

EDST5438

@YUXYfg\jd'H\Ycfmž'F YgYUfVX 'UbX'DfUWjWY

HYfa %z&\$&&



7 ci fgY`Cj Yfj]Yk

GhJZZ'7 cbhJWñ'8 YhU]`g

7 cbj Ybcfg

B Ua Y	9a U]`	5j U]`UV]`]m	@cWñ]cb	D\cbY
F]WUfX`B]YgWXY	f"b]YgWXY4 i bgk "YXi "Ui	9a U]`Zcf`Ub Uddc]bñ Ybh	F cca ; %* A cfj Yb 6fck b Vi]X]b[f\$&Ł'-\$*) %* &&

GWcc`7 cbhJWñ`bZcfa Uh]cb

GWcc`cZ9Xi Wñ]cb

5fñgž8 Yg][b`UbX'5fW]ñYñ fY

; fci bX: `ccfž'A cfj Yb'6fck b'6i]X]b[`fi &\$Ł

H. Ž *%f&Ł'-' ,)`%- ++

9. YXi Wñ]cb4 i bgk "YXi "Ui

K . \hñdg.##k k k "Ufñg"i bgk "YXi "Ui #YXi Wñ]cb

5W_bck`YX[Ya YbhcZ7ci bHfm

I B GK `5fngž8Yg][b`UbX`5fWk]HfWfi fY? Ybg]b[hcb`UbX`DUXX]b[hcb`Wla di gYg`UfY`Vi]hcb`5Vcf][]bU`
@UbXg"K Y`dUmci f`fYgdYWtg`hc`hY`6]X}[U`UbX` ; UX][U`dYcd`Yg`k`c`UfY`hY`7i`gfcX]Ubg`cZ`hY`gY`UbXg"
K Y`UW_bck`YX[Y`hY`5Vcf][]bU`UbX`Hc`fYg`G`fU]h`g`UbXYf`dYcd`Ygž`hY` :]fgh5i`gfcU`Ubgžk`c`gY`UbXgž
k]bXg`UbX`k`UHf`g`k`Y`U`bck`g`UfYž`UbX`dUm`fYgdYWfi`hc`hY`f`i`b]ei`Y`j`U`i`Ygž`UbX`hY`f`W`b`h`bi`]b[`UbX
YbXi`f]b[`W`h`fYg`k`\\W`XYYdYb`UbX`Yb`f]W`hY`Z`cZci`f`b`U`h`cb`UbX`W`a`a`i`b]h`Yg`"

U[Y`W`ci`f`h`g`m`c`Z`h`Y`C`Z]W`c`Z`h`Y`D`f`c`J`]W`!`7`Ub`W`c`f`b`X][Ybci`g`[L`B`G`K`f`g`b`X\]\[Ybci`g`g`f`U`h`\[`m](#)

7 ci fgY'8YHJ`g

I b]hg'cZ7 fYX]h*`

K cf_`cUX

%) \$`ci fg]bWl X]b[`WUgg`VcbUWl\ci fgžfYUX]b[gžWUgg`dFYdUfU]cbžUggYgga YbžZc`ck`i d`UW]j]hYgž YHw

Gi a a UfmicZ`h.Y'7 ci fgY

⊕`h]g`Vci fgY`mci `XYj Y`cd`i bXYfgfUbx]b[`cZYXi WU]cbU`YUXYfg\]d`h.Ycf]YgžW ffYbhFYgYUfW `UbX dfUW]W`Mci `Vcbg]XYf`h.Y`a U`cf`UddfcUWYg`h`YUXYfg\]d`gi W`Ug`fU]hžVY\Uj]ci fžVcb]b[YbWmUbX hfUbgZcfa Uh]cbU`YUXYfg\]d`h.YcfmžUg`k Y`Ug`W ffYbhFYgYUfW `UbX`dfUW]W`]b`h.Y`Vcb]h`i hcZYXi WU]cb`

