

# **POLS5127**

 $7 \ ]bU'UbX'5g]U!DUW]Z]WGYW f]lm$ 

HYfa "Hk c "#" &\$&%

### 7ci fgY'8YW]`g

#### 7 fYX]hDc]bhg \*

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

 $\begin{array}{l} : \ cf'h cgY']bhYfYghYX']b'hY'Z \ hi \ fY'cZfY[\ ]cbU``gYW' \ f]m']b'hY'5g]U!DUWZ]WUbX']bhYfbUhJcbU``fY`UhJcbgZ \\ W `hj UhJb[ 'Ub'i bXYfghUbX]b[ 'cZ7 \]bU'UbX']ng'ZcfY][ b'dc`]Wn']g']a \ dYfUhJj Y''H\]g'Wci \ fgY'cZZYfg'mci 'h\Y cddcfh b]m'hc 'gh Xm7 \]bU'Ug'U'[ `cVU``dck Yf']b'h\Y'a U_]b[ '': cW g]b[ 'cb'7 \]bU'g'Yj c'j ]b[ 'Yb[ U[ Ya Ybh k ]h\ 'h\Y'dcgh 7 c'X'K Uf'fY[ ]cbU``cfXYfZ'mci 'k ]``YI d`cfY'\ck '7 \]bU'g'fffgYfiUg'U'[ fYUhdck Yf'cj Yf'h\Y'dUgh h\fY'XYWUXYg'\Ug'dfcZci bX'm]a dUWYX'Vch\ 'fY[ ]cbU``UbX'[ `cVU``gYW'f]m''\Mci 'k ]``VY'dfcj ]XYX'k ]h\ 'h\Y UbU`m']\W'`UbX'h\YcfYh\W'`hcc`g'hc 'Wf]h\W'`mYI Ua ]bY'7 \]bYgY'ZcfY][ b'dc`]\WnZYVUhYg'cb'k \Yh\Yf'7 \]bU']g'Z bXUa YbHU``mU'ghUh g'ei c'cf'fYj ]a]cb]ghdck Yf'' \\ \end{array}$ 

### 7 ci fgY @YUfb]b[ Ci hWca Yg

- %" 5bUmY'h\Y'7\]bYgY'ZcfY][ b'dc`]Wha U\_]b['dfcWYgg'UbXž']b'dUff\]W'`Ufz'h\Y'\]ghcf]WU``UbX d\]cgcd\]WU`Zci bXUf\]cbg'cZ7\]bUf\[fy'fY[]cbU``Yb[U[Ya YbhglfUhY[m''
- &" 91 Ua ]bY'h\Y'\_Ymcddcfhi b]hJYg'UbX'W\U``Yb[Yg'7\]bU'ZJWYg']b']hg'Xca YghJWdc`]hJWJ`'hfUbgZcfa UhJcb UbX'ff[]qYfiUg'U'[`cVU`'UbX'fY[]cbU'`dck Yf"'
- '" 7 f]h]WU``m'Udd`m'±bhYfbUh]cbU``F Y`Uh]cbg'h\Ycfmhc'Yl d`U]b'7\]bUfg'Yl hYfbU``VY\Uj ]ci f'UbX h\Y']a d`]WUh]cbg'cZ]hg'[fck]b['dckYf'Zcf'fY[]cbU``gYW f]mi]b'h\Y'5g]U!DUW]ZW'

#### HYUWX]b[ GlfUhY[]Yg

H\]a'Wti fqY'Wtbq]gha'cZU'hk c!\ci f'qYa ]bUf'YUW\'k YY "'

5g'h\]g']g'U'gYa]bUf'Wci fgYžghi XYbhg'k]``'VY'Yl dcgYX'hc'U'`YUfb]b['dfcW'gg'h\UhfYei]fYg'dUfh]W]dUh]cb']b'U j Uf]YhmcZ]bHY``YWn U``UWnjj ]h]Ygž']bWi X]b['X]gW gg]b['Ugg][bYX'fYUX]b[gž'[fci d'dfYgYbhUh]cbgž'UbX']b!WUgg XYVUhY'''5 'g\cfh`YWn fY'k]``'VY'XY']j YfYX']b'h\Y'Z]fgh\ci f'hc'dfcj ]XY'ghi XYbhg'k]h\'h\Y'bYWyggUfm'[fci bX]b[]b'h\Y'hcd]Whc'VY'Yl Ua]bYX'''H\Y'gYWcbX'\ci f'k]``'h\Yb']bj c'j Y'WUgg'ZUW]']hUh]cb'Vmghi XYbhg'UbX'[fci dX]gW gg]cb'''

