

# **EDST5458**

FYgYUfWX]b['GdYW]U`'9Xi WUh]cb

GYa YghYf'Hk c''#'&\$%

7ci fgY <sup>*</sup> Cj Yfj ]Yk	
GHJZZ:7cbHJWh:8YHJ]`g	

### 7ci fgY 8YHJ] g

7 fYX]hDc]bhg\*\*

K cf\_`cUX

%) \$`\ci fg`]bWi X]b[`WUgg`WcbHUWi\ci fgž`fYUX]b[gž`WUgg`dfYdUfUh]cbž'UggYgga Ybhž'Zc``ck 'i d`UWhj]]h]Ygž YhW

#### Gi a a UfmcZh\Y 7ci fgY

H\]g`Wci fgY`]g`XYg][ bYX`hc`gi ddcfhimci `hc`Yl d`cfY`UbX`Wf]h]ei Y`mci f`WkcgYb`UfYU`cZfYgYUfWk`Vm`cWUh]b[`]h]b`h\Y`WcbhYl hcZ\_Ym]ggi Yg`UbX`UddfcUWkYg`]b`gdYW]U``YXi WUh]cb`UbX`j ]Yk]b[`]h'Zfca `U`X]j Yfg]hmcZ ei Ubh]hUh]j Y`UbX`ei U`]hUh]j Y`dYfgdYWf]j Yg"`H\Y`Wci fgY`dfcj ]XYg`Ub`]bhfcXi Wf]cb`hc`h\Y`]a dUWicZX]ZZYfYbh Yd]ghYa c`c[]WU``UbX`a Yh\cXc`c[]WU``UddfcUWkYg`]b`ei Ubh]hUh]j Y`UbX`ei U`]hUh]j Y`gdYW]U``YXi WUh]cbU`

i bXYfgfUbX]b[ 'UbX'UbU`mf]WU``g\_]```]g'U'\_YmA 9X'dfc[ fUa a Y'ci fWca Y''

6i hth.]g:'Wci fgY'dcg]h]cbg'hYUWXYfg'Ug'bdaVgUWde'Ug'k Y```Ug'Ua` eg\_ Wde'cZYXi WUh]cbU``fYgYUfWXž'UbX VYmcbX'Yb[ U[ ]b[ 'k ]th. 'YI ]gh]b[ 'fYgYUfWXž'dUfh]W]dUbhg'k ]````YUfb'th.Y'fY`Yj Ubhg\_]``g'hc'WcbXi Wh'U'ga U`` fYgYUfWX 'dfc YWhfY`Yj Ubhhc'th.Y]f'ck b'thYUWX]b[ 'WcbhYI hfg\t''H\Y'XYj Y`cda YbhcZdfcWYXi fU``Ug'k Y```Ug XYWUfUh]j Y'\_bck `YX[ Y']g'th.YfYZcfY'th.Y'WcfY'ci hWca Y'cZth.Y'Wci fgYž'UbX']g'df]cf]h]nYX'th.fci [ \ci t'

# 5i ghfu`]Ub'DfcZYgg]cbU`; fUXi UhY'HYUWX]b['GhJbXUfXg

GHJbXUfX	8 Y g W f ] d h] c b
' "&"%	D`Ub``Yggcb`gYei YbWfg`i g]b[`_bck`YX[Y`cZghi XYbh`YUfb]b[žWcbhYbh'UbX`YZZYWfj YhYUW.]b[`ghfUhY[]Yg"
' "&"&	D`Ub`UbX`]a d`Ya Ybhik Y``!ghfi Whi fYX``YUfb]b[ 'UbX'hYUWX]b[ 'dfc[ fUa g'cf``Yggcb gYei YbWrg'h\UhiYb[ U[ Y'ghi XYbhg'UbX'dfca chY``YUfb]b[ "
(")"(	FYj]Yk 'cf']a d'Ya YbhbYk 'dc']WJYg'UbX'gHfUHY[]Yg'hc'Ybgi fY'h\Y'gUZYž'fYgdcbg]V'Y'UbX Yh\]WU''i gY'cZ=7 H']b''YUfb]b['UbX'HYUW\]b["
) "&"'	GY`YWiZica 'Ub`YZZYWij Y`fUb[Y`cZglfUlY[]Yg`hc`dfcj]XY`lUf[YhYX`ZYYXVUW_`VUgYX`cb]bZcfa YX`UbX`lja Y`mi^ X[Ya Ybhg`cZYUWX`ghi XYbhfig`W ffYbhibYYXg`]b`cfXYf`hc`dfc[fYgg`YUfb]b[
*"&"'	D`Ub`Zcf`dfcZYgg]cbU```YUfb]b[ 'Vm'UWWgg]b[ 'UbX'Wf]hjei ]b[ 'fY`Yj Ubh'fYgYUfW\ž'Yb[ U[ Y`]b