7 ci fgY`@YUfb]b[`Ci hVca Yg

%` 8]gW gg`W]hW`mi`h.Y`bUhi fY`cZ`YUXYfg\]d`Vch`h.YcfY]W`mUbX`\ck`]ha Ub]Zygh`]b`X]ZYfYbh gVXcc`cf`ch.Yf`YXi WU]cbU`Vcb]h`i hg
&` ÆYbh]ZmUbX`UbU`mgY`fYgYUfW`Yj]XYbWžVch`cW`UbX`]bhYfbUh]cbU`žk]h`fYgdYWh`k`h`U]g WU]a YX`cb`VY\U`ZcZYXi WU]cbU`YUXYfg\]d
'` 8Yj Y`cd`U`fY`Uh] Y`migm]h`a Uh]Wi bXYfgfUbx]b[`cZk`h`YUXYfg\]d`k`ci`X`a YUb`h`mci`f`gVXcc`cf`cf[Ub]nUh]cbU`Vcb]h`i

HYUW]b[`GhfUH[]Yg`

F Uh]cbU`Y.

ÆYUg`UVci h`YUXYfg\]d`\Uj Y`h`bXYX`h`XYj Y`cd`]b`U`XnbUa]WUbX`dfc[fYgg] Y`k`UmUg`YUf]Yf`dfc`d`cgU`g \Uj Y`VYb`fYgYUfW`YXžXYVUH`Xž]a`dfcj YX`i`dcb`cf`fYd`UW`X`H`Y`ghfi W`fY`UbX`Vcb]h`bhcZ`h.Y`Vci fgY gYY`g`h`fYZYWh`h`g`W]hW`]bh`Y`W`U`XnbUa]Vžk]h`gh`XYbh]VY]b[`UV`Y`h`gYY`k`YfY`]XYUg`WU]a Y`Zca UbX`k`h`U`h`YX`h`h`Yf`fYd`UW`a Ybh`H`Y`h`UW]b[`UddfcUW`]g`h`YfY`Zc`fY`cbY`cZ`W]hW`Yb[U[Ya Ybhk]h`h`Y`fYgYUfW`]h`fUhi fY`UbX`h`Y`W`ffYbhFYgYUfW`cZghUZZ`h`UW]b[`h`Y`Vci fgY`H`Y`UddfcUW`h`h`UW]b[UbX`YUfb]b[]g`]bZcfa YX`VmifYgYUfW`H`]g`fYgYUfW`\Ug`XYa`cbgfUH`X`h`Y`]a`dcfU`bW`cZ`h.Y`YUfb]b[Ybj]fcb`a`Ybh`Zc`f`ei`U`]migh`XYbh`YUfb]b["H`Y`fY`Zc`fY`Z`Ya`d`Ug]g`]g`d`UW`X`cb`U`YUfb]b[`Ybj]fcb`a`Ybhk`h`W]g`gh`XYbhW`b`fYXž`_bck`YX[Y!W`b`fYXž`UggYgga YbhW`b`fYX`UbX`Vca`a`i`b]m]W`b`fYX`"

HYUW]b[`GhfUH[]Yg.

⊕`[YbYfUž`h.YfY`Ug`VYb`U`g\]Zh]b`YUXYfg\]d`h.Ycf]n]b[žZca`Ub`YUf]Yf`dYf]cX`h`UhgUk`YUXYfg`Ug`dcggYgg]b[`W`fU]b`YggYbh]U`dfcdYf]Ygž`h`a`cfY`fYW`b`h`h`]b_]b[`h`UhgYg`YUXYfg\]d`hUg`g`UbX`dfUW]W`g`Ug`VY]b[`YUj]m]bZi YbW`X`Vm`Vcb]h`i`h`H`Y`a`U]b`h`UW]b[`ghfUH[m]g`h`YfY`Zc`fY`h`Yb`Vci`fU[Y`gh`XYbh]h`i`gY`h`Y`Yj]XYbW`cZ`h.Y]f`ck`b`Vcb]h`i`hg`cZdfUW]W`Ug`U`h`c`Zc`f`Yj`U`i`Uh]b[`UddfcUWYg`h`YUXYfg\]d`]b`U`W]hW`k`Um`"

