



7ci fgY`Cj Yfj ]Yk

`GHUZZ7cbhUWhi8YHU]`g`

`7cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]]m	@cWU]cb	D\cbY
GcbmU`@]ZgWk]m	g"]ZgWk]m4 i bgk "YXi "Ui	6mYa U]` Uddc]bha Ybh	K YVghYf`%\$(	

GWcc`7cbhUWhi`bZcfa Uh]cb

Fcca "`%&Z`Yj Y`` F cVYfhiK YVghYf`6i ]X]b[

D\cbY.`f\$&L`-` , ) `( , ) \*

9a U]: [gUa 4 i bgk "YXi "Ui](#)

K YVg]hY: [\hfdg.#gUa "Ufng"i bgk "YXi "Ui](#)

H\Y`GWcc`cZhY`5fng`UbX`A YX]U`k ci `X`\_]Y`hc`F YgdYWwz`m5W\_bck`YX[ Y`hY`HfUX]h]cbU`7i g]cX]Ubgz`hY`6YXY[ U`fP`Ybg]b[ hcb`WUa di gLz; UX][ U`f7 ]mUbX`5fhi`8Yg][ b`7 Ua di gYgE`UbX`hY`B [ i bbUk U`

7 ci fgY'8YHJ]`g

7 fYX]hDc]bHg`(`

Gi a a UfmicZ\hY'7 ci fgY

Gi VYWh5fYU. ? ge[U B W d\_ S` UW ? ge[U 7` eW\_ T`W

h`h]g`dfUW]W]`Wci fgYz`mci `k ]`XYj Y`cd`mci f`UXj UbW`X`]bgrfi a YbH`U`z`j cW]`cf`Wca dcg]h]cb`g\_]`g`k ]h`cbY!  
h`!cbY`gi ddcfh]Zca `U`gdYW]U`]ghh` hcfz`UbX`[ U]b`YI dYf]YbW`]b`Udd`m]b[ `h`cgY`g\_]`g`h`fci [ `dUfh]W]dU]h]cb  
]b`k`cf`g`l`cdg`za UghYfWUggYg`UbX`YbgYa V`Yg`"H`YgY`Wca dcbYbHg`k ]`Wca V]bY`h`gi ddcfhmci f`gdYW]U`]gh  
ghfYb[ `h`g`UbX`]b`h`fYghz`UbX`h`V`fc`UXYb`UbX`W`b`h`I`h`U`]gY`mci f`dYfgcbU`gh`X]Yg`"A ]YgrcbYg`Zcf`h`Y  
Wci fgY`UfY`h`W`b]W]`Zci bXU]h]cbg`Zcf`V`ch`dYfZcf`a Yfg`UbX`Wca dcgYfgz`UbX`Y`U`h`mdfUW]W]z`Ug`h`Y`VUg]g  
cZcd]h`a U`dYfZcf`a UbW`UbX`gi gh]b]UV`Y`a i g]W`a U\_]b[ ""

BchY. "H`h]g`]g`U`%&`! C 7`Wci fgY`"Mci `k ]`Ybfc`]b`(` `! C 7`]b`YUW`cZ`h`fY`gi W`W`gg]j Y`h`fa`g`k ]h`U`fYgi`h`  
fYdcfhYX`Vm]U`g]b[ `Y`[ fUXY`Uh`h`Y`YbX`cZ`h`Y`h`]fX`(` `! C 7`Wci fgY`"

7 ci fgY`@YUfb]b[ `Ci hWca Yg

%` 6i ]X`UbX`Udd`mZci bXU]h]cbU`h`W`b]W]`g\_]`g`]b`h`Y`XYj Y`cda YbhcZUfh]gh]WYI dfYgg]cb  
&` 5dd`mi`h`Y`df]b]W]d`Yg`cZ`Y`U`h`mdfc`Z]gg]cbU`dfUW]W]`h`c`j`cW]`UbX`]bgrfi a YbH`U`h`W`b]ei Y`UbX  
dYfZcf`a UbW`  
'` " =>Yb]h]ZmfY`U]h]cbg`]dg]Ua`cb[ `]ggi`Yg`]b]Zcf`a ]b[ `dYfZcf`a UbW`dfUW]W]W]  
(` 5dd`mdf]b]W]d`Yg`cZ`h`Ua`k`cf`\_`h`a`i`g]W]YbgYa`V`Y`

