

# **ARTS1630**

±blfcXi Wcfmi>UdUbYgY 5

GYa YghYf'CbY''##'&\$%

## 7ci fgY Cj Yfj ]Yk

## Ghuzz 7 cbhuWh8 Yhu]`g

#### '7cbj Ybcfg'

B Ua Y	9a U]`	5j U]`UV]`] <b>m</b>	@cWUh]cb	D\cbY
B U[ ]gU': i _i ]	- 0	A cbXUmg`‰!%(žcf VmUddc]bha Ybhj]U Ya U]`	A 6 %\$*	- ' , )

#### @YWhifYfg

B Ua Y	9a U]`	5j U]`UV]`]lm	@cWUh]cb	D∖cbY
7\]\]fc H\ca gcb	Wh\ca gcb4 i bgk "YXi "Ui	A cbXUmg'%(!%*žcf VmUddc]bha Ybhj ]U Ya U]`	A 6 <sup>-</sup> &(,	-',)'+)'

#### 'Hi hcfg'

BUa Y	9a U]`	5j U]`UV]`] <b>m</b>	@cWUh]cb	D\cbY
M a <u>]_c                                   </u>	m"\Ug\]a chc4 i bgk "YXi "Ui	H65	A 6 '&\$'	-',)"+&&
? Uni Y <sup>.</sup> C_Ua chc	_"c_Ua chc4 i bgk "YXi "Ui	H65	A 6 '&+'	- ' , ) '' +( -
?]a]mc'AUhgi]	_"a Uhgi]4 i bgk "YXi "Ui	H65	A 6 %\$(	-',) '' +*'
5hca]'C\UaU	U"c\Ua U4 i bgk "YXi "Ui	H65	A 6 %\$(	-',) '' +*'
HU_i mU?c/ja U	h'_c^a U4 i bgk "YXi "Ui	H65	A 6 <sup>-</sup> &\$(	-',)"+*"
5_]_c	\U`4 i bgk "YXi "Ui	H65	A 6&\$(	-',)"+*"

## GWXcc`7cbHJWhi±bZcfa Uhjcb

GWkcc`cZ<iaUb]hYq'UbX'@Ub[iU[Yq

@cWUhjcb. 'GW\cc``CZJ\W`ž'AcfjYb'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>

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

5 'ghi XYbh']g'Yl dYWYX'hc'UhhYbX'U```WUgg'WcbhUWi\ci fg'Zcf'U'ZJWY!hc!ZJWY'fl &: Ł'cf'V`YbXYX'Wci fgY'UbX Wca d`YhY'U```UWYj ]hjYg'Zcf'U'V`YbXYX'cf'Z ``mcb`]bY'Wci fgY"

5 'ghi XYbhik \c'Uff]j Yg'a cfY'h\Ub'%) 'a ]bi hYg'``UhY'a Um'VY'dYbU`]gYX'Zcf'bcb!UhhYbXUbWY'''=Zgi W\'U'dYbU`hm ]g']a dcgYXž'h\Y'ghi XYbha i gh'VY']bZcfa YX'j YfVU``m'Uh'h\Y'YbX'cZWUgg'UbX'UXj ]gYX']b'k f]h]b[ 'k ]h\]b'&(\ci fg"

₹Uʻgh XYbhYl dYf]YbWʻgʻ]`bYggža ]gUXj Ybh fYʻcfʻch\YfʻcWW ffYbWYʻh\Uha U\_YgʻUVgYbWʻZfca ʻU WUgg#JWMjj ]hmi bUj c]XUV`YžʻcfʻYl dYWgʻhcʻVYʻUVgYbhZfca ʻUʻZcfh\Wca ]b[ ˈWUgg#JWMjj ]hmžh\Ymg\ci `XʻgYY\_ dYfa ]gg]cbʻZfca ʻh\Yʻ7 ci fgYʻ5i h\cf]hmžʻUbXʻk \YfYʻUdd`]WJV`Yžʻh\Y]fʻfYei Yghg\ci `XʻVYʻUVWca dUb]YXʻVmUb cf][ ]bUʻʻcfʻWYfh]ZYX`WcdmcZUʻa YX]WJ``WYfh]ZWJHYʻcfʻch\YfʻZcfa ʻcZUddfcdf]UhYʻYj ]XYbWY''

