

) 'UVgY]hg'XYf'Hci f]ghYbdZUXY'bUWX
A UWX i 'D]WXX i

K]f'k YfZYb'Y]bYb'6`]W_`Ui Z'Z0bZ'U'hYfbUh]j Y`K UbXYfi b[Yb
bUWX 'A UWX i 'D]WXX i žK Y`hYb'YbhZYfbh]j cb'XYf'[YgWÅZh][Yb
_`Ugg]gWXYb'Fci hY'A UWX i 'D]WXX i 'a U['Xi fWUi g'Y]b
?'`]gWYY'XYf'9]a Yf']ghY'gY]bž'UVYf'Yg'[]Vh[Yb0[YbX'; f0bXY
XUZ0fž'k Ufi a 'gc'j]Y`Y'6Ygi WXYf'ni 'X]YgYf'\Yff`]WXYb
N]hUXY`Y'ghf0a Ybž'X]Y'\cW'cVYb']b'XYb'5bXYb'h\fcbh"8 Ug
HfY__]b['bUWX 'A UWX i 'D]WXX i 'Xi fW'XUg'<Y']][Y`HU`]gh
ni h]YZgh'VYZf]YX][YbX'i bX'V`Y]Vh'Y]b'A i gg'Z0f'ZUgh'YXYb
6Ygi WXYf'DYfi g"8 Ug'0_U!A Y]ghYfk Yf_]gh'gdY_hU_i `Àf
[Y`Y[Yb'i bX'YfZ0`hž'gcVU`X'Yg'YffY]W'h]ghž'U`Y'9fk Ufhi b[Yb
Ub'gY]bY'\Yff`]WXYb'ga UfU[X[f0bYb';]dZY`i bX
hYffUgg]YfhYb'Fi]bYb"8 Yf'_`Ugg]gWXY'0_U'HfU]'HfY_]gh]b
XYb`YhnhYb'Ua d^Y`]d/

K]f'k YfZYb'Y]bYb'6`]W_`Ui Z'Z0bZ'U'hYfbUh]j Y`K UbXYfi b[Yb'bUWX
A UWX i 'D]WXX i žK Y`hYb'YbhZYfbh]j cb'XYf'[YgWÅZh][Yb'_`Ugg]gWXYb
Fci hY

A UWX i 'D]WXX i 'a U['Xi fWUi g'Y]b?'`]gWYY'XYf'9]a Yf']ghY'gY]bž
UVYf'Yg'[]Vh[Yb0[YbX'; f0bXY'XUZ0fž'k Ufi a 'gc'j]Y`Y'6Ygi WXYf
ni 'X]YgYf'\Yff`]WXYb'N]hUXY`Y'ghf0a Ybž'X]Y'\cW'cVYb']b'XYb
5bXYb'h\fcbh"

8 Ug'HfY__]b['bUWX 'A UWX i 'D]WXX i 'Xi fW'XUg'<Y']][Y`HU`]gh
ni h]YZgh'VYZf]YX][YbX'i bX'V`Y]Vh'Y]b'A i gg'Z0f'ZUgh'YXYb'6Ygi WXYf
DYfi g"8 Ug'0_U!A Y]ghYfk Yf_]gh'gdY_hU_i `Àf'[Y`Y[Yb'i bX'YfZ0`hž
gcVU`X'Yg'YffY]W'h]ghž'U`Y'9fk Ufhi b[Yb'Ub'gY]bY'\Yff`]WXYb
ga UfU[X[f0bYb';]dZY`i bX'hYffUgg]YfhYb'Fi]bYb"

8 Yf'_`Ugg]gWXY'0_U'HfU]'HfY_]gh]b'XYb`YhnhYb'0\ fYb']a a Yf

VY`YVhYf[Yk cfXYb" HUHgÅW`]W` \ UVYb`X]Y`dYfi Ub]gWYb
6Y\ ÒfXYb`]a` ð\ f`&\$%` XUG`HU[Yg`]a`]h`Ui ZA cf[Yb!`i bX
BUW`a`]hU[gnm`Yb`[YÅbXYfhž`i a`]bg[YgUa` h`a` Y\ f`6Ygi WYf`dfc
HU[`ni` Yfa` Ò[`]WYb"

