



ARTS1210

7cbWdhg'cZ5g]U

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

GWcc`cZ<i a Ub]hYg`UbX`@Ub[i U] Yg`#`i BGK`5ftgz8Yg][b/`5fWX]hYWhi fy

7 ci fgY`Cj Yfj]Yk

GhJZ`7cbhJWk`8YhJ]`g

7cbj Ybcfg

B Ua Y	9a Uj`	5j U]`UV]`]m m	@cWjhcb	D\cbY
=				

7ci fgY'8YHJ]`g

7fYX]hDc]bhtg`*`

Gi a a UfmicZ`h`Y'7ci fgY

H\]g'; UHrk UmVci fgY`]bhfci Wg`mci`hc`h`Y`X]ZYfYbhVci bhf]Yg`h`Uha U_Y`i`d`h`Y`5g]Ub`fY[]cb`UbX`h`Y`
]bh`fX]gW]d`]bUfma`Y`h`c`Xg`i`gYX`hc`fYgYUfW`UbX`gh`Xm5g]U`f`l`bck`b`Ug`5g]Ub`Gh`X]Ygl`I`g]b[]Ub`U`!5g]U`
UddfcUW`k`]h`U`ZcW`g`cb`h`Y`h`Y`bh]Y`h`W`bh`fnz`]hk`j`[]j`Y`mci`U`VfcUX`_bck`YX[]Y`c`Z`h`Y`X]j`Yfg]m`ic`Z`h`Y`
gcW]Y]Yg`h`U`h`Vc`bgh]h`h`Y`5g]U`"Mci`k`j`"YUfb`UVci`h`h`Y`X]ZYfYbhW`h`i`fYg`h`Uha`U_Y`i`d`9Ugtz`Gci`h`UbX`
Gci`h`Y`Ugh5g]Uz`]bW`X]b[]fY][]cbz[]YbYU`Vc`cb]U`"j]g]f]Yg`z`Vc`bgh]i`W]cbg`cZ[]YbXYfz`5g]Ub`W]Yg`z`h`Y`
dc`]h]Vg`c`Z`X`Y`a`c`W`U`W`h`UbX`U`i`h`c`f]h`Uf]Ub]ga`z`UbX`h`Y`Vc`bb`Y`W]cbg`VY`h`Y`Yb`5g]Ub`Zc`X`UbX`Y`h`b]W`
]XYbh]h]Yg"

7ci fgY`@YUfb]b[]Ci`h`Vc`a`Yg

%`5`fh]W`U`h`U`VfcUX`Vc`XmcZ`_bck`YX[]Y`UVci`h`h`Y`X]j`Yfg]m`UbX`Xmb`Ua`]W]c`Z`h`Y`5g]Ub`fY[]cb`
&`8`YgW]VY`_YmYj`Ybhgz`dYcd`Yz`UbX`h`fYbXg`Vc]YfYX`Vmi`h]g`Vci`fgY`
'`"5`bgk`Yf`ei`Ygh]cbg`dcgYX`i`g]b[]Uf[]a`Ybh`UbX`Yj`]XYbW`
(`"A`U_Y`g`W`c`U`f`m`Uf[]a`Ybh]i`g]b[]]bXYdYbXYbhmi`c`W`h`Y`X`Yj`]XYbW`

