

@Ub [YbVUW Yf`A Yhn[Yf`_Àa dZh[Y[Yb
B YhnØVYf`Ughi b[. `Gc`UfUb`U[Y
UV[YgWU`hYh

9]b`A Yhn[Yf`Ui g`@Ub[YbVUW`XUfZ`gY]bY`]bj Ygh]YfhY
Gc`Ufghfca Ub`U[Y`b]W`h`bi hnYbž`XU`g]Y`VY]`B YhnØVYf`Ughi b[
UV[YgWU`hYh`k]fX"

9]b`A Yhn[Yfa Y]ghYf`Ui g`@Ub[YbVUW`U`h`g]W`a]h`Y]bYf`J]Y`nU`
j cb`<YfUi gZcfXYfi b[Yb`fi bX`i a`gY]bY`D`c`hcj c`hU]_Ub`U[Y
_cbZfcbh]Yfh[YgY`Yb"BUW`Y]bYf`b]j Ygh]h]cb`j cb`ØVYf`&) "\$\$\$\$
9i fc`j b`X]Y`DfcXi _h]cb`Y][YbYf`Gc`UfYbYf[]Y`_Àa dZh`5i [i gh]b
?Y`Yf`bi b`[Y[Yb`X]Y`k]YXYf`c`hY`5VghY`i b[`gY]bYf`5b`U[Y`Xi fW
X]Y` , VYf`UbXk Yf`_Y`9fX]b["J cf`U`Ya`Ub`gcbb][Yb`HU[Ybž`X]Y`ZØf
X]Y`Gc`UfYbYf[]YdfcXi _h]cb`cdh]a U`g]bXž`k]fX`gY]bY`5b`U[Y
]a a Yf`k]YXYf`UV[YgWU`hYhž`k Ug`ni`Y]bYf`Ybcfa Yb`Z]bUbn]Y`Yb
6Y`Ughi b[`ZØ`fh"

9g`ZØ`h`g]W`Ub`k]Y`Y]bY`9b`hY][bi b[`ž`VYgW`fY]Vh`?Y`Yf`gY]bY
Zfi ghf]YfYbXY`@U[Y"5b`HU[Ybž`Ub`XYbYb`Yf`gY]bYb`Y][YbYb
dfcXi n]YfhYb`Ghfca`b]W`h`bi hnYb`_Ubbž`[Y`Yb`]a`[YgW`À`h`hY
) \$\$`9i fc`j Yf`cfYb"5bghU`h`Ui Z`X]Y`ni j cf`YffY]W`hYb
9]bgdUfi b[Yb`VY]`gY]bYb`Ghfca`_cgYb`ni fØW`[fY]ZYb`ni`_ØbbYbž
a i gg`Yf`XUbb`hYi fYb`B Yhnghfca`_Ui ZYb"GY]bY`GhfUH`[]Yž`X]Y
YbYf[]Y]bhYbg]j Yb`5fVY]hYb`]b`XYf`A Yhn[YfY]`Ui Z`X]Y
A]hU[gghi bXYb`ni`Y[Ybž`k Ybb`X]Y`GcbbY`Ua`gh`À`_ghYb`gW`Y]bž
nY][hž`XUgg`Yf`]bhYbg]j`j Yfgi W`hž`X]Y`J cf`hY]`Y`gY]bYf`b]j Ygh]h]cb`ni
fYU`]g]YfYb"8Yb`bcW`gW`Y]bYb`X]Y`B`Yi][_Y]hYb`ØVYf`gY]bY
cdh]gW`U`h`fU`_h]j Y`DJ!5b`U[Y`j cb`HU[`ni`HU[`XØghYfYf`ni`k YfXYb"

