

< Ym'8 5 C gž'g]bX'F]g]_c_Ud]hU`[YVYf'XY]bY
: fYi bXY3

⊕`XYf'YfghYb`<À`ZhY`XYg`⌘\fYg`&\$&&'k i fXYb`]b`%%- -
GdYbXYbfi bXYb`ØVYf" \$ž`'A]``UfXYb`l G!8c``Uf`ZØf
6`cW_WU]b!Dfc`Y_hY`[YgUa`a`Y`h`K`Ybb`G]Y`k`]f`_]W`Ub`XUg
Dfchc_c``[`Ui`VYbž`XfØW_Yb`G]Y`X]YgY`,`VYfnYi`[i b[`Xi`fW
XYb`A`Uf`_h`Ui`gž`]bXYa`'G]Y`_Ui`ZYb`ž`gU[`hY`:`fUb`_]b`6]ž
8]fY`_hcf`ZØf`Dc`fhZc`]c`Yb`hk`]W`_i`b[`VY]`DUbhYfUž`[Y[YbØVYf
6`cW_k`cf`_g`8`U`K`YV`!GhUfhi`dg`]b`XYf`:`fØ`d`UgY`k`Y]hYf\]b
X]Y`5i`Za`Yf`_gUa`_Y]hj`cb`F`]g]_c_Ud]hU`[Yk`]bbYbž`k`]fX`X]Y
6Yn]Y\i`b[`nk`]gW`Yb`XYnYbhfU`Yb`Ui`hcbca`Yb
Cf[Ub]gUh]cbYb`fB`5C`gł`i`bX`F`]g]_c_Ud]hU`[YVYfb`fU`7`gł
]a`a`Yf`Yb[Yf`j`YfZcW`hYb`"B`UW`A`YggUf]g`<%`&\$&&
: i`bXfU]g]b[!6Yf]W`h`ž`k`i`fXYb`]b`XYf`YfghYb`<À`ZhY`XYg
⌘\fYg`&\$&&`]b`%%- -`:`i`bXfU]g]b[!F`i`bXYb`" \$ž`'A]``UfXYb`l G!
8c``Uf`[YgUa`a`Y`hž`k`Ug`XYb`:`]bUbn]Yfi`b[gVYhfU[`ØVYfhfUž
XYb`U`Y`6`cW_WU]b!GhUfhi`dg`]a`⌘\f`/`Ua`d`^Y``]d/

- ɸ`XYf`YfghYb`<`À`ZhY`XYg`ɹ\`fYg`&\$&&`k`i`fXYb`]b`%%-`-`
GdYbXYbfi`bXYb`ØVYf`" `\$ž` `A`]`]UfXYb`!`G!8`c``Uf`ZØf`
6`c`W`W`U]b!Dfc`Y`_hY` [`YgUa` a` Y`h`
- `K`Ybb`G]Y`k`]f`_]W`Ub`XUg`Dfchc`_c``[`Ui`VYbž`XfØW`Yb`G]Y`
X]YgY` ,`VYfnYi` [`i`b[`Xi`fW`XYb`A`Uf`_h`Ui`gž`]bXYa` `G]Y`
Ui`ZYb`ž`gU[`hY` :`fUb`]b`'6]ž`8]fY`_hcf`ZØf`
DcfhZc`]cYb`hk`]W`_i`b[`VY]`DUbhYfUž`[`Y[`YbØVYf`'6`c`W`k`cf`_g`

8`U`K`YV`!`GhUfhi`dg`]b`XYf` :`fØ`d`UgY`k`Y]hYf\`]b`X]Y`
5i`Za`Yf`_gUa`_]Y]h]j`cb`F]g]_c`_Ud]hU``[`Yk`]bbYbž`k`]fX`X]Y`6Yn]Y\i`b[
nk`]gW`Yb`X`YnYbhfU`Yb`Ui`hcbca`Yb`Cf[`Ub]gUh]cbYb`fB`5C`gŁ`i`bX`
F]g]_c`_Ud]hU`[`YVYfb`fU`7gŁ`]a`a`Yf`Yb[`Yf`j`YfZcW`hYb`"

