



# MMAN4953

F YgYUfVX 'H\Yg]g' 7

HYfa 'C bY' '# '&\$&%

GWcc`cZA YWUbjWU`UbX`A Ubi ZUW# f]b[ `9b[ ]bYYf]b[ `#` I BGK `9b[ ]bYYf]b[

7ci fgY`Cj Yfj ]Yk

GHJZZ7cbhJW`8YHJ`g

7cbj Ybcfg

B Ua Y	9a Uj`	5j Uj`UVj]m	@cWUjcb	D\cbY
HfUWj`6UfVYf	hVUfVYf4 i bgk "YXi "Ui	D`YUgY`WcbhJW`Vm Ya Uj`cfj ]U`HYUa g	>%+`(\$%5	

GWcc`7cbhJW`bZcfa Uh]cb

@cWUjcb

I BGK `A YWUbj]WU`UbX`A Ubi ZUW`f]b[ `9b[ ]bYYf]b[

5]bgk cft\`Vi ]X]b[ `>%+ž@Yj Y`%

5Vcj Y`7cZZY`cb`7 Ua di g

<ci fg

-.\$\$-).\$\$da žA cbXUm=: f]XUm

f7`cgYX`cb`di V`]W`c`]XUmžGWcc`gWYXi `Y%aj Ybht \$bX`I b]j Yfg]mGZYX`cb`7 Ua di g

K YV

[GWcc`cZA YWUbj\]WU`UbX`A Ubi ZUW`f\]b\[ `9b\[ \]bYYf\]b\[](#)

[9b\[ \]bYYf\]b\[ `Gh`XYbhGi ddcfhGYfj \]Wg](#)

[9b\[ \]bYYf\]b\[ `bXi gfr\]U`HfU\]b\]b\[](#)

[I BGK `Gh`Xm5VfcUX`UbX`9I WUbj \]Y`fZcf`\]bVci bX`gh`XYbht](#)

[I BGK `: i h`fY`Gh`XYbht](#)

D\cbY

fZ`\*%&Ł`-` , ) ; ) \$\$`-`Bi WYi g`Gh`XYbh<i V

fZ`\*%&Ł`-` , ) `+\*\*%`-`9b[ ]bYYf]b[ `bXi gfr]U`HfU]b]b[

fZ`\*%&Ł`-` , ) `%-`-`I BGK `Gh`Xm5VfcUX`UbX`I BGK `9I WUbj ]Y`fZcf`]bVci bX`gh`XYbht

fZ`\*%&Ł`-` , ) `(\$`-`+`-`\$ ZZY`cb`7 Ua di g

9a U]

[9b\[ \]bYYf\]b\[ \]Gh XYbhGi ddcfhGYfj \]Wg](#) – W ffYbhghi XYbhYbei ]f]Yg

- Y"[ "Ybfc`a Yblždfc[ fYgg]cbžWUg\`fYei YgrgžWci fgY`]ggi Yg`cf`dfc[ fUa !fY`UhYX`ei Yf]Yg

[9b\[ \]bYYf\]b\[ \]`bXi gff\]U`HfU\]b\]b\[ \]`](#) – bXi gff]U`HfU]b]b[ ]`ei Ygh]cbg

[I BGK`Gh Xm5VfcUX`](#) – gh XmiUVfcUX`gh XYbhYbei ]f]Yg`fZcf`]bVci bX`gh XYbhgk

[I BGK`9I WUUb\]Y`](#) – gh XYbhYI WUUb]Y`Ybei ]f]Yg`fZcf`]bVci bX`gh XYbhgk

[I BGK`i h fY`Gh XYbhg](#) – dchYbh]U`gh XYbhYbei ]f]Yg

- Y"[ "UXa ]gg]cbgžZYgždfc[ fUa gžWYX]hffUbgZYf

[GWcc`C Z\]W`](#) – GWcc`[ YbYfU`cZ]W`UXa ]b]ghfU]cb`Ybei ]f]Yg

- B 6. hY`fY`Yj UbhYUa g`]ghYX`Uvcj Y`a i ghVY`WcbUWYX` - gh XYbhYbei ]f]Yg



H\Y`Wt i fgY`]g`hUi [ \hUg`Ub`]bX]j ]Xi U`fYgYUfW\`dfc`YWz`hc`XYj Y`cd`U`Yj Y`cZfYgYUfW\`g\_]`g`UbX  
Ui`h`bca`m`