### 5ggYgga Ybh

#### 5ggYgga YbhHUg\_g

5ggYgga Ybh'hUg_	K Y][ \h	Gh XYbh@YUfb]b[ Ci hWca Yg 5ggYggYX	5 +HG@'DfcZYgg]cbU`'; fUXi UhY HYUWX]b[ 'GHJbXUfXg'5ggYggYX	8iY 8UhY
7 f]h]ww`FYZYwn]cbcZDiV`]g\YXFYgYUfw\	) \$1	% <u>*</u> 8.Ž	' "&"%ž(") "( ž* "&"'	\$*#\$,#& \$% \$&.%* DA
F YgYUfVX DfcdcgU`	) \$1	' Ž(	' "&"&ž) "&"'	&%\$-#& \$% \$&.%+ DA

D'YUgY fYZYf hc 3gefcS/[S` BdaXWee[a`S^EfS`VSdVe XadFWSUZWde cb h\Y dfYj ]ci g dU[Y

#### 5ggYgga Ybh8YHJ]`g

5ggYgga Ybh% 7f]h]WU`FYZYWh]cbcZDi V`]g\YXFYgYUfWX

#### GHJfh:XUhY.

#### 5XX]h]cbU`XYhU]`g.

#### Gi a a Ufm

H\]g`HUg\_`fYei ]fYg`mci `hc`gY`YWhikk c`cZh\Y`di V`]g\YX`cf][ ]bU``fYgYUfW\`dUdYfg`Zca `h\Y`gYgg]cb!Vm gYgg]cb`fYUX]b[ ``]gh—`mci `a i ghBCH`i gY`h\Y`hYI hVcc\_`Zcf`h\]g`Ugg][ ba Ybhz`UbX`mci `a i ghgY`YWhZca `h\Y dUdYfg`ghUffYX`Ug`fYgYUfW\`dUdYfg`fUg`cddcgYX`hc`a Yh\cXc`c[ mdUdYfgžk \]W\`Xc`bchdfYgYbhcf][ ]bU` fYgYUfW\}E"5bgk Yf`h\Y`Zc``ck ]b[ `ei Ygh]cbg`Wf]h]WU``m

%"4d[WKk eg\_\_\_Sd[eWh\Y`hk c`hYI hg`]b`hYfa g`cZh\Y]f`hcd]WfbE'UbX`k\YfY`h\Ym'Z]h`]bhc`h\Y``UbXgWUdY`cZ gdYW]U``YXi WUh]cb`fYgYUfW\`fY"["`'h\]g`]g`U`dUdYf`]b`h\Y`UfYU`cZUi h]ga `h\Uh`Zci bX...'E"`Mci `WUb`i gY`UbmcZh\Y`fYgYUfW\`dUdYfg`]bWi XYX`]b`h\Y`Wci fgY`fYUX]b[g`Zcf`h\]g`hUg\_`—'bchU``UfY`YXi WUh]cb!gdYW]Z]W'

"": cfYUWX`dUdYfž'Ud[f[cgWfZWdWeWSdJZ \_ WfZaV geWW Se [fdWSfWe fa fZWfab[U - k \UhiUfY`h\Y`ghfYb[ h\g UbX`k YU\_bYggYg`cZi g]b[ 'h\]g`a Yh\cX`Zcf'h\]g`fYgYUfWX`dfcV`Ya žk \Uhich\Yf`k Um#g`a ][ \h\Uj Y`VYYb VYhYfž'UbX`\ck 'a ][ \hkag \Uj Y`UddfcUWXYX`h\Y`fYgYUfWX`dfcV`Ya 3

 $("`7 ca a Ybh'Vf]YZmcb'h'Y'i \ d[f[`YS`V'SkagfaXfZWbSbWd'hc'k \Uh'YI hYbh'X]X'mci 'Z]bX']h'YUgmcf'X]ZZ]W'`h fUbX#cf']bh'YfYgh]b['cf'bch']bh'YfYgh]b[''k'hc'fYUX3'<ck'a][\h'h'Y'k f]h'Yf'\Uj Y']a dfcj YX']h'B$ 

