



IEST5007

Dc`j]WU`9Wt`c[m`Gi ghU]bUV`Y`8Yj Y`cda Ybh/`>i gh]VW

HYfa`Cby`#`&\$&%

GWcc`cZ<i a Ub]h]Yg`UbX`@Ub[i U[Yg`#`I BGK`5 frg`UbX`GcWU`GWYbWg

7ci fgY`Cj Yfj]Yk

GHJZ7cbHJW`8YHU]`g

7cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cW]hcb	D\cbY
8Ub]Y`F cV]bgcb	X"fcV]bgcb4 i bgk "YXi "Ui	VmUddc]bħa Ybh	F cca ' ' *\$ A cfj Yb'6fck b	\$(+, ' & ' +- &

GWcc``7cbHJW`bZcfa U]hcb

GWcc``cZ<i a Ub]hYg`UbX:@Jb[i U[Yg

@cW]hcb. 'GWcc``C Z]WžA cfj Yb'6fck b'6i]X]b[ž@Yj Y`&ž&),

CdYb]b[' <ci fg. 'A cbXUm! : f]XUmž - Ua '!) da

D\cbY. 'ž*%&'-' ,) :%*, %

: Ul. 'ž*%&'-' ,) ; +\$)

9a U]: [\U`4 i bgk "YXi "Ui](#)

7 ci fgY'8YHJ]`g

7 fYX]hDc]bqg *`

Gi a a UfmicZ`hY'7 ci fgY

H\]g'gi V`YVhU_Yg'Ub`]bhYfbU]cbU`dYfgdYVWj Y`cb`YVc`c[]WU`UbX`gcWU`]bYei]mUbX`c`hYf[`cVU`
WU`Yb[YgZ`ZcW`g]b[`cb`cb[c]b[`]a dUWg`cZVc`cb]gU]cbZ`hY`fc`Y`cZYbj]fcb`a`YbH`U`W`b]Yb]cbg`UbX`fUXY
fi`YgZ`UbX`hY`]a`dUW`icZ[`cVU`[`cj`YfbUbW`g`hU]Y[]Yg`gi`W`Ug`hY`"gi`ghU]bUV`Y`XYj`Y`cda`Ybh[`cU`g`"H\]g
W`i`fgY`k`]`VY`cZdUf]W`Uf`]bhYfYgh]Zmci`UfY`W`bW`fbYX`k`]h`]ggi`Yg`cZ[`cVU`]bYei`U`]mZ`Ybj`]fcb`a`YbH`
↑gh]WZ`UbX`hY`fc`Yg`cZ`hY`ghU]Y`UbX`Wj`]`gcW]Ym`'b`h`g`W`i`fgY`Z`mci`k`]`YI`d`c`fY`hY`Ybj`]fcb`a`YbH`
WU`Yb[Yg`h`U`hZUW`hY`"; `cVU`Gci`h`"UbX`Yb[U[Y`]b`U`dfcXi`Wj`Y`W]hei`Y`cZbYc`]VYfU`a`cXY`g`cZ
YV`bca`]W[`fck`h`UbX`XYj`Y`cda`Ybh`h`U`i`bXYf]Y`h`YgY`WU`Yb[Yg`"H\Y`W`i`fgY`dfcj`]XYg`mci`k`]h`Ub
i`bXYfghUbX]b[`cZ`hY`\]g`h`f]WU`Z`dc`]h]WU`Z`UbX`]bhYfbU]cbU`W`b`h`i`h`g`k`]h`]b`k`\]W`]ggi`Yg`cZYbj`]fcb`a`YbH`
UbX`"XYj`Y`cda`YbH`UfY`ZUa`YXZ[`cj`YfbYXZ`UbX`f]b`gca`Y`WUgYg`UXXfYggYX`"Mci`k`]`W`b]g]XYf`hY`gcW]U`
UbX`Ybj`]fcb`a`YbH`]a`dUWg`UbX`]a`d`]WU]cbg`cZ[`cVU`j`U`i`Y`WU]bg`UbX`dfcXi`W]cb`bYk`cf_gZ`Ug`k`Y`Ug
YZ`c`f]g`h`i`bXYfU_Y`a`cfY`Yh]WU`UbX`gi`ghU]bUV`Y`UddfcUWX`Yg`"Mci`k`]`Yb[U[Y`]b`WUgY`gh`X]Yg`UbX`YUfb
UVci`hUdd`YXZ`dfUW]WU`Z`UbX`fYZYI`]Y`UddfcUWX`Yg`Z`f`UXXfYgg]b[`]`cVU`m]bhYf]b_YX`]ggi`Yg`ZUW]b[`hY`
"; `cVU`Gci`h`Z`"cf`"a`U`c]f]m`k`cfX`"

