



ARTS3092

A YX]U'UbX'HfUbgZcfa Uh]cb']b'hY'5g]U!DUW]ZW

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

7 ci fgY`Cj Yfj]Yk

`GHUZZ`7 cbhUW`i8YHU]`g`

`7 cbj Ybcfg`

B Ua Y	9a U]`	5j U]`UV]`]m	@cWU]hcb	D\cbY
GW`thiG\UbYf	g"g\UbYf4 i bgk "YXi "Ui	K YXbYgXUmg`UbX : f]XUmg`Vm Uddc]bra Ybh	K YVgYf' %%9	\$&`-' ,) *, \$(

`Hi hcf`g`

B Ua Y	9a U]`	5j U]`UV]`]m	@cWU]hcb	D\cbY
NU]bUV`>Ugja	nU]bUV"Ugja 4 i bgk "YXi "Ui	7`Ugg`hja Yg`cb`m	b#U	b#U

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

F cca " %&Z`Yj Y`" `F cVYfhK YVgYf`6i]X]b[

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

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

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

H\Y`GW`cc`cZH`Y`5fmg`UbX`A`YX]U`k`ci`X`_]`Y`h`c`F`YgdYW`Z`m`5W`bck`YX[`Y`h`Y`HfUX]h]cbU`7`i`g`h`X]U`bg`z`h`Y`6YXY[`U`f`P`Ybg]b[`h`c`b`W`Ua`di`g`L`z`;`UX][`U`f`7`]m`UbX`5`f`h`v`8`Yg][`b`7`Ua`di`g`Y`g`L`U`b`X`h`Y`B`[`i`bb`U`k`U`

7ci fgY'8YHJ]`g

7fYX]hDc]bHg`*`

Gi a a UfmcZh\Y'7ci fgY

Gi VYWh5fYU.`? W[S! 5g`fgdWS` V FWUZ` a`aYk

5ggYgga Ybh

D`YUgY`bchY`h`Uhmci`a`i`ghia`U_Y`U`gYf]ci`g`UHYa`dhUhuU``UggYgga`YbhiUg_g`hc`VY`Y`][`JV`Y`hc`dUgg`h`]g`Wci`fgY"

5ggYgga YbhiUg_g`

5ggYgga YbhiUg_	K`Y][`h	8i`Y`8UH`	Gh`XYbhi@YUfb]b[Ci`hWca`Yg`5ggYggYX
A`]X!HYfa`'9I`Ua`	'`)	%(`#/\$#&\$%-`'-.`.\$\$5A	%z&
Hi`hc]U``;`fci`d`DfYgYbhiU]cb`	&\$	K`YY_g`"!%\$	%z&Z`z(`
F`YgYUfWX`DUdYf`	()	&)`#/\$#&\$%-`'\$.`.\$\$`5A	%z&Z`z(`

5ggYgga Ybhi8YHJ]`g`

5ggYgga`Ybh%`A`]X!HYfa`'9I`Ua`

GHUfhXUH`. `+`#/\$#&\$%-`'-.`.\$\$5A

@Yb[`h`. `%z\$\$\$`k`cfXg

8YHJ]`g`. `Gh`XYb]g`fYVW]j`Y`U`gWcfY`Wca`a`i`b]WUH`X`]b`A`ccX`Y`"

5XX]h]cbU`XYHJ]`g`.

:`i`fH`Yf`XYHJ]`g`c`Z`h`]g`Ugg][`ba`Ybhk`]`VY`dfcj`]YX`]b`h`Y`Wci`fgY`a`ccX`Y`"

Gi`Va`]gg]cb`bchYg.6Y`gi`fY`hc`W`Y`W`_`mci`f`Z`Y`k`h`Y`b`mci`gi`Va`]h`Gi`Va`]gg]cbg`7`5`B`B`C`H`VY`fYd`U`W`X`U`Z`Y`f`h`Y`Xi`Y`X`U`H`d`U`g`g`Y`g`K`h`U`h`j`Y`f`mci`h`U`j`Y`gi`Va`]h`Y`X`k`]`VY`c`W`Y`X`]b`U`h`h`Y`h`ja`Y`h`Y`Xi`Y`X`U`H`d`U`g`g`Y`g`Mci`W`b`b`c`h`W`U`b`]`Y`g`h`]g`"Z`mci`]b`h`b`X`h`c`gi`Va`]h`U`h`Z`U`b`X`h`U`j`Y`d`f`Y`]ci`g`m`gi`Va`]h`Y`X`U`X`f`U`Z`h`d`Y`U`g`Y`a`U`_`Y`gi`fY`mci`X`Y`Y`h`h`Y`X`f`U`Z`h`V`Y`Z`c`fY`h`Y`Xi`Y`h`ja`Y`d`U`g`g`Y`g`"

