

9]bVfØWÅ Y`i bX`J Yf_Y\fg_cbhfc`Yb.
B Yi YghY`Dc`]nY]a Y`Xi b[Yb`Ui g
7`cddYbVi f[

9]bVfØWÅ Yž`GUW VYgWÅX][i b[Yb`i bX`J Yf_Y\fg_cbhfc`Yb.
8]Y`Dc`]nY]a Y`Xi b[Yb`Ui g`7`cddYbVi f[i bX`GØX_fY]g]j ca
\$*\$-\$- "V]g`\$+ "\$- "&\$&("

7`cddYbVi f[#] YW hU`fchgt

⊕`XYf`FY[]cb`7`cddYbVi f[i bX`GØX_fY]g`k i fXYb`j cb`8`cbbYfghU[
V]g`: fY]hU[ž`*"GYdhYa VYf&\$&(ž`a Y\fyfY`_f]a]bY`Y`J cfZÀ`Y
j YfnY]W`bYhž`X]Y`gck c\`9]bVfØWÅ Y`U`g`Ui W`GUW VYgWÅX][i b[Yb
i a ZUgghYb`"8]Y`Dc`]nY]`7`cddYbVi f[`U]h`b`j YfgW]YXYbYb
6YfY]W`Yb`U_h]j`Yfa]hY`hi bX`gi W`h`NYi [Ybž`X]Y`<]bk Y]gY`[YVYb
_ÖbbYb"

9]bY`XYf`VYa Yf_Ybgk YfhYghYb`HUhc`fhY`k Uf`X]Y`; fi bXgWÅ i`Y`]b
9`ghYbž`k c`i bVY`UbbhY`HÅhYf`]b`XYf`NY]h`nk]gW`Yb`XYa`)"
GYdhYa VYfž`%, .\$\$`i` \fž`i bX`XYa``*"GYdhYa VYfž`\$+.\$\$`i` \fž
j Yfgi W`h`\UhYbž`Y]b`: YbghYf`Y]bni k YfZYb`"8Yf`J Yfgi W`gW`i [
ZY\`ž`XcW`X]Y`HÅhYf`]Y» Yb`b]W`h`c`W`Yf`i bX`VfUWÅYb`]b`XUg
Gdcfh\Y]a`XYg`GJ`8`ž`9`ghYb`Ub`XYf`GhfU» Y`5a`:`UXXYf`Y]b"
8cfhk i fXYb`nk Y]: YbghYf`Ui Z[Y\YVY`hž`i bX`XUg`⊕`bYfY`XYg
; YVÅi XYg`VYhfYhYb`⊕`Zcfa Uh]cbYb`ØVYf`Yj Ybhi Y`Yb`hk YbXYhYg
8]YVYg[i h`ghY\Yb`bcW`Ui g`i bX`g]bX`XYfnY]h`; Y[YbghUbX`XYf
9fa]hhi b[Yb`"8]Y`Dc`]nY]`V]hYhi a`<]bk Y]gY`i bhYf`XYf
HY`YZcbbi a`a Yf`\$((+%#%, *\$\$"

9]bVfi W`]b`7`cddYbVi f[

5a`:`fY]hU[UVYbXž`XYa``*"GYdhYa VYfž`k i fXY`Y]b`k Y]hYfYf

9]bVfi W\]b`Y]bY`K c\bi b[`Ub`XYf`A Ø\`YbghfU»Y`[Ya`Y`XYh"
I bVY_UbbhY`HÀhYf`[Y`Ub[hYb`nk]gWYb`%+.` \$`I` \f`i bX`&` .%\$`I` \f`
[Yk U`hgUa`]b`X]Y`K c\bi b[`i bX`ghU\`Yb`a Y`fYfY`
K Yfh[Y[Ybgh`ÀbXY`"5i W\` \]Yf`Yf`cZh`g]W\`X]Y`Dc`nY]`Xi fW\`
<]bk Y]gY`Ui g`XYf`6Yj` Ò`_Yfi b[`bYi Y`5b`U`hgdi b`_hY`"8]Y`
HY`YZcbbi a` a` Yf`ZØf`X]Y`Dc`nY]`7`cddYbVi f[``Ui hYh`YVYbZU`g`
\$((+%#%, * \$ \$"

