8& 8+0., \$1#0(,+

BOL Z[HUKHYK VM JHYL MVY OLHS[O JHYL WYV]PKLYZ WYVWVZLK I` ZLJ[PVU + VM [OL @LZ[H[LTLU[ VM [OL ; H^ BOPYK\$ BVY[Z. <LKPJH\$ < H\$WYHJ[PJL THYRZ H M\UKHTLU[H\$ ZOPM[ PU [OL O TLYPJHU ; H^ \$UZ[P[\[LeZ WVZP[PVU VU WYVMLZZPVUH\$ [VY[ \$PHIP\$P]^& OJJVYKPUN [V IV[O JVU]LU[PVUH\$ ^PZKVT HUK WYPVY @LZ[H[LTLU[ WYV]PZPVUZ\$ [OL Z[HUKHYK VM JHYL MVY WO`ZPJPHUZ PZ KL[LYTPULK I` [OLPY J\Z[VTHY` WYHJ[PJLZ& ?YVMLZZPVUH\$Z H\$VUL HYL NP]LU [OL \UPX\L WYP]P\$LNL [V ZL[ [OLPY V^U \$LNH\$ Z[HUKHYK VM JHYL& 7 V^L]LY\$ [OL WYVWVZLK ZLJ[PVU + KLWHY[Z MYVT [OPZ WVZP[PVU& 8UZ[LHK\$ YLHZVUHI\$L JHYL MVY OLH\$[O JHYL WYV]PKLYZ PZ KLMPULK HZ JVUK\J[ cYLNHYKLK HZ JVTWL[LU[d I` TLKPJH\$ WLLYZ& 2\Z[VTHY` WYHJ[PJLZ HYL YL\$L]HU[ I\[ KV UV[ IPUK [OL 0\Y`&

8U YLHSP[`\$ [OL Z[LW [HRLU I` ZLJ[PVU + PZ T\JO \$LZZ YHKPJH\$ [OHU [OL OVYUIVVRZ HUK \$LNH\$ LUJ`J\$VWLKPHZ ^V\\$K Z\NNLZ[& < HU` Z[H[LZ OH]L HSYLHK` HIHUKVULK [OL J\Z[VT%IHZLK Z[HUKHYK VM JHYL\$ HUK V[OLYZ PNUVYL P[ PU WYHJ[PJL& OZ H YLZ\\$[\$ [OL \$H^ PU HJ[PVU H\$YLHK` YLZLT I\$LZ [OL WYV]PZPVUZ VM [OL UL^ @LZ[H[LTLU[& 8 Z[YVUNS` LUKVYZL [OPZ UL^ KLMPUP[PVU&

BOPZ WHWLY PZ KP]PKLK PU[V [OYLL WHY[Z& ?HY[ 88 L\_WSHPUZ HUK KLMLUKZ [OL UL^ KLMPUP[PVU VM [OL TLKPJHS THSWYHJ[PJL Z[HUKHYK VM JHYL& ?HY[ 888 KLZJYPILZ [OL L]PKLUJL [OH[ Q\YPLZ JHU YLZWVUZPIS` OHUKSL [OLPY YLZWVUZPIPSP[`

OZ 9\KNL ; LHYULK 7 HUK L\_WSHPULK\$ cH ^OVSL JHSSPUN TH` OH]L \UK\S` SHNNLK PU [OL HKVW[PVU VM UL^ HUK H]HPSHISL KL]PJLZ&d

O[ [OL ILNPUUPUN VM [OL [^LU[PL[O JLU[\Y`\$ WO`ZPJPHUZ ^LYL NV]LYULK I` [OL ZHTL Y\SL& 1 \ [ HZ [OLPY ZVJPHS Z[H[\Z NYL^\$ [OLPY SLNHS WYP]PSLNLZ NYL^^ ^P[O P[& BOVZL WYP]PSLNLZ YHUNLK MYVT PTT\UP[` HNHPUZ[ SPHIPSP[` \UKLY [OL HU[P[Y\Z[ WYPJL\MP\_PUN Y\SLZ [V Y\SLZ L\_JS\KPUN JVYWVYH[L JVTWL[P[PVU& >UL VM [OLZL ZWLJPHS Y\SLZ NH]L WO`ZPJPHUZ [OL WV^LY [V ZL[ [OLPY V^U Z[HUKHYK VM JHYL&

