

# **ARTS3283**

F ca Ub '9a dYfcfg.': fca '5i [i ghi g'hc'BYfc

GYa YghYf'Hk c''#'&\$%

## 7 ci fgY Cj Yfj ]Yk

#### GHJZZ7cbHJWh8YHJ]`q

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]lm	@cWUh]cb	D\cbY
5ggcWJUHY DfcZYggcf B]W_8ciaUb]g	b"Xci a Ub]g4 i bgk "YXi "Ui	A cbXUm&!(	A cfj Yb 6fck b	-',)%+\$)

#### GW.cc`7cbhJWh =bZcfa Uhlcb

GWXcc`cZ<ia Ub]hYg'UbX'@Ub[iU[Yg

@cWUhjcb. 'GW\cc`'C ZZj\\xizA cfj Yb'6fck b'6i ]`X]b[ z'@Yj Y``&z\&),

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>

#### 5 hmy b X Ub Wy F Yei ] f Ya Yb hg

5 qh XYbh]q Yl dYWYX hc UhYbX U``WUqq WcbhUWi\ci fq Zcf U ZUW!hc! ZUW! fl & L'cf V YbXYX Wci fqY UbX WeadYhY'U``'UWAj ]hYq'Zef'U'VYbXYX'cf'Z ``micb`]bY'WeifqY"

5 gh XYbhk\c'Uff]j Ygʻa cfY h\Ub′%) a ]bi hYgʻ`UhYʻa UmVY dYbU`]gYX Zcf'bcb!UthYbXUbVW" Zgi VX U'dYbU`hm ]g^]a dcgYXz\*h\Y`ghi XYbha i ghVY`]bZcfa YX`j YfVU``mUhh\Y`YbX`cZWUgg^UbX`UXj ]gYX`]b`k f]h|b[ 'k ]h\]b`&( \ci fg"

ZUʻgh XYbhYl dYf]YbW'gʻ]`bYggža ]gUXj Ybh fYʻcfʻch\YfʻcVW ffYbW h\Uha U\_YgʻUVgYbW Zfca ʻU WUgg#JWNj jmi buj cjXUV`Yžcf`YI dYWmg`hc`VY`UVgYbhZfca`U`Zcfh\Wcajb[`WUgg#JWNj jmz`h\Ymg\ci`X`gYY\_ dYfa ]qq]cb Zfca 'h\Y'7 ci fqY'5i h\cf]|mz'UbX'k\YfY'Udd`]WUV`Yz'h\Y]f`fYei Yqhq\ci `X'VY'UW\can dUb]YX'VmUb cf][ |bU`cf`WfHZYX`WcdmcZU'a YX]WU`WfHZWJHY`cf`ch\Yf`Zcfa `cZUddfcdf|UHY`Yj |XYbW/"

5 7 ci fqY 5 i h\cf|lma UmYl W qY U qhi XYbh2fca WUqqYq cf UWlij |h|Yq Zcf i d hc cbY a cbh\" < ck Y j Yfz h\Ym a UmUgg][b'UXX]hcbU`UbX#cf'U`hYfbUh]j Y'hUg\_g'hc'Ybgi fY'Wca d`]UbWY"'5'7 ci fgY'5i h\cf]hmWcbg]XYf]b['h\Y [fubhb[cZuvqYbWraighvYrguhqZ]YXrurgh XYbhk]```qh]```VYruv`Yrbc'a YYhrh\YrWcifqY'q``Yufb]b[cihWcaYq UbX#cfjciaYcZYUfb]b["5 gh XYbhgYY\_]b[ 'Uddfcj U`hc VY UVgYbhZcfa cfY h\Ub cbY a cbh\ a i ghUdd`m ]b'k f]hb['hc'h\Y'8YUb'UbX'dfcj]XY'U```cf][]bU``cf'WYfhZYX'gi ddcfhb['XcW a YbHJhcb"

cfacfy]bzcfaUt]cbUVcihthYUthYbXUbWYdfchcVc`g]bthYY:UW`tmcZ5fhgUbX'GcWJU` GWYbWrg. \htdg.#k k k "Uffig"i bak "YXi "Ui #W ffYbhah XYbha#UWJXYa \\mathbb{W}\delta Zcfa Uhcb#dfchcWc\a![i \]XY\\delta Ya#

