



!

"#\$%&#' \$() #' *!+' &\$, !-. -\$%/ !%01%&\$!

2)&3-,) 1!)#!)4%' #!-\$&%--%-' #5!

(/ 1' 4\$-!

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67// ' &. !2)&3-,) 1!&%1)&\$!

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+89: ; <=+>!@AA!96B!8) #5' . !C7#!DA\$, !DA??!

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C7#!DA??

"#%!&' ()*+', !-!*. //0(1!(2, ' (3!454655!

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8+29!: . ' 32; !3+<!(2, ' (3!*+' . =; !>2!(2?2((2; !3' !0*#

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A' B2(*!DEFE!G!H0??' =21!FE; IDE!7455E!932(903<' 90=J0(3+!*1*32/!2K, 2(3!&' ()*+', !' 9!' L209!3(2**2*!09; !
</, OL3*E!\$. //0(1!(2, ' (3E!#\$%!%K?' (; !5M!, , E!

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"#%&!&'()*+,-./0(1(2,'(3!454655!

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^+2!&'()*+,-./0(1(2,'(3!454655!
+0Q<9B! 9!3+2! L209!0(2!L / , (' /<*9B!3*!0><3!1!3' !* . , , ' (3! . *E!^+<*!2K0 / <903<' 9!' ?!*192(B<*3<L!
3+(203*!=20; *!3' !3+2!L' 9L=. *<' 9!3+03!&2!+002!. 9; 2(2*3</032; !3+2!' Q2(0=(<*)!09; !3+03!3+2!&+' =2!' ?!
/0(<92!; 2B(0; 03<' 9!<*!B(2032(!3+09!3+2!* . /!' ?!<3*!, 0(3*!0!09; !3+03!; 2B(0; 03<' 9!<*!9' &!+0 , 29<9B!03!0!
?0*32(!032!3+09!, (2; <L32; E!!

!

"3!<*!L=20(!3+03!3+2!3(0; <3<' 90=2L' 9' /<L!09; !L' 9* . /2(!Q0=. 2*!3+03!?' (/2(=1!*2(Q2; !*' L<23!1!&2=!!&+29!
L' . , =2; !&3+!L. ((293!(032*!' ?!, ' , . =03<' 9!<9L(20*2!0(2!9' 3!* . *30<90>=2E!^+2!' L209!<*!3+2!-0(B2*3!
2L' *1*32/' 9!J0(3+!L' . , , ' (3*!. *!09; !/0<930<9*!' . (!&' (=; !<9!0!+0>30>=2!L' 9; <3<' 9E!^! /0<930<9!3+2!
B' ' ; *!09; !*2(0<L2*!3!+0*!, (' Q< 2; !3' !+ . /09)<9; !?' (!/ <=299<0!; 2/09; *!L+09B2!<9!+' &!&2!Q<2&C!
/090B2!C!B' Q2(9!09; !. *2! /0(<92!2L' *1*32 / *E!^+2!*L0=2!' ?!3+2!*3(2**2*!' 9!3+2!' L209! / 209*!3+03!
; 2?2((<9B!0L3<' 9!&<=9L(20*2!L' *3*!<9!3+2!?. 3. (2!<20; <9B!3' !2Q29!B(2032(!= **2*!' ?!>292?<3*E!!

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^+2!)21!, ' <93*!922; 2; !3' !; (<Q2!0!L' / / ' 9!*29*2!(23+<9)l0(2@

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L7 / ' #!' 4\$() #-!, ' J%!&%-7*\$%5!(#!2' & / (#M!' #5!' 4(5(K(4' \$() #!)K!\$, %) 4% ' #-!' #5!' &%!#) 2!4' 7-(#M!
(#4&% ' -%5!, . 1)0(' f!
\$3. ; <2*!' ?!3+2!J0(3+!*, 0*3!<9; <L032!3+03!3+2*2!0(2!3+(22!*1 / , 3' / *!3+03!<9; <L032!; <3. (>09L2*!' ?!
3+2!L0(>' 9!L1L=2!0*** L<032; !&3+!20L+!' ?!3+2!, (2Q<' . *!?!<Q2! / 0**!2K3<9L3<' 9*!' 9!J0(3+!Y2E!E!J(&<9C!
744Mc!d2(' 9C!744MOC>c!d2(' 9!23!0=fC!744bc!\0(9' *) 1!23!0=fC!7455ZE!

