# **ARTS3292**

A ][fUbhg`UbX`FYZ [YYg`]b`5i ghfU`]Ub`<]ghcfm

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

# 7ci fgY<sup>\*</sup>Cj Yfj ]Yk

## GHJZ7cbHJWh8YHJ]`g

### 7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cWUh]cb	D\cbY
Fih\~6U`]bh	f"VU`]bh4 i bgk "YXi "Ui	Hi YgXUm'&!' 'cf'Vm	A 6' ()	
		Uddc]bha Ybh		

### GWXcc`7cbHJWhi±bZcfa Uh]cb

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

@c\\U||cb. G\\cc``C\\Z|\\\žA\cfj\Yb'6fck\b'6i]\X]b[\z'@\j\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>

## 7ci fgY 8YHJ] g

## 7 fYX]hDc]bhg\*\*

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

5hU'ha Y'k \Yb'a i W\'cZh\Y'k cfXfg'dcdi `Uh]cb']g'cb'h\Y'a cj Yž]a a ][ fUh]cb'UbX'Ugmi a `\Uj Y'VYWca Y'hk c cZh\Y'a cghWcbhYbh]ci g']ggi Yg'hcXUm''5bX'k \]'Y'5i ghfU`]Ufig'dcdi `Uh]cb']g'cbY'cZh\Y'a cghX]j YfgYžci f gcW]Ymi]g'\]ghcf]WU`mcbY'cZh\Y'a cgh]bgi `Uf"'=b'h\]g'Wci fgYžmci 'k ]``YI d`cfY'\ck 'a ][ fUh]cb'\Ug'g\UdYX UbX'hfUbgZcfa YX'5i ghfU`]Ub'dc`]hWg'UbX'gcW]Ymž'UbX'\ck '5i ghfU`]U'\Ug'fYgdcbXYX'hc'a ][ fUbhg'UbX fYZ [ YYg"'K Y'YI Ua ]bY'h\Y'f]gY'UbX'ZU``cZh\Y'K \]hY'5i ghfU`]U'dc`]Wnžh\Y'a U'cf'g\]Zng'cZh\Y'dcghk Uf dYf]cX'UbX'bYk ']bhYfbUh]cbU``cV`][ Uh]cbgž'5i ghfU`]Ufig'W\Ub[ ]b[ 'Uh]hi XYg'hc'bYk Wca Yfgž'h\Y'UddYUfUbW''cZ "VcUhdYcd'Y"'UbX'bYk fY[ ]a Yg'cZYI Wi g]cbž'UbX'h\Y'k Umg']b'k \]WYgg]j Y'a ][ fUbh[ fci dg'\Uj Y Wca Y'hc'WU``5i ghfU`]U'\ca Y"

### •

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

- %" 5bU`mgY`\_Ym`Yj Ybhgž`]XYUgž'dYcd`Y`UbX`XYj Y`cda Ybhg`]b`fY`Uh]cb`hc`5i ghfU`]Ufig`\]ghcfmcZa][fUbhg UbX`fYZ [YYg
- &" 9j U'i UhY fY Yj UbhigWkc 'Uf'mi']hYfUhi fY
- ' " 5 bgk Yf`\]ghcf]WU``ei Ygh]cbg`i g]b[ `Yj ]XYbWY`VUgYX`Uf[ i a Ybhg`VUgYX`cb`]bXYdYbXYbhm`cWUhYX qci fWYg
- ("7caaib]WUHY]XYUgUbXYb[U[Y]bX]gWgg]cb

