!"#$%&'()*'+$%,&-'.' ' '''/&,-$0-1'.2..'
'

'

!"#$%&'()#*)+',)-!.!'%/0)

'

!!"#$%&"

#$%&&'"&(") $$&*+,-+./") *0-,-+."1"2343,-&+/"5 6# 7 "#;0+:;"

#$%&&'"&(") $$&*+,-+./") *0-,-+."1"2343,-&+/"5 6# 7 "#;0+:;"

#$%&&'"&(") $$&*+,-+./") *0-,-+."1"2343,-&+/"5 6# 7 "#;0+:;"

#$%&&'"&(") $$&*+,-+./") *0-,-+."1"2343,-&+/"5 6# 7 "#;0+:;"

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

!,*-./.,*0.112,*

!!"#$%"34*5$3%!"

-,26.772,*%289:*52;<=;>*

-,26.772,*(>:/?9;*(21.@;:* *

-,26.772,*A,;.@.*(22B.,* *

-,26.772,*%28./*!.C/7D?*

-,26.772,*(?,97*+E;:7*

-,26.772,*FC<9/?*G,..<@;:* *

-,26.772,*0;1D21@*A;@@9. *

-,26.772,*F.::9.*A,;:H.,*

-,26.772,*F2?:*I;77.1<9:.*

-,26.772,*I.1.:*I2<H72:*

-,26.772,*F.>;B;1;:*J;79B911;9*

-,26.772,*%9DK*J,.E.,* *

-,26.772,*497;*0;,,92//*

-,26.772,*G92:;*0;,/9:*

-,26.772,*(?;,1.7*0D4C,.*F,*

-,26.772,*!;1.*-9:/2*

-,26.772,*F2?:*-,.881.*

-,26.772,*3<,9;:*&;=>.,*

'

'

'

!"#$%& '()#*)+ ',)- !. ! '%/0)123224)5#(6)789)&#6)29):6)7;<)
'

!

) *+, - .+/0

'

!"#$%& '()#)+ ' ,)- !. ! '%/0)123224)5#(6)78!9)&#6)29): : 6)7 ; =>272)*

'

!

!

!

6/+.14778!049+,+5/3:8!/1*!,/;!3-5<0+/134!

!

!

;&*(%0(*!4('''('6!<&'$*(!=-**$- !(*#!>$*#(!10&'*- !

!

!

2;':D"EAFFG"H=CCFIJ",%:&D-9:9",%3,"K:D$:K,-&+9"&(",%:"':.-,-L3$;"&("3"':.3'"3*,%&D-,;"L:0-3,:",%:"-+('*:+$:"&("(3-D+:99"&+"-+0-M-0*3'9N"$&LK'-3+$:"O-,%",%:"'3OP"7:"3KK';"2;':DN9",%:&D;",&",%:",34"$&+,:4,",&"(*D,%:D"&*D"*+0:D9,3+0-+."&(",%:"399&$-3,-&+"Q:,O::+",34K3;:D9N"(3-D+:99"K:D$:K,-&+9"3+0"$&LK'-3+$:P"7:"$&+9-0:D"Q&,%"0-9,D-Q*,-M:"3+0"KD&$:0*D3'"(3-D+:99P"R*D":4K:D-L:+,3'"D:9*',9/"*9-+."03,3"(D&L"B?C")L:D-$3+",34K3;:D9/"9*..:9,",%3,"0-9,D-Q*,-M:"(3-D+:99"3+0"KD&$:0*D3'"(3-D+:99":+$&*D3.:",34K3;:D9N"$&LK'-3+$:/"3+0",%3,",%:9:"(3-D+:99":((:$,9"3D:"300-,-M:P"S*D,%:DL&D:/"O:"(-+0",%3,"K:D$:K,-&+"&("':.-,-L3$;"L:0-3,:(")3+$:/"D""":4K:D-L:+,3(:D)1(K);"

'

"#&! ' ( ) #*! "+

bCF&G-!())6!$*!(!#- . &,'(,8!%0-!%(9!585%- . ! . +5%!F-!@($'!(*#!F-!5--*!%&!F-!@($'0!Q / '&D*! K! < $*%H6!]^_]6!_[ ]R%!4($'*-55!$5!(!,& . :('(%$G-!P+#7 . -*%!F(5-#!&*!(,%+()!&'!$. (7$*-#! '-@-'-*,-! : &$*%5!Q4&)7-'! K! J '&: (*H(*&6!]^^_R%!?*#G#+()5! D0&! : -',-$G-!@($'*-55! ('-! . &'-!)$N-)8!%&!F-!5(%$5@$-#!(*#!%-*#!%&!F-!,&&: -'(%$G-6!D0-'-(5!$*#G#+()5!D0&!: -',-$G-! +*@($'*-55! ('-! . &'-!)$N-)8!%&! F-!''-5-*%@+)! (*#!%-*#! %&! F-!+*,&&: -'(%$G-!QBN(')$,N$! K! 4&)7-'6! _aagR%! C5! 5: -,$@$,())8! (: :)$-#! %&! %(9! ,& . :)$(*,-6! $%! $5! F-)$-G-#! %0(%! @($'*-55! : -',-: %$&*5! $*@)+-*,-! %(9: (8-'50! ,&&: -'(%$&*! D$%0! %(9! (+%0&'$%$-5! (*#! $*,'-(5-! %0-$'! %-*#-*,8!%&!: (8!%0-$'!%(9-5%! 10$5!$5!$. :&'%(*%!F-,(+5-!7&G-'* . -*%5!('-!#-: -*#-*%!&*!(! 0$70!#-7'--!&@! G&)+*%('8!,& . :)$(*,-! D$%0!%(9!)(D5%! "*@&',- . -*%! . -(5+'-5!%&!,&))-,%! $*,& . -!%(9!('-!,&5%)8!(*#!D&+)#!F-!-55-*%$())8!+* . (*(7-(F)-!$*!%0-!@(,-!&@!)('7-25,()-! @($)+'-!%&!,& . :)8%!!!!

1D&! $. :&'%(*%! #$. -*5$&*5! &@! @($'*-55! ('-! #$5%'$F+%$G-! @($'*-556! D0$,0! '-@-'5! %&! %0-! @($'*-55! &@! &+%,& . -5! -9: -'$-*,-#! F8! $*#$G$#+()5! '-)(%$G-! %&! &%0-'56! (*#! : '&,-#+'()! @($'*-556! D0$,0! '-@-'5! %&! %0-! @($'*-55! &@! %0-! : '&,-55! F8! D0$,0! (*! &+%,& . -! &,,+'5! Q I (*!

, $! &$#*) - .+/ -) 0 1& ! (" '+- " '+, 2 3 ! # , $%$%+' $ 4 $. ! 3 5 $ "#

?*!%0$5!5-,%$&*6!D-!'-G$-D!%0-!@($'*-55!(*#!%(9!)$%-'(%+'-5!@&'!%0-&'-%$,()!(*#!-.:$'$,()!-G$#-*,-!'-7('#$*7!%0-!'-)(%$&*50$:!F-%D--*!-(,0!&@!#$5%'$F+%$G-!@($'*-55!(*#!:'&,-#+'()!@($'*-55!(*#!%(9!,&.:)$(*,-6!(*#!%0-!:&%-*%$()!.-#$(%$*7!'&)-!&@!)-7$%$.(,8%! L -!#'(D!&*! 18)-'05!Q]^^l!m_aa^n

'

=-,())!%0(%!%0-!,&*5%'+,%!&@!:'&,-#+'()!@($'*-55!'-)(%-5!%&!:-',-:%$&*5!&@!%0-!@($'*-55!&@!%0-!:'&,-55!)-(#$*7!%&!(*!&+%,&.-!Q5--!>-G-*%0()6!_ao^i!10$F(+)%!K!L ()N-'6!_agki!I (*!#-*! /&5!-%! ()%6!_aagR%! 10-!%(9!)$%-'(%+'-!,&*%($*5! 5-G-'()! 5%+#$-5!%0(%! -9(.$*-!%0-!'-)(%$&*50$:!F-%D--*!G('$&+5!.-(5+'-5!&@!:'&,-#+'()!@($'*-55!(*#!%(9!,&.:)$(*,-%!10-!5+'G-82F(5-#!5%+#$-5!&@! f &F-*(!(*#! I (*! c $PN-!Q]^_1i!

L -!#&!*&%!F-)$-G-!%0(%!%0-!- . :$'$,()!&'!%0-&'-%$,()!)$%-'(%+'-!:'&G$#-!(!5+@@$,$-*%!F(5$5!%&!08:&%0-5$5-!&*!D0-%0-'!%0-'-!D&+)#!F-!(*!$*%-'(,%$&*!F-%D--*!%0-!%D&!%8:-5!&@!@($'*-55M!10$5!7(:!$*!%0-!)$%-'(%+'-!#&-5!*&%!%(N-!(D(8!%0-!G()+-!&@!)-('*$*7!D0(%!%0-$'!,&.F$*-#!-@@-,%!.$70%!F-M!=(%0-'!%0(*!5%(%$*7!(!08:&%0-5$56!D-!:&5-!(!'-5-(',0!W+-5%$&*6!(5!@&))&D5[!!

CD[!

565 E.&!@)'&$'#*-!?&+#*'#$F!8)-&!)=!-&F#'#?*%G!

p+'!@$*()!%D&!08:&%0-5-5!,&*5$#-'!%0-!'&)-!&@!)-7$%$.(,8!$*!.-#$(%$*7!%0-!(55&,$(%$&*!F-%D--*!@($'*-55!(*#!%(9:(8-'50!,&.:)$(*,-M!?*!0$5!%0-&'8!&*!,&.:)$(*,-6!18)-'!Q]^^1!m_aa^nR!5+77-5%5!%0(%!%(9:(8-'50!.&%$G(%$&*!%&!,&.:)8!D$%0!%(9!)(D5!'-)(%-5!%&!%(9:(8-'50!@--)$*75!(F&+%!%0-!(+%0&'$%$-5!D0&!:'-5,'$F-!(*#!-*@&',-!%0-!)(DM!E-!:'&:&5-5!%0(%!,$%$H-*50!F-)$-@5!(F&+%!%0-!)-7$%$.(,8!&@!(!)-7()!(+%0&'$%8!Q$*,)+#$*7!(!%(9!(+%0&'$%8R!:'&G$#-!(!N-8!.&%$G(%$&*!@&'!@&))&D$*7!%0-!)(D5!:'-5,'$F-#!F8!%0$5!(+%0&'$%8M!1+'*-'!Q]^^k6!:M!oR!#-5,'$F-5!b)-7$%$.(%-!(+%0&'$%8O!(5!b,&*%'&)!F(5-#!&*!%0-!(,,-:%(*,-!F8!%0-!%('7-%!&@!&*-05!'$70%!%&!:'-5,'$F-!%0-$'!F-)$-@56!(%%$%+#-5!&'!(,%$&*50M!18)-'!Q_aagR!50&D5!%0(%!)-7$%$.(,8!$5!F(5-#!&*!(!,$%$H-*05!&F)$7(%$&*!%&!&F-8!(*!(+%0&'$%8!(5!D-))!(5!%0-!-9%-*%!%&!D0$,0!%0(%!(+%0&'$%8!#&-5!$%5!P&F!D-))M!j$',0)-'6!E&-)H)!(*#!L(0)!Q]^^oR!(*#!L(0)6!j(5%)+*7-'!(*#!j$',0)-'!Q]^_^R!('7+-!%0(%!D0-*!(!%(9!(+%0&'$%805!:&D-'!$5!)-7$%$.(%-6!%0(%!(+%0&'$%8!$5!.&'-!)$N-)8!%&!F-!%'+5%-#!(*#!,&.:)$-#!D$%0M!18)-'!(*#!4(7(*!Q]^^oR!@+'%0-'!('7+-!%0(%!@($'*-55!$5!(*!$.:&'%(*%!#-%-'.$*(*%!&@!:-',-:%$&*5!&@!%0-!)&7-2&(-)(#8!&@!%*

'

< ,>-(*! Q]^]^R! &F5-'G-5! %0(%! %0-! '-5+)%! &@! %0$5! %+'*! &@! -G-*%5! 0(5! F--*! (!)(,N! &@! #-G-)&: . -*%! &@! 18)-'05! %0-&'8! (5! $%! '-)(%-5! %&! #$5%'$F+%$G-! @($'*-55M! 10$5! $55+-! ,(*! F-! 5--*! $*! < +': 08! Q]^^kR! (*#! < +': 08! -%! ()M! Q]^_1R! $*! %0(%! 0-8! 5%+#8! : '&, -#+'()! @($'*-55! &*)8! $*! %0-$'! %-5%! &@! 18)-'05! %0-&'8M!

L -! -9%-*#! %0-! D&'N! &@! < +': 08! Q]^^kR! (*#! < +': 08! -%! ()M! Q]^_1R! $*! %0'--! D(85[! _R! D-! $*, &': &'(%-! #$5%'$F+%$G-! @($'*-55i!]R! D-! +5-! (*! -9: -'$. -*%()! (: : '&(,0! %&! : '&G$#-!, (+5()! -G$#-*, -! (F&+%! %0-! $*@)+-*, -! &@! F&%0! #$5%'$F+%$G-! (*#! : '&, -#+'()! &*! %(9: (8-'50! ,& . :)$(*, -! %0'&+70! %0-$'! F-)$-@5! $*! %0-!)-7$% . (,8! &@! %0-! %(9! (+%0&'$%8i! (*#! `R! D-! +5-! (! F'&(#! 5(. :)-! &@! %(9: (8-'5! D0&! ('-! *&%! N*&D*! %&! F-! *&*2, & . :)$(*%M! p+'! '- . ($*$*7! 08: &%0-5-5! ('-[!

AH[!

'

E*;-&!7B! J& ?)F8*@.#%!/8)=#-&!3'*'#:'#%:!

!

———————————————————————!

$%:$^:0"d<+$&L:"3+0"a&M:D,;"-+",%:"5+-,:0"#,3,:9Y"AF=BN"ET:63M39@73',"1"aD&$,&D/"AF=>/"KP"ABJP"R*D"
93LK':"O39"*+0:DO:-.%,:0"-+",%:"*+0:D"5#T"Ac/FFF"3+0"-+",%:".D:3,:D",%3+"5#T"=FF/FFF"$3,:.&D-:9"Q;"
3Q&*,"h i /"3+0"&M:DO:-.%,:0"-+",%:"5#T"hc/FFF"j"5#T"=FF/FFF"$3,:.&D;"Q;"3Q&*,"h i P"S&D":0*$3,-&+/"O:"
$%:$^:0"dW0*$3,-&+"d&$3.24000.2C3,[(*+)-1'd[6(d)-000.(:")-1 1d#&D"T"d&D"d":-$3,Fdc""$$3,OdPc::-+&D::-.%,:0"

S('%$,$:(*%5!'-,-$G-#!(*!-.($)!$*G$%(%$&*!@'&.!%0-!@$'.!%&!:('%$,$:(%-!$*!(!W+-5%$&**($'-!(F&+%!$*,&.-!%(9-5!(*#!D-'-!(55$7*-#!(!+*$W+-!+5-'!?c!(*#!:(55D&'#!:'&G$#-#!F8!%0-!@$'.6!-*5+'$*7!%0-8!,&+)#!,&.:)-%-!&*)8!&*-!W+-5%$&**($'-6!(*#!D-'-!$*,-*%$G$5-#!F8!(!:&$*%!585%-.!5:-,$@$,!%&!%0-!@$'.M!C@%-'!F-$*7!'(*#&.)8!(55$7*-#!%&!-9:-'$.-*%()!,&*#$%$&*56!:('%$,$:(*%5!'-(#!(!5,-*('$&!(*#!(*5D-'-#!W+-5%$&*5!:-'%($*$*7!%&!%0-!#-:-*#-*%!G('$(F)-6!(5!D-))!(5!&%0-'!W+-5%$&*5!(F&+%!:&%-*%$()!,&*%'&)!G('$(F)-5!Q5&,$()!*&'.56!#-%-,%$&*!)$N-)$0&&#6!D0-%0-'!%0-!:('%$,$:(*%!0(#!-G-'!0(#!(*!+*:)-(5(*%!-*,&+*%-'!D$%0!(*!?=B!(7-*%R6!(*#!#-.&7'(:0$,!$*@&'.(%$&*!Q(7-6!7-*#-'6!*+.F-'!&@!8-('5!@$)$*7!(!%(9!'-%+'*6!%(9!:'-:('-'6!-#+,(%$&*6!(*#!$*,&.-R%!!

?*!())!G-'5$&*5!&@!%0-!5,-*('$&6!%0-!%(9:(8-'!'-,-$G-#!(*!+*@(G&+'(F)-!&+%,&.-6!$*!D0$,0!(!#-#+,%$&*!D(5!#-*$-#6!5$*,-!@($'*-55!:-',-:%$&*5!('-!.&'-!)$N-)8!%&!F-!(,%$G(%-#!$*!%0-!:'-5-*,-!&@!+*@(G&+'(F)-!&+%,&.-5!Q<+))-*6!]^^gi!=+%%-!K!<-55$,N6!_aakR%!L-!D-'-!,('-@+)!%&!#$5%$*7+$50!%0-!@(G&+'(F$)$%8!&@!%0-!&+%,&.-!@'&.!%0-!#$5%'$F+%$G-!@($'*-55!&@!%0(%!&+%,&.-!Q5--!BN$%N(!-%!()M6!]^^`R6!5$*,-!D-!.(*$:+)(%-#!#$5%'$F+%$G-!@($'*-55!F8!0(G$*7!%0-!%(9:(8-'05!+*@(G&+'(F)-!&+%,&.-!,&.:('-#!D$%0!'-@-'-*%!&%0-'5!Q&+%,&.-5!&@!&%0-'6!5$.$)('!%(9:(8-'5R%!!

?*$%$())86!:('%$,$:(*%5!'-(#!%0-!@&))&D$*7[!

/-)&D!$5!(!F'$-@!5,-*('$&!(F&+%!(!%(9:(8-'!*(.-#!;(.$-!(*#!0$5!-9:-'$-*,-5!D$%0!%0-!?*%-'*()!=-G-*+-!B-'G$,-!Q?=BR%!S)-(5-!'-(#!$%!,('-@+))86!(5!8&+!D$))!F-!(5N-#!5&.-!@&))&D2+:!W+-5%$&*5M!L-!D&+)#!)$N-!%&!N*&D!D0(%!8&+!D&+)#!#&!$@!8&+!D-'-!;(.$-M!

3-9%6!:('%$,$:(*%5!D-'-!7$G-*!(!5,-*('$&!%&!'-(#M!J&..&*!%&!())!5,-*('$&5!D(5!%0-!@&))&D$*7[!

;(.$-!$5!(!5.())!F+5$*-55!&D*-'M!>(5%!8-('6!0-!0(#!(!)-*7%08!(*#!@'+5%'(%$*7!#$5:+%-!D$%0!%0-!?=B!,&*,-'*$*7!(!%(9!#-#+,%$&*M!?*!%0-!-*#!;(.$-!D(5!

