



ARTS2510

☯HYfa YX]UHŸ ; Yfa Ub '5

HYfa 'C.bY''##'&\$%-

7 ci fgY`Cj Yfj]Yk

`GHUZZ7cbhUWhi8YHU]`g`

`7cbj Ybcfg`

B Ua Y	9a Uj`	5j Uj`UV]`]m	@cWUhcjb	D\cbY
8Yb]gY`< UbhY`	X"\UbhY`4 i bgk "YXi "Ui	Hi Y`%d%&'cf`Vm Uddc]bha Ybh	A cfj Yb`6fck b &' (Z`*%f&E`-' ,) \$) - *

GW\cc``7cbhUWhi`bZcfa Uh]cb

GW\cc``cZ<i a Ub]hYg`UbX`@Jb[i U[Yg

@cWUhcjb. `GW\cc``C Z]WZ`A cfj Yb`6fck b`6i]X]b[ž`@Yj Y``&ž&),

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

D\cbY. `Z`*%&`-' ,) `)%*, %

: U! . `Z`*%&`-' ,) `; , +\$)

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

7ci fgY'8YHJ]`g

7fYX]hDc]bHg`*`

Gi a a UfmicZ\hY'7ci fgY

; fWd_WW[SfW9Wd_S`3`jg]XYU`Zmci` \Uj Y'gi WWggZ`mUWVca d`g\YX'hY`bhfci Wcfmi; Yfa Ub'5`UbX'6
Wci fgYg'cfZ]Zmci` \Uj Y'hY`Yei]j UYbhcZU`mYUf'cZ; Yfa Ub`Ub[i U[Y`YUfb]b[" `#iWcbgc`XUHg`UbX
YI hYbXg'mci f'dfYj]ci g'mUWci]fYX'cfU`UbX'k f]hY'b; Yfa Ub`Wca a i b]WU]cb`g_]`gZ`UbX`YI hYbXg'mci f
j cWUvi `UfmiUbX`[fUa a Uf'Zci bXU]cb`H\i gZ'hY`Wci fgY`YbUV`Yg'mci `hc`Wca a i b]WU]h`]b`U'a cFY
gdcbU]bYci g`UbX`Y`UVcfU]h`k Um]b; Yfa Ub`"Mci`k cf`_k]h`U`fUb[Y`cZUi hYb]h]WYUfb]b[`a U]f]U`
f]W]cbU`UbX`bcb!Z]W]cbU`Zcb`Wcb]hYa dcfUfmiUbX`\]g]cf]WU`hcd]Wg]k` \]W`dfcj]XYg'mci`k]h`YI hYbg]] Y
bck`YX[Y`UbX`U`VY]hYfi bXYfghUbX]b[`cZ\hY`gcW]Y]Yg`UbX`W`h`fY`cZ; Yfa Ub!gdYU]b[`Wci bh]Yg"

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

%`I` bXYfghUbX`UbX`fYgdc]bX`]b; Yfa Ub`hc`hY`a U]b`dc]bHg`cZcfU`UbX`k f]hY'b`hYi hg`XYU`]b[`k]h`
hcd]Wg`cZVfcUXYf`gcW]U`WcbW]fbg`YbWci bhYfYX`]b`hY; Yfa Ub!gdYU_]b[`Wca a i b]h]Yg"
&" DfcXi W`g]a d`YZ`Wc`YfYbh]hYi hg`fcfU`UbX`k f]hY'b]b; Yfa Ub`cb`Wca a cb`hcd]Wg`cf`UfYUg`cZ
dYfgcbU`]b]hYfYgh
'`" `8YgW]VY`YI dYf]YbW]g`UbX`Yj YbHg`UbX`dfcj]XY`fYUgcbg`cf`YI d`UbU]cbg`Zcf`cd]b]cbg`UbX`d`Ubg`]b
; Yfa Ub"
(`" F`YZYW]cb`YUfb]b[`dfcW]gg`UbX`YUfb]b[`ghfU]h[]Yg"
)" `8Yj Y`cd`ghfU]h[]Yg`hc`Wca a i b]WU]h`YZYW]j Y`mk]h`chYf`a Ya VYfg`cZ\hY`[fci d"

