



## ARTS3047

7cbhYa dcfUfm7 fjhjWU`UbX`7 i `hi fU`H\Ycfm

HYfa `H\fYY`##`&\$&\$

7 ci fgY`Cj Yfj ]Yk`

GhJZZ`7 cbhJW`8YhJ]`g

7cbj Ybcfg

B Ua Y	9a Uj`	5j Uj`UVj]`m	@Wjhcb	D\cbY
9`jnUVYh`A WA U\cb	Y"a Vå U\cb4 i bgk "YXi "Ui	: f]XUm&!'	K YVghYf`&&'	!%%* (

GW`cc``7 cbhJW`hZcfa Uh]cb

GW`cc``cZ`hY`5fng`UbX`A YX]U

Fcca " %&ž@Yj Y`` žF cVYfhK YVghYf`6i ]X]b[ `f] %Ł

D\cbY. f\$&Ł- ' , ) '( , ) \*

9a Uj]: [gUa 4 i bgk "YXi "Ui](#)

K YVg]hY: [k k k "Ufng"i bgk "YXi "Ui #gUa](#)

H\Y`GW`cc``cZ`hY`5fng`UbX`A YX]U`k ci `X``\_Y`h`F YgdYW`m5W`bck`YX[ Y`hY`HfUX]hcbU``7 i g`hX]Ubgž`hY`6YXY[ U`fP`Ybg]b[ hcb`WJa di gŁž; UX][ U`f7 ]mUbX`5fhi`8Yg][ b`7 Ua di gYgŁ`UbX`hY`B [ i bbUk U`dYcd`Y`f5i g`fU]Ub`8YZ`bVW : cfW`5WUXYa m]b`7 UbVYffUŁ`cZ`hY`UbXg`k \YfY YUW`WJa di g`cZI`BGK`]g`cW`hY`X"

7 ci fgY'8YHJ]`g

7 fYX]hDc]bhtg`\*`

Gi a a UfmcZ`hY'7 ci fgY

H\]g`Wci fgY`]bfcXi W`g`mci`hc`gca Y`cZ`hY`W`bhfU`hY`hg`UbX`W`bW`dhtg`]b`hY`\_Ym]bhY`Y`W`h`U`a`cj`Ya`Y`bhtg`UbX`hY`cfYg`Z`ca`hY`Y`Uf`m`k`Y`bhY`h`W`b`h`f`m`h`c`hY`d`f`Y`g`Y`bh`U`g`h`Y`g`Y`V`Y`U`f`c`b`hY`f`U`f`m`U`b`U`mg]g`"Mci`k`]"`Yi`Ua`]bY`U`f`U`b[`Y`c`Z`f`Y`U`h`X`]gg`Yg`]bW`X]b[`.

%` \ck`hY`j`YfmUggi`a`d]cbg`c`Z`Ub[`i`U[`Yz`Wca`a`i`b]W]h]cb`UbX`a`Y`Ub]b[`\Uj`Y`V`Y`Y`b`ei`Y`gh]cbYX`Z`ca`Y`U`f`m`k`Y`bhY`h`W`b`h`f`m`h`c`hY`d`f`Y`g`Y`bh`&`hY`f`Y`!`W`b`W`d]cb`c`Z`]X`Y`bh]m`U`b`X`]hg`]a`d`U`W`h`c`b`hY`f`U`f`m`W`c`b`g`h`f`i`W`h]cb/`" `hY`k`U`mg`d`c`]h]W`g`h`f`i`W`h`f`Y`g`W`c`b`g`h`f`i`W`h`h`Y`f`Y`U`h]cbg`d`V`Y`k`Y`Y`b`i`a`U`b`g`i`V`Y`W`h]g`UbX`c`V`Y`W`h]g`i`W`X`U`g`W`ca`a`c`X`]h]Y`g`"

