



## ARTS2845

GYI ž<i a Ub'F ][ \hg'UbX'>i gh]W

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

7ci fgY`Cj Yfj ]Yk

`GHZZ7cbhJW`i8YhJ]`g`


7ci fgY'8YhJ]g

# 5ggYgga Ybh

## 5ggYgga YbhHUg\_g`

5ggYgga YbhHUg_	K Y][ \h	8i Y'8UHŸ	Gh XYbh@YUfb]b[ Ci hWta Yg'5ggYggYX
HYgh	( \$	K YY_) 'UbX'K YY_-'	*
9ggUmi	) \$	\$- #\$, #&\$%- '%%) - 'DA	%ž&ž( ž)
Hi hc f]U`F Ydcfh	%)\$	\$- #\$, #&\$%- '%%) - 'DA	'

## 5ggYgga Ybh8YHU]`g

### 5ggYgga Ybh% 'HYgh

#### GHUfhXUHŸ.`

8YHU]`g. 'Hk c'cb]bY 'hYghžYUW'k cfh '&\$| žk ]`VY`Y'X'j]b'K YY\_) 'UbX'K YY\_-' 'cZ'HY'gYa YghŸf''9UW  
hYghk ]`VY'a Uf\_YX'k ]h]b'fk c'k YY\_g'cZgi Va ]gg]cb'UbX'hY'gh XYbŸg'k ]`fYW]j Y'bi a Yf]WU' [ fUXYg"

#### 5XX]h]cbU`XYHU]`g.

Mci 'UFY'fYei ]fYX'hc'Xc'hY'Ugg][ bYX'fYUX]b[ g'Yj Yfmk YY\_'Ug'hY'VUg]g'Zcf'hi hc f]U`X]gW gg]cb''H\YgY  
fYUX]b[ g'UbX'chYf'Wci fgY'k cf\_'U'gc'Zcfa'hY'VUg]g'Zcf'hY'ZfghUggYgga Ybh'Ub'cb]bY'ei ]n'hU]bj c]j Yg  
g\cfh]Ubgk Yfg']b'K YY\_) "'H\Y'gYW'cb'cb]bY'ei ]n'hU\_Yg'hY'Zcfa'cZUb'UbU'mg]g'cZU'g\cfhdUggU[ Y  
fY'UH'X'hc'Wci fgY'ei Ygh]cbg"'Mci f'UbU'mg]g'g\ci 'X'VY'Uddfcl ]a UH'mi+) \$!%\$\$\$k cfXg'cb[ "'Mci 'k ]`bchVY  
dYbU]gYX'Zcf'[ c]b[ 'cj Yf'hY'k cfX''ja ]h'Vi hid'YUgY'fYa Ya VYf'hU]h]g'ja dcf]Ubh'hc'VY'gi W]b'Wh'UbX'hc  
Uj c]X'VY]b[ 'cb[ !k ]bYX'j]b'U`k f]hY'b'k cf\_'Z'hY'Wta a Ybh]cb'mci f'k f]hY'b'k cf\_'UFY'bc]hgi Z]W]Ybhm  
\Y'dž žk Y'W]b'cZ'Wci fgY'X]gW gg'mci f']XYUg'UbX'ei Ygh]cbg"

g]a ]Uf]mfYdcfng"

5ggYgga Ybh&. '9ggUm

GHUfhXUHY. '

8YHU]`g. 'Gh XYbng'gi Va ]hUb ]bX]j ]Xi U`YggUmf&) \$\$`k cfXgE" E i U`]h]j Y`ZYXVUW`UbX`U`bi a Yf]WU`[ fUXY  
UfY`fYh fbYX`hc`gh XYbng`k ]h ]b`h`b`k cf\_]b[ `XUmg`cZXi Y`XUHY`"H\Y`UggYgga YbhW]h`f]U`UfY`Uj U]UV`Y`hc  
gh XYbng`Uhh\Y`ghUfhcZgYa YghYf`gc`h`Uhh`YmW]b`k cf\_`hck UfXg`gdYW]ZYX`ghUbXUfXg" H\]g`]g`h\Y`ZbU`  
UggYgga Ybh]b`h\]g`Vei fgY`Zcf`h\Y`di fdcgYg`cZh\Y`Uhh`bXUbW`fYei ]fYa Ybh`

