



ARTS3660

5Xj UbWX? cFYUb'5

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

7 ci fgY`Cj Yfj JYk

`GHUZZ7cbhUW`i8YHUJ`g`

`7cbj Ybcfg`

B Ua Y	9a Uj`	5j Uj`UVj`]m	@cWUj`cb	D\cbY
GYcb[!7\i`G\]b	g"gl]b4 i bgk "YXi "Ui	H\i fgXUm%' / : f]XUm%&%'cfVm Uddc]bha Ybh	A 6&* &	-',)!' +&(

`@YW`i fYfg`

B Ua Y	9a Uj`	5j Uj`UVj`]m	@cWUj`cb	D\cbY
GYcb[!7\i`G\]b	g"gl]b4 i bgk "YXi "Ui	H\i fgXUm%' / f]XUm %&%'&žcfVm Uddc]bha Ybh	A 6&* &	-',)!' +&(

`Hi hcfj`

B Ua Y	9a Uj`	5j Uj`UVj`]m	@cWUj`cb	D\cbY
5`jW`>cc	U"čc4 i bgk "YXi "Ui	H67	A 6&*,	H67

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

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

@cWUj`cb. `GW`cc`C ZjW`žA cfj Yb`6fck b`6i]X]b[ž`@Yj Y`&ž&),

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

D\cbY. `ž*%&`-' ,) `)%*, %

: Ul. `ž*%&`-' ,) `; , +\$)

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

7ci fgY'8YHJ]`g

7fYX]hDc]bHg`*`

Gi a a UfmicZ\hY'7ci fgY

Gi VYWh5fYU.`=adMS` E fgV[Wé

H\]g'7ci fgY'dfcj]XYg'Ub'5Xj UbW'X'Yj Y'dfc[fUa`]b'? cfYUb'Ub[i U[Y'ghi XmZ'ca`U'Wéa a i b]WU]h] Y'UbX
HJg_!VUgYX'UddfcUW' "H\Y'df]a Ufma YX]i a`cZ]bghfi W]cb`]g'? cfYUb'"Gh'XYbhg'Wébh]bi Y'hc'XYj Y'cd'UbX
YI H'bx'hY]f'i bXYfgHUbX]b['UbX'i gY'cZ? cfYUb'a cfd'c'c[mž'YI]g'UbX'gnbHUI`h'fci [\`fYUX]b[ž'UbX
X]gW'gg]cb`]b'? cfYUbž'cZUi`h'Ybh]W? cfYUb'hYI hg'Vmi`h]`]g]b['j Uf]ci g'fYUX]b['ghfUH[]Yg'"DUfh]W]dU]h]cb`]b`U
j Uf]YfmcZk f]h]b[ž'gi W'Ug'Wéa d'YI`"YhYfgž`"h'fUhi fY'fYgdcbgYgž'bc'h' hU_]b[ž'UbX'YggUmik f]h]b[" `éWi XYg
gmgh'a Uh]WdfUW]W'cZgYa`]bUf'dfYgYbH]h]cbg`]b`U'k]XY'fUb[Y'cZ'Wéa a i b]WU]h] Y'g]h Uh]cbg'gi W'Ug
Vi g]bYgg'UbX']bhYf]]Yk`"

Hcd]Wé]]bWi XYg']bhYfdYfgcbU'fY'Uh]cbgž'YbhYfU]ba Ybh]bXi ghf'ž'W`h' fU'` \Yf]hU[Y'UbX'Vi g]bYgg'dfUW]W'g"

