

MMAN9002

A UghYf'cZ9b[]bYYf]b['GW]YbWY'DfcYWh6

HYfa 'H\fYY''##'&\$&\$

7ci fgY[·]Cj Yfj]Yk

GhJZZ 7 cbhJWh 8 YhJ] g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cWUhjcb	D\cbY
Fcb [.] 7\Ub		#i]g'fYWca a YbXYX mci 'Ya U]'h\Y Wci fgY'Wcbj Ybcf'hc a U_Y'U'gdYWJZJW Uddc]bha Ybh]Zmci bYYX'hc'X]gW gg'Ubm]a dcffUbh]ggi Yg"	5]bgk cfh\ 6i]`X]b[-',) %)')

GWXcc`7cbHJWhi±bZcfa Uhjcb

@cWUbjtcb %

 $f\tilde{Z}^{*}\%\&E^{-}\text{'}\text{'},\text{)}\text{'}(\$-+\text{'}\text{-}\text{'}GVWcc``C}Z\!J\!WHH$

7ci fgY 8YHJ] g

7 fYX]hDc]bhg**

Gi a a UfmcZh\Y 7ci fgY

D; '7 ci fgY'K cf_'Dfc^YWi]g'i gi U``mWta d`YhYX']b'ik c'WtbgYW h]j Y'hYfa g'Xi f]b['h\Y``UghUWUXYa]WmYUf'' Ghi XYbhg'k]```k cf_']b'hYUa g'hc'WtbXi Wi'U'fYgYUfW.'VUgYX'dfc^YWi'H\Y'dfc^YWi'WtbHJ]bg'U'`Uf[Y'Ua ci bhcZ cf][]bU'`fYgYUfW.'UbX#cf'bcj Y``XYg][b'k cf_'cf'UbU'mg]g''' \delta']g'bchh\Y'fYgdcbg]V]`]mmcZh\Y'gi dYfj]gcf'hc'hY'``h\Y'ghi XYbh'hYUa 'k \Uh'hc'Xcž'bcf'g\ci `X']h'VY'Uggi a YX'h\Uh'h\Y'gi dYfj]gcf']g'Ub'YI dYfh']b'U```UfYUg'cZ Yb[]bYYf]b["''H\YmUfY'h\YfY'hc'cZYf'[i]XUbW'UbX'UXj]Wfz'Ug'UfY'``UVcfUhcfmgHJZz'k cf_g\cd'ghJZz'UbX

H\YfY`]gʻbcʻZcfa U``hYUW\]b[`Vi hih\Y`ghi XYbhg``YUfbʻZfca `Vch\`]bhYfbU``UbX`YI hYfbU``gci fWYg"``H\Y gi dYfj]gcfž'ch\Yf`UWUXYa]WgʻUbX``UVcfUhcfm*k cf_g\cd`ghUZZUfY`h\Y`]bhYfbU``gci fWYgžk \YfYUgʻh\Y`@]VfUfmž]bhYfbYhUbX`]bXi ghfma YbhcfgʻUfY`h\Y`YI hYfbU``gci fWYg"`H\YfY`UfY`bc`gYh`YWhi fYgʻZcf`h\]gʻWci fgYž'Vi hU bi a VYfʻcZk cf_g\cdg`k]```VY`dfcj]XYX`hc`Ugg]ghighi XYbhgʻhc`Wca d`YhY`h\Y]f`h\Yg]gʻhc`U`\][\`ghUbXUfX"`5`` k cf_g\cdg`k]``VY`fYWcfXYX`UbX`a UXY`Uj U]`UV`Y`hc`ghi XYbhgʻcb`]bY"f"

5ggYgga Ybh

5ggYgga YbhHUg_g

5ggYgga Ybh'hJg_	K Y][\h	8i Y'8UHY	Gh XYbh@YUfb]b[Ci hWca Yg 5ggYggYX
Dfc YWiDfYgYbHJhjcb	&\$ı	6cc_'U'f]a Y'k]h\'Fcb VYfkYYb'KYY_'%\$'fc'%'fc Wcad'YfY'f\Y'dfYgYbfUf]cb	%ž'&ž' ž'(ž')
:]bU`F Ydcfh	, \$1	&' #%#&\$&\$`%&.\$\$`5A	%ž'&ž'' ž'(ž')

5ggYgga Ybh'8YHJ]`g

5ggYgga Ybh% Dfc YWhDfYgYbhUh]cb

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\. '&\$'a]bi hYg

8YHJ]`g.

Gh XYbhhYUa g`\Uj Y`hc`dfYgYbhfUg`U`[fci dŁ'hc`ci h]bY`h\Y]f`Z|bX]b[g"

5ggYgga Ybh'& :]bU`FYdcfh

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\."\$dU[YgŽZcbh/YbXaUhhYf

8YHJ]`g.

FYgci fWfg

DfYgWf]VYX F Ygci fWYg

Bch'Uj U]`UV`Y

FYWca a YbXYX FYgci fWYg

7 cbh/bhcb h\Y 'Wci fgY 'A ccX`Y 'dU[Y 'k]```VY 'i dXUh/X`cZh/b`k]h\ 'h]dgžX]gW gg]cbg 'UbX`fYgci fW/gžgc 'mci UfY`ghfcb[`mUXj]gYX`hc`a U_Y`gi fY`mci 'W\YW_'Zcf'U```i dXUh/y"

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

± 'h\]g'Wci fgYžfYWYbh']a dfcj Ya Ybhg'fYgi `h]b['Zfca 'ghi XYbhZYYXVUW_']bWi XY'\Uj]b['ga U``Yf'hYUa 'g]nYg hc']a dfcj Y'ghi XYbhg!a Ybhcf'Yb[U[Ya Ybh'