`U`h1` 2`HfUi`a`nY]h`9g`[]Vh`a` Y\ fYfY`U`hYfbUh]j`Y`K` UbXYfi`b[Yb
bUW`A`UW`i`D]W`i`f`P`hYf`C`_fc`W`Y`X`nYž`G\`i`h`hYfghc`W`Ł

Y`h`h`X`Ø`f`ZY`b`h`Å[`]W`]bg[YgUa` h`i` "-` (`\$`A`Y`bg`W`Y`b`]b`X`Y`5`b`U`[Y
fY]bgW`Y`Y`»`]W`X`Y`g` ð`_U`!`H`f`U`]`g`Ł`" `H`f`c`h`X`Y`g`5`b`g`h`Y`[g`V`Y`]V`h`X`Y
BUW`Z`f`U`[Y`b`UW`X`Y`f`V`Y`f`Ø`a` h`Y`g`h`Y`b`K` UbXYfi`b[`G`Ø`X`U`a` Y`f`_`U`g`
j`Y`Y`]W`h`X`Y`f`K`Y`h`i`i`b`Y`f`g`Å`h`]W`"

;`Ø`W`_`]W`Y`f`k`Y`g`Y`k`U`f`Y`b`X`Y` ð`_`U`g`U`i`W`A`Y`]g`h`Y`f`]a` `G`h`f`U`»`Y`b`V`U`i` "
G]Y` \ UVYb`K`Y`[Y`X`i`f`W`X`Y`5`b`X`Y`b`[Y`V`U` \ b`h`ž`j`c`b`X`Y`b`Y`b`j`]Y`Y`
\`Y`f`c`f`f`U`[Y`b`X`Y`U`h`Y`f`b`U`h]j`Y`K`UbXYfi`b[Y`b`b`U`W`A`U`W`i`D]W`i`
V]Y`h`Y`b`"6Y`i`b`g`Y`f`Y`a`6Y`gi`W`]a` ð\ f`&\$%)`Y`b`h`g`W`]Y`X`Y`b`k`]f`i`b`g`
Z`Ø`f`X`Y`f`i` \`[Y`f`Y`ž`U`V`Y`f`U`b`g`d`f`i`W`g`j`c`Y`f`Y`G`U`_`U`b`h`U`m`K`UbXYfi`b[
bUW`A`UW`i`D]W`i`"

K`Y`b`b`G]Y`Y`g`k`]Y`k`]f`j`c`f`n]Y`Y`b`ž`U`V`g`Y]h`g`X`Y`f`A`U`g`g`Y`b`ni`k`UbXYfbž
X`U`b`b`g]b`X`X]Y`g`Y`U`V`[Y`Y`[Y`b`Y`b`K`UbXYfi`b[Y`b`b`U`W`A`U`W`i`D]W`i`
j`c`b`5`W`h]c`b`D`Y`f`i`H`f`Y`_`g`j`]Y`Y`]W`h`[Y`b`U`i`X`U`g`ž`k`c`b`U`W`G]Y`g`i`W`Y`b`"
5`Y`K`UbXYfi`b[Y`b`Y`b`X`Y`b`a`]h`Y`b`Y`f`[Y`Z`Ø` \ f`h`Y`b`6`Y`g]W`h`[i`b`[j`c`b`
A`U`W`i`D]W`i`i`b`X`X`Y`f`A` Ò[`]W`_`Y]h`ž`X`Y`b`<`i`U`m`b`U`D]W`i`ni`
V`Y`g`h`Y`[Y`b`"

