

# **ARTS2816**

K \c'; Yhg'K \UhB'H\Y'; `cVU``Dc`]hJWg'cZ'\bYei U`]hm

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

## 7ci fgY 8YW] g

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

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

\*g'dck Yf'k \YfY'h\Y'a cbYm]g3'K \mXc'gca Y'dYcd'Y'[Yhigc'a i W\Z'k \]Y'ch\Yfg'ghfi [['Y'hc'gi fj ]j Y3'K \Uh
XcYg']na YUb'hc'hU\_Y']bYei U']mm]b'['cVU''dc']h]Wg'gYf]ci g'mUg'U'XYW]g]j Y'ZJWkcf']b'dYcd'Y'g'`]j Yg3' \*b
h\]g'Wci fgYZ'mci 'k ]'``ei Ygh]cb'h\Y'bUhi fYZ'Wcbgh]hi h]cb'UbX'YZYWg'cZh\Y'WcbhYa dcfUfm['cVU'`dc']h]WU'
YWcbca mZrca 'U'Wf]h]WJ''dYfgdYWf]j YZ'X]gW gg]b['h\Y'j Uf]YhmcZUddfcUW\Yg'hc'UbX'i bXYfghUbX]b[g'cZ
['cVU''dc']h]WJ''YWcbca ]WdfUW]WYgZ'UWkcfgZ'dUhhYfbg'UbX']XYUg'' \*bHcXi W]b['mci 'hc'['cVU''dc']h]WJ'
YWcbca mUg'U'Z]Y'X'cZghi XmUbX'U'gdUWY'cZ\i a Ub']bhYfUW]cbZ'h\Y'Wci fgY'YI Ua ]bYg'h\Y'fY'Uf]cbg\]d
VYfk YYb'dc']h]Wg'UbX'YWcbca ]Wg'UbX'h\Y'fYUgcbg'k \mdck YfZfYgci fWYg'UbX'df]j ]'Y[Y'UfY'cZhYb
WcbW'bHTUhYX']b'dUfn]W 'Uf'\UbXg'''GWfi h]b]g]b['h\Y'dUghzdfYgYbhUbX'Z hi fY'cZh\Y'['cVU''dc']h]WJ'
YWcbca mz'h\Y'Wci fgY'ci h]bYg'UbX'cj Yfj ]Yk g'\_Ym\]ghcf]Yg']bz'UddfcUW\Yg'hc'UbX'XYj Y'cda Ybhg'cZh\Y
['cVU''Ywcbca ]WcfXYf'''6mZcW g]b['cb'dUfn]W 'Uf'XmbUa ]Wg']b'UfYUg'gi W\'Ug']bhYfbUhjcbU''XYj Y'cda Ybhz
ffUXYz'Z]bUbWYz'dfcXi Wnjcbz'h\Y'Ybj ]fcba YbhUbX'[YbXYfz'h\Y'Wci fgY'g\]bYg'U'`][\hicb'\ck ']bYei U']mm]g
[YbYfUhYX'UbX'a U]bhU]bYXz'Ug\_]b['mci 'hc'h\]b\_'WJfYZ '`mUVci hh\Y'Wcbgh]h h]cb'UbX'YZYWg'cZk \c'[Yhg
k \Uh]b'['cVU''dc']h]Wg'hcXUm''

Gi VYWh5fYU. 'Dc`]h]Wg`UbX`±bhYfbUh]cbU``F Y`Uh]cbg"'H\]g'Wci fgY`WUb'U`gc'VY`gh X]YX`]b'h\Y`Zc``ck]b[gdYW]U`]gUh]cbg. 'DYUWYVi]'X]b['UbX'8Yj Y`cda YbhUbX'Dc`]h]Wg'ZD\]`cgcd\mUbX'9Wcbca]Wg"'