*&' . 5!(5!%0-!(G-'(7-!5,&'-!&@!%D&!$%- . 56!(#(:%-#!@'& . ! / &F-N!-%!()M!Q]^_`R6!+5$*7!(!g2
:&$*%!>$N-'%!5,()-!(5!(F&G-6!(5!@&))&D5[!_R!
!(*#!]R! M!
10-! J '&*F(,005!():0(!&@!%0$5! . -(5+'-!D(5!^Mga6!D0$,0!$5!7&&#!Q3+**())86!_agoRM! L -!
()5&! ,&*%'&))-#!@&'!%0-! :&55F)$%8!%0(%! (!'-5:&*#-*%! . (8!0(G-!F--*!$*@)+-*,-#!F8!(!
:'-G$&+5! +*:)-(5(*%! -*,&+*%-'! D$%0! (! %(9! (+%0&'$%8! - . :)&8--! F8! (5N$*7! (! F$*('8!
W+-5%$&*6! r!?*!5+ . 6!%0-'-!
('-!*$*-!,&*%'&)!G('$(F)-5M!

10-!'-5+)%5!$*!1(F)-!qF!$*,)+#-!%0-!$*@)+-*,-!&@!())!*$*-!,&G('$(%-5!'-:&'%-#!$*!1(F)-!`M!
"9,)+#$*7!%0-!,&G('$(%-5!#&-5!*&%!5$7*$@$,(*%)8!,0(*7-!%0-!'-5+)%5!(5!:'-5-*%-#!(F&G-M!

I6I C);9:'$&::!%.&%0:!

L-!()5&!,&*#+,%-#! j '+5N()2 L ())$5! %-5%5! %&! #-%-' . $*-! $@! &+'! . ($*! -@@-,%5! &@! -(,0!
#$. -*5$&*!&@!@($'*-55!('-!'&F+5%!%&!(*!&'#$*()!'(%0-'!%0(*!$*%-'G()!$*%-':'-%(%$&*!&@!&+'!
#(%(M!C! j '+5N()2 L ())$5!E!%-5%!50&D-#!%0(%!%0-'-!D(5!(!5%(%$5%$,())8!5$7*$@$,(*%!#$@@-'-*,-!
$*!%(9!,& . :)$(*,-!$*%-*%$&*5!F-%D--*!)-G-)5!&@!#$5%'$F+%$G-!@($'*-556!w2Q_R! s! l M_kq6! ! s!
^M^_`6!D$%0!(! . -(*!'(*N!,& . :)$(*,-!5,&'-!&@!]^aM^l!@&'!0$70!#$5%'$F+%$G-!@($'*-55!(*#!
_o^Mog!@&'!)&D!#$5%'$F+%$G-!@($'*-55M!C! j '+5N()2 L ())$5!E!%-5%!()5&!50&D-#!%0(%!%0-'-!D(5!
(! 5%(%$5%$,())8! 5$7*$@$,(*%! #$@@-'-*,-! $*! %(9! ,& . :)$(*,-! $*%-*%$&*5! F-%D--*!)-G-)5! &@!
:'&,-#+'()!@($'*-556! w2Q_R! s! l Mq__6! ! s!^M^__6!D$%0!(! . -(*!'(*N!,& . :)$(*,-!5,&'-!&@!
]^oMaa! @&'! 0$70! :'&,-#+'()! @($'*-55! (*#! _o^M]^! @&'!)&D! :'&,-#+'()! @($'*-55M! 10-5-!
'-5+)%5!('-!,&*5$%-*%!D$%0!&+'!. ($*!C 3 J p I C!$*!1(F)-!`M!

'

,& . :)$(*,-6! D$%0! (! :'&,-#+'())8! (*#! #$5%'$F+%$G-)8! +*@($'! 5$%+(%$&*! '-5+)%$*7! $*! %0-!
)&D-5%!,& . :)$(*,-6!(!:'&,-#+'())8!&'!#$5%'$F+%$G-)8!@($'!5$%+(%$&*!'-5+)%$*7!5$7*$@$,(*%)8!
0$70-'! ,& . :)$(*,-6! (*#! (! :'&,-#+'())8! (*#! #$5%'$F+%$G-)8! @($'! 5$%+(%$&*! '-5+)%$*7! %0-!
0$70-5%! ,& . :)$(*,-! $*%-*%$&*5M[14]! 10$5! @$*#$*7! 5+77-5%5! %0(%! #-7'--5! &@! @($'*-55! ('-!
:-',-$G-#!F8!%(9:(8-'5!(*#!$. :(,%!%0-$'!D$))$*7*-55!%&!,& . :)8!D$%0!%(9!(+%0&'$%$-5M!?%!

'

/ $-56! =! K! < &(76! ;! _aol6! b?*%-'(,%$&*()! P+5%$,-[! J& . . +*$,(%$&*! ,'$%-'$(! &@! @($'*-5506! $*! > -D$,N$6! =6!
B0-: : ('#6! / !K! / (H-' . (*! < !Q-#5R6! !QG&)M!_R6!;C?!S'-556!
f '--*D$,06! J 16! : : M!q`2kkM!!

/ &F-N6! c 6! E (%@$-)#6! =!K! L -*%H-)6! j !]^^g6! bC*!$*G-5%$7(%$&*!&@! D08!%(9: (8-'5! : '-@-'!'-@+*#5[!C!%0-&'8!
&@! :)(**-#!F-0(G$&'! (: : '&(,006! 6! G&)M!] a6! *&M!_6!
: : M! a`2___M!

/ &F-N6! c 6! E (7- . (*6! C! K! j -))$0-'6! J !]^_`6! bC*()8H$*7! %0-! '&)-! &@! 5&,$()! *&' . 5! $*! %(9! ,& . :)$(*,-!
F-0(G$&'06! 6! G&)M!__k6! *&M!`6! : : M! qk_2q1oM!

/ '&,N*-'6! ;! K! L $-5-*@-)#6! / ! _aa l6! bC*! $*%-7'(%$G-! @'(. -D&'N! @&'! -9:)($*$*7! '-(,%$&*5! %&! #-,$5$&*5[!
?*%-'(,%$G-!-@@-,%5! &@! &+%,& . -5! (*#! : '&,-#+'-506! 6! G&)M! _] ^6! *&M!] 6! : : M! _oa2
] ^oM!

/ '&,N*-'6! ;!] ^^] 6! b < (N$*7! 5-*5-! &@! : '&,-#+'()! @($'*-55[! E&D! 0$70! : '&,-#+'()! @($'*-55! ,(*! '-#+,-! &'!
0-$70%-*! %0-! $*@)+-*,-! &@! &+%,& . -! @(G&'(F$)$%8006! 6! G&)M!] g6! *&M!
_6! : : M! ko2g1M!

/ '&,N*-'6! ;! K! L $-5-*@-)#6! / !] ^^k6! bE&D6! D0-*6! (*#! D08! #&-5! &+%,& . -! @(G&'(F$)$%8! $*%-'(,%! D$%0!
: '&,-#+'()! @($'*-55r06! $*! f '--*F-'76! ;! K! J &)W+$%%6! ;! Q-#5R6! 6!
" ')F(+ . !C55&,$(%-56! < (0D(06! 3 ;6! : : M! k] k2kk`M!

/ '&D*6! =!K! < $*%H6! ;!] ^_]6! b10-! / $7! S$,%+'-06! $*! j -''6! E6! < , j -*H$-6! j !K! < $*%H! ;! Q-#5R6!
6! J (*(#$(*! 1(9! 4&+*#(%$&*6! 1&'&*%&6! 660Tm / TT1 81T f [(/ ')-1(%)-1006 6! 660 . 0024Tc 4604512 . 8621-71

'

< &5-'6! c 6! "G(*56!;!K! j $. 6! J !_aak6!b10-!-@@-,%5!&@!0&'$H&*%()!(*#!-9,0(*7-!$*-W+$%8!&*!%(9!'-:&'%$*7!
#-,5&*506! 6!G&)M!g^6!*&M!q6!: :M!l_a2l`qM!

< +))-*6!"!]^^g6!b10-!'-,$:'&,()!'-)(%$&*50$:!F-%D--*!(@@-,%!(*#!:-',-:%$&*5!&@!@($'*-5506!$*!1y'*F)& . 6!
j !K! I -' . +*%6!=!Q-#5R6! 6!
C507(%-6! / +')$*7%&*6! I 16!: :M!_k2`gM!

< +':086! j !]^^q6!b10-!'&)-!&@!%'+5%!$*!*+'%+'$*7!,& . :)$(*,-[!C!5%+#8!&@!(,,+5-#!%(9!(G&$#-'506!
6!G&)M!]o6!*&M!]6!: :M!_og2]^aM!

< +':086! j !]^^k6!b=-7+)(%$*7! . &'-!-@@-,%$G-)8[!10-!'-)(%$&*50$:!F-%D--*!:'&,-#+'()!P+5%$,-6!)-7$%$. (,86!
(*#!%(9!*&*2,& . :)$(*,-06! 6!G&)M!`]6!*&M!q6!: :M!kl]2koaM!

< +':08! j 6!18)-'6!1!K! J +'%$56!C!]^^a6!b3+'%+'$*7!'-7+)(%&'8!,& . :)$(*,-[!?5!:'&,-#+'()!P+5%$,-!-@@-,%$G-!
D0-*!:-&:)-!W+-5%$&*!%0-!)-7$%$. (,8!&@!%0-!)(Dr06! 6!G&)M!`6!*&M!_6!: :
_2]lM

< +':086! j M! / '(#@&'#6! / ! K! ;(,N5&*6! ;!]^_l6! b < &%$G(%$*7! ,& . :)$(*,-! F-0(G$&'! (. &*7! &@@-*#-'5[!
S

18)-'6! 1! K! c-7&-86! S! _aak6! bJ&))-,%$G-! '-5%'($*%! $*! (! 5&,$()! #$)-. . (! 5$%+(%$&*[! 10-! $*@)+-*,-! &@!
:'&,-#+'()! P+5%$,-! (*#! ,&. . +*$%8! $#-*%$@$,(%$&*! &*! %0-! -. :&D-'. -*%! (*#!)-7$%$. (,8! &@!
(+%0&'$%806! 6!G&)M!1a6!*&M!`6!::M!qo]2qagM!

18)-'6!1!K!4(7(*6!;!]^^o6!b>-7$%$. (,8!(*#!,&&:-'(%$&*[! L 08!#&!:-&:)-!0-):!%0-!:&)$,-!@$70%!,'$. -!$*!
%0-$'!,&. . +*$%$-5r06! 6!G&)M!16!*&M!_6!::M!]`_2]gkM!

I (*!#-*!/&56!j 6!I -'. +*%6!=!K!L $)N-6!E!_aag6!bS'&,-#+'()!(*#!#$5%'$F+%$G-!P+5%$,-[!L 0(%!$5!@($'!#-:-*#5!
. &'-! &*! D0(%! ,&. -5! @$'5%! %0(*! &*! D0(%! ,&. -5! *-9%06!
6!G&)M!g]6!*&M!_6!::M!ak2_^qM!

I (*!c$PN-6!<!K!I -'F&&*6!S!]^_^6!b1'+5%!$*!(+%0&'$%$-5!(5!(!F&+*#('8!,&*#$%$&*!%&!:'&,-#+'()!@($'*-55!
-@@-,%5!&*!%(9!,&. :)$(*,-06! 6!G&)M!`_6!*&M!_6!::M!o^2a_M!

I -'F&&*6! S! K! I (*! c$PN-6! <!]^^g6! bC! 5-)@2$*%-'-5%! (*()85$5! &@! P+5%$,-! (*#! %(9! ,&. :)$(*,-[! E&D!
#$5%'$F+%$G-! P+5%$,-! . &#-'(%-5! %0-! -@@-,%! &@! &+%,&. -! @(G&'(F$)$%806!
6!G&)M!]o6!*&M!16!::M!g^q2g]gM!

I -'F&&*6! S! K! I (*! c$PN-6! <!]^__6! bL 0-*! #&! 5-G-'-! 5(*,%$&*5! -*0(*,-! ,&. :)$(*,-r! 10-! '&)-! &@!
:'&,-#+'()!@($'*-5506! 6!G&)M!`]6!*&M!_6!::M!_]^2_`^M!

I -'F&&*6!S!K! I (*! c$PN-6! <!]^_]6!b10-!-@@-,%!&@!:-',-$G-#!#-%-''-*,-!&*!,&. :)$(*,-!D$%0!(+%0&'$%$-5[!
10-! . &#-'(%$*7! $*@)+-*,-! &@! :'&,-#+'()! P+5%$,-06!
6!G&)M!_6!::M!_k_2_l_M!

L (0)6!?6! j (5%)+*7-'6!/!K! j $',0)-'6!"!]^_^6!b1'+5%!$*!(+%0&'$%$-5!(*#!:&D-'!%&!-*@&',-!%(9!,&. :)$(*,-[!
C*!-. :$'$,()!(*()85$5!&@!%0-!X5)$::-'8!5)&:-!@'(. -D&'NY06! 6!G&)M!`]6!*&M!q6!::M!
`o`2q^lM!

L -*H-)6!<!]^^]6!b10-!$. :(,%!&@!&+%,&. -!&'$-*%(%$&*!(*#!P+5%$,-!,&*,-'*5!&*!%(9!,&. :)$(*,-[!10-!'&)-!
&@!%(9:(8-'50!$#-*%$%806! 6!G&)M!og6!*&M!q6!::M!l]a2lqkM!

L &'50(. 6!=!_aa16!b10-!-@@-,%!&@!%(9!(+%0&'$%8!F-0(G$&'!&*!%(9:(8-'!,&. :)$(*,-[!C!:'&,-#+'()!P+5%$,-!

33$"'*6+

63$&*5$"#-.+ "%#&(5$"#

?*%'&#+,%$&*!

/-)&D!$5!(!F'$-@!5,-*('$&!(F&+%!(!%(9:(8-'!*(.-#!;(.$-!(*#!0$5!-9:-'$-*,-5!D$%0!%0-!?*%-'*()!=-G-*+-!B-'G$,-!Q?=BR%!!S)-(5-!'-(#!$%!,('-@+))86!(5!8&+!D$))!F-!(5N-#!5&.-!@&))&D2+:!W+-5%$&*5%! L -!D&+)#!)$N-!%&!N*&D!D0(%!8&+!D&+)#!#&!$@!8&+!D-'-!;(.$-%!

!

J&..&*!$*@&'.(%$&*!

;(.$-!$5!(!5.())!F+5$*-55!&D*-'%!>(5%!8-('6!0-!0(#!(!)-*7%08!(*#!@'+5%'(%$*7!#$5:+%-!D$%0!%0-!?=B!,&*,-'*$*7!(!%(9!#-#+,%$&*%!!?*!%0-!-*#!;(.$-!D(5!#$5(::&$*%-#!%&!@$*#!&+%!%0(%!0-!D(5!*&%!())&D-#!%&!,)($.!%0-!@+))!#-#+,%$&*%!

!

L&'#$*75!@&'!@($'*-55!.(*$:+)(%$&*5!!

!

!

!

'

gR!S)-(5-!$*#$,(%-!8&+'!(::'&9$. (%-!(**+()!$*,& . -[!

)-55!%0(*!|]k6^^^!
F-%D--*!|]k6^^^!(*#!|k^6^^^!
F-%D--*!|k^6^^_!(*#!|gk6^^^!
F-%D--*!|gk6^^_!(*#!|_^^6^^^!
}!|_^^6^^^!
S'-@

)
!"#$%& '()#)+ ' ,)- !. ! '%/0)123224)5#(6)789)&#6)29): :6)27?>2?7)*
'

!

!

'

=*41,+, : ! ,>4?,! ,/ ;! .4?21*! ?./2*! +1! ,>4! @1+,4*! A,/,47!

!

!

C*#'-D!E+)%7'-*6 !;&0*!E(55-)#$*- !(*#!;&*(%0(*!3(50 !

!

!

2%-9"3D,-$':"0&$*L:+,9",%:"K%:+&L:+&+"&("-0:+,-,;",%:(,",34"D:(*+0"(D3*0"-+",%:"5+-,:0"#,3,:9"3+0"0:9$D-Q:9",%:"KD&Q':Ll"-+$'*0-+."O%3,"-,"-9/"%&O",%:"(D3*0"-9":4:$*,:0/"-,9"0:,:$,-&+/"L3.+-,*0:"3+0"KD:M3':+$:/"3+0",%:"D:9K&+9:"&("^:;"9,3^:%&'0:D9P" 7-,%"3"K3*$-,;"&("KD-&D"9$%&'3D';"D:9:3D$%"3+0"9$3+,"-+(&DL3,-&+"(D&L"&,%:D"$&*+,D-:9/"O:"D:';"&+"%-9,&D-$3'"D:K&D,9"(D&L",%:"<+,:D+3'"]:M:+*:"#:DM-$:"E<]#J"3+0"-,9"&M:D9-.%,"3.:+$-:9"-+$'*0-+.",%:"n&M:D+L:+,")$$&*+,3Q-'-,;"R((-$:/"2D:39*D;"<+9K:$,&D" n:+:D3'"(&D"234")0L-+-9,D3,-&+/"3+0",%:"63,-&+3'"234K3;:D")0M&$3,:P"7%-':"L:,D-$9"D:(':$,-+."-+0-M-0*3'"-0:+,-,;",%:(,",34" D:(*+0"(D3*0"%3M:"D:$:+,';"Q::+",D:+0-+."-+",%:"D-.%,"0-D:$,-&+/",%:"-99*:"O-'"%3M:"39,-+."$&+9:f*:+$:9"-+",:DL9"&("<]#" D:9&*D$-+."3+0"$;Q:D9:$*D-,;/",34K3;:D",D*9,/",34"KD:K3D3,-&+"L:,%&09"3M3-'3Q':",&",34K3;:D9"3+0",%:-D"$&LK'-3+$:"Q*D0:+9"j" K3D,-$*'3D';",%:"Q*D0:+"3((:$,-+."'&O@-+$&L:",34K3;:D9/"3+0"&+"(*,*D:",34"$&LK'-3+$:"-,9:'(P"S-+3'';/",%-9"3D,-$':"-9"3"$3'"(&D" 9$%&'3D';"3,,:+,-&+"Q&,%"-+",%:"5#"3+0":'9:O%:D:/"O%:D:",%:"-99*:"&(",%-9"(D3*0"%39"Q::+"*+0:D@D:9:3D$%:0P""""

$;Q:D9:$*D-,;l"-0:+,-,;",%:(,l"<]#l",34"30L-+-9,D3,-&+l",34"$&LK'-3+$:l",34"(D3*0

'

———————————————!

"S#R"234"#,3(("=/"WD+9,"1"_&*+./"8&9,&+/"5#)P"WL3-'Y"3+0D:O%*',.D:+[.L3-'P$&LP" "aD&(:99&D"&(")$$&*+,-+."3+0"2343,-&+/"a3*'"X&'':.:"&("8*9-+:99"3+0"W$&+&L-$9/"5+-M:D9-,;"&("6:O"

'

!

"#&!'()#*!"

'

!

4&'!%0-!@'(+#5%-'6!&F%($*$*7!%0-!G$,%$. 05!S??!$5!%0-!$*$%$()!F(''$-'!%&!:-':-%'(%$*7!? c 1!%(9!'-@+*#!@'(+#M!A*@&'%+*(%-)86!%0$5!$5!'-)(%$G-)8!-(58!$*!%0-! . &#-'*!-'(!(5!@'(+#5%-'5!+5-!(!G('$-%8! &@! %(,%$,5! %&! &F%($*! 5+,0! $*@&' . (%$&*6! &*-! '(. :(*%! . -%0&#! F-$*7! %0'&+70!:0$50$*7!%0'&+70!+*5&)$,$%-#!- . ($)5!(*#!%-)-:0&*-!,())5M! p *-!5+F2,(%-7&'8!&@!:0$50$*7!5,0- . -5!5(D!@'(+#5%-'5!:&5$*7!(5!(!5-*$&'!,& . :(*8!-9-,+%$G-!&5%-*5$F)8!- . ($)$*7!%0-$'!&D*!:(8'&))!&'!0+ . (*!'-5&+',-5!#-:('% . -*%6!'-W+-5%$*7!- . :)&8--50!S??!(*#!%0-$'!D(7-!(*#!%(9!5%(%- . -*%!$*@&' . (%$&*!@'& . !%0-!- . :)&8--50!4&' . ! L 2]!5%(%- . -*%5!Q f C p6!]^_oRM!

