!"#\$%&'(%)("\*+%\*#%&",\$-%)("\*+% % . +% Ŋ, / 0% 1 '2"+% 3 "#44 \$ (2% 3#55'6'\#7\ / 8558(\$\(29\):("+\ ;#2(59%.0%;(-#-#"\*% 3#55'6'\#7\ / 8558(\$\(29\: (''+\) % Y, %4)\*(#\$)("-5#(9:(/)-\*5(\$-5(8))0(;31)"/(-2<0%;")1')1=(#\$)\*)(\$-5(8))0("3##")(%\*(0%("-\*')>52-")(5#&1/( %+(,)-(7-\*#/(-2#3435#5?((6)"/30'(%0(-(#;%>/)-\*(7-0)"(5#&1/(@A:9B>A:9CD(%+(-"E%5#(F::(5&77%\*#)\*5(  $\%+(G^*)$  1% E H%\*<5(%)("-\*')5#(,)-(.-\*#/(%\*'-03I-#3%OD=(;)(+%2&5(\%0(#\$)(#\*-05+%\*E-#3\%0-"(\*%")( ,\*&E7(\$-5(7"-/)1(30(\*)13\*)2#30'(,)-(.-\*#/(5&77%\*#)\*5J(-##3#&1)5=(7\*3%\*3#3)5(-01(-2#343#3)5?(H)(+301( #; -\*15(, \*&E7=()4)0(-E%0'(#%5)(; 3#(#)(E%5#(0)' -#34)(43); (%+(\$3E(30(1& $\ast$ 30'(#)(0%E30-#3%0( 7 3%1 (LO(#\$35(; -/(#\$)(,)-(.-\*#/(\$-5(301))1(8)2%E)(#\$)(,\*&E7(.-\*#/M(8&#(;)(-"5%(+301(#\$-#( ,\*&E7(5&77%\*#(\$-5(0%#(\*)7"-2)1(,)-(.-\*#/(5&77%\*#(8&#(35(-55%23-#)1(;3#\$(302\*)-5)1(7%53#343#/( %4)\*(#\$)(7)\*3%1(%+(#\$)(7-0)"?(%)(

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### ! "#\$%&'()\$\*&#+

N302)(3#5(302)7#3%0(30(A::F=(#\$)(,)-(.-\*#/(\$-5(5\$%;0(53'03+32-0#(5&22)55(30(5\$-730'()")2#%\*-"(%&#2%E)5(+%\*(6)7&8"32-0(2-0131-#)5?(L0(7-\*#32&"-\*=(30(A:9:(-01(A:9A(#\$)(,)-(.-\*#/(;-5(5&22)55+&"(30(1)+)-#30'(8%#\$()5#-8"35\$E)0#(2-0131-#)5(-01(302&E8)0#5=(-01(30(5)\*430'(-5(-0(3E7%\*#-0#()0'30)(+%\*(6)7&8"32-0(')0)\*-"()")2#3%0(432#%\*3)5?(Q%0)#\$)")55=(30(#\$)(+3\*5#(7\*)531)0#3-"(2%0#)5#(-+#)\*(#\$)(,)-(.-\*#/J5(302)7#3%0(#\$)/(2-E)(&7(5\$%\*#=(-5(-(4)\*/()5#-8"35\$E)0#(2-0131-#)(U3##(6%E0)/(;%0(#\$)(A:9A(6)7&8"32-0(0%E30-#3%0?(L0("-\*')(7-\*#(#\$35(;-5(1&)(#%(#\$)(;)-<0)55)5(%+(#\$)(2-0131-#)5(;3#\$('\*)-#)5#(-77)-"(#%(,)-(.-\*#/(5&77%\*#)\*5)(632<(.)\*\*/(-01(W)\*E-0(P-30?(

 $(A: 9X(6)7\&8"32-0(7*3E-*3)5("\%)<)1(\#\%(8)(E\%)(7*\%E3530'(+\%*(,)-(.-*\#/(5&77\%*\#)*5?)(Y, $)(+3*5\#(\#\$))(6)7\&8"32-05(\#\%(Z\%++323-"'/[(K\%30(\#\$)(A: 9X(7*)531)0\#3-"(2-E7-3'0(N)05?), )1(P*\&I=(6-01(.-\&"(-01(U-*2\%(6\&83\%?)(?)(*-4)(\%0)(83'(\#\$30'(30(2\%EE\%0)(\-2\$(*\%5)(\#\%(7\%;)*(;3\#\$(5\&77\%*\#)(+*\%E(\#\$)(,)-(.-*\#/(E\%4)E)0\#J(@W\%(<(A: 9BD?)(H3\#\$(\#\$)("-2<"\&5\#)*(7)*+\%*E-02)(\%+()5\#-8"35$E)0#(+-4\%*3\#)(])8(S\&5\$=(\#\$)(,)-(.-*\#/(\$-1(*)-5\%0(\#\%(8)(\%7\#3E35\#32?)))))$ 

