



MMAN4953

F YgYUfVX 'H\Yg]g' 7

HYfa 'C bY' '# '&\$&%

GWcc`cZA YWUbjWU`UbX`A Ubi ZUW# f]b[`9b[]bYYf]b[`#` I BGK `9b[]bYYf]b[

7ci fgY`Cj Yfj]Yk

GHJZ7cbhJW`8YHJ`g

7cbj Ybcfg

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWUjcb	D\cbY
HfUWj`6UfVYf	hVUfVYf4 i bgk "YXi "Ui	D`YUgY`WcbhJW`Vm Ya Uj`cfj]U`HYUa g	>%+`(\$%5	

GWcc`7cbhJW`bZcfa Uhjcb

@cWUjcb

I BGK `A YWUbjWU`UbX`A Ubi ZUW`f]b[`9b[]bYYf]b[

5]bgk cft\`Vi]X]b[`>%+ž@Yj Y`%

5Vcj Y`7cZYY`cb`7Ua di g

<ci fg

-.\$\$-).\$\$da žA cbXUm=: f]XUm

f7`cgYX`cb`di V`jW`c`]XUmžGWcc`gWYXi `Y%aj Ybht \$bX`I b]j Yfg]mGZYX`cb`7Ua di g

K YV

[GWcc`cZA YWUbjWU`UbX`A Ubi ZUW`f\]b\[`9b\[\]bYYf\]b\[](#)

[9b\[\]bYYf\]b\[`Gh`XYbhGi ddcfhGYfj \]Wg](#)

[9b\[\]bYYf\]b\[`bXi gfr\]U`HfU\]b\]b\[](#)

[I BGK `Gh`Xm5VfcUX`UbX`9I WUbj \]Y`fZcf\]bVci bX`gh`XYbht](#)

[I BGK `: i h`fY`Gh`XYbht](#)

D\cbY

fZ`*%&Ł`-` ,) ;) \$\$`-`Bi WYi g`Gh`XYbh<i V

fZ`*%&Ł`-` ,) `+**%`-`9b[]bYYf]b[`bXi gfr]U`HfU]b]b[

fZ`*%&Ł`-` ,) `"-`%+-`-`I BGK `Gh`Xm5VfcUX`UbX`I BGK `9I WUbj]Y`fZcf]bVci bX`gh`XYbht

fZ`*%&Ł`-` ,) `(\$`-`+`-`\$ ZYY`cb`7Ua di g

9a U]

[9b\[\]bYYf\]b\[\]Gh XYbhGi ddcfhGYfj \]Wg](#) – W ffYbhghi XYbhYbei]f]Yg

- Y"["Ybfc`a Yblždfc[fYgg]cbžWUg\`fYei YgrgžWci fgY`]ggi Yg`cf`dfc[fUa !fY`UhYX`ei Yf]Yg

[9b\[\]bYYf\]b\[\]`bXi gff\]U`HfU\]b\]b\[\]`](#) – bXi gff]U`HfU]b]b[]`ei Ygh]cbg

[I BGK`Gh Xm5VfcUX`](#) – gh XmiUVfcUX`gh XYbhYbei]f]Yg`fZcf`]bVci bX`gh XYbhgk

[I BGK`9I WUUb\]Y`](#) – gh XYbhYI WUUb]Y`Ybei]f]Yg`fZcf`]bVci bX`gh XYbhgk

[I BGK`i h fY`Gh XYbhg](#) – dchYbh]U`gh XYbhYbei]f]Yg

- Y"["UXa]gg]cbgžZYgždfc[fUa gžWYX]hffUbgZYf

[GWcc`C Z\]W`](#) – GWcc`[YbYfU`cZ]W`UXa]b]ghfU]cb`Ybei]f]Yg

- B 6. hY`fY`Yj UbhYUa g`]ghYX`Uvcj Y`a i ghVY`WcbUWYX` - gh XYbhYbei]f]Yg

H\Y`Wt i fgY`jg`hUi [\hUg`Ub`]bX]j]Xi U`fYgYUfW`dfc`YWz`hc`XYj Y`cd`U`Yj Y`cZfYgYUfW`g_]`g`UbX
Ui`h`bca`m`