HYUW]b[]G`h`f`U`h`[]Yg`

H\]g`Vci`fgY`]g`XYg][]bYX`hc`\Y`d`mci`XYj`Y`cd`U`ei`Ygh]cb]b[]a`]bX`k`\Yb`UddfcUW]b[]h`Y`gh`XmcZ5g]U`
H\Y`Y`W`h`fYg`dfcj`]XY`V`U`W`_`fci`bX`]b`Zc`fa`U]h]cb`UbX`]bhfci`Xi`W`h`Y`c`f`Y`h]W`UbX`Ub`U`m]h]W`d`Y`fgd`Y`W]h]j`Yg`UbX`
XYV`U`h]g`h`U`h`U`fY`Yi`d`c`f`Y`X`]b`c`f`Yi`Ya`d`]Z]YX`V`m`g`d`Y`W]U`]nYX`k`YY`_`m`f`Y`U`X]b[]g`"h]g`]a`dc`f`h`U`b`h`h`U`h`mci`Y`U`fb`
h`Y`g`_`]g`c`Z`W]h]W`Ub`U`mg]g`"H\Y`g`Y`g`_`]g`b`Y`Y`X`h`c`V`Y`X`Y`j`Y`cd`Y`X`f`Y[]i`U`f`m`c`j`Y`f`h]a`Y`UbX`h`h`c`f]U`g`U`fY`U`
Z`b`X`U`a`Y`b`h`U`d`U`f`h`c`Z`h`g`Y`U`fb]b[]d`f`c`W`g`g`"K`f]h]Y`b`f`Y`g`d`c`b`g`Y`g`h`c`h`Y`f`Y`U`X]b[]g`h`f`U]b`mci`hc`f`Y`Z`Y`W`h`UbX`

5ggYgga Ybh

D`YUg`Y`gYY`h`Y`A`ccX`Y`g]h`Z`f`U`h`U`W`k`a`Y`b`h`g`c`b`.

f%&`Hi`h`c`f]U`f`Y`U`X]b[`g`U`b`X`e`i`Y`g`h`c`b`g`Z`c`f`h`Y`f`Y`g`d`c`b`g`Y`g`h`c`f`Y`U`X]b[`g`U`b`X`h`h`c`f]U`X]g`W`g`g]c`b`z`U`b`X`h`h`Y`X`Y`h`U]`g`Z`c`f`h`Y`c`b`!`j`b`Y`U`W`h`j`]m`h`c`V`Y`X]g`W`g`g`Y`X`U`g`c`j`b`h`h`c`f]U`g`f`h`Y`a`U`h`Y`f]U`j`b`h`Y`c`b`!`j`b`Y`U`W`h`j`]h`Y`g`k`j`U`g`c`V`Y`j`b`W`i`X`Y`X]j`b`h`Y`W`U`g`g`h`Y`g`h`c`

f&L`@`Y`W`h`f`Y`U`b`X`c`i`h`g`k`k`j`V`Y`j`Y`f`m`i`g`Y`Z`Z`Z`c`f`h`U`_]b[`b`c`h`Y`g`U`b`X`Z`c`f`Y`j`]Y`k`j`b[`Z`c`f`h`Y`W`U`g`g`h`Y`g`h`c`

fI`E`<`U`b`X`c`i`h`g`j`b`h`Y`A`ccX`Y`g]h`Y`i`b`X`Y`f`h`Y`Z`c`X`Y`f`9`g`g`U`m`g`k`k`j`U`j`Y`h`Y`W`h`Y`f]U`U`b`X`b`c`h`Y`g`U`V`c`i`h`Z`c`f`b`c`h`Y`g`

5ggYgga YbhHUg_g

5ggYgga YbhHUg_g	K`Y][`h	8`i`Y`8`U`h`Y`	G`h`X`Y`b`h`@`Y`U`f`b]b[`C`i`h`W`c`a`Y`g`5`g`g`Y`g`g`Y`X`
F`Y`g`d`c`b`g`Y`g`h`c`f`Y`U`X]b[`g`	&\$i	%`*`#`\$`#`&`\$`&`%`\$`*`.\$`\$`D`A`	'
<`]`g`h`c`f]`W`U`_`g]`h`Y`Y`I`Y`f`W]`g`Y`	&\$i	%`-`#`\$`+`#`&`\$`&`%`\$`).`.\$`\$`D`A`	(
H`Y`g`h`i`	&\$i	\$(`#`\$,`#`&`\$`&`%`\$`%`\$`\$`D`A`	%`z`'`&`z`'
A`U`c`f`9`g`g`U`m`i`	(`\$i	\$`-`#`\$`+`#`&`\$`&`%`\$`).`.\$`\$`D`A`	%`z`'`z`(`

5ggYgga Ybh8YhU]`g

5ggYgga Ybh%`F`Y`g`d`c`b`g`Y`g`h`c`f`Y`U`X]b[`g`

G`h`U`f`h`X`U`h`Y`.`\$`#`\$`*`#`&`\$`&`%`\$`-`.\$`\$`5`A`

8`Y`h`U]`g`.

