



## MDIA3008

ggi Yg'UbX'7 f]g]g'7 ca a i b]WU]cb

GYa Yghf'Cby''##'&\$%

## 7 ci fgY`Cj Yfj JYk

'GHUZZ7cbhUW`i8YHU]`g`

'7cbj Ybcfg`

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWUjcb	D\cbY
7c`j]b`7\i U	7"7\i U4 i bgk "YXi "Ui	Hi YgXUmž-" \$Ua `hc %%" \$Ua žcfVm Uddc]bha Ybh	K YVghYf`&' %? -',))-, ,	

'Hi hcfg`

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWUjcb	D\cbY
DYhfF cVYfng	d"fcVYfng4 i bgk "YXi "Ui			
G Ua YYfU`8i ffUb]	gUa YYfU"Xi ffUb]4 i bgk "YXi "Ui			
>UbY`>cfXUb	^cfXUb4 i bgk "YXi "Ui			
5XUa `GHUd`Yhcb	U"ghUd`Yhcb4 i bgk "YXi "Ui			
B ]X]U`F UmU`A Ufh]bYn	b"fUmUa Ufh]bYn4 i bgk "YXi "Ui			

## GWXcc`7cbhUW`i`bZcfa Uhjcb

Fcca " %ž`Yj Y"" `F cVYfhK YVghYf`6i ]X]b[

D\cbY: f\$&Ł-' , ) '( , ) \*

9a Uj]: [gUa 4 i bgk "YXi "Ui](#)

K YVg]hY: [\hmg.#gUa "Ufng"i bgk "YXi "Ui](#)

H\Y`GWXcc`cZHY`5fng`UbX`A`YX]U`k`ci`X`\_Y`hc`F`YgdYWZ`m5W\_bck`YX[`Y`hY`HfUX]h]cbU`7i`ghcX]Ubgž`hY`6YXY[`U`fP`Ybg]b[`hc`b`WLa`di`gŁž;`UX][`U`fP`]mUbX`5fV`8Yg][`b`7`Ua`di`gYgŁ`UbX`hY`B`[`i`bbUk`U`dYcd`Y`f5i`gfU]Ub`8YZYbVW`:`cfVW`5WUXYa`m]b`7`UbVYffUŁ`cZHY`UbXg`k`YFY`YUWX`WLa`di`g`cZi`BGK`]g`cWUjYX"

## 5hYbXUbW`F`Yei`]fYa`Ybhg

5`gh`XYbh]g`YI`dYVW`X`hc`U`hY`b`X`U`WUgg`W`cbhUW`i`ci`fg`Zcf`U`ZUW`!hc!ZUW`fi`&`Ł`cf`V`Y`b`X`Y`X`W`ci`fg`Y`Ub`X`W`ca`d`Y`h`U`U`U`W`j`]h]Yg`Zcf`U`V`Y`b`X`Y`X`cf`Z`mcb`]b`Y`W`ci`fg`Y"

5`gh`XYbhk`c`U`ff]j`Yg`a`cfY`h`Ub`%)`a`]bi`hYg`U`h`a`UmVY`dYbU`]gYX`Zcf`bcb!U`hY`b`X`Ub`W`"Zgi`W`U`dYbU`m`]g`]a`dcgYXž`hY`gh`XYbhia`i`ghVY`]b`Zcfa`YX`j`YfVU`m`U`h`h`Y`Y`b`X`c`Z`W`U`gg`Ub`X`U`X`j`]gYX`]b`k`f]h]b[`k`]h]b`&(`\`ci`fg`"

ZU`gh`XYbhYI`dYf]YbW`g`]`bYggž`a`]gUX`Y`bhi`fy`cf`chYf`cWV`ffYbW`h`U`ha`U`Yg`UVgYbW`Zca`U`WUgg#UW]j`]mi`bUj`c]XUV`Yž`cf`YI`dYVW`g`hc`VY`UVgYbhZca`U`Zc`f`h`W`ca`]b[`WUgg#UW]j`]mž`h`Y`mg`i`ci`X`g`Y`Y`\_`dYfa`]gg]cb`Zca`hY`7`ci`fgY`5i`h`cf]mž`Ub`X`k`Y`FY`Udd`]WU`Yž`h`Y`f]f`Yei`Yghg`i`ci`X`VY`U`W`ca`d`Ub]YX`Vm`Ub`cf][`]b`U`cf`W`f]j]YX`W`c`m`c`Z`U`a`YX]W`W`f]j]WU`h`cf`chYf`Zca`c`Z`U`dd`f`d`f]U`h`Y`j`]X`Y`b`W`"