)`U`V`g`Y]h`g`X`Y`f`H`c`i`f]g`h`Y`b`d`Z`U`X`Y`b`U`W`A`U`W`i`
D]W`i`

%`5`b`W`U`g`W`Ł`W`U`!`K`UbXYfi`b[

9`b`h`Z`Y`f`b`i`b[.`(`-`_`a`8`U`i`Y`f`.)`H`U`[Y`#`(`B`Å`W`h`Y`f`Ž`U`b`X`Y`f`Y`
C`d`h]c`b`Y`b`Ł`D`f`Y]g.`~`++`\$`!`G`8`

`U`h1`5`h`Y`f`b`U`h]j`Y`K`UbXYfi`b[Y`b`b`U`W`A`U`W`i`D]W`i`
5`b`W`U`g`W`Ł`W`U`2`5`b`W`U`g`W`Ł`W`U`]g`h`Y`b`Y`f`X`Y`f`U`a`k`Y`b][`g`h`Y`b`V`Y`_`U`b`b`h`Y`b`
H`f`Y`_`g`b`U`W`A`U`W`i`D]W`i`f`G`W`Ł`h`h`6]U`Y`g`ž`G\`i`h`h`Y`f`g`h`c`W`Ł

8 Yf`5bWUgWcWU`HfY_]gh`Y]bYf`XYf`Ua`k`Yb][ghYb`VY`UbbhYb
HfY_g`bUW`A`UW`i`D]W`i`ž`V]YhYh`UVYf`Y]b][Y`XYf`XfUa`Uh]gW`ghYb
@UbXgW`UZhYb`XYf`FY`[`]cb"8]Y`UV[Y`Y[YbY`F`ci`hY`j`YfVf]b[h`a`Y`f
NY]h`]b`\\O`YfYb`@U[Yb`U`g`UbXYfY`K`UbXYfi`b[Yb"

<O`YfY`<O`Yb`Vf]b[Yb`bU`h`f`]W`\\A`fhYfYg`K`UbXYfb`a`]h`g]W`"8]Y
Ubgdfi`W`gj`c`Y`K`UbXYfi`b[`Z`\\`f`h`ni`a`<`i`Um`Ub`Um`DU`gg`Ui`Z`("*)`\$
a`f`P`)"&)`Z`h`"8]Y`6Y`c`\\`bi`b[`]gh`ž`X`U`gg`K`UbXYfYf`Y]b][Y`XYf
gW`Ob`ghYb`U`d]bYb`@UbXgW`UZhYb`]b`XYb`5bXYb`[Yb]Y»Yb"5i`Z
X]YgYf`<O`Y`YfghfY`W`h`g]W`X]Y`@UbXgW`UZh`a`]h`gdY`_`h`U`i`A`fYb
5i`gV`]W`_`Yb`Ø`VYf`6Yf[gY`Yb`ž`\\`YfUV`gh`Ø`fnYbXY`K`U`ggYfZ`A`Y`i`bX`XYb
\\`cW`Ui`Z`fU[YbXYb`;`]dZ`Y`XYg`GU`_`Ub`h`Um`ž`XYf`a`]h`*`&`*`a`f`&`\$`)"`%
Z`h`XYb`<`cf]nc`bh`X`ca`]b]Yf`h"

8Yf`Y`hnhY`HU[`X]YgYf`J`Yfg]cb`XYf`K`UbXYfi`b[`VY]b`\\`U`hYh`Y]bYb
5VgW`b]h`h`XYg`_`U`gg]gW`Yb`ϕ`_`U`HfU`]g"5bWUgWcWU`]gh`XYf
W`UfU`_`hYf]gh]gW`Y`HfY`_`j`cb`5W]cb`DYfi`a`]h`gYW`g`J`Uf]Ub`hYb`XYf
F`ci`hY"

