



ARTS2455

; YbXYf']b `7 \]bU

HYfa `H\ fYY` ##`&\$%-

7ci fgY`Cj Yfj]Yk

`GHUZZ7cbhUW`i8YHU]`g`

`7cbj Ybcfg`

B Ua Y	9a U]`	5j U]`UV]`]m	@cWU]hcb	D\cbY
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`Hi ħcfg`

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GW`cc``7cbhUW`i`bZcfa Uh]cb

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@cWU]hcb. `GW`cc``C Z]W`žA cfj Yb`6fck b`6i]X]b[ž`@Yj Y`&ž&),

C dYb]b[`<ci fg. `A cbXUm!`: f]XUmž`- Ua `!`) da

D\cbY. `Ž`*%&`-' ,) `*% , %

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9a U]`. [\U`4 i bgk "YXi "Ui](#)

7 ci fgY'8YHJ`g

7 fYX]hDc]bHg *`

Gi a a UfmicZhY'7 ci fgY

Gi VYWh5fYU. '5Z[WēWE fgV[Wē

H\]g'Wēi fgY'Wb'U'gc'VY'gh X]YX']b'hY'Zc`ck]b['gdYW]U]gUh]cbg. '3e[S` E fgV[Wēi I a_ W ie S` V 9 W VVd E fgV[Wē

H\]g'Wēi fgY'YI d`cFg'hY'XfUa Uh]WwXUb[Yg'hc [YbXYf'UbX'gYI i U']mibcfa g'YI dYf]YbWwX'VmdYcd'Y`j]b[]b'7\]bU'cf'cdYfU]b[]b'hY'G]bcd\cbY'k c'fX"H\Y'Wēi fgY'YI Ua]bYg'hY'fUbgZcfa Uh]cb']b'hYgY'fYU'a g Zca 'ja dYf]U'hja Yg'h'fci [\ 'hc'hY'W ffYbhYfU" #ig\ck g'hY'cb[c]b['hYbg]cb'VYhk YYb'dc'di 'Uf]XYUg'UVci h ffUX]h]cbfU'X'fā cXYfb]mfUg[YbXYf'UbX'gYI i U']mibcfa g'UbX'dfUW]Wg'\Uj Y'WwUb[YX'cj Yf'hja Y" # YI Ua]bYg']bHfj Ybh]cbg'Vm7\]bU'fj U]f]ci g'[c] Yfba Ybhg'UbX'Y[U'gmg'hYa g'UbX'WJa dU][bg'VmUW]j]gHg UbX'fYz'fa Yfg'hc'WwUb[Y'hY'g'fU'h g'ei c'Ug'k Y"Ug'hY'i gY'cZgYI 'UbX[YbXYf'VmWYU]j Y'Ufh]gHg'k f]hYfg UbX'UXj Yfh]gYfg" Mēi 'k]"YUfb'UVci hd\Ybca YbU'gi Ww'Ug. 'dfc[fYgg'hc'k UfXg'gYI 'Yei U']mž'hYbg]cbg VYhk YYb']bX]]Xi U'XYg]fYg'UbX'ZJa]mdfYggi fYž@6; H=W 'h' fY'UbX'f][\hgžgcW]U]ghWwU'Yb[Yg'hc fU]h]cbž'7\]bYg'Ya UgW']b]h]Yg'UbX'Z'Ya]b]h]Yg']b'cW'UbX'['cVU'WēbhYI hgžX]j Yfg]m]b[YbXYf'UbX gYI i U']mibcfa g'Ua cb['7\]bU'fj' bcb! < Ub'Y'h'b]W]h]Yg'UbX'X]ZYfYbhgcW]U'WUggYgž'W ffYbhWwU'Yb[Yg']b [YbXYf'UbX'gYI i U']mibcfa g']b'fY'Uh]cb'hc' d\Ybca Ybcb']_Y'ZJa]mž'fa Uh]cbž'Ya d'cma Ybž'dc']h]W' dUfh]W]dU]h]cbž'gdc'f]b['UbX'W' 'h' fU'YI dYfg]cb"

