

# MINE4710

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| B Ua Y          | 9a U]`                    | 5j U]`UV]`]m                 | @cW]h]cb  | D\cbY                  |
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| a ]bY`k cf_]b[ `Ybj ]fcba Ybh   |                               |
| ) "5dd`m`h`Y`df]bW]dU`dYfZcfa UbW`a YUgi fYg`i gYX`]b`a ]bY<br>a UbU[ Ya Ybh  | D9%`%žD9&`%žD9' "( žD9%`&     |
| *`8Ya cbgfhUH`Ub`Uk UfYbYgg`cZa ]b]b[ `Uk `fgUZymž`a ]b]b[<br>`YUgYg`YH`  | D9&`( žD9' "%                 |
| +`F YWt[ b]gY`UbX`UddfU]gY`h`Y`ZUWc`fg`Wtbf]Vi h]b[ `hc`gUZym/`f]g_<br>a UbU[ Ya Ybh]ggi Yg`]b`gdYW]Z]Wa ]b]b[ !fY`UH`X`dfcW]ggYg | D9%) žD9%`* žD9&`"            |
| , "`b] Ygh[ UH`h`Y`W]i`gYg`UbX`WtbgYei YbW]g`cZa ]b]b[ !fY`UH`X`<br>gYf]ci g`]bW]XYb]g`UbX`dfc]cgY`f]g_`a UbU[ Ya Ybh]gfhUH[ ]Yg  | D9%) žD9&`%žD9' "%            |
| - "8Ya cbgfhUH`Ub`Uk UfYbYgg`cZWtbfUWc`f`a UbU[ Ya Ybh]f]<br>ck bYf]cdYfUH`Xt`]ggi Yg   | D9%`* žD9&`(`                 |
| %"`8Ya cbgfhUH`h`Ua `g_]`g  | D9' "&žD9' "' žD9' ") žD9' "* |
| %%`8Ya cbgfhUH`UX] UbW]X`k f]h`b`UbX`cfU`Wt`a`a`i`b]W]h]cb`g_]`g  | D9' "&žD9' "(                 |

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| 5ggYgga YbhHUg_                             | K Y][ \h | 8i Y'8UH                                | Gh XYbh@YUfb]b[<br>Ci hWta Yg'5ggYggYX |
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| łXi gh]U'F Y'Uh]cbg'GW]dh<br>UbX'F c'Y!d'Um | &\$!     | %&# \$, # & \$ & % \$ ) . \$ \$ ' DA    | &ž' ( ž%žž%                            |
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| C b ]bY'8 ]gW gg]cb'6cUfX'                  | &\$!     | 9j Yfm&! ' k YY_g                       | ' ž' ) ž' + ž, ž%žž%                   |
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8YHU]`g.

8Ygd]h' hY'Udd']W]h]cb'cZUXj UbVWX'f]g\_a UbU[ Ya Ybhia YhcXc'c [ ]Ygž ]bXi gh]U'UVW]XYbhg'Wcb]bi Y'hc  
cVWV f' H\Y'di fdcgY'cZ h ]g'YI YfW]gY' ]g'hc'gY'YVWU'fYVWbh\][ \!dfcZ]Y'UVW]XYbhfa ]b]b[ 'cf'chYfk ]gYłž'hc

]bbYf'hci [ \hg'UVci h'hY'j Uf]ci g'hd]Wg'X]gW ggYX'Xi f]b[ 'hY'k YY\_"H\Ymk ]''U'gc '\Uj Y'hY'cddcfh b]mhc  
W'a a Ybhc'b'hY]f'WUgga U'h'g' ]XYUg'UbX'dc]b'g'cZj ]Yk "'H\Y' [ cU'cZ'h.]g'UW]j ]m]g'hc'YbW'i fU[ Y'hY  
g\Uf]b[ 'cZ]XYUgžXYj Y'cd'W]h'W' h'b\_]b[ žZYI ]V] ]mUbX'cdYb!a ]bXYXbYgg'Ug'k Y''Ug'Yb\UbW' h'Y  
gh XYb'g'g\_]`g' ]b'bY[ ch]U]cb'UbX'h]a Y'a UbU[ Ya Yb'ž'U''cZk \]W' UfY'W'i W]U'g\_]`g'cZUb'YZZYW]j Y  
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|           | 5ggYgga Ybh | A UbU[ Ya Ybh: i bXUa YbH`g`fF c`Y`D`UmŁ:F c`Y`D`Um<br>cZUb`bXi gh]U`8]gdi hY |



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5`A`]b]b[ `9b[ ]bYYf]b[ `gh`XYbñg`UfY`fYei`]fYX`hc`W`ca`d`Y`H`U`ghi`XYbñXYWñUfU`h]cb`Zc`f`UWUXYa`]W]bñ[ ]f]m`k`\W`]g`ci`h]bYX`]b`h`Y`Ugg][ ba YbñW`j`Yf`g`Y`Y`h]g`"6`mg][ b]b[ `h]g`XYWñUfU`h]cb`ž`mci`U[ fY`h`U`h`mci`f`k`cf\_]g`mci`f`ck`b`cf][ ]bU`k`cf\_"

