

8]Y' @K C !NØ[Y'Yf_]a a Yb'X]Y
9fZc`[g`Y]hYf'VY]'K K 9'A c bYm']b'h\Y'6Ub_

8 Ug'K K 9!DfYa]i a !@j Y!9j Ybh' A c bYm']b'h\Y'6Ub_ 'gh
VY_Ubbh'i bX'VY'YVh'ZØf'gY]b'gdUbbYbXYg'F Ub['ghYba UhW
a]h'a Y\fyfYb'; Y[bYfbž'VY]'XYa 'X]Y'HY]'bY\ a Yf'j Yfgi WXYbž
Y]bY'ØVYf'XYa 'F]b['\Åb[YbXY'5_hYbhUgWXY'ni fØW_ni \c`Yb"
Ð`X]YgYf'5_hYbhUgWXY'VYZ]bXYh'g]WXY'Y]b'Y]bn][Ufh][Yf
J YfhfU[ž'XYf'YXYfnY]h'i bX'ØVYfU`X]Y'7\UbW'Ui Z'Y]b
A Y]ghYfgW UZhggd]Y`]bbYf\U'V'Y]bYg'J\fyg'bUW'; Yk]bb'XYg
: U`Yg'[UfUbh]Yfh"9g`]Y[h'U'gc'Ui Z'XYf'<UbXž'XUgg'X]Y
A ÅbbYf'i bX': fUi Ybž'X]Y'Y]b'X]YgYb'?Ua dZ'i a 'U`Yg
j Yfk]W_Y'h'g]bXž'j c f'b]W h'g'ni fØW_gW fYW_Yb'k YfXYbž'i a
X]Y'@Y]hYf'ni 'Yf_]a a Yb'i bX'X]Y']_cb]gWXY'5_hYbhUgWXY'Y]b
6Yg]hn'ni 'bY\ a Yb"i bX'XU'Ub'X]YgYa 'GUa ghU['Y]b'@cbXcb
X]Y'%("J YfUbghU'hi b['Ua d^Y`]d/



8 Ug'K K 9!DfYa]i a !@j Y!9j Ybh' A c bYm']b'h\Y'6Ub_ 'gh'VY_Ubbh
i bX'VY'YVh'ZØf'gY]b'gdUbbYbXYg'F Ub['ghYba UhW'a]h'a Y\fyfYb
; Y[bYfbž'VY]'XYa 'X]Y'HY]'bY\ a Yf'j Yfgi WXYbž'Y]bY'ØVYf'XYa
F]b['\Åb[YbXY'5_hYbhUgWXY'ni fØW_ni \c`Yb"Ð`X]YgYf
5_hYbhUgWXY'VYZ]bXYh'g]WXY'Y]b'Y]bn][Ufh][Yf'J YfhfU[ž'XYf'YXYfnY]h

i bX`ØVYfU``X]Y`7\UbW`Ui Z`Y]b`A`Y]ghYfgW\UZhggd]Y``]bbYf\U`V
Y]bYg`↗\fYg`bUW` ; Yk`]bb`XYg` : U``Yg`[UfUbh]Yfh``9g``Y[h`U`gc`Ui Z
XYf`<UbXž`XUgg`X]Y`A`ÀbbYf`i bX` : fUi Ybž`X]Y`]b`X]YgYb`?Ua`dZ`i a
U``Yg`j Yfk`]W`Y`h`g]bXž`j c`f`b]W\hg`ni fØW`gW`fYW`Yb`k YfXYbž`i a` `X]Y
@Y]hYf`ni`Yf`_`]a` a`Yb`i bX`X]Y`_]c`b]gW`Y`5`_hYbhUgW`Y`]b`6Yg]m`ni
bY\`a`Yb``I`bX`XU`Ub`X]YgYa` `GUa`ghU[`]b`@cbXcb`X]Y`%("
JYfUbghU`hi b[`ni`a` `H\Ya`U` `A`≠H6` `ghUhhZ]bXYb`k`]fXž`A`/` :` `U`h`g]W\
a`]h`nk`Y`]`XYf`<YfUi`gZcfXYfYf`[YhfcZZYbž`i a` `YfUi`gni`Z]bXYbž`k`]Y
g]Y`U``Y`F`]j`U`Yb`ØVYfXUi`Yfb`i bX`6Yg]mYf`X]YgYf`gW`]W`gU`\UZhYb
5`_hYbhUgW`Y`k`YfXYb`k`c``Yb``9g`_ØbbhY`Y]b`Yd]gW`Yf`5VYbX`ZØf
XYb`GhU`` `@Uh]bc`K`c`f`X`C`fXYf` `k`YfXYbž`k`Ybb`GUbhc`g`9gW`VUf
i bX`NY`]bU`J`Y[U`]fY`Yk`Y`][Yb`K`K`9`A`cbYm]b`h`Y`6Ub`_!
A`UhW`Yg`[Yk`]bbYb`"

