



ARTS2661

ⓂHYfa YX]UHŸ ? c fYUb '6

HYfa 'H\ fYŸ' ##' &\$%-

7ci fgY`Cj Yfj]Yk

`GHUZZ7cbhUW`i8YHU]`g`

`7cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]`]m	@cWU]cb	D\cbY
;]!<mi b`G\]b	["g\]b4 i bgk "YXi "Ui	: f]`%`' `DA žVm 5ddc]bha Ybh	F cca `&\$& A cfj Yb`6fck b 6i]X]b[- ' ,) %+' %

GWXcc``7cbhUW`i`bZcfa U]cb

GWXcc``cZ<i a Ub]h]Yg`UbX`@Ub[i U[Yg

@cWU]cb. `GWXcc``C Z]WžA cfj Yb`6fck b`6i]X]b[ž`@Yj Y``&ž&),

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

D\cbY. `ž*%&`- ' ,) `%*, %

: U! . `ž*%&`- ' ,) `; , +\$)

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

7ci fgY'8YHJ]`g

7fYX]hDc]bHg`*`

Gi a a UfmicZh\Y'7ci fgY

Gi VYWhi5fYU.`? cfYUb`Gh X]Yg

H\]g`Wci fgY`dfcj]XYg`Ub`]bHfa YX]UH`Yj Y`dfc[fUa`]b`? cfYUb`Ub[i U[Y`gh XmZca`U`Wta a i b]WUhj Y`UbX
hUg_!VUgYX`UddfcUWk`"H\Y`df]a Ufma YX]i a`cZ]bghfi W]cb`]g? cfYUb`UbX`k \YfY`bYWggUfm9b[]g\`]g`U`gc

Ug`ja]hX`Ug`a Ubmik ci `X`gi [[Yg]h`Vi hcb`h`Y`c`h`Yf`UbX`Uj Y`U`b`YXX`h`c`dfYdUfY`U`f`Xcgg]YffcZa Uhf]U`
UVci h`c`d]Wj`cZ]b`h`fYg]b`c`fXYf`h`W`bj YfgY`a`Y`Ub]b[Z`m`UbX`Zi`Y`bh`mik]h`b`U]j Y`gdYU`Yfg`k`Y`b`h`Y`
c`W`U]g]cb`d`fYgY`b]g]h`gY`Z`

5g`Ug`V`Y`Y`b`]b`5`F`HG%`*`\$`5`F`HG%`*`%`UbX`5`F`HG&`*`\$`W`Uggfcca`U`W]j]h`Yg`UfY`Z`Ua`YX`h`c`h`U`_`Y`Z` ``
UXj`Ub]U[Y`c`Z`h`Y`]b`h`fU`W]j Y`UbX`W`a`i`U`h] Y`X]a`Y`bg]cb`c`Z`h`Y`Y`Ufb]b[`c`Z?`c`f`Y`Ub`U`h`l`B`G`K`"``h]g`ja`d`c`f`U`b`h`
h`U`h`g`h`X`Y`b`h`g`h`Y`a`g`Y`j`Y`g`V`Y`U`k`U`f`Y`c`Z`h`Y`Y`Ufb]b[`c`V`Y`W]j Y`g`k`Y`Y`_`V`m`k`Y`Y`_`U`b`X`W`U`g`g`V`m`W`U`g`g`z`h`U`h`h`Y`m`
V`Y`U`V`Y`h`c`f`Y`U`h`f`Y`U`X]m`k`U`h`h`Y`m`U`f`Y`Y`Ufb]b[`b`c`k`h`c`k`U`h`h`Y`m`d`f`Y`j`c`i`g`m`Y`U`f`b`h`z`U`b`X`h`U`h`h`Y`m`d`f`Y`W]j`Y`
`c`k`k`U`h`h`Y`m`U`f`Y`Y`Ufb]b[`b`c`k`f`Y`U`h`g`h`c`a`U`h`f]U`d`f`Y`j`c`i`g`m`Y`U`f`b`h`z`U`b`X`h`U`h`h`Y`m`V`Y`Y`b`W`c`i`f`U[Y`X`h`c`i`g`Y`
d`i`f`d`c`g`Y`Z` ``U`b[i`U[Y`U`W`W`c`f`X]b[`m`