C!@+'%0-'! . -%0&#!0(5!5--*!#$50&*-5%!- . :)&8--5!5%-()$*7!S??!@'& . !$*20&+5-!#(%(F(5-5!%0'&+70!%0-$'!- . :)&8 . -*%!(*#!%0-

0(G-! 7'(#+())8! F-,& . -! . &'-! (#G(*,-#! %0'&+70&+%! %0-! 8-('56! %0+5! *-,-55$%(%$*7! @'(+#5%-'5!%&!,&*%$*+())8!-G&)G-!(*#!0&*-!%0-$'!,'(@%6!,'-(%$*7!7'(#+())8! . &'-!,&*G$*,$*7! '-%+'*5!-G-'8!8-('!Q?=B6!]^_oR‼3 1C!Q]^_g(R!*&%-#!(*!-9(. :)-!&@!(! . &'-!5&:0$5%$,(%-#! 5,0- . -!D0-'-!,'$. $*()5!+5-!- . :)&8-'!$#-*%$@$,(%$&*!*+ . F-'5!%&!@$)-!@'(+#+)-*%!F+5$*-55! %(9!'-%+'*5!(*#!,&*,)+#-#!%0(%!%0-!?=B! . +5%!,&*%$*+-!%&!'- . ($*!G7)(*%!(*#!F-!*$. F)-! %&!,&+*%-'(,%!- . -'7$*7!#-G-)&: . -*%5!$*!? c 1!@'(+#‼

10-!%0$'#!5%-:!$*!%0-!@'(+#!$5!%&!&F%($*!%0-!%(9!'-@+*#!@'& . !%0-!?=B‼ < &5%!@'(+#5%-'5!+5-! :'-:($#!#-F$%!,('#5!&'!#$'-,%!#-:&5$%56!D$%0!(!5)$70%!%-*#-*,8!%&D('#5!:'-:($#!#-F$%!,('#5! (5!%0-5-!,(*!F-!(*&*8 . &+5)8!#-:&5$%-#!D$%0&+%!(*8!#$'-,%!$-!%&!%0-!@'(+#5%-'!QJ0(. F-'5! K!z-$#(*6!]^_`R‼!"(')8!&*6!(!@)(D!())&D-#! . +)%$:)-!%(9!'-%+'*5!%&!F-!@$)-#!@'& . !%0-!5(. -! (##'-556!(*#!(,,&'#$*7!%&!1? f 1C!Q]^_]R!&G-'!]6^^^!'-%+'*5!D-'-!@$)-#!@'& . !(*!(##'-55! $*!>(*5$*76! < $,0$7(*!(5!D-))!(5!0+*#'-#5!&@!'-%+'*5!F-$*7!@$)-#!@'& . !&%0-'!5:-,$@$,! (##'-55-5‼!10(*N@+))86!%0$5!$55+-6!(5!D-))!(5%0-!$55+-!&@! . +)%$:)-!'-@+*#5!F-$*7!#-:&5$%-#! %&!&*-!(*&*8 . &+5!F(*N!(,,&+*%6!D-'-!())-G$(%-#!@&))&D$*7!?=B!(,%$&*‼!1(9!'-@+*#5! . +5%!*&D!F-! . (#-!%&!(!F(*N!(,,&+*%!&'!#-F$%!,('#!$*!%0-!%(9:(8-'05!*(. -!(*#!%0-! *+ . F-'!&@!'-@+*#5!:-' . $%%-#!%&!F-!5-*%!%&!(!5$*7)-!5&+',-!$5!)$. $%-#!%&!%0'--6!F+%!%0$5!0(5! &FG$&+5)8!F--*!$*5+@@$,$-*%!%&!,& . :)-%-)8!:'-G-*%!%0$5!@$*()!5%-:!&@!%0-!@'(+#‼

+-) #*! "+! "+ +# - 6+7& - ('+! 4 $&+#* 5 $

H67 [&*8:!@8#)8!')!5\7\!

c-5:$%-!5& . -!5,'+%$*8!@'& . !?=B!&G-'5$70%!F&#$-5!QE(55-)#$*-6!]^_kR6!%0-!?=B!D(5!5)&D! %&!:+F)$,)8!%'-(%!?c 1!%(9!'-@+*#!@'(+#!(5!(! . (P&'!$55+-!(*#!#$#!*&%!$*,)+#-!$%!$*!%0-$'! b c $'%8!c &H-*0!)$5%!&@!5,(. 5!+*%$)!]^_]‼3&%D$%05%(*#$*7!%0$56!&G-'!%0-!8-('56!%0-!?=B!0(5! #-G-)&:-#!%0-$'!%-,0*$W+-56!(#. $*$5%'(%$G-!F&#$-56!(*#!:'&,-#+'()!585%-. 5!@&'!#-()$*7! D$%0!%0-!@'(+#‼

?*!]^^k6!%0-!?=B!&@@$,$())8!-5%(F)$50-#!%0-!?#-*%$%8!10-@%!S'&7'(. !p@@$,-6!)(%-'!,'-(%$*7! %0-!S'$G(,86!?*@&' . (%$&*!S'&%-,%$&*6!(*#!c (%(!B-,+'$%8!&@@$,-!(*#!%0-!?#-*%$%8!10-@%!(*#! ?*,$#-*%! < (*(7- . -*%! &@@$,-! D$%0! (*! (,,& . :(*8$*7! C#G$5&'8! J& . . $%%--! $*!]^^g! Q31C6!]^^gR‼!?*!]^^o6!%0-!?=B!F-7(*!. ('N$*7!%(9:(8-'50!(,,&+*%5!D$%0$*!%0-$'!#(%(F(5-! $@!%(9:(8-'5!0(#!F--*!G$,%$. 5!&@!%0$5!@'(+#6!%0-'-@&'-!0-):$*7!%&!,&&'#$*(%-!%0-$'!-@@&'%5! %&!(55$5%!%(9:(8-'5!(,'&55!G('$&+5!#G5$&*5‼!10-8!()5&!-5%(F)$50-#!%0-!?#-*%$%8!S'&%-,%$&*! B:-,$()$H-#!A*$%!%&!0-):!%(9:(8-'5!D0&!0(#!F--*!G$,%$. 5!(5!D-))!(5!(!%&))2@'--!0&%)$*-!

H65 [&*8:!5\7\!]!5\7I!

10-!?=B!$*,'-(5-#!%0-$'!-@@&'%5!(7($*5%!?c 1!%(9!'-@+*#!@'(+#!$*!%0-!8-('5!%0'&+70!]^_q!
?*!]^_^!%0-8!$. :)- . -*%-#!%0-!")-,%'&*$,!4'(+#!c -%-,%$&*!B85%- . 6!5%$))!$*!:)(,-!%&!5& . -!
-9%-*%!%&!%0$5!#(8!10-!585%- . !D(5!(! . &'-!#-G-)&:-#!@&' . !&@!%0-!@$)%-'5!%0(%!D-'-!+5-#!
:'-G$&+5)86!(5!$%!D&+)#!(*()85-!'-%+'*5!F&%0!F(5-#!&*!(!5-'$-5!&@!7-*-'()!@$)%-'5!(*#!F(5-#!
&*!:'$&'!8-('!'-%+'*5!!?%!b5,&'-50!%(9!'-%+'*5!(*#!#-%-' . $*-5!(!:'&F(F$)$%8!&@!%0- . !F-$*7!
@'(+#+)-*%6!D$%0!%0&5-!5,&'$*7!(F&G-!(!,-'%($*!Q+*#$5,)&5-#R!:-',-*%(7-!F-$*7!5+FP-,%!%&!
@+'%0-'!5,'--*$*7!(*#!-9%'- . -)8!0$70!5,&'-5!F-$*7!%'-(%-#!(5!@'(+#+)-*%!(+%& . (%$,())8!
Q1?f 1C6!]^_^R%!!

?*!]^__6! ?=B! ,'-(%-#! %0-! "*0(*,-#! =-%+'*! S'&,-55$*7! :'&7'(. ! D0$,0! 5&+70%! %&!
,&&'#$*(%-!-@@&'%5!%0'&+70&+%!%0-!G('$&+5!?=B!#$G5&*5!(5! 3 1C!Q]^__R!*&%-#!%0(%!]o!
#$@@-'-*%! 5+F+*$%5! D-'-! $*G&)G-#! $*! (,%$G$%$-5! '-7('#$*7! $#-*%$%8! %0-@%%!! S('%! &@! %0$5!
:'&7'(. !D(5!(*!$*$%$(%$G-!%0(%!5&+70%!%&!W+-))!%0-!*+ . F-'!&@!@'(+#+)-*%!'-%+'*5!F-$*7!
@$)-#!D$%0!#-,-(5-#!$*#$G$#+()50!$*@&' . (%$&*%!! 10$5!D(5!(,,& . :)$50-#!$*!:('%!F8!P&$*%!
D&'N!D$%0!%0-!B&,$()!B-,+'$%8!C# . $*$5%'(%$&*!%&!F-7$*! . ('N$*7!%0-!?=B!(,,&+*%5!&@!
#-,-(5-#!$*#$G$#+()5!(*#!F8!:+%%$*7!:'-55+'-!&*!D-F5$%-5!5+,0!(5!C*,-5%'8%,& . !%&!,-(5-!

!

?*!]^_l! %0-! B-,+'$%8! B+ . . $%! -5%(F)$50-#! (##$%$&*()! D&'N! 7'&+:5!! B-G-'()! :'&7'(. 5!

'

I67 PC3!)<&8:#F . '!*F&$%#&:!

C5!*&%-#!$*!5-,%$&*!`M]6! f C p !Q]^_]R!:+F)$50-#!(*!(+#$%!&*!-)-,%'&*$,!@$)$*7!@'(+#!D0-*! %0-!AB!%(9!585%- . !D(5!@$'5%!5%('%$*7!%&!-9:-'$-*,-! . (P&'!:'&F)- . 5!(*#!%0-!(. &+*%!&@! '-@+*#! @'(+#! D(5! $*! %0-! . $))$&*5! '(%0-'! %0(*! F$))$&*5! Q3$7'$*$! K! S-%-'56!]^_oR%! C###$%$&*())86! 3 1C!Q]^^kR!@-(%+'-#!%0$5! . -%0&#!&@!@'(+#!(5!&*-!&@!%0-$'!b . &5%!5-'$&+5! :'&F)- . 50!(*#!*&%-#!%0(%!%0-'-!D(5!(*!(##$%$&*()! 1? f 1C!'-:&'%!&*!$#-*%$%8!%0-@%!%0(%! (55-'%-#!%0-!?=B!0(#!*&!,&*,'-%-!,&':&'(%-!5%'(%-78!$*!:)(,-!%&!(##'-55!%0-!7'&D$*7! ,&*,-'*!&@!%0-!@'(+#%!

10-!3 1C!(*#!1? f 1C!F&%0!(##'-55-#!%0-!:'&F)- . !(7($*!$*!]^^g!(*#!@&+*#!%0(%!%0-'-! 0(#!F--*!(!`a l t !$*,'-(5-!$*!%0-!%&%()!*+ . F-'!&@!,& . :)($*%5!#$'-,%-#!%&!%0-!4-#-'()! 1'(#-!J& . . 55&*6!D0$,0!D(5!%0-!&*)8!(G($)(F)-!$*#$,(%&'!&@!%0-!:'&F)- . 6!7$G-*!%0(%! %0-!?=B!0(#!*&%! 8-%!F-7+*!,)&5-)8! . &*$%&'$*7!?c 1!@'(+#!(%!%0-!%$. -!Q3 1C6!]^^gi! 1? f 1C6!]^^gR%! 10-!:'&F)- . !%0-*!D&'5-*-#!D$%0! f C p!Q]^__R!*&%$*7!%0(%!%0-!%&%()! *+ . F-'!&@!$*,$#-*%5!&@!%(92'-)(%-#!?c 1!*-(')8!W+$*%+:)-#!@'& . !]^^o2]^_^!7'&D$*7!@'& . ! k_6g^]!%&!]qo6`kg!,(5-5%! pG-'())6! 5$*,-!]^^k!%0-!:'&F)- . !D&'5-*-#6! 7$G-*!$%!D(5! ,&*5$5%-*%)8!)$5%-#!(5!&*-!&@!%0-!3 1C05!b . &5%!5-'$&+5!:'&F)- . 50!Q()%0&+70!*&%!$*!]^^l6!]^_^6!&'!]^_qR6!)-(#$*7!%&!$*,'-(5-#!?=B!(,%$&*%($)-1(*,')1(5)-2(%)-2-5

Q_R! 10-!?=B! . +5%!,'-(%-!(!:'&7'(. !$*!D0$,0!%(9:(8-'56!,&*,-'*-#!%0(%!%0-8! . (8!F-! (! G$,%$. ! &@! $#-*%$%8! %0-@%6! ,(*! '-W+-5%! (*! ?#-*%$%8! S'&%-,%$&*! S-'5&*()! ?#-*%$@$,(%$&*!3+ . F-'!Q?S!S?3R!%&!@$)-!(!%(9!'-%+'*!Q5-,%$&*!]^^kR%!

Q]R! 10-!?=B! . +5%!-5%(F)$50!(!5$*7)-!:&$*%!&@!,&*%(,%!@&'!%(9:(8-'5!D0&!('-!(!G$,%$. ! &@!$#-*%$%8!%0-@%%! 10-!5$*7)-!:&$*%!&@!,&*%(,%!50())!%'(,N!%0-!%(9:(8-'05!,(5-!%&! ,& . :)-%$&*!(*#!,&&'#$*(%-!D$%0!&%0-'!?=B!- . :)&8--5!%&!'-5&)G-!%0-!,(5-!(5! W+$,N)8!(5!:&55$F)-!Q5-,%$&*!]^^l R%!

Q`R! 10-! ?=B! . +5%! *&%$@8! %(9:(8-'5! D0-*! %0-! ?=B! #-%-' . $*-5! &'! 5+5:-,%5!

!

!

10-! . &5%!-@@-,%$G-6!F+%!()5&! . &5%!,&*%'&G-'5$()!%(,%$,!&@!,& . F(%$*7!? c 1!%(9!'-@+*#!@'(+#! D&+)#!F-!%&!#-)(8!%0-!%(9!@$)$*7!5-(5&*!&'!'-@+*#!$55+(*,-5M! 10$5!D&+)#!())&D!%0-!?=B! %&!@+))8! . (%,0!'-%+'*!#(%(!D$%0!4&' . ! L 2]5!(*#!7$G-!%(9:(8-'5! . &'-!%$. -!%&!'-5:&*#!$@! %0-$'!$#-*%$%8!0(#!F--*!5%&)-*M!A*@&'%+*(%-)8 6!%0$5!D&+)#!)$N-)8!0(G-!(!#$5(5%'&+5!$. :(,%! &*!)&D2$*,& . -!%(9:(8-'5!D0&!'-)8!&*!%0-$'!%(9!'-@+*#5!%&!5+'G$G-!Q f '--*-6!]^_`R!(*#! 5+,0!(!,&+'5-!&@!(,%$&*!5-- . 5!-9%'- . -)8!+*)$N-)8M!

'

!

:'-:('-'!@$' . 6!%0$5!&%0-'!-*%$%8!D$))!(55$5%!D$%0!%0-!(+%0-*%$,(%$&*!:'&,-55!50&+)#!&*-05!$#-*%$%8!F-!5%&)-*%!B& . -!@$' . 5! . (8!,0('7-!(*!(##$%$&*()!@--!&'!&@@-'!(##2&*!$*5+'(*,-!%0(%!,(*!F-!:+',0(5-#!5-:('(%-)8%! L 0$)-!%0$5!D$))!*&%!:'-G-*%!%0-!@'(+#!@'& . !&,,+''$*76!$%!D$))!(%!)-(5%! . -(*!%0(%!%(9:(8-'5!#&!*&%!0(G-!%&!#-()!D$%0!%0-!@())&+%!@'& . !

'

!

! ") . (' * " 1+& $ 5 - & 0 %

10$5!('%$,)-!0$70)$70%5!? c 1!%(9!'-@+*#!@'(+#!(5!,& . : '5*7!(!5$7*$@$,(*%!&*7&$*7!: '&F)- . !
$*!%0-!AB!%(9!585%- . M!A5$*7!$*@&' . (%$&*!@'& . ! : +F)$,!'- : &'%56!D-!#-5,'$F-!%0-! : '&F)- . !
(*#!%0-!&G-'())!'-5 : &*5-!@'& . !%0-!?=B!(*#!&G-'5$70%!(7-*,$-5!&G-'!%0-!)(5%!%0'--!#-,(#-5M!
p " J c !Q]^^1R!*&%-5!%0(%!? c 1!$5!(!*+(*,-#!$55+-!@&'!%(9!(7-*,$-5!(*#!%0$5!('%$,)-!50&D5!

!

'

!

f &G-'* . -*%!C, ,&+*%(F$)$%8! p @@$, -!Q f C p R!]^_16!

!Q f C p 2_12k^oR6! f C p 6! L (50$*7%&*6! c J M!

f &G-'* . -*%!C, ,&+*%(F$)$%8! p @@$, -!Q f C p R!]^_g6!

!

>-$70%&*2c ()8%! < !]^_a%!b?#-*%$%8! 10-@%! (*#! 1 (9! J '$. -[! E (5!%-,0*&)&78! . (#-!$%! -(5$-'!%&!#-@'(+#!%0-!
'-G-*+-r0

'

!

3(%$&*()!1(9:(8-'!C#G&,(%-!Q31CR!]^]^6! 6!?*%-'*()!=-G-*+-!B-'G$,-6!
L(50$*7%&*6!cJ!

37+7$6!/!j6!E+*76!j21!K!>$6!d!;!]^]_6!b=-#+,$*7!%(9!$#-*%$%8!%0-@%!F8!$#-*%$@8$*7!G+)*-'(F$)$%8!:&$*%5!
$*!%0-!-)-,%'&*$,!%(9!@$)$*7!:'&,-5506! 6!(#G(*,-!&*)$*-6!`^!
C+7+5%!

3$7'$*$6!<!;!K!S-%-'56!;!B!]^_o6!b?#-*%$%8!10-@%!1(9!=-@+*#!4'(+#[!C*!(*()85$5!&@!%0-!@'(+#!5,0-.-5!
+5$*7!?=B!$*G-5%$7(%$&*!5+..('$-506! 6!G&)!!_^6!
*&!!_6!::!`o2kk!!

p)5&*6!3!]^_o6!bB&.-!&F5-'G(%$&*5!&*!%(9!(#.$*$5%'(%$&*!(*#!%0-!#7%()!'-G&)+%$&*06!:)-*('8!(##'-55!(%!
%0-!A*$G-'5$%8!&@!3-D!B&+%0!L()-5!_`%0!?*%-'*(%$&*()!J&*@-'-*,-!&*!1(9!C#.$*$5%'(%$&*6!
A3BL!/+5$*-55!B,0&&)6!B8#*-86!k!C:'$)!!CG($)(F)-!(%[!
0%%:5[\\DDD!F+5$*-55!+*5D!-#+!(+\CF&+%2

'

)
)
!"#$%& '()#)+ ',)-!.! '%/0)123224)5#(6)789)&#6)29): :6)2?2›2@2)*
'

!

