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!!
                   ! "#$%&'()*+, " - - . /0$1+2)'3$%+,30/04+
                                  5!6+
!
              7888888888888888888888888888888888888
                              "#$%&! ' ()$*&)+,!
                                                                        !!
                                                                        !!
                                                                        !!
                                                                        !!
                                                                        !!
                                                                        !!
                 :;:<=5!6>:+<?+>!6;=@A5!6B!C+'/D+
                        A : = : @+<?+=:?:=:!, :+"E+
                       F = \langle G; A + F5 = A! : = @2BF + E"#+
                   A2;+,5H, 2+@5?;AI+F&5!+F=<G;,A+
                   : ; : <=5!6>:+<?+>!6;=@A5!6B!C+
F5=AB;@+
   -.! ! "#$%&'()*+," - -./0$1+2)'3$%+,30/04!
   6321&$782394(*78$):6$8;)3:4<!"=$%)+F'#$/)#=,!
    ++
LM
      F = \langle G; A+N5, OC = \langle F | 6+5 | 6+F \rangle = F \langle 0; +F \rangle
          A%)+F#"P)4$+F.#Q"*)>!?3!2)&($&!@&$$&)!3:$239&6!A3)!4()$1214(*$6!@7!
    2)&($1*;!(*5!A(2181$($1*;!$%&!6%()1*;!3A!4()$1214(*$!6(A&$7!4B(*6!:61*;!$%&!3*81*&!
    676$&9!A3)!6$3)(;&!(*5!)&$)1&C(B!2)&($&5!@7!$%&!D1623*61*!E$($&F15&!G&(B$%!
```

H*A3) 9 (\$13*! I &\$F3)J!" DHEGH I ,!F1\$%!\$%&!K%&L: (9 & ; 3*!M223: *\$(@B&>!\$%&!K3 9 9: *1\$7!A3)!G&(B\$%!"KM\\$KG,!F3)J;)3:4.!

"@, R "#(S#".Q+=)4" - -)/D'\$0"/>!\$%&!D3)J;)3:4!)&2399&*56!\$3!\$%&!

- 0.18!416 (6! - 0.18,416 (6! - 0.18J' (**6)(18:65)).(8753**\$%&(6**!(-))(18**6@(+) **)\$&3\$\$\$7(5)\$%&6 (\63:43.2\$?!6) *3\$\!(()2%)1&()9 @#2!3))(16:162)(16:163)(1**

- 5.! b (2%! ' ()\$7\$!\$3!\$%&!&X\$&*\$!B&; (B7!4&) 9 1661@B&\$!F1B!1*5& 9 *1A7! (*5! %3B5!%() 9 B&66!KM\\$KG\$!1\\$6!3AA12&)6! (*5!51)&2\\$3)6\\$! (*5! (*7!3\\$%&)!

