





!  
!  
!  
!  
!

c>E?98"!>" )9!=989d!

!  
C2!  
!

c>/\*#1(!2J0!/' \$#!F#1#d!

!

A!VG\*\*#1('GJ/! ?OL\$G((# ,!G/!@'1(G' &!DO&KG&& \$ #/(!JK!(F#!8#ZOG1# \$ #/( \*!KJ1!(F#!VJP(J1' &!V#I1##!G/!

cEA : 9! ; D!V9B899d!

!

VG\*\*#1('GJ/!WJ\$ \$G((##-!!

c. '/#!VJ#5!"G(&#!Q#NIN!A\*\*JPG'(#!@1JK##\*\*JIR5!V#%'1(\$ #/(!E' \$ #5!VG\*\*#1('GJ/!WF'G1!!

c : # \$L#1!\_5!"G(&#!V#%'1(\$ #/(!E' \$ #5!WJ\$ \$G((##! : # \$L#1!

: # \$L#1!35!"G(&#!V#%'1(\$ #/(!E' \$ #5!WJ\$ \$G((##! : # \$L#1!

cAVV!'&&!WJ\$ \$G((##! : # \$L#1\*d!

!

<(77(' / \$!0%/%(!&7\*=(>'%5!

?0@A@0+@B!C@DB!6(E/ , -.(;!0->\*78!9F9G:!!

!

! !

!

!



! ! !

!

**DK<ML NO@ I P@ A @M+0!**

!

>/, #/(!% '1' I1 '%FN!!" FG\*!G\*!' !L1G#K!% '1' I1 '%F!#T%1#\*\*G/ I!1#PJI/G(GJ/!JK!'/, !'%%1#PG'(GJ/!

KJ1!\*%#PG'&!%1JK#\*\*GJ/'&! '\*\*G\*( '/P#!#T(#/, #, !(J!2JO!L2!'P', # \$GP!%#1\*J// #&5!' I#/PG#\*5!'/, !

G/\*(G(O(GJ/\*N!!'#\$%&'()\*+), )%-., /0!%&-!)I#))\*!-23))!4/+).5!

QEJ(GP#-!>K!' / 2!% '1(JK!(F#!(F#\*G\*e, G\*\*#1(' (GJ/!F' \*!L##/!%OL&G\*F#, !L#KJ1#5!(F#!KJ&&JHG/ I!(HJ!  
% '1' I1 '%F\*!FJO&, !L#G/P&O, #, !HG(FJO(' &(#1'(GJ/!GK!2JO!F'O#! / J!%1#OGJO\*2!%OL&G\*F#, !' \$ '(#1G' &5!  
(F#/, #&#(F#!(HJ!% '1' I1 '%F\*RN!

!

f"FG\*!VJP(J1'&!VG\*\*#1(' (GJ/!H' \*!%1J, OP#, !G/!'PPJ1, '/P#!HG(F!IOG, #&G/\*#!HFGPF!%#1 \$G!(F#!  
G/P&O\*GJ/!' \*!% '1(JK!(F#!VJP(J1'&!VG\*\*#1(' (GJ/!(F#!(#T!JK!' /!J1GIG/'&!% '%#15!J1!% '%#1\*5!\*OL \$G((#, !  
KJ1!OL&GP'(GJ/#!" F#!VJP(J1'&!VG\*\*#1(' (GJ/! \$O\*(!\*(G&&!PJ/KJ1 \$!(J!'&&J(F#1!1#ZOG1# \$#/( \*N!>(\$O\*(!  
G/P&O, #!' !PJ \$ %1#F#/\*GO#!'L\*(1'P(5!'!KO&&G/(1J, OP(GJ/!' /, !&G(#1'(O1#!1#OG#H5!' /, !' !KG/'&!JO#1'&&!  
PJ/P&O\*GJ/N!A, , G(GJ/'&! \$ '(#1G'&!Q%1JP#, O1'&' /, !, #\*GI/!, '( '!' \*!H#&&' \*!, #\*P1G%(GJ/\*!JK!  
#ZOG% \$#/(R! \$O\*(L#!%1JOG, #, !G/!\*OKKGP#/(!, #('G&!J!'&&JH!'!P&# '1' /, !%1#PG\*#!gO, I \$ #/(!J!L#!  
\$ ', #!JK!(F#!G \$ J1(' /P#!' /, !J1GIG/'&G(2!JK!(F#!1#\*# '1PF!1#%J1(#, N!

