

# **ARTS2630**

=bhYfa YX]UhY`>UdUbYgY`5

HYfa 'C bY''##'&\$&%

GW.cc``cZ<iaUb]Mg'UbX'@Ub[iU[Yg`'#'I BGK '5ffg'UbX'GcWU`'GWMbWrg

# 7 ci fgY<sup>·</sup>Cj Yfj ]Yk

## GHJZZ7cbHJWh78YHJ]`g

### 7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cWUh]cb	D∖cbY
Gia]_c` <b>⊣</b> XU	g"]]XU4 i bgk "YXi "Ui		A cfj Yb 6fck b &+&	Ž*%&'-',) '+()

#### Hi hcfg

BUa Y	9a U]`	5j U]`UV]`]m	@cWUhjcb	D∖cbY
BcViU_] <sup>.</sup> 5_U[]	b"U_U[]4 i bgk "YXi "Ui		A cfj Yb 6fck b	Ž*%'&'-',)
			&\$(	' +*'

### GWXcc``7cbHJWhi=bZcfaUh]cb

GWkcc``cZ<iaUb]h]Yg'UbX'@Ub[iU[Yg

@cWUhjcb. `GW&cc``CZJWYžAcfjYb 6fckb 6i]`X]b[ž@YjY``&ž&),

CdYb]b[ `<ci fg. `A cbXUm! `: f]XUmž - Ua `!`) da

D\cbY. Ž\*%&'-',) %\*, %

: UI . Ž\*%&'-' , ) ', +\$)

9a U]`. <u>\U`4 i bgk "YXi "Ui</u>

# 7ci fgY<sup>·</sup>8YHJ]`g

### 7 fYX]hDc]bhg<sup>·\*·</sup>

### Gi a a UfmcZhXY7ci fgY

H\Y'Wci fgY'ZcWi gYg'cb'>UdUbYgY'Wca a i b]WUh]cb']b'i ddYf'VY[]bbYfg'`Yj Y``h\fci [\'X]ZYfYbhhcd]Wg'h\Uh UfY'fY`UhYX'hc'XU]`m`]ZY''' #idfcj ]XYg'mci 'k ]h\'U'[YbYfU`'i bXYfgHJbX]b['cZ>UdUbYgY'gYbhYbWi'gHfi Wfi fYž j cWUVi `Ufm]bWi X]b['-) `\_Ub']ž'dfU[ a Uh]Wg'cZ>UdUbYgY'Wca a i b]WUh]cb'hc[Yh\Yf'k]h\'ZJa ]`]Uf]hmk]h\'U bi a VYf'cZgcW]cWi`hi fU``]ggi Yg''H\Y'Wci fgY'U]a g'hc'XYj Y`cd'mci f`]bZcfa YX'i bXYfgHJbX]b['cZ>UdUbYgY YI dYf]YbWi'gž'Wi`hi fYž'gcW]YmUbX'k cfX'j ]Yk g'Ug'k Y```Ug'Z fh\Yf'X'j Y`cd'VY[]bbYfgfi>UdUbYgY']bh/fUWh]j Y g\_]``g'UW\]Yj YX']b' #bfcXi Wfcfm`Yj Y``hck UfXg'dfY!]bh/fa YX]UhY''Yj Y`'' #iU`gc'U]a g'hc'dfYdUfY'mci 'hc'VYWca Y Wca dYhYbhWca a i b]WUhcf']b'>UdUbYgY']b'j Uf]ci g']bZcfa U``UbX'Zcfa U``WcbhYI hg''

### 7cifgY`@YUfb]b[`CiHWcaYg

- %"8YgWf]VY`UbX`bUffUHY`YjYbhg`cihcZcbYfg`YldYf]YbWfžUbX`YldfYgg`h\ci[\hg`cb`h\Y`YjYbhg`ig]b[ Wcad`Yl`gYbhYbWf`ghfiWfifY`]b`>UdUbYgY
- &" DYfZcfa 'cfU`'UbX'k f]hhyb'g\_]`g'[U]bYX']b'h\Y'Wci fgY
- ' " =XYbh]ZmUbX'Yj U`i UhY'dfcV'Ya g`]b`ck b`cfU``UbX'k f]hhYb'k cf\_
- ("5dd`m\_bck `YX[Y`cZ>UdUb`UbX#cf`>UdUbYgY``Ub[i U[Y`UbX`>UdUbYgY`Wcaaib]WUhjcb`g\_]``g h\fci [\`dUfhjWjdUhjcb`]b`ZJVW!hc!ZJVW!UbX`cb`]bY`UWhjj ]hjYg`UbX`Yj Ybhg
- ) " GY`YWrUbX`i gY`Uddfcdf]UhY`\_Ub'}`f]bWi X]b[`-) `bYk `\_Ub'}E'UbX`\_UbU`]b`fYUX]b[`UbX`k f]h]b[ >UdUbYqY

#### HYUW ]b[ GhfUh []Yg

H\Y'I\KfYY!\cif`YWfifY`]g`X]j ]XYX`]bhc`fk c`dUffg"' =b`f\Y`Z]fgh`YWfifYžgfi XYbfg`k ]```YUfb`gcW]U``UbX`W`Ih`fU` ]ggi Yg`fY`UhYX`hc`f\Y`hcd]WcZh\Y`k YY\_žZc``ck YX`VmYI d`UbUh]cbg#X]gW gg]cbg`UbX`gca Y`]bhYfUWfj Y dfUWfjWfg`cZbYk`[fUa a Uh]WU``gffi WfifYg#YI dfYgg]cbg"' =b`f\Y`gYWcbX``YWfifYžgfi XYbfg`k ]```Yb[U[Y`]b fYUX]b[`UbX`kf]h]b[`UWfj] ]h]Yg`]bWi X]b[``YUfb]b[`bYk`\_Ub']`UbX`\UbXg!cb`YI YfW]gYg`f\UhUfY`YggYbf]U``hc h\Y`hcd]WcZh\Y`k YY\_"`H\Y``YWfifY`]g`fY[i`Ufmj]g]hYX`VmgYb]cf`gfi XYbfg`k \ca``gfi XYbfg`Wb`]bhYfUWfik ]h UbX`[U]b`gi ddcfh'``H\Y``YWfifY`]g`fY[i`Ufmj]g]hYX`VmgYb]cf`gfi XYbfg`k \ca``gfi XYbfg`Wb`]bhYfUWfik ]h UbX`[U]b`gi ddcfh'``H\Y``YWfifY`]g`fY[i`Ufmj]g]hYX`VmgYb]cf`gfi XYbfg`k \ca``gfi XYbfg`Wb`]bhYfUWfik ]h UbX`[U]b`gi ddcfh'``H\Y``YWfifY`]g`fY[i`Ufmj]gTYY`]j YfYX'a U]b`m]b`9b[``]g\`k]h`>UdUbYgY`#9b[``]g\`g`]XYg']b`cfXYf`Zcf gfi XYbfg`fc`Z ``mi bXYfgfUbX`h\Y`WcbHYbhcZh\Y`kYY\_"``Hi hcf]U`g`dfcj]XY`gfi XYbfg`k]h`YI d`]W]hdfUWf]Wf`cZ ]bhYfUWf]cb`]b`>UdUbYgY`k\YfY`h\Ymdi hhc`i gY`h\Y`\_bck`YX[Y`[U]bYX`Zfca``YWfifYg`]bhc`dfUWf]Wf`h\fci [\`U bi a VYf`cZYIYfV]gYgžf\Yb`Udd`mk\Uhf\Ym\UjY``YUfbhhc`fYU`Wca a i b]WUfjcb`k]h`HUWXYf`UbX`dYYfg"

Hi hcf]U`g`UfY`XY`]j YfYX`]b`>UdUbYgY`hc`XYj Y`cd`ghi XYbhg``]ghYb]b[`g\_]``g`UbX`YbWci fU[Y`h\Ya`hc Wca a i b]WUhY`]b`>UdUbYgY''`K \]`Y`gYhhb[`fh\Y`UVcj Y`ZUWY!hc!ZUWY`WUggYgž'h\Y`Wci fgY`UWhjj Y`mi gYg @YUfb]b[`A UbU[ Ya YbhGmghYa`fk@A GEhc`dfcj ]XY`ghi XYbhg`k]h\``YUfb]b[`fYgci fWYgžUggYgga Ybhg`Ug`k Y`` Ug`U``YUfb]b[`Wca a i b]mnk]h\`ch\Yf`ghi XYbhg`UbX`hYUW\Yfg`h\fci [\`h\Y`g\Uf]b[`cZYI dYf]YbWYg`UbX ]bZcfa Uh]cb`fY[UfX]b[`>UdUbYgY``Ub[i U[ YžW`hi fY`UbX`gcWjYm'`Ghi XYbhg`UfY`U`gc`YbWci fU[ YX`hc`Yb[U[ Y ]b`>UdUbYgY``Ub[i U[ Y`UbX`>UdUb!fY`UhYX`UWhjj ]h]Yg`ci hg]XY`cZWUgg`hc`Z fh\Yf`XYj Y`cd`h\Y]f g\_]``gž\_bck`YX[ Y`UbX`YI dYf]YbWY`cZ>UdUbYgY`Wca a i b]WUhjcb''

H\Y'Wci fgY'i gYg'; Yb\_]'&'Ug'U'HYI H/cc\_"'H\Y'Zfgh'g]I 'W\UdHYfg'Wcj Yfg'H\Y'Zc``ck ]b[ 'hcd]Wg.

%"`DUfhhjaY`kcf\_

&"`; ]Zhif17 \UdhYf`&Ł

' "`HfUj Y``f7 \UdhYf`' Ł

("@cghidfcdYfhmif7\UdhYf"(Ł

)"FiacifUbXAcUb]b['f7\UdHYf')Ł

\*""| b]j Yfg]mi@]ZY`f17 \UdhYf`\*Ł

# 5ggYgga Ybh

### 5ggYgga YbhHUg\_g

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7`Ugg'hYghg'	()	HYgh%]b`K ' žHYgh&`]b`K +ž UbX`HYgh' `]b`K %\$	%ž`&ž' Ž)
GY`ZIgY`YWYX``YUfb]b[ UW1]ji]h]Yg`	&\$1	K ]h\]b`hkc`XUmg`UZhYf`h\Y Wcad`Yh]cb`cZYUVX`UWh]j]hm"	%ž`&ž' Ž (
91 Ua <sup>-</sup>	')	8if]b[`h\Y`YIUa`dYf]cX	%ž`&ž`' Ž`( Ž`)

#### 5ggYgga Ybh8YHJ]`g

5ggYgga Ybh'% '7`Ugg'hYghg

#### GhufhXUhY.Bch5dd`]WUV`Y

@Yb[ h\. '%) 'a ]bg'Zcf'HYgh'%z'&\$'a ]bg'Zcf'HYgh'&z'UbX'%\$'a ]bi hYg'Zcf'HYgh' 'f[ i ]XUbWY'cb`mŁ

#### 8 YHJ]`g.

Ghi XYbhg Wca d`YhY'' I `i d`hc`&\$`a ]bg`hYghg`hc`UggYgg`h\Y]f Wca a i b]WUh]cb`g\_]``g"

Ghi XYbhgʻfYWY]j Y`U`a Uf\_`UbX`ZYYXVUV<u>'</u>'`⊕X]j ]Xi U``Vcbgi `hUh]cb`]g`Uj U]`UV`Y`Zcf`Z fh\Yf`ZYYXVUV\_

#### 5XX]h]cbU``XYHJ]`g.

HYgh%f%\$1 Ł HYgh&f%)1 Ł HYgh'f&\$1 Ł

#### 5ggYgga Ybh&: `GY`ZgY`YWYX``YUfb]b[ `UWjj ]hjYg

GHUFHXUHY.KYY\_%

@Yb[h\.`8YdYbX]b[`cb`h\Y`UWhj]]hm'`FYUX`h\Y`XcW`aYbhcb`AccX`Y

#### 8 YHJ]`g.

Ghi XYbhgʻgY`YWh`YUfb]b[`UWhjj]hjYgʻZfca`U``]ghicZdfYgWf]VYX`UWhjj]hjYgžidi hi]bhcʻdfUWhjWY`UbX`kf]hY`U`fYdcfhi]b >UdUbYgY`cb`@AG"

H\Y`fYdcfh`]g`UggYggYX`Vmh\Y`]bghfi Wrcf`cb`]hg`UWX]Yj Ya YbhcZh\Y`ghUh/X`UWhjj ]hmU]a g`UbX`Zi YbWncZ >UdUbYgYži g]b[`U`fi Vf]W`H\Y`fi Vf]W]g`UWWYgg]V`Y`Vmh\Y`ghi XYbhg" Gi Va ]gg]cb`bchYg.`F Ydcfh#@c[`fhc[Yh\Yf`k]h\`Yj]XYbWY`k \YfY`fYei]fYXŁ`cb`A ccX`Y`Zcf`U```UWfj]h]Yg"

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

5ggYgga Ybh' . '9l Ua

@Yb[h\.'&'\cifg

#### 8YHJ]`g.

Ghi XYbhgʻWca dʻYhYʻUʻ&!\ci fʻYI Ua ]bUh]cbʻ]bʻh\YʻZcfa UʻYI Ua ]bUh]cbʻdYf]cXʻk ]h\ʻa i `h]dʻYʻW\c]WYʻei Ygh]cbg UbXʻg\cfhihcʻ`cb[ʻUbgk Yf`ei Ygh]cbg"

Ghi XYbhgʻfYWY]jYʻUʻa Uf\_ʻUbXʻWUbʻWobgi`hk]h\ʻh\YʻYWhi fYʻZofʻZi fh\YfʻZYYXVUW\_"`H\]gʻ]gʻh\YʻZ]bU` UggYgga YbhZofʻUhHYbXUbWYʻdi fdogY"

#### 5XX]h]cbU``XYHJ]`g.

8c bcha U\_Y UbmiffUj Y UffUb[ Ya Ybhi bh] h Y YI Ua XUhY ]g fY YUgYX"

		I

		FYj]gY`K%)`WcbhYbhg`UbX`VY`fYUXmZcf`h\Y`WUgg hYgh`]b`KYY_`+"
	Dfc YWh	FYj]gY'mcifDfcYWhDcfh72c`]c'UWh]j]h]Yg fl Ł ! <ujy'mci'vyyb'kcf_]b['fy[i`uf`m3 !8c'mci'\UjY'Ybci[\hUWh]j]h]Yg3 !<ujy'mci'uxxyx'u```fydcfhg#c[g'cb'accx`y3'< th=""></ujy'mci'uxxyx'u```fydcfhg#c[g'cb'accx`y3'<></ujy'mci'vyyb'kcf_]b['fy[i`uf`m3 
K YY_`+.`&- `A UfVX`!`& 5df]`	@YWhifY	@YWnifY`%`7`Ugg`HYgh&Z`7\UdhYf`%*/7i`hifYž ; fUaaUf`UbX`DfUWnJWY" @YWnifY`&.`7\UdhYf`%*`WcbhJbiYg"fBiY`hc`diV`JW \c`]XUmcb`:f]XUmžh\YfY`k]``VY`bc``]jY``YWnifY" ``H\Y`fYWcfXYX``YWnifY`k]``VY`fY`YUgYX`cb`AccX`YŁ`
	Hihcf]U`	DfUWjWF`]bhYfUWjcb`k]h\`WUggaUhYg"
K YY_', .') '5df]`!'- '5df]`	@Y₩nifY	@YWnifY`%`7\UdhYf`%+/7i`hifYž; fUaaUf7 DfUWnjWY"`fBiY`hc`diV`jW\c`jXUmcb`AcbXUmžh\YfY k]``VY`bc``jjY``YWnifY" ``H\Y`fYWcfXYX``YWnifY`k]```VY`fY`YUgYX`cb`AccX`YŁ` @YWnifY`&.`7\UdhYf`%+`Wcbh]biYg"
	Hi hcf]U`	DfUWjWF]bHYfUWjcbk]h\WUggaUHYg"
	DfcYWh	ffFYgcifWY`G\UfYfiUWjjj]hmi]g`XiY`h\]g`:f]XUmi(da cb`5df]``-`]Zmci`W\cgY`h\Y`UWjjj]hm'
K YY_''%&'5df]`'!'%* 5df]`	@YWhifY	@YWnifY`%`7\UdhYf`%+`Wcbh]biYg" @YWnifY`&.`7\UdhYf`%`fiib]jYfg]hm`@]ZYfi`7i`hifYž ;fUaaUf`UbX`DfUWn]WY"
	Hihcf]U`	DfUWgW[`]bhYfUWgcbik]h. WUgga UhYg"
K YY_`%\$.`% `5df]`'!`&' 5df]`	@y₩i fy	@YWhifY`%`7\UdHYf`%`WcbHbiYg" @YWhifY`&.`7\UdHYf`%`WcbHbiYg"
	Hihcf]U`	7 `Ugg HYgh' . `=bh∕ fU₩jcb HYgh'
	Dfc YWh	5```dfcYWridcfhZc`]c'fYdcfhgž`c[g'UbX'ch\Yf XcW a Ybhg'hc'VY'dcghYX'Vm(da'cb':f]XUmž'5df]``&'" Gi Va ]gg]cb'hcc``k]``VYWcaY']bj ]g]V`Y'UZhYf'h\]g'Xi Yž UbX'Ubmigi Va ]gg]cb'UZhYf'h\Y'XiY'VmYaU]``cf'YaU]` UhrUW\aYbhik]```bchiVY'UWWYdhYX'''

### FYgci fWg

#### DfYgWf]VYX F Ygci fWfg

; Yb\_]`=HYI hVcc\_`H\]fX`9X]h]cb

; Yb\_]`=K cf\_Vcc\_H\]fX`9X]h]cb

7 ci fgY'bchYg'UbX'ch\Yf"YUfb]b['XcW'a Ybhg'UfY'cb'A ccX`Y"

#### FYWca a YbXYX<sup>\*</sup>FYgci fWYg

GYY'7ci fgY'BchYg'cb'AccX`Y

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

: cfa U`ZYYXVUW\_Zca `ghi XYbhg`k]``VY`Wc``YWYX`j]U`a m'9I dYf]YbWYžUbX`k]``VY`i gYX`hc`]a dfcj Y`Z hi fY ]hYfUh]cbg`cZh\]g`Wci fgY"`=bZcfa U``fYU`!h]a Y`ZYYXVUW\_`]g`U`gc`j Yfmk Y`Wca Y`Y]h\Yf`]b`dYfgcb`cf`h\fci [\`U A ccX`Y`Zcfi a `Zcf`gi [[Ygh]cb`UbX`Wca a Ybhg"

# Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

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

Zmci YbWci bhYf'U'dfcV'Ya 'k \Yb'UhYa dhjb[ 'hc'gi Va ]hmci f'Ugg][ ba YbhN fci [ \ 'Hi fb]hjbž'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'fl \*) 'XUmg'U'mYUfŁ''Zmci UfY'i bUV'Y'hc'gi Va ]hmci f'Ugg][ ba YbhXi Y'hc'U'ZJi 'hk ]h. 'Hi fb]hjb'mci 'a UmUdd`mZcf'Ub'YI hYbg]cbžVi hmci a i ghfYhU]b'mci f'hjW\_Yhbi a VYf'Zfca '9I hYfbU'`Gi ddcfhfU'cb[ 'k ]h. 'Ubmch\Yf'fY'Yj UbhXcW a YbhgŁ'hc ]bWi XY'Ug'Yj ]XYbWY hc'gi ddcfhimci f'YI hYbg]cb'Udd`]WUh]cb'''Zmci 'Ya U]`'9I hYfbU'`Gi ddcfhimci 'k ]`` Ui hca UhjWU'`mfYWY]j Y'U'hjW\_Yhbi a VYfž'Vi h]Zmci 'hY`Yd\cbY'mci 'k ]``bYYX'hc'gdYWJZWU``mUg\_'Zcf'cbY" Hi fb]hjb'U`gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'gfUhi g'cb'Hk ]hYf"

; YbYfU``mž'UggYgga YbhHUg\_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 YbH'`=b`]bgHUbWfg`k \YfY`H\]g`]g`bchdcgg]V`Yž`]hk ]```VY`gHUHYX`cb`mci f`Wci fgY**'**g`A ccX`Y`g]HY`k ]H\ U`HYfbUh]j Y`gi Va ]gg]cb`XYHU]`g"

: cf`]bZcfa Uh]cb`cb`\ck `hc`gi Va ]hUgg][ ba Ybhg`cb`]bY`j ]U`A ccX`Y.`\hhdg.##gh XYbh'i bgk "YXi "Ui #\ck! gi Va ]hUgg][ ba Ybha ccX`Y

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

D`U[]Uf]ga `]g`i g]b[ 'H\Y`k cfXg`cf`]XYUg`cZcH\Yfg`UbX`dfYgYbH]b[ 'H\Ya `Ug`mci f`ck b"`=h\Wb`HU\_Y`a Ubm Zcfa gžZīca `XY`]VYfUHY`W\YUH]b[ 'hc`UWV]XYbHU``mWcdm]b[ 'Zīca `U`gci fW'`k ]H\ci hUW\_bck `YX[ Ya YbH'

I BGK '[fci dg'd`U[]Uf]ga ']bhc'h\Y'Zc``ck ]b[ 'WUhY[cf]Yg.

i bXYfgHUbX\*mci f\*f][\hg\*UbX\*fYgdcbg]V]`]h]Yg\*Ug\*U\*gh XYbhUhI BGK