!

B, %!-1%%5-!)K! / ' #. !#%M' \$(J%!4, ' #M%-!\$)!\$, %) 4% ' #!' &%!#%' &!\$)!&!&!\$& 43(#M!\$, %!2)&-!N4' -%!
-4%# ' &(-!K&) / !"OEE! ' #5!)\$, %&!1&%5(4\$() #-!f6) / %!' &%!' -!1&%5(4\$5P!H7\$! / ' #. !' &%!K' -\$%&!\$, ' #!
' #\$(4(1' \$%5P! ' #5! / ' #. !' &%!-\$(*!' 44%*%&' \$(#MF!!
T' 9*2: . 29L2*!' ?!L. ((293!(032*!' ?!L+09B2!0=(20; 1! / 03L+<9B!3+' *2!, (2; <L32; !. 9; 2(!3+2!e&' (*3!
L0*2!*L290(<' f!

R!

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"#%&!&'()*+,-./0(1(2,'(3!454655!

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\0. /!G!] 12(*!7440c!A' *29>2(B!23!0-!744Rc!8' (/!23!0-!7446c!] 12(*!23!0-!744Sc!i0L)** 9C!
744Mc!\0. /!G!8' (/!744bc!l 2((233!23!0-!7454c!j . 3L+<9B*!23!0-!7454c!80(; k#0-B2!23!0-!7454c!
#-9*)10!23!0-!7455Z!

!

B, %!/ ' M#(\$75%)K!\$, %!47/7** \$(J%!(/ 1' 4\$-!)#!\$, %!)4%' #!(-!M&% '\$%&!\$, ' #!1&%J() 7-*. !7#5%&-)\$) 5!
"932(OL3<' 9*!>23&229!; <??2(293!</ , OL3*!L09!>2!92B03-Q2=1!*192(B<*3!Y92B03-Q2!</ , OL3!B(2032(!
3+09!*. /!' ?!<9; <Q< . 0=3(2**' (*Z!' (l3+21!L09!>2!0930B' 9<*3!Y= &2(<9B!3+2!2??2L3*!' ?!<9; <Q< . 0=
</ , OL3*Z!JK0/ , =2*!' ?!*. L+!<932(OL3<' 9*!<9L= ; 2@L' /><903<' 9*!' ?!' Q2(?<+<9B! , +1*!L0=
; <*3. (>09L2C!L= / 032!L+09B2!2??2L3*!9. 3(<293!(. 9' ?!l09; l<93(' ; . L3<' 9*!' ?!9' 9k903-Q2!* , 2L<2*!
=20; <9B!3' !2K, =' *' 9*!' ?!3+2*2!<900*<Q2!* , 2L<2*!<9L= ; <9B!+0(/?. =0-B0= >= ' / *!l09; !; 20; !' 92*!

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"#\$%!&'()*+,-!*. / / 0(1!(2, '(3!454655!

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; 2L0; 2*!Yd09!F' =0+c!7444c!H09; *>2(Bc!7447c!j 2<*=2(!23!0=c!744Mc!F↓)21!G!#=#)0*c!744bc!809B!G!
8. c!744bz

SI

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"#%!&' ()*+' , !-!* . / / 0(1!(2, ' (3!454655!

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L+09B2*!<9!3+2!' L209!03!09!<9L(20* <9B!(032!09; !<9!*' / 2!(2B<' 9*!+0*!(2* . =32; !<9!2L' *1*32 / !L' =0, *2E!
^+2!L' 93<9. 2; !2K, 09*

b!

