

; @C 7? '9WchYWX 'dfÀgYbh]Yfh  
`Y]ghi b[ gghUf\_Yf`Ci hXccf!  
6UhhYf]YgdY]WX Yf`]b ; f]ZZYb

; @C 7? '9WchYWX 'dfÀgYbh]Yfh'XYb`bYi Yb`Ci hXccf!  
6UhhYf]YgdY]WX Yf` ; @C 7? '69GG ` `ZYI ]VY`ž`bUWX`U`h][ `i bX  
ni j Yf`Àgg][ `ZØf`I bhYfbY`a Yb"

; f]ZZYb`fchgt

⇒Y]bYf`VYXYi hYbXYb`BYi Yfi b[ `ZØf`X]Y`9bYf[ ]YgdY]WX YfvfUbwY  
`U`h`XUg`ÒghYffY]WX]gWX Y`I bhYfbY`a Yb` ; @C 7? '9WchYWX ` \_Øfn`]WX  
gY]bY`bYi YghY`Ci hXccf!6UhhYf]YgdY]WX Yf`Ògi b[ `j cf[ YghY`h`XYb  
; @C 7? '69GG ``8]YgY`]bbcj Uh]j Y`@Øgi b[ `VYnY]WX bYh`Y]bYb  
k Y]hfY]WX YbXYb`GWX f]h]b`F ]WX hi b[ `bUWX`U`h][ Yf  
9bYf[ ]Yj Yfgcf[ i b[ `i bX`Ui hUf\_Yf`Ghfca bi hni b[ "

8Yf` ; @C 7? '69GGž`[ YZYfh][ h]b`² ghYffY]WX ž`V]YhYh`b]WX h`bi f`Y]bY  
YZZ]n]YbhY`i bX`j Yf`Àgg`]WX Y`A Ò[ `]WX \_Y]hž`ØVYfgWX Øgg][ Yb`Ghfca `]b  
NY]hYb`a ]h[ Yf]b[ Yf`B UWX ZfU[ Y`ni `gdY]WX Yfbž`gcbXYfb`ghY`h  
X]YgYb`Ui WX`]b`NY]hYb`a ]h`c`Y`a `6YXUfZVYfY]h`8]Yg`Yf`Ò`h`X]Y  
I bUV`Àb[ ][ \_Y]h]j cb`YI hYfbYb`Ghfca ei Y`Yb`i bX`ghY][ Yfh`XYb  
5i hUf\_]Y[ fUX`j cb`I bhYfbY`a Yb`Yf`YV`]WX "

HYWX b]gWX Y`A Yf\_a U`Y`i bX  
9]bgUhna Ò[ `]WX \_Y]hYb

8Yf`Ci hXccf!6UhhYf]YgdY]WX Yf`i bhYfgWX Y]XYh`g]WX `Xi fWX `gY]bY  
fcVi ghY`7cbhU]bYfVUi k Y]gYž`X]Y`ZØf`VYgh]a a hY  
5bk YbXi b[ gVYfY]WX Y`Ui g[ Y`Y[ h]gh`8]Y`5b`U[ Yb`g]bX`]b  
j YfgWX ]YXYbYb`GdY]WX Yf\_UdUn]h`hYb`Yf`À`h]WX ž`XUfi bhYf`(\* &  
\_K `ž`%`\$+, `\_K ` \ i bX`&`\$+- `\_K ` \ ``8]YgY` : `YI ]V`]h`h`Yfa Ò[ `]WX h

Y]bY`5bdUggi b[ `Ub`]bX]j ]Xi Y`Y`6YXØfZb]ggY`i bX`Øfh]WXY  
; Y[ YVYb\Y]hYb"8UZØf`ghY\Yb`; fØ»Yb\_`UggYb`j cb`%\$ž`&\$`i bX`(\$  
: i »`ni f`JYfZØ[ i b[ "

8]Y`6Ybi hni b[ `XYg`; @C 7?`69GG`YfZc`[ h`ØVYf`Y]bYb`Y]bZUWXYb  
`!D\UgYb!( \$ \$J!5bgW`i ggžk Ug`X]Y`ϕghU`Uh]cb`Yf\YV`]W  
Yf`Y]W hYfh"8UfØVYf`\]bUi g`]gh`XYf`6UhhYf]YgdY]WYf`a ]h`Y]bYa  
9W`hnY]h!: YfbØVYfk UW`i b[ g!`i bX`GhYi Yfi b[ ggmghYa  
Ui g[ YghUhhYhž`XUg`Y]bY`ØW\_Yb`cgY` , VYfk UW`i b[ `XYf  
GdY]WYfdfcnYggY`[ Yk Å\`f`Y]ghYhi bX`XUXi fW`X]Y  
6Yhf]YVgg]WYf\Y]h`Yf\Ø`h"

