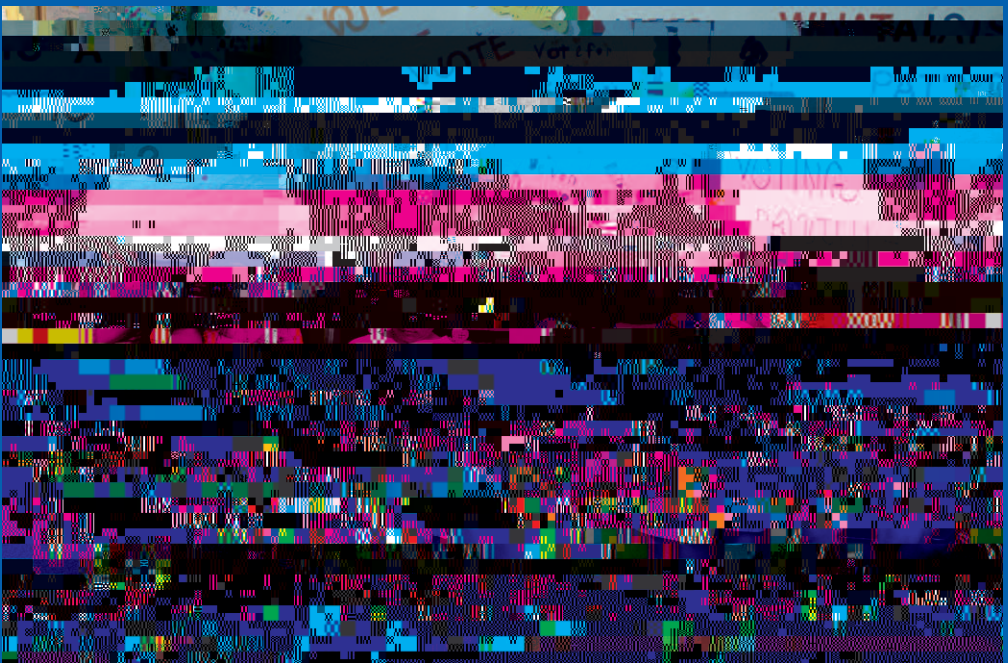


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American Academy of Arts & Sciences

1B0.A6<; .:1 . 6C69 (<062AF
)2.056;4 C612;02 .@21
206@6<; #.86;4

.:<; .99.;)6;. ?<AG2?
2?<:2!.4.; '605.?1 \$6@/2AA
.C61 \$ &2?86;@ .:1 "22 ((5B9:.;

\$

206@6<; #.86;4 .;1 A@ 2C29<=:2;A
% ! "

.; '2.@<;6;4 2).B45A
! " ##

@ ?6A60.9)56;86;4 . 2;2?.9).92;A
!

)2.056;4 C612;02 .@21 6A6G2;@56=

"2.?.6;4 A<'2.@<; ./<BA C612;02 .;1 E=9.;.A6<;@
&?<:6@6;4 6?20A6<;@ 6; 1B0.A6<;
!#(!

08;<D9214:2;A@

)56@ 0<9920A6<; 6@ =.?A <3 .; :2?60.; 0.12:F <3 ?A@ .;1 (062;02@ =?<720A
A5.A 2E=9<?2@ 2C612;02 /.@21 A56;86;4 6;! 21B0.A6<;)52 =?<720A =?<=@
2@ A5.A A52 21B0.A6<;.9 @F@A2: <3 A52 *;6A21 (A.A2@ @5<B91 0<;@612? 5<D A<
=?2=.;?2 F<B;4 =2<=92 :<?2 23320A6C29F 3<? A52 86;1 <3 1206@6<; .:86;4 A5.A 6@
?2>B6?21 A< B;12?@A.;1 05.;42 A< .1C<0.A2 .;1 A< C<A2 D6A5 8;<D92142
./<BA =B/960 =<960F 6A6G2;@ D5< C.9B2 .;1 8;<D 5<D A< B@2 2C612;02 A52
=?<720A 5F=<A52@6G2@ D699 /2 /2AA2? =?2=.;?21 A< =.?A606=.A2 6; A52 12:<0?.A60
=?<02@@@ .@ 6;3<?:21 A56;82?@ C612;02 /.@21 A56;86;4 6@ =.?A <3 924.9 .;1
:2160.9 A?.6;6;4 .;1 A52 0.@2 @AB1F :2A5<1 6@ A52 3<B;1.A6<; <3 .;F
:2?60.; /B@6;2@@ @05<<9@ 92.?9F A56@ 86;1 <3 ?2.@<;6;4 6@ 0<;@612?21 C.9B
./92 A< A52 =?<32@@6<;@ .@ 6A 6@ 6;A2;121 A< 2;5.;02 . @AB12;AI@ ./696AF A<
B;12?@A.;1 .;1 @0?BA6;6G2 0.B@.9 09.6:@ A< .@@2@@@ .;1 1?.D 6;32?2;02@ 3?<:
2C612;02 .;1 A< 12C29<= <? :<163F .==?<=?6.A2 /29623@ 6; A52 C.9616AF <3
.@@2?A6<;@)52 D612? =B/960 D<B91 /2;236A 3?<: @F@A2:.A60 A?.6;6;4 6; A56@
AF=2 <3 0?6A60.9 A56;86;4

)< 2E=9<?2 A56@ A<=60 A52 0.12:F /?<B45A A<42A52? 21B0.A<?@ A2EA/<<8
216A<?@ 0B??60B9B: 12@64;2?@ 2E=2?A@ <; 21B0.A6<;.9 .@@2@@@:2;A .;1 =<960F
2E=2?A@ <; 12C29<=:2;A.9 =@F05<9<4F .;1 A52 =569<<=@5F <3 @062;02 .;1
@<06.9 @062;A6@@@ D6A5 8;<D92142 <3 A52 =B/960I@ B;12?@A.;16;4 <3 0<=:92E
=<960F 6@@B2@ B?6;4 .@2?62@ <3 16@0B@@@6<;@ 05.6?21 /F &B9 ?2@A &?2@6
<3 A52 ,6996.;. ;1 9<?. 2D92AA <B;1.A6<; @2C2?.9 A<=60@ D2?2 612;A63621
3<? A56@ 0<9920A6<; @ 2.05 2@@@.F ?2C2.9@ :<?2 D<?8 ;221@ A< /2 1<;2 6; A52
@05<<9@ /BA 12A2?;6;6;4 D5.A @5<B91 /2 1<;2 .;1 5<D A< 1< 6A ?.6@2@ .116
A6<;.9 0<=:92E 6@@B2@)56@ C<9B:2 6@ 6;A2;121 A< 2;0<B?.42 3B?A52? 0<;C2?
@.A6<; ./<BA 0?6A60.9 A56;86;4 .;1 6A@ 6:=<?A.;02

)52 0.12:F 4?.A23B99F .08;<D92142@ A52 2@@@.F6@A@ .;1 <A52? D<?8@5<=
=?.?A606=.;A@ D5<@2 6;@645A@ 0<;A?6/BA21 A< A56@ C<9B:2 <@2=5 9.AA
.?C.?1 *;6C2?@6AF .:<; .99.; (A.;3<?1 *;6C2?@6AF <29 <52;
'<08232992? .;1 <9B;/6. *;6C2?@6A62@)6;. ?<AG2? .?C.?1 *;6C2?@6AF
?60 .;B@528 <<C2? ;@A6ABA6<; 2?<:2 !.4.; .?C.?1 *;6C2?@6AF
#.78 "2==2? (A.;3<?1 *;6C2?@6AF '<F &2. (A.;3<?1 *;6C2?@6AF .C61
&2?86;@ .?C.?1 *;6C2?@6AF .@<; &B@8.? <@A<; <99242 #605.29
'.;2F *;6C2?@6AF <3 .963<?;6. 2?8292F "22 '<@@ (A.;3<?1 *;6C2?@6AF
'605.?1 <A5@A26; 0<;<:60 &<960F ;@A6ABA2 "22 (5B9.;. ?;2462
<B;1.A6<; 3<? A52 1C.;02:2;A <3)2.056;4 ".B?. (05B9G #.@@.05B@2AA@
;@A6ABA2 <3)205;<9<4F 9.B12 (A2292 (A.;3<?1 *;6C2?@6AF .;1 .;629
-.;829<C605 +62D=<6;A "2.?;6;4 ;0)52 0.12:F .9@< 2E=?2@@@2@ 6A@
4?.A6AB12 A< &?<32@@<?@ #605.29 !.;2F .;1 "22 '<@@ 3<? A526? 0<=:2;A@ <;
2.7962? 1?.3A@ <3 A52 2@@@.F@ .;1 &?<32@@<?)6;. ?<AG2? .;1 '2/200. #6992?

.?C.?1 ?.1B.A2 (05<<9 <3 1B0.A6<; 3<? A526? .@ @6@A.;02 6; 0<:=696;4 A52
@B442@A6<;@ 3<? 3B?A52? ?2.16;4
A A52 0.12:F #.?A6; #.96; &5F996@ 2;1299 &2A2?!.?1<; .;1
96G./2A5 BAA;2? =?<C6121 <?4.;6G.A6<; .1C602 .;1 .@ @6@A.;02 A5?<B45<BA
.99 =5. @2@ <3 A56@ C<9B:2
)52 0.12:F D<B91 9682 A< A5.;8 &.B9 ?2@A 3<? 2;0<B?.46;4 A56@ =?<720A
.;1 3<? 05.6?6;4 A52 D<?8@5<=@ 6;.99F A52 0.12:F 6@ 4?.A23B9 A< A52
,6996.:.;1 9<?. 2D92AA <B;1.A6<; 3<? B;12?D?6A6;4 A56@ 2E=9<?.A6<;

9602 \$</92

"2@962 2?9<D6AG

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& \$# % !

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7=;8->,=287

@;2=. =1. 27=;8->,=287 =8=12<,855.,=287 8/ 9*9;< * =1. ,87,5><287 8/ =1.
12<=8;2, 9;<2-7=2*5 .5.,=287 &12< .5.,=287 2< 0.;6*7. =8=12<,855.,=287
+.,*>. 2= 12015201=<=1. ;.<987<2+252=B 8/ ,2=2C.7< =8 @.201=1. *;0>6.7=< *7-
9;898<*5< 8/ ,869.=270 ,*7-2-*=< *7- =8 <>998;= =18<. @18<. 9;898<*5< *;
68<= ;.*<87*+5. *7- @18<. ;.*<87270 2< 68<= ,869.55270 >= ?8=270 ,2=2C.7<
*;. *5<8 .? *5>* =270 =1. ,1*;* ,=< +.52./< 9.;<87*52=2.< *7- 52/. 12<=8;2.< 8/
,*7-2-*=< %18>5- =1.<. 3>-06.7=< *7- .? *5>* =287< +. 9>;<>.- =1;8>01 ,;2=
2,*5 *7*5B<.< 8/ -*=* *7- *;0>6.7=< =1;8>01 =1. .A.;,2<. 8/ 27=>2=2?. .69*=1
2, E0>=F /.5270< 8; =1;8>01 <86. ,86+27*=287 8/ +8=1

<2= * @8;=1@125. 08*5 /8; .?.;B ,2=2C.7 27 * -.68.,*B =8 .A.;,2<. 088-
3>-06.7= /<>,1* 08*5 2< @8;=1@125. ,*7 088- 3>-06.7= +. =*>01= *7
=1. @1.; @2=1*5 =8 =1274 ,;2=2,*55B *7*5B=2,*55B *7- <8>7-5B +. 5.*;7.- +B <=>
-.7=< @1.=1.; 27=1. 9;.,855.02*= .B.*;< 8; 27 ,855.0.< *7- >72?.;<2=2.< *7
=1.<. @*B< 8/ =1274270 *7- ;.*<87270 +. =*>01= 27 /8;6*5 .->,* =287*5 <.=
=270< ?.7 2/ =1.B ,*7 *; =1. 68<= 2698;=*7= -. =.;627*7=< 8/ 088- 3>-0
6.7= =8 +. 58,*.- 27 -.? .589.- ,8072=2?. ,*9*,2=2.< 8; 27 =1. -.? .5896.7= 8/
088- ,1*;* ,=;

&1. /8>7-.;< 8/ -.68;,*=2, <8,2.=2.< -2<-*27.- =1. ,5*26 =1* = ,;2=2,*5
=1274270 *7- 088- 3>-06.7= @.;. 1.;-2=*;B 02/=< =1* = @.;. 98<<.<<. 875B
+B * <6*55 .52=. <.06.7= 8/ =1. <8,2.=B /<>,1=*5.7=< *; .78= 277* =. *7- 78=
5262=-. =8 * <.5., = *;2<=8;,*B 8/ @86.7 *7- 6.7D2/ 27 /*, = =1.<. 68-< 8/
=18>01= *7- *;=287 *; . =.*1*+5.D<18>5- =1.B +. =;.*=- <E+* <2, <4255<F
,869,*+5. =8 ;.*-270 @;2=270 ,*5,>5*=287 *7-D27 8>; 9;<.7= ;.*D/>7-*
6.7=*5 =.,1785802,*5 52=,*B .,*>.<. ?2-.7., +*<.- ,2<287 6*4270 2<
>7524.5B =8 +. 5.*;7.- 27 =1. /625B 8; =1. 7.201+8;188- <18>5- <,1885< 78=
+ .;<987<2+5. /8; =.* ,1270 =12< <4255 /;86 427-.;0* ;.7 =1;8>01 0;*->* =.
<,1885 &1. :>.<=287 =1.7 +.,86.< @1.=1.; =.* ,1270 .?2-.7., +*<.- ,2
<287 6*4270 ;.*55B 6* =.;< @1.=1.; 2= 2< 98<<2+5. *7- 18@ 2= 6201= +.
*,86952<1.-

7 *5=.;7* =. ?2.@ @8>5- <>+8;-27* =. .?2-.7., +*<.- ,2<287 6*4270 =8
=1. -.? .5896.7= 8/ -.<2;*+5. ?*5>.< +.52./< * =2=>.< 8; 1*+2=< " =1.;
?2;=>.< 6*B 27-.- +. /*; 68; .2698;=*7= =1*7 ,;2=2,*5 ;.*<87270D<>,1 * <
427-7.<< .69*=1B 58?. 58B*5=B /*2;7.<< /2-.52=B +.*>=B 8; /*2=1 (. 6*B .;;
2/ @. 95*., =88 6>,1 .691* <2< 87 =1. * ,-.62, ?*5>.< 8/ ;.*<87 *7- 78=
.78>01 87 =18<. 27 =1. 68;*5 1>6*7. ;.52028>< *7- *.<=1.=2, <91.;<
(12,1 2< +. =.; =8 1*?. 5.*-;< 8/ :>.<=287*+5. ?2;=>.;.*<87270 ,5.*;5B *7-
;5B270 87 *;./>55B ,855.,=- *7- @.201.- .?2-.7., 8; =8 ;5B 87 />7*6.7
=*55B -.,7= <.7<2=2?. *7- 3><= 6.7 *7- @86.7 @18 @255 ><. .?2-.7., 269.;
/.,=5B +>= 7.?.;=1.5.<< 27 * 1>6*7. *7- ,87<2-.* =. 6*77.;

&12< ?85>6. 27,5>-.</2?. .<<*B< ,8662<<287.- +B=1. 6.;2,*7 ,*-6B
8/ ;=< *7- %,2.7.,< =8 ;<987- =8 =1.<. :>.<=287< &1. ;<987-.7=< 27,5>-.
=1;.. 9<B,185802<=< .;86. *0*7 \$2,1*;- !2<+.= = *7- *?2- #.;427<
* <,2.7.,.->,*=8; &27* ;8=C.; *7- * 9852=2,*5 *7- 68,*5 91258<891.;
*6877 *55*7 &1.B 8//.; :>2=. -2//.;7= 9;<9.,=2?< 87 =1.<. ,86687
:>.<=287< 9;<9.,=2?< <>//2,2.7=5B -2<=27,=2?<. =1* = /27-270 ,86687 0;8>7-<
/8; ,869*;2<87 2< /;.:>.7=5B -2//2,>5=

&1;.. 8/ =1. *>=18;<D!2<+.= #.;427< *7- ;8=C.;D0*=1.; =1. 0;8@270
. ?2-.7., =1* = ;2=2,*5 3>-06.7= 9;8+*+252<=2, ;.*<87270 *7- ,5.*; =1274270
, *7 +. =*>01= @1.=1.; 27 0.7.,*5 8; <9.,2/2,*55B 27 =1. =.*;1270 8/ 9*;;=2,>5*;
-2<,29527.< <>,1 *<=1.<,2.7.,< &1.B />;=1.; *;0>. =1* = 87., 5.*;7.- <>,1
68-< 8/ =1274270 ,*7 @2=1 5262=< +. =,*7</;.;- =8 8=1.; -86*27< *7- *;.
=1.;/8;. 524.5B =8 5.*- =8 68;. 0.7.;*5 ,*9*,2=2.< =8 =1274 ;;2=2,*55B *7- .//.,
=2?<.5B *0*7 <,8//< * = <>,1 ,5*26</8; 0.7.;2, ;;2=2,*5 =1274270 *+252=2.< 27<2<=
270 =1* = 088- 3>-06.7= 2< 6>,1 68;. 524.5B =8 +. -86*27 -2<,29527. *7-
,87=.A = <9.,2/2, . />;=1.; .A9;.<<.< -8>+ =1* = ,8072=2?<. ,*9*,2=2.< *587.
*;. <>//2,2.7= *55*7 <1*;< * 68-2,>6 8/ *0*7H< <4.9=2,2<6 . ;/5.,=< 87
18@ -2//2,>5= 2= 1* <+..7 /8; 126 * <.*<87.- 91258<891.; *7- .A9.;2.7.,-
<,185*;; =8 5.*;7 =8 =1274 *;8<=< ;*-2=287*5 -2<,29527*;;B +8>7-*;2.< . <>0
0.<=< 6.;2,*7< <18>5- 5.*;7 =8 ;.*<87 *+8> = *7- .6+,*;. :>.<=287< 8/ ?*5
>.< *7- 68,*5 ,182.,* =1.; =1*7 5.*;7 =8 @.201 524.52188-< *7- =1. @*;;*7 =
8/ .692;2,*5 .?2-7.,

87.,;7 /8; @1.=1.; 1201.; .->,*=287 2< 27-..- E*--270 ?*5>.F =8 =1.
+252=2.< 8/ >7-.;0,->* =. <=>-.7=< 1* < 78@ ;,*;1.- =1. <=* =. *7- 7* =287*5
9852,B *;7* ' % ,.;;=*;B 8/ ->,*=287 *;0*;. = %9.55270< *99827=- *
,8662<<287D>7-.; =1. ,1*2;6*7<129 8/ 1*;;5.< 255.; @18 1*- 5.- =1.
&A* < 1201.; .->,*=287 ,8662<<287D=8 .A*627. =1. :>*52=B 8/ ' % 1201.;
.->,*=287 "7. 8/ =1. ,.7=;*5 2=.6< 87 =1. ,8662<<287 *0.7* @* < @1.=1.;
,855.0.< *7- >72?<.<2=2.< @.;. 185-270 =1.6<.5?< * ,8>7=*+5. /8; 269;8?270
=1. :>*52=B 8/ 478@5.-0. *7- =18>01= -.687<=*;.- +B =1.2; <=>-.7=< (125.
=1. ?*5>. *-- 27 <9.,2/2, 9;8/.<<287*5 9;80;*6< <>,1 * <5*@ .7027..;270
7- -.7=2<=;B 6201= +. :>2=. 8+?28>< @1 = 2< *-- +B >7-.;0,*->* =. 52+;;
5 .->,=287

5=18>01 68<= 8/ =1. ;;2=2,< 8/ =1. %9.55270< 8662<<287 *==*,4.- =1.
<9.,.=; =1* = 6>5=295. ,182., =.<=< 6201= +. .6958B.- =8 *7<@.; =1* = :>.<
=287 =1. 68<= /;.:>.7=5B ,2=-. .A*695. 8/ <>,1 *7 * <<.<6.7= @* < 78= * 6>5
=295. ,182., =.<=< +> = *7 89.7 .7.- .<<*B .A*6 =1. 855.02* =. ;;7270
<<.<6.7= &12< * <<.<6.7= 8/ ;;2=2,*5 =1274270 *7- .?2-7.,. ?*5>* =287 1* <
+..7 -<207.- +B <86. 8/ =1. 7* =287H< 9;62.; <,185*;< 8/ * <<.<6.7= *7-
,8072=287 *7- <..4< =8 6.*<>.; =1. 0*27< 27 0.7.,*5 ;;2=2,*5 =1274270 *7- ;,*
<87270 *+252=2.< * ,12.?< +B ,855.0. <=>-.7=< 8?.; =1. ,8>;< 8/ =1.2; >7-.;
0,*->* =. .A9.;2.7.,

6.;2,*7< 6*B =.7- =8 8;2.7= =8 @*;;- 0.7.;*5 9;8.,<<.< 8/ =1274270 *7-
9;8+5.6 <85?270 ,* =1.; =1*7 =8 -.9 <>+< =*7=2?<. >7-.;< =*7-270 @2=127 <9.,2/
2, -2<,29527*;;B -86*27< &12< * = 5.*< = *99.*; < =8 +. =1. 9.;,9=287 8?.;<.* <
% .?;*5 B.*; < *08 *0;8>9 8/ ,855.*0>.< *7- 6.= * = \$18-< 8><.* =

"A/8;- '72?.;<2=B =8 -2<,><<=1. /2;<= -;*/= 8/ 8>; +884
%>552?*7 . = *5 = * ;2=2,*5 9827= 27 =1. =@8 -*B< 8/ -2<,><<287 87. 8/
=1. ;2=2<1 ,855.*0>.< * <<.;=-D@2=1 <>+<=*7=2*5 ,87,>;,7. /;86 12< /.5
58@<D=1*= =1. =;8>+5. @2=1 ' % 5.0*5 .->,*=287 2<=1*= 2=<= 08*5 2<=8 =,*1
<=>-.7=< E=8 524. 5*@B.;<F=8 .70*0. 27 =1. *7*5B=2,*5 ;.*<87270 * <<8,2*=
.- @2=1 =1. 9;8,<<.< <=*=.02.< *7- -2<98<2=287< 8/ =1. 5*@ ;*=1.; =1*7 @2=1
=1. ,87,9=< 9;27,295.< *7- /*,=< 8/ =1. 5*@D=1. E+5*,4 5.==.; 5*@FD=1* = *;.
=1. ,8;. 8/ 5.0*5 >7-;.<=*7-270 *7- ,869.=.7,.

