



ARTS3462

5 fh]gh]WF YdfYgYbhU]cbg'cZ7 \]bU'UbX'hkY'8]UgdcfU

HYfa`Cby`#`&\$&%

7ci fgY`Cj Yfj]Yk

GhJZZ'7cbhJWw'8YhJ]`g

7cbj Ybcfg

B Ua Y	9a U]	5j U]'UV]'m	@cWWhcb	D\cbY
K U\ ; i Ub`@a	k [`]a 4 i bgk "YXi "Ui	VmUddc]bħa Ybhcb`m	A 6`&()	- ' ,) `%* , %

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

@cWWhcb. 'GWxcc``C Z]WwžA 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](#)

7 ci fgY'8YHJ`g

7 fYX]hDc]bqg '*`

Gi a a UfmicZh\Y'7 ci fgY

h`h]g`Wci fgYžmci `k]`YI Ua]bY`h\Y`]bYfHk]bYX`fY`Uf]cbg\]dg`VYfK`YYb`7`]\bU`UbX`h\Y`7`]\bYgY`X]UgdcfU
Ug`YI`dfYggYX`]b`]\YfUfH`fY`UbX`h\Y`UfH`"K` \UhUfY`h\Y`Hbg]cbg`UbX`Wcbj`Yf[`YbWg`h`UhXYZ]bY`7`]\bU`Ug`h\Y`
]a`U[]bYX`ca`Y`UbX`UbX`h\Y`c]`YfgYUg`X]Ugdcf]Wwca`a`i`b]h]Yg3`h`fUW]b[`h\Y`gcW]c!\]gfcf]W]`fU`Y`Wc`f]Yg`
h`UhXYj`Y`cdYX`i`b]ei`Y`m]b`HU]k`Ubž`<`cb[`?`cb[`žG]b[`UdcfYž`UbX`A`U`Umg]Užmci`k`]`[`U]b`Ub`i`bXYfgfUbX]b[
cZ\ck`h\YgY`UWwci`bYX`Zcf`Wca`dYH]b[`gYbgYg`cZbU]cbU`žW`h`fU`UbX`dc`]h]W]`]XYbh]Z]W]h]cb`UbX`
UZZ]U]h]cb`UWcgg`h\Y`7`]\bYgY!gdYU_]b[`k`cfX`"H\UhUi`h`c`fg`UbX`Ui`h`i`fg`h`Uh`mci`k`]`X]gW`ggž]bW]`XY`
@]M`b[`d]b[`ž`<`i`[`\`@Y`?`i`c!\]g]i`ž`?`i`c`DUc`?`i`bž`7`Ub`?`ccb!W]i`b[`ž`<`ci`<`g]Uc!\]g]Ybž`5`bb`<`i`]`UbX`HgU]
A`]b[!]Ub[`ž`Ua`cb[`ch\Yfg`"

H\Y`Wci fgY`]g`a`U]b`m]h]i`[`\]h]b`7`]\bYgY`"

7 ci fgY`@YUfb]b[`C`i`hWca`Yg

%`7`ca`dUfY`X]ZYfYbh`]\YfUfmiUbX`Uf]h]h]W]fU]h]cbg`h`Uh`Uj`Y`XYj`Y`cdYX`]bXYdYbXYbhm]b]j`Uf]ci`g`
`cW]Yg]UWcgg`h\Y`7`]\bYgY!gdYU_]b[`k`cfX`"
&`7`cbgfi`W]U`W]h]W]`Z]Ua`Yk`cf`_`h`c`h`ci`[`\]h]`mX]gW`gg`h\Y`]ggi`Y`cZ`7`]\bUf]g]UbX`7`]\bYgYbYgg`
`" `XYbh]Z]h\Y`X]ZYfYbW]g`]b[`YbYfg`f]W]cbž`XfUa`Už`W]bYa`U`UbX`bi`UbW]X`j`Uf]U]h]cbg`f]b[`i`]gh]Wž`
gcW]c!\]gfcf]W]ž`dc`]h]W]`L`]b`Uf]h]h]W]d]cXi`W]cbg`"
(`F`YgdcbX`fYgdYW]ž`m]fk`f]h]Y`b`UbX`j`YfVU`L`]b`d]cXi`W]j`Y`UW]X]Ya`]WX]gW`gg]cb`"

