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$%
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                                                                                                                                                                                                              &
ļ
                                                                                                              "#$%&!' ()$*!+%$, -.*$&/!
                                                                                         01(.2#%!3#45!67-(4(8/!9-: #.&; -\&!
                                                                                                                   <=>>!' $%1-4!?4, 1@
                                                                                                            "#$%&!' ()$*A!BC!D<E>F!
                                                                                                 -; $4/@1); 4-.G$%HI4-.J *4)@1)!
"!"#$%&'(#!!
M. (8.#; !(N!O-4$8$(%!#%1!"(H$-&/!!
K>>P5!! 67@B@!M.$%H-&(%!67-(4(8$H#4!"-; $\\#./!
                      O-4$8$ (%A!Q&7$H*A!M (4$&$H*!!
                                                                                                        !
K>>R5!! B@9$, @M.$%H-&(%!67-(4(8$H#4!"-; $\%#./!!
                      B(.#4!67-(4(8/!
K >> E5!! ?@O@! + \%, -.* \%/! (N!S#*7$\%8\&(\%!))
                     T#HI*(%!"H7((4!U%&-.%#&$(%#4!"&)1$-*!#%1!O-4$8$(%!
$)' *+,,&' ($-.%//'&(%O+(%,#!
                                                                 O**$*&#%&! 9$.-H&(.! (N! &7-! O-*-#.H7! W-%&-.! N(.! W) 4&).-A! O-4$8$(%A! Q&7$H*A!
K>KK!V!: .-*-%&5!!
                                                                 "H$-%H-A!#%1!6-H7%(4(8/!XWOQ"6YA!"#$%&!' ()$*!+%$, -.*$&/!X"' +Y!
K>K<V: .-*-%&5!!
                                                                 O^{**}(H_{8}^{*}-I_{8}^{*}) \cdot I_{8}^{*} - I_{8}^{*} \cdot I_{8}^{*} 
K>ERVK>K<5!
                                                                 K>EDVK>E=5!!
                                                                 67-(4(8/! M(*&V1(H&(.#4! O-*-#.H7! O**(H$#&-! G$&7! &7-! W-%&-.! N(.! 67-(4(8/A!
                                                                 "H$-%H-A!#%1!3); #%!Z4().$*7$%8A!+%$, -.*$&/!(N![ (&.-!9#; -!
ļ
$&'()*%+), -.#!!
/ 010234567#!!
ļ
                     K>KK5
                                                                                                     5!
                                                                                                                                                                                                                             XC\N(.1!+\%, -.*\%/!!
                                           ļ
                                                                 M.-**Y!
ı
                     ļ
                                           O-, S-G*5!
                                                                            "/; : (*$); !G$&7!B#1-4$%-!W.(%$%A!W(%*&#%H-!Z).-/A!"&#%4-/!3#)-.G#*A!
                                                                           W#%1#H-! T(.1#%A! 67(; #*! O@! '-G$*A! #%1! 6-1! "; $&7! $%!
                                                                           XN(.&7H(; $\%8\forall \text{!}
                                                                           O-, $-G!-**#/!]/!' (.$!M-#.*(%!N(.!&7-!XN(.&7H(; $%8Y!
                                                                           O-, $-G!-**#/!]/!6#/4(.!C&&!N(.!&7-!
                                                                                                                                                                                                                                               XN(.&7H(; $\%8\!
                                                                            O-, S-G-1!]/!"7#%%-O.3(.)-O.5(!&)O.1.24O6O8O.24[%!N(.!
```

O-*-#.H7\$H*!¥

