## ! ''#\$%&'#(&'()'\*+,'),#\$-,.'/'#(0,!/-, 12&')/,3433,

15\$-6''0-7! "#\$%&'!(!) \*%\$\*+%&'!,-,./0-.1!2 "!
8&%9-\*\*%&-!34\*5&\$%6&!78\*9\*4!!
:99'5-,;%''&\*-!) \*%\$\*+%&'+!::/:;<=!#6!>'!&;;#8\$?<\*\$?!!
<=+('0-!&4\*5&\$%6&@+8\*9\*4 A B#4#6&%#@\*%C!!

>%''&\*-,:?-&?'-@7.,

DE8+!B#C6+\*!\*5; 4#6\*+!E#F!BE&\$9\*+!8\$!8\$G#6<&?8#\$!B#< < C\$8B&?8#\$!?\*BE\$#4#98\*+!HI J D+K L 8\$B4C%8\$9!?E\*!8\$?\*6\$\*?=!+#B8&4!<\*%8&e!<#>84\*!; E#\$\*+=!&\$%!>89!%&?& L E&M\*!+E&; \*%!; #48?8B+!8\$! &C?E#68?&68&\$!6\*98<\*+0!DE8+!B#C6+\*!F844!\*5&<8\$\*!E#F!9#M\*6\$<\*\$?+!&\$%!\$#\$+?&?\*!&B?#6+!C+\*!%898?&4! ?\*BE\$#4#98\*+!?#!<&\$8;C4&?\*!&\$%!+C6M\*84!?E\*!;C>48B=!&+!F\*44!&+!E#F!&B?8M8+?+!&\$%!\*M\*6'%&'!B8?8N\*\$+! C+\*!?E\*+\*!?##4+!?#!#69&\$8N\*!&\$%!<#>848N\*0!7?C%\*\$?+!F844!>\*!8\$?6#%CB\*%!?#!BC??8\$9/\*%9\*!6\*+\*&6BE!#\$! ?E\*!6#4\*!#G!+#B8&4!<\*%8&!8\$!&C?E#68?&68&\$!;#48?8B+=!FE84\*!4\*&6\$8\$9!E#F!?E8+!F#60!8+!96#C\$%\*%!8\$! 4#\$9/+?&\$%8\$9!?E\*#68\*+!8\$!?E\*!B#<;&6&?8M\*!;#48?8B+!48?\*6&?C6\*0!

PM\*6!?E\*!B#C6+\*!#6!?E\*!+\*<\*+?\*6=!F\*!F844!%8+BC++!QC\*+?8#\$+!+CBE!&+-!I+!+#B8&4!<\*%8&!&!R48>\*6&?8#\$!
?\*BE\$#4#9'\$!#6!?E\*!;##4!?E&?!E\*4;+!&C?E#68?&68&\$!6\*98<\*+!+?&'!8\$!;#F\*6T!) E\*\$!&\$%!E#F!B&\$!+#B8&4!
<\*%8&!G&B848?&?\*\*!:6#?\*+?!8\$!6\*:6\*++8M\*!\*\$M86#\$<\*\$?+T!36\*!B\*\$+#6+E\$%!E\$F78\$?\*6\$\*?!+&4!

>%''&\*-,D-E'''&-+-)#\*7, , F6 D-\*-(&5\$,8&%2%\*(0,HI4 J K,

7?C%\*\$?+!F844!%\*M\*4#; !&!6\*+\*&6BE!; 6#; #+&4!?#!&\$+F\*6!&!+#B8&4!+B8\*\$B\*!QC\*+?8#\$!&>#C?!?E\*!
6\*4&?8#\$+E8;!>\*?F\*\*\$!+#B8&4!<\*%8&!&\$%!; #48?8B+!8\$!&C?E#68?&68&\$!6\*98<\*+0!) E84\*!+?C%\*\$?+!F844!\$#?!
>\*!6\*QC86\*%!?#!B#44\*B?!%&?&!#6!B#\$%CB?!+?&?8+?8B&4!&\$&4'+8+!8\$!?E8+!B#C6+\*=!?E\*86!; 6#; #+&4+!+E#C4%!
%\*+B68>\*!?E\*!%&?&!&\$%!<\*?E#%+!?E\*'!F#C4%!8%\*&44'!C+\*!?#!&\$+F\*6!?E\*86!6\*+\*&6BE!QC\*+?8#\$+0!!!

