



# MMAN2700

H\Yfa cXmbUa ]Wg

HYfa `C.bY`##`&\$&%

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


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

7ci fgY'8YhJ]`g


D`YUgY`fYZf`hc`h`Y`]bZcfa Uhcb`]b`A ccX`Y

5XX]h]cbU`7 ci fgY`-bZcfa Uh]cb

H\]g`]g`U`\*`i`b]hcZ`WfYX]hfl`c7`L`Wci`fgYz`UbX`]bj`c`j`Yg`,`!%\$`\\ci`fg`dYf`k`YY`\_`f`h`#`L`c`Z`Z`U`W`!`h`!`Z`U`W`W`c`b`h`U`W`h`  
5XX]h]cbU`h]a`Y`g`l`ci`X`V`Y`gdYbh]b`a`U`\_]b[`i`gi`fY`h`U`h`m`c`i`i`b`X`Y`f`g`h`U`b`X`h`h`Y`Y`W`h`f`Y`a`U`h`f`]U`z`W`c`a`d`Y`h`b[`h`h`Y`  
gYhcZ`Z`c`fa`Uh]`Y`U`b`X`gi`a`a`Uh]`Y`U`gg][`ba`Y`b`h`g`z`z`f`h`h`Y`f`f`Y`U`X]b[`z`U`b`X`f`Y`j`]g]b[`i`Z`c`f`U`b`m`Y`I`U`a`]b`U`h]`c`b`g`"

5ggYgga Ybh

5ggYgga YbhHUg\_g

5ggYgga YbhHUg_	K Y][ \h	8i Y'8Uŋŷ	

Gi Va ]gg]cb' bchYg. 'A ccX`Y`< UbX` ɓ

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GHUfhXUHY. ' # #&\$&%

@Yb[ h\.'G\cfh

8YHU]`g.

5b`Ugg][ ba YbhXYg][ bYX`tc`YbWci fU[ Y`ghi XYbhg`tc`Wca dUfY`h\YcfYh]WU`UbU`mg]g`cZhYfa cXnbUa ]W  
XYj ]Wg`k ]h`h\Y`cdYfU]cb`cZh\cgY`XYj ]Wg`]b`U`fYU`!k cfX`WcbhYI h'

Gi Va ]gg]cb' bchYg. 'A ccX`Y`< UbX` ɓ









6f]b[ 'U'W'W 'Uhc'hc 'U''UVcfUhc'fmdYf]cXg''

Mci 'k ]''bchVY'UXa ]HhY'hc'h'Y''UVcfUhc'fmi b`Ygg'mci 'UfY'Uddfcdf]UH'`mXfYggYX'Zcf'gUZY'k cf\_]b[ ž  
\Uj Y'U''UVcfUhc'fmVcc\_ž'U'W'W 'Uhc'f'UbX'dfYgYbh'h'Y'Ugg][ bYX'dfY`ja ]bUfmk cf\_''

>STadSfack E SXWfk

5''ghUZZUbX'gh XYbhg'a i ghcVgYfj Y'U''gUZY'hmfYei ]fYa Ybhg ]b'h'Y''UVcfUhc'fm'Mci 'a i ghW'a Y'hc'h'Y  
'UVcfUhc'fmXfYggYX'Zcf'k cf\_žBC '@C C G9'CF '65; ; M7@C H< B; žBC 'G5B85@G'CF '65F9': 99H"  
6YZcfY'VY[ ]bb]b[ 'UbmYI dYf]a Ybtž]bgdYWh'U''Yei ]da Ybhmc'i 'k ]''i gY'Zcf'dchYbh]U''\UnUfXg"K \]Y'i g]b[  
'UVcfUhc'fmYei ]da Ybtž\_YYd'U'YfhZcf'UbmXYj Y'cd]b[ '\UnUfXžY"[ "i bi gi U'bc]gYžj ]VfU]cbž'i bi gi U'XU]U  
hfYbXg'YhW'



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'YUg'gYY'hY'jbZcfa Uhc]b'cb'I BGK 'g' [GdYWU'7 cbg\]XYfUhc'b'dU\[ Y"](#)