 Q& 9 @&)6!" (6!5&A1*&5!1*!\\$%&!KM\\$KG!V7_N(F6,!(;(1*6\\$!(B!B!(@1B)\\$\&6! ()161*;!A)3 9 !\\$%1)5!4()\\$7!2B(19 6\\$!1*2B:51*;!\\$%)&(\\$&*&5!B\\$1;(\\$13*\\$!))&B(\\$1*;!\\$3\\$!!"(,!\\$%(\\$!'()\\$7R6!(2\\$6!3)!3 9 16613*6!)&B(\\$1*;!\\$3!\\$6!

 4()\\$1214(\\$13*!1*!\\$%&!M223:*\\$(@B&!K3 9 9:*1\\$7!3A!G&(B\\$%!1*!M6\\$(*5!(*5!V(7A1\\$B5!K3:*\\$1\&6!"MKG,[!(*5!"@,!(*7!(2\\$6!3)!3 9 16613*6!3A!(!c1)\\$2\\$3)!3)!TAA12&)!F\\$&*!(2\\$1*;!3*!@&%(BA!3A!\\$\\$\\$!'()\\$7!(*5!*3\\$!(6!(!9 & 9 @ & 9) @ & 1)\\$3\\$\\$\\$\\$\\$\\$!V3()5.!!!
- /.! , " Q31+U0\$%+D) 40*0" / *+"E+ , 5H\$, 2+N" '#DH+E : @ 9 1\$!\$3!\$%&! (: \$%3)1\$7!3A!\$%&!

 KM\\$KG!V3()5! (*5!23 9 4\b7!F1\\$%!5&21613*6!3A!\\$%&!KM\\$KG!V3()5\\$!F\\$12\\$!16!1*!

 \$:)*!;3C&)*&5!@7! (*5!5&)1C&6! (: \\$%3)1\\$7!A)3 9! I 3)\\$\%(J&6\\$!F1\\$\%!)&64&2\\$!\\$3!

 166:&6!)&\\$(\\$1*;!\\$3!\\$\&!MKG.!
- \.!;])4.\$)+'/D+4" Q31+U0\$%+RB@2B!+G"0/D)#+5\$#)))/\$H+bX&2:\$&!(!2347! 3A!(*5!2394b7!F1\$%!\$%&!DHEGHI!d31*5&)!M;)&&9&*\$!"(\$\$(2%&5!(6!bX%1@1\$!b! \$3!\$%&!N191\$&5!M22&66!(*5!U6&!M;)&&9&*\$!A3)!KM\\$KG!"#N191\$&5!M22&66! M;)&&9&*\$+,!"\$%&!N191\$&5!M22&66!M;)&&9&*\$!16!(\$\$(2%&5!%&)&\$3!(6! E2%&5:B&!\,\$!1*2B:51*;!(*7!(9&*59&*\$6!\$3!\$%&!N191\$&5!M22&66! M;)&&9&*\$\$!(*5!\$3!@&!A(91b!()!F1\$%!\$%&!3@b!;(\$13*6!6&\$!3:\$!1*!\$%&!N191\$&5! M22&66!M;)&&9&*\$\$!(*5!\$3!@&!A(91b!()!F1\$%!\$%&!3@b!;(\$13*6!6&\$!3:\$!1*2B:5&!"@:\$!()&!*3\$! B191\$&5!\$3,!\$%36&!3@b!;(\$13*6!23*\$(1*&5!1*!KB(:6&!\./!3A!\$%&!N191\$&5!M22&66! M;)&&9&*\$.!!
- W.!; /*.#)+4" Q30'/4)+U0\$%+2BF55T+R0*4"/*0/+3'U+'/D+?)D)#'33'U>!
 b*6:)&!\$%(\$!\\$!(*5!(*7!3A!\\$6!&94B37&&6!(*5!(;&*\\$6!:6&!\\$%&!DHEGHI!
 676\\$&9!(*5!4()\\$1214(\\$&!1*!(*7!3A!\\$%&!(66321(\\$&5!F3)JAB3F6!1*!(!9(**&)!\\$%(\\$!
 2394B1&6!F\\$%!(44B12(@B&!B(F6\\$!1*2B:51*;!GH'MM!(*5!(*7!)&B&C(*\\$!E\\$(\\$&!(\$&!(*5!e&5&)(B!B(F6)!))))))))))