## HYUWX]b[ GhfUhY[]Yg

5gʻgW.c`UfgʻUbX`k f]hYfgʻ]bh]a UhY`m]bj c`j YX`]b`a ][ fUh]cb`\]ghcfmžk Y`XYg][ bYX`h\]g`Wci fgY`k ]h\`h\Y`U]a `cZg\ck WJg]b[ `h\Y`VYbYZ]hg`cZfYgYUfW.!`YX`hYUW.]b[ "'K Y`VY`]Yj Y`h\UnfYgYUfW.!`YX`hYUW.]b[ `Wcbj Ymg Ybh\i g]Uga `UbX`XYX]WJh]cb`hc`UʻgdYVJZ]WhYUW.]b[ `UfYUžUbX`hc`\]ghcf]WJ`gW.c`Ufg\]d"`Mci `k ]```VY YbWci fU[ YX`hc`h\]b\_`UVci h\ck `a ][ fUh]cb`\]ghcfm\Ug`]bZcfa YX`W`ffYbhYj Ybhgždc`]VJYg`UbX`UhJhi XYg hck UfXgʻa ][ fUbhg`UbX`fYZ [ YYg`]b`5i ghfU`]U"`Mci `k ]``VY`]bhfcXi WYX`hc`f]W\`UbX`X]j YfgY`a UhYf]UʻžZfca Zj`a g`UbX`]hYfUhi fY`hc`a cfY`hfUX]hjcbU``UfW.]j U``gci fWrgžUbX`k ]```VY`dUfhicZk \Uh]g`U`k Umg`U``]j Y`m`YUfb]b[Ybj ]fcba Ybh'i5g`k Y```Ug`XYj Y`cd]b[ `mci f`k f]hhYb`UbX`UbU`mh]WJ``g\_]``gžmci `k ]```U`gc`VY`[ ]j Yb`h\Y`gdUWY UbX`[ i ]XUbWY`hc`XYj Y`cd`U'dfc`YWhcj Yf`h\Y`Wci fgY`cZh\Y`hYfa `]b`U`ga U```[ fci d`UVci hU`a ][ fUbh[ fci d`cZ mci f`ck b`W.ccg]b[ "

## 5ggYgga Ybh

#### Gi Va ]gg]cb

 $\label{thm:limb} Hi hcf] U``dUdYfg``UbX`fYgYUfW\`YggUmg`g\ci~`X``VY`gi~Va~]hhYX`Y`YWhfcb]WU``mhc``Hi~fb``\pi\\beta`cb``A~ccX`Y''`H\Y``]b_k~ [```VY`WYUf`ma~Uf_YX''$ 

#### FYZYfYbW/b[

 $5 ```k f]hh'b`k cf_a i ghVY`cf][]bU``f]"Y"`bchd`U[]Uf]gYXŁ`UbX`dfcdYf`mfYZYfYbWkX`i g]b[`CB9`fYWc[b]gYXfYbWhb[`gmghYa``fh'"["`ClZcfX`cf`<Uf]UfXŁ`Vi hbchU`WcaV]bUh]cb`cZgmghYag"`H\Y`dfYZYfYbWY`]g`ZcfZchbchY`gmghYa`-ClZcfX`cf`7\]WU[c"$ 

\hdg.#gh XYbh'i bgk "YXi "Ui #CchbchY!V]V`]c[fUd\mcf!cl ZcfX!fYZYfYbW]b[!gmghYa

±0!hYI hff/["'GhYUfbg'&\$%) ž'd"'%( Ł']g'c\_Umdfcj ]XYX ]h']bWi XYg'U'dU[Y'bi a VYf'5B8'U'fYZYfYbWY'`]gh'

GYY. `\hdg.#ghi XYbh'i bgk "YXi "Ui #\Ufj UfX!fYZYfYbW]b[

H]d. K \Yb ]b Xci Vhž fYZYfYbW": cchbchYqž Zcf YI Ua d Yž UfY bchcb mZcf X]fYWhei chUhcbg Vi hU qc Zcf

]bghJbW/g^]b^k \]W\^mci \dUfUd\fUgY^h\Y^k cf \cZch\Yf^gW\c`Ufg"

H]d.: cchbchYg^[c^]b^gYei YbWYžVi hg\ci^XbYj YfVY^d`UWYXbYI hhc^YUWX~ch\Yf"@@@Q&Q=Zmci~k Ubhhc^fYZYf

hc hk c gci fwg Uhcby dc]bhz ]bgyfhcby Zcchbchy Ubx h\yb xygwf]vy vch\ gci fwg "O Q

 $\label{eq:helmonth} H]d. `K. ]h. `U` Zcchbch' \check{z}`Z]fghih. Yb`gi fbUa Y"` $\pm b`U`V]V`]c[fUd\m#fYZYfYbW'``]gh\check{z}`UffUb[Y`]b`U`d\UVYh]WU``cfXYf`Vmgi fbUa Y"$ 

#### : cfa Uthb[

5```k f]hhyb`k cf\_'a i ghiVY`dfcdYf`miZcfa UhhyX.

