

! "#\$%&# '()*+,- !.*/#\$,01##-&2,3,+! "#\$* (#* /,01##-&
0! ' . /)! *,/ !, %&)/ #,0.1\$# (3 -)0/,4# (!*0/\$3/)! *0,
- ')55, - ! '# (3 *⁶,
)*/\$!4. - /)! *2,+! "#\$* (#* /0,3 *4, %&)/ #,0.1\$# (3 - 7,
! 89: , ; <8=>, ?@>, A<BC6DEF; , @GH>, IG=<G9, A<8JI<?<>; <8, ?@>, . 8<?>B, 0?G?>; ,
K>>8, I>=JL8<M>B, G; , G8B, L<H>8, ?@>, I<L@?; , JN, NO99, =<?M>8; , JN, ?@>, =JO8?I: , ?@>: ,
9<H>, <8P, G?, 9>G; ? , J8, QGQ>IR^S, 5JI, AJ; ? , JN, 3 A>I<=G8, @<; ?JI: P,

;?G?>T; , =0II>8? ,

SF6D,,,,,,,,,,,,,%)' ' 3 (# / / # , .

0! -)3',W.0/-#,'#a.)/7,W!. \$*3', , "

<AGL>;, NIJA, 3 A>I<=GT;, BGIV, QG;?, U@<9>, B>>Q>8<8L, ?@>, @<;?JI<=G9, B<H,
GAJ8L, A<8JI<?:, LIJOQ;R, c : , 0?<9<M<8L, ?@>, LJH>I8A>8?;, Q>>=@, BJ=?I<8>, ?@J;>,
<8, QJ;<?<J8;:, JN, GO?@JI<?:, @GH>, QJU>IN09, GH>80>;, ?J,

/ @ > , W < A , - I J U , O J O ? @ P , ? @ > , d 9 G 8 P , G 8 B , H < J 9 > 8 = > , G L G < 8 ; ? , A < 8 J I < ? < > ; , G I > ; , J ,
< 8 ? I < 8 ; < = G 9 9 : , 9 < 8 V > B , ? J , J 8 > , G 8 J ? @ > I , ? @ G ? , < ? , < ; , 8 > G I 9 : , < A Q J ; ; < K 9 > , ? J , ? G 9 V , G K J O ? ,
J 8 > , U < ? @ J O ? , ? G 9 V < 8 L , G K J O ? , ? @ > , J ? @ > I ; R 6 \ , ! 8 > , J N , ? @ > , U J I ; ? , > Q < ; J B > ; , J N , I G = < G 9 ,
? > H J I , < 8 , ? @ > , . 8 < ? > B , O ? G ? > , ? J J V , Q 9 G = > , < 8 , / O 9 ; G P , ! V 9 G @ J A G P , < 8 , ? @ > , > G I 9 : , 6 D S F ; R ,
3 8 , 3 N I < = G 8 C 3 A > I < = G 8 , A G 8 , U G ; , G = 0 ; > B , J N , ; > e O G 9 9 : , G ; ; G O 9 ? < 8 L , G , U @ < ? > ,
U J A G 8 P , ? @ J O L @ , < ? , U G ; , 9 G ? > I , B > ? > I A < 8 > B , ? @ G ? , ? @ > , A G 8 , f 9 < V > 9 : , ? I < Q Q > B , G 8 B ,
G = < B > 8 ? G 9 9 : , ; ? > Q Q > B , J 8 , ? @ > , U J A G 8 T ; , N J J ? R g 6 Y , 4 > ; Q < ? > , ? @ > , N G = ? , ? @ G ? , ? @ > , = @ G I L > ; ,
U > I > , B I J Q Q > B , G L G < 8 ; ? , ? @ > , A G 8 P , G , U @ < ? > , A J K , L G ? @ > I > B , G 8 B , = @ G ; > B , G , L I J O Q , J N ,
G I A > B , K 9 G = V , A > 8 , U @ J , U > I > ,

=>8?OI: ,G?,?@> ,@G8B; ,JN,U@<?> ,;OQI>AG=<;?;R, " <J9>8?,JO?KOI;?; ,U>I> ,=J8;?G8?,
 ?@IJOL@JO?,?@> ,A<BB9> ,QGI?,JN,?@> ,?U>8?<>?@ ,=>8?OI: P,;> ;Q>=<G99: ,NJ99JU<8L,?@> ,
 ' () * + @B>=<;<J8R, (G8: ,U@<?> ;P,<8=90B<8L,?@J; ;> ,<8,QJ; <?<J8; ,JN,QJU>IP,K>9<H>B,
 ?@>I,Q9G=> ,<8, ; J=<? : ,UG; ,K<8L,08B>IA<8>BR^{SF} , ! 8> , 3NI<=G8C 3 A>I<=G8,AG8,
 UG; , ; @J?, G?, QJ<8?CK9G8V, IG8L> , GN?>I, <8; <;?<8L, J8, K<8L, V>Q?, J8, ?@> , HJ?<8L,
 IJ99;R^{S6} ,

>8=J08?>I>B,G,U@<?>,AJK,U@<?>,?I:<8L,?J,>8IJ99,@<;,=@<9BI>8,<8,;=@JJ9R, / @>,
AJK,JH>IIG8,?@>,JNN<=>I;,U@J,U>I>;?G?<J8>B,G?,?@>;=@JJ9,?J,AG<8?G<8,JIB>I,
G8B,G??G=V>B, ?@>, 0@0??9>;UJI?@,NGA<9:,U<?@,9GIL>,=@G<8;;G8B,KG?;R^{SY}, / @>,
>8=J08?>I,U<?@,?@>,AJK,>8B>B,U<?@,?@>,QG;?JI,8>GI9:.,K>G?>8,?J,B>G?@,G8B,
A<;<8L;;V<8,NIJA,@<;,NG=>R^{SE},,,