5.7 ci fgY '5 i h\cf]hma UmYI W gY 'U'ghi XYbhZfca 'WUggYg'cf'UWjj ]hJYg'Zcf'i d'hc'cbY 'a cbh\"' < ck Yj Yfž'h\Ym a UmUgg][ b'UXX]hJcbU``UbX#cf'U'hYfbUhJj Y'HUg\_g'hc'Ybgi fY'Wca d`]UbW"'5'7 ci fgY '5 i h\cf]hmWcbg]XYf]b[ 'h\Y [fUbh]b[ 'cZUVgYbW'a i ghVY'gUhJgZJYX'U'ghi XYbhk ]``gh]``VY'UV'Y'hc'a YYhh\Y'Wci fgY'g'`YUfb]b[ 'ci hWca Yg UbX#cf'j c'i a Y'cZ'YUfb]b[ "'5'ghi XYbhgYY\_]b[ 'Uddfcj U`'hc'VY'UVgYbhZcf'a cfY'h\Ub'cbY'a cbh\'a i ghUdd`m ]b'k f]hJb[ 'hc'h\Y'8YUb'UbX'dfcj ]XY'U``cf][]bU``cf'WYflJZYX'gi ddcfh]b[ 'XcW a YbhUh]cb"

: cfa cfY`]bZcfa Uhjcb`UVci hh\Y`UhhYbXUbWY`dfchcWc`g`]b`h\Y`: UW\`hmcZ5fhg`UbX`GcVJU` GWJYbWYg.`<u>\hndg.#k k k "Ufhg"i bgk "YXi "Ui #W ffYbh!ghi XYbhg#UWUXYa ]W]bZcfa Uhjcb#dfchcWc`g![i]XY`]bYg#</u>

### 5 WUXYa ]W + Zcfa Uhjcb

: cf'YggYbhJU``ghi XYbh']bZcfa UhJcb'fY`UhJb[ 'hc. 'fYei Yghg'Zcf'Yl hYbg]cb/fYj ]Yk 'cZa Uf\_g/cWW dUhJcbU``\YU`h\

## 7ci fgY 8YW] g

7 fYX]hDc]bhg\*\*

Giaa UfmcZh\Y 7ci fgY

Gi VYWh5fYU. <SbS` WeWE fgV[We

H\Y`Wci fgY`]bffcXi Wfg`h\Y`>UdUbYgY`gci bX`gmghYa ž`VUg]W[ fYYf]b[ g`Ug`k Y```Ug`U`bi a VYf`cZVUg]W >UdUbYgY`gffi Wfi fYg`UbX`j cWUVi `UfmYl dfYggYX`]b`<]fU[ UbU`UbX`? UfU\_UbU`gm`UVUf]Yg`h\UhUfY`YggYbf]U` fc`VUg]W>UdUbYgY`Wca a i b]WUf]cb"`H\]g`Wci fgY`]g`Zcf`h\cgY`k\c`\Uj Y`bc`cf`U`a cghbc`\_bck`YX[ Y`cZ >UdUbYgY"`H\Y`Zc``ck]b[`Z]j Y`gcW]U`#W`hi fU`hcd]Wg`k]``VY`Wcj YfYX.`%"; fYYf]b[ g`UbX`a YYf]b[`bYk`Zf]YbXg/&"`5g\_]b[`UVci hih\]b[ g`Ufci bX`mci /' "`8U]`mfci f]bYg/("'@cWUf]cbg/) "'@]\_Yg`UbX`X]g`]\_Yg"`C b`YUW\hcd]Wzk\]Y`ghi Xm]b[`h\Y``Ub[i U[Yžmci 'UfY`W\U``Yb[YX`hc'X]gWcj Yf`X]ZYfYbhUddfcUW\Yg`hc'j ]Yk]b[`h\Y`k cfX