7 ci fgY`@YUfb]b[ `Ci`hWca`Yg

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

H\]g`Wci fgY`]g`]bZ`ca`Y`X`V`m`U`b`U`dd`f`c`U`W`h`c`h`Y`U`W`X`]b[ `U`b`X`\_`Y`U`f`b]b[ `h`U`h`Z`c`g`h`f`g`]b`h`Y`f`U`W`h]`]m`z`g`h`X`Y`b`h`U[ `Y`b`W`h`UbX`hY`d`Y`U`g`i`f`Y`c`Z`\_`b`c`k`\_`Y`X[ `Y`" `h`d`f`c`a`c`h`Y`g`b`Y`k` `k`U`mg`Z`c`f`g`h`X`Y`b`h]g`h`c`X`Y`j`Y`c`d`d`f`c`X`i`W`h]`Y`d`c`g`g`V`]`h]Y`g`Z`ca`hY`X`]g`W`d`]b`U`f`m`V`U`g`Y`g`c`Z`h`Y`f`g`h`X`m`U`b`X`h`c`f`Y`W`c`[ `b]g`Y`h`Y`d`c`h`b`h]U`]b`]b`h`Y`f`X`]g`W`d`]b`U`f`m`Y`b[ `U[ `Ya`Y`b`h]b`hY`i`a`U`b]h]Y`g`" `5`g`U`h`f`X`m`Y`U`f`W`c`i`f`g`Y`z`]h`d`f`c`a`c`h`Y`g`]b`X`Y`d`Y`b`X`Y`b`h`Y`U`f`b]b[ `U`g`f`Y`Z`Y`W`h]X`]b`g`h`X`Y`b`h`Z`c`W`g`g`Y`X`g`Y`a`]b`U`f`g`z`h`Y`Ya`d`U`g]g`c`b`f`Y`g`Y`U`f`W`z`U`b`X`h`Y`W`c`i`f`g`Y`g`m`a`d`c`g]i`a`" `H`Y`f`Y`k`]`V`Y`U`c`b`Y`!`c`i`f`Y`W`h`f`Y`Y`U`W`X`k`Y`Y`\_`" `5`\_`Y`W`h`f`Y`]g`a`c`f`Y`h`U`b`U`d`f`Y`g`Y`b`h]U`h]cb`c`Z`]b`Z`ca`U`h]cb`/`h]g`U`b`U`W`h]`Y`U`b`X`]b`h`Y`f`U`W`h]`Y`Z`c`f`i`a`k`Y`Y`f`Y`]X`Y`U`g`U`b`X`f`Y`U`X]b[ `d`f`U`W`h]W`g`U`f`Y`f`Y`U`f`g`Y`X`z`h`g`h`X`U`b`X`W`U`Y`b[ `Y`X`" `h`i`g`h`Y`g`]h`Y`k`Y`Y`f`Y`g`h`X`Y`b`h]g`Y`b`W`c`i`b`h`Y`f`h`Y`W`c`b`j`Y`b`h]cbg`c`Z`d`f`Y`g`Y`b`h]b[ `U`W`X`Y`a`]W`f`Y`g`Y`U`f`W`X`U`b`X`g`h]U[ `]b[ `U`W`X`Y`a`]W`X`Y`V`U`h]" `@`Y`W`h`f`Y`U`h`Y`b`X`U`b`W`h]g`g`i`d`d`c`f`h`X`V`m`i`k`c`f`Y`j`]g]cb`h`c`g`Y`W`X`c` `\*`\$`U`b`X`c`b!]`b`Y`a`U`h`Y`f`U`d`c`g`h`X`]b`h`Y`k`Y`Y`\_`U`Z`Y`f`h`Y`Y`W`h`f`Y`" `B`Y`]h`Y`f`c`Z`h`Y`g`Y`g`i`d`d`c`f`h]g`]g`U`f`Y`d`U`W`h]a`Y`b`h`Z`c`f`U`h`Y`b`X`U`b`W`h]" `H`Y`Y`W`X`c` `\*`\$`]g`U`f`Y`W`c`f`X`c`Z`U`b`Y`j`Y`b`h`b`c`h`U`g`i`a`a`U`f`m`c`Z`]b`Z`ca`U`h]cb`" `h`\_`Y`Y`d]b[ `k`]h`h`Y`c`V`Y`W`h]`Y`g`c`Z`h`]f`X`!`m`Y`U`f`g`h`X`n`z`h`Y`g`Y`a`]b`U`f`a`c`X`Y`d`f`c`j`]X`Y`g`U`a`c`f`Y`]b`X`Y`d`Y`b`X`Y`b`h]U`b`X`W`c`\_`U`V`c`f`U`h]`Y`Y`U`f`b]b[ `Y`b`j`]f`c`b`a`Y`b`h`K` \]Y`Z`\_`m`g`i`d`d`c`f`h`X`U`b`X`X`]f`Y`W`h]X`z`h`Y`g`Y`a`]b`U`f`U`c`k`g`g`h`X`Y`b`h]g`h`c`U`g`g`i`a`Y`]b`W`Y`U`g`Y`X`f`Y`g`d`c`b`g]V`]m`Z`c`f`h`Y`X`]f`Y`W`h]cb`c`Z`Y`U`W`X`W`U`g`g`U`b`X`Z`c`f`h`Y`Z`ca`i`U`h]cb`c`Z`f`Y`g`Y`U`f`W`h]U`g`" `H`Y`m`i`U`f`Y`U`g`c`U`V`Y`h`c`W`h]W`h]m`i`f`Y`Z`Y`W`h]cb`h`Y`]f`c`k`b`d`f`c`W`g`g`Y`g`c`Z`Y`U`f`b]b[ `z`k` \]W`X`]g`c`Z`d`U`f`h]W`U`f`]a`d`c`f`U`b`W`h]b`U`W`c`i`f`g`Y`]b`f`c`X`i`W`b[ `b`Y`k`W`h]W`h]f`Y`U`X]b[ `d`f`U`W`h]W`g`" `H`Y`g`Y`a`]b`U`f`f`Y`e`i`]f`Y`g`Y`U`W`X`g`h`X`Y`b`h]c`i`b`X`Y`f`U`\_`Y`d`f`Y`d`U`f`U`h]cb`z`]b`W`i`X]b[ `g`c`a`Y`W`c`\_`U`V`c`f`U`h]cb`k`]h`c`h`Y`f`g`h`X`Y`b`h]g`/`X`]g`W`g`g]cb`U`b`X`d`f`Y`g`Y`b`h]U`h]cbg`/`W`c`\_`U`V`c`f`U`h]`Y`k`c`f`\_]b`g`a`U`" [ `f`c`i`d`g`" `H`c`k`U`f`X`g`h`Y`Y`b`X`c`Z`h`Y`W`c`i`f`g`Y`k`Y`k`]"` \`c`X`U`h`Y`a`Y`X`G`m`a`d`c`g]i`a`]b`d`U`W`h]c`Z`g`Y`a`]b`U`f`g`" `D`f`Y`!`U`f`f`U`b[ `Y`X`[ `f`c`i`d`g`k`]"`Y`U`W`X`[ `]`Y`U`&`a`]b`i`h`d`f`Y`g`Y`b`h]U`h]cb`c`b`U`h`c`d]W`h`U`h`U`g`V`Y`Y`b`\_`U`d`d`f`c`j`Y`X`V`m`h`Y`W`c`b`j`Y`b`c`f`" `H`Y`g`k`]"`Y`b`U`V`Y`g`h`X`Y`b`h]g`h`c`Y`b[ `U[ `Y`k`]h`h`Y`Z`\_`f`U`b[ `Y`c`Z`h`c`d]W`h]U`b`X`]b`h`Y`f`Y`g`h]f`U]g`Y`X`]b`h`Y`W`c`i`f`g`Y`U`b`X`h`c`g`h`U`h`h`Y`]f`c`k`b`d`c`g]h]cb`U`g`U`b`]b`h`Y`f`j`Y`b`h]cb`]b`U`b`U`W`X`Y`a`]W`X`]g`W`g`g]cb`" `H`Y`g`W`c`i`f`g`Y`]g`g`i`d`d`c`f`h`X`V`m`i`@`Y`U`f`b]b[ `A`U`b`U[ `Ya`Y`b`h]G`m`g`h`Y`a`W`c`a`d`c`b`Y`b`h]g`z`d`f`c`j`]X]b[ `W`c`i`f`g`Y`]b`Z`ca`U`h]cb`U`b`X`i`d`X`U`h]g`z`W`c`d]Y`g`c`Z`h`i`hg`U`b`X`U`X`X]h]cb`U`" ]b`\_`g`h`c`f`Y`U`h`Y`X`g`W`X`c`U`f`m`f`Y`g`c`i`f`W`g`z`c`b]b`Y`X]g`W`g`g]cb`[ `f`c`i`d`g`Z`c`f`[ `f`c`i`d`k`c`f`\_`"