%") 'cf'Xci V`Y 'qdUWX"

%&'dc]bhZcbhfdfYZYfUV`mUb'YUgmhc'fYUX'Zcbhgi W\'Ug'H]a Yg'BYk'F ca UbŁ

FYUgcbUV`Y`a Uf[]bg"

 $\hbox{\it CMODYHYf'B "'GHYUfbgž'9 W'VWd[`I adW: [efackž' fX'YXb"'BYk 'Mcf_. `Fci hYX[Yž\&$\%] žd"'\% }$ 

@Q=bWcffYWn~GYY~ZcchbchY~~~

 $O QDYHYf'B"'GHYUfbgž'9 W'VWd[ I adW: [efackž' fX'YXb"'BYk 'Mcf_, 'Fci hYX[Yž&$\%) ž'd"'% />cUb'K "GWcHz''; YbXYf. '5 I gYZ ``7 UHY[cfmcZ<]ghcf]WU`'5bU`mg]g'ž'3_ Wd[US`: [efadUS^DWh[W <math>z'$ -%) z'%, \*z'dd"

%\$)'!%\$+)ž'd"'%\$)(

# 5ggYgga YbhHUg\_g

5ggYgga Ybh'hJg_	K Y][ \h	8i Y'8UHY	Gh XYbh@YUfb]b[ Ci hWca Yg 5ggYggYX
Hi hcf]U``DUdYf`	' \$ı	%) #\$' #&\$&%'\$(.\$\$'DA	%ž <sup>.</sup> &ž <sup>.</sup> '
F YgYUfVX 'YggUm'	()।	%*#\$(#&\$&%`\$, .\$\$`DA	%ž <sup>.</sup> &ž <sup>.</sup> '
DfYgYblUljcb	&) ı	Bch5dd`]WUV`Y	%ž <sup>:</sup> &ž <sup>:</sup> (

# 5ggYgga Ybh'8YHJ]`g

5ggYgga Ybh'% 'Hi hcf]U` 'DUdYf

**GHJfh**'X**UhY**. '\$%#\$' #&\$&%'\$&.%) 'DA

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

### 8YH**J**]`gg.

 $\label{lem:conditional} Ghi XYbhg`k f]hY`U`fYgYUfWk`dUdYf`VUgYX`cb`U`k YY\_`mhcd]WcZh\Y`Wci fgY"`@Yb[h\.`Uddfcl]a UhY`m\%$$$ k cfXg"$ 

H\Y'h hcf]U`'dUdYf']g'UggYggYX'cb.

- 9j]XYbWY`cZfYgYUfVX"
- 8 Ya cbglfUlYX 'UbU'mg]g'cZfY 'Yj Ubha UlYf]U'"
- GmmY 'UbX'ghfi Whi fY'—'Hu\_Y'WufY 'hc'k f]hY 'WYUfmiUbX'hc'cf[ Ub]gY'mci f'k cf\_']b'gi W\'U'k Umh\Uh]h gi ddcfhg'mci f'Uf[ i a Ybh'
- H\Y'UV]`]mm'c'gi WWggZ ``m'UXj UbWYžXYj Y`cd'UbX'gi ghU]b'Ub'Uf[i a Ybh'
- H]a Y`mgi Va ]gg]cb"

5ggYgga Ybh& FYgYUfW YggUm

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\.'&) \$\$ k cfXg

8YHJ]`g.

Gh XYbhg k f]hY Ub YggUmcZ&ž\$\$\$'! '&ž) \$\$ k cfXg VUgYX cb ']bXYdYbXYbhfYgYUfW."

±bX]j ]Xi U`k f]thYb ZYYXVUW\_žfi Vf]WUbX a Uf\_j ]U`A ccX`Y"

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

FYgYUfWX 9ggUm ()ı

@Yb[ h\ . &) \$\$ k cfXg"

HUg\_. '5 bgk Yf'Ub'Ugg][ bYX'YggUmei Ygh]cb'C F 'XYj Y`cd'mci f'ck b'ei Ygh]cb']b'Wcbgi `hUh]cb"'9ggUm E i Ygh]cbg'UfY'`]ghYX'Zcf'YUWX'k YY\_"'9bgi fY'mci 'Xc'bch\Uj Y'g][ b]Z]WUbhcj Yf'Ud'k ]h\'mci f'h hcf]U''dUdYf"

5g']h]g'U'fYgYUfW\'YggUmz'mci 'g\ci `X'di fgi Y']bXYdYbXYbhfYgYUfW\'i g]b[ 'df]a UfmUbX'gYWcbXUfm

gi ddcfhgʻmci fʻUf[i a Ybhʻ: cfʻUbʻYggUmcZh\]gʻ`Yb[h\žmci 'WUbʻi gYʻgi V!\YUX]b[gʻVi hii gYʻh\Ya YZYWNj Y`m—a cfYʻh\Ubʻh\fYYʻk ci `X'VYʻYI WYqq]j Y"

- H\Y'UV]]|mmlc\_gi\_VWWggZ\_``mUXj\_UbVWžXYj\_Y`cd\_UbX\_gi\_ghU]b\_Ub\_Uf[\_i\_a\_YbhUbX#cf\_bUffUh]j\_Y"
- H\Y`UV]`]hmihc`Zc``ck`[i]XY`]bYg`—`]Y"`Hc`\cigY`ghmY`fl&dc]bhZcbhz`%") `hc`XciV`Y`gdUW]b[ŁżdfYZYffYX`fYZYfYbW]b[`gmghYa`fZcchbchY`UbX`V]V`]c[fUd\mŁ`UbX`h]aY`mY`YWfcb]WgiVa]gg]cb'j]UHifb`=hi=b`cb`AccX`Y"

FYZYfYbWjb['gmghYag.