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

7`Ugg`XY`j`Yfmk`]`]bW]`XY`Z]W]!h`!Z]W]`UbX`cb`]bY`UW]j`]h]Yg`"Mci`k`]`Yb[`U[`Y`]b`WcgY`fYUX]b[`UbX`j`]Yk`]b[
cZgY`YW]k`cf`g`cZ`Z]W]cbž`XfUa`U`UbX`W]bYa`U`h`YI`Ua`]bY`]ggi`Yg`cZ`fY`dfYgYbh]h]cb`UbX`fY`dfYgYbh]UV`]mž`
]XYbh]miUbX`W`h`fU`dc`]h]W]ž`cb[]b[`UbX`VY`cb[]b[`ž`UWcgg`h\Y`7`]\bYgY!gdYU_]b[`k`cfX`"H\YgY`_Ym]h]I`hg`
k`]`VY`gY`YW]X`k`]h`Ub`Ym]`h`k`UfX`h\Y`Wca`d`YI`fY`Uf]cbg\]dg`VYfK`YYb`h\YgY`X]Ugdcf]Wg]h]Yg`UbX`
a`U]b`UbX`7`]\bU`"C`b`h`c`d`cZ`h`YgY`df]a`Ufmgci`fW]gž`X]gW`gg]cb`]b`YUW]`k`YY`_`k`]`VY`gi`dd`Ya`Ybh]X`Vm`
gYW]cbXUfmi]h]I`hg`h\UhX]gW`gg`W`h`fU`h\Ycfnž`dc`]h]W]cZ`Ub[`i`U[`Y`UbX`]XYbh]mi`h`Uh`Uj`Y`VY`Yb`[`U]b]b[
]bW]YUg]b[`]a`dcf]UbW]`]b`UW]X]Ya`]WX]gW]ci`fgY`cZ`Uh`"

5ggYgga Ybh

H\Y'i gY'cZY'YWfcb]WXYj]W'g'fIUdfrdgža cV]Y'd\cbYgž']!dUXgž'dU[Yfgž'YhWE:]g'dfc\]V]hX'j]b'WUgg"

5ggYgga YbhHUg_g

5ggYgga YbhHUg_	K Y]Y]h	8i Y'8UH	GhY'Y'@]b[Ci hca Yg'5ggYggYX
A ccX'Y'8]gW'gg]cb'	(\$i		

W\UfUWf'g]b'hY'Z'a'kY'UFY'fYUX]b[žUbX'VY[]b'U'X]gW'gg]cb'Z'ca'hY'W\UfUWf'g'dc]bhcZ'hY'j]Yk'hYm
UfY'UXcd]b['YhW

9UW'ghi'XYbh]g'fYei]fYX'hc'gi Va]h('A ccX'Y'Dcghg'UbX'UW'Ug'U'8]gW'gg]cb '@YUXYf'Uh'YUghcbW''Mci
a Umbchgi Va]hU'A ccX'Y'Dcghcb'hY'k'YY_'mci 'UfY'UW]b['Ug'8]gW'gg]cb '@YUXYf'

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

5ggYgga Ybh& . '9ggUmDfYdUfU]cb

8Yh]g.

Dfcj]XY'U') \$\$!k cfX'YggUmici h]bY'UbX'V]V]c[fUd\mk]h'bc''Ygg'h.Ub'%'\$]h'a gž]bW' X]b['Uh'YUgh' 'Vcc_g
cb'mci f'YggUm]cd]W3-6X]j]Xi U'k f]h]b'Z'YXVUW_'dfcj]YX'VYzcfY'Z]bU'YggUm'

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

5ggYgga Ybh' . '9ggUm

8Yh]g.

K f]h' U'fYgYUfW'YggUmcb'U'W'cgYb'hd]WcZUddfcI]a Uh'm&ž\$\$\$k cfXg"3'6X]j]Xi U'Z'YXVUW_'dfcj]YX"

Hi fb]h]b'gYh]b[. 'H\]g'Ugg][ba Ybh]g'gi Va]h]X'h'fci [\ 'Hi fb]h]b'UbX'ghi'XYbh]g'Xc'bchgYY'Hi fb]h]b
g]a]Uf]mifYdcf]g"

5 HbXUbW F Yei JfYa Ybhg

5 HbXUbW cZgYa JbUfg Jg a UbXUhc fm Jb H Jg Wci fgY 5 HbXUbW k J VY HU Yb UhHY VY [Jbb]b [cZYUWk WUgg " Hi fb]b [i d'hc WUgg a cfY H.Ub) 'a]bi Hrg UHY Jg Wcbg]XYfYX Ub i bYI W gYX UVgYbW " i bYI W gYX UVgYbW Zfca 'a cfY H.Ub %\$i cZgYa JbUfg k J fYgi 'h]b H Y Uk UFX U ZU [fUXY " 6YWli gY H Jg Jg U'gYa JbUfZ mci UfY YI dYWH X hc UWij Y mYb [U [Y k]h Wc fY Wci fgY WcbhY bZ d Ufh W d UHY]b WUgg X Jg W gg]cb Vm]ghY b]b [UHY bhj Y mUbX fYgdc bX]b [fYgdY WZ mhc mci f WUgga UHY g " H Y gY k J YbUV Y mci hc UHU]b.