B ,855.*0>.< *7- *=1. *;7.02. 8>7-*=287 1*?. /8; =1. 9*<= -,*-.
+..7 <=>-B270 .->,*=287 27 * 7>6+.; 8/ 9;8/.<<287<D5*@ ,5;0B .7027..;
270 6.-2,27. 7>;<270 <,185*;<129 =1. #1 *7- <,1885 =,*1270 (. *;.
9;.<>*-. =1* =.->,*=287 /8; =1. 5.*;7.- 9;8/.<<287< 2< 78= * 6*==.; 8/ 27=.5
5.,=>*5 -.?.5896.7= *587. =18>01 =1* = 2< * ,.7=;*5 ,1*55.70. 8/ .?.;B 9;8/ <
<287*5 <,1885 &1. ,*7-2-* =.< 27 =1.< . /2.5-< 6>=<= *5<8 -.?.589 1201 5?.5< 8/
=.,172,*5 <4255 =1.B 6>=<= 5.*;7=8 -8 9;8;6 *7- *, = ? .7 =18>01 =.,172
,*5 * ,86952<16.7=< *; 8/=.7 -2<-*27.- +B =1. * ,*-.6B 78=. =1. 58@.;
9;.<=20. 8/ E,5272,*5 *99827=6.7=<F 27 * ,*.62, <,1885< 8/ 6.-2,27. 7>;<270
8; .->,*=287 =1.B *; . =1. *==;2+>=< =1* = -2<=270>2<1 =1. 68<= * ,86952<1.-
9;8/.<<287*5<) = .? .7 =.,172,*5 .A, .55.7, . 2< 27<> //2,2.7 = &1. @.55 .->,*=-
9;8/.<<287*5 6>=<= -.?.589 *7 27=.;7*52C.- <.7< 8/ ;.<987<2+252=B *7 27=.0;2=B
=1* = 2< 271.;.7 = 27 =1.2; 2-.7=2=2.< *7- .6+8-2.- 27 =1.2; =18>01 = <4255< *7-
,*9*,2=2.< /8; ;.<987<2+5. 3>-06.7 = *7- *, =287 7 =1. *;7.02. <=>-2.< @.
;./.; =8 =1.< . =1;.. 427-< 8/ 5.*;7270 * < 1*+2=< 8/ 627- 1*+2=< 8/ 9;* ,=2. *7-
1*+2=< 8/ =1. 1.*; = *6 9;.<>*-. =1* = =12< =1;.. /85- ;9;.<.7=* =287 @8>5-
*5<8 6*9 72,5B 87=8 =1. 5.*;7270 7..- +B ,2=2C.7< =8 =1274 *7- *, = @2=1
27=.0;2=B 2< 78 <6*55 /.* =

&1. ;*-.;< 8/ =1.< . << *B< @255 /27- =1.6 ,1*55.70270 27 =1.2; -2<*0;..
6.7=< +>= 7..- 78 = 6*4. *7 .2=1.; 8; ,182, . *6870 =1. < .? .; *5 9;.<9, =2? .<
9;.<.7 = - 1.; &1.B *; . 78 = 6>=>*55B .A,5><2? . +. ;><. *55 27 =1.2; @*B 9;8
68=. 87. 8/ =1. 68<= 98@ .;/>5 2-* < 27 ,87=.698,*;B =18>01 = =1* = 8/ G9;* ,
=2,*5 3>-06.7 = H (1.7 @. <*B =1* = @. *26 = 8 1.59 <=>-.7=< -.?.589 =1. ,*9*,2
=2.< =8 ;.*<87 ;2=2,*55B *7- *, = ;.<987<2+5B @. 6*B +. <*B270 =1* = @. @2<1
=1.6 = 8 5.*;7 = 8 .70*0. @.55 27 =1. 9;8,.<< 8/ 52<6 /

+ .2078;- ">; <,1885< 18@.?.; *,. >7524.5B =8 =*4. 87 *55 8/ =1.6 * < 08*5<
8/ =1. ->; *=287*5 9;8,.<< &1. 08*5 8/ .->; *=287 2< 78= =8 ;.7-.; 9*; =2,*5
*;0>6.7=< 68;. =1.8;.=2,*5 78; 2< 2= =8 -26272<1 =1. ;85. 8/ ?*5>.< 27 9*; =2
,*5 ;.*<87 7-.- *55 =1;.. <8>;..<D=1.8;.=2,*5 478@5.-0. 9*;* =2,*5 478@
18@ *7- .A9;.2.7,. *7- ..95B 1.5- ?*5>.< *7- 2-.7=2=BD1*?. 5.02=26*=
95* ;.< 27 9*;* =2,*5 *;0>6.7=< 7 .->; *=- 9;.<87 *;0>. 91258<891.;<
&186* < ;..7 *7- *;B .7<=.;6*,1.; 2< <86.87. @18 1* <
=,*7<8/6.- =1. 9;.62<.< 8/ 1.; 8; 12< 9*;* =2,*5 *;0>6.7=< /;86 +.270 5.<<
8+3,.=2?.5B ;.*<87*+5. =8 +.270 68;. 8+3,.=2?.5B ;.*<87*+5. &1* =2< =8 =1.
.A=.7= =1* =1.B .6958B 9;8+*+252<=2, ;.*<87270 8; 27=.;9; =-* =/;86 ?*;28><
<8>;,.< =18<. 3>-06.7=< *7- 27=.;9;.* =287< ,87/8;6 68;. *,>;* =.5B =8
@.55 >7-.;<=88- 9;27,295.< *7- *;. 5.<< <><.,9=2+5. =8 +2* <.* 7- -2<=8;=287<
&8 =1. A=.7= =1* = ?*5>.< ,>5=>;*5 8; ;.52028>< 78;6< 8; 6*==.;< 8/ 9;.<87*5
9;./.;7. 8; =* <=.*; * = @8;4 =1.B 1*?. +.7 ;.7-.;- 68;. .A952,2= ,87
<.,28>< 27=.7=287*5 *7- ./5,.=2?.

7 12< .<<*B /8; =12< ?85>6. .;86. *0*7 ;./5,.=< =1. 27=.;* =287< *6870
=1.<. 98<2=287< +B *;0>270

(. *;. 68;. 524.5B =8 <85?. 8>; ,>;. 7= 9;8+5.6 18@.?.; 2/ =.* ,1.;<
,,9= =1. ;.<987<2+252=B 8/ 0>;*7=..270 =1* = *55 *-85.<.,7=< ;.0*;
5.<< 8/ ,5* << 8; . =172,2=B ,*7 ;.* *7- ,869;.1.7= =1. <.,2.7, .<.,=287
8/ 7. @<9*9;.< <85?. +* <2, 6* =1.6* =2,*5 9;8+5.6< -. =. =1. 5802,*5
,81.;7, 27 787 =.,172,*5 ?;+*5 *;0>6.7=< 8; 7*;* =2?.< *7- 27<2<=
=1* = *55 * ,< 8/ 6*52,28><7.<< -. ,9=287 *7- >7; .0>5* =.- <5/ *00;*7
-2C.6.7= *;. 68,*55B >7* ,9= *+5.

(1.=1.; ,188<270 +.=@.7 * #;2>< *7- * >66.; *7 "+*6* 8; *
, *27 27<=*55270 <85*; 9*7.5< 8; 95*7=270 =*55.; =;.< * @.55 .->; *=- 9;.<87
1* < 5* ;7.- =8 ,86+27. =1.2; ?*5>.< .A9;.2.7, .>7-.;<=*7-270< *7- .?2
-.7, .27 * =18>01= />5 *7- ;.<987<2+5. 6*77.; &1>< -8 1*+2=< 8/ 627- 9*;*
=2, . *7- 1.*; = *55 95*B * <2072/2,*7= ;85. 27 =1. 52?.< 8/ ,2=2C.7<
">; @;2=.;< 8//; * ;2,1 *; ;B 8/ 9;.<9, =2?.< 87 =1. 98=.7=2*5 /8; =1. .->
,* =287*5 9;8,.<< =8 27/8;6 *7- .7;2,1 =12< ,8695.A <.= 8/ 9;8,.<<.< ,86
6.7- =1.2; 8//.;270< =8 =1. ;.*-.;< 8/ =12< ?85>6. B8> @255 /27- =1.6 <=26>
5* =270 -2<=>;+270 *7- .75201=.7270 27 =>;7

.7<=.;6*,1.; #1258<891B 8/ ;.<.*; ,1 87 =.* ,1270 &1;.. * <9,=< 7
;-.- .- (2==;8,4 !.@)8;4

*,6255*7

;..7 & !.@)8;4 , ;* @ 255

%>552?*7 (85+B (.07.; (87- *7- %1>56*7 %
%*7 ;*7,2<,8 8<<.B * <<

0C4;H >E4AA>34 C427=820; A4B4AE0C8>=B)C0A1D2: 0=3 #8;;8:4= *74 B7DC
C;4 4G?;>343 B7>AC;H 05C4A ;0D=27 *74 ?>>A;H 2>=248E43 0H >5 &86B 8=E0B8>=
>5 D10 8B 0 5DAC74A 2><<>= C0A64C >5 2A8C8@D4 4 6 >7=B>=
<068=8=6 0 B>284CH F74A4 4E834=24 10B43 3428B8>= <0:8=6 8B <>A4 >5 0
34;814A0C4 2A05C F74A4 <>BC ?4>?;4 <0:4 3428B8>=B B><4F70C 14CC4A C70=
C74H CH?820;;H 3> C>30HL1420DB4 43D20C8>= <4=C>A8=6 0=3 >C74A <40=B >5
5>BC4A8=6 6>>3 3428B8>= <0:8=6 70E4 1A>D67C C78B 01>DCL8B 4=C828=6)>
C>> 8B 8<068=8=6 0 B>284CH F74A4 03>;4B24=CB 0A4 <>A4 20DC8>DB 01>DC 4G?4A8
<4=C8=6 F8C7 B4G 0=3 3AD6B F74A4 03D;CB ;4BB >5C4= 50;; 8=C> 3403 4=3 9>1B >A
3403 4=3 A4;0C8>=B78?B F74A4 20A4 5>A C74 4;34A;H 8=E>;E4B <>A4 ?;0==8=6 0=3
5>A4B867C)> C>> 8B 8<068=8=6 0 F>A;3 F74A4 =>C >;H 3> 8=38E83D0;B 14CC4A
=0E860C4 C748A F0H C7A>D67 C74 2><?;4G8C84B >5 ;854 1DC F74A4 ;0A64A B20;4
3428B8>=BL<0CC4AB >5 ?D1;82 >55824 0=3 ?D1;82 ?>;82HLA45;42C <>A4 8=5>A<43
0=3 0CC4=C8E4 ;4034AB 0=3 28C8I4=B #H 08< 8= C78B 4BB0H 8B 1A845;H C> 4G?;>A4
C74 ?A>B?42CB >5 2A40C8=6 BD27 0 F>A;3
>2DB8=6 >= 4E4AH30H 3428B8>= <0:8=6 C74 38B2DBB8>= <>E4B C7A>D67
B4E4A0; C74<4B 58ABC F70C 38BC8=6D8B74B 3428B8>= <0:8=6 5A>< >C74A :8=3B >5
C78=:8=6 C74= 34B2A8?C8>=B >5 7>F 3428B8>= <0:8=6 6>4B FA>=6 0=3 ?A4
B2A8?C8>=B 5>A F70C 2>D=CB 0B 6>>3 3428B8>= <0:8=6 0=3 7>F 43D20C8>=
<867C 34E4;>? 6>>3 3428B8>= <0:8=6 58=0;;H 0 ?0AC82D;0A ?A>1;4< 7>F 14C
C4A 3428B8>= <0:8=6 <867C B4AE4 =>C 9DBC 8=38E83D0; 8=C4A4BCB 1DC 28E82 4=60
<4=C 0=3 B>284CH 0C ;0A64
(4B40A27 C4;;B DB 0 ;>C C>30H 01>DC 7>F 3428B8>= <0:8=6 6>4B A867C >A
FA>=6 -70C F4 :=>F 033B D? =>C B> <D27 C> 0 C4<?;0C4 5>A ?4A542C 3428
B8>= <0:8=6 0B C> 0 E8B8>= >5 0AC5D; B4;5 A46D;0C8>= A4B?>=B8E4 C> C74 28A2D<
BC0=24B B><4C8<4B <>A4 0=0;HC82 B><4C8<4B <>A4 8=CD8C8E4 B><4C8<4B <0:
8=6 2742;;8BCB B><4C8<4B C4;;8=6 BC>A84B 0=3 2>D=C4ABC>A84B C> >=4B4;5 #>34
=443B C> <0C27 >220B8>= *74 14BC 455>ACB C> 8<?A>E4 3428B8>= <0:8=6
C7A>D67 43D20C8>= 70E4 14=458280; A4BD;CB >F4E4A C74B4 455>ACB 5>2DB >=;H
>= B><4 0B?42CB >5 C74 270;;4=64 3D20C8>=0; 0=3 >C74A 8=BC8CDC8>=B F>D;3
3> F4;; C> 8=E4BC <D27 <>A4 8= C78B 5D=30<4=C0; 2>6=8C8E4 2A05C C7A>D67
F7827 F4 B70?4 >DA ;8E4B 0=3 >DA ;0A64A B>284CH

>F 3>4B 3428B8>= <0:8=6 38554A 5A>< >C74A :8=3B >5 C78=:8=6 5>A 8=BC0=24
?;0==8=6 A40B>=8=6 >A 0=0;H18=6 *74 1>D=30A84B 14CF44= BD27 4E4AH30H
20C46>A84B 8=4E8C01;H 0A4 5DIH 0;; C74 <>A4 B> 1420DB4 C74H C4=3 C> 3A0F >=
>=4 0=>C74AL>=4 342834B >= 0 ?;0= >A ?;0=B 7>F C> 342834 A40B>=B >DC 0
3428B8>= >A 342834B >= C74 <>BC 8<?>AC0=C A40B>=B 4 6 #>B7<0=
*70C 02:=>F;43643 3428B8>= <0:8=6 <>BC 24=CA0;;H 8B 0 ?A>1;4< >5 27>824
0;>CC8 %>4 <DBC B4;42C 5A>< 0<>=6 0;C4A=0C8E4 ?0C7B ;4038=6 C>F0A3
C74 5DCDA4 *74 ?0C7B <0H 2><?A8B4 0;C4A=0C8E4 ?;0=B 6> => 6> 27>824B >A
14;845B C> 0224?C >A A4942CL0B F8C7 A4;868>DB 508C7B ?>;8C820; ?78;>B>?784B B>
4=C8582 C74>A84B >A ?4AB>=0; ?>;8284B

%5C4= C74 270;;4=64 6>4B 14H>=3 342838=6 14CF44= 68E4= 0;C4A=0C8E4B
%=4 <867C =443 C> 58=3 A40B>=01;4 0;C4A=0C8E4B 8= C74 58ABC ?;024 >A C> ;>>:
2A40C8E4;H 14H>=3 C74 >1E8>DB >?C8>=B C> >C74AB <>A4 ?A><8B8=6 E4= B>
27>824 A4<08=B 24=CA0; = C74 B40A27 5>A 0 6>>3 27>824 <0=H 502C>AB 20= 586
DA4 6>0;B 0=3 E0;D4B C> 14 ?DABD43 C8<4 ?A4BBDA4 B834 45542CB >??>ACD=8CH
2>BCB BC01;4 E4ABDB 270=68=6 28A2D<BC0=24B 0E08;01;4 :=>F;4364 8=C4A4BCB >5
>C74AB 0B F4;; 0B >=4B4;5 0=3 <>A4 HA=4B 0;>CC8 02>1B 0=3
!;02IH=B:8

-78;4 3428B8>= <0:8=6 B8CD0C8>=B E0AH 4=>A<>DB;H 8= C748A ?0AC82D;0AB
C78B 022>D=C 24=C4AB >= F70C <867C 14 20;;43 4E4AH30H 3428B8>= <0:8=6L5>A
8=BC0=24 ?DA270B4 3428B8>=B 5>A<8=6 0=3 B4E4A8=6 ?4AB>=0; A4;0C8>=B78?B
E>C8=6 0=3 >C74A ?>;8C820; 2><<8C<4=CB 43D20C8>=0; 0=3 9>1 3428B8>=B 0=3
27>824B A460A38=6 B4G A42A40C8>=0; 3AD6B 0=3 C74 ;8:4 &4>?;4 033A4BB8=6 BD27
4E4AH30H 3428B8>=B CH?820;;H 5024 ?>B88-00C874A<570= >A 8= 0338
C8>= C> 14;847' 5+.' 5>A A45;42C8>= A0C74A C70= =4438=6 C> A4B?>=3 @D82:
;H 70E40.' (#.+#+#3+5F8C7 C74 0A40 8= @D4BC8>= 1DC ;02: 344? ?A>54BB8>=0;
4G?4AC8B4 0=3 544; C74B40A4-: +/70-7'A0C74A C70= <0:8=6 C427=820;
3428B8>=B >= <0CC4AB =>C 2;>B4 C> C74<

= >A38=0AH 4G0<?;4 2>D?;4 >5 H40AB 06> 0CC4=343 0 2>=54A4=24 8=
C74=B #H F854 20<4 0;>=6 0=3 F4 C>>: C8<4 C> 4=9>H C74 2;0BB82 28CH %=
>DA ;0BC 30H F4 B?4=C 0= 7>DA 0=3 0 70;5 ;>>:8=6 0C %A84=C0; AD6B 8= 0 B<0;;
B7>? -4 B?4=C 2>=B834A01;4 C7>D67C5D; C8<4 B>AC8=6 >DC F7827 AD6B F4 ;8:43
14BC 0=3 4=343 D? 1DH8=6 C7A44 <438D< B8I4 AD6B -4 :=4F B><4C78=6
01>DC C74 ?A828=6 >5 C74B4 AD6B 0=3 C74 2>BCB B44<43 A40B>=01;4 %DA 3428
B8>= ;8:4 2>D=C;4BB >C74AB C70C ?4>?;4 <0:4 4E4AH 30H 703 0;; C74 40A<0A:B >5
0 CH?820; 3428B8>= <0:8=6 ?A>24BB 0= 02C8>= C0:4= 05C4A A45;42C8>= 10B43 >=
B><4 50<8;80A8CH F8C7 C74 0A40 0=3 70E8=6 ?4AB>=0; 8=E>;E4<4=C

*74 3428B8>= 0;B> F0B 0 <8BC0:4 F4 ;0C4A 2>=2;D343 =>C 0 B4A8>DB >=4
1DC 0 <8BC0:4 =>=4C74;4BB -7H >F 3> 3428B8>=B 6> FA>=6

*74 =4GC 30H F4 54;C C70C F4 B7>D;3 70E4 1>D67C >=;H >=4 >A ?A70?B CF> >5
C74 AD6B %DA 8<<8=4=C 34?0ACDA4 703 ;43 DB C> >E4A?DA270B4 "40E8=6
1478=3 0= 0CCA02C8E4 1DH F0B 385582D;C = 022834=C >5 B2743D;4L>DA 8<<8
=4=C 34?0ACDA4LD=3D;H 8=5;D4=243 DB C74 B7>? >F=4AB 383 =>C78=6 C> ?A4BB
DB 8= 0 F0H C70C 03E4AC8B4AB 5A4@D4=C;H <8<82 F8C7 7403;8=4B ;8:4 M%=4 30H
>=;HN >A M"8<8C43 C8<4 >554AN <B4; 4C 0; 0A6D4 C70C 0E>830=24 >5
5DCDA4 A46A4C >5C4= BCA>=6;H 0=3 8=0??A>?A80C4;H 586DA4B 8= 3428B8>= <0:8=6
= 45542C <H F854 0=3 540A43 C74 A46A4C >5 0 ;>BC >??>ACD=8CH 0 3428B8>=
<0:8=6 ?8C50;; F4 B7>D;3 70E4 A42>6=8I43 5A>< ?A8>A 4G?4A84=24

-4A4 F4 BDA4 F4 <034 0 <8BC0:4 *78B 8B 0= 8<?>AC0=C @D4BC8>= 1420DB4
0??A08B0; >5 3428B8>=B 05C4A C74 502C BD554AB 5A>< F70C 8B 20;;43 M78=3B867C
180BN C74 38BC>AC8=6 45542C >5 :=>F8=6 7>F C78=6B CDA=43 >DC 4 6 8B277>55
0=3 4HC7 *4864= -4 F4A4 2>=5834=C F4 703 4AA43 -4 A420;;43
7>F 3DA8=6 B7>??8=6 F4 F4A4 <D27 <>A4 0CCA02C43 1H >=4 >5 C74 AD6B B86