8]YgY`C`dh]cbYb`i`a`Z`U`ggYb`Y]bY`j`]Yf`h`A`[`][Y`K`UbXYfi`b[ž`Y]bY
Z`Ø`b`Z`h`A`[`][Y`K`UbXYfi`b[ž`X]Y`Y]bYb`nk`Y]h`A`[`][Yb`5VgW`b]h`h`XYg
ϕ`_`U`dZ`X`g`VY]b`\\`U`hYh`ž`i`bX`Y]bY`Z`Ø`b`Z`h`A`[`][Y`ž`g]Y`VYb`h`A`[`][Y`c`XYf
UW`h`h`A`[`][Y`F`Y]gYf`ci`hY`ž`X]Y`XYb`5bWUgWcWU`HfY`_`a`]h`XYa
GU`_`Ub`h`Um`HfY`_`_`ca`V]b]Yf`h"

K`Y]hYfY`ϕ`Z`c`fa`U]cbYb.`UW]cb`dYfi`hY`_`g`W`c`a

&"`GU`_`Ub`h`Um`j`]U`ϕ`_`U`HfU`]`HfY`_`

9bhZYfbi`b[`.`(`&`_`a`8Ui`Yf.`(`HU[Y`#`B`A`W`hY`DfY]g.`~`*`-`\$`i`G8

`U`h1`5`hYfbUh]j`Y`K`UbXYfi`b[Yb`bUW`A`UW`i`D]W`i
GU`_`Ub`h`Um`2`8Yf`GU`_`Ub`h`Um`j`]U`ϕ`WU`HfU`]`HfY`_`bUW`A`UW`i`D]W`i
fA`Ufei`Ygg`?`]Ub`6YW`_`ž`G`i`hhYfghc`W`_`t

8]YgY`Ub`Z`Ub[g`\\`YfUi`gZ`c`f`XYfbXY`K`UbXYfi`b[`gW`_`A`b[Y`h`g]W
Xi`fW`Y]bY`\\`cW`[Y`Y[YbY`@UbXgW`UZh`i`bX`j`YfVf]b[h`Y]bYb
;`fc»hY`]XYf`YfghYb`nk`Y]HU[Y`i`bhYf`XYa`]a`d`cg`Ub`hYb`;`]dZ`Y`

gY]bYg'B Ua Ybg[YVYfg"8]Y @UbXgWUZh'Ui Z'X]YgYf'F ci hY'AbXYfh
g]W'Ua 'Xf]hhYb'HU['gWbY''žk Ybb'X]Y'F ci hY'Ui Z'XYb'Ď_U!HfU]'
hf]Zhi bX'XUa]h'X]Y'Ødd][Y'J Y[YhUh]cb'i bX'X]Y'Xcfh[YZ' bXYbYb
UfW'Ac`c[]gWYb'GhÀhhYb"

8]Y'F Y]gYfci hY'VY]b\U'hYh'ink Y]'7Ua d]b[b'AW'hYžk cVY]'X]Y''YhnhY
B UW'h'_ca ZcfhUVY''b'Y]bYa '<chY''b'5[i Ug'7U'Y]bhYg'j YfvfUW'h
k]fX"'5a 'Xf]hhYb'HU['_ØbbYb'g]W'K UbXYfYf'YbhgdUbbYb'i bX
Y]bY'Ni [ZU\fhj cb'C`UbhUmhUa Vc'bUW'5[i Ug'7U'Y]bhYg
[Yb]Y»YbžVYj cf'g]Y'Ua ''YhnhYb'HU['A UW'i 'D]W'W'i 'VYgi W'Yb"

K Y]hYfY'ĎZcfa Uh]cbYb.'UWh]cbdYfi hfY_g"Wca

' "'A cbXghY]bk UbXYfi b['

9bhZYfbi b[.', ž) '_a 8Ui Yf.') 'HU[Y'#('B'AW'hYDfY]g.'~ +, \$'I G8

'U'h1 '5'hYfbUh]j Y'K UbXYfi b[Yb'ni 'A UW'i 'D]W'W'i 'A ccbghcbY
% 28]Y'A cbXghY]bfc i hY'k]fX'bi f'j cb'5Wh]cb'DYfi 'HfY_g'fY'cW]b, (ž
G\i hhYfghcW_Ě[Ybi hnh