HYUW]b[ `GhfUH[ ]Yg`

Gh XYbHg]fidYfgcbU`g\_]`g`]b`dYfZcf`a UbW`cf`Wca dcg]h]cb`k ]`VY`XYj Y`cdYX`h`fci [ ` `!`%`W`cbgi`h`U]h]cbg`k ]h`  
gdYW]U`]ghh` hcfg`O`!`%`l`ci`f`YUW`h`f]a`YghYfO`"h`k`cf`g`l`cdg`O`!`%`)"`l`ci`fg`YUW`h`f]a`YghYfO`]bgrfi`a`YbH`U`  
UbX`j`cW]`g`h`XYbHg`k ]`[ U]b`dYfZcf`a UbW`YI dYf]YbW`z`k`Y`Wca dcg]h]cb`gh`XYbHg`k ]`VY`Wca Y`Z]a ]]Uf  
k ]h`]ggi`Yg`UZYW]b[ `dYfZcf`a UbW`UbX`dYfZcf`a UbW`dfYdUfU]h]cb`"K`cf`g`l`cd`g`Y`h]b[`g`k ]`U`gc`gi`ddcfh  
Yb[ U[ Ya`Ybkh`]h`]ggi`Yg`W`b`W`fb]b[ `a`i`g]W]Ubgf`h`Y`U`h`UbX`k`Y`VY]b[ `z`h`Y`XYj Y`cda YbhcZgh]U[ Y`W`b`Xi`W`z`  
UbX`Ub`Y`Ya`YbhcZdYf`c`Vg`Yf] U]h]cb`Zcf`gdYW]U`]gh`dYfZcf`a UbW`UbX`Wca dcg]h]cb[ `fci`dg`"Gh`XYbHg`k ]`  
UhY`bX`a`UghYfWUggYg`YX`Vm]j`g]h]b[ `YI`dYf]g`]b`U`f]Ub[ Y`cZa`i`g]W]`]bgrfi`a`YbHg]z`c]W]g`UbX`ghm]Yg`z`  
YbWci`fU[ ]b[ `gh`XYbHg`h`X`fUk`" ]b`\_`UbX`Wca`dUf]gcbg`k ]h`h`Y]f`dYfgcbU`gh`X]Yg`W`ccg]b[ (` `!`&`l`ci`fg  
Zca`b]bY`a`UghYfWUggYg`UW`cgg`h`Y`m]UfO`"5`gh`XYbHg`k ]`dUfh]W]dU]h`]b`X]fYW]YX`YbgYa`V`Yg`z`W`ccg]b[  
Zca`U`k`XY`f]Ub[ Y`cZa`i`g]W]`ghm]Yg`UbX`W`h`fYg`O`!`&`l`ci`fg`YUW`h`f]a`YghYfO`