H\Y`Wci fgY`Uggi a Yg`ea\_ Wdf]cf`\_bck`YX[Y`cZ\hYfbUh]cbU``FY`Uh]cbg`h\Ycfm'UbX`7\]bYgY`ZcfY][b`dc`]Wf' H\Y`Wci fgY`k]``ž\ck Yj Yfž'VY`gYei YbWX`UbX`XY`]j YfYX`gc`Ug`hc`]bhfcXi WY`ghi XYbhg`hc`Zci bXUh]cbU` WcbWYdhgž'h\Yb`hc`YI hYbX`ghi XYbhgfi\_bck`YX[Y`h\fci [\`UX; UbWXX`XYVUhYg`UbX`Ya d]f]WU``a UhYf]U`"

# 5ggYgga Ybh

## 5ggYgga YbhHUg\_g

5ggYgga Ybh'tUg_	K Y][ \h	8iY'8UHY	GhiXYbhi@YUfb]b[ CiMoWhWcaYgʻ5ggYggYX
7`Ugg': UWj]hUhjcb'	&) ı	Bch5dd`]WUV`Y	%ž'&
G\cfh'9ggUm	&) ı	\$) #\$+#&\$&\$`%%\$\$`DA	&ž¨'
: ]bU``9ggUm			

## 5 http://bxubwwr.Fyei]fYaYbhg

5```gYa]bUfg`UfY`aUbXUlrcfmWUggYg`]b`DC@G) %&+`]b`H&ž`&\$&\$"