GUbhc`g`9gW`VUf``Àggh`gY]bY`K`K`9!; Y[bYf`XUb`_`8fcd`gYhg
ZU``Yb`

F`Ub[`]ghYbgd]Y`Y`g]bX`ZØf`a`]W\`_Y]b`I`bVY`Ub`bhYf`ž`gU[h
9gW`VUfž`Y]b` ; fUdd`Yf`XYf`nk`Y]hYb` ; YbYfUh]cb`Ui`g`A`YI`_]c`!GhUXhž
A`YI`_]c`ž`i bX`XYf`Gc`b`XYg`Y`[YbX`ÀfYb`@`W\U`@]VfY!GhUfg`/`9`
: UbhUga`U``K`Ug`gY]b`HfU]b]b[`VYhf]Zhž`a`i`gg`9gW`VUf`gY]bY`NY]h
g]bbj`c``bi`mYb```≠W`j`Yfgi`W\Yž`a`]h`gc`k`Yb][`NY]h`k`]Y`a`Ø[`]W\`gc
j`]Y`k`]Y`a`Ø[`]W\`ni`a`UW`Yb`ž`gU[h`Yf`i bX`VYfØW`g]W\h][h`XUVY]
XYb`j`YffØW`_hYb`Hci`fd`Ub`Y]bYg`K`K`9!Gi`dYfghUfg```≠W`j`Yfgi`W\Y
]a`a`Yfž`a`Y]bYb`?ØfdYf`gc`ni`hfU]b]YfYbž`XUgg`?fUZh`i bX
6Yk`Y[`]W\`_Y]h`j`c`f`UbXYb`g]bX`` `K`Ybb`Yg`XUfi`a` `[Y\hž`]bg
:]hbYggghi`X]c`ni`[Y\Ybž`]gh`XUg`@K`C!A`]h[`]YX`Y]b`[fc»Yf
6YZØfk`c`fhYf`XYg`5i`Zk`Àfa`Ybgž`]bgVYgcbXYfY`XU`Yf`a`]h`XYf
5Vbi`hni`b[`ni` `_Àa`dZYb`\Uhž`X]Y`XYf`F`]b[`a`]h`g]W\`Vf]b[h`K`Ug`X]Y
D`Ubi`b[`gY]bYf`GÀhY`Ub[Y\hž`ZØ\fh`XYf`Ui`ZfY[YbXY`K`fYgh`Yf
[YfbY`8fcd!GYhg`]b`XYf`F`Y]\YbZc`[Y`j`cb`%)`ž`%&ž`%\$`i bX` ,
K`]YXYf`c`i`b[Yb`Xi`fW``8fcd`gYhg`g]bX`Y]bY`[fc»Ufh][Y
A`Ø[`]W\`_Y]hž`X]Y`A`i`g`_Y`\mdYfhfcd\]Y`ni`ZØfXYfbž`k`Ug`ni`Y]bYf
Ni`bU\`a`Y`XYf`A`i`g`_Y`[fØ»Y`i bX`5i`gXUi`Yf`ZØ\fh`?Y]b`K`i bXYfž
XUgg`Yf`Ui`W\`gY]bY` ; Y[bYf`ZU``Yb``Àggh``