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

- %" ⇒ YbhjZmUbX`XYgWf]VY`\_Ym`]ggi Ygž`UWrcfg`UbX`]bghjhi hjcbg`]b`h\Y`[`cVU``dc`]hjWU``YWcbca mž`]bWi X]b[h\Y]f`fY`Uhjcbg\]dg`k]h\`YUW\`ch\Yf`UbX`[`cVU``dc`]hjWg`VfcUX`m'``
- &" 8]gW gg^UbX^YI d^U]b^h\Y^\]ghcf]\W\_``UbX`WcbhYa dcfUfmidc`]h\WJ``XmbUa]\Wg^cZj Uf]ci g^]ggi Ygž'U\Wcfgž UbX^]bgh]hi h\chg^]b^h\Y^[ `cVU``dc`]h\WJ``Y\Wcbca m'
- ' " 5 bU`mgY`WcbHYa dcfUfm']bHYfbUh]cbU``XYVUHYg`cb`]bYei U`]hm'UbX`dck Yf`]b`[`cVU``dc`]h]WU``YWcbca m Zfca `U`h\YcfYh]WU``m']bZcfa YXžYa d]f]WU``m[ fci bXYX`dcq]h]cb"`
- ("9jUiUhYh\Yidc`]h]WU`UbXYW&bca]WW&bgh]hih]cb'UbXYZZYWgicZ]bYeiU`]hm]bi[`cVU`dc`]h]Wg''

#### HYUW ]b[ GhfUhY[ ]Yg

H\Y'Wei fgY']g'Hui [\hih\fci [\'U'lk c!\ci f''YWhi fYž'U'cbY!\ci f'h hcf]U''UbX'g]l '\ci fg'cZcb']bY''YUfb]b[
UWhji JhJYg''H\Y''YWhi fYg'dfcj ]XY'VUW\_[ fci bX'a UhYf]U''UbX'UbU'mgYg'XfUk b'Zfca 'h\Y'YI dYfhJgY'cZh\Y
'YWhi fYf'UbX'Zfca 'h\Y'fY'Yj UbhUWUXYa ]W']hYfUhi fY'''H\Y'cbY!\ci f'h hcf]U''k]'''VY''YX'VmU'hi hcf'UbX'k]''
Webg]ghicZWUgg'X]gW gg]cb'UbX'ghi XYbhdfYgYbhUhJcbg'''=hk]'''VY'VUgYX'cb'fYUX]b[ gž'UbU'mg]g'UbX
]bXYdYbXYbhjbhYfdfYhUhJcb'cZU'gY'YWJcb'cZgYWebXUfmgci fWg'''H\Y'hi hcf]U''X]gW gg]cb']g'XYg][ bYX'hc
XYj Y'cd'mci f'i bXYfgHUbX]b[ 'cZh\Y'dfYj ]ci g'k YY\_fig'a UhYf]U'ž'mci f'UV]']mhc'[ fUgd'Ya d]f]WU''UbX
WebWYdhi U'']ggi Ygž'UbX'mci f'Wea a i b]WUhji Y'UbX']bhYfdfYhUhji Y'g\_]'`g''C b`]bY''YUfb]b[ 'UWhji JhJYg'k]'''Vi ]'X
UbX'YI dUbX'cb'Wei fgY'WebhYbhUWfcgg'h\Y'hYfa 'UbX'a i ghVY'Wea d'YhYX'hc'U'gUhJgZJWcfmghUbXUfX'''H\Y
gdYWJZJWg'cZh\Y'cb`]bY''YUfb]b[ 'UWhjj ]lmk ]'''j UfmUWWefX]b[ 'hc'hcd]W'A ]b]a i a 'k YY\_mfYUX]b[ gž'h\Y
gi dd'Ya YbhUhJcb'cZfYUX]b[ g'k ]h\'Uddfcdf]UhY'UbX'fY'Yj Ubh]bXYdYbXYbhfYgYUfW\Z'UbX'Yb[ U[ Ya Ybhk]h\
W ffYbhUZZJ]fg'k \YfY'fY'Yj UbhUfY'bYWYggUfmZcf'h\Y'gi WWYggZ ''Wea d'YhJcb'cZh\]g'Wei fgY'''

