



# ARTS3630

5Xj UbWX'>UdUbYgY'5

HYfa`Cby`#`&\$%-

7ci fgY`Cj Yfj ]Yk

`GHUZZ7cbhUW`i8YHU]`g`

`7cbj Ybcfg`

B Ua Y	9a U]`	5j U]UV]]m	@cWU]hcb	D\cbY
? Uni Y`C _Ua chc	_"c_Ua chc4 i bgk "YXi "Ui	A cbXUm%%Ja !%da ž`C h.Yfg`Vm Uddc]bha Ybh	A 6&+`	- ' , ) ! ' + ( -

GVXcc``7cbhUW`i`bZcfa U]hcb

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

@cWU]hcb. `GVXcc``C Z]WžA 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]bhtg '\*`

Gi a a UfmicZh\Y'7 ci fgY

Gi V'YWh5fYU.'<SbS` WēWE fgV[Wē

H\]g'Wēi fgY'dfcj ]XYg'mci `k ]h`i ddYfl]bhYfa YX]UH'`Yj Y`h` ]hcb`]b`>UdUbYgY`Ub[ i U[ Y`gh Xmf` : c`ck ]b[ `hY  
dfYfYei ]g]h`f`bhYfa YX]UH'>UdUbYgY'6fzcf'Yei ]j U`Ybhz'mci `Wēbh]bi Y`hc`XYj Y`cd`mci f`]bhYfW`h`fU`  
Wēa a i b]W]h]cb`g\_]`g`Ug`k Y`Ug`YUfb`bYk`>UdUbYgY`ghfi W`h`fYgžYI dfYgg]cbgž`UbX`]bhYfUW]cb`ghfUH[ ]Yg"  
Mci `k ]`YI dUbX'mci f]j cW]Vi `UfmVm`YUfb]b[ `&\$\$\_Ub`↑" 7 i ffYbhgcW]c!W`h`fU`]ggi Yg`]b`>UdUb`UFY`h\Y  
h\Ya Uh]Wz`W`g`cZh\Y`Wēi fgY"

7 ci fgY'@YUfb]b[ `Ci hWēa Yg

%` 7 ca a i b]W]h`\_bck`YX[ Y`cZ>UdUbz>UdUbYgY`Ub[ i U[ YžUbX`Wēa a i b]W]h]cb`g\_]`gž]b`cfU`  
dfYgYb]h]cbg`gdc`\_Yb`]b`>UdUbYgY`  
&" K f]h`fYdcfh`i`g]b[ `>UdUbYgY`k f]h]b[ `ghmY`  
' " 5Wēa d`]g\`hUg`\_g`k ]h`dYYfg`

HYUW]b[ `GhfUH[ ]Yg`

@YWh`fYg`XY`]j Yf`gcW]U`UbX`W`h`fU`]ggi Yg`fY`UH`X`hc`h\Y`hcd]WcZh\Y`k`YY`\_"BYk`ghfi W`h`fYg#`fUa`a`Ufg`UFY`  
U`gc`YI`d`U]bYX`"Gh`XYbhtg`dfcUW]j`Y`midUfh]W]dUH`]b`dfUW]W]g`cZbYk`YI`dfYgg]cbgž]`cW]Vi`Uf]Ygž`UbX`?`Ub`↑  
UbX`]bhYfUW]k`]h`Z`ck`gh`XYbhtg`Uh`h\Y`YWh`fYg`"

@YWh`fYg`UFY`XY`]j YfYX`i`g]b[ `a`cghm>UdUbYgY`hc`Ugg]ghigh`XYbhtg`]b`XYj`Y`cd]b[ `h\Y]f`]ghYb]b[ `UV`]h]Yg`UbX`  
VYWēa`]b[ `ZJa`]Uf`k`]h`bUh]j`Y`>UdUbYgY`gdYU`Yfgf]U`\_"H\Y`Wēbh`bhk`\]W]`gh`XYbhtg`UfY`bchUV`Y`hc`  
Wēa`dfY`YbX`]b`>UdUbYgY`a`UmVY`YI`d`U]bYX`]b`9b[ `]g\`"