!

!

B>4! /77-3+/,+-1! -?! 5 /1*/,-.:!,/;!*+730-72.47! C+,>!,>4! .4/*/D+0+,:!/1*!,-14! -?! E-021,/.:!,/;! .4<-.,7!

!

!

")$H(F-%0! < &'%&*6 ! I $*,-*%! / $,+#&!#-! J (5%'& !(*#!B('(0!E$*,0)$@@- !

!

!

2%-9"3D,-$':":43L-+:9"$&LK3+-:9"O-,%"'&O"$&LK3D3,-M:",34"K3;3Q':"E+*$,-&#)". +/0$%")1)0#%$'%2%0"3J/"$&LK3D:0",&"$&LK3+-:9"
O-,%"%-.%:D"$&LK3D3,-M:",34"K3;3Q':"E+*$,-&#) ". +/0$%") 1)-/4) 0#%$'%2(J" 3$$&D0-+.",&" L3+03,&D;",34"D:K&D,9"E ` 2]9J/"(&D"
0-((:D:+$:9"-+"D:303Q-'-,;"3+0",&+:"-+",%:-D"D:9K:$,-M:"M&'*+,3D;",34"D:K&D,9"Em2]9JP"<+"0 7 0 .4 1 8(2) 20 .004 [(J/) -3(2) 20(,) -3(%:) - 1(2) 2(

'

)
)

)

:'-5-*%!G&)+*%('8!*(%+'-!&@! I 1=!$*!C+5%'()$(6!0&D-G-'6!%0-'-!('-!(!7'&D$*7!*+ . F-'!&@!
-*%$%$-5!%0(%!('-!&:%$*7!%&!F-,& . -!5$7*(%&'$-5!@&'!%0-!,&#-M[13]!!

?%!$5!%0-! !*(%+'-!&@!%0-! I 1=5!5:+''-#!F8!%0-!1 1 J !%0(%!$5!%0-!@&,+5!&@!%0$5!('%$,)-M!
?*!:('%$,+)('6!%0-!(+%0&'5!-9(. $*-!5$7*(%&'$-5!%&!%0-! 1 1 J !%&!$#-*%$@8!D0-%0-'!%0-!)-G-)!
&@! :+F)$,! -9:&5+'-! Q5,'+%$*$5-#\)&D! 5,'+%$*8R! ('5*7! @'& . ! < 1=5! $. :(,%5! %0-!
'-(#(F$)$%8!(*#!%&*-!&@! I 1=5M!10-!%-' . ! !'-@-'5!%&!%0-!)-G-)!&@!&:(W+-*-556!&'!
&F@+5,(%$&*6! $*! %0-! $*@&' . (%$&*! -*G$'&* . -*%[! $*! D0$,0! (*! (+%0&'! :'-:('-5! . &'-!
,& . :)-96! 6!$*@&' . (%$&*M[14]!C5! / -+5-)$*,N!(*#!,&2(+%0&'5!5%(%-6!,& . :)-9$%8!
D$%0$*!%0-!$*@&' . (%$&*!-*G$'&* . -*%!'-#+,-5!%'(*5:('-*,8!(5!b . &'-!%$. -!(*#!-@@&'%!@'& . !
&+%5$#-'5!%&!F-,& . -!:'&:-')8!$*@&' . -#0!$5!'-W+$'-#6!%0-'-F8!&F5,+'$*7!%0-!(F$)$%8!%&!
+*#-'5%(*#M[15]! !'-@-'5!%&!%0-!5-*%$. -*%!&@!%0-!#$5,)&5+'-56!F-$*7!%0-!-9%-*%!%&!D0$,0!
'-:&'%5!,&*%($*!%-' . 5!D$%0!&:%$. $5%$,!&'!:-55$. $5%$,!5-*%$. -*%!%0(%!,(:%+'-!b%0-!(@@-,%!
&'!@--)$*7!&@!(!,& . . +*$,(%$&*0M[1] !!

10-! . &%$G(%$&*! @&'! %0$5! 5%+#8! $5! F(5-#! &*! %0'--! :'$. ('8! @(,%&'5! (5! @&))&D5M! 4$'5%6!
,&':&'(%-!%(9(%$&*!0(5!7($*-#!5+F5%(*%$()!5:&%)$70%!$*!'-,-*%!%$. -5M!?*!(!'-,-*%!&+%)$*-6!
%0-!/&('#!&@!1(9(%$&*!*&%-#!,&*,-'*!(F&+%!%(9(%$&*!(*%$2(G&$#(*,-!$*!5%(%$*7!%0(%!bm%n0-!
(,%$&*5!&@!(!@-D!F+5$*-55-56!:('%$,+)(')8!)('7-!. +)%$*(%$&*()5!-*7(7$*7!$*!(77'-55$G-!%(9!
(G&$#(*,-6!0(G-!%('*$50-#!%0-!'-:+%(%$&*5!&@! . (*8!F+5$*-55-5!%0(%!('-!#&$*7!%0-!'$70%!
%0$*70M[1] !?*! (##$%$&*! %&! 5-,%$&*! ` J!&@! %0-! !QJ%0R!
'-W+$'$*7!%0-! (**+()! :'-:('(%$&*! &@! (!=-:&'%! &@! "*%$%8! 1(9!?*@&' . (%$&*! @&'!,-'%($*!
,&':&'(%-!%(9!-*%$%$-56!@($'*-55!(*#!%'(*5:('-*,8!0(G-!F--*!,&'*-'5%&*-!$*!C+5%'()$(M!
10-!D(G-!&@!,&*#- . *(%$&*!('$5$*7!@'& . !%0-!bS(*(. (!:(:-'50!$*!]^_1!(*#!%0-!bS('(#$5-!
:(:-'50!$*!]^_g6[1] !&'! . +)%$*(%$&*()!,& . :(*$-5!5+,0!(5!C::)-6!('-!P+5%!5& . -!-9(. :)-5!
&@!%0-!7'&D$*7!:+F)$,!,&*,-'*!&G-'!@($'*-55!(*#!%'(*5:('-*,8!$*!0-!C+5%'()$(*!%(9(%$&*!
585%- . M[1] !!

C)%0&+70!(!@$' . 05!@$*(*,$()!5%(%- . -*%5!('-!5--*!(5!(*!$. :&'%(*%!5&+',-!&@!$*@&' . (%$&*6!
%0-!+5-@+)*-55!&@!%(9!#$5,)&5+'-5!0(5!F--*!&@!,&*,-'*!@&'!5& . -!%$. -M[20]!?%!0(5!()'-(#8!

---

[13]"#::") *9,D3'-3+" n&M:D+L:+,/"dm&'*+,3D;"234" 2D3+9K3D:+$;"X&0:Y"m22X"]:K&D,9N"EB=" ` 3;"AFA=J/"
%,,K9Ykk03,3P.&MP3*k03,39:,k09@0.3@(h=hFC3?@A::Q@>cCA@30=(@>>B(h(cAF=?Gk0-9,D-Q*,-&+k0-9,@0.3@
:>>:ChAC@BF(c

)
)

)
)

)

6[30]!(*#!%0-'-@&'-!,&.:(*$-5!.(8!+5-!#$5,)&5+'-5!(5!$*5%'+.-*%5!@&'!5&,$()!,&*%'&)!&@!(*#!&G-'!%0-!*(''(%$G-M[31]!!

L$%0!%0-!(@&'-.-*%$&*-#!$*!.$*#6!%0$5!('%$,)-!-9(.$*-5!5$7*(%&'$-5!%&!%0-!1 1 J!%&!(55-55!
D0-%0-'!,(%-7&'5*7!,&.:(*$-5!(5! !Q,&.:'$5$*7!
,&.:(*$-5!0(G$*7!)&D!,&.:('(%$G-!%(9!:(8(F)-!(5!:-'!.(*#(%-#!%(9!%'(*5:('-*,8!
'-:&'%R6!,&.:('-#!%&! !Q0$70-'!,&.:('(%$G-!%(9!:(8(F)-!(5!
:-'!%0-!.(*#(%-#!%(9!%'(*5:('-*,8!'-:&'%R6!D$))!)-(#!%&!#$@@-'-*,-5!$*!'-(#(F$)$%8!(*#!
%&*-!$*! I 1=5M! /8!#&$*7!5&6!%0-!(+%0&'5!(5N6!

[32]!

10-!(+%0&'5!:&5$%!%0'--!N-8!&::&'%+*$%$-5!%0(%!-*%$%$-5!0(G-!$*!,&*%'&))$*7!%0-$'!%(9!
*(''(%$G-!G$(!I 1=5[!!!

_M 10-!7-*-'()!)(,N!&@!(G($)(F)-!%(9!$*@&'.(%$&*!#+-!%&!:'$G(,8!'-7+)(%$&*5i!!

]M 10-!)(,N!&@!()$7*.-*%!F-%D--*!%0-!(,,&+*%$*7!(*#!%(9(%$&*!585%-.5!)-(#$*7!%&!
(!#$5,&**-,%-#*-55!$*!(G($)(F)-!%(9!$*@&'.(%$&*i!(*#!!

`M 10-!7-*-'()!)(%$%+#-!(G($)(F)-!$*!G&)+*%('8!#$5,)&5+'-5M!!!

1D&!08:&%0-5-5!('-!.(#-M!4$'5%6!%0(%!,&.:(*$-5!D$%0! !
:'-:('-! I 1=5! D0$,0! ('-!-(5$-'!%&!'-(#i!(*#6!5-,&*#6!%0(%!,&.:(*$-5! D$%0!
! :'-:('-! .&'-!&:%$.$5%$,!G&)+*%('8!%(9!'-:&'%5M! c-5:$%-!%0-!
(%%-.:%5!@&'!,&.:(*$-5!%&!,&*%'&)!%0-!*(''(%$G-!%0'&+70!&F@+5,(%$&*6[33]!7&G-'*.-*%!
(%%-*%$&*!.(8!h!(*#!*&%$*7!'-5-(',0!F8!/-+5-)$*,N!(*#!,&2(+%0&'5[34]!(*#!E&:-6!<(!(*#!
10&.(5[35]!h!)-(#!%&!$.:'&G-.-*%5!$*!'-(#(F$)$%8M!!!

10$5!('%$,)-!$5!5%'+,%+'-#!(5!@&))&D5[!5-,%$&*!]!&+%)$*-5!%0-!F(,N7'&+*#6!F'$-@)8!
,&*5$#-'$*7!%0-!*--#!%&!F()(*,-!:'$G(,8!(*#!%(9!%'(*5:('-*,8!(*#!%0-!#-G-)&:.-*%5!$*!
C+5%'()$(!D$%0!'-5:-,%!%&!.(*#(%&'8!(*#!G&)+*%('8!%(9!#$5,)&5+'-5M!B-,%$&*!`!5-%5!&+%!
%0-!)$%-'(%+'-!(*#!$#-*%$@$-#!7(:5!$*!-9%(*%!'-5-(',0!(*#!$*!#&$*7!5&6!,)('$@$-5!%0-!:'-5-*%!
5%+#805!@&,+5M!B-,%$&*!q!@&))&D5!F8!('%$,+)(%$*7!%0-!'-5-(',0!W+-5%$&*!(*#!08:&%0-5-5M!
B-,%$&*!k!:'-5-*%5!%0-!'-5-(',0!#-5$7*6!@&))&D-#!F8!%0-!N-8!@$*#$*756!#$5,+55$&*!(*#!
(*()85$5!$*!5-,%$&*!lM!B-,%$&*!g!5+..('$5-5!(*#!,&*,)+#-5!%0-!('%$,)-6!D$%0!%0-!.($*!
@$*#$*756!%(9!:&)$,8!$.:)$,(%$&*56!()5&!)$.$%(%$&*5!(*#!@+%+'-!'-5-(',0M!

30"#::"+"=c/"3Q&M:P"

31"T3K%+:")"e3L:9&+/"d2:''-+.",%:"<+M:9,L:+,"#,&D;Y")"63DD3,-M:")+3';9-9"&("#%3D:%&'0:D"]:K&D,9N"EAFFFJ"
BhE=J"</$%2=-)/›)C$0&2"00)O/ * *$2&#='&/2"h/"CP"#::"3'9&"U-/"3Q&M:"+"=cl"\:+D;/"3Q&M:"+"=Gl")K&9,&':9")"
83''39/"d2%:"XD:3,-&+"&(",%:")*0-,-+."aD&(:99-&+"-+"nD::$:N"E=CC?J"ABE?J"*E##/$2'%26:)W%6=2&X='&/20)=23)*
!/#&"'("h=cP"

32" 7%-':",%:D:"

)
)

)

-) 0 1 & ! (" '

5ϭ7! W9:'8*-#*$!+&<&-)@?&$':!#$!;*-*$%#$F!@8#<*%G!*$+!'8*$:@*8&$%G!

" . -'7-*%!5%-:5!$*!%0-!'- . &G()!&@!(!G-$)!&@!5-,'-,8³ !$*!C+5%'()$(!D-'-!:'-5-*%!F-@&'-!0$702:'&@$)-!,(5-5M!10$5!('7+(F)8!F-7(*!D$%0!%0-!%(9!%'(*5:('-*,8!'-:&'%$*7!'-7$. -!%0(%!D(5!$*%'&#+,-#!$*!]^_`!$*!%0-!

QJ%0R6!)(%-'! (. -*#-#! F8! %0-!

M! J-'%($*!#$5,)&5+'-5!Q-7ϭ!(*!-*%-':'$5-05!*(. -6!C+5%'()$(*! / +5$*-55! 3+ . F-'!QC / 3R6!%&%()!$*,& . -6!%(9(F)-!$*,& . -!(*#!%(9!:(8(F)-R!@'& . !%(9!'-%+'*!$*@&' . (%$&*!D(5!%0-'-(@%-'!'-:&'%-#!$*!(*!(**+()!%(9!%'(*5:('-*,8!'-:&'%!Q<1=RM!10$5!D(5!$. :)- . -*%-#!$*!c-,- . F-'!]^_k6!D$%0!%0-!]^_`2

'

)
)

)

10-! < +)%$*(%$&*()!C*%$2CG&$#(*,-!>(D!Q < CC>R!0(5!()5&!'-5+)%-#!$*!'-5%'+,%+'$*7!&@!
5& . -! 7)&F()! -*%$%$-5! (*#! $5! -9:-,%-#! %&! '-5+)%! $*! F$))$&*5! &@! #&))('5! $*! 5()-5! F-$*7!
b'-%+'*-#!%&!%0-!C+5%'()$(*!%(9!F(5-0!(5!D-))!(5!(##$%$&*()!7&&#5!(*#!5-'G$,-5!%(9!Q f B1R!
:(8 . -*%5M[45]!!

L $%0!%0-5-!#-G-)&: . -*%5!$*! . $*#6!%0-'-!$5!(!5+F5%(*%$()!'-7+)(%&'8!50$@%!$*!C+5%'()$(!%0(%!
$5!@&,+5-#!&*! . &'-!:+F)$,)8!%'(*5:('-*%!(*#!5,'+%$*$5-#!%(9!(@@($'5!D$%0!'-5:-,%!%&!)('7-'!
F+5$*-55-5M!10-!:'-5-*%!5%+#8!5:-,$@$,())8!,&*5$#-'5!%0-!,&*%- . :&'(*-&+5!#-G-)&: . -*%!
&@!G&)+*%('8!%(9!#$5,)&5+'-5!('$5$*7!(5!(!'-(5&*(F)8!*-D!(::'&(,0!%&!'-5:&*#!%&!%0-!
$*,'-(5$*7!,&*,-'*!&G-'!%(9:(8-'50!:(8$*7!%0-$'!b@($'!50('-0!&@!%(9!,&*%'$F+%$&*56!(*#!
%0-!. (*#(%-#!'-)-(5-!&@!%0-!(**+()!%(9!%'(*5:('-*,8!'-:&'%5M[4] !10-!(+%0&'5!,&*5$#-'6!$*!
:('%$,+)('6!%0-!'-)-(5-!&@!I 1=5!:+'5+(*%!%&!%0-!11 J M[4] !"

5ϭ5! ")-9$'*8G!'*>!8&@)8'#$F!#$!W9:'8*-#*!**

C5! *&%-#6! G&)+*%('8! %(9! '-:&'%$*7! $*! C+5%'()$(! $5! 5%$))! $*! $%5! $*@(*,8M! L 0$)-! 5& . -!
,&':&'(%$&*5! 0(G-6! &G-'! %0-! :(5%! #-,(#-6! F--*! +*#-'%(N$*7! (!)-G-)! &@! G&)+*%('8! %(9!
'-:&'%$*76! (! N-8! . &G-! %&D('#5! -*,&+'(7$*7! ,&':&'(%$&*5! %&! #&! 5&! ('&5-! D$%0! %0-!
$*%'&#+,%$&*! &@! (!@'(. -D&'N! @&'! G&)+*%('8! %(9! '-:&'%$*7! $*$%$(%-#! F8! %0-! C+5%'()$(*!
7&G-'* . -*%M!10$5!F-7(*!D$%0!%0-!]^_k! / +#7-%M!;&-!E&,N-86!%0-!%0-*!1'-(5+'-'6!D'&%-!
%&!%0-! / &('#!&@! 1(9(%$&*!'-W+-5%$*7!%0-!#-G-)&: . -*%! &@! (!,&#-!(5!:('%!&@!%0-!]^_k!
/ +#7-%[4] !

C!G&)+*%('8!,&#-!D$))!:'&G$#-!(!@'(. -D&'N!@&'!)('7-!F+5$*-55-5!%&!%(N-!%0-!
)-(#6!%&! F-,& . -! . &'-!%'(*5:('-*%! (*#! 0-):!-#+,(%-!%0-!:+F)$,!(F&+%!%0-$'!
,& . :)$(*,-!D$%0!C+5%'()$(05!%(9!)(D5M[4] !

4&))&D$*7!$*$%$()!,&*5+)%(%$&*!D$%0!(!L &'N$*7! f '&+:[50]!$*!B-:%- . F-'!]^_k6!%0-!'-,-$:%!
&@!_a!5+F . 55&*56[51]!(*#!%0-!'-)-(5-!&@!(!,&*5+)%(%$&*!:(:-'!$*!c-,-. F-'!]^_k6!%0-!,&#-!
D(5!5+F5-W+-*%)8!@$*()$5-#!$*!4-F'+('8!]^_1M!10-!]^_12_g! J& . . &*D-()%0! / +#7-%!
(**&+*,-#!%0-!*-D!G&)+*%('8!11 J 6!0$70)$70%$*7!%0(%[!

10-! f &G-'* . -*%!$5!,& . . $%%-#!%&!-*,&+'(7$*7!7'-(%-'!%(9!%'(*5:('-*,8!D$%0$*!
%0-! ,&':&'(%-! 5-,%&'6! -5:-,$())8! F8! . +)%$*(%$&*()! ,&':&'(%$&*5M! 10-!
! D$))! -*,&+'(7-! F+5$*-55-5! D$%0! (*! (**+()! %+'*&G-'! &@!
|_^^! . $))$&*!&'! . &'-!%&! :+F)$50!$*@&' . (%$&*!%&! 5+::&'%! 7'-(%-'! (*#! F-%%-'!

