





&) 9 9\*!-%\*!)bb%\*D!\*D&),AD8/B-!\*CA(!,\*D!(gE,\*9\*%8D!-%/7\*(D/8A/(D!J!Z%!&AD!. \*!. )-8\*+!&G\*D8!7)8(\*!  
(\*DC)%DA`/,/86!. \*!&)%A/8(\*!,A!./bb6(\*%&\*!\*%8(\*!,\*D!. \*-HJ! : G\*D8!7)8(\*!(DC)%DA`/,/86!. \*!&)%Af8(\*!,\*D!  
(gE,\*9\*%8D!-%/7\*(D/8A/(D!A-ID-0\*8!. -!C,AE/A8!\*8!. \*!,G/%86E(/86!D&),AD8/B- \*!%!&AD!. \*!. )-8\*+!,!bA-8!  
&)%D-,8\*(!&\*D!(gE,\*9\*%8D!\*8!%) -D!C)D\*(!7)D!B-\*D8/)%D!D!%6&\*DDA/( \*J!  
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! )/(!A-DD/!!! '88CILLMMMJ-M)J&AL) 9`-. DLE-/. \*DL&' \*A8/En`()&' -( \*JC. b!  
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**MS\*W!&\$%0%\*&/-!!**

T\*!&)-(8D!o 9 /%/48\*D8Dp!) -!B-/N!bA&8-\*,D!D\*(%)%8!A. 9 /%/D8(6D!DA%D!A7/D!C(6A,A` ,\*+!\*%!: >!) -!\*%!VT+!  
C)-(!76(b/\*(C)%&8-\*,\*9\*%8!7)D!&)%A/DDA%&\*D!. \*D!,\*88-(D!\*8!. \*D!./D&-DD/)%D!\*%!&,ADD\*J!I,%GA-(A!  
CAD!. \*!(A88(ACAE\*!. \*D!C)-( !&\*D!B-/N+! 9 A/D!D\*- ,\*9\*%8!,\*D! 9\*/,,\*(D!?!(6D-,8A8D!5D-(!A-! 9 )/D!@<!D\*(%)%8!  
-8/,/D\*D!Ab/%!. \*!&A,&- ,\*(!,A!%)8\*!b/%A,\*J!  
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[ ]D!C\*(9 A%\*%&\*D!5) -!q! \* -(\*D!. \*!`-( \*A-!r<!D)%8!F!7)8(\*!./DC)D/8/)%!C)-(!(6C)%.( \*!F!8)-8\*!B-\*D8/)%!  
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\*%!DA,,\*!. \*!&,ADD\*!) -!C\*% . A%8!,\*D!C\*(9 A%\*%&\*D!J!I,%!bA-8!D-(8)-8!CAD!D-CC)D\*(!B-\*!%) -D!C)-(())D!  
(6C)%.( \*!CA(!&)-((/\*,!F!8)-8\*D!7)D!B-\*D8/)%D!. \*!. \*%(/g(\*!9 /%-8\*!5,A!7\*/,,\*!. \*D!8\*D8D!) -! \*!,A! . A8\*!. \*!  
(\*9/D\*!. \*D!8(A7A-H+!CA(!\*H\*9 C,\*<J!#/!7) -D!%) -D!6&(/7\*N!CA(!&)-((/\*,+!9\*( &!./G/. \*%8/b/\*(!,\*!&)-(D!  
5ob(A%CA/D!; R3@Wp!) -!D/9 /,A/( \*<!. A%D!,\*!D-0\*8!. \*!7)8(\*!9 \*DDAE\*!Ab/%!. \*!%) -D!C\*(9 \*88(\*!. \*!,\*!  
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#/#7) -D!-8/,/D\*N!' A`/8-\*,\*9\*%8!-%!&)-((/\*,!A-8(\*!B-\*!7)8(\*!A.( \*DD\*!U -M)J&A+!,!bA-8!bA/( \*!D-/7(\*!  
&\*,\*4&!)-!,A!76(b/\*(!6E-/,/g(\*9\*%8!!&G\*D8!,GA.( \*DD\*!CA(!,AB-\*,\*!,G/%D8/8-8/)%!7) -D!&)%8A&8\*(AJ!!  
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**VQ),/&!121%(/,&!-!!**

