

MDIA5001

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7ci fgY[.]Cj Yfj]Yk

7ci fgY⁻8YHJ]`g

7 fYX]hDc]bhg**

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 $+ b^*h^*]g^*W^* c^* i^* fgY^*m^* c^* i^* k]^* VY^*] b^* f^* X^* h^* c^* _Y m^* a YX] U^* k f] h^* b^* [^*g_]^* g^* H^* Y^* W^* c^* fgY^* k]^* W^* c^* Z[YbfYg] h^* c^* Z[Yb$

5ggYgga Ybh

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5ggYgga Ybh'hJg_	K Y][\h	8i Y'8UHY	Gh XYbh@YUfb]b[Ci hWca Yg 5ggYggYX
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8 YHJ] `g. `+) \$ `k cfXgž'ei U`]HJHj Y 'ZYYXVUW_ dfcj]XYX 'j]U Hi fb]Hjb"

Gi Va]gg]cb bchYg. < UfX bYk g ghcfmfYei]fYX"

 $\label{thm:limit} \begin{tabular}{ll} Hi & fb & fb & gYh &$

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8 YM]`g. `+) \$ k cfXgž'ei U`]Mhj Y ZYYXVUW_dfcj]XYX j]U Hi fb]hjb"

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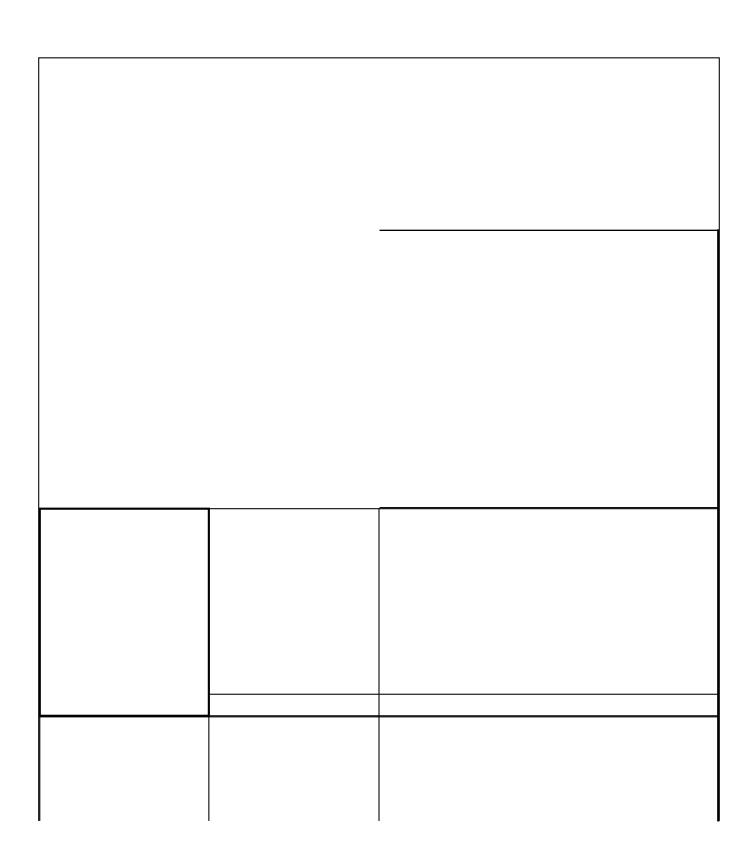
@Yb[h\.') \$\$ k cfXg

8YHJ]`g. ') \$\$ k cfXgžei U`]HJh]j Y ZYYXVUW_dfcj]XYX'j]U'Hi fb]h]b

 $\textbf{Gi Va }] \textbf{gg]} \textbf{cb'bch'g}. \\ \textbf{H} \\ \textbf{Jg'}] \textbf{g'} \textbf{U'} \\ \textbf{UfX'bYk } \textbf{g'ghcfm'} \textbf{Zcf'df]} \textbf{bh'UbX'cb'} \\ \textbf{bY'ci hYhg'i g]} \textbf{b['U'''h', Uhfg''VYYb''YUfbYX'']} \\ \textbf{g'ghcfm'} \textbf{Zcf'df]} \textbf{bh'UbX'cb'} \\ \textbf{bY'ci hYhg'i g]} \textbf{b['U'''h', Uhfg''VYYb'''YUfbYX'']} \\ \textbf{g'ghcfm'} \textbf{Zcf'df]} \textbf{bh'UbX'cb'} \\ \textbf{bY'ci hYhg'i g]} \textbf{b['U''''h', Uhfg'''VYYb'''YUfbYX'']} \\ \textbf{g'ghcfm'} \textbf{Zcf'df]} \textbf{bh'UbX'cb''} \textbf{bY'ci hYhg'i g} \textbf{bY'ci hYhg'i g'h'} \\ \textbf{g'ghcfm'} \textbf{Zcf'df]} \textbf{bh'UbX'cb''} \textbf{bY'ci hYhg'i g'hcfm'} \textbf{bY'ci hYhg'i g'hcfm'$