: Øf`XUg`5fa`!`i bX`F`ØW`_YbhfU]b]b[`ZØ\fh`9gW`VUf`?i`fn`Ub`hY`!7i`f`gž
@Ub[\Ub`hY`!8fU[!7i`f`gž`?i`fn`Ub`hY`!DfYUW`Yf!7i`f`gž

?i fn\UbhY`fi XYfb`i bX`XUg`H!6Uf!F i XYfb`Ui gž`X]Y`U`Y`XUg`[`Y]WXY
8fcd!GYh!A i ghYf`j Yfk YbXYb`"9gWcVUf`b]a a h`Yg`gY`f`Yfbghž
UVgY]hg`XYg`F`b[`g`\Ufh`ni `UfVY]hYbž`UVYf`Yg`]gh`gWk`jYf][ž`XUg
dYfZY`hY`HfU]b]b[`ZØf`XYb`i a [Ub[`a`j]h`XYf`GhU`\`Y]hYf`ni `d`UbYbž
X]Y`Ua`GUa`ghU[`ja`Gd]Y`gY]b`k`jFX`" ÆW`k`i fXY`cZh[YZFU[hž`k Ug
X]Y`[fØ»hY`6YXfc`i b[`]b`Y]bYa`A`cbYm]b`h`Y`6Ub`!
FUb[`]ghYbgd]Y`XUfghY`h ž`gU[h`9gWcVUf`" I bX`]W`gU[hYž`X]Y
[fØ»hY`6YXfc`i b[`g]bX`X]Y`@Y]hYfb`K Ufi a`3`8Ybb`a`j]`\bYb
_Ubbgh`Xi`X]Y`5`hYbhUgWXY`ni fØW`c`Yb`i bX`XUa`j]hXY]bY`; Y[bYf
VYghfUZYb`"9g`]ghj`YffØW`h`i bX`[`Y]WXYnY]h][`ZFYi`Y`]W`a`]W
XUfUi`Z`

: Øf`j`jY`Y`Dfc!K`fYgh`]b[`!`Ubg`]gh`XUg`A`cbYm]b`h`Y`6Ub`_`!9j`Ybh
XYf`Ui`ZFY[`YbXghY`5VYbX`]ja`K`K`9!`?U`YbXYfž`Ub`XYa``; YgWXYW`hY
[`YgW`f]YVYb`k`jFXž`XYbb`Yg`V]YhYh`]fYa`@YV`]b[`g!`fUdd`Yf`XUg
DchYbn]U`ž`g]WXY`bYb`H]hY`_Ua`dZ`ni`g]WXYfbž`gcVU`X`g]Y`]fYb
J`YfhfU[`Y]b`ØgYb`"K`Yf`_Ubb`j`Yf[`YggYbž`k`]Y`GYh`F`c`]bg`6fcW`
@YgbUf`k`Å`fYbX`gY]bYg`gdcbhUbYb`H]hY`_Ua`dZg`VY]`K`fYgh`YA`Ub]U
`%f&\$%)`Ł`Ybhh`fcbhYž`cXYf`7Ufa`Y`Ug`ØVYffUgWXYbXYb`7Ug`!`÷
[`Y[`Yb`7`Uf`chY`:`U]fž`XYf`]b`XYf`:`c`[`Y`j`cb`Ga`UW`8`ck`b
ghUhhZUbXž`X]Y`Ui`Z`K`fYgh`YA`Ub]U`(`f&\$%,`Ł`Zc`[`hY`3`8`cW`k`Å`fYbX
Yg`ghUf`_Y`5fa`Y`VfUi`W`hž`i`a`XYb`?`cZZf`\`cW`cVYb`]ja
8UW`gdUffYb`ni`gW`bUddYbž`g]bX`[`i`h`hfU]b]YfhY`6Y]bY`YVYbgc
k`]W`h][`"