7ci fgY'@YUfb]b[`Ci hWéa Yg

%` HfUbg'UH'Wéa d'YI`? cfYUb'X]U'c[i Yg'cf'dUggU[Yg']bhc`9b[`]g\
&" GdYU_? cfYUb'i g]b[`Wéa d'YI` gYbhYbW'gž'Uddfcdf]UH'j`cW]Vi`Ufmž'fY[]ghYf'UbX'ghmYgž'UbX'U
j Uf]YfmcZgmbcbma`g
'`" F YUX'Wéa d'YI` hYI hg'hc'cV]h]b`]bZ'fa Uh]cb'UbX']XYUgž'UbX'h'Yb'i gY'h'Y']bZ'fa Uh]cb`]b`U'j Uf]YfmcZ
WébhYI hg
(`" K f]h'Z'fa U'UbX'Wéa d'YI` hYI hg'hc'XYgW]VY`UW]h]]hYgž'Yj Ybhg'UbX'hcd]Wé`h'UhifY'UH'hc'h'Y'`ZY'UbX
k cf`cZ? cfYUbg
)`" 9I d'U]b'h'Y'? cfYUb'W`h' fU'`Y[UWh'Z'ca`]bhYfbU]h]cbU'dYfgdYW]h] Yg

HYUW]b[`GhfUH[]Yg`

F Uh]cbU'Y.

H\]g'Wéi fgY`]g`]bWi XYX'hc'YbUV'Y'mci`hc'XYj Y'cd'UXj UbW'X'Wéa a i b]WU]h]cb`g_]`g'h'Uhk`j`Yb\UbW'`mci`f
dfUW]W'Ug'U'Wéa dYh'bhWéa a i b]WU]h]cb`]b'? cfYUb'"`h'fYZYW]g'U'dcg]h]cb'h'Uh'mci`f`dfUW]W'k`]h]b'h'Y`ZY`X
k`j`fYei`fY'UXj UbW'X'Yj Y'g'cZ'Wéa a i b]WU]h]cb`hc'YbUV'Y'cb[c]b['XYj Y'cda Ybh]b`j Uf]ci g'dfcZYgg]cbU'
UfYUg"

H\Y`h'YUW]b[`k`j`VY`U][bYX'k`]h'h'Y'U]a gž'YUfb]b[`ci hWéa Yg'UbX'UggYgga Ybh]hJg_g'cZ'h]g'Wéi fgY
XYgW]VYX'UVcj Y'gc'Ug'hc'UW]Y]j Y'XYg]fYX'fYgi`hg`H\Y'`Ub[i U[Y'cZ]bghfi W]cb'UbX'Wéa a i b]WU]h]cb`]g
? cfYUb'gc'h'Uh'mci`W]b'XYj Y'cd'mci`f`]ghYb]b['UV']`h]Yg'"5`h'Y'Zci`f`Ub[i U[Y'g_]`g'f]ghYb]b[ž'gdYU_]b[ž
fYUX]b['UbX'k`f]h]b[`k`j`VY`]bhY[fUH'X'h'fci [\`ci h'h]g'Wéi fgY'UbX'Vc'h'Wéa a i b]WU]h] Y'UbX'[fUa`a UfI
hfUbg'Uh]cb'UddfcUW]Yg'k`j`VY`UXcd'h'YX"

HYUW]b[`GhfUH[]Yg.

H\Y`Wéi fgY`]bj`c`j`Yg'ZUW]!hc!ZUW'`YWh'fYg'UbX'h'hc]f]U'g'UbX'cb`]bY'cf`Ub[i U[Y'UV'YI`YfW]gYg'"`é'h'Y
'YWh'fYgž[fUa`a Uh]W]`UbX'W`h'fU'hc]d]Wé`hc'VY`Wéj`YfYX'Xi`f]b['h'Y'k`YY`_k`j`VY'dfYgYbhYX'UbX'YI`d]WU]h'X"
é'h'Y'h'hc]f]U'gž'mci`k`j`VY`Ugg][bYX'Wéa d'YI`hJg_g`]b'h'Y'Zci`f`Ub[i U[Y'g_]`g'UfYUg'"H\YgY`hJg_g`k`j`
]bWi XY'fYUX]b['UbX'UbU'mg]b['U'j Uf]YfmcZ'h'YI`hgž'XY'j`Yf]b[`cfU'dfYgYbH]h]cbg'UVci`h'h'Y'hc]d]Wé'VY]b[