% @>8, :J08L, =<H<9, I<L@?;., G=?<H<;?;., KJGIB>B, <8?>I;?G?>, KO>;;., ?J,
=@G99>8L>.,>LI>LG?<J8,9GU;.,<8,N>B>IG9,=JOI?P,?@>.:,U>I>,JN?>8,A>?,U<?@,H<J9>8?,
I>;<;?G8=>,NIJA,U@<?>.,;JO?@>I8>I;P, JN?>8,<8,=J8X08=?<J8,U<?@,?@>, d9G8R,5JI,
<8;?G8=>P,U@>8,?@>,G=?<H<;?;.,GII<H>B,<8,39GKGAG,<8,(G:.,JN,6DE6,?@>.:,U>I>.,
A>?,K:.,U@<?>,AJK;.,U@J,N<I>,KJAK>B,?@>,KO>;;R^{SI}.)8,c<IA<8L@GAP,?@>,d9G8,
;?IO=V,G,B>G9,U<?@,?@>,9J=G9,QJ9<=>,?J,G99JU,NJI,G8,08QIJ?>=?>B,N<N?>>8CA<80?>.,
U<8BJU,<8,U@<=>@,?J,G??G=V,?@>,G=?<H<;?;R^{SZ},3IJ08B,?@<I?;.,d9G8;A>8,GUG<?>B,
?@>,KO;.,G?,?@>,?>IA<8G9,G8B,G??G=V>B,?@>,G=?<H<;?;P,9>GH<8L,J8>,AG8,U<?@,
Q>IAG8>8?,KIG<8,BGAGL>R^{SD}.,,

% @<9>, <?, UJ09B, K>, =J8H>8<8?>, ?J, B>=9GI>, ?@G?, ?@>, QG;.;GL>, JN, ?@>.,
\$>=J8;?IO=?<J8,3A>8BA>8?;.,G8B,>H>8,?@>.,-<H<9,\$<L@?;.,3=?.,JN,6DE\,G8B,
" J?<8L,\$<L@?;.,3=?.,JN,6DEY,Q0?,G8,>8B,?J,IG=<G9,?>8;<J8;.,<8,?@>.,.8<?>B,0?G?>P,

, ^{SY},5. \$IG?,6Y6R,
, ^{SE},3 * 4 \$#%, (R, (3 *)0P,3.5)\$#,7 ! . . -

0! -)3',W.0/)-#,' ,#

SF6D,,,,,,,,,,,,,%)' ' 3 (# // #, . *) "# \$ 0) / 7, - ! ' ' # + #, ! 5, ' 3 %,

0! -)3',W.0/)-#,'#a.)/7,W

QIJAJ?>,G,;J=<?>:,<8,U@<=@,A<8JI<?<>;,GI>,;>=J8B,=9G; ;,=<?<M>8;,JI,BJ,8J?,>e<;?,
G?,G99R, + JH>I8A>8?;,>e<;?,?J,QIJ?>=?,<?<M>8;,G8B,?@<I,I<L@?;P,G8B,?@G?,BO?>:,
<8=90B>;,QIJAJ?<8L,G,B<H>I;>,KJB: ,JN,Q>JQ9>R,&JU,=G8,?@J;>,=<?<M>8;,N>>9,;GN>,
G8B,<8=90B>B,<8,?@<I,JU8,=JAA08<?<>;,U@>8,?@>;>,G=?<J8;,GI>,<8?>8?<J8G99: ,
B>;<L8>B,

08B>I, ?@>, 9<K>IG99: , =J8; ?IO>B, 5<I; ? , 3 A>8BA>8?R^{Y6},)8, NG=?P, ?@>, ; Q>>=@, I<L@?; ,
08B>I, ?@>, 5<I; ? , 3 A>8BA>8?, GI>, I>=JL8<M>B, G; , ; 0=@, G8, >; ; >8?<G9, I<L@?, ?@G?, ?@> ,
00QI>A>, - JOI?, @G; , ?<A>, G8B, ?<A>, GLG<8, GNN<IA>B, ?@>, I<L@?; , JN, ; Q>GV>I; P, >H>8,
U@>8, ?@>: , GI>, d9G8; A>8P, 8>JC * GM<; P, JI, J?@>I, KIG8B; , JN, U@<?>; ; OQI>AG=<; ?; R,

N\$ F - 24B3B4+437" & J 4A. &

3?, ?@>, >8B, JN, G, B>=GB>, ?@G?, ; GU, ?@>, K9JJB<>; ? , G8B, A J; ? , =J8?>8?<JO; ,
>H>8?; , JN, ?@>, - <H<9, \$ <L@?; , #IGP, ?@>, 00QI>A>, - JOI?, B>=B, ' (- + . " + DI (% & , \$ &
R74) P & <8, U@<=@, G, d9G8; AG8, H<J9G?>B, G8, ! @<J, ; ?G?>, ; ?G?O?>, JO?9GU<8L, ?@> ,
GBHJ=G=: , JN, =I<A<8G9, ; : 8B<=G9<; AR^{YS}, / @G?, GBHJ=G=: , GAJ08?>B, ?J, ?@> ,
IGAK9<8L; , JN, G, d9G8; AG8, 8GA>B, cIG8B>8KOIL, J8, G, ; >I<>; , JN, 8>U; =G; ?; , <8,
U@<=@, @>, IG8?>B, GKJO?, UG8?<8L, 3NI<=G8C3 A>I<=G8; , ?J, LJ, KG=V, ?J, 3NI<=GP,
Q9G88<8L, AGI=@>; , <8, % G; @<8L?J8P, 4R - RP, 59JI<BGP, G8B, (<; <; <; <QQ<P, G8B,
=J8B>A8<8L, LJH>I8A>8?G9, ; OQI>; ; <J8, JN,

fG==JAQ9<;@<8L,<8B0;?I<G9,JI,QJ9<?<=G9,I>NJIArg^{YY}, / @>, - JOI?,@>9B,?@G?,G,;?G?O?>,
NJIK<BB<8L,GBHJ=G=:,<;,O8=J8;?<?O?<J8G9,O89>;,;?UJ,NG=?JI,;=G8,K>,;@JU82,
NI;?,?@>,GBHJ=G=:,A0;?,K>,B<I>=?>B,G?,QIJBO=<8L,f4<<4+''+3,9GU9>;,;G=?<J8Pg,
G8B, ;>=J8BP, ?@>, 9GU9>;, G=?<J8, <;, 9<V>9:, ?J, J==OI^{YE}, * J?@<8L, GKJO?,
cIG8B>8KOILT,; ;Q>>=@,UG,; ;>>8,K:,?@>, - JOI?,G,;9<V>9:,?J,=GO;>, <AA<8>8?,
9GU9>;,;JI,H<J9>8?,G=?<J8P,G8B,?@0,;@<;,;Q>>=@P,@G?>NO9,G,;<?,AG:,@GH>,K>>8P,
UG,;QIJ?>=?>B,K:,?@>,5<I;?,3A>8BA>8?^{YI},