5`7`ci`fgY`5i`h`cf]m`a`UmYI`W`gY`U`gh`XYbhZca`WUggYg`cf`UW]j`]h]Yg`Zcf`i`d`hc`cbY`a`cbh`"<`ck`Yj`Yfž`h`Y`m`a`Um`Ugg][`b`U`X`X]h]cbU`Ub`X`#`f`U`h`f`b`U`h]`Y`h`U`g`\_`hc`Y`b`gi`fy`W`ca`d`]Ub`W`"5`7`ci`fgY`5i`h`cf]m`W`cbg]X`Y`f]b[`h`Y`"



7ci fgY'8YHJ]`g

7fYX]hDc]bHg`\*`

Gi a a UfmcZh\Y'7ci fgY

## 5ggYgga Ybh

H\]g'57C5`XcW a Ybh]g`]bhYbXYX`df]a Uf]`miUg`U`dc`]WniXcW a Ybh!`d`YUgY`fYZf`hc`h\Y  
7ca dfY\Ybg]j Y`7ci fgY`; i ]XY`gYW]cb`cb`h\Y`A`ccX`Y`g]hY`Zcf`Wca`d`YhY`]bZcfa`Uh]cb`cb`h\Y`Wci`fgY`"

## 5ggYgga YbhHUg\_g`

5ggYgga YbhHUg_	K Y][ \h	8i Y`8UH`	Gh XYbh@YUfb]b[ Ci hWca Yg`5ggYggYX
G\cfh9ggUm	&)	' \$#\$' #&\$% `\$(. \$\$`DA	%ž( ž)
DfYgYbhU]cb`	&)	Bch5dd`]WUVY	%ž&ž( ž)
7 f]h]WU`5bU`mg]g`C`F`7 f]g]g 7ca a i b]WU]cb`D`Ub`	) \$	\$%#*\$`#&\$%``%%)`-`DA	%ž&ž ž( ž)

## 5ggYgga Ybh8YHU]`g

5ggYgga Ybh%`G\cfh9ggUm

GHUfhXUH`.

@Yb[ h. `%%\$!%) \$\$`k`cfXg

8YHU]`g. `K`cfX`Yb[ h. `%%\$!%) \$\$`k`cfXg`H\]g`UggYgga Ybh]g`]bhYbXYX`hc`hYghmci`f`XY] Y`cd]b[

Mci 'UfY'UXj ]gYX'hc'gY'YWimci f'ei Ygh]cb'k ]h'WUfYžUg'hYm d'cgY'X]ZZYfYbhWU'Yb[ Yg": cf']bghUbwWž  
ei Ygh]cb'cbY' ]g'ei ]h' [ YbYfU' -hc'Xc'k Y'žmci f'WU'Yb[ Y'k ]'VY'hc'VY'hc'dfcj ]XY'U'f][ cfc] g'UbX  
YZZYW]j Y'mgi ddcfYX'fU]cbU'Yž[ 'efMSV'cZg]a d'mdfcj ]X]b[ 'U'gYhcZVfcUX'UbX'[ YbYfU']gYX'ghUHYa Yb]g"  
K ]h'ei Ygh]cbg'fk c'UbX'h'fYžmci f'WU'Yb[ Y'k ]'VY'hc'g\ck 'h'Uhimci 'UfY'XYj Y'cd]b[ 'U'ghfcb[ 'cj YfU'  
i bXYfg]UbX]b[ 'cZ]ggi Yg'UbX#cf'W]g]g'Wca a i b]WU]h]cbž[ 'efMSV'cZg]a d'mdfcj ]X]b[ 'U'bUffck 'fYgdcbgY  
XfUk b'Zca '↑ghcbY'k YY\_'g'k cft'h'cZfYUX]b[ "

5ggYgga Ybh7f]hYf]U.'

