



ARTS3454

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7ci fgY`Cj Yfj]Yk

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B Ua Y	9a U]`	5j U]UV]]m	@cW]hcb	D\cbY
8F`M]b[`]Gi b	m]b[`]"gi b4 i bgk "YXi "Ui	A cbXUm%&DA `cf VmiUddc]bha Ybh	A cfj Yb`6fck b &)	- ' ,) &* (\$

`@YWi fYfg`

B Ua Y	9a U]`	5j U]UV]]m	@cW]hcb	D\cbY
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GW\cc``7cbhUWih`bZcfa Uh]cb

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

7ci fgY'8YHJ`g

7fYX]hDc]bqg`*`

Gi a a UfmicZ\hY'7ci fgY

Gi VYWh5fYU. '5Z[WēWE fgV[Wē

H\]g'Wēi fgY]bfcXi W'g'mēi 'hc'fYWWbh]bHfdFYh]b['hYcf]Yg'UbX'a YhcXc`c[]Yg"Mcī 'k]`YUfb`ck 'hc]bHfdFYhVYrk YYb'9b[`]g\`UbX'7\]bYgYži g]b['X]ZYfYbh]bHfdFYh]b['hYWXb]ei Yg"Mcī 'k]`UWēi]fY`]b[i]gh]W UbX'W`h fU`UV]`]h]Yg'fYei]fYX'Zcf'VēbgYW h] Y]bHfdFYh]b['UbX'YZZYWj] Y Wfcgg!`Ub[i U[Y#W`h fY Wēa a i b]W]h]cb`]b`U'fUb[Y'cZXmbUa]WwēbhYI hg"Mcī 'k]`XYj Y'cd`UbX`\cbY'mēi f'g_]`g`]b`hUW_]b['X]ZYfYbh ghmYg'cZ]bHfdFYh]b['h'fci [\] Uf]ci g`UbXg!cb]bHfdFYh]b['YI YfW]gYg"

7ci fgY@YUfb]b[`Ci hWēa Yg

% " ⇒Ybh]ZmhYcYfYh]W`]ggi Yg]bWī X]b[`]bHfdFYh]b['UddfcUWX'Yg'UbX'ghmYgžYh]Wg`cZdfcZYgg]cbU`]bHfdFYhYfg'UbX`bcfa g' UbX'a cXY`g`cZ]bHfdFYh]b[&" 5ggYgg`bYk`a YhcXc`c[]Yg'UbX'hYWXb]ei Yg'Uj U]UV`Y`Zcf'9b[`]g\`UbX'7\]bYgY`]bHfdFYh]b[' " 8Ya`cbg]fUHY`Wēa dYHYbW`]b`UbX`VUg]Wg_]`g`UbX'hYWXb]ei Yg'cZVēbgYW h] Y]bHfdFYh]b['UbX di V`WgdYU_]b[(" `bHfdFYh]b`U'fUb[Y'cZdUfUdfcZYgg]cbU`]g]h U]cbg.]gcW]U`X]U`c[i YgžWēa a i b]m]gYfj]W X]U`c[i YgžhUXY`X]U`c[i Yg'UbX`WēbZYfYbW`gdYfYWX'Yg)" `bHfdFYhgY`YWYX`fYdfYgYbhU]h] Y`hYI hg`Zca`'9b[`]g\`]bhc`7\]bYgY'UbX'7\]bYgY`]bhc`9b[`]g\`