## 5ggYgga Ybh

H\Y ZbU [ fUXY ZcfH\Yg]g'a UXY i d Zca 'H\Yg]g'5 f%) i lZ'H\Yg]g'6 f%\$i lZ'H\Yg]g'7 fYdcfhf' \$i lZ'H\Yg]g'7 dfYgYbUhc'b'f%\$i l'UbX'U'dUfh]W]dUhc'b'a Uf\_ Zca 'mci f'gi dYfj ]gcf'f) i l'

## 5ggYgga YbhHUg\_g

5ggYgga YbhHUg_g	K Y][ \h	8i Y'8UH	Gh XYbh@YUfb]b[ Ci hWca Yg'5ggYggYX
H\Yg]g'dfc'YWhUbX'fYdcfh	* \$i	: f]XUm) da 'K YY_ '%\$	%ž&ž' ž( ž)
H\Yg]g'dfYgYbUhc'b'	%\$i	K YXbYgXUmK YY_ '%fH67Ł	

## 5ggYgga Ybh8YHU]`g

5ggYgga Ybh% 'H\Yg]g'dfc'YWhUbX'fYdcfh

8YHU]`g.

H%

Dfc'YWh'fYdcfhf[ i ]XY'UbX'a Uf\_]b[ 'fi Vf]WUj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ'

H&.

Dfc'YWh' dXUH'fYdcfhf[ i ]XY'UbX'a Uf\_]b[ 'fi Vf]WUj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ'

H' .

: ]bU'dfc'YWh'fYdcfhf[ i ]XY'UbX'a Uf\_]b[ 'fi Vf]WUj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ'

DfYgYbUhc'b'f]bZca Uhc'b'k ]`VY'Uj U]'UV'Y'cb'h\Y'Wci fgY'A G'HYUa g'g]hYŁ'

.

5ggYgga Ybh& 'H\Yg]g'dfYgYbUhc'b

8YHU]`g.

H%

DfYgYbHjcb`f]bZcfa Ujcb`k j``VY`Uj Uj`UV`Y`cb`h\Y`Wti fgY`A G`HYUa g`g]hYk`

# F Ygci fWg

F YWca a YbXYX'F Ygci fWg

BchUj U]UV'Y

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

@UVcfUhcfmK cf\_g\cd' bZcfa Uh]cb

7CJ 8!%- 'BCH9.'H\Y'GWcc''UVcfUhcfmZUW]j]hYg'UFY'cdYb'hc'fYgYUFW' h\Yg]g'gh XYbhg/\ck Yj Yfz'UWWgg  
]g''ja ]hYX''Hc'Wca d'mk ]h' [ cj Yfba Ybh]gcW]U'X]ghUbW]b[ 'fYei ]fYa YbhgZ'Y"[ "Z( 'gei UFY'a YhYfg'dYf  
dYfgcbz'YUWX'fcca '\Ug'U'a Ul ]a i a 'WUdUW]m''ja ]h'k \]W'k ]''VY'a cb]hc'fYX'Vmih'Y'gi dYfj ]g]b[  
dfcZ'gg]cbU''ghUZZ'D'YUgY'WXYW'k ]h' h\Y''UVcfUhc'fmcZ]W'f']b'mci f'UFYU'VY'Zc'fY'UWWgg]b[ 'UbX'cVgYfj Y'h\Y  
'ja ]h'UbX'U''c'h\Y'f'gUZ'hmidfYW]i h]cbg"

Mci 'a i ghgYY\_[ i ]XUbW'UbX'Uddfcj U'Zca 'mci f'H\Yg]g'gi dYfj ]gcf'df]cf'hc'Ubmi'UVcfUhc'fmUW]j ]hYg"