HYUWX]b[`GhfU]h[]Yg`

H\Y`hYUWX]b[`ghfU]h[]Yg`cZci f; Yfa Ub`WUggYg`UfY`VUgYX`cb`hY`Wca a i b]WU]h] Y`UbX`fUg`!VUgYX
UddfcUWX`Zk` \]W`U]a `Uh[]j]b[`gh`XYbHg`cddcf] b]h]Yg`hc`dfUW]W`hY]f`Wca a i b]WU]h]cb`g_]`g`]b`Wcb]hYi hg
hUhUfY`dYfgcbU`m]fY`Yj UbhUbX`Wcb]bYW]X`hc`Yj YfmXUm`]Z`" H\i gZ`gh`XYbHg`YUfb`U`j YfmUi hYb]h]Wi gY`cZ
hY; Yfa Ub`Ub[i U[Y`Wca V]bYX`k]h`W`h`fU`UbX`\]g]cf]WU`_bck`YX[Y`"H\Y`YUfb]b[`a U]f]U`f]b]hUbX
X]]]hU`E`UbX`YUfb]b[`UW]j]h]Yg`fY["`"cb`]bY`fUg`gZ`ga U`"fUg`g#dfc`YW]g`]bg]XY`UbX`ci hg]XY`hY`WUggfcca`Z
Z]W]cbU`UbX`bcb!Z]W]cbU`hYi hg]d`dfcj]XY`gh`XYbHg`k]h`j Uf]YX`cddcf] b]h]Yg`hc`dfUW]W`hY]f`fYW]d]h] Y`UbX
dfcXi W]j Y`g_]`gZ`Ug`k Y`"Ug`hY]f`j cWUvi `UfmiUbX`VUg]W; Yfa Ub`[fUa a Uf`"k`Y`YbWci fU[Y`gh`XYbHg`hc
YI dUbX`hY]f`fYdYf]c]fY`cZgi]fUV`Y`Ub[i U[Y`YUfb]b[`ghfU]h[]YgZ`UbX`hc`]bXYdYbXYbh]mdfUW]W`cf`fYj]gY
hY]f; Yfa Ub`g_]`g`cb`U`fY[i `Uf`VUg]gZ`]bg]XY`UbX`VYmcbX`hY`WUggfcca`"H\Y`Ub[i U[Y`cZ]bg]h] W]cb`]g
dfYXca]bUb]h]m; Yfa Ub`fUdUf]h]Zca`gca`Y`YI d`UbU]cb`cZ[fUa a U]h]W`ZYU]h`fYg]gc`hUh]gh`XYbHg`XYj Y`cd
hY]f`]gh]b]b[`g_]`g`" `b`Vch`"YW]h`fY`UbX`h`hc]f]U`gZ`k`Y`UfY`i`g]b[`X]ZYfYbh`YUfb]b[`UddfcUWX`Yg`UbX`a`cXYg
cZ]bg]h] W]cb`f]dYgYb]h]cbgZ`dU]f`cf`ga U`" [fci d`k`cf`_Z`]bX]]]Xi U`Ugg]] ba`YbHg]hc`dfcj]XY`YI hYbg]] Y`UbX
a`cFY`c`]gh]Wcddcf] b]h]Yg`hc`]gh]b`hcZ`fYUXZ`gdYU`_`UbX`k`f]hY`]b; Yfa Ub"

5ggYgga Ybh

fi Vf]WUbX`]bX]j]Xi U`Wca a Ybty"

5ggYgga Ybh(. 'HYgh

GhUfhXUHY.'

5 hYbXUbW`F Yei]fYa Ybhg

Gh XYbhg`UfY`ghfcb[`mYbWci fU[YX`hc`Uhm`bX`U`WUggYg`UbX`fYj`Yk`YW`fY`fYW`cFX]b[g"

7 ci fgY`GW`YXi`Y`

[J`Yk`WUgg`hja`YhUV`Y`](#)

H]a`YhUV`Y`

8UhY	HmdY	7cbhYbh
K YY_%`%`!`YVfi Ufm!`&(`UXcd]W : YVfi Ufm		? Ud]hY`%`>WgfWZWgfW.`DYcd`YzXfYUa gž Z]YbXg\]dž`YfcYgž`Udd]bYgg 5i ZH_h/`A cXi`%`
K YY_&.`&`): YVfi Ufm!` A UfW	Hcd]W	? Ud]hY`%`>WgfWZWgfW.`DYcd`YzXfYUa gž Z]YbXg\]dž`YfcYgž`Udd]bYgg A cXi`Y`&!`(`
K YYh`gž`m] b]Wxi%` A UfW	Hcd]W	? Ud]hY`&`!` aZ` i WfW`!`<ck`dYcd`Y`j`Yž \ca`Y`YggbYggž`YI`fUcFX]bUfm`ch`gž`mci b[`UXi`h]Xi`hg gh`j]`j] b[`k`h`h.Y]f`dUfYbhg 5i ZH_hž`A cXi`Y`

		5i žU_hžA cXi `Y%/ `&
K YY_-.;% `5df`!`&% 5df`	Hcd]W	? Ud]hY`) `3 ^Wb i [^YWWd f eW[`.`]Z`cb[`YUfb]b[ž X][]hU`a YX]Už`YUfb]b[`ghUHY[]Yg/ `hVWb]ei Yg GdYU_]b[`HYghžA cXi ``
K YY_%.&&`5df`!`&, 5df`	Hcd]W	bc `YWñ fY/ `h hcf]U`fđUghYf`A cbXUm/ `5BN57 8 Unt
K YY_%%`&- `5df`!`% A Um	Hcd]W	? Ud]hY`) `3 ^Wb i [^YWWd f eW[`.`]Z`cb[`YUfb]b[ž X][]hU`a YX]Už`YUfb]b[`ghUHY[]Yg/ `hVWb]ei Yg A cXi `` (žHYgh

F Ygci fWg

DfYgW]VYX F Ygci fWg

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Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

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

≠mci`YbWci bHYf`U`dfcV`Ya`k`Yb`U`HYa`dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`
HY`Yd`cbY`9I`HYfbU`Gi`ddcfhcb`-`,`)`'`'`'`%cf`Ya`U]`h`Ya`cb`YI`HYfbU`HY`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`mY`UfL`≠mci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhXi`Y`hc`U`ZU`hik`]h`Hi`fb]h]b`mci`a`Um`Udd`mi`Zc`f`Ub`YI`HYbg]cb`z`Vi`hmc`i`
a`i`ghfY`hU]b`mci`f`h]W`Yhbi`a`VYf`Zca`9I`HYfbU`Gi`ddcfhfU`cb[`k`]h`Ubmc`h`Yf`fY`Yj`UbhXcW`a`Yb`hg`L`hc`
]bWi`XY`Ug`Yj`]XYbW`hc`gi`ddcfhmc`i`f`YI`HYbg]cb`Udd`]W]h]cb"≠mci`Ya`U]`9I`HYfbU`Gi`ddcfhmc`i`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`U`b[]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'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 ""

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

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/