HYUWX]b[`GhfUHY[]Yg`

H\Y`Wēi fgY]g`hUj [\hVmk UmicZrk c!\ci f`YWh fY'UbX'cbY!\ci f`h hc]U`k YY`m`H\Y`YWh fYg`]bfcXi W' W ffYbh]bHfdFYh]b['hYcf]Ygž'a YhcXc`c[]Yg'UbX'hYWXb]ei Yg'k \]WX`UFY`YI d`cfYX`]b`gdYW]U`]gYX`Wēi fgY fYUX]b[g" H\Y`h hc]U`g`dfcj]XY`U`\UbXg!cb`cddcfh b]m]hc`di h]bHfdFYh]b['hYcf]Yg'UbX'hYWXb]ei Yg`]bhc dfUW]W"Mcī 'k]`XYj Y'cd`UbX`dc`]g\`mēi f'g_]`g`]b`]bHfdFYh]b['X]ZYfYbhghmYX`hYI hg`h'fci [\] Uf]ci g]bHfdFYh]b['YI YfW]gYg" HYUa k cf_`UbX`dYfY`YUfb]b['UfY`Ya d\Ug]gYX`]b`hY`h hc]U`g"

5ggYgga Ybh

5hYbXUbW cZ@YWi fYg#Hi hcf]U'g]g'a UbXUrcfm]b'h.]g'Wci fgY"i bYI W gYX'UVgYbWV Zfca 'a cFY'h.Ub'&\$i cZ@YWi fYg#Hi hcf]U'g'k]'fYgi 'h]b'h.Y'Uk UfX'U'ZU]'[fUXY" 'b'@YWi fYg#Hi hcf]U'g'mci 'k]'UW]j Y'mYb[U[Y k]h 'Wc'fY'Wci fgY'Wc'bhYb'h'YbUV']b['mci 'hc'U'U]b' 7 @C '%z&Z(z) "

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5ggYgga YbhHUg_	K Y][\h	8i Y'8UH'	Gh XYbh@YUfb]b[Ci hWca Yg'5ggYggYX
hYfdYh]b['ei]nnYg'UbX Ugg][ba Ybh'	') i	hYfdYh]b['5gg][ba Ybh% Xi Y]b'k YY_ ('h hcf]U' f\$- #/\$#&\$%- E/ hYfdYh]b[5gg][ba Ybh&Xi Y]b'k YY_ , h hcf]U' f\$* #/%#&\$%- E/ hYfdYh]b['E i]n'Xi Y]b'k YY_ - 'YWi fY'f%#/%#&\$%- E"	%z z(z)
HYgh'	(\$i	A]X!hYfa 'HYghXi Y]b'k YY_ '* h hcf]U' f& #/\$#&\$%- E/:]bU' HYghXi Y]b'k YY_ %\$'h hcf]U' f&#/%#&\$%- E"	%z z(z)
F c'Y'D'Umi	&) i	F c'Y'd'UmiXi Y]b'k YY_ , 'YWi fY'f\$ (#/%#&\$%- E'k YY_ '- 'YWi fY'f%#/%#&\$%- E'cf'k YY_ %\$'YWi fY'f% #/%#&\$%- E"	%z&Z z(

5ggYgga Ybh8YHU]g

5ggYgga Ybh% hYfdYh]b['ei]nnYg'UbX'Ugg][ba Ybh'

GHUfhXUH'.

8YHU]g. Gh XYbh'Wca d'YH'&]hYfdYh]b['Ugg][ba Ybh'f&\$i E'cZUddfcl ""') \$\$!+\$ \$'k cfXg#XUfUWVYfg YUW'UbX%'hYfdYh]b['ei]n'f% i E'k \]W'Wc'bg]g'g'cZ&\$'a i 'h'd'Y'W'c]W'ei Yg]cbg'UbX') \$'j cWU'Vi 'Ufm ei Yg]cbg": YYXVUW_]'U']bX]]Xi U'Wca a Ybh'UbX']b!WUgg'X]gW'gg]cb"

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

5ggYgga Ybh&. HYgh'