B`UW`A`YggUf]g` <`%`&\$&&` :`i`b`XfU]g]b[`!6Yf]W`h`ž`k`i`fXYb`]b`XYf`
YfghYb`<`À`ZhY`XYg`ɹ\`fYg`&\$&&`]b`%%-`-` :`i`b`XfU]g]b[`!F`i`b`XYb`" `\$ž`
A`]`]UfXYb`!`G!8`c``Uf`[`YgUa` a` Y`hž`k`Ug`XYb` :`]bUbn]Yfi`b[`gVYhfU[
ØVYfhfUž`XYb`U`Y`'6`c`W`W`U]b!GhUfhi`dg`]a` `ɹ\`f`ni`j`cf`Yf\`U`hYb`
\`UhYb`"

8]Yg`nY][`hž`XUgg`hfch`n`6`ĀfYba`Uf`_hVYX]b[`i`b[`Yb`]a`a`Yf`bcW`
[`fc`»`Yg`ɸ`hYfYggY`Ub`K`YV`!`Dfc`Y`_hYb`VYghY`h`GhUfhi`dg`]b`XYf`
ZfØ`Yb`G`Y`Y`X!`D`UgYž`X]Y`Y]bY`8`5C`!6YhY][`[`i`b[`VY]b`U`hYhYb` `X]Y`
Yf\`Y`hYb`+`%i` `U`Yf` :`ØfXYfa`]hY` ``k`UfYb`VYgcbXYfg`VY[`Y`fh`

9]b`8`5C`UfVY]hYh`bUW`Wc`X]YfhYb`F`Y[`Y`bž`Yg`ghY``h]g]W`Yfž`XUgg`X]Y`
;`cj`YfbUbW`]b`XYf`Cf[`Ub]gUh]cb`hfUbgdUfYbh`V`Y]Vh`i`bX`XUgg`X]Y`
9bhgW`Y]Xi`b[`gZ]bXi`b[`j`cb`U`Yb`7ca`a`i`b]hm!A`]h[`]YXYfb`[`YhY`]h`
k`]fX`"

8]Y`5fhi`bX`K`Y]gYž`k`]Y`8`5C`g`]a` `J`Yf[`Y]W`ni`hfUX]h]cbY`Yb`GhUfhi`
i`dg`UfVY]hYbž`\`Uhi`bk`Y][`Yf`]W`X]Y`5fhi`bX`K`Y]gY`j`YfĀbXYfhž`k`]Y`
F]g]_c`_Ud]hU`[`YVYf`K`YV`!`Dfc`Y`_hY`]b`XYf` :`fØ`d`UgY`Z]bUbn]YfYbž`

gU[hY` < Ufh@Ja Vi fž'A]hVY[fØbXYf'XYg'I A 5!Dfc hc_c`gž
[Y[YbØVYf'6`cW_k cf_g"

⇒ XYf'; YgWk]Wk hY`XYg'a cXYfbYb`J Ybhi fYg`\Uh`X]Y
f]Yg][Y`A Yb[Y`Ub`Ui Z[YVfUWk hYa`F]g]_c_Ud]hU`U`Y
X]Y`[`Y]Wk Yb`8YU`!Ghfi`_hi fYb`j Yfk YbXYh`UVYf
k Ug`k]f`gY`Ybž`]ghž`XUgg`8 5C g`hUhgÅWk`]Wk`Ui Z`[Ub n
UbXYfY`K Y]gY`; Y`X`VYgWk UZZYb`_ØbbYb`ž`gU[hY
@Ja Vi f"

8 5C g`ghY`Yb`Y]bY`A Ø[`]Wk_Y]h`XUfž`X]YgY`FY[Y`b`Ui ZY]bY`K Y]gY
bYi`ni`gWk fY]VYbž`X]Y`k]f`bcWk`b]Wk h[YgWk UZZYb`UVYb`ž`gU[hY
Yf"

8 5C g`g]bX`]b`YfghYf`@]b]Y`j cb`A]h[`]YXYfb`VYhf]YVYbY
Cf[Ub]gUh]cbYb`"8]Y`A Y`f`Y]h`XYf`Yi hY`YI]gh]YfYbXYb`8 5C g`\Uh
Y]bYg`j cb`nk Y]`A]h[`]YXgWk UZhga cXY`Yb.`Hc_Yb!VUg]YfhY
A]h[`]YXgWk UZh`i bX`U_h]YbVUg]YfhY`A]h[`]YXgWk UZh"