! 89:,>L@?, :>GI,GN?>I, ' (-+. ''+DI(%G8B,X0;?,JH>I,?@<I?::>GI,;;<8=>,
?@>,399<B,5JI=>;,B>=9GI>B,H<=?JI:,JH>I,*GM<, +>IAG8:P,?@>, - JOI?,B>=B,G,
=J8?IJH>I;<G9,=G;>, <8,U@<=@,G8,3A>I<=G8,8>JC*GM<,LIJOQ,;O>B,NJI,?@>,I<L@?,?J,
AGI=@,<8,?@>,QI>BJA<8G8?9:,W>U<;@,=??:,JN,OVJV<P,)99<8J<;R^{YZ}, / @>,)99<8J<;=??:,
G??>AQ?>B,?J,>8XJ<8,?@>,8>JC*GM<;,NIJA,G8:,V<8B,JN,QOK9<=,B<;Q9G:R^{YD}, / @>,
- JOI?P,@JU>H>IP,I>H>I;>B,?@>, <8XO8=?<J8P,;?G?<8L,<8,G,;@JI?,C''(42I(4I<4JQ<8J8,
?@G?,5<I;?,3A>8BA>8?,QIJ?>=?<J8,;GQQ9<B,?J,?@>,8>JC*GM<,B>AJ8;?IG?JI;^{RE},,

/ @>, - JOI?,GNN<IA>B,<?;>,9<A<?G?<J8,J8,;OQQI>;;<J8,JN,@G?>NO9,>eQI>;;<J8,
U@>8,<?,@>GIB,G,=G;>, <8,U@<=@, (<88>;J?G,?>>8GL>I,;KOI8>B,G,;AG99,=IJ,;
U<?@<8,?@>,N>8=>B,;GIB,JN,G8,3NI<=G8C3A>I<=G8,NGA<9:R^{E6}, / @>,G=?<J8,H<J9G?>B,

, ^{YY},5. \$G?, \ \ CY \ \ YR,
, ^{YE},5. \$G?, \ \ [,]>AQ@G;<;,GBB>B_R,
, ^{YI},5. \$G?, \ \ ZC \ DR,
, ^{YZ}, * G?T9 * G?<J8G9,OJ=<G9<;?,1GI?:,JN,3AR3A>I<=G,HR, " <99R " <99GL>,JN,OVJV<P, \ bS, . ROR,
\ bP, \ b,]6D[[_,]Q>I,=OI<GA_R,,
, ^{YD},5. \$,
, ^{EF},5. \$G?, \ \ R,
, ^{E6}, \$R3R " R,HR, - <?:,JN,O?R,1GO9P, (<88RP,YFY, . ROR,b [[P,b[D,]6DDS6DD6_R,

G, 0?R, 1G09, JIB<8G8=>, U@<=@, QIJ@<K?>B, ?@>, B<;Q9G:, JN, JKX>=?;, JI, ;: AKJ9;, V8JU8, ?J, =GO;>, G8L>I, JI, G9GIA, <8, J?@>I;, J8, ?@>, KG;<;, JN, IG=>P, I>9<L<J8P, JI, L>8B>IR^{ES}, / @<;, <8=90B>B, B<;Q9G: <8L, ;UG; ?<VG;, JI, KOI8<8L, G, =IJ; ;;R^{Eb}, / @>, <?:T;, GILOA>8?, K>NJI>, ?@>, - JOI?, UG;, ?@G?;, 0=@, G, I>L09G?<J8, UG;, 8>=>; ;GI: , <8, JIB>I, ?J, f>8; OI>, ?@>, KG;<=, @0AG8, I<L@?;, JN, A>AK>I;, JN, LIJOQ;, ?@G?, @GH>, @<; ?JI<=G99:, K>>8, ;OKX>=?>B, ?J, B<;=I<A<8G?<J8, R, R, R, Rg^{E\}, / @>, - JOI?, ; ?G?>B, ?@G?, >H>8, <N, ?@>, JIB<8G8=>, U>I>, 8GIIJU9: , =J8; ?IO>B, ?J, NJIK<B, 08QIJ?>=?>B, fN<L@?<8L, UJIB; P<g, <?, UG;, ; ?<99, NG=<G99: , <8HG9<B, K>=GO;>, <?, UG;, G, =J8?>8?CKG;>B, QIJ@<K?<J8, U<?@<8, ?@>, QIJ; =I<KKG9>, =G?>LJI: , JN, ; Q>>=@R^{EY}, / @>, - JOI?, UG;, =9>GI, <8, <?;, JQ<8<J8, ?@G?, <?, K>9<>H>B, =IJ; ;, KOI8<8L, UG;, G, fI>QI>@>8; <K9>g, G=?P, KO?, ?@>, - <?: , JN, 0?R, 1G09, @GB, J?@>I, JQ?<J8; , ?J, k0>99, ;0=@, G=?;, ?@G?, B<B, 8J?, H<J9G?>, 5<I? , 3 A>8BA>8?,

; : AKJ9,<8=90B<8L,?@>,f&<?9>I,;G90?>Rg^{EZ},c : ,=J8?IG;?P,<8,?@>, . 8<?>B,0?G?>;P,8>JC
*GM<;A,G8B,?@>,d9G8 o ?UJ,JN,?@>,AJ;?,B>;Q<;>B,G8B,<8NGAJ0;,J9JL<>; o
@GH>,?@>,IL@?,?J,>eQI>;;?@><I,@G?I>B,G8B,H?I<J9,<8,QOK9<=R,#H>8,?@>,%>;?KJIJ,
cGQ?<;?,-@OI=@P,G,LIJ0Q,J8=>,BOKK>B,f 3 A>I<=GT;; (J;?,&G?>B,5GA<9:Pg,NJ08B,
>GN>,@GH>8,08B>I,?@>,5<I;?, 3 A>8BA>8?P,