7 ci fgY`@YUfb]b[`Ci`hW`a`Yg

- %`5dd`m]W]h]WU`h`]b_]b[`h`c`W`c`fY`W`b`W`d]g`fY`Yj`Ubh`h`c`Ya`Yf[]b[`]`cVU`Ybj`]fcb`a`YbH`]ggi`Yg`UbX`
WU`Yb[Yg
- &`9I`d`U]b`YI`h`fbU`dc`]h]WU`YV`bca`]W]bZi`YbW`g`cb`hY`]; `cVU`Gci`h`#`a`U`c]f]m`k`cfXZ`UbX`\ck`h`YgY`
]bZi`YbW`'gi`ghU]bUV`Y`XYj`Y`cda`YbH`h`m`d`Y`WU`Yb[Yg`UbX`]bYei`]h]Yg
- '`"9I`d`c`fY`UbX`UggYgg`hY`i`gY`cZ[`cVU`Z`YV`bca`]W`Y[U`Z`UbX`]bg]h`h`]cbU`ZUa`Yk`cf_g`Z`f`
UXXfYgg]b[`Ybj`]fcb`a`YbH`]ggi`Yg`]b`hY`W`b`h`i`h`cZU`fUb[Y`cZ`hY`f`g`f`i`W`i`fU`]bYei`U`]h]Yg`UbX`
WU`Yb[Yg
- ("8]gW`gg`UbX`W]hei`Y`hY`YZZ`W]Yj`YbYgg`cZ]bg]h`h`]cbU`c`f`fY[i`U`h`f`m`i`UddfcUWX`YgZ`a`Uf`Y`h`V`Ug`YX`
UddfcUWX`YgZ`h`W`b`c`c[m`h`f`U`b`g`Z`Y`f`z`W`d`U`W]m`Vi`]X]b[Z`UbX`c`h`Y`f`UddfcUWX`Yg`Z`f`XYU`]b[`k`]h`
'gi`ghU]bUV`Y`XYj`Y`cda`YbH`WU`Yb[Yg
-)`"I`gY`_bck`YX[Y`cZ`'gi`ghU]bUV`Y`XYj`Y`cda`YbH`WU`Yb[Yg`UbX`hY`dfUW]WU`UbX`Udd`]YX`U`h`Y`a`d]g`
h`c`fY`gc`j`Y`h`Y`a`h`c`UbU`mgY`U`fUb[Y`cZ`c`WU`Z`b`U]h`]cbU`Z`UbX`fY[]cbU`WUgY`gh`X]Yg

HYUW]b[`G`h`f`U`h`[]Yg`

H\Y`W`i`fgY`]g`hUj[\h]b`U`gYa`]bUf`gm`Y`k`]h`gca`Y`Y`W`h`fY`W`b`h`Y`bh`UbX`fY[i`Uf`V`fYU`_ci`h`g`Z`c`f`
X]gW`gg]cbg`#UW]j`]h]Yg`"

5ggYgga Ybh

8YHU]YX'Ugg][ba Ybh]bZcfa UH]cb'k]'VY'dfcj]YXX']b'Ub'Ugg][ba Ybhg\YYh]b'a ccX'Y''8i Y'hc'7CJ -8!%-
gca Y'WU]b[Yg'hc'hY'dfYgYbhU]cb'a UmVY'fYei]fYX"

: cf'U''Ugg][ba Ybhg'<Uf] UfX'cf'5D5']b!hYI hfYZfYbW]b[']'g'dfYZfYXžk]h'U'Z''fYZfYbW'']ghUhhY'YbX'cZ
mci f'Ugg][ba Ybhg'fcb'mfYZfYbW' hY'k cf_g'hUhmci 'i gY'UbX'W]hY'5'k Umg']bW' XY'U'W]h]cb'k \Yb'i g]b[
gca YcbY'Y'gYf]k cf_k \YhYf']h]g'U'dUdYfžVcc_žfYdcf'k YVg]hY''': U]b['hc'\Uj Y'W]h]cbg:]g
W'bg]XYfYX'd'U[]Uf]ga "'': cf'hY'dfYgYbhU]cbž'd'YUgY'\Uj Y'ga U'']b!hYI hfYZfYbW]g'k \Yb'mci 'i gY'chYfg
k cf_X]fYW]nž'UbX'U'g]b['Y'g']XY'W'cb]b]b['mci f'X]fYW]mi gYX'fYZfYbW]g'UhhY'YbX''

