

BIOM9020

A UghYfg'Dfc YWwfk U`ZH]a YŁ

HYfa " z&\$&&



7ci fgY'8YHJ]`g

I b]hg'icZ7 fYX]h*`

Gi a a UfmicZ`h\Y'7ci fgY

H\Y'V]ca YX]WU`Yb[]bYYf]b[`A UghYfg'Dfc'YWhU`ck g`Wci fgYk cf_`A UghYfg'gh XYbth'hc `YI dYf]YbWV`fYgYUfWk
fU]b]b[`Y]hYf'k]h]b`hY'GWXcc`cf'k]h`Wc`UVcfU]b[`]bgh]h]hcbg'gi Wk`Ug`cgd]U]g`UbX'7G=F C`"Dfc'YWg
UfY'gY'YWYX`VmihY'gh XYbh]b`Wcbgi`hU]cb'k]h`U'gi dYf]]gcf`WcbXi W]b[`fYgYUfWk]b`Ub`UfYU`cZ]bhfYghhc
hY'gh XYbh`Z`hY'fYgYUfWk`hcd]WgY'YWYX`]g`YI hfU'hc`hY'GWXcc`# b]j Yfg]mz`hY'gh XYbha i ghUffUb[Y
Zcf`Ub`]bhfU'` ; G6a 9`Wc!gi dYf]]gcf#UggYggcf"

6-€A - \$&\$`f'`I C 7 E`]g`hY`Z]fgh`U`ZcZ`hY`%&`I C 7`fYgYUfWk`dfc`YW`6-€A - \$&%`f'`I C 7 E`]g`hY`gYWcbX
`U`Z`9bfc`a`Ybh]b`hY`gY`Wci fgYg`U`ck g`U`gh XYbh`i bXYfU`Y`hY`Yei]j`U`YbhcZ6-€A -- %(`A UghYfg
Dfc'YW`h`c`Yf`k`c`hY`fa`g`"Mci`a`i ghX]gW`gg`hY`fYgYUfWk`dfc`YW`h`k]h`mci`f`gi dYf]]gcf`UbX`[`Yh]Yf
Uddfcj`U`df]cf`hc`Ybfc`]b[`]b`h`g`6-€A - \$&\$`"GU]gZUWc`fmdYfZcfa`UbW`]b`6-€A - \$&\$`k`]"`YbUV`Y`mci`hc
hY`b`Wc`a`d`YH`6-€A - \$&%`"7`UbX]XUH`g`a`i ghVcb`hU`Wh`hY`GWXcc`Zcf`WcbgYbh`hc`Ybfc`"6-€A - \$&\$`]g`cb`m
Uj`U]UV`Y`hc`\[`U`Wk]Y`]b[`gh XYbth`k]h`df]cf`k`f]hY`b`gW`cc`Uddfcj`U`"

H\Y'6-€A - \$&\$`dfc`YW`h`g`WcbXi WYX`cj Yf`%`hY`fa`UbX`Wcbf]Vi`hY`g`U`ZcZU`gh XYbth`bcfa`U`Z`"!h`a`Y`c`UX`
Dfc'YW`h`k`cf`_`i`gi`U`m]bW`XYg`U`fY`j`Yk`c`Z`h`Y`"hY`fU`h`fY`z`dfY`]a`]bUfmYI`dYf]a`Ybthz`]XYbh]Z]W]h`cb`UbX
`YUfb]b[`cZbYk`fYgYUfWk`g_]`g`UbX`dfc`YW`h`d`Ubb]b[`Zcf`gi VgYei`Ybh`fYgYUfWk`Ug`dUfhcZ6-€A - \$&%`
DYfZcfa`UbW`]b`h`g`Wci fgY`]g[`fUXYX`"