8]Y'A cbXghY]bfc i hY']gh'Y]bY'XYf'bYi YghYb'K UbXYfi b[Yb'bUW
A UW'i 'D]W'W'i ž'X]Y'Ui ggW'Y]Y»'W'j cb'5Wh]cb'DYfi 'HfY_g
Ybhk]W_Y'h'i bX'[Ybi hnh'k]fX"'8]Y'A cbXghY]b!K UbXYfi b[]gh'Y]bY
[Ya À»][hYfY'K UbXYfi b['U'g'X]Y': i »ghUdZYb'j cb'GU'_UbhUm'i bX
5bWUgWcWU'i bX'ZØ\fh'ni 'Y]bYf'F Y]\Y'j cb'_cbhfUgh]YfYbXYb'i bX
i bj Yfk YW'gY'VUfYb'C fhYb"

HfY__Yf'VYgi W'Yb'Y]bY'[i hYf\U'hYbY'UfW'Ac`c[]gWY'GhÀhhY'Ui g
XYf'NY]hj cf'XYb'Ď_Už'XYb''Ab[ghYb'?UbU''a 'Ď_U!F Y]W' i bX
Y]bYb'GhY]bVfi W'ž'Ui g'XYa 'XYf'GhY]b'ghUa a hž'XYf'ZØf'X]Y
C`UbhUmhUa Vc!HYa dY'j Yfk YbXYh'k i fXY"'I bhYfk Y[g'Yf\YVh'g]W
XYf'a Uf'_UbhY';]dZY''XYg'A ci bh'J Yfcb]WU'Ui Z) ", -' 'a 'f%- "' ' ('ZhĚ
ØVYf'ĎbYb'i bX'k]fZh'gY]bYb'GW'UhhYb'ØVYf'X]Y' i a 'Y[YbXYb
; 'YhgW'Yfž'HÀ'Yf'i bX'6Yf[XØfZYf"

K Y]hYfY'ĎZcfa Uh]cbYb.'UWh]cbdYfi hfY_g"Wca

(" `@UfYg!K UbXYfi b[`

8]ghUbn. ' +_a 8 Ui Yf. '(`HU[Y`#` `BÀW hYDfY]g. `` * - \$`I G8

`U`h1 `5`hYfbUh]j Y`K UbXYfi b[Yb`bUW`A UW`i `D]W`i `@UfYg
% 2 8 Ug`@UfYg!HU`f@]gU`GhY`nY`ž`G\i hhYfg hc W_Ł

⇒a `@UfYg!HU`ž`Ua `b`ŌfX`]W`Yb`F UbX`XYg`j]Y`VYgi W`hYb`<Y`][Yb
HU`gž`[Y`h`XUg`@YVYb`gc`k Y]hYf`k]Y`gY]h`d\`f\i bXYfhYb"
8 cfZVYk c`bYf`]b`hfUX]h]cbY`Yf`5bXYb`_Y]Xi b[` _Øa a Yfb`g]W`i a
@Ja Ug`i bX`5`dU`Ugž`dZUbnyb`?Ufhc ZY`b`j cb`<UbX`i bX`k YVYb
Ghc ZY`ž`k]Y`g]Y`Yg`gY]h`; YbYfUh]cbYb`hi b"G]Y`g]bX`a Ō[`]W`Yfk Y]gY
X]Y`Y]bn][Yb`UbXYfYb`A YbgW`Ybž`X]Y`G]Y`Ui ZXYf`[YgUa`hYb
K UbXYfi b[`gY`Yb"

8]YgY`5`hYfbUh]j Y`ni f`hfUX]h]cbY`YfYb`@UfYg!F ci hY`VY]b`U`hYh`Ua
Xf]hhYb`HU[`Y]bYb`6Ygi W`X`Yf`Y]» Yb`E i Y`Yb`j cb`@UfYgž`k c
K UbXYfYf`]\`fY`a ØXYb` ; `]YXYf`Ui gfi `Yb`_ØbbYbž`VYj cf`g]Y`bUW
C``UbhUmhUa Vc`k Y]hYfZU`fYb``8]Y`FY]gYfci hY`VY]b`U`hYh`nk Y]
BÀW hY`7Ua`d]b[`i bX`Y]bY`BUW`h]b`Y]bYa`6YX`/`6fYU`ZUgh"