0! -)3',W

@<L@ , @OIB9>P , ?@> , LJH>I8A>8? , AO ; ? ; ; @JU , ?@G? , <? ; ; ; Q>>=@ , I>LO9G?<J8 , NOI?@>I ; G ,
 =JAQ>99<8L , LJH>I8A>8? , <8?>I> ; ? , G8B , ?@G? , ?@> , I>LO9G?<J8 , @G ; , K>>8 , ?G<9JI>B , G ; ,
 8GHIJU9 : G ; ; QJ ; ; <K9> ; ?J , A>>? , ?@G? , <8?>I> ; ?R^{Z\} , / @> , LJH>I8A>8? , U<99 , G9UG : ; ; @GH> ,
 G , AJ80A>8?G9 , =@G99>8L> , A>>?<8L , ?@> , ?UJCQIJ8L , ?> ; ?P , >H>8 , U@>8 , ?@> ,
 I>LO9G?<J8 ; , GQQ>GI , ?J , QIJ?>=? , ?@> , - JOI? , <? ; >9NR^{ZY} , " <>UQJ<8?CKG ; >B , I>LO9G?<J8 ; ,
 GI> ; ; ?I<=?9 : , NJIK<BB>8R^{ZE} , , ,

/ @O ; P , =<? : , G8B , ; ?G?> , LJH>I8A>8? ; , @GH> , G9AJ ; ? , 8J , JQ?<J8 ; , <8 ,
 QI>H>8?<8L , U@<?> , 8G?<J8G9< ; ? , B>AJ8 ; ?IG?<J8 ; , <8 , QOK9<= , NJIOA ; P , G ; , ; O=@ ,
 I>LO9G?<J8 ; , UJO9B , K> , H<>UQJ<8?CKG ; >BR , &JU>H>IP , ?@< ; , BJ> ; , 8J? , A>G8 , ?@G? ,
 LJH>I8A>8? ; , 9G=V , JQ?<J8 ; , <8 , I> ; QJ8B<8L , ?J , U@<?> , ; OQI>AG< ; ? ,
 B>AJ8 ; ?IG?<J8 ; R , / @> , AGIV>?Q9G=> , JN , G ; , GNNJIB ; , LJH>I8A>8? ; , A : I<GB ,
 JQ?<J8 ; , ?J , QIJH , G8 , G9?>I8G?<H> , A> ; ; GL> , ?J , ?@> , @G?>NO9 , A> ; ; GL> , >eQI> ; ; >B ,
 K : , ?@> ; > , LIJOQ ; R ,

,
)))R , , / &# , + ! " # \$ * (# * / ,) * , / &# , (3 \$ d # / 1 ' 3 - # , ! 5 .) 4 # 3 0 ,

3 == JIB<8L , ?J , ?@> , OOQI>A> , - JOI?P , LJH>I8A>8? , =G8 , HJ<=> , <? ; , JU8 ,
 JQ<8<J8 , <8 , ?@> , AGIV>?Q9G=> , JN , G ; , U<?@JO? , H<J9G?<8L , ?@> , 5<I ; ? , 3 A>8BA>8?R ,
 / @> , - JOI? , K>LG8 , ; >I<JO ; 9 : , I>=JL8<M<8L , LJH>I8A>8? , ; Q>>=@ , QJU>I ; , <8 , ?@> ,
 6DDF ; R ,)8 , G , 9<8> , JN , 5<I ; ? , 3 A>8BA>8? , =G ; > ; P , ?@> , - JOI? , > ; ?GK9< ; @>B , ?@G? ,

, Z\ , 5 . \$G? , \ YR ,
 , ZY , ! "" k

SF6D,,,,,,,,,,,,,%)' ' 3 (# // #, . *) "# \$ 0) / 7, - ! ' ' # + #, ! 5, ' 3 %,

LJH>I8A>8?, UG;, >;>8?<G99:, =JAQ>99<8L, ?@>A, ?J, ;Q>GVR^{DY}, /@>, - JOI?,
B<;GLI>>BP,@J9B<8L,?@G?,LJH>I8A>8?,=G8,;0QQJI?,<?;,QIJLIGA;,G8B,QJ9<=<>;K:,
=J99>=?<8L,?Ge>;P,G8B,=G8,0;>;?@G?,AJ8>:,?J,QG:,QI<HG?>;;Q>GV>I;,?J,=J8H>:,
f;Q>>=@,G8B,J?@>I,>eQI>;;<J8,?J,GBHJ=G?>,G8B,B>N>8B,<?;,JU8,QJ9<=<>;lg^{DE}.,
/ @ >, - JOI?, >;?GK9<;@>B, <8, ?@>,

NJ08B, ?JJ, JNN>8;<H>, ?J, A>AK>I; , JN, ?@>, QOK9<=R^6F\ , . ;<8L, ?@>, IO9<8L, NIJA, !I << I <, G; , <? ; , KG; < ; P, ?@> , - JOI?, B>?> IA<8>B, ?@G? ; , Q>=<G9? ; , 9<=>8 ; > , Q9G?> ; , U>I> , LJH>I8A>8? ; , Q>=>@P, G8B, ?@0 ; , ?@> , 5<I ; ? , 3 A>8BA>8? , B<B, 8J? , I>k0<I> , ?@> , LJH>I8A>8? ; ?J, K> , H<UQJ<8?C8>0?IG9, G ; , <? , GQQIJH>B, JI, B>8<B, GQQ9<=G?<J8 ; , G8B, B> ; <L8 ; , NJI ; , Q>=<G9? ; , Q9G?> ; R^6FY ,