7ci fgY'5]a g

H\]g`]g`hY`Wci fgY`Zcf`hY`dcgh`fUXi`UH`a`UghYfg`fYgYUfWk`dfc`YW`g`hc`VY`i`bXYfU`Yb`cj`Yf`&`hY`fa`g`
6-€A - \$&\$`d`i`g`6-€ - \$&%`Wcbg]gh`cZU`hcU`cZ`%&`I C 7`"U`ck`g`Wci fgYk`cf`_`gh`XYbth`hc`YI`dYf]YbWV`
fYgYUfWk`fU]b]b[`Y]hYf'k]h]b`hY'GWXcc`cf'k]h`Wc`UVcfU]b[`]bgh]h]hcbg`"7`UbX]XUH`g`g`l`ci`X`Wc`a`d`YH`
hY`h`Y`g]g`dfcdcgU`Zcfa`f`g`Y`Y` ; G6a 9`k`YVg]hY`E]b`Wcbgi`hU]cb'k]h`U` ; G6a 9`gi dYf]]gcf`k`c`k`]"`UW`h`Ug
hY`f`gi dYf]]gcf`"5`gYWcbX`Wc!gi dYf]]gcf#UggYggcf`a`i ghU`gc`VY`bca`]bUH`Y`X`cb`h`g`Udd`]W]h`cb`"5`"h`Y`g]g
dfcdcgU`Zcfa`g`a`i ghVY`Uddfcj`YX`VmihY`<`YUX`cZGWXcc`"

7ci fgY`@YUfb]b[`Ci hWc`a Yg

5ZYf`gi WYV`ggZ`mWc`a`d`Yh]b[`h`]g`Wci fgY`Zmci`g`l`ci`X`VY`UVY`hc.

@YUfb]b[`Ci hWc`a Y	95`GHJ[Y`%`7ca`dYh`bW]Yg
%`"8Yj`Y`cd`U`XYg][`b`cf`U`dfc`W`gg`cf`]"b] Ygh[UH`U`l`m`dc`h`Y`g]g Zc`ck`]b[`]bXi`ghfmUbX`dfcZ]gg]cbU`Yb[]bYYf]b[`ghUbXUfXg"	D9%(`Z`D9%)
&`"7`f]h]WU`m`fYZYW`h`cb`U`gdYW]U`]ghVcXmicZ`_bck`YX[Y`fY`UH`X`hc hY`f`h`Y`g]g`hcd]W	D9%`%`z`D9%`"
'`"5dd`mgW]Ybh]Z]WU`b`Yb[]bYYf]b[`a`Y`h`c`X`g`hc`gc`j`Y`U`V]ca`YX]WU` Yb[]bYYf]b[`dfcV`Ya`"	D9%`%`z`D9%`" `z`D9%`(`Z`D9`" `%`z` D9`" "
("5bU`mgY`XUH`U`cV`YW]j`Y`mi`g]b[`ei`Ub]h]U]h] Y`UbX`a`U`h`Ya`U`h]WU`	

5ggYgga Ybh

H\YfY'UfY'fk c'UggYgga YbhUg_g'UWfcgg'6€A - \$&\$'UbX'6€A - \$&%"'b'6€A - \$&\$žmci 'a i ghVca d'YH
Ub'jbHYfja 'fYdcfh'6€A - \$&%žmci 'a i ghVca d'YH'U'gWYbhZWa Ubi gW]dh'H\Y'ZbU'[fUXY'Zcf
6€A - \$€A - \$&\$'k]'VY'h\Y'k Y][\hX'Uj YfU[Y'cZmci f'UggYgga Ybhg'Zca '6€A - \$&\$'f&\$i g'6€A - \$&\$'UbX'6€A

h\Y`dfc`YWha`Ubi`gW]dhk`YfY`XcbY`]b`Wc`UVcfUhc]cb`k`]h`Z`cf`i`bXYfhU`_Yb`Vmz`ch`Yf`a`Ya`VYfg`c`Z`h`Y`f`Yg`YUfW
[`fci`d`cf`Vm`YI`h`fb`U`Wc`UVcfUhc]fg`"B`ch`h`U`hk`cf`_`XcbY`Vm`ch`Yfg`a`i`gh`VY`"]a`]h`X`hc`gh`dg`h`U`hk`ci`X`
Yb`UV`Y`h`Y`gh`XY`bh`c`i`b`XY`fh`U`_Y`h`Y`]f`dfc`Y`Wz`b`ch`h`Y`dfc`Y`Wh`h`Ya`g`Y`j`Yg`"9I`Ua`d`Yg`c`Z`h`]g`a`Um`]b`W]`XY`
fVi`hb`ch`]a`]h`X`hc`L`