 $,)-(.-*#/(\%7#3E35E(-77)-*)1(;)">+%&01)1(&0#3"(^{0}-"1(,*&E7(1)2"-*)1($35(2-0131-2/(\%0(1)))(AF=(A:9B?(H3#$30(#$*))(;))<5($)($-1(#-<)0(#$)(")-1=(;$32$($)(0)4)*(*)"30_&35$)1?(^{0}-"1(,*&E7(;-5=(\%+(2\%&*5)=(0)3#$)*()5#-8"35$E)0#(0%*(,)-(.-*#/?(W35(\%&#531)*(5#-#&5(-01(2\% E E3#E)0#(#%(5$-<30'(#$30'5(&7(;%&"1(5))E30'"/(*)5\%0-#)(;)""(;3#$(#$)(,)-(.-*#/=(8&#(,*&E7J5(1)53*)(#%(57)01($))-43"/(%0(30+*-5#*&2#&*)=($35(135*)'-*1(+%*(1)+323#5=(#%')#$)*(;3#$($35(5&77)*#(+%*(#-*3++5(E-1))($3E((*3#412589.)531)0#($3/#0.24E#E20.2(E)(E)0.2$(,00.24E1(*)-3EEL)$ 

 $\%4)^{*"-7D?}((!5(-(2^{-""})0'30'(+-2^{#3}\%0=(3^{#5}('\%-"((3^{5}(8)5^{#}()^{})E^{7}(3^{+3})1(3^{0}(4^{*3})(4^{*3}^{*"})(\%+(,,)-(.-^{*}/(")-1)^{*}(U-^{#}/(")-1)^{*}(U-^$ 

! 01(5&2\$(5<)7#3235E(; -5(0%#(&0; -\*\*-0#)1?((, \$)(, )-(.-\*#/(\$-1(\*)7\*)5)0#)1(#\$)(2%05)\*4-#34)(; 30 '( %+( #\$)( 6)7&8"32-0(..-\*#/(5302)(3#5(302)7#3%0?(, \$)(A:9:( !Q\N(5#&1/(5\$%; 5(#\$)(\*%")(%+(2\%05)\*4-#35E(30(8\%\#(13++)\*)0#3-#30'(, )-(.-\*#/(6)7&8"32-05(+\*%E(%#\$)\*(6)7&8"32-05(-01(30(3E7-2#30'(, )-(.-\*#/(5&77\%\*#(30(#\$)(8\*%-1)\*(7&8"32?((H\$3")(F:(7)\*2)0#(%+(, )-(.-\*#/(6)7&8"32-05(2-11))(3E7-2#30'(, )-(.-\*#/(5&77\%\*#(30(#\$)(8\*%-1)\*(7&8"32?((H\$3")(F:(7)\*2)0#(%+(, )-(.-\*#/(6)7&8"32-05(2-11))(3E7-2#30'(, )-(.-\*#/(6)7&8"32-05(2-5)(%+(%0"/(XAd(%+(%#\$)\*(6)7&8"32-05(-01()4)0(E%\*)(53'03+32-0#=(30(-(E&"#34-\*3-#)("%'35#32(\*)'\*)553%0(-0-"/535=(!8\*-E%;3#I(+%&01(2%05)\*4-#34)(31)%'' /( #%(\$-4)(#\$)(5#\*%0')5#()++)2#(%0(, )-(.-\*#/(5&77%\*#(-E%0'(;\$3#)(!E)\*32-05 eE%\*)(3E7%\*#-0#(#\$-0(6)7&8"32-0(31)0#3+32-#3%0=(\*-23-"(\*)5)0#E)0#=(2\$&\*2\$(-##)01-02)(%\*(135"3<)(+%\*(f8-E-(@!8\*-E%;3#I(A:X>A:C(A:9AD?((!01(#\$)\*)(;)\*)(\_&)5#3%05()4)0(-8%&#(\$35(7-\*#35-0(")-030'5(5302)(\$)(\$-1(8))0(^)E%2\*-#(+\*%E(A::9(#\$\*(A::F=(-01(%0"/(\*)'35#)\*)1(-5(-(6)7&8"32-0(30(A:9A((\*,135)))))))))))))))))))

,\$)(\_&)5#3%O(;-5(+3\*5#(\$%;(5&22)55+&"(,\*&E7(;%&"1(8)(30(%4)\*2%E30'(\$35(2%E7-\*-#34)( 135-14-0#-')(30(31)%"%'/(-01(355&)5(

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 $\#^{*}-1)(-5(;)^{**}(-5(31))^{**}/(!+\#)^{*}(-***(-1)^{*})^{*}) = (-1)^{**}(-1)^{**$ 

## **. . \$ / & ' & 0 & 12**+

 $i 34)0(\#\$)3^{*}(3E7\%^{*}-02)=(3\#(35(5\&^{*}7^{*}3530'(\#\$-\#(\#\$)))(\$-5(8))0(5\%("3\#\#"))(5/5\#)E-\#32(-0-"/535(\%+(,,)-(.)))(-2\#3435\#5)(,,\$)(7^{*}\%8'')E(\$-5(8))0(7^{*}3E-*3''/(\%0)(\%+(-22)55)(L0(\#\$35(7-7)))(;)(*)''/(\%0(-(7-0)))(5\%^{*}4)/(\%+(G^{*}))1\%EH\%^{*}<5()E-3''(5\&852^{*}38)^{*}5(;\$32\$(;)(2-**3)1(\%\&\#(\%4)))(A:9B>A:9C)($ 