# 5ggYgga Ybh

A midfYZffYX'fYZfYbW]b[ 'ghmY'Zcf'fY'A U'cf'YggUm]g'A cXYfb'@Ub[ i U[ Yg'5ggcW]U]cb'fA @5'ghmY'': cf Yl Ua d'Yg'cZ\ck 'hc'i gY'f]gžgYY

[\fhdg.#ghmY"a`U"cf\[ #cf\\_g!W\]hX!U!ei \]W!\[ i \]XY#](#)

[\fhd.#\]VfUfm'WcbWcfX\]U"WU#AY'd#W\]hb\[ #a`U"d\`d](#)

## 5ggYgga YbhHUg\_g

5ggYgga YbhHUg_	K Y][ \h	8i Y'8UH	Gh XYbh@YUfb]b[ Ci hWca Yg'5ggYggYX
6`c[ 'FYZYW]cb'fUg_	&\$i	\$, #/%/#&\$%- '\$). \$\$'DA	
Gma dcg]i a 'DfYgYb]U]cb'	' \$i	%&#/#/##&\$%- '\$+.\$\$\$'DA	
A U'cf'YggUm	) \$i	&- #/##&\$%- '\$). \$\$'DA	

## 5ggYgga Ybh8YHJ]`g

5ggYgga Ybh%`6`c[ 'FYZYW]cb'fUg\_

@Yb[ h. %\$\$\$

8YHJ]`g.