YGACC(%8/DDAE\*!\*D8!-%!C)&\*DD-D!&),,\*8&b!.) %8!%) -D!D) 9 9 \*D!8) -D!\*8!8)-8\*D!9 -8-\*,\*9\*%8!  
(\*DC)%DA` ,\*D!I,A!C(6D\*%&\*!A88\*%8/7\*+!,A!CA(8/&CA8/)%!A&8/7\*!8!,A!C(6CA(A8/)%!A. 6B-A8\*!( \*C(6D\*%8\*%8!  
.)%&!-%!9 /%/9 -9!.\*!&)- (8)/D/\*!\*8!. \*!D),/ . A(/86!\*%7\*(D!7)D!&A 9 A(A. \*D!. \*!&,ADD\*J!  
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k)-(!`/\*%!(6-DD/(!. A%D!&\*!&)- (D!/,!bA-8!ADD/D8\*(!F!8)-8\*D!,\*D!&,ADD\*D s &)- (D!9 AE/D8(A-H!5 : ><!A%D!  
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CAD!ACC(%\*.( \*!. \*D!&,ADD\*!A-HB-\*,\*D!7) -D!%GADD/D8\*N!CAD!m!C,-D/\*-(D!68- . \*D!)%8!&)%D8A86!-%\*!  
&)((6,A8/)%!D8A8/D8/B-\*!. /(\*8\*!\*%8(\*!,GADD/ . -/86!5,A!C(6D\*%&\*<!8!,\*D!%)8\*D!b/%A,\*D!J!  
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**K/&!8/J#%&!X+% (J(\$L!0%(\*E\$/&Y!-!**

k)-(!&' AB-\*!. \*7)/(+!,!bA-8!/% . /B-\*(!&,A/( \*9\*%8!,A!. A8\*!. \*!( \*9/D\*+!7)8(\*!%) 9 !\*8!%-9 6(!). G68- ./A%8J\*+!  
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D)-9\*88(\*!,\*!9e9\*!. \*7)/(+!,!D-bb/8!. G-%!D\*-,!\*H\*9 C,A/( \*!C)-(!,\*D!. \*-H!C\*(D)%%\*D!9 A/D!A7\*!&!,\*D!  
. \*-H!%) 9D!&,A/( \*9\*%8!/% . /B-6D!!7) -D!)`8/\*%.( \*N!,A!9e9\*!%)8\*!C)-(!&\*!. \*7)/(J!#/!7) -D!8(A7A/,\*N!  
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7) -D!(DB-\*N!-%\*!%)8\*!. \*!N6(!C)-(!&\*!8(A7A/,!5) -!C/( \*+!D\*,)%!,\*D!(gE,\*9\*%8D!-%/7\*(D/8A/( \*D!  
ACC,/A` ,\*D!!  
'88CILLMMMJ-M)J&AL-%/7D\*%LC. bLA&A. \*9/&nC),/&\*/DLACC\*A,DLD&' ),AD8/&n./D&C,%\*n-%.(E(A.JC.b!<!!  
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56 U+!\*&!+D/!&+\$8/2+[&!%/&0#2&\*4\*,\*+!+#!3D/3]!+D/!3#\$%&!0%//%E\$\*&+/&! (28!(2+\*%/E\$\*&+/&! K%,\*DD!\$) -!'A7\*!\*/8'\*(!8'\*(!(\*B-/D/8\*D!b)(!8'/D!&)-(D\*!)(!M(/88\*%!DC\*%&/A,!C\*(9/DD/)%!b() 9!8' \*! T\*CA(89\*%8!)b! ](\*%&'!#8- ./D!8)!\*%(),!%/!8+!\$)-!9A\$!`\*(9)7\* .!b() 9!8' /D!&)-(D\*!A% .! /8! M/,,!`\*! .,\*8\* .!b() 9!\$)-(!(\*&)(.J!V'/D! . \*%&/D/)!9A\$!)8!`\*!ACC\*A,\* .J! t ) -!M/,,!( \*&\*/7\*!%)! A.0-D89\*%8!8!)\$)-(!b\*\*D!/!%8' \*! \*7\*%8!8' A8!\$)-!A(\*! . .)CC\* .!b() 9!A!&)-(D\*!b)(!bA/,/%E!8)! 'A7\*! 8' \*!%!\*&\*DDA(\$!C(\*B-/D/8\*D!J!

