! "##\$! "%" &'(\$) *+'

&,-./0') 12-34'56, /0678'91:;:'

91:;:&'<==>&';,66,0')**12363**?7@,6'A2B74,-C!"#\$***\$&!" '('')*+**,\$**"-./0*1&2"314" '1&.\$516." #*&&17.\$.*862"9 ':1";/1&.*86"8<".:1" = 1&&*\$6*," > 81&"*6"?"@1.17A"" BOC*&872"#7D")/*&." = D"E\$66*6F"GGG"

A:):&:8'<==D8';,66,0')12363?7@,6'A2B74,-C!"#\$%%\$&!"'(" 314"'1&.\$516." ':1&*&2"9':1"-*F6*<*,\$6,1"8<".:1"H1&/771,.*86"8<"I:7*&."<87".:1"-\$6,.*<*,\$.*86"8<".:1")1%*1C172"B"':18%8F*,\$%"-./0J"8<"H85\$6&"K2?L?MA" B0C*&872"#7D"#\$C*0"ND"08417J"

&:; 7E:8'DFFG8' ! 36 / BH7, '\$4I2-4, I734, 6' '' 47E2-07IC!" I 8% / 5 +*\$!" - I ' = *&&*86&"

J:*:**8'DFFK8'A2, II62'9,**@7L7@'''47E2-07IC!"-1\$..%1!">B" =/&*,"PO/,\$.*86!"=/&*,"@17<875\$6,1" !''##\$%&''#%'\$''()"

;7M63B,8'DFNN8'O2-4P,62'Q7?1'A@1336!"E1760\$%1!">B" !"##\$%&"#%'\$"()'

!;+&\$!'+R9+#\$+S!+"

9-3L2003-'3L'S2T') 20I, B24I', 4P'U-22.8' ! 36/BH7, 'J7H67@, 6'A2B74, -C8' ! 36/BH7, ' \$4I2-4, I734, 6''' 47E2-07IC8' I 8%/5+*\$!"-I'

*"'+%, -./012)!)34%

۲

5'1\$,:*6F"

= B2''''

H1&*016.2"Q711R"?LS2") \$&*," = 87T: 8%8FJ!"Q711R"U2"G6.17510*\$.1" - J6.\$V) B2" 3 ' " ' 1V.&"\$60" I 86.1V.&"

H1\$017"<87" #D = *6"T78`1,.&"

_@:#"0*&&17.\$.*86"\$0C*&87"

B05*6*&.7\$.*C12"

....

- $\# *71,.87"8 < a'J1$7") B] = # *C"T78F7$5 "Y^/\J"Sb?cLT71&16.["$
- -./016."B0C*&*6F"
 d6*C17&*.J"I855*..11&2"--="#*C*&*86\$%"E\$,/%.J"YSb?ULT71&16.[\"
 d6*C17&*.J"E\$,/%.J"YSb?ULT71&16.[\"--="@78F7\$5"B&&1&&516."
 Y@78<1&&*86\$\"=B&["YSb?MLSb?a[\"I/77*,/%/5"I855*..11"YSb?KLSb?e["B'-"O*\$*&86"YSb?e".8"T71&16.["
 O1\$017&:*T"*6"B&&1&&516."YSbSb".8"T71&16.["

* PV/4@I'9-3L2003-8'+/-3M2,4'A@1336'L3-'!/6I/-2',4P') 12363?C8'!36/BH7,' \$4I2-4,I734,6'''47E2-07IC8'N876.\$%!"Q175\$6J"

*"'+%, -.8012)!)34%

.

= B'', 8/7&1''Y*6''Q175\$6[2''X175161/.*,&''

%

* 0070I, 4I'; 2, 48' ! 36/ BH7, 'J7H67@, 6'A2B74, -C8' ! 36/ BH7, '\$4I2-4, I734, 6' '' 47E2-07IC8' I 8%/ 5 +*\$!"- I"