NY`]bU`J`Y[`U`Yb`hk`]W`Y`h`a`]h`d`mc`a`Yhf]gWXYa`HfU]b]b[`ZØf
K`K`9`A`cbYm]b`h`Y`6Ub`_`Yi`d`cg]j`Y`6Y]b`fUZh`

9]b`k`YgYbh`]WXYf`6YghUbXhY`]j`cb`J`Y[`Ug`GhfUhY[`]Y`ZØf`A`Æ6`k`Uf
X]Y`9b`hk`]W`i`b[`]fYf`Yi`d`cg]j`Yb`6Y]b`fUZh`Xi`fW`d`mc`a`Yhf]gWXYg
HfU]b]b[`]D`mc`g`i`a`ZUggh`,`Vi`b[`Ybž`X]Y`X]Y`A`i`g`_Y`b`gck`c`
UbgdUbbYb`U`g`Ui`W`XY`bYbž`k`]Y`@Ui`ZYbž`?`b]YVYi`[`Ybž`<ØdZYb
i`bX`6cl`↑`a`dg`"K`Å`fYbX`G]Y`X]Y`6Yk`Y[`i`b[`Yb`ØVYbž`dUggYb`g]W
ÆfY`A`i`g`_Y`b`Ub`i`bX`X]Y`@Y]ghi`b[`]j`YfVYggYfh`g]W`"D`mc`g]bX`Y]bY
[`fc»Ufh][`Y`A`Ø[`]W`_Y]hž`XYb`?`ØfdYf`Ui`Z]bhYbg]j`Y`GdcfhUfhYb
j`cfni`VYfY]hYbž`i`bX`Xi`fW`X]Y`9b`hk`]W`i`b[`]ÆfYf`ghUV`]g]YfYbXYb
A`i`g`_Y`b`_ØbbYb`G]Y`Ui`W`j`]Y`Yb`dchYbn]Y`Yb`J`Yf`Yhni`b[`Yb
j`cfVYi`[`Yb`":`Øf`J`Y[`U`\`]Zh`XUg`D`mc`!HfU]b]b[`ž`g]WXY`Ui`ZY]b

F Ub[`]ghYbgd]Y`j c fni VYfY]hYb" 9g[]Vh`Y]bZUW`b]W`h`gc`j]Y`Y
@Y]hYfbž`X]Y`]W`ni`<Ui gY`Yf`_]a a Yb`_Ubb ž`gW`Yfnh`NY`]bU`J Y[U"
G]Y`]gh`g]W`j c`_ca a Yb`XUfØVYf`]a `?`UfYbž`XUgg`X]Y`7cgd`Um!
: Ub]b`Ub[Yg]W`hg`XYf`ØVYfU``\Yfi a Z]Y[YbXYb`?ØfdYf`i bX`XYg
XUfUi g`fYgi `h]YfYbXYb`k U\bg]bb][Yb`?Ua dZYg`i a `X]Y`@Y]hYf`[i h
_cbX]h]cb]Yfh`gY]b`a i ggž`i a `]\fY` : Y]bXY`ni`ØVYfXUi Yfb"