G`h`i`X`Y`b`h`g`i`V`a`]`h`U`f`Y`g`d`c`b`g`Y`f`W`U`")`.\$`\$`!`*`\$`\$`k`c`f`X`g`E`h`c`g`Y`h`e`i`Y`g`h`c`b`g`c`b`U`k`Y`Y`_`m`f`Y`U`X]b[`V`Y`Z`c`f`Y`c`b`Y`h`h`c`f]U`":`Y`Y`X`V`U`W`_`]`g`V`m`j`b`X]j`]X`i`U`W`c`a`a`Y`b`h`g`z`U`b`X`j`b`!`W`U`g`g`X]g`W`g`g]c`b`"

5`X`X]`h`c`b`U`X`Y`h`U]`g`.

G`Y`Y`h`Y`Z`Y`c`b`h`i`h`c`f]U`f`Y`U`X]b[`g`U`b`X`e`i`Y`g`h`c`b`g`j`b`W`i`X]b[`h`c`g`Y`Z`c`f`h`k]g`U`g`g`Y`g`g`a`Y`b`h]b`U`Z`Y`i`d`c`U`X`Y`X`j`b`h`Y`A`ccX`Y`g]h`Y`H`h`g]g`X`i`Y`U`h`h`Y`Y`b`X`c`Z`m`c`i`f`h`h`c`f]U`j`b`k`Y`Y`_`"`

H`i`f`b]`h`b`g`Y`h`h]b[`.`h`h`g]`U`g`g][`b`a`Y`b`h]g`g`i`V`a`]`h`Y`X`h`f`c`i`[`h`i`f`b]`h`b`U`b`X`g`h`i`X`Y`b`h`g`W`U`b`g`Y`Y`H`i`f`b]`h`b`g`a`]`U`f]`m`f`Y`d`c`f`h`g`"

5ggYgga Ybh&`<`]`g`h`c`f]`W`U`_`g]`h`Y`Y`I`Y`f`W]`g`Y`

G`h`U`f`h`X`U`h`Y`.`&`#`\$`*`#`&`\$`&`%`\$`&`.\$`\$`D`A`

@Yb[m. * \$\$'k cfXg

8YHJ]`g.

Gh XYbHg`gY`YWhU` \]gfcf]WU`'g]hY`'b`Ubmi5g]Ub`Wci bbfmUbX`gdYU_`Zcf''`a`]bi`Hrg`UVci`hk` \Uh`hY`'g]hY`
Wca`a`Ya`cfUH`g`UbX`k` \UhY`Ya`YbHg`UVci`h`hY`'g]hY`'g` \]gfcf]m]g`Zcf[`chYb`'b`hY`'bUh]cbU`'a`Ya`cfm`Gh`XYbHg`
gi`Va`]hU`cbY!dU[`Y`V]V]c[`fUd`mcZgci`fW`g`Wcbgi`hYX`Zcf`hY]f`dfYgYbhUh]cb"

: YXXVUWU`]g]Vmi]g]X]X]X]U`Wca`YbHg`UbX`'b!WUgg`X]gW`gg]cb"