5ggYgga Ybh' . 'Hi hc]U`F`Ydcfh

GHUfhXUHY. '

8YHU]`g. 'Gh XYbng'gi Va ]hUb ]bX]j ]Xi U`fYdcfhcb`h\Y]f`h`hc]U`dfYdUfU]cb`UbX`dUfh]W]dU]cb`f) \$\$`k cfXgE"  
H\Y`UggYgga YbhW]h`f]U`UfY`Uj U]UV`Y`hc`gh XYbng`Uhh\Y`ghUfhcZgYa YghYf`gc`h`Uhh`YmW]b`k cf\_`hck UfXg  
gdYW]ZYX`ghUbXUfXg" 'Gh XYbng`k ]`fYW]j Y`ZYXVUW`k ]h ]b`h`b`k cf\_]b[ `XUmg`cZgi Va ]gg]cb"



F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

H\Y`YggYbh]U`fYUX]b[ g`Zcf`YUW`k YY`\_UfY`a Uf`\_YX`k ]h`Ub`Ughf]g`\_]b`hY`k YY`\_mgW\YXi`Y"

F YWca a YbXYX`F Ygci fWg

5g`bchYX`UVcj Yzh`hcf]U`g`dfYgi ddcgY`h`Uhmci` \Uj`Y`fYUX`UbX`a UXY`Ub`\cbYghUHY`a dhlc`i`bXYfgHUbX`hY`fYei`]fYX`fYUX]b[ `Zcf`YUW`k YY`\_zk` \]W\`]g`ghUffYX`]b`hY`Wci`fgY`[ i`]XY`VY`ck`"

h]g`]a`dcfHUbhH`UhUg`W]nYbgz`UbX`ghi`XYbhg`cZdc`]h]Mgz`mci`fYUX`Uh`YUghcbY`[ ccX`bYk`g`gci`fW`XU]`mfZcf`YI`Ua`d`YzhY`cb`]bY`9`gSd/[S`cf`@W`Kadj`F`\_`Wc`]g`UXYei`UH`Lz`Ug`k`Y`Ug`k`YY`\_mUbX`a`cbh`m`ci`fbU`g`h`Uhdfcj`]XY`]bZcfa`Uhcb`UbX`Uf[ i`a`YbhUVci`h`hY`ghUHY`cZ`hY`k`cfX`"D`YUgY`ZY`ZfY`h`Ug`\_`hY`7`ci`fgY`7`ccfX]bUhc`f`Zcf`gi`[ [Ygh]cbg`UVci`hchYf`Vcc`\_gz`Ufh]WYg`cf`k`YV`

[: cc\[ 'Y'UbX': cc\[ 'Y'GWXc'Uf](#)

CZwci fgY''Mci 'Wb'gYhi d'hY'dfYZfYbW'g'hc''b\_'; cc[ 'Y'GWXc'Uf'hc'hY'I BGK '@]VfUfmYj Yb'k \Yb'mci UfY'bchcb'Wla di g.'[ c'hc'; cc[ 'Y'GWXc'Uf2'gYh'ib[ g2''VfUfm''b\_gz'UbX'Yb'hf'i b]j Yfg]micZBYk 'Gci h' K U'Yg''b'hY'Vcl 'Zcf' '@VfUfmi"

[I b\]h'X'B'Uhc'bgz'UbX'I B'K'ca Yb](#)

H\Y'I B'g]h'c'ZYfg'UW'W'gg'hc'XcW'a Yb'hg'z'XYW]g]cbg'UbX'Yj Yfmi'h]b[ 'Y'gY'hc'Xc'k ]h'hY'I B'fUg'h'Y'g]h'Y' ]g [ ][ Ubh]Vz'h]g'gca Y'h'a Yg'ei ]W'Yf'hc'gYUfVX'Zcf'I B'XcW'a Yb'g'i g]b[ '[: cc\[ 'Y'](#)"