Xi f]b['h\Y'hf]a YghYf'UVci hX]ZZYfYbha YX]U'Zcfa g'UbX'Udd`]WUV`Y'k cf_g"

 $\label{thm:condition} \mbox{Hi fb]h]b"gYh]b" Low Ybh"]g"gi Va]hhYX"h\fci [\h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b g]a]"Uf]hm"fYdcfhg" \mbox{Hi fb]h]b" Low Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va]hhYX"h\fci [\h]h]b" Low X"ghi XYbhg"Xc"bchgYY"Hi fb]h]b gha Ybh"]g"gi Va [\h]hyX"h\fci [\h]hyX"h\fci [\h]hyX"h\fci [\h]hyX"h\fci [\h]hy Low X"ghi XYbhg"Xc"bchgYY"Hi fb]hyb gha Ybh"]g"gi Va [\h]hyX"h\fci [\h]hyb gha Ybh"]g"gi Va [\h]hy X"h\fci [\h]hyb gha Ybh"]g"gi Va [\h]hy X"h\fci [\h]hyb gha Ybh"]g"gi Va [\h]hyb gha Ybh"]g"g Ybh"]g"g Ybh gha Ybh"]g"g Ybh gha Ybh"]g"g Ybh gha Ybh"]g"g Ybh gha Yb$



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- I bXYfghUbX]b['>ci fbU`]ga
- 5 <]ghcfmcZBYkg
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- A YX]U'UbX'>ci fbU']ga .'BYk '5ddfcUWXYg'hc'H\YcfmUbX'DfUWf\W
- H\Y'9'YWfcb]WF YdcfhYf

7ci fgY 9j U`i Uh]cb UbX 8Yj Y`cda Ybh

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

Gi Va]gg]cb cZ5ggYgga YbhHUg_g

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'YI 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'''#c'ici
UfY'i bUV'Y 'rc'gi Va]hmci f'Ugg][ba YbhXi Y'rc'U'ZJi 'hk]h\'Hi fb]r]b'mci 'a Um'Udd'mZcf'Ub'YI hYbg]cbž'Vi hmci
a i ghfYhJ]b'mci f'r]WYhbi a VYf'Zfca '9I hYfbU''Gi ddcfhfU'cb['k]h\'Ubmch\Yf'fY'Yj UbhXcW a Ybfgt'rc
]bWi XY'Ug'Yj]XYbWY 'rc'gi ddcfhmci f'YI hYbg]cb'Udd']WUh]cb'''#mci 'Ya U]''9I hYfbU''Gi ddcfhmci 'k]'`
Ui hca Uh]WJ''mfYWY]j Y'U'r]W_Yhbi a VYfž'Vi h]Zmci 'hY'Yd\cbY'mci 'k]'''bYYX'rc'gdYW]ZJWJ''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 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 `]g`i g]b['h\Y`k cfXg`cf`]XYUg`cZch\Yfg`UbX`dfYgYbh]b['h\Ya `Ug`mci f`ck b"'=hWJb'hU_Y`a Ubm Zcfa gžZfca `XY`]VYfUhY`W\YUh]b['hc`UWW]XYbhU`mWcdm]b['Zfca `U`gci fWY'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'dfcYWgž'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 Whi fY 'UbX#cf'dfc[fYgg]cb'cZ]XYUg'cZh\Y'cf][]bU`ž'UbX']bZcfa Uh]cb'k]h\ci h\UW_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 h\UhYX]hUbX'hc
d]YW]b['hc[Yh\Yf'ei chYg'UbX'dUfUd\fUgYg']bhc'U'bYk 'k \c`Yž'k]h\ci h\Uddfcdf]UhY'fYZYfYbW]b["