H\Y`XYg][b`cZh\Y`hYUVX]b[`acXY`UbX`WcbhUWi\cifg`fYZYWiVch\`U`Wcaa]haYbhirc`ZUVW`hc`ZUVW`hYUW\]b[UbX`Yb[U[YaYbhk]h\`jUf]cig`UgdYWhg`cZV`YbXYX``YUfb]b[ž`Ug`cih]bYX`]b`h\Y`IBGK`&\$&)`GhfUhY[mH\YaY`5&.`9XiWUn]cbU``9IVW``YbWY"

## 5ggYgga Ybh

: i ff\Yf`UggYgga YbhXYfU]`g`k]```VY`dfcj]XYX`f\fci[\`h\Y`A ccX`Y`dU[Y`Zcf`5F HG&, %\*"`Mci `g\ci `X`W\YW\_A ccX`Y`fY[i `Uf`mUbX`a U\_Y`gi fY`mci f`Ya U]``UXXfYgg`]g`dfcdYf`mgYhi d`hc`fYWf]jY`Wci fgY Wca a i b]WUfjcbg"`

#### 5ggYgga Ybh'HUg\_g'

5ggYgga Ybh'hJg_	K Y][ \h	8i Y'8UHY	Gh XYbh@YUfb]b[ Ci hWca Yg 5ggYggYX
l bgYYb 91 Ua ]bUh]cb	) \$1	Bch5dd`]WUV`Y	&Ž Ž(
8]gW gg]cb DUdYfg	) \$1	Bch5dd`]WUV`Y	1

#### 5ggYgga Ybh8YHJ]`g

5ggYgga Ybh% I bgYYb 9I Ua ]bUh]cb

GhUfhXUhY. Bch5dd`]WUV`Y

@Yb[h\. '&'\ci fq

8 YHJ]`g. `Ghi XYbhg`UfY`fYei ]fYX`hc`g]hU`&!\ci f`Z]bU``YI Ua `Xi f]b[ 'h\Y`I b]j Yfg]lmfg`YI Ua ]bUh]cb`dYf]cX"`H\Y YI Ua ]bUh]cb`k ]```Yj U`i UhY`U`ghi XYbhg`UV]`]lmhc`h\]b\_`gmbh\Yh]WU``mUbX`Wf]h]WU``mUVci hih\Y`a UhYf]U``]b`h\Y Wti fgY"\#ifYei ]fYg`ghi XYbhg`hc`Yb[ U[ Y`k ]h\ WtbhYbhUWfcgg`h\Y`Wti fgY`k \]Y`Ug\_]b[ 'h\Ya 'hc`XYa cbghfUhY h\Y]f`UW\]Yj Ya YbhcZh\Y`k YY\_`m`YUfb]b[ 'ci hWta Yg"'9I Ua ]bUh]cb`gWf]dhg`k ]``VY`a Uf\_YX`Vi hbchfYhi fbYX hc`ghi XYbhg`fYWf]j Y`U'bi a Yf]\W\`[ fUXY`UbX`\Wb`fYei YghZfca 'h\Y`G\\cc``cZGc\]U``G\]Yb\Yg`hc gYY`h\Y]f`YI Ua ]bUh]cb`dUdYf"`H\]g`]g`h\Y`Z]bU``UggYgga YbhZcf`h\]g`\wti fgY"