H\Y'Wēi fgY'XfUk g'i dcb'U'X]j YfgY'fU]b[Y'cZ'YI hg'! 'Ui X]c]j]gi U'ž]bhYfbYhž'Z'a ž']hYfU'h fYž'cZ]W]U' XcW'a Ybhgž'bYk gdUdYfg'UbX'a U[Un]bYgž'dcghYfgž'Ufh'UbX'dYfZ'fa UbWw" #]g['fci bXYX']b'W ffYbh'Yc'f]Yg cZ[YbXYf'UbX'gYI i U']mibcfa g']b'hY'fU]h]cb'U'm'UbX']b'7\]bU" DfcZ]W]YbW]h]b'7\]bYg'Y'Ub[i U[Y']g' bch fYei]fYX"

7 ci fgY '@YUfb]b['Ci hWēa Yg

- % " Ufh]W' U'h' U'gdYW]Z]Ww'cXm'cZ_bck 'YX[Y'UVci hWē'fY' UgdYW]g'cZ7\]bYg'Y'gcW]Ym'Ug'dYfU]b]b['hc Yj'c'j]b[[YbXYf'UbX'gYI i U']mibcfa g
- &" YI d'U]b'hY'j Uf]YX'bU'h' fY'cZG]bcd\cbY'YI dYfg]cbg'cZ[YbXYf'UbX'gYI i U']m'UW'cgg'hja Yž VYhk YYb'cW]h]cbgž'Y'h'b]W]h]Yg'UbX'gi V!W' 'h' fYg
- ' " Ufh]W' U'h' _bck 'YX[Y'UVci h'hY'X]ZYfYbhk Umg[YbXYf'UbX'gYI i U']m\Uj Y'VYYb'a cV']nYX']b X]ZYfYbh[YbfYg'cZdi V']WmW]fW' U]h]b['h'] hg
- (" YI Ua]bY'UbX'Wēa dYf\YbX'hY'Wē'fY'X]ZYfYbW]g'VYhk YYb'7\]bU'g'WwUb[]b[[YbXYf'UbX'gYI i U']m b'cfa g']b'hY']b'hY'fU]h]cb'U'UbX'W'cgg!W' 'h' fU'WēbhYI h
-)" XYa cbg'fU'h' 'Ub'i bXYfgh'UbX]b['cZ_Y'm'h'Yc'f]Yg'Z'f'i bXYfgh'UbX]b[[YbXYf'UbX'gYI i U']m'Ug cdYfU]h]b[]b'W ffYbh'UW]X'Ya]W]g]Wēi fgY

HYUWw]b['G'fU'hY[]Yg'

H\]g'Wēi fgY']g'Y'Wēi fY'UbX'gYa]bU'f'VUgYXž'UbX']h]g']bhYfX]g]W]d']bUfm]b' bU'h' fY" #k]"VY']h]i [\h]b a i 'hja YX]U'a cXYž'k]h'X]j YfgY[YbfYg'cZa U'h]f]U'g'i gYX'UbX'UbU'mgYX" # 'UXX]h]cb'hc'i d!hc!XU'h'fYUX]b[g]b'fY'Yj UbhZ]Y'Xgž'Y'Wēi fYfg'UbX' 'h' hc'fg'UXcdh'U'fYgYUfW! 'YX'h'UWw]b['UddfcUWw 'h'UhYb[U[Yg'gh'XYbh]]b UW]j Y'fYgYUfWw 'dfc'Y'Wēi "H\]g'Wēi fgY'Ya d\Ug]gYg'WUgg'dUfh]W]dU]h]cb'UbX'X]gW'gg]cb/]hYbWēi fU[Yg' gh'XYbh]bdi hUbX'dUfh]W]dU]h]cb'UbX'YbWēi fU[Yg'gh'XYbh]hc'h]b'_W]h]W' 'm'