ϕ`6Yni [ `Ui ZX]Y`j ]Y`gY]h[ Yb`9]bgUhma Ø[ `]W`\_Y]hYb`V]YhYh`XYf  
; @C 7?`69GG`X]Y` : `YI ]V`]hÅhžgck c\` ]b`K c\bg]YX`i b[ Yb`U`g`Ui W  
]b`<chY`Ub`U[ Yb`cXYf`ϕXi ghf]YVYhf]YVYb`Y]b[ YgYhnh`ni `k YfXYb"  
6YgcbXYfg`]b`?ca V]bUh]cb`a ]h`XYb`V]ca UggYVUg]YfhYb`Ghfca !  
K Åfa Y\_fUžk Yf\_Yb`j cb`; @C 7?`9W`hYW`Yb`hZU`hYh`XYf  
6UhhYf]YgdY]WYf`gY]b`j c`Yg`DchYbn]U`i bX`hfÅ[ h`ni f  
[ Ub`n\Y]h]WYb`@Øgi b[ `ZØf`YfbYi YfVUFY`9bYf[ ]Yb`VY]"

9]b`nYbhfU`Yg`A Yf\_a U`]gh`XUg`Xi fW`XUW`hY`8Yg][ b`XYg`; @C 7?  
69GGžk Y`WYg`b]W`h`bi f`\]bg]W`h]W`X`Yf` : i b`\_h]cbU`]hÅhžgcbXYfb  
Ui W`]b`GUW`Yb`G]W`Yf\Y]h`ØVYfnYi [ h"8]Y`\c\Y  
6fUbXgW`i hn`\_UggY`fF 9=%&\$Ł`gc f[ h`XUZØfž`XUgg`dchYbn]Y`Y  
F]g]\_Yb`a ]b]a ]Yfh`k YfXYb"Ni XYa `k ]fX`XYf`GdY]WYf`Xi fW`  
?cffcg]cbglž`GhUi V!`i bX`Gdf]h`nk UggYfgW`i hn`i a ZUggYbX  
[ YgW`Øhnhž`k Ug`ni `Y]bYf`\c\Yb`@Ub[ `YV][ \_Y]h`XYg`DfcXi \_hg`ZØ\fh"

## 8 ]Y`J ]g]cb`j`cb` ; @C 7?`9W`hYW`

8]Y`ϕbcj UhcfYb`j`cb`; @C 7?`9W`hYW`UfVY]hYb`VYfY]hg`gY]h`&\$\$  
Ub`@Øgi b[ Yb`ni f`XYnYbhfU`Yb`9bYf[ ]Yj Yfgcf[ i b[ ž`X]Y`Ui Z  
fY[ ]cbU`Yb`F Yggci fW`b`VUg]YfYb"6]ca UggY`gd]Y`h`\]YfVY]`Y]bY  
YbhgW`Y]XYbXY`F c`Yž`XU`g]Y`Y]bY`bUW`\U`h][ Y`i bX  
i a k Y`hžFYi bX`]W`Y`9bYf[ ]Yei Y`Y`XUfghY`h`A ]h`XYb`bYi  
Ybhk ]W`\_Y`hYb`6UhhYf]YgdY]WYfb`a ØW`hY`XUg`i bhYfbY`a Yb`gY]bYb  
?i bXYb`X]Y`A Ø[ `]W`\_Y]h`V]YhYbž`U`\_h]j`Ub`XYf`9bYf[ ]Yk YbXY  
hY]`ni bY`a Yb`i bX`]fYb`7C&! : i »UVXfi W`\_ni `fYXi n]YfYb"

8]Y`DfcXi \_hY`j`cb`; @C7?`9WŁhYWŁ`Z]bXYb`5bk`YbXi`b[ `]b  
j`YfgWŁ]YXYbYb`GY`\_hcFYbž`XUfi`bhYf`ϕXi`ghf]Yž;`Yk`YfVYž  
Hci`f]ga`i`g`i`bX`@Ubxk`]fhgWŁUZh"8]YgY`8]j`Yfg]Z]\_Uh]cb`hfÀ[`h`b]WŁ`h  
bi`f`ni`f`GhUV]`]hÀh`XYg`i`bhYfbY`a`Ybg`VY]ž`gcbXYfb`Ui`WŁ`ni`f  
GWŁUZZ]b[ `Y]bYf`i`a`k`Y`hžFYi`bX`]WŁYfYb`9bYf[ `]Y]bZfUghfi`\_hi`fž`X]Y  
XYb`\\Yi`h][`Yb`5bZcfXYfi`b[ `Yb`[ `YfYWŁ`h`k`]fX"