 $\label{thm:conditional} \mbox{Hi fb]h]b$ "gYhh]b$ [. "H\]g$ "Ugg][ ba Ybh]g$ "gi Va ]hhYX"h\fci [\ \ 'Hi fb]h]b$ "UbX"ghi XYbhg" WUb"gYY"Hi fb]h]b$ "gJa ]$ `Uf]hm fYdcfhg"$ 

5ggYgga Ybh'& 'F YgYUfW\' 'DfcdcgU`

IBGK 'G7<CC@'C: '98I 75H€B'FI 6F = 7 # 998657? 'G<99H' 98GH)(),

5ggYgga Ybh'HUg\_. '7f]hjWU`FYZYWhjcb'cZ'Di V`]g\YX'FYgYUfW

GdYW <mark>Z</mark> JW7 f]hYf]U	``flŁ			2fŽŁ
I bXYfghUbX'cZh\Y'ei Ygh]cb'cf']ggi Y'UbX'h\Y'_YmWcbWfdhg ]bj c` YX  • i bXYfghUbX]b[ 'cZh\Y'hUg_'UbX']hg'fY'Uh]cbg\]d'hc'fY'Yj Ubh'UfYUg cZh\YcfmžfYgYUfW\'UbX'dfUWf]Wf • gi a a Uf]Yg'cZhYl hg				
fydfygyblulijcbg czk fillyfg' Uf[ i a Yblig UbX a Yh\cXg				
				***************************************
	1	I		

GdYWJZJW7 f]hYf]U	··flt2fŽt
GdYWJZJW7fJhYfJU	"flt2flt

@YWhi fYf

``B6.`h\]g`h]W\_g`]b`h\Y`j Uf]ci g`Vcl Yg`UbX`XYg][ bYX`hc`dfcj ]XY`ZYYXVUW\_`hc`gh XYbhg/h\YmUfY`bch`[ ]j Yb Yei U``k Y][ \h]b`XYhYfa ]b]b[ `h\Y`fYWca a YbXYX`[ fUXY"`8 YdYbX]b[ `cb`h\Y`bUh fY`cZh\Y`UggYgga Ybh'hUg\_ž

GdYWJZJW7 f]hYf]U	"flŁ	2fŽŁ

@YWhifYf

 $FYWca \ a \ YbXYX. \qquad ```#&\$fl @`DG`7F`8B`<8Ł` \qquad \qquad k \ Y][\ \ h]b[\ \ . ``&\$i$ 

"B6."h\]g'f\]W\_g']b'f\Y'j Uf]ci g'Vcl Yg'UbX'XYg][ bYX'fc'dfcj ]XY'ZYYXVUW\_fc'ghi XYbfg/h\YmUfY'bch[]j Yb
Yei Ul'k\Y][\\h\Y][\\h\Y]bUh fY'cZh\Y\M\f\ggYgga Ybhf\Ug\_ž b]b[bf\\Yh\Y\\takt] a YbXYXt[fUtXY"8YdYbX]b[ cb'h\Y'bUh fY'cZh\Y'UggYgga Ybhf\Ug\_ž b]b[ 'h\
Y\Wi fYfg'a UmU'gc'\taktbhYl hi U`]nY'UbX#cf'Ua YbX'h\YgY'gdY\W]\Wf]h\Yf]U"''\H\Y'fY\takta a YbXYX'[ fUXY']g
h\YbhUh]j Y'cb`mz'gi Va Y\Whc'ghUbXUfX]gUh]cb'dfc\W'ggYg'UbX'Uddfcj U`Vmh\Y'G\Xcc``cZ'9Xi \WUh]cb

#### Gi Va ]gg]cb cZ5ggYgga YbhHUg\_g

Gh XYbhg UfY Yl dYWYX hc di hh\Y]f bUa Yg UbX gh XYbhbi a VYfg cb Yj YfmdU[Y cZh\Y]f Ugg][ ba Ybhg"