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5ggYgga YbhHUg_g`

5ggYgga YbhHUg_	K Y][\h	8i Y`8UH	Gh XYbh@YUfb]b[Ci hWta Yg`5ggYggYX
DfYgYbHU]cb`	&\$!	(da `VmdfYgYbHU]cb`XUm	%&Z ž(ž)
!7`Ugg`HYgh	` \$!	\$) #/#&\$%-	%&Z ž(ž)
F YgYUfW`9ggUm) \$!	% #/#&\$%- `\$(. \$\$`DA	%&Z ž(ž)

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GHUfhXUH. ` \$%#/#&\$%-

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8YHU]`g. `Gh XYbtr`k]``dfYgYbhHY]f`i bXYfgHUbX]b[`UVci hU`gY`ZgY`YWYX`WUgY`fY`UH`X`hc`hY`k`YY`_fj
X]gW`gg]cb`hc]d]W`H\Ymk]``VY`Ug`_YX`hc`dfca`dhX]gW`gg]cb`Zc`f`hY]f`dYYfg`"H\Y`ZYXVUW`_k]``VY`dfcj]XYX
j]U`U`F`i`Vf]WZc`f`DfYgYbHU]cbg`W`ffYbhm]b`i`gY`]b`5g]Ub`Gh`X]Yg`Wci`fgYg"@Yb[h. `&\$`a]bi hYg`f]bW X]b[`)
a]bi hY`E` / `5L`fU`ZYXVUW`_`

Gi Va]gg]cb`bchYg.g`h XYbtr`hc`gi Va]h`hY]f`dfYgYbHU]cb`Z]Yg`UbX`fUbgW]d]hg`hc`Hi`fb]h]b`j]U`A`cc`X`Y`

Hi`fb]h]b`gYH]b[.`H\]g`Ugg][`ba`Ybh]g`gi`Va]hYX`h`fci`[`H`Hi`fb]h]b`UbX`gh`XYbtr`WUb`gY`Y`Hi`fb]h]b`g]a]Uf]m
fYdcftr`"

5ggYgga Ybh&.`!7`Ugg`HYgh

GHUfhXUH. ` \$) #/#&\$%-

@Yb[h. `) ` \$`a]bi hYg`

8YHU]`g. `Gh XYbtr`k]``VY`ei`jnnYX`cb`hY]f`XYa`cbghUHYX`i`bXYfgHUbX]b[`cZ`hY`Wci`fgY`Wci`bhY`bhUbX
fYUX]b[]g`UbX`hY]f`UV]`]mhc`Uf]W`UH`Uf[`i`a`YbhUbX`a`Ufg`U`Y`j]XYbW`]b`fY`UH]cb`hc`h`UhUf[`i`a`Ybh]b`U
gYf]Yg`cZg`cfhUbgk`Yf`ei`Ygh]cbg`UbX`cbY`cb[`Ubkg`Yf`ei`Ygh]cb"@Yb[h. `) ` \$`a]bi hYgDUdYf`Wc`ffYW]cb`

Hi`fb]h]b`gYH]b[.`H\]g`]g`bchU`Hi`fb]h]b`Ugg][`ba`Ybh`

5ggYgga Ybh' .`F YgYUfW`9ggUm

GHUfhXUH. `Bch5dd]WUV`Y`

8YHU]`g. `Gh XYbtr`k]``VY`Ug`_YX`hc`gY`YWU`fYgYUfW`ei`Ygh]cb`Zca`U`bca`]bUH`X`]gh`H\Y]f`HUg`_]g`hc
[`Uh`Yf`fYgYUfW`a`UH]f]U`gZ`Wc`bgrfi`W`U`WYUf`UbX`c`[]WU`Uf[`i`a`YbhUfci`bX`hY`fYgYUfW`ei`Ygh]cbZ`Vi`HfYgg
h`]g`Uf[`i`a`Ybhk`]h`Y`j]XYbW`UbX`Wca`a`i`b]WUH`]b`U`WYUf`k`f]hYb`Z]g`]cb`"H\Y`Y`j]XYbW`k]``VY`dfYgYbhYX
]b`Zc`fa`U`UWUXY`a`]WcbHU]cb`UbX`XcW`a`YbhUH]cb`K`f]hYb`ZYXVUW`_k]``VY`dfcj]XYX`cb`hY`F`i`Vf]WZc`f
9ggUm`g`W`ffYbhm]b`i`gY`]b`5g]Ub`Gh`X]Yg`Wci`fgYgZ`j]g`Hi`fb]h]b`"H\]g`]g`hY`Z]bU`UggYgga`YbhZc`f`