D'YUgY'bc'hY'hUhghi XYbhg'k ]'bchVY'fYei ]fYX'hc'dfcj ]XY'UbmXcW a YbhUfmYj ]XYbW'hc  
gi ddcfhUVgYbW'g'Zca 'UbmWUggYg'a ]ggYX'VYWU] 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]WUhg'Zca 'UbmcbY'XYYa YX'hc'VY'U'dcg]h] Y'WUgYž  
cf'k \Yb'hYm\Uj Y'fYVčj YfYX" 'Gi W'Wf]h]WUhg'UfY'X]Z]W'h'hc'cVhU]b'UbX'di hUb'i bbYW'ggUfm]gh]U]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`XYbhg`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`YfUHX`Uhl`BGK`"B`SY[Sde\_`SfG@E|`[e VWX` VW`Se ge[`Y`  
fZWi`ad/e`ad[VWSe`aXafZW`S`V`bSee[`Y`fZW\_`aXSe`kagdai``ž

D`U[ ]Uf]ga` ]g`U`hmdY`cZ]bhY`YW`i`U`h`YZ`i`#iW]b`hU`\_Y`a`UbmiZcfa`gž`Zca`XY`]VYfUHX`WX`YU]b[ `hc`UWUXYbH`U`m`  
W`dm]b[ `Zca`U`gci`fW`k`]h`ci`hUW`bck`YX[`Ya`Ybh`I`BGK` `Ug`dfcXi`WX`U`k`YVg]h`k`]h`U`k`YU`h`cZ`  
fYgci`fW`g`hc`gi`ddcfghi`XYbhg`hc`i`bXYfgHbX`UbX`Uj`c]X`d`U[ ]Uf]ga`ž`]g]h`[gh`XYbh`i`bgk`"YXi`"Ui`#d`U\[ \]Uf\]ga`"](#)  
H`Y`@YUfb]b[ `7`YbhY`Ugg]ghg`gh`XYbhg`k`]h`i`bXYfgHbX]b[ `UWUXYa ]W]bhY[ f]m]UbX`ck`bchlc`d`U[ ]Uf]gY`  
H`Y`mi`U`gc`lc`X`k`cf\_g`l`cdg`UbX`W]b`Y`d`gh`XYbhg`cbY!`cb!`cbY`"

Mci`U`fY`U`gc`fYa`]bXYX`h`UhWUfYZ``h`a`Y`a`UbU[`Ya`Ybh]g`Ub`]a`dcfHbhdUfhcZghi`XmiUbX`cbY`cZ`h`Y`  
]X`Ybh]Z`Y`X`W]i`gYg`cZ`d`U[ ]Uf]ga` ]g`d`ccf`h`a`Y`a`UbU[`Ya`Ybh`G`h`XYbhg`g`l`ci`X`U`ck`gi`Z`W]Y`bh]h`a`Y`Z`c`f`  
fYgYUfW`ž`X`fU]h]b[ `UbX`h`Y`dfcdYf`fY`Z`fY`bW]b[ `cZ`gci`fW`g`]b`dfY`dUf]b[ `U`UggYgga`Ybh]Ug\_g`"

ž`d`U[ ]Uf]ga` ]g`Z`ci`bX`]b`mci`f`k`cf`\_`k`Y`b`mci`U`fY`]b`Z`fghmY`Ufž`mci`f`Y`W`i`fY`f`k`]`c`Z`Y`f`mci`Ugg]ghU`bW`hc`  
]a`dfcj`Y`mci`f`UWUXYa ]Wg\_]`g`"H`Y`ma`UmUg\_`mci`hc`cc\_`Uhgca`Y`cb`]bY`fYgci`fW`gž`U`hY`bX`h`Y`@YUfb]b[  
7`YbhY`ž`cf`gca`Y`h`a`Yg`fYgi`Va`]h`mci`f`k`cf`\_`k`]h`h`Y`dfcV`Ya`Z]`YX`"<ck`Yj`Yf`a`cfY`gYf]ci`g`]bgHbW`g`]b`Z`fgh`  
mY`Ufž`gi`W`Ug`gh`U`]b[ `UbchYf`gh`XYbhg`k`cf`\_`cf`dU]b[ `gca`YcbY`hc`Xc`mci`f`k`cf`\_`ž`a`UmVY`]bj`Ygh[`UH`X`  
i`bXYf`h`Y`G`h`XYbhA`]gW`bXi`W`h`DfcW`Xi`fYg`"