!

>(!G\*' PP#%('L&#KJ1!(FG\*!VJP(J1'&!VG\*\*#1(' (GJ/!(J!G/P&O, #!' \*!PF' %(#1\*'O(F#/(GP!PJ%G#\*!JK!% '%#1\*!  
'&1#', 2!%OL&G\*F#, 5!%1JOG, #, !(F#\*#! \$ ##(!2%#!\*G` #5! \$ '1IG/5!' /, !&#IGLG&G(2!1#ZOG1# \$#/( \*N!>/\*OPF!  
P' \*#\*5!PJ// #P(G/ I!#T(\*5!HFGPF!%1JOG, #!&JIGP'&!L1G, I#!L#(H##/!, GKK#1#/(! \$ '/O\*P1G%(\*5!'1#!  
\$ '/, '(J12N! YF#1#!(F#!\*(O, #/(!G\*!/J!(F#!\*J&#!'O(FJ!JK!'! \$ '/O\*P1G%(5!(F#!\*(O, #/(!G\*!1#ZOG1#, !(J!  
\$ 'U#!' /!#T%&GPG(!\*( '# \$ #/(!G/!(F#!G/(1J, OP(J12! \$ '(#1G'&!J!(F'(! \$ '/O\*P1G%(!, #\*P1GLG/ I!(F#!  
\*(O, #/([\*PJ/(IGLO(GJ/!(J!(F#!HJ1U!' /, !' PU/ JH&#, IG/ I!(F#!PJ/(IGLO(GJ/!JK!(F#!J(F#1!'O(FJ1Q\*RN!" F#!  
'%#1JO'&\*!JK!(F#!?O%#1OG\*G/ I!WJ \$ \$G((##!'((#\*(!(J!(F#!' PPO1'P2!JK!(FG\*!\*( '# \$ #/ \Nh!

!

!



!

!

!

!

**+D30@!LT!KLM+@M+0!**

"F#!" 'L&#!JK!WJ/(#/(Q" ; WR!P' /!L#G/\*#1(#,!'O(J\$ '(GP' &&2!L#P'O\*#!2JO!F'O#!O\*#,!(F#!  
'%%1J%1G'(#!\*2&#!KJ1!\*#P(GJ/5!PF' %(#!!(G(&#\*5!' / ,!KJ1!\*OLF#',G/I\*N!>/!Y J1,5!2JO!P' /!PF#PU!HF'(!  
HG&&'%%# '1G/!(F#!" ; W!L2!OG#HG/I!G/!f ; O(&G/#h!\$ J ,#5!\*O%1#\*G/I!LJ ,2!(#T(N!  
!

V#,GP'(GJ/! j j j j j ~~~~~!GGG!

APU/JH&#, I#\$#/( \*!~~~~~!GO!

AL\*(1'P(!~~~~~!OG!

)G\*(!JK!" 'L&#! ~~~~~!T!

)G\*(!JK!DGI0!#\* ~~~~~!OGG

O!

!







! ! !  
!