H\Y''UVcfUhc'f]Yg'UFY'h\Y'fYgdcbg]V']]m'cZ'h\Y'ghUZZ]b]VX'Uf[ Y'Z'UbX'mci 'a i ghcdYfU'h'k ]h' ]b'h\Y'UWW'dh'X  
dfUW]W'g'cZ'h\Y''UVcfUhc'fm'VcbW'fbYX''@UVcfUhc'fm]ghUZZ'UFY'\][ '\mg\_]''YX'UbX'\Y'dZ ]/hU\_Y'Z ''UXj UbhU[ Y  
cZ'h\Y]f'YI dYfj]YbW' /\ck Yj Yfz'mci 'g\ci 'X'bc'hYI dYW'h'UVcfUhc'fm]ghUZZ'hc'hU\_Y'fYgdcbg]V']]m'Zc'f'mci f'h\Yg]g  
cf'W]ffmici hk cf\_'Zc'f'mci "

Z'mci f'dfc'YWh]bj c] Yg''UVcfUhc'fmk cf\_Z'Vcb'UW'h'h\Y'cZ]W'f] ]b]VX'Uf[ Y'fC => E'cZ'h\Y''UVcfUhc'fm]b'k \]W' mci  
k ]''VY'k cf\_]b[ 'Ug'gccb'Ug'dcgg]V'Y'hc'X]gW'gg'mci f'fYei ]fYa Ybhg''H\Ymk ]''ggj Y'mci 'k ]h' U'@UVcfUhc'fm  
5VW'gg'5ddfcj U'f'5E'Zc'fa 'k \]W' mci 'a i ghWca d'Y'h'UbX'fY'h'fb'hc'h\Y'C => "

[: cf'a cfY' \]bZcfa Uh\]cb'UVci hUWW'gg\]b\[ 'h\Y'GWcc' 'g' UVcfUhc'f\]YgZ'd'YUgY'j \]g\]h'h\Y'GWcc'  
k'YVg\]hY.'\h'fdg.##k k k "Yb\[ \]bYf\]b\[ "i bkg "YXi "Ui #a YVX'Ub\]W\]!Yb\[ \]bYf\]b\[ #Ygci fWg#UV!UWW'gg!\ck !hc!  
Zcfa g](#)

## K cf\_g\cd

Mci 'a i ghgYY\_[ i ]XUbW'UbX'Uddfcj U'Zca 'mci f'H\Yg]g'gi dYfj ]gcf'df]cf'hc'fYei Ygh]b[ 'Ubm'k cf\_g\cd  
UW]j ]hYg"



5`gh XYbhUWj ]hYg fYei ]f]b[ 'a Ubi ZJWñ fY' ]b'hY'A YWUbjWU`UbX'A Ubi ZJWñ f]b[ '9b[ ]bYYf]b[ 'fA A 9Ł  
k cf\_g\cd'g\ci 'X'VY'X]gW ggYX'k ]h'hY'k cf\_g\cd'dYfgcbbY`UhihY' ]bWd]cb'cZ'hY'k cf\_"H\Y'k cf\_g\cd  
dYfgcbbY`a i gh\Uj Y'hY'cddcfi b]mhc'UXj ]gY'UbX' ]bZi YbW'hY'XYg][ b'hc'\Y'd'a ]b]a ]gY'UggYa V'mž  
a Ubi ZJWñ fY'cf'Z bW]cbU`dfcV'Ya g"

H\Y'k cf\_g\cd' ]g'i gi U`m]b'j Yfm\][ \ 'XYa UbX" 'Zmci 'fYei ]fY'hY'k cf\_g\cd'hc'a Ubi ZJWñ fY'Yei ]da Ybh  
YggYbh]U`hc'mci f'hYg]gž'hYb'a U\_Y'gi fY'hUhmci 'X]gW gg'mci f'fYei ]fYa Ybhg'Ug'YUfmUg'dcgg]V'Y'k ]h'hY  
K cf\_g\cd#@UVcfUhcfmA UbU[ Yf"Mc' ]g\ci 'X'dfcj ]XY'Yb[ ]bYYf]b[ 'XfUk ]b[ g'k \]W'UfY'Z]fghUddfcj YX'Vm  
hY'UVcfUhcfmC =7"Mc' ]g\ci 'X'a U\_Y'Yj YfmYZc'fhc'a ]b]a ]gY'hY'K cf\_g\cd'cUX'Vma cX]h]b[ 'YI ]gh]b[  
Yei ]da YbhfU'hYf'hU'Vi ]X]b[ 'Zca 'bYk žUbX'Vm\_YYd]b[ 'mci f'XYg][ bg'g]a d'Y