## 7ci fgY'GWXYXi `Y

### J]Yk 'WUgg'ha YHUV'Y

## H]a YtUV`Y

8 UHY	HmdY	7 cbhYbh
K_YY_'%'' %'A Um'!'( '>i bY	GYa ]bUf	CjYfj]Yk%'@c[]gh]Wg'cZ7cifgY'
		K \Uh'UfY'h\Y'a U]b'h\YcfYh]WU`'UddfcUW\Yg'hc'h\Y gh XmcZ]bhYfbUh]cbU`'gYW f]hm'UbX'\ck 'Xc'h\Ym\Y`d i g'i bXYfghUbX'h\Y'f]gY'UbX'VY\Uj ]cf'cZ7\]bU3 K \Uh'UfY'h\Y'VUg]WhYbYhg'cZfYU`]ga ž`]VYfU` ]bgh]h h]cbU`]ga ž'UbX'Wcbghfi Wh]j ]ga ž'UbX'k\Uh'Xc h\YmH'``i g'UVci h']bhYfghUhY']bhYfUWh]cbg3
K YY_'&.'+'>i bY'!'\% >i bY	GYa ]bUf	7 \ ]bU g '9j c`j ]b[ ': cfY][ b Dc`]Wm8cWf]bYg. GHJh g E i c cf F Yj ]g]cb]ghDck Yf3
		#b 'fh Y ``Ugh'fh ]fhmmY Ufgž' 7 \ ]bU'g 'ZcfY][ b 'dc `]\Wm\Ug Yj c 'j YX 'Zfca "_YYd]b[ 'U `ck 'dfc Z] Y" i bXYf '8 Yb[ L ]Ucd]b[ 'fc 'a cfY 'UggYfflj Y 'Zcfa gžgi W 'Ug "Gff]j ]b[ Zcf 5 W ]Yj Ya Ybhz" 'UbX "7 \ ]bU'XfYUa "'UbX "C bY 6Y `hz C bY F cUXz" i bXYf 'L ] >]bd]b[ "K \UhUfY 'fh Y a U]b 'W UfUWY f]gh]Wg cZX]ZZY fYbhghU[ Yg cf "XcWf]bYg" cZ7 \ ]bU'g 'ZcfY][ b 'dc `]\Whz f 'UggYfflj YbYgg ]b `]hg 'ZcfY][ b 'dc `]\WmVY\Uj ]cfzcf ']g '7 \ ]bU' XY `]VYfUhY `ma cj ]b[ 'hck UfXg [ fYUhYf 'UggYfflj YbYgg ]b `]hg 'ZcfY][ b 'dc `]\WmVY\Uj ]cfzcf ']g '7 \ ]bU'g 'bYk VY\Uj ]cfa YfY `mU 'fYZYW]cb 'cZ]hg [ fck ]b[ 'dck Yf WUdUV] `]hJYg 'Y '\dh 'Y U' i b]ei Y "dYUWY Z `f]gY" cfk ]` `]hZc``ck 'h Y 'dUhYfb cZch\Yf [ fYUh dck Yfg 'UbX 'Yj Ybhi U` mdi fgi Y \Y[ Ya cbmk \Yb#Z ]hg 'dck Yf 'WUdUV] `]hJYg 'U` ck ']hhc 'Xc 'gc 3 K \Uh g\UdYg 'h\Y' y c`i h]cb 'cZ7 \ ]bU'g 'ZcfY][ b 'dc `]\Wmg\UdY ']bhYfbUh]cbU` 'gYW f]hm ]b '5g]U3
K YY_'' .'%) '>i bY'!'% >i bY	GYa ]bUf	F]g]b[ 'UbX'8YW]b]b[ ' <y[ '7\]bu!i="" 7="" [fyuhdck="" \][\ygh]a="" ]huv'y3'k\uhufy'h\y']a="" a="" b]h'x'ghuh'g'ubx'7\]bu'ufy'h\y'hk="" c'[fyuhdck="" c'a="" cbg3'="" ch\yf'g'ghfuh'[]w]bhyfyghg'cf']g'gd]fu']b[="" cxuhy'yuwx="" d`]wuhjcbg<="" duwhcb'h\y'fy[]cbu''gyw'f]m''k\uh]g'h\y="" dyhjhjcb']b'h\y'5g]u!duwjzjw="" g="" g'fy'uhjcbg']b'h\y'5g]u!duwjzjw8="" h\y'i="" th="" u'cf="" ub'h\y'hk="" wca="" wcbzfcbhuhjcb']byj="" ya="" yfg']b'h\y'5g]u!duwjzjwfy[]cb'k]h\'h\y="" yfg'uwwca="" yggybw''cz7\]bu!i=""></y[>

