



# SOSS3001

E i UbhjhUjhj Y`GcWjU`F YgYUfWx

HYfa `Hk c`#`&\$&\$

GWXcc`cZGcWjU`GWjYbWjg`#`I BGK ``5ffg`UbX`GcWjU`GWjYbWjg

7 ci fgY`Cj Yfj ]Yk

GHJZ 7 cbHJW`8YHJ]`g

7 cbj Ybcfg

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWjhcb	D\cbY
7 ]bXm< Ufa cb! >cbYg	W\Ufa cb!`cbYg4 i bgk "YXi "Ui	VmUddc]bha Ybh	fYa chY	

Hi hcfg

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWjhcb	D\cbY
9`jnUVYh Gi a a YfY`	Y"gi a a YfY`4 i bgk "YXi "Ui			
Gmj ]U`< Ufa cb! >cbYg	g"\Ufa cb!`cbYg4 i bgk "YXi "Ui			

7ci fgY'8YHJ]`g

7fYX]hDc]bqg`\*`

Gi a a UfmicZ\Y'7ci fgY

Gi VYWh5fYU.'GcW]U`F YgYUfW\`UbX'Dc`]Wn

H\Y'UV]`]mhc`WcbXi W\[\`ei U`]mei Ubh]hU]j Y`fYgYUfW\`]g`U`j U`i UV`Y`g\_]`Zcf`gcW]U`gWYb]g]g]UbX`Udd`]YX  
gcW]U`fYgYUfW\Yfg`H\]g`Wci fgY`cZYfg`mci`U`XYHJ]YX`]bfcXi W]cb`hc`ei Ubh]hU]j Y`fYgYUfW\`a`YhcXg`UbX  
XUH`UbU`mg]g`H\Y`Z]fghdUfmcZ\Y`Wci fgY`Y`UVcfUH]g`cb`a`U`cf`hYa`Yg`]b`fYgYUfW\`XYg][`b`fY`["z  
a`YUgi`f]b[`gcW]U`WcbW]d]g]gUa`d`]b[`z`XUH`Wc`YW]cb]U`UbX`Wca`a`cb`WU`Yb[`Yg`fY`["z[`YbYfU`]gUV]`]mz

# 5ggYgga Ybh

## 5ggYgga YbhHUg\_g`

5ggYgga YbhHUg_	K Y][ \h	8i Y'8UH	Gh XYbh@YUfb]b[ Ci hWta Yg'5ggYggYX
F YgYUfW`F Ydcfh	( \$i	\$* #\$, #&\$&\$ %%%\$ \$'DA	%ž ž( ž)
GHUhg]Wg`hU_Y!\ca Y`hYghg`	* \$i		&ž( ž)

## 5ggYgga Ybh8YHU]`g

5ggYgga Ybh%`F YgYUfW`F Ydcfh

GHUfhXUH`.

8YHU]`g.

H\]g`UggYgga YbhWcbg]ghg`cZU`fYgYUfW`fYdcfhU]bW`XYg`U`]HfUhi fY`fYj`Yk`ža`Yh`cX`XYgW]dh]cbž`fYgi`hg`dfYgYb]h]cb`UbX`XYgW]dh]cbž`X]gW`gg]cb`UbX`WcbW`g]cb`VUgYX`cb`h`Y`Wci`fgY`fYgYUfW`hc]d]WUbx`XUhu`Wc`YWYX`Xi`f]b[`h`Y`gYa`YghYf`

&ž) \$ \$`k`cfXg`H\]g`]g`h`Y`Z]bU`UggYgga YbhZcf`UHf]bXUbW`di`fdcgYg`

Gh XYbh]k`j`fYW]j`Y`k`f]h]b`ZYXVUW`UbX`U`bi`a`Yf]WU`[`fUXY`k`]h`]b`h`c`k`YY\_g`cZgi`Va`]gg]cb`h`fci`[`\`h`Y`I`b]j`Yfg]m]g`@YUfb]b[`A`UbU[`Ya`YbhGm]hYa`f]eA`GE`H\Y`ZYXVUW`g`Y`Yh]fi`Vf]Wk`j`VY`Uj`U]UV`Y`hc`gh`XYbh]U`h`h`Y`ghUfhcZ`h`Y`Wci`fgY`gc`h`U`h`h`Y`m`W]b`k`cf`\_`hc`k`UfXg`gdYW]Z]YX`ghUbxUfXg`

