

5fUVY``U'?]YgVUi Yf.'9]bV`]W_Y']b']\f ZUgn]b]YfYbXYg'@YVYb'i bX'K]f_Yb°

9bhXYW_Yb^G]Y^XUg^@YVYb^ibX^X]Y^?Uff]YfY^jcb^5fUVY^`U ?]YgVUiYfž'XYf^ÒghYffY]WX]gWXYb^HJ!AcXYfUhcf]bž'X]Y^K]Yb ibX^X]Y^AYX]Yb`UbXqWXUZh^[YdfÀ[h^\Uh"



K]Ybž'² ghYffY]W '!'K Yf'_Ubb'g]W 'b]W h'Ub'5fUVY``U'?]YgVUi Yf Yf]bbYfb3'8]Y '`YV\UZhY'i bX'W Ufa UbhY'HJ!A cXYfUhcf]b'Ui g ² ghYffY]W 'VY[Y]ghYfh'gY]h'ØVYf'' \$'\J\fYb'XUg'Di V`]_i a 'a]h']\fYf i bj Yfk YW gY`VUfYb'5fh" \D'Y]bYa 'U_hi Y``Yb'\DhYfj]Yk 'j YffÀh'g]Yž XUgg']\f'JcfbUa Y']a a Yf'bcW 'GhUa a d`Uhn']b'XYb'; YVi fhg`]ghYb\Uh'i bX'cZh'Ub'_`Y]bY'A ÀXW Yb'k Y]hYf[Y[YVYb'k]fX"'8]Yg'b]a a hg]Y'a]h'Y]bYa 'GW a i bnY`b'ni f'?Ybbhb]g'i bX'nY][h'Y]ba U`'a Y\fž XUgg'g]Y'j c``Yf'GY`Vgh]fcb]Y'ghYW_h"

 $= \text{@Ui ZY']} \text{ fYf'? Uff]} \text{ YfY'} \text{ Uh'?]YgVUi Yf'Y]b'Y]bXfi W_gj c``Yg \\ \text{DcfhZc`]c'Ui Z[YVUi h'''J cb'%--(''V]g'&$$('a cXYf]YfhY'g]Y'X]Y \\ \text{YfZc`[fY]WXY'HU`_g\ck' 5fUVY``U ''Ui Z'DfcG]YVYbž'k c \\ \text{5``hU[ga YbgWXYb'i bX'XYfYb'; YgWX]WX hYb']a ': c_i g'ghUbXYb''' \= fY}$

i b_cbj Ybh]cbY``Y`< YfUb[Y\Ybgk Y]gY`i bX`X]fY_hY`5fh`a UW\hYbg]Y`gW\bY``ni a `EichYb!GhUf''`< Yi hY`]gh`g]Y`b]W\h`bi f`VY_Ubbh`ZØf]\fY`G\ck ž`gcbXYfb`Ui W\`ZØf`X]Y`A cXYfUh]cb`j cb`X]j YfgYbUbXYfYb`: cfa UhYb`k]Y` H\Y`A Ug_YX`G]b[Yf`5i ghf]U`i bXGhUfa Ub]U`''9]b`VYgcbXYfYg`<][\`][\h`k Uf`]\fY`Fc``Y`VY]a9i fcj]g]cb`Gcb[`7cbhYgh`&\$%)`]b`K]Ybž`Y]bY`JYfUbghU`hi b[ž`X]YZØf`j]Y`Y`Y]bY`i bj Yf[Yqg`]W\Y`9f]bbYfi b[`V`Y]Vh"

DYfgÒb`]WXYf'<]bhYf[fibX'ibX'KifnY`b

 $\label{eq:final_stress_stres$

$F Ø W_Y \ f'i b X'U_hi Y``Y'Dfc'Y_hY$

BUWX 'Y]bYf'NY]hž']b'XYf'j]Y`Y'XUWX hYbž'k]f'\ÀhhYb'g]Y'b]WX h'a Y\f [YgY\Ybž'ZY]YfhY'?]YgVUi Yf'&\$&%']\f'7ca YVUW_']b'XYf'XYi hgWXYb: YfbgY\k Y`hž'k c'g]Y'YfbYi h' GhUfa Ub]U 'a cXYf]YfhY' 'Y]b: cfa Uhž'XUg'g]Y'VYghYbg'_Ybbh''?Øfn`]WX'k i fXY'VY_Ubbhž'XUgg'g]Y

 $ZØf^{*}X]Y^{*}_{ca}$ a $YbXY^{*}GhUZZY^{*}_{j}$ cb ? Ua $dZ^{*}XYf^{*}F^{*}YU^{*}_{j}$ hmghUfg $"Ui~ZFH@NK~9=]a~~^{1}_{2}V^{*}_{6}$ by $YfdZ^{*}_{j}W$ hY h'k $i~fXY^{*}_{6}$ by Y^{*}_{6} by Y^{*}_{6}

<Yi hY ``YVh 5fUVY``U'?]YgVUi Yf a]h']\fYa '9\Ya UbbžXYa 'K]YbYf
I bhYfbY\a Yf': `cfYbg'9V`]b[Yfž'i bX']\fYb 'nk Y]'?]bXYfbž'HcW\Yf
B]_U'f%+L'i bX'Gc\b'BYc'f%(L']b'K]Yb"'9fZfYi `]W\Yfk Y]gY'V`Y]Vh'g]Y
k À\fYbX']\fYf'8fY\UfVY]hYbž'X]Y'g]Y'a UbW\a U``bUW\'H\U]`UbX
ZØ\fYbž'a]h']\fYf': Ua]`]Y']b'?cbhU_h"'8]Yg'nY][hž'XUgg'ZUa]`]ÀfYb
6]bXi b[Yb'ZØf'g]Y'bcW\']a a Yf'Ub'cVYfghYf'GhY``Y'ghY\Yb"</pre>

K]f`XØfZYb`[YgdUbbh`gY]bž'k Y`W\Y`bYi Yb`K Y[Y`g]Y`Y]bgW\`U[Ybk]fX`i bX`k Y`W\Y`; YgW\]W\hYb`g]Y`i bg`bcW\`YfnÀ\`Yb`_Ubb"\8]Y`HJ!@UbXgW\UZh`\Uh`a]h`5fUVY``U`?]YgVUi Yf`Ui Z`YXYb`: U```Y]bYbYW\hYb`GW\Uhnž`XYf`i bg`bcW\`j]Y`Y`\J\\fY`VY[`Y]hYb`k]fX"

8 YhU]`g	
Cfh	K]Ybž ^{·2} ghYffY]WX
EiY``Yb	• k k k "V]`X"XY
	XY"k]_]dYX]U"cf[
	• k k k "bYk g"Uh

6Ygi WXYb G]Y i bg Ui Z. a Y]b!k]Yb bYh