=85820=C;H 1H C74 B42>=3 0=3 5>D=3 C74 C78A3 B8<?;H ?;40B0=C *78B B7>D;3
70E4 144= 0 B86=0; 5>A 20DC8>= 5C4A 0;; C74 AD6B F4A4 148=6 B78??43 B> F4
2>D;3 70E4 C0:4= 0 2>D?;4 >5 30HB C> 342834 01>DC C74 B42>=3 0=3 C78A3 AD6B
0=3 C74= 4 <08;43 C74 B7>? >F=4A F8C7 ;8CC;4 A40;8BC82 A8B: C70C >C74AB F>D;3
70E4 ?DA270B43 4G02C;H C7>B4 AD6B -4 2>D;3 4E4= 70E4 ??>C>6A0?743 C74
AD6B F8C7 >DA 3868C0; 20<4A0 5>A 0=>C74A ;>; :0C4A -4 703 3>=4 1>C7 C74B4
C78=6B 8= C74 ?0BC

*> 64=4A0;814 5A>< C78B 0=3 <0=H >C74A >A38=0AH 4G0<?;4B 3428B8>= <0:
8=6 1A>03;H B?40:8=6 6>4B FA>=6 1420DB4 8C 8B =>C BD558284=C;H 4E834=24
10B43 &4>?;4 >5C4= 02C 8<?D;B8E4;H 0=3 8<?A4BB8>=8BC820;;H F8C7 0 ;<8C43
E84F >5 C74 <0CC4A 0C 70=3 =>C ;>;:8=6 14H>=3 F70C C74 >1E8>DB >?C8>=B
>554A =>C BD558284=C;H 2>=BD;C8=6 ?0BC 4G?4A84=24B 64=4A0; :=>F;4364
8=5>A<43 5A84=3B 0=3 2>;;406D4B 0=3 >C74A B>DA24B >A =>C F40E8=6 4E834=24
C>64C74A 8= 0 2>74A4=C F0H *74 C427=820; ;8C4A0CDA4 >= C74 ?BH27>;>6H >5
3428B8>= <0:8=6 5>A46A>D=3B 7>F ?>>A 3428B8>= <0:8=6 A45;42CB ;02: >5 B4;5
A46D;0C8>= C> 4;01>A0C4 0=3 2;0A85H >=4OB 6>0;B 0=3 C74 6>0;B >5 A4;4E0=C >C74A
8<068=0C8E4;H B40A27 5>A ?A><8B8=6 >?C8>=B 20A45D;;H 0BB4BB C74 2>BCB 0=3 2>
B4@D4=24B >5 03>?C8=6 C7>B4 >?C8>=B 0=3 B> >= 4 6 0A>= HA=4B
0;>CC8 0=8B

*70C 8B C74 186 ?82CDA4 \$>F 5>A B><4 34C08;B

*' #'-'/' 0('13'4/5+) 0.1-'9+5:

%=4 >1E8>DB 270;;4=64 >5 3428B8>= <0:8=6 8B B8<?;H C70C 3428B8>=B 0A4 >5C4=
2><?;4G 8=E>;E8=6 B4E4A0; >?C8>=B <D;C8?;4 2A8C4A80 0=3 38E4AB4 :=>F;4364
01>DC C74 B8CD0C8>= #0=068=6 0;; C74 4;4<4=CB 8B 70A3 0=3 >E4A;>;:8=6
B><4C78=6 8<?>AC0=C 8B 40BH #40=B 0A4 =44343 C> >A60=8I4 0=3 8=C46A0C4 C74
8340B 0=3 8=5>A<0C8>= 8<?>AC0=C C> 0 3428B8>=

*74 6>>3 =4FB 8B C70C ?4>?;4 70E4 2>=24?CD0; C>;B 5>A 2>?8=6 F8C7 C78B
2><?;4G8CH *74 C>>;B 0A4 =>C 0;F0HB 5D;;H >A F4;; DB43 1DC C74H 0A4 ?>F4A5D;
*F> A0C74A 38554A4=C <>34B >5 A4?A4B4=C0C8>= 586DA4 ?A><8=4=C;H 8= 1>C7
4E4AH30H 0=3 <>A4 4G?4AC 3428B8>=20#5+6#5+7' 5#56@D0=C8C0C8E4
5>A B7>AC 0#33#5+7'

*74 @D0=C8C0C8E4 0??A>027 >5C4= C0:4B B8<?;4 ;8BC 5>A< 0B 8= 2742;;8BCB >5
?A>3D2C 540CDA4B >A C0;;84B >5 ?A>B 0=3 2>=B C C74 50A 4=3 >5 C427=820; 58=4BB
0A4 4G?42C43 DC8;8CH <>34;B *74B4 8=E>;E4 0= 8=CA820C4 C01D;0A 0=0;HB8B F8C7
4027 >5 B4E4A0; >?C8>=B B2>A43 5>A 4027 >5 B4E4A0; 2A8C4A80 0=3 C74 2A8C4A80
F4867C43 5>A A4;0C8E4 8<?>AC0=24 4 6 0A>= 0F4B 0=3 >AA860=

E>= -8=C4A54;3C 0=3 3F0A3B #D;C8?;H8=6 4027 >?C8>= B2>A4
C8<4B C74 F4867C >5 C74 2A8C4A8>= 0=3 BD<<8=6 C74 A4BD;CB H84;3B 0= >E4A0;;
B2>A4 5>A C74 >?C8>= *74 ?A>1018;8C84B >5 E0A8>DB 2>=B4 @D4=24B 20= 0;B> 14
8=2>A?>A0C43 8=C> C74 0=0;HB8B <?A4BB8E4;H B>?78BC820C43 0B C78B 8B 8C 8B 0
<4C7>3 C70C 3>4B =>C B4AE4 0;; B8CD0C8>=B F4;; 0 <0CC4A 4;01>A0C43 ;0C4A

\$0AA0C8E4 >554AB 0=>C74A <>34 >5 A4?A4B4=C0C8>= 5>A 3428B8>= <0:8=6
)8<?;4 E4AB8>=B >5 C74 =0AA0C8E4 <>34 8=E>;E4 2>=28B4 20DB0; BC>A84B 8= 50E>A
>5 >A 0608=BC >?C8>=B M O< BH<?0C74C82 F8C7 78B 6>0;B 1DC >:0H8=6 C78B
F>D;3 B4C 0 ?A42434=C F403 70E4 C> ;8E4 F8C7 5>A4E4AN M 5 F4 >A34A C>30H

F4O;; 70E4 C> 70E4 C74 <0C4A80;B B4=C 1H 4G?A4BB >A C74H B8<?;H F>=OC 64C 74A4
8= C8<4N ><?;4G E4AB8>=B 8=E>;E4 4;01>A0C4 0A6D<4=C = 2A8<8=0; ;0F 5>A
8=BC0=24 2>=B834A 7>F C74 ?A>B42DC8>= <>C8E0C4B C74 9DAH C> A4CDA= 0 6D8;C
E4A382C 1H F40E8=6 C74 4E834=24 8=C> 0 BC>AH 0 MC74>AH >5 C74 2A8<4N C70C
2><18=4B C74 C7A44 C74<4B >5 <>C8E4 <4C7>3 0=3 >??>ACD=8CH *78B BC>AH
<DBC BC0=3 0608=BC 2>D=C4ABC>A84B 03E0=243 1H C74 3454=B4 F7827 20BC C74
4E834=24 8= 0 38554A4=C ;867C 0=3 270;;4=64 B><4 >5 8C
-78;4 C74 2>=24?CD0; C>>;B >5 @D0=C8C0C8E4 0=3 =0AA0C8E4 A4?A4B4=C0C8>=
20= 74;? F8C7 3428B8>= <0:8=6 C748A A403H F834B?A403 DB4 8B 2><?;820C43 1H
0 =D<14A >5 502C>AB >A 3428B8>=B C70C 8=E8C4 C427=820; 0??A>0274B C74 <>A4
8=CA820C4 0=0;HB4B A4@D8A4 :=>F;4364 0=3 B:8;;B <0=H ?4>?;4 3> =>C 70E4 %=
C74 @D0=C8C0C8E4 B834 <>BC ?4>?;4 3> =>C :=>F F74= C> 0CC4<?C >A 7>F C>
<0=064 C74 4G?42C43 DC8;8CH ?A>243DA4B %= C74 =0AA0C8E4 B834 <>BC ?4>?;4
0A4 D=;8:4;H C> 14 2>=E4AB0=C F8C7 C74 =824C84B >5 7H?>C74C82> 343D2C8E4 A40

7D<0= 148=6BQ+5'& 3#5+0/#-+5:

!07=4<0= 0=3 *E4AB:H &A>B?42C C74>AH 5>2DB4B >= 3428B8>=B C70C
8=E>;E4 608=B 0=3 ;>BB4B >5C4= D=34A 2>=38C8>=B >5 D=24AC08=CH
*74 C74>AH 70B B4E4A0; =D0=24B 1DC >=4 >5 C74 <>BC 10B82 ?>8=CB 8B 40B8;H
BC0C43 &4>?;4 0A4 BCA>=6;H ;>BB 0E4AB4L270=64B E84F43 0B ;>BB4B DBD0;;H 0A4
CA40C43 0B 2>=B834A01;H <>A4 ?08=5D; C70= 4@D8E0;4=C 270=64B E84F43 0B 608=B
0A4 CA40C43 0B A4F0A38=6 >=CA0AH C> 4= A0=;;8= 0 ?4==H B0E43 8B F>AC7
<>A4 C70= 0 ?4==H 40A=43 18;; 8B F>AC7 <>A4 C> H>D 1H A>D67;H
CF824 0B <D27 F74= H>D 70E4 8C 0=3 C78=: >5 H>DAB4;5 0B ?>C4=C80;;H ;>B8=6 >A
B?4=38=6 8C C70= F74= H>D 3>=OC 70E4 8C 0=3 <867C 608= 8C >A 8=BC0=24 ?4>
?;4 DBD0;;H F>=OC 14C 0608=BC 0 585CH 585CH 270=24 >5 64CC8=6 . D=C8; . 64CB
D? C> 01>DC 4 6 *E4AB:H 0=3 7(10B82)-237(?H)25(585C)33)20(;CB48(1DC)-237(>=4

?A> 2>= ;8BC)>?78BC820C43 0=0;HC82 ?A02C824 8=E>;E4B =>C >=;H 0= 4;01>A0C43 @D0=C8C0C8E4 >A =0AA0C8E4 0??A>027 1DC 0;4AC=4BB C> B?428582 CA0?B

*')-'%5 0(/56+5+0/ #5 54 '45

-8C7>DC @D4BC8>= @D82: 8=CD8C8E4 3428B8>= <0:8=6 B4AE4B F4;; C> <>E4 DB C7A>D67 C74 <8=>A 3428B8>=B >5 C74 30H -74= C74 BC0:4B 0A4 ;>F 0=3 4E4= <>A4 B> F74= F4 70E4 4G?4A84=24 C> 1D8;3 >= F7H C78=: 70A3 01>DC 0 3428 B8>= 5 F4 0A4 >220B8>=0;;H FA>=6 B> F70C -4 20= 7>?4 C> ;40A= 5A><> >DA <8BC0:4B 0=3 3> 14CC4A =4GC C8<4

>F4E4A 5>A <>A4 8<?>AC0=C 3428B8>=B C74 <>A0; >5 C74 BC>AH B> 50A <867C B44< C> 14 M0=0;HC82 6>>3 8=CD8C8E4 103N *> 0E>83)8<=>OB ;8<8C43 A0C8>=0;8CH 1>CC;4=42: 3428B8>= <0:4AB B7>D;3 5867C C74 8=CD8C8E4 8<?D;B4 0=3 03>?C F4;; 4;01>A0C43 =0AA0C8E4 0=3 @D0=C8C0C8E4 0??A>0274B F8C7 C74 74;? >5 BD??>AC BHBC4<B 5A>< ?4=28; 0=3 ?0?4A C> B?A403B744CB

B86=85820=C 1>3H >5 A4B40A27 7>F4E4A ~~B70FB07056+5+7'~~
&'%+4+0/4 #3' \$502;< ;03F4;;OB ?>?D;0A 1>:>: -+/, A4E84FB 0
A0=64 >5 BD27 4G0<?;4B 0;148C B><4F70C D=2A8C820;;H = 64=4A0; 8=CD8C8>= 20= B4AE4 F4;; F74= C74 3428B8>=B 70E4 0 ?4AB>=0; 270A02C4A 5>A 8=BC0=24 ?A454A 4=24B 5>A 5>>3 0AC >A ?4A70?B 4E4= 0=>C74A ?4AB>= C> B?4=3 >=4OB ;854 F8C7 >A 4G0<?;4 8= ;01>A0C>AH 4G?4A8<4=CB F74A4 BD1942CB F4A4 8=E8C43 C> 27>>B4 0 90< C74H ;8:43 >A 0 ?>BC4A C> 70=6 8= C748A 0?0AC<4=CB BD1942CB 0B:43 C> 0??A>027 C74 C0B: 8=CD8C8E4;H B7>F43 6A40C4A B0C8B502C8>= ;0C4A >= F8C7 C 27>824B C70= 383 BD1942CB 0B:43 C> C0:4 0= 0=0;HC82 0??A>027 -8;B>= 4C 0; -8;B>= 0=3)27>>;4A

-7H 8B C78B %5C4= F4 3> =>C 70E4 ?A428B4 0224BB C> >DA A40B>=B 5>A ;8:8=6 B><4C78=6 #>A4 1A>03;H 8= B><4 0A40B >5 ;854 F4 20===>C B8<?;H A403 >55 C74 C>?B >5 >DA <8=3B C74 <0=H C028C 6>0;B C70C 6D834 >DA 1470E8>A 3>?C8=6 0= 0=0;HC82 0??A>027 20= 38BAD?C >DA 8=CD8C8E4 0CCD=4<4=C C> >DA 344? 8=C4A4B ;4038=6 C> F>AB4 3428B8>=B *74B4 C028C 6>0;B <0H C74<B4;E4B 8=E8C4 BDA5028=6 0=3 A42>=B834A0C8>= 1DC C70C 8B 0=>C74A BC>AH

(4B40A27 0;B> 0A6D4B C70C 0= 8=CD8C8E4 0??A>027 >5C4= 14CC4A B4AE4B F74= ?4>?;4 70E4 F4;; 34E4;>?43 4G?4A84=24 8= 0 3><08=)CD384B >5 4G?4ACB 70E4 H84;343 0 <>34; 20;;43 A42>6=8C8>= ?A8<43 3428B8>= <0:8=6 (& 4 6 !;48= "8?B78CI 4C 0; G?4A84=243 58A45867C4AB B78? 2><<0=34AB C0=: ?;0 C>>= ;4034AB 0=3 B> >= C4=3 C> <0:4 3428B8>=B 1H B8I8=6 D? 0 B8CD0C8>= A0?83;H 8= >A34A C> D=34ABC0=3 8C A>< C78B 0 6>>3 ?A>B?42C8E4 B>;DC8>= @D82;;H 0=3 =0CDA0;;H 4<4A64B -74= C74 4G?4AC 70B 3>D1CB 8=BC403 >5 1A08=BC>A<8=6 <0=H B>;DC8>=B 0=3 2><?0A8=6 C74< 74 >A B74 CH?820;;H 03>?CB 0 =0AA0C8E4 C02C82 >5 ;8<8C43 B2>?4 0BB4BB8=6 C74 B>;DC8>= 0C 70=3 1H 3>8=6 0 <4=C0; B8<D;0C8>= 0=3 85 C74 B>;DC8>= B44<B F0=C8=6 A40278=6 5>A 0=>C74A ?A>B?42C B?4280;;H 8= C8<4 ?A4BBDA43 28A2D<BC0=24B >A F74A4 4558284=2H 8B 8<?>AC0=C C74 ?>8=C 8B =>C B> <D27 C> 27>>B4 C74 01B>;DC4 14BC 0<>=6 0;; ?>BB81;4 >?C8>=B 0B 8C 8B C> 0AA8E4 0C 0 6>>3 F>A:01;4 B>;DC8>= 0=3 <>E4 5>AF0A3

0 ?;D<18=6 ?A>1;4< H>DAB4;5 >A 20;; C74 ?;D<14AL(& <0H F4;; 586DA4
45542C8E4;H -74= <H F854 0=3 F4A4 1DH8=6 %A84=C0; AD6B 8= A4424 F4 703
4=>D67 4G?4A84=24 C> A42>6=8I4 0 A8B: >5 >E4A?DA270B8=6 &A70?B =4GC C8<4
>DA A42>6=8C8>= F8;; 14 14CC4A ?A8<43

>4B C78B BD664BC 0 <>A0; 38A42C;H >?>B8C4 M0=0;HC82 103 8=CD8C8E4
6>>3N > F4 9DBC =443 C> 34E4;>? 4=>D67 :=>F;4364 0=3 4G?4A84=24 8= C74
3><08= 8= @D4BC8>= C> D=34AFA8C4 8=CD8C8E4 3428B8>= <0:8=6 B 0 64=4A0;
?>;82H C78B F8;; =>C F>A: #0=H ;854 3428B8>=B >22DA >;H =>F 0=3 C74= F8C7
<>BC ?4>?;4 D=;8:4;H C> 022D<D;0C4 C74 A827 4G?4AC8B4 C70C 2>D;3 3A8E4 B>D=3
8=CD8C8E4 3428B8>= <0:8=6

#>A4>E4A 2>=B834A01;4 A4B40A27 B7>FB C70C F74= <D;C8?;4 A40B>=01;H
2;40A 2A8C4A80 140A >= 0 3428B8>= ?4>?;4 0A4 =>C 6>>3 0C 8=CD8C8E4;H 8=C46A0C8
C748A 8<?A4BB8>=B 8=C> 0= >E4A0;; 9D36<4=C >A 8=BC0=24 2>;464 03<8BB8>=B
?A>24BB4B C70C 34?4=3 >= ?4>?;4 B8I8=6 D? 20=3830C4B 0A4 <0A:43;H ;4BB ?A4
382C8E4 >5 02034<82 BD224BB C70= 0338=6 D? B2>A4B 5>A C74 <D;C8?;4 2A8C4A80
4E4= F74= B><4 >5 C74 8=38E83D0; B2>A4B 0A4 C74<B4;E4B BD1942C8E4 9D36<4=CB
0F4B D<0= 9D364B ;40= C>> <D27 C>F0A3 B448=6 4027 20B4 0B 8=38
E83D0; 0=3 5>A46A>D=38=6 C78B >A C70C 0CCA02C8E4 >A D=0CCA02C8E4 540CDA4
+=5>ACD=0C4;H C78B <0:4B C74 58=0; 9D36<4=CB F>AB4 0 CA4=3 385582D;C C> 2>=
E8=24 ?4>?;4 >5 1420DB4 F4 0A4 4=>A<>DB;H 0CCA02C43 C> C74 8340 C70C =D0=243
7>;8BC82 9D36<4=C 0;F0HB F8=B >E4A 0338=6 D? =D<14AB 0;>CC8 27

6..+/) 1 5*! *#--/)'4 0('%+4+0/ #,+/)

428B8>=B >5C4= 8=E>;E4 0 A0=64 >5 >?C8>=B =>C 0??0A4=C 0C 58ABC 0B F4;; 0B
2>=B4@D4=24B >5 270A02C4A <06=8CD34 0=3 ;8:4;87>>3 C70C 0A4 40B8;H <8BB43
>A <8BC0:4= 'D0=C8C0C8E4 0=3 =0AA0C8E4 BCH;4B >5 A4?A4B4=C0C8>= 74;? DB C>
<0=064 C74 2><?;4G8CH 1DC C74H 0A4 DB4;4BB 85 F4 3> =>C B44: >DC C70C 2><
?;4G8H =BC403 8=CD8C8E4 8<?A4BB8>=B AD;4 %5C4= C74H 0A4 =>C F4;; 6A>D=343
8= A827 4G?4A84=24 0=3 ?4AB>=0; B4=B818;8CH %5C4= <8B;4038=6 74DA8BC82B 0=3
180B4B 0A4 8= C74 <8G *7DB C7>D67C5D; 20A45D; 3428B8>= <0:4AB <DBC OCC4=3
C> 0=3 F0C27 >DC 5>A 0 =D<14A >5 502C>AB

>F4E4A A4;0C8E4;H 8=CD8C8E4 0??A>0274B B><4C8<4B H84;3 6>>3 B4AE824
0=3 <>A4 4;01>A0C4 0=0;HB4B B><4C8<4B H84;3 => 14CC4A 27>824B 0=3 >220B8>=
0;;H F>AB4 >=4B 1H 38BAD?C8=6 B>D=3 8=CD8C8>=B *74 CA034 >55B 14CF44= A4;0
C8E4;H <>A4 0=0;HC82 0=3 8=CD8C8E4 0??A>0274B 0B F4;; 0B 14CF44= @D0=C8C0C8E
0=3 =0AA0C8E4 0??A>0274B ;403 C> C74 @D4BC8>= -70C 8= C74 4=3 8B 6>>3 3428