#! %: 9@29%: 9.7 - 6=1:8", 52 +>.91.<1:3%.<26=&236921/B%?=>:8.<B)<.0%02

BOYV\NOV\[ [OL [^LU[PL[O JLU[\Y`\$ \$LNH\$ ZJOV\$HYZ \UPMVYT\$` IL\$PL]LK [OH[ J\Z[VTHY` TLKPJH\$ WYHJ[PJLZ ZL[ [OL Z[HUKHYK VM JHYL PU TLKPJH\$ TH\$WYHJ[PJL JHZLZ\$ BOPZ JVUZLUZ\Z L\_[LUKLK MYVT [YLH[PZLZ \$PRL E P\$\$PHT ; \$V`K ?YVZZLY HUK E \$\cline{k} ?HNL : LL[VU\$ [V \$LNH\$ LUJ`J\$VWLKPHZ\$ \$PRL O TLYPJHU 9\YPZWY\KLUJL\$ OJJVYKPUN [V ?YVZZLY\$ [VY[ \$H^ cNP]LZ [OL TLKPJH\$ WYVMLZZPVU \$\cline{k} \$\cline{k} [OL WYP]P\$LNL\$ ^OPJO PZ \Z\HS\$` LTWOH[PJHS\$` KLUPLK [V V[OLY NYV\WZ\$ VM ZL[[PUN [OLPY Y^U \$LNH\$ Z[HUKHYKZ VM JVUXB9VVdP

BOL J\Z[VT%IHZLK Z[HUKHYK VM JHYL PZ Z\WWVY[LK I` [^V WYPTHY` YH[PVUHSLZ& 5PYZ[\$ SH` Q\YPLZ ZOV\SK UV[ IL NP]LU [OL WV^LY [V JVUJS\KL [OH[ WYHJ[PJLZ ^PKLS` MVSSV^LK I` WYHJ[PJPUN WO`ZPJPHUZ HYL ULNSPNLU[& ALJVUK\$ [OH[ WO`ZPJPHUZ JHU IL [Y\Z[LK [V WSHJL WH[PLU[ PU[LYLZ[Z HIV]L [OLPY V^U MPUHUJPHS PU[LYLZ[Z ^OLU LZ[HISPZOPUN [OLPY Z[HUKHYKZ VM JHYL&

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cFIGLJH\ZL [OL Z[HUKHYK VM JHYL PZ KL[LYTPULK I` [OL JHYL J\Z[VTHYPS` WYV]PSV [

0: 8; 2>29>d I`H WYV]PKLYZe WLLYZ& 2\Z[VTHY`WYHJ[PJLZ HYL YLSL]HU[I\[KV UV[IPUK [OL 0\Y`&

\$! , 52 %. =27. A 6= '@:70694 69 >52 +. 82 &6<20>6:9 .=>52 )<:;:=21 \*2=>.>2829>

BOL HJ[\HS JHZL SH^ OHZ HS^H^Z ILLU TVYL JVTWSL\_ [OHU JVU]LU[PVUHS ^PZKVT Z\NNLZ[LK& <HU` Z[H[LZ OH]L L\_WSPJP[S` TV]LK [V H YLHZVUHISL WO`ZPJPHU Z[HUKHYK VM JHYL& BOL [LZ[ PU [OLZL Z[H[LZ PZ ^OH[ H YLHZVUHISL WO`ZPJPHU ^V\SK OH]L KVUL\$ UV[ ^OH[ PZ \Z\HSS` KVUL& OJJVYKPUN [V H YL]PL^ W\ISPZOLK PU )'''\$ [OL MYHJ[PVU VM Z[H[LZ \ZPUN YLHZVUHISL JHYL SHUN\HNL OHK NYV^U [V YV\NOS` MVY[` WLYJLU[& BOL YH[PVUHSL PZ X\P[L

OUV[OLY JOHSSLUNL WVZLK I` [OL \ZL VM H J\Z[VT%IHZLK Z[HUKHYK PZ [OL KPMMPJ\S[` VM YLSPHIS` WYV]PUN ^OPJO WYHJ[PJLZ OH]L ILJVTL J\Z[VTHY`& >UL WO`ZPJPHU%SH^`LY OHZ Z\NNLZ[LK [OH[ H UH[PVUHS Z\Y]L` ^V\SK IL ULLKLK& 8U YLHS SPML\$ L\_WLY[Z VM[LU KV UV[ RUV^ HUK JV\SK UV[ OVWL [V RUV^ [OL MYHJ[PVU VM KVJ[VYZ ^OV ^V\SK OH]L ILOH]LK SPRL [OL KLMLUKHU] KPK&