% 7 ca dUfY X]ZYfYbh]HfUfmUbX Ufhgh]WfUX]hcbg H Uh Uj Y XYj Y cdYX]bXYdYbXYbhm]b j Uf]ci g cWU Yg UWfcgg H Y 7 \]bYgY!gdYU_]b [k cfX "

& " 7 cbgfi W U W H W ZfUa Yk cf _hc H ci [\ hZ mX]gW gg H Y Jggi Y cZ7 \]bUfg U bX 7 \]bYgYbYgg " ' " X Ybh Zm H Y X]ZYfYbW g]b [YbfYg f Z W H cbz XfUa Uz W bYa U U bX bi UbW X j Uf]Uf]cbg f]b [i]gh Wz gcW c! \]ghc f]W Z dc]h W U E]b Ufhgh]WdfcXi W H cbg "

(" F Ygdc bX fYgdY WZ mfk f]Hb UbX j YfVU E]b dfcXi W j Y UWUXYa]WX]gW gg]cb "

7 ci fgY GWYXi Y

[J Jk WUgg ha YHUV Y](#)

Hja YHUV Y

8UH	HmdY	7cbHYbh
K YY_ % %) : YVfi Ufm! % - : YVfi Ufm	GYa JbUf	7 ci fgY H f c Xi W H cb
K YY_ & . & : YVfi Ufm! & * : YVfi Ufm	GYa JbUf	F Ya Ya VYf]b [UbX : cf [Y H]b [:]W H cb . @ j ' L]b k i ' " " H Y 7 Ugg 7 ci bgY c f " f % + + E :]W H cb . @ ' L]b \ i U ' " " G W f " f % + , E D Um G \ U M I]b ' z @ G \ ci W Y b [' UbX M U c A]b [X Y ' " " K \ U h] Z = F Y U m K Y f Y 3 " f % + + E
K YY_ " . % A UfW !) A UfW	GYa JbUf	<]ghc f]W U 5 a bYg]U ' D Um ; U c L]b [U b ' " " H Y 6 i g ! G h c d " f % , ' E :]a \$ % f Z W : W S f a X f Z W E g "

		:]a . '9aaV ? W t 9aaV l a_ W ' 'fX]f' < ci <g]Uc!\g]Yb' ž%- -) Ł
K YY_) . %) 'A UfVX ! '%- A UfVX	GYa]bUf	GcW]YHJ 'fB]gŁC fXYf D`Um ? i c`DUc`? i b' ""H\Y`7cZ]b`]g`Hcc`6][Zc`f`h\Y`<c`Y"" 'f%- , (Ł D`Um ? i c`DUc`? i b' ""Bc`DUf_]b[`cb`c`XX 8Umj"" 'f%- , * Ł :]a . '3 4d]YZfW]Eg_ _ Wd6Sk fX]f' '9Xk UfX`MUb[' ž%- - %Ł 9ggUmDfYdUfU]cb`f%\$i ŁXi Y`Uh`h\Y`YbX`c`Z`h\Y k YY_ž: f]XUm%- 'A UfVX `&\$&%ž) DA
K YY_* . '&&'A UfVX ! '&* A UfVX	F YUX]b[A UbXUrcfm: `Yl]'K YY_!' Bc`WUgg
K YY_+ . '&- 'A UfVX ! '& 5df]`	GYa]bUf	=XYbh]fm D`Um ; Uc`L]b[]Ub' ""H\Y`C`h\Yf`G`c`fY"" f%- , * Ł :]a . 'Ea`Y`aXfZW7j [W 'fX]f' '5bb`<i] ž%- - \$Ł
K YY_ , . :) '5df]'!`- '5df]`	GYa]bUf	8]gd`UW]a Ybh :]a . 'H[hW>3_ agd 'fX]f' 'HgU]'A]b[!]'Ub[ž%- - (Ł D`Um ? i c`DUc`? i b' ""8YgW]bXUbtg

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

5`fYei]fYX`fYUX]b[g`UbX`j]Yk]b[`a UHf]U`g`fZ]a g`UbX`#cf`d`UmgL`UfY`Uj U]UV`Y`j]U`A`ccX`Y`"Gh XYb]g`UfY`
YI dYWYX`hc. %&`Uj Y`Wca d`YhYX`hY`fYUX]b[`UbX`j]Yk]b[`cZU`a UHf]U`Zcf`hY`k YY`VYZcfY`Wca]b[`hc`
WUggz`UbX`&L`Vf]b[`UfX`Wcd]Yg`cZ`hY`fYUX]b[`a UHf]U`g`hc`WUgg`"6YW]i gY`mci `UfY`bchYI dYWYX`hc`
di fWUgY`Ubmi`hY`hg`Zcf`h]g`Wci fgYz`UbX`g]bW`hY`i gY`cZU`Y`YVfcb]WXYj]Wg`]g`dfc`V]hYX`]b`WUggz`mci`
a i ghdf]bh`UfX`Wcd]Yg`cZ`mci f`fYUX]b[g`UbX`Vf]b[`hYa` `hc`WUgg`Zcf`ci f`gYa]bUf`X]gW`gg]cb"