Mci 'UfY'UXj ]gYX'hc'Zc'ck 'h\]g' [ YbYfU'Zcfa Uhk ]h' mci f'DfYgYbHh]cb"

%" #hfcXi W]h]cb"K \UhUfY'mci 'hU\_]b[ 'UVci h3'K \m]g'h\]g'hc d]WfY'Yj Ubh]f"Y"žk \mg\ci 'X'dYcd'Y W]fYŁ3'<ck 'UfY'mci 'hUW\_]b[ 'h\Y'hc d]WfK \Uh]g'mci f'UddfcUW\UbX#f'a Yh\cXc'c[ mŁ3 &" Cj Yfj ]Yk "K \UhUfY'h\Y'\_YmWŁb hYI hg3'K \UhUfY'h\Y'a cgh]a dcfUbhXYj Y'cda Ybhg3'K \]W\UfY h\Y'\_YmUgdYW]g'cZ h\Y' ]ggi Yg#W]g]g3 ' " 5bU'mg]g#fYWŁa a YbXU]h]cbg"K \UhUfY'h\Y'\_Yma ]ghU\_Yg'UbX#f'\_Ymigi W]WggYg'k ]h' fY[ UfXg'hc WŁa a i b]W]h]cbg'ghfU]h' m3'K <Mf\ck 'W]b'mci 'gi VghUbh]U]h' cf'gi ddcfhmci f'UbU'mg]gŁ3'K \Uh k ci 'X'mci 'fYWŁa a YbX3'K \UhUfY'mci f']bg][ \hg3'<ck 'W]b'mci 'gi ddcfhmci f'dc]bhg'k ]h' fY'Yj Ubh Z]W]gžXU]h]z'UbX#f'h\Yc fYh]W]Z'Ua Yk cf\_g3 (" 7cbWi ]g]cb"K \UhUfY'h\Y'\_Ym]hU\_YUk Umg'mci 'k ]g\ 'hc'YUj Y'mci f'Ui X]YbW'k ]h'3

K cf\_]b[ ']b'U'ga U' [ fci d'k ]'hmd]W]mVY'U'WŁa a cb'UW]j ]m]Zcf'k cf\_]b[ ']b'h\Y' ]bXi ghfm'5'\_Ym]dfYa ]gY VY\]bX'h\]g'UggYgga Ybh]Ug\_]g'Zcf'mci 'hc' h'fYUh'h\Y'WŁa d'YI ]h]Yg'UbX'i bW]fU]bh]Yg'cZ[ fci d'XmbUa ]W]g'UbX ]bh'fUW]h]cbg'Ug'U'Z' bXUa Ybh'U'UgdYW]h]cZ h\Y'YUfb]b[ 'dfcW]gg'—Ug'U'j U'i UV'Y'cddcfh] b]m]cZdfUW]W]b[ 'Zcf UbX'WŁa ]b[ 'hc'h'fa g'k ]h' Ub'UW]j ]m]hUh'mci 'k ]'b'YX'hc' VYWŁa Y'dfcZ]W]Ybhk ]h' "

5ggYgga Ybh'7 f]h'f]U.

- 5V] ]m]h'k cf\_'dfcZ]gg]cbU'mUg'U'h'Ua 'hc' hU\_Y'W]Uf[ Y'UbX'hc'YUX'U'DfYgYbHh]cb"
- 5V] ]m]h'gY'YW]UbX'XYj Y'cd'Ub'Uddfcdf]U]h' W]gY'gh' X mž'k ]h'g'WŁdY'Zcf'UbU'mg]g"
- 5V] ]m]h'WŁ'Y'fYbh'm]UbX'dYfgi Ug]j Y'mWŁa a i b]W]h'Y'\_Ym]XYUg'UbX'dc]bhg"
- 5V] ]m]h' d'fcj ]XY'Ub'YZZYW]j Y'UbX'gi W]b]W]h]c]j Yfj ]Yk ž'g\ck ]b[ 'gh'fcb[ 'i bXYfgh]UbX]b[ 'cZ h\Y fY'Yj Ubh]bXi ghfm'WŁb hYI hg'UbX' ]ggi Yg'fY'U]h]b[ 'hc'h\Y'gY'YW]YX'W]gY'gh' X m'
- 5V] ]m]h' d'fcj ]XY'a YUb]b[ Z' ]bg][ \hgž'UbU'mg]gž'UbX#f'fYWŁa a YbXU]h]cbgž'd'fcdYf'migi ddcfh'X'V m fY'Yj Ubh'WŁb'W]d'hgž'XU]h]z'UbX'h\Yc f m'
- 5V] ]m]h' fYg'dcbX'W]Uf'm]UbX'YZZYW]j Y'mk \Yb'W]U'Yb[ YX'k ]h'ei Ygh]cbg"