Hc`Y`d`h`Y`g`h`X`Y`b`h`c`V`Y`U`b`]b`X`Y`d`Y`b`X`Y`b`h`U`b`X`f`Y`Z`Y`W]j Y`Y`U`f`b`Y`f`z`h`Y`7`c`i`f`g`Y`U`g`c`Y`b`W`c`i`f`U[Y`g`h`Y`g`h`X`Y`b`h`
h`U`h`U]b`]b`X`Y`d`Y`b`X`Y`b`h`f`Y`W`c`[b]h]c`b`U`g`h`c`h`Y`]f`Zi`Y`b`W`n]b`?`c`f`Y`U`b`z`g`i`W`X`U`g`H`Y`g`h`c`Z`D`f`c`Z]W]Y`b`W`n]b`?`c`f`Y`U`b`
f`H`C`D`?`E`U`X`a`]b]g`h`f`Y`X`V`m`h`Y`B`U`h]c`b`U`h`g`h]h`h`Y`Z`c`f`h`h`f`b`U`h]c`b`U`9`X`i`W`h]c`b`f`B`=9`8`E`Z`F`Y`d`i`V`]W`c`Z`?`c`f`Y`U`

HYUW]b[`G`h`f`U`h`Y`[]Y`g`.

9UW]c`Z`h`Y`i`b]h]g`]b`h`Y`h`Y`i`h`V`c`c`_`k`]`V`Y`g`h`X`]Y`X`]b`h`k`c`g`h`U[Y`g`" `@`Y`W`h`f`Y`g`z`]Y`z`U`f[Y`f`W`U`g`g`Y`g`z`g`h`U`f`h`k`]h`
Y`i`d`U`b`U`h]c`b`g`c`b`U`b[i`U[Y`d`U`h`Y`f`b`g`U`b`X`i`f`U`a`a`U`h]W]j`X`Y`h]g`z`U`b`X`Y`b`X`k`]h`Z`c`W`g]b[`U`b`X`g`U`d]b[
Y`i`Y`f`W]g`Y`g`" `H`i`h`c`f]U`g`z`]Y`z`g`a`U`Y`f`W`U`g`g`Y`g`z`V`Y`[]b`k`]h`Z`c`W`g]b[`U`b`X`g`U`d]b[`Y`i`Y`f`W]g`Y`g`z`U`b`X`W`c`b`W`i`X`Y`k`]h`
d`i`f`d`c`g`Y`Z` ``i`g`Y`g`c`Z`Y`U`f`b`h`Y`i`d`f`Y`g]c`b`g`]b`W`c`b`h`Y`i`h`

h`U`X`X]h]c`b`z`h`Y`7`c`i`f`g`Y`d`f`c`a`c`h`Y`g`f]b`W]X`Y`b`h`U`f`i`Y`Ufb]b["5`b`]a`d`c`f`U`b`h`W`c`a`d`c`b`Y`b`h`c`Z`h`Y`7`c`i`f`g`Y`]b`h`g`
f`Y[U`f`X`]g`g`h`X`m]b[`g`Y`h]g`c`Z`f`Y`U`X]b[`d`U`g`g`U[Y`g`g`Y`Y`W`Y`X`Z`f`c`a`d`f`Y`j`c`i`g`H`C`D`?`h`Y`g`h`g`X`i`f]b[``Y`W`h`f`Y`h`c`i`f`g`
H`h]g`]g`b`c`h`c`b`m`h`c`Y`b`W`c`i`f`U[Y`g`h`X`Y`b`h]g`h`c`h`U`_`Y`]b]h]U]j Y`g`]b`d`f`U`W]j]b[`h`Y`i`h`U`b`U`m`g`Y`g`V`i`h`U`g`c`h`c`Y`i`d`U`b`X`
h`Y`f`U`b[i`U[Y`f`Y`g`c`i`f`W`g`" `H`h`Y`7`c`i`f`g`Y`U`g`c`Y`b`W`c`i`f`U[Y`g`h`Y`g`h`X`Y`b`h]g`h`c`i`b`X`Y`f`U`_`Y`Y`j`Y`" `c`f`h`[`Y`f`H`Y`g`h`
c`Z`D`f`c`Z]W]Y`b`W`n]b`?`c`f`Y`U`b`"8`Y`h]Y`X`]b`Z`c`f`a`U`h]c`b`c`b`h`Y`h`Y`g`h`U`b`X`a`U`h`f]U`g`Z`c`f`h`Y`d`f`Y`d`U`f`U]c`b`k`]`V`Y`[]j`Y`b`
X`i`f]b[`h`Y`W`c`i`f`g`Y`"