, \_

```
!
D-(6')/*7,

34!6*&%8$9+!F844!>*!;#+?*%!?#!J&$M&+0!]*&%8$9+!G#6!*&BE!F**O!&6*!48+?*%!C$%*6!8$!?E*!B4&++!
+BE*%C4*!&$%!&++89$<*$?+!+*B?8#$!>*4#F0!,

,
o(**,15$-6''0-,()6,!**'/)+-)#*7,,
U--V,F7,>%''&*-,
```

 $\label{eq:kappa} $$k \& 4*SNC*4\&=!7@=!W1:, @!1$; \&BO8S9!?E*!C+*!\#G!+\#B8\&4!<*\%8\&!G\#6!; 6\#?*+?!>*E\&M8\#6-!DE*!6\#4*+!\#G!\\ 8SG\#6<&?8\#S=!\#; 8S8\#S!*5; 6*++8\#S=!\&$\%!\&B?8M8+<@!?, +$B-&%(>+<&AB''$&'(5-B+%6B56=!KLH^K=!;; @aW1/aOW@!). $$(5-B+%6B56=!KLH^K=!;; @aW1/aOW@!). $$(5-B+%6B56=!KLH^K=1); $$(1-B+K)(1$ 

## U --V,R7,>% + 2''#(#'%) (0,8&%2(/()6(,HN-B,FS,T,N-B,FRK,

3 %\*\$&=! " @=! f \$80#4#; #M=! ] @=!2\*?6#M&=! " @=!7&\$?&6#+&=! k @!&\$%! i EC6&M+O& ' &=! f @=!W1 : . @! ] &%8#!&\$%!?E\*! ] 8+\*!#G!?E\*! \ &N8+!8\$!26\*F&6! n \*6<&\$ ' @!; <+(O#&\$6+\$'. (! "#\$%&'(")(D-"%", B-5=!

```
\begin{split} &p \, \text{C=!} \, p \, \text{@=!W1W1@!D\#!} \, \text{]} \, *; 6*++!\#6!?\#! \, \text{J} \, \#q\#; ?T! \, \text{3} \, \text{C?E\#68?\&68\&\$!} \, \text{J} \, \#\$?6\#4!\$\$!?E*! \, \text{3} \, 9*!\#6!U898?\&4! \\ &7 \, \text{C6M*844\&\$B*@!} \, ?, \, +\$B-\&\%(!\, ''\#\$\%\&'('')(:\, '''B6B-\&'(I-B+\%-+@!) \\ &, \\ &e\#\$*+=!\, '' \, @P \, @=!W1:, @!7\#B8\&4! < *\%8\&=!+C6M*844\&\$B*!\&\$\%!+\#B8\&4!B\#\$?6\#4!8\$!?E*! \, g \, \&E6\&8\$!C; 68+8\$9@! \\ &! \\ &n \, 68\$>*69=!U@=!W1: ^@! \, \text{J} \, E8448\$9!\%*M*4\#; < *\$?+-!U898?\&4!\&BB*++=!+C6M*844\&\$B*=!\&\$\%!?E*!\&C?E\#68?\&68\&\$! \\ \end{split}
```

78\*9\*4=!3@3@!&\$%!DCBO\*6=!e@3@=!W1:d@!DE\*!I+4&<8B!7?&?\*`+!8\$G#6<&?8#\$!F&6G&6\*-! " \*&+C68\$9!?E\*! +CBB\*++!#G!I7I7`+!#\$48\$\*!+?6&?\*9'@!!"#\$%&'(")('&%4#&4+(&%1(E'''B6B-5=!