DfcV`Ya Y`Xi fW`B YhnØVYf`Ughi b[

8]Y' VYf`UbXk Yf_Y`9fX]b[`g]bX` [Ynk i b[Ybž?Y`Yfg`5b`U[Y`Ub
gcb] [Yb`HU[Yb`UVni ghY`Ybž`k Ybb`Y]bY`Xfc\YbXY` VYf`Ughi b[
XYg`Ghfca bYhnYg`ZYgh[YghY`h`k]fX"@Ui h`Y]bYa`GdfYWX Yf`XYf
, VYf`UbXk Yf_Y`YfZc` [h`X]Ygž`i a`X]Y`GhUV`]h`h`XYg`BYhnYg`b]W`h`ni
[YZ\`fXYbž`XU`X]Y`ni bY`a` YbXY`5bnU`\`j`cb`DJ!5b`U[Yb`]b`XYf
FY []cb`Y]bY`<YfUi gZcfXYfi b[`ZØf`X]Y`BYhnVYhfY]VYf`XUfghY`h`
K`Ybb`XYf`BYhnVYhfY]VYf`6UmYfbk Yf_Y]bYb`9b[dUgg`VYZØfW`hYhž
a`i`gg`Yb`hgdYfW`YbX` [Y\`UbXY`h`k YfXYb` ž`Yf`_`Àfh`XYf`GdfYWX Yf`" `đ
XYb`Y`h`h`Yb`A`cb`UhYb`k`Uf`X]Yg`\`Ai`Z[`XYf` :`U`" `a` `A`U]`k`Uf`?Y`Yfg
5b`U[Y`Ub`%` `HU[Yb`UV[YgW`U`hYhž]a` `đ`b]`Ub`nY`\`b`i`bX`]a` `đ` `]`Ub
Yhk`U`ZØb`Z`HU[Yb`"

8]Y`ghY][YbXY`5bnU`\`j`cb`Gc`UfUb`U[Yb`ZØ\`fh`XUni ž`XUgg`XUg
VUmYf]gW`Y`Ghfca bYhnž`XUg`Ui`ZY]bY`UbXYfY`5fh`XYf
9bYf[]YdfcXi`_h]cb`Ui`g[Y`Y[h`k`Ufž`i`bhYf`8fi`W`_ [Yf`Àh`" `a` `đ\`f
&`\$`&`'`k`UfYb`VYfY]hg`)` \$\$\$`\$\$\$`D\`c`hcj`c`hU]_Ub`U[Yb`a`]h`Y]bYf
;`YgUa`h`Y]ghi`b[`j`cb`fi`bX`%`\$`\$\$\$`A`Y[Uk`Uh`i`Ubg`6UmYfbk`Yf`_
BYhn`Ub[YgW`c`ggYbž`k`c`VY]`U`Y]b` ,` ,` "\$`\$`\$`b`Yi`Y`5b`U[Yb`]a
`Y`h`h`Yb`đ\`f`\]bni [Y`_ca`a`Yb`g]bX`"6UmYfbk`Yf`_\`Uh
FY`_c`fX]bj`Ygh]h]cbYb`]b`XYb`5i`gVUi`XYf`9bYf[]YbYhnY`Y]b[Yd`Ubhž
UVYf`XYf`VUi` `]W`Y` :`c`fhgW`f]h`h`VYb`Øh][h`Y]bZUW`a`Y`\`f`NY]h`U`g`XYf
5i`ZVUi`b`Yi`Yf`DJ!5b`U[Yb`"