5 WUXYa | W = b Zcfa Uh | cb ·

## 7ci fgY 8YW] g

7 fYX]hDc]bhg \* \*

Gi a a UfmcZh\Y 7ci fgY

Gi VYWh5fYU.: [efack

H\Y'Wci fgY'Yl d`cfYg'h\Y'\]ghcfmcZF ca Yfg'Z]fghiXmbUghmUbX'\ck ']ha UbU[YX'h\Y'hfUbg]h]cb'Zfca 'fYdi V']W hc a cbUfWkm' FZWDa\_S` 7\_bWdace Wcbg]XYfg'\ck 'h\Y'bYk 'cfXYf'k Ug'WfYUhYX'UbX'\ck ']hiXYj Y`cdYX']hg 'Y[]h]a UWm'' Mci 'k]``Yl Ua]bY'h\Y'`]j Yg'cZ5i [i ghi gž'H]VYf]i gž'7 U'][i 'Už'7 'Ui X]i g'UbX'B Yfcž'UbX'gi Wk Yl hfUcfX]bUfm]a dYf]U`k ca Yb'Ug'@jj ]Už'>i `]U'UbX'5[f]dd]bU'h\Y'9`XYf''5g'k Y```Ug'Yb[U[]b['k]h\Th\Y'k cf\_cZ'YUX]b['\]ghcf]Ubgž'mci 'k]``fYUX'h\Y'gU'UW]ci g'UbX'[cgg]d!Z]``YX'>[hWe'cZGi Yhcb]i g']b'cfXYf'hc'UggYgg h\Y'a Yf]hg'cZV]c[fUd\mUg'Ub'\]ghcf]WU``gci fWf'z'UbX'UbU`mgY'a cXYfb'a YX]U'fYdfYgYbhUh]cbg'cZh\Y XmbUghmž]bWi X]b['FcVYfh; fUj Ygfi; 5'SgV[ge"```

. .

#### 5 hm Y WcbWi g]cb cZm ]g Wci fgY h Y ghi XYbhk ] ``VY UV Y hc

- %" 5bU`mgY`F ca Yfg`'hfUbg]h]cb`Zfca 'fYdi V`]Whc`Ya d]fY`UbX`Yj U`i UhY`h\Y`\]ghcf]c[ fUd\]WU``fYgdcbgYg hc']h
- &" 8 Ya cbglfUlY 'UV]`]lmihc 'WcbXi Whi]bXYdYbXYbhifYgYUfW\`]b`cfXYf`hc`Ubgk Yf`\]ghcf]WU``ei Ygh]cbg" ' " 5bU`mqY`UbX`Wf]h]WU``mUqqYqq`df]a UfmUbX`qYWcbXUfmqci fWYq`fcb`]bY`UbX`]b`df]bh'!"

#### HYUWX]b[ GhfUhY[]Yg

H\Y`Wci fgY`k]``XYj Y`cd`mci f`i bXYfgHUbX]b[ `cZF ca Yfg`ffUbg]lfjcb`Zfca `fYdi V`]Whc'a cbUfWkmžk]lh\`gdYW]U`fYZYfYbW\`hc'h\Y`fY][ bg`cZh\Y`Z]fghZ]j Y`fYa dYfcfgfTH\Y`Wci fgY`]g`XY`]j YfYX`df]a Uf]`mfh\fci [\``YWh fYg`UbX hi hcf]U`g"`@YWh fYg`k]```dfcj ]XY`h\Y`bYW\ggUfm\]ghcf]WU``UbX`\]ghcf]c[ fUd\]WU``VUW\_[ fci bX`hc'YUW\`d\UgY ]b`h\]g`Wf]h]WU``dYf]cX`]b`F ca Ub`\]ghcfmž'U`h\ci [\`mci `k]```VY`YbWci fU[ YX`hc'Ug\_'ei Ygh]cbg'Xi f]b[ `h\Y`YWh fY"`5h`YUgh&\$`a]bi hYg`k]```VY`gYhUg]XY`Zcf`[ fci d`X]gW gg]cb`cb`\_YmWcbWldhg`fU]gYX`]b`h\Y``YWh fY"`