=6 ?#,#3\!#2! . 3(8/ ' \*3!' '#2&\*8/%(+\*#2!@#%!^+\$8/2+! . 4&/23/&!\_!` 28/%) (8\$(+!/!^+\$8/2+&!\*2! a%&+!T2+% \! ?%#) % ( ' &!!

'88CILLMMMJ-M)J&AL-%/7D\*%&LA&A . \* 9/&nC),/&\*/DL(E'8Dn(\*DC)%D/^/,/8\*/DJ'89,!!

V/E\$/&+&!@#%! . 3(8/ ' \*3!' '#2&\*8/(+\*#2!` &\*2)!+D/!^/,@\_V/0#%+/8! . 4&/23/!a#% ' !! #8- . \*%8D!M' )!\*HC\*(/\*%&\*!A%!-%\*HC\*%&8\* .!/,,%\*DD!)(!/%0-(\$!)(!A\*!H8\*% -A8/%E!&/(&- 9D8A%&\*!5PR! ') - (D!)(!,\*DD<18' A8!D!D-bb/&/%\*8,\$!D\*7\*(!8)!8\*9C)(A(/,\$!( \*% . \*(!8' \*9!-%A` ,!8)!9\*\*8!A&A . \* 9/&! (\*B-/(9\*%8D!5\*JEJ+A88\*% . /%E!,\*%8-(D!)(!,A`D+!M(/8/%E!8\*D8D!)(!9/ . 8\*(9!\*HA9D+!&)9C,\*8/%E! A% . !D-` 9/88/%E!ADD/E% 9\*%8D+!CA(8/&CA8/%E!/%!C(\*D\*%8A8/)%D<D' )- , . !D\*,b4!

! . \*%&A(\*!-D/%E!8' \*!)%,/%\*!#\*,b4^\*C)(8\* . !X`D\*%&\*!C)(8A,J!V'/D!)C8/)%D' )- , . !`\*!-D\* . !/%! D/8-A8/)%D!M' \*(!8' \*!D8- . \*%8!\*HC\*%&8D!8)!(\*D- 9\*!A&A . \* 9/&!( \*DC)%D/^/,/8\*/D!M/8' /%!PR!') - (D!)(!, \*DD!V' \*!b),,)M/%E!&)% . /8/)%D!A(\*!/%!C,A&\*!b)(!D\*,b4(\*C)(8/%E!)b!9\* . /&A,!)(!\*H8\*% -A8/%E! &/(&- 9D8A%&\*D!!