- gca`Y`gi`f`[`Yf`]Yg`VY]b`[`i`b`XY`fh`U`_Yb`Vm`ia`c`f`Y`YI`d`Yf`]Yb`W`X`UV`Wc`YU`[`i`Yg`"
- h]ggi`Y`W`h`f`Yg`VY]b`[`a`U`]b`h`U`]b`YX`c`f`d`f`c`W`gg`YX`Vm`UV`Ugg`]gh`U`b`hg`"
- gi`fj`Ym`f`Yg`d`c`b`g`Y`c`f`d`U`h`Y`b`h`X`U`h`U`V`U`g`Y`g`[`Y`b`Y`f`U`h`X`c`f`U`b`U`m`g`Y`X`]b`k`l`c`Y`c`f`d`U`f`h`m`Vm`ch`h`Y`fg`"
- U`gi`Vg`Y`W`]c`b`c`Z`h`Y`g`Ua`Y`YI`d`Yf`]a`Y`b`h`U`X`U`h`c`V`h`U`]b`YX`Vm`UV`Wc`YU`[`i`Yg`Z`ca`U`d`f`Y`j`]ci`g`gh`X`m`"
- d`f`c`W`X`i`f`Yg`VY]b`[`ci`h`g`ci`f`W`X`hc`U`b`YI`h`fb`U`Wc`a`d`U`b`m`"
- 8`Y`g`[`b`Y`Ya`Y`b`hg`Wc`b`h`]Vi`h`X`Vm`m`ci`f`gi`d`Yf`]g`c`f`c`f`c`h`Y`f`g`h`XY`b`hg`"
- I`h`]g`]b`[`f`Y`gi`h`g`c`f`a`c`X`Y`g`[`Y`b`Y`f`U`h`X`V`m`d`f`Y`j`]ci`g`f`Y`g`Y`U`f`W`g`h`XY`b`hg`"

h`a`i`gh`VY`c`V`j`]ci`g`Z`ca`h`h`]g`g`Y`W`]c`b`h`U`h`h`Y`gh`XY`b`hg`Wc`b`h`]Vi`h`c`b`]g`h`Y`j`U`gha`U`c`f`]m`c`Z`h`Y`k`c`f`_`
X`Y`g`W`]V`Y`X`]b`h`h`]g`f`Y`d`c`f`h`H`Y`gi`d`Y`f`]g`c`f`a`i`g`h`g`[`b`h`h`]g`"G`Y`Y`_`U`X`j`]W`Z`ca`m`ci`f`gi`d`Y`f`]g`c`f`]Z`m`ci`U`f`Y`
i`b`gi`f`Y`U`V`ci`h`h`h`]g`"