Wcj YfYX'jb'hY'k YY_žj]Yk]b['UbX'X]gW gg]b['Z'a g'UbX'cH Yf'j]gi U'a UHf]U'g'UbX'k f]h]b['j Uf]ci g'hdYg'cZ
hYI hg'cb'? cfYUb'hd]Wg''Gca Y'fYUX]b['UbX'k f]h]b['UW]j]h]Yg'k]''VY'gYh'c' \Y'd'mci 'Xc]b['mci f'YggUm
Ugg][ba Ybhcb'hd]Wg'fY'UH'X'hc'U''b[i]gh]WUbX'gc]c!W 'h fU'UgdYWh'cZ? cfYU''H\Y'cb']bY'a UHf]U'g'k]'
dfcj]XY'mci 'k]h'YI d']W]h] cW]Vi 'Ufmž'gYbhYbVW' dU]h]f]bg'UbX'cH Yf'k f]h]b'YI YfW]gYg'Zcf'k \]W'mci 'k]''VY
dfcj]YX'ja a YX]UH'Z'YXVUW_''

H\Y'Wci fgY'i gYg'U'fUb[Y'cZHYUW]b['ghfUH']Ygž]bWi X]b['hUg_]cf]Ybh'X'UW]j]h]Yg']b'dU]fg'UbX'] fci dgž
UbX'WUgg'UbX'ga U'' [fci d'X]gW gg]cbg'' b'h]g'dfcW'ggž'mci 'k]''VY'UV'Y'hc'W'a a i b]W]h'Zcf']bZ'ca U]cbž
]XYUg'UbX'Uf[i a Ybh'Vch'cfU'mUbX']b'k f]h]b[''Mci 'k]'' [UH'Yf'UbX'cf[Ub]gY]bZ'ca U]cb'Z'ca 'hY
hYI h/cc_'UbX'U'k]XY'fUb[Y'cZk f]h]b'a UHf]U'gž'Ui X]c!j]gi U'fBJ 8žJ]XYcžYh'W'UbX'Y'YW'fcb]Wf]bh'fbYhž
Yh'W'gci f'W'g''H\]g'dfcW'gg'k]''U'gc'YbUV'Y'mci 'hc'i gY' #i'f' cfYUb'k cfX'dfcW'ggcfž? cfYUb'k YV'']b_gžYh'W'
YZZYW]j Y'mUg'U'a YUbg'cZ'W'a a i b]W]h]cb'UbX'Ug'Ub'U]X'hc''Ub[i U[Y'YUfb]b['Ug'k Y''Ug']bXYdYbXYbh
YUfb]b[''

WUgg"

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

K YY_`miHb!a]bi H`j cWVi `Ufmei]nnYg`]b`WUgg"

Gi Va]gg]cb`bchYg.Mci `a i ghgi Va]hH`Y`ei]n`dUdYfg`UhH`Y`YbX`cZei]nnYg`]b`WUgg

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

5ggYgga Ybh&. `Gdc`_Yb`HYgh

GHUfhXUH. `Bch5dd`]WUVY

@Yb[h. `%l`" `ei Ygh]cbg

8YHJ]`g. `5b`]bX]j]Xi U`H`_]b[`gYgg]cb`k]h`h`Y`HYUW.]b[`ghUZZ`Zcf`%\$`a]bi H`g`cb`dfY!UffUb[YX`hcd]Wg"
Gdc`_Yb`UbX`k f]H`b`ZYXVUW`k]h`a`Uf`g"

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

5b`]bX]j]Xi U`H`_]b[`gYgg]cb`Zcf`%\$`a]bi H`g"

Gi Va]gg]cb`bchYg.Mci `a i ghUH`bX`h`Y`]bX]j]Xi U`H`_]b[`gYgg]cb`fH`i fgXUmK YY`_`-`L

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

@Yb[h. '(I %\$\$'k cfXg

8YHJ]g. : ci fg\cfh[i]YX'Wta dcg]hcbg'cb'[]j Yb'hd]Wg'Uhbc'a cfY'hU'%'k cfXg'YUWz'Wta d'YhX
Xi f]b['WUgg'UbX'gi Va]h'X'Uh'hY'YbX'cZ'hY'WUgg"8YHJ]g'cZ'hY'Wta dcg]hcb'hUg_g'UfY'i d'cUXYX'cbhc
h'Y'i b]j Yfg]mfj @A G'Uh'hY'Wta a YbW'a YbhcZ'hY'Wta fgY"K f]h'Y'b'ZYXVUW_k]h'a Uf_g"

5XX]hcbU'XYHJ]g.