>A >=4 ?A>1;4< 3428B8>=B >5C4= 50;; B7>AC >A 8=3443 BD22443 1420DB4 >5
D=5>A4B44= 0=3 =>C A40B>=01;H 5>A4B4401;4 4E4=CB #>A4>E4A F4 >5C4= 70E4
=> BDA4 F0H >5 :=>F8=6 F70C F>D;3 70E4 70??4=43 703 F4 27>B4= 38554A4=C
;H 5 0 H40A 06> F4 1>D67C BC>2: A0C74A C70= BC>2: C>30H F4 20= ;>: D?
7>F BC>2: 383 1DC 85 F4 C>:>: 9>1 A0C74A C70= 9>1 F7>OB C> B0H 7>F 9>1
F>D;3 70E4 6>=4

DAC74A<>A4 0=>C74A CA>D1;4B><4 2>6=8C8E48;DPS\$+ #4
<0:4B 8C 385582D;C C> 9D364 F70C 27>824 B7>D;3 70E4 144= <034 40A;84A :=>F
8=6 >=;H F70C >=4 :=4F 0C C74 C8<4 &4>?;4 3A0BC820;;H >E4A4BC8<0C4 C74
145>A4 C74 502C ;8:4;87>>3 >5 4E4=CB C74H :=>F 70E4 02CD0;;H >22DAA43 0=3
C74H 0;B> C4=3 C> E84F >DC2><4B 0B D=BDA?A8B8=6LM4E4AH>=4 :=>FB C70C N =
>=4 BCD3H BCD34=CB A403 022>D=CB >5 >1B2DA4 78BC>A820; 4E4=CB F8C7 38554A4
>DC2><4B A4?>AC43 5>A 38554A4=C BCD34=CB 0=3 >=4 6A>D? >5 BCD34=CB A4248E8
=> 8=5>A<0C8>= 01>DC >DC2><4B 8B277>55 0=3 4HC7 B:43 C> 4BC8
<0C4 C74 ;8:4;87>>3 >5 E0A8>DB >DC2><4B 145>A4 C74 4E4=CB BCD34=CB F7> A403
C70C 0 ?0AC82D;0A >DC2><4 703 02CD0;;H >22DAA43 0BB86=43 8C 0 <D27 6A40C4A
?A>1018;8CH C70= C74 => >DC2><4 6A>D? = 0=>C74A BCD3H *4864= 703
>=4 6A>D? >5 BCD34=CB A0C4 C74 MCADC7N >5 0 ?A>E4A1 4 6 M01B4=24 <0:4B C74
740AC 6A>F 5>=34AN F78;4 0=>C74A 6A>D? A0C43 C748A MCADC7N >5 8CB >??>B8C4
4 6 M>DC >5 B867C >DC >5 <8=3N 027 ?A&BCB >??>B8C4 64=4A0;;H
40A=43 MCAD4N A0C8=6B
= BD<<0AH 3458=8=6 6>>3 3428B8>= <0:8=6 1H F74C74A C74 ?0AC82D;0A

34=C 8674A @D0;8CH B?40:4AB 2>=CA81DC4 ;4BB F8C7>DC 0 6>>3 0<?;8584A C>
3A8E4 C74<

)D27 A4B4AE0C8>=B 3> =>C 270;;4=64 C74 2>=B834A01;4 DC8;8CH >5 C74 DC8;8CH
<>34; F7827 >5C4= ?A>E4B E0;D01;4 8= B8CD0C8>=B F8C7 B4E4A0; 2A8C4A80 0=3
<0=H CA034>55B 02A>BB 38554A4=C >?C8>=B *78B 20= 40B8;H 70??4= 5>A 2><?4C8=6
?DA270B4 3428B8>=B >A 9>1 >??>ACD=8C84B F8C7 38554A4=C 03E0=C064B 0=3 38B03
E0=C064B *74 @D0=C8C0C8E4 C01D;0A 0??A>027 ?A>E834B 0 F0H C> A4?A4B4=C 0=3
A4E84F C74 B8CD0C8>= 4E4= F74= C74 8340; 2>=38C8>=B 5>A 8CB 0??;820C8>= 0A4
=>C <4C *74 8BB4 8B =>C F74C74A C74 DC8;8CH <>34; 8B 0 6>>3 C>;; 8= C74
C>;;8CL8C 8BL1DC F74C74A 8C ?A>E834B 0 D=8E4AB0; =>A<0C8E4 <>34; 5>A
6>>3 3428B8>= <0:8=6L8C 3>4B=OC

5 C74 DC8;8CH <>34; 3>4B =>C >554A C74 ?4A542C 022>D=C >5 0 6>>3 3428B8>=
<0:8=6 ?A>24BB F70C 3>4B &4A70?B =>=>4 C4<?;0C4 F8;; BD55824 5542C8E4
BCA0C46H A4@D8A4B B8I8=6 D? C74 B8CD0C8>= 8C A4@D8A4B M342838=6 7>F C> 34
>>3 3428B8>= <0:8=6 8B C7DB 0 B8CD0C8>= A4B?>=B8E4 3>D1;4 10;0=28=6 02C >5
C74 8=CD8C8E4 0=3 0=0;HC82 =0AA0C8E4 0=3 @D0=C8C0C8E4 <4C7>3B BD8C43 C> C
28A2D<BC0=24B

*70C 8B 6>>3 3428B8>= <0:8=6 8B 0= 030?C8E4 A4B?>=B4 C> C74 ?0AC82D;0AB
&0H=4 4C 0; F7827 <867C 74;? C> 4G?;08= C74 58=38=6 5A>< 0;>CC8 0=3
2>;;406D4B C70C BCD34=CBO B4;5 A4?>AC43 3428B8>= <0:8=6 BCH;4B 4 6
<>A4 8=CD8C8E4 E4ABDB 0=0;HC82 F4A4 =>C ?A4382C8E4 >5 C74 =D<14A >5 >?C8>=E
>A 0CCA81DC4B C74H 2>=B834A43 8= 4E0;D0C8=6 2>;;464 <09>AB *74 34<0=3B >5
C74 B?428582 3428B8>= <0H 8=5;D4=24 F70C ?4>?;4 3> <>A4 C70= C748A BCH;8BC82
?A438;42C8>=B *78B F>D;3 58C C74 64=4A0; B>280; B284=24 >1B4AE0C8>= C70C
1470E8>A 8B 34C4A<8=43 <>A4 1H B8CD0C8>=0; 270A02C4A8BC82B C70= 1H ?4AB>=0;
270A02C4A8BC82B (>BB 0=3 \$8B14CC

42838=6 7>F C> 342834 20= 14 0= 0;<>BC A45;4G8E4 >A 0 7867;H 34;814A0C8E4
<0CC4A =0=H 20B4 8C >5C4= F8;; ;403 C74 3428B8>= <0:4A C> 0 <833;4 ;4E4; >5
8=E4BC<4=C 8= 3428B8>= <0:8=6 C70C =48C74A A8B:B 0= 4GCA4<4;H 8=CD8C8E4 3428
B8>= =>A 140AB C74 7867 2>BCB >5 C74 <>BC 4;01>A0C4 BCH;4B >5 0=0;HB8B >A
4G0<?;4 >=4 ;8=4 >5 4G?4A8<4=C0C8>= 0B:43 BD1942CB C> 2>=B834A >?C8>=B BD27
0B ?>BB81;4 0?0AC<4=C A4=C0;B 0??;H8=6 0 =D<14A >5 2A8C4A80 C> 0 A0=64 >5
0;C4A=0C8E4B 0243 F8C7 <0=H >?C8>=B ?4>?;4 CH?820;;H F8;; @D82;;H 4;8<8=0C4
<>BC >5 C74< 0B 508;8=6 C> <44C >=4 >A 0=>C74A 2>=38C8>= C74H E84F 0B =424B
B0AH 5>A B4E4A0; B8<8;0A 4G0<?;4B B44 0;>CC8 27 B7>??4A <867C
2A>BB >55 0=H 0?0AC<4=C >= 0 1DBH BCA44C 0=3 0=H 0?0AC<4=C >E4A 0 24AC08= 2>
?4A <>=C7)D27 C02C82B A43D24 C74 >?C8>=B C> 0 54F 8=E8C8=6 2;>B4A 2>=B834A0
C8>=)CA82C;H B?40:8=6 C74 4;8<8=0C8>= ?A>24BB 8B 0 =>A<0C8E4 <8BC0:4 D=;4BB
C74 4;8<8=0C8>= 2A8C4A80 0A4 CAD;H =424BB0AH 2>=38C8>=B *74 BCA0C46H A8B:B
8=6 C74 A0A4 78334= 64< 5>A 4G0<?;4 0= >E4A 1D364C 0?0AC<4=C B> 140DC85D;
0=3 2>=E4=84=C C70C >=4 A4C78=:B >=4OB 1D364C >F4E4A C74 BCA0C46H <0:4B
C74 3428B8>= ?A>24BB <D27 <>A4 <0=06401;4

=0AA0C8E4 0??A>027 0;B> 20= 1A8=6 C74 3428B8>= <0:4A C> 0 <833;4 ;4E4;
>5 8=E4BC<4=C >=4 C70C 8B <>A4 C70= 0 @D82: C0:4 1DC <D27 ;4BB C70= 0 B060
(420;; 7>F A4B40A27 >= 4G?4AC 3428B8>= <0:8=6 A4E40;B 2;40A ?0CC4A=B >5 =0AA0
C8E4 4;01>A0C8>= BD27 0B C4BC8=6 ?A><8B8=6 B>;DC8>=B F8C7 <4=C0; B8<D;0C8>=
!;48= "8?B78CI 4C 0; %C74A BCA0C4684B 5>A <0:8=6 C74 <>BC >5
>=4OB =0AA0C8E4B F8C7>DC ;4CC8=6 C74< 142><4 7834>DB;H 2><?;4G 8=2;D34 B4C
C;8=6 C8<4 BD27 0B MB;44?8=6 >= 8CN >A C0:8=6 0 F0;; 0=3 A4?40C43 A4740AB0; C>
A40??A08B4 0 =0AA0C8E4 A4<4<14A >=4 ?4AB>= C4;;8=6 <4 C70C 74 C0;;43 >E4A
3428B8>=B F8C7 78B 20C 34;814A0C4 2>D=C4A=0AA0C8E4 BD27 0B C74 3454=B4OB
A4B?>=B4 C> C74 ?A>B42DC8>= 8B 0=>C74A C02C82 0=3 0 6>>3 F0H C> C4BC C74
8=C46A8CH >5 0 =0AA0C8E4

\$0AA0C8E4 0=3 @D0=C8C0C8E4 <>34B >5 A4?A4B4=C0C8>= 8=E>;E4 CA034 >55B C
05542C 7>F F4;; C74H BD8C 0 ?0AC82D;0A B8CD0C8>= \$0AA0C8E4B 20= 345;42C =4434
2A8C820; 4G0<8=0C8>= C7A>D67 C74 =40C=4BB >5 C74 BC>A84B C74H C4;;)CD3H8=6
8=5>A<0; 4E4AH30H A40B>=8=6 &4A:8=B 4C 0; 0A6D43 C70C ?4>?;4 C0:8=6
?>B8C8>=B >= 2>=CA>E4AB80; 8BBD4B >5C4#;38B7;0H4500-0):
BDB?4=38=6 2A8C820; 9D36<4=C 0B B>=>= 0B C74H 0AA8E43 0C >=4 F0H >5 C4;;8=6 C74
BC>AH C70C <034 B4=B4 ;B> =0AA0C8E4 5>A<B @D82;;H 142><4 D=<0=06401;4 0B
C74H 8=2>A?>A0C4 <>A4 38<4=B8>=B 0=3 34C08;B 'D0=C8C0C8E4 C01D;0A 5>A<B
20= 022><<>30C4 <0=H >?C8>=B 0=3 2A8C4A80 A4038;H 85 C438>DB;H 9DBC 1H
0338=6 A>FB 0=3 2>;D<=B

%= C74 >C74A 70=3 4E4= B8<?;4 @D0=C8C0C8E4 5>A<B 0A4 70A3 C> CA02: F8C7
>DC C74 74;? >5 ?4=28; 0=3 ?0?4A >A 0 B?A403B744C *74 20DB0; 8=C4=C8>=0; 270A
02C4A >5 =0AA0C8E4 0=3 2>D=C4A=0AA0C8E4 BD??>ACB <4<>AH ;B> 0=0AA0C8E4
4<1>384B 0= 4G?;0=0C>AH 022>D=C >5 C74 ?A><8B4 >5 0= >?C8>= C70C <867C 14
<>A4 A4E40;8=6 C70= C>C8=6 D? B2>A4B

)><4 B8CD0C8>=B 2;40A;H ;4=3 C74<B4;E4B <>A4 C> 0 @D0=C8C0C8E4 >A =0AA0
C8E4 BCH;4 ?0AC<4=C 540CDA4B ;8:4 ?A824 =D<14A >5 A>><B 0=3 ;>20C8>= 20=
14 4E0;D0C43 A4;0C8E4;H 8=34?4=34=C;H >5 >=4 0=>C74A 5>A C748A 2>=CA81DC8>= C
C74 >E4A0;; 34B8A018;8CH >5 0= 0?0AC<4=C C7DB 8=E8C8=6 0 @D0=C8C0C8E4 BCH;4
2>=CA0BC C> 4E0;D0C4 0 ?>4< 1H B2>A8=6 8C >= 8=34?4=34=C 38<4=B8>=B >5
A7HC7< <4C0?7>A 0;;DB8>= 0=3 B> >= F>D;3 14 >33 C>> <D27 34?4=3B >=
7>F C74 E0A8>DB 540CDA4B 8=C46A0C4 F8C7 >=4 0=>C74A

8=0;;H <8G43 <>34B 0A4 >5C4= =0CDA0; >A 8=BC0=24 0 =0AA0C8E4 BCH;4 <0H
<>A?7 8=C> 0 @D0=C8C0C8E4 BCH;4 0B <>A4 0=3 <>A4 502C>AB BDA5024 5>A 2>=B83
0C8>= 0=3 34<0=3 >A60=810C8>= ;C4A=0C8E4;H 0 @D0=C8C0C8E4 4G?;>A0C8>=
<867C A4E40; 8=C4A02C8=6 502C>AB C70C 2AHBC0;;8I4 8=C> 0 =0AA0C8E4 <>A4 2><
?4;;8=6 C70= 0 C0;;H >5 B2>A4B 42838=6 7>F C> 342834 8B =>C 9DBC 0 B8=6;4
27>824 0B >=4 C02;;4B 0 3428B8>= 1DC 0 27>824 A4<034 0B 8340B 0=3 8=5>A<0C8>=
34E4;>?

-8C7 <>A4 8=CD8C8E4 0=3 0=0;HC82 =0AA0C8E4 0=3 @D0=C8C0C8E4 <>34B >5 A4?
A4B4=C0C8>= 0E08;01;4 F70C 0A4 B><4 >5 C74 502C>AB C70C 8=5>A< 0 6>>3 3>D1;4
10;0=24 C ;40BC C7A44 0A4 F>AC7 2>=B5#;48;08-'&)' 0=3 1'340/#-
3'40/#/%'

*' +)/(+%#/%' 0(5#,'4 (03 #-#/%'& '%+4+0/ #,+/)

*' +)/(+%#/%' 0(/08-'&)' (03 #-#/%'& '%+4+0/ #,+/)

!=>F;4364 4G?4A84=24 0=3 D=34ABC0=38=6 >5 0 B8CD0C8>= 0A4 CA4<4=3>DB;H
8<?>AC0=C 8= C74 10;0=28=6 02C >5 6>>3 3428B8>= <0:8=6 D=30<4=C0; C> C74

-8C7 B><4 27>824B F4 3>=OC 70E4 4=>D67 ?4AC8=4=C 4G?4A84=24 C> C4;;
>DAB4;E4B A4;801;4 BC>A84B -4 0A4 A0A4 E8B8C>AB C> <0=H >5 ;854OB ?DII;4B \$>C
>5C4= 3> F4 5024 <09>A <43820; >A 20A4 3428B8>=B 5>A 068=6 ?0A4=CB DC
A4B?>=B4B 0A4 ;8:4;H C> 14 D=A4;801;4 -74= F4 0A4 =>C F4;; >A84=C43 34;814A
0C4;H B44:8=6 >DC 8=5>A<0C8>= 0=3 4;01>A0C8>= 8B 4B?4280;;H 8<?>AC0=C 0=3 C74
<>A4 34C02743 @D0=C8C0C8E4 BCH;4 4E4= 85 >;H 8= C74 5>A< >5 0 ?A> 2>= ;8BC
?A>E834B 0 F0H >5 >A60=8I8=6 F70C 8=5>A<0C8>= F4 3> 70E4 >A 20= 60C74A

2><?>B4 0 =0AA0C8E4 >A @D0=C8C0C8E4 0=0;HB8B 5>A 0=H >5 C74B4 7867 BC0:4B 34
B8>=B 1DC C> <0:4 BD27 27>824B F8C7>DC 0B:8=6 F74C74A>>C74A
?4AB>= C74 3F4;;8=6 >A C74 ?A>54BB8>= F>D;3 14 >33 = BD27 20B4B C74 8=CD
8C8E4 E>824 >5 ?4AB>=0; A4B>=0=24 >A 38BB>=0=24 8B 0 CA4<4=3>DB;H 8<?>AC0=C
30C0 ?>8=C >5C4= 0??A>0278=6 0 =424BB0AH 2>=38C8>=
-74= ?4AB>=0; A4B>=0=24 70B B?4280; 140A8=6 6>>3 =0AA0C8E4 4;01>A0C8>=
<0H B4AE4 C74 3428B8>= ?A>24BB 14CC4A C70= @D0=C8C0C8E4 C01D;0A 4;01>A0C8>
>=B834A 7>F ?>4CAH >A ?A>B4 20= 20?CDA4 4BB4=C80; ?4AB>=0; @D0;8C84B =
2>=CA0BC 3428B8>=B A460A38=6 BC>2: 8=E4BC<4=CB 8=BDA0=24 ?>;8284B 0=3 F0B
8=6 <0278=4B 70E4 0 :8=3 >5 =4DCA0;8CH C70C 8=E8C4B CA40C8=6 C74< ;0A64;H 8=
C4A5 >1942C8E4 03E0=C064B 0=3 38B03E0=C064B

#-#/%'& '%+4+0/ #,+ / 6..#3:

>>3 3428B8>= <0:8=6 20= 14 B44= 0B 0 3>D1;4 10;0=28=6 02C *74 3428B8>=
<0:4A 342834B 7>F C> 342834 03>?C8=6 0 <>A4 8=CD8C8E4 >A 0=0;HC82 0??A>027
8= 0 <>A4 =0AA0C8E4 >A @D0=C8C0C8E4 >A <8G43 BCH;4 BD8C43 C> BC0:4B :=>F;436
0=3 ?4AB>=0; A4B>=0=24
J 867 BC0:4B 3428B8>=B A42><<4=3 0 <>A4 0=0;HC82 0??A>027 F8C7 1>C7
=0AA0C8E4 0=3 @D0=C8C0C8E4 C01D;0A A4?A4B4=C0C8>=B C> 2A>BB2742: >=4
0=>C74A 1DC F8C7 20DC8>= 01>DC 38<8=8B78=6 A4CDA=B 5>A 4GC4=343 4;01>A0
C8>=
J 1D;0A0=3640=3 @D0=C8C4G?23708DC;0;2K>C=34367@ 0 4;01>A0B4;<;HCTd [(

%5C4= C74 8<?02C 5034B 8= 0 54F <>=C7B >F4E4A C74 0DC7>AB ?0AC82D;0A
;H ;8:4 0 ?A>6A0< 20;;46%+/) 5*' +4, 6+--&+/) 5*' ,+--4 50 3'7/5