```
^M+ &0'V030$1+0/*.#'/4)H+b(2%!'()$7!F1BB!9(1*$(1*!1$6!3F*!B1(@1B1$7!23C&)(;&!"$3!
   $%&!6($16A(2$13*!3A!$%&!V3()5!3A!KM\$KG,!3*!@&%(BA!3A!1$6&BA!(*5!1$6!(;&*$6!
   $\(\$!23C&\)6!(\*5!\*6:)\&6!\$6!(2\$C\$\&6!\*!23\*\*&2\$\3\*!F\$\\!2)\&(\$\*;!(\*5!:6\*;!
   E(A&$7!'B(*6$!(*5!(B!3$%&)!(2$6!(*5!3916613*6!:*5&)$(J&*!1*!)&B($13*!$3!
   KM\$KG\$\$\16!QTU\$\$\16!')3\\&2\$\3\\8\\14\3\\&2\$6!\\\$(\$1*;\$3\\KM\$KG\$!
    13)$\%(J&6\$!D\HEG\|I.+
^.! ;Y'3.'$0"/H+M6616$!F1$%!$%&!A3B3F1*;!5($(!23B&2$13*!(*5!&C(B:($13*>!
       (.! f:()$&)$7!5($(!23B\&2\$13\*!3\!KM\$KG!'\B(\*!\$\((\$!16!23\)\&2\$\&5!\@7!
           DHEGHI!': B6&!(*5!KM\$KG!'\B(*!'3)\$(\B.!?\)16!5(\$(!\9 (7!\1\cdot 2\B: 5\&\cdot)!)
                 H5&*$1A12($13*!3A!A(21B1$($3)6!(*5!C1&F&)6[!
            11.!
                 48(*6!2)&($&5[!
            111.!
                 4B(*!(2$13*68:6&[!(*5!!
            1C.!
                4()$1214(*$!5&93;)(4%126.!
       @.! c ($(!K3882$13*!)&8($1*;!$3!KM\$KG!'8(*!b*;(;&9&*$!*3$!23882$&5!
           @7!$%&!DHEGHI!E76$&9!(6!15&*$\A1&5!@7!$%&!D3)J;)3:4!(6!&66&*$\(6!)
          $3!&C(B: ($1*;!6:22&66.!?%16!9 (7!1*2B:5&>!!
             1.! 4B(*!5&@)1&A6[!
            11.!
                @(6&81*&!2)1616!5($([!
            111.!
                A1*(*21(B!194(2$[!(*5!
            1C.! 43B127!(*5!4)32&5:)&6.!
g.! @.QQ"#$H!')3C15&!(BB!)&(63*(@B&!6:443)$$!1*A3)9($13*$!9($&)1(B6!(*5!
```

(6616\$(*2&!\$3!&*(@B&!1\$!\$3!9&&\$!1\$6!3@B1;(\$13*6!:*5&)!\$%16!QT

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'QQ"0/$)D+ V1+ 'S#)) - )/$+ "E+ ,5H$,2+ '/D+ $%)+ F'#$0)*T+ + U0$%+ $%)+ $0$3)*+ '/D+
#) *Q" / *0V030$0) *+' *+/ "$) D+V)3" UH+
           -.! D3)J;)3:4!N&(5>!
                  ?%&!D3)J;)3:4!N&(5!6%(B>!
                  M.! 9 (*(; &!$%&!'()$7\\6!4()\$12\!4(\$13*!\*!\$%&!KM\$KG!'\\B(*!4)3\\82\$[!
                  V.! 15&*$\text{147}! DHEGH I!: 6&)6\text{8}!A(2\text{1B}!\$(\$3)6\text{8}!(\*5!\$\\&!\&C(\text{B}: (\$3)[!
                  K.! &*6:)&!4()$\!2\!4(\$\!*;\!6\$(\A\!\%(C&!2394\\&\$\&5!\$)(\!*\!*;\[!
                  c.! &*6:)&!2394b!(*2&!F1$%!(B)!DHEGHI!(*5!KM\$KG!(;)&&9&*$6[!(*5!
                  b.! 4()$1214($&!F1$%!4()$*&)!(;&*21&6!1*!5&@)1&A6!(A$&)!4B(*!:6&!F%&*!
                      (44)34)1($&.!
                     ļ
           /.! bC(B: ($3)!
                  ?%&!bC(B: ($3)!6%(B!@&!$%&!431*$!4&)63*!)&643*61@B&!A3)!23B&2$1*;!(*5!
                  )&43)$1*;!L:()$&)87!(*5!(**:(8!&C(8:($13*!9&(6:)&6!A3)!KM\$KG!(*5!
                  V&&J&&4&)6.!?%&!bC(B: ($3)!6%(B!4()$1214($&!1*!$%&!KM\$KG!'B(*!
                  bC(8: ($3)!$) (1*1*;!(*5!($\&*5!D3)J;)3:4!9 &&\$1*;6!)&\B(\$1*;!\$3!
                  &C(B: ($13*!3A!$%&!KM\$KG! 'B(*!')3P&2$.!!
           \.! e(2181$($3)"6,!
                  ?%&!e(2181$($3)"6,!6%(Bb>!
                  M.! 15&*$1A7!(*5!;:15&!4()$1214(*$6!$%)3:;%!$%&!KM\$KG!'B(*!(*5!ZT\|[!
                  V.! 4()$1214($&!1*!KM\$KG!'\B(*!e(2\B1\$(\$3)!?)(1\*1\*;[!(*5!
                  K.! 4()$1214($&!1*!5&@)1&A6!(A$&)!4B(*!:6&!F1$%!4()$*&)!(;&*21&6!F%&*!
                      (44)34)1($&.!!
                   ?%&!e(2181$($3)"6,!9(7!(863!@&!$%&!DHEGHI!U6&)8j1&F&)"6,!
          W.! DHEGHI!U6&)8 j 1& F&)"6,!
              ?%&!DHEGHI!U6&)8j1&F&)"6,!()&!$%&!(:$%3)1]&5!:6&)6!3A!$%&!DHEGHI!
               ':B6&!(*5!$%&!KM\$KG!'B(*!'3)$(B.!!?%&!DHEGHI!U6&)8j1&F&)"6,!6%(B\\:
                         M.! 2)&($&!4()$1214(*$!)&23)56[!
                         V.! U483(5!*&F!(*5!)&C16&5!48(*6[!
                         K.! 2(*2&B!4B(*6!($!4()$1214(*$6R!)&L:&6$[!(*5!
```