**K"DU+@B!LM@;!+J+O@!+CU@I!"@B@!**

9<98 ]!W=A@"98! : +?"!C9B>E! ; E!A!E9Y!@AB9N!  
WF' %(#1!(G(&#!HG&&!L#!LJ&, 5!' &&!P' %\*5!P#/(#1#, N!  
] JOI!(#T(!L#IG/\*!F#1#N! YG(FG/!2JOI!(#T(5!2JO!HG&&!KJ&&JH!2JOI!H1G(G/I!\*(2&#!QA@A5! : ) A5!#(PR!KJ!  
(F#!PJ11#P(!KJ1\$ '(G/I!JK!\*OL(G(&#!5!O\*#!JK!G/ , #/( \*5!' / , !PG('GJ/\*N!@'I#! /O\$ L#1\*!HG&&!KJ&&JH!JOI!  
(# \$ %&' (#5!1#I'1, &#!\*\*!JK!(F#!H1G(G/I!\*(2&#!2JO!'1#!O\*G/IN!U/8(!71, 2(>'!, 1'!/ - - (/>!\*7!%) (!  
2#%# , !R(7%(>!#Q!%) (!- /8(S!+) (!Q\*>'! - /8(!#Q!5#1>!%(E#!2(8\*7'!#7!- /8(!VS!  
) J1# \$ !G%\*O\$!, J&J1!\*G(!' \$ #(!PJ/\*#P(#O1!', G%G\*GPG/I!#&G(5!\*#, !, J!#GO\* \$ J, !(# \$ %J1!

G/PG,G,O/(!O(!&'LJ1#!#!, J&J1#!\$ 'I/'!' &GZO'N!+(#!/G\$!' , !\$G/G\$!O#/G' \$5!ZOG\*!/J\*(1O, !#T#1PG('GJ/!

\_!

!



!

!

!

!

( ) \*+&,BD, - 01/"1\$&7,E( ) \*+&3, ) 17, ! "#\$%&3,/2)/,801/"1\$&,01/0,/2&,1&4/, . )#&,1&&7,/0,2 )>&, ),  
L801/"1\$&7M,+ ) \*+&,01,/2&,801/"1\$&7, )%& )6,

!	!	!
!	!	!

!

a!

!

!

!

!

!

**K "DU+@B!+NL;!+ "J0!J0!DM!@WDAUO@!LT!D!OLMP@B!+J+O@!+ "D+!@W+@MI0!**

**LM+L!ALB@!+ "DM!LM@!OJM@\$!AD<@!0&B@!+ "D+!OLMP!K "DU+@B!!**

**+J+O@0!DB@!DO0L!JM!+ " @!JMX@B+@ I!UCBDAJI!TLBAD+\$!**

\!

!

! ! !  
!  
O&&' \$PJ!&'LJ1G\*/G\*G!O(!' &GZOG% !#T!#' !PJ \$ \$ J , J!PJ / \*#ZO '(N!VOG\*!' O(#!G101#!, J&J1!G/!1#%1#F# / , #1G(!  
G/!OJ&O%('(#!O#&G(!#\*#\*#!PG&&O \$ !, J&J1#!#O!KOIG'(!/O&&'!%' 1G'(O1N!9TP#%(#O1!\*G/(!JPP'#P'(!PO%G, '( (!  
/J/!%1JG, #/(5!\*O/(!G/!PO&% '!ZOG!JKKGPG'!, #\*#10/(! \$ J&&G(!' /G \$ !G, !#\*(!&'LJ1O \$ N!  
)J1# \$ !G%\*O \$ !, J&J1!\*G(!' \$ #(!PJ / \*#P(#O1!' , G%G\*GPG/ I!#&G(5!\*# , !, J!#GO\* \$ J , !(# \$ %J1!G/PG, G, O/(!O!  
&'LJ1#!#(!, J&J1#! \$ ' I / '!' &GZO'N!+(!#/G \$ !' , ! \$ G/G \$ !O#/G' \$ 5!ZOG\*/J\*(1O, !#T#1PG('GJ/!O&&' \$ PJ!  
&'LJ1G\*/G\*G!O(!' &GZOG% !#T!#' !PJ \$ \$ J , J!PJ / \*#ZO '(N!VOG\*!' O(#!G101#!, J&J1!G/!1#%1#F# / , #1G(!G/!  
OJ&O%('(#!O#&G(!#\*#\*#!PG&&O \$ !, J&J1#!#O!KOIG'(!/O&&'!%' 1G'(O1N!!  
!  
! !