5ggYgga Ybh

H\Y ZbU [fUXY ZcfH\Yg]g'a UXY i d Zca 'H\Yg]g'5 f%) i lZ'H\Yg]g'6 f%\$i lZ'H\Yg]g'7 fYdcfhf' \$i lZ'H\Yg]g'7 dfYgYbUhc'b'f%\$i l'UbX'U'dUfh]W]dUhc'b'a Uf_ Zca 'mci f'gi dYfj]gcf'f) i l'

5ggYgga YbhHUg_g

5ggYgga YbhHUg_g	K Y][\h	8i Y'8UH	Gh XYbh@YUfb]b[Ci hWca Yg'5ggYggYX
H\Yg]g'dfc'YWhUbX'fYdcfh	* \$i	: f]XUm) da 'K YY_ '%\$	%ž&ž' ž(ž)
H\Yg]g'dfYgYbUhc'b'	%\$i	K YXbYgXUmK YY_ '%%fH67Ł	

5ggYgga Ybh8YHU]`g

5ggYgga Ybh% 'H\Yg]g'dfc'YWhUbX'fYdcfh

8YHU]`g.

H%

Dfc'YWh'fYdcfhf[i]XY'UbX'a Uf_]b['fi Vf]WUj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ"

H&.

Dfc'YWhi dXUH'fYdcfhf[i]XY'UbX'a Uf_]b['fi Vf]WUj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ"

H' .

:]bU'dfc'YWh'fYdcfhf[i]XY'UbX'a Uf_]b['fi Vf]WUj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ"

DfYgYbUhc'b'f]bZca Uhc'b'k]`VY'Uj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ"

.

5ggYgga Ybh& 'H\Yg]g'dfYgYbUhc'b

8YHU]`g.

H%

DfYgYbHhcb`f]bZcfa Uhc`k j``VY`Uj U]UV`Y`cb`h\Y`Wti fgY`A G`HYUa g`g]hYk`

F Ygci fWg

F YWca a YbXYX'F Ygci fWg

BchUj U]UV'Y

7ci fgY'9j U'i Uh]cb'UbX'8Yj Y'cda Ybh

@UVcfUhcfmK cf_g\cd' bZcfa Uh]cb

7CJ 8!%- BCH9. 'H\Y'GWcc''UVcfUhcfmZUW]h]Yg'UFY'cdYb'hc'fYgYUFW' h\Yg]g'gh XYbhg/\ck Yj Yfz'UWWgg
]g''ja]h'X''Hc'Wca d'mk]h' [cj Yfba Ybh]gcW]U'X]ghUbW]b['fYei]fYa YbhgZ'Y"["Z('gei UFY'a Yh'fg'dYf
dYfgcbz'YUWX'fcca '\Ug'U'a Ul]a i a 'WUdUW]m''ja]h'k \]W'k]''VY'a cb]hc'fYX'Vmih'Y'gi dYfj]g]b[
dfcZ'gg]cbU''ghUZZ'D'YUgY'WXYW'k]h' h\Y''UVcfUhc'fmcZ]W'f']b'mci f'UFYU'VY'Zc'fY'UWWgg]b['UbX'cVgYfj Y'h\Y
'ja]h'UbX'U''c'h\Y'f'gUZ'hmidfYW]i h]cbg"

Mci 'a i ghgYY_[i]XUbW'UbX'Uddfcj U'Zca 'mci f'H\Yg]g'gi dYfj]gcf'df]cf'hc'Ubmi'UVcfUhc'fmUW]j]h]Yg"

H\Y''UVcfUhc'f]Yg'UFY'h\Y'fYgdcbg]V']]m'cZ'h\Y'ghUZZ]b]W'Uf[Y'Z'UbX'mci 'a i ghcdYfU'h'k]h']b'h\Y'UWW'dh'X
dfUW]W'g'cZ'h\Y''UVcfUhc'fm'VcbW'fbYX''@UVcfUhc'fm]ghUZZ'UFY'\]['\mg_]''YX'UbX'\Y'dZ]/hU_Y'Z ''UXj UbhU[Y
cZ'h\Y]f'YI dYfj]YbW' /\ck Yj Yfz'mci 'g\ci 'X'bh'YI dYW'h'UVcfUhc'fm]ghUZZ'hc'hU_Y'fYgdcbg]V']]m'Zc'f'mci f'h\Yg]g
cf'W]ffmici hk cf_'Zc'f'mci "