		Zcf'h\Y'fY[]cbU`'dYUWY'UbX'gHUV]`]hn3
K YY_'(.'&%'>i bY'!'&) >i bY	GYa ]bUf	7\]bU!Fi gg]U'5`][ ba Ybh'UbX'GYW f]lmi]b'h\Y 5g]U!DUW]Z]W
		7 \]bU!Figg]U'gYW f]mWccdYfUh]cb'\Ug']bWfYUgYX Wcbg]XYfUV'mcj Yf'h\Y'`UghXYWUXYžUbX'bck'h\Y 6Y]']b[!A cgWck'dck Yf'Ul]g'\Ug'g][b]Z]WUbhVYUf]b[ cb']bHYfbUh]cbU'`gYW f]m]b'5g]U'UbX'VYmcbX''' <ck fuddfcwxya="" g'fy'uh]cbg3="" g'ubx'7\]bu!i="" ghfuhy[]wwccdyfuh]cb']b'h\y'5g]u!duw]zwfy[]cb3<="" hc'wcbwydh'u']ny'ubx'xyz]by'7\]bu!figg]u'ghfuhy[]w="" k\uh'ufy'h\y'dchybh]u'`uj="" td="" wcbgyei="" xyhyf]cfuh]cb'czfigg]u!i="" ybi="" ybr3'="g']hU'ghfUhY[]WdUffbYfg\]d'cZ" ybwyžcf']g']hub'ux'\cwfyuwf]cb'hc'h\y="" yg'cz'7\]bu!figg]u=""></ck>
K YY_').'&, '>i bY'!'&'>i	`m GYa ]bUf	7 \ ]bU g 'F ]gY 'UbX 'h\Y 'F Y[ ]cbU` 'Dck Yfg ']b '5 g]U fDUfh'‰ 'H\Y '7 UgY 'c Z もX]U
		±bX]U`]g`Wcbg]XYfYX`Ubch\Yf`″f]g]b[`dck Yf″`]b`5g]U3 < ck Yj Yfž'h\YfY`]g`bc`WcbgYbgi g`cj Yf`\ck '7\]bU! ±bX]U`fY`Uh]cbg`a ][\hYj c`j Y"`7 Ub`7\]bU`UbX`±bX]U f]gY`dYUWYZ ``mhc[Yh\Yf3`5`hYfbUh]j Y`mžXc'h\YmgYY YUW\`ch\Yf`Ug`U`h\fYUhUbX`h\i g`UfY`XYgh]bYX`Zcf WcbZ]W3`
K YY_'*.')	GYa ]bUf	7 \ ]bU g F ]gY UbX F Y[ ]cbU`Dck Yfg ]b 5g]U fDUfh &L 'H\Y'7 UgY c Z'>UdUb
		7\]bU!>UdUb`fY`UhJcbg`UfY`cbY`cZh\Y`a cghWca d`YlcbYg`]b`h\Y`5g]U!DUWJZJWfY[]cb"`H\Y`hk c`Wci bhf]Yg\Uj Y`hYff]hcf]U``X]gdi hYg`UbX'j YfmWca d`Yl`\]ghcf]W\`a Ya cf]Yg"'< ck `WUb`h\Y`hk c`dfc[fYgg`hck UfXgbcfa U`]nUhJcb`]b`h\Y]f`V]`UhYfU``]bhYfUWJcbg3`K\Uh`]gh\Y`fc`Y`cZYl c[Ybci g`ZJJWcfg`fY"["'>UdUb'g`U``]UbWfY`UhJcbg'k]h\`h\Y`l b]hYX`GhUhYgb']b`h\Y'yj c`j ]b[bUh fY`cZ7\]bU!>UdUb`fY`UhJcbg3`8c`h\Y`hk c
K YY_`+.`%&`>i `m!`%*`>i	`mGYa]bUf	7 \ ]bU g F ]gY UbX Ga U``Yf Dck Yfg ]b 5 g]U fDUfh 处 < YX[ ]b[ ž6U`UbW]b[ ž6UbXk U[ cb]b[
		±oʻh\Yʻ5g]U!DUW]Z]Wžʻ7\]bUʻ]gʻgi h'(Wžʻ7( <b>‰</b>