8YHU]g. : cf'dYfZcfa UbW'ghi XYbhgžYI Ua ]bUh]cbg'k ]''VY'i bXYfU\_Yb']b'H' ""Gh XYbhg'k ]''dfYgYbhU  
&\$!a ]bi h' d'fc[ fUa a Y'XYj ]gYX ]b'bY[ ch]U]cb'k ]h' h'Y]f'gdYW]U]ghh' h'c'fgž'h'c'gi ]h'h'Y]f'dYfgcbU'' ]b'h'fYghg  
UbX'h'fU'YW'c'f]Yg''Gh XYbhg']XYbh]Z]b[ 'Ug'Unn'gdYW]U]g]g'k ]''dfYgYbh'h'W]b]W'k cf\_'Zca 'h'Y'Unn  
gm'UVi g'XYj ]gYX ]c'f'h]g'W'c'i fgY''H'Y'YI Ua ]bUh]cb'k ]''U'gc ]bW' XY'U'g'c'f'g]h]g[ \h'fYUX]b[ 'h'gh]c'f'U''  
gh XYbhg''H\]g'k ]''VY'h'Y ]bU'UggYgga Ybh'h]g\_'Zc'f'dYfZcfa Yfg": cf'W'c'a d'cg]h]c'b'gh XYbhgž'd'c'f'h'c' ]c'g'k ]''  
VY'gi Va ]h'X']b'H' ""D'c'f'h'c' ]c'g'a Um]bW' XY Ubmbi a VY'f'c'Zk cf\_gž'Vi h'h'Y'h'c'U'Xi fU]c'b'c'Zk cf\_g'g'c'i 'X  
VY'%) 'a ]bi h'g''G'W'c'f'Y'g'g'c'i 'X'VY'gi Va ]h'X'Z'U'cb[ 'k ]h' f'Y'W'c'f'X]b[ g'c'ZU''k cf\_g''H\]g'k ]''VY'h'Y ]bU'  
UggYgga Ybh'h]g\_'Zc'f'W'c'a d'cgYfg": YYXVUW\_'K f]h'Y'b'f'Y'd'c'f'h'c'b'd'f'U'W]W'YI Ua 'UbX'W'c'a d'cg]h]c'b'd'c'f'h'c' ]c"

Gi Va ]gg]cb'bc'h'g.DfUWYI Ua g'k ]''h]\_Y'd'U'W' ]b'k YY\_'%&



F Ygci fWg

DfYgW]VYXYXY c i fWg

Gi Va ]gg]cb`cZ5ggYgga YbhHUg\_g

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Hi fb]hb`Gi Va ]gg]cb

Ʒmci`YbWci bhYf`U`dfcV`Ya`k` \Yb`U`H`Ya` dh]b[ `hc`gi Va ]hmc i f`Ugg][ ba YbhHfci [ \`Hi fb]hb`z`d`YUgY  
H`Y`d`l`cb`Y`9I`H`f`b`U`Gi` ddcfhcb`-` , )`"``"``%cf`Ya`U]`H`Ya` `cb`YI`H`f`b`U`H`f`gi` ddcfh4` i` b`gk`"YXi`"Ui`"Gi` ddcfh  
`l`ci`fg`UfY` , .`\$\$Ua` -`-%\$.`\$\$da` `cb`k`YY`\_`XUmg`U`b`X`-` .`\$\$Ua` -`i` .`\$\$da` `cb`k`YY`\_`YbXg`f`l`\*)` `XUmg`U`m`Y`U`f`l`"Ʒmci  
UfY`i` bUV`Y`hc`gi Va ]hmc i f`Ugg][ ba YbhXi`Y`hc`U`Z`U` `hk`]H`Hi`fb]hb`mci` `a`Um`U`dd`m`Z`f`U`b`YI`H`f`b`g]cb`z`Vi`hmc i  
a`i`gh`f`Y`H]b`mci`f`h]W`Y`h`bi`a`VY`f`Z`ca` `9I`H`f`b`U`Gi` ddcfhf`U`cb[ `k`]H`U`b`m`c`H`Y`f`f`Y`j`U`b`h`X`c`W`a`Y`b`h`g`l`hc  
]b`W`i`X`Y`U`g`Y`j`]X`Y`b`W` `hc`gi` ddcfhmci`f`YI`H`f`b`g]cb`U`dd`]W`h]cb"Ʒmci` `Ya`U]` `9I`H`f`b`U`Gi` ddcfhmci` `k`]`  
Ui`hc`a`U`h]W`U`m`f`Y`W`]j`Y`U`h]W`Y`h`bi`a`VY`f`z`Vi`h]Z`mci` `H`Y`d`l`cb`Y`mci` `k`]`b`Y`Y`X`hc`gd`Y`W`Z]W`U`m`U`g`\_`Z`f`cb`Y`"  
Hi`fb]hb`U`gc`d`fcj`]X`Y`g`i`d`X`U`H`Y`g`i`cb`H`Y`j`f`g`m`g`H`Ya` `g`h`U`h`g`i`cb`H`k`]H`Y`f`"