Z'mci f'dfc'YWh]bj c] Yg''UVcfUhc'fmk cf_Z'Vcb'UW'h'h\Y'cZ]W'f]]b]W'Uf[Y'fC => E'cZ'h\Y''UVcfUhc'fm]b'k \]W' mci
k]''VY'k cf_]b['Ug'gccb'Ug'dcgg]V'Y'hc'X]gW'gg'mci f'fYei]fYa Ybhg''H\Ymk]''gggi Y'mci 'k]h' U'@UVcfUhc'fm
5W'W'gg'5ddfcj U'f'5E'Zc'fa 'k \]W' mci 'a i ghWca d'Y'h'UbX'fY'h'fb'hc'h\Y'C => "

[: cf'a cfY' \]bZcfa Uh\]cb'UVci hUWWgg\]b\['h\Y'GWcc' 'g'UVcfUhc'f\]YgZ'd'YUgY'j \]g\]h'h\Y'GWcc'
k'YVg\]h' '\h'fdg.##k k k "Yb\[\]bYf\]b\["i bkg "YXi "Ui #a YWU\]b\]W\]!Yb\[\]bYf\]b\[#Ygci fWg#UV!UWWgg!\ck !hc!
Zcfa g](#)

[K cf_g\cd](#)

Mci 'a i ghgYY_[i]XUbW'UbX'Uddfcj U'Zca 'mci f'H\Yg]g'gi dYfj]gcf'df]cf'hc'fYei Ygh]b['Ubm'k cf_g\cd
UW]j]h]Yg"

5`gh XYbhUWj]hYg'fYei]f]b['a Ubi ZJWñ fY']b'hY'A YWUbjWU`UbX'A Ubi ZJWñ f]b['9b[]bYYf]b['fA A 9Ł
k cf_g\cd'g\ci 'X'VY'X]gW ggYX'k]h'hY'k cf_g\cd'dYfgcbbY`UhihY']bWd]cb'cZ'hY'k cf_"H\Y'k cf_g\cd
dYfgcbbY`a i gh\Uj Y'hY'cddcfri b]mhc'UXj]gY'UbX']bZi YbW'hY'XYg][b'hc'\Y'd'a]b]a]gY'UggYa V'mž
a Ubi ZJWñ fY'cf'Z bW]cbU`dfcV'Ya g"

H\Y'k cf_g\cd']g'i gi U`m]b'j Yfm\][\ 'XYa UbX" :Zmci 'fYei]fY'hY'k cf_g\cd'hc'a Ubi ZJWñ fY'Yei]da Ybh
YggYbh]U`hc'mci f'hYg]gž'hYb'a U_Y'gi fY'hUhmci 'X]gW gg'mci f'fYei]fYa Ybhg'Ug'YUfmUg'dcgg]V'Y'k]h'hY
K cf_g\cd#@UVcfUhcfmA UbU[Yf"Mc']g\ci 'X'dfcj]XY'Yb[]bYYf]b['XfUk]b[g'k \]W'UfY'Z]fghUddfcj YX'Vm
hY'UVcfUhcfmC =7"Mc']g\ci 'X'a U_Y'Yj YfmYZc'fhc'a]b]a]gY'hY'K cf_g\cd'cUX'Vma cX]h]b['YI]gh]b[
Yei]da YbhfU'hYf'hU'Vi]X]b['Zca 'bYk žUbX'Vm_YYd]b['mci f'XYg][bg'g]a d'Y

UggYgga YbhdYfZcfa UbWžmci 'UfY'Y'[]V'Y'hc'Udd'mZcf'GdYWU'7 cbg]XYfUhc'b'df]cf'hc'gi Va]h]b['Ub
UggYgga Ybhcf'g]h]b['Ub'YI Ua "