F8C7 8=5>A<0C8>= 0E08;01;4 D? C> =C4AE4=C8>= 0C 40A;H 6A034B 8B ?>BB81;4
C>> B0<?;4 ;4BB>= 5>A 58ABC 6A030A50DB4B%*4 5*) 1H A)4DBB
0=3 0 B8<?;85843 3428B8>= <0:8=6 BCA0C46HL-70C 2>D;3 F4 3> -70C F>D;3
70??4= 85 F4 383 C7>B4 C78=6B -70COB C74 14BC C78=6 C> 3>
*74 34B86=4AB >5 8=5DB43 ?A>6A0<B F>D;3 =>C 4G?42C >220B8>=0; 3428B8>=
<0:8=6 02C8E8C84B 8= 78BC>AH >A A4038=6 C> <0:4 ;40A=4AB 14CC4A 3428B8>= <0:
4AB (0C74A C74H 4=2>DA064 5A4@D4=C 0=3 2>=B8BC4=C DB4 >5 BD27 ?A02C824B
02A>BB 0 E0A84CH >5 38B28?;8=4B 08<8=6 1>C7 C> 344?4= 38B28?;8=0AH ;40A=8=6
0=3 8=BC8;; 3428B8>= <0:8=6 ?A02C824B C70C F8;; B?8;; >E4A C> >C74A 38B28?;8=4B
0=3 C> ;40A=4ABO 4E4AH30H ;8E4B
>F 2>=5834=C 20= F4 14 C70C BD27 8=8C80C8E4B BC0=3 0;>=4 >A 8=5DB43
70E4 C74 34B8A43 8<?02C ?A8>A @D4BC8>= 2>=24A=B C74 4=C8A4 4=C4A?A8B4 >5
C74 C40278=6 >5 64=4A0; C78=:8=6 B:8;;B 0=3 38B?>B8C8>=B *78B 8BBD4 70B 144=
2>=CA>E4AB80; =34AB>= 4C 0; A>F= 4C 0; &4A:8=B 0=3)0;><>=
)><4 70E4 0A6D43 DB8=6 2>=24?CB ;84456#5'& -#3/+/# 6
"0E4 0=3 -4=64A C70C 4=70=28=6 2>6=8C8E4 20?018;8C84B 8= 0 64=4A0;
B4=B4 8B D=;8:4;H 5542C8E4 8=8C80C8E4B =443 0 2>=C4GCD0; 5>2DB 0B F8C7 C74 ?
6A0= 03>;4B24=C B4GD0;8CH 0=3 E8>;4=24 >A 0 F78;4 C74 3410C4 C>>: 0
?>;0A8143 M20=OC 14 3>=4 20= 14 3>=4N 5>A< #H B4=B4 8B C70C 0 <>A4 <>34A
0C4 ?>B8C8>= =>F ?A4E08;B = 0=H 20B4 70E4 0A6D43 4;B4F74A4 C70C C74 ;8C4A0
CDA4 =>F >554AB 0 =D<14A >5 2;40A 4<?8A820;;H 6A>D=343 20B4B >5 4=70=28=6
E0A8>DB 64=4A0; 2>6=8C8E4 B:8;;B A>C14A 0=3 &4A:8=B &4A:8=B
(8C2770AC 0=3 &4A:8=B
>F4E4A 3428B8>= <0:8=6 ?4A B4 70B =>C 144= C74 5>2DB >5 C74 14BC
A4B40A27 HA=4B >1B4AE4B C70C C74 4E0;D0C8>=B >5 C74 % (
&4AB>=0; 428B8>= #0:8=6 0=3 %3HBB4H ?A>6A0<B 0;; 8=2;D343 B><4 ?>B8C8E4
A4BD;CBL1DC >= <40BDA4B C70C 4<?70B8143 BCD34=CBO :=>F;4364 >5 3428B8>=
<0:8=6 (4B40A274AB <034 => ?>BCC4BC 455>AC C> 8=E4=C>AH BCD34=CBO 3428B8>=
<0:8=6 1470E8>A 8= A40; F>A;3 2>=C4GCB >A C> 4=6064 C74< 8= B8<D;0C43 3428
B8>= <0:8=6 ?A>24BB4B
%=4 20= 7>?4 C70C C74 BCD34=CBO 608=B 8= :=>F;4364 0=3 D=34ABC0=38=6
F>D;3 CA0=B;0C4 8=C> B785CB 8= ?A02C820; 1470E8>A 1DC HA=4B F0A=B C70C C74
?4306>6820; 0??A>0274B C0:4= B44< B><4F70C 38302C82 340B 01>DC CA0=B54A
>5 ;40A=8=6 ?>8=C C> 540CDA4B C70C B7>D;3 4=70=24 8<?02C <4C02>6=8C8E4
A45;42C8>= 8=C4=B8E4 B8<D;0C43 A4740AB0; BD27 0B C70C F7827 8B 270A02C4A8BC
C0A64C43 0??A>0274B 0=3 38A42C 4=2>DA064<4=C C> 0??;H C74 8340B F834;H
BD27 0B ;>6 :44?8=6 02C8E8C84B 0A>D=3 4E4AH30H 3428B8>= <0:8=6 4 6 &4A:8=B
0=3)0;><>=)0;><>= 0=3 &4A:8=B
#0=H 4G0<?;4B >5 8=5DB43 0??A>0274B 4G8BC 1DC ;8CC;4 A4B40A27 70B 144=
3>=4 8= C78B 0A40 1420DB4 4<14338=6 C78=:8=6 BCA0C4684B 8= 38B28?;8=0AH ;40A=
8=6 8=CA>3D24B <0=H 70A3 C> 2>=CA>; E0A801;4B *F> :8=3B >5 >DC2><4BL
4=70=24<4=C >5 38B28?;8=0AH D=34ABC0=38=6 0=3 C78=:8=6L0A4 A4;4E0=C 0=3
4E4= F8C7>DC 2>=CA>;43 BCD384B F4 20= A40B>=01;H 2;08< C70C C74 4GC4=B8E4
DB4 >5 8=5DB43 3428B8>= <0:8=6 >A >C74A C78=:8=6 ?A02C824B 0;<>BC 24AC08=;H
5>BC4AB 38B28?;8=0AH D=34ABC0=38=6 GC4=B8E4 A4B40A27 70B 34<>=BCA0C43 C7

C7>D67C5D; 4;01>A0C8E4 ?A>24BB8=6 >5 2>=C4=C 1D8;3B D=34ABC0=38=6 4 6
>74= 4C 0; #4H4A 0=3 "0=3 -8B:4
%= C74 >C74A 70=3 C74 8<?02C >5 8=5DB43 0??A>0274B >= BCD34=CBO 64=4A0;
3428B8>= <0:8=6 ?A02C824B ;02:B A86>A>DB 4E834=24 >=4 F0H >A C74 >C74A
=5>A<0; A4?>ACB >5 344?4A FA8C8=6 01>DC 3428B8>= B8CD0C8>=B 0A4 4=2>DA068=
0B 0A4 5A4 @D4=C 0=423>C4B 5A>< BCD34=CB 01>DC 7>F C74H 0??;843 >=4 >A
0=>C74A C427=8@D4 >F4E4A C74B4 3> =>C >554A 38A42C 4E834=24 >5 ;0BC8=6
64=4A0; 270=64B 8= 3428B8>= <0:8=6 ;C7>D67 8=2>=E4=84=C C> 8=E4BC860C4
C78B 8B 0= 0A40 C70C F>D;3 14 F>AC7 C74 455>AC
*> BD<<0A8I4 ?4306>6820; 0??A>027 8B 8<?>AC0=C 8302C82 BCH;4B 0A4
;8:4;H C> 14 ;4BB 45542C8E4 C70= 0??A>0274B C70C 8=E>;E4 <4C02>6=8C8E4 A45;42
C8>= 0=3 B8<D;0C8>=B 08A;H 5A4 @D4=C 02C8E8C84B >E4A 0 2>=B834A01;4 ?4A8>3 >
C8<4 0A4 ;8:4;H C> 70E4 6A40C4A 8<?02C C70= 0 1A845 D=8C ??A>0274B C70C 5>2DB
>= B8=6;4 38B28?;8=4B >A C>?82B 0A4 ;8:4;H C> 14 ;4BB 45542C8E4 C70= 0??A>0274B
C70C 34;814A0C4;H A0=64 02A>BB 38B28?;8=4B 0=3 8=E8C4 ;40A=4AB C> <0:4 2>==42
C8>=B C> C748A >DC >5 B27>>; ;8E4B 5>BC4A8=6 CA0=B54A >5 ;40A=8=6
;B> CH?820; 8=C4AE4=C8>=B BD27 0B % (;40= C>F0A3 C74 @D0=C8C0
C8E4 C01D;0A BCH;4 >5 0=0;HB8B F8C7 >?C8>=B 0=3 0CCA81DC4B 0=3 A0C8=6B >A 27
;8BCB *74H 0;B> =46;42C C74 8<?>AC0=24 >5 A46D;0C8=6 3428B8>= <0:8=6 022>A3
8=6 C> C74 2A8C820; 38<4=B8>=B >5 BC0:4B :=>F;4364 0=3 ?4AB>=0; A4B>=0=24

8=5;D4=24)3B615*+/, 0=8B 0 ?74=><4=>= C70C AD=B 0;; C74 F0H 5A><
&* <44C8=6B C> =0C8>=0; ?>;8C82B A>D?C78=: 8B C74 C4=34=2H 5>A 6A>D?
<4<14AB C> 8=5;D4=24 >=4 0=>C74A 8= F0HB C70C ;403 C> 0= 0AC858280; 0=3 <8B
;4038=6 2>=B4=BDB COB 0 <0CC4A >5 5>;>F8=6 C74 2A>F3 3454AA8=6 C> 8=5;D4=
C80; 586DA4B 0=3 :44?8=6 2>=CA0AH C7>D67CB C> >=4B4;5 F74= 0 CA4=3 60C74AB
<><4=CD<
'D8C4 C74 >??>B8C4 ?74=><4=>= 8B 3>2D<4=C43 1H 0<4B)DA>F842:8
8= 78B A424=C" "+4&0. 0(308&4)DA>F842:8 A4E84FB =D<4A>DB
A4B40A27 A4BD;CB 0=3 =0CDA0; 28A2D<BC0=24B 34<>=BCA0C8=6 C70C C74 2><<>=
CA4=3 02A>BB 0 =D<14A >5 8=38E83D0;B >5C4= H84;3B A4<0A:01;H 6>>3 9D36<4=CB
0=3 ?A4382C8>=BL14CC4A C70= <>BC >5 C74 8=38E83D0;B 8=E>;E43 4E4= C74
4G?4ACB 0B4B A0=64 5A>< 4BC8<0C8=6 C74 =D<14A >5 <0A1;4B 8= 0 90A C> ?A4
382C8=6 4;42C8>=B 0=3 42>=><82 CA4=3B
*74 F8B3>< >5 2A>F3B 8B 6>>3 =4FB 5>A C74 ?>C4=C80; >5 34<>2A0C82 B>28
4C84B 0=3 5A44 <0A:4CB DC 8C 2><4B F8C7 0 B44<8=6 ?0A03>G >F 20= F4
70E4 1>C7 6A>D?C78=: 0=3 C74 F8B3>< >5 2A>F3B *74 0=BF4A 8B C70C C74H
A45;42C 38554A4=C 28A2D<BC0=24B A>D?C78=: C7A8E4B >= 2;>B4 8=C4A02C8E4 A4;
C8>=B78?B 14CF44= C74 ?4>?;4 8=E>;E43 B> C70C >?8=8>=B 20= B=>F10;; =
2>=CA0BC C74 F8B4 2A>F3 64=4A0;;H 8=E>;E4B ?4>?;4 =>C 8= 2;>B4 C>D27 F8C7
E0A843 B>DA24B >5 8=5>A<0C8>= 0=3 A40278=6 8=34?4=34=C 9D36<4=CB
>;C7>D67 BCD34=CB 24AC08=;H 2>D;3 ?A4?0A4 14CC4A 5>A 3428B8>= <0:8=6 8=
28E82 2>=C4GCB C74 270;;4=64 6>4B F4;; 14H>=3 8=38E83D0; 2><<8C<4=C 0=3
20?018;8CH *7>D67C5D; 8=34?4=34=C 9D36<4=C 8B =>C B> F4;; B4AE43 1H CH?820;
?>;8C820; ?A>24BB4B 0=3 8=BC8CDC8>=B E4= A40B>=01;H 2><<8CC43 <4<14AB >5
C74 ?>;8CH 20==>C 58=3 8C 40BH C> 5D=2C8>= 8= 0= 8340; F0H >=B834A C74 8=>A38
=0C4 1DA34= >5 D=34ABC0=38=6 2><?;4G ?D1;82 8BBD4B \$> <0CC4A F74C74A C74
C74<4 8B 8<<86A0C8>= C0G ;0FB <8;8C0AH 2><<8C<4=CB >A 740;C720A4 C74

;HC82 F0HB = BD<<0AH C74 CH?820; ?0CC4A= >5 ?D1;82 38B2>DAB4 0A>D=3 <09>A
8BBD4B 0=3 >55824B 8B B8=6D;0A;H D=BD??>AC8E4 >5 8=3443 8= <0=H F0HB 02C8E4;
D=34A<8=8=6 >5 C7>D67C5D; 28C8I4=;H 4=6064<4=C
*> 34E4;>? 28C8I4=;H B:8;;B 0=3 38B?>B8C8>=B F78;4 =46;42C8=6 ;0A64 B20;4

' :0/& #/#-:5+%#- 50 8'--)306/&'& +/56+5+7' &'%+4+0/ .#D27 >5 C74
;8C4A0CDA4 >= 3428B8>= <0:8=6 0=3 <>BC 43D20C8>=0; 8=C4AE4=C8>=B C0A64C8=6
64=4A0; 3428B8>= <0:8=6 CA40C 8C 0B 8340;;H 0= 0=0;HC820; 4=C4A?A8B4 >F4E4A
A4B40A27 C4;;B DB C70C 8= 24AC08= 2>=C4GCB F4;; 6A>D=343 8=CD8C8E4 C78=:8=6
B4AE4B 3428B8>= <0:8=6 14CC4A 22>A38=6;H F70C 70B 74A4 144= 270A02C4A8143
0B 10;0=243 3428B8>= <0:8=6 F8C7 C74 A867C 10;0=24 B>D67C B8CD0C8>= 1H B8CD0
C8>= 0B C74 ?4AB>= 342834B 7>F C> 342834 F>D;3 B4AE4 ?4AB>=0; 0=3 ?D1;82
8=C4A4BCB 14CC4A C70= 0 3>6643;H 0=0;HC82 0??A>027
' :0/& 26#/5+5#5+7' 5#\$6-#3 50 /#33#5+7' 45:-'4 0(&'%+4+0? #/#-:4+4
?A>0274B C> 2D;C8E0C8=6 64=4A0; 3428B8>= <0:8=6 20?018;8C84B C4=3 C> 5>A4
6A>D=3 @D0=C8C0C8E4 0=0;HB8BL>?C8>=B 0CCA81DC4B A0C8=6B B2>A4B >A 9D=
E4AB8>=B >5 C74 B0<4 BD27 0B ?A> 2>= ;8BCB 0=3 C0;;84B *78B 8B >5C4= 0 ?>F4A5D;
<>34 >5 0=0;HB8B 1DC A4B40A27 >= 3428B8>= <0:8=6 BD664BCB C70C =0AA0C8E4
0=0;HB8B 8B ?>C4=C 0B F4;; *74 ?0AC82D;0A 270A02C4A >5 C74 3428B8>= 20= ;4=3
8CB4;5 C> >=4 >A C74 >C74A >A C> 0 1;4=3
05* *+)* 13+03+5: 5#3)'54 #/&)/'3#- &'%+4+0/ .#;78;4 B><4 ?4>?;4
7>?4 C70C C74 2D;C8E0C8>= >5 64=4A0; 3428B8>= <0:8=6 B:8;;B 0=3 38B?>B8C8>=B
F8;; B4AE4 F4;; 4=>D67 7867 ?A8>A8CH ?4AB8BC4=C CA>D1;4 B?>CB BD27 0B 03>;4B
24=C B4GD0;8CH 3AD6 DB4 E8>;4=24 0=3 28E82 ?0AC828?0C8>= 0;<>BC 24AC08=;H
A4@D8A4 C0A64C43 CA40C<4=C >>3 ?A02C824 34?4=3B C>> <D27 >= 2>=C4GC B?4
28582 :=>F;4364 4=2>343 8= F0HB C70C <0:4 8C 5;D4=C;H 0E08;01;4 8= C74
<><4=C 0=3 >= <0=068=6 CA82:H 0B?42CB >5 ?4AB>=0; A4B>=0=24 5>A 0=H>=4
C> 4G?42C C70C 64=4A0; 3428B8>= <0:8=6 B:8;;B 0=3 38B?>B8C8>=B F8;; ?>F4A5D;;H
8=5>A< BD27 0A40B
>F4E4A ?4AB>=0; 0=3 ?D1;82 ;854 8=2;D34 0 <HA803 >5 <438D< C> 7867
BC0:4B 3428B8>=B C70C >22DA >=;H =>F 0=3 C74= %=4 20===>C ?A4?0A4 H>D=6
>40A=4AB 5>A 7D=3A43B >5 B?428582 3428B8>=B 20B4 1H 20B4)><4 A4B40A274AB
70E4 2;08<43 C70C 64=4A0; 2>6=8C8E4 B:8;;B 20===>C 14 B86=85820=C;H 4=70=243
1DC ?;4=CH >5 4E834=24 4G8BCB C> C74 2>=CA0AH *74A45>A4 64=4A0; 3428B8>= <0:
8=6 B:8;;B 0=3 38B?>B8C8>=B 0A4 8<?>AC0=C C>>

8<?A>E4 64=4A0; 3428B8>= <0:8=6 B7>D;3 =>C 14 B44= 0B BD1BC8CDC4B 5>A
033A4BB8=6 7867 ?A8>A8CH C0A64CB 0=3 E824 E4AB0 #0:8=6 ?4>?;4 14CC4A 3428B8>

!07=4<0= 0=3 *E4AB:H &A>B?42C C74>AH = 0=0;HB8B >5 3428B8>=B D=34A
A8B:%0/0.'53+%# K

!07=4<0= &);>E82 0=3 *E4AB:H 6&).'5 6/&'3 /%'35#+/5: '63+45+%4
#/# +#4'4 0<1A8364 +! 0<1A8364 +=8E4AB8CH &A4BB

!;02IH=B:8 & #4C02>6=8C8>= 0=3 2>6=8C8E4 E0A8018;8CH 3D0; ?A>24BB <>34;
>5 3428B8>= <0:8=6 0=3 8CB 34E4;>?<4#C7'401.'5 0(6&).'5 #/# '%+4+0/
#,+/) +/ *+&3'/ #/# &0-'4%/54 43 02>1B 0=3 & !;02IH=B:8 K
#07F07 \$ A;10D<

!;48= 063%'4 0(08'3 08 '01-' #,' '%+4+0/4 0<1A8364 # * &A4BB

!AD6;0=B:8 0=3 -41BC4A #>C8E0C43 2;>B8=6 >5 C74 <8=3 M)48I8=6N 0=3
M5A44I8=6N%'0-0)+%#- '7+'8 K

"0E4 0=3 -4=64A +56#5'& '#3/+/) ') +5+.#5' '3+1*'3#- #35+%+1#5+0/
\$4F />A: 0<1A8364 +=8E4AB8CH &A4BB

"8?B78CI (!;48= %A0B0=D 0=3)0;0B *0:8=6 BC>2: >5 =0CDA0;8BC82 3428
B8>= <0:8=6 063/#- 0('*#7+03#- '%+4+0/ #,+/) K

(8C2770AC (0=3 \$ &4A:8=B "40A=8=6 C> C78=: *74 270;;4=64B >5 C40278=6
C78=:8=6 #.\$3+&)' #/&\$00, 0(*+/,+) #/& '#40/+) 43 ! >;H>0: 0=3 (
#>AA8B>= K \$4F />A: 0<1A8364 +=8E4AB8CH &A4BB
(>BB <?A>E8=6 03>;4B24=CBO 3428B8>= <0:8=6 B33;B%6-6. /26+3:
K
(>BB " 0=3 (\$8B14CC *' '340/ #/& 5*' +56#5+0/ '341'%5+7'4 0(0%+#-
4:%*0-0):&78;034;?780 *4<?;4 +=8E4AB8CH &A4BB
)0;><>= 0=3 \$ &4A:8=B (>2:H A>03B C> CA0=B54A (4C78=:8=6 <4270
=8B5 0 =46;42C43 ?74=><4=&6%#5+0/#- 4:%*0-0)+45

-: '1-?;:5:3
1)-A34@

-: <1;<81 .1 @-A34@ @; A?1 -.?@>-/@ 5:21>1:/1 >A81? ?A/4 -? @41 >A81? ;2 8;35/
@; >1-?;: -.;A@ 1B1:@? 5: 1B1>E0-E 8521

: 1D/1<@5;: @; @41 -:@5 5:21>1:@5-8 >A81? <;?5@5;: ;2 9:-E @C1:@51@4 /1:
@A>E <?E/4;8;35?@? C-? 1-: &5-31@ C4; 4180 @4-@ <1;<81 0; 4-B1 -.?@>-/@
5:21>1:@5-8 >A81? 5:/8A05:3 @4;?1 /;>1?<;:05:3 @; @41 >A81? ;2 <>;<;?5@5;:-8
8;35/ -? C188 -? <->@5/A8-> /;3:5@5B1 ?/419-? 5:/8A05:3 ?/419-? 2;> <>;<;>
@5;:-85@E <>;-.585@E -:0 @41 91/4:-5/-8 1=A585.>5A9 <>5:/5<81 ;2 -/@5;: >1-/
@5;: 1 3 :41801> -:0 &5-31@ &5-31@ -:0 :41801> ;C1B1>
&5-31@ C-? -? 5:75?@1:@ -? ;@41> @C1:@51@4 /1:@A>E <?E/4;8;35?@? @4-@ ?A/4
>A81? /-:K@ .1 @-A34@ .A@ ;;8E 5:0A/10 2>;9 85B5:3 5: @41 <->@5/A8-> C;>;80 @4-@
C1 85B1 5:

A@ @41 -:@5>A81 -:@5 5:?@>A/@5;: <;?5@5;: ;2 9A/4 ;2 @C1:@51@4 /1:@A>E
<?E/4;8;3E 5? 95?@-71: #E /;881-3A1? -:0 4-B1 ?4;C: @4-@ <1;<81 0; 4-B1
5:21>1:@5-8 >A81? /;>1?<;:05:3 @; - :A9.1> ;2 5:21>1:@5-8 >A81 ?E?@19?H
5:/8A05:3 <>;-.585@E -:0 ?@-@5?@5/? 91@4;0;8;35/-8 <>5:/5<81? @4-@ ->1 >18510
:: .E @41 ?;/5-8 ?/51:@5?@ @41 >A81? ;2 /;?@ .1:125@ 01/5?5;: @41;>E -:0 C4-@
C1 /-88 l<->-39-@5/>1-?;:5:3 ?/419-? J "->5/7 1@ -8 #;>1;B1> @41?1
>A81? /-: .1 >1-058E @-A34@ ?;91 @; - ?53:525/-: @013>11 5: /8-??>;;9 ;> 8-; ;
>-@;>E ?1@ @5:3? 8-?@5:3 -: 4;A> ;> 81??
::?501> @41 2;88;C5:3 <>;819

-@41>5:1 5? -9:-A2-/@A>1>K? >1<>1?1:@-@5B1 (41 8571? 41> 6; . C45/4 @-71?
41> @; /5@51? -88 ;B1> @41 /;A:@>E (;91@45:3 ;2 -3;A>91@ ?41 1-@? -@
>1?@-A>:-@? @4-@ ->1 >1;991:010 @; 41> +41: ?41 4-? -<->@5/A8->8E
1D/1881:@ 91-8 -@ ->1?@-A>:-@ ?41 A?A-88E 3;1? 2;> ->1@A>: B5?5@ A@ ?41 5?
2>1=A1:@8E 05?<<;5:@10 (A.?1=A1:@ 91-8? ->1 >->18E -? 3;0 -? @41 25>?@
91-8 +4E 0; E;A ?A<<;?1 @45? 5?