		■ 7 \ ]bU'U'h\fYUhcf'Ub'cddcfhi b]hmZcf'h\Y'ga U``YfghUhYg'gi ffci bX]b[']h8' < ck 'Xc'Gci h\YUgh5g]Ub ghUhYg'zgi W\'Ug'J ]YhbUa ž'A U'Umg]Už'UbX'h\Y D\]`]dd]bYg'bUj ][ UhY'h\Y'ffci V'YX'k UhYfg'cZh\Y Gci h\YUgh5g]Ub'gYW f]hmWca d'YI']b'h\Y'WcbhYI hcZ ]bhYbg]Zm]b['Gci h\'7\]bU'GYU'X]gdi hY3'8c'h\Ym\YX[Y'cf'VU'UbWY'U[U]bgh7\]bUžcf'XcY'h\YmVUbXk U[cb'k]h\'6Y]'b[']bghYUX3'K\Uh]g'h\Y dfYXca ]bUbhdUhYfb']b'h\Y]f'VY\Uj ]ci fž'UbX']g']h W\Ub[]b['Ug'7\]bU'Wcbh]bi Yg'hc'f]gY3
K YY_''&*'>i `m!'' \$'>i `m	GYa ]bUf	7\]bUfg`7CJ=8!%`8]d`ca UWm`Wcbh]bi ci g`f]gY U[U]bghU```h\Y`cXX3 7\]bU`\Ug`VYYb`Uhh\Y`ZcfYZfcbhcZ]bhYfbUh]cbU` dc`]h]Wg`Xi f]b[`UbX`]b`h\Y`UZhYfa Uh\`cZ7CJ=8!% dUbXYa]W'' <ck ``]hhy`uvci="" h\ck<br="" y`gh]```_bck="" yfž'k="" yj="">7CJ=8!%``\Ug`UZZYWhYX`7\]bUfg`Wcbh]bi ci g`f]gY" <ug`h\y`7cj=8`dc`]h]wg`g`ck ]hy`h\y<br="" b`cfžei="" yx`]hxck="">cddcg]hYž'Zffh\Yf`UWW`YfUhYX`h\Y`f]gY`cZ7\]bU'j ]g!U! j ]g`ch\Yf`bUh]cbg3'<ck `\ug`7cj="8!%`UZZYWhYX&lt;br">7\]bUfg`fY`Uh]cbg`k]h\`ch\Yf`Wci bhf]Yg`]b`h\Y`5g]U!</ck></ug`h\y`7cj=8`dc`]h]wg`g`ck></ck>
		DUWJZJWfY[]cb3K Ugʻ]hXYff]a YbHJ`fc 7\]bUfgʻ[`cVU` gHJh gžcf'dYf\Udgʻ]fgʻ]a dUWfk UgʻfUh\Yf'a]l YX3''
K YY_'%\$.'&'5i [i gh!'* 5i [i gh	GYa ]bUf	6Yłk YYb 'GWm` U'UbX '7\UfmVX]g3' '7\]bU!I G 7 ca dYhjhjcb 'UbX '5i glfU`]U g': cfY][ b'Dc`]Wm  < ck 'WUb '5i glfU`]U'a UI ]a ]nY ']lg 'bUhjcbU` ']bhYfYglg']b h\Y '5g]U!DUW[Z]WfY[ ]cb3'8cYg']h\Uj Y 'hc 'W\ccgY  VYłk YYb 'YWcbca ]W]bhYfXYdYbXYbWY k ]h\ '7\]bU UbX'gYW f]lmU``]UbWY k ]h\ 'h\Y'I b]hYX'GHUhYg3' < ck g\ci `X'5i glfU`]U'bUj ][ UhY 'h\Y'Yj Yf! ]bhYbg]Zhjb[ 'I G! 7\]bU'Wca dYhjhjcb']b'5g]U3'G\ci `X']h\YX[ Yž  VU'UbWYzcf'VUbXk U[ cb3' < ck 'Xc 'h\Y'h\Ycf]Yg'UbX WUgYg'gh X]YX'h\fci [ \ci hh\]g'Wci fgY']bZcfa 'ci f i bXYfghUbX]b[ 'cZ5i glfU']Ufg'VY\Uj ]cf']b'h\Y'fY[ ]cb3

## FYgci fWfg

### DfYgWf]VYX F Ygci fWYg

5```fY`Yj Ubh'Wci fgY`]bZcfa Uh]cb'UbX'fYei ]fYX'fYUX]b[g'UfY'Uj U]`UV`Y'cb'h\Y'A ccX`Y'g]hY'Zcf'h\]g'Wci fgY'' D`YUgY'fY[i `Uf`m'W\YW\_Zcf'i dXUhYgž'Ubbci bWYa Ybhgž'UbX'ch\Yf'fY`Yj Ubh'Wci fgY'fY`UhYX']bZcfa Uh]cb'cb A ccX`Y''

### FYWca a YbXYX FYgci fWfg

 $\pm 0.2cfa \ Uhljcb `UVci h`UXX]hljcbU``fYUX]b[g`UbX`fYgci fWfg`]g`U`gc`a UXY`Uj U]`UV`Y`cb`h\Y`A ccX`Y`g]hY`2cf`h\]g Wci fgY"$ 

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

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

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

; YbYfU`mž'UggYgga YbhiHug\_g'a i ghVY'gi Va ]hhYX'Y`YVWfcb]\WJ``mij ]U'Y]h\Yf'Hi fb]h]b'cf'U'A ccX`Y Ugg][ ba Ybh''=b']bgHJb\W'g'k \YfY'h\]g']g'bchdcgg]V`Yž']hk ]```VY'gHJhYX'cb'mci f'\\circ i fgY'g'A ccX`Y'g]hY'k ]h\U`hYfbUh]j Y'gi Va ]gg]cb'XYHJ]`g"

cfi]bZcfa Uhjcbicbi\ckihcigi Va ]hUgg][ ba Ybhgicbi]bYij ]UiA ccXiY.i\hdg.#gh XYbhi bgk "YXi "Ui #\ck! gi Va ]hUgg][ ba Ybha ccXiY

5WUXYa]W<cbYghmUbXD`U[]Uf]ga