I BGK 'bck '\Ug'U': [\]h\]c'G\]h#Gi Va \]h\]f'Yžk \\]](#)W'a YUbg'hUh]Zmci 'UfhYa dhUb'YI Ua 'cf'gi Va]hU'd]YW'cZ
UggYgga Ybhž'mci 'UfY'XYWUf]b['mci fgY'Z]hYbci [\ 'hc'Xc'gc'UbX'WUbbch'Uhf'Udd'mZcf'GdYWU'
7 cbg]XYfUhc'b"

: cf'XYfU]g'cZUdd'm]b['Zcf'GdYWU'7 cbg]XYfUhc'b'UbX'WcbX]h]cbg'Zcf'hY'Uk UfX'cZgi dd'Ya YbhUfm
UggYgga Ybhž'd'YUgY'gYY'hY'jbZcfa Uhc]b'cb'I BGK 'g' [GdYWU'7 cbg\]XYfUhc'b'dU\]Y"](#)

D'YUgY'bc'hY'hUhighi XYbhg'k]'bchVY'fYei]fYX'hc'dfcj]XY'UbmXcW a YbhUfmYj]XYbW'hc
gi ddcfhiUVgYbW'g'Zca 'UbmWUggYg'a]ggYX'VYWU]i gY'cZ7CJ -8!%- 'di V']W\YU'h'a YUgi fYg'gi W'Ug
]gc'Uh]cb" I BGK 'k]'bchVY']bg]gh]b['cb'a YX]W'Wf]h]Z]W]hYg'Zca 'UbmcbY'XYYa YX'hc'VY'U'dcg]h]Y'WUgYž
cf'k \Yb'hYm\Uj Y'fYVčj YfYX" 'Gi W'Wf]h]Z]W]hYg'UfY'X]Z]W'h'hc'cVh]b'UbX'di hUb'i bbYW'ggUfmgfU]b'cb
gh XYbhg'UbX'a YX]W'ghUZZ'

5dd']W]h]cbg'Zcf'gdYWU'Wcbg]XYfUhc'b'k]'VY'fYei]fYX'Zcf'UggYgga YbhUbX'dUfh]W]dUhc'b'UVgYbW'g'—
Vi hbc'XcW a YbhUfmYj]XYbW'Zcf'7CJ -8'-%-]'bYgg'cf']gc'Uh]cb'k]'VY'fYei]fYX"

5 WUXYa]W< cbYgmiUbX`D`U[]Uf]ga

I BGK `Ug`Ub`cb[c]b[`Wca a]ha Ybhlc`ZcghYf]b[`U`W`hi`fY`cZ`YUfb]b[`]bZcfa YX`VmiUWUXYa]W]bhY[f]m`5`
I BGK `gh`XYbthg`Uj`Y`U`fYgdcbg]V`]mhc`UX`YfY`hc`h`g`df]bW]d`Y`cZUWUXYa]W]bhY[f]m`D`U[]Uf]ga
i bXYfa]bYg`UWUXYa]W]bhY[f]m]UbX`]g`bchlc`YfUHYX`Uhl`BGK`"B`SY[Sde_`SfG@E|`[e VWX`W`Se ge[`Y`
fZWi`ad/e`ad[VWSe`aXafZW`S`V`bSee[`Y`fZW_`aXSe`kagdai`ž`

D`U[]Uf]ga`]g`U`mdY`cZ]bhY`YW`i`U`h`Y`Z`h`h`W]b`hU`_Y`a`UbmiZcfa`gž`Zca`XY`]VYfUHY`WXYU]b[`hc`UWUXYbH`m`
W`dm]b[`Zca`U`gci`fW`k`]h`ci`hUW`bck`YX[`Ya`Ybh`I`BGK` `Ug`dfcXi`W`X`U`k`YVg]h`k`]h`U`k`YU`h`cZ`
fYgci`fW`g`hc`gi`ddcfhgh`XYbthg`hc`i`bXYfgtUbX`UbX`Uj`c]X`d`U[]Uf]ga`ž`]g]h`[gh`XYbth`i`bgk`"YXi`"Ui`#d`U\[\]Uf\]ga`"](#)
H`Y`@YUfb]b[`7`YbhfY`Ugg]gh`gh`XYbthg`k`]h`i`bXYfgtUbX]b[`UWUXYa]W]bhY[f]m]UbX`ck`bchlc`d`U[]Uf]gY`
H`Y`miU`gc`c`X`k`cf_g`cdg`UbX`W]b`Y`d`gh`XYbthg`cbY!cb!cbY"