5 VY ^OH[L]LY YLHZVU\$ [OL JV\Y[Z PU THU` VZ[LUZPI\$` J\Z[VT%IHZLK Z[H[LZ HS\$V^ W\$HPU[PMMeZ L\_WLY[Z [V [LZ[PM` [OH[ [OL KLMLUKHU[eZ JHYL ^HZ UV[ cHJJLW[HI\$L\$d cHWWYVWYPH[L\$d VY \W [V [OL cZ[HUKHYK VM JHYLd ^P[OV\[ YLMLYLUJL [V WYL]HP\$PUN WYHJ[PJLZ&

BO\Z\$ ULHYS` OHSM [OL Z[H[LZ OH]L HSYLHK` HIHUKVULK [OL J\Z[VT%IHZLK Z[HUKHYK VM JHYL HZ H TH[[LY VM SH^& <HU` V[OLYZ PNUVYL P[ PU WYHJ[PJL& O WYLJPZL JV\U[ PZ ]PY[\HSS` PTWVZZPISL ILJH\ZL THU` Z[H[LZ OH]L JVUM\ZPUN VY JVUMSPJ[PUN SHUN\HNL&

%!, 52 )<:;:=21 +>.91.<1 :3 #002;>./72 :< %: 8; 2>29> %. <2 6= >52 \*645> (92

OZ UV[LK HIV]L\$ [OL [YHKP[PVUH\$ J\Z[VT\HHZLK Z[HUKHYK PZ \U^VYRHI\$L\k 8[ PZ HSZV IHK W\I\$PJ WV\$PJ`\k BOL UL^ Z[HUKHYK IHZLK VU JVUK\J[ [OH[ WLLYZ

WYL]LU[LK JSPUPJHS [YPHSZ MVY KLJHKLZ\$ T\[PSH[PUN [OV\ZHUKZ VM ^VTLU ^P[O H ^VY[OSLZZ WYVJLK\YL&

@LZLHYJOLYZ OH]L MV\UK YLTHYRHISL KLSH`Z b HZ T\JO HZ H KLJHKL b PU [OL HKVW[PVU VM UL^ ILZ[ WYHJ[PJLZ\$ L]LU ^OLU [OLPY Z\WLYPVYP[` PZ UV[ PU KPZW\[L& 5PM[LLU `LHYZ HM[LY H THQVY Z[\K` LZ[HISPZOLK [OH[ YPNVYV\Z NS\JVZL JVU[YVS ZPNUPMPJHU[S` YLK\JLK SVUN%[LYT JVTWSPJH[PVUZ MYVT KPHIL[LZ\$ VUS` VUL VM MV\Y KPHIL[PJ WH[PLU[Z ^HZ YLJLP]PUN [OL YLJVTTLUKLK U\TILY VM HUU\HS [LZ[Z& 5\Y[OLYTVYL\$ Z[\KPLZ OH]L KVJ\TLU[LK [OH[ ULHYS` OHSM VM WO`ZPJPHUZ KV UV[ MVSSV^ 2SPUPJHS ?YHJ[PJL 6 \PKLSPULZ&

BOPZ PZ LZWLJPHSS` [YV\ISLZVTL ILJH\ZL H Z\YWYPZPUN U\TILY VM JSPUPJHS WYHJ[PJLZ OH]L UV YLSPHISL L]PKLU[PHY` IHZPZ& 4& 7 HH]P < VYYLPT VIZLY]LZ [OH[ THU` JSPUPJHS CYV\[PULZ HYL IHZLK UV] 0\Z[ VU JSLHY KH[H HUK JHYLM\S YLHZVUPUN\$ I\[ HSZV VU OHIP[\$ O\UJO\$ J\YYLU[ MHZOPVU\$ HUK [OL WYVMLZZPVUeZ MVSR ^PZKVT&d

>UL PU MP]L WYLZJYPW[PVUZ PZ WYV]PKLK MVY HU VMM%SHILS W\YWVZL\$ L]LU [OV\NO TVZ[ VM [OVZL \ZLZ OH]L UV Z\WWVY[PUN YLZLHYJO& AVTL[PTLZ [OH[ WYHJ[PJL PZ ILULMPJPHS\$ I\[ ZVTL[PTLZ b HZ PU [OL JVTTVU VMM%SHILS \ZL VM [OL KPL[ KY\N 5LU%?OLU b WH[PLU[Z Z\MMLY KL]HZ[H[PUN PUQ\YPLZ& ATHSS ^VUKLY [OH[ YLWLH[LK Z[\KPLZ OH]L MV\UK [OH[ TLKPJHS WYHJ[PJLZ ]HY` ^PKLS` HUK PUL\_WSPJHIS` MYVT VUL JVTT\UPI` [V HUV[OLY&