 $f \&^{(303\#3-"(5\&^{4})/(\%+(G^{*}))1\%EH\%<5(-2\#3435\#5(;-5(2\%01\&^{2})1(30(A:9B>A:9X?(!\#(\#))(\#^{3}E))(\%+(\#^{3}E)(5\&^{4})/=(G^{*}))1\%EH\%<5(;-5(8/(+-*(\#^{3})(E\%5\#(1\%E30-0\#(,)-(.-*\#/('*\%\&^{7}(-5(-"E\%5\#(\$-"+(@RB(7))^{2})0\#D(\%+(-""(BBX=BB9(,))-(.-*\#/('*\%\&^{7}(E)E8)*5(8)"\%0')1(\#(G^{*}))1\%EH\%<5(@S\&^{*'}\$-*#(-01(n)5<301(A:9BV(9XD?(\4)0(+*\%E(\#^{3})(8)'30030'=(G^{*}))1\%EH\%<5(\$-1(\#^{3})("-*')5\#(5\#^{2}\#^{2}\#^{2})(\%+(5\&^{7}7\%)^{*}\#=(1))((8)+(\%)(3\#^{3}(E)E8)*5(3)()^{7}\%1)1(@S\&^{*'}\$-*\#(A:9BD?($ 

, \$%5)(%O(#\$)(G\*))1%EH%\*<5()E-3"("35#(2%O5#3#&#)(#\$)(&O34)\*5)(+\*%E(;\$32\$(;)(1\*-;(%&\*( \*)57%O1)O#5?(,\$35('\*%&7(2%O5#3#&#)5(-(\* 7"! 8%\$9,/6)

- **3 4**.5(0\$5+6+7\*5)(55\*&#+
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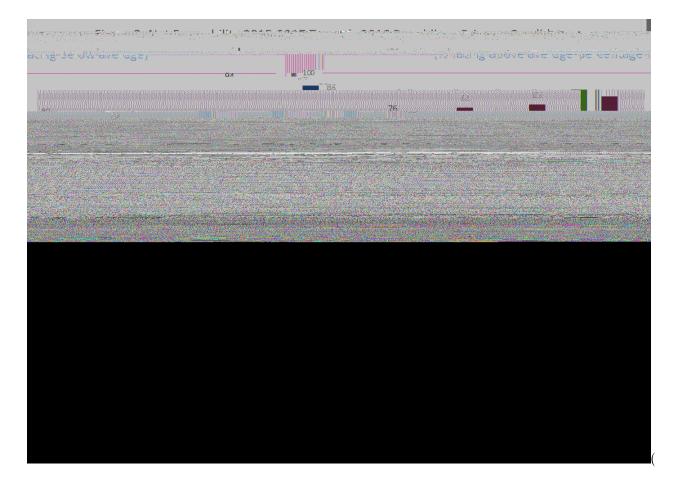
7)\*2)0#D=(-01(

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 $! "\#\%\& '\$(0)\#(+-4\%-83"3\#/(*-\#30'5(7"-2)1(, *\&E7(0)-*(\#\$)(8\%\#\%)E(\%+(\#\$)(9R(2-0131-\#)5(+\%*(\#\$)(0\%E30-\#3\%)(-01(E-0/(5-31(\#\$)/(2\%\&"1(0\%\#(5\&77\%*\#(\$3E(+\%*(\#\$)(0\%E30-\#3\%))(-(\#335(5\&*4)/(2-E)(8)+\%))(\$)(\$)(\$)(2-E)((\%)(10\%\%)(-01(\#\$)(7*)531)0#?(N\%=(;\$-\#(\$-77)0)1(8)\#;))0(A:9B(-01(A:9Ch(^{31}(\%\&*(,)-(.-*\#/(-2\#3435\#5(\%4)*2\%E)(\#\$)3*(1\%\&8\#5(-01()E8*-2)(\$3E(\%02)(\$)(8)2-E)(\#\$))(0\%E30))(-01(\%02)(\$)(;\%0(\#\$)()")2\#3\%0h((f*(131(\#\$)/(\#\&*0(\%0(\$3E(-5(\#\$)/(\$-1(\%0(i))\%*')(H?(S\&5\$(30(A::F(;\$))0(\$)(*))2\#)1(,)-(.-*\#/(7*3\%*3\#3)5(;3\#\$(, !6.h($ 

 $(-05;)^{*}() E7^{-#32-'''/=(35(Y/)5J())}$ 



:": B01 < 9 < 1% - 0)C, 9, 0; + - 0A, < 0) # % & ')D9 - 0% - \* < 306)