H`Y`Vci fgY`k`]`i`gY`Yi`d`]W]h]bghfi W]cb`XYg][bYX`h`gh]a`i`UH`gh`XYbh]h`b_]b[`VYW]i`gY`h`YfY`UfY`U`bi`a`VY`cZ`h.Ycf]Yg`k`\]W`a`i`ghVY`i`bXYfg`h`c`X`UbX`[fci`d`X]gW`gg]cbžUW]j]hYg`UbX`WUgY`gh`X]Yg`XYg][bYX`h`]bW`YUgY`h`Y`WUdUW]mUbX`WUdUV]m]micZgh`XYbh]h`Zc`f`XYj Y`cd]b[`h`Y]f`ck`b`h`Ycf]Yg`cZ`

5ggYgga Ybh

5ggYgga YbhUg_	K Y][\h	8i Y'8UHŸ	7ci fgY'@YUfb]b[Ci hŸa Yg'5ggYggYX
%"@YUXYfg\]d'hŸcfmdUdYf	(\$i	& # \$' #&\$&&\$) . \$\$'DA	%ž'&ž'
&"HŸcfmXYj Y'cda Ybh dUdYf	* \$i	&- # \$(#&\$&&\$) . \$\$'DA	%ž'&ž'

5ggYgga Ybh% "@YUXYfg\]d'hŸcfmdUdYf

8i Y'XUHŸ. '& # \$' #&\$&&\$) . \$\$'DA

HUg_ '%! '9ggUm! '&\$\$\$'k cfXg

Gh XYbŸg'k]''fYW]j Y'k f]ŸŸb'ZYXVUW_ 'k]h]b'hŸfY'k YY_g'cZgi Va]gg]cb

H\]g'Ugg][ba Ybh]g'gi Va]ŸŸX'hŸfci [\ 'Hi fb]Ÿb'UbX'ghi XYbŸg'WŸb'gYY'Hi fb]Ÿb'gja]Uf]mfYdcfŸg"

5XX]Ÿ]cbU'XYŸU]`g

5``UggYgga YbhUg_ XYŸU]`g'k]''VY'dfcj]XYX'j]U'A ccX`Y"

5ggYgga Ybh& 'HŸcfmXYj Y'cda YbhdUdYf

8i Y'XUHŸ. '&- # \$(#&\$&&\$) . \$\$'DA

HUg_ '&! '9ggUm! '(\$\$\$'k cfXg

Gh XYbŸg'k]''fYW]j Y'k f]ŸŸb'ZYXVUW_ 'k]h]b'hŸfY'k YY_g'cZgi Va]gg]cb

H\]g'g'hŸY`ZbU'UggYgga Ybh'

H\]g'Ugg][ba Ybh]g'gi Va]ŸŸX'hŸfci [\ 'Hi fb]Ÿb'UbX'ghi XYbŸg'WŸb'gYY'Hi fb]Ÿb'gja]Uf]mfYdcfŸg"

5XX]Ÿ]cbU'XYŸU]`g

5``UggYgga YbhUg_ XYŸU]`g'k]''VY'dfcj]XYX'j]U'A ccX`Y"

GdYWZjW7 f]hYf]U	f]k ————— 2fZk				
<ul style="list-style-type: none"> 7 `Uf]mž`Wčbg]ghYbWniUbX`Uddfcdf]UHybYgg`cZWčbj Ybh]cbg`Zcf ei ch]b[ž`dUfUd`fUg]b[ž`Uhf]Vi h]b[`gci fWg`UbX`]bZcfa Uh]cb`UbX`]gh]b[`fYZfYbWg`f5D5`ghmYk 7 `Uf]mUbX`Uddfcdf]UHybYgg`cZgYbhYbW`ghfi Wni fYžj cWUvi `Ufm i gYžgdY`]b[ž`di bWni Uh]cb`UbX`k cfx`Yb[h 					
; YbYfU`Wča a Ybhg#fYWča a YbXUh]cbg`Zcf`bYI h]ja Y.`					

F YWča a YbXYX.