;`Yb`Y`f`U`m`z`UggYgga`YbhHUg\_g`a`i`gh`V`Y`gi`Va`]H`Y`X`Y`Y`W`f`cb]W`U`m`j`]U`Y`]H`Y`f`Hi`fb]hb`cf`U`A`cc`X`Y`  
Ugg][ ba Ybh`H`b`]b`g`h`U`b`W`g`k` \Y`f`Y`H`L`g`]g`b`c`h`i`d`c`g`g]V`Y`Z`]h`k`]`V`Y`g`h`U`H`X`i`cb`mci`f`W`ci`fg`Y`g`A`cc`X`Y`g`]H`Y`k`]H`  
U`H`f`b`U`h]j`Y`gi`Va`]gg]cb`X`Y`H]`g`"

:`cf`]b`Z`c`fa`U`h]cb`cb` \c`k` `hc`gi Va ]hUgg][ ba Ybh`g`i`cb`]b`Y`j`]U`A`cc`X`Y` .` \`h`d`g` .`#`g`h`X`Y`b`h`i` b`gk`"YXi`"Ui` #`ack`!  
gi Va ]hUgg][ ba Ybh`a`cc`X`Y`"

## 5 WUXYa ]W<c bYghmUbX`D`U[ ]Uf]ga

D`U[ ]Uf]ga ]g`i g]b[ `hY`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[ `hYa`Ug`mci`f`ck`b" `hWUb`hU`Y`a`Ubm`Z`fa`g`z`Z`ca`XY`]VYfUHY`WXYU]b[ `hc`UW]XYbhU`mW`dm]b[ `Z`ca`U`gci`fW`k`]h`ci`hUW`bck`YX[ `Ya`Ybh`

I BGK`[ `fci`dg`d`U[ ]Uf]ga`]b`hc`hY`Z`ck`]b[ `W]HY`[ `cf]Yg.

7`cdm]b[ `i`g]b[ `hY`gUa`Y`cf`j`Yfmg]a`]Uf`k`cfXg`hc`hY`cf][ ]bU`hY`hcf`]XYU`k`]h`ci`hUW`bck`YX[ ]b[ `hY`gci`fW`cf`i`g]b[ `ei`chU]cb`a`Uf`g" `H`g`U`gc`Udd`Yg`hc`]a`U[ `Yg`z`Uf`h`UbX`XYg][ `b`dfc`YW`g`z`Ug`k`Y`U`g`dfYgYbhU]cbg`k`Y`fY`gca`YcbY`dfYgYbh]b[ `Ubc`h`Y`f`g`]XYUg`cf`k`cfXg`k`]h`ci`hW`YX]h`

hUddfcdf]UHY`dUfUd`fUg]b[ `7`U`b[ ]b[ `U`Z`k`k`cfXg`UbX`d`fUgYg`k`Y`a`cghmi`fY]b]b[ `hY`cf][ ]bU`g]fi`W`fY`UbX`#`f`dfc[ `fYgg]cb`c`Z]XYUg`c`Z`h`Y`cf][ ]bU`z`UbX`]b`Z`fa`U]cb`k`]h`ci`hUW`bck`YX[ `Ya`Ybh`H`g`U`gc`Udd`Yg`]b`dfYgYbhU]cbg`k`Y`fY`gca`YcbY`dUfUd`fUgYg`Ubc`h`Y`f`g`]XYUg`cf`k`cfXg`k`]h`ci`hW`YX]h`UbX`hc`d]Y]b[ `hc[ `Y`h`Y`f`ei`chYg`UbX`dUfUd`fUgYg`]b`hc`U`b`Yk`k`Y`c`Y`z`k`]h`ci`hUddfcdf]UHY`fY`Z`fY`b]b[ "