## 5ggYgga Ybh

#J 'h\]g'Wci fgYž'U``h\Y'UggYgga Ybhk]``VY'WcbXi WhYX']b'mci f'WUggžYl WYdhh\Y'Z]bU``Yl Ua "'H\Y'Z]bU`
Yl Ua 'k]``VY'gW\YXi `YX']b'h\Y'Zcfa U``Yl Ua ]bUh]cb'dYf]cX"'`Ghi XYbhg'UfY'Yl dYWhYX'hc'[]j Y'h\Y]f'ghi X]Yg
df]cf]lm'UbX'h\]g']bWi XYg'a U\_]b['h\Ya gY'j Yg'Uj U]`UV'Y'Zcf'h\Y'Ybh]fY'Yl Ua ]bUh]cb'dYf]cX"'`HfUj Y`
Wca a ]ha Ybhg'a UXY'df]cf'hc'h\Y'di V`]WUh]cb'cZh\Y'Z]bU``Yl Ua ]bUh]cb'h]a YhUV'Y'UfY'bch'U'j U`]X'fYUgcb'Zcf
h\Y'U`hYfbUhY'UggYgga Ybh'

.

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## 5ggYgga Ybh'HUg\_g'

5ggYgga Ybh'hJg_	K Y][\h	8i Y'8UHY	Gh XYbh@YUfb]b[ Ci hWca Yg 5ggYggYX
8]WUHcbEi]n	%) ၊	K_YY_"( "f8]\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
A ]X HYfa 'HYgh'	&\$I	K YY_'+	%ž&Ž
±bhYfUWnJcb"HYgh	&) ı	K YY_"%\$	%ž&ž)
: ]bU``91 Ua `	(\$1	91 Ua 'dYf]cX	%ž&ž ž(

## 5ggYgga Ybh'8YhJ]`g

5qqYqqa Ybh% 8]WUhlcb Ei ]n

GhUfhXUhY. Bch5dd`]WUV`Y

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

8]\\u00d7\u00d7\u00d7\\u00d7\u00d7\u00d7\\u00d7\u00d7\\u00d7\u00d7\\u00d7

#### 5ggYgga Ybh& A]X HYfa HYgh

GhUfhXUhY. Bch5dd`]WUV`Y

**8 YHJ]**`g. `A ]X!HYfa `Y! Ua `k ]```VY`\Y`X'Xi f]b[ `mci f`h hcf]U`g"``±ik ]```HU\_Y`UVci h' \$`a ]bi HYg"`H\Y`WcbHYbhg`cZ h\]g`HYghk ]```VY`]bZcfa YX`Uhci f``YWh fY"`Gh XYbhg`fYWY]j Y`U`a Uf\_"`: i fh\Yf`]bX]j ]Xi U``ZYYXVUW\_`]g`Uj U]`UV`Y cb`fYei Ygh"

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

H\Y'hYgh'k]``VY'\Y`X'Xi f]b['mci f'Hi hcf]U``]b'K YY\_'+"'Mci 'a i gh'hU\_Y'h\Y'hYgh']b'mci f'ck b'Hi hcf]U'"

5ggYgga Ybh' . ≠bhYfUWh]cb HYgh

GHJfhXUhY. Bch5dd`]WUV`Y

8YHJ]`g. '±bHYfUWIjcb'HYghik]``VY`\Y`X'Xi f]b['mci f'gYa]bUf"'Mci 'k]``dYfZcfa 'U'g\cfhifc`Y'd`Umi]b'>UdUbYgY k]h\cbY'cZmci f'WUgga UHYg'Zcf') 'a]bi HYg"'A cfY'XYHJ]`g'k]``VY'Ubbci bWYX']b'h\Y``YWfi fY'UbX'mci f qYa]bUf'WUgg"H\Y'dYfZcfa UbWY'k]``VY'fYWcfYX'UbX'a Uf\_YX']bX]j ]Xi U``mVmH\Y'HYUW\Yf"