\$3''\$2+%, -...90'''+%, -...%

% __66"\$00*.*86".8"+1*6F"\$"515+17"8<".:1"#1\$6f&"\$0C*&87J",855*..11"Y#1\$6f&" I\$+*61.[!"6"%10"&15*6\$7J"<\$,/%.J"511.*6F&!!T%\$6610"\$60"5\$*6.\$*610"\$,\$015*,"&,:10/%1!" \$60"\$&&*&.10"4*.:"T78F7\$5"\$&&1&&516.D"E87".:1"Sb?c"\$,,710*.\$.*86"C*&*."8<".:1"B&&8,*\$.*86"</pre> $\label{eq:started_st$

_H1T71&16."B > = "\$.".:1"\$66/\$%" 5 11.*6F&"8<".:1"<=3>)2)3?%@7@)'42)")2% A"!@7'("3B!!4C44)%YB&&8,*\$.*86"8<"PC\$6F1%*,\$%")*+%1"-,:88%&["\$60"%8,\$%" 5 *&&*86&",86<1716,1&"

9-3L2003-8'+/-3M2,4'A@1336'L3-' ! /6I/-2',4P') 12363?C8' ! 36/BH7,'\$4I2-4,I734,6' ''47E2-07IC8"N876.\$%!"Q175\$6J"

D)&)#@)2%, --E0; \$+%, -./%

&\$S\$A) #X'+R9+#\$+S !+'

Y-P74, I734'I3'9-20HCI2-'74'I12'*4?67@,4'!1/-@1'74'S3-I1'*B2-7@,8''

9^/0F1 5 16."\$60"&/<<17*6F"?"@1.17"M2?iDA"@71&16.10"\$.".:1"iU!""B66/\$%" = 11.*6F"8<".:1" PC\$6F1%*,\$%" ' :18%8F*,\$%" - 8,*1.J!"E87." > 87.:!" ' (!"38C1 5 + 17"SbS?D"

9':18\%8F*,\$\L+\$&10"@17,1T.*86&"8<"Q80"\$&"\$"@8&&*+\1"B&&1&& 516."8<"-T*7*./\$*.JDA" @71&16.10".8F1.:17"4*.:\^*\$"ED"N\\$/&*"\$.".:1"B66/\$\"I86<1716,1"8<".:1"I:7*&.*\$6" B&&8,*\$.*86"8<"@&J,:8\%F*,\$\"-./0*1&!"B.\\$6.\$!"QB!"=\$7,:"?U!"SbSbD"

 $\begin{array}{l} 9\,I:7^{\$}\&.^{\$}6\&"\$60":.1"^{OF\,5\,16}."8<"Q802"PVT\$87^{\ast}6F":.1">\$76^{\ast}6F"^{\ast}6"?"@1.17"U2?S+DA"\\ @71\&16.10"\$":.1"i?^{\#5}"B66/\$"=11.^{\ast}6F"8<":.1"PC\$6F1\$^{\ast},\$\$"':18\$8F^{\ast},\$\$"-8,*1.J!"-\$6"\#*1F8!"\\ I\,B!"\,3\,8C1\,5+17"Sb?cD"\end{array}$

H1C*14 "8<"; $$2NW4Q2 = "BQ\%6'(\%S)!4$#)34\%Z+)!0\%A\%X$\&NB2 = "3(\%^&AHH'7\&$47=3$'\% V = ##)34$2+!"+J"B60714"'D"O1"@1$/!"':78/F:"j %0"'1&.$516."PJ1&"314"'1&.$516."$ $I 8 5 5 16.$7*1&!!"10D"B60714"'D"O1"@1$/!YQ7$60"H$T*0&2"N71F1%"B,$015*,!"Sb?i[!"*="23$'% >=2%40)%ZK$3B)'7&$'%S0 = '=B7&$''%G=&7)4+!"K?2S"Y^/61"Sb?e[2"UicLe?D"$

9-:\$7*6F"*6".:1"-/<<17*6F&"8<".:1"I:7*&.2"B"Q1617\$%"Q16*.*C1"*6"?"@1.17"M2?U1A"@71&16.10" \$.".:1"Kc^{\$%}"B66/\$%"=11.*6F"8<".:1"PC\$6F1%*,\$%"':18%8F*,\$%"-8,*1.J!"@78C*016,1!"HG!" 38C15+17"?K!"Sb?iD""