Hi hcf]U`g`k]``ZcW g`cb`a cfY`gdYWZ]W\]ghcf]WU`žh\YcfYh]WU``UbX`\]ghcf]c[fUd\]WU``]ggi YgžUbX`k]```WYbhY`cb gdYWJZ]Wdf]a UfmXcW a Ybhg"'`Mci `k]```VY`fYei]fYX`hc'[]j Y`cbY`hYb!a]bi hY`dfYgYbhUh]cb`hc`h\Y`WUggž'UbX gi dd`mYUW\`ghi XYbhk]h\`U'' `f6(Łdu[Y`XcW a Ybhh\Uh]bWi XYg`U`XYgWf]dh]cb`cZh\Y`dfcV`Ya `mci `UfY UXXfYgg]b[žmci f`UggYgga YbhcZh\Y`dfcV`Ya žUbX`Ub`UbbchUhYX`V]V`]c[fUd\m'`H\Y`a U`cf`d]YWY`cZ UggYgga Ybh]g`U`a U`cf`YggUmžk\]W\`k]``[]j Y`mci `Ub`cddcfhi b]hmhc'i bXYffU\_Y`]bXYdYbXYbhfYgYUfW\žUbX hc`Yb[U[Y`Wf]h]WU``mk]h\`fYUX]b[q"

H\Y`fYgYUfW\`YggUmk]```fYei]fY`ghiXYbhg`hc`ibXYfhU\_Y`]bXYdYbXYbhifYgYUfW\`cb`U`gdYWJZJWhcd]Wz`hcYb[U[Y`k]h\`gW\c`Ufg\]d`]b`h\Y`Z]Y`X`UbX`hc`dfUWJ\Wf\Yf\Wf\M]h]WJ``h\]b\_]b[z`UbU`mh]WJ``UbX`kf]h]b[`g\_]``g"
9b[U[YaYbhk]h\`h\Y``YWhifY`UbX`fYUX]b[`aUhYf]U``k]```VY`UggYggYX`VmU`Z]bU``YIUaz`k\]W\`k]```[]jY`mcicddcfhib]mhc`h\]b\_`VfcUX`mUVcihh\Y`dYf]cX`UbX`]hg`aYUb]b["

#### 5XX]h]cbU`'XYhU]`g.

H\Y`\UbXci ha i ghVY`fYUXmUbX`X]ghf]Vi hYX`]b`WUgg`cb`h\Y`XUmcZh\Y`dfYgYbhUh]cb"'H\Y`XcW a Ybhg\ci `X VY`U`[ i ]XY`hc`h\Y`HU`\_ž`]hg`a U]b`dc]bhgž`]hg`h\Yg]gž'UbX`]hg\ci `X`dfcj ]XY`U`V]V`]c[ fUd\m'\#i]g`k cfh\`%\$i `cZ mci f`cdj YU```a Uf\_`fh\Y`cfU``fYgYbhUh]cb`]g`&\$i \ \E

Gi Va ]gg]cb bchYg. < UbXci hXcW a YbhW +) \$ k cfXg

Hi fb]hb gYhb[. H\]g ]g bchU Hi fb]hb Ugg][ ba Ybh

5ggYgga Ybh' . 'HYgh

GHJfh'XUhY. "%+#%\$#&\$% "%%\$\$"5A

@Yb[h. W %\$\$ k cfXg

**8YHJ]`g.** `) \$!a ]bi HY`]b!WUgg`HYghih\UhUggYggYg`[ YbYfU``i bXYfgHJbX]b[ g`cZh\Y`bUhi fY`cZh\Y`dc`]h]WJ`fYj c`i h]cb`Wcj YfYX`]b`h\Y`Wci fgY"

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

: cf'h\Y']b!WUgg'h\ghighi XYbhg'cb`mbYYX'U'dYb"'6cc\_`Yhg'k]``VY'dfcj]XYX"'Bch\'g'a i ghVY'di hUk UmXi f]b[h\Y'h\gh''Ghi XYbhg'Xc'bchbYYX'hc'k cffmUVci hW]hUh]cbg'cf'UVci hf\Ya Ya VYf]b['ei ch\'g"'A cfY']b\Zcfa Uh]cb UVci hh\Y'h\qhk ]``VY'dfcj]XYX'h\Y'k YY 'VYZcfY'h\Y'h\qh'

#### Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

Gh XYbhg UfY Yl dYWYX hc di hh\Y]f bUa Yg UbX gh XYbhbi a VYfg cb Yj YfmdU[Y cZh\Y]f Ugg][ ba Ybhg"

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

; YbYfU`mž'UggYgga YbhitUg\_g'a i ghVY'gi Va ]hhYX'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"