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

H\Y'HYghik]``VY'\Y`X'Xi f]b['mci f'GYa]bUf']b'K YY\_'%\$"'A cfY'XYHJ]`q'k]``'VY'Zci bX'cb'ci f'A ccX`Y"

5ggYgga Ybh( : ]bU`9l Ua

GhUfhXUhY. Bch5dd`]WUV`Y

8 YHJ]`g. :: ]bU``9 I Ua `k ]```VY`\Y`X`Xi f]b[ `H\Y`i b]j Yfg]lmiYI Ua `dYf]cX"`H\Y`YI Ua `]g`Zcf`&`\ci fg"'H\Y'H\gh dUdYf`k ]```VY`a Uf\_YX`UZH\f`H\Y`Wca d`YH]cb`cZYI Ua "H\]g`]g`H\Y`Z]bU``UggYgga Ybh'HUg\_`Zcf`UHH\bXUbW\di fdcgY"

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

: ]bU``9I Ua 'k ]```VY`\Y`X'Xi f]b[''h\Y'i b]j Yfg]lmYI Ua 'dYf]cX"'5```ghi XYbhg'Ybfc``YX`]b'h\Y'Wci fgY'g\ci `X'VY Uj U]`UV`Y'cb'h\Y'XUmcZh\Y'HYgh''H\Y'h]a YhUV`Y'cZh\Y'9I Ua ']g'X]gWcgYX`]b'A Um''Bc'ghi XYbhg\ci `X cf[ Ub]gY`UbmhfUj Y``fKca Ygh]V#cj YfgYUgŁ'VYZcfY'X]gWcgi fY'cZh\Y'h]a YhUV`Y"'BY]h\Yf'YUf`mYI Ua 'bcf``UhY YI Ua 'k ]```VY`Uj U]`UV`Y"'

Ghi XYbhgʻk \cʻZJ]`hcʻUhhYbXʻUh`YUghi, \$i ʻcZh\Y``YWhi fYgžhi hcf]U`gž'UbXʻgYa ]bUfʻa Um'VYʻfYZ gYXʻfYWY]j Y a Uf\_gʻZfca 'h\Y`Z]bU``YI Ua "``

## 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

#mci YbWci bhYf'U'dfcV'Ya 'k \Yb'UthYa dr]b[ 'rc'gi Va ]hmci f'Ugg][ ba Ybht\fci [ \'Hi fb]r]bž'd'YUgY
hY'Yd\cbY'9I hYfbU'Gi ddcfhcb'-', ) '''' %cf'Ya U]''h\Ya 'cb'<u>Yl hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui"</u>"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY\_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY\_YbXg'fl \*) 'XUmg'U'mYUft\"'=\maintention
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'm\Zcf'Ub'YI hYbg]cb\ZVi hmci
a i ghfYhJ]b'mci f'h]\W\_Yhbi a VYf\Zfca '9I hYfbU''Gi ddcfhfU'cb[ 'k ]h\'Ubmch\Yf'fY'Yj UbhXcW'a Ybhgt'hc
]bWi XY'Ug'Yj ]XYbW' hc'gi ddcfhmci f'Yl hYbg]cb'Udd']\WJh]cb'''\=\maintention
Uh\WJ'`mfYWY']j Y'U'h]\W\_Yhbi a VYf\ZVi h]Zmci 'hY'Yd\cbY'mci 'k ]``bYYX'hc'gdYW]\Z\WJ'`mUg\_'Zcf'cbY''
Hi fb]h]b'U'gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'gfUh' g'cb'Hk]hYf"