7`C`J`-8`!`%`-`a`d`U`W`h`G`h`U`h`Y`a`Y`b`h`

Z`m`ci`f`f`Y`g`Y`U`f`W`d`f`c`Y`W`h`U`g`V`Y`Y`b`]a`d`U`W`Y`X`V`m`7`C`J`-8`!`%`-`]b`U`b`m`ik`U`m`i`f`Y`["`YI`h`Y`b`X`Y`X`c`W`X`c`k`b`z`
g`Y`Z`g`c`U`h`c`b`c`f`X`Y`f`g`Y`h`W`z`h`Y`b`i`g`Y`h`h`]g`g`d`U`W`h`c`X`Y`h`U`]`YI`U`W`h`m`l`c`k`h`h`]g`U`g`U`Z`Y`W`Y`X`"H`h`]g`g`Y`W`]c`b`g`l`ci`X`
V`Y`\$`"!`%`d`U`[`Y`c`b`[`"H`h`]g`g`Y`W`]c`b`k`]"`X`]g`W`g`g`U`b`m`W`U`b`[`Y`g`]b`W`f`W`a`g`h`U`b`W`h`U`h`U`j`Y`U`Z`Y`W`Y`X`m`ci`f`h`Y`g`]g`
f`Y`gi`h`g`f`Y`["`"UV`g`l`i`h`X`c`k`b`L`Gi`d`Y`f`]g`c`f`g`U`b`X`5`g`g`Y`g`g`c`f`g`U`f`Y`hc`h`U`_Y`h`h`]g`]b`h`c`Wc`b`g`]X`Y`f`U`h`c`b`k`Y`b`a`U`f`_]b`["`

5`X`X`]h`c`b`U`X`Y`h`U`]g`

H`h`Y`f`Y`]g`U`X`Y`h`U`]Y`X`X`Y`g`W`]d`h`c`b`c`Z`h`h`]g`U`g`g`Y`g`g`a`Y`b`h`h`U`g`_`c`b`h`h`Y`H`Y`U`a`g`W`U`b`b`Y`"Z`m`ci`X`c`b`f`h`U`j`Y`U`W`W`g`g`
h`c`H`Y`U`a`g`z`d`-

5 hYbXUbW'F Yei]fYa YbHg

H\YfY]g'bc'cZ]WU'WUgg'hja Y'Zc'f'h]g'Wci fgY" Mci f'ZJW!hc!ZJW'hja Y'bYYXg'hc'VY'cf[Ub]gYX'k]h'mci f
gi dYfj]gcfZ'Ug'mci 'UfY'YI dYWYX'hc'a YYh'hYa 'Uh'YUghcbW'dYf'k YY_"Mci 'a i ghgh]"`Ybgi fY'mci f'
Ybfc'a YbhUbX'fY[]ghfU]cb]g'i d'hc'XUHY"

7 ci fgY'GWXYXi `Y

[J \]Yk'WUgg'hja YhUVY](#)

H]a YhUV`Y`

8UHf	HmdY	7cbhYbh
Gh XmK YY_`&% Bcj Ya VYf'!`&(Bcj Ya VYf	5ggYgga Ybh	hYf]a `F YdcfhXi Y`A cbXUmK YY_`%%'Uh %%) - da ""

F Ygci fWg

DfYgWf]VYX F Ygci fWg

F Ygci fWg'k]`VY'a UXY'Uj U]UV'Y'rc'\Y'd'ghi XYbng] i]XY'hYa]b'hY]f'ci fbYmZcf'H\Yg]g'5"

9I hYbg]cbg

Mci `Wb`Udd`mZcf`gdYWU`Wcbg]XYfU]cb`k \Yb`]'bYgg'cf'chYfW]FW a ghUbWg]bHfZYf'k]h`mci f UggYgga YbhdYfZcfa UbW"

C hYf`Udd`]W]h]cbg`Zcf`YI hYbg]cb`cZgi Va]gg]cb`cZhYg]g`fYdcfrg`fY"["Yei]da YbhVfYU_Xck bZ`YHWE