/ @> ; > , =G ; > ; , <990 ; ?IG?> , ?@G? , ?@> , LJH>I8A>8? , =G8 , @GH> , <? ; , JU8, H<UQJ<8? , U@>8 , <? ; , Q>GV ; P, G8B , =G8 , >H>8 , =I>G?> , <? ; , JU8 , I>k0<I>A>8? ; , NJI , 0 ; <8L , <? ; , Q9G?NJIA , ?J , QIJAJ?> ; , Q>=>@R , 5OI?@>IP , ?@> , IO9<8L , NIJA , ?@> ; > , =G ; > ; , G99JU , LJH>I8A>8? ; , ?J , QI>H>8? , ?@><I , JU8 , Q9G?NJIA ; , NIJA , K><8L , =JJQ?>B , K : , @G?> , LIJQ ; R , - J8 ; IP , NJI , >eGAQ9>P , <N , G , U@<?> ; , OQI>AG= ; , LIJQ ; , 0=@ , G ; , ?@> , d0 , d90e , d9G8 , JI , G , 8>JC * GM< , LIJQ , UG8?>B , ?J , >I>=? , G , A>AJI<G9 , <8 , G , 9J=G9 , QGIV , B>Q<=?<8L , G , N<LOI> , <8 , ?@> , <8NGAJ0 ; , @JJBP , G8 , >?>I8G9 , KOI8<8L , =IJ ; ; P , JI , G ; , ?G?O> , JN , &<?>IR ,)N , G , A08<=<QG9<? ; , U>I> , I>k0<I>B , K : , ?@> , - J8 ; ?<?0?<J8 , ?J , K> , H<UQJ<8?C 8>0?IG9 , <8 , ; >9>=?<8L , U@G? , A> ; ; GL> ; , <? , B< ; Q9G : >B , <8 , QOK9<=P , <? , UJ09B , K> , @G8B=ONN>B , <8 , QI>H>8?<8L , >e?I>A>9 : , JNN>8 ; <H>P , IG=< ; ?P , G8B , @GIAN09 , B< ; Q9G : ; , NIJA , K><8L , Q>IAG8>8?9 : , GNN<e>B , ?J , ?@> , QOK9<= , 9G8B ; =GQ> , JN , <? ; , =<? : R , 0<A<9GI9 : P , =J8 ; I , <N , ?@> ; , JC=G99>B , f% @<?> , d8<L@? ; , JN , ?@> , d0 , d90e , d9G8g , JI , G , 8>JC * GM< , LIJQ , UG8?>B , G ; , Q>=<G9? ; , Q9G?> , QIJA<8>8?9 : , N>G?OI<8L , ?@> , d9G8T ; , U@<?> , =IJ ; ; , >AK9>A , JI , G ; , UG ; ?<VG , JN , * GM< , +>IAG8 : R ,)N ; , Q>=<G9? ; , Q9G?> ; , U>I> , 8J? , B>>A>B , LJH>I8A>8? ; , Q>=>@P , LJH>I8A>8? ; , UJ09B , K> , NJI=>B , ?J , QI<8? , <AGL> ; ,

<8;>QGIGK9: , ?<>B, ?J, @G?>NO9, J9JL<>;P, JI, B<;=J8?<80>, ?@>, ;Q>=<G9?:, Q9G?>, QIJLIGA, G9?JL>?@>R, / @>, LJH>I8A>8?, ;Q>>=@, =G;>;, QI>;>IH>, ?@>, GK<9? : , NJI, LJH>I8A>8?, ?J, =GII: , <? ; , JU8, A>; ; GL>; , U<?@JO?, K<<8L, NJI=>B, ?J, QIJAJ?>, G; ,

G8B,<8<?<G?<H>;, ?@G?, QIJAJ?>, B<H>I;<?:P,>; Q>=<G99: , J8>;, ?@G?, B<I>=?9: , =J8NIJ8?,
U@<?>, ;OQI>AG=:P, <?, ;Q>GV;, 8J?, J89:, GLG<8;?, @G?>NO9, I@>?JI<=, KO?, ?J, ?@>,
LJH>I8A>8?T;, QI<JKI?>:, ?J, =G99, JO?>; O=@, ; Q>=>=@, G8B, ;?G8B, NJI, B<H>I;<?: , U<?@<8,
?@>, =JAAO8<?: , <?, I>QI>; >8?>; R,

% @>8, G, LJH>I8A>8?, B>=;, ?J, QIJH, G8: , V<8B, JN, NO8B<8LP, ?@>I>; <;,
8JIAG99: , ; JA>, V<8B, JN, ;?<QO9G?<J8, I>kO<I>B, JN, ?@>, I>=<Q<>8?R, / @>, - JOI?, ?JJV,
OQ, G8, <;>O>, I>LGIB<8L, QOK9<=, 9<KIGI: , NO8B<8L, <8, U@<=@, ; JA>, I>=<Q<>8?>; JN,
N>B>IG9, BJ99GI;, U>I>, 8J?, Q9>G;>B, U<?@, =J8B<?<J8;>, - J8LI>; ;, Q9G=>B, J8, ?@>,
I>=>Q?, JN, ?@G?, AJ8>: R,)8, ?@>, 9G?>, 6DDF;P, - J8LI>; ;, QG;>; >B, 9>L<; 9G?<J8, JNN>I<8L,
N>B>IG9, NO8B<8L, ?J, QOK9<=, 9<KIGI<>;, U@J, UG8?>B, ?J, JNN>I, <8?>I8>?, G==>; ;, ?J, ?@>,
QOK9<=R^{6FE}, - J8LI>; ;, 9G?>I, QG;>; >B, GBB<?<J8G9, 9>L<; 9G?<J8, I>kO<I<8L, 9<KIGI<>;,
I>=>H<8L, NO8B;>, NJI, QOK9<=, <8?>I8>?, G==>; ;, ?J, <8;>?G99, ; JN?UGI>, ?@G?, K9J=V;>,
<AGL>;, JN, JK;=>8<?: , G8B, =@<9B, QJI8JLIGQ@:P, U@<9>, L<H<8L, 9<KIGI<>; ; JA>,
9G?<?OB>, <8, QI>H>8?<8L, =>I?G<8, ;<?>;, NIJA, K><8L, N<9?>I>BR^{6FI}, / @>, 3 A>I<=G8,
' <KIGI: , 3 ; ; J<=G?<J8, G8B, J?@>I, GNN<9G?>B, JILG8<MG?<J8;>, =9G<A>B, ?@G?, ; O=@, G,
I>kO<I>A>8?, H<J9G?>B, ?@>, 5<I;?, 3 A>8BA>8?, QIJ?>=?<J8;>; JN, QOK9<=, QG?IJ8;>; U@J,
O;>; ?@>, 9<KIGI: R^{6FZ}, % I<?<8L, NJI, G, Q9OIG9<?: , JN, ?@>, - JOI?P, - @<>N, WO;?<=>, \$>@8kO<?>,
;ETQqGR9?8R9 =JNN5040 . 2 (:.) . 2 . 2 () 0 . 2 (;) (=) 0 . 2 (<) 0 . 2 (J8;) - 0 . 2 (,) 10J9 (,) 48 . 428D49 . 00