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8YHU]g. Gh XYbh'Wca d'YH'U'a]X!hYfa 'hYghf&\$i E'cZUddfcl ""') \$\$!* \$ \$'k cfXg#XUfUWVYfg'UbX'U'Z]bU' hYgh f&\$i E'cZUddfcl "", \$\$!- \$ \$'k cfXg#XUfUWVYfg":]bU' hYgh]g'hY'Z]bU'UggYgga YbhZcf'UH'YbXUbW di fdcgYg": YYXVUW_ Zcf'a]X!hYfa 'hYghdfcj]XY'X]U']bX]]Xi U'Wca a Ybh'UbX']b!WUgg'X]gW'gg]cb" Gh XYbh fYW]j Y'U'a Uf_ Zcf'Z]bU' hYgh'UbX'W]b'Wc'bg' h'hY'YWi fY'Zcf'Z f'hY'f'ZYXVUW_ "

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

5ggYgga Ybh' . 'F c`Y`D`Um

GhUfhXUHy .'

8YhU]`g. 'Gh XYbfg`Wta d`Yh`U' [fci d`fc`Y`d`UmifW]", 'a]bi hYg`dYf`dYfgcbE`cb`]bH`fd`fY`h]b [`g]h U`h]cbg
[]j Yb": YYXVUW`j]U`]bX]j]Xi U`Wta a Ybfg`UbX`]b!WUgg`X]gW`gg]cb"

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`

5`fYUX]b[`a Uhf]U`g`UfY`Uj U]UV`Y`cb`A ccX`Y`

F YWca a YbXYX`F Ygci fWg

- \hd.##k k "Yfi X]f`cf[#b#Yj i Y#a YhU#
- \hd.##k k "bUUh"Wca "Ui #

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

H\]g`Wci fgY`k]`VY`Zcfa U`mYj U`i UHX`h %o %oA c j a f]Ubh "

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

Gi Va]gg]cb`cZ5ggYgga YbhHUg_g

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

≠mci`YbWci bHYf`U`dfcV`Ya`k`Yb`U`HYa`dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybh`h`fci`[`\`Hi`fb]h]b`z`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`fI`*)`XUmg`U`mY`UfL`≠mci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhXi`Y`hc`U`ZU`ihk`]h`Hi`fb]h]b`mci`a`Um`Udd`mi`Zc`f`Ub`YI`HYbg]cb`z`Vi`hmc`i`
a`i`ghfY`hU]b`mci`f`h]W`Yhbi`a`VYf`Zca`9I`HYfbU`Gi`ddcfhfU`cb[`k`]h`Ubmc`h`Yf`fY`Yj`UbhXcW`a`Yb`hgL`hc`
]bWi`XY`Ug`Yj`]XYbW`hc`gi`ddcfhmc`i`f`YI`HYbg]cb`Udd`]W]h]cb"≠mci`Ya`U]`9I`HYfbU`Gi`ddcfhmc`i`k`]"`

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 gž`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.

7cdm]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[YgžUfhUbX`XYg][b`dfc`YWgžUg`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 cghmifYU]b]b[`hY`cf][]bU`
ghfi W`i fY`UbX`#`f`dfc[fYgg]cb`cZ]XYUg`cZ`hY`cf][]bU`ž`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`Yž`k]h`ci hUddfcdf]UHY`fYZYfYbW]b["

7c`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_]7c`i g]cb`U`gc
]bWi XYg`dfcj]X]b[`mci f`k cf_]hc`UbchYf`gh`XYbhVYZc`fY`hY`Xi Y`XUHYž`cf`Zc`f`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'U'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'i BGK 'UbX'I BGK '@]V'f'U'f'm

Gca Y'cZ'U'g'Y'U'f'Y'U'g'k]''V'Y'Z'J'a]]U'f'U'c'm'c'i ž'c'h'Y'f'g'k]''V'Y'b'Y'k "; U]b]b['U'g'c'X'i bXYfghUbx]b['cZU''U'Y'f'Y'U'h'X'U'g'd'Y'W'g'c'Z'9@-G'9'k]''\Y'd'm'c'i 'a U_Y'U'Y'a c'g'h'c'Z'm'c'i 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 WXYa]WbZcfa Uhcb`

: cfYggYbhU`ghi XYbh]bZcfa Uhcb`fY`Uh]b[`rc.