

8]YKY`hk]fXb]W\hVYggYf

8 Ug @YVYb XYf A YbgWXYb a U[g]WX j YfVYggYfbž UVYf k Ug]gh'a]h'U``Ya 'UbXYfYbž'k Ug'i bgYfYb'D`UbYhYb'hY]`h3' \⇒b aWk |Yf][Yb NY]hYb bY][Yb GcW]U`!A YX]U!Bi hnYf XUni ž 8 Yb_UbghÒ» Yž'8]U[fUa a Y'i bX'; fUZ]_Yb'ni 'hY]`Ybž'X]Y VYk Y]qYbž'XUqq'Yq'XYf'A YbqW\\Y]h'bcW\'b]Y'qc'[ih'[]b[" 8]YgY; fUZ]_Yb'_cbnYbhf]YfYb'g]W\'Ui Z'XUg'K UW\ghi a gWX ObYf'8]b[Y'k]Y'; fi bXV]Xi b[ž'5dUVYh]g]Yfi b[ž8 Yac fuhly i b X = a d Z b [Yb i b X X Y b F ØW [Ub [$gWkfYW_{}^{}MYf'8]b[Y'k]Y'YIhfYaY'5faih'ibX$ $?]bXYfghYfV`]WX_Y]h"8]Y8]U[fUaaYkYfXYbcZhijcb$ dfà[bUbhYb'6]`XibhYfqW\f]ZhYb'k]Y'[fc»Ufh][Yf'6YkY]qž $XUgg^{*}X]Y^{*}A YbgWX Y]h^{*}Yg^{*}b]WX h^{*}k]f_{}]WX^{*}j Yfa UggY^h^{*}Uh$ VY[`Y]hYh"'U`h1 / Ua d/, , &&\$/8]Y'@YVYbqVYX]b[i b[Yb'XYf A YbgWXYb j YfVYggYfb g]WX fb]`X. I bgYfY K Y`h']b $8UhYbL/Uad/_, &&$//[h/lbqYfY'KY'h']b'8UhYb'8]Y$ @YVYbgVYX]b[ib[Yb/UadAY``]d/

8 Ugʻ@YVYbʻXYfʻA YbgW\Ybʻa U[ˈg]W\'j YfVYggYfbžʻUVYfʻk Ugʻ]ghʻa]h U``Ya 'UbXYfYbž'k Ugʻi bgYfYbʻD`UbYhYbʻhY]`h3

±bʻgW\k]Yf][YbʻNY]hYbʻbY][YbʻGcW]U`!AYX]U!Bi hnYfʻXUni ž 8Yb_UbghÒ»Yžʻ8]U[fUa a Yʻi bXʻ; fUZ]_Ybʻni ʻhY]`YbžʻX]YʻVYkY]gYbž XUggʻYgʻXYfʻAYbgW\\Y]hʻbcW\ʻb]Yʻgcʻ[i hʻ[]b["

8]YgY; fUZ]_Yb'_cbnYbhf]YfYb'g]W\'Ui Z'XUg'K UW\ghi a 'gW\\ObYf 8]b[Y'k]Y'; fi bXV]`Xi b[\check{z} '5`d\UVYh]g]Yfi b[\check{z} '8 Ya c_fUh]Y'i bX \Rightarrow dZi b[Yb'i bX'XYb'F \varnothing W_[Ub['gW\fYW_`]W\Yf'8]b[Y'k]Y'YI hfYa Y 5fa i h'i bX'?]bXYfghYfV`]W_Y]h''

8]Y '8]U[fUa a Y 'k YfXYb 'c Zh'j cb 'dfÀ[bUbhYb '6]`Xi bhYfgW\f]ZhYb k]Y '[fc \ Ufh][Yf '6Yk Y]gž 'XUgg 'X]Y 'A YbgW\Y]h 'Yg 'b]W\h'k]f_`]W\

"U`h1 8]Y @YVYbgVYX]b[ib[Yb'XYf'A YbgWXYb'j YfVYggYfb'g]WX
fb]`X. I bgYfY'K Y`h']b'8UhYbŁ 2 I bgYfY'K Y`h']b'8UhYb'8]Y
@YVYbgVYX]b[ib[Yb'XYf'A YbgWXYb'j YfVYggYfb'g]WX