6Y]`XYf`Hc_Yb!VUg]YfhYb`A]h[`]YXgWk UZh`XYf`[YVfÅi Wk`]Wk ghYb
: cfa`gh]a`a Yb`X]Y`HY]`bY`a Yf`ØVYf`k]Wk h[Y`9b hgWk Y]Xi b[Yb
UVž`k cVY]`XUg`Gh]a`a [Yk]Wk h`X]fY`_h`d`f`c`d`f`h]cbU`ni`a`Hc_Yb!
6Yg]hn`]gh`I`a`k]f`_]Wk`Ui hc bca`ni`gY]bž`a`ØggYb`X]YgY
5Vgh]a`a i b[Yb`7cXY`X]fY`_h`Ui Z`XYf`6`c`W`Wk U]b`Ui gZØ`fYbž
UbghUhh`YX][`]Wk`X]Y`5Vg]Wk h`XYf`A]h[`]YXYf`ni`Y]bYa`H`Ya`U`ni
g][bU`]g]YfYbž`XUg`X]Y`9bhk]W`Yf`hUhgÅWk`]Wk`ja`d`Ya`Ybh]YfYb
f`c`XYf`b]Wk h`"

8]Y`U_h]YbVUg]YfhY`A]h[`]YXgWk UZh`]gh`Å`b`]Wk ž`UVYf`HY]`bY`a`Yfž
X]Y`A]h[`]YX`k YfXYb`a`ØWk hYbž`a`ØggYb`ni`Yfgh`Y]bYb`J`c`fg`Wk`U[
Y]b`fY]Wk Yb`i bX`[YbY`a`][h`k YfXYbž`VYj`cf`g]Y`XYf`8 5C`VY]h`fYhYbž
k Ybb`5_h]Yb`Gh]a`a`fYWk h`i bX`9][Ybhi`a`XUfghY`Yb"

K`c`d`Uggh`F`]g]_c_Ud]hU``\]bY]b 3

: fUb_`]b'6]ž'8]fY_hcf'ZØf'DcfhZc`]cYbhk]W_`i b[`VY]'DUbhYfUž'Y]bYa
<YX[YZcbXgž'XYf'g]W`Ui Z'6`cW`WU]b!VYnc[YbY'Dfc'Y_hY
_cbnYbhf]Yfhž'gU[hY' [Y[YbØVYf'6`cW_k cf_gž'XUgg'Y]bY'Hc_Yb!
VUg]YfhY'A]h[`]YXgW`UZh'ǂj YghcfYb'cZh'X]Y' [`Y]W`Y'7\UbW`VY]a
5i ZVUi `Y]bYf'Dcg]h]cb'Ui Z'XYa `A Uf_hj YfgW`UZh"

K Ybb'G]Y'k]f_]W`Ub'XUg'Dfchc_c`''[`Ui VYbž'XfØW_Yb'G]Y'X]YgY
, VYfnYi [i b[`Xi fW`XYb'A Uf_h'Ui gž]bXYa `G]Y'_Ui ZYbž'XUbb
k Å\`Yb'G]Y'a]h'XYfgY`VYb', VYfnYi [i b[`Yg]gh'Y]b'Gd]Y`ZY`X'ZØf
7\UbW`b[`Y]W`Y]h ž'gU[hY'6]"`

8 Ug'DfcV`Ya `gY]'cZh'X]Y': fØ\d\UgYbZ]bUbn]Yfi b[`]b`Y]bYa
[YgW`cggYbYb'^2 _cgmghYa `cXYf'Y]bYf'85C'a]h'U_h]YbVUg]YfhYb
A]h[`]YXgW`UZhYb"

? `Y]bUb`Y[Yf'_ØbbYb'g]W`Ui Z'X]YgYf'9VYbY'b]W`h'VYhY']][Yb
ØUf'm'ighU[YØ'U`gc'ZØ\`h'Yg'g]W`i bZU]f'Ub ž'gU[hY'6]"` ÆW`XYb_Y
[YfbY`XUfØVYf'bUW`ž'XUgg'XYf'?ca dfca]gg'ZØf'X]Y
?Ud]hU`VYgW`UZZi b[`Xi fW`X]YgY'A Yh'cXY'Ui W`Y]bYb`\cZZYb'h]W`
\cW`k Yfh][Yb'HY]'bY`a Yf']b'X]YgYg'^2 _cgmghYa `Y]bVf]b[h"