!

! ! !  
!

**DUU@MIJW!**

! A%%#/,GP##!'1#'\$ '#1G'&\*(F'('1#!%#1G%F#1'&!LO(!1#&#O'/(!(J!2JO1!,JPO\$#/(5!\*OPF!'\*!  
\*O1O#2\*!J1!F' / ,JO(\*!O\*#,!G/!2JO1!1#\*#'1PF5!PJ \$%O(#!PJ ,#5!#T(1'!KGIO1#\*!J1!( 'L&#\*5!(PN!>K!2JO!'1#!  
/J(\*O1#!HF'(!(J!G/P&O,#!G/!2JO1!'%%#/,GP##!J1!GK!2JO!//##,!(J!G/P&O,#!' /!'%%#/,GT5!PJ/\*O&(!HG(F!  
2JO1!\*O%#1OG\*G/I!PJ \$ \$G((##N!>K!2JO1!,G\*\*#1('GJ/!1#\*#'1PF!1#ZOG1#,!>8C!'%%1JO'&5!(F#!>8C!  
'%%1JO'&! : + ?"!C9!>EW) + V9V!A?!" = 9!D>8?!"!A@@9EV>^N!  
>K!2JO!F'O#!'%%#/,GP##5!(F#2!HG&&'%%# '1!'K(#1!2JO1!(#T(' / ,!L#KJ1#!2JO1!8#K#1#/P##5!  
1#I'1 ,&##\*\*!JK!HFGPF!HIG(G/I!\* (2&#!2JO!'1#!O\*G/IN!A%%#/,GP##!\*FJO&,!E ; "!

b!

!

!  
!  
!

**B@T@B@MK@0!**

8#K#1#/P#\*!FJO&,!KJ&&JH!(F#!\* '\$#!\*(2&#!IOG,#!JK!2JO1!\$ '/O\*P1G%(XXA@A5! : )A5!WFGP' IJ5!#(PN!  
8#K#1#/P#\*!\$ '2!'&\*J!L#!P'&&#!,!YJ!U\*!WG(#,!J!1!CGL&GJI1'%F25!,##%/ ,G/I!J/!2JO1!\*(2&#!IOG,#!N!  
!  
mmm" F#!8#K#1#/P#\*!L#&JH!'1#!' /!#T' \$ %&#!JK!J /#!(2%#!JK!PJ11#P(!KJ1\$ '(G/I!N!@&# ' \*#!O\*#!(F#!  
KJ1\$ '(G/I!' / ,!\*% 'PG/I!\*%#PGKG#,!L2!2JO1!\*(2&#!IOG,#!KJ1!(FG\*!\*#P(GJ/Nmmm!  
!

AA?=" ;!366\N!!fAA?=" ;!) 8DV!C1G, I#!V#\*GI/!?!%#PGKGP'(GJ/\*5h!A \$ #1GP' /!A\*\*JPG'(GJ/!JK!  
?('#!=GIFH'2!' / ,!'1' /%#J1('GJ/! ; KKGP'&\*5!a !#,G(GJ/5! Y '\*FG/I(J/5!VNWN!  
!

A\*H' ,5!AN5!' / ,!WF#/5! ]N5!f>\$ % 'P(!JK!) 8DV!?!%#PGKGP'(GJ/!JK!) J' ,!VG\*(1GLO(GJ/!JK!@?!WJ/P1#(#!  
C# '\$ \*5h!@W>!.JO1/ ' &5!<N!ak5!EJN5!?!%#(\$L#1X

!