Mci`UfY`U`gc`fYa`]bXYX`h`UhWfYZ`h`ja`Y`a`UbU[`Ya`Ybh]g`Ub]a`dcff]bhdUfhcZgh`XmiUbX`cbY`cZ`h`Y`

5 WUXYa]W=Zcfa Uh]cb

7 fYX]hdc]bHg

7 ci fgY`WYX]h]g`WU`W`UH`X`]b`I` b]Hg!C Z 7 fYX]hfl C 7 E`H\Y`bcfa U`k cf`cUX`YI dYWWUh]cb`Zc`f`cbY`I` C 7]g`Uddfcl`Ja`UH`m`&`)\`ci fg`dYf`h`fa`"H\]g`]bW`i`XYg`WUgg`W`b`h`U`W`h`l`ci fg`z`df]j`UH`g`h`Xm`z`c`h`Yf`Y`U`fb]b[U`W`h`j`]h`Y`g`z`d`f`Y`d`U`f`U`h]cb`U`b`X`h`a`Y`g`d`Y`b`h`c`b`U`"U`gg`Y`g`g`U`V`Y`k`cf`_"

A`c`g`h`W`i`f`g`Y`k`c`f`_`W`i`f`g`Y`g`U`h`I` B`G`K` `U`f`Y`*`I` C`7` `U`b`X`]`b`j`c`j`Y` `U`b`Y`g`h`a` U`h`X`%`\$` \`ci fg`h`c`W`e`a`d`Y`h`z`Z`c`f`V`c`h` f`Y`[`i` `U`f`U`b`X`]`b`h`y`b`g`j`Y`h`y`fa`g`"9`U`W`X` `W`i`f`g`Y`]`b`W`i`X`Y`g`U`d`f`Y`g`W`]`V`Y`X`b`i`a`V`Y`f`c`Z`l`ci fg`d`Y`f`k`Y`Y`_`f`h`#`E`c`Z` g`W`X`Y`X`i` `Y`X`Z`J`W`!`h`c`!`Z`J`W` `U`b`X`#`c`f`c`b`]`b`Y` `W`c`b`h`U`W`h` `5`b`m`U`X`X`]`h`c`b`U`h`a`Y` `V`Y`m`c`b`X`h`Y`d`f`Y`g`W`]`V`Y`X` `W`c`b`h`U`W`h`l`ci fg` g`l`ci` `X` `V`Y`g`d`Y`b`h]b`a` U`_]b[`gi` f`Y`h`U`h`m`c`i` `i` b`X`Y`f`g`h`U`b`X`h`Y` `Y`W`h`i` f`Y`a` U`h`Y`f`]U`z`W`e`a`d`Y`h]b[`h`Y`g`Y`h` U`gg][`ba`Y`b`h`g`z`Z`f`h`Y`f`f`Y`U`X]b[`z`U`b`X`f`Y`j`]g]b[`Z`c`f`U`b`m`Y`I`U`a`]b`U`h]c`b`g`"

C b!WJa di g`WUgg`UH`Y`b`X`U`b`W`Y

Di V`]WX]ghU`b`W]b[`W`c`b`X]h]c`b`g`a`i`gh`V`Y`Z`c`k`Y`X`Z`c`f`U`"Z`J`W`!`h`c`!`Z`J`W` `W`U`g`g`Y`g`"H`c` `Y`b`g`i` f`Y`h`]g`z`c`b`m`g`h`i`X`Y`b`h`g`