S)#; ))0(A:9B(-01(A:9C=(131(,\*&E7(7\*3%\*3#3)5(-01(,\*&E7(355&)(7%53#3%05(8)2%E)(E%\*)(53))(-(25))(-(2

#### @0@0A &'', \$ - \B, - - #''\*\C40\\ 3 '', D\\B, - - #''\*\\82\\EFAG\\

, %(#\$)(1)'\*))(#\$-#(, \*&E7(-77)-")1(#%(2%05#3#&)023)5(13++)\*)0#(+\*%E(P\*&IJ5=(;)(5\$%&"1(+301(#\$)(5-E)(4-\*3-8")5(\$-430'(13++)\*)0#()++)2#5(%0()4-"&-#3%05(%+()-2\$?(G%\*()`-E7")=(5302)(3EE3'\*-#3%0(;-5(5%(E&2\$(E%\*)(-(7-\*#(%+(,\*&E7J5(2-E7-3'0(#\$-0(P\*&IJ5(;)(5\$%&"1()`7)2#(-(5#\*%0')\*()++)2#(%0(,\*&E7J5()4-"&-#3%05(#\$-0(%0(P\*&IJ5)(30(2%0#\*-5#=(8)2-&5)(P\*&I(;-5(5%(5#\*%0'"/(31)0#3+3)1(-5(-(2%05)\*4-#34)=(;)(5\$%&"1(+301(31)%"%'/(E%\*)(5#\*%0'"/(\*)"-#)1(#%(P\*&IJ5()4-"&-#3%05(#\$-0(#%(,\*&E7J5?((``-E3030'(#\$)(\*)5&"#5(+%\*(P\*&I()4-"&-#3%05(30(P%"&E0(9(%+(,-8")(9=(;)(5))(-(2")-\*()++)2#(%(\*)(2%\*)(,)-(.-\*#/(-01(2%05)\*4-#34)(31)%"%'/=(8&#(-"5%(3"30'0)55(#%(2&#(N%23-"(N)2&\*3#/(-01(U)132-\*)(30(%\*1)\*(#%(\*)1&2)(#\$)(1)+323#(-\*)(#\$)(%0"/(

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53'03+32-0#(7\*)132#%\*5(%+(P\*&I()4-"&-#3%05?(N%E); \$-#(5&\*7\*3530'"/=(3EE3'\*-#3%0(1%)5(0%#(\$-4)(-(

53'03+32-O#()++)2#=(0%\*(1%(1)E%'\*-7\$325(%\*(+%\*)3'0(7%"32/(-##3#&1)5?(P\*&IJ5()E8)11)10)55(30(#\$)( ,)-(.-\*#/=(2%E830)1(;3#\$(31)%"%'/=(%4)\*;\$)"E5(#\$)5)(%#\$)\*(+-2#%\*5?(

(%)(%)(4-\*3-8")(; \$32\$(53'03+32-0#"/(-++)2#)1(8%#\$(P\*&I(-01(, \*&E7()4-"&-#3%05(35(-##3#&1)5(-8%&#(2&##30'(#\$)(1)+323#()4)0(3+(3#(E)-05(2&#5(#%(5%23-"(7\*%'\*-E5("3<)(U))132-\*)(-01(N%23-"(N))2&\*3#/?(W%; )4)\*=(#\$)()++)2#5('%(30(%77%53#)(13\*)2#3%05?(, \$%5)(+-4%\*30'(7\*%#)2#30'(5%23-"(7\*%'\*-E5(%4)\*(\*))1&230'(#\$)(1)+323#(; )\*)(53'03+32-0#'/(E%\*)("3<)"/(#%(5&77%\*#(, \*&E7=(; \$3"))(#\$%5)(E%\*)(; 3""30'(#%(2&#(5%23-"(7\*%'\*-E5(#%(8-"-02))(#\$)(8&1'))#(; )\*)(E%\*)(5&77%\*#34)(%+(P\*&I?(

! "#\$%& ' \$(3#(35(0%#(5&\*7\*3530 ' (#\$-#(, \*&E7J5(A:9B())4-"&-#3%05(; )\*)(-++)2#)1(8/(-##3#&1)5(-8%&#(

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 $' \$30' (\#\%(5-4)(N\%23-"(N)2\&*3\#/(;3\#\%\&\#(-O/(2\&\#5?(L(<O\%;(;\$)*)(\#\%(')\#(\#\$)(E\%0)/(+*\%E?(Q\%8\%1/()"5)(1\%)5?)!#"G\&*\#\$)*E\%*)=(-5(]\%90(N31)5(5\%;5=(\#\$)(2\%4)*-')(\%+(^{\%}0-"1(,*\&E7(30(\#\$)(+3*5\#(E\%0\#\$(;-5(;)""(8)/\%01(\#\$-\#(\%+(\%\#\$)*(2-0131-\#)5(-01())*#*-\%*130-*/(8/(-0/(E)-5\&*)=('3430'(\$3E(\#*)E)01\%\&5())*7\%5\&*)(\#\%(\#\$)(6)7\&8"32-0(8-5)(@N31)5(A:9BD?($ 

 $P'') - *'' / = (+*\% E(\#\$)(8) '30030'(, *\&E7(; -5(0\%\#(-(\#/732-"(, )-(.-*\#/(2-0131-\#)(30(\$35(8-5)5(\%+(5\%77\%^{*}\#(-01(\%77\%53^{*}\#3\%0?(S\&\#(-5(\#\$)(2-E7-3'0(; )0\#(\%0=(-01()57)23-'''/(-5(\#\$)(')0)^{*-''})')2\#3\%0(<32<)1(30\#\%(\$3'\$(')-*(131(\$35()4-''\&-\#3\%05(8)2\% E)(E\%^{*})(2''\%5)''/(\#3)1(\#\%(\#/732-''(6)7\&8''32-0(-01j\%(, )-(.-*\#/(+355\&)5(-01('*\%\&75h(L0(\%^{*}1)^{*}(\#(-55)55(\#\$35=(; )(\&5)1(\#\$)(5-E)(301)7)01)0\#(4-*3-8'')5(+*\% E(\#\$)(A:9B(E\%1)''(\#\%(7^{*})132\#(, *\&E7J5(A:9C()4-''\&-\#3\%05?(^{*}31(\#\$)(A:9B(7^{*})132\#\%5(5\#*\&2\#\&*)())4-''\&-\#3\%05(\%)(+(, *\&E7(\#; \%(/)-*5(''-\#))*(8))\#\#))(\#\$-0(\#\$)/(131(30(A:9Bh($ 