 $\begin{array}{l} H1C*14"8<"M2) \\ N\% = 2\%[7>) \\ 0\%G42$4) \\ B7) \\ !\% = 2\%[) \\ \$2373B!\% \\) \\ 4\$7373B!\%\$3(\% \\) \\ K7K73B\%J \\ R\% \\ S) \\ !4\$\# \\) \\ 34\%M2) \\ N!"+J" \\) \\ 16`\$5*6"\\ OD" = 17R\%1"\$60"H8+17."\\ O"@\%/5517"YQ7\$60"H\$T*0\&2" \\) \\ \$R17" \\ B, \\ \$015*, !'Sb?i!'X = = \\ N!\%\$4\%\%M'\$3\&)"Y \\ :...T2]] \\ 444D+88R\&\$.\$F\%\$6, 1D, 85] + \\ 88RL \\ \hline 11C*14\&]F711RL\%*(1L\&.7\$.1F*1\&L\%1\$76*6FL71.\$*6*6FL71C*C*6FL614L.1\&.\$516.LF711RL+16`\$5*6L \\ \%L'517R\%1L78+17.L\%LT\%/5517][''Sb?eD'' \\ \end{array}$

O1,./712"9':1"314"@17&T1,.*C1"86"@\$/\!"3'">7*F:.!"\$60"PC\$6F1*,\$\"d6*.J!A"T71&16.10" O/7*6F"PC\$6F1*,\$\"d6*.J">11R"\$."I8\/5+*\$"G6.176\$.*86\$\"d6*C17&.J!"=\$7,:"Se!"Sb?iD"

 $9^{1\&} = \frac{1}{6} - \frac{1}{$

 $\label{eq:2.1} $$ "9Eg7"^1&/&'''1+16!".78.Z"015" > $017&.$60"017" > 1&.A"YO*C*6F"<87"^1&/&"01&T*.1".:1" j TT8&*.*86"8<".:1" > 87&0[!"T71&16.10"$."I k^="^/F160+*+1&./601"Yn = I B"n8/.:")*+&1" - ./0J[!"#16R16087<!"Q175$6J!"E1+7/$7J"Sb??D"$

9#17") 17FT710*F."h"\$6"P.:*R"<g7":1/.11A"Y':1"-17586"86".:1"=8/6."h"B6"P.:*,"<87" '80\$J1[!"T71&16.10"\$."-/T17"@%/&"h"\$"5*6*&.7J"8<".:1"PC\$6F1%*&,:1"N*7,:16F51*601" Y@78.1&.\$6."I:/7,:["*6" j 416!"Q175\$6J!" j ,.8+17"Sb?bD"

9^1&/&"0/7,: "0*1"B/F16"017"^g6F17"&1:16A"Y-11*6F"^1&/&".:78/F:".:1"PJ1&"8<".:1" #*&,*T%1&[!"T71&16.10"\$.".:1"Q151*601"Q8..1&"YI:/7,: "8<"Q80["Og016&,:1*0!" Og016&,:1*0!"Q175\$6J!"UbD"j,.8+17h?D38C15+17!"Sbbc"

 $\begin{array}{l} 901*016!"\$+17"o7*,:.*Ff"h"@17&T1R.*C16"$/&"?D@1.7/&A"Y-/<<17*6F!"+/."*6".:1"9H*F:.A">$J"h" @17&T1,.*C1&"<78.5"?"@1.17["T71&16.10"$."71F*86$%" 5.11.*6F"8<".:1"#1/.&,:1"I:7*&.%*,:1" '1,:6*R17")/60"YQ175$6"I:7*&.*$6"P6F*6117"B&&8,*$.*86[!"=$66:1*5!"Q175$6J!" E1+7/$7J"SbbeD" \end{array}$

9 ' 8/7"0/7, : "016"^\$R8+/&+7*1<A"YB" ' 8/7".:78/F:".:1"01..17"8<"^\$ 5 1&[!"T71&16.10"\$." I k^ = ")*+1%L\$R./1%"E87/5 "Yn = IB")*+%1"<87" ' 80\$J"E87/5 [!"H/*.!"Q175\$6J!" j ..8+17"SbbeD"

90 - : 7*6F"*6". : 1" - /<<17*6F&". : 1" I : 7*&.f"h"