5ggYgga Ybh

5ggYgga YbhHUg_g

5ggYgga YbhHUg_g	K Y][\h	8i Y'8UH	Gh XYbh@YUfb]b[Ci hWta Yg'5ggYggYX
!7`Ugg'HYgh	&\$!	!K YY_ '(%&Z
5gg][ba Ybh	&\$!	!K YY_ +	%&Z(
dfYgYbhU]cb	&\$!	K YY_ %\$	%&Z(
:]bU`YI Ua`	(\$!	8i f]b[`9I Ua`DYf]cX	%&Z

5ggYgga Ybh8YHJ]`g

5ggYgga Ybh%`!7`Ugg'HYgh

GHUfhXUH.

8YHJ]`g. H\Y`!7`Ugg'HYghfi bg'Zc'f'cbY`lci f'UbX`Wcbg]gh'cZei Ygh]cbg'cb'j cWUvi `UfmUbX'[fUa a Uh]WU`
dUHfYfbg'Ug'k Y`Ug`Wta dfY\Ybg]cb'ei Ygh]cbg'hc'f'ghk`Uh\Ug`VYyb`YUfbh]i g'ZUf": YYXVUW_k]`VY`
[] Yb`h]fci [\]bX]]Xi U`Wta a Yb]g"

5ggYgga Ybh&`5gg][ba Ybh

GHUfhXUH.

8YHJ]`g. Mci`k f]h`]b? cfYUb`cb'cbY`cf'a cfY`fcd]MgZk` \]W`g\ci`X`VY`fY`Y] Ubh]c`hY`7`ci`fgYZ]b`bc'a`cfY`
h]Ub`%&\$\$`k`cfXg`]b`fch`"H\Y`XYHJ]`g`UfY`fcd]WU`bX`hY`fi`bb]b[`h]a`YZ`Uddfci`]a`UH`mi]hb`
a`]bi`h]gZ`UfY`fcd]WU`bX`hY`fci`[\ `WUgg`X]gW`gg]cb": YYXVUW_k]`VY`[] Yb`h]fci [\]bX]]Xi U`
Wta a Yb]g"

5ggYgga Ybh'`dfYgYbhU]cb

GHUfhXUH.

8YHJ]`g. H\Y`dfYgYbhU]cb`]g`U`gdYYW`]b? cfYUbZ`VUgYX`cb`hY`gW]dh]mci`dfYdUfYXZ`UbX`]g`fcd]WU`bX`hY`fi`bb]b[`h]a`YZ`Uddfci`]a`UH`mi]hb`
a`]bi`h]gZ`UfY`fcd]WU`bX`hY`fci`[\ `WUgg`X]gW`gg]cb": YYXVUW_k]`VY`[] Yb`h]fci [\]bX]]Xi U`
Wta a Yb]g"

5ggYgga Ybh(: :]bU`YI Ua

GHUfhXUH.

8YHJ]`g. H\]g]`]g`U`Zcfa`U`YI`Ua`]bU]cb`gW`YXi`YX`]b`hY`Zcfa`U`YI`Ua`]bU]cb`dYf]cXZ`UbX`]g`hY`Z]bU`
UggYgga`YbhHUg_g`Zc'UHfYbXUbW`di`fdcgYg": YYXVUW_k]`VY`[] Yb`h]fci [\]bX]]Xi U`Wta a Yb]g`i`dcb`
fYei`Ygh`