```
  K>EP5! \quad aM. (\&-*\&\#\%\&!M (4\%\$H\#4!67-(4(8/!\#\%1!M4).\#4\$^*; 5!Z.(; !\#!M (4\%\$H^*!(N!O-N)^*\#4!\& (!6-\%1\$\%8!) ) ) ) ) ) ) 
ļ
              #%1!C.8#%$_$\%8!N(.!W(;; (\%!^\((1*c! !, (4\!e!E>\!e!"-: \%!E>A!EVE=\!e!"
       ļ
              a[#&).-c!#%1!aS(.*7$:cY! A!, (4@L<@FA!! PREVPPE@!
İ
       K>E=5!! !a9$*&$%8)$*7$%8!U%&-44-H&)#4!#%1!B(.#4!b$.&)-*!$%!"H$-%&$\$H!M.#H&$H-c!
                                    !, (4@L@EA!=>VE><@!
ļ
       K>E=5! aM-.*(%#4!O-*: (%*$]$4$\!$%!\&7-!Z#H-!(N!'\&.)H\&).#4!Q,$45!6.#%*H-%1-%\&#4$*\&!9-]#\&-*!
              O-H(%*$1-.-1c!
                                                               A!, (4@<=@EA!": .$%8f");; -.@!
İ
       K>E=5! aW#\%!^-\%)*!]-!6#)87&hd5!Q; -.*(%d*!^-\%)*!#%1!&7-!\b$.&)-!(N!''-4NV6.)*&c!
                              , (4ªFRŒA!EVERª!
İ
       K>ER5!! a67-! b$.&) -! (N! Q; -.* (%d*! U; $&#&$ (%! (N! W7.$*&5! O-N4-H&$ (%*! N. (; ! S$A$#; ! Q4-./!
              W7#%$\%8!&(!T(7\%!\?.(G\%!
```

```
      !
      K>ER5!!
      6-1!O@'';
      $&7A!
      @X''&#%N(.1A!WOA!!

      !
      !
      "&#%N(.1!+%$, -.*$&/!M.-**A!K>ELYA!
      A!, (4@RFXKYA!::@K>FVK>L@!

      !
      K>ED5!!
      "$A, $#! ''-]#*&$#%$@!
      !