 $c.!\ 4\,(\,)\$1214\,(\,\$\&!1\,^*!5\&@\,)1\&A6!\,(\,A\$\&\,)!4\,B\,(\,\,^*!\,:\,6\&!\,F\,1\$\%!4\,(\,\,)\$\,^*\&\,)!\,(\,\,;\,\&\,^*21\&6!\,)$

@BC!; 6+5!6+5C=;; 6+NI+A2;+F5=AB; @H+

e:BB! I (9&!3A!'()\$7!	!	
M:\$%3)1]&5!E1; * (\$3)7!	!! -	!!
1 (5 td 0,:		
M:\$%3)1]&5!E1; * (\$3)7! E1; * (\$:)&"6,!	!!	!!
' 361\$13*!!	!!	!!
	!	!
c (\$&!	"!!	!!

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e:BB! I (9&!3A!'()\$7!	++	
M:\$%3)1]&5!E1; * (\$3)7! I (9&"6,!	!!	!!
M:\$%3)1]&5! E1; * (\$:)&"6,!	!!	!!
' 361\$13*!&.;.! K3991\$\$&&!9&9@&)!	!!	!!
c (\$&!	!!	!!

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$$R "#(S#" . Q+A)# - *+"E+=)E)#)/4)+$$

!!

A0\$3)H+ KM>\$KG!D3)J;)3:4!

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- -. D3)J;)3:4!_!K394361\$13*!(*5!M4431*\$9&*\$!
- -.- , " Q" *0\$0" />!?%&! D3)J;)3:4!6%(B!2394)16&!3A!9&9@&)6!(6!A3B3F6>!

- M.! ?%36&!436\\$13*6!5&62)1@&5!1*!KB(:6&!Y.-!3A!\$%&!QTU\$!&(2%!\$3!@&!5&215&5! @7!(;)&&9&*\$!@7!\$%&!'()\$1&6[!(*5!
- V.! M6! 9 (*7!A:)\$%&)!4361\$13*6!(6!()&!)&L:1)&5!\$3!(2\$!(6!)&4)&6&*\$(\$1C&6!3A! &(2%!'()\$7!"(\$!B&(6\$!3*&!)&4)&6&*\$(\$1C&!A)39!&(2%!'()\$7!)&L:1)&5,.!
- K.! T\$%&)!)&4)&6&*\$(\$C&6!(6!D3)J;)3:4!9&9@&)6!5&&9!*&2&66()7.!
- -./ ,%'/\$)*+\$"+#)Q#)*)/\$'\$0Y)*>!M!'()\$7!9(7!2%(*;&!1\$6!)&4)&6&*\$(\$1C&!3*!\$%&!

"@, \$%&!D3)J;)3:4!16!*3\$1A1&5!@7!(!'()\$7\$!\$%(\$!\$%&7!F16%!\$3!2%(*;&!\$%&1)!)&4)&6&*\$(\$1C&.!