UggYgga YbhdYfZcfa UbWžmci 'UfY'Y'[ J]V'Y'hc'Udd'mZcf'GdYWU'7 cbg]XYfUhc'b'df]cf'hc'gi Va ]h]b[ 'Ub  
UggYgga Ybhcf'g]h]b[ 'Ub'YI Ua "

I BGK 'bck '\Ug'U': [Jhrc'G\]h#Gi Va \]hfi\\_Yžk \\]](#)W'a YUbg'hUh]Zmci 'UhtYa dhUb'YI Ua 'cf'gi Va ]hU'd]YW'cZ  
UggYgga Ybhž'mci 'UfY'XYWUf]b[ 'mci fgY'Z]hYbci [ \ 'hc'Xc'gc'UbX'WUbbch'Uhtf'Udd'mZcf'GdYWU'  
7 cbg]XYfUhc'b"

: cf'XYHU]g'cZUdd'm]b[ 'Zcf'GdYWU'7 cbg]XYfUhc'b'UbX'WcbX]h]cbg'Zcf'hY'Uk UfX'cZgi dd'Ya YbhUfm  
UggYgga Ybhž'd'YUgY'gYY'hY'jbZcfa Uhc]b'cb'I BGK 'g'[GdYWU'7 cbg\]XYfUhc'b'dU\[Y](#)"

D'YUgY'bc'hY'hUhighi XYbhg'k ]'bchVY'fYei ]fYX'hc'dfcj ]XY'UbmXcW a YbhUfmYj ]XYbW'hc  
gi ddcfhiUVgYbW'g'Zca 'UbmWUggYg'a ]ggYX'VYWU]i gY'cZ7CJ -8!%- 'di V']W\YU'h'a YUgi fYg'gi W'Ug  
]gc'Uh]cb" I BGK 'k ]'bchVY' ]bg]gh]b[ 'cb'a YX]W'Wf]h]Z]W]hYg'Zca 'UbmcbY'XYYa YX'hc'VY'U'dcg]h] Y'WUgYž  
cf'k \Yb'hYm\Uj Y'fYVčj YfYX" 'Gi W'Wf]h]Z]W]hYg'UfY'X]Z]W'h'hc'cVHU]b'UbX'di hUb'i bbYW'ggUfmgfU]b'cb  
gh XYbhg'UbX'a YX]W'ghUZZ'

5dd']W]h]cbg'Zcf'gdYWU'Wcbg]XYfUhc'b'k ]'VY'fYei ]fYX'Zcf'UggYgga YbhUbX'dUfh]W]dUhc'b'UVgYbW'g'—  
Vi hbc'XcW a YbhUfmYj ]XYbW'Zcf'7CJ -8 %- ]'bYgg'cf']gc'Uh]cb'k ]'VY'fYei ]fYX"

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

I BGK `Ug`Ub`cb[c]b[ `Wca a ]ha Ybhlc`ZcghYf]b[ `U`W`hi`fY`cZ`YUfb]b[ `]bZcfa YX`VmiUWUXYa ]W]bhY[ f]m`5`  
I BGK `gh`XYbthg`Uj`Y`U`fYgdcbg]V`]mhc`UX`YfY`hc`h`g`df]bW]d`Y`cZUWUXYa ]W]bhY[ f]m`D`U[ ]Uf]ga  
i bXYfa ]bYg`UWUXYa ]W]bhY[ f]m]UbX`]g`bchlc`YfUHYX`Uhl`BGK`"B`SY[Sde\_`SfG@E|`[e VWX`W`Se ge[`Y`  
fZWl`ad/e ad[VWSe aXafZWde S`V bSee[`Y`fZW\_`aXSe kagdai`ž