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

5b`Ybh]fY`YWh`fY`]g`X

%o`Y]f`dfYgYbhUh]cbm`Uh`Ug

&\$&%UbX'gh XYbHg'bYYX'hc'i d'cUX'hAY]f'fYgdcbgYg'hc'hAY'ei Yghjcbg'Vm%da'cb'hUhxUm'i'H\YcfYh]W'`nž
mci'g\ci'X'\Uj'Y'cbY'\ci'f'UbX')\$'a]bi'hYg'hc'Xc'hAY'hYghVi'hi=Ua' '[j]b['U'%'\$'a]bi'hY'U'ck'UbW'Zcf
Xck'b'cUX]b['hAY'ei Yghjcbg'UbX'i d'cUX]b['hAY'fYgdcbgYg'"'

Hi fb]hjb'gYHjb[. 'H\]g'Ugg][ba Ybh]g'gi Va]hYX'hfci [\ 'Hi fb]hjb'UbX'gh XYbHg'Xc'bchgYY'Hi fb]hjb
g]a]Uf]mfYdcfHg"

5ggYgga Ybh(. 'A U'cf'9ggUm

GhUfhXUHY. '\$&#*\$ #&\$&%\$%\$\$'DA

8YHJ]g.

F YgYUfW\ '9ggUm'

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

H\YfY`jg`bc`hI`hcc_`fYei`]fYX`Zcf`hY`Wci`fgY`"

GYY`hY`A`ccX`Y`G]hY`Zcf`hY`Z]Y`cb`"Hi`hcf]U`F`YUX]b[`g`UbX`E`i`Ygh]cbg`Zcf`8]gW`gg]cb`"i`bXYf`hY`YUX]b[`
"7`cb]h]b]g]UbX`F`Ygci`fWg`"Zcf`hY`"ghcZfYUX]b[`g`fYei`]fYX`Zcf`YUW`k`YY`_"`F`YUX]b[`g`Zcf`h`hcf]U`g`UfY`
UWY]gg]V`Y`Y`Y`Wfcb]W]`mi`h`fci`[`\`h`Y`@]VfUfm@Y[`Ubhc`gmg]h`a`Ya`VYXXYX`]b`h`Y`A`ccX`Y`g]hY`Zcf`hY`
Wci`fgY`"7`]W]cb`hY`[`fYyb`]Wcb`Yb]h]YX`"F`Yei`]fYX`F`YUX]b[`g`Zcf`Hi`hcf]U`g`"

H\Y`"]b_g`h`hY`cb`]bY`UW]j`]h]Yg`UfY`U`gc`Uj`U]UV`Y`h`fci`[`\`h`Y`@]VfUfm@Y[`Ubhc`gmg]h`a`"GYUfW`Zcf`]h]b`
hY`fY`Yj`Ubhk`YY`_"`"

F YWca a YbXYX`F Ygci fWg

GYY`a`m\UbXci`hcb`9ggUmei`Ygh]cbg`UbX`V]V`]c[`fUd\]Yg`"

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

:`YXXVUW`k`]`VY`[`U]bYX`h`fci`[`\`A`m9i`dYf]YbW`U`h`hY`YbX`cZ]h`fa`"="Uj`Y`fYgdc]bXYX`h`hY`ZYXXVUW`Vmi`
fYXi`W]b[`h`Y`UggYgga`Ybh`"UghmYUf`f&\$&\$&`k`c`fYgdc]bgYg`h`fYUX]b[`g`k`YfY`fYei`]fYX`":`fca`"&\$&%`=
\Uj`Y`fYXi`W]X`h`g]h`c`b`m`%fYgdc]bgY`h`fYUX]b[`Xi`Y`]b`k`YY`_"`"