F`YdYUH`X`d`U[ ]Uf]ga`fYj`Yb`]b`Z`fghmY`Ufž`d`U[ ]Uf]ga`U`Z`Y`f`Z`fghmY`Ufž`cf`gYf]ci`g`]bgHbW`gž`a`UmU`gc`VY`  
]bj`Ygh[`UH`X`i`bXYf`h`Y`G`h`XYbhA`]gW`bXi`W`h`DfcW`Xi`fYg`"H`Y`d`Yb`U`h`Y`g`i`bXYf`h`Y`dfcW`Xi`fYg`W]b`]bW`i`XY`  
U`fY`Xi`W`h`cb`]b`a`Uf\_gž`Z]`]b[ `U`W`i`fgY`cf`Zc`f`h`Y`a`cghgYf]ci`g`a`UH`Y`fg`f]`\_Y`d`U[ ]Uf]ga` ]b`Ub`l`cbci`fg`  
h`Y`g]g`L`Yj`Yb`gi`gdYbg]cb`Zca`h`Y`i`b]`Yfg]m`H`Y`G`h`XYbhA`]gW`bXi`W`h`DfcW`Xi`fYg`UfY`Uj`U]UV`Y`Y`fY`.

[k`k`k`"\[g`i`bgk`"YXi`"Ui`#d`U\[ \]Uf\]ga`\]W`<`cb`Y`g`m`i`U`b`X``D``U`\[` \]`U`f`\]`g`a`"\]`g`Z`c`i`b`X`\]`b`m`c`i`f`k`c`f`\\_`k`Y`b`m`c`i`U`f`Y`\]`b`Z`f`g`h`m`Y`U`f`ž`m`c`i`f`Y`W`i`f`Y`f`k`\]`c`Z`Y`f`m`c`i`U`g`g`\]`g`h`U`b`W`h`c`\]`a`d`f`c`j`Y`m`c`i`f`U`W`U`X`Y`a`\]`W`g`\\_\]`g`"H`Y`m`a`U`m`U`g`\\_`m`c`i`h`c`c`c`\\_`U`h`g`c`a`Y`c`b`\]`b`Y`f`Y`g`c`i`f`W`g`ž`U`h`Y`b`X`h`Y`@`Y`U`f`b`\]`b`\[`7`Y`b`h`Y`ž`c`f`g`c`a`Y`h`a`Y`g`f`Y`g`i`V`a`\]`h`m`c`i`f`k`c`f`\\_`k`\]`h`h`Y`d`f`c`V`Y`a`Z`\]`Y`X`"<`c`k`Y`j`Y`f`a`c`f`Y`g`Y`f`\]`c`i`g`\]`b`g`H`b`W`g`\]`b`Z`f`g`h`m`Y`U`f`ž`g`i`W`U`g`g`h`U`\]`b`\[`U`b`c`h`Y`f`g`h`X`Y`b`h`g`k`c`f`\\_`c`f`d`U`\]`b`\[`g`c`a`Y`c`b`Y`h`c`X`c`m`c`i`f`k`c`f`\\_`ž`a`U`m`V`Y`\]`b`j`Y`g`h`\[`U`H`X`i`b`X`Y`f`h`Y`G`h`X`Y`b`h`A`\]`g`W`b`X`i`W`h`D`f`c`W`X`i`f`Y`g`"](#)