#&\$`f] @`DG`7F`8B`<8k

K Y][\h]b[.

(\$i

B 6. H\Y`h]W_g]b`hY`j Uf]ci g`Vcl Yg`UfY`XYg][bYX`hc`dfcj]XY`ZYXVUW`hc`gh] XYbhg/hYmUfY`bch[]j Yb Yei U`k Y][\h]b`XYhYfa]b]b[`hY`fYWča a YbXYX`[fUXY`"8YdYbX]b[`cb`hY`bUhi fY`cZ`hY`UggYgga Ybh]Ug_ž`YWni fYfg`a UmU`gc`WčbH]i h U`]gY`UbX`#cf`Ua YbX`hYgY`gdYWZjW7f]hYf]U`H\Y`fYWča a YbXYX`[fUXY`]g hYbh]h]j Y`cb`mž`gi V`YWni`hc`gh]UbXUfX]gUh]cb`dfcW`ggYg`UbX`Uddfc9YX.

GdYWZjW7 f]hYf]U	f]k ————— 2fZk				
<ul style="list-style-type: none"> • 7 `Uf]mž`Wčbg]ghYbWniUbX`Uddfcdf]UHybYgg`cZWčbj Ybh]cbg`Zcf ei ch]b[ž`dUfUd`fUg]b[ž`Uhf]Vi h]b[`gci fWg`UbX`]bZcfa Uh]cb`UbX`]gh]b[`fYZfYbWg`f5D5`ghmYk • 7 `Uf]m]UbX`Uddfcdf]UHybYgg`cZgYbhYbW`ghfi Wni fYžj cWU]Vi `Ufm i gYžgdY`]b[ž`di bWni Uh]cb`UbX`k cfx`Yb[h 					
; YbYfU`Wča a Ybh]#fYWča a YbXUh]cbg`Zcf`bYI h]ja Y.`					

F YWča a YbXYX.

#&\$`f] @`DG`7F`8B`<8k

K Y][\h]b[.

* \$i

B 6. H\Y`h]W_g]b`hY`j Uf]ci g`Vcl Yg`UfY`XYg][bYX`hc`dfcj]XY`ZYXVUW`hc`gh] XYbh]g/hYmUfY`bch[]j Yb Yei U`k Y][\h]b`XYhYfa]b]b[`hY`fYWča a YbXYX`[fUXY`"8YdYbX]b[`cb`hY`bUhi fY`cZ`hY`UggYgga Ybh]Ug_ž`YWni fYfg`a UmU`gc`WčbYI h U`]gY`UbX`#cf`Ua YbX`hYgY`gdYWZjW7f]hYf]U`H\Y`fYWča a YbXYX`[fUXY`]g hYbh]Uj Y`cb`mžgi V`YWni`hc`gh]UbXUfX]gUh]cb`dfcWgYg`UbX`Uddfc9YX.

F Ygci fWg

DfYgWf]VYX`F Ygci fWg`

5`fYUX]b[` [i]XY`UbX`fYUX]b[g`ZcfYUW`k YY_`]g`dfcj]YXX`cb`A`ccX`Yzk` \]W`WUb`VY`UWV`ggYX`Vmig][b]b[]bhc`A`ml`BGK`"Gh`XYbhg`UFY`YI`dYVW`X`i`gY`hY`k`YY_`mfYUX]b[` [i]XY`UbX`hc` \Uj`Y`fYUX`fYei`]fYX`fYUX]b[g VYZcfY`U`hY`bX]b[`WUgg`YUW`k`YY_`"