'

)
)

)

'

)
)

)

c$5,)&5+'-5!F8!5$7*(%&'$-5!%&!%0-!11J!,(*!&,,+'!D$%0$*!5-G-'()!,&*%-9%56!$*,)+#$*7!$*!%0-!7-*-'()!:+':&5-!@$*(*,$()!5%(%-.-*%5!Q f S4B5R6!$*!%(9-5!:($#!'-:&'%56!(*#!,&':&'(%-!5&,$()!'-5:&*5$F$)$%8!QJB=R!'-:&'%56!@&'!-9(.:)-6!(*#!('-!*&%!'-W+$'-#!%&!F-!-9%-'*())8!(+#$%-#M 4!A*)$N-!%0-!()$7*.-*%!$55+-5!%0(%!('$5-!D$%0!%0-!.(*#(%-#!%(9!%'(*5:('-*,8!'-:&'%5!'-)-(5-#!(**+())8 5!%0-!/&('#!&@!1(9(%$&* !$*#$,(%-#!%0(%!#$5,)&5+'-5!50&+)#!F-!,(:(F)-!&@!F-$*7!'-,&*,$)-#!%&!%0-!$*,&.-!%(9!'-%+'*!(*#!@$*(*,$()!5%(%-.-*%5M!10-!/&('#! &@! 1(9(%$&*! $56! *&*-%0-)-556! (D('-! &@! %0-! #$5,'-:(*,8! F-%D--*! $%5!)$5%! &@!5$7*(%&'$-5!(*#!%0-!C1p!:+F)$50-#!#(%(!('$5$*7!@'&.!%0-!@)-9$F$)$%8!+*#-'!%0-!11J6!D0$,0!+)%$.(%-)8!b.(N-5!,&.:('$5&*5!)-55!.-(*$*7@+)0M !10-!/&('#!&@!1(9(%$&*!0(5!

'

)
)

)
)

)

&@!%0-!%-,0*$W+-5!@&'!5+F%)-!:'&.&%$&*!D&+)#!,'-(%-!(!:&5$%$G-!%&*-№!10$5!5%+#8!#&-5!*&%!#$'-,%)8!(##'-55!%0-!$*%-*%!&@!%0-!(+%0&'!F+%!'(%0-'!D0-%0-'!(!.&'-!:&5$%$G-!%&*-!(@@-,%5!$*G-5%&'5№ [4]!

"9%(*%!'-5-(',0!-9(.$*-5!)$*7+$5%$,!(%%'$F+%-5!&@!G('$&+5!'-:&'%5!(*#!#$5,)&5+'-5№! 6!&'!%0-!5-*%$.-*%!&@!%0-!#$5,)&5+'-5!h!%0-!(@@-,%!&'!@--)$*7!&@!(!,&..+*$,(%$&* [5]!h!0(5!F--*!@&+*#!%&!0(G-!$*@&'.(%$&*!G()+-i !$*@)+-*,-!$*G-5%&'50!(*#!(*()85%!G$-D5!(*#!F-!(55&,$(%-#!D$%0!-,&*&.$,!&+%,&.-5i !F-!:&5$%$G-)8!(55&,$(%-#!D$%0!5%&,N!$55+(*,- !(*#! @$'.!:-'@&'.(*,-i ! (*#6! .(8! '-@)-,%! .(*(7-'$()! F-0(G$&+'! 5+,0! (5! %(9!(77'-55$G-*-55№[100]!!

'

)
)

)

-('*$*75!(*#!,(50!@)&D!:-'@&'.(*,-M!B$.$)(')86!E-*'8[10] !@&+*#!%0(%!%&*-!&@!-('*$*75!:'-55!'-)-(5-5!$*@)+-*,-5!$*G-5%&'50!'-(,%$&*5!(*#!)&*7-'!'-)-(5-5!'-#+,-#!.('N-%!$.:(,%M!>&+70'(*!(*#!<,c&*()#[10] !&F5-'G-#!%0(%!#$,%$&*!$5!$*(::'&:'$(%-!@&'!7(+7$*7!%0-!%&*-!&@!@$*(*,$()!#$5,)&5+'-5M!10(%!5%+#8!@&,+5-#!&*!4&'.!_^2 j!'-:&'%5!'-G-()$*7!%0(%!@'-W+-*%)8!&,,+''$*7!%-'.5!%0(%!('-!&:%$.$5%$,!$*!#$,%$&*!5+,0!(5!b'-5:-,%06!b5-,+'$%806!b:&D-'06!(*#!b(+%0&'$%80!D$))!*&%!F-!,&*5$#-'-#!*&'!:-',-$G-#!:&5$%$G-)8!F8!'-(#-'5!&@!F+5$*-55!#&,+.-*%5M!10-!(+%0&'5!'-@$*-#!%0-!7-*-'()2:+':&5-!E('G('#05!f-*-'()!?*W+$'-'!D&'#!)$5%5!D0$,0!1-%)&,N!+%$)$5-#6[10] !(*#!,)(55$@$-#!D&'#5!$*!)$5%5!5&!%0(%!%0-!D&'#5!$*#--#!('-6!@'&.!(!@$*(*,-!:-'5:-,%$G-6!:&5$%$G-!&'!*-7(%$G-M!10-!(+%0&'5!#-()%!D$%0!%0-!@$)$*750!-@@-,%5!&*!5%&,N5!#+'$*7!%0-!q2#(85!D$*#&D!:'$&'!(*#!5+F5-W+-*%!%&!%0-!@$)$*7!#(%-!&@!(!_^2 j M!!'

B$.$)('!%&!%&*-6!(!7'&D$*7!F&#8!&@!@$*(*,-!(*#!(,,&+*%$*7!'-5-(',0!+5-5!%-9%+()!(*()85$5!%&!-9(.$*-!%0-!!&@!,&':&'(%-!'-:&'%5!Q:'$.('$)8!_^2 j!'-:&'%5R6!$%5!#-%-'.$*(*%56!(*#!$%5!,&*5-W+-*,-5M!=-(#(F$)$%8!'-@-'5!%&!%0-!)-G-)!&@!&:(W+-*-556!&'!

)
)

)

G&)+ . -6[11] !(*#!$*G-5% . -*%!-@@$,$-*,86[120]!D0$)-!$%!$5!*-7(%$G-)8!(55&,$(%-#!D$%0!%0-!,&5%!
&@!#-F%!(*#!%0-!5%&,N!:'$,-!,'(50!'$5N[121]!>&+70'(*!(*#! < , c&*()#[122]!

'

)
)

)

'

)
)

)

%'(*5(,%$&*5!(*#!'-:&'%$*7!5%(*#('#5M[143]!4&'!-9(.:)-6!E&:-!(*#!,&2(+%0&'5[144]!5+77-5%-#!%0(%!%&!%0-!-9%-*%!.(*(7-'5!D&+)#!F-)$-G-!%0(%!*&*2#$5,)&5+'-!&@!7-&7'(:0$,!-('*$*75!'-#+,-5!:'&F(F$)$%8!&@!(+#$%6!:'-G-*%5!(##$%$&*()!@&'-$7*!5(*,%$&*5!&'!:-*()%$-5!&'!#-@)-,%5!:+F)$,!,'$%$,$5.6!G&)+*%('8!#$5,)&5+'-5!D&+)#!F-!(G&$#-#M!10$5!D(56!*&*-%0-)-556!.$%$7(%-#!D0-*!(!,-'%($*!)-G-)!&@!#$5,)&5+'-!F-,(.-!.(*#(%-#M!c8-'6!>(*7!(*#!B%$,-2>(D'-*,-!Q]^_1R6[145]!0&D-G-'6!0(G-!'($5-#!,&*,-'*!&G-'!%0-!(F$)$%8!%&!!%0-!#$5,)&5+'-!,0&$,-5!@'&.!%0-!+*#-')8$*7!-,&*&.$,5M!

L$%0!%0$5!$*!.$*#6!f+(8!(*#!,&2(+%0&'5!0$70)$70%!%0-!&%0-'!#$5,)&5+'-!.-#$+.5!F-8&*#!%0-!@$*(*,$()!5%(%-.-*%5!%0(%!,(*!b(,0$-G-!(*!&:%$.()!$*@&'.(%$&*'&*.-*%0M[14]!?*!:('%$,+)('6!(!*+.F-'!&@!5%+#$-5!,&*5$#-'!%0-!$*%-':)(8!F-%D--*!.(*#(%&'8!(*#!G&)+*%('8!#$5,)&5+'-56!@$*#$*7!%0(%!%0-!,&.:)-9$%8!Q'-@)-,%$*7!)&D-'!$*@&'.(%$&*(,,-55$F$)$%8R!$5!(55&,$(%-#!D$%0!$*,'-(5-#!G&)+*%('8!#$5,)&5+'-6!D0$,0!$5!,&*5$5%-*%!D$%0!.(*#(%&'8!(*#!G&)+*%('8!#$5,)&5+'-!5-'G$*7!(5!5+F5%$%+%-5M[14]!!

'

)
)

)

L -!:&5$%!%0(%!%0-!7'-(%-'!%0-!(F5-*,-!&@!%(9!$*@&' . (%$&*!7-*-'())8!(G($)(F)-6!%0-!7'-(%-'!%0-! #-7'--! &@! ,& . :)-9$%8! @&'! %0-! G&)+*%('8! #$5,)&5+'-5M! / -8&*#! %0-!)$. $%-#! %(9!#$5,)&5+'-56!%0-'-!$5!&::&'%+*$%8!%&!&F@+5,(%-!#+-!%&!%0-!)(,N!&@!()$7* . -*%!F-%D--*!%(9!(*#!(,,&+*%$*76!(*#!%0-!)(%$%+#-!$*!G&)+*%('8!'-:&'%$*7M!!!

4&'!%0-!'-)-G(*%!C+5%'()$(*!,&*%-9%!:'$&'!%&!%0-!$*%'&#+,%$&*!&@!%0-!11 J!(*#! I 1=56!%0-!$*%'&#+,%$&*!&@!%0-!)-#!%&!(**+()!%(9!%'(*5:('-*,8!'-:&'%5!

'

)
)

)

)$*N-#!%&!%0-!D&'N!F8! f '(0(. ! (*#! ,&2(+%0&'56[15] !D0$,0!@&+*#!'-:+%(%$&*!%&!F-!%0-!5-,&*#! . &5%!$. :&'%(*%!@(,%&'!$*!%0-!#-,5&*!*&%!%&!(#&:%!(!:&%-*%$()!%(9!:)(**$*7!5%'(%-78%!10$56!$%!$5!&F5-'G-#6!$. :(,%5!%0-!#-7'--!%&!D0$,0! I 1=!$5!+5-#!(5!(!%&&)!@&'!'-:+%(%$&*! ,&*%'&)%! 10$5! 5+77-5%5! %0(%! @$' . 5! . (8! F-!)-55!)$N-)8! %&! #$5,)&5-! %(9!$*@&' . (%$&*!&%0-'!%0(*!D0(%!$5! . (*#(%-#!@&'!@-('!&@!'-:+%(%$&*()!#(. (7-!%&!%0-!@$' . %!<&'-&G-'6!%&:! . (*(7- . -*%!D(5!,&*5$#-'-#!%&!,('-!(%!)-(5%!(5! . +,0!(F&+%!%0-! f CCS!"1=!(5!,(50!%(9-5!:($#!@&'!%0-!5+F5%(*%$()! . (P&'$%8!&@!-9-,+%$G-5!Qoq!:-'!,-*%R%!

=-%+'*$*7! %&! E&&:-5! (*#! ,&2(+%0&'56[1] [0]! D0&! ()5&! -9(. $*-#! %0-! . (*#(%&'8! %(9!%'(*5:('-*,8!'-:&'%5!$*!C+5%'()$(6!%0-$'!5%+#8!@&+*#!-G$#-*,-!&@!@$' . 5!(#P+5%$*7!%0-$'!$*,& . -!%&!(G&$#!#$5,)&5+'-6[1] [1]!%0+5!(*%$,$:(%$*7!%0-!,&5%!&@!#$5,)&5+'-%!B$. $)(')86!%0-!5%+#8!F8! J0-*[1] [2]!$*#$,(%-5!%0(%!()%0&+70!$*G-5%&'5!(*%$,$:(%-#!(*!&G-'())!*-%!F-*-@$%!@'& . !%0-!#$5,)&5+'-!('5*7!@'& . !%0-! . (*#(%-#!%(9!%'(*5:('-*,8!'-:&'%5!Q$*,)+#$*7!%0-!F-*-@$%!@'& . !'-#+,-#!$*@&' . (%$&*!(58 . . -%'8!(*#! . &*$%&'$*7!&@!(,%$G%$-5R6!@$' . 5!)$N-)8!%&! @(,-! $*,'-(5-#! 5,'+%$*8! D-'-! @&+*#! %&! 0(G-! 5 . ())! *-7(%$G-! . ('N-%! '-(,%$&*5%!J& . :('(F)-!@$*#$*75!0(G-!()5&!F--*!-5%(F)$50-#!$*!;(:(*6!D0-'-!(!*&*

)
)

)

B,'+%$*8!F-,& . -5! . &'-!

'

)
)

)

%(9! $*@&' . (%$&*M! 10$5! $5! ,& . :('(F)-! %&! %0-! ('7+ . -*%! :&5-#! F8! / -+5-)$*,N! (*#! ,&2 (+%0&'5[1 5!

1&! %0-! -9%-*%! %0(%! *&*2#$5,&G-'8! &@! (77'-55$G-! %(9! :)(**$*7! (,%$G$%$-5! $5! (! ,&*5$#-'(F)-! F-*-@$%6! D-!,&*P-,%+'-! %0(%! . &'-! %(9! (77'-55$G-! @$' . 5! D$))! +5-! . &'-! @$*(*,$()! '-:&'%$*7! &F@+5,(%$&*! 5%'(%-7$-5! %0'&+70! &G-')8! ,& . :)-9! @$*(*,$()!'-:&'%$*7M!

E&D-G-'6! $%! #&-5! *&%! *--#! %&! F-! &*)8! @&'! %0-! :+':&5-! &@! %(9! (77'-55$G-*-556! (5!5--*! $*! %0-! 5%+#8! F8! / -+5-)$*,N! (*#!,&2(+%0&'5i! $%!,(*!()5&! F-! @&'! %0-! :+':&5-! &@!,&*%'&))$*7! %0-! *(''(%$G-M1 !10-! %0$'#! &::&'%+*$%8! ())&D$*7! @&'! %0-!,&*%'&)! &@! %0-! *(''(%$G-! $5! %0-!)(%$%+#-! D$%0$*! G&)+*%('8! #$5,)&5+'-5! 7-*-'())8M1 !!

4&))&D$*7! %0-!)&7$,! &@! f+(8! (*#!,&2(+%0&'51 !(*#! <&'%&*61 !,& . :)-9$%8! $*! I 1=5! ('$5-5! @'& . ! %0-!)(,N! &@! ()$7* . -*%! F-%D--*! %(9! (*#! (,,&+*%$*7! #$5,)&5+'-56! %0-! ,& . :)-9$%8! &@! (! @$' . 05! F+5$*-55! %'(*5(,%$&*5! (*#!)(,N! &@! N*&D)-#7-! D$%0! '-7('#5! %&! -9%-'*()! '-:&'%$*7! (*#! #$5,)&5+'-! '+)-5M! ?*! %0$5! 5-*5-6!

6! (*#! !

)
)

)

$%$ - &) , + ' $%* 1 "

10$5!('%$,)-!-9(. $*-5!%0-!(55&,$(%$&*!&@! < 1=5!D$%0!%&*-!(*#!'-(#(F$)$%8!&@! I 1=5!$*!
C+5%'()$(!! 10-! (+%0&'5! '-)8! &*!)$*-('! '-7'-55$&*! &*! 5-,&*#('8! #(%(! %&! ,&*#+,%! (*!

)
)

)

!

E*;-&!5B!0==&%'#<&!E*>!C*'&!

!		4'-W+-*,8!	S-',-*%!	I ()$#! S-',-*%!	J+.+)(%$G-! S-',-*%!
I ()$#!	^ t !	]1!	]q\k!	]k\]!	]k\]!
	] t !	_!	\a!	_\^!	]1\]!
	q t !	_!	\a!	_\^!	]g\]!
	k t !	_!	\a!	_\^!	]o\]!
	o t !	_!	\a!	_\^!	]a_!
	a t !	_!	\a!	_\^!	`^_!
	_^ t !				

'

)
)

)

&F5-'G(%$&*5!#'(D*!@'& . !(**+()!'-:&'%5!&@!*&*2@$*(*,$()!@$' . 5!)$5%-#!&*!%0-!C+5%'()$(*!

'

)
)

)

E*;-&!HB!N)88&-*'#)$:!

R5(%51<$!	S&.T4($U! V,('06!	4,>!	4<$0)#? W%&)5%'!	",&$!	S&.",*5<! =&),:$!X6!	S&."5851<$! =&),:$!X6!	S&."58! P5G51<$!X6!	S&.Y5(0$*! 95;%*5<%05*%,&6!	Z++$)*%3$!"58! M5*$!
S&.T4($U!V,('06!	D!	?AD[\!!	?AD[B!!	?AD[J!!	AIJI!!!	A@BC!	A@]\!	AJJQ!!!	?A@]\!
4,>!	?AD[\!!	D!	A[\Q!!!	?ADBQ!	A@]@!	?A@II!	?AQQ\!!	A@Q@!	?AQIB!!
4<$0)#?W%&)5%'!	?AD[B!!	A[\Q!!!	D!	?AQDD!!	A@\I!	?A@]J!	?AQJ@!!	A@IB!	?AQ]Q!!
",&$!	?AD[J!!	?ADBQ!	?AQDD!!	D!	?A@CQ!	AJI[!!!	AQ\C!!!	A@[D!	AJ]]!!!
S&.",*5<!=&),:$!X6!	AIJI!!!	A@]@!	A@\I!	?A@CQ!	D!	AJJJ!!!	AQJD!!	AB@[!!!	A@\J!
S&."5851<$!=&),:$!X6!	A@BC!	?A@II!	?A@]J!	AJI[!!!	AJJJ!!!	D!	ACD@!!!	AQ[B!!	A]\I!!!
S&."58!P5G51<$!X6!	A@]\!	?AQQ\!!	?AQJ@!!	AQ\C!!!	AQJD!!	ACD@!!!	D!	AD\]!	A\BC!!!
S&.Y5(0$*!95;%*5<%05*%,&6	AJJQ!!!	A@Q@!	A@IB!	A@[D!	AB@[!!!	AQ[B!!	AD\]!	D!	ADQ@!
Z++$)*%3$!"58!M5*$!	?A@]\!	?AQIB!!	?AQ]Q!!	AJ]]!!!	A@\J!	A]\I!!!	A\BC!!!	ADQ@!	D!

uuJ&''-)(%$&*!$5!5$7*$@$,(*%!(%!%0-!^%^_!)-G-)!Q]2%($)-#R%!

uJ&''-)(%$&*!$5!5$7*$@$,(*%!(%!%0-!^%^k!)-G-)!Q]2%($)-#R%!

!

K65! **L&'.)+!)=!*$*-G:#:!**

10-!(+%0&'5!('7+-!%0(%!"1=!$5!(*!$*#-:-*#-*%!

'

)
)

)

$*,'-(5-#!5,'+%$*8!(*#!:+F)$,!:'-55+'-!&G-'!)('7-!,&':&'(%$&*5!$*!C+5%'()$(6!0(5!)-#!:('%$,+)('!,&.:(*$-5!%&!'-5:&*#!F8!:'&#+,$*7!G&)+*%('8!%(9!'-:&'%5!%0(%!-*,&.:(55!:('%$,+)('!%&*-!(*#!'-(#(F$)$%8!,0('(,%-'$5%$,5M!