7 c``i g]cb.'k cf_jb['k]h\ch\Yfg'Vi hdUgg]b['cZZh\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_'hc'Ubch\Yf'ghi XYbhVYZcfY'h\Y'Xi Y'XUhYžcf'Zcf'h\Y'di fdcgY'cZh\Ya d`U[]Uf]g]b['UhiUbmh]a Yž'dUm]b['Ubch\Yf'dYfgcb'hc'dYfZcfa 'Ub'UWUXYa]WhUg_ž'ghYU']b['cf'UWei]f]b[Ubch\Yf'dYfgcb'g'UWUXYa]Wk cf_'UbX'Wcdm]b[']hz'cZYf]b['hc'Wca d'YhY'Ubch\Yf'dYfgcb'g'k cf_'cf'gYY_]b[dUma YbhZcf'Wca d'Yh]b['UWUXYa]Wk cf_"

±bUddfcdf]UhY`W]hUh]cb.`7]h]b[`gcifWrg`k\]W\`\UjY`bchVYYb`fYUXžk]h\cihUW_bck`YX[]b[`h\Y`´gYWcbXUfm´gcifWrZfca`k\]W\`_bck`YX[Y`cZh\Ya`\Ug`VYYb`cVhU]bYX"

8 i d`]\W\n]cb`ffgY`Z\d`U[]\Uf]ga "Ł`gi Va]\n]b[`mci f`ck b`k cf_z`]b`k \c`Y`cf`]b`dUffz`k \YfY`]h\Ug`dfYj]ci g`m VYYb`dfYdUfYX`cf`gi Va]\nYX`Zcf`Ubch\Yf`UggYgga Ybhcf`\\cf\\text{i fgY`UhI_BGK_`cf`Ubch\Yf`i b]j Yfg]\m'

7 cffYWnfYZYfYbWlb['dfUWnWyg.

- DUfUd\fUg]b[žgi a a Uf]g]b[žYggUmk f]h]b['UbX h]a Y a UbU[Ya Ybh
- 5ddfcdf]UhY'i gY'cZUbX'Uhtf]Vi h]cb'Zcf'U'fUb[Y'cZa UhYf]U`g']bWi X]b['hYl hž']a U[Ygž'Zcfa i `UY'UbX WbWYdhg"

±0X]j]Xi U``Ugg]ghUbWr`]g`Uj U]`UV`Y`cb`fYei YghZfca `H\Y`@YUfb]b[`7 YbhY`f\hd.#k k k "`Wi bgk "YXi "Ui #£" Gh XYbhg`UfY`U`gc`fYa]bXYX`h\UhWUfYZ ``hja Y`a UbU[Ya Ybh]g`Ub`]a dcfhUbhdUfhcZgh XmUbX`cbY`cZh\Y]XYbh]Z]YX`WUi gYg`cZd`U[]Uf]ga `]g`dccf`hja Y`a UbU[Ya Ybh'`Gh XYbhg`g\ci `X`U``ck `gi Z]W]Ybh'hja Y`Zcf fYgYUfW\žXfUZh]b[`UbX`dfcdYf`fYZ/fYbW]b[`cZgci fWfg`]b`dfYdUf]b[`U``UggYgga Ybh']hYa g"

IBGK @]VfUfmU`gc`\Ugʻh\Y`9@G9`hcc``UjU]`UV`Y`hc`Ugg]ghmci`k]h\`mcif`ghiXmUhIBGK "'9@G9`]gXYg][bYX`hc`]bhfcXiVW`bYk`ghiXYbhg`hc`ghiXm]b[`UhIBGK`Vih]hWUb`U`gc`VY`U`[fYUhfYZfYg\Yf`Xif]b[`mcifqhiXm"

7 ca d'Yhlb['h\Y'9@&9'hi hcf]U`'UbX'ei]n'k]`'YbUV'Y'mci 'hc.

 UbU`mgY`hcd]\Mgž'd`Ub`fYgdcbgYg`UbX`cf[Ub]gY`fYgYUf\W\`Zcf'U\WXYa]\Wk f]hjb[`UbX`ch\Yf UggYgga YbhiHUg_g • i bXYfgHJbX'mci f'f][\hg'UbX'fYgdcbg]V]`]h]Yg'Ug'U'gh XYbh'Uhil BGK

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 dfcW/Xi fYg/
- gdYWJU``Wcbg]XYfUhJcb`]b`h\Y`Yj YbhcZ]``bYgg'cf'a]gUXj Ybhi fY/
- gh XYbhYei]hmUbX X]gUV]`]hm/
- ÜbX'ch\Yf'YggYbhJU`'UWUXYa]W]bZcfa UhJcbž'gYY

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