K UgʻX]Yʻ6]`Xi bhYfgW\f]ZhYbʻ][bcf]YfYbžʻ]ghžʻXUggʻA YbgW\Ybʻb]W\h X]YʻY]bn][YʻGdYn]Ygʻg]bXžʻX]YʻnÀ\`h"·8]YʻK Y`hʻa U['Y]bʻVYggYfYf CfhʻZØfʻi bgʻgY]bžʻUVYfʻk Ugʻ]ghʻa]hʻXYbʻA]``]cbYbʻj cbʻ5fhYbžʻX]Y Ui W\`X]Yʻ9fXYʻ]\f`Ni \Ui gYʻbYbbYb3

GY`Vgh`X]Y`a U» j c``ghYb`8 YVUhhYb`ØVYf`XYb`?`]a Uk UbXY`
VYn]Y\Yb`g]W\`Ui Z'i bgYf`@YVYbž'i bgYfY`?]bXYfž'i bgYfY`Ni _i bZh"
J]Y``Y]W\h']gh`X]YgYf`Gc`]dg]ga i g`bchk YbX][/J]Y``Y]W\h'_Øa a Yfb
g]W\`X]Y`a Y]ghYb`A YbgW\Yb`Y]bZUW\`b]W\h'i a `Y]b`DfcV`Ya ž'Yg`gY]
XYbbž'Yg`gW\`Y]W\h'g]W\`]b`]\fYb`Y][YbYb`GW\UhhYb`cXYf`_`cdZh`Ub
]\fY`Y][YbY`HØf"`9g`[]Vh'?]bXYf`i bX`FYW\bi b[Yb`i bX`U``hÀ[`]W\Y
6Ygcf[i b[Yb`` k Yf`\Uh'X]Y`: À\][_Y]hž'g]W\`ØVYf`[][Ubh]gW\Y
DfcV`Ya Y`k]Y`XYb`?`]a Uk UbXY`; YXUb_Yb`ni a UW\Yb3

K À\fYbX'k]f'YXcW\ii bgYfYb'hÀ[`]W\Yb'; YgW\ÀZhYb'bUW\[Y\Ybžf]W\hYh'i bgYfY'<]b[UVY'Ub'cVgnÒbYb'?cbgi a]ga i g'U``a À\`]W\ JYfk Øghi b['Ui Z'XYa '[UbnYb'D`UbYhYb'Ub"

JYf`i gh'XYf'K]`Xb]g

@YhnhYg`\\fYbh\\Ø``hYb`K]ggYbg\\UZh`Yfž`XUgg`AYbg\\Yb`U``Y]b`]b XYb``YhnhYb`&)`\\\fYb`Y]b`NY\bhY``XYf`K]`Xb]g`XYf`9fXY`nYfghÒfh \UVYb"'8]Y`]b`7i ffYbh`6]c`c[mij YfÒZZYbh`]\\\hY`Ghi X]Y`Ybh\\Ø``h U`Ufa]YfYbXY`9f_Ybbhb]ggY`\ØVYf`X]Y`K]`Xb]g`XYf`KY`h`fj cb`XYb 5i hcfYb`XYZ]b]Yfh`U`g` V]c`c[]g\\\`i bX`Ò_c`c[]g\\\`kY]h[Y\YbX]bhU_hY`\@UbXg\\\\UZhYbž`X]Y`[fÒ\\\hYbhY]`g`ZfY]'j cb`aYbg\\\`]\\\Yb 9]b[f]ZZYb`g]bX\\\!

'U`h1 ?`]a Uk UbXY`.'5a Uncb 2 HfUi a nY]h'8 Yf'5a UncbUg'a UW\h' \$`i `XYf'K]`Xb]g'Ui gž'X]Y`]b`XYb``YhnhYb`&) `\$U\fYb'j Yf`cfYb [Y[Ub[Yb']gh

8]Y 'Ghi X]Y 'nY][hž XUgg 'gY]h XYb 'ZfØ\Yb '%- - \$Yf '\\fYb gW\Ahni b[gk Y]gY '' \\ \'Z 'A]``]cbYb '_a & 'K]`Xb]g 'j Yf`cfYb '[Y[Ub[Yb g]bXž'' \\ \'1 'XUj cb']a '5a UncbUg[YV]Yh 'i bX '%('\ '\ ']b 'NYbhfU`UZf]_U"