G; ; < ; ? G 8 = > P, ; J, 9 J 8 L, G ; , ? @ > , = J 8 B < ? < J 8 ; , B J, 8 J ? , < 8 B 0 = > , Q G I ? < = < Q G 8 ? ; , < 8 ? J,
O 8 = J 8 ; ? < ? O ? < J 8 G 9 , G = ? < H < ? : R^{6FD} ,) 8 , @ < ; , I > G ; J 8 < 8 L P , - @ < > N , W O ; ? < = > , \$ > @ 8 k O < ; ? , U I J ? > ,
? @ G ? , G , Q O K 9 < = , 9 < K I G I : , B J > ;

% @<9>, ?@>, - JOI?T; , IO9<8L; , <8, N< "(42 - +&M4D(- (8&NBB)24-34)+, G8B, T42) &

Q9G=>, ; Q>=<N<=, I>; ?IG<8?; , J8, ?@>, AG88>I, <8, U@<=@, LJH>I8A>8?, =G8; ; Q>GVP, ?@>I>, <; Q9>8?; , JN, 9>>UG: , <8, @JU, LJH>I8A>8?, =G8, ; Q>8B, G8B, QIJAJ?>, =>I?G<8, H<UQJ<8?; R,)8, I>LGIB; , ?J, QIJAJ?<8L, =<H<9, I<L@?; , G8B, B<H>I; <? : P, ?@>; ; ; Q>8B<8L, JQ<8J8; , JQ>8>B, G, U@J9>, @J; ?; JN, JQ?<J8; , <8, U@<=@, KJJV; P, GI?P, >BO=G?<J8G9, QIJLIGA; P, G8B, =JAA08<? : , <8<?<G?<H>; , =G8, I>=><H>, LJH>I8A>8?, NO8B<8LR, 00=@, LJH>I8A>8?, KG=V<8L, @G; , ?@>, QJ?>8?<G9, ?J, ; <L8<N<=G8?9: , ; ; UG: , ?@>, <AQG=? , G8B, <8N90>8=>, JN, @G?>NO9, I@>?JI<=, JN, U@<?>, ; OOI>AG=: , LIJ0Q; R, / @>, J89: , k0>; ?<J8, I>AG<8<8L, <; , U@G?, BJ>; , ?@>, <AQ9>A>8?G?<J8, JN, ?@G?, LJH>I8A>8?, ; Q>>=@, 9JJV, 9<V>p,

) " R, ! " # \$ % & # ' (, & 3 / # P, 1 \$! (! / # , + ! ! 4 2 , 3 , c ' . # 1 \$) * / , 5 ! \$, + ! " # \$ * (# * / * (,

K : , ? @ > , X O B L > T ; , B > = < ; < J 8 R g ^{66E} , % @ < 9 > , ? @ > , = < ? : , U G ; , K J O 8 B , K : , G , X O B < = < G 9 , J I B > I , ? J ,
 G 9 J U , ? @ > , B > A J 8 ; ? I G ? < J 8 , < 8 , ? @ G ? , H > 8 O > P , J ? @ > I , > H > 8 ? ; , = J O 9 B , @ G H > , K > > 8 , ; > ? , < 8 ,
 A J ? < J 8 , U > > V ; , J I , > H > 8 , A J 8 ? @ ; , K > N J I > , ? @ > , Q > I A < ? ; , N J I , ? @ > , I G 9 9 : , U > I > , L I G 8 ? > B j ,
 G 8 B , U @ < 9 > , 8 J ? , G , Q > I N > = ? ; , J 9 O ? < J 8 P , < ? , < ; , Q J ; ; < K 9 > , ; O = @ , > H > 8 ? ; , = J O 9 B , @ G H > , < 8 , Q G I ? ,
 k O > 9 9 > B , J I , B > ? > I I > B , ? @ > , H < J 9 > 8 => , ? @ G ? , > 8 ; O > B P , J I , G ? , 9 > G ; ? ; , > 8 ? , G , = 9 > G I , A > ; ; G L > ,
 ? J , ? @ > , U J I 9 B , I > X > = ? < 8 L , U @ < ? > , 8 G ? < J 8 G 9 < ; ? < = , @ G ? > R ,

N\$ R , "(* 7 " A < k 3 7 " k 9 " B B - % " : k N + k N A 3 " (+ - 3 4 , " k 6 4 < " A 4 + " k 3) k N A 3 > F 4 % 7 3 k
 = 7 - (A) 3 3 " B , 4 A A " k