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] 0(<92!A2*20(L+! i0L' >!*IV9-Q2(*-31! \(2/ 29!	
i' *+!A2L+2(3!] 090B-9B!F<(2L3' (!	#2&!J90<' 9/ 293! X(' . , !	P(2L+2(3n, 2&3(. *3*E' /!
g0(29!\$0L)!	F<(2L3' (!' ?! -932(903< 90=' L209! L' 9*2(Q03< 9!	#2&!J90<' 9/ 293! X(' . , !)*0L)n, 2&3(. *3*E' (B!
g2=1!A-BB!	JK2L. 3-Q2!F<(2L3' (!	X=' >0=T0 / , 0-B9!?' (! T≈ / 032!DL3< 9!)2=1nQ0(; 0B(' . , E' (B!
g<(*31!g2 / , !	#' *3; ' L3' (0= A2*20(L+2(!	"9*3<3. 32!' ?!o' '= B1! o' '= B-L0=\$' L<231!' ?! H' 9; ' 9!!	g<(*31!g2 / , n<`FOLE.)!
g<(*3-90!] ! XP2(; 2!	j -B+!\$20*!# ' ≈L1! D; Q<* ' (!	"932(903< 90=V9< 9!?' (! T' 9*2(Q03< 9! ?!W03. (2!)BP2(; 2n2<, EL' /E, ≈
033!X-099d	#' ≈L1!D; Q<* ' (!	F22, !\$20!T' 9*2(Q03< 9! T' 0≈3< 9!	/033+2&B-099<n 923*L0, 2E923!
<(2=0!d' 9! > 29?2=*!	F<(2L3' (!	^+2!"932(903< 90= #(' B(0 / / 2! 9!3+2! \$3032!' ?!3+2!%L209!	/ <(2=0nL' / / . 9L03< 9*9LE[E' E.)!
2!j ' 2B+k => 2(B!	#(' ?2*** (!09; ! F<(2L3' (!	X=' >0=T+09B2!"9*3<3. 32! V9-Q2(*-31!' ?! q. 229*-09; !	' Q2+n . : E2; . E0. !
3(L<' !\2(90=	#(' P2L3!T' ' (; <903' (! "VTW!j -B+!\$20*! "9<3-03-Q2!	"932(903< 90=V9< 9!?' (! T' 9*2(Q03< 9! ?!W03. (2!	.03(L<' E>2(90=n<. L9E' (B!

"#%&!&'()*+,-!*/0(1(2,'(3!454655!

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: ##%0!DF!>%\$' (*%5!1&) 1) -' * -!K)&! ' !SX!<*)H' *!=4%' #!E) / 1*(' #4%!E) / /(--())#!
Q<=EERF!

\0*2; !' 9!2Q< 29L2!, (2*2932; !03!3+<*/ 223-9BC!&3!<!(2L' / / 29; !3+03@

!

5E ^+2!>. (; 29!' ?!, (' ' ?!. 9; 2(!VWTH%\$!r09; !-932(903< 90=L. *3' / 0(1!=0&!09; !3(203-2*s!>2!(202(*2; !
3' !29*. (2!3+03!3+' *2!. 3<< <9B!(2*' . (L2*'! (129B0B<9B!<9!0L3-Q<3-2*!3+03!0??2L3!3+2!j -B+!\$20*!
Y; 2?<92; !0*!3+2!+&+! *20*!&032(!L' =. / 9!09; !*20>2; !D(20!>21' 9; !903< 90=P. (< *; <L3< 9Z! / . *3!
; 2 / ' 9*3(032!3+03!3+2<(0L3-Q<3-2*!0(2!<9!L' / , =09L2!&3+!3+2!&E!

!