S ) 2 - & 5 ) (# \$) (301) 7 ) 01 ) 0 # (-01(1) 7 ) 01 ) 0 # (4 - \$3 - 8") 5 (-\$) (E) - 5 & \$ ) 1 (-"E % 5 # (#; % (/) - \$5 (-7 - \$# - (3 # (3 + 1) 5)) (-7 - \$# - (3 # (3 + 1) 5)) (-7 - \$# - (3 + 1) 5) (-8 + 1) (-7 + 1) 32 # - 1) (-7 + 1) 32 # - 1) (-7 + 1) 32 # - 1) (-7 + 1) (-8 + 1) (-7

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 $( P \otimes O \# - 2 \# ( + \otimes E ( ! E) \otimes 32 - = ( ; \$ 32 \$ ( 5) \otimes 4) 1 ( -5 ( -( , ) - ( . - \# / ( E - 03 + )5 \# \otimes ( @ ^ - 435 ( A : 9 : D = ( ) E7 \$ -531) 1 ( *)7) - "( \% + ( \# \$) ( ! + \# \$ 1 - 8") ( P - *) ( ! 2 \# ( @ ! P ! D = ( 5 \$ 30 < 30 ' ( \# \$) ( 531) ( \% + ( ' \% 4) \otimes D E) 0 \# ( -01 ( 8 - " - 0230 ' ( \# \$) ( 8 \& 1 ' ) \# ( 8 / ( *) 1 \& 230 ' ( 57) 0130 ' = ( 8 \& \# ( 3 E E 3 ' * - \# 3 \% 0 ( 35 ( 0 \% \# ( ) 4) 0 ( E) 0 \# 3 \% 0) 1? ( , $) ( 7 * 3 \% 3 \# 31 - \# 3 \% 0 ( \% + ( 1) + 323 \# ( *) 1 \& 2 \# 3 \% 0 ( - E \% 0 ' ( , ) - ( . - * \# / ( - 2 \# 3 4 35 \# 5 ( ) ^ * \# ) 015 (8 - 2 < ( - \# ( " ) - 5 \# (\# \% ( A : 99? (N \& * 4) / 5 ( \% + (G^*)) 1 \% E H \% < 5 (5 \& 77 \% * \#) \otimes 5 (2 - * * 3) 1 ( \% \& \# ( 30 ( A : 99 = (A : 9R ( -01 ( A : 9B = (5 \% ) ; (\# \$ - \# ( *) 57 \% 01) 0 \# 5 (30 ( ) - 2 \$ ( 5 \& * 4) / (* - \#) 1 (\# \$) (8 \& 1 ' ) \# (1) + 32 3 \# (-5 () 3 \# \$) * (\# \$) (\# \% 7 (\% * (5) 2 \% 01 (\# \% 7 (7 * 3 \% 3 \# / = ( -01 (30 () 4) * / (2 - 5) (A : (7) * 2) 0 \# ( \% ( E \% *) (* - \#) 1 (3 \# (-5 (\# \$)) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -01 (3 0 () 4) * / (2 - 5) (A : (7) * 2) 0 # ( \% * (E \% *) (* - \#) 1 (3 \# (-5 (\# \$)) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -01 (3 0 () 4) * / (2 - 5) (A : (7) * 2) 0 # ( \% * (E \% *) (* - \#) 1 (3 \# (-5 (\# \$)) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -01 (3 0 () 4) * / (2 - 5) (A : (7) * 2) 0 # ( \% * (E \% *) (* - \#) 1 (3 \# (-5 (\# \$)) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -01 (3 0 () 4) * / (2 - 5) (A : (7) * 2) 0 # ( \% * (E \% *) ) (* - \# ) 1 (3 \# (-5 (\# \$)) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -01 (3 0 () 4) * / (2 - 5) (A : (7) * 2) 0 # ( \% * (E \% *) ) (* - \# ) 1 (3 \# (-5 (\# \% )) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -0 ) (3 ) * ( -5 (\# \% )) 3 * (\# \% 7 (7 * 3 \% * 3 \# / = ( -0 ) (3 ) ) * ( -5 ) 3 * ( -5 (\# \% )) 3 * ( -5 ) (3 ) * ( -5 ) )$ 

 $S \& #(, *\& E7J5(7\%53#3\%0(\%0(+)1)*-"(1)+323#(355\&)5(; -5(7*)5-')1(8/(\$35(30#)*43); (\%0(PQSP(30(U-/(\%+(A:9X(;\$)*))(\$)(5#-#)1=(YZ^[)8#(; -5(-"; -/5(5\%*#(\%+(30#)*)5#30'(#\%(E)?(Q\%; (; )J*)(30(-(13++)*)0#(53#\&-#3\%0(; 3#\$(-(2\%\&0#*/=(8\&\#(L(; \%\&"1(8\%**\%; (<0\%; 30'(#\$-#(3+(#\$)()2\%0\% E/(2*-5\$)1(/\%\&(2\%\&"1(E-<)(-(1)-"?(!01(3+(\#\$)()2\%0\% E/(; -5('\%\%1(3#(; -5('\%\%1(5\%(\#\$)*)+\%*)(/\%\&(2-0J#("\%5)J(@a\&*#I")8)0(A:9XD?($ 

## $35(5\#3'''(E\%^*)(5\&77\%^*\#(\#\$-0(\%77\%53\#3\%0(+\%^*(2\&\#\#30'(\#\$)(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#=(8\&\#(\#\$)(7)^*2)0\#-')(5\&77\%^*\#30'(2\&\#5(\#\%(1)+323\#))))$