8]YgY'9]bgW`Åhni b[`k]fX'j cb'5bXfYk `æbYg'[YhY]'hž'XYa `@]hYf
ZØf'K UW`ghi a `i bX'A Uf_Yh]b[`VY]a `K YV' !GhUfhi d'ǂXYI `7ccdž
Y]bYa `?c`Y_hj] ž'XUg'XUfUi Z'UVn]Y'hž'X]Y`VYghYb'?fmdhc!ǂX]nYg'Ui Z
XYa `A Uf_h'ni `YfghY`Yb'i bX'ni `dZY[Ybž'XYf'gU[hYž'XUgg'J 7g
XYZ]b]h]j `Y]bYb'D`Uhn]a `K YV' !^2 _cgmghYa `UVYb"

9g'[]Vh'Y]bY'5fh'<Ugg']YVY'a]h'7ca a i b]hmg'i bX'J 7gž'UVYf'XUg
[`Ui VY]W`b]W`h'k]f_]W` ž'gU[hY'æbYg"

K]f'k ÅfYb'b]W`h`\]Yf' `k]f'k ØfXYb'b]W`h
Zi b_h]cb]YfYb' `k Ybb'Yg'b]W`h'X]Y`HUhgUW`Y'[ÅVYž
XUgg'J 7g'Y]bYb'Hc_Yb'[Y_Ui Zh'\ÅhhYb ž'gU[hY'Yf"

; cj YfbUbW`]gh'Y]b'DfcnYggž'VY]'XYa `Yg'VY]'XYb'; fØbXYfb

UbZÀb[hž]a '@Ui ZY'XYf'NY]h'VUi h'a Ub'J YfhfUi Yb'i bX'Y]bY
6Yn]Y\i b['Ui Z'XUbb'VY_ca a h'a Ub'Y]bY'8Y'Y[Uh]cb'i bX'UfVY]hYh
Ui Z8YnYbhfU`g]Yfi b['i bX'a Y\`f'5i hcbca]Y'\]bž'Yg'dUgg]Yfh'b]W\h
ØVYf'B UW\h' 'Yg]gh'Y]b'GdY_hfi a žZØ[hY'æbYg'\]bni "

8 Ug'J YfhfUi Yb'j]b'F]g]_c_Ud]hU`[YVYf'_Ubb'ZØf'K YV' !GhUfhi dg']b
XYf': fØ\d\UgY '[YfYW\hZYfh][h'gY]b""6Y]'gdÅhYfYb'8Y:]!Dfc hc_c`Yb
fbZh'a]h'A]`]cbYb'j cb'8c`Uf'j]b'\fYa 'Dfc hc_c`Y]b[YgW\`cggYbŁ
_ØbbYb'[fØ» YfY'<ÅbX'Yfž'X]Y'cZh'j cb'F]g]_c_Ud]hU`[YVYfb'i bX
<YX[YZcbXg' 'gc[YbUbbhYb'K U'Yb' 'i bhYfghØmh'k YfXYbž'Y]bYb
ØVYf[fc» Yb'9]bZi gg'\UVYb"

A UfWc'A cg\]ž'85C!@Y]hYf'VY]'Dc`m[cbž'gU[hY'j]b'Y]bYa 'æhYfj]Yk
a]h'6`cW_k cf_g]a 'ž b]ž'XUgg'X]Y '[fØ» hY'<YfUi gZcfXYfi b['VY]'XYf
Hc_Yb!VUg]YfhYb'85C!; cj YfbUbW'XUf]b'VYghY\Yž'XUgg'Y]bY
; Ya Y]bgW\UZh'b]W\h'XYb'F Y]W\ghYb'[Y\ØfYb'gc`hY'cXYf'XYbYbž
X]Y'j cf'UbXYfYb'Ub[Y_ca a Yb'g]bX"

ØH\YQ8]Y'GhU_Y\c`XYf'XYf'c f[Ub]gUh]cb'k YfXYb'g]W\
k U\fgW\Y]b'j]W\ 'ja '@Ui ZY'XYf'NY]h'ÀbXYfbž'i bX'85C'g'gc`hYb
VYfØW_g]W\h[Ybž'XUgg'g]W\ ']\fY'c f[Ub]gUh]cb'k Y]hYfYb'k]W_Y'h
i bX'X]Y'VYhY']][hYb'DYfgcbYb'g]W\ 'YVYbZU`g'fY[Y'a Å»]]['ÀbXYfb
k YfXYb ž'gU[hY'A cg\]"