7E 8<3+<9!3+2!92K3!6! / ' 93+*!3+2!VW!\$2L. (<3!T' . 9L<9!L' 9P. 9L3< 9!&3+!3+2!X292(0=D**2 / >=1!L0=
' 9!3+2!VW!\$2L(230(1!X292(0=3' !2*30>=<+!0!X= >0=P!L209!T' / , =09L2!T' / / <* * < 9!YX%TTZ!?' (!3+2!
j -B+!\$20*!3' !0; ; (2**!<* . 2*! * . L+!0*!>. 3!9' 3!< / <32; !3' !+&+&+1! / -B(03' (1!09; !*3(0; ; =9B!*, 2L<2*!
; <*L(232!+&+! *20*!*, 2L<2*!<!, ' =. 3< 9!<9L=. ; <9B!& 9Bk(09B2a3(09* >' . 9; 0(1!, ' =. 3< 9!<=2B0=?*+<9BC!
' Q2(?<+<9BC! / 0(<92!*, 03<0=, =099<9BC!, (' 32L32; !0(20*!09; !2L' *1*32 / !L' 9*2(Q03< 9!09; !' 3+2(!
, (' L2**2*!09; !0L3-Q<3-2*!3+03! / 01!0; Q2(*2=1!0??2L3!3+2!j -B+!\$20*E!!

!

NE #' &2(*@^+2!T' / , =09L2!T' / / <* * < 9!&<=! *23!'. 3!3+2!(2B. =03' (1!(2: . <2 / 293*!3' !L' / , =1!&3+!
3+2!, (' Q<* < 9*! ?!VWTH%\$!&3+!(2*, 2L3!3' !, (' 32L3< 9!09; !, (2*2(Q03< 9!' ?!3+2! / 0(<92!
29Q<(' 9 / 293!09; !3+2!L' 9*2(Q03< 9!*. *30<90>=2!09; !2: . <30>=2!. *2! ?!+&+! *20*!>< ; <Q2(*3!09; !
(2*' . (L2*!<9!0LL' (; 09L2!&3+!3+2!2L' *1*32 / !0, , (' 0L+!09; !, (2L0. 3< 90(1!, (<9L<, =2E! *3!&<+0Q2!
(2?2(29L2!3' !VWI \$D!; 2L<* < 9*!30)29!>1!3+2!T\F!3+2!VWI TTT!3+2!"] %!3+2! "\$D!3+2!VW!
T' 9Q293< 9!' 9!F2*2(3<3<L03< 9!09; !' 3+2!(2=2Q093!>' ; <2*!L' 9Q293< 9*!09; !B= >0=L' / / 3 / 293*E!!

!

OE ^+2!T' / / <* * < 9!*+0=+0Q2!, ' &2(!3' !=2Q1! / 09; 03' (1!L' 93(<. 3< 9*!?' / !! C!\$3032*!j -B+!

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"#%!&'()*+,-!*/0(1(2,'(3!454655!

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A2?2(29L2*!

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D9; (0; 1!DHE!7455E!!] <L(' , -0*3L*!!<9!3+2!] 0(<92!J9Q<(' 9/293E!!] 0(<92!#' =. 3< 9!\. =23-9C!"9!#(2**!

!

D93+' 91C!gEAEWEC!g≈92C!FF"EC!F<0`k#. ≈; ' C!XEC!F' Q2C!\$EC!j ' 2B+kX. ≈; >2(BC!%E!744M!%L209!OL<; <?<L03<' 9!
L0. *2*!>=20L+<9B!09; !, (' ; . L3-Q-31!=' **!<9!L' (0-!(22?!>. <; 2(*E!#(' L22; <9B*!' ?!3+2!W03<' 90=DLO; 2/1!
' ?!\$L<29L2!' ?!3+2!V\$D!54R@5S007k5S006!

!

\0(9' *)1C!DEFEC!] 03`)2C!WEC!^' /<10C!\$EC!8' B09C!XE%EVEC!\$&0(3` C!\EC!q. 2930=C!\E\EC!] 0(*+0=C!TEC!
] LX. <(2C!iEHEC!H<9; *21C!JEHEC!] 0B. <(2C!gETEC!] 2(*21C!\EC! 2((2(C!JEDE!7455!j 0*!3+2!J0(3+!*!<K3+!/0**!
2K3-9L3<' 9!0=(20; 1!0((<Q2; t!W03. (2!OS5@R5kRS!