5%23-"(7\*% '\*-E5(13E3035\$)1(53'03+32-0#"/?!'(

 $LE E3'*-#3\%0(355\&)5(7"-/)1(-(7*))E30)0#(*\%")(30(#\$)(, *\&E7(2-E7-3'0(-01(;)*)(2"\%5)"/(30<))(*30<)1(#\%("-;(-01(\%1))*=(;3#\$(2"-3E5(#\$-#(U))*2-05(;)*)(*-735#5(-01(2-""5(+\%*(8-0030'(U\&5"3E5=(1))7\%*#30'(3"")'-"(3EE3'*-0#5=(-01(8\&3"130'(-(8\%*1)*(;-""(8)2\%E30'(2\%05#-0#(*)+*-305(-#(,*&E7J5(*-""3)5?(!5(;)(5-;(-8\%4)=(+*\%E(A:9B(#\%(A:9C(#\$)(7)*2)0#(\%+(,)-(.-*#/(-2#3435#5(30132-#30'(3EE3'*-#3\%0(-5(#\$)3*(#\%7(7*3\%*3#/(302*)-5)1=(*)+")2#30'(-(5$3+#(30(5&77\%*#(\%+(,*&E7J5(7\%"32/(7*3\%*3#3)5(-5()4-"&-#3\%05(\%(*($3E(5\&*')1(\%4))(5-E)(#;\%)/)-*(7)*3\%1?(N302)(;)(1\%(0\%#($-4)(31)0#32-"(-\&)5#3\%05(\%0(3EE3'*-#3\%0(355\&)5(-2*\%55(#$)(#;\%(;-4)5(\%+(#$)(5\&*4)/=()^-E3030'(2$-0')(30(355\&)(7\%53#3))))))$ 

@0J0A B, --#''\*\#7\&'', \$-\I\$\$86''(\*8#2\)#58>+\)'#-#4(54\

:"G D9-0%-\*<306)3F)\*+,)#,-).-\$\*/)

# **8 9** &#)0(5\*&#5+

 $f 4)*(")55(\#\$-0(-(\#;\%)/)-*(7)*3\%1=(-E\%0'(G*))1\%EH\%*<5(-2\#3435\#5=(^\%0-"1(,*\&E7(E\%4))1(+*\%E(8)30'(-0(\&07\%7\&"-*(2-0131-\#)(+\%*(\#\$)(6)7\&8"32-0(0\%E30-\#3\%0(\#\%(8)2\%E30'(-0()^{#*}-\%*130-*3"/(7\%7\&"-*(7*)531)0\#?(!#(\#\$)(8)'30030'(\%+(\#\$)(0\%E30-\#3\%0(7*\%2)55=()4)0(\#\%\&'\$(\$)(131(\$-4)(-(2\%*)(\%+(5\&77\%*\#=(\$)(;-5(\&07\%7\&"-*(\%4)*-""?(f0"/(+\%\&*(\%+(\#\$)(\%\#\$)*(\#\$3*\#))0(2-0131-\#)5(;)*)(*-\#)1(")55(+-4\%*-8"/?(!"E\%5\#(-(#\$3*1(\%+(\%&*(5-E7")(30132-\#)1(\#\$)/(;)*)(\&0;3""30'(\#\%(5\&77\%*\#(\$3E(+\%*(\#\$)(0\%E30-\#3\%0)(5)))(*-3))(*-3))(*-3))(*0);3""30'(\#\%(5\&77\%*\#(\$3E(+\%*(\#\$)(0\%E30-\#3\%0)(5)))(*-3))(*-3))(*-3))(*-3))(*-3)$ 

 $LO(\#\$)5)(; -/5=(\#\$)(,)-(.-*\#/(-5(*)+")2\#)1(30(\%\&*(G^*))1\%EH\%*<5(*)57\%01)0\#5(-77)-*5(\#\%(\$-4)(8)2\%E)(4)*/(E\&2\$(-(,*\&E7(.-*\#/?(fO(\#\$)(\%\#\$)*(\$-01=(7\%53\#34)(-++)2\#(+\%*(,*\&E7(-2\#343\#/(131(0\%\#(1))\#*-2\#(+*\%E(+\%*(,)-(.-*\#/()4-"&-#3\%05(-2\#343\#/=(8\&\#(302*)-5)1(\#\$)E?(,*\&E7(0\%E30-\#3\%0(-2\#343\#/=(8\&\#(0\%\#(-2\#343\#/(+\%*(\%\#\$)*(2-0131-\#)5=(;-5(53'03+32-0\#'/(*)"-\#)1(\#\%(302*)-5)1(-2\#343\#/(+\%*(\#\$)(,)-(.-*\#/(8)\#;)))0(A:9B(-01(A:9C?($ 

6 - #\$) \* (#\$ - 0(2%02"&130'(#\$ - #(#\$)(,) - (. - \*#/(\$ - 5(8)2% E)(#\$)(, \*&E7(. - \*#/=(3#(35(E%\*)(-22&\*-#)(%)(5 - /(#\$ - #(-(0); (+%\*E(%+(,) - (. - \*#/(e(-(, \*&E73 - 0(,) - (. - \*#/(e()E)\*')1(%4)\*(#\$)(A:9X(2 - E7 - 3'0?(H\$ - #(#\$35(E) - 05(+%\*(#\$)(+ &#&\*)(%+(#\$)(,) - (. - \*#/(E%4)E)0#(-01(+%\*(#\$)(6)7&8"32 - 0(. - \*#/(35(/)#(#%)(8)(1)))\*E30)1?)