      !
      XQ%84#%15! M#48.#, -! B#HB$4#%A! K>E<Y@!</td>
      !
      @, (4@EFXKYA!::@

      !
      K>=VKEE@!
      !
      .
```

```
K>EF5!
               W-%-.!N(.!67-(4(8$H#4!U%n)$./5!S(.I*7(:!(%!O-4$8$())*!Q\:-.$-%H-!#%1!B(.#4!U1-%$$/@
K>E>5!
                                                      5!M7$4(*(:7/A!O-4$8$(%A!M(4$&$H*!");;-.!M.(8.#; @!
K>E>5!!!
                `)/:-.!O-*-#.H7!Z-44(G*7$:!OG#.1!!
K>>P5!!!
               M.$\%H-&(\%!+\%, -.*$\&/A!W-\%e-.!N(.!&7-!"&)1/!(N!O-4$8$(\%A!O-*-#.H7!Z-44(G!!))
               M.$%H-&(%!67-(4(8$H#4!"-; $\%#./A!B-.\&!6)\$\$(\%!\H7(4\pi.\*7\$:!
K>>PVK>EF!
!!
               M.$%H-&(%!67-(4(8$H#4!"-; $%#./A!9(H&(.#4!Z-44(G*7$:!
K>>=5!!!
                ^{.}\#1)\#_{-}!"_{8})1/!Z-4(G^{*}7_{5}:!N(.!M\#._{7}!M)4:_{8}!B_{5}%_{8}./5!N)_{1}_{8}!N(.!\#!/-\#.!_{5}%!^{)}\#_{8}-;_{4}\#!
$C"."-+%+), -.#!!
*01|>3>1=>7#!!
K>KF5!! a3); #%!#%1![ (%V7); #%!Z4().$*7$%85!U; :#&$-%&!M#&$-%H-!N(.!Z)&).-!^-%-.#&$(%*c!
        W(44-8\$); !U%*\$\$\&)\&-d*! B#8\$!M.(2-H\&!N(.!"H\$-%H-A!M7\$4(*(:7/A!#%1!67-(4(8/A!M7\$4#1-4:7$#@!
K>KF5!! a3): $4$\\/!#%1!U\%\-4\-H\\)#4!3): $4$\\/c!
                                                                          A!"#%!9$-8(@
K>K<5!! O-*: (%*-!&(!: #%-4!(%!: /!]((15!M#%-4!&$4-5!aQ: $4/!9): 4-.VS$$\H14-.\alpha*!B(1-.\&!\b$.\&)-5!\B#./!
        S (44*&(%-H.#N&!#%1!#!6.#1$&$(%!(N!9$**-%&!XC\N(.1!+%$, -.*$&/!M.-**A!K>KKYC![$%-&--%&7!
        W-\%)./!67-(4(8/!+\%\\\)!OOO!\\\"#\%!O\\\\\(\%\(!\)
K>K<5!! O-*: (%*-!&(!T-NN!?$*7(:d*!]((I!
                                                                    !XK>KKYA!" (H$-&/!(N!!W7.$*&$#%!
        Q&7$H*A!W7$H#8 (@!
K>K<5!! !aO] (4$&$(%!#%1!' #G5!b$*$(%*A!U; #8$%#&$(%*A!#%1!9.-#; *!67-%!#%1![ (Gc!''(H$-&/!(N!
        W7.$*&$#%!Q&7$H*A!W7$H#8(@!
K>K<5!! aU; $&#&$(%A!Q\-; : 4#.$&/A!#%1!3#]$&c!G$&7!&7-!: #%-4!
                     @''(H$-&/!(N!W7.$*&$#%!Q&7$H*A!W7$H#8(@!
K>KK5!! a67-(4(8/!#%1!&7-!M$$87&!(N!&7-!3); #%$$-*!$%!&7-!B(1-.%!+%$,-.*$&/c!$%, $&-1!: #%-4$*&!N(.!#!
        .()%1&#]4-!1$*H)**$(%A!"H74-$-.; #H7-.!+%$&A!OOOA!9-%,-.A!WC@!
K>KK5!! aQ&7$H*A!67-(4(8/A!#%1!M(4$&$H*!$%!&7-!''&)1/!(N!O-4$8$(%c!N(.!&7-!:#%-4!
                          !XOOOfC+M!"-.$-*Y!OOOA!9-%, -.A!WC@!
K>KK5! aB(1-.%!b$.&)-5!&7-!M.(2-H&!#%1!M)]4$H#&$(%c!G$&7!&7-!:#%-4!
        $%!&7-!000f"?'!S(; -%d*!W#)H)*!000A!9-%, -.A!WC@
K>KK5! !aB(1-.%!b$.&)-5!O)&7(.!B--&*!W.$\$H*c!Q).(: -#%!OH#1-; /!(N!O-4\$\$(%A!?(4(8\#A!U&#4/!
       XI.)%-A@i
K>KK5!! U; $&#&$%8!&7-!W.$; $%#4!W7.$*&5!O::-#4*!&(!e&7-!3); #%d!$%!#%!O%&-V]-4); !O; -.$H#%!!
        6.#1$&$(%!(N!W$,$4!9$*(]-1$-%H-c!:#%-4!aO-4$8$(%!#%1!&7-!3); #%d!$%!Q&7$H*!#%1!O.&c!
        Q).(:-#%!OH#1-; /!(N!O-4$8$(%A!?(4(8%#A!U&#4/!XT)%-Y@!
K>KK5!! a
                        5! O)8)*&$%-! #%1! S (44*&(%-H.#N&! &(G#.1! #! M4).#4$*&! Z-; $%$*; c! G$&7! &7-!
        O)8)*&$%-!#%1!M4).#4$*; !W(%N-.-%H-A!\;\b$\/4\#\%(,#!+\%$,-.*\&\/!\\$\%,\$\&-1\Y
```

 $\label{eq:K-KE5!} \text{K-KE5!! aB(\%)}; \ -\% \text{**!} \# \% 1! \text{W(.\%-.*&(\%-*c!N(.!\#!:.-V.-H(.1-1!:\#\%-4!(\%!)))}$

67-(4(8\$H#4!O%&7.(: (4(8/!#%1!!

K>>P5!!!

3); #%!C.\$8\$\%*!X6O3CY!

```
V
V
M--.!.-, $-G!(N!; #%)*H.$: &*!N(.!#H#1-; $H!:.-**5!!
V W#; ].$18-!+%$, -.*$&/!M.-**!XK>KKA!K>K<A!K>KFY!

K>KFVK>K=5! B-; ]-.!(N!&7-!'-#1-.*7$:!?(#.1!N(.!&7-!

K>K<VK>KF5! B-; ]-.!(N!&7-!-1$&(.$#4!](#.1!N(.!&7-!

!
K>E=V:.-*-%85! W(V
```

```
O; -.$H#%!O**(H$#&$(%!(N!+%$,-.*$&/!S(; -%!
Z-44(G*7$:!N(.!M.(&-*&#%&!Q&7$H*!
!
```