+2' G % H 3 5 6 8U SPNO[ VM [OLZL JVUZPKLYH[PVUZ\$ 8 Z[YVUNS` LUKVYZL [OL O; 8eZ HKVW[PVU VM H Z[HUKHYK IHZLK VU JVUK\J[ cYLNHYKLK HZ JVTWL[LU[d I` TLKPJHS WLLYZd& 7 V^L]LY\$ [OL ^PZKVT VM [OPZ KLWHY[\YL MYVT [OL N\HYKYHPSZ VM [OL J\Z[VT% IHZLK Z[HUKHYK VM JHYL KLWLUKZ VU [OL Q\Y`eZ HIPSP[` HUK ^PSSPUNULZZ [V ZLUZPIS` L]HS\H[L TLKPJHS L]PKLUJL HUK [YLH[ WYV]PKLYZ MHPYS`& 5 VY[\UH[LS`\$ [OL L]PKLUJL PUKPJH[LZ [OH[ [OL` JHU HUK KV& BOPZ HUHS`ZPZ PZ H[ [OL JVYL VM ?HY[ 888 VM [OPZ LZZH`&

888 B' % 91.4e/0"()(040, 42!)1!0% <%\$(#!) = %&)(&%+#%

3 LJHKLZ VM YLZLHYJO VU TLKPJHS THSWYHJ[PJL 0Y ]LYKPJ[Z ZOV^ ^P[O YLTHYRHISL \UPMVYTP[ OH[ 0YPLZ \ZL [OLPY WV^LY ^PZLS & =LNSPNLUJL TH[[LYZ& BOL VKKZ VM H WSHPU[PMMeZ ]LYKPJ[ YPZL HZ [OL L]PKLUJL VM ULNSPNLUJL PTWYV]LZ& E OLU PU KV\I[\$ 0YVYZ YLN\SHYS NP]L WO`ZPJPHUZ [OL ILULMP[ VM [OL KV\I[&

 $2\,V\,T\,WLSSPUN\,Z[\KPLZ\,ZOV\,^{OH}[\,KVJ[VYZ\,^PU\,OHSM\,\,VM\,\,[OL\,\,0\Y\,^{Y}LSPL]\,L\,\,OL\,\,WH[PLU[Z\,ZO\,^{OH}]\,LSPL]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,LSPL]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[Z\,ZO\,^{OH}]\,L\,\,WL[PLU[$ 

BOLZL V\[JVTLZ Z[YVUNS` Z\NNLZ[ [OH[ KVJ[VYZ LU $\emptyset$ V` VUL VY TVYL Z`Z[LTPJ HK]HU[HNLZ& B^V Z[YVUN JHUKPKH[LZ HYL HJJLZZ [V IL[[LY SH^`LYZ\$ L\_WLY[Z\$ HUK L]PKLUJL HUK ^PKLZWYLHK W\ISPJ ZRLW[PJPZT HIV\[ WH[PLU[Z ^OV Z\L [OLPY KVJ[VYZ& E OH[L]LY [OL L\_WSHUH[PVU\$  $\emptyset$ \YPLZ NP]L WO`ZPJPHUZ [OL ILULMP[ VM [OL KV\I[& 2VU[YHY` [V JVTTVU JVUJLW[PVU\$  $\emptyset$ \YPLZ ZLLT [V IL H^HYL VM [OLPY SPTP[LK L\_WLY[PZL HUK \U^PSSPUN [V MPUK HNHPUZ[ H WO`ZPJPHU PM [OL`OH]L HU` KV\I[ HIV\[ [OL TLYP[Z&

?\[ KPMNLYLU[S`\$ [OL` ZLLT [V [HRL ]LY` ZLYPV\ZS` [OL I\YKLU VM WYVVM HUK [OL [^V ZJOVVSZ VM [OV\NO[ KVJ[YPUL& 8M [OL` KV UV[ MLL\$ JVTMVY[HI\$L JOVVZPUN IL[^LLU VWWVZPUN L\_WLY[Z\$ [OL` MPUK MVY [OL KLMLUKHU[& BOL` HYL TVYL \$PRL\$` [V KV ZV [OHU Q\KNLZ HUK L]LU V[OLY WO`ZPJPHUZ& 8M [OL JVTW\$L\_P[` VM ZVTL TH\$WYHJ[PJL JHZLZ OL\$WZ HU`VUL\$ P[ OL\$WZ KLMLUKHU[Z& 1HZLK VU [OPZ IVK` VM YLZLHYJO\$ [OLYL PZ UV IHZPZ MVY KV\ I[PUN [OH] 0\YPLZ ^P\$\$