Mci`UFY`U`gc`YbWci`fU[YX`hc`UWV`gg`chYf`fY`Yj`UbhfYgci`fWg`Zca`I`BGK`"]VfUfmh`VSdZV,
[\hd.#k k "\]VfUfmi bgk "YXi "Ui ž](#)

5`h`ci` [\`hY`Wci`fgY`Wci`Yfg`U`fUb[Y`cZ`hY`a`cgh`W`b`fU`di`V`]g`YX`dcg]h`cbg`]b`YXi`W]h`cbU`YUXYfg`dž`h`jg`]g`U`fYgYUfW`!Xf]`Yb`Wci`fgY`U`gc`]b`hY`gYbgY`h`Uh`hY`W`b`h`b`h`cZ`hY`Wci`fgY`ZU`g`i`bXYf`hY`]bZi`YbW`cZ`hY`a`cgh`fY`W`b`h`fY`gY`U`fW`VY]b[`W`c`b`X`i`W`X`V`m`hY`g`h`U`Z`k` \c`h`f`U`W`k`hY`Wci`fgY`"

F YWca a YbXYX`F Ygci fWg

Gca`Y`cZ`5`ggcW]U`h`D`fcZ`Y`ggc`f`F`]W`U`f`X`B`]Y`g`W`Y`f`g`V`cc`_`g`c`b`Y`Xi`W]h`cbU`YUXYfg`d`]b`W`i`XY`.

- 7ci`f`rb`Y`mž`G`ž;`i`b`h`f`ž`<`ž`B`]Y`g`W`Y`ž`F`"/`H`f`i`š`c`ž`H`"f`p`X`g`"Ł`f`&`\$`&`%`&`" _UVcdR_UZ_X`7`U`f`TRž`_R]`>VRUVcdYž,`5`cZ`TR]`V`c`d`a`V`T`e`ž`V`d`R`_`U`3`a`a`c`R`T`Y`V`d`"@`c`b`X`c`b`."`ó`c`c`a`g`V`i`f`m`
-

Gi Va]gg]cb`cZ5ggYgga YbhiHUg_g

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

Ʒmci`YbWci bHYf`U`dfcV`Ya`k` \Yb`UH`Ya` dh]b[`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybhi`h`fci`[`\`Hi`fb]h]b`z`d`YUgY`
HY`Yd`l`cb`Y`9I`HYfb`U`Gi`ddcfh`cb`-`,`,)`````%cf`Ya`Uj`h`Ya`icb`YI`HYfb`U`HY`hgi`ddcfh`4`i`bgk`"YXi`"Ui`""`Gi`ddcfh`
l`ci`fg`UfY`,`.\$\$Ua`-`-%\$.\$\$da`icb`k`YY`XUmg`UbX`-`.\$\$Ua`-`).\$\$da`icb`k`YY`YbXg`fI`*)`XUmg`U`mY`UfI`"Ʒmci`
UfY`i`bUV`Y`hc`gi`Va`]hmc`i`f`Ugg][`ba`Ybhi`Xi`Y`hc`U`Zi`h`k`]h`Hi`fb]h]b`mci`a`Um`Udd`m`Zc`f`Ub`YI`HYbg]cb`z`Vi`hmc`i`
a`i`gh`fY`h]b]mci`f`h]W`Yhbi`a`VYf`Z`ca`9I`HYfb`U`Gi`ddcfh`f`U`cb[`k`]h`Ubmc`h`Y`f`fY`Yj`Ubh`Xc`W`a`Yb`hg`L`hc`
]b`Wi`XY`Ug`Yj`]XYb`V`hc`gi`ddcfh`mci`f`YI`HYbg]cb`Udd`]W`h]cb`"Ʒmci`Ya`Uj`9I`HYfb`U`Gi`ddcfh`mci`k`]`
Ui`hc`a`U`h]W`m`f`Y`W`j`Y`U`h]W`Yhbi`a`VYf`z`Vi`h]Z`mci`HY`Yd`l`cb`Y`mci`k`]`b`YYX`hc`gd`Y`W`Z]W`m`Ug`_`Zc`f`cb`Y`"
Hi`fb]h]b`U`gc`d`fcj`]XYg`i`d`XU`HY`g`cb`h`Y]f`gm`gh`Ya`g`h`U`h`g`cb`Hk`]h`Y`f`"