?*!)$*-!D$%0!B$#0+!(*#!L 0$%%'-#6[1] !%0-!(+%0&'5!5:)$%!%0-!5(.:)-!+5$*7!D0(%!%0(%!5%+#8!#-5,'$F-#!(5!(!b:&)$%$,())8!(,,-:%(F)-!%0'-50&)#06!:-'0(:5!0-'-!F-%%-'!#-5,'$F-#!(5!(!M!10-!(+%0&'5!'(*N!%0-!,&.:(*$-5!F(5-#!&*!%0-$'!"1=6!(*!(::'&(,0! ,&*5$5%-*%! D$%0! $*@&'.(%$&*! 5&+',-#! @'&.! '-5:-,%$G-! .(*#(%&'8! %(9!%'(*5:('-*,8!'-:&'%56!(*#!%0-*!0(G-!#-@$*-#!:+F)$,)8!-9:&5-#!,&.:(*$-5!(5!%0&5-!D$%0!(*!"1=!)-55!%0(*!%0-!.-#$(*M!10&5-!F-)&D!%0-!.-#$(*!('-!,(%-7&'$5-#!(5!6!D0$)5%!%0&5-!%0(%!0(G-!(!0$70-'!"1=!('-!,(%-7&'$5-#!(5!M!C'7+(F)86!%0$5!,&+)#!F-!5--*!(5!(*!('F$%'('8!%0'-50&)#!(5!$%!'-5+)%5!$*!0()@!&@!%0-!5(.:)-!F-$*7!:&)$%$,())8!-9:&5-#!(*#!%0-!&%0-'!0()@!*&%M!!!

C*!-9(.$*(%$&*!&@!%0-!,&''-)(%$&*!F-%D--*!%0-!G('$(F)-5!50&D5!*&!0$70!,&''-)(%$&*!(.&*7!%0-!G('$(F)-5!+5-#!$*!-(,0!&@!%0-!:'&:&5-#!.&#-)56!5+77-5%$*7!*&!$55+-5!D$%0!G('$(F)-50!#$5,'$.$*(*%!G()$#$%8M[200]!C!*&%-!50&+)#!F-!.(#-!'-7('#$*7!%0-!4&7!(*#!4)-5,02 j $*,($#!$*#-9-56!F&%0!F-$*7!+5-#!(5!:'&9$-5!@&'!'-(#(F$)$%8!(*#!%0-'-@&'-!#$5:)(8$*7!(!0$70!,&''-)(%$&*M!A5$*7!%D&!#$@@-'-*%!:'&9$-5!@&'!.-(5+'$*7!'-(#(F$)$%8!h!D$%0!5$.$)('!@$*#$*75!h!$.:'&G-5!%0-!'-)$(F$)$%8!&@!%0-!.&#-)!D0-*!-9(.$*$*7!%0-!'-(#(F$)$%8M!=-7('#$*7!%0-!G()$#$%8!&@!%0-!.&#-)56!%0-!(*()85-5!50&D!%0-!,&-@@$,$-*%5!&@!%0-!$*#-:-*#-*%!(*#!,&*%'&)!G('$(F)-5!(#&:%-#!$*!%0-!.&#-)5!('-!*&%!()D(85!5%(%$5%$,())8!5$7*$@$,(*%M!10-'-@&'-6!%0-!'-7'-55$&*5!:'-5-*%!)&D!@2G()+-5!(*#!)&D!(#P+5%-#!=[2]M!pG-'())6!(*!(*()85$5!&@!%0-!,&''-)(%$&*!F-%D--*!%0-!5+F25(.:)-50!#-:-*#-*%!(*#!$*#-:-*#-*%!G('$(F)-5!D$))!5+@@$,-!@&'!'-(,0$*7!%0-!@$*#$*75!&@!%0$5!5%+#8M!

%) (%%*! "+-" '+-" -. 2%*%+! 7+#, $+7*" '*" 1%

M67! /8&-#?#$*8G!=#$+#$F:!

10-!:'-)$.$*('8!@$*#$*75!-9(.$*-#!%0-!'-)(%$&*50$:!F-%D--*!())!_^1!&F5-'G(%$&*5!(*#!'-G-()-#!Q5--!,&''-)(%$&*!.(%'$9!&*!1(F)-!`R!%0(%[!

)
)

)

0-):$*7!%&!-#+,(%-!%0-!:+F)$,!(F&+%!$%5!,&.:)$(*,-!D$%0!%0-!%(9!)(D5M[201]!10-!,&.:(*805!%&*-!$5!:&5$%$G-!%&D('#5!%0-!b$*@&'.-#!:+F)$,!5,'+%$*80[202]!(*#!%&D('#5!$%5!'-:+%(%$&*M[203]!!

=-7'-55$&*! (*()85$5! +5$*7! '-(#(F$)$%8! $*#-9-5! (5! $*#-:-*#-*%! G('$(F)-5! (*#! (5! #-:-*#-*%!G('$(F)-5!"1=6!>*Q<('N-%!J(:$()$5(%$&*R!(*#!>*Q;4'-W!L&'#5R!Q<&#-)5!_6!]6!(*#!`R!,&*@$'.5!%0(%!(!0$70!"1=!$5!(55&,$(%-#!D$%0!'-:&'%5!%0(%!('-!-(5$-'!%&!'-(#!Q$-6!)&D!'-(#(F$)$%8!$*#-9-5R!10-!,&-@@$,$-*%5!@&'!%0-!"1=!('-!2^M]ql!Q s]M_`lR6!+5$*7!4&7!(5! (*! $*#-:-*#-*%! G('$(F)-! (*#! 2^M]k_! Q s2]M_olR6! +5$*7! 4)-5,02j$*,($#! (5! (*! $*#-:-*#-*%!G('$(F)-M!!!

L $%0!%0-5-!@$*#$*75!$*!.$*#6!%0-!0$70-'!%0-!"1=6!%0-!.&'-!%'(*5:('-*%!(*#!+5-'!@'$-*#)8!%0-!'-:&'%!h!F-$*7!%0-!($.!&@!%0-!11J!(*#!&+%)$*-#!F8!%0-!/&('#!&@!1(9(%$&*M[204]!10-!,)-('-'!%0-!#$5,)&5+'-56!%0-!.&'-!-(5$)8!+*#-'5%&&#!%0-!,&*%-*%M!10-5-!'-5+)%5!()$7*!F'&(#)8!%&!-9%(*%!'-5-(',0!&*!5,'+%$*8!(*#!:+F)$,!-9:&5+'-!F-$*7!)$*N-#!%&!%&*-!(*#!'-(#(F$)$%8M[205]!E&D-G-'6!%O$5!'($5-!W+-5%$&*5!(5!%&!D0-%0-'!%0-!G&)+*%('8!5,0-.-!$5!0(G$*7!%0-!-@@-,%!&@!$*,-*%$G5*7!,&.:(*$-5!%&D('#5!%0-!5:$'$%!&@!%0-!)(D6!(5!%0-!B-*(%-!",&*&.$,5!=-@-'-*,-5!J&..$%%--!-*W+$'8!#$5,+55-#M[20]!10$5!$5!:('%$,+)(')8!5&6!7$G-*!

)
)

)

(*#!4)-5,02 j $*, ($#!Q$-6!'-:&'%5!&@!,& . :(*$-5!D$%0!0$70-'!" 1=!('-!-(5$-'!%&!'-(#R!D$%0!*&!(55&,$(%$&*!D0(%5&-G-'!'-7('#$*7!%&*-!(*#!" 1=M!

B+ . . ('5*76!+5$*7!%0-!,'$%-'$(!&@!5:)$%%$*7!%0-!5(. :)-!F-%D--*!,& . :(*$-5!D$%0!)&D!" 1=!(*#!0$70!" 1=!(5!(!:'&98!@&'!:+F)$,!-9:&5+'-!(*#!5,'+%$*86220!

'

)
)

)

E*;-&!IB!39 ? ? *8G!)=!N)&==#%#&$':!=)8!0EC!

$%&%'(%')" *+,-+./%"	01)+/"2+3&/%" 4!56789!"	#:./-;"!<&1=:,%" >"?1@"2;,:)-'A" ;13&+'-%="4'5B79"	#:./-;"!<&1=:,%"C" 2;,:)-'-=%(" ;13&+'-%="4'5BD9"
",&$!	AIDI^^^!. _IA@@]6!	A@[B!. _A]]]6!	AJCD^^!. _QA]CI6!
4<$0)#?W%&)5%'!	?AQ]D^^!. _?QAD\B6!	?AJD]^!. _?DA[@\6!	?AQD\!. _?DAJ@D6!
4,>!	?AQIB^^!. _?QADJB6!	?AQ\Q^!. _?DAC@\6!	?AQI]!. _?DAICQ6!

5!"#$($!5($!J!:%00%&>!35<2$0!($>5('%&>!Z"ME!#$&)$!*#$!*,*5<!05:;<$!,+!D@B!),:;(%0$0!,+!]@!;21<%)!$8;,02($!`!<,F!0)(2*%&G!),:;5&%$0E!]J!;21<%)!$8;,02($!`!0)(2*%&%0$'!),:;5&%$0E!5&'!J!:%00%&>!35<2$0A!
^^^A!N%>&%+%)5&*!5*!*#$!@A@D!<$3$<A!^^!N%>&%+%)5&*!5*!*#$!@A@]!<3<A!^!N%>&%+%)5&*!5*!*#$!@AD@!<$3$<A!

!

!

pG-'())6!%0-!@$*#$*75!$*#$,(%-!%0(%! !,&.:(*$-5!'-5&'%!%&!%0-!%&*-!&@!%0-!'-:&'%6!D0-'-(5!%0&5-!D$%0!)&D-'!5,'+%$*8!'-)8!&*!%0-!'-(#(F$)$%8!&@!$%5!'-:&'%5M!p*!%0$5!F(5$56!%0-!08:&%0-5-5!('-!5+::&'%-#M!!!

'

)
)

)

^67! **L *#$!=#$+#$F:!**

10$5!('%$,)-!'-G-()5!%0(%! !,& . :(*$-5!'-5&'%!%&!:&5$%$G-!%&*-!
$*!%(9!'-:&'%$*76!D0$)5%!%0&5-!D$%0!)&D-'!5,'+%$*8!'-)8!&*!%0-!'-(#(F$)$%8!&@!'-:&'%5M!
L 0$)-!:'-5-*%!)$%-'(%+'-!,&*,-'*$*7!G&)+*%('8!'-:&'%$*7!*&%-5!%0(%!%&*-!$*,'-(5-5!(5!@$' . !
:-'@&' . (*,-!$*,'-(5-56^{230}!%0-!(+%0&'5!@$*#!%0(%!(5!%0-!" 1=!$*,'-(5-56!%0-!%&*-!&@!'-:&'%5!
F-,& . -! . &'-!:&5$%$G-M!10$56!&*!5-7'-7(%$*7!%0-!#(%(!F(5-#!&*!:+F)$,!-9:&5+'-6!$5! . &5%!
(::('-*%! @&'! ,& . :(*$-5! '(%0-'! %0(*! !
,& . :(*$-5M! L $%0!'-7('#5!%&!'-(#(F$)$%86!%0-!(+%0&'5!@$*#!%0(%!'-:&'%5!('-! . &'-!'-(#(F)-!
(5!%0-!" 1=!$*,'-(5-5M! p*!5-7'-7(%$*7!%0-!#(%(!F(5-#!&*!:+F)$,!-9:&5+'-6!%0$5!$5!5--*!(5!
-G$#-*%!5:-,$@$,())8!@&'!)&D!5,'+%$*8!,& . :(*$-56!$*@-''$*7!'-(#(F$)$%8!$5!(55&,$(%-#!D$%0!
0$70-'!" 1=M!10$5!@$*#$*7!$5!,&*5$5%-*%!D$%0!%0-!5%+#8!F8!/-+5-)$*,N!(*#!,&2(+%0&'5^{231}!

)
)

)

10-!@$*#$*7!%0(%! !,& . :(*$-5!'-5&'%!%&!%0-!+5-!&@!:&5$%$G-!%&*-!$*!%(9!'-:&'%$*76!D0$)5%!%0&5-!D$%0!)&D-'!5,'+%$*8!'-)8!&*!%0-!'-(#(F$)$%8!&@!'-:&'%5!'($5-5! 5& . -! W+-5%$&*56! (*#! $5! ,&*5$5%-*%! D$%0! %0-! B-*(%-! '',&*& . $,5! =-@-'-*,-5!J& . . $%%--05!,&*,-'*5!%0(%!@$' . 5!%0(%!b:+50!%0-!)-%%-'!(*#!5:$'$%!&@!%0-!)(D0!D$))!*&%!F-!$*,-*%G5-#!b%&!:+F)$50!%(9!$*@&' . (%$&*0M[23] ! 10-!%0'--!&::&'%+*$%$-5!%0(%!%0$5!('%$,)-!&+%)$*-5!%0-'-@&'-!0$70)$70%!%0-!,0())-*7-5!%0(%!:&)$,82 . (N-'5!@(,-!$*!F()(*,$*7!%0-!*--#!@&'!,&*@$#-*%$()$%8!(*#!%'(*5:('-*,8!D0-*!5--N$*7!%&!F+$)#!,&*@$#-*,-!$*!%0-!,&':&'(%-!%(9!585%- . M[240]!

c-5:$%-!%0-!%&*-!(*#!'-(#(F$)$%8!,&*,-'*5!Q(*#!:+%%$*7!(5$#-!,&*@$#-*%$()$%8!,&*,-'*5R6!%0-!W+-5%$&*!('$5-5!(5!%&!D0-%0-'!%0-!'-:&'%5!('-!(F)-!%&!&G-',& . -!%0-!#$@@-'-*,-5!%0(%!('$5-!@'& . !%0-!)(,N!&@!()$7* . -*%!F-%D--*!%0-!(,,&+*%$*7!(*#!%(9(%$&*!585%- . 5M! L $%0&+%!%0-!,&**-,%$&*!F-$*7!'-(#$)8!+*#-'5%&&#6!$%!$5!W+-5%$&*(F)-!D0-%0-'! < 1=5! ! I 1=5!-*(F)-!%'+-! !%&!F-!(,0$-G-#M!E&D-G-'6!%0-!(+%0&'5!#&!*&%!5--!%0$5!(5!F-$*7!+)%$. (%-)8!(!7&()!&@!%0-!:&)$,82 . (N-'5!&'!F+5$*-55-56!(5!%0-!F(5$,!:&5$%$&*!$*!C+5%'()$(!@&'!%(9!(@@($'5!F-7$*5!D$%0!(!:&5$%$&*!&@!,&*@$#-*%$()$%8M!!!

C5!c-G&5!(*#!z(,N'$55&*!0(G-!$*#$,(%-#6[241]!%0-!%(92,+)%+'-!5-%%$*7!$5!0$70)8!$. :&'%(*%!%&!%0-!'-5:&*5-!%&!$*,'-(5-#!#$5,)&5+'-M!C5!5+,06!%(9!:&)$,8!*--#5!%&!'-@)-,%!%0$5!5-%%$*76!D$%0!(*8!(##$%$&*()!#$5,)&5+'-5!(%!'$5N!&@!(##$*7!%&!(!D-F!&@!:&%-*%$())8!#$5,&**-,%-#!(*#!$*,& . :)-%-!:$,%+'-M! E&D-G-'6!%0-! < 1=5! ,&+)#! F-!5--*! (5!$. :'&G$*7!%0-!%(9!#$5,)&5+'-5!QG$(!I 1=5R6!(*#!()F-$%!D$%0!%0-!(F)$%8!&@!F+5$*-55-5!%&!,&*%'&)!%0-!*(''(%$G-!%0'&+70!%&*-!(*#!'-(#(F)$%86!(##!G()+-!%&!%0-!$*@&' . (%$&*!-*G$'&* . -*%M!!!

^6H! **Y#?#'*'#)$:!**

10-'-!('-!(!*+ . F-'!&@!)$. $%(%$&*5!%&!%0$5!5%+#8M!10-'-!$5!(!)$. $%-#!(F$)$%8!%&!(55-55!%0-!$*@)+-*,-!Q(5!&::&5-#!%&!(55&,$(%$&*R!&@!5+'-M!8!5+'-!$!%&!(55&,$(%$&*R!&&&&&&&&

'

)
)

)

$. : (, %5! $*@&' . (%$&*!#$5,)&5+'-!h! : ('%$,+)(')8!$*!%0-! J p I ? c 2_a! (*#! : &5%! J p I ? c 2_a! -*G$'&* . -*%M! 10-!%'(*5 : ('-*,8!&@!,&' : &'(%-!%(9!$*@&' . (%$&*!$5!F-,& . $*7!$*,'-(5$*7)8! $. : &'%(*%!%&!5(%$5@8!F&%0!7&G-'* . -*%!(*#!,& . . +*$%8!'-W+$'- . -*%5M! 10-!(+%0&'5!*&%-6! 0&D-G-'6!%0(%!%0-!(: : '&(,0!$*!D0$,0!%0$5!$5!(,0$-G-#!*--#5!%&!F-!,('-@+))8!(55-55-#!%&! #-%-' . $*-!D0-%0-'!#$5,)&5+'-5!('-!(: : '&: '$(%-!(*#!@$%!@&'! : +' : &5-6!&@@-'$*7!*+ . -'&+5! (G-*+-5!@&'!@+%+'-!'-5-(',0M!!!

4+'%0-'!'-5-(',0!50&+)#!,&*5$#-'!%0-!()$7* . -*%! F-%D--*!%0-!(,,&+*%$*7!(*#!%(9(%$&*! 585%- . 56!@&'!-9(. :)-!F8!(55-55$*7! I 1=!&+%: +%!%'$(*7+)(%-#!D$%0!%0-! f S4B!(*#! < 1=! &+%: +%M! 10$5! D&+)#! (55$5%! $*! (55-55$*7!%0-! -9%-*%! %&! D0$,0!,& . :)-9$%8! &@! #$5,)&5+'-! '-7$. -5!$. : (,%5!%0-!W+()$%8!&@!$*@&' . (%$&*!$*!(! I 1=M! < &'-&G-'6!-9(. $*$*7!,& . : (*8! $*,-*%$G-5!F-0$*#!5$7*$*7!&*!%&!%0-!1 1 J !D$))!()5&!F-!$. :&'%(*%6!$*,)+#$*7!#-%-' . $*$*7! %&! D0(%! -9%-*%! %0-8! 5--N! %&! ,&*%'&)! %0-! *(''(%$G-! Q@&'! -9(. :)-6! $*! &'#-'! %&! . (*(7-! '-: +%(%$&*()! 0(' . ! (*#! %&! D0(%! -9%-*%! %0-! 1 1 J ! ()) &D5! @&'! ,&*5-'G(%$G-! G&)+*%('8! #$5,)&5+'-5!%&!F-! . (#-243R6!D0-%0-'!%0-8!: -', -$G-!%0-!#$5,)&5+'-5!(5!-@@-,%$G-!$*!F-%%-'! $*@&' . $*7!: +F)$,!5,'+%$*8624 4!(*#!D0-%0-'!%0-!: '&,-55!+*#-': $**$*7!%0-!1 1 J !$5!@&5%-'$*7! (*!$*%-'*()!,+)%+'-!%0(%!$5!50$@%$*7!%&D('#5!: +F)$,!%'(*5 : ('-*,8M245!!