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$3!(2$!1*!;335!A(1$%!(*5!1*!$%&!@&6$!1*$&)&6$6!3A!$%&!D3)J;)3:4!(*5!$%&!
           '()$1&6!($!(B!$19&6!(*5!1*!(223)5(*2&!F1$%!$%&6&!?&)96!3A!Z&A&)&*2&[!
                 $3!:6&!%16!3)!%&)!@&6$!&M3)$6!$3!23*6:$$!(*5!J&&4!:4!$3!5($&!F1$%!$%&!
           '()$7!%&86%&!)&4)&6&*$6!$3!&*6:)&!%&86%&!16!)&4)&6&*$1*;!$%&!'()$7\\6!C1&F6!$3!
          $%&!@&6$!3A!%168%&)! (@181$1&6[!
          "5.
                 $3!)&43)$!@(2J!$3!$%&i)!'()$7!3*!J&7!5&2i6i3*6!(*5!4)3;)&66!9(5&!@7!
          $%&!D3)J;)3:4[!
                 $3!4)&4()&!A3)! 9 &&$1*; 6!@7!)&(51*;!(*5!23*615&)1*;!$%&!
          4(4&)689($&)1(86!6&*$!1*!(5C(*2&!3A!$%&!9&&$1*;6[!
                 $3!F3)J!23B(@3)($1C&87!F1$%!$%&!3$%&)!9&9@&)6!3A!$%&!D3)J;)3:4!(*5!
          $3!23 9 9 : *12 ($&! ( *5!&* ; ( ; &!A)&L : & *$7$!34& *B7! ( *5!%3 *&6$7!F1$%!$%&!
          3$%&)! 9 & 9 @ &)6!3A!$%&! D 3)J;)3:4[!
                 15&*$\A7!(*7!)&(\B!3)!4&)2&\1C&5!23*\AB\2$\!3\A!\1*$&)&6$\.!!?\\&!)&9(\1*\1*;!
          9 & 9 @ & )6!3A!$%&! D 3)J;)3:4!6%(B!23*6!5&)!F%&$%&)!$%&!23*AB12$!3A!1*$&)&6$!16!
           9 ($&)1(B!(*5!1A!1$!16$!$(J&!F%($&C&)!(2$13*!1$!23*615&)6!*&2&66()7!)&B($1*;!
          $%&)&$3[!(*5!
                 J&&4!23*A|5&*$|(B!(*5!*3$!5|62B36&!":*B&66!)&L:1)&5!@7!B(F,!(*7!
          "1,
          K3*A15&*$1(B!H*A3)9($13*!)&B($1*;!$3!$%&!D3)J;)3:4.!!
           M:$%3)1$7!!
            6)40*0"/+-'(0/$>!!H*!:*5&)$(J1*;!4)3P&2$$!$%&!D3)J;)3:4!6%(\(\)!%(C&!$%&!
     (:$%3)\$7!$3!9 (J&!5&2\6\3*6!(*5!5&$&)9\1*($\13*6\$\1*2\B:5\1*;>!
          "(,
                 (B$&) ($13*6!$3!4)32&5:)&! (*5!F3)JAB3F!
          "@,
                 (B$&)($13*6!$3!4B(*!B(*;:(;&!
          "2,!!!!!!($\&)($13*6!$3!$)(1*1*;!
          "5,!!!!!!2%(*;&6!$3!$%&!6234&!3A!&C(B:($13*!
@BC!;6+5!6+5C=;;6+NI+A2;+F5=AB:@H+
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W

W. -

e:BB! I (9&!3A!'()\$7!	++	
M:\$%3)1]&5!E1; * (\$3)7! I (9&"6,!	!!	!!
M:\$%3)1]&5! E1; * (\$:)&"6,!	!!	!!
' 36 \$13*!&;! K399 \$\$&&!9&9@&)!	!!	!!
c (\$&!	!!	!!

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@ , 2 ; 6 > & ; +J+[+ , 5 | \$, 2 + N | [& 5 | R @ +

+W'\$\$'4%)DX+

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