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

8 YHJ]`gʻUVci hih\YʻYI Uaʻk]```VYʻdfcj]XYXʻcbʻa ccX`Y`WcgYfʻhcʻh\YʻYI UaʻdYf]cX"

Hi fb]hjb gYhjb[. H\]g ]g bchU Hi fb]hjb Ugg][ ba Ybh

5ggYgga Ybh& 8]gW gg]cb DUdYfg

GhufhXuhY. Bch5dd`]WUV`Y

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

8 YHJ]`g. 'Ghi XYbhg`a i ghigi Va ]hik c'% \$\$`k cfX`X]gW gg]cb`dUdYfg"'9 UW. 'dUdYf`]g`k cfh\ '&) i 'cZh\Y`Z]bU` [fUXYžZcf`U'hchU`cZ) \$i "'Ghi XYbhg`g\ci `X`W\ccgY`U`X]ZYfYbhei Ygh]cb`Zcf`YUW\`dUdYf`fh\]g`WJb`VY`h\Y]f ck b`ei Ygh]cb`cf`h\Y`ei Ygh]cb`cZUbch\Yf`ghi XYbhž`Ug`X]gW ggYX`]b`hi hcf]U`gŁ" 'H\Ymg\ci `X`fYZYWhcb fY`Yj Ubhg\W\c`Uf`mXYVUhYgža Yh\cXg`UbX`h\YcfYh]\W``ZfUa Yk cf\_g`k ]h\]b`YUW\`dUdYf"K f]hhYb`ZYYXVU\Zž ]bWi X]b[ 'U'fi Vf]\WUbX`bi a Yf]\WJ``[fUXYžk]``VY`dfcj ]XYX`k ]h\]b`hk c`k YY\_g`cZgi Va ]gg]cb`Zcf`YUW\ UggYgga Ybh'Ghi XYbhg`k]``VY`dfcj ]XYX`k ]h\`[i ]XY`]bYg`cb`UggYgga YbhYl dY\WUh]cbgža UXY`Uj U]`UV`Y`hc h\Ya 'h\fci [\`A ccX`Y"

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

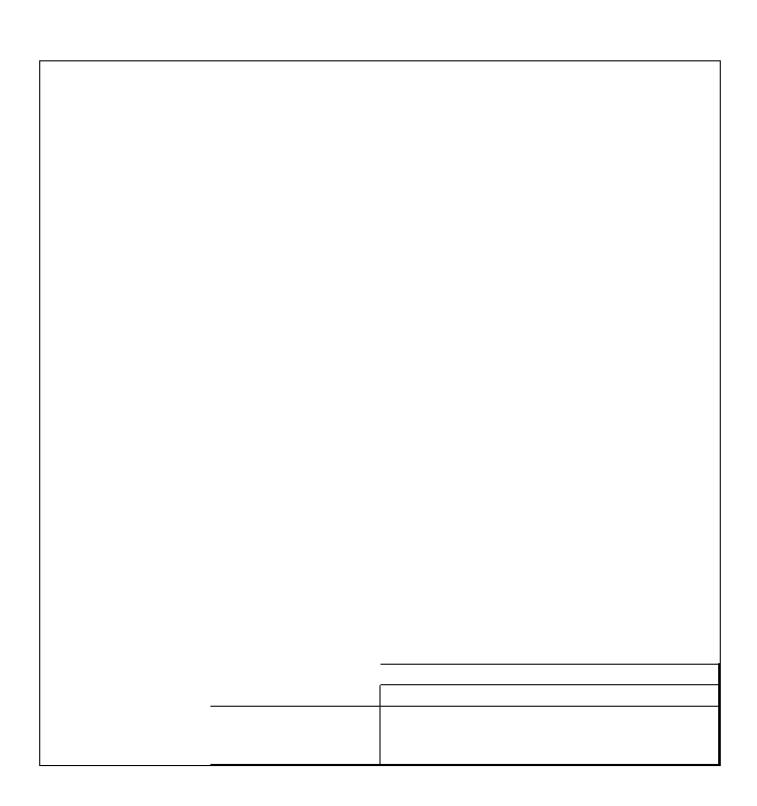
 $H\YfY'UfY'kc'Xi Y'XUhYg.': f]XUm&$'A UfW.'Uha ]Xb][ \hfl f]XUmcZk YY_') £'UbX': f]XUm&( '5df]''Uha ]Xb][ \hfl f]XUmcZk YY_'%$E''$ 