@UVcfUhcfmK cf_g\cd \DZcfa Uh]cb

B#5

 $\label{thm:condition} $$ \ensuremath{\mathsf{U}} = \ensuremath{\mathsf{U}} =$

I BGK 'bck '\Ug'U': <u>|hhc'G|h#Gi Va |hfi 'Y</u>ž'k \]W\ 'a YUbg't\\Uh']Zmci 'UhhYa dh'Ub'YI Ua 'cf'gi Va]h'U'd]YW\'cZ UggYgga Ybhž'mci 'UfY'XYWUf]b['mci fgY`ZZ]hYbci [\'hc'Xc'gc'UbX'WUbbch`UhYf'Udd`m'Zcf'GdYW]U` 7 cbg]XYfUh]cb"

: cf`XYhJ]`g`cZUdd`m]b['Zcf`GdYVJU``7 cbg]XYfUh]cb`UbX`WcbX]h]cbg'Zcf`h\Y`Uk UfX`cZgi dd`Ya YbhUfm UggYgga Ybhž'd`YUgY`gYY`h\Y`]bZcfa Uh]cb`cb`l BGK 'g`<u>GdYVJU``7 cbg]XYfUh]cb`dU[Y</u>"

D`YUgY'bchY'h\Uhgh XYbhg'k]``bchVY'fYei]fYX'hc'dfcj]XY'UbmXcW a YbhUfmYj]XYbW'hc gi ddcfhUVgYbWg'Zfca 'UbmWUggYg'a]ggYX'VYWUi gY'cZ'7CJ=8!% 'di V`]W\YU'h\ 'a YUgi fYg'gi W\'Ug

5 WUXYa]W±bZcfa Uh]cb

7 fYX]hdc]bhg

7 ci fgY'WfYX]hi]g'WU'W'`UhYX']b'I b]hg!C Zi 7 fYX]hifl C 7 L"'H\Y'bcfa U``k cf_`cUX'YI dYWfUh]cb'Zcf'cbY'I C 7]g'UddfcI]a UhY`m'&) '\ci fg'dYf'hYfa "'H\]g']bWi XYg'WUgg'WcbhUWh'\ci fgž'df]j UhY'ghi Xmž'ch\Yf'`YUfb]b[UWfj]]h]Ygž'dfYdUfUh]cb'UbX'h]a Y'gdYbh'cb'U``'UggYggUV`Y'k cf_"

A cgh'Wci fgYk cf_'Wci fgYg'Uhl BGK 'UfY'*'I C 7 'UbX']bj c`j Y'Ub'Ygh]a UhYX'%) \$`\ci fg'hc'Wca d`YhY'''9UW\ Wci fgY']bWi XYg'U'dfYgWf]VYX'bi a VYf'cZ\ci fg'dYf'k YY_'fl\#\ Ł'cZgW\YXi `YX'ZJ\WY!hc!ZJ\W''UbX#cf'cb`]bY WcbhJ\W''5bmUXX]h]cbU`'hja Y'VYmcbX'h\Y'dfYg\fy]VYX'WcbhJ\Wi\ci fg'g\ci `X'VY'gdYbh]b'a U_]b['gi fY'h\Uhmci ii bXYfghJbX'h\Y''YWfi fY'a UhYf]U'ž'Wca d'Yh]b['h\Y'gYhUgg][ba Ybhgž'Z fh\Yf'fYUX]b['ž'UbX'fYj]g]b['Zcf UbmYl Ua]bUh]cbg"

Cb!WUa di g WUgg UHYbXUbW

Di V`]WX]gHJbW]b[`WcbX]h]cbg'a i gh'VY`Zc``ck YX`Zcf'U```H' `ZJ\WY!hc!ZJ\WY`WUggYg":Hc`Ybgi fY`h\]gž'cb`m ghi XYbhg`Ybfc``YX`]b`h\cgY`WUggYg'k]```VY`U``ck YX`]b`h\Y`fcca "`7`Ugg`fcghYfg`k]```VY`UhtUW\YX`hc WcffYgdcbX]b[`fcca g`UbX`W]fW``UhYX`Ua cb[``UV`XYa cbghfUhcfg"'Bc'cj Yf!Ybfc`a Ybh]g`U``ck YX`]b`ZJ\WY!hc! ZJ\WY`WUgg"'Ghi XYbhg`Ybfc``YX`]b`cb`]bY`WUggYg`WJb`gk Ud`h\Y]f`Ybfc`a YbhZca 'cb`]bY`hc'ch\Yf`UXX]h]cbU`ž' Vi h``]a]hYXž'bi a VYf`cZcb!WJa di g`WUggYg`VmGi bXUmž'K YY_`%"D`YUgY`fYZYf`hc`mci f`Wci fgYfg;A]\WcgcZh HYUa g`UbX`A ccX`Y`g]hYg`Zcf'a cfY`]bZcfa Uh]cb`UVci h`WUgg`UhhYbXUbWY`Zcf']b!dYfgcb`UbX`cb`]bY`WUgg gY\W]cbg#J\W]j]h]Yg"

 $\label{thmuh} $$ Mci f'Yu'h' `UbX'h'Y'YU'h' `cZh'cgY']b'mci f'WUgg']g'Wf]hJWU'`m]a dcfhUbh''Mci 'a i ghghUmUh'\ca Y']Zmci 'UfY g]W_'cf'\Uj Y'VYYb'UXj]gYX'hc'gY'Z]gc`UhY'VmBGK_'\YU'h' `cf'[cj Yfba Ybh'Ui h'\cf]hJYg'''7 i ffYbh'U'Yfhg'UbX'U `]gh'cZ\chgdchg'WUb'VY'Zci bX'$

a dcfhUbh'@]b_g