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%" 8 ]gW gg'hY'dcgg]V] ]micZUb`YI hYbg]cb`k ]h`mci f`gi dYfj ]gcf`Z]fgh`
&" F Yei Yghg`WUb`hYb`VY`cX[ YX`VmihY`ghi XYbh\YfY` \hdl.##]bni f`Wca #m&ndnj."`H\Y`gi dYfj ]gcf`k ]`
  hYb`fYW]j`Y`Ub`Ya U]`Ug_]b[ `hYa`'rc`Uddfcj`YzVYZcfY`]h]g`YgWU`UH`X`rc`hY`XYW]g]cb`dUbY`"
' " F Yei Ygha`i`ghVY`cX[ YX`VmK`YY`_*`cZhf`a` "
(" DUbY`XYW]g]cb`k ]`VY'a UXY`VmYbX`cZk`YY`_+"
)" H\Y`XYW]g]cb`k ]`VY'a UXY`VmU`dUbY`-`Wcbg]gh]b[ `cZhY`<cG`fct`hY]f`bca ]bYYZ`H\Yg]g
  7ccfX]bUrcfz`UbX`%chYf`dYfgcb"
*" Gh`XYbng`g\ci`X`VY`U`YfH`X`rc`hY`ZJWh`h`Uh`h`g]g`bch[i`UfUbH`YXz`UbX`h`i`g`g\ci`X`bchfY`mcb
  [Yh]b[ `Ub`YI hYbg]cb"
+" Hnd]WU`nz`YI hYbg]cbg`UfY`[ fUbH`X`I`D`HC`" `k`YY`g`"H\Y`Yb[ h`cZhY`YI hYbg]cb`bYXXg`rc`VY
  fYei Ygh`X`UbX`↑gh]Z]YX`VmihY`gi dYfj ]gcf`"DUbY`k ]`XYW]XY`hY`Yb[ h`cZ`h`a`Y`[ fUbH`X`"
, "

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[bXi ghfmVUgYX`dfc`YWg](#)

- 8]gUV]`]mGi ddcfhGYfj]Wg. [\hdg.##gh.XYbhi.bgk"YXi"Ui.#X\]gUV\]`\]mGyfj \]Wg](#)

Gi Va]gg]cb'cZ5ggYgga YbhiHUg_g

@UVcfUhcfmfYdcfng'UbX'a U'cf'Ugg][ba Ybht'k]''fYei]fY'U' [Bcb'D'U\[\]Uf\]ga '8YWUfU\]cb'7cj Yf'G\YYH'](#)

5gg][ba Ybht'g\ci 'X'VY'gi Va]H'X'cb'hja Y''5'XU]mdYbU'micZ) i 'cZhY'a Uf_g'Uj U]UV'Y'Zcf'hUh
Ugg][ba Ybhk]''Udd'mZcf'k cf_'fYW'j YX'UZ'Yf'hY'Xi Y'XUH''5bmiUgg][ba Ybhia cfY'h'Ub') 'XUmj''UH'k]''bch
VY'UW'Wdh'X''H\Y'cb'mYI Ya dh]cb'k]''VY'k \Yb'df]cf'dYfa]gg]cb'Zcf''UH'gi Va]gg]cb'\Ug'VYYb'[fUbh'X'Vm
hY'7ci fgY'W'cfX]bUhc'f''9I hYbg]cbg'k]''VY'[fUbh'X'cb'mcb'a YX]W'cf'W'a dUgg]cbUH'[fci bXg'i bXYf
YI hfYa Y'W'fW'a ghUb'W'g''

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

D@5; ≠F ≠GA

6Yk UFY`5b`Ugg][ba YbhUUh]bWl XYg`d`U[]Uf]gYX`a UHf]U`k]`fYW]j Y`U`\$i : U]žUbX`gh XYbhtg`k \c
d`U[]Uf]gY`a UmZ]`hY`Wci fgY`Gh XYbhtg`k \c`d`U[]Uf]gY`k]`Uj Y`hY]f`bUa Yg`YbHYfYX`cb`U`d`U[]Uf]ga
fY[]ghf`UbX`k]`VY`]UV`Y`hc`X]gW]d`]bUfmiUW]cbž]bWl X]b[`Yl Wl g]cb`Zca `Ybfc`a`Ybh`
#]g`Yl dYWYX`hUUhU`gh XYbhtg`a i ghUUhU`h]a Yg`gi Va]hY]f`ck`b`k`cf`_`Zcf`UggYgga Ybh`Gi Va]h]b[`hY
k`cf`_`cf`]XYUg`cZgca YcbY`Y`gY`k]h]ci hWYUfmiUW_bck`YX[]b[`hY`gci fW`cZVcffck YX`a UHf]U`cf`]XYUg`g
d`U[]Uf]ga "