 $@UhY`dYbU`h]Yg`k]```VY`]a\ dcgYX`Uh'h\Y`i\ gi\ U``fUhY`cZ) \ i\ \ `dYf`XUmz`ghUfh]b[``Uh'\&.$\%'h\Y`XUm'UZhYf`h\Y`Xi\Y`XUhY`]b`YUW\`WUqY"$ 

91 h/bg]cbg a i ghVY gci [\hij]U'h\Y W/bhfU']gYX gmghYa 'UbX VY 'Udd']YX 'Zcf' VYZcfY 'h\Y Xi Y XUhY''

5 'dYbU'hm'cZ' + 'k ] '``VY']a dcgYX'Zcf'ZU]'i fY'hc'i gY'h\Y'<Ufj UfX'f]b!hYI hz'gmghYa 'cZfYZYfYbW]b["GYY'\hdg.#ghi XYbh'i bgk "YXi"Ui #\Ufj UfX!fYZYfYbW]b["

Mci 'ghUbX'hc'`cgY'VYhk YYb') 'UbX'&\$'a Uf\_g'Zcf'dccf'fYZYfYbW]b['UbX'Uhhf]Vi h]cb'cZgci fWrg"'H\YfY']g'5 @CH'cZUgg]ghUbW''Uj U]`UV'Y'hc'mci 'hc'\Y`d'mci '`YUfb'UVci hifYZYfYbW]b['z'Uhhf]Vi h]cb'UbX'Uj c]X]b[d`U[]Uf]ga "''⊋mci 'UfY'bchgi fY'>I GH'5G? "'GYY'\hndg.##ghi XYbh'i bgk "YXi "Ui #gi ddcfhfYZYfYbW]b[!Ugg][ ba Ybhg"



## FYgci fWyg

### DfYgWf]VYX F Ygci fWYg

 $\label{thmubxfyw} $$HYfY^{\ }]g^{\ }bc^{\ }h' \|h'Cc_{\ }Z_f^{\ }h'\|g'''^{\ }ch' a \ UbXUhcfmUbX^{\ }fYW^{\ }a \ a \ YbXYX^{\ }fYUX]b[\ g^{\ }Z_f^{\ }YW^{\ }fYg \ UbX'hi \ hcf]U^{\ }g^{\ }k]^{\ }VY^{\ }dcghYX^{\ }cb^{\ }a \ ccX^{\ }Y''$ 

#### FYWca a YbXYX FYgci fWfg

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

H\]g`Wci fgY`i gYg`h\Y`i b]j Yfg]lmig`A m9I dYf]YbW'dfcW'gg`lc`UWei ]fY`UbX`fYgdcbX`lc`ZYYXVUW\_`Zfca ghi XYbhg`Uhih\Y`YbX`cZh\Y`Wci fgY"'Mci `UfY`j Yfmk Y`Wca Y`UbX`]bj ]hYX`Uh'Ubmh]a Y`lc`gi Va ]h]bZcfa U`ZYXVUW\_`gdYW]ZJWlc`]bX]j ]Xi U``hi hcf]U`g`UbX``YWhi fYg`lc`h\Y`Wci fgY`Wcbj Ybcf"

Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

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

Image: Ybwci bhYf'U'dfcV'Ya k \Yb'UhYa dhJb[ 'hc'gi Va ]hmci f'Ugg][ ba Ybht\fci [ \ 'Hi fb]hJbž'd'YUgY

HY'Yd\cbY'9| hYfbU''Gi ddcfhcb'-', ) '' ' ' %cf'Ya U] 'h\Ya 'cb'Y! hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui '"'Gi ddcfh