D`U[ ]Uf]ga`]g`U`mdY`cZ]bhY`YWfi`U`h`YZh`#hW]b`hU`\_Y`a`UbmiZcfa`gžZca`XY`]VYfUHY`WXYU]b[ `hc`UWUXYbH]m`  
Wcdm]b[ `Zca`U`gci`fWY`k`]h`ci`hUW\_bck`YX[`Ya`Ybh`I`BGK` `Ug`dfcXi`WYX`U`k`YVg]hY`k`]h`U`k`YU`h`cZ`  
fYgci`fWYg`hc`gi`ddcfhghi`XYbthg`hc`i`bXYfgtUbX`UbX`Uj`c]X`d`U[ ]Uf]ga`ž`]g]h`[gh`XYbthi`bgk`"YXi`"Ui`#d`U\[ \]Uf\]ga`"](#)  
H\Y`@YUfb]b[ `7`YbhfY`Ugg]gth`ghi`XYbthg`k`]h`i`bXYfgtUbX]b[ `UWUXYa ]W]bhY[ f]m]UbX`ck`bchlc`d`U[ ]Uf]gY`  
H\YmiU`gc`lc`X`k`cf\_g`cdg`UbX`W]b`Y`d`gh`XYbthg`cbY!cb!cbY"

Mci`UfY`U`gc`fYa`]bXYX`h`UhWfYZ`hja`Y`a`UbU[`Ya`Ybh]g`Ub]a`dcffUbhdufhicZghi`XmiUbX`cbY`cZ`hY`

5 WUXYa ]W=Zcfa Uh]cb

7 fYX]hdc]bHg

7 ci fgY`WYX]h]g`WU`W`UH`X`]b`I` b]hg!C Z 7 fYX]hfl C 7 E`H\Y`bcfa U`k cf`cUX`YI dYWW]h]cb`Zc`f`cbY`I C 7 ]g`Uddfcl ]a UH`m&) ` \ci fg`dYf`hYfa "H\]g`]bW`i XYg`WUgg`Wcb`hUW`h\ci fg`z`df]j UH`g`h Xn`z`ch`Yf`YUfb]b[ UW`j ]h]Yg`z`dfYdUfU]h]cb`UbX`h]a Y`gdYb`hcb`U`UggYggUV`Y`k cf`\_"

A cghWci fgYk cf`\_Wci fgYg`Uhi BGK`UFY`\*`I C 7`UbX`]bj`c`j`Y`Ub`Ygh]a UH`X`%) \$` \ci fg`hc`Wca d`YH`z`Zc`f`Vch fY[ i`Uf`UbX`]b`h`bg]j`Y`hYfa g`"9UW`Wci fgY`]bW`i XYg`U`dfYgW`]VYX`bi a VYf`cZ` \ci fg`dYf`k`YY`\_`f`k`#`E`cZ gW`YXi`YX`ZUW`!hc!ZUW`UbX`#`f`cb`]bY`Wcb`hUW`i`5bm`UXX]h]cbU`h]a Y`VY`mcbX`h`Y`dfYgW`]VYX`Wcb`hUW`h\ci fg g\ci`X`VY`gdYb`h]b`a U`\_]b[ `gi`fY`h`U`h`m`c`i`i`bXYfg`h`U`b`X`h`Y`Y`V`h`fY`a UH`f]U`z`Wca d`Y`h]b[ `h`Y`g`Y`h Ugg][`ba`Yb`hg`z`Z`f`h`Y`f`Y`UX]b[ `z`UbX`fYj`]g]b[ `Zc`f`Ubm`YI`Ua`]b`U`h]`cbg`"

C b!WJa di g`WUgg`UH`Y`b`X`U`b`W`Y`

Di V`]WX]ghU`b`W]b[ `WcbX]h]cbg`a i ghVY`Zc`ck`YX`Zc`f`U`ZUW`!hc!ZUW`WUggYg`"Hc`Ybgi`fY`h`]g`z`cb`m`g`h`i`XY`b`hg`"