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

#mci YbWci bhYf'U'dfcV'Ya k \Yb'UhYa dhJo[ 'hc'gi Va ]hmci f'Ugg][ ba Ybhh\fci [ \'Hi fb]hJbž'd'YUgY
hY'Yd\cbY'9| hYfbU'Gi ddcfhcb'-', ) "''' %cf'Ya U]''h\Ya 'cb'<u>Yl hYfbU'hY'hgi ddcfh4 i bgk "YXi "Ui"</u>"'Gi ddcfh
\ci fg'UfY', .\$\$Ua '-'%\$.\$\$da 'cb'k YY\_XUmg'UbX'-.\$\$Ua '-').\$\$da 'cb'k YY\_YbXg'fl \*) 'XUmg'U'mYUfŁ"'#mci
UfY'i bUV'Y'hc'gi Va ]hmci f'Ugg][ ba YbhXi Y'hc'U'ZJi 'hk ]h\'Hi fb]hJb'mci 'a Um'Udd'mZcf'Ub'Yl hYbg]cbž'Vi hmci
a i ghfYhJ]b'mci f'hJW\_Yhbi a VYf'Zfca '9| hYfbU''Gi ddcfhfU'cb[ 'k ]h\'Ubmch\Yf'fY'Yj UbhXcW'a YbhgŁ'hc
]bWi XY'Ug'Yj ]XYbW'hc'gi ddcfhmci f'Yl hYbg]cb'Udd']WUhJcb"'#mci 'Ya U]''9| hYfbU''Gi ddcfhmci 'k ]'`
Ui hca UhJWJ'`mfYWf']j Y'U'HJW\_Yhbi a VYfžVi h]Zmci 'hY'Yd\cbY'mci 'k ]'`bYYX'hc'gdYWJZJWJ'`mUg\_'Zcf'cbY''
Hi fb]hJb'U'gc'dfcj ]XYg'i dXUhYg'cb'h\Y]f'gmghYa 'ghUh' g'cb'Hk]hYf"

; YbYfU`mž'UggYgga YbhitUg\_g'a i gh'VY'gi Va ]hhYX'Y`YVWfcb]\WJ``mj ]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ ba Ybh''=b']bghUb\Wg'k \YfY'h\]g']g'bchdcgg]V`Yž']hk ]``'VY'ghUhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k ]h\U`hYfbUh]j Y'gi Va ]gg]cb'XYhU]`g''

#### @UhY 5ggYgga YbhDYbU`hjYg

Ghi XYbhgʻUfYʻfYgdcbg]V`YʻZcfʻh\Yʻgi Va ]gg]cbʻcZUggYgga YbhiHJg\_gʻVmh\YʻfYei ]fYXʻXUhYgʻUbXʻhJa Yg" 8YdYbX]b[ˈcZh\Y`YI hYbhcZXY`Um]bʻh\Yʻgi Va ]gg]cbʻcZUbʻUggYgga YbhiHJg\_ʻdUghh\Y`Xi Y`XUhYʻUbXʻhJa Yž

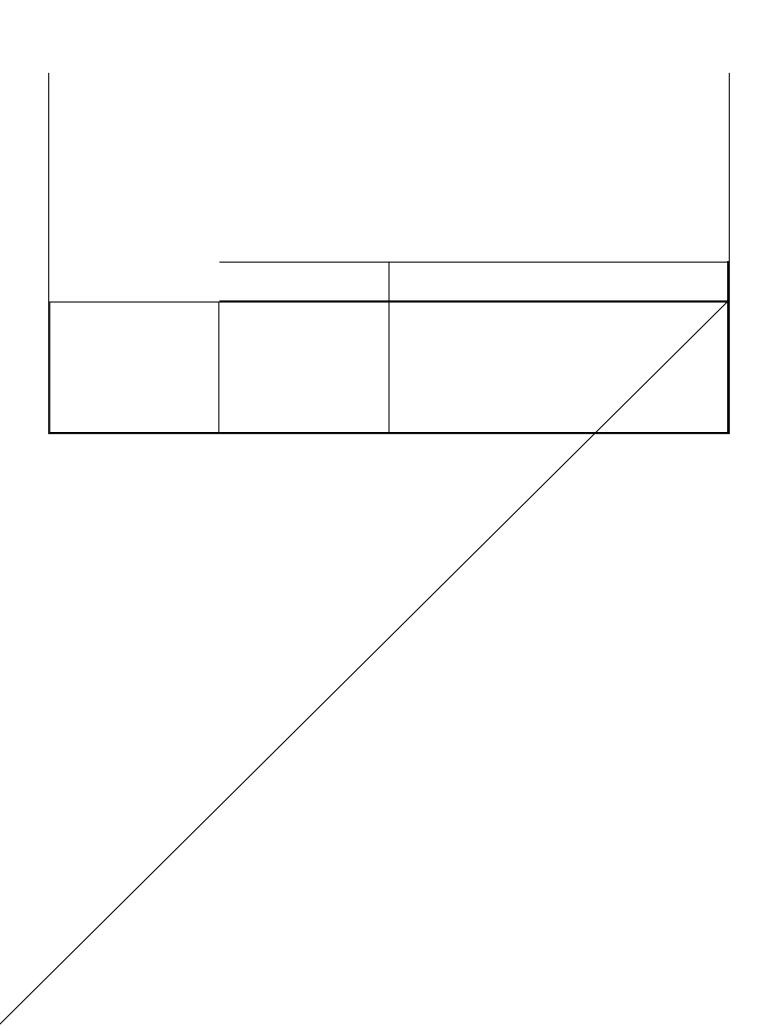
7jS_bW'5'gh XYbhgiVa]hg'Ub'YggUm(	, '\ci fg'UbX'%\$'a]bi hYg'UZhY	fih\Yigh]di `UhYXiXYUX`]bY""H\\	Y YggUm