h`&\$&\$`hY`Wci`fgY`k`Ug`h]i`[`\`h]Z`"mcb`]bY`Zcf`hY`Z]fgh]a`Y`Xi`Y`h`7`cj`]X!`%`fYgh]W]cbg`"H\Y`Wci`fgY`
Yj`U`i`Uh]cbg`k`YfY`Yi`W`"Yb]h`h`fYgdc]bgY`h`hY`ei`Ygh]cb`"C]`YfU`"=k`Ug`gU]gZ]YX`k`]h`hY`ei`U`]micZ`hY`
Wci`fgY`"Z`5`F`HG`%&%\$`fYW]j`YX`U`g`WcfY`cZ`)`-`k`\]Y`hY`gW]cc`Uj`YfU[`Y`a`Uf`k`Ug`)`"\$`\$`"h`fYgdc]bgY`h`hY`
ei`Ygh]cb`"C]`YfU`"=k`Ug`gU]gZ]YX`k`]h`hY`ei`U`]micZ`h]g`dYfgcb]h`Y`UW]b[`"Z`hY`Wcb]`Ybc]fYW]j`YX`hY`
gWcfY`cZ`)`+`k`\]Y`hY`gW]cc`Uj`YfU[`Y`k`Ug`)`"&-`"

7ca`a`Ybh]j]bW]`XYX`k`YfY`.

"A`]bU]g`"YWi`fYg`k`YfY`gi`dYf`Yb[`U[`]b[`]Xi`Y`h`"Yf`"i`a`ci`fZdfcj`]X]b[`]dYfgcbU`"Yi`dYf]YbW]g`cb`"YWi`fY`
hcd]W]g]UbX`]bWcf]dc]fUh]cb`cZj`]XYcg`h`d]fcj`]XY`Z`f`h`Yf`]bg][`\`h]g`Zcf`gh`XYbh]cb`h`Y`hcd]Wg]Yf]g]X]gW`gg]b[`"
G\Y`a`UXY`hcd]W]g]gi`dYf`YUgm]h`i`bXYfgh]UbX`UbX`hY`"YWi`fY`\UbXci`hg`k`YfY`YgdYW]U`"m\Y`dZ`"Zcf`
fYj`]g]cb`"

"5`""]b`U`"="fYU`"mYb`c`mYX`7`cbW]d]h]cZ5g]U`!!`]h\Ug`VYYb`a`mia`cghYb`c`nUV`Y`Wci`fgY`Uhi`b]h`c`XU`h`"h\Ug`
YbWci`fU[`YX`a`Y`h`a`U`cf`]b`5g]Ub`Gh`X]Yg]UbX`\Y][`\`h]bYX`a`midUgg]cb`]b`hY`5g]Ub`fY[`]cb`"

"5XX]h]cbU`"mi`hY`UggYgga`Ybh]k`YfY`\[`\`m]fY`Yj`Ub]h`h`Y`Wci`fgY`k`cf`_`UbX`j`Yfmi`gY`Z`""]b[`]U]b]b[`]U`VY`hY`f`
i`bXYfgh]UbX]b[`]cZgca`Y`cZ`hY`Wci`fgY`h]g`WcbW]d]h]g`"

"H\Y`hcd]W]g]fY[`UfX]b[`]5g]Ub`W`h`fY`fWc`hY`gZ`[`YbXYf`UbX`Z]a`]b]ga`Z`ZcX`UbX`fY][`]cb]k`YfY`Z`Zcf`a`Y`k`Y`!
h`ci`[`\`h]ci`h]UbX`j`Yfmi`k`Y`"Wcb]g]XYfYX`"=k`Ug`]b]h]cXi`W]X`h`X]Z]Yf]bh_]bXg`cZ5g]Ub`WcbW]d]h]g]UbX`W`h`fY`gZ`
k`\]W]a`UXY`a`Y`d]fc]Zi`bX`m]Udd]fY]U]h`a`m\Yf]h]U[`Y`Yj`Yb`a`cfY`"="Yb`c`mYX`hY`fYUX]b[`g]UbX`hY`"YWi`fYg`
k`\]W]k`YfY`Yb[`]U[`]b[`"