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5ggYgga YbhHUg_	K Y][\h	8i Y'8UH	

5ggYgga Ybh&. '9ggUm%

GHUfhXUH. 'Bch5dd]WVY

@Yb[h. '% \$\$'k cfXg'fd'i g'fYZfYbW'gk

8YHU]`g.

bxj]Xi U`g\cfhYggUm'

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

A cfY`XYHU]`g'k]`VY'dfcj]YX']b`hY`Ugg][ba Ybhg\YYh]b'a ccX'Y"

Gi Va]gg]cb`bchYg. 'Gi Va]hUg'U'D8: 'cf'k cfX'XcW]b'A ccX'Y

Hi fb]hb`gYH]b[. 'H\]g'Ugg][ba Ybh]g'gi Va]hY'X'h'fci [\ 'Hi fb]hb`UbX'ghi XYbhg'Xc`bchgYY`Hi fb]hb`g]a]Uf]mifYdcfrg"

5ggYgga Ybh' . 'A U'cf'fYgYUfW' fYdcfh

GHUfhXUH. 'Bch5dd]WVY

@Yb[h. "' \$\$\$'k cfXg'fd'i g'fYZfYbW'gk

8YHU]`g.

A U'cf'fYgYUfW' fYdcfhUbX`WUg'`gh Xmicb`gdYWZ]W'cd]W'gk'W'j YfYX"' bxj]Xi U`k f]h'Yb`ZYXVUW`dfcj]YX'" 5ddfcI "' \$\$\$'k cfXg'"H\]g']g'hY`Z]bU`UggYgga YbhZ'f'U'hYbXUbW`di fdcgYg"

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

: i f'hYf`]bZcfa U]cb`]g'dfcj]YX']b`hY`Ugg][ba Ybhg\YYh]b'a ccX'Y"

Gi Va]gg]cb`bchYg. 'gi Va]hUg'U'D8: 'cf'k cfX'XcW]b'a ccX'Y`dcfHU`

Hi fb]hb`gYH]b[. 'H\]g'Ugg][ba Ybh]g'gi Va]hY'X'h'fci [\ 'Hi fb]hb`UbX'ghi XYbhg'Xc`bchgYY`Hi fb]hb`g]a]Uf]mifYdcfrg"

5 HbXUbW F Yei]fYa Ybhg

Gh XYbhg UfY gfcfb[mYbWci fu[YX hc UHbX U WUggYg UbX fYj]Yk YWfi fY fYWcfX]b[g"

7 ci fgY GWXYXi Y

[J Yk WUgg ha YhUVY](#)