C##$%$&*())86!-9 : (*#$*7!%0-!(*()85$5!%&!-9(. $*-!%0-!5&+',-!&@!)&D!QO$70R!)-G-)5!&@!%(9! : (8(F)-!$5!D(''(*%-#6!$-6!-9(. $*$*7!D0-%0-'!: '&9$-5!@&'!%(9!(77'-55$G-*-55!$. : (,%!%0-! (55&,$(%$&*5!$#-*%$@$-#M!C5!()'-(#8!$*#$,(%-#6!%0$5!('$,)-!#&-5!*&%!-9%-*#!%0-!(*()85$5!%&! ,&*5$#-'!%(9!(77'-55$G-*-55!&@!%0-!@$' . 56!(5!+*)$N-!$*!%0-!5%+#8!F8! / -+5-)$*,N!(*#!,&2 (+%0&'5^24 ! $%! $5! ,&*5$#-'$*7! ! '-5 : &*5-M! 4+'%0-'! '-5-(',0! 50&+)#! ,&*5$#-'!%0-!$. : (,%!&@!%&*-!(*#!'-(#(F$)$%8!$*!'-)(%$&*!%&!%0-! < 1=\ I 1=!,& . : ('$5&*6! F'$*7$*7!$*!%0-!(77'-55$G-*-55!G('$(F)-M!

?*!%0-!(F&G-!,&*%-9%!%0$5!'-5-(',0! . (N-5!%0'--!,&*%'$F+%$&*5!%&!%0-!)$%-'(%+'-M!4$'5%6!%0-! ('%$,)-! -9%-*#5! -9$5%$*7! '-5-(',0! -9 :)&'$*7! ,& . :)-9$%8! (*#! I 1=6! @())$*7! D$%0$*! (! ,&*%-*%$&+5! (*#!,'$%$,()! ('-(!&@!%0&+70%[!%0-!,&' : &'(%-!%(9!585%- . M! 10-! 1 1 J ! (*#!$%5! 5$7*(%&'$-5!,'-(%-!(!*&G-)!#(%(!5-%6! : '-G$&+5)8!*&%!(G($)(F)-!#-()$*7!D$%0!(*!('-(!&@! F+5$*-55!%0(%!@(,-5! : ('%$,+)(')8!5%'&*7!5,'+%$*8[!D0-%0-'!,& . : (*$-5!('-! !Q&'! R!,&*%'$F+%$*7!%0-$'!b@($'!50('-0!&@!%0-!%(9!F+'#-*M!B-,&*#)86!%0-!('%$,)-!-9%-*#5! -9$5%$*7! '-5-(',0! -9 :)&'$*7! '-(#(F$)$%8! (*#! %&*-! D$%0$*! %0-! ,&*%-9%! &@! G&)+*%('8! '-: &'%$*7M! 10-! (+%0&'5! @$*#! %0(%! %0-!)-G-)! &@! : +F)$,! -9 : &5+'-!$. : (,%5! %0-! $*%-':)(8! F-%D--*! '-(#(F$)$%8! (*#! %&*-! &@! I 1=5M! 10$'#)86! %0$5! -9%-*#5! %0-! '-5-(',0! %0'&+70! ,&*5$#-'$*7!0&D!(%%-*%&*6!5+,0!(5!7&G-'* . -*%!$*%-'G-*%$&*6!$. : (,%5!5+,0!$*@&' . (%$&*! #$5,)&5+'-M! 10-! (+%0&'5! : &5$%! %0(%! %0-! $*%-':)(8! F-%D--*! < 1=! (*#! I 1=! ,'-(%-5! (! : &5$%$G-!&+%,& . -!@&'!)$. $%$*7!&: : &'%+*$%$-5!@&'!&F@+5,(%$&*6!5+: : &'%$*7!%0-!08 : &%0-5-5! &@!%0-!5%+#8M! L 0$)-!%0-!('%$,)-!5-%5!&+%!%0'--!N-8!&: : &'%+*$%$-5!@&'!,& . : (*$-5!%&!,&*%'&)! %0-!*(''(%$G-6! < 1=5! ,&+*%-'!%0-5-!&: : &'%+*$%$-56! (*#!#-5 : $%-!%0-!)(,N!&@! ()$7* . -*%! F-%D--*! < 1=5!(*#! I 1=5!,'-(%-!(!)-G-)!&@!(%%-*%$&*!&%0-'D$5-!*&%!: '-5-*%M!

!

!

243"nD3%3L":,"3'/"3Q&M:"+"=cC/"=FFF℗"
244") *9,D3'-3+"2D:39*D;/"3Q&M:"+"cA/"==℗"
245"8&3D0"&("2343,-&+/"3Q&M:"+"==℗"
24 "#::". :+:D3'';"8:*9:'-+$^":,"3'/"3Q&M:"+"=>℗"

)
)

!

"#$%&!'()!*"+,!#-.!/01 1#23!45!60784 1&,!!

!

!	!	"#$%!	"#$&!	"#$'! ()*+,-,./!	"#$0! ()*

!

"#$%&'()!$*!+(,!-"."(&/0!

+0"!(..$/1(21$'!$*!3('4(2$&5!2(,!41./)$.%&".!6120!20"!&"(4(71)125!('4!2$'"!$*!8$)%'2(&5!2(,!&"9$&2.!

+

:>?!
!
!

!

!

"#$%&'()!$*!+(,!-"."(&/0!123224!5$)6!789!'$6!29!::6!2;<=<3<!
!

/ .&! 0)1-+! . *2!3)$&! ' . 1)43 . !2&5&1*-!6&1#)+2!)7!1*6#+!+&5&-)6 8 &$'2!#$!'&%. $)-)39!)5&1! ' . &!9&*12:!%) 8 8)$-9!1&7&11&+!')!*2!;<$+42'1#*-! = &5)-4'#)$2>?!@#2')1#%*--9:!' . &!6)2#'#5&! &77&%'2!)7! 24%. ! '&%. $)-)3#%*-! +&5&-)6 8 &$'2!)$! ' . &! &%)$) 8 9! . *5&! %)$2#+&1*A-9!)4' 0 &#3 . &+!' . &!+#2146'#5&!# 8 6*%'!)$!& 8 6-)9 8 &$'?[1]!B*%. !'# 8 &:!' . &! 0)1-+! . *2!A&$&7#'&+! 71) 8 ! 31&*'&1! *331&3*'&! &%)$) 8 #%!)4'64':! *! 1&+4%'#)$! #$! ' . &! $&&+! 7)1! 8 &$#*-! -*A)41:! . #3 . &1! -*A)41! 61)+4%'#5#'9! *$+! . #3 . &1! 0 *3&2:! *2! 0 &--! *2! ' . &! %1&*'#)$!)7! $& 0 ! C)A!)66)1'4$#'#&2?[2]!

8)+&-?!S42'!-#D&!*4')8*'#)$:!&8#22#)$2!*-2)!1*#2&!*$!#224&!)7!;-&*D*3&>:!0.&1&!6)-#%#&2!&$*%'&+!#$!)$&!(41#2+#%'#)$!8*9!-&*+!')!'.&!2.#7'#$3!)7!'.&!&M'&1$*-#'9!')!*$)'.&1!(41#2+#%'#)$?!J&%'#)$!T!)7!'.#2!*1'#%-&!0#--!*$*-92&!'.#2!8)+&-!')!2&&!#7!*$9!-&22)$2!#$!'*M!+&2#3$!

;<$+42'1#*-!=&5)-4'#)$!&M%&6'#)$*-#2 8 >?!<$!)'.&1! 0)1+2:!6&)6-&!'&$+!')!'.#$D!'.*'!;'.#2!'# 8 &! 0 #--! A&! +#77&1&$'>:! &5&$!'.)43.!'.&!-*A)41! 8 *1D&'!+)&2! &5&$'4*--9!*+C42'!')!'.&!%.*$3&2? !

@) 0 &5&1:!#'!#2! 0)1'.!&M6-)1#$3!'.&!6)22#A#-#'9!'.*'!;

1'#7#%#-! #$'&--#3&$%&! 61)31* 8 2:! 0 .#%.:! +4&! ')! '.&#1! #$.&1&$'! 26&&+:! 1&-#*A#-#'9:! *$+! 2%*-*A#-#'9:!$) 0!6)22&22!*$!*+5*$'*3&!)5&1!.4 8 *$2!#$!*1&*2!24%.!*2!2&%41#'#&2!'1*+#$3?[13]!

*!"#"5 674.,&*4+&4*./(.*7,&-1.89/6:.*

J&$2)12:! 61)%&22)12:! *$+! $&'0)1D#$3! %*6*A#-#'#&2! *1&! $)0! 2477#%#&$'-9! %.&*6! *$+! 2477#%#&$'-9! 8#$#*'41#2&+!')!A&!& 8 A&++&+!#$')!&5&19+*9!)A&%'2:!%1&*'#$3!0#+&!$&'0)1D2!)7!#$'&1%)$$&%'&+!)A&%'2!'.*'!*1&!*A-&!')!#$+&6&$+&$'-9!%)--&%':!61)%&22!*$+!'1*$2 8 #'! #$7)1 8 *'#)$?[14]!

\ .#-&!61&5#)42!'&%.$)-)3#%*-!1&5)-4'#)$2!.*5&!*-2)!1&24-'&+!#$!2'14%'41*-!*$+!71#%'#)$*-! 4$& 8 6-)9 8 &$':!#'!#2!-#D&-9!'.*'!'.&!61&2&$'!0*5&!)7!*4')8*'#)$!0#--!A&! 8)1&!+#2146'#5&! '.*$!A&7)1&:!7)1!2&5&1*-!1&*2)$2?!F#12':!0.#-&!61&5#)42!'&%.$)-)3#%*-!#$$)5*'#)$2!+#+!$)'! &-# 8 #$*'&!'.&!$&&+!7)1!.4 8 *$!-*A)41!')!)6&1*'&!*$+!%)$'1)-!'&%.$)-)39:!'.&!*4')$) 8)42! $*'41&!)7!'.&!61&2&$'!0*5&!)7!'&%.$)-)3#&2!'.1&*'&$2!')!24A2'#'4'&!.4 8 *$!-*A)41!')!*! 31&*'&1!&M'&$'!A9!74--9!&-# 8 #$*'#$3!'.&!$&&+!7)1!.4 8 *$!#$'&15&$'#)$!#$!'.&!*4')$) 8)42! &M&%4'#)$!)7!*!3#5&$!'*2D?[15]! J&%)$+-9:!4$-#D&!61&5#)42!'&%.$)-)3#%*-!#$$)5*'#)$2!'.*'! .*5&! A&&$!-# 8 #'&+!#$!'.&!2%)6&!)7!'.&#1!*66-#%*A#-#'9:!*4')$) 8)42!'&%.$)-)39!#2!*! 3&$&1*-R6416)2&!'&%.$)-)39! 0#'.!*! 84%.! 0#+&1! 2&'!)7!%*6*A#-#'#&2! Z! 1*$3#$3! 71) 8 ! 6.92#%*-! *%'#)$! ')! #$7)1 8 *'#)$! 61)%&22#$3! Z! *$+! .&$%&! .*2! 31&*'&1! 6)'&$'#*-! 7)1! +#2146'#5&!# 8 6*%'!*%1)22!*!0#+&1!1*$3&!)7!2&%')12?[1] !

E

2)%#*-! %)2'2! *1#2#$3! 71) 8 ! ' . &! $&&+! ')! 2466)1'! *$+! 1&'1*#$! +#26-*%&+! 0)1D&12:! 0 . #% . ! %)$2'#'4'&!*!$&3*'#5&!&M'&1$*-#'9?! J4% . ! 8 *1D&'!7*#-41&2!%*$!A&!%)4$'&1&+!' . 1)43 . !' . &!42&!)7!*!N#3)45#*$!'*M?!

<$!' . &!2 .)1'R'&1 8 :!*4') 8 *')$!#2!-#D&-9!')!*-'&1!&M#2'#$3!C)A2!A9!%*'*-92#$3!% . *$3&2!#$!' . &! 2%)6&!*$+!$*'41&!)7!*!-*13&!61)6)1'#)$!)7!&M#2'#$3!)%%46*')$2?! E4') 8 *')$!#2!*A-&!')! 61) 8 #2&!A&''&1!1&24-'2!7)1!-) 0 &1!%)2'2!#$!' . &!6&17)1 8 *$%&!)7!26&%#7#%!'*2D2:!3#5#$3&!1(8)4!)-7 (3)1 (361$

8&*241&2! '*13&'&+! *'! 8#'#3*'#$3! ' . &! # 8 6*%'!)7! *4') 8 *'#)$!)$! 26&%#7#%! 2&%')12!)1! C)A! %-*22&2?!!

<$! 2) 8 &! 2&%')12:! '&%. $)-)3#%*-! *+5*$%& 8 &$'2! 8 *9! 8 *D&! #'! 7&*2#A-&! *$+! &%)$) 8 #%*--9! %) 8 6&--#$3!7)1!%) 8 6*$#&2! ')!74--9!*4') 8 *'&! *$! &$'#1&!%-*22!)7!C)A2?25!E! 8 *C)1!61)A-& 8 ! &$24&2!#7! ' . &! 0)1D&12! ' . *'!6&17)1 8 ! ' . &2&!C)A2! *1&!$)'!'96#%*--9!1& I 4#1&+! ')!6)22&22!2D#--2! ' . *'! 0)4-+! *--) 0 ! ' . & 8 ! ')!6&17)1 8 ! *-'&1$*'#5&! '*2D2!)1!C)A2?! E$! *1%. &'96*-!&M* 8 6-&!)7! ' . #2! #2! ' . &! 6)'&$'#*-! &77&%'! ' . *'! 2&-7R+1#5#$3! '14%D2! 6)2&! ')! '14%D! +1#5&12?! _$-#D&!)' . &1! %*2&2!)7! *4') 8 *'#)$! -#D&! ' . &! #$'1)+4%'#)$!)7! *4') 8 *'&+! '&--&1! 8 *%. #$&2:! 0 . #%. ! 0 &1&! 4$*A-&! ')!6&17)1 8 ! *--!)7! ' . &!74$%'#)$2! ' . *'! . 4 8 *$!'&--&12!6&17)1 8 &+:!2&-7R+1#5#$3! '14%D2! %)4-+! 74--9! *4') 8 *'&! ' . &! 1)-&2!)7! ')+*9>2! '14%D! +1#5&12?! V)'0#' . 2'*$+#$3! ' . &! 7*%'! ' . *'! '14%D!+1#5&12! 8 *9!$&&+! ')! 8)$#')1!2&-7R+1#5#$3! '14%D2!#$! ' . &!2.)1'R14$:2 !2&-7R+1#5#$3!%*12! 2'#--! . *5&! ' . &!6)'&$'#*-! ')!+#26-*%&! '14%D!+1#5&12!71) 8 ! ' . &#1!C)A2!)$&!+*9?!F41' . &1 8)1&:!*2! ' . &! 8 *#$!2D#--!)7!*! '14%D!+1#5&1!#2!+1#5#$3:! ' . &2&!+1#5&12!*1&!4$-#D&-9!')!6)22&22!2D#--2! ' . *'!

61#%#$3!*$+!*4') 8*'#)$!'*M*'#)$?!/ .42:!#'!8*9!A&!0)1'. 0 .#-&!2'4+9#$3!'.&!7)18&1:!')!2&&!#7!#'!%*$!2&15&!*2!*!42&74-! 8)+&-!7)1!*4') 8*'#)$!'*M*'#)$?!B8#22#)$2!61#%#$3:!)1!'.&!#86)2#'#)$!)7!*!61#%&!)$!31&&$.)42&!3*2!&8#22#)$2!'.*'!#2!6*9*A-&!A9!&8#''&12:!#2!*$!&M*86-&!)7!*!N#3)45#*$!'*M!*$+!.*2!A&&$!*+)6'&+!A9!2&5&1*-!C41#2+#%'#)$2!*2!*!1&26)$2&!')!'.&!$&3*'#5&!&M'&1$*-#'9!)7!%-#8*'&!%.*$3&!*1#2#$3!71)8!31&&$.)42&!3*2!&8#22#)$2?35!E$*-)3)42-9:!*!61#%&!%)4-+!A&!#86)2&+!)$!'.&!+&6-)98&$'!)7!*4') 8*'&+!292'&82!)1!&I4#68&$'!A9!7#182:!*2!*!1&26)$2&!')!'.&!$&3*'#5&!&M'&1$*-#'9!)7!0)1D&1!+#26-*%&8&$'!%*42&+!A9!24%.!*4') 8*'#)$?!S42'!-#D&!*4') 8*'#)$:!&8#22#)$2!*-2)!1*#2&!*$!#224&!)7!;-&*D*3&>:!0 .&1&!6)-#%#&2!&$*%'&+!#$!)$&!C41#2+#%'#)$!8*9!-&*+!')!'.&!2.#7'#$3!)7!'.&!&M'&1$*-#'9!')!*$)'.&1!C41#2+#%'#)$?!!

E!6)-#%9!)7!61#%#$3!'.&!&M'&1$*-#'9!A9!#86)2#$3!*!'*M!%)$2'#'4'&2!*!8*1D&'RA*2&+!2)-4'#)$!')!'.&!&M'&1$*-#'9?!/ .&!#$'&$+&+!6)-#%9!)4'%)8&!)7!8#$#8#2#$3!'.&!2#`&!)7!'.&!&M'&1$*-#'9!#2!*%.#&5&+!$)'!A9!61&2%1#A#$3!)1!61)2%1#A#$3!'.&!*%'#)$2!)7!*3&$'2:!A4'!A9!*+C42'#$3!'.&!8*1D&'!61#%&2!*22)%#*'&+!0#'.!%&1'*#$!*%'#)$2!#$!)1+&1!')!74--9!1&7-&%'!'.&!&M'&1$*-#'#&2!)7!'.&2&!*%'#)$2?!\ .#-&!'.&!#$'&$'!#2!')!#$7-4&$%&!*3&$'!A&.*5#)41!A9!*+C42'#$3!61#%&2:!'.&2&!*3&$'2!1&'*#$!'.&!*A#-#'9!')!71&&-9!%.))2&!'.&#1!*%'#)$2!*$+!')!3&$&1*'&!'.&!&M'&1$*-#'9!4$+&1!8*1D&'RA*2&+!2)-4'#)$2?!/ .&2&!8*1D&'RA*2&+!2)-4'#)$2!.*5&!'.&!*+5*$'*3&!)7!*%.#&5#$3!2)%#*--9R)6'#8*-!)4'%)8&2!'.1)43.!'.&!+&%&$'1*-#2&+!%.)#%&2!)7!#$+&6&$+&$'!*$+!#$%&$'#5&R+1#5&$!*3&$'2:!&-#8#$*'#$3!'.&!$&&+!7)1!3)5&1$8&$'2!')!4$+&1'*D&!'.&!%.*--&$3#$3!'*2D!)7!+&'&18#$#$3!*$+!+#%'*'#$3!0.*'!'.&!2)%#*--9R)6'#8*-!A&.*5#)41!0)4-+!A&!7)1!&*%.!#$+#5#+4*-!*3&$'?3 !/ .&!$&&+!')!%)11&%'!.&!8*1D&'!7*#-41&!*1#2#$3!71)8!'.&!&M'&1$*-#'#&2!3&$&1*'&+!A9!1*6#+!*$+!8*22#5&!+#26-*%&8&$'!)7!-*A)41!+4&!')!*4')8*'#)$!61)5#+&2!'.&!'.&)1&'#%*-!C42'#7#%*'#)$!7)1!3)5&1$8&$'!#$'&15&$'#)$!#$!'.&!7)18!)7!*$!*4')8*'#)$!'*M?3 !

=&34-*')12!842'!+&'&18#$&!'.&!2#`&!)7!'.&!&M'&1$*-#'9!3&$&1*'&+!A9!&*%.!*3&$':!2)!*2!')