⇒ dcfhUbh@]b\_g

- [A ccX`Y](#)
- [@UV`5WV`gg](#)
- [<YU`h`UbX`GUZYhm](#)
- [7ca`di`hb\[`: UW`hYg](#)
- [Gh`XYbhF`Ygci`fW`g](#)
- [7ci`fgY`Ci`h\]bYg](#)
- [9b\[ \]bYYf\]b\[ `Gh`XYbhGi`ddcfhGYfj`\\_W`g:7YbhfY](#)
- [A`U`YfgdUW`](#)
- [I`BGK`H\]a`YhUV`Y](#)
- [I`BGK`<UbXVcc`](#)
- [I`BGK`A`YWXUb\]W`UbX`A`Ubi`ZUW`f\]b\[ `9b\[ \]bYYf\]b\[](#)
- [9ei`\]hUV`Y`@YUfb\]b\[ `GYfj`\\_W`g](#)

⇒ U[ Y`7`fYX]h

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

7F ⇒ CG

7F ⇒ CG`Dfcj`JYf`7`cXY`.\$\$\$-` ;

5W\_bck`YX[ Ya`YbhcZ`7`ci`b]fm

K`Y`UW\_bck`YX[ Y`h`Y`6YXY[ U`d`Ycd`Y`k` \c`UFY`h`Y`fUX]h]cbU`W`ghcX]Ubg`c`Z`h`Y`UbXg`cb`k` \]W`I`BGK`  
?`Ybg]b[ hcb`W]a`di`g`]g`c`W]h`Y`X`"

5ddYbX]l . '9b[ ]bYYfg'5i ghfU`U'f95E'DfcZYgg]cbU`'9b[ ]bYYf'7ca dYhYbWm  
 GHUbXUfX

Dfc[ fUa 'hYbXYX'@YUfb]b[ 'Ci hWta Yg	
? bck `YX[ Y'UbX'g_]`VUgY	
D9%"%7 ca dfY\Ybg]j YzhYcfmVUgYX'i bXYfghUbX]b[ 'cZhY'i bXYfd]bb]b[ 'bUh fU`UbX d\mg]WU`gWYbWg'UbX'hY'Yb[ ]bYYf]b[ 'Z bXUa YbH'g'Udd`]WUV'Y'hc'hY'Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%"&'7 cbWdh U`i bXYfghUbX]b[ 'cZhY'a UhYa Uh]Wg'z'bi a Yf]WU`UbU`mg]g'ghUhgh]Wg'z'UbX Wta di h'f'UbX']bZ'fa Uh'cb'gWYbWg'k \]W' i bXYfd]b'hY'Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%" " 'h!XYdh'i bXYfghUbX]b[ 'cZgdYWU`]ghVcX]Yg'cZ_bck `YX[ Y'k ]h]b'hY'Yb[ ]bYYf]b[ X]gWd`]bY	
D9%"('8]gWfba Ybhcz_bck `YX[ Y'XYj Y`cda YbhUbX'fYgYUfW'X]fYW]cbg'k ]h]b'hY Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%"') ? bck `YX[ Y'cZYb[ ]bYYf]b[ 'XYg][ b'dfUW]W'UbX'Ve'bhYi h U`ZUW'c'fg]a dUW]b[ 'hY Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%"* 'i bXYfghUbX]b[ 'cZhY'gW'cdY'z'df]bWd`Yg'z'bcfa g'z'UW'Ve'ci bhUV]']h]Yg'UbX'Vci bXg'cZ gi ghU]bUV'Y'Yb[ ]bYYf]b[ 'dfUW]W' ]b'hY'gdYW]ZWX]gWd`]bY	
9b[ ]bYYf]b[ 'Udd`]WU]h'cb'UV`]m	
D9%"%5dd`]WU]h'cb'cZYghUV`]g\YX'Yb[ ]bYYf]b[ 'a Yh'cXg'hc'Wta d'YI'Yb[ ]bYYf]b[ 'dfcV'Ya gc`]b[	
D9%"&'&: 'i YbhUdd`]WU]h'cb'cZYb[ ]bYYf]b[ 'h'W]b]ei Yg'z'hc'c'g'UbX'fYgci fW'g	
D9%" " '5dd`]WU]h'cb'cZgmg'hYa Uh]WYb[ ]bYYf]b[ 'gmb'hYg]g'UbX'XYg][ b'dfcW'ggYg	