

# **ARTS3048**

; ch\]W7i`hifYg.'@]hYfUhifY'UbX'GWfYYb

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

# 7ci fgY 8YHJ] g

7 fYX]hDc]bhg \*

### Gi a a UfmcZh\Y'7ci fgY

 $H\g"Wci fgY'ffUW_g"h,Y'W'hi fU'`\ghcfmcZh,Y'[ch]W[YbfY'Zfca"h,Y'gi V']a Y"UbXgWUdYg'UbX'\Ui bhYX WUghYg'cZ < cfUW'K U'dc'Y'hc'h,Y'WcbhYa dcfUfm5a Yf]WUb; ch,]W'': fca ']hg']bW'dh]cbz'h,Y'; ch,]W[YbfY \Ug'VYYb'U'dcdi 'Uf'UbX'Wcbhfcj Yfg]U''W'hi fU''d\Ybca Ybcb'k \]W\"\Ug'XfUa Uh]gYX'h,Y'XUf_Yf'g]XY'cZh,Y gYbgYg'UbX']a U[]bUh]cb—Ug'k Y``'Ug'HYgh]b['h,Y'Vci bXUf]Yg'cZ']hYfUfmhUghY'''=b'; ch,]WZ]Wh]cb'bch,]b[']g Yj Yf'WYfhU]b'''+\Y'Xca Ygh]WUbX'ZJa]']Uf'UfY'a YfY'mWca Zcfh]b[']'i g]cbg'h,Uhj Y]''h,Y'XUf_Yf'fYU']mmcZ i bgdc_Yb'ZYUfg'UbX'XYg]fYg''' < ca Yz'W]mz'k cf_z']XYbh]mz'gYI i U']mz'h,Y'VcXmUbX'h,Y'a ]bX'UfY'U'''g]hYg'h,Uh UfY'cdYb'hc'h,Y'XYghUV]']g]b['d'UmUbX'i bWJbbmYZZYWg'cZh,Y'; ch,]W]a U[]bUh]cb'Ug'h,]g'Wci fgY'g'gY'YWYX hYI hgz'Za g'UbX'HJ 'gYf]Ygz'k \]W.'fUb[Y'Zfca 'h,Y'dcdi 'Uf'hc'h,Y'WJbcb]WJ'zYI Ya d']Zm''$ 

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

### HYUWX]b[ GhfUhY[]Yg

 $\label{eq:hammond} \text{H} \setminus Y \cdot W \text{ci } fgY \cdot ]g \cdot H \text{di } [ \setminus Y \cdot Y \text{di } fYg \cdot U \text{b} X \cdot H \text{ } hcf] U \cdot g''$ 

@YWn fYg`dfcj ]XY`WcbhYl hi U``]bZcfa Uh]cbžci h`]bYg`cZWf]h]WU``fYgdcbgYg`hc`h\Y`hYl hg`UbX`gca Y`WcgYX]gWl gg]cb"'Hi hcf]U`g`fYei ]fY`ghi XYbhg`hc`Yb[ U[ Y`UWh]j Y`mk ]h\`h\Y``YWn fY`UbX`fYUX]b[ `a UhYf]U``UbXXYj Y`cd`h\Y]f`ck b`Wf]h]WU``fYgdcbgYg"

# 5ggYgga Ybh

.

 $B6. + cfXYf'hc'dUgg'h \ ]g'Wc'ifgYz'mc'i'a'igha U_Y'U'gYf]cig'UhYa dh'Uh<math>5@@'UggYgga Ybh'hUg\_g'''$ 

.

# 5ggYgga Ybh HUg\_g

5ggYgga Ybh'HJg_	K Y][ \h	8i Y'8UHY	Gh XYbh@YUfb]b[ Ci hWca Yg 5ggYggYX
A ]bcf'YggUmi	(\$1	&) #\$*#&\$&%`\$) .\$\$`DA	%ž <sup>.</sup> &ž <sup>.</sup> '
A U^cf`Wf]h]WU``YggUmi	*\$1	% #\$, #&\$&%`\$).\$\$`DA	%ž'&ž''

# 5ggYgga Ybh'8YHJ]`g

5ggYgga Ybh% A ]bcf YggUm

8 YW] g.

(XJ) € [Xi U`

%) \$\$!k cfXg

Ghi XYbhgik f]hYiUbiYggUmh\UhiYb[U[YgiWcgYimk]h\ih\Yi; ch\]WUgiUi[YbfYik]h\iUiicb[i\]ghcfm"

: YYXVUW\_'j ]U'@A G"

5ggYgga Ybh& A U^cf Wf]h]WU`YggUm

 $\textbf{GhUfhXUhY}. \ \texttt{Bch5dd`]} \textbf{WUV`Y}$ 

@Yb[h\.")\$\$"kcfXg

8YHJ]`g.