`Hi`hc]U`g`dfcj ]XY`gh`XYbhtg`k`]h`cddcfh`b]h]Yg`hc`dfUW]W]`]bhYfUW]cbž`fYUX]b[ `ž`UbX`k`f]h]b[ `]b`>UdUbYgY`  
Z`ck`]b[ `h\Y`]bZ`fa`Uh]cb`]b]fcXi`W]X`Xi`f]b[ ``YWh`fYg`UbX`dfcj ]XYX`]b`h\Y`hYI`h/cc`\_"H\Y`mU`gc`XYj`Y`cd`  
i`bXYfg]UbX]b[ `UVci`h>UdUbz`]bhYfW`h`fU`Uk`UFYbYggž`UbX`]bhYfW`h`fU`Wēa`a`i`b]W]h]cb`g\_]`g`"H\Y`mU`gc`  
X]gW`gg`\ck`gh`XYbhtg`g\ci`X`XYU`k`]h`U`g]h`Uh]cb`fY`UH`X`hc`h\Y`hcd]WUg`U`gi`W]YggZ``]bhYfW`h`fU`  
Wēa`a`i`b]W]h]c`f`"5`df]a`Ufma`YX]i`a`cZ`Ub[ i U[ Y`]b`h`hc]U`g`]g`>UdUbYgY`]b`cfXYf`hc`XYj`Y`cd`gh`XYbhtg`  
cfU`#U`fU`g\_]`g`"Gh`XYbhtg`UfY`ghfc]b[ `mYbWēi`fU[ YX`hc`i`gY`>UdUbYgY`Xi`f]b[ `WUggYg`"

# 5ggYgga Ybh

## 5ggYgga YbhHUg\_g`

5ggYgga YbhHUg_	K Y][ \h	8i Y'8UHŸ	Gh XYbh@YUfb]b[ Ci hWta Yg'5ggYggYX
GdYU_]b[ 'hŸgh	&\$i	Bch5dd`]WUVY	%ž
: ]bU`YI Ua ]bUH]cb`	( \$i	Bch5dd`]WUVY	%ž&
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## 5ggYgga Ybh8YHU]`g

5ggYgga Ybh% 'GdYU\_]b[ 'hŸgh

GHUfhXUHŸ. 'Bch5dd`]WUVY

8YHU]`g. '9UWŸ gh XYbhk ]`dYfZca 'U'fc'Y'd'Umk ]Ÿ'Ubch\Yf'gh XYbh(f) !\* 'a ]bg#dU]fL'K f]ŸYb'ZYXVUW\_k ]`  
VY '[ ]j Yb'j ]U'bi a Yf]WŸ` [ fUXY'UbX'k f]ŸYb'Wta a Ybh'

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

GYY'A ccXY'Zcf'XYHU]`g

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

5ggYgga Ybh&. ': ]bU`YI Ua ]bUH]cb

GHUfhXUHŸ. '

8YHU]`g. 'Gh XYbŸg'k ]`Wta d'YŸ'Z]bU`YI Ua ]bUH]cb'Xi f]b[ 'YI Ua 'dYf]cX": YXVUW\_k ]`VY '[ ]j Yb'i dcb  
fYei Ygh'