F`Y`W`h`]W`Y`G]hi`Uh]cb`i`bX`5i`gk`Y[`ZØf` A`Y`hn[Yf`

5i [i`gh]b`?Y`Yf`]gh`g]W`XYf`fYW`h]W`Yb` ;`fi`bX`U[Yb`X]YgYf
A`U`»`bU`a`Yb`VYk`i`gghž`j`YfghY`h`Y`XcW`b]W`hž`k`Yg`U`V`gY]bY
[YgUa`hY`5b`U[Y`UV[YgW`U`hYh`k`YfXYb`a`i`ggž`UbghU`h`bi`f
ØVYfgW`Øgg][Y`9]bgdY]gi`b[Yb`ni`fY[i` `]YfYb`" `9]b`Y]bZUW`Yg
<`À`_W`Yb`_`Øb`b`h`Y`X]Y`G]hi`Uh]cb`À`b`XYfb`ž`gU[h`Yf`Zfi`ghf]Yfh`"8]Y
l`bhYfVfYW`i`b[Yb`X]YgYf`5fh`\UVYb`b]W`h`bi`f`ZØf`?Y`Yf`
?`cbgYei`YbnYbž`gcbXYfb`VYhfYZYb`Ui`W`n`U`\`fY]W`Y`UbXYfY
6YhfY]VYf`j`cb`Y]ghi`b[gghUf`_Yb`Gc`UfUb`U[Yb`"

A`Uf]Ub`F`Udd`ž`<`Ui`dh[YgW`À`ZhgZØ\`fYf`XYg`J`YfV`UbXg`XYf
6UmYf]gW`Yb`9bYf[]Y!`i`bX`K`UggYfk`]fhgW`UZhž`VYgh`h][hž`XUgg
?Y`Yf`b]W`h`U`Y]b`]b`gY]bYf`A`]gYfY`]gh`"J`cf`XYa` `<]bhYf[fi`bX`XYg

_`Ugg]gW`Yb`Ghfca bYhnYgž`XUg`Y]bgh`Ui Z[i`h`ghYi`YfVUfY
?fUZhk`Yf`_`Y`Ui`g[`Y`Y[`h`k`Ufž`Yf[`]Vh`g]W`X`Y]b`8]`Ya`a`U`ZØf`6YhfY]VYf
j`cb`Gc`UfUb`U[`Ybž`XU`Gcbb`Y`i`bX`K`]bX`b]W`h`b`UW`6Y`]YVYb
fY[i`]Yfh`k`YfXYb`_`Öbb`Yb" K`ØfXYb`U`Y`9fnYi`[i`b[`gUb`U[`Yb
i`bVY[`fYb`nh`k`Y]hYf`Ui`ZYbž`_`Ubb`XUg`]a`gW`a`a`ghYb`:`U`ni
Ghfca`Ui`gZ`Yb`ZØ`fYb`ž`Yf`_`Àfh`F`Udd`k`Y]hYf`i`bX`YVh`XYb
ni`_`i`bZh`gk`Y]gYbXYb`7`UfU`hYf`XYf`DfcV`Ya`g]W`hk`Y]gY`Yfj`cf"

8]Y`@Øgi`b[`g]Y`h`F`Udd`gck`c`b`Y]bYa`5i`gVUi`XYf
GdY]W`Yf`_`UdUn]h`h`Yb`U`g`Ui`W`]b`XYf`_`cbh]bi`]Yf`]W`Yb
Cdh]a`]Yfi`b[`XYg`B`YhnYgž`i`a`XYb`b`Yi`Yb`5bZcfXYfi`b[`Yb`[`YfYW`h
ni`k`YfXYb" `A`ca`Yb`h`Ub`]gh`X]Y`?`UdUn]h`h`XYf`]b`6UmYfb
]bghU`]YfhYb`6UhhYf]YgdY]W`Yf`YXcW`i`bni`fY]W`YbXž`i`a
`Àb[`YfZf]gh][`XYb`5bZcfXYfi`b[`Yb`XYf`9fnYi`[i`b[`ggd]hnYb`[`YfYW`h
ni`k`YfXYb"

Hfchn`XYf`<`YfUi`gZcfXYfi`b[`Yb`V`Y]Vh`A`Yhn[`Yfa`Y]ghYf`?`Y`Yf
cdh]a`]gh]gW`" `9f`[`_`Ui`Vh`ZYgh`Ub`X]Y`ni`_`ØbZh][`Yb`A`Ø[`]W`_`Y]hYb`j`cb
Gc`Ufghfca`i`bX`a`ØW`h`Y`k`Y]hYf`]b`k`YfVYbž`i`a`X]Y
5i`Za`Yf`_`gUa`_`Y]h`Ui`Z`X]Y`gmghYa`]gW`Yb`DfcV`Ya`Y`i`bX`@Øgi`b[`Yb
ni`Yb`Yb" `9f`]gh`b]W`h`VYfY]hž`Ui`Zni`[`YVYb`]b]gVYgcbXYfY`b]W`hž
gc`Ub[`Y`X]Y`GcbbY`gW`Y]bhi`bX`X]Y`A`Ø[`]W`_`Y]hYb`XYf
Gc`UfYbYf[`]Y`VYghY`Yb`V`Y]VYb"