8 UfØVYf`\]bUi g`\UVYb`XfY]`XYf`%(`hYffYghf]gW\Yb`6]ca Y`XYf`9fXY Yhnh`_Y]bY`[`cVU``VYXYi hYbXYb`K]`Xb]g[YV]YhY`a Y\f"`K Y]hYfY ZØbZ'6]ca Y`\UVYb`Yhnh`k Yb][Yf`U`g`%\$`i `K]`Xb]g`ØVf]["

K Ybb'g]W\'X]Y'U_hi Y``Yb'HfYbXg'ZcfhgYhnYbž'_ÒbbhY'Yg']b'k Yb][YfU`g'Y]bYa'\\f\i bXYfh'_Y]bY'k Y`hk Y]h'g][b]Z]_Ubh'k]`XYb'; YV]YhYa Y\f'[YVYb"

8 Ug gYW ghY A UggYbghYfVYb

A YbgWX`]WXY'5_h]j]hÀhYb`\UVYb`XUg`Y]b[Y`Ài hYhž'k Ug`Y]b][Y K]ggYbgWXUZh`Yf`XUg`5bh\fcdcnÀb`bYbbYbž`XUg`Ui g`XYf`NY]h ghUa a hž'U`g`a YbgWX`]WXY'5_h]j]hÀhYb`VY[UbbYbž'Y]bYb g][b]Z]_UbhYb`[`cVU`Yb`9]bZi gg`Ui Z'X]Y`; Yc`c[]Y`i bX`X]Y 2 _cgmghYa Y`XYf`9fXY`ni`\UVYb"

8 Ugʻ5bh\fcdcnÀbʻ_ÒbbhYʻ]bʻY]bYaʻ]ffYj Yfg]V`YbʻA UggYbghYfVYb []dZY`bžʻXUgʻZØfʻXUgʻ@YVYbʻUi ZʻXYfʻ9fXYʻ_UhUghfcd\U``k ÀfYž k UfbYbʻK]ggYbgW\UZh`Yf"

'U`h1 A YbgW\`]W\Y`5_h]j]hÀhYb`_ÒbbhYb`XUg`gYW\ghY A UggYbghYfVYb`Ui g`ÒgYbžʻgU[Yb`K]ggYbgW\UZh`Yf 2 HfUi a nY]h A YbgW\`]W\Y`5_h]j]hÀhYb`_ÒbbhYb`XUg`gYW\ghY`A UggYbghYfVYb Ui g`ÒgYbžʻgU[Yb`K]ggYbgW\UZh`Yf

8 UgʻgYW\ghY`A UggYbghYfVYbʻi bhYfgW\Y]XYhʻg]W\ʻj cbʻXYbʻZØbZ j cfUb[Y[Ub[YbYb`A UggYbghYfVYbž'k Y]``YgʻXi fW\`a YbgW\`]W\Yg < UbXY`bʻj Yfi fgUW\h`k i fXY"

Ni 'XYb'l fgUW\Yb'[Y\OfYb.'X]Y'k Y`hk Y]hY'J YfVfY]hi b['b]W\h\\Y]a]gW\Yf'5fhYb/a YbgW\`]W\Y'8ca]bUbn'ØVYf'X]Y
Df]a ÀfdfcXi _h]cb'XYf'K Y`h/'a YbgW\`]W\Y'<UbX`i b[Yb'VY]'XYf
@Yb_i b['XYf'9j c`i h]cb/i bX'XYf'i bgh]``VUfY'5ddYh]h'XYf
a cXYfbYb'; YgY``gW\UZh'Ui Z'GhfU» YbVUi 'fhfchn']\fYf

 $nYfghOfYf]gWXYb^*K]f_i b[^*Ui Z^*X]Y^*BUhi ft^*i bX^*bYi Y^*HYWXbc^*c[]Yb^*fhchn^*] fYf^*hcl_]gWXYb^*K]f_i b[^*Ui Z^*X]Y^*l a k Y^*ht''$