8U T` JVU]LYZH[PVUZ ^P[O L\_WLYPLUJLK \$H^`LYZ VU IV[O ZPKLZ\$ 8 OH]L MV\UK [OH[ [OL` HSYLHK` RUV^ [OLZL MHJ[Z& 8[ PZ ]LY` OHYK MVY H WH[PLU[ [V ^PU H THSWYHJ[PJL ]LYKPJ[& 1LJH\ZL P[ PZ HSZV ]LY` L\_WLUZP]L [V \$P[PNH[L [OLT\$ WSHPU[PMMZe \$H^`LYZ HYL MPSPUN ML^LY HUK ML^LY JHZLZ PU 2HSPMVYUPH HUK HJYVZZ [OL UH[PVU&

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ALJ[PVU +!H" KLMPULZ [OL TLKPJH\$ TH\$WYHJ[PJL Z[HUKHYK VM JHYL HZ c[OL JHYL\$ ZRP\$\$\$ HUK RUV^\$LKNL <24.<121 .= 0:8;2>29> HTVUN ZPTP\$HY TLKPJH\$ WYV]PKLYZ PU [OL ZHTL VY ZPTP\$HY JPYJ\TZ[HUJLZkd

@H[OLY [OHU HZRPUN ^OL[OLY [OL KLMLUKHU[ ILOH]LK HZ WO`ZPJPHUZ J\Z[VTHYPS` KV\$ [OPZ KLMPUP[PVU HZRZ ^OL[OLY [OL KLMLUKHU[ WYV]PKLK JHYL CYLNHYKLK HZ JVTWL[LU[d I` TLKPJHS WLLYZ% 8SS\Z[YH[PVU , THRLZ P[ JSLHY [OH[ VIZVSL[L J\Z[VTHY` WYHJ[PJLZ JHU UV^ IL JOHSSLUNLK% 8U HKKP[PVU\$ [OL

5VY ZPTPSHY WY\KLU[PHS YLHZVUZ\$ 8 Z\ZWLJ[\$ [OL @LWVY[LYZ WYVWVZLK H Z[YVUNLY 2@6129%. <B YV\$L MVY J\Z[VTHY` WYHJ[PJLZ PU TLKPJH\$ TH\$WYHJ[PJL JHZLZ [OHU [OH[ NP]LU [V PUK\Z[Y` J\Z[VTZ PU VYKPUHY` ULNSPNLUJL JHZLZ\$ ^OLYL J\Z[VT PZ ZPTW\$` VUL MHJ[VY [V IL JVUZPKLYLK\$ BOPZ TL[ Z[YVUN YLZPZ[HUJL MYVT JYP[PJZ ^OV ML\$[ [OH[ MHY [VV T\JO ^LPNO[ ^HZ ILPUN NP]LU [V TLKPJH\$] J\Z[VTZ\$

BV IL Z\YL\\$ [OL PUP[PHS KYHM[ KPK WSHJL H OLH] ` [O\TI VU [OL ZJHSL PU MH] VY VM \ZPUN WYL] HPSPUN WYHJ[PJLZ HZ [OL Z[HUKHYK VM JHYL\\$ BVV OLH] `\\$ 8U P[Z LHYSPLZ[ P[LYH[PVUZ\\$ 2VTTLU[ 2 VM 2V\UJP\\$ 3YHM[ =V\\$ \* PTWSPLK [OH[ J\Z[VTHY` WYHJ[PJLZ ZOV\SK \Z\HSS` NV]LYU\\$ Z[H[PUN

WYLZ\TW[PVU PU MH] VY VM J\Z[VT& BOL` HSZV KYVWWLK [OL [L\_[ Z[H[PUN [OH] J\Z[VTZ JHU VUS` cZVTL[PTLZd IL YLNHYKLK HZ PUJVTWL[LU[&d BOL J\YYLU[ KYHM[ HSZV WYLZLY] LZ SHUN\HNL\$ JSHYPM`PUN [OH[ [OL Z[HUKHYK VM JHYL PZ c\S[PTH[LS`d HUK cLZZLU[PHSS`d ^OH[ V[OLY OLHS[O JHYL WYV]PKLYZ YLNHYK HZ JVTWL[LU[\$ UV[ ^OH[ [OL` [`WPJHSS` KV& O[ [OL ZHTL [PTL\$ OV^L]LY\$ [OL SH[LZ[ KYHM[ VM [OL JVTTLU[Z JVU[PU\LZ [V ZH` [OH[ J\Z[VTZ ^PSS cMYLX\LU[S`d VY cVM[LUd IL H \ZLM\S ILUJOTHYR HUK [OH[ WYL]HPSPUN TLKPJHS WYHJ[PJLZ HYL c\Z\HSS`d JVTWL[LU[&