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\0. /C!iEgEC!] 12(*C!AEDE!7440!

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"#\$%!&'()*+,-./:0(1(2,'(3!454655!

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j';B* 9cXEC!i' +09c!%EC!H<L. 0909c!8[peC!H-Q<9B*3' 92c!\$EAEc!H' Q2=c!JEAEc!] ' ' (2c!iEDEC!%>. (0c!FE%EC!
%L+0Q<= ' c!FEc!# ' <; ' (' c!\

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"#%!&'()*+,-!*/0(1(2,'(3!454655!

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j 2<*=2(C!IEC!X=>2(3C!#E] EC!\. ()+' =; 2(C!IE] EC!D9; 2(*' 9C!FE] EC!T' L+=09C!8EC!F299<*' 9C!8ETEC!
F' (3L+!qEC!X' >=2(C!TEIEC!j 2<C!TEDEC!j . / , +(2*C!JEC!H2&3. *C!DEC!] OB9<29C!AEC!] O(*+0=C!j EXEC!\$2=92(C!gEC!
\$3' L)&2=C!FEDEC!\$3' 2L)2(C!FEgEC!\$. ; ; =2*' 9C!] EI744M!J. 3(' , +L03<' 9!09; !+0(/?. =0=B0!>= ' / *@0!
L<293?L!L' 9L29. *E!j O(/?. =D=B02!M@Nk5N!

!

j <(0<j C!^0)0; 0!j !23!0=EI!7455E!!%(B09L!/L(' , ' =. 3093*!<9!/O(<92!, =0*3L*!; 2>(<?!(' /!3+2!' , 29!
' L209!09; !(2/' 32!09; !. (>09!>20L+2*E!] O(<92!# ' =. 3<' 9!\. =23<9C!"9!#(2**E!

!

j ' 2B+kX. =; >2(BC!#E!IE!] . />1C!#E!IEC!j ' ' 329C!DEIEC!\$3292L)C!AE\$EC!X(229?<2=; C!#EC!X' / 2`C!JEC!j O(Q2=C!
TEFEC!\$0=2C!#E!IEC!J; &O(; *C!DEIEC!TO=; 2<(OC!gEC!g9' &=3' 9C!WEC!JO)<9C!TE] EC!"B=2*0*k#(<23' C!AEC!] . 3+BOC!WEC!
\(O; >. (1C!AEj EC!F. ><C!DEC!j O3' <' = *C!] EJE!

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"#%!&' ()*+' ,!-!* . / / 0(1!(2, ' (3!454655!

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#0*L0-#E!pEC!I =22B2(C!iE8EC!X0=Q2` C!I EC!T0(/09C!gEAE!7454!^+2!3' K4' =! B4L04<932(OL3<' 9!>23&229!' L209!
OL< 31!09; !/230=*!<9!L' 0*304/2<' >293+4!L' , 2, ' ; *E!] 0(<92!# ' =. 3<' 9!\. =23<9!64@7745k774M!

!

#0. =1C!FEC!T+(<*329*29C!dEC!F0=*B00(; C!iEC!I (' 2*2C!AEC!^' ((2*C!I ETE!5bbM!I <+<9B!; ' &9!/0(<92!?' ' ; !&2>*E!
\$L<29L2!7Sb@M64kM6N!

!

#0. =1C!FEC!8E!X(0+0/C!\$E!H<(0=03' C!HE!] ' (<*2332!09; !] EHEFE!#0=' /0(2*E!744bE!i2=1?<* +!<9!2L' *1*32/*C!
' 9=>92!; 030>0*2*!09; !2L' *1*32/!/ ' ; 2=*E !656!Y5Z@6SkMRE!