Gi Va ]gg]cb' b'ch'g.DfYgYbHh]cb'cb'm'bc'Hi fb]h]b'gi Va ]gg]cb'fYei ]fYX"

Hi fb]h]b'gYh]b[ . 'H\]g' ]g'bchU'Hi fb]h]b'Ugg][ ba Ybh

5ggYgga Ybh' . '7 f]h]W] '5bU'mg]g'CF '7 f]g]g'7ca a i b]W]h]cb'D'Ub

GHUfhXU]h' .

@Yb[ h' . '7 f]h]W] '5bU'mg]g'f&ž) \$\$!' \$\$\$'k cfXgŁ'CF '7 f]g]g'7ca a i b]W]h]cb'D'Ub'Ug'U'WŁ'UVcfU]h] Y'dU]f fl ž) \$\$!( \$\$\$'k cfXgŁ"

8YhU]g. 'H\YfY'UfY'h'c'W]c]W]g'Uj U]UV'Y' ]b'h'fa g'cZ h\]g'a U'cf'dfc'YW]m'ci 'W]b'gi Va ]h]Ub' ]bX]j ]Xi U' 7 f]h]W] '5bU'mg]g'f&ž) \$\$!' \$\$\$'k cfXgŁ'CF 'gi Va ]hU'7 f]g]g'7ca a i b]W]h]cb'D'Ub'Ug'U'WŁ'UVcfU]h] Y'dU]f fl ž) \$\$!( \$\$\$'k cfXgŁ'"H\]g' ]g'h\Y'Z]bU'UggYgga Ybh]Ug\_"K f]h'Y'b'ZYXVUW'ž']b'WŁb' bW]cb'k ]h'U'a Uf\_]b[ h'Ya d'U]h'"

5XX]h]cbU'XYhU]g.

H\]g'a U'cf'UggYgga Ybhk ]'VY'k cf'h'U'gi VghUbh]U'dYfW]b]U[ Y'cZmci f'Z]bU'a Uf\_' "h\Ug'VYYb'XY'YVYfU]h'Y'm XYg][ bXY'h\]g'k Umž'Ug'k cf\_]b[ ']b'h\Y' ]bXi ghfmk ]'VY'XYdYbXYbhcb'h\Y'gi W]Wgg'cZa U'cf'dfc'YW]g'mci 'UfY ]bj c'j YX'k ]h'"Gca Y'h]a Y'k ]'VY'gYh]Ug]XY' ]b'W]UggYg'U]h' ]b'h\Y'gYa Ygh'fž']b'cfX'Y'f'hc'k cf\_g\cd'h\Y'a U'cf'UggYgga Ybh'

H\YfY'UfY'rk c'Wc]Wg'Uj U]UV'Y'jb'Hyfa g'cZh.]g'a U'cf'dfc'YW'Mc'i 'Wb'gi Va ]hUb ]bX]j ]Xi U'7 f]h]W'5bU'mg]g'f&ž) \$\$\$! '\$\$\$k cfXglžCF 'gi Va ]hU'7 f]g]g'7 ca a i b]WU]cb'D`Ub`Ug`U`Wc``UVcfUh]j Y'dU]f fl ž) \$\$\$!( '\$\$\$k cfXgl'