;`Yb`Yf`U`m`z`Ugg`Ygga`Ybhi`Ug_g`a`i`gh`VY`gi`Va`]h`Y`X`Y`Y`W`f`cb]W`m`j`]U`Y`]h`Y`f`Hi`fb]h]b`cf`U`A`cc`X`Y`
Ugg][`ba`Yb`h`i`h`]b`gh`Ub`V`W`g`k` \Y`fY`h`l`g`]g`b`ch`d`c`gg]V`Y`z`]h`k`]`VY`g`h`U`H`X`cb`mci`f`W`ci`fg`Y`g`A`cc`X`Y`g`]h`k`]h`
U`HY`fb`U`h]`Y`gi`Va`]gg]cb`XY`h]g`"

:`cf`]b`Z`fa`U`h]cb`cb`l`ck`hc`gi`Va`]h`Ugg][`ba`Yb`hg`cb`]b`Y`j`]U`A`cc`X`Y`.`h`hdg`#`gh`XYb`h`i`bgk`"YXi`"Ui`#`ck`!
gi`Va`]h`Ugg][`ba`Yb`h`a`cc`X`Y`"

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

D`U[]Uf]ga `]g`i g]b[`h`Y`k cfXg`cf`]XYUg`cZc`h`Yfg`UbX`dFYgYbh]b[`h`Ya `Ug`mci f`ck b`" `#WUb`hU`Y`a Ubm
Zcfa gZ`Zca `XY`]VYfUH`V`X`YU]b[`h`c`UW]XYbhU`m`W`dm]b[`Zca `U`gci fW`k]h`ci hUW`bck `YX[Ya Ybh`

I BGK `[fci dg`d`U[]Uf]ga `]b`h`c`h`Y`Zc`ck]b[`W]h`[cf]Yg.

7cdm]b[.`I` g]b[`h`Y`gUa Y`cf`j Yfmg]a]Uf`k cfXg`h`c`h`Y`cf][]bU`h`I`h`cf`]XYU`k]h`ci hUW`bck `YX[]b[`h`Y`
gci fW`cf`i g]b[`ei`c`h`U]cb`a Uf`g`"H`g]bW`i XYg`W`dm]b[`a`U`h`f]U`gZ`]XYUg`cf`W`b`W`d`h`g`Zca `U`Vcc`_`Z`U`f`h]WY`Z

5 WUXYa]W=Zcfa Uh]cb

8i Y`tc`Yj`c`j`]b[`UXj`]W`VmB`GK` `<YU`h`z`gh`XYbh`a`i`gh`WXYW`Zc`f`i`dXU`h`X`]bZc`fa`Uh]cb`fY[`UfX]b[`cb`]bY`YUfb]b[`Zc`f`U`5`f`g`z`8`Yg][`b`UbX`5`f`W`]h`W`i`f`Y`W`i`f`g`Y`g`h`]g`h`f`a``f`j`]U`A`ccX`Y`c`f`W`i`f`g`Y`]bZc`fa`Uh]cb`dfcj`]XYX`L

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

- fYei`Yg`h`Zc`f`YI`h`bg]cb/
- `UH`gi`Va`]gg]cbg`[`i`]XY`]bYg/
- fYj`]Yk`cZa`Uf_g/
- I`B`G`K` `<YU`h`UbX`GUZ`h`m`d`c`]W`Y`g/
- YI`Ua`]bUh]cb`dfc`W`X`i`f`Y`g/
-