+1 4-B1 <?;10 @45? ?;>@ ;2 =A1?@5;: @; ?/;>1? ;2 <1;<81 4-B5:3 10A/-@5;:
-8 81B18? >:35:3 2>;9 /;88131 2>1?49-: @; &4 81B18 ?@-22 -@ 9-6;> >1?1->/4
5: ?@5@A@5;: ? \$5?.1@@ 1@ -8 \$5?.1@@ >;9 2>1?491: C1 -89;?@
:1B1> 31@ -:E@45:3 ;@41> @4-: - /-A?-8 4E<;@41?5? l#-E.1 @41 /412? /4-:31
-8;@J ;> l#-E.1 41> 1D<1/@-@5;: ? ->1 ?; 4534 @4-@ @41 >1-85@E C588 05?<<;5:@
41>J (A/4 4E<;@41?1? ->1 ;@ :1/1??->58E C>;3 .A@ @41E 95?? A:01>8E5:3
?@-@5?@5/-8 <;5:@? >;9 A:01>3>-0A-@1? C4; 4-B1 4-0 - /;A>?1 5: ?@-@5?@5/?
C1 ;2@1: 31@ -?C1>? @4-@ >1281/@ -: -<<>1/5-@5;: ;2 @41 <>;-.585?@5/ :-@A>1
;2>1?@-A>:-@ 91-8 =A-85@E l#-E.1 5@ C-? 6A?@ .E - /4- /1 @4-@ ?41 3;@ ?A/4 -
3;0 91-8 @41 25>?@ @591J C45/4 5? ?A>18E >534@ -? 2-> -? 5@ 3;1? >;9 3>-0A
-@1 ?@A01:@? 5: <?E/4;8;3E C4; 4-B1 @E<5/-88E 4-0 @C; ;> @4>11 /;A>?1? 5:
?@-@5?@5/? C1 A?A-88E 31@ - ?@-@5?@5/-8 -:?C1> ;2@1: ;2 4534 =A-85@E ?A/4 -?
l)41>1 ->1 <>;-.8E 9:-E 9;>1 >1?@-A>:-@? C41>1 E;A /-: 31@ -: 1D/1881:@
91-8 ?;91 ;2 @41 @591 @4-: @41>1 ->1 >1?@-A>:-@? C41>1 E;A /-: 31@ -: 1D/18
81:@ 91-8 -88 ;2 @41 @591 (; 52 ?41 31@? -: 1D/1881:@ 91-8 5@K? <>;-.8E 5: -
>1?@-A>:-@ @4-@ 5? ;:8E B1>E 3;0 ;: -B1>-31)41>12;>1 52 ?41 31@? - @>A8E
1D/1881:@ 91-8 @41: @41>1K? ;: <8- /1 @; 3; .A@ 0;C:H; -B1>-31J >;9
&4 ? 5: ?/51:/1 C1 :1->8E -8C-E? 31@ - ?@-@5?@5/-8 -:?C1> A?A-88E ;2 4534
=A-85@E

-: E;A @1-/4 <1;<81 ?@-@5?@5/-8 <>5:/5<81? @4-@ /-: -221/@ @415> A:01>?@-:0
5:3 ;2 1B1>E0-E 8521 1B1:@? C5@4;A@ 4-B5:3 @419 @-71 4A:0>10? ;2 4;A>? ;2

;/A>?1? ,1? C1 /-: @1-/4 <1;<81 4;C @; >1-?;;-;A@ 1B1:@? 8571 -@41>5:1K?
05?-<<5:@91:@ 5: 8-;.>-@;>E ?1??5;;? 8-?@5:3 81?? @4-: -: 4;A> ;:3 1@ -8
+1 /-: @1-/4 >A81? 8571 @41 8-C ;2 8->31 :A9.1>? 5: <A>18E -.?@>-/@ 2-?4
5;;.E @-875:3 -;A@ A>? C5@4 .-88? ;2 05221>1:@ /;8;>? 0125:5:3 @41 /;:/1<@?
;2 <;<A8-@5;; <->-91@1> ?-9<81 <->-91@1> -:0 ?-9<81 ?5F1 -:0 <;5:@5:3

)41 28-C 5: -E /;:/8A?5;: @4-@ @41 <>;3>-9 5? 1221/@5B1 5? @41 I?182 ?181/
@5;:J <;??5.585@E)4-@ 5? @41 <1;<81 C4; ?@A/7 C5@4 @41 <>;3>-9 9-E 4-B1
.11: @4;?1 C4; C1>1 3;5:3 @; 8;?1 C1534@ -;EC-E)4;?1 C4; 050:K@ ?@5/7
C5@4 @41 <>;3>-9 9-E 4-B1 .11: @4;?1 C4; C1>1:K@ 8;?5:3 C1534@ -:0 4-0
35B1: A<)41E 9534@ 1B1: 4-B1 3-5:10 C1534@)4-@ E;AK>1 3;5:3 @; 8;?1
C1534@ 52 E;A 1:>;88 5: @41 ";?1 +1534@ \$;C ;>3-:5F-@5;: 5? ;@ /81->
+1 25:0 @4-@ @C; E1->? ;2 3>-0A-@1 @>-5:5:3 5: <?E/4;8;3E 3>1-@8E 5:/>1-?
1? @41 8571854;;0 @4-@ <1;<81 C588 ?<;@ @41 <;@1:@5-8 ->@52-/@ 5: <>;.819? @4-@
>1=A5>1 A:01>?@-:05:3 ;2 @41 ?182 ?181/@5;: <>5:/5<81 ;> @41 >181B-:/1 ;2 /;:
@>;8 3>-;/;"J(?181B)/7(@5;:J(?10A-@)1(1-1.35 Td3(1=A@41).-?37(@41)-2;:J(?+)70(1)-(-;"J

>-@5;:-8 1;A34 A@ @41: >1?1->/4 1?<1/5-88E @4-@ .E <?E/4;8;35?@? -:518
!-4:19-: -:0 9;?)B1>?7E ?4;C10 @4-@ <1;<81 C1>1:K@ 1B1: B1>E .;A:0
108E >-@5;:-8)41E ?<1:0 -? 9A/4 @591 ?4;<<5:3 2;> - ?45>@ -? 2;> - >12>531>-
@;> @41E ->1 >5?7 -B1>?1 5: ?5@A-@5;:? C41>1 @41>1 5? - <;@1:@5-8 3-5: -:0 >5?7
?1175:3 5: ?5@A-@5;:? C41>1 @41>1 5? - <;@1:@5-8 8;?? @41E ->1 ?A.61/@ @; ?1B1>1
2>-95:3 1221/@? 2;> 1D-9<81 >1-/45:3 ;<<;?5@1 /;:/8A?5;:? -.;A@ @41 ?-91
2;>9-8 <>;.819 C41: 1;/A>-310 @; @45:7 -.;A@ @41 <>;.819 -? - <;??5.81
3-5: @4-: @41E 0; C41: 1;/A>-310 @; @45:7 -.;A@ 5@ -? - <;??5.81 8;?? @41E
/-8/A8-@1 B-8A1 ;;@ C5@4 >1?<1/@ @; ?;91 -.?;8A@1 ?/-81 .A@ 91>18E C5@4 >1?<1/@
@; @415> /A>>1:@ ?@-@1 -:0 @41E 0;:K@ A?1 <>;<1> <>;-.585@51? -@ -88 .A@ >-@41
?;91@45:3 9;>1 8571 I01/5?5;: C1534@?J -:0 ;: @41 85?@ /;A80 3;)B1>?7E
!-4:19-:

@41 /;?@ ;2 >1;:B-@5:3 @41 ;80 ;:1 -:0 @41 ;80 ;:1 4-0 .11: 1D@>1918E 1D<1:
?5B1 @; .A580 /;::95?@? -:0 1B1>E;:1 18?1 ?4;A80 ?-E @4-@ @41 /;?@ ;2 @41 ;80
4;?<5@-8 5? ?A:7 -:0 @41>12;>1 5>>181B-:@ @; @41 <>1?1:@ /4;5/1
/;::95?@? 0; 5: 2-/@ ?-E @4-@ -:0 @41E ->1 9A/4 9;>1 85718E @; -<<8E
/;?@ .1:125@ <>5:/5<81? 5: @41 -B;C108E ;;>9-@5B18E /;>>1/@ C-E @; -88 75:0? ;2
<;85/E <>;819? -:0 <1>?;:-8 /4;5/1? 1 3 +87 ;A@ ;2 - 8;A?E 9;B51 ;> ?@-E
@; @41 .5@ @1> 1:0 A@ .5;8;35?@? -:0 4A9-5@51? <>;21??;>? ->1 ;; @:1->8E -?
85718E @; A?1 @4;?1 <>5:/5<81? -? 1/;::95?@? :0 .5;8;35?@? -:0 4A9-5@51?
<>;21??;>? ->1 ;;@ 9A/4 9;>1 85718E @; A?1 @4;?1 <>5:/5<81? @4-: @415> ?@A01:@?
;C -;A@ @>-5:5:3 5: 1/;::95/? ?4;>@ ;2 - 0;/@;>-@1 ;1? - /;A>?1 5:
1/;::95/? 9-71 E;A 9;>1 85718E @; A?1 @41 /;?@ .1:125@ >A81? \$; *:01>
3>-0A-@1? C4; 4-B1 4-0 - ?5:381 /;A>?1 5: 1/;::95/? ->1 ;; 9;>1 85718E @;
A?1 /;?@ .1:125@ >A81? 5: -:-8EF5:3 <;85/E =A1?@5;? ;> 9-75:3 <1>?;:-8 01/5
?5;: ? @4-: ->1 A:01>3>-0A-@1? C4; 4-B1 :1B1> 4-0 - /;A>?1 5: 1/;::95/?
"->>5/7 1@ -8
A@ C1 /-: @1-/4 /;88131 ?@A01:@? 4;C @; A?1 @41 ?A:7 /;?@ -:0 <<>@A
:5@E /;?@ <>5:/5<81? 5: ?1??5;: ? 8-?@5:3 81?? @4-: -: 4;A> "->>5/7 1@ -8
:0 @41 :1C >A81? ?@5/7 ->;A:0)C; C117? -2@1> @>-5:5:3 @419 C1 /-88 @419
5: @41 3A5?1 ;2 -: ;<5:5: <;88 -:0 -?7 =A1?@5;: ? @4-@ 0;K@ 8;;7 -@ -88 8571 @41
;;1? ;: C45/4 @41E C1>1 @>-5:10)41 ?@A01:@? A?1 @41 ;;>9-@5B18E /;>>1/@
>A81? 9;>1 @4-: 0; A:@>-5:10 ?@A01:@?
A@ 4;C 0; 7;;C @41EK>1 .1@@@1>;22 A?5:3 I;>9-@5B18E /;>>1/@J >A81?
KB1 -8>1-0E -095@@@10 @4-@ :15@41> @41 -.?@>-/@ ;<@59-85@E ;;> @41 2-/@ @4-@
<;>-@5;: ?45>1 01/5?5;: 1D<1>@? <>;B501? 9A/4 >1-?;: @; .1851B1 @4-@ @41 >A81?
->1 /;>>1/@
A@ ;A> >1?1->/4 ?4;C? @4-@ A?1 ;2 @41 >A81? 5? -?;/5-@10 C5@4 8521 ;A@
/;91? @4-@ <1;<81 01?5>1 -/A8@E 919.1>? C4; >13A8->8E A?1 /;?@ .1:125@
>A81? C41: 9-75:3 /4;5/1? 31@ 45341> ?-8->51? -:0 .5331> >-5?1? @4-: 0; @4;?1
C4; 81?? >13A8->8E A?1 @41 >A81? "->>5/7 1@ -8 *:01>3>-0A-@1? C4;
9;>1 2>1=A1:@8E A?1 @41 >A81? 4-B1 45341> & ? %:1 9534@ -?7 C41@41> @45?
25:05:3 /-: .1 -@>5.A@10 @; @41 ?182 ?181/@5;: <>5:/5<81 >1 @41 ?@A01:@? C4;
A?1 @41 >A81? ;> /8-59 @; 0; ?; 9;>1 5:@188531:@ @4-: @4;?1 C4; 0; ;@ A?1
@41 >A81? /@A-88E ?@A01:@? C4; 4-B1 45341> 3>-01? @4-: @415> ()?/>1? -
<>1@ @E 3;0 5:05/-@;>; 2 5:@188531:/1 C;A80 <>105/@ ->1 9;>1 85718E @; A?1 @41
>A81? 15:3 C5?1 -;A@ /4;5/1? 418<? E;A @; -/451B1 9;>1 @4-: E;A C;A80
;@41>C5?1
) 0-@1 C1 4-B1 ?@A0510 -:0 2;A:0 1221/@5B1 C-E? ;2 @1-/45:3 - ?53:525/-:@

::3) !>:@F -:0' \$5?.1@@)41 1221/@? ;2 ?@-@5?@5/-8 @>-5:5:3
:: @45:75:3 -.;A@ 1B1>E0-E <>;819?! & (%+ " " + G

::3) -:0' \$5?.1@@ 99105-@1 -:0 018-E10 @>-:21> ;2 @>-5:5:3
1221/@? 5: ?@-@5?@5/-8 >"\$?;5:3*\$ \$!& %+ " " + !\$ G

:41801> -:0 &5-31@ \$)& " " !! \$" "" &"
" % ! \$1C ;;>7 -?5/ ;;7?

"->>5/7 ' & \$ #;>3-: -:0' \$5?.1@@)1-/45:3 @41 A?1 ;2 /;?@ .1:125@
>1-?;:5:3 5: 1B1>E0-E 8524+ " " ! G

"->>5/7 ' & ' \$5?.1@@ -:0 \$ #;>3-: +4; A?1? @41 /;?@ .1:125@ >A81?
;2 /4;5/1 9<85/-@5;:2;> @41 ;;>9-@5B1 ?@-@A? ;2 95/>;1/;;95/ @41;>E

9 8/:/)'2 \$. /41/4- '
+4+8'2 \$'2+4:

9;6658: ,58 :.+)2/3 :.: 54+)'4 :+').)8/:/)'2 :./41/4- =/:./4 '96+),/)
53/4 5, 145=2+-+ (:;)'445: :+').)8/:/)'2 :./41/4- '9 '4 '(9:8): :2+4:
.: :8'49)+4*9 *53/49 5;2* 54+ :+'). D':.2+:/) 91/22E 5;:9/*+ 5, '6'8:/);
2'8 9658: 58 D'+9:./) '668+)'/:/54E /4*+6+4*+4: 5, :.+ ,583 :.+ '8:/9:/)
685*); :99;3+*

'). /4*/</'2 8+7;/8+9 ': ' 3/4/3;3 ' (5*? '4* 3/4* .+'2:.'? +45;-.

\$.*,1270 ?2-.7,.. *<.-
2=2C.7<129

8;=1.5*<=/.@ B.*;< 1*?. +.7 ,8=.*,1270 *7 27=.;-2<,29527*;B 1>6*72=2.<
,8>;<. /8; /;<16.7 8; *+8>=1;.. @..4< 27 =1. 62--5. 8/ =1. ,8>;<. =*4.
=1. 98-2>6 =8 987-.;=1. <2072/2,*7., 8/ =@8 % # #>9;.6. 8>;= ,*<.<
(' # & % *7-

*7- =. ,1270 * < =1. <.:>.7=2*5 9;.<.7=* =287 8/ -2<,29527*;B /;*06.7=< =1* =
6201= 8; 6201= 78= 1.59 <86. <=>-.7=< =8 ,87<=>,>= 27=;.-2<,29527*;B
>7-;.<=*7-270 1*?. 02?.7 78 ;,*<87 =8 =;B =8 -8 =1. /8;6.; &1* = 6201=
+. =1. 68<= 8+?28><.;.*<87 =8 -8 <8 *5<8 =>;7< 8>= 8 +. 78= ?.;B 1.59/>5
95* =2=>-. *+8>= =1. 0;8@=1 8/ 478@5.-0. 2< =1* = =1. 68<= /.;=25. *;.*< 8/
27?.<=20* =287 *; . 8/= .7 /8>7- * = =1. +8>7-*;2.< 8/ *-3827270 -2<,29527.< '!=
=1. 95* =2=>-. <..6< 68; . *9952,*+5. =8 =1. ,87-> ,= 8/ ;.<.*; ,1 =;*27270 =1*7
=1. =.* ,1270 8/ 27=;8-> ,=8;B ,855.0. ,8>;<.< / =1. 68<= 9;862<270 *;.*< /8;
* ,*-.62, 2778?* =287 *; . 27 /* ,= 8 +. /8>7- * = =1. .-0.< 8/ .<=*+52<1.- -2<,2
9527.< =1.7 088- ;.<.*; ,1 =;*27270 @255 -*@ 78?2, < 27 =1* = -2; , =287 >= 2=
-8.< 78= /8558@ =1* = 27=;8-> ,=8;B ,855.0. ,8>;<.< 6>=< =* ; = 7>-0270 *7B87.
5870 =1 = ;8>= . 5870 +./8; .< ;28>< ;.<.*; ,1 =;*27270 1* < =* ; =.- @12,1 @255
7.?.; 1*99.7 /8; =1. 0;.* = 6*38;2=B 8/ <=>-.7=< 27 <>,1 ,8>;<.<
@*7= =8 ,*7?* < *7 *5=.;7* =2? . ; =287*5. /8; * 427- 8/ 27=;.-2<,29527*;B
=.* ,1270 =1* = 1* < * 9;89.; 95* . 27 =1. /2;<= B.*; 8/ ,855.0. *7- 27 1201 <,1885
/8; =1* = 6*==.; =18>01 @255 *5<8 +. ,*7-2- *+8>= 6B 5270.;270 62<02?270<
+8>= <>,1 =. ,1270 \$1. ;.* =287*5. ,*7 +. +;8>01= 27=8 /8,>< =1;8>01 * :>.<
=287 >;0. <=>-.7=< =8 =1274 *+8>= 27 =1. >7#(87 *7- # & + \$8
@1* = .A.=7 = 1* < 6.;2,* <> ,,,.- 27 ;.*52C270 =1. 68;*5 9;862<. 8/ /;...-86
*7- .:>*52=B /8; *55 2=< ,2=2C.7< ;.0* ; -5.<< 8/ =1.2; ;.* 8; ;1.=8;2,*5 ,87?.7
2.7, . <1*55 ,*55 =12< #1(:>.<=287 =.55 6B <=>-.7=< =1* = =1.B @255 78=
5.*; 7 7.*;5B .78>01 27 8>; ,8>;< . =8 +. .7=2=5.- =8 *7 27=.55.,=>*55B * <<>;.-
*7<@.; =8 =1.# (:>.<=287 >= *5<8 <=;.<< =1* = =12< 2< =1. :>.<=287 =1* =
;.*55B 6*==.;< 7 =1. 5*0; < ,1.6. 8/ =1270< 2= 6*==.;< /* ; 68; . =1*7 =1.2;
0;*- .8; .?.7 =1. 9* <<287< /8; 5* @ 12<=8;B 8; 9852=2,*5 91258<891B =1* = 6201=

@* < *,86952<1.- 27 =1. 2?25 "201=< 68?.6.7= *0*27<= .;8<287 >7-.;=*4.7
27 =1. <.->=??. 0>2<. 8/0;8>9 ;201=< =1. 9>;<>2= 8/-. /*,=8 -.<.0;0*=287
8; =1. 524. 2/=1. <.,87- @. ;;8>015B =;>. =1.7 =8 ;0*;- * ,858; +527-
5.0*5 -2<9.7<*=287 * <=1. ,87<>66*=287 8/ ;*,2*5 .:>*52=B @8>5- *==.<= =8
0;2.?8>< 68;*5 ,8695*.,7,B * = +.<= *7- ,86952,2=B 27 899;.<<287 * = @8;<=
<4270 <=>-.7=< =8 ,87/;87= =# (:>.<=287 2< 78= 524. *<4270 =1.6 =8
=1274 *+8>= =1. ,*>.< 8; ,87<.:>.7.< 8/ =1. !589877.<2*7 &*; 2= 2< *<4270
=1.6 @18<. <2-. =1.B *; 87 27 * <=;>005. =1* =1.2; 52?.< *5; *-B .7,869* <<
*7- @18<. 2698;=*7, ,*778= -. ,7=5B +. ?*-. 7 -. ,2-270 87 9* ;=B //252
*=287 @186 =8 ?8= . /8; *7- @12,1 <2-. =8 =*4. 27 * 18<= 8/ 9852=2, *5 -. +* =.<
@2=1 ,869* =;28=< ,188<270 @.55 -.9.7-< 27 78 <6*55 9* ;= 87 088- /2=1
./8; =8 0;* <9 =1. ;201= *7<@. ; @1* =.?. ; *7<@. ; =1* =6201= +.