5`UggYgga Ybhtg`k \]Wl`mci `UbX`]b`a i gh`Uj Y`U`[Bcb`D`U\[\]Uf\]ga`8YWUfU\]cb`7cj`Yf`G`YYH`H\\]g`\]g`Zcf`
Vch`\]bX\]j`\]Xi`U`UbX`\[fci`d`k`cf`_`5HUVW`\]h\]c`mci`f`Ugg\]\[ba YbhVYZcfY`gi Va \]h\]b\[`\]h\]c`hY`7`ci`fgY`
7`ccfX\]bUhc`f`cf`Uh\]hY`GVX`cc`C`Z\]W`"](#)

D`U[]Uf]ga `]g`hY`i`gY`cZUbchYf`dYfgcb`g`k`cf`_`cf`]XYUg`Ug`]ZhYmik YfY`mci`f`ck`b`K` \Yb`]h]g`bYW]ggUfmicf`
XYg]fUV`Y`hc`i`gY`chYf`dYcd`Y`g`a`UHf]U`mci`g`ci`X`UXYei`UH`mUW_bck`YX[Y`k`cgY`k`cfXg`cf`]XYUg`hYm`
UfY`UbX`k` \YfY`mci`Zci`bX`hY`a`f`]j`]b[`hY`Wca`d`YH`fYZYfYbW`XYH]`gž]bWl X]b[`dU[Y`bi`a`VYffg]H`Y`
@YUfb]b[`7`YbHY`dfcj`]XYg`Z`fH`Yf`]bZcfa`U]cb`cb`k` \UhWcbgh]h`H`g`D`U[]Uf]ga `Uh`
`h]dg`#]gh XYbht`i`bgk`"YXi`"U`#]U[]Uf]ga`

5WUXYa]W#Zcfa Uh]cb

7CI FG9'9J5@! 5H€B'5B8'89J9@CDA 9BH

Gh XYbhZYXVUW_\Ug\YdYX'hc'g\UdY'UbX'XYj Y'cd'h\]g'Wci fgYž]bWi X]b['ZYXVUW_cVHU]bYX'Zca'cb!
]bY'Yj U'i Uh]cbg'Ug'dUfhcZI BGK 'g'Ug'dUfhcZI BGK 'g'a m9I dYf]YbW'dfcW'gg"Mc'i 'UfY'\][\`m
YbWci fU[YX'hc'Wca d'YH'gi W\ Ub'cb!]bY'Yj U'i Uh]cb'hc k UfX'hY'YbX'cZHYfa "': YYXVUW_UbX'gi [[Ygh]cbg
dfcj]XYX'k]`VY'ja dcfhUbh]b]ja dfcj]b['hY'Wci fgY'Zf'Z hi fY'gh XYbthg"

85H9G'HC'BC H9

FYZf'hc'A m BGK 'Zcf'æ dcfhUbh8UH'gžUj U]UV'Y'Uh
[\hdg.##a m'i bgk "YXi "Ui #gh XYbh#fYgci fW'g# Ym8UH'g"\ha`](#)

57589A ⇒'58J ⇒9

: cf]bZcfa Uh]cb'UVci h

- ""B cH'g'cb'UggYgga Ybthg'UbX'd'U[]Uf]ga ž
- ""GdYW]U''7 cbg]XYfU]cbgž
- ""GW'cc''Gh XYbh9h]Vg'C Z]W'fz'UbX
- ""69GG

fYZf'hc'hY'GW'cc''k YVg]H'Uj U]UV'Y'Uh

[\hd.##k k k "Yb\[\]bYYf\]b\["i bgk "YXi "Ui #/\]ca YX\]WU'!Yb\[\]bYYf\]b\#

Gi dd`Ya YbhUfm9I Ua]bUh]cbg. `

Gi dd`Ya YbhUfm9I Ua]bUh]cbg'Zcf'HYfa '%&\$&&'k]`VY'\Y'X'cb'fH67 E'g\ci 'X'mci 'VY'fYei]fYX'hc'g]hcbY"