GhY][YbXY'HYa dYfUhi fYb

8 Ugʻj Yf[Ub[YbYʻIJ\f`k Uf`XUgʻ\Y]» YghYʻgY]hʻ6Y[]bbʻXYf 5 i ZnY]W\bi b[Ybʻ]a ˈIJ\f`%, , \$"

8]Y`Xi fW\gW\b]hh`]W\Y`CVYfZÀW\YbhYa dYfUhi f`XYf`9fXY`]gh`gY]h XYa `gdÀhYb`%- "`J\\f\i bXYfh`i a `%ž%`..7`f\\`....\L'[Ygh]Y[Yb"`8Yf [fÒ» hY`HY]``XYf`9fk Àfa i b[`]gh`]b`XYb``YhnhYb`')`J\\fYb Ui Z[YhfYhYbž'k cVY]`%*`XYf`%+`k Àfa ghYb`J\\fY`gY]h`&\$\$% Ui Z[YhfYhYb`q]bX"

 $= a - gY^VYb^- + JV^- f'j - YfOZZYbh^-]WVhY^- Cihg]XY^- Cb^-]bY^- Y]bYb^- BUWV fi Z^- ZOF XUg^-; fYUh^- 6Uff]Yf^- FYYZ^- Yg^- VY[]bbh$

K À\fYbX'XYg'[fÒ» hYb'HY]'g'gY]bYg'@YVYbg'k Uf'XUg'F]ZZ'X]Y'[fÒ» hY YVYbXY'Ghfi _hi f'XYf'K Y`h'i bX'X]Y'Y]bn][Yž'X]Y'j ca 'K Y`hfUi a Ui g'g]W\hVUf'k Uf"'9g'k Uf'%"(\$\$'A Y]`Yb'`Ub[ž'a]h'&"-\$\$'Y]bnY`bYb F]ZZYb'i bX'%"\$)\$'=\bg[YgUa h'k Uf'Yg'[fÒ» Yf'U`g'XUg JYfY]b][hY'?Òb][fY]W\i bX'Ybh\]Y`h'a Y\f'5fhYbj]Y`ZU`h'U`g'[Ubn 9i fcdU'ni gUa a Yb"'9g'VY\YfVYf[hY'%"*&)':]gW\UfhYbž'' "\$\$\$ K Y]W\h]YfUfhYbž'()\$'?cfU``YbUfhYbž'&&\$'Jc[Y`UfhYb'i bX''\$'5fhYbj]cb'K U`Yb'i bX'8Y`Z]bYb"'BYVYb'j]Y`Yb'UbXYfYb

[fÒ» hYb Dcdi `Uh]cbYb j cb GYY_Ø\Yb i bX XYf [fÒ» hYb 6fi hghÀhhY [fØbYf A YYfYggWX] X_fÒhYb"

8 Yf'5fh]_Y``]gh'nk Y]ZY``cg'U`Ufa]YfYbXž'UVYf'j]Y``Y]W\h'g]bX'Ghi bhg k]Y'X]YgY'bchk YbX][ži a 'X]Y'5i Za Yf_gUa _Y]h'XYf'K Y`h'Ui Z k]W\h][Yž'UVYf'i bgYl m'l a k Y`hdfcV`Ya Y'ni '`Yb_Yb"'GW\`]Y»`]W\gW\a Y`nYb'; 'YhgW\Yf']a '; 'YhgW\YfhYa dc'i bX'b]Ya UbX'\Uh'gc `Ub[Y'5i Za Yf_gUa _Y]hggdUbbYb"'J]Y``Y]W\h'_ObbYb'a i h][Y Ghi bhg'[Y`]b[Ybž'k c'GhUh]gh]_Yb'i bX'Ghi X]Yb'j YfgU[Yb"

< UbX`i b[gVYXUfZ

8 Yf'bYi Y'DfÀg]XYbh'XYf'I G5ž'8 cbU`X'Hfi a dž'\À`h'XYb?`]a Uk UbXY`'ZØf'Y]bYb'GW\Yfn'i bX'gY]b'?UV]bYhh']gh'j c``'j cb G_Ydh]_Yfb'i bX'@Yi [bYfb"'8 UfØVYf'\]bUi g'k i fXYb'JYfk Y]gY'Ui Z XYb'?`]a Uk UbXY`'bUW\'Hfi a dg'5a hgY]bZØ\fi b['j cb'XYf'K YVg]hYXYf'I G!FY[]Yfi b['YbhZYfbh"'9g']gh'_`Ufž'XUgg'X]Y'8]b[Y'VYfY]h g]bXž'bcW\'j]Y`ž'j]Y`'gW\`]a a Yf'ni 'k YfXYb"