( +

]%0)5=(P\$&2<?(@A:9mD(Y,\*&E7J5(G)1)\*-"(S&1')#(^)+323#V(r9(,\*3""3%0(-01(S)/%01?J(F"-P'#<(

G)8\*&-\*/(F=(A:9m?(\$##75Vjj;;;?+%\*8)5?2%Ej53#)5j2\$&2<K%O)5jA:9mj:Aj:Fj#\*&E75+)1)\*-">

8&1')#>1)+323#>9>#\*3'''3%0>-01>8)/%01jXgAgX-+9BRR+?((

#)(,)-(.-\*#/(U%4)E)0#(%0(#\$)(A:9:(U31#)\*E(")2#

; <<. # ' \*=+; >(

 $(7-0)''(&\#3''3I) 1(30(\#335(*)5) - *2\$(57-05(-"E\%5\#(-(\#;\%>/)-*(7)*3\%1?(L0(5\&2\$(2-5)5(7-0)''(E\%*\#-"3\#/(35(-0(30)43\#-8")(355\&)?(W)*)(\#\$)(355\&)(35(2\% E7\%\&01)1(8/(\#\$)(E)\#\$\%1(\%+(*)57\%01)0\#(-2_&353\#3\%0(>(-(8"-5\#()E-3"(\#\%(E)E8)*5(\%+(-(4)*/("-*')(\%*'-03I-\#3\%0?(f+(\#\$\%5)(*)57\%0130'(30(A:9B=(\%0"/(-8\%\&\#(9C(7)*2)0\#(*)57\%01)1(30(A:9C?(f\&*(*(1-\%''-\%)^{*}7)2\#-\#3\%0(35(\#\$-\#(5302)(8"-5\#()E-3"5(-*)(\%7)0)1(5\%E); \$-#(*-01\%E"/=(\#\$-#()4)0(; 3\#\$(\$3'\$(7-0)"(E\%*\#-"3\#/(\#\$)*)(5\$\%\&"1(8)("3\##")(5/5\#)E-\#32(83-5?($ 

 $f 0(\#\$)(\%\#\$)^{(\$-01=(\#\$)(7\%"3\#32-"(;\%"1(\$-1(2\$-0')1(53'03+32-0\#"/?(!\#(\#\$)(\#3E)(\%+(\#\$)(+3*5\#(;-4)=(,)-(.-*\#/(+-4\%*3\#)5(,)1(P*\&I(-01(S)0(P-*5\%0=(\$-1(5))E)1(\#\%(8)(7\%5538")(7-*\#/(0\%E30))5(30(-(E-#2\$\&7(E\%5\#("3<)"/(;3\#\$()5\#-8"35\$E)0\#(2-0131-#)(])8(S\&5\$?(S\&\#(,*\&E7J5(2-E7-3'0(\%4))*;\$)"E)1(8\%\#\$(,)-(.-*\#/(-01()5\#-8"35\$E)0\#(2-0131-#)5(\%0(\$35(;-/(\#\%(\#\$)(0\%E30-\#3\%0(-01(\#\%)(7*)531)02/?($ 

 $^{31}(A:9B(2\$-*-2\#)*35\#325(30+"\&)02)(\#\$)(1)2353\%0(\#\%(1*\%7(\%\&\#(\%+(\#\$)(5\&*4)/h(^{31}(,)-(.-*\#3)*5(; $\%(135"3<)1(,*\&E7(1*\%7(\%\&\#(1357*\%7\%*\#3\%0-\#)"/h(^{31}(\#\$\%5)(; $\%(\$-1(8))0(E\%*)(-2\#34)(30(7-5\#(7*)531)0\#3-"(-01(2\%0'*)553\%0-"(*-2)5(1*\%7(\%\&\#(1357*\%7\%*\#3\%0-\#)"/h(^{31}(,)-(.-*\#/(-2\#3435\#5(1*\%7(\%\&\#(E\%*)(2\%EE\%0"/h($ 

, %(-55)55(#\$35()++)2#=(;)(&5)(-0(-5/EE)#\*32(%\*130-"(5#-#35#32(@N%E)\*J5(1D?(S)2-&5)(#\$)( 5-E7")(53I)(35(5%("-\*')=()4)0(5E-""(5&85#-0#34)()++)2#5(;3""(8)(5#-#35#32-""/(53'03+32-0#?(

g:(

<sup>i</sup>!"#!\$%&!'((&#)\*+!, &!'))-&..!\$%&!\*../&!O1!20, !-&.(O#.&!-'\$&!'#)!('#&2!30-\$'2\*\$45!.%0, \*#6!\$%'\$!789:!-&.(O#.&!\*.! O#24!, &';24!-&2'\$&)!\$O!'!1/22!-'#6&!O1!\*3(O-\$'#\$!(-&)\*<\$0-.=!