F YWca a YbXYX`F Ygci fWg

Gh XYb]g`a][`hZ]bX`hY`Zc`ck]b[`cb`]bY`fYgci fW`i gYZ`Zcf`Wcb]g]fi W]b[`hY`V]V`]c[fUd`mZcf`mci f`
fYgYUfW`YggUm

[\fdg.# "cgi "YXi #a WwV\]c\[fUd\Yg#](#)

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

H\]g`]g`U`bYk`Wci fgY`"Bc`gh XYbhZ`YXVUW`YI]ghYX`]b`hY`k`f]h]b[`cZ`h]g`Wci fgY`"

Gi Va]gg]cb`cZ5ggYgga YbhiHUg_g

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

≠mci`YbWci bHYf`U`dfcV`Ya`k` \Yb`UHYa` dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhiHfci`[`\`Hi`fb]h]bzd`YUgY`
HY`Yd\cbY`9I`HYfbU`Gi`ddcfhcb`-`,`)`"``"``%cf`Ya`Uj`hYa`icb`YI`HYfbU`HY`hgi`ddcfh4`i`bgk`"YXi`"Ui`""Gi`ddcfh`
\ci`fg`UfY`,`.\$\$Ua`-`-%\$.\$\$da`icb`k`YY`XUmg`UbX`-`.\$\$Ua`-`).\$\$da`icb`k`YY`YbXg`f1`*)`XUmg`U`mY`Uf2`≠mci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhiXi`Y`hc`U`ZU`ihk`]h`Hi`fb]h]b`mci`ia`UmUdd`mZc`f`Ub`YI`HYbg]cbz`Vi`hmc`i`
a`i`ghfYhU]b`mci`f`h]W`Yhbi`a`VYf`Zca`9I`HYfbU`Gi`ddcfhfU`cb[`k`]h`Ubmc`h`Yf`fY`Yj`UbhXcW`a`Ybhtg`L`hc`
]bWi`XY`Ug`Yj`]XYbVW`hc`gi`ddcfhmc`i`f`YI`HYbg]cb`Udd`]W]h]cb`≠mci`Ya`Uj`9I`HYfbU`Gi`ddcfhmc`i`k`]`
Ui`hca`U]WU`mifYW]j`Y`U`h]W`Yhbi`a`VYfz`Vi`h]Zmci`HY`Yd\cbY`mci`k`]`bYYX`hc`gdYW]Z]WU`mUg`Zc`f`cbY`
Hi`fb]h]b`U`gc`dfcj`]XYg`i`dXUH`g`cb`h`Y]f`gmghYa`ig`hU`h`g`cb`Hk`]hYf`"

;`YbYfU`mz`UggYgga`YbhiUg_g`a`i`ghVY`gi`Va`]hYX`Y`YWfcb]WU`mj`]U`Y]h`Yf`Hi`fb]h]b`cf`U`A`ccX`Y`
Ugg][`ba`Ybhi`h`]bghU`bVW`g`k`\YfY`h`lg`]g`bchidcgg]V`Yz`]hk`]`VY`ghU`h`X`cb`mci`f`Wci`fgY`g`A`ccX`Y`g]h`k`]h`
U`HYfbU]h]`Y`gi`Va`]gg]cb`XYhU]g`"

:`cf`]bZcfa`Uh]cb`cb`\ck`hc`gi`Va`]hUgg][`ba`Ybhtg`cb`]bY`j`]U`A`ccX`Y`. \hhdg.#gh`XYbhi`bgk`"YXi`"Ui`Ack`!
gi`Va`]hUgg][`ba`Ybhta`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
-

5 WUXYa]WbZcfa Uh]cb

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

- fYei Ygh]Zcf`YI H`bg]cb/
- `Uh`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I B GK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua]bUh]cb`dfcW`Xi fYg/
- gdYW]U`W`bg]XYfUh]cb`]b`hY`Yj YbhcZ]`bYgg`cf`a]gUXj Ybh fY/
- gh XYbhYei]mUbX`X]gUV`]m/
- UbX`c`hYf`YggYbh]U`UWUXYa]W]bZcfa Uh]cbž`gYY