K c\`Ui g` : fi ghfUh]cb`ØVYf`j`Yf`_Y`f`]W\Y`I` a` gh`ÀbXY`_Ua` `Yg`ni`
Y]bYf`GUW`VYgW`ÀX][`i b[`Ub`Y]bYa` `D?K` `]b`7`cddYbVi f[``9]bY`
* +!`À\ f][`Y` : fUi` `a` i` gghY`Ua` ` : fY]hU[`i` a` `%%.` \$`I` \f`
j`Yf`_Y`fgVYX]b[`h`Ua` ` ;` Y`k` Y[`k` UfhYb`ž`k` Ug`Y]bYf` :` i` » [`Àb[`Yf]b`
c`ZYb`VUf`b]W\`h`d`UgghY`"8]YgY`hfUh`U[[`fYgg]j` ` [`Y[`Yb`X]Y`
6Y]ZU\`fYfhØf`XYg` :` U`fnYi [`g`i` bX`Y`b`h`Z`f`b`hY`g]W\`U`bgW\`]Y»`YbX`
fUgW\`]b`F`]W\`hi` b[` :`f]Ygc`mh\`Yf`GhfU»`Y`"8`Yf`G`W\`UXYb`Ub`X`Yf`HØf`
k`]fX`Ui`Z`Y`hk`U`&\$`\$`9i`fc`[`YgW\`À`h`h`ž`i`bX`Ui`W\` \]Yf`gi`W\`h`X]Y`
Dc`nY]`b`UW\`N`Yi [`Yb`"

J Yf`_Y`f`gØVYfk`UW\`i`b[`]b`X`Y`f`F`Y`[`]c`b`

8]Y`Dc`nY]`k`Uf`ni`XYa` `U`_hj` `]b`X`Y`f`J`Yf`_Y`f`gØVYfk`UW\`i`b[``5a`
: fY]hU[`UVYbXž`[`Y[`Yb`&&.`\$,` `I` \f`ž`k`i`fXY`Y]b`(`&!`À\ f][`Yf` :`U`fYf`
Y]bYg`?`Y]bhf`Ubgdc`fhYfg`]b`X`Y`f`<`U[`YbghfU»`Y`Ub[`Y`U`h`Yb`ž`k`Y]`Y`f`
]b`G`W\`Ub[`Yb`]b]Yb`Z` \f`"9]b`5`h`Ya` `U`_c`c`h`Y`gh`Yf[`UV`Y]bYb`K`Yfh`
j`cb`%ž&`,`Dfca` `]Y`ž`k`Ug`X]Y`9]b`Y]hi`b[`Y]bYg`GhfUž`YfZU\`fYbg`ni`f`
: c`[`Y` \UhhY`"

9]b`k`Y]hYfYg`5i [`Yba`Yf`_`X`Y`f`Dc`nY]``U[`Ua` `gY`VYb`5VYbX`Ui`Z`
gc[`Yb`Ub`bhYb` `5i`h`c`d`c`g`Y`fb` ``ϕ`X`Y`f`N`Y]h`nk`]g`W`Y`b`&&.`\$`\$`i`b`X`
&(`.\$`\$`I` \f`k`i`fXYb`X`fY]`↑`b[`Y` :`U`fYf`]a` `G`h`U`X`h[`YV]Yh`j`cb`
7`cddYbVi f[`[`Yg`h`c`d`d`h`ž`X]Y` \]Y` \c`W`a`c`h`c`f]g]YfhYb` :`U`fnYi [`Y`a`]h`
i`bb`Øh][`Ya` `@`A`fa` `Xi`fW\`ØVYfa` `À»][`Y`6`YgW\`Yi`b][`i`b[`]b`
6Yk`Y[`i`b[`[`YgY`h`h` \UhhYb`"8]Y` :`U`fYf`ž`]a` `5`h`Y`f`j`cb`&\$`ž`&%`i`b`X`
&` `ϕ\`fYb`ž`a` ØggYb`g]W\`bi`b`Y]bYa`
C`f`X`bi`b[`gk`]Xf][`_Y]hYbj`YfZU\`fYb`ghY``Yb`"

8]Y`Dc`nY]`7`cddYbVi f[`V`Y]V`h`k`Y]hYf`]b`k`UW\`g`Ua` `i`b`X`V]h`h`Y`h`X]Y`
²`ZYb`h]W\`_Y]hi`a` `A`]h\`Z`Y`"6Y]?`Yb`b`hb]g]j`cb`j`YfX`À`W\`h][`Yb`

5_hj]]hÀhYb`cXYf`ni f`A Y`Xi b[`j cb`<]bk Y]gYb`ni `XYb`[YbUbbhYb
J cfZÀ``Yb`_ÒbbYb`g]W`NYi [Yb`YXYfnY]h`Ub`X]Y`Òfh`]W`Yb
Dc`]nY]X]YbghghY``Yb`k YbXYb"

8YhU]`g

6Ygi W`Yb`G]Y`i bg`Ui Z.`b!U["XY