$

*4') 8 *'#) $! '*M! 0#--! A&! ')! +&%1&*2&!)1! #$%1&*2&! & 8 6-)9 8 &$'! #$! *4') 8 *'#) $R#$'&$2#5&! #$+42'1#&2?!!

@&$%&:!4$-#D&!& 8 #22#) $2!61#%#$3!2% . & 8 &2!' . *'!*1&!' . &) 1&'#%*--9!&77&%'#5&!*2!*! 8 &*$2!) 7!

#$+42'1#&2?! \ .#-&!24%.!*$!*4') 8*'#)$!'*M! 8*9!2&15&!*2!*!+#1&%'!1& 8&+9!A9!2-) 0#$3!'.&! 6*%&!)7!*4') 8*'#)$!)1!A9!1*#2#$3!74$+2!')!2466)1'!*77&%'&+!0)1D&12:!#'! 8*9!*-2)!#$+#1&%'-9! &M*%&1A*'&!'.&!4$+&1-9#$3!61)A-& 8!A9!4$+&1 8#$#$3!'.&!61#%&!%) 8 6&'#'#5&$&22!)7!'.&#1!)4'64'!*$+!'.&!%1&*'#)$!)7!C)A!)66)1'4$#'#&2!#$!'.&#1!2&%')12?!<$!)'.&1!0)1+2:!*4') 8*'#)$! #2!*!+)4A-&R&+3&+!20)1+!7)1!0)1D&12!#$!*4') 8*'#)$R#$'&$2#5&!#$+42'1#&20!#'!'.1&*'&$2!')! +#26-*%&!'.&#1!-*A)41!A4'!%) 8 6&$2*'&2!A9!2*7&34*1+#$3!'.& 8!71) 8!&M'&1$*-!%) 8 6&'#'#)$!

' . &! 6) '&$'#*-! & 8 6-)9 8 &$'R+#26-*%#$3! &77&%'2!)7! *4') 8 *'#) $! A*2&+!) $! ' . &! #$'&$2#'9!)7! *4') 8 *'#) $!# 8 6-& 8 &$'&+?[5] !

$
$

$
$

%& ' ()*+,$ ' -$. + / $ 0 %1%+)23$. + / +45 ' *$ ' -$+ (4 ' 6 +45 ' *$+*7$+)45-525+,$5*4%,,58%*2%$+1$+$4 ' ',$ ' -$,+9 ' ()$: ',52 ; $

!@B$
$
!

$
$

%& ' ()*+,$ ' -$. + / $ 0 %1%+)23$. + / +45 ' *$ ' -$+ (4 ' 6 +45 ' *$+*7$+)45-525+,$5*4%,,58%*2%$+1$+$4 ' ',$ ' -$,+9 ' ()$: ',52 ; $

*$+! -)22R 8 *D#$3! %) 8 6*$#&2?! / . &! &77&%'!)7! ' . &! -*''&1! #2! ')! #$%1&*2&! ' . &! 61&2241&!)$! 2'

#+&*-!1)A)'!'*M! 0)4-+! . *5&!')!A&!%) 8 6-&M!&$)43 . !')!*66-9!#$!*--!' . &2&!+#77&1&$'! 0 *92:! *$+!7-&M#A-&!&$)43 . !')!D&&6!46! 0 #' . !' . &!1*6#+!+&5&-)6 8 &$'2!#$!*4') 8 *'#)$!'&% . $)-)39?! / . &!+& 8 *$+!7)1!*!292'& 8 !' . *'! 0)1D2!#$!61&%#2&-9!24% . !*! 0 *9!#2!$)'!$& 0 ?! / *M!*4' .)1#'#&2! *1)4$+!' . &! 0)1-+! . *5&!-)$3!1&*-#2&+!' . &!#$*+&I4*%#&2!)7!3&$&1*-!'*M!14-&20 5!+1*7'!' . & 8 ! ')!A1)*+-9!*$+!' . &1&!#2!$)!'*M6*9&1!%&1'*#$'9P!+1*7'!' . & 8 !')!$*11) 0 -9!*$+!1#2D!' . &!-)22!)7!'*M!1&5&$4&? ! / . &!2)-4'#)$! 0 *2!7)4$+!')!-#&!#$!' . &!42&!)7!%) 8 61& . &$2#5&!2% . &+4-&! 2466)1'&+! A9! 3&$&1*-! '*M! 61#$%#6-&2P! &*% . ! #'& 8 !)$! ' . &! 2% . &+4-&! %)4-+! A&! *%%)1+&+! +#77&1&$'! '*M! '1&*' 8 &$'! +&6&$+#$3!)$! ' . &! 3)5&1$ 8 &$'*-! 6)-#%9! *'! ' . &! '# 8 &? ! J4% . ! *! 292'& 8 ! 0 *2!*66-#&+!')!' . &!'*M!'1&*' 8 &$'!)7!*22&'2!*%I4#1&+!7)1!42&!#$!A42#$&22&2?! / . &!42&!)7! 24% . ! 292'& 8 2! +#5&13&+!)5&1! '# 8 &:! 0 #' . ! ' . &! _$#'&+! J'*'&2! -*A&--#$3! ' . &! %)$%&6'! ;+&61&%#*'#)$!)7!*22&'2>!*$+!' . &! _$#'&+! b#$3+) 8 !%*--#$3!#'!;%*6#'*-!*--) 0 *$%&2>?! / . #2! 2&%'#)$!&M6-)1&2!' . &! 8 &%. *$#2 8 !)7!;+&61&%#*'#)$>:! 0 . #% . ! . *2!A&&$!42&+!')!61)5#+&!'*M! #$%&$'#5&2! *$+! +#2#$%&$'#5&2! *134*A-9! 2#$%&! Ycdc? ! <'! 0 #--! *134&! ' . *'! ' . &! 2% . &+4-*1! 292'& 8 ! 42&+! A9! +&61&%#*'#)$! #2! &M'1*)1+#$*1#-9! 0 &--! 24#'&+! 7)1! %)$'1)--#$3! ' . &! 1*'&! *'! 0 . #% . !*4') 8 *'#)$!+#26-*%&2! . 4 8 *$! 0)1D&12?!!

/ . &! 74$+* 8 &$'*-! %)$%&6'!)7! +&61&%#*'#)$! #2! 2# 8 6-&! &$)43 . ! ')! 31*26?! E! 7#1 8 ! 0 . #% . ! #$5&2'2!#$!$& 0 !%*6#'*-!7)1!#'2!A42#$&22!#$%412!*$!&M6&$2&?!@) 0 &5&1:! 8)2'!'*M!*4' .)1#'#&2! +)!$)'!*--) 0 !' . &!7#1 8 !')!+&+4%'!' . &!74--!%)2'!)7!' . &!*22&'!*2!*$!&M6&$2&!# 8 8 &+#*'&-9!*2! ' . &!7#1 8 !2'#--!6)22&22&2!' . &!*22&':! 0 . #% . ! 0 #--!%)$'#$4&!')! . *5&!5*-4&!4$'#-!' . &!&$+!)7!#'2! 0)1D#$3!-#7&?! / . 42:!7)1!'*M!*%%)4$'#$3!6416)2&2:!' . &!7#1 8 ! 8 42'!+&+4%'!' . &!&M6&$2&!)$!*!

$
$

%& ' ()*+,$ ' -$. + / $ 0 %1%+)23$. + / +45 ' *$ ' -$+ (4 ' 6 +45 ' *$+*7$+)45-525+,$5*4%,,5 8%*2%$+1$+$4 ' ',$ ' -$,+9 ' ()$: ',52 ; $

8 6) 1 ' *$%&!) 7 ! 24% . !%*6# ' *-R#$ ' &$2#5&!A42#$&22&2!&5&$ ' 4*--9!-&+!') !' . &!# 8 6-& 8 &$ ' *' #) $!) 7 !
5*1#) 42!2% . & 8 &2!') !1&%) 3$#2&!' . &!' 14&!%) 2 ' 2!) 7!%*6# ' *-!&M6&$+#' 41&? 3 ! / . &! 8) 2 ' !&M' &$2#5&!

! @=$
$
!

*K"?"# 2))434+%*4=.=4;+4),%*,/&.*

E%%&-&1*'&+!+&61&%#*'#)$!#2!'.&!*--)0*$%&!)7!+&+4%'#)$2!7)1!+&%-#$&2!#$!'.&!5*-4&!)7!*$!*22&'!*'!.#3.&1!1*'&2!'.*$!*1&!&M6&%'&+!')!)%%41!#$!61*%'#%&? ![)$%&6'4*--9:!'.&!')'*-!*8)4$'!)7!'*M!+&+4%'#)$2!*''1#A4'*A-&!')!'.&!%*6#'*-!&M6&$+#'41&!+)&2!$)'!%.*$3&?!<$2'&*+:!'.&!+&+4%'#)$2!*1&!A1)43.'!7)10*1+!2)!'.*'!'.&9!%*$!A&!8*+&!&*1-#&1?[0]!<$!&77&%':!'.&!'*M6*9&1!1&%&#5&2!*$!#$'&1&2'R71&&!-)*$!71)8!'.&!3)5&1$8&$':!&I4#5*-&$'!')!'.&!*8)4$'!)7!'*M!+&7&11&+!*2!*!1&24-'!)7!'.&!&*1-9!+&+4%'#)$?[1]!E6*1'!71)8!'.&!#$'&1&2'R71&&!-)*$!71)8!'.&!3)5&1$8&$':!*%%&-&1*'&+!+&61&%#*'#)$!*-2)!)77&12!7#182!2&5&1*-!)'.&1!A&$&7#'2?!F#12':!*2!'.&!5*-4&!)7!8)$&9!+&%1&*2&2!)5&1!'#8&!+4&!')!#$7-*'#)$:!'.&!*A#-#'9!')!+&7&1!)$&>2!'*M&2!1*#2&2!'.&!$&'!61&2&$'!5*-4&!)7!'.&!%*6#'*-!*22&':[2]!2#$%&!'.&!+&+4%'#)$!#2!%-*#8&+!#$!61&2&$'!+)--*12!1*'.&1!'.*$!#$!74'41&!+)--*12!G0.#%.!*1&!0)1'.!-&22H?[3]!!

J&%)$+:!0.#-&!74'41&!'*M!+&+4%'#)$2!*1&!4$%&1'*#$!2#$%&!'.&9!8*9!A&!*77&%'&+!A9!*!5*1#&'9!)7!4$&M6&%'&+!7*%')12:!%-*#8#$3!'.&!+&+4%'#)$2!#88&+#*'&-9!-)%D2!#$!'.&!&77&%'!)7!'.&!'*M!+&+4%'#)$2:!1&+4%#$3!'.&!1#2D!7)1!'.&!A42#$&22?[4]!/.#1+:!'.&!&*1-9!+&+4%'#)$!)7!%*6#'*-!&M6&$+#'41&!61)5#+&2!%*2.!7-)0!A&$&7#'2:!3#5#$3!'.&!7#18!8)1&!-#I4#+!%*2.!*$+!*--)0#$3!'.&!*22&'!')!A1&*D!&5&$!*'!*!7*2'&1!1*'&?[5]!F#$*--9:!*%%&-&1*'&+!+&61&%#*'#)$!61)5#+&2!*$!#86)1'*$'!2)41%&!)7!74$+2!')!7#182!*$+!1&+4%&2!'.&!$&&+!')!)A'*#$!&M'&1$*-!7#$*$%#$3?!N1&2&$'-9!A)'.!'.&!_J!]E[=J!*$+!'.&!_b!%*6#'*-!*--)0*$%&2!292'&8!.*5&!+&7*4-'!+&61&%#*'#)$!1*'&2!'.*'!*%%&-&1*'&+?!V&5&1'.&-&22:!'.&!+&61&%#*'#)$!1*'&2!*1&!71&I4&$'-9!741'.&1!*%%&-&1*'&+!')!*%.#&5&!&%)$)8#%!)A(&%'#5&2:!6*1'#%4-*1-9!')!2'#84-*'&!%*6#'*-!#$5&2'8&$'!+41#$3!'#8&2!)7!1&%&22#)$?!

*K"?"! P/&'1.=4;+&!)7#8&2!)7)7)7)7)7)7)7)76)1726164286 11.6669-759TmTT/TTWnC$&! %*6#'%*6#'%*6)17261*

$
$

$
$

' . &! 7#1 8 >2! %*6#'*-! #$5&2' 8 &$'! +&%#2#)$2!)$! & 8 6-)9 8 &$':! 0 . #-&! ' . &! -*''&1! *661)*%. ! 7)1&%*2'2!' . &! -#D&-9! &77&%'2!)7! #$+#5#+4*-! #$2'*$%&2!)7! %*6#'*-! #$5&2' 8 &$'! A*2&+!)$!' . &! 7&*'41&2!)7!' . &!*22&'!641%. *2&+?!

$
$

%& ' ()*+,$ ' -$. + / $ 0 %1%+)23$

& 8 #22#) $2!1& 8 *#$&+! 0 #' . #$!' . &#1!*--) 0 *$%&2?[100]! / . &!&M'&$'!') ! 0 . #% . !%*1A) $!-&*D*3&! . *2! *%'4*--9!A-4$'&+!' . &!# 8 6*%'!)7!B _ !& 8 #22#) $2!6) -#%9!#2!4$%-&*1?[101]!!

/ . &!462 .) '!#2!' . *'!' . &!6) 22#A#-#'9!) 7!;*4') 8 *'#) $!-&*D*3&>!2 .) 4-+!A&!2&1#) 42-9!%) $2#+&1&+! A9!6) -#%9R 8 *D&12! 0 . &$!+&2#3$#$3!*$+!# 8 6-& 8 &$'#$3!% . *$3&2!') !' . &!&M#2'#$3!292'& 8 !) 7! %*6#'*-!*--) 0 *$%&2?!V) ' 0 #' . 2'*$+#$3!' . #2:!' . &!&M'&$'!) 7!*$9!*4') 8 *'#) $!-&*D*3&!#2!-#D&-9! ') !A&!-&22!' . *$!' . *'!) 7!%*1A) $!-&*D*3&?! / . &!2466-#&12!*$+!%) $'1*%') 12!#$!' . &!%*2&!) 7!%*1A) $! -&*D*3&!*1&!-#D&-9!') !A&!A*2&+!#$!-&22!+&5&-) 6&+!&%) $) 8 #&2! 0 #' . !*! 0 &*D&1!#$%&$'#5&!') ! # 8 6-& 8 &$'! 2'1#$3&$'! &$5#1) $ 8 &$'*-! 1&34-*'#) $2?! <$! ' . &! %*2&!) 7! *4') 8 *'#) $! -&*D*3&:! .) 0 &5&1:! ' . &! #$71*2'14%'41&:! '&% . $) -) 3#%*-! &%) 292'& 8 2:! *$+! . #3 . -9! 26&%#*-#2&+! -*A) 41! 1& I 4#1&+!7) 1!*4') 8 *'#) $R#$'&$2#5&!61) +4%'#) $!*1&!-#D&-9!') !A&!7) 4$+!#$! . #3 . -9!+&5&-) 6&+! &%) $) 8 #&2! Z!' . &! 5&19! &%) $) 8 #&2! 0 #' . !' . &! 2'1) $3&2'!#$%&$'#5&!') ! +#2%) 41*3&! &M%&22#5&! *4') 8 *'#) $! 7) 1! 7&*1!) 7! +#26-*%#$3! +) 8 &2'#%! & 8 6-) 9 8 &$'?! / . #2! 1&+4%&2! ' . &! 6) '&$'#*-! 2&5&1#'9!) 7! ' . &! #224&! *$+! %1&*'&2! ' . &! 6) 22#A#-#'9!) 7! %)) 6&1*'#) $! A&' 0 &&$! +&5&-) 6&+! &%) $) 8 #&2! ')! C) #$'-9! '*%D-&! ' . &! 1&-*'&+! 61) A-& 8 2!) 7! *4') 8 *'#) $R#$+4%&+! C) A! +#26-*%& 8 &$'!*$+!*4') 8 *'#) $!-&*D*3&?!!

<$! ' . &! &5&$'! ' . *'! ' . &! #224&!) 7! *4') 8 *'#) $! -&*D*3&! 8 *'&1#*-#2&2:! #'! #2! -#D&-9! ') ! A&! %) $%&$'1*'&+!#$!*!-# 8 #'&+!$4 8 A&1!) 7!2&%') 12?! / . &!1&*2) $!7) 1!' . #2!#2!' . *'!' . &!1&-) %*'#) $!) 7! 61) +4%'#) $!') !*5) #+!' . &!#$%&$'#5&2!*3*#$2'!42#$3!& 8 6-) 9 8 &$'R

/ . #2! *1'#%-&! . *2! *134&+! '. *'! A9! 42#$3! 1&5&12&! +&61&%#*'#)$X%*6#'*-! *--) 0 *$%&2:! 3)5&1$ 8 &$'2!*$+!'*M!*4'.)1#'#&2!*1&!*A-&!')! 8 *D&!42&!)7!*$!&M#2'#$3!*$+!0 &--!&2'*A-#2 . &+! 292'& 8 !'. *'!#2!&26&%#*--9! 0 &--!24#'&+!')!+&*-! 0 #'. !'. &!61)A-& 8 2!)7!-*%D!)7!61&%#2#)$!*$+! 2-) 0 $&22!)7!1&26)$2&!')!%. *$3&?! E$!*4') 8 *'#)$!'*M!%)4-+!61*%'#%*--9!A&!# 8 6-& 8 &$'&+! 42#$3! 1&5&12&! +&61&%#*'#)$X%*6#'*-! *--) 0 *$%&2! *2! *! 8 &%. *$#2 8 ?! E2! *! 42&74-!')) -! 7)1! 3)5&1$ 8 &$'2! ')! . *5&!)$! . *$+:! *$! *4') 8 *'#)$! '*M! %*$! A&! I4#%D-9! # 8 6-& 8 &$'&+! A9! A4#-+#$3!)$!'. &!&M#2'#$3!+&61&%#*'#)$X%*6#'*-!*--) 0 *$%&2!71* 8 & 0)1D! 0 . &1&!$&%&22*19?!<'! %*$! A&! 42&+!')! 8 *$*3&!'. &! A*-*$%&! A&' 0 &&$!'. &! 6)2#'#5&!*$+!$&3*'#5&!&M'&1$*-#'#&2!)7! *4') 8 *'#)$!*$+!*1'#7#%#*-!#$'&--#3&$%&!A9!%*-#A1*'#$3!'. &!-&5&-!)7!'. &#1!*+)6'#)$!'. 1)43. ! '. &! 42&!)7! '. &2&! '*M! #$%&$'#5&2?! E2! '. &! A&$&7#'2! 71) 8 ! '. &! &77#%#&$%9! 2*5#$32! 71) 8 ! *4') 8 *'#)$!*$+!*1'#7#%#*-!#$'&--#3&$%&!%)$'#$4&!')!A&!*''1*%'#5&!')!'. &! 8 *℃)1#'9!)7!2'*'&2:! 0 &!+)!$)'!*$'#%#6*'&!'. *'!'. &!1)A)'!'*M! 0 #--!A&!*+)6'&+! 0 #+&-9?!@) 0 &5&1:!#'!1& 8 *#$2!*! 42&74-!6)-#%9!'))-!#$!'.)2&!2&-&%'!2#'4*'#)$2! 0 . &1&!2)%#*-!%)$2#+&1*'#)$2! 8 *9!$&&+!')!A&! 61#)1#'#2&+?!

!

!

!
!