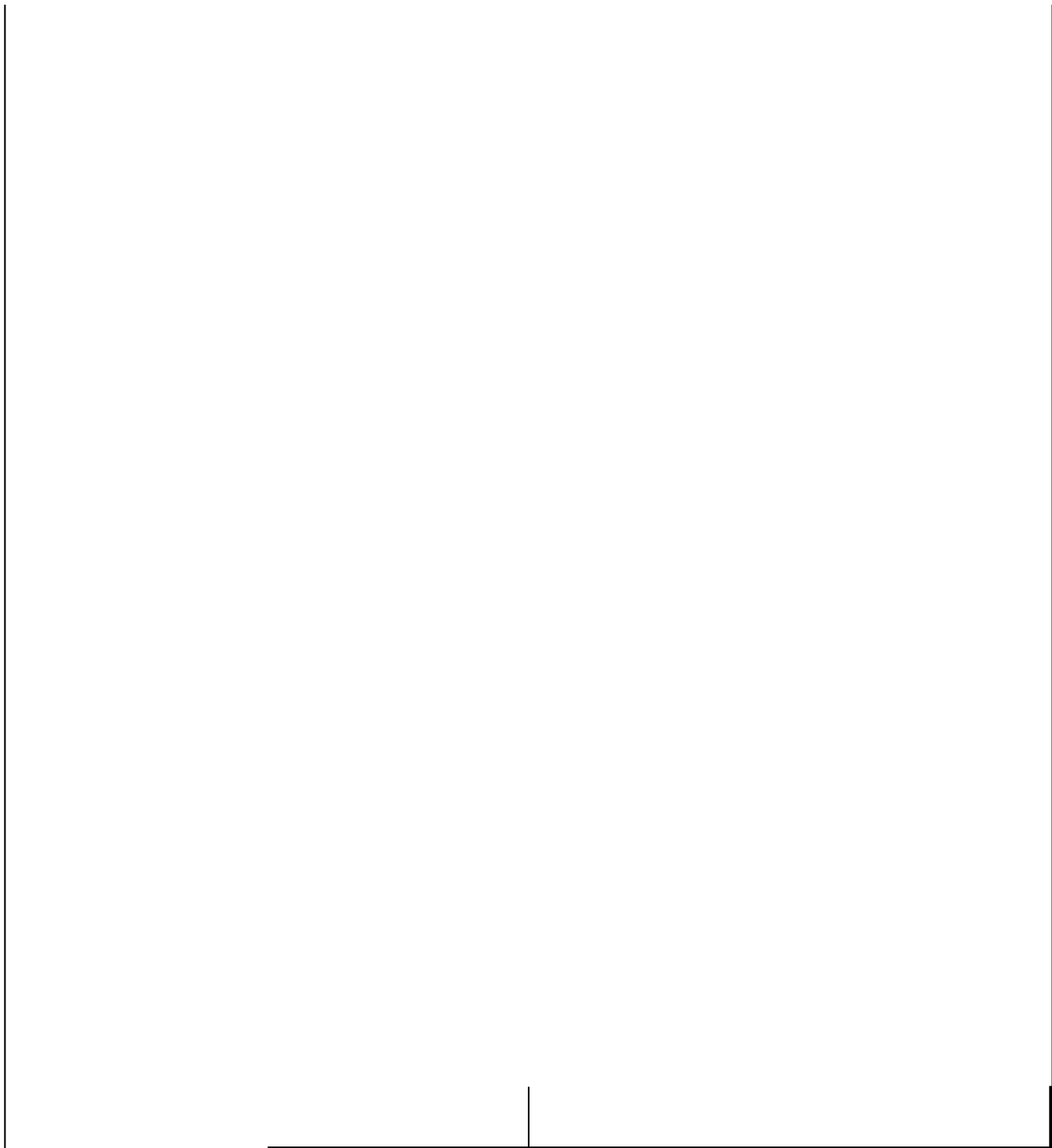
UHYbXUbW di fdcgYg"

5XX]h]cbU`XYHJ]g.

