

ARTS2754

8Yj Y`cda Ybh']b'DfUWfWY. FYgYUfWX Zcf'GcWJU`'7\Ub[Y

HYfa 'Hk c''##'&\$%

7 ci fgY Cj Yfj]Yk

GHJZZ:7cbHJWh:8YHJ]`g`

'7cbj Ybcfg'

B Ua Y	9a U]`	5j U]`UV]`] m	@cWUhjcb	D\cbY
HUbmUʻ>U_]a ck	h"^U_]ack 4 i bgk "YXi "Ui		A cfj Yb 6fck b %(&	

GWXcc``7cbHJWhʻ±bZcfa Uh]cb

GWXcc``cZGcWJU``GWJYbWYg

Fcca '%) -

A cfj Yb 6fck b 7 &\$

Ya U]`. 'gcgg4 i bgk "YXi "Ui

d\cbY. '\$&'-',) '% \$+

7 ci fgY 8YHJ]`g 7 fYX]hDc]bhg **

5ggYgga Ybh

5ggYgga Ybh'HUg_g'

5ggYgga Ybh'hUg_	K Y][\h	8iY'8UHY	Gh XYbh@YUfb]b[CihWcaYgʻ5ggYggYX
DYfgcbU``glUhYa YbhcZYh\]\W\`dfU\W]\W\`	&) ı	&%#\$*#&\$%_`\$'\$\$`DA	%2
; fci d'DfYgYblUlfjcb. +blYfX]gWjd`]bUfmUddfcUW\ 'lc U'fYgYUfW\ 'dfcV`Ya	' \$I	&) #\$+#&\$% `\$' .\$\$`DA	%ž&
F YgYUfW\`dfcdcgU``	()	\$-#\$,#&\$%-`\$(.\$\$`DA	%ž&ž(

5ggYgga Ybh'8YHJ]`g

5ggYgga Ybh% DYfgcbU`glUhYa YbhcZYh\]WU`dfUWhJWY

GHJfh:XUhY.

@Yb[h\. +) \$ k cfXg

 $8 YHJ)^*g. DYfgcbU^*fYZYWf]cb^*ci h]b]b[^*h,Y^*ghi XYbhig^*UddfcUW,^*hc^*Yh,]WU^*fYgYUfW,^*dfUWf]WYžUbX^*h,Y df]bW]d^*Yg^*k \]W,^*k]^**[i]XY^*h,Y]f^*WcbXi Wh]b^*h,Y^*fZ]Y^*X'^*fH) $^k cfXgŁ"^K f]hhYb^*ZYYXVUW_k [^*h,Y)^*dfcj]XYX^k]h,]b^*h,c^k YY_g^*cZgi Va]gg]cb"^*$

 $\label{thm:continuous} \begin{tabular}{ll} Hi & fb \end{tabular} $$ h' \end{tabular} $$ fb \end{tabular} $$ fo \end{tabular} $$ fb \end{tabular} $$ fb \end{tabular} $$ fb \end{tabular} $$ fc \end{tabular}$

5ggYgga Ybh&; fci d'DfYgYbhJh]cb. +bhYfX]gW]d`]bUfmUddfcUW\ hc U'fYgYUfW\ dfcV`Ya

GhUfh XUhY.

8 YHJ]`g. ; fci dg`k]```a U_Y`U`&\$`a]bi HY`dfYgYbHJH]cb`H\Uh`Vf]b[g`hc[Yh\Yf`X]ZYfYbhX]gV]d`]bUfmiUddfcUW\Yg hc`Ubgk Yf`U`fYgYUfW\`dfcV`Ya `]b`fY`UH]cb`hc`XYj Y`cda YbH'; fci dg`k]```gi Va]h`U`Zjj Y`dU[Y`WcbW\dhbchYk]h\Th\Y]f`dfYgYbHJH]cb"`K f]HhYb`ZYYXVUW_`k]```VY`dfcj]XYX`k]h\]b`hk c`k YY_g`cZgi Va]gg]cb"``Ghi XYbhg fYW\]j Y`U`[fci d`a Uf_"