žmci`b`Y`Y`X`gca`Y`U`X`X]h]cbU`gi`ddcfh`k`]h`mci`f`k`f]h]b[ `g\_]`gž`d`Y`UgY`W`cb`hU`Wñ`h`Y`@Y`Uf]b[ `7`Y`bñY`cf`j`]Y`k`gca`Y`cZ`h`Y`fYgci`fW`g`cb`h`Y]f`k`Y`V`g]hY`[k`k`k`"Wñ`bgk`"YXi`"Ui`"](#)H`Y`@Y`Uf]b[ `7`Y`bñY`]g`XYg][ bYX`hc`\Y`d`mci`]a`dfcj`Y`mci`f`UWUXYa`]W`k`f]h]b[ `UbX`W`ca`a`i`b]W`h]cb`g\_]`g`"Gca`Y`ghi`XYbñg`i`gY`h`Y`7`Y`bñY`gYf] ]W`g`VY`Wñi`gY`h`Y`m`U`fY`Z]bX]b[ `h`Y]f`Ugg][ ba Ybñg`U`W`U`Y`b[ Y`ž`ch`Y`fg`VY`Wñi`gY`h`Y`mk`U`bñ`hc`]a`dfcj`Y`Ub`U`fY`U`X`m`gi`W`Y`ggZ`UWUXYa`]W`dYfZcfa`UbW`"

5 WUXYa ]W#Zcfa Uh]cb

7 ci fgY`F Ygi `hg

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#`gca Y`]bghUbWg`mci f`Z]bU`Wci fgY`fYgi `ha UmVY`k ]H\Y`X`UbX`bchfY`YUgYX`cb`hY`l BGK `d`UbbYX`XUH`" H\]g`]g`]bX]WUH`X`VmU`Wci fgY`[ fUXY`fYgi `hcZY]hYf.

- VfcUXVUbX`WcbbYWjcb`f&) \*`\_V]hgYWcf`ZJghYfŁ
- UV]`]mhc`j`Yk`ghfYUa`]b[`j`XYc`fŁ][`\\`cf`ck`XYZ]b]hcb`I`BGK`HJ`cdh]cbgŁ

A cfY`]bZcfa`Uhcb`UVci`hgmgH`a`fYei`]fYa`YbHg`]g`Uj`U]`UV`Y  
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## 5VWYgg]b[ `7ci fgY`A`UHf]U`g`H\fcI [ `A`ccX`Y

7ci fgY`ci`h]bYgZgi`ddcfha`UHf]U`g`UFY`i`d`cUXYX`hc`A`ccX`Yz`hY`i`b]j`Yfg]mghUbxUfX`@YUfb]b[  
 A`UbU[`Ya`YbhGmgH`a`f@a`GŁ`"b`UXX]hcbz`cb!`]bY`Ugg][`ba`Ybhgi`Va`]gg]cbg`UFY`a`UXY`i`g]b[`hY`  
 Ugg][`ba`YbhXfcdVcl`ZUW]`]midfcj`]YX`]b`A`ccX`Y`"5`"Ybfc`"YX`gh`XYbHg`UFY`Ui`hca`UH`W`"m]bW]`XYX`]b`  
 A`ccX`Y`Zcf`YUW`Wc`i`fgY`"Hc`UWVY`gg`hY`gY`XcW`a`YbHg`UbX`ch`hYf`Wc`i`fgY`fYgci`fW`gZ`d`YUgY`j`]g]h`  
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 Ybfc`a`Ybh`Mci`f`Wc`i`fgY`Wc`bj`Ybcfg`k`]`i`gY`hY`Ya`U]`Z`bW]cb`k`]h]b`A`ccX`Y`cf`k`Y`k`]`Wc`bhUWh`mci`cb`  
 mci`f`4`gh`XYbhi`bgk`"YXi`"Ui`Ya`U]`UXXfYgg"

K`Y`i`bXYfghUbx`h`Uhmc`i`a`Um`Uj`Y`Ub`YI`]gh]b[`Ya`U]`UW`Wc`i`bhUbx`k`ci`X`dfYZf`Zcf`mci`f`I`BGK`Ya`U]g`hc`  
 VY`fYX]fYWYX`hc`mci`f`dfYZf`fYX`UW`Wc`i`bh`D`YUgY`gYY`]bg]fi`W]cbg`cb`\\`ck`hc`fYX]fYW`mci`f`I`BGK`  
 Ya`U]g`" "<ck`WUb`"Zcfk`UfX`a`mYa`U]g`hc`UbchYf`UW`Wc`i`bfB"

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 dYfgcbZ`d`YUgY`i`gY`hY`Ya`U]`UXXfYgg`VY`ck`Zcf.

- 9bfc`a`Ybhcf`ch`hYf`UXa`]b`ei`Ygh]cbg`fY[`UfX]b[`mci`f`dfc[`fUa`.  
[\hdg.##`bgk`\]bg\]\[`h`a`\]fcgcZ`W`a`dcffU`g`W`a`#`YV!Zcfa`g#](#)
- 7ci fgY`]bei`]f]Yg`g`\\`ci`X`VY`X]fYWYX`hc`hY`7`ci`fgY`7`cbj`Ybcf`

⇒ U[`Y`7`fYX]h

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?Ybg]b[ hcb`Wla`di`g`]g`cWU`hYX"





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