"U`h1 6Yf]W\hYb`ni Zc`[Y`k i fXY`XYa `I G!BUh]cbU`dUf_X]Ybgh'bUW\gY]bYb`5bh]!Hfi a d!FYhk YYhg`XUg`Hk]hhYfb`i bhYfgU[h 2 HfUi a nY]h 6Yf]W\hYb`ni Zc`[Y`k i fXY`XYa `I G!BUh]cbU`dUf_X]Ybgh'bUW\gY]bYb 5bh]!Hfi a d!FYhk YYhg`XUg`Hk]hhYfb`i bhYfgU[h

±b 'Y]bYf'NY]hž']b'XYf'gY`Vgh'X]Y'<ØhYf'i bgYfYf'k Yfhj c``ghYb'CfhY Ui Z[YZcfXYfh'k YfXYbž'i bdc`]h]gW\'ni 'V`Y]VYbž'a ØggYb'k]f'U``Y'Ui Z]bX]j]Xi Y``Yf'9VYbY'a Y\f'hi b"

8]Y'Xi b_Y`ghYb'HUhYb'XYf'A YbgW\\Y]h' 'J Ò`_Yfa cfXž?c`cb]U`]g]Yfi b[ž'G_`Uj YfY]' '[YgW\Y\Yb'bcfa U`Yfk Y]gY']a '@Ui ZY j cb'\\\fnY\bhYbž'j YfVcf[Yb'i bhYf'XYa '8YW_a UbhY`'XYfBcfa U`]h\\\h''9g'[]Vh'_Y]bY'V`]b_YbXYb'; YZU\fYbnY]W\Yb'cXYfV`i hfchY'K UfbZ'U[[Ybž'gcbXYfb'Y]bY'gW\Y]W\YbXY'9fcVYfi b['XYfJc`_ga Y]bi b["'8Yf'?`]a Uk UbXY`'Z]bXYh']b'Y]bYa 'bcW\'`\\\ho[YfYb

NY]hfU\a YbʻghUhhʻi bXʻYgʻZÀ``hʻi bgʻY]bXYi h][ʻgWk Yfžʻi bgʻi a ʻXUg bÀWkghYʻ*J\f\i bXYfhʻni ʻ_Øa a Yfb"

9g'[]Vh'g]YVYb'A]``]UfXYb'A YbgWXYb'Ui Z'XYf'9fXY"'I bg']gh'XUg a YbgWX`]WXY'@YVYb'hYi Yf' 'i bX'Yg']gh'hYi Yf' 'UVYf'XYf'D`UbYh'i bX gY]bY'9f\U`hi b['g]bX'k]WXh][Yf"'8]Y'6]cX]j Yfg]hÀh']gh'[fÒ» Yf'U`g k]f'i bX'k]f'\UVYb'X]Y'JYfdZ]WXhi b[ž'FYZYfYbndi b_hY cfa YbgWX`]WXYf'I a [YVi b[Yb'ni 'VYk U\fYb"

; fi bXV]`Xi b[ž'5`d\UVYh]g]Yfi b[ž'8 Ya c_fUh]Y'i bX'=a dZ b[Yb a \hat{O} [Yb'g]W\"U``Y'j YfVYggYfbž'i bX'ZØf'A YbgW\Yb'_ \hat{O} bbhY'X]Yg'X]Y VYghY'U``Yf'NY]hYb'gY]bž'UVYf'ZØf'U``Yg'UbXYfY'_ \hat{O} bbhY'Yg'Xi fW\Ui g X]Y'gW\`YW\hYghY'gY]b"

'U`h1 2

@Y]hV]`X. 8fYUa gh]a Y

•

.

8 Y hU]`c

6Ygi WXYb G]Y i bg Ui Z Y]bY!fY]gY "XY