Hi`fb]h]b`g`Y`H]b[`. `h`h`]g`Ugg][`ba`Ybh]g`gi`Va`]h`Y`X`h`fci`[`h`Hi`fb]h]b`U`b`X`gh`XYb]g`Xc`b`c`h`g`Y`Y`Hi`fb]h]b`g]a`]Uf]m`f`Y`d`c`f`r`g`"

5ggYgga`Ybh&.`Hi`hc]U``;`fci`d`DfYgYbhiU]cb`

GHUfhXUH`. `B`ch`5`d`d`]W`V`Y`

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

8YHJ]`g`. `Gh`XYb]g`fYVW]j`Y`Z`Y`X`V`U`W`_`g`h`Y`Y`h]b`W`U`g`g`"

5XX]h]cbU`XYHJ]`g`.

H\]g']g'U' [fci d'Ugg][ba Ybh'

: i f\Yf'XYU]g'cZ\]g'Ugg][ba Ybhk]''VY'dfcj]XYX']b'hY'Wci fgY'a ccX'Y"

Gi Va]gg]cb'bcH]g.DfYgYbhU]cbg'k]''VY'WcbXi W'X']b'mci f'hi hcf]U'g

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

5ggYgga Ybh' . F YgYUfW\ 'DUdYf

GHUfhXUH.

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

- K YVg]h" = 5""cZhY`fYUX]b[g`Zcf`hY`Wci fgY`UfY`Uj U]UV`Y`cb`]bY`j]U`hY`Wci fgY`A ccX`Y`g]h"

F YWca a YbXYX`F Ygci fWg

5g`hY`Wci fgY`]g`fYgYUfW`VUgYXzmc`i`k`]`VY`YI`dYW`X`hc`a`U`_`Y`i`gY`cZ`hY`gW`c`Uf`mX`U`h`U`V`U`g`Y`g`c`Z`fY`g`Y`U`f`W`U`f`h`]`W`Y`g`f`Y`Y`j`Ub`h`c`h`Y`W`c`i`fg`Y`" `H`Y`g`Y`k`]`V`Y`X`]`g`W`gg`Y`X`Xi`f`]`b`[`h`Y`g`Y`gg`]`cb`z` \`ck`Y`j`Y`f`gh`i`X`Y`b`h`g`

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Hi fb]h]b`Gi Va]gg]cb

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` `hk]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 gZ`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[YgZ`UfhUbX`XYg][b`dfc`YWgZ`Ug`k Y`Ug`
dfYgYbhU]cbg`k \YfY`gca YcbY`dfYgYbh]g`UbchYf`g`]XYUg`cf`k cfXg`k]h`ci hW`YX]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`Z`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 hW`YX]h`UbX`hc`
d]YW]b[`hc[YhYf`ei chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk`k \c`Yz`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`XUHY`Zc`f`Zc`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'Wcdmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'Ubx'5Ww'dhUV'Y'I gY'cZ I BGK '⇒H'F Ygci fW'g'Dc`]Wm
- VY'Uk UfY'cZh'Y'ghUbxUfXg'cZVY\Uj]ci f'YI dYW'X'cZYj Yfmcby`]b'h'Y'I BGK 'Wca a i b]m
- `cWJh'gYfj]Wg'UbX'j]bZcfa Uh]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZh'YgY'UfYUg'k]`VY'ZJa]]Uf'hc'mci ž'ch'Yfg'k]`VY'byk "; U]b]b['U'gc`X'i bXYfghUbx]b['cZU`h'Y fY'UH'X'UgdYW'g'cZ9@G9'k]`Y'd'mci 'a U_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\hd. #gj V'YWf i \]XYg" \]VfUfm'i bgk "YXi "Ui #` \]gY#JVci h' \]gY](#)

5 WUXYa]WbZcfa Uhcb`

: cfYggYbh]U`ghi XYbh]bZcfa Uhcb`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 Ybhi fY/
- ghi XYbhYei]hmUbX`X]gUV`]`hm/
- UbX`chYfYggYbh]U`UWUXYa]W]bZcfa Uh]cbz`gYY

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

⇒ U[Y`7 fYX]h