:  $cchbchY#V]V^c[fUd\m]g^dfYZYffYX$ .

\hdg.#gh XYbh'i bgk "YXi "Ui #cchbchY!V]V]c[fUd\mcf!cl ZcfX!fYZYfYbW]b[!gmghYa

±9! hY I hk \]WX ]bWi XYg dU[Y bi a VYfg ]g UWW dhUV Yž]"Y" < Ufj UfX.

\hdg.#ghi XYbh'i bgk "YXi "Ui #\Ufj UfX!fYZYfYbW]b[

 $\label{thm:continuous} \begin{tabular}{ll} Hi fb]h]b gYh]b[. Hi]g Ugg][ba Ybh]g gi Va]hhYX hi fci [iii]hb UbX ghi XYbhg Wub gYY Hi fb]h]b g]a] Uf]hm fYdcfhg" \end{tabular}$ 

5ggYgga Ybh' . DfYgYbhJh]cb

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\."%\$!%) a ]bi hYq

8 YHJ]`g.

 $Ghi XYbhg'[]j Y'U'dfYgYbhUh]cb'hc'h\Y'WUgg'f%$'hc'%) 'a ]bi hYgŁ'VUgYX'cb'cbY'k YY\_`mhcd]WZcf'h\Y'Wci fgYži g]b['Ub'cf][]bU`'df]a Ufmgci fWY''$ 

±0X]j ]Xi U``k f]hhYb ZYYXVUW\_'UbX`a Uf\_'j ]U'Ya U]`ž'Ug'k Y```Ug'ZYYXVUW\_']b 'WUgg''

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

# 5 hm/b XUb WY F Yei ]fYa Ybhg

 $\hbox{Ghi XYbhg'UfY'ghfcb[`mYbWci fU[YX'hc'UhhYbX'U```WUggYg'UbX'fYj]Yk ``YWhi fY'fYWcfX]b[g''] }$ 

# 7ci fgY'GWXYXi `Y

# J]Yk 'WUgg'hja YhUV'Y

# H]a YtUV`Y

8UhY	HmdY	7 cbhYbh
K YY_'% '%) ': YVfi Ufm! '%	@YWhifY	%ʻ±blfcXi Whjcb
: YVfi Ufm		0 " O V M `ch lalh [ 'a ] [ fl lhch '\ ]amfm 'a ] [ fl lhch * aV h\V f
		&"`8 YWc`cb]g]b[ 'a ][ fUh]cb`\]ghcfm'a ][ fUh]cbž'gYhhYf Wc`cb]U`]ga 'UbX'\DX][ Ybci g'gcj YfY][ bhm
	Hi htf]U`	%"A YYhUbX'; fYYh'K YY_`mhcd]Wg'Zcf'h\Y
		dfYgYbfUf]cbg'k]``VY'Ugg][bYX"
		&"'8YWc`cb]g]b[ 'a ][ fUh]cb'\]ghcfm
K YY_'&.'&&': YVfi Ufmi!'&*	@YWh fY	A ][ fUbhgžfYZ [ YYgʻUbX`K \]hYʻ5i ghfU`]U`VYZcfY
: YVfi Ufm		K cfX'K Uf'=
	Hi hcf]U`	A ][ fUbhgžfYZ [ YYgʻUbX'K \]hYʻ5i ghfU`]UʻVYZcfY K cfX'K Uf'=
IZ AZAZ EL EQUEN LIQUAN EL A		
K YY_'' .'%'A UfWX'!') A UfWX	@YWhi fY	%"Dcghk Ufa][fUh]cb
, Corvin		&"`8]gd`UV\X`DYfgcbg
	Hi hcf]U`	個Yk '5i glfU']Ubgfi
		5ggYgga Ybh'[i]XUbWY. 'hi hcf]U``dUdYf
K YY_'(.', 'A UfWX'!'%&	@YWh fY	%"'6f]hjg\'a ][ fUbhg
A UfWX		
		&"'7\]X'a ][ fUh]cb
T .	Hi hcf]U`	fK \]b[]b['Dca gfB
K YY_") . "%) "A UfWX "! "%-	@YWh fY	A YbžK ca YbʻUbXʻ7\]`XfYb. '=br]a UhY' < ]ghcf]YgʻcZ
A UfVX	Li befili	DcghK Uf A ][ fUhjcb
	Hi hcf]U`	A ][ fUbhˈZJa ]`]Yg
	5ggYgga Ybh	Hi hcf]U``dUdYf`Xi Y`A cbXUm%) `A UfWXž'(da "
K YY_'*.'&&'A UfVX'!'&* A UfVX	F YUX]b[	H <b>†</b>