; 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

5b'UggYggYX'HUg\_']g'XYYa YX``UhY']Z]h']g'gi Va ]hhYX'UZhYf'h\Y'gdYW]Z[YX'h]a Y'UbX'XUhY'Ug'gYhci h']b'h\Y Wci fqY'@YUfb]b['A UbU[Ya YbhGmqhYa 'f@A GŁ"

 $\label{thm:condition} $$HY^UHY^dYbU^m]g^hY^cgg^cZ)_L^cZ^hY^hcHU^dcgg]VY^aUf_g^Zcf^hYY^HUg_Z^cf^YUW^XUmcf^dUfhhYfYcZhY^kcf_]g^UHY^@UhYbYgg^k]^*]bW^XY^kYY_YbXg^UbX^di_V^]WYc^]XUmg^"HY]g^XcYg^bchUdd^mhc^U'HUg_'hWh]g^UqqYqqYX^Vi_hbc^aUf_]g^Uk_UfXYX"$$$ 

K cf\_'gi Va ]hhyx'zci fhyyb'fl%( EXUmg'Uzhyf'h\y'Xi Y'XUhy'k ]``VY'a Uf\_YX'UbX'zYYXVUW\_'dfcj ]XYX'Vi hbc'a Uf\_ k ]``VY'fYWcfXYX"'=Zh\Y'k cf\_'k ci `X'\Uj Y'fYWr]j YX'U'dUgg'a Uf\_'Vi hzcf'h\Y'`UhybYgg'UbX'h\Y'k cf\_']g'U Wca di `gcfm'Wci fgY'Wca dcbYbhz'U'gh XYbh'k ]``VY'XYYa YX'hc'\Uj Y'a Yhih\UhfYei ]fYa Ybh''H\]g'XcYg'bch Udd`mhc'U'hUg\_'h\Uh']g'UggYggYX'Vi hbc'a Uf\_']g'Uk UfXYX"

K cf\_'gi Va ]hh/X'hk YbhnlcbY'f&&XUmg'UZhYf'h\Y'Xi Y'XUhY'k ]```bchVY'UWWdhYX'Zcf'a Uf\_]b[ 'cf'ZYYXVUW\_UbX'k ]```fYWY]j Y'bc'a Uf\_'cf'[ fUXY"'=Zh\Y'UggYgga YbhHUg\_']g'U'Wca di `gcfmWca dcbYbhcZh\Y'Wci fgY'Ugh XYbhk ]```Ui hca Uh]WU``mZU]`'h\Y'Wci fgY"

## GdYWJU`7cbg]XYfUhJcb55dd`]WUhJcbg

 $\label{eq:linear_continuity} $$Mc_i = W_0 - W_$ 

G]W\_bYggža ]gUXj Ybhi fY'cf'ch\Yf'W]fW a ghUbWrg'VYmcbX'mci f'Wcbhfc``a Um

ł DfYj Ybhimci Zfca Wca d`Yhlb[ U.Wci fqY fYei ]fYa Ybhž

ł? YYd mci Zfca 'UthYbX]b[ 'Ub 'UggYggUV'Y 'UWnji ]tmž

ł Ghod moi gi Va ]hh]b[ 'UggYggUV'Y k cf\_ Zcf'U Wci fgYž

ł `G][ b]Z]\WbhmUZZY\Wimci f`dYfZcfa Ub\Wr`]b`UggYggUV`Y`k cf\_ž`VY`]h'U`Zcfa U``YbX!cZgYa YghYf`Yl Ua ]bUh]cbž`U \WUgg`hYghž`U``UVcfUhcfmhYghž`U`gYa ]bUf`dfYgYbhUh]cb`cf`Ubmch\Yf`Zcfa 'cZUggYgga Ybh'