Hi`fb]h]b`g`Y`h]b[`.`H\]g`Ugg][`ba`Ybh]g`gi`Va`]h]YX`h`fci`[`\`Hi`fb]h]b`UbX`gh`XYbh]W]b`g`Y`Y`Hi`fb]h]b`g]a`]Uf]m`fYdcfhg`

5ggYgga Ybh&.`GHUhg]Wg`hU\_Y!\ca Y`hYghg`

GHUfhXUH`.

8YHU]`g.

H\]g`UggYgga Ybhk`j`Wcbg]gh]bhcZ`ci`f`hU\_Y!\ca Y`hYghg`"9UW`cbY`k`j`fYei`]fY`gh`XYbh]hc`gi`Va`]h]eA`GDGG`GHUhg]Wg`fGHUhg]WU`GcZk`UfY`E`ci`hdi`hdi`g`%)`\$`k`cfXg`cb`h`Y`f]b]h]fd]fY]h]cb`cZk`U`h`h`Y`ci`hdi`ha`Y`Ubg`

Gh XYbh]k`j`fYW]j`Y`k`f]h]b`ZYXVUW`UbX`U`bi`a`Yf]WU`[`fUXY`k`]h`]b`h`c`k`YY\_g`cZgi`Va`]gg]cb`h`fci`[`\`h`Y`I`b]j`Yfg]m]g`@YUfb]b[`A`UbU[`Ya`YbhGm]hYa`f]eA`GE`H\Y`ZYXVUW`g`Y`Yh]fi`Vf]Wk`j`VY`Uj`U]UV`Y`hc`gh`XYbh]U`h`h`Y`ghUfhcZ`h`Y`Wci`fgY`gc`h`U`h`h`Y`m`W]b`k`cf`\_`hc`k`UfXg`gdYW]Z]YX`ghUbxUfXg`

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

GYY'hY'k YY\_mgWXYXi 'Y'Zcf'hY'Xi Y'XUhg'cZ'hY'('hU\_Y'\ca Y'h'ghg"

Hi fb]h]b'gYh]b[ . 'H\]g'Ugg][ ba Ybh]g'gi Va ]hYX'h'fci [ \ 'Hi fb]h]b'UbX'gh XYbhg'WJb'gYY'Hi fb]h]b'g)a ]'Uf]m fYdcfg"

5 hYbXUbW F Yei ]fYa Ybhg

Gh XYbhg UfY'ghfcb[ 'mYbWci fU[ YX'hc'UhhYbX'U''WUggYg'UbX'fYj ]Yk ''YWhi fY'fYWcfX]b[ g"

7 ci fgY'GWXYXi `Y

[J \]Yk WUgg'hja YhUV`Y](#)