! ! !  
!  
: G&&' \$5!. '\*J/!)N5! : '5!oFJ/II0J5!f?G/I&#!)' /#!)GO#!) J', !VG\*(1GLO(GJ/!D'P(J1!KJ1!V#PU#,!  
@1#P'\*(e@1#\*(1#\*\*#, !WJ/P1#(#!BG1, #1!C1G, I#\*5h!" 8C!3667!A//O'&! : ##(G/I!WVX8 ; : 5!A0I0\*(!\_5!  
366\N!  
!  
)G5!.G/IgO'/5!WF#/#B#/\$G'J5!' / , !oF'/I5!oF#5!fA!\*G\$%&GKG#, !\$(FJ, !(J!PJ \$%O(#!&J', !, G\*(1GLO(GJ/!  
G/!L1G, I#!I61, #1\*5h!!" 8C!3667!A//O'&! : ##(G/I!WVX8 ; : 5!A0I0\*(!\_5!366\N!  
!  
f?"AAVN@1Jh!366\N!A!%1J1I' '\$' / , !O\*#1[\*!\$' /O'&!%OL&G\*F#, !L2!8##\*' !PF!9/IG/##1\*!  
>/(#1/'(GJ/'&! , GOG\*GJ/!JK!/##H!B0105!>/PN5! ] J1L'!)G/ , '5!WAN!  
!  
"#T'\*!V#%'1(\$#/(!JK!"1'/\*%J1('(GJ/!366\_N!fC1G, I#!V#\*GI/! : '/O'&5h!"#T'\*!V#%'1(\$#/(!JK!  
"1'/\*%J1('(GJ/5!V#P#\$L#1!\_5!366\_N!  
!  
Y#I \$O&&#15!ANYN5!' / , !MJ\*(# \$5!WNE!Q\_k4aRN!fDG/(#!#&# \$#/(!' / '&2\*G\*!JK!%&'(#\*!' / , !#PP#/(1GP'&&2!  
\*(GKK#/#, !%&'(#Nh!D1G(`!9/IG/##1G/I!) 'LJ1'(J12!8#%J1(!EJN!a14ANa5!)#FGIF!+/GO#1\*G(2N!  
!

!

!  
!  
!

**XJ+D!**

. '/#!VJ#!G\*!K1J \$!?' /!A/(J/GJ5!" ^N!?F#!\*(O,G#,!FGIF#1!#,OP'(GJ/!' , \$G/G\*(1'(GJ/!' / ,!  
# '1/#, !LJ(F!'!C'PF#&J1[\*!' / ,! : '\*(#1[\*!',#I1##!G/!9 ,OP'(GJ/!K1J \$!"F#!+ /GO#1\*G(2!JK!"#T'\*!'(!?' /!  
A/(J/GJN!=#1!KO(O1#!%&' /\*!G/P&O ,#!' !K#&&JH\*FG%!'(!Y2J \$G/ I!+ /GO#1\*G(2N!

!

<G('!> /\*(1OP(GJ /\*-!

"F#!<G('!G\*!3)6783)\*5!!

>/ ,#/(!F#!KG1\*(!&G/#!JK!#'PF!%'1' I1'%FN!!!

"F#!<G('!G\*!'!\*FJ1(!LGI11'%FGP'&!\*O\$ \$ '12N!?(O, #/(\*(!2%GP' &&2!G/P&O ,#!G/KJ1\$ '(GJ/!\*OPF!'\*!

HF#1#!(F#2!'1#!K1J \$5!HF'(!F#2!F' O#!\*(O,G#, !G/!(F#!%'\*(5! ,#I1##\*(F#2!F' O#!#'1/#,5!' / ,!

KO(O1#!#/, #'OJ1\*N!!

V ; !E ; " !G/P&O ,#!PJ/( 'P(!G/KJ1\$ '(GJ/5!\*OPF!'\*!' , ,1#\*\*#\*5!#\$ 'G&\*5!%FJ /#!/O \$L#1\*5!#(PN!!!

V ; !E ; " !G/P&O ,#!'!1#\*O\$ #5!PO11GPO&O \$ !OG(' #5!J1!&G\*(!JK!%OL&GP'(GJ/\*

!  
!  
!  
!