9][Ybh`]W`a UW`Y`]W`fYhnh`j]Y`a Y`f`\cW`]bhYbg]j Yg`7UfX]cž
j]Y`a Y`f`<=H!7UfX]cž`k Y`]W`XUg`; YZØ`\`UVYž`XUgg`a Ub`]b
gc`W`Yb`A ca YbhYb`g]W`YfghY`Yb`a i ggž`XUgg`a Ub`]b`gY]bY
Dck YfVUb`_[fY]ZYb`i bX`g]Y`Ui g`g]W`Y`YfUi g\c`Yb`_Ubb" `k Ybb`Yg
bØh][`]gh ž`gU[h`g]Y`"HUhg`W`]W`Yfn`A`h`J Y[U`A / : ž`XUgg`g]Y`Yhnh
Y]bYb`K fYgh`]b[!F]b[`U`g`HY`]`\fYg`<ca Y!:]hbYgg!GYhi dg`\Uhž
XUa]h`g]Y`gc`j]Y`Y`Ghi bXYb`k]Y`a Ø[`]W`]a `E i UXfUh`fY]g
hfU]b]YfYb`_Ubb" `5VYf`k Ug`]gh`a]h`XYf`@Y]hYf`gY`Vgh`_gh`g]Y
gW`k Yf3` 9g`]gh`k]f`_]W`gW`k Yf ž`gU[h`J Y[U" `J]Y`Y`@Yi hY
j YfghY`Yb`XUg`b]W`hž`]W`V]b`j]Y`_`Y]bYfž`U`gc`]gh`Yg`Y]bY`gc
[fc»Yž`_`cV][Y`GUW`Yž`XUgg`]W`g]W`YfghY`Yb`a i ggž`XUgg`]W`a]W`
XUa]h`i a [Y`Yb`_Ubb" `9g`]gh`XYZ]b]h]j `Yhk Ugž`XYggYb`HfU[Yb
_Y]bYb`GdU» `a UW`h`

⌘`X]YgYa `⌘\f`gW`Y]bh`ZØf`XYb`G]Y[Yf`]b`@cbXcb`a Y`f`Ui Z`XYa
Gd]Y`ni`ghY`Yb`U`g`Y`ni j c fž`XYbb`Yg`Yfk UfhYb`G]Y`gdUbbYbXY
A`ÀbbYf`!`i bX` : fUi Ybgd]Y`Y" `W`ZfYi Y`a]W`gc`gY`fž`\]Yf`ni`gY]b ž
gU[h`J Y[Už`U`g`X]Y`; `cW`Ybghi bXY`b`A`Yf`fØW`h" `8]Y` : Ub`g]bX
\]Yf`gc`Y]XYbgW`UZh`]W`" `6Y]`XYb`A`ÀbbYfb`k YfXYb`Yg`GUbhcg
9gW`VUfž`F]W`W`Yhž`G\]bgi _Y`BU`Ua i fUž`@5`?b][\hž`6i hW`ž
8Ua]Ub`Df]Ygh`i bX`@ [Ub`DUi`gY]bž`X]Y`; Y`X`j YfX]YbYb`k c`Yb"
6Y]`XYf`8Ua Yb!5_hYbhUgW`Y`g]bX`X]Y`<YfUi gZcfXYfYf]bbYb`NY`]bU
J Y[Už`6YW`_m`@mbW`ž`NcYm`GhUf`_ž`6Um`Ymž`≠mc`G`_m`i bX`Hf]g\
GhfUhi`g"

I a `YfUi gni Z]bXYbž`cV`g]W`XUg`\UfhY`HfU]b]b[`XYf`@K C
Ui gnU`hž`j YfdUggYb`G]Y`b]W`hg`j cb`XYf`5W]cb`j cb`K K 9`A cbYm
]b`h`Y`6Ub`_ž`XUg`Ua`GUa ghU[ž`XYa`%"`ž`]j Y`Ui g`XYf
VYfØ`a hYb`C &!5fYbU`]b`@cbXcb`ØVYf`DYUW`W`]b`XYb`J YfY]b][hYb
GhUUhYb`i bX`K K 9`ØVYfhfU[Yb`k]fX`J YfbYhnYb`G]Y`g]W`ØVYfU`
gcbgh"

6Ygi W\Yb`G]Y`i bg`Ui Z.`a Y]b!Z]hbYgg"bYh