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

- *`l b]hg`Zca`'=adMS` [3Uf[a` 4aa] \$ Vm; `G\]b/`5`6i ncžl bdi V]g\YX`K YV`9X]hcbž&\$\$%" fB`"h.Y`l b]hg`UfY`Uj U]UV`YžZfY`cZV\Uf[Yžj]U`A ccX`Y"Gh XYbHg`UfY`YI dYW\X`hc`df]bhci h`h.Y]f ck b`Wcd]Yg"Ł

F YWca a YbXYX`F Ygci fWg

- Gcb[ž>UY`>i b[" f&\$\$) Ł" FZW=adMS` >S` YgSYW E fdgUfgdW GeWS` V 5a` fWj f`B Yk`Mcf_ F ci hYX[Y
- =a ž<c`6]bž<cb[ž? mi b[`Dmcž/`7`Ub[žGi ` _`b" f&\$\$%Ł" =adMS` YdS`_ SdXad[fWd Sf[a` S^ MSd WŁ"G Yci` . McbgY]l b]j Yfg]miDfYgg"
- =[Y E Wa` Y ;` ef]fgfW [\hd.##k k k "gY`cb\[\U_XUb\["cf\[#g`W #ca Y#a U\]b"Xc](#)
- A` Žŕ W`=adMS` >S` YgSYW5agdeWŁ Tk EaYS` Y G` [hWŁ[fkŁ E WŁgŁ =adMS [\hd.## cfYUb"gc\[Ub\["UW` f#](#)
- =D;2 G@EI /=adMS DWeWSdJZ ;` ef]fgfW G@EI fi [\hd.##k k k " fi"i bgk "YXi "Ui # cfYUb!UW\]cb! \]bYfbU\]cbU! YUfbYfg!Vcc !%](#)
- 9a =adMS` S` V S XW` afZWŁ Sf3e[S 7VgUSf[a` 8ag` VSf[a` [? WTagd W [\hd.##k k k "Ug\]UYXi W\]hcb"YXi "Ui #a U\]bgYUfVX3\]bXYI 7 U\]U`c\[i Y1a U\]bgYUfVX/ gYUfVX E i Yfml \[c _cfYUW k cfXgA cXY1\\$](#)
- =adMS` 5g`fgdS^5W fdW[` E kV` Wk [\hd.## cfYUbW`h fy"cf\["Ui #](#)
- =adMS` 7VgUSf[a` 5W fdW[` E kV` Wk [\hd.##k k k "Ui.g_YW` f#](#)

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

7ci fgYg`UfY`dYf]cX]W]`mfYj]Yk YX`UbX`gh XYbHg` ZYXVUW`]g`i gYX`hc`]a dfcj Y`h.Ya`": YXVUW`]g [U`h.YfYX`Zca` gh XYbHg`i g]b[`a mŕl dYf]YbW`" Gh XYbHg`UfY`YbWŁi fU[YX`hc` WŁa d`YH`h.Y]f`gi fj Ymg`Vm UWW`gg]b[`h.Y`dYfgcbU`]gYX`k YV`]b`_j]U`h.Y`A ccX`Y`WŁi fgY`g]h`"

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`hYa`dh]b[`hc`gi Va`]hmcif`Ugg][`ba`Ybh`h`fci`[\`Hi`fb]hbzd`YUgY
hY`Yd\cbY`9I`hYfbU`Gi`ddcfhcb`-`,`)`''`%cf`Ya`U]`hYa`c`%YI`hYfbU`hY`hgi`ddcfh`i`bgk`"YXi`"U%`bE

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 gžZca 'XY`]VYfUh'`WXYUh]b['h'UWV]XYbhU`miW'cdm]b['Zca 'U'gci fW'k]h'ci hUW_bck `YX[Ya Ybh'

I BGK '[fci dg'd`U[]Uf]ga ']bh' hY`Zc`ck]b['WU]h[cf]Yg.

7cdm]b[.i g]b['hY`gUa Y'cf'j Yfmg]a]Uf'k cfXg'h' hY'cf][]bU`hI hcf']XYU'k]h'ci hUW_bck `YX[]b['hY

- 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'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'j]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 ""

[\hfd.#\]i V'YW'f i \]XYg" \]VfUfm'i bgk "YXi "Ui #' \]gY#\]Vci h' \]gY](#)

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`mdc`]WYg/