ϕhYfYgg]YfhY`\_ÒbbYb`a`Y`f`ØVYf`X]Y`DfcXi`\_hY`i`bX`@Øgi`b[ `Yb`j`cb  
; @C7?`9WŁhYWŁ`Ui`Z`XYf`i`bhYfbY`a`Ybgk`YVg]hY`YfZU`fYb.  
k`k`k`"[`c`W`!`Y`WŁ`h`Y`WŁ`"WŁ`a`"

ϕb`bc`j`Uh]j`Y`@Øgi`b[ `Yb`ZØf`Y]bY`b`UWŁ`\\U`h][`Y  
Ni`\_i`bZh

8Yf`; @C7?`69GG`]gh`b]WŁ`h`bi`f`Y]b`hYWŁ`b]gWŁ`Yg`DfcXi`\_hž`gcbXYfb  
Y]b`GWŁ`f]h]b`F`]WŁ`hi`b[ `Y]bYf`b`UWŁ`\\U`h][`Yb`9bYf[ `]Yni`\_i`bZh"ϕ  
Y]bYf`NY]hž]b`XYf`i`bhYfbY`a`Yb`ni`bY`a`YbX`b`UWŁ`K`Y[ `Yb`gi`WŁ`Ybž  
]`fYb`9bYf[ `]YVYXUfZi`a`k`Y`hžFYi`bX`]WŁYf`ni`X`Y`W`Ybž`V]YhYh`X]Y  
9]bZØ`fi`b[ `XYg; @C7?`69GG`Y]bY`VYa`Yf`\_Ybgk`YfhY`A`Ò[ `]WŁ`\_Y]h"  
9g]gh`\_`Ufž`XUgg`gc`WŁ`Y`ϕ]h]Uh]j`Yb`b]WŁ`h`bi`f`ni`f  
9ZZ]n]YbngHY][`Yfi`b[ `VY]hfU[ `Ybž`gcbXYfb`Ui`WŁ`X]Y`J`YfU`bhk`cfhi`b[  
[ `Y[ `YbØVYf`i`bgYfYf`i`a`k`Y`h`ghÀf`\_Yb"

HYWŁ`b]gWŁ`Y`GdYn]Z]\_Uh]cbYb`i`bX`J`c`fhY]`Y

8]Y`; @C7?`69GG!GmghYa`Y`V]YhYb`Y]bY`J]Y`nU`\\j`cb`hYWŁ`b]gWŁ`Yb  
GdYn]Z]\_Uh]cbYbž`X]Y`]`fY`Ni`j`Yf`Àgg][`\_Y]hi`bX`9ZZ]n]Ybn`Yf`\\Ø`Yb"  
8Yf`6UhYf]YgdY]WŁYf`]gh`ZØf`XYb`6Yhf]YV`i`bhYf`Yi`hfYa`Yb  
K`YhhYfVYX]b[ `i`b[ `Yb`\_`c`bn]d]Yfh`i`bX`[ `UfU`bh]Yfh`Y]bY`:`i`b`\_`h]cbU`]hÀh  
VY]`HYa`dYfUhi`fYb`j`cb`!`&\$`V]g`ž`(\$;`fUX`7Y`g]i`g"8]Y`]bhY[ `f]YfhYb  
G]WŁYf`Y]hga`YWŁ`Ub]ga`Ybž`k`]Y`,`VYf`UXi`b[ `g!`ž`,`VYf`\\]hni`b[ `g!`i`bX  
?i`fngWŁ`i`gggWŁ`i`hž`gcf[ `Yb`ZØf`Y]bY`g]WŁYfY`5bk`YbXi`b[ `"

9]b`k`Y]hYfYg`k`]WŁ`h][`Yg`A`Yf`\_a`U`g]bX`X]Y`a`cXi`UfYb`?`UdUn]hÀhYb"  
A`]h`XYf`A`Ò[ `]WŁ`\_Y]hž`X]Y`GdY]WŁYf`\_UdUn]hÀhYb`Xi`fWŁ`dUfU`Y`Yb  
6Yhf]YV`ni`Yfk`Y]hYfbž`\_ÒbbYb`i`bhYfbY`a`Yb`i`bX`ϕgh]hi`h]cbYb  
ghYhg`Y]bY`a`U»[ `YgWŁ`bY]XYfhY`@Øgi`b[ `ZØf`]`fY`6YXØfZb]ggY`Z]bXYbž

c\bY`XUgg`i a ZUb[ fY]WXY`BYi UbGwUZZi b[ Yb`bchk YbX][ `g]bX"  
8]YgY`:`YI ]V`]h`h`gh`YbHgWXY]XYbX`Z0f`X]Y`9bYf[ ]Yj Yfgcf[ i b[ `]b  
6YfY]WXYbž`X]Y`ghUf`Yb`GWk Ub`i b[ Yb`i bhYf`]Y[ Yb"