[5i ghfU'Ub'@Y\[ U' bZc'fa Uhc'b' bgh'h h'f'bi gh@+](#)

H\]g'g]h'Y'dfcj ]XYg'UW'W'gg'hc'Ub'YI h'Ybg] ]Y'gY'YW]cb'cZdf]a UfmUbX'gYW'cbXUfm5i ghfU'Ub''Y[ U''a U'h'f]U'gz' UbX'\Ug''b\_g'hc'a Ubm]b'h'fbUhc'bU''Y[ U''XUfUVUgYg'UbX'Y'YW'fcb]W'ci fbU'g"

[5i ghfU'Ub'DUf\]Ua Ybh](#)

H\]g'g]h'Y'dfcj ]XYg'UW'W'gg'hc'XYVU'h'gz'Y[ ]g'Uhc'b'z'W'a a ]h'Y'Y'gz'dUf]Ua Yb'Uf'mk \c'g'k \c'Y'h'W'z'k ]h'U'X][ ]h'U' gYUfVX'cZfYV'c'Xg'Z'fca '%-\$%Uh'[DUf' bZc'z'UbX'](#)]bj U'i UV'Y'di V']W]h'cbg'Uh'h'Y '[DUf\]Ua YbhUfm@VfUfmi](#)"

[< \]\[\ '7 ci fhcZ5i ghfU' \]U](#)

H\Y'7 ci fh'g'\ca Y'dU[ Y'c'ZYfg'XYW]g]cbg'z'fUbgW]d'hg'z'fYW'bhgdYYW'Yg'z'V]c[ fUd\]Yg'cZ'h'Y'↑ X[ Yg'z'Y'h'W'

[< i a Ub'F \]\[\ h'g'K U'h'W'z'Ygd''K'ca Yb'g'F \]\[\ h'g](#)

[9i fcdYUb'7 ci fhcZ< i a Ub'F \]\[\ h'g](#)

7 UgYg'UbX'c'h'Y'f'a U'h'f]U'Z'fca 'h'Y'9i fcdYUb'7 ci fh'

[I b\]h'X'? \]b\[ Xca 'DUf\]Ua Ybh](#)

H\]g'g]h'Y'c'ZYfg'UW'W'gg'hc'V'ch'dc']h'W''UbX''Y[ U''XYW]g]cbg'z'd'i g'U''h'Y'i gi U''gh' Z'cb'[ c] Y'fba Yb'h''H\Y'fY UfY'U'gc'gYdUfU'h'k YVg]h'g'Zcf'h'Y '[G'W'c'h'g'\': c\] Y'fba Yb'h'f \]U\[ \U'h'Ug'bU'\15'VU'z'h'Y'K'Y'g'\': c\] Y'fba Ybh f@mk cXfUY'h'7 ma fi t'z'UbX'h'Y' B'c'f'h'Y'f'b'f'Y'UbX'9i YW'h\] Y'@cgg\]V'Y'Q](#)

[H\Y'K \\]h'Y'< ci gY](#)

CZ]W]U'k YV'g]h'Y'Zcf'h'Y'K \]h'Y'< ci gY'UbX'h'Y'() ^h' D'fYg]XYb'hcZ'h'Y'I G5"

[Gi dfYa Y'7 ci fhcZ7 UbUXU](#)

H\]g'g]h'Y'dfcj ]XYg'UW'W'gg'hc'XYW]g]cbg'cZ'h'Y'Gi dfYa Y'7 ci fhcZ7 UbUXU"

[Gi dfYa Y'7 ci fhcZ'h'Y'I b\]h'X'G'h'U'h'g](#)

H\]g'g]h'Y'c'ZYfg'I G'Gi dfYa Y'7 ci fh'XYW]g]cbg'Ug'k Y''Ug'c'hg'cZ'ch'Y'f'a U'h'f]U''"

[C'm'Yn](#)



H\]g'I G'Gi dfYa Y'7ci fhA i`hja YX]U'g]h' d'fcj ]XYg'UWVWgg'rc'cfU'Uf[ i a YbhgžhfUbgWf]d'hg'UbX'WUgYg"