, 3 Q Q 9 : < 8 L , ? @ > , L J H > I 8 A > 8 ? ; , Q > > = @ , B J = ? I < 8 > , < 8 , G 9 9 , J N , < ? ; , N J I A ; , ? J , ? @ > ,
 f . 8 < ? > , ? @ > , \$ < L @ ? g , I G 9 9 : , < 8 , - @ G I 9 J ? ? > ; H < 9 9 > , Q I J H < B > ; , G 8 , J Q Q J I ? 0 8 < ? : , N J I , G , B < I > = ? ,
 = J O 8 ? > I , A > ; ; G L > , ? J , ? @ G ? , J N , ? @ > , U @ < ? > , ; O Q I > A G = < ; ? , L I J O Q ; R , F I B 3 # k ;) 7 - + + B # k
 J - A P " (# k G 8 B , ! I < < I < k G 9 9 , 9 G : , G , = J 8 ; ? < ? 0 ? < J 8 G 9 , K G ; < ; , N J I , U @ G ? , G , = < ? : , 9 < V > ,
 - @ G I 9 J ? ? > ; H < 9 9 > , J I , > H > 8 , ? @ > , - J A A J 8 U > G 9 ? @ , J N , " < I L < 8 < G , = J O 9 B , B J , < 8 , I > ; Q J 8 ; > ,
 ? J , U @ < ? > , ; O Q I > A G = < ; ? ; , L G ? @ > I < 8 L , N J I , G , I G 9 9 : R , 3 ; ; O A > , N J I , ? @ > , ; G V > , J N , ? @ < ; ,
 > e G A Q 9 > , ? @ G ? , ? @ > , - < ? : , J N , - @ G I 9 J ? ? > ; H < 9 9 > , I > = > H > B , 8 J ? < = > , J N , ? @ > , I G 9 9 : , J 8 > , A J 8 ? @ ,
 K > N J I > , < ? , U G ; , ; = @ > B O 9 > B , ? J , ? G V > , Q 9 G => , J 8 , 3 O L O ; ? , 6 6 , ` , 6 S P , S F 6 [R ,) 8 ; ? > G B , J N ,
 X O ; ? , I : < 8 L , ? J , ; ? J Q , J I , B > ? > I , ? @ > , I G 9 9 : , N I J A , @ G Q Q > 8 < 8 L P , U @ G ? , < N , ? @ > , = < ? : , G 8 B , ; ? G ? > P ,
 O ; < 8 L , ; Q > 8 B < 8 L , Q J U > I , ? J , N O 8 B , = J O 8 ? > I , ; Q > > = @ , O 8 B > I , ;) 7 - + + B k G 8 B , N < " (4 2 - + k
 M 4 D (- (8 k N B B) 2 4 - 3 4) + P , A J K < 9 < M > B , G 9 9 , J N , < ? ; , I > ; J O I => ; P , < 8 = 9 O B < 8 L , < ? ; , G I I G : , J N ,

^{66E} , (< V > , 0 < L 8 > I O < 8 L > P , = 4 3 8 k ! 3 - 3 " < " + 3 k) + k ` a b \ k =) I (3 k F I A 4 + % P , 5 3 - # c ! ! d ,] 3 O L R , 6 6 P ,
 S F 6 [P , @ ? ? Q ; 2 i i U U U R N G => K J J V R = J A i Y 6 S F F [6 Y E S Z i Q J ; ? ; i = < ? : C ; ? G ? > A > 8 ? C J 8 C Z 6 S C = J O I ? C I O 9 < 8 L C
 U @ < 9 > C ? @ > C = < ? : C ; C B < ; G Q Q J < 8 ? > B C K :

SF6D,,,,,,,,,,,,,%)' ' 3 (# // #, . *) "# \$ 0) / 7, - ! ' ' # + #, ! 5, ' 3 %,

197

;Q>>=@,?JJ;P,?J,QIJH,G,AG;;<H>=J08?>IC

>8?<I>, AJ8?@, QIJAJ?<8L, ?@>, K>G0? : , G8B, B<H>I; <? : , JN, JOI, 3NI<=G8C3 A>I<=G8P,
W>U<; @P, G8B, J?@>I, A<8JI<? : , =JAA08<?<>; Rg, * J?, J89 : , UJ09B, ?@<; , ;>IH>, G; , G,
;>IJO; , I>KOV>, JN, U@<?>; ; OQI>AG = : P, <?, UJ09B; , ;>8B, G8, 08A<; ?GVGK9>, A>; ; GL>,
?J, ?@J; ;>, =JAA08<?<>; ; G8B, ?@>, 8G?<J8, G?, 9GIL>, ?@G?, ?@>, LJH>I8A>8? ; ; ?G8B; , U<?@,
G8B, B>N>8B; ; <? ; ; B<H>I; ;>, QJQ09G?<J8R,

OJA>, JN, ?@>, AJ; ? ; ; ?GI?9<8L, H<; OG9; , NIJA, ?@>, f . 8<?>, ?@>, \$ <L@?g, IG99 : ,
U>I>, ?@>, Q@J?JLIGQ@; , G8B, HJ ; , ; @JU<8L, ?@>, ; <M>, JN, ?@>, U@<?>, 8G?<J8G9<; ?,
LIJOQ; , =J8?IG; ?>B, U<?@, 9<??9>, ?J, 8J, JILG8<M>B, IG99 : , NIJA, ?@>, J?@>I, ; R,)8,
L>8>IG99, =J08?>ICQIJ?>; ?>I; , G??>AQ?>B, ?J, =J8NIJ8?

)8, ?@<;, ;=>8GI<JP, ?@>, f . 8<?>, ?@>, \$ <L@?g, IG99 : , UJO9B, ;?<99, ?GV>, Q9G=>P, QIJ?>=?<8L, ?@>, 5<I;?, 3 A>8BA>8?, I<L@?;, JN, ?@>, U@<?>, ;OQI>AG=<;?<j, KO?, ?@>, LJH>I8A>8?P, O?<9<M<8L, ?@>, QJU>I, G99JU>B, ?J, <?, O8B>I, ?@>, 5<I;?, 3 A>8BA>8?P, UJO9B, QIJH, G8, JH>IU@>9A<8L, B<;Q9G : , JN, =J08?>I, ;Q>>=@R, / @>, . 8<H>I;<? : , JN, " <IL<8<G, IG99 : , UJO9B, G9; J, 9<V>9 : , ;>IH>?J, A<8<A<M>, H<KJ9>8=>P, G; , AG8 : , JN, ?@>, =J08?>ICQIJ?>;?>I; , UJO9B, 9<V>9 : , 9>8B, ?@><I, ;OQQJI?, ?J, ?@>, 9GIL>I, G8B, A JI>, B<H>I;>, LG?@>I<8LP, ?@O; , I>BO=<8L, JI, QI>H>8?<8L, H<KJ9>8?, <8?>IG=?<J8; , U<?@, U@<?>, ;OQI>AG=<;?<R,