5i`gV`]W`_`Ui`Z`YfbYi`YfVUfY`9bYf[`]Yb

Hfchn`U`Yf`K`]Xf][`_`Y]hYb`V`Y]Vh`X]Y`:`fU[`Y`b`UW`XYf`9Z]n]Ybn]j`cb
D`l`chc`j`c`hU]_`Ub`U[`Yb`]a`NYb`hfi`a`XYg`hYfYggYg" `8]Y
i`bni`fY]W`YbXY`5Vgh]a`a`i`b[`XYf`YfbYi`YfVUfYb`9bYf[`]Yb`a`]h`XYa
VYghY`YbXYb`Ghfca`bYhn`]gh`Y]bY`<`YfUi`gZcfXYfi`b[`ž`X]Y`_`fYUh]j`Yg
8Yb`_`Yb`i`bX`]bb`cj`Uh]j`Y`@Øgi`b[`Yb`YfZcfXYfh" `8Ug`DchYbn]U`XYf
Gc`UfYbYf[`]Y`]gh`Ybcfa`i`bX`k`]fX`j`cb`j`]Y`Yb`U`g`XYf`GW`ØggY`ni`f
9bYf[`]Yk`YbXY`Ub[`YgY`Yb" `8cW`c`b`Y`[`YY][`bYh`Y`GhfUhY[`]Yb`i`bX
5bdUggi`b[`Yb`k`]fX`X]Y`9bYf[`]Yni`_`i`bZh`Y]bY`gh`ÀbX][`Y
5i`gY]bUbXYfgYhni`b[`a`]h`XYb`VYghY`YbXYb`@]a`]h]Yfi`b[`Yb`XYg
Ghfca`bYhnYg`gY]b"

G]W`j`Yf`ÀbXYfbXY`9bYf[`]Y`Ub`XgW`UZh`]b

8 Yi hgWk`UbX

⊕`XYb`YhnhYb`⊕\fYb`\Uh'g]Wk`X]Y`9bYf[]Y`UbXgWkUZh]b
8 Yi hgWk`UbX`Yf\YV`]Wk`j`YfÅbXYfh"8Yf`, VYf[Ub[`ni
YfbYi`YfVUfYb`9bYf[]Yb`]gh`HY]`XYf`bUh]cbU`Yb`GhfUHY[]Yž`X]Y`N]Y`Y
ZØf`?`]a`UgWk`i`hn`i`bX`9bYf[]Yj`Yfgcf[i`b[gg]Wk`Yf\Y]h`ni`YffY]Wk`Yb`
8]Y`6i`bXYgfY[]Yfi`b[`\Uh`XUg`N]Y`Zcfa`i`]Yfhž`V]g`&\$`(
_]a`UbYi`hfU`ni`k`YfXYbž`k`Ug`VYXYi`hYhž`XUgg`XYf`5bhY]`
YfbYi`YfVUfYf`9bYf[]Yb`Ua` ;`YgUa`hghfca`VYXUfZ`_cbh]bi`]Yf`]Wk`
ghY][`Yb`a`i`gg"@Ui`h`XYa`6i`bXYga`]b]ghYf]i`a`ZØf`K`]fhgWkUZh`i`bX`
?`]a`UgWk`i`hn`k`Uf`]a`⊕\f`&\$&&`XYf`5bhY]`YfbYi`YfVUfYf`9bYf[]Yb`
Ub`XYf`Ghfca`j`Yfgcf[i`b[`]b`8Yi`hgWk`UbX`VYfY]hg`VY]`Yhk`U`(&
DfcnYbh"