K Y]hYfY`⇒Zcfa Uh]cbYb. `UW]cbdYfi hfY`_g"W`a

) " `< i W`i m`E cgec!K UbXYfi b[`

8]ghUbn. `%+_a 8 Ui Yf. " `HU[Y`#`&`BÀW hYDfY]g. `` * &\$`I G8

`U`h1 `5`hYfbUh]j Y`K UbXYfi b[Yb`bUW`A UW`i `D]W`i `<i W`i m
E cgec`% 2 8]Y`UfW`Àc`c`[]gW`Y`Gh`hY`<i W`i m`E cgec`fA UfW`
5`Y`a`ž`G\i hhYfg hc W_Ł

8]Y`<i W`i m`E cgec!K UbXYfi b[`]gh`X]Y`[Ya`À»][hghY`C dh]cb`Ui Z
XYf`@]ghY`i bX`VY]b`U`hYh`bi f`Y]bYb`[Ubnyb`K UbXYfhU[" `8Yf`YfghY
HU[`i a ZUggh`%(`_a`ž`a`]h`Y]bYf`DUi gY`Ua`E cf]W`W`U!GYY`ni a
A]hU[YggYbž`VYj cf`G]Y`Ua`BUW`a`]hU[`Ui ZY]bYa`_Y]bYb
5VgW`b]hh`XYg`i fgdfØb[`]W`Yb`⇒U!HfU]`g`k Y]hYfZU`fYb``5b
X]YgYa`5VYbX`WUa`dYb`K UbXYfYf`Ui ZXYb`HYffUggYb`XYf
UfW`Àc`c`[]gW`Yb`Gh`hY`<i W`i m`E cgec"

8YfZc[YbXY'A cf[Yb'VY]b\U'hYh'Y]bY'6Yg]W\h][i b['XYf'⊖_U!
Fi]bYb'a]h'Y]bYf'VYY]bXfi W_YbXYb'GUa a `i b['j cb'; YVĀi XYbž
XUfi bhYf'X]Y'(\$'a ``Ub[Y'?U``Ub_U'f[fc»Y'<U``YĚ"5b'X]YgYa 'HU[
'Y[Yb'K UbXYfYf'k Y]hUi g[Ya Øh]W\YfY'XfY]'?]`ca YhYf'ni fØW_ž
VYj cf'g]Y']b'C``UbhUmhUa Vc'XYb'Ni ['bUW\ '5[i Ug'7U']YbhYg
bY\ a Ybžk c'g]Y']b'Y]bYa ' < chY'`ØVYfbUW\hYb"

K Y]hYfY'⊖Zcfa Uh]cbYb. 'UWh]cbdYfi hfY_g"Wĉa

K]f'Ya dZY\`Yb'X]Y'Bi hmi b['j cb'6cc_Uk Umž'i a '6i g!ž: Ā\f!'i bX
Ni [h]W_Yhg']b'DYfi 'ni 'Z]bXYb"'6Y'YVhY'F ci hYb'bUW\ 'A UW\i 'D]W\i
Z]bXYb'G]Y'\]Yf"

'U'h1 2

@cbY`m'D`UbYh'DYfi ']gh'Y]b'i a ZUggYbXYf'F Y]gYZØ\ fYf'ZØf'DYfi ž'XYf
Y]bY'F Y]\Y'j cb'5_h]j]hĀhYb'i bX'F Y]gYn]Y'Yb'gck]Y'K UbXYfi b[Yb
bUW\ 'A UW\i 'D]W\i 'UVXYW_h"

@Y]hV]'X. 'gU]_c' dž'G\i hhYfghcW_

8YhU]`g

6Ygi W\Yb'G]Y'i bg'Ui Z. 'Y]bY!fY]gY"XY