**₽**X]j ]Xi U`

A U^cf'YggUm

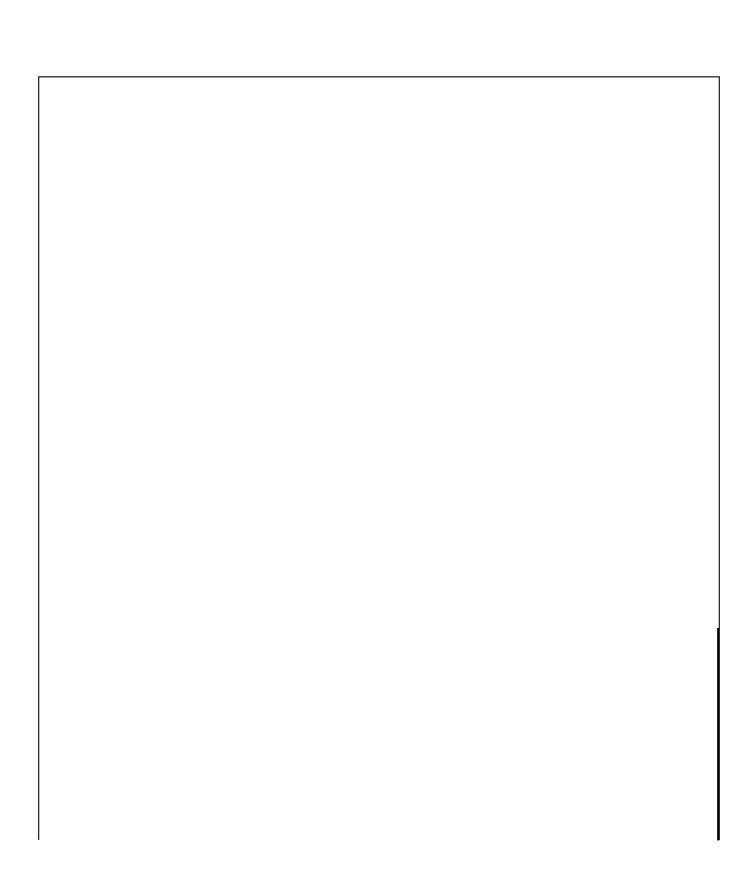
&ž) \$\$ "k cfXg" "

Ghi XYbhgʻc ZZYfʻUʻgi ghU]bYXʻUf[i a YbhWca dUf]b[ʻUbX`WcbhfUgh]b[ʻhk cʻ; ch\]WhYl hgʻ]bʻ\]ghcf]WU``WcbhYl h'ʻ

: YYXVUW<u>"j</u> ]U"@A G"

Gi Va ]gg]cb bchYg. FYZYfhc A ccXY

 $\label{thm:condition} \mbox{Hi fb]h]b"gYh]b" Label Label$ 



/		

		/#++) Ž\$" " %fi F cgW4 ?aaV /\$" " * Ž \$" #&fi``Mci `UfY k Y`Wca Y`hc`X]gW gg`ch\Yf`j Ua d]fY`Z]`a g#j `gYf]Yg`]b h\]g`WUgg`Ug`k Y``"``
K YY_''&*'>  `m'!'' \$'>  `m	ey Wif fy	<"D"'@cjYWfUZhžH\Y' <cffcf'uhfyx'<cc_< th=""></cffcf'uhfyx'<cc_<>
	GYa ]bUf	Hi YgXUm'>i `m'&+h\ 'GYa ]bUf
		H\Y`gYhhYIhZcf`h\]g`kYY_`k]``VY`@cjYWfUZf@`g\cfh ghcfmFZW: addadSfDW: aa] "`H\YfY`]g`U``]b_`hc`Ub cdYb`UWWgg`jYfg]cb`cZh\]g`hYIh]b`h\Y`acXi`Y gYWf]cb`VY`ck"'
K YY_"%\$."&"5i [i gh!"*	@YWn fY	J]Wcf@UjY``YžH\Y`6U``UX`cZ6`UW_`Hca
5i [i gh	GYa ]bUf	Hi YgXUm5i [i gh' fX GYa ]bUf
		H\Y`gYhhYIhZcf'h\]g`WUgg`]g`@UjY``Yfg`bcjY``U`FZW 4S^SVaX4^SU]Fa_"``7cd]Yg`cZh\]g`Vcc_`WUb`VY difW\UgYX`Uhh\Y`IBGK`Vcc_g\cd"`



# Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

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

Image: Ybwei bhyfu'dfcv'ya k \yb'uhhya dhjb[ 'hc'gi va ]hmci f'Ugg][ ba Ybhh\fci [ \ 'Hi fb]h]bž'd'YUgY

Hy'Yd\cby'9| hy'fbu''Gi ddcfhcb'-', ) '' ' ' %cf'Ya U]''h\Ya 'cb'Y! hy'fbu'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'mYUft'''=Z'mci
UfY'i bUV'Y'hc'gi va ]hmci f'Ugg][ ba YbhXi Y'hc'U'ZJi 'hk ]h\ 'Hi fb]h]b'mci 'a Um'Udd'mZcf'Ub'Y! hy'bg]cbž'Vi hmci
a i ghfYhJ]b'mci f'h]W\_Yhbi a VYf'Zfca '9! hy'fbU''Gi ddcfhfU'cb[ 'k ]h\ 'Ubmch\Yf'fy'Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj ]XYbW' hc'gi ddcfhmci f'Y! hy'bg]cb'Udd']WUh]cb"'=Zmci 'Ya U]''9! hy'fbU''Gi ddcfhmci 'k ]'`
Ui hca Uh]WJ'`mfYW']j Y'U'h]W\_Yhbi a VYfZ'Vi h]Zmci 'hY'Yd\cbY'mci 'k ]``bYYX'hc'gdYW]Z]WJ'`mUg\_'Zcf'cbY''
Hi fb]h]b'U'gc'dfcj ]XYg'i dXUhy'g'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hyf''

; YbYfU`mž'UggYgga YbhiHug\_g'a i ghVY'gi Va ]hhYX'Y`YVWfcb]\WJ``mij ]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk ]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k ]h\U`hYfbUh]j Y'gi Va ]gg]cb'XYHJ]`g"

cfi]bZcfa Uhjcbicbi\ckihcigi Va ]hUgg][ ba Ybhgicbi]bYij ]UiA ccXiY.i\hdg.#gh XYbhi bgk "YXi "Ui #\ck! gi Va ]hUgg][ ba Ybha ccXiY

# 5 WUXYa ]W<cbYghmUbX D`U[]Uf]ga

D`U[]Uf]ga i]gii g]b[ih\Yik cfXgicfi]XYUgicZch\YfgiUbXidfYgYbh]b[ih\Ya iUgimci fick b"i=hWJbihU\_Yia Ubm Zcfa gžZfca iXYi]VYfUhYiWXYUh]b[ihciUWW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hiUW\_bck iYX[Ya Ybh'

IBGK [fcidg'd'U[]Uf]ga ]bhc'h\Y'Zc``ck]b['WUhY[cf]Yg.

• i bXYfgHJbX'mci f'f][\hg'UbX'fYgdcbg]V]`]h]Yg'Ug'U'gh XYbh'Uhil BGK

# 5 WUXYa ]W = b Zcfa Uh cb

: cf'YggYbhJU`'gh XYbh']bZcfa UhJcb'fY`UhJb['hc.

- fYei Yghg 'Zcf'Yl hYbg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYi ]Yk 'cZa Uf\_g/
- I BGK '< YU'h\ 'UbX'GUZYhm'dc`]\\\Yg/
- YI Ua ]bUh]cb dfcWYXi fYg/
- qdYWJU``Wcbq]XYfUHjcb`]b`H\Y`Yj YbhcZ]``bYgg`cf`a ]gUXj Ybh fY/
- gh XYbhYei ]mUbX X]gUV]`]m/
- UbX'ch\Yf'YggYbhJU`'UWUXYa ]W]bZcfa UhJcbz'gYY

\hdg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbhgh XYbhg#UWJXYa ]W]bZcfa Uh]cb#dfchcWc`g![i ]XY`]bYg#

.

### ⇒a U[Y'7fYX]h

XYg][bamb][\h'Wca

#### 7F = 7CG

7F = CG'Dfcj]XYf'7cXY.'\$\$\$-,;

#### 5W\_bck `YX[ Ya YbhcZ7ci bhfm

 $K_{Y'UW\underline{D}bck} YX[Y'hY'6YXY[U''dYcd'Y'k \c'UfY'hY'ffUX]h]cbU''W ghcX]Ubg'cZhY''UbXg'cb'k \]WX'I_BGK_?Ybg]b[hcb'WJa_di_g']g''cWJhYX'''$