\ci fg'UfY', .\$\$Ua '-'\\$.\$\$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'Y! hYbg]cbž'Vi hmci

a i ghfYhJ]b'mci f'hJW\_Yhbi a VYf'Zfca '9! hYfbU''Gi ddcfhfU'cb[ 'k ]h\ 'Ubmch\Yf'fY'Yj UbhXcW a YbhgŁ'hc

]bWi XY'Ug'Yj ]XYbWY'hc'gi ddcfhmci f'Y! hYbg]cb'Udd']WUhJcb" =Zmci 'Ya U]''9! hYfbU''Gi ddcfhmci 'k ]'`

Ui hca UhJWJ'`mfYWY]j Y'U'hJW\_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k ]'``bYYX'hc'gdYWJZWJ``mUg\_'Zcf'cbY"

Hi fb]hJb'U'gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk ]hYf"

; YbYfU``mž'UggYgga YbhiHug\_g'a i ghVY'gi Va ]hhYX'Y`YVWfcb]\W)``mj ]U'Y]h\Yf'Hi fb]hjb'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`hYfbUhj Y'gi Va ]gg]cb'XYHJ]`g''

cfi]bZcfa Uh]cbicbi\ckihcigi Va ]hUgg][ ba Ybhgicbi]bYij ]UiA ccXiY.i\hdg.#gh XYbh'i bgk "YXi "Ui #\ck! qi Va ]hUgq][ 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±iWUbihU\_Yia Ubm Zcfa qžZfca iXYi]VYfUhYiW\YUh|b[ihciUVW]XYbhU`mWcdm]b[iZfca iUigci fWYik]h\ci hUW\_bck iYX[Ya Ybh'i

IBGK '[fci dg'd'U[]Uf]ga ']bhc'h\Y'Zc``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[ "

7 c``i g]cb. 'k cf\_]b[ 'k ]th 'cth Yfg'Vi hidUgg]b[ 'cZZth Y '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\_'thc'Ubcth Yf'ghi XYbh'VYZcfY'th Y'Xi Y'XUHYZcf'Zcf'th Y'di fdcgY'cZth Ya

- i bXYfgfUbX mci f'f][\hg'UbX'fYgdcbg]V]`]hJYg'Ug'U'gh XYbhUhl BGK
- VY`Uk UfY`cZd`U[]Uf]ga ž`Wcdmf][\hz'l BGK `Gh XYbh7cXY`cZ7cbXi WhUbX`5VWWdhUV`Y`l gY`cZ I BGK `=\forall H`F Ygci f\W\g`Dc`]\m\m
- VY 'Uk UfY 'cZh\Y 'ghUbXUfXg 'cZVY\Uj ]ci f'Yl dYWYX 'cZYj YfmcbY ']b 'h\Y 'l BGK 'Wca a i b]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 ž'ch\Yfg'k]``VY'bYk"'; U]b]b['U'gc`]X'i bXYfgHJbX]b['cZU``h\YfY`UhYX'UgdYWng'cZ9@+69'k]``\Y`d'mci 'a U\_Y'h\Y'a cghicZmci f'ghi X]Yg'UhI BGK "'\\hd.##qi VYWfi |XYg"`]VfUfm'i bqk "YXi "Ui #\`]qY#JVci hY`]qY

#### 5WUXYa]W = DZcfa 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/
- fYj ]Yk 'cZa Uf\_g/
- I BGK '<YU`h\ 'UbX'GUZYhm'dc`]W[Yg/
- YI Ua ]bUh]cb dfcWXi fYg/
- gdYWJU``Wcbg]XYfUhJcb`]b`h\Y`Yj YbhcZ]``bYgg'cf'a ]gUXj Ybh fY/
- gh XYbhYei ]hmUbX X]gUV]`]hm/
- UbX'ch\Yf'YggYbhJU`'UWUXYa ]W]bZcfa UhJcbž'gYY