?Øfn`]W\ gh]a a hY'A U_Yf85Cž'Y]bYg'XYf'[fØ» hYb'8Y:]!Dfc hc_c`Yb
j cb'9h\YfYi a ž[Y[Yb'X]Y'9]bf]W\hi b['Y]bYg
6YfUhi b[gUi ggW\i ggYgž'i a 'Y]bY'gW\`Ub_YfY': Ø\fi b[gghfi _hi f
]bbYf\U'V'XYf'85C'ni 'ja d`Ya Ybh]YfYb""8]YgYf'J cfgW\`U['k i fXY
\YZh]['Ub[YZcW\hYb'i bX'j cb'Y]b][Yb'U'g'æhYfYggYb_cbZ]_h
nk]gW\Yb'F]g]_c_Ud]hU`i bX'i bUV\Àb[]][Yb'HY]'bY\`a Yfb
Ub[YgY\Yb"

CVk c\`X]Yg'a UbW\ a U`XYf': U``]ghž['Ui Vh'6]ž'XUgg'X]YgY
A Y]bi b[gj YfgW\]YXYb\Y]hYb'j]bbYf\U'V'j cb'Dfc hc_c`Yb'Y][Ybh]W\
[Ubn'bcfa U`g]bX"

9g]gh'Y]b'8Å¼j i !; YZØ\`ž'XYb'k Ybb'a Ub'Y]b'GhUfhi d'VYhf]hž
dUgg]Yfh'XUg'Ub'XYb'a Y]ghYb'HU[Yb""8]Y'@Yi hY'g]bX'gi dYf

Y]XYbgW UZh]W i bX'ghfY]hYb'a]hY]bUbXYF"8Yf'I bhYfgW]YX
VYghY\hXUf]bžXUgg'GhUfhi dg'bcfa U`Yfk Y]gY`Y]bYb'79C`UVYbž
XYf`YXYa`gU[hžXUgg`Yf`]b`Y]bY`VYgh]a a hY`F]W hi b[`[Y\Yb`gc``ž
gU[hY`6]"`8Ug``Y[h]b`XYf`BUhi f`j`cb`A YbgW Ybž`X]Y`[YfbY
F]g]_Yb`Y]b[Y\Yb`i bX`Y]XYbgW UZh]W Y`8]b[Y`hi b`

: Øf`6]`U`g`#j Yghcf`]gh`Ua`9bXY`XYg`HU[Yg`XUg`K]W h][ghYžXUgg
g]W`XUg`Dfchc`_c``Ui hUf`_k Y]hYfYbtk]W_Y`b`i bX`k Y]hYfYbtk]W_Y`b
_Ubb``

; i hY`J 7g`Yf`_YbbYb`XYb`K Yfh`XYg`Dfchc`_c``g`XUf]bž`X]Y
7ca`a`i`b]hm`Ui`Z`\fYf`GY]hY`ni`UVYb``K`Ybb`Y]b`J`7`U`Y`UbXYfYb
Ui`g`XYf`7ca`a`i`b]hm`j`YfhfY]Vhž`XUbb`VYgW`Y]»`Yb`g]Y`g]W`gY`Vgh`ž
gU[hY`6]"`9g[]Vh`U`gc`]bg[YgUa`h]a`a`Yf`bcW`Y]bY`n]Ya`]W`[i hY
5Vgh]a`a`i`b[`a`h]J`7g`i`bX`7ca`a`i`b]h]Yg`

6Ygi W Yb`G]Y`9i fcdUg`ZØ`fYbXY`]bgh]hi h]cbY``Y`? fmdhc!
?cbZYfYbn`a`h`Y]bYa`F UVUhh``Bi`f`bcW``HU[Yž`i`a`v`&) \$
Ui`Z`H]W`Yhg`ni`gdUfYb`J`Yfk`YbXYb`G]Y`XYb`7cXY
@CB8CB&) \$"

H\Y`dcgh`<Ym`85C`gž`g]bX`F]g]_c`_Ud]hU`[YVYf`XY]bY`fYi`bXY3`]gh
_Y]bY`Z]bUbn]Y``Y`6YfUhi b["

8YhU]`g

6Ygi W Yb`G]Y`i`bg`Ui`Z`_fmdhc!bYk`g`Uh