H]a YhUV`Y`

8UhY	HmdY	7cbhYbh
K YY_`\$.`&` `A Um!`&- A Um		
K YY_`%`%>i bY!`) `>i bY	@YWhi fY	!`K `Uh]g`ei Ubh]hUj] Y`fYgYUfW3  !`A YUgi f]b[ `gcW]U`WcbWdhg  F YUX]b[ .`7`UdhYf`%
	Hi hcf]U`	!`b]fcXi W]cb`hc`GDGG  !`Gi fj YmZcf`7 ci fgY`Dfc YWh
K YY_`&`,`>i bY!`%& >i bY	@YWhi fY	!`GUa d`]b[  !`; fUd\]W]`X]gd`UmcZXUfU  !`F YUX]b[ g.`7`UdhYfg`&`UbX`"
	Hi hcf]U`	!`C VhU]b]b[ `ZfYei YbWnhUV`Yg`UbX`[ fUd\g
K YY_`"`,`%`>i bY!`%> >i bY	@YWhi fY	!`8 YgW]dhj] Y`ghUhg]Wg  !`F YUX]b[ .`7`UdhYf`(`
	Hi hcf]U`	!`8 YgW]dhj] Y`ghUhg]Wg ]b`GDGG
K YY_`(`&&>i bY!`&` >i bY	@YWhi fY	!`DfcVUV]]miUbX`\mdch Yg]hYgh]b[  !`F YUX]b[ .`7`UdhYf`%\$
	Hi hcf]U`	!`8 UfU`dfYdUfU]cb`UbX`WYUb]b[
	5ggYgga Ybh	HU_Y`\ca Y`hYgh`,`%`8 YgW]dhj] Y`ghUhg]Wg`Xi Y`: f]XUm &(`>i bYz`%da
K YY_`)`,`&-`>i bY!`" `>i `m	@YWhi fY	!`7 cffY`U]cb  !`F YUX]b[ .`7`UdhYf`,`
	Hi hcf]U`	!`7 cbXi W]b[ `WcfY`U]cbg`]b`GDGG
K YY_`*`,`*`>i `m!`%\$`>i `m		!`: `YI ]V]]mk YY_z`bc`"YWhi fY`cf`h hcf]U`g
K YY_`+`,`%`>i `m!`%+`>i `m	@YWhi fY	!`7 \]!gei UfY  !`F YUX]b[ .`7`UdhYf`-
	Hi hcf]U`	!`7 cbXi W]b[ `W]!gei UfY`]b`GDGG
	5ggYgga Ybh	HU_Y`\ca Y`hYgh`,`&`,`7 cffY`U]cb`Xi Y`: f]XUm%) `>i `m

K YY_ ; . & \$ ' > i ` m ! ' & ( ' > i ` m	@YWh fY	! ' Gh XYbhg` hYgh ! ' F YUX]b[ . ' 7 \ UdHYf )
	Hi hc f]U`	! ' 7 cbXi W]b[ ' hYgh]b` GDGG
	5ggYgga Ybh	HU_Y ` \ ca Y` hYgh . ' . ' 7 \ ]` gei UfY` Xi Y` : f]XUm&& ` > i ` m % % da
K YY_ - . & + ` > i ` m ! " % > i ` m	@YWh fY	! ' 5bU` mg]g` cZj Uf]UbW` f5BCJ 5Ł ! ' F YUX]b[ . ' 7 \ UdHYf` *
	Hi hc f]U`	! ' 7 cbXi W]b[ ' 5BCJ 5` ]b` GDGG
	5ggYgga Ybh	HU_Y ` \ ca Y` hYgh . ( . hYghXi Y` : f]XUm&- ` > i ` m % % da
K YY_ % \$ . " ` 5i [ i gh ! + 5i [ i gh	@YWh fY	! ' DU]fYX` hYgh ! ' bHYfdYh]b[ ` UbX` dYgYbh]b[ ` fYgi ` hg ! ' F YUX]b[ . ' 7 \ UdHYf` +
	Hi hc f]U`	! ' 7 cbXi W]b[ ` dU]fYX` hYgh ! ' 5D5 ` Zcfa Uh
	5ggYgga Ybh	! ' F YgYUfW` F Ydcfh` : ]bU` dYc` YWhXi Y` H\i fgXUm * ` 5i [ i gh % % da

## F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

? bUddž < "f&\$%+Ł" bfcXi Wc fmGHghgWg`l g]b[ `GDGG`f&bX`9X]hcbŁ`H\ci gUbX`C U\_gž 7 5. `GU[ Y"

F YWca a YbXYX`F Ygci fWg

H\Y`Zc`ck ]b[ `hk c`Vcc\_g`UfY`VYghY`b[ ``WUgg]Wg`h UhUfY`\[ `m fYWca a YbXYX`Zc`f`Ubmigh XYbfg`k \c k Ubha cfY`VUW\_[ fci bX`]bZca Uh]cb`cf`YI Ua d`Yg`cb`hY`ghUgh]Wg`h`Wb]ei Yg`k`Y`k`j`VY`YUfb]b[ ``H\Ym Vch`Uj`Y`a`i`hd`Y`YX]hcbg`UbX`mci`WUbc`Zyb`Z]bX`i`gYX`Wcd]Yg`cZdfYj`]ci`g`YX]hcbg`h UhUfY`fYUgcbUV`m df]W`X"