## A Uf`h`i bX`K YhhVYk Yfv

8Yf`A Uf`h`Z0f`6UhhYf]YgdY]WXYf`0gi b[ Yb`k`AWgh`ni bY`a Ybž  
]bgVYgcbXYfY`Xi fW`X]Y`ghY][ YbXY`B UWZfU[ Y`bUW`YfbYi YfvUfYb  
9bYf[ ]Yb`i bX`XYf`Bchk YbX][ `\_Y]hž`9bYf[ ]YgdY]WXYf`ni `cdh]a ]YfYb"  
@Ui h`Y]bYf`A Uf`h`UbU`mgY`j cb`=95`k ]fX`Yfk UfhYhž`XUgg`XYf`[ `cVU`Y  
A Uf`h`Z0f`6UhhYf]YgdY]WXYf`V]g`&\$&`Y]bYb`K Yfhj cb`` \$`A ]`]UfXYb  
I G!8c``Uf`0VYfgWfY]hYb`\_0bbhY"; @C 7?`9W`hYW`d`cg]h]cb]Yfh]g]W  
]b`X]YgYa`K YhhVYk Yfv]gi a ZY`X`U`g`5bV]YhYf`j cb`ei U`]hUhj  
`cWk Yfh][ Ybž`fcVi ghYb`i bX`YZ]n]YbhYb`Ghfca`gdY]WXYf`0gi b[ Yb"

8Yf`K YhhVYk Yfv`i a ZUggh[ fc»Y`i bhYfbY`a Yb`YVYbgc`k ]Y  
]bbcj Uhj Y`GhUfhi dg"; @C 7?g`c`\_i g`Ui Z`c`U`Y`FYggci fW`b`i bX  
bUW`U`h][ Y`@0gi b[ Yb`[ ]Vh`XYa`i bhYfbY`a Yb`YXcW`Y]b  
k ]W]h][ Yg`5``Y]bghY``i b[ ga Yf`a U``8]Y`?ca V]bUh]cb`Ui g  
6]ca UggY`i bX`6UhhYf]YgdY]WXYf`\_Ubb`U`g`]bhY[ f]YfhY`@0gi b[ `Z0f  
j ]Y`Y`bXi ghf]Yb`X]YbYb`i bX`V]YhYh`Y]bYb`ni g`Ah`n`]WXYb`A Y`fk Yfh  
[ Y[ Yb0VYf`Yf`\_0a a`]WXYb`9bYf[ ]Y`0gi b[ Yb"

## B UW`U`h][ `\_Y]h`i bX`I a k Y`hVYk i gghgY]b

; @C 7?`9W`hYW`j YfZc`[ h`a ]h`XYf`9bhk ]W`i b[ `XYg`69GG`b]W]h`bi f  
k ]fhgWUZ]h]WXY`N]Y`Yž`gcbXYfb`gYhnh`Ui W`Ui Z`B`UW`U`h][ `\_Y]h``8]Y  
Bi hni b[ `j cb`6]ca UggY`U`g`YbYf[ ]Yei Y``Y`hf`h`[ h`ni f`J`Yfa ]bXYfi b[  
j cb`7C`&!9a ]gg]cbYb`VY]`i bX`i bhYfgh0hnh`X]Y`N]Y`Y`XYg  
Yi fcd`h]gWXYb`; fYYb`8YU`gž`XYf`XUfUi Z`UVn]Y`hž`9i fcdU`V]g`&\$) \$  
\_]a UbYi hfU`ni `a UWXYb``@Ui h`9i fcd`h]gWXY`?ca a ]gg]cb`g]bX  
]bbcj Uhj Y`9bYf[ ]Y`0gi b[ Yb`Y]b`GW`0ggY``ni f`9ffY]W]i b[ `X]YgYf  
N]Y`Y"

8]Y`J`Yfk YbXi b[ `j cb`cWk Yfh][ Yb`A UhYf]U`]Yb`Z0f`X]Y  
<YfghY``i b[ `XYg`6UhhYf]YgdY]WXYfg`ghY``h]g]WXYfž`XUgg`X]Y`DfcXi `\_hY  
`Ub[ `YV][ `g]bX`i bX`b]W]h`bi f`\_i fnZf]gh][ `ni f`@0gi b[ `j cb  
9bYf[ ]YdfcV`Ya Yb`VY]hfU[ Yb``8i fW`X]Y`9bhk ]W`i b[

bUW\U`h][ Yf`HYWbc`c[ ]Yb`Z0fXYfh; @C 7?`9WchYW`Ui W`X]Y  
GWUZZ b[ ``c\_U`Yf`5fVY]hgd`ÀhnY`i bX`hfÀ[ h`ni f`k ]fhgWUZh]WYb  
GhUV]`]hÀh]b`XYf`FY[ ]cb`VY]"

8YhU]`g

6Ygi W`Yb`G]Y`i bg`Ui Z.`X]Y!bUW f]W`hYb`"bYh