: ci f'WUgg'Wta dcg]hcbg"

Gi Va]gg]cb'bch'g.Mci 'a i ghgi Va]h'WUgg'Wta dcg]hcbg']b'WUgg

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

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

McbgY]? cfYUb`6cc_`(!%/5i h\cfg. `McbgY]I b]j Yfg]m? cfYUb`@Ub[i U[Y`#gh]h hY/Di V`]g\Yf. `McbgY]
I b]j Yfg]mDfYgg

F YWca a YbXYX`F Ygci fWg

=adMS` 9 dS__ SdXd;` fWd Sf[a` S^>Wsd Wde/5i h\cfg. `a ž<cb[`UbX`7\Ub[/Di V`]g\Yf. `McbgY]
I b]j Yfg]mDfYgg"

G` VWefS` V[Y >\$ =adMS` >Wsd Wd7 ddae, 6 WeUd]bf[a` t 7j b`S` Sf[a` S` V;_ b[USf[a` e/5i h\cfg. `G\]bžG!7/
Di V`]g\Yf. `Gchcb[`Di V`]g\]b[`7c`fGYci `E`5j U]UV`Y`Uhl BGK `6cc_g\cd

McbgY]? cfYUb`@Ub[i U[Y`#gh]h hY/[k k k "ng `\]"Wca](#)

?]b[`GY`cb[`#gh]h hY/[k k k "gY`cb\[\U XU\]b\["cf\]](#)

B U]cbU`#gh]h hY`cZhY`? cfYUb`@Ub[i U[Y. [k k k "?cfYUb\]"c" _f](#)

I BGK `@]VfUfm [k k k "\]"VfUfm"i bgk "YXi "Ui](#)

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

7ci fgYg`UFY`dYf]cX]W]m]fYj]Yk YX`UbX`gh XYbhg`ZrYXVUW_]g`i gYX`hc`]a dfcj Y`hYa`"" : YYXVUW_]g
[U]hYfYX`Zca`gh XYbhg`i g]b[`a m]l dYf]YbW]`#]g`YbW`i fU[YX`gh XYbhg`Wca d`Yh`hY]f]gi fj Ymg`Vm
UW]gg]b[`hY`dYfgcbU]gYX`k YV`]b_]U`hY`A ccX`Y`W`i fgY`g]hY"

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 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]`Ubc`hYf`g`]XYUg`cf`k cfXg`k]h`ci hW`YX]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`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`Ubc`hYf`g`]XYUg`cf`k cfXg`k]h`ci hW`YX]h`UbX`hc`
d]YW]b[`hc[Y`hYf`ei`chYg`UbX`dUfUd`fUgYg`]bhc`U`bYk`k`c`Y`Z`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`Ubc`hYf`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'U'g'U'bx'Uf'X'g'c'Z'V'Y'\Uj]ci f'Y'I d'Y'W'X'c'Z'Y'j Y'f'm'c'b'Y'']b'h'Y'I BGK 'W'c'a a i b]m
- `c'W'U'h'g'Y'f'j]W'g'UbX'j]b'Z'c'f'a U'h'c'b'U'V'c'i h'l BGK 'UbX'I BGK '@]V'f'U'f'm

Gca Y'cZ'U'g'Y'U'f'Y'U'g'k]`VY'Z'Ja]]U'f'hc'mci ž'c'h'Y'f'g'k]`VY'b'Yk "'; U]b]b['U'gc`X'i bXYfghUbx]b['cZU`'h'Y f'Y'U'h'X'U'gd'Y'W'g'c'Z'9@-G'9'k]`'Y'd'mci 'a U_Y'h'Y'a c'g'h'c'Z'mci f'g'h X]Y'g'U'hl BGK ""

[\h'c'.#\]j V'Y'W'f'i \]X'Y'g" \]V'f'U'f'm'i b'g'k "Y'X'i "U'i #' \]g'Y'#\]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 hYbg]cb/
- `UhY`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I BGK `<YU`h`UbX`GUZY`mdc`]WYg/