H\YfY`]g`bc`gdYWZWFYei]fYa YbhZcf`fYZfYbW]b[`]b`h\]g`Wci fgY"D`YUgY`fYZf`hc`
[\hd.##gh_XYbhi_bkg`"YXi`"Ul`#fYZfYbW\]b\[`Zcf`XYHJ\]g"](#) <ck Yj YfZ`mci `UfY`YbWci fU[YX`hc`i`gY`< Ufj UfX`ghmY
fYZfYbW]b[`]b`Wca d`Yh]b[`h\Y`fYgYUfW`dUdYf`H\]g`k`]`VY`Z`f\Yf`YI`d`U]bYX`]b`hi`hc`f]U`WUgg"

Gi Va]gg]cb`bchYg.Gh XYbhg`hc`gi Va]h\Y`fYgYUfW`dUdYf`Vmi d`cUX]b[`Ub`Y`YWfcb]WWdmihc`Hi fb]hb
j]U`A`ccX`Y`"5`GW`cc`5gg][ba Ybh7cj Yfg\YYha i ghVY`UhtUWXYXzk]h`mci f`WcbhUWXYHJ]g`UbX`g][bUhi fY
Z`YX`]b"@UH`gi Va]gg]cb`k`]`UhtUWidYbU`hYg"

Hi fb]hb`gYH]b[. H\]g`Ugg][ba Ybh]g`gi Va]hYX`h`fci [\`Hi fb]hb`UbX`gh XYbhg`WUb`gY`Y`Hi fb]hb`g]a]Uf]hm
fYdcfng"



Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

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`Ybh`h`fci`[`\`Hi`fb]hb`z`d`YUgY`
H`Y`d`l`cb`Y`9I`H`f`b`U`Gi`ddcfh`cb`-`,`)``%`cf`Ya`U]`h`Ya`cb`YI`H`f`b`U`H`h`gi`ddcfh`4`i`bgk`"YXi`"Ui`"Gi`ddcfh`
`l`ci`fg`UfY`,`.\$\$Ua`-`%\$.\$\$da`cb`k`YY`XUmg`UbX`-`.\$\$Ua`-`).\$\$da`cb`k`YY`YbXg`f`l`*)`XUmg`U`m`Y`Uf`l`"Ʒmci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`Xi`Y`hc`U`Z`U`h`k`]h`Hi`fb]hb`mci`a`Um`Udd`m`Z`f`Ub`YI`H`f`bg]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`ddcfh`f`U`cb[`k`]h`Ub`m`c`h`Y`f`f`Y`j`Ub`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`ddcfh`mci`f`YI`H`f`bg]cb`Udd`]W`h]cb"Ʒmci`Ya`U]`9I`H`f`b`U`Gi`ddcfh`mci`k`]`
Ui`h`ca`U`h]W`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`]W`m`U`g`_`Z`f`cb`Y`
Hi`fb]hb`U`gc`d`fc`j`]X`Y`g`i`d`X`U`H`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`Ugg`Y`gga`Y`bh`h`U`g`_`g`a`i`gh`V`Y`gi`Va`]h`Y`X`Y`Y`W`f`cb]W`m`j`]U`Y`]h`Y`f`Hi`fb]hb`cf`U`A`cc`X`Y`
Ugg][`ba`Y`b`h`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`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`l`ck`hc`gi`Va`]h`Ugg][`ba`Y`b`h`g`i`cb`]b`Y`j`]U`A`cc`X`Y`.\`h`td`g`#`g`h`X`Y`b`h`i`bgk`"YXi`"Ui`#`ack`!
gi`Va`]h`Ugg][`ba`Y`b`h`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
Zcfa gž`Zca `XY`]VYfUHY`WXYU]b[`hc`UWV]XYbhU`mW`dm]b[`Zca `U`gci fW`k]h`ci hUW_bck`YX[Ya Ybh`

I BGK `[fci dg`d`U[]Uf]ga `]bhc`hY`Zc`ck]b[`WUHY`[cf]Yg.