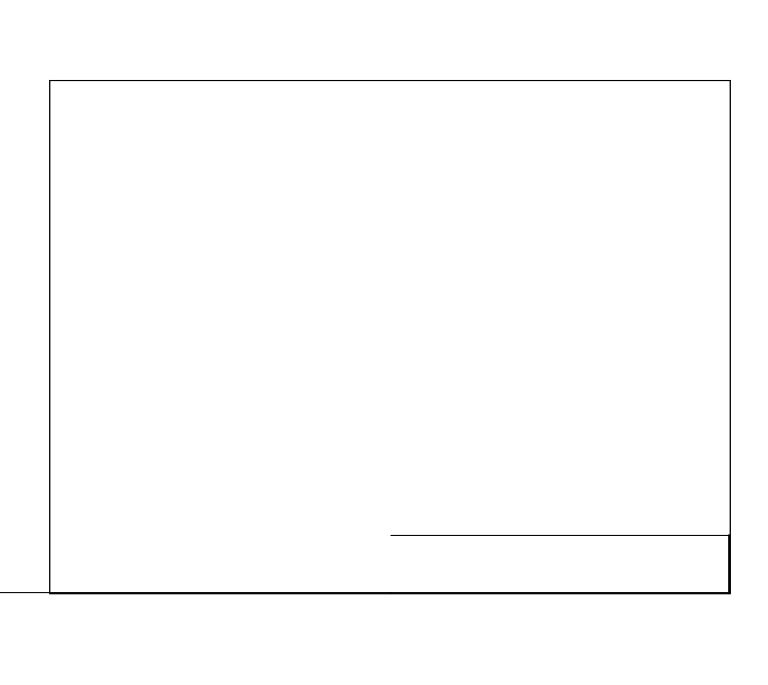
Hi fb]h]b gYh]b[. 'H\]g Ugg][ba Ybh]g gi Va]h\X h\fci [\'Hi fb]h]b UbX ghi XYbhg WUb gYY 'Hi fb]h]b 'g]a]`Uf]hm fYdcfhg"

5ggYgga Ybh' . F YgYUfW dfcdcgU`

GHJfh'XUhY.

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

8YHJ]`g. '\(\frac{1}{2}\) \(\frac{1}{2}\) \(



FYgci fWyg

DfYgWf]VYX F Ygci fWyg

9 | dYWYX fYUX]b[g k] \ VY \]gYX cb A ccX Y k YY_ Vmk YY_

FYWca a YbXYX FYgci fWYg

.

HYI HVcc a

- %" D WeWSdUZ S`V 8[WWi ad] [`6 WhWab_ W fl 8"'< Ua a Ythž7"'Hk ma Ub'UbX'A "'; fU\Ua ž5V]b[Xcb. F ci hYX[Y'f&\$%] Ł"
- &" 6a[Y 6WhWab_ W f D WeWSdJZł J "'8 YgU]'UbX'F "'DcHHYfž'@cbXcb.'G5; 9'f&\$\$*Ł"'5j U]'UV'Y']b'A U]b ']VfUfm'G'' ', "-\$\$-%+&#&
- ' " D WeWSdJZ Xad 6 WhWab_ W f, 3 bdSUf[US^Yg[VWz*G"*@Uk z*7"*< UfdYfz*F "`A UfW gz*@cbXcb.*G5; 9 f&\$\$' Łz*5j U]`UV`Y`Ug`Ub`Y!Vcc_'h\fci [\`I B G K \^]VfUfmk YVdU[Y"*
- ("6WhWab_Wf8[WWiad]žF"'GWXYmjYbg'UbX'8"'GhcfYmž@cbXcb.'G5; 9'f&\$\$' Ł'5j U]'UV'Y'Ug'Ub'Y! Vcc_'h\fci [\1BGK '`]VfUfmkYVdU[Y"'
-)" 3`fZdaba'aYk S`V 6 WhWab_Wif, 5 ZS^WiYWe XadfZWFi WifkZYdef 5 Wifgdkl?"; UfXbYf'UbX'8" @Yk]gz'@cbXcb.'D'i hc'DfYgg'f&\$%) Ł