Hja YhUVY

8 UHr	HmdY	7 cbHrYbh
K YY_% %) : YVfi Ufm! %- : YVfi Ufm	GYa]bUf	H\Y Wci fgY fi bg]b]bhYbg]j Y a cXY Zfca %\$Ua !) da cb A cbXUmg UbX Hi YgXUmg]b k YY_g %d' žk]h U % \ci fVfYU_ Zcf i bW Zfca %da YUW XUmUbX g\cfh VfYU_g Yj Yfm\ci f H\Y Wci fgY]g gWXYXi YX Zcf WUggYg cb]bY]b 6 UW_VcUfX 7 c UVcfUH fH fci [\ a ccX Y E 5 B 8 ZJW ! hc ! ZJW g]a i hUbYci g m ;] j Yb h Y fYW bh 7 C J 8 ci hVfYU ž h Y ZJW ! hc ! ZJW WUggYg UfY i b]_Y m : h h Y Yj Ybh h]g W U b [Y g ž h Y fcc a g k ci X V Y . A cb % \$. \$ \$! % . \$ \$ E i U X f U b [Y % \$ (' f P ! 9 %) ! % \$ (' E A cb % (. \$ \$! % + . \$ \$; c X g h Y] b ; \$ - f P ! 8 % * ! ; \$ - E Hi Y % \$. \$ \$! % . \$ \$ E i U X f U b [Y ; \$ (\$ f P ! 9 %) ! ; \$ (\$ E Hi Y % (. \$ \$! % + . \$ \$ A U h Y k g & & + f P ! ; & ' ! & & + E
K YY_& . && : YVfi Ufm! & * : YVfi Ufm	GYa]bUf	H\Y Wci fgY fi bg]b]bhYbg]j Y a cXY Zfca %\$Ua !) da cb A cbXUmg UbX Hi YgXUmg]b k YY_g %d' žk]h U % \ci fVfYU_ Zcf i bW Zfca %da YUW XUmUbX g\cfh VfYU_g Yj Yfm\ci f H\Y Wci fgY]g gWXYXi YX Zcf WUggYg cb]bY]b 6 UW_VcUfX 7 c UVcfUH fH fci [\ a ccX Y E 5 B 8 ZJW ! hc ! ZJW g]a i hUbYci g m ;] j Yb h Y fYW bh 7 C J 8 ci hVfYU ž h Y ZJW ! hc ! ZJW WUggYg UfY i b]_Y m : h h Y Yj Ybh h]g W U b [Y g ž h Y fcc a g k ci X V Y . A cb % \$. \$ \$! % . \$ \$ E i U X f U b [Y % \$ (' f P ! 9 %) ! % \$ (' E A cb % (. \$ \$! % + . \$ \$; c X g h Y] b ; \$ - f P ! 8 % * ! ; \$ - E Hi Y % \$. \$ \$! % . \$ \$ E i U X f U b [Y ; \$ (\$ f P ! 9 %) ! ; \$ (\$ E Hi Y % (. \$ \$! % + . \$ \$ A U h Y k g & & + f P ! ; & ' ! & & + E
K YY_ ' . % A UfW !) A UfW	GYa]bUf	H\Y Wci fgY fi bg]b]bhYbg]j Y a cXY Zfca %\$Ua !) da cb A cbXUmg UbX Hi YgXUmg]b k YY_g %d' žk]h U % \ci fVfYU_ Zcf i bW Zfca %da YUW XUmUbX g\cfh VfYU_g Yj Yfm\ci f H\Y Wci fgY]g gWXYXi YX Zcf WUggYg cb]bY]b 6 UW_VcUfX 7 c UVcfUH fH fci [\

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F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

H\YfY`UfY`bc`fYei`]fYX`hYI`hg`Zcf`ghi`XYb`hg`"F YUX]b[g`k`]"`VY`gYhZcf`YUW`a`cXi`Y`h`fci`[`\`@Y[`Ubhc`]b`
A`ccX`Y`"Mci`k`]"`VY`UV`Y`hc`UW`W`gg`h`Y`gY`fYUX]b[g`h`fci`[`\`h`Y`I`BGK`]"`VfUfmk`]h`mci`f`c`[`]b`"

F YWca a YbXYX`F Ygci fWg

Gca`Y`i`gYZ`"hYI`hg`za`cg`hc`Zk`\]W`W`Ub`VY`Zci`bX`]b`I`BGK`]"`VfUfmz`]b`Wi`XY`.

DYfYUi`h`H`"Z`6`f]X[`Yz`:"`Z`/`A`W`Uf`h`n`z`>`"f`P`X`g`L`"f`&`\$`%`L`"F`Z`W`D`a`g`f`W`Y`W`Z`S``V`T`a`a`]`a`X`b`a`f`[`[`US`^`W`U`a`h`Y`k`"
F`ci`h`Y`X`[`Y`z`@`c`b`X`c`b`"

DYYh`F`"Z`F`c`V`V]b`g`z`D`z`/`K`U`h`g`z`A`"f`P`X`g`L`"f`&`\$`%`L`"9`h`T`S`^`b`a`f`[`[`US`^`W`U`a`h`Y`k`"F`ci`h`Y`X`[`Y`z`@`c`b`X`c`b`"

DYYh`F`"Z`/`K`U`h`g`z`A`"f`&`\$`%`L`">[`T`W`S`f`a`W`U`a`h`Y`[`W`e`,`W`h`[`d`a`_`W`f`i`V`W`h`W`a`b`_`W`f`i`e`a`U`[`S`^`_`a`h`W`_`W`f`e`"
F`ci`h`Y`X`[`Y`z`@`c`b`X`c`b`"