## 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'

±DUddfcdf]UhY`dUfUd\fUg]b[.'W\Ub[]b['U'ZYk'kcfXg'UbX'd\fUgYg'k\]`Y`acghmfYhJ]b]b['h\Y`cf][]bU`ghfi WhifY`UbX`]bZcfaUh]cb`k]h\ci hUW\_bck`YX[YaYbh'H\]g'U`gc'Udd`]Yg`]b'dfYgYbhUh]cbg'k\YfY`gcaYcbYdUfUd\fUgYg`Ubch\Yf'g`]XYUg`cf'kcfXg'k]h\ci hWfYX]h''±iU`gc'Udd`]Yg`hc'd]YW]b['hc[Yh\Yf'ei chYg'UbXdUfUd\fUgYg`]bhc'U'bYk'k\c`Yžk]h\ci hfYZ/fYbW]b['UbX'U'ghi XYbh'g`ck b'UbU`mg]g`hc'Vf]b['h\Y`aUhYf]U`hc[Yh\Yf''

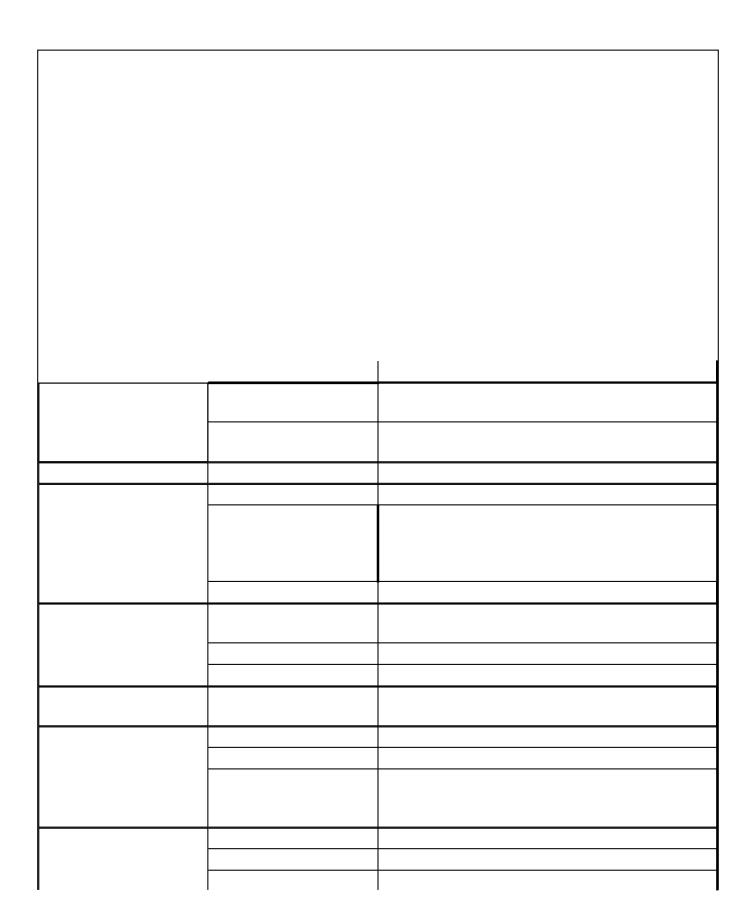
7 c``i g]cb. 'k cf\_]b[ 'k ]h\ 'ch\ Yfg'Vi h'dUgg]b[ 'c\Z'h\ Y 'k cf\_'Ug'U'dYfgcb'g']b\X]j ]\Xi U``k cf\_"'7 c``i g]cb'U`gc ]b\Wi XYg'dfcj ]\X]b[ 'mci f'k cf\_'hc'Ubch\ Yf'ghi XYbh\ VYZcfY'h\ Y 'Xi Y 'XUhYzcf'Zcf'h\ Y' di fdcgY'cZh\ Ya d`U[ ]\Uf]g]b[ 'Uh\Ubmh]a Yz'dUm]b[ 'Ubch\ Yf'dYfgcb'hc'dYfZcfa 'Ub'U\WUXYa ]\Wh\Ug\_z'ghYU']b[ 'cf'U\\ello i ]f]b[ Ubch\ Yf'dYfgcb'g' U\WUXYa ]\Wk cf\_'Ub\X'\\ello dm]b[ ']hz'c\ZYf]b[ 'hc'\\ello a d`YhY'Ubch\ Yf'dYfgcb'g' k cf\_'cf'gYY\_]b[ d\una Ybh\Zcf'\\ello a d`Yh\beta d`