8]Y`Ni`bU\`a`Y`j`cb`D\chc]c`hU]_Ub`U[`Yb`]gh`XUVY]`\Yfj`cfni`\YVYb`
⊕a`⊕\f`&\$&`k`UfYb`]b`8Yi`hgWk`UbX`ØVYf`&ž`A`]cbYb
D\chc]c`hU]_Ub`U[`Yb`]bghU`]Yfhž`X]Y`ni`gUa`a`Yb`Y]bY`@Y]ghi`b[`]j`cb`
ØVYf`+`\$` ;`][`Uk`Uh`YfnYi`[`hYb`"8]YgY`9bhk`]W`_i`b[`]j`YfXYi`h`]Wk`hž`
XUgg`X]Y` ;`YgY`gWkUZh`ni`bY\`a`YbX`]b`F`]Wk`hi`b[`]bUWk\`U`h][`Yf`
9bYf[]Yei`Y`Yb`[`Y\hž`YXcWk`Ui`Wk`<`YfUi`gZcfXYfi`b[`Yb`k`]Y`X]Y`
j`cb`?`Y`Yf`Yf`YVhYb`BYhmØVYf`Ughi`b[`Yb`a`]h`g]Wk`Vf]b[`h`"

8]Y`F`c`Y`XYf`B`Y`hnVY`hfY]VYf`i`b`X`ni`_ØbZh][`Y` @Øgi`b[`Yb`

8]Y`B`Y`hnVY`hfY]VYf`ghY\`Yb`j`cf`XYf`Ubgd`fi`Wk`gj`c`Yb`5i`Z[`UVYž`XUg`
Ghfca`bYhm`gc`ni`ghYi`Yfbž`XUgg`Y]bYfgY]hg`X]Y`
J`Yfgcf[i`b[gg]Wk`Yf\Y]h[]Yk`À`f`Y]ghY`h`V`Y]Vh`i`bX`UbXYfYfgY]hg`XYf`
ni`bY\`a`YbXY`5bhY]`YfbYi`YfVUfYf`9bYf[]Yb`YZZY`_hj`]b`hY[f]Yfh`
k`YfXYb`_Ubb`"8]Y`U`_hi`Y`Y`G]hi`Uh]cb`nY][`hž`XUgg`XUg`VYghY\`YbXY`
Ghfca`bYhm`c`Zh`b]Wk`h`i`b`XYf`@U[`Y`]ghž`X]Y`j`c`Uh]Y`9fnYi`[i`b[`Ui`g`
D\chc]c`hU]_Ub`U[`Yb`i`bX`K`]bX`_fUZhUb`U[`Yb`YZZ]n]Ybh`ni`
\UbX\UVYb"

I`a`X]YgY`<`YfUi`gZcfXYfi`b[`Yb`ni`VYk`À`h][`Ybž`g]bX`i`a`ZUb[`fY]Wk`Y`
⊕j`Ygh]h]cbYb`bØh][`"@Ui`h`Y]bYf`Ghi`X]Y`XYf`8Yi`hgWk`Yb`9bYf[]Y!
5[`Ybhi`f`fXYbUk`k`]fX`[`YgWk`À`hnhž`XUgg`ZØf`XYb`b`chk`YbX][`Yb`

5i gVUi `XYf`Ghfca bYhnY`V]g`&\$' \$` ðj Ygh]h]cbYb`]b`<Ò\Y`j`cb
]bg[YgUa`h` \$`A`j`]UfXYb`9i`fc`YfZcfXYf`]W`g]bX`"8]YgY
ðj Ygh]h]cbYb`i`a`ZUggYb`XYb`6Ui`bYi`Yf`@Y]hi`b[Ybž`X]Y
J YfVYggYfi`b[`XYf`BYhn]bZfUghfi`_hi`f`gck`]Y`XYb`9]bgUhn`j`cb
]bhY`][YbhYb`BYhnYW`bc`c[]Ybž`i`a`X]Y`9bYf[]YYfnYi`[i`b[`VYggYf`
ghYi`Yfb`ni`_`ÒbbYb`"