?`c`h`U`f`j`z`5`"z`G`U`Y`h`z`5`"z`9`g`W`c`V`U`f`z`5`"z`8`Y`a`U`f`]U`z`:"`Z`/`5`W`c`g`h`U`z`5`"f`P`X`g`L`"f`&`\$`%`L`"B`g`d`h`W`e`W`3`b`a`e`f`Z`
V`W`h`W`a`b`_`W`f`V`[`U`f`a`S`c`k`"H`i`_]`U`6`c`c`_`g`U`b`X`5`i`h`c`f`g`i`d`Z`c`b`h`9`!`j`Y`f`g`]c`b`[\Yfy](#)

8`f`5`]`g`U`z`:"`Z`8`Y`a`U`f`]U`z`:"`Z`/`?`U`"g`z`:"`"f`P`X`g`L`"f`&`\$`%`L`"6`W`d`a`i`f`Z`,`S`h`a`U`S`T`g`S`c`k`X`a`d`S``W`W`S`"F`ci`h`Y`X`[`Y`z`
@`c`b`X`c`b`"

Gca`Y`k`Y`V`g`]h`Y`g`h`U`h`a`U`m`V`Y`i`g`Y`Z`""]`b`Wi`XY`.

Gci`h`7`Y`b`f`Y`.\`h`h`d`g`##`k`k`"g`c`i`h`W`b`f`Y`"]`b`h`#`

=>`H`G`8`f`H`f`U`X`Y`U`b`X`G`i`g`h`U`]b`U`V`Y`8`Y`j`Y`c`d`a`Y`b`h`.\`h`h`d`g`##`W`g`X`"]`g`X`"c`f`[`#`

h`h`f`b`U`h`c`b`U`"h`g`h`h`h`Y`Z`c`f`G`i`g`h`U`]b`U`V`Y`8`Y`j`Y`c`d`a`Y`b`h`.\`h`h`d`g`##`k`k`"]`g`X`"c`f`[`#`

h`h`f`b`U`h`c`b`U`"h`g`h`h`h`Y`Z`c`f`9`b`j`f`c`b`a`Y`b`h`U`b`X`8`Y`j`Y`c`d`a`Y`b`h`.\`h`h`d`g`##`k`k`"]`Y`X`"c`f`[`#`

I`B`

g`Y`Z`"`%`o`

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Wca a Ybng'UVci hñY'Wci fgY'cf'UggYgga Ybng''

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 bXYfghUjX'mci f'f][\hg'UbX'fYgdcbg]V]h]Yg'Ug'U'gh XYbhUhl BGK
- VY'Uk UfY'cZd'U[]Uf]ga ž'Wc'dmf][\hž' BGK 'Gh XYbh7cXY'cZ7cbXi W'UjX'5W'W'dhUV'Y'I gY'cZ
I BGK '⇒H'F'Ygci f'W'g'Dc`]W'h
- VY'Uk UfY'cZ'Y'ghUjX'UfX'g'cZVY\Uj]ci f'YI dY'W'X'cZYj Yfmc'bY']b'Y'Y'I BGK 'W'a a i b]m
- `cW'U'Y'gY'fj]W'g'UbX']b'Z'f'a U'h'c'b'UV'ci hi BGK 'UbX'I BGK '@]VfUfm

Gca Y'cZ'Y'gY'UfY'Ug'k]`VY'ZJa]]Uf'hc'mci ž'c'h'Y'fg'k]`VY'bYk " ; U]b]b['U'gc`X'i bXYfghUjX]b['cZU`'h'Y
fY'U'Y'X'UgdY'W'g'cZ9@-G9'k]`'Y'd'mci 'a U_Y'h'Y'a cgh'cZ'mci f'gh X]Yg'Uhl BGK ""

[\h'c' #g'j V'Y'W'f' i \]X'Y'g" \]V'f'U'f'm'i b'g'k "Y'X'i "U'i #' \]g'Y'#U'V'c'i h' \]g'Y](#)

5 WUXYa]W]bZcfa Uh]cb

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

- fYei Ygh]Zcf`YI H`bg]cb/
- `Uh`gi Va]gg]cbg`[i]XY`]bYg/
- fYj]Yk `cZa Uf_g/
- I B GK `<YU`h`UbX`GUZY`midc`]WYg/
- YI Ua]bUh]cb`dfcW`Xi fYg/
- gdYW]U`W`bg]XYfUh]cb`]b`hY`Yj Ybhcz]`bYgg`cf`a]gUXj Ybh fY/
- gh XYbhYei]mUbX`X]gUV`]m/
- UbX`c`hYf`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#dfchW`g`\[i \]XY`\]bYg#](#)