Н

Н

K YY_', .') '5df]`'!'- '5df]`	@YWhi fY	: fca '5gg]a ]`Ur]cb'hc'A i `r]W'`hi fU`]ga """UbX'VUW_ U[ U]b3'A ][ fUr]cb'UbX'gYthYa Ybhdc`]W]Yg'UbX XYVUhYg'Zca '% +, 'rc'h\Y'dfYgYbh'
	Hi hcf]U`	BY][\cifVccXg'cf';\Yhhcg3.'=aa][fUh]cb']b'h\Y'YfUcZai'h]W'hifU`]ga
K_YY_'''&'5df]`'!'%* 5df]`	@YWn fY	6YZcfY'UbX'5ZhYf'HUadU.'Zfca'aUbXUhcfmhccZg\cfY'XYhYbh]cb
	Hi hcf]U`	FYZI[YY`@jj Yg
		; fci d'K cf_
	5ggYgga Ybh	F YgYUfWX '9ggUm'Xi Y '%* '5df]`"
K YY_"%\$."% "5df]`"!"&"	@YWhi fY	7 cj ]X!% 'UbX'F YZ [ YYg
5df]`	Hi hcf]U`	K fUd!i d"

3gefdS/S' <agd S^aX: [efack S' V Ba/ff[Ue

7fZ`[UEfgV[We

<aqd S^aX7fZ`[US`V? [YdSf[a` EfgV]We

<agd  $S^aX;_{\_}[YdS`fS`VDWgYWWEfgV[We$ 

K YVg]hYg7 8UhUVUgYg

\htdg.##fcj Y"b`U"[cj "Ui :!'cbY'cZh\Y'VYghXUhUVUgYg'cb'h\Y']bhYfbYhžYl WY``YbhZcf'5i ghfU`]Ub'WcbhYbh—YUgmhc'bUj ][UhY"

\hd.#kkk"]a a ]"[cj "Ui #! 8 YdUfha YbhcZ=a a ][fUh]cb UbX 7 ]h]nYbg\]d 5 i ghfu`]Už ]bWi XYg WcbhYa dcfUfm UbX \ ]qhcf]WU`qci fWYg"

BGK `A ][ fUl]cb' < Yf]lU[ Y `A i gYi a `fC b`]bYŁ `\lhd.#k k k "a ][ fUl]cb\Yf]lU[ Y"bgk "[ cj "Ui #VY`cb[ ]b[ g! \ca Y#JVci hVY`cb[ ]b[ g#Ji glfU]luq!a ][ fUl]cb!\]ghcfm#

G6G = a a ][ fUh]cb B Uh]cb HJ GYf]Yg F Ygci fWrg DU[ Y. `\hhd.#k k k "gVg"Wca "Ui #a a ][ fUh]cbbUh]cb#Ygci fWrg

FYZ [YY'7ci bW]"cZ5i ghfU`]U. <u>\hd.#k k k "fYZ [YYWci bW]"cf["Ui</u>

Gh XYbhg gYY\_]b[ fYgci fWg WUb U`gc cVhU]b Ugg]ghUbW Zfca h\Y I BGK @VfUfm'

### 7 ci fgY 9j U'i Uhjcb UbX 8 Yj Y'cda Ybh

: YYXVUW\_'k]``VY`gci [\hi g]b[`h\Y`i b]j Yfg]hma m9l dYf]YbWY`gmghYa ž`Ug`k Y```Ug`j ]U`Ub`]bZcfa U``gi fj Ymž UbX`cZWci fgY`]g`k Y`Wca Y`Ubmih]a Y\*`B chY.`]b`&\$% ž`h\]g`Wci fgY`UW\]Yj YX`U`dYfZYWfigWcfY`Zcf`fCj YfU``ž`=k Ug gUh]gZ]YX`k]h\`h\Y`ei U`]hmcZh\]g`Wci fgYf'i

# 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 UmUdd'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