Cb`]bY'fYgci fWg

Mci 'k]```VYbYZjhZfca 'VYWca jb['ZJa]`]Uf'k jh\; cc[`YGW\c`Uf'f\htd.#gW\c`Uf''[cc[`Y''\wca_Ł`Ug'U'_YmgYUfW\Yb[]bY'Zcf'UWJXYa]Wdi V`]WJhjcbg'UbX'fYdcfhg'''Mci 'WJb'gYhi d'h\Y'dfYZYfYbWYg'hc``]b_'hc'h\Y'I BGK@]VfUfmYj Yb'k \Yb'mci 'UfY'bchcb'\WJa di g'''

; c'hc'; $cc['Y'GWkc'Uf2'gYhf]b[g2'']VfUfm']b_gž'UbX'YbhYf''I b]j Yfg]micZBYk 'Gci h\ 'K U'Yg'']b'h\Y'VcI 'Zcf''@VfUfm''.$

 $H\Y^{n}]ghYX^{n}cifbU^{n}Y^{u}ffWYg^{n}Y^{u}ffWYg^{n}Y^{u}ffWYg^{n}Y^{u}ffWYg^{n}Y^{u}ffWYg^{n}Y^{u}ffWYg^{n}Y^{u}ffWYg^{n}Y^{u}fWYg$

Ua`hW`WobeUS`g`VWobefS`VZai [egTeWcgW`fkWSobež	efgVW fe Wj bWdW UWW fZWUagdeW S`V i ZSf [_ bdahW_ W fe SdWdWcg[dwW

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

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 Ybhh\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 '-'%\$.\$\$da 'cb'k YY_XUmg'UbX'-.\$\$Ua '-') .\$\$da 'cb'k YY_YbXg'fl *) 'XUmg'U'mYUft'' =Zmci
UfY'i bUV`Y'hc'gi Va]hmci f'Ugg][ba YbhXi Y'hc'U'ZUi 'hk]h\'Hi fb]hJb'mci 'a Um'Udd'mZcf'Ub'Y! hYbg]cbžVi hmci
a i ghfYhU]b'mci f'hJW_Yhbi a VYf'Zfca '9! hYfbU``Gi ddcfhfU'cb['k]h\'Ubmch\Yf'fY`Yj UbhXcW a Ybhgt'hc
]bWi XY'Ug'Yj]XYbW'hc'gi ddcfhmci f'Y! hYbg]cb'Udd`]WUhJcb'' =Zmci 'Ya U]`'9! hYfbU``Gi ddcfhmci 'k]``

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"'=hWUb`hU_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b['hc`UWW]XYbhU``mWcdm]b['Zfca `U`gci fW'k]h\ci hUW_bck `YX[Ya Ybh'

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

 $7 \text{ cdm}b[...i g]b[...h\Y.gUa Y.cf.j Yfmig]a] \Uf'k cfXg'hc'h\Y.cf][]bU''hYl h'cf']XYU'k]h\ci h'U\V_bck `YX[]b[...h\Y.cf][]bU''hYl h'cf']XYU'k]h'cf']$

- 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 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 cghicZmci f'ghi X]Yg'UhI BGK "'\\hd.##qi V'YWfi |XYg"`]VfUfm'i bqk "YXi "Ui #\`]qY#JVci hY`]qY

5 WUXYa]W = DZcfa Uhjcb

: cf`YggYbhJU``gh XYbh]bZcfa UhJcb`fY`UhJb['hc.

fYei YghgʻZcfʻYl hYbg]cb/ `UhYʻgi Va]gg]cbgʻ[i]XY`]bYg/ fYj]Yk ʻcZa Uf_g/ I BGK ʻ< YUʻh\ 'UbXʻGUZYhmdc`]WJYg/