7 cdm]b[.`i g]b[`hY`gUa Y`cf`j Yfmg]a]Uf`k cfXg`hc`hY`cf][]bU`hYI 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[Ygž`UfhUbX`XYg][b`dfc`YWgž`Ug`k Y`Ug`
dfYgYbhU]cbg`k \YfY`gca YcbY`dfYgYbh]g`UbchYf`g`]XYUg`cf`k cfXg`k]h`ci hWYX]h`

hUddfcdf]UHY`dUfUd`fUg]b[.`7`Ub[]b[`U`ZYk`k cfXg`UbX`d`fUgYg`k`Y`a cghmifYU]b]b[`hY`cf][]bU`
ghfi W`fY`UbX`#`f`dfc[fYgg]cb`cZ]XYUg`cZ`hY`cf][]bU`ž`UbX`]bZcfa U]cb`k]h`ci hUW_bck`YX[Ya Ybh`H\]g`U`gc`
Udd`]Yg`]b`dfYgYbhU]cbg`k \YfY`gca YcbY`dUfUd`fUgYg`UbchYf`g`]XYUg`cf`k cfXg`k]h`ci hWYX]hU`bX`hc`
d]YW]b[`hc[YhYf`ei chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk`k \c`Yž`k]h`ci hUddfcdf]UHY`fYZYfYbW]b["

7 c`i g]cb.`k cf_]b[`k]h`chYfg`Vi hdUgg]b[`cZ`hY`k cf_]Ug`U`dYfgcb`g`]bX]j]Xi U`k cf_]7 c`i g]cb`U`gc`
]bWi XYg`dfcj]X]b[`mci f`k cf_]hc`UbchYf`gh`XYbhVYZc`fY`hY`Xi Y`XUHYž`cf`Zc`f`hY`di fdcgY`cZ`hY`a

- i bXYfghUbx'mci f'f][\hg'UbX'fYgdcbg]V]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[]Uf]ga ž'Wc'dmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5W'W'dhUV'Y'I gY'cZ I BGK '⇒H'F'Ygci f'W'g'Dc`]W'h
- VY'Uk UfY'cZ'Y'ghUbxUfXg'cZVY\Uj]ci f'YI dY'W'X'cZYj Yfmcby`]b'h'Y'I BGK 'W'a a i b]m
- 'cW'W'h'gYfj]W'g'UbX']bZ'fa U]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZ'Y'gY'UfY'Ug'k]''VY'ZJa]]Uf'hc'mci ž'c'h'Y'fg'k]''VY'bYk "'; U]b]b['U'gc`]X'i bXYfghUbx]b['cZU''h'Y fY'U'Y'X'UgdY'W'g'cZ9@-G9'k]''\Y'd'mci 'a U_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\h'hd.##gi V'Y'W'i \]X'Y'g" \]VfUfm'i bgk "Y'X'i "U'i #' \]gY#\]V'ci h' \]gY](#)

5 WUXYa]WbZcfa Uhcb`

: cfYggYbh]U`ghi XYbh]bZcfa Uhcb`fY`Uh]b[`hc.

- fYei Yghg`ZcfYI hYbg]cb/
- `UH`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I BGK `<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]miUbX`X]gUV`]`m/
- UbX`chYfYggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

[\hdg.#k k k "Ufmg"i bgk "YXi "Ui #W ffYbhghi XYbh\]bZcfa Uhcb`dfc\]Vc`g!\[i \]XY`\]bYg#](#)

⇒ U[Y`7fYX]h

D\chc`VmGUa UbhU`Gcd\]U`cb`i bgd`Ug\

7F ⇒ CG

7F ⇒ CG`Dfcj]XYf`7cXY.`\$\$\$- ;