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 dYWWUh]cb`Zc`f`cbY`I C 7 ]g`Uddfcl ]a UH`m&) `\\ci fg`dYf`hYfa "H\]g`]bW`i XYg`WUgg`WcbhUW`h\ci fg`z`df]j UH`g`h Xn`z`ch`Yf`YUfb]b[ UW`j ]hYg`z`dfYdUfU]cb`UbX`h]a Y`gdYbhc`b`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`]bH`bg]j`Y`hYfa g`"9UWX`Wci fgY`]bW`i XYg`U`dfYgW`]VYX`bi a VYf`cZ`\\ci fg`dYf`k`YY`\_`f`k`#`E`cZ gW`YXi`YX`ZJW`!hc!ZJW`UbX`#`f`cb`]bY`WcbhUW`i`5bmUXX]h]cbU`h]a Y`VYmc`bX`h`Y`dfYgW`]VYX`WcbhUW`h\ci fg g\ci`X`VY`gdYbh]b`a U\_]b[ `gi`fY`h`Uhmci`i`bXYfg`h`UbX`h`Y`YV`h`fY`a UH`f]U`z`Wca d`Yh]b[ `h`Y`g`Yh Ugg][`ba`YbHg`z`Z`f`h`Yf`fYUX]b[`z`UbX`fYj`]g]b[ `Zc`f`UbmYI`Ua`]bU]cbg"

C b!WJa di g`WUgg`UH`Y`bX`Ub`W`

Di V`]WX]ghUbW]b[ `WcbX]h]cbg`a i ghVY`Zc`ck`YX`Zc`f`U`ZJW`!hc!ZJW`WUggYg`"Hc`Ybgi`fY`h`]g`z`cb`m`g`h`XYbHg

⇒ 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`YWX`Ub\]W\]`UbX`A`Ubi`ZUW`h`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`]XYf`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`g]hX]Ubg`cZ`h`Y`UbXg`cb`k` \]W`I`BGK`  
?`Ybg]b[ hcb`W]a`di`g`]g`cW]hYX"



5ddYbX|l . '9b[ ]bYYfg'5i ghfU`U'f95Ł'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 YžhYcfmVUgYX'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]Wgžbi a Yf]WU`UbU'mg]gžghUhgh]WgžUbX Wta di h'f'UbX']bZcfa 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'WcbhYi h U`ZUWc'fg]a dUW]b[ 'hY Yb[ ]bYYf]b[ 'X]gWd`]bY	
D9%"* 'i bXYfghUbX]b[ 'cZhY'gWc'dYždf]bWd`Ygžbcfa gžUW]c' bHUV]']h]Yg'UbX'Vci bXg'cZ gi gh]bUV'Y'Yb[ ]bYYf]b[ 'dfUW]W' ]b'hY'gdYW]ZWX]gWd`]bY	
9b[ ]bYYf]b[ 'Udd']WU]cb'UV']]m	
D9%"%5dd']WU]cb'cZYghUV]g\YX'Yb[ ]bYYf]b[ 'a Yh'cXg'hc'Wta d'Yl'Yb[ ]bYYf]b[ 'dfcV'Ya gc'] ]b[	
D9%"&:'i YbhUdd']WU]cb'cZYb[ ]bYYf]b[ 'h'W]b]ei Ygž'hc'g'UbX'fYgci fW'g	
D9%" " '5dd']WU]cb'cZgmg]Ya Uh]WYb[ ]bYYf]b[ 'gmb'hYg]g'UbX'XYg][ b'dfcW'ggYg	
D9%"('5dd']WU]cb'cZgmg]Ya Uh]WUddfcUW]Yg'hc'hY'WcbXi W]UbX'a UbU[ Ya YbhcZYb[ ]bYYf]b[ dfc'YW]g	
DfcZYgg]cbU`UbX'dYfgcbU`Uhf]Vi hYg	
D9' "%9h]WU`WcbXi W]UbX'dfcZYgg]cbU`UW]c'i bHUV']]m	
D9' "&'9ZYW]j Y'cfU`UbX'k f]hYb'Wta a i b]WU]cb']b'dfcZYgg]cbU`UbX`UmXca U]bg	
D9' "' '7fYUh]j Yž]bbcj Uh]j Y'UbX'dfc!UW]j Y'XYa YUbc'f	
D9' "( 'DfcZYgg]cbU`i gY'UbX'a UbU[ Ya YbhcZ]bZcfa Uh]cb	
D9' )" 'C'fXYf'ma UbU[ Ya YbhcZgY'Zi'UbX'dfcZYgg]cbU`WcbXi W]	
D9' "*" '9ZYW]j Y'hYUa 'a Ya VYfg\]d'UbX'hYUa ``YUXYfg\]d	