5bm9X]hcb`fl d`rc`hY`\*`h`9X]hcb`bck`Ł`cZ>i`jY`DU`Ubfg`GDGG`Gi`fj`j`U`A`Ubi`U`DU`Ubhž>"f&\$%\*Ł"GDGG Gi`fj`j`U`A`Ubi`U`A`W`fUk`!<]`9Xi`WU]hcb`fl`?`Ł"

\hdg.##k k k "U`YbUbXi`bk`]b`Wca`#/fck`gY`#/cc\_g`JWUXYa`]WdfcZ]gg]cbU`#fYgYUfW!a`YhcXg#GDGGGi`fj`j`U`A`Ubi`U`!>i`jY!DU`Ubh`-`+`,`%`\*`\$`&`-`%`-`)&

5bm9X]hcb`fl d`rc`)`h`9X]hcb`bck`Ł`cZ5bXm: ]Y`Xfg`8]gWcj`Yf]b[ `GHghgWg`l`g]b[ `GDGG. : ]Y`Xž5" f&\$%+Ł" 8]gWcj`Yf]b[ `GHghgWg`l`g]b[ `A`GDGG`GHghgWg`GU[ Y`fl`?`Ł"

\hdg.##k k k "X]gWcj`Yf]b[`ghUgh]Wg`Wca`#

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



Gi Va ]gg]cb 'cZ5ggYgga YbhiHUg\_g

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

≠mci 'YbWci bHYf'U'dfcV'Ya 'k \Yb'UH'Ya dh]b[ 'hc'gi Va ]hirci f'Ugg][ ba Ybhi'fci [ \ 'Hi fb]h]bž'd'YUgY  
HY'Yd\cbY'9I HYfbU'Gi ddcfhcb'- ' , ) " ' ' %cf'Ya U] 'h'Ya 'cb'YI HYfbU'HY'gji ddcfh4 i bgk "YXi "Ui "'Gi ddcfh

## 5 WUXYa ]W< cbYgmiUbX`D`U[ ]Uf]ga

D`U[ ]Uf]ga `]g`i`g]b[ `h`Y`k`c`f`X`g`c`f`]X`Y`U`g`c`Z`c`h`Y`f`g`i`U`b`X`d`f`Y`g`Y`b`h]b[ `h`Y`a` `U`g`m`c`i`f`c`k`b`" `#`W`U`b`h`U`\_`Y`a` `U`b`m`  
Z`c`f`a` g`z`Z`c`a` `X`Y`]V`Y`f`U`h`Y` `W`X`Y`U`h]b[ `h`c` `U`W`W`Y`X`Y`b`h`U` `m`i`W`c`d`m]b[ `Z`c`a` `U`g`c`i`f`W` `k` ]h`c`i`h`U`W`\_`b`c`k` `Y`X[ `Y`a` `Y`b`h`

I`B`G`K` `[`f`c`i`d`g`d`U[ ]Uf]ga `]b`h`c` `h`Y` `Z`c` `c`k` ]b[ `W`U`h`Y`[`c`f`]Y`g.



## 5 WUXYa ]WbZcfa Uh]cb

: cfYggYbh]U`gh XYbh]bZcfa Uh]cb fY`Uh]b[ `tc.

- fYei Ygh]ZcfYI H]bg]cb/
- `UhY`gi Va ]gg]cbg`[ i ]XY`]bYg/
- fYj ]Yk `cZa Uf\_g/
- I BGK `<YU`h`UbX`GUZYmdc`]WYg/
- YI Ua ]bUh]cb`dfcWYXi fYg/
- gdYW]U`Wcbg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a ]gUXj Ybh fY/
- gh XYbhYei ]mUbX`X]gUV`]m/
- UbX`chYf`YggYbh]U`UWUXYa ]W]bZcfa Uh]cbz`gYY

[\ftdg.#k k k "Uftg"i bgk "YXi "Ui #W ffYbhgh XYbh\]UWUXYa \]W\]bZcfa Uh\]cb#dfchWc`g!\[ i \]XY`\]bYg#](#)

⇒ a U[ Y`7 fYX]h

GmbYf[ ]Yg`]b`Gci bX`&\$%\*`