# 7ci fgY GWXYXi `Y

## <u>J.]Mk:wWJdgrg.hlavYh</u>UV`Y

H]a YHJV`Y

	8 UHY	Hmd Y	7 cbhYbh	
	K YY_"%"&" '>i `m!"&- '>i `m		±olfcXi Whjcb'hc'gdYWjU`'YXi WUhjcb'fYgYUfW. WcbXi Whjb['U'`]hYfUhi fY'gYUfW.ž5D5'ghmYž'ci fbU` UfhjWY'Zcfa Uh	
			9th.]WU``]ggiYgʻ]bʻgdYW]U``YXiWUh]cb.`WobXiWh]b[ fYgYUfW\`k.]hh`ji`bYfUV`YfYdgXdUfWh]kkb]b}z*BiUb]YbQWY`Y`dco GhUhYaYbh`cb`9th.]WU``7cbXiWh]b` <iaub`fygyufw\ž IBGK`<f<b>‰</f<b></iaub`fygyufw\ž 	di `Uh]cbg:
W¢bXi ₩]i	o[ 'U'`]hYfUhi fY'gYUfW\ž'5D5	∵ghmYž′cifbU`		
GHUHYa YI	bhcb'9h\]WU`7cbXiWh]b' <i< td=""><td>a Ub<sup>.</sup>F YgYUfW.ž</td><td></td><td></td></i<>	a Ub <sup>.</sup> F YgYUfW.ž		



### FYgci fWyg

DfYgWf]VYX F Ygci fWYg

<u>Fiaf]``zD"'8"z7cc\_z6"; "z/ K\_]`Ymz'5"'@"'f&\$%%±"'DWeW8dJZ\_[`ebWJ[S^WgUSf[a`,6We[Y`el\_\_WfZaVelS`V\_Sbb1USf[a`e"</u>

#### FYWca a YbXYX FYgci fW/g

7 fYgk Y`` $\ddot{z}$  >"K " $\ddot{z}$ / 'Dch\ $\ddot{z}$ 7 "B "'f&\$% Ł"'C gS{fSf[hW;\`cg[dk S\`V D WeWSdJZ 6 We[Y\`, 5 Zaae[\`Y 3\_a\`Y 8[hW 3bbdaSUZ We"\(h\`9X]f]cb"\@cbXcb.'G5; 9"

: ]Y`Xž'5"'f&\$%) Ł"'6 [eUahWd[`Y efSf[ef[Ue ge[`Y;4? EBEE efSf[ef[Uež@cbXcb.'G5; 9"

I WTefW

.

 $FUj ] hWX z`G"A "z'/ '7 Uf`z`B"A "`f&$\% L''`C gS`(fSf[hWD WeWSdJZ, 4 q(VY[`Y fZW5 a`UWbfgS^FZWadWf[US^FS`V ? WfZaVa^aY[US^*:@cbXcb.`G5; 9"$ 

### 7ci fgY 9j U'i Uhjcb UbX 8Yj Y'cda Ybh

 $H\[g']g'h\Y'Z\[fghgYa\ YghYf'h\]g'Wci\ fgY']g'VY]b['cZZYfYX"$ 

#### ⇒a U[Y'7fYX]h

GmbYf[]Yg^]b^GcibX^&\$%\*

#### 7F = 7CG

7F = 7CG Dfcj ]XYf 7cXY. \$\$\$-,;