H\]g'Wci fgY'ci h]bY'gYthg'ci hXYgW]dh]cb'cZUggYg'Uh'hY'XUH'hY'7ci fgY'Ci h]bY']g'di V']g\YX""H\Y
bUh fY'cZUggYg'a UmV\Ub[Y'Xi f]b['hY'HYfa 'UZf'hY'7ci fgY'Ci h]bY']g'di V']g\YX""A ccX'Y'g\ci 'X'VY
W'cbgi 'hY'X'Zcf'hY'i d'hc'XUH'WUgg'XYgW]dh]cbg""Z'hY'fY']g'Ubm]bW'cbg]gh'bw]b'hY'XYgW]dh]cb'cZ

? Ybg]b[hcb`Wla di g`lg`cWJHX"

5ddYbX]l . '9b[]bYYfg'5i ghfU`U'f95E'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 YzhYcfmVUgYX'i bXYfghUbX]b['cZhY'i bXYfd]bb]b['bUh fU`UbX d\mg]WU`gWYbWg'UbX'hY'Yb[]bYYf]b['Z bXUa YbH'g'Udd`]WUV'Y'hc'hY'Yb[]bYYf]b['X]gWd`]bY	
D9%"&'7 cbWdh U`i bXYfghUbX]b['cZhY'a UhYa Uh]Wg'z'bi a Yf]WU`UbU'mg]g'ghUhgh]Wg'z'UbX Wta di h'f'UbX']bZ'fa Uh]cb'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`ZUW'c'fg]a dUW]b['hY Yb[]bYYf]b['X]gWd`]bY	
D9%"* 'i bXYfghUbX]b['cZhY'gW'cdY'z'df]bWd`Yg'z'bcfa g'z'UW'W'ci bHUV`]h]Yg'UbX'Vci bXg'cZ gi gh]bUV'Y'Yb[]bYYf]b['dfUW]W']b'hY'gdYW]ZWX]gWd`]bY	
9b[]bYYf]b['Udd`]WU]h]cb'UV`]jm	
D9%"%5dd`]WU]h]cb'cZYghUV`]g\YX'Yb[]bYYf]b['a Yh'cXg'hc'Wta d'Yi'Yb[]bYYf]b['dfcV'Ya gc`]b[
D9%"&'&'i YbhUdd`]WU]h]cb'cZYb[]bYYf]b['h'W]b]ei Yg'z'hc'g'UbX'fYgci fW'g	
D9%" " '5dd`]WU]h]cb'cZgmg]Ya Uh]WYb[]bYYf]b['gmb'hYg]g'UbX'XYg][b'dfcW'ggYg	
D9%"('5dd`]WU]h]cb'cZgmg]Ya Uh]WUdd'fcUW]Yg'hc'hY'WcbXi W]UbX'a UbU[Ya YbhcZYb[]bYYf]b[dfc'YW'g	
DfcZYgg]cbU`UbX'dYfgcbU`Uhf]Vi hYg	
D9' "%9h]WU`WcbXi W]UbX'dfcZYgg]cbU`UW'W'ci bHUV`]jm	
D9' "&'9ZYW]j Y'cfU`UbX'k f]hYb'Wta a i b]WU]h]cb`]b'dfcZYgg]cbU`UbX`UmXca U]bg	
D9' " '7fYUh]j Y'z']bbc] Uh]j Y'UbX'dfc!UW]j Y'XYa YUbc] f	
D9' "('DfcZYgg]cbU`i gY'UbX'a UbU[Ya YbhcZ]bZ'fa Uh]cb	
D9' ") 'C'fXYf'ma UbU[Ya YbhcZgY'z'UbX'dfcZYgg]cbU`WcbXi W]	
D9' "*" '9ZYW]j Y'hYUa 'a Ya VYfg\]d'UbX'hYUa ``YUXYfg\]d	