±bUddfcdf]UhY`W]hUh]cb.`7]h]b[ˈgci fW/gˈk \]WX`\Uj Y`bchVYYb`fYUXžk]h\ci hUW\_bck`YX[]b[ˈh\Y`″gYWcbXUfm″gci fW/Zfca k \]WX`\_bck`YX[Y`cZh\Ya`\Ug'VYYb`cVhU]bYX"

8 i d`]\WUh]cb`ff`gY`Zld`U[]\Uf]ga "Ł`gi Va]\h]b[`mci f`ck b`k cf\_ž]b`k \c`Y`cf`]b`dUfhžk \YfY`]h`\Ug`dfYj]ci g`m VYYb`dfYdUfYX`cf`gi Va]\hYX`Zcf`Ubch\Yf`UqqYqqa Ybhcf\Wci fgY`UhI\_BGK\_`cf`Ubch\Yf`i b]\Yfq]\m"

7 cffYWhfYZYfYbWb[dfUWhWyg.

• VYHYfa UbU[Ymcifh]a Y



## FYgci fWyg

### DfYgWf]VYX F Ygci fWYg

%"5FHG%\*'\$ ±blfcXi Wfcfm>UdUbYgY7ci fgYBchYg

&"'; Yb\_]'% ${\tilde z}$ 5b']bhY[fUhYX'Wci fgY']b'Y'Ya YbhUfm'>UdUbYgY ${\tilde z}$ GYWcbX'9X]hJcb ${\tilde z}$ 6Ubbc"'9 ${\tilde z}$ =\_YXU"'M ${\tilde z}$ C\bc"'M ${\tilde z}$ G\]bU[Uk U"'7 ${\tilde z}$ HU\_Ug\]\_]"'?  ${\tilde z}$ H\Y'>UdUb'H]a Yg'f&\$\%\£

' "; Yb\_]'%ž'5b']bhY[fUhYX'Wci fgY`]b'Y`Ya YbhUfm'>UdUbYgYž'K cf\_Vcc\_ž'GYWcbX'9X]hJcbž'6Ubbc"'9ž'=\_YXU" Mž'C\bc"'Mž'G\]bU[Uk U"'7 ž'HU\_Ug\]\_]"'? ž'H\Y'>UdUb'HJa Yg'f&\$%\£

(""; Yb\_]"cb`]bY'g]lY."\hd.##(Yb\_]"^UdUbh]a Yg"Wc"^d#bXYI SYb"

#### FYWca a YbXYX FYgci fW/g

GYY'h\Y'Wci fgY'A ccX'Y

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

: cfa U`Yj U`i Uhjcbg`k]``VY`WcbXi WhYX`VmA m9I dYf]YbWYž'UbX`h\Y`fYgi `hg`k]``VY`i gYX`hc`]a dfcj Y`Zi hi fY]hYfUhjcb`cZh\]g`Wci fgY"'\#DZcfa U`žfYU`!hja Y`ZYYXVUW\_`]g`U`gc`j Yfmik Y`Wca Y`Y]h\Yf`]b`dYfgcb`cf`h\fci [\AccX`Y"

## =a U[Y'7fYX]h

: fca 'i bgd`Ug\'.'h\Y'`]b\_']g'VY`ck

7F = 7CG

7 F = 7 C G 'Dfc| ]XYf'7 cXY. '\$\$\$-,;