5ggYgga Ybh' . 'Dfc YWŸ

GHUfhXUHŸ. '&) #&#&\$%- '\$- .\$\$'5A

8YHU]`g. 'Gh XYbŸg'k ]`Yb[ U[ Y ]b'U'j Uf]YhmcZUWŸj ]h]Yg'hc`YUfb'>UdUbYgY`Ub[ i U[ Yž'W`h fYž'UbX  
]bh'fW`h fU`Wta a i b]WU]cbž'Wcbg]gh]b[ 'cZUddfcI "'&\$!' '\$a ]bg'cb'U'k YY\_'mVUg]g" 'H\Y'UWŸj ]h]Yg' ]bWŸ XY'U  
[ fci d#bX]j ]Xi U`dfYgYbhU]cb'f#`a ]bgž'd'Um]b[ 'U'fc'Y'Ug'h hc]f]U`YUXYfž'UbX ]bh'fUWŸ]b[ 'k ]Ÿ'>UdUbYgY  
dYcd'Y#g'dYU\_Yfg'UhUb'Yj Ybh\Y'X'ci hg]XY'I 'BGK "'Gh XYbŸg'k ]`ŸYb'fYZYWŸUbX'k f]Ÿ'U'fYdcfhf( \$\$!) \$\$  
WUfUWŸfg#Ydcfh]cb'ŸY]f'YI dYf]YbWŸg"K f]ŸYb'ZYXVUW\_k ]`VY '[ ]j Yb'j ]U'bi a Yf]WŸ` [ fUXY"

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

GYY'A ccXY'g'Zcf'XYHU]`g

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





		Di V`]W<c`]XUm
	Hi hc]U`	@) @
	@YWh fy	@)
K YY_`%% `&- `5df]`!`% A Um	@YWh fy	Di V`]W\c`]XUm @)
	@YWh fy	@YWh fy fP\ fL @)

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

- 6cc\_-'HcV]fU); UHk UmHc`5Xj UbW`X`>UdUbYgY`@YUfb]b[ `H\fc i [ \ `7 cbYbhUbX`A i `hja`YX]U f&\$\$- 7
- 6cc\_-'; fUa a Uf`Dck Yf.`9I YfW]gYg`; cf`A UghYfmf&\$\$%\$7
- 6cc\_-'Dck Yf`I d`? Ub`j, \$\$`6Ug]W? Ub`j`5g`5`; UHk UmHc`5Xj UbW`X`>UdUbYgY`f&\$\$%\$7

F YWca a YbXYX`F Ygci fWg

- HcV]fU`k YVg]hY`""\hd.##rcV]fUk YV"- \*(\$`d#
- [`\hd.##k k "\[Uj c"ti \]hc. mc"UWd#c`UX#d\fUg\]b\[ #bXYI](#)



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`gh`fY`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`hg`L`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.

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[ Ygž`UfhUbX`XYg][ b`dfc`YWgž`Ug`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`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`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[ "

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`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'Y'ghUbxUfXg'cZVY\Uj ]ci f'YI dY'W'X'cZYj Yfmcby`]b'h'Y'I BGK 'W'a a i b]m
- 'cW'W'h'gYfj ]W'g'UbX' ]bZ'fa U]cb'UVci hl BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZ'Y'gY'UfY'Ug'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'U'Y'X'UgdY'W'g'cZ9@-G9'k ]''\Y'd'mci 'a U\_Y'h'Y'a cghcZmci f'gh X]Yg'Uhl BGK ""

[\h'hd.##ji V'Y'W'i \]X'Yg" \]VfUfm'i bgk "YXi "Ui #' \]gY#UVci h' \]gY](#)

## 5 WUXYa ]WbZcfa Uhcb`

: cfYggYbh]U`ghi XYbh]bZcfa Uhcb`fY`Uh]b[ `hc.

- fYei Yghg`ZcfYI hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I BGK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua ]bUh]cb`dfcVWXi fYg/
- gdYW]U`Vc]bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a ]gUXj Ybh fY/
- ghi XYbhYei ]hmUbX`X]gUV`]`hm/
- UbX`chYfYggYbh]U`UWUXYa ]W]bZcfa Uh]cbz`gYY

[\hfdg.#k k k "Ufng"i bgk "YXi "Ui #W ffYbh\]ghi XYbh\]bZcfa Uh\]cb`dfc\]Vc`g!\[ i \]XY`\]bYg#](#)

→ W[Y`Y`Z`YX]h