A Ubmch.Yf'i gYZ ``XUHUVUgYg'UfY'Uj U]UV'Y'j ]U'hY [L.BGK\\_@VfUfmk.YVg\]h.ž](mailto:L.BGK_@VfUfmk.YVg]h.ž)

7ci fgY'9j U'i Uh]cb'UbX'8Yj Y`cda Ybh

5hi BGK žgih XYbhYj U'i Uh] Y'ZYXVUW\_ ]g'[ UH.YfYX'dYf]cX]WU`mi g]b[ žUa cb[ 'ch.Yf'a YUbgžh.Y  
a m9I dYf]YbW'dfcW'gg" Gh XYbhZYXVUW\_ 'cb'h.]g'Wci fgY ]g[ UH.YfYX'h'fci [ \ 'a m9I dYf]YbW'Yj U'i Uh]cbg  
Uh'h.Y'YbX'cZ'h.Y'Wci fgYžUbX'UhUbm]hja Y'gih XYbhg'UfY'k Y'Wca Y'rc'Ya U]'cf'gdYU\_'rc'h.Y'7cbj Ybcf'UVci h  
ei Ygh]cbg'cf'dfcV'Ya g''h]g'gca Yhja Yg'h.Y'WUgY'h.Uhgh XYbhg'i bXYfg]UbX'h.Y'g][ b]Z]W]bW'cZgca Y'cZ'h.Y  
dfcV'Ya g'W'bg]XYfYX'cb'mUZYf'h.Y'Wci fgY ]g'Z'fa U'm'Wca d'Yh'Xž'UbX'gh XYbhg'UfY'U'gc'U'k Umg'k Y'Wca Y  
rc'W'cb]UW'h.Y'gYa ]bUf'7cbj Ybcf'UZYf'WUggYg'\Uj Y'Z]b]g\YXžYj Yb'a Ubm]YUfg'UZYf'h.Y'Wci fgY'\Ug  
YbXYX''5''ZYXVUW\_ ]g'WUfYZ ``m'W'bg]XYfYXž'fYZYW'X'i dcbž'UbX'i gYX'rc'Yj U'i UH'UbX'fYZ]b'U''UgdYWg  
cZ'h.Y'Wci fgY"

Gi Va ]gg]cb`cZ5ggYgga YbhHUg\_g

Gi Va ]gg]cb`cZ5ggYgga YbhHUg\_g

Hi fb]hb`Gi Va ]gg]cb

≠mci`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`fb`U`Gi`ddcfh`cb`-`,`)`'`'`'`%`cf`Ya`U]`h`Ya`cb`YI`H`fb`U`H`h`gi`ddcfh`4`i`bgk`"YXi`"Ui`"Gi`ddcfh`  
`l`ci`fg`UfY`,`.\$\$Ua`-`-%\$.\$\$da`cb`k`YY`XUmg`UbX`-`.\$\$Ua`-`i`.\$\$da`cb`k`YY`YbXg`f`l`\*)`XUmg`U`m`Y`Uf`l`"≠mci`  
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`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`fb`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`bg]cb`Udd`]W`h]cb"≠mci`Ya`U]`9I`H`fb`U`Gi`ddcfh`mci`k`]`  
Ui`hc`a`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`Z`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`bh`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]`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`bh`g`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`bh`a`cc`X`Y`"

5 WUXYa ]W<c bYghmiUbX`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 hWYX]h`

hUddfcdf]UHY`dUfUd`fUg]b[ .`7`Ub[ ]b[ `U`ZYk `k cfXg`UbX`d`fUgYg`k \]Y`a cghmiFYhU]b]b[ `hY`cf][ ]bU`  
ghfi W`i 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 hWYX]hU`bX`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'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'f'g'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.##ji V'Y'W'i \]X'Y'g" \]VfUfm'i b'gk "Y'X'i "U'i #' \]g'Y'#J'V'ci h' \]g'Y](#)

5 WUXYa ]WbZcfa Uh]cb`

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

- fYei Ygh]Zc`fYI hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I BGK `<YU`h`UbX`GUZY`midc`]WYg/