⇒ dcfhUbh@]b_g

- [A ccX`Y](#)
- [@UV`5WV`gg](#)
- [<YU`h`UbX`GUZYhm](#)
- [7ca`di`hb\[`: UW`hYg](#)
- [Gh`XYbhF`Ygci`fV`g](#)
- [7ci`fgY`Ci`h\]bYg](#)
- [9b\[\]bYYf\]b\[`Gh`XYbhGi`ddcfhGYfj`_W`g:7YbhfY](#)
- [A`U`YfgdUV`](#)
- [I`BGK`H\]a`YhUV`Y](#)
- [I`BGK`<`UbXVcc`](#)
- [I`BGK`A`YWX`Ub\]WV`UbX`A`Ubi`ZUV`f\]b\[`9b\[\]bYYf\]b\[](#)
- [9ei`\]hUV`Y`@YUfb\]b\[`GYfj`_W`g](#)

⇒ U[Y`7`fYX]h

GmbYf[]Yg`]b`Gci`bX`&\$%*`

7F ⇒ CG

7F ⇒ CG`Dfcj`]XYf`7`cXY.`\$\$\$-`,`;

5W_bck`YX[Ya`YbhcZ`7`ci`bhf`m

K`Y`UW_bck`YX[Y`h`Y`6YXY[U`d`Ycd`Y`k` \c`UFY`h`Y`fUX]h]cbU`W`ghcX]Ubg`c`Z`h`Y`UbXg`cb`k` \]W`I`BGK`
?`Ybg]b[hc`b`W]a`di`g`]g`c`W]h`Y`X`"

5ddYbX]l . '9b[]bYYfg'5i ghfU`U'f95Ł'DfcZYgg]cbU`'9b[]bYYf'7ca dYhYbWm
 GHUbXUfX

Dfc[fUa 'hYbXYX'@YUfb]b['Ci hWta Yg	
? bck `YX[Y'UbX'g_]`VUgY	
D9%"%7 ca dfY\Ybg]j YžhYcfmVUgYX'i bXYfghUbX]b['cZhY'i bXYfd]bb]b['bUh fU`UbX d\mg]WU`gWYbWg'UbX'hY'Yb[]bYYf]b['Z bXUa YbHU'g'Udd`]WUV'Y'hc'hY'Yb[]bYYf]b['X]gWd`]bY	
D9%"&'7 cbWdh U`i bXYfghUbX]b['cZhY'a UhYa Uh]Wgžbi a Yf]WU`UbU'mg]gžghUhgh]WgžUbX Wta di hYf'UbX']bZcfa Uhcb'gWYbWg'k \]W' i bXYfd]b'hY'Yb[]bYYf]b['X]gWd`]bY	
D9%" " 'h!XYdh'i bXYfghUbX]b['cZgdYWU`]ghVcX]Yg'cZ_bck `YX[Y'k]h]b'hY'Yb[]bYYf]b[X]gWd`]bY	
D9%"('8]gWfba YbhcZ_bck `YX[Y'XYj Y`cda YbhUbX'fYgYUfW'X]fYW]cbg'k]h]b'hY Yb[]bYYf]b['X]gWd`]bY	
D9%"') ? bck `YX[Y'cZYb[]bYYf]b['XYg][b'dfUW]W'UbX'WcbhYi h U`ZUWc'fg]a dUW]b['hY Yb[]bYYf]b['X]gWd`]bY	
D9%"* 'l bXYfghUbX]b['cZhY'gWc'dYždf]bWd`Ygžbcfa gžUW]ci bhUV]`]h]Yg'UbX'Vci bXg'cZ gi ghU]bUV'Y'Yb[]bYYf]b['dfUW]W']b'hY'gdYW]ZWX]gWd`]bY	
9b[]bYYf]b['Udd`]WU]hcb'UV`]m	
D9%"%5dd`]WU]hcb'cZYghUV`]g\YX'Yb[]bYYf]b['a YhlcXg'hc'Wta d'Yl'Yb[]bYYf]b['dfcV'Ya gc`]b[
D9%"&'&: 'i YbhUdd`]WU]hcb'cZYb[]bYYf]b['hYW]b]ei Ygžhc'g'UbX'fYgci fW'g	
D9%" " '5dd`]WU]hcb'cZgmgHya Uh]WYb[]bYYf]b['gmbhYg]g'UbX'XYg][b'dfcW'ggYg	