: cf'hY'7 f]h]W'5bU'mg]gžmci f'hUg\_]g'hc'UbU'mgY'CB9`WUgY'ghi Xm'5'gY'YW]cb'cZh'fYY'dcgg]V'Y'WUgY'ghi X]Yg'hc'WkccgY'Zca`k ]''VY'dcghYX'cb'A ccX'Y'Uddfcl ]a UH'mrk c'k YY\_g'VY'ZcfY'hY'UggYgga Ybh XYUX'jbY''H\]g']g']bh'byX'hc'dfcj ]XY'gca Y'gYa V'UbW'cZhY'hja Y'dfYggi fYžgdcbhUbY]mž'UbX'`UW\_cZ ZcfYg][\h'hUhd'fcdYf'mWUfUW'f]gY'W]gYg'UbX' ]ggi Yg''FZWeWUSeWefgV]Wé i [^TWVdSi ` Xta\_ SUfgS^ W'hW fet S` V i [^ZShWaUUGdW i [fZ[ fZWbSef X]hWkVScé''7 UgY'ghi X]Yg'k ]''VY'X]gW ggYX' ]b''YW' fYg h'fci [ \ci h'hY'gYa YghYf''

5'gi [ [ YghYX'Zcfa Uh]g'Ug'Zc`ck g.



H\]g'Wca dUbm#cf[ Ub]gUhc'b'WU'VY'\mdch.Yh]WU'cf'UWU'U'"Zmci'WXccgY'Ub'UWU'U'Wca dUbm#cf[ Ub]gUhc'bž  
mci'k]`bYXX'hc'UHUWU'U'g][ bYX`YHYf'Zca'U'Wca dUbmifYdfYgYbHUj]Y'\c'X]b[ 'U'gYb]cf'a UbU[ Ya Ybh  
dcg]hc'bžWcbZ]fa ]b[ 'hUh'f%L'H\YmiUFY'[ ]j]b[ 'mci' dYfa ]gg]cb'hc'WYUHY'U'7 f]g]g'7 ca a g'D'Ub'Zcf'hY  
Wca dUbm#cf[ Ub]gUhc'b/f&"E'H\Y'Wca dUbm#cf[ Ub]gUhc'b'XcYg'bch\Uj Y'U'dfY!YI ]gh]b[ '7 f]g]g'7 ca a g'D'Ub"

: cf'hY'7 f]g]g'7 ca a i b]WUhc'b'D'Ubžmci'k]`VY'fYeI ]fYX'hc'UX\YfY'hc'UWUWdHYX'j]bXi ghfmidfUWU]WU

Gi Va ]gg]cb`cZ5ggYgga YbhHUg\_g

Gh XYbng`UfY`YI dYW`X`hc`di h`h`Y]f`bUa Yg`UbX`gh XYbhbi a VYfg`cb`Yj YfmdU[ Y`cZ`h`Y]f`Ugg][ ba Ybhg"

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

≠mci`YbWci bhYf`U`dfcV`Ya`k`Yb`U`h`Ya`dh]b[`hc`gi Va ]hmcif`Ugg][ ba Ybh`h`fci [ \`Hi`fb]h]b`z`d`YUgY`h`Y`d`cb`Y`9I`h`fb`U`Gi`ddcfhcb`-`'`,`)`''`'`%cf`Ya`U]`h`Ya`cb`[YI`h`fb`U`h`h`gi`ddcfh`i`bgk`"YXi`"Ui](#)

f`G][ b]Z]WbhmUZZYWhmci f`dYfZcfa UbWV`]b`UggYggUV`Y`k cf\_žVY`]hU`Zcfa U`YbX!cZgYa Yghf`YI Ua ]bUh]cbžU  
WUgg`hYghž`U`UVcfUhc fmi`hYghž`U`gYa ]bUf`dfYgYbUh]cb`cf`Ubmich`Yf`Zcfa`cZUggYgga`YbH`

: cf`Z`f`h`Yf`XYhU]`g`]b`fY`Uh]cb`hc`GdYWU`7`cbg]XYfUh]cb`]bWi`X]b[`K`Yb`hc`5dd`mž`<`ck`hc`5dd`m`UbX  
"Gi`ddcfh]b[`8`cW`a`YbUh]cb`"d`YUgY`fYZYf`hc`h`Y`GdYWU`7`cbg]XYfUh]cb`k`YVgh]Y`.