7`c`i`g]cb.`k`cf\_]b[ `k`]h`c`h`Y`fg`Vi`hdUgg]b[ `c`Z`h`Y`k`cf\_]Ug`U`d`Y`fg`cb`g`]bX]j`]Xi`U`k`cf\_"`7`c`i`g]cb`U`gc`]bW`i`XYg`dfcj`X]b[ `mci`f`k`cf\_]hc`Ubc`h`Y`f`gh`XYbhVY`Z`fY`h`Y`Xi`Y`XU]h`z`cf`Z`f`h`Y`di`fdcgY`c`Z`h`Ya`d`U[ ]Uf]g]b[ `Uh`Ubm]h]a`Y`z`dUm]b[ `Ubc`h`Y`f`d`Y`fg`cb`hc`d`Y`Z`fa`Ub`UW`X`Ya`]W]Ug`z`gh`U`]b[ `cf`UW`ei`]f]b[ `Ubc`h`Y`f`d`Y`fg`cb`g`UW`X`Ya`]W`k`cf\_]UbX`W`dm]b[ `]h`z`Z`f]b[ `hc`W`a`d`Y`h`Ubc`h`Y`f`d`Y`fg`cb`g`k`cf\_]cf`g`Y`Y\_]b[ `dU`ma`Y`bh`Z`f`W`a`d`Y`h]b[ `UW`X`Ya`]W`k`cf\_"

hUddfcdf]UHY`W]h]cb.`7`h]b[ `gci`fW`g`k`Y`W`U`j`Y`bchVYY`b`fYUX`z`k`]h`ci`hUW`bck`YX[ ]b[ `hY`gY`W`b`X`U`fm`gci`fW`Z`ca`k`Y`W`\_`bck`YX[ `Y`c`Z`h`Ya`U`g`VYY`b`c`V]b]bYX"

8`i`d`]W]h]cb`f`f`gY`Z`d`U[ ]Uf]ga`"L`gi`Va`]h]b[ `mci`f`ck`b`k`cf`z`]b`k`Y`c`f`]b`d`U`f`z`k`Y`fY`]h`U`g`d`fYj`]ci`g`m`VYY`b`d`fY`d`U`fYX`c`f`gi`Va`]h]X`Z`f`Ubc`h`Y`f`UggY`gga`Y`bhcf`W`i`fgY`U`h`I`BGK`c`f`Ubc`h`Y`f`i`b]j`Y`fg]m`

7`c`f`Y`W`i`fY`Z`fY`b]b[ `d`f`U`W]W`g.

- DUFUd`fUg]b[ `z`gi`a`a`Uf]g]b[ `z`YggUm`k`f]h]b[ `UbX`h]a`Y`a`UbU[ `Ya`Ybh`



## 5 WUXYa ]W]bZcfa Uh]cb`

: cf`YggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[ `hc.

- fYei Yghg`ZcfYI hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I B GK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua ]bUh]cb`dfcVWXi fYg/
- gdYW]U`Vc]bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a ]gUXj Ybh fY/
- ghi XYbhYei ]hmUbX`X]gUV`]`hm/
- UbX`chYf`YggYbh]U`UWUXYa ]W]bZcfa Uh]cbz`gYY

[\h\]dg.#k k k "Ufmg"i bgk "YXi "Ui #W ffYbh\]ghi XYbh\]bZcfa Uh\]cb`dfc\]Vc`g!\[ i \]XY`\]bYg#](#)

⇒ U[ Y`7 fYX]h

Gc`c`DYfZcfa UbW`A U\_]b[ `&\$%-

7F ⇒ CG

7F ⇒ CG`Dfcj ]XYf`7cXY.`\$\$\$- ;