\$\$\$\$k cfXg]b'hcU""@cW]h'U'W'hi fU'cf""fYfUfm]h]i hUbX'k f]h'U'fYZYW]cb'cb']h'Yl d'cf]b[ '\ck' ]h]"i ghfU]h'g cbY'cZ'hY'hYcfY]h]W]'WcbW'dhg'Zfca' h'Y'W'ci fgY""8c'h]g'Zcf'h'fY'X]ZYZfYbhk YY\_'m]cd]W]g""Mci' a Umbch V'c[ 'cb'h'Y'hcd]WcZmci f'Gma dcg]i a 'dfYgYb]U]cb'Vi ha UmV'c[ 'cb'h'Y'hYcfY]h]W]'WcbW'dh]mci 'XYU'k ]h ]b'mci f'a U'cf'YggUm'

Gi Va ]gg]cb'bc]h'g. GHU[ [ YfYX'gi Va ]gg]cbg'cb'W'ci fgY'fYUXYf'V'c[ 'Zfca' k YY\_'&"

K f]h]b'ZYXVUW\_'UbX'bi a Yf]W]'[ fUXY'j ]U'@A G"

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

5ggYgga Ybh&. Gma dcg]i a 'DfYgYb]U]cb

GHUfhXUH. &#/#/##&\$&\$'-\$-.\$\$\$'5A

8YHJ]`g.

H\Y'Gma dcg]i a ]g'U'a ]b]!W'cb: cf

fk c' [ fUXYg. 'cbY'Zcf'h\Y' [ fci d'k cf\_ Ug'U'k \c'Y'UbX'cbY'Zcf'h\Y]f'j]bX]j ]Xi U'Wcbf]Vi h'cb"

K f]mYb'ZYXVUW'UbX'bi a Yf]W' [ fUXY'j ]U'@A G"

5XX]h]cbU'XYHJ]g.

H\]g'mYUfZ'k Y'k ]' \c'X'fk c'7 f]h]W' H\YcfmGma d'cg]U"

D'YUgY'bc'h'Z'gh XYbhg'UfY'cb'mfYei ]fYX'hc'dfYgYbhUhcby'cZ'hYa žY]h\Yf'Uhi'h\Y'gYa ]bUf'cZ'h'c'W'c'VYfz  
cf'Uhi'h\Y'gYa ]bUf'cZ%( h' B'cj Ya VYf"

Hi fb]h]b'gYH]b[ . H\]g'Ugg][ ba Ybh]g'gi Va ]mYX'h'fci [ \ Hi fb]h]b'UbX'gh XYbhg'Xc'bc'hgYY'Hi fb]h]b  
g]a ]Uf]mifYdcf'g"

5ggYgga Ybh' . A U'cf'YggUm

8YHJ]g.

&) \$\$'k cfXg" H\]g' ]g'h\Y'Z]bU'UggYgga Ybh'Ug\_"

Gh XYbhg'k ]' fYW]j Y'k f]mYb'ZYXVUW'UbX'U'bi a Yf]W' [ fUXY"

Hi fb]h]b'gYH]b[ . H\]g'Ugg][ ba Ybh]g'gi Va ]mYX'h'fci [ \ Hi fb]h]b'UbX'gh XYbhg'Xc'bc'hgYY'Hi fb]h]b  
g]a ]Uf]mifYdcf'g"





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`fI`\*)`XUmg`U`mY`UfI`"≠mci`  
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`YbhiXi`Y`hc`U`Zji`hk`]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`ddcfhU`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`]XYgi`dXUH`g`cb`h`Y]f`gmghYa`ig`hU`h`g`cb`Hk`]hYf"

;`YbYfU`mz`UggYgga`YbhiHUg\_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`g`]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]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'c'h'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 ""

[\hhd.##ji V'YWf i \]XYg" \]VfUfm'i bgk "YXi "Ui #'\]gY#JVci h' \]gY](#)

5 WUXYa ]W=Zcfa Uh]cb

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