/ <=>-.7=< * <4 =1# (:>.<=287 <.;28><5B =1.B 6><= *5<8 ,87<=>; =* =
5.* <= * 9;8?2<287*5 *7<@. ; 87 =1. +* <2< 8/ *?*25*+5. ?2-.7. \$12< 6*4.< =1.
<9.,2/2,*55B ,8072=2?. =* <4< =1.B /*, 27 0;995270 @2=1 =1. * ,-.62, 6* =.;2*5
9;.<.7= ;* =1. ; -2//.;7= =1*7 =1.< =* <4< @8>5- +. 2/ =1. <=>-.7=< 1* =8 =1274
*+8>= =1.6 6.;5B * < 78?2,. 91258<891.;< 12<=8;2*7< 5.0*5 <,185* ; < 8; =1.
524. 7 9* ;=2, >5* ; *7<@. ;270 =#. (:>.<=287 :>* ,2=2C.7 ; :>2.; < *7 27=.
0;*=287 8/ /*, =*7- ?*5>. =1* = 9><1.< +.B87- =1. +8>7-* ;2.< 8/ *7B 6.;5B
-2<,29527* ;B >7- ;<=*7-270

87<2- ; \$1>;088- *;<1*55H< ,5*26 =1* = F>75.<< 8>; ,125- ;7 +.027 =8
5.*;7 =80.=1. ; =1. ; 2< 52==5. 189. =1* = 8>; 9.895. @255 5.*;7 =8 52?. =80.=1.;G
&1* = *;<1*55 ,55< F52?270 =80.=1.;G ,*7 875B +. ,1* ;2=*+5B >7- ;<=88- * <
<86.=1270 524. F52?270 =80.\$! ;& \$ G / =. ; *55 @12= < *7- +5* ,4< 27
6.;2, * 52?-. =80.=1. ; >7- ; 26 ;8@ @2=18>= 5.* ;7270 =80.=1. ; +>= =1* = 2<
1* ;5B =1. 427- 8/ ,2?2 ,8.A2<=.7. , =1* = *;<1*55 .7?2<*0- \$1. +;8* -9852=2
, *5 *7- 5.0*5 ,87=.A= 8/ *;<1*55H< ;.6* ;4 <>00.<=< =1* = 1. 524.5B 1* - * = 5.* <= *
,8>95. 8/ =1270< 27 627- >7- ; =1. ;>+;2, 8/ 52?270 =80.=1. ; * <.:>*5< 6. ;
2,*7< @8>5- .738B .:>*5 .,87862, 8998;=>72=B 2;;.<9. =2?. 8/ ;. =1.B
@8>5- *5<8 ;.,29;8, *. ;.<9. = /8; . * ,1 8=1. ; =1;8>018>= *55 <8,2*5 27<=2=>
=287< @1* =.?. ; =1.2; ;. 6201= +. * ;<1*55H< =1.<2< =1.7 2<=1* = @2=18>=
=1. 427- 8/ ;*,2*5 ,8662705270 =1* = -. /*,=8 -.<.0;0*=287 @8>5- <.,>. =1.
9;862<. 8/ /;.. *7- .:>*5 ,2=2C.7<129 @255 ;6*27 8>= 8/ ;. * ,1 /8; 6*7B
6.;2,*7<

*;<1*55H< =1.<2< 2< ,;>2*5 =8 18@ 87. *7<@.# (=1.:>.<=287 *7- *
1>0. +8-B 8/ <8,2*5 <,2.7=2/2, ;.<.* ;1 +.* ;< 87 =1. =1.<2< >= =1. =1.<2< 2< <>,1
=1* = .?2-.7. *-->.- /8; 8; *0*27<= 2= ,*778= +. .A,5><2?.5B .692;2,*5 \$1* = 2<
<8 /8; =1. 8+?28>< ; * <87 =1* =1. ,87,9=< 8/ .:>*5 8998;=>72=B *7- ;.,29;8,*5
;.<9. = *;. 89.7 =8 ;2?*5 27=.;9; =* =287< *7- =1. 27=.;9; =* =287 *7B 87. 8/ ><
6201= /?8; 2< 9;89.;5B * 6* =. ; 8/ 68;*5 3>-06.7= #>,1 3>-06.7=< ,*778= +.
@* ;,*7=.- +B *7B *99.*5 =8 ?*5>. 7.>=,*5 -* =* 8; .A*695. 2/ ,>5=>,*5 -2// ;
.7.< ;* =1. ; =1*7 =1. :>*52=B 8/ <=* =. ->,* =287*5 9;8?2<287 .A95*27.- 6>,1 8/

' # * % # 8; * ,2;;>6<9., = -./7<. 8/ =1.->,* =287*5
7- ,2?2, +.7/2=< 8/27=0; =287 <.. 58= /5=.; <86. @1* =68; .<4.9=2,*5 ?2. @ 2<
. ?2-.7= 27 \$1.;7<=;86 *7- \$1.;7<=;86

>= 78@ @. ,86. +*,4=8=1. 9;8+5.6 8/ -25.==*7=2<6 1*?. *;0>.- =1*=
* ,;=*27 427- 8/ 27=-.;-2<,29527*;B 5.*;7270 2< 27=.0;*5 =8 .->,*=287 /8; -.68
;,*=2, ,2=2C.7<129 ><270#1. :>.<=287 =8 =1;8@ 27=8 ;.52./ =1. -2<=27,=2?.
,1**,=.; 8/ <>,1 5.*;7270 \$1. 5.,=>;.< 02?. 6B /;.<16*7 ,5*<< *, *7
==.69= =8 /8<=.; <>,1 5.;7270 #=255 6B ./8;=< ;.:>2; .6. =8 .70*0. @2=1
6>,1 6*=-;2*5 +.B87- 6B .A9.;=2<. &1* = @8;;2.< 6. @1.7 ;./5.,= 87 @1*=
-8 @* < 7.?.; +.==.; .A9;.<<.- =1*7 +B 2.=C<,1. 27 * /=. ; *
,1**,=.;2<=2,*55B -*CC5270 9*<<*0. =1* = -.<;2+.< =1. 1>6*7 ,8<= 8/ 27=.55.,=>
*5 <9.,2*52C*=287 1. =>;7< 12< *==.7=287 =8 =1. *5=.;7*=2?. /8; <,185*;<

>= B8> @8>5- 1*?. 2= 8=1.;@2<.E,1.*9.; *7- /*2;.; *7- *+8?. *55 68;.
,86/8;=*+5.E2<7H= =1* = ;201= 6B -*; ,87=.698;*;2.< &.55 =1.7 +>= 27
=1* = ,*<. B8> *5<8 266.-2* =.5B 0.= <86.=1270 .5<. 27<=.*- 8/ =1. ,;*/=<
6*7 *7- 6*<=.; =1. F6*7 8/ 5.==.;<G =1. -.A=.;8>< F985B-.A=.;8><G 6*7
8/ 5.==.;< @18 =8 +. <>.. 5*,4< =1. 1>7,1.- +*,4E78= ,8>7=270 =1. 98<
=>;. 1. *<<>6.< +./8;. B8> +.270 =1. <*5.<6*7 8/ =1. <92;2= *7- =1. F,*;

($\$$)1. 427- 8/ 08?.;76.7= 9.895. @*7= 2< 87. 27 @12,1 8;-27*;B 9.895.
-8 78= 1*?. =8 0.= 27?85?.- &. <18@ =1*= 9.895. @*7= =8 -2<=*7,. =1.6
<.5?.</;86 08?.;76.7= 78= +.,* ><. 8/ * <B<=.6 -./.,= +>= +.,* ><. 6*7B
9.895. *;. <2695B *?.;<. =8 9852=2,*5 ,87/52,= *7- 6*7B 8=1.;< +.52.?.
9852=2,*5 ,87/52,= 2< >77.,.<<*;B *7- *7 27-2,*=287 =1* = <86.=1270 2< @;870
@2=1 08?.;76.7=*5 9;8,.->;< !.895. +.52.?. =1* = 6;2,*7< *55 1*?. =1.
<*6. +* <2, 08*5< *7- =1.B *;. ,87<.:>.7=5B =>;7.- 8// +B 9852=2,*5 -.+* =.
*7- -. *5 6*4270 =1* = 9;.<>998<. * 5*,4 8/ ,87<.7<>< !.895. +.52.?. =1* =
=1.<. *,=2?2=2.< @8>5- +. >77.,.<<*;B 2/ -.,2<287 6*4.;< @.; 27 =>7. @2=1
=1. ,87<.7<>*5 9>+52, 27=.;.<= ;* =1.; =1*7 =1. , *891878>< <9.,2*5 27=.;
. <=< -- =8 =12< =1. 9.;.,2?.- 5*,4 8/ 2698;=*7,. 8/ 68<= 9852,2< *7-
9.895. =.7- =8 ?2.@ 9852=2,*5 9;8,.->;< * < * ,8695.=. @* <=. 8/ =26.
2++270 *7- \$1.2<< 8;<.

$\$8$ ' % *7 *,8>7= 8/ 9852=2,*5 **=2=>-.< 5.<< 27 4..9270 @2=1 ,87,.9=287<
8/ -.68,;* =2, ,2=2C.7<129 <>,1 * < 627. =1* = -.6*7- <=:;7>8>< ,8072=2?. *7-
68;*5 //8;= /;86 ,2=2C.7< @8>5- +. -2//2,>5= 8;8?.; =1. * >=18;<H .?2-.7.,
<>00.<=< =1* =1. **=2=>-.< =1.B -.<;2+. *, 52==5. //.,=- +B .->,* =287 * =
5.* <= * < 2= 2< ,>;.7=5B 9;* =2,.- 2++270 *7- \$1.2<< 8;<. D
\$1. ?.;B **=.69= =8 .7,8>,*0. *7 .?2-.7., +* <.- *99;8*,1 =8 =1. # (
:>.<=287 6201= <..6 6.;5B :>2A8=2, 02?.7 +8=1 =1. .692;2,*5 ;.*52=B 8/
6.;2,*7 ,2=2C.7<129 =1* = 2++270 *7- \$12.<< 8;<.<.-<;2+. *7- =1. 7.052
02+5. 9;80;<< 6B <=>-.7=< ,*7 +. .A9.,=- =8 6*4. 27 *7<@.;270 =1. :>.<
=287 * < * ,87<.:>.7,. 8/ 6B =.* ,1270 >= *7 2698;=*7= -2<=27,=287 =8 +.*; 27

58=/.5=.; \$ % # # (\$ %# % \$ # %
!;27,.=87 !;27,.=87 %72?.;<2=B !;.<<
2++270 " *7- \$1.2<< 8;<. % % # * # , \$ \$ &%
(' # % & # *6+;2-0. *6+;2-0. %72?.;<2=B !;.<<
2.=C<,1. * =;*7< &*5=.; *>/6*7 .@ '8;4 "*7-86
8><.
\$1.;7<=;86 *7- # \$1.;7<=;86)&\$ \$ \$ % !
.@ '8;4 #2687 #,1>=<.;

!3/@<7<5 B= '3/A=<
/0=CB D723<13 /<2
F>:/</B7=<A %@=;7A7<5
7@31B7=<A 7< 2C1/B7=<

" "0(5,"+," 3" /& "!" 5 " 0&*\$ 0 &*0! /,&* % +2".*)"0 10%+.&0&/"
.1/%"! 0+ \$ 0%". "2&!" " +10 0%" /+1. " *! / (" +# 0%" ,.+ (") *! 3%" 0%". &0

2C1/B7<5 4=@ A173<B7471 :7B3@/1G @3?C7@3A /< /<AE3@ B= E6/B ;/93A @3/A=<7<5
/0=CB A173<B7471 3D723<13 A= 6/@2 < 3F>/<A7D3 :7B3@/BC@3/22@3AA3A B67A ?C3
B7=< @/<57<5 4@=; @3A3/@16 =< E6G >3=>:3 /BB3<2 B= 13@B/7< BG>3A =4 7<4=@;/
B7=< =D3@ =B63@A 7< />3@13>BC/: A3<A3 3 5 "/19 /<2 '19 B= E6G 13@
B/7< 7<4=@;/B7=< 7A AC113AA4C: 7< 1/>BC@7<5 =C@ /BB3<B7=< 3 5 (C<AB37<
/<2 6=E 234/C:B 07/A3A /<2 63C@7AB71A ;/93 7B 274471C:B B= @3/A=< E3:: 7< /<G
57D3< A7BC/B7=< 3 5 #7193@A=< 3B /: B 7<1:C23A @3A3/@16 =< >3=>:3NA
274471C:B73A E7B6 >@=>=@B7=</: @3/A=<7<5 >@=0/07:7B73A /<2 AB/B7AB71A 4=@
@3D73E A33 %7/B3::7 %/:;/@7<7 <=B63@ 0=2G =4 @3A3/@16 4=1CA3A =< @3/
A=<7<5 /0=CB 1=;>:3F7BGK<=B =<:G B63 @3?C7A7B3 A97::A /<2 >/BB3@<A =4 B67<9
7<5 0CB E/GA =4 23/:7<5 E7B6 B63 1=5<7B7D3 :=/2 =4 ;/<G 7<B3@ @3:/B32 BG>71/::G
2G<:/;71 1=<13>BA 3 5 =@<3@ 3:B=D716 3B /:
< B63 3D3<B B6/B =<3 AC@;=C<BA B63A3 16/::3<53A 7< 5/7<7<5 ACAB/7<7<5
/<2 4=1CA7<5 /BB3<B7=< /<2 63:>7<5 B63 >C0:71 AC113AA4C::G @3/A=< /0=CB B63
A173<B7471 3D723<13 /B 6/<2 B63 :7B3@/BC@3 7< B63 473:2 /:A= 7<D7B3A CA B= 1=<A
3@ B63 A=17=:5G =4 B63 >@=0:3; A>/13 27D3@A3 :7B3@/BC@3 7< 7BA =E< @756B 7
1=<A723@A ?C3AB7=<A AC16 /A E6/B 7A B63 </BC@3 =4 A173<13 /<2 6=E 2= B63 >/B
B3@<A 7< A173<13 7<B3@/1B E7B6 6=E >3=>:3 /BB3<2 03:73D3 /<2 C<23@AB/<2 7B
=@ 7<AB/<13 74 A173<13 7A />@=13AA =4 B@/27<5 C> 4=@ ;=@3 >=E3@4C: 3F>:/</
B=@G ;=23:A /A)6=;/A C6< AC553ABA E63@3 2=3A B67A :3/D3 B63 >C0
:71 E6= ;756B 6=:2 /< /11C;C:/B7=< ;=23: =4 6=E A173<13 E=@9A 7< B@G7<5
B= @3/A=< /0=CB B63 /D/7:/0:3 A173<B7471 3D723<13 @=; B63 >3@A>31B7D3 =4 B63
>C0:71 A173<13 ;756B A33; B= 16/<53 7BA ;7<2 /:=B)63 :7B3@/BC@3 7< B63 473:2
/:A= /22@3AA3A 6=E A173<B7ABA 6/<2:3 C<13@B/7<BG 3 5 .36@ 6=E 27A
/5@33;3<BA /@3 D3BB32 /<2 6=E :=1/: 9<=E:3253 /<2 L3F>3@B 9<=E:3253M
7<B3@/1B B= 7<4=@; />@=0:3; A>/13 3 5 /A/<=44 ,G<<3 756:G
>C0:71 7<1723<BA B6/B 2@/E C>=< A173<B7471 9<=E:3253 AC16 /A B63 A>7</16
A1/@3 =CB:7<32 /0=D3 0@7<5 B63 >C0:71 L/:=<5 4=@ B63 @723M E6(6=E)-237(=:1)101=

3F>:=@3 A=;3 =4 B63 93G /@3/A =4 @3A3/@16 /0=CB A173<B7471 @3/A=<7<5 B6/B 7::C
;7</B3 B63 27@31B7=<=4 @3A3/@16 /<2 >@/1B713 7< 32C1/B7=< ,67:3 B63A3 27@31
B7=<A =443@ >@=:7A3 B63 1=<1:C27<5 A31B7=< @34:31BA C>=< B63A3 27@31B7=<A
1=<A723@A E6/B 3:A3 E3 ;756B 03 2=7<5 7< :756B =4 6=E 1=;>:71/B32 B63 >@=0
:3; A>/13 7A

% 0 / "!"! 0+ "0 / 0+ % *\$" 1. &*!/
+*#&.) 0&+* & / *! 0%". "!"* &"/

=E 2=>3=>:3 @3A=><2 B= 27443@3<B BG>3A =4 3D723<13 < / A3;7</: E=@9
3/<</ C6< /<2 1=:3/5C3A @3D73E32 / E723 @/<57<5 A3B =4 ABC273A
/<2 1=<2C1B32 B/@53B32 ABC273A @3:/B32 B= 6=E >3=>:3 @3/A=< /0=CB 3D723<13
)63G 4=C<2 B6/B >3=>:3 BG>71::G 2=<NB 16/<53 B637@ ;7<2A /<2 B6/B B63G 6/D3
/ <C;03@ =4 274471C:B73A @3/A=<7<5 /0=CB 3D723<13 =@ 7<AB/<13 C6< 3B /:
4=C<2 B6/B >3=>:3 272 <=B 27AB7<5C7A6 03BE33< B63 3D723<13 /<2 B63 B63=@G
7BA3:4 ,63< 3D723<13 E/A 27A1@3>/<B E7B6 / B63=@G >3=>:3 4/7:32 B= /19<=E:
3253 7B =@ B63G /28CAB32 =@ 75<=@32 7B < 1/A3A E63@3 B63G =<:G ;=23@/B3:G
03:73D32 B63 B63=@G B63G =4B3< /28CAB32 B63 B63=@G B= 47B B63 3D723<13 E7B6-
1=<A723@7<5 B63 7;>:71/B7=<A =4 2=7<5 A=)63G /:A= 6/2 274471C:BG >3@137D7<5
7<AB/<13A =4 / <=<=>3@/B7D3 D/@7/0:3 =@ /< =>3@/B7D3 D/@7/0:3 B6/B :32 B= /<
=CB1=;3 =>=>A7B3 =4 E6/B B63G 3F>31B32)63A3 ABC273A /@3 >/@B =4 / :7<3 =4
@3A3/@16 :3/27<5 B= E6/B 6/A 033< 1::32 L1=<47 @;/B7=< 07/AMKB63 B3<23<1G B=
CA3 3D723<13 B= 1=<47 @; =<3NA 3F7AB7<5 03:734A =<47 @;/B7=< 07/A 6/A 033<
E723:G ABC2732 /<2 1=@ @=0=@/B32 7< B63 473:2 =@ 7<AB/<13 :/6@ /<2 1=
:3/5C3A 3 5 (16C<</<2 :/6@ :/6@ 3B /: 4=C<2 AC0831BA /@3 :3AA
A93>B71/: =4 A3:4 53<3@/B32 6G>=B63A3A B6/< B6=A3 53<1A-2372B63 3D721=(B6)7(J) =

67<</<2 @3E3@ ABC2732 6=E ABC23<BA @3A>=<232 E63< 1=<
4@=<B32 E7B6 /<=:/=CA 2/B/=@ 3D723<13 B6/B 1=<B@/271BA B637@ 1C@ @3<B B63=