<sup>iii</sup>! I &. (0#)&#\$.!, &-&!'.; &) !\$0!.&2&<\$!'#) !-'#; !\$%&!\$0(!1\*A&!\*../&!'-&'.!!-03!'!2'-6&-!.&\$!01!\*../&!'-&'.=!"1!'#!'-&'! , '.!#0\$!0#&!01!\$%&!\$0(!1\*A&5!\*\$!, '.!'..\*6#&)!.\*+=! > &!\$%&#!./H\$-'<\$&) !\$%&!.<0-&!10-!\$%&!\*3 3\*6-'\$\*0#!'-&'!1-03!\$% '\$!10-! \$%&!)&1\*<\*\$!'-&'=!"1!\*3 3\*6-'\$\*0#!, '.!-'\$&) !9!'#) !\$%&!)&1\*<\*\$!'!J5!\$%\*.!, 0/2) !6\*A&!'!.<0-&!01!\$%-&&=!"1!\$%&!-'#;\*#6!, &-&! -&A&-.&)5!\$%&!.<0-&!, 0/2) !H&!DK=!

<sup>iv</sup>!%\$\$(.LMM, , , =-&(/H2\*<'#A\*&, .=0-6M)0#'2)D\$-/3(.DA\*&, .DO#D.0<\*'2D.&</-\*\$4M!

'!N.\*#6!789@!'\$\$\$/)&.!'.!(-&)\*<\$0-.!0!!7890!G-/3(!&A'2/'\$\*0#.!&#./-&.!\$%'\$!, &!6/'-)!'6'\*#.\$!-&A&-.&!<'/.'\$\*0#!</p>
\*#!, %\*<%!7890!G-/3(!&A'2/'\$\*0#.!3\*6%\$!<'/.&!'\$\$\*\$/)&!.%\*1\$.!H&\$, &&#!789@!'#)!7890!\*#!2\*#&!, \*\$%!G-/3(P.!(0.\*\$\*0#.!)'#)!\*#12'\$&!\$%&!</p>

vi!E!)\*11&-&#<&!01!3&'#.!0#!\$%&!)&1\*<\*\$!'.!\$0(!\*../&!(-\*0-\*\$4!<03('-\*#6!, 'A&D9!'#)!, 'A&D7!4\*&2).!'!%\*6%24! .\*6#\*1\*<'#\$!)\*11&-&#<&!10-!\$%&!.'3(2&!'.!'!, %02&!'#)!10-!H0\$%!I&Q&<\$&-.!'#)!R/((0-\$&-.!\$( =89T=!"33\*6-'\$\*0#!'.!\$0(! \*../&!.%0, .!'!.\*6#\*1\*<'#\$!/(, '-)!30A&3&#\$!\$( =89T!10-!\$%&!.'3(2&!'.!'!, %02&!'#)!10-!G-/3(!-&Q&<\$&-.5!H/\$!#0\$!10-! G-/3(!./((0-\$&-.!\$( =78T!, %0!'-&!'2-&')4!'\$!'!%\*6%!2&A&2=!

vii!"\$!\*.!'2.0!\$%&!<'.&!\$% '\$!%\*6%&-!(-\*0-\*\$4!10-!\*3 3\*6-'\$\*0#!\*#!7890!, '.!'!.\*6#\*1\*<'#\$!(-&)\*<\$0-!01!G-/3(! &A '2/'\$\*0#.=!

viii! > &!<0 3 H\*#&!\$%&!'6-&&!'#)!.\$-0#624!'6-&&!-&.(0#.&.!\*#\$0!0#&!<'\$&60-45!\$%&!.2\*6%\$24!'6-&&!'#)!.2\*6%\$24!0((0.&! -&.(0#.&.!\*#\$0!'!.&<0#)!<'\$&60-45!'#)!\$%&!)\*.'6-&&!'#)!.\$-0#624!)\*.'6-&&!-&.(0#.&.!\*#\$0!'!\$%\*-)=!N.\*#6!\$%&!1/22!-'#6&! )0&.!#0\$!'11&<\$!\$%&!-&./2\$.=!F'A0-!\*#<2/)&.!'6-&&!'#)!.\$-0#624!'6-&&!-&.(0#.&.=!JC=8!(&-<&#\$!01!-&.(0#)&#\$.!1'A0-&)! 3 ';\*#6!\$%&.&!</\$.!<0 3 ('-&)!\$0!7@=K!(&-<&#\$!01!-&.(0#)&#\$.!, %0!0((0.&)!\*\$=!</pre>

<sup>ix</sup>!R/(((0-\$!)&<2\*#&)!1-03!JC=8!(&-<&#\$!\*#!789@!\$0!KU=J!(&-<&#\$!\*#!7890=!G%\*.!-&./2\$!\*.!.\*6#\*1\*<'#\$5!( 8=8@=!

"!>&!'2.0!-'#!'#'24.\*.!\$0!)&\$&-3\*#&!, %&\$%&-!'<\$\*A\*\$4!10-!G-/3(!)&\$-'<&)M./H.\$\*\$/\$&)!10-!G&'!B'-\$4!'<\$\*A\*\$4=!!G%&! -&./2\$.!\$%&-&!-&\*#10-<&)!0/-!1\*#)\*#6.!0#!G&'!B'-\$4!&A'2/'\$\*0#=!!E<\$\*A\*\$4!10-!G-/3(!, '.!'..0<\*'\$&)!, \*\$%!\*#<-&'.&)! '<\$\*A\*\$4!10-!G&'!B-\$4!6-0/(.=!!R0!-'\$%&-!\$%'#!)\*3\*#\*.%\*#6!G&'!B'-\$4!'<\$\*A\*\$45!G-/3(!'<\$\*A\*\$4!'<\$/'224!\*#<-&'.&)!G&'! B'-\$4!'<\$\*A\*\$4=!