Gi Va]gg]cb 'cZ5ggYgga YbhiHUg_g

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

Ʒmci 'YbWci bHYf'U'dfcV'Ya 'k \Yb'UH'Ya dh]b['hc'gi Va]hmc i f'Ugg][ba YbhiH'fci [\ 'Hi fb]h]bž'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'fl *) 'XUmg'U'm'YUfl" Ʒmci
UfY'i bUV'Y'hc'gi Va]hmc i f'Ugg][ba YbhiXi Y'hc'U'Zi 'hk]H'Hi fb]h]b'mci 'a UmUdd'm'Zcf'Ub'YI HYbg]cbž'Vi hmc i
a i ghfYHU]b'mci f'h]W_Yhbi a VYf'Z'ca '9I HYfbU'Gi ddcfhfU'cb['k]H'UbmcH'Yf'fY'Yj UbhXcW a YbHg'k'hc
]bWi XY'Ug'Yj]XYbVW'hc'gi ddcfhmc i f'YI HYbg]cb'Udd'jW]h]cb" Ʒmci 'Ya U]'9I HYfbU'Gi ddcfhmc i 'k]
Ui 'ca UH]W]m'fYW]j Y'U'h]W_Yhbi a VYfž'Vi h]Zmci 'HY'Yd\cbY'mci 'k]'b'YX'hc'gdYW]Z]W]m'Ug_ 'Zcf'cbY"
Hi fb]h]b'U'gc'dfcj]XYg'i dXUH'g'cb'H'Y]f'gmgh'Ya 'ghU'g'cb'Hk]HYf"

; YbYfU'mž'UggYgga YbhiHUg_g'a i ghVY'gi Va]HYX'Y'YW'fcb]W]m'j]U'Y]H'Yf'Hi fb]h]b'cf'U'A ccX'Y
Ugg][ba YbH' 'b]bg]UbVW'g'k \YfY'H'g]g'bc]hdccg]V'Yž]hk]'VY'gh'UH'X'cb'mci f'Wci fgY'g'A ccX'Y'g]H'k]H
U'HYfbUH] Y'gi Va]gg]cb'XYHU]g"

: cf]bZ'fa UH]cb'cb'\ck 'hc'gi Va]hUgg][ba YbHg'cb]bY'j]U'A ccX'Y. \h'hdg.#gh XYbH'i bgk "YXi "Ui #ck!
gi Va]hUgg][ba YbH'a ccX'Y

5 WUXYa]W< cbYgmiUbX`D`U[]Uf]ga

D`U[]Uf]ga `]g`i`g]b[`h`Y`k`c`f`X`g`c`f`]X`Y`U`g`c`Z`c`h`Y`f`g`i`U`b`X`d`f`Y`g`Y`b`h]b[`h`Y`a` `U`g`m`c`i`f`c`k`b`" `#`W`U`b`h`U`_`Y`a` `U`b`m`
Z`c`f`a`g`Z`Z`c`a` `X`Y`]V`Y`f`U`h`Y` `W`X`Y`U`h]b[`h`c` `U`W`W`Y`X`Y`b`h`U` `m`i`W`c`d`m]b[`Z`c`a` `U`g`c`i`f`W` `k`]h`c`i`h`U`W`_`b`c`k` `Y`X[`Y`a` `Y`b`h`

I`B`G`K` `[`f`c`i`d`g`d`U[]Uf]ga `]b`h`c` `h`Y` `Z`c` `c`k`]b[`W`U`h`Y`[`c`f`]Y`g.

- i bXYfgHUbX'mci f'f][\hg'UbX'fYgdcbg]V]]hYg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[]Uf]ga ž'Wcdmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi WñUbX'5WwdfUV'Y'I gY'cZ
I BGK '⇒H'F Ygci fW'g'Dc`]Wñ
-

5 WUXYa]W=Zcfa Uh]cb

: cf`YggYbh]U`ghi XYbh]bZcfa Uh]cb`fY`Uh]b[`tc.

- fYei Ygth`Zc`f`Yl h`bg]cb/
- `Uh`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I BGK `<YU`h`UbX`GUZYmdc`]WYg/