, c J?@, ?@>, - JOI?, G8B, ;=@J9GI; , @GH>, ;@JU8, ;O=@, =J08?>I, ;Q>>=@, ?J, K>, 8J?, J89 : , G, =J8;?<O?<J8G99 : , G==>Q?GK9>, I>;QJ8;>, ?J, @G?>N09, ;Q>>=@P, KO?, G8, >NN>=?<H>, J8>R, 1IJN>;;JI, *GB<8>, O?IJ; ;>8P, <8, G8, GI?<9>, QOK9<;@>B, K : , ?@>, 3 A>I<G8, cGI, 3 ;;J=G?<J8T; , HI< - +k F4%73Bk 9 - % - S4+ "P, LGH>, 80A>IJO; , >eGAQ9>; , JN, @JU, >NN>=?<H>, =J08?>I, ;Q>>=@, =G8, K>, ?J, B<;>AQJU>I, @G?>CN<99>B, ;Q>>=@R, 1IJN>;;JI, O?IJ; ;>8, QJ<8?>B, ?J, <8;?G8=>; , ;O=@, G; , G, 59JI<BG, I>QI>;>8?G?<H>, U@J, UG; , NJI=>B, ?J, I>;<L8, GN?>I, O; <8L, G, IG=<G9; , 90IP, JI, ?@>, ;J=<G9, A>B<G, =GAQG<L8, 9G08=@>B, GLG<8;?, *>U, 7 JIV, G??JI8> : , 3 GIJ8, O=@9J; ;K>IL, U@>8, @>, B>IB, G, OQG8<;@C; Q>GV<8L, I>;?GOIG8?, UJIV>I, NJI, 8J?, ;Q>GV<8L, #8L9<;@R⁶⁶l ,)8, KJ?@, >eGAQ9>;P, @G?>N09; ;Q>>=@, UG; , I>KO??>B, K : , JH>IU@>9A<8L, ?@>, ;Q>GV>I;T, G; , U<?@, A JI>, ;Q>>=@R, / @>, 00QI>A>, - JOI?, >8BJI>;>B, ?@<; ,

⁶⁶l , *GB<8>, O?IJ; ;>8P, =) I + 3 " (BC " " 27k4 + kF " BC) + B " k3) k = 7 - + % 4 + % k G) 34) + Bk) / k E (" " k ! C " " 27P , & . (3 * , \$) + & / 0 , (3 + 3 m) * # ,] SF6Z_P , @??Q; ?iiUUURGA>I<=G8KGRJLILIJQ; i=I; XiQOK9<=G?<J8; i@OAG8nK<L@?; nAGLGM<8>n@JA>i?@>C

GQQIJG=@, <8, K+43". & !3-3"B& , \$& NA, -("S, U@>8, W0;?<=>, c I> :>I, ;OLL>;?>B, ?@G?,

<8?>I>;?;, U<?@JO?, H<J9G?<8L, ?@>, 5<I;?, 3 A>8BA>8?, I<L@?;, JN, ?@>, ;Q>GV>I,
;QI>GB<8L,NG9;>@JJB;R^{6S6},

' >LG9,UI<?>I; ,G8B, ;=@J9GI; ,@GH>,BIGU8, ;<A<9GI,=J8=90;<J8;,G;,?J,?@>,
>NN>=?<H>8>;, JN,0;<8L,=J08?>I, ;Q>=>@, ?J,B<;QIJH>,9<;R,)8,I>;QJ8B<8L,?J,?@>,
B>=<;<J8, <8, NA, -("SP, J8>, UI<?>I, ;?G?>B, ?@G?, f>NN>=?<H>, =J08?>I, ;Q>=>@,
B>AJ=IG?<M>;,?@>,>NNJI?,GLG<8;?,NG9;>,=9G<A; t g^{6SS},0<8=>,?@>,LJH>I8A>8?,=G8,
QGI?<=<QG?>,<8,?@>,AGIV>?Q9G=>, JN,G;P,<?,?JJ,=G8,0;>,<?;, ;Q>=>@,QJU>I; ,?J,
QIJH, ?IO?@, GLG<8;?, NG9;>@JJB;P, <8=90B<8L, ?@J;>,

6R - J8NIJ8?,&<;?JI:,

% @>8, ?@>, #kOG9, WO;?<=>,)8?<G?<H>,]#W)_ ,9G08=@>B, <?;, - JAA08<?>:,
\$>A>AKIG8=>, 1IJX>=?P,<?,B<B,;J,U<?@,?@>,<8?>8?<J8,JN,G99JU<8L,=JAA08<?><?>:,
G99, G=IJ;,, ?@>, =J08?I:, ?J, =J8NIJ8?, ?@><I, QGI?<=<QG?<J8, <8, IG=<G9, ?>IIJI,
9: 8=@<8L;R^{6Sb},5JI,=JAA08<?><?>,,?@G?,GI>,U<99<8L,?J,=JA>,NG=>C?JCNG=>,U<?@,?@><I,
JU8,@<;?JI:P,#W),U<99,QIJH,G,@<050q0 . TJ80JIIJH<=G9,AG@>I,

A0;<=<G8;P,=GI>NO99:.,=@J;>8,K:.,?@>,<?:R, / @>,9J=G9,QOK9<=,9<KIGI:.,JI,N<8>,GI?;.,

A0;>OA,=JO9B,@J;?,>e@<K<?;.,N>G?OI<8L,A<8JI<?:.,GI?<;G8;.,JI,08H>9,

BGAGL>, JN, U@<?>, ; OQI>AG=:R, % @G?, <;, QIJQJ ;>B, <8, ?@<;, GI?<=9>, <;, KO?, J8>, =JL,
<8, G, 9GIL>I, A>=@G8<; A, L>GI>B, ?JUGIB, G, A JI>, B<H>I ;>; J=<? : R,,