



ARTS3451

5Xj UbWX'7 \]bYgY'6

HYfa 'Hk c''##'&\$%-

7ci fgY'8YHJ]`g

7fYX]hDc]bkg`*`

Gi a a UfmicZh\Y'7ci fgY

Gi VYWh5fYU.'7\]bYgY'Gh X]Yg

9I hYbX]b['cb'5F HG' () \$žh\]g`Wci fgY'dfcj]XYg'UXj UbWYX'h]hcb`b'7\]bYgY`Ub[i U[Y'fA UbXUf]bE'gh Xmž
i g]b['U'hYI hVcc_XYg][bYX'gdYWZ]WU`mZcf'UXj UbWYX'7\]bYgY`YUfbYfg'Uhi b]j Yfg]hYg'ci hg]XY'cZ7\]bU" 3h
Wca V]bYg`Ub[i U[Y'gh X]Yg'k]h`Ub`YI d'cfU]cb'cZ7\]bYgY`W`hi fY'UbX'gcV]Yhž]bWi X]b['hfUX]hcbU`
W`hi fY" H\Y'a YX]i a 'cZ]bgfhi W]cb`]g'A UbXUf]b" Mci `k]`YI hYbX'mci Z9bX'gcW] cb'5F HWYhhi fbYgY`W`

5ggYgga Ybh

5HYbXUbW cZ@YWh fYg#Hi hcf]U`g`]g'a UbXUhcfm]b`h.]g`Wci fgY"i bYI W gYX`UVgYbW`Zca`a cFY`h.Ub`&\$i
 cZ@YWh fYg#Hi hcf]U`g`k`]"`fYgi`h]b`h.Y`Uk UfX`U`ZU]"`[fUXY" `@YWh fY#Hi hcf]U`g`mci`k`]"`UWh] Y`mYb[U[Y
 k`h`Wc`fY`Wci fgY`Wc`bhYb`h`YbUV`]b[`mci`h`U`hU]b`7@C`%z&Z`z(z)"`

5ggYgga YbhHUg_g`

5ggYgga YbhHUg_	K Y][\h	8i Y`8UH`	Gh XYbh@YUfb]b[Ci hWca Yg`5ggYggYX
5gg][ba Ybhg`	&\$i	5gg][ba Ybh%]b`k`YY_`* `YWh`fY`f%\$`>i`m`&\$%-`t/ 5gg][ba Ybh&]b`k`YY_`%\$ `YWh`fY`f#`5i`[i`gh`&\$%-`t	&z(
HYgh%	&)i	K`YY_)`h`hcf]U`f(`cf)`>i`m &\$%-`t	%z&z
HYgh&`	&)i	K`YY_`%\$`h`hcf]U`f]`cf`- 5i`[i`gh`&\$%-`t	%z&z
; fci d`Dfc`YWh	`\$i	DfYgYbhU]cb`Xi`Y`]b`k`YY_`; h`hcf]U`f&)`cf`&*`>i`m`&\$%-`t cf`k`YY_`-`h`hcf]U`f%`cf`& 5i`[i`gh`&\$%-`t`F`YgYUfW dUdYf`Xi`Y`cb`Y`k`YY_`U`Z`Y`f`h`Y dfYgYbhU]cb"	%z(z)

5ggYgga Ybh8YH]`g`

8YHJ`g. '7ca dfY\Ybg]j Y'hYghf%) ` \ci fgE'cZhY`UghZk`WXUdHYfg'g]bVW`HYgh%'Gh XYbHj`fYVW]j Y`U'a Uf_
UbX`WJb`Wc'bgj`h'hY`h'UWk]b[`gHJZZ'cf'Z`fh'Yf'ZYXVUW`"H\]g]g'h'Y`Z]bU`UggYgga YbhZcf`UfhYbXUbW
di fdcgYg"

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

5ggYgga Ybh(. ; fci d`Dfc`YVh

GHUfhXUH.`

8YHJ`g. Gh XYbHj`Wca d`YH`U`[fci d`fYgYUfW`dfc`YVh'cb`h'Y]f`WkcgYb`hcd]W`H\Y`dfYgYbH]cb`f&\$i`E]g
UggYggYX`cb`]bX]j]Xi U`VUg]g`fUVci h'!)`a`]bi hYg`dYf`dYfgcbE'k` \]Y`h'Y`fYgYUfW`dUdYf`f%\$i`E`fUVci h

F Ygci fWg

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

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Ẓmci `YbWci bhYf`U`dfcV`Ya `k \Yb`U`H`Ya dh]b[`hc`gi Va]hmc i f`Ugg][ba YbhHfci [\`Hi fb]h]bžd`YUgY
H`Yd\cbY`9I H`fbU`Gi ddcfhcb`-` ,) `` `` ` %cf`Ya U]`H`Ya `cb`YI H`fbU`H`hgi ddcfh4 i bgk "YXi "Ui ``Gi ddcfh
\ci fg`UfY` , .\$\$Ua `--`%\$. \$\$da `cb`k YY_XUmg`UbX`- . \$\$Ua `--`) . \$\$da `cb`k YY_YbXg`fI *) `XUmg`U`mYUfL` Ẓmci
UfY`i bUV`Y`hc`gi Va]hmc i f`Ugg][ba YbhXi Y`hc`U`ZU`i`hik]H`Hi fb]h]b`mci `a UmiUdd`miZc`f`Ub`YI H`bg]cbžVi hmc i
a i ghfYH]b`mci f`h]W`Yhbi a VYf`Zca `9I H`fbU`Gi ddcfhfU`cb[`k]H`Ubmch`Yf`fY`Yj UbhXcW a YbHgE`hc
]bWi XY`Ug`Yj]XYbW`hc`gi ddcfhmci f`YI H`bg]cb`Udd`]W]h]cb" Ẓmci `Ya U]`9I H`fbU`Gi ddcfhmci `k]`

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[YgžUfhUbX`XYg][b`dfc`YWgžUg`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`i 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'h'X'UgdY'W'g'cZ9@-G9'k]''\Y'd'mci 'a U_Y'h'Y'a cgh'cZ'mci f'gh X]Yg'Uhl BGK ""

[\h'hd.##gi V'Y'W'f'i \]X'Y'g" \]V'f'U'f'm'i b'gk "Y'X'i "U'i #' \]g'Y'#J'V'c'i h' \]g'Y](#)

5 WUXYa]WbZcfa Uh]cb`

: cfYggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[`rc.

- fYei Ygh]Zc`fYI h`bg]cb/
- `Uh]`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I BGK `<YU`h`UbX`GUZY`midc`]WYg/