>@=2C1B7D3 /;M =@ 7< ;=@3 B6/< =<3 27@31B7=< L)63 ;=@3 1/4437<3 2@7<9
B63 ;=@3 >@=2C1B7D3 /; C<B7: 1@/A6 /<2 53B <=B67<5 2=<3M)63G /:A=
4=C<2 B6/B >3=>:3 B3<232 B=E/@2 4/:A3 7<1:CA7=<KB= D73E /<G 1=D/@7/B3 /A
1/CA/: 3D3< 7< 1/A3A E63@3 7B E/A ;@3:G 1=@ @3:/B7=</: 7<27<5 1=D/@7/B7=<
E7B6 =<3 D/@7/0:3 AC0831BA E3@3 C<:793:G B= B3AB =B63@ C<1=<B@=:32 D/@7/0:3
=@ 7<AB/<13 G=C ;756B 231723 B6/B AC<A1@33< =4 (% /<2 67563@ 7A B63
1C:>@7B 7< B63 @/A6 0CB G=C >CB =< AC<A1@33< =4 (% /<2 67563@ =<:G E63<
G=C A>3<2 :=<5 >3@7=2A =4 B7;3 7< 7<B3<A3 AC< %3@6/>A B63 6756 (% :3D3:
7A<NB E6/B 7A 1/CA7<5 G=C@ @/A6 0CB :=<5 >3@7=2A =4 3F>=AC@3 B= 7<B3<A3 AC<
\$D3@/;>:732 1=D/@7/B7=< 1/< :3/2 B= /AAC;>B7=<A /<2 3@ @=<3=CA 1=<1:C
A7=<A =@ 3F/;>:3 B63 =:353 =/@2 3AB/0:7A632 / 6756 >=A7B7D3 1=@ @3:/B7=<
03BE33< ABC23<BA E6= B==9 /:530@/ 7< 3756B6 =@ <7<B6 5@/23 /<2 B6=A3 E6=
E3<B B= 1=:353)63 * (A31@3B/@G =4 32C1/B7=< 7<B3@>@3B32 B67A B= ;3/< B6/B
1=C@A3A 7< ;/B63;/B71A 7<1:C27<5 /:530@/ E3@3 B63 5/B3E/G B= 1=:353
@/13G -3B E3 2=<NB 9<=E 74 / B67@2 D/@7/0:3 >3@6/>A @3:/B32 B= >/@
3<B7<5 =@ /07:7BG :3D3: :32 B= 0=B6 =CB1=;3A C@B63@ E67:3 1=D/@7/B7=< 7<
B3@;A =4 B3;>=@/ /<2 A>/B7/: 1=<B75C7BG 1/< 03 /< 7;>=@B/<B 1C3 B= B63 >=AA7
07:7BG =4 / 1/CA/: @3:/B7=<A67> /A 1/CA/:7BG 031=;3A ;=@3 1=;>:3F @3:G7<5 =<
1= D/@G7<5 1=<B75C=CA D/@7/0:3A 1/< @3AC:B 7< A6=@BA756B32<3AA 031/CA3 A=;3
1/CA3A /@3 A>/B7/:G /<2 B3;>=@/::G @3;=B3 4@=; B637@ 34431BA (6C:BH /<2
"3<23:A=< =B6 =4 B63A3 97<2A =4 3@ @=@A 1/< 03 23B31B32 7< >3=>:3NA
@3/A=<7<5KB63 B3<23<1G B= /AA75< / 1/CA/: @3:/B7=<A67> B= =<3 B6/B 7A ;@3:G
1=@ @3:/B7=</: /<2 B63 B3<23<1G B= :=9 4=@ :=1/: 1/CA3A /<2 34431BA /<2 B= ;7AA
A>/B7/:G /<2 B3;>=@/::G @3;=B3 =<3A
'3A3/@16 A6=EA B6/B >3=>:3 2= CA3 1=D/@7/B7=< 0CB B67A 2=3A <=B />3/@
B= 03 B63 E6=:3 AB=@G <4/<BA CA3 1=<B7<53<1G 3F>31B7<5 B6/B =0831BA /1B =<
=<3 /<=B63@ =<:G 74 B63G B=C16 /<2 B6/B /1B7=< 7A <=B 3</1B32 4@=; / 27AB/<13
=@B=< !3A:73 !3A:73 /<2 330:3 \$/93A (>3:93
3B /: +/< 23 /:3 /<2 (>3:93 /<2 1:3/@ /53 @3:/B32 7<1@3/A3A
=11C@ 7< >3=>:3NA /07:7BG B= CA3 1=<B7<53<1G 2/B/ B= 1C3 B63 >=AA707:7BG =4 /
1/CA/: @3:/B7=<A67> G >@3A16==: 167:2@3< 6/D3 5/7<32 5@3/B3@ C<23@AB/<27<5
=4 B63 1=<B3FBK/: <C/<13A =4 />:G7<5 B3;>=@/ /<2 A>/B7/: 1C3A)63G /@3 :3AA
:793:G B= >719 / A>/B7/:G @3;=B3 3D3<B /A / 1/CA3 =A:=EA97 =A:=EA97
/<2 (<7>>3@ !3AA3@ /<2 E63< A>/B7/: 1=<B75C7BG 1C3A 1=<4:71B E7B6
B3;>=@/ 1C3A 167:2@3< =D3@ @723 B63 4=@;3@ 7< 4/D=@ =4 B63 :/BB3@ C::=19 /<2
3:;<)7;3 23:/GA 03BE33< 1/CA3A /<2 34431BA 7<B@=2C13 274471C:B73A
4=@ >@3A16==:3@A (735:3@ /<2 !7303@B 0CB 0G 47D3 G3/@A =4 /53 167:2@3<
/@3 /0:3 B= 23/: E7B6 B7;3 23:/GA E63< B63 23:/GA 6/D3 /< 723<B747/0:3 3F>:/</
B7=< "3<23:A=< /<2 (6C:BH 4=@ 7<AB/<13 B63 >6GA71/: 34431BA B6/B
@3AC:B 4@=; 7::<3AA /4B3@ 1=<B/1B E7B6 / 1=<B/;7</B7=< /:7A6 2C:BA
/@3 /0:3 B= =D3@ @723 B3;>=@/ /<2 A>/B7/: 1=<B75C7BG 1C3A E63< B63 A>317471
1=<B3FBK4=@ 7<AB/<13 B63 >=AA707:7BG =4 / 1=;>:3F 7<B3@/1B7=< 03BE33< BE=
1=;>3B7<5 1/CA3AKAC553ABA B63 <332 B= "716=BB3 2C:BA /:A=
/@3 ;=@3 :793:G B= 6/D3 /<2 B63@34=@3 CA3 7<4=@;/B7=< /0=CB B63 1=<B7<53<1G
@3:/B7=<A 03BE33< BE= 3D3<BAK6=E =4B3< B63G /@3 :793:G B= 1= =11C@ 3 5
3::3G #7A03BB /<2 '=AA

'3A3/@16 /:A= C<23@A1=@3A 6=E <C/<132 >3=>:3NA @3:7/<13 =< 1=D/@7/B7=<
2/B//@3 (735:3@ /<2 !7303@B 4=C<2 B6/B E63< B63G D/@732 B63 235@33 =4
1=D/@7/B7=< >3@13<B B= >3@13<B 03BE33< 3D3<BA /<2 7<B@=2C132 D/@7
/07:7BG 7<B= B63 B3;>=@/: 1=<B75C7BG 7;;327/B3 D3@ACA 47D3 A31=<2 23:/G
3756B /<2 <7<3 G3/@ =:2A E3@3 ;=@3 A3<A7B7D3 B= B63 :/19 =4 >3@431B 1=D/@7/
B7=< B6/< 47D3 G3/@ =:2A >3@6/>A 2C3 B= B63 27AB@/1B7=< =4 B7;3 23:/GA /<2
037<5 :3AA :793:G B= <=B713 B63 :/19 =4 >3@431B 1=D/@7/B7=< =><79 3B /:
6/D3 /@5C32 B6/B G=C<5 167:2@3< 1/< =D3@@@723 7;>3@431B 1=@ @3:/B7=< ;/G 03
/113>B7<5 =4 B63 >@=0/07:7AB71 1=<B3FB /<2 ;/G 7<2332 @3/A=< /A /G3A7/<A
AC;;7<5 /1 @=AA 3F>3@73<13A B= 27A13@< 4@3?C3<173A =4 >/@B71C:/@ >/BB3@<A
<D3AB75/B7=<A =4 6=E >3=>:3 CA3 1=<B7<53<1G 2/B/ 7< 23B3@;7<7<5 1/CA3 /<2
34431B @3:/B7=<A67>A AC553ABA /< /53 @3:/B32 7<1@3/A3 7< B63 /11C@/1G =4 B67@2
/<2 A3D3<B6 5@/23 167:2@3<NA /<2 /2C:BA8C25;3<BA =4 / 1/CA3 34431B @3:/B7=<
A67> (6/9:33 /<2 =:2AB=< (6/9:33 /<2 "7;A
A 1=D/@7/B7=< /:: B6/B >3=>:3 CA3 7< 23B3@;7<7<5 / 1/CA/: @3:/B7=<A67>
=<A723@ B63 4=::=E7<5 BE= AB/B3;3<BA 6756 1=@ @3:/B7=< 3F7ABA 03BE33<

%. "6/ + &),(" 5 0+ *(" +),("4&05
"!1 0&2" & /" !/ 1/ ("# 1(0 00".*/

< B63 >@=13AA =4 /<:GH7<5 3D723<13 =<3 7;>:717B:G ;/93A 2317A7=<A /0=CB
6=E B= 0=C<2 B63 >@=0:3; A>/13 < C<0=C<232 A>/13 7A C<B3</0:3 7< ;<G
@3/A=<7<5 1=<B3FBA G3B /A E7B6 A>/B7/:G /<2 B3;>=@/:G @3;=B3 1/CA3A ;=@3
3FB3<232 A3/@167<5 7A A=;3B7;3A <33232 (7;7:/@:G =<3 ;/93A 2317A7=<A
/0=CB 6=E B= 16/@/1B3@7H3 B63 7<63@3<B 43/BC@3A /<2 1=;>:3F7BG < B63 A;/3
A>7@7B =4 3447173<1G /<2 1=;>@363<A707:7BG E63< 23/:7<5 E7B6 1=;>:3F7BG >3=
>:3 B3<2 B= @3D3/: L@32C1B7D3 07/A3AM 3:B=D716 3B/: 723<B74732 16/@/1
B3@7AB71A =4 1=<13>BA =@ A7BC/B7=<A B6/B 1/CA3 274471C:BG 4=@ ;=AB >3=>:3 /<2
4=C<2 B6/B >3=>:3 B3<2 B= A7;>:74G >63<=;3</ 7< / BG>3 =4 @32C1B7D3 07/A =@
7<AB/<13 >3=>:3 =4B3< @32C13 2G</:71 >63<=;3</ B= AB/B71 A</>A6=BA /<2
1=<B7<C=CA >@=13AA3A B= 27A1@3B3 AB3>A

%3=>:3 @32C13 7<4=@;/B7=< 7<B= A3BA =4 63C@7AB71A /A E3:: =@ 7<AB/<13
>3=>:3 B3<2 B= CA3 /< L/D7/:07:7BG 63C@7AB71M E63< A/;>:7<5 7<4=@;/B7=<
)D3@A9G /<2 /6<3;/< ,3 A/;>:3 B63 ;=AB /D7/:0:3 7<4=@;/B7=<
4@=; ;3=@G @/E7<5 1=<1:CA7=<A 4@=; 4@3?C3<1G =4 3F>3@73<13 B3<2A B=
A3@D3 CA E3:: 0CB 1/< 1/CA3 3@ @=@A 0G 07/A7<5 B63 A/;>:3 3F/;>:3A 7<1:C23
@3;3;03@7<5 3D3<BA E7B6 A6=19 D/:C3 /<2 A= =D3@3AB7;/B7<5 B637@ =11C@
@3<13 (C<AB37< '3A3/@16 =< L7<BC7B7D3 B=F71=:=5GM @3D3/:A B6/B >3=>:3
6=:2 /AAC;>B7=<A /0=CB B63 </BC@3 =4 163;71:A B6/B /@3 ?C7B3 27D3@53<B E7B6
E6/B 3F>3@BA 03:73D3 (C<AB37< !/G>3=>:3 B3<2 B= 03:73D3 B6/B /<G
6C;/< ;/23 163;71: 7A 0/2 E67:3 /<G AC0AB/<13 4@=; </BC@3 7A 03<3D=:3<B
E63@3/A 3F>3@BA /@3 ;=@3 7<B3@3AB32 7< B63 2=A/53 /<2 @31=5<7H3 B6/B 163;7
1:A 7< </BC@3 1/< 03 /A =@ ;=@3 6/@;4C: B6/< ;<C4/1BC@32 =<3A F>3@BA
D73E </BC@/::G =11C@ @7<5 @/2=< /A / ;C16 5@3/B3@ 1/<13@ B6@3/B B6/< 6C;/<
;/23 A=C@13A =4 @/27/B7=< =E AC16 07/A3A 1/< 7<4:C3<13 >C0:71 C<23@AB/<2
7<5 /<2 27@31B >C0:71 A3<B7;3<B 7< @3/A=<7<5 /0=CB A173<B7471 3D723<13 7A
3F3;>:74732 7< B63 1C@ @3<B :=9 0/19 /B '163: /@A=<NA 34431B7D3<3AA 7< B63
0/<<7<5 =4) B63 :/19 =4 A173<B7471 3D723<13 B= AC>>=@B B63 0/<<7<5 /<2
B63 AC0A3?C3<B ;:/@7/ 23/B6A (C<AB37<)73@<3G

=E E3 @3/16 1=<1:CA7=<A /0=CB B63 E=@:2 /@=C<2 CA 7A /:A= 7;>/1B32 0G
6=E E3 AB@C1BC@3 1/CA/:7BG @=BH3@ /<2 1=:=3/5C3A @=BH3@ %3@97<A
/<2 @=BH3@ 723<B74732 <7<3 A7;>:74G7<5 1/CA/:AAC;>B7=<A B6/B >3=>:3
B3<2 B= ;/93 7< B637@ 3F>:/</B7=<A %3=>:3 /AAC;32 :7<3/@7BG /A ==>=A32 B=
<=<:7<3/@7BG 27@31B 1=<<31B7=<A 03BE33< 1/CA3A /<2 34431BA E7B6=CB 7<B3@
D3<7<5 AB3>A =@ 7<27@31B 1=<<31B7=<A C<727@31B7=</:7BG /A ==>=A32 B= 0727
@31B7=</:7BG A3?C3<B7/:7BG /A ==>=A32 B= A7;C:B/<37BG B6/B 1/CA3A /<2
34431BA /@3 =0D7=CA /<2 >3@13>B70:3 /A ==>=A32 B= <=<=0D7=CA /<2 7;>3@13>
B70:3 /1B7D3 =@ 7<B3<B7=</: /53<BA /A ==>=A32 B= <=<7<B3<B7=</: =<3A
23B3@;7<7A;KE63@3 34431BA ;CAB 1=<A7AB3<B:G 4=:=E L1/CA3AM =@ B63
L1/CA3M 7A <=B 1=<A723@32 B= 03 B63 1/CA3 /A ==>=A32 B= >@=0/07:7AB71 1/CA/
B7=< A>/B7/: /<2 B3;>=@/: 1=<B75C7BG 03BE33< 1/CA3A /<2 34431BA /A
==>=A32 B= A>/B7/: 5/>A =@ B3;>=@/: 23:/GA 13<B@/:7H32 1/CA3A E7B6 43E
/53<BAK;7AA7<5 ;=@3 1=;>:3F 7<B3@/1B7=<A =@ 3;3@53<B 34431BA /A ==>=A32

B= 2313<B@/:7H32 1/CA3A =@ 27AB@70CB32 /53<1G (C0AB/<B7/: AC>>=@B 4=@ B63A
B3<23<173A 3F7ABA 7< B63 @3A3/@16 :7B3@/BC@3 3 5 3:B=D716 3B /: 3@ @/@/2
/<2 67 ,7:3<A9G /<2 '3A<719 =@ 7<AB/<13 '3A<719
@343@A B= B63 L13<B@/:7H32 ;7<2A3BM /<2 @7D3@ 3B /: 723<B74732 /B3<23<
1G B=E/@2 A7;>:3 :7<3/@ 1/CA/: 3F>:/</B7=<A
'32C1B7D3 07/A3A /<2 63C@7AB71A 1/< 63:> CA ?C719:G /<2 3447173<B:G >@=13AA
7<4=@;/B7=<)63@34=@3 7< A=;3 @3A>31BA B63G ;/93 A3<A3 <=B63@ 1=<B3FBA
6=E3D3@ E3 ;756B ;7AA >/@BA =4 B63 1/CA/: AB=@G /<2 ;/93 C<7<4=@;32 2317
A7=<A)67A 93G /@3/ =4 @3A3/@16 7<D7B3A @34:31B7=< =< B63 B3<23<1G 7< 32C1/B7
B= @32C13 1=;>:3F >63<=;3</ B= A7;>:3@ D3@A7=<A /<2 @/7A3A ?C3AB7=<A /0=CB
6=E E3 1/< 63:> :3/@<3@A 23D3:=> /E/@3<3AA /<2 / @34:31B7D3 AB/<13 =< B63
63C@7AB71A /<2 1/CA/: @3/A=<7<5 >/BB3@<A B6/B B63G 3;>:=G

1)) .5 +&*0/

)63 AC; =4 B63 @3A3/@16 7< B63A3 93G /@3/A AC553ABA B63 274471C:BG =4 C<23@
AB/<27<5 B63 </BC@3 =4 A173<B7471 @3/A=<7<5 /<2 3D723<13 3D/:C/B7=< E7B6=CB
B63 <C/<132 1=<B3FB B6/B AC@ @=C<2A AC16 @3/A=<7<5 /<2 3D/:C/B7=< (B@/B3573A
B6/B ;756B A33; A7;>:7AB71 @32C1B7D3 =@ ;7A5C7232 7< =<3 1=<B3FB ;756B 47B
E7B6 A173<B7471 >@/1B713 7< /<=B63@ 1=<B3FB @3; /<2 '7>A 4=C<2 B6/B
>3=>:3NA /07:7BG B= @3/A=< /0=CB 3D723<13 E/A A75<7471/<B:G 03BB3@ 7< 7<4=@;/
B7=< @716 B6/< 7<4=@;/B7=< >==@ 1=<27B7=<A %/@B717>/<BA 7< B637@ ABC2G B3-
32 B= >@343@ 3D723<13 0CB B63 D/:C3 B63G >:/132 =< 3F>:/</B7=<A @=A3 A75<747
1/<B:G E63< B63G 03:73D32 7<4=@;/B7=< E/A A1/@13 %/@B717>/<BA 7< @716
7<4=@;/B7=< 1=<B3FBA @343@ @32 B= 3D723<13 BE713 /A =4B3< /A B6=A3 7< >==@
7<4=@;/B7=< 1=<B3FBA B B63 A;/3 B7;3 >3=>:3 3<5/53 7< A7;>:74G7<5 AB@/B3
573A B6/B 1=;>:71/B3 B637@ /07:7BG B= 3D/:C/B3 3D723<13 E3:: %3=>:3 />3/@ B=
6=:2 07/A3A B6/B 1=;>3B3 E7B6 3F>3@B 3D723<13 3D/:C/B7=< A97::A ,67:3 53<3@
/:7H/0:3 A97::A 2= />:G /1 @=AA 3D723<13 3D/:C/B7=< 1=<B3FBA 6=E B6=A3 A97::A
/@3 3</1B32 7< / 57D3< A7BC/B7=< 23>3<2A :/@53:G =< B63 <C/<13A =4 B63 1=<
B3FB '3A3/@163@A 6/D3 E@7BB3< /0=CB B67A /A B63 1==@27</B7=< =4 BE= >@=0:3;
A>/13A 3 5 :/6@ /<2 C<0/@ C6< 3B /: ,6/B 2=3A /: B67A
AC553AB 4=@ @3A3/@16 =< C<23@AB/<27<5 1/CA/:7BG /<2 @3/A=<7<5 /0=CB 3D7
23<13 C@B63@ E6/B 2=3A 7B AC553AB 4=@ 32C1/B7=</: >@/1B713
)63 23D3:=>:3<B/: @3A3/@16 1=;C<7BG 6/A @3A>=<232 B= B63 274471C:B73A
=4 B63 >@=0:3; A>/13 0G 1/@34C::G 1=<B@=:237(B63A3)-236(6=E)-23774 A7BC/B7=< 23

/<2 A>317471/::G /</:GH3 B63; B6@=C56 B6/B :3<A /@3 :793:G B= =443@ B63 233>3AB
7<A756BA 7<B= 6=E >3=>:3 @3/A=< /0=CB A173<B7471 3D723<13

/1B7D7B73A /<2 @317>3 :793 :/0 3F>3@73<13A B6/B /@3 <=B <313AA/@7:G L;7<2A =<M

B63 B3/163@ 7A <=B 6756:G A97::32 7< 475C@7<5 =CB 6=E B= E3/D3 1=<B3<B 3F>:=
@/B7=< 7<B= B63 7<?C7@G 1=<B3FB

%" ,&/0")+(\$5 +# &"* "

<5/57<5 7< 34431B7D3 7<?C7@G 0/A32 A173<13 >@/1B713A 7A ;=@3 B6/< 9<=E7<5
6=E B= 1/@ @G =CB 3F>3@7;3<BA 6=E3D3@ (/<2=D/: /<2 '37A3@ 6/D3
/@5C32 B6/B ABC23<BA <332 B= C<23@AB/<2 B63 3>7AB3;=:=571/: 1=;;7B;3<BA
B6/B A173<B7ABA ;/93KB63 >@=13AA3A B63G D/:C3 4=@ 53<3@/B7<5 /<2 D/:72/B7<5
9<=E:3253)63G 1/:: 4=@ 4=@35@=C<27<5 B63A3 1=;;7B;3<BA 7< B63 1=<B3FB =4
7<?C7@G 0/A32 />>@=/163A)67A 5=3A 03G=<2 63:>7<5 ABC23<BA :3/@< B= LB67<9
:793 A173<B7ABAM)63 /7; 63@3 7A B= 63:> ABC23<BA :3/@< B63 </BC@3 =4 A173<13 /<
B63 3>7AB3;=:=571/: C<23@>7<<7<5A =4 B63 27A17>:7<3)63 </B7=</: A173<13
AB/<2/@2A /:A= /22@3AA B63 7;>=@B/<13 =4 9<=E:3253 =4 B63 3>7AB3;=:=5G =4
A173<13)63G 1/:: 4=@ /< C<23@AB/<27<5 =4 B63 E/GA =4 9<=E7<5 /<2 47<27<5
=CB 7< B63 27A17>:7<3 4=@ 7<AB/<13 LA173<B7ABA 23D3:=> 3F>:/</B7=<A CA< B63 27

;/93 >@3>/@7<5 B3/163@A B= C<23@AB/<2 B6=A3 /AAC;>B7=<A /<2 47<27<5
E/GA B= ;/93 3>7AB3;:=571:/AAC;>B7=<A /113AA70:3 /B B63 @756B :3D3: 4=@
ABC23<BA E7B6=CB @32C17<5 B63; B= / AB3@3=BG>32 A3B =4 AB3>A