[\hdg.#gh`XYbhi`bgk`"YXi`"Ui`#gdYWU`!Wcbg\]XYfUh\]cb](#)

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

D`U[ ]Uf]ga `]g`i g]b[ `hY`k cfXg`cf]XYUg`cZchYfg`UbX`dfYgYbh]b[ `hYa `Ug`mci f`ck b" `hWUb`hU\_Y`a Ubm  
Zcfa gž Zca `XY`]VYfUHy`WXYUh]b[ `hc`UWV]XYbU`miW`cdm]b[ `Zca `U`gci fW`k ]hci hUW\_bck `YX[ Ya YbH`

I BGK `[ fci dg`d`U[ ]Uf]ga `]bhc`hY`Zc`ck ]b[ `WUHy[ cf]Yg.

7cdm]b[ .`i g]b[ `hY`gUa Y`cf`j Yfmg]a ]Uf`k cfXg`hc`hY`cf][ ]bU`hYI hcf]XYU`k ]hci hUW\_bck `YX[ ]b[ `hY  
gci fW`cf`i g]b[ `ei ch]cb`a Uf\_g`H\]g`U`gc`Udd`Yg`hc`ja U[ YgžUfhUbX`XYg][ b`dfc`YWgžUg`k Y`Ug  
dfYgYbU]cbg`k \Yfy`gca YcbY`dfYgYbh]g`Ubc`hYf`g:]XYUg`cf`k cfXg`k ]hci hWYX]hY[ cf]Yg.

- VYhYf'a UbU[ Y'mci f'h]a Y
- i bXYfgHUbX'mci f'f][ \hg'UbX'fYgdcbg]V']hYg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[ ]Uf]ga ž'Vc'dmf][ \hž' BGK 'Gh XYbh7cXY'cZ7cbXi WñUbX'5WñdñUV'Y'l gY'cZ  
I BGK '⇒H'F Ygci fW'g'Dc`]Wñ
-



F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

- K YVg]h' - F Ygci fWg`k ]`VY`Uj U]UV`Y`cb`h`Y`7ci fgY`A ccX`Y`k YVg]h'"

F YWca a YbXYX`F Ygci fWg

: i fh`Yf`F YUX]b[

7cca VgžK "H"/`<c`UXUmž`G">"f9Xg"ž`&\$\$%ž`FZW: S`VTaa] aX5d[e[e 5a\_`\_g` [USf[a`ž`YX]h`X`VmA U`XYbž  
A 5: 6`UW`k Y`

; U`ck Umž`7"/`?`k UbUg\!5]Xccž?`ž`&\$\$-`ž`BgT`U`DWSf[a`e`;eegW`S`V`5d[e[e`?`S`SYW

<agd S^aXBgT fUDWSf[a` e DWéWSdJZ

BgT fUDWSf[a` e DWh[W

f`H\]g`]g`U`]ghcZgi dd`Ya YbHfmiFYUX]b[ `fYgci fWgžk \]W`a UmVY`Y`dZ` `]b`Xc]b[ `Z` fH`Y`f`fYgYUfW`" Mci  
UfYžcZVéi fgYžYbWéi fU[ YX`h`a`cj`Y`VYmcbX`h`YgY`gi [ [ YghYX`h`I`hg"

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

Mci f`ZYXVUW` [ UH`Y`fYX`Zca` h`Y`gi fj Ymg`Uh`h`Y`YbX`cZ`h`Y`gYgg]cb`cZYfg`j U`i UV`Y`]bdi H`Mci f`  
YI dYf]YbW`g`UbX`gi [ [ Ygh]cbg`UfY`]a` dcfUbtž`UbX`h`YfY`]g`U`k`Umg`fcca`Zc`f`]a` dfcj`Ya`Ybh]b`h`fa`g`cZ`  
Wé`b`h`bh`UbX`h`UW`]b[ `gfU`h` [ ]Yg`"

⇒ U[ Y`7`fYX]h

H`Y`Wéj`Yf`]a` U[ Y`i`gYX`k`]h`h`]g`7ci fgY`C`i`h]bY`Ug`VY`Yb`c`V`H]bYX`Zca` `Ub`Ubc`bma`ci`g`cb`]bY`gci`fW`"

7F ⇒ CG

7F ⇒ CG`Dfcj`JYf`7`cXY`.\$\$\$`-` ;