!

#+<<, 0(3C!TEiE] EC!D90; x9C!AEC!F09' 00(' C!AEC!F<, , 92(C!iE8EC!F (<9) &032(C!gE! EC!j 0&)<9*C!\$E!EC!%B. `C!^EC!!

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"#%&!&'()*+,-./0(1(2,'(3!454655!

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d2('9C!iEJEWEC!j'2B+kX.=>2(BC!%EC!H293'9C!^E]EC!H'.B+C!iE]EC!%>. (OC!FE%EC!#20(L2kg2=1C!#EC!
\$+2,0(;C!TEAETEC!\$,0=<9BC!]EC!\$30??'(;k\$/<3+C!]EXEC!A'B2(*C!DEFE!744b!^+2!L'(0=(22?!L(<*<@3+2!
L(<3!L0=</,'(309L2!'?!ENR4,,/!T%7E!]0(<92!#'=3<'9!\.=23<9!RM@507Mk50NS!

!

809BC!iEC!8.C!iE!744b!%LL.((29L2!09;!,'3293<0=(*)?!?!+0(/?.=0-B0=>='/*!<9!3+2!J0*3!T+<9!\$20E!
\$L<29L2!'?!3+2!^'30=J9Q<('9/293!04S@0457k0475!

!

809BC!]EC!%Q2(-09;C!iEJ!744b!D!*20!<L2!?(22!*./ /2(!D(L3!&!&3+<9!N4!120(*t!X2',+1*!<L0=A2*20(L+!
H2332(*!N6@H4SR47C!;'@54E547ba744bXH4NSM74!

!

80(;k#0-B2C!TEDEC!] '(OC!TEC!H'3`2C!jEgEC!#03329B<=k\$2//29*!TEC!]LT=290L+09C!HEC!D(<0*kt0*3('C!JEC!
]12(*C!AEDE!7454!HO(B2k*L0=2!0>*29L2!'?!*+0()?!'9!(22?*!<9!3+2!B(2032(!T0(<>209@0!?'3,(<93!'?!
+./09!,(2**.(2*E!#H'\$92!R@255b6M!

!

80**/099C!#EC!F.0(32C!TE]EC!DB.*3<C!\$EC!\$2P(C!jEgE!7455!||'3,(<93*!'?!L=</032!L+09B2!<9!3+2!D(L3!<!
/0(<92!2L'*1*32/E!X='>0=T+09B2!\<'=B1!5S@57NRk570b!

!

82(9>2(BC!^EC!A.**2=C!\EFEC!]''(2C!#E!EC!H<9BC!\$EFEC!\$/0=2C!FEDEC!TO/,>2=C!DEC!T'=2/09C!]EDEC!
\$32<9>2(BC!#EFEC!g29;(L)C!XEDEC!T'992=C!\$FE!7455!//,0L3*!'?!L=</032!L+09B2!<9!0!B='>0!+3*,'3!?'(!
32/,2(032!/0(<92!><'<Q2(*<3!1!09;!L209!&0/<9BE!i'.(90!?!JK,2(</2930=]0(<92!\<'=B1!09;!
JL'='B1!044@Sk56!

!

82*3>('')C!XEgEC!^+03L+2(C!gEJEC!A'+<9BC!JE!EC!#<'3(' &*)<L!DE]EC!#,=<)2C!jEC!%*>'(92C!DEjEC!W<*>23C!JEXEC!
]<9*+. =C!^EDEC!H09'<2=mC!]EC!i0/2*C!AEjEC!j f+92(>0L+C!dEC!X(229C!FE!EC!I<*>2(C!AEJEC!T('L)2(C!DE!EC!
T+0>2(3C!DEC!\'3'9C!TEC!\2*L`19*)ok]„=2(C!DEC!\2(9;3C!TEC!D:..<<90C!DE!744b!J*LO,2!'?!/23+092!BO*!
?('/!3+2!*20>2;!0='9B!3+2!82*3

!