J!)"(#!+J!+|, ("7J+| h%'!7d&+O"O!G'!\$(&H"JJ+&| 7%J!G", 7NJ"!+)! , 7! !\$"(\$")N7)"!J)+h#7?!, N(("I)!7\$\$(&\$(+7)"!)"(#J!+I, %NO"<!O(Nh!NJ"!`+I!)L"!, 7J"!&H!+%+, +)! JNGJ)71, "Ja^!O(Nh!#+JNJ"!`+I!)L"!, 7J"!&H!\$(&G%"#7)+, !NJ"!&H!%"h7%!O(NhJ!&(!\$("J, (+\$)+&I! #"0+, 7)+&I Ja!7I 0!700+, )+&I!`+I!)L"!, 7J"!&H!JNGJ)7I, "!NJ"!0+J&(0"(a!`Fa?! ļ L! **L7(#!("ON, )+&I** □ **L**7(#!("ON, )+&I !+J!7!J")!&H!\$(7, )+, 7%!J)(7)"h+"J!7I O!+O"7J!7+#"O!7)!("ON, +I h! I "h7)+d"!, &I J"wN"I, "J!7JJ&, +7) "O!R+) L!O(Nh!NJ"?!L7(#!("ON, )+&I !+J!7%J&!7!#&d"#"I)!H&(!J&, +7%! WNJ)+, "!GN+%)!&I !7!G"%+"H!+I ^!7I O!("J\$", )!H&(^!)L"!(+hL)J!&H!\$"&\$%"!RL&!NJ"!O(NhJ!`Pa?! LNG!71 OIJ\$&\*"!) ("7)#"1)!J'J)"#4LNG!71 O!J\$&\*"!+J!d"(#&I)ZJJJ'J)"#!&H!#"O+, 7)+&I!7JJ+J)"O! )("7)#"I)<sup>1</sup>JN\$\$&()+I h!\$"&\$%"!+I!(", &d"('!H(&#!&\$+&+0!NJ"!0+J&(O"(?!I+I"!("h+&I7%!LNGJ!&HH"(! 07+%'!JN\$\$&()!H&(!\$7)+"I)J!R+)L!, &#\$\%"r!700+, )+&IJ?!7)!&d"(!VP!\%, 7\%!J\$\%\*"J^\!0\%, )&(J^\!IN(J"J^\!71IO!) , &NI J"%&(J!&HH"(!&I h&+I h!&\$+&+0!NJ"!0+J&(0"(!)("7)#"I)!HN%'!+I)"h(7)"0!R+)L!h"I"(7%! L"7%)L, 7("!7I 0!R"%I "JJ!J"(d+, "J?!)L+J!H(7#"R&(\*!"HH+, +"I )%'!0"\$%&'J!&\$+&+0!NJ"!0+J&(0"(!"r\$"()+J"! 7I O!L"%\$J!"r\$7I O!7,, "JJ!)&!&\$+&+O!NJ"!O+J&(O"(!)("7)#"I)!H&(!d"(#&I)"(J!`Qa?! ļ ŦĮ. **+I W", )+&I !O(Nh!NJ"!`+NO**2<) L"!7, )!&H!7O#+I +J)"(+I h!O(NhJ!G'!+I W", )+&I ?!G%&&OB&(I"!d+(NJ"J^!%+\*"! L+d!

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, , &7 < 1, L+))"10"1!, &N1)'! & +&+0!7\%+71, "!
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                                                                                            7/891/.: '!I 3@OCMOA!TV'!T_FV?!!(0/A.0@02!#9A: -!U_'!T_FX!KA3C!
                                                                                            -\frac{1}{6} : = > > \frac{1}{0.00} = > > \frac{1}{0.00} = -\frac{1}{0.00}  ļ
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