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- A< D8- . \*%8D!M/,,!` \*!A,,)M\* . !(' (L' \$' !#@!+b#!&/, @\_%/0#%+/8!(4&/23/&!` \*8M\*\*%# #\*C8\* 9`\*(!A% . !XC(/,!A% .!)%\*!D\*,b4(\*C)(8\* . !A`D\*%&\*!` \*8M\*\*%#> A\$!A% . !X-E-D8m!!
- < A%\$!A`D\*%&\*D!/%!H&\*DD!)b!8' \*!% - 9`\*(!` \*D/E%A8\* . !/%!&,A-D\*!A!A` )7\*+!( \*EA(.,\*DD!)b! . -(A8/)%+!M/,,!( \*B-/( \*D8- . \*%8D!8)!(C(\*D\*%8!A!#8- . \*%8!> \* . /&A,! : \*(8/b/&A8\*!5#> :<+! D/E%\* . !` \$!A/,/&\*%D\* . !9\* . /&A,!)(!9\*%8A,!` \*A,8'!C(A&8/8/)%\*(+! . \*8A/,/%E!8' \*! . -(A8/)%!A% . ! D\*7\*(/8\$!)b!/,,%\*DD+!)(ACC)C(/A8\*! . )&- 9\*%8A8/)%!D-CC)(8/%E!H8\*% -A8/%E! &/(&- 9D8A%&\*D!8)!8' \*!X&A . \* 9/&! : )-D\*%,/%E!-/%8!/%8' \*/(!JA&- ,8\$!)b!( \*E/D8(A8/)%!%)! ,A8\*(!8' A%!8M)!` -D/%\*DD! . A\$D!A8\*(!8' \*! . A8\*!DC\*%&/b/\* . !b)(!(\*D- 9/%E!(\*DC)%D/^/,/8\*/DJ! k,\*AD\*!D\*\*!D\*%&8/)%!P!` \*,,)M!b)(!9)(\*! . \*8A/,DJ!!
- &< V' \*! . -(A8/)%!b!8' \*!H&-D\* . !A`D\*%&\*!M/,,!` \*!b)(!A!9AH/9-9!)b!PR!') - (D!b() 9!8' \*! 8/9\*!8' \*!#\*,b4^\*C)(8\* . !X`D\*%&\*!b)(9!/D!&)9C,\*8\* . !8' ( )-E'!8' \*!%) ,/%\*!C)(8A,+!)(! b() 9!R!23!A9!8' \*!b),,)M/%E!9)(%/E!b!8' \*!b)(9!/D!D-` 9/88\* . !Ab8\*(!P!23!C9m!!
- < V' \*! . -(A8/)%!b!8' \*!H&-D\* . !A`D\*%&\*!M/,,!8\*(9/%A8\*!C(/)!8)!8' \*!% . !)b!8' \*!PR!') - (C\*(/ . !D' )- , . !8' \*!D8- . \*%8!-% . \*(8A\ \*!D/E%/b/&A%8!A&A . \* 9/&!( \*DC)%D/^/,/8\*/D!5M(/8\*!A! 8\*D8+!D-` 9/8!A!CAC\*(<! . -(/%E!8' A8!8/9\*%m!!
- \*< V' \*! . -(A8/)%!b!A%!\*H&-D\* . !A`D\*%&\*!M/,,!8\*(9/%A8\*!A8!R!23!A9!)%8' \*! . A\$b),,)M/%E! 8' \*! ,AD8! . A\$!)b!&,ADD\*D!\*A&'!D\*9\*D8\*(!(\*EA(.,\*DD!)b!')M!9A%\$! . A\$D!)b!A`D\*%&\*! 'A7\*! \* ,ACD\* . m!!
- b< #\*,b4(\*C)(8\* . !A`D\*%&\*D!M/,,!%)8!` \*!A,,)M\* . !b)(!D&\* . - , \* . !b/%A,!\*HA9/%A8/)%Dm!b)(! 9/ . 8\*(9!\*HA9/%A8/)%D!D&' \* . - , \* . ! . -(/%E!8' \*!T\*%&\*9`\*(!HA9/%A8/)%!C\*(/ . m!)(!b)(! b/%A,!,A`!\*HA9/%A8/)%D!D&' \* . - , \* . ! . -(/%E!8' \*!b/%A,!M\*\*\!)b!8\*(9m!!
- E< #\*,b4(\*C)(8/%E!9A\$!)8!` \*!-D\* . !b)(!ADD\*DD9\*%8D!5\*JEJ!9/ . 8\*(9!\*HA9D+!8\*D8D+!(\*C)(8D+! C(\*D\*%8A8/)%D+!)(!DDA\$D<!M)(8'!9)( \*!8' A%!23 i !)!b!A%\$!E/7\*%!&)-(D\*J!!
- < D8- . \*%8D!9-D8!` \*!/%!8)-&'!M/8'!8'\*/(!%D8(-&8)(D!2#!,(+/%!+D(2!=c!D#\$%&!(@+/%!+D/! /28!#0!+D/!0/%#8!3#J/!/8!4!\!+D/!^/,@\_V/0#%+/8! . 4&/23/!@#% '+18)!&,A(/b\$')M! 8' \*\$!M/,,!` \*!HC\*%&8\* . !8)!b-,b/,18' \*!A&A . \* 9/&!\*HC\*%&8A8/)%D!8' \*\$!9A\$!'A7\*!9/DD\* . !

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%)8!`\*\*%! 9 \*8+!/ %&, - . /%E!M' \*( \*!8 ' \*!D8- . \*%8!'AD!\*H&\*\* . \* . !8 ' \*! 9 AH/9 - 9 !% - 9 `\*(!)b!  
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V' \*!b),,)M/%E!&)% . /8/)%D!A(\*!/%!C,A&\*!b)(!D8- . \*%8D!D\*\*\/%E!A&A . \* 9 /&!&)%D/ . \*(A8/)%!b)(!A!  
%)%4 9 \* . /&A,!A`D\*%&\*1!!

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