2`_cbca`]gW`Y`5i`gk`]f`_i`b[Yb`ZØf`
I`bhYfbY`a`Yb`

8]Y`Ò`_cbca`]gW`Yb`5i`gk`]f`_i`b[Yb`XYf`U`_hi`Y`Yb`BYhnØVYf`Ughi`b[
g]bX`ZØf`I`bhYfbY`a`Yb`k`]Y`X]Y`A`Yhn[YfY]j`cb`?Y`Yf`Yf`YV`]W`"9]b`
6Yf]W`h`X`Y`g`ðgh]hi`hg`ZØf`K`]fhgW`U`Zh`g`Zc`fgW`i`b[`f]Zc`k`Xc`_i`a`Ybh]Yfhž`
XUgg`_`Y]bY`i`bX`a`]hhY`gh`AbX]gW`Y`I`bhYfbY`a`Yb`fP`A`I`gk`]b`
8Yi`hgW`U`bX`X`i`fW`X]Y`c`Yb`Ghfca`dfY]gY`]a``X`f`&\$&`
VYgcbXYfg`ghUf`_`VYhfc`ZYb`g]bX`"?bUdd`*`\$`DfcnYbh`XYf`?A`I`g`
[UVYb`Ubž`XUgg`Ya`dZ]bX`]W`Y`DfY]gYf`Ò`i`b[Yb`]fY`VYhf]YV`]W`Y`
F`YbhUV`]h`h[YZ`A`fXYb`"

8UfØVYf`]\bUi`g`nY][`h`Y]bY`I`a`ZfU[Y`j`cb`HB`G`ðZfUhYghž`XUgg`ØVYf`
+`\$`DfcnYbh`XYf`I`bhYfbY`a`Yb`]b`8Yi`hgW`U`bX`Y]bY`5bdUggi`b[`XYf`
FY[Y`i`b[Yb`ZØf`X]Y`9]bgdY]gi`b[`j`cb`D`c`hc`j`c`hU]_ghfca`Zc`f`XYfbž`
i`a`X]Y`k`]fhgW`U`Zh`]W`Y`6Y`Ughi`b[`ni`fYXi`n]YfYb`i`bX`X]Y`Bi`hni`b[
YfbYi`YfVUfYf`9bYf[]Yb`UhhfU`_h]j`Yf`ni`a`UW`Yb`"

8]Y`8]g`fYd`Ub`n`nk`]gW`Yb`[YgYhn`]W`Yf`J`cf[UVY`i`bX`XYb`
hUhg`A`W`]W`Yb`A`Ò[`]W`_Y]hYb`ni`f`Bi`hni`b[`j`cb`gY`Vgh`YfnYi`[`h`Ya`
Ghfca`j`Yfgh`A`f`_h`X]Y`I`bg]W`Yf`Y]h`ZØf`I`bhYfbY`a`Yfž`X]Y`Ui`Z`
YZZ]n]YbhY`9bYf[]Y`Ògi`b[Yb`Ub[Yk`]YgYb`g]bX`"

A`h`X]YgYb`<YfUi`gZc`f`XYfi`b[Yb`]a`6`]W`_k`]fX`_`Ufž`XUgg`bYVYb`XYf`
hYW`b]gW`Yb`@Øgi`b[`Ui`W`dc`]h]gW`Y`A`U»`bU`a`Yb`bck`YbX][`g]bXž`
i`a`X]Y`F`U`a`YbVYX]b[i`b[Yb`ZØf`6YhfY]VYf`j`cb`DJ`!5b`U[Yb`ni`
j`YfVYggYfb`i`bX`Y]bY`ZU]fYfY`Bi`hni`b[`XYg`gY`Vgh`YfnYi`[`h`Yb`
Ghfca`g`ni`Yfa`Ò[`]W`Yb`"

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