#### @UhY 5ggYgga Ybh'DYbU`h]Yg

Gh XYbhgʻUfYʻfYgdcbg]V`YʻZcfʻh\Yʻgi Va ]gg]cbʻcZUggYgga YbhhUg\_gʻVmh\YʻfYei ]fYX`XUhYgʻUbXʻhJa Yg" 8YdYbX]b[ˈcZh\Y`YI hYbhcZXY`Um]bʻh\Yʻgi Va ]gg]cbʻcZUbʻUggYgga YbhhUg\_ʻdUghh\Y`Xi Y`XUhY`UbXʻhJa Yž

- K cf\_'gi Va ]hh'X`%\$`hc`% 'XUmg`UZhYf`h\Y`gh]di `UhYX`XYUX`]bY`k]```VY`UggYggYX`UbX`ZYYXVUW\_dfcj]XYX`Vi h'U`a Uf\_'cZnYfc`k]```VY`fYWcfXYX"`\Zh\Y`k cf\_'k ci `X`\Uj Y`fYWf]j YX`U'dUgg`a Uf\_'Vi h'Zcf h\Y``UhYbYgg`UbX`h\Y`k cf\_']g`U`Wca di `gcfm'Wci fgY`Wca dcbYbh'f\i fX`Y`fYei ]fYa Ybh\z`U'gh XYbhk]``VY`XYYa YX`hc`\Uj Y`a Yhih\Uh'fYei ]fYa Ybh\
- K cf\_'gi Va ]hhYX`&\$`cf`a cfY`XUmg`UZhYf`h\Y`gh]di `UhYX`XYUX`]bY`k ]```bchVY`UWWdhYX`Zcf UggYgga YbhUbX`k ]```fYWY]j Y`bc`ZYYXVUW\_ža Uf\_'cf`[ fUXY"'=Zh\Y`UggYgga YbhHUg\_']g`U`Wca di `gcfm Wca dcbYbhcZh\Y`Wci fgY`U'ghi XYbhik ]```fYWY]j Y`Ub`l bgUh]gZJWcfmi: U]``fl : Ł`[ fUXY`Ug`U`fYgi `hcZ i bgUh]gZJWcfmidYfZcfa UbWY`]b`Ub`YggYbh]U``Wca dcbYbhcZh\Y`Wci fgY"

H\]g^]bZcfa Uh]cb^]g^U^gc^Uj U]^\$

**‰**fm

**‰** ‰

‰

### 5 WUXYa ]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"'\lefi\Wb'hU\_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b[ 'hc`UVW]XYbhU`mWcdm]b[ 'Zfca `U`gci f\W' k ]h\ci hUW\_bck `YX[ Ya Ybh'

IBGK [fcidgdu[]Uf]ga ]bhch\YZc``ck]b[ WUhY[cf]Yg.

7 cdm]b[.'i g]b['h\Y'gUa Y'cf'j Yfmg]a]`Uf'k cfXg'hc'h\Y'cf][]bU`hYl h'cf']XYU'k]h\ci h'UW\_bck `YX[]b['h\Y gci fW'cf'i g]b['ei chUh]cb'a Uf\_g"'H\]g'U`gc'Udd`]Yg'hc']a U[Ygž'Ufh'UbX'XYg][b'dfcYWhgž'Ug'k Y``'Ug dfYgYbhUh]cbg'k\YfY'gca YcbY'dfYgYbhg'Ubch\Yf'g']XYUg'cf'k cfXg'k]h\ci h'WfYX]h'

⇒ Uddfcdf]UhY 'dUfUd\fUg]b[...7\Ub[]b[ 'U'ZYk 'k cfXg'UbX'd\fUgYg'k \]'Y 'a cghmfYhJ]b]b[ 'h\Y'cf][]bU` ghfi Wh fY 'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU'žUbX']bZcfa Uh]cb'k ]h\ci hUW\_bck `YX[Ya Ybh'H\]g'U`gc Udd`]Yg']b'dfYgYbhUh]cbg'k \YfY'gca YcbY'dUfUd\fUgYg'Ubch\Yf'g']XYUg'cf'k cfXg'k ]h\ci hWfYX]hUbX'hc d]YW]b[ 'hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk 'k \c`Yžk]h\ci hUddfcdf]UhY'fYZYfYbW]b[ "

 $7c^{i}$  g]cb. 'k cf\_]b[ 'k ]th. 'cth. Yfg'Vi h'dUgg]b[ 'c\Zth. Y'k cf\_'Ug'U'dYfgcb'g']bX]j ]Xi U''k cf\_"'7c''i g]cb'U'gc

- i bXYfglUbX mci f'f][\hg'UbX'fYgdcbg]V]]hJYg'Ug'U'gh XYbh'Uhil BGK
- VY 'Uk UfY'cZd`U[]Uf]ga ž'Wcdmf][\hž'l BGK 'Ghi XYbhi7cXY'cZ7cbXi WhUbX'5VWWdhUV`Y'l gY'cZ | BGK '=7 H'F Ygci fWYg'Dc`]Wh
- VY'Uk UfY'cZh\Y'ghUbXUfXg'cZVY\Uj]cif'YldYWhYX'cZYjYfmcbY']b'h\Y'l BGK 'Wcaaib]hm
- `cWUHY 'gYfj ]WYg'UbX `]bZcfa UH]cb'UVci hI BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZh\YgY'UfYUg'k]``VY'ZJa]`]Uf'hc'mci žch\Yfg'k]``VY'bYk"'; U]b]b['U'gc`]X'i bXYfgHJbX]b['cZU``h\YfY'UhYX'UgdYWhg'cZ9@&9'k]``\Y`d'mci 'a U\_Y'h\Y'a cghcZmci f'gh X]Yg'UhI BGK "

# 7ci fgY GWX YXi `Y

### J]Yk 'WUgg'ha YHUV'Y

## H]a YtUV`Y

8 UhY	HmdY	7 cbhYbh
K YY_'%'&' '>i `m'!'&- '>i `m	@YWn fY	H\Y`9bX`cZh\Y`F ca Ub`F Ydi V`]W
K YY_`&.'' \$`>i`m!`) 5i[igh	GYa ]bUf	>i`]i g`7 UYgUf. H\Y`ZJfghYa dYfcf3
K YY_" . * 5i [i gh!	GYa ]bUf	H\Y'bYk'cfXYf'cZ5i[ighig
K YY_'(.'%'5i[igh!'%- 5i[igh	GYa ]bUf	: Ua ]`]U`7 UYgUf]g.`H\Y`ZJa ]`mcZ5i [i ghi g
K YY_').'&\$'5i[igh!'&* 5i[igh	GYa ]bUf	H\Y`Df]bW]dUhY`cZH]VYf]i g
K YY_'*.'&+'5i[igh!'& GYdhYa VYf	GYa ]bUf	HUWjhi g`h\Y`\]ghcf]Ub
K YY_`+.'' 'GYdhYa VYf'!'- GYdhYa VYf	GYa ]bUf	Gi Yhcb]i gʻUbXʻ6]c[fUd\m
K YY_', .'%\$'GYdhYa VYf'! %*'GYdhYa VYf	GYa ]bUf	; U]i g'7U`][ i `U.'9a dYfcf'Ug'lmfUbh
K YY_''%+'GYdhYa VYf'! &' 'GYdhYa VYf	GYa ]bUf	7`Ui X]i g'UbX'\]g'k ]j Yg
6fYU^&( 'GYdhYa VYf'! ' \$'GYdhYa VYf		A ]X'HYfa '6fYU_
K YY_'%\$.`%`CWvcVYf'!`+ CWvcVYf	GYa ]bUf	H\Y`F ca Ub`=a dYf]U``ghUhY.`< ck `h\Y`Ya d]fY`k Ug [ cj YfbYX
K YY_'%%', 'C WcVYf'!'%( C WcVYf	GYa ]bUf	Cb'BYfc'UbX'\ck'BCH'hc'fi 'Y'Ub'Yad]fY
K YY_'%&.'%) 'C WhcVYf'! &%'C WhcVYf	@YWhi fY	H\Y`F ca Ub`9a d]fY`UZhYf`h\Y`>i`]c!7`Ui X]Ubg

# Fygci fWyg

## DfYgWf]VYX F Ygci fWYg

HYI NVcc\_. Gi Yhcb]i gž'H\Y'Hk Y'j Y'7 UYgUfgž'DYb[i]b'6cc\_g

## FYWca a YbXYX FYgci fWYg

FYWca a YbXYX. HUWjhi gž'H\Y'5bbU'gž'DYb[i]b'6cc\_g

<"<"'GW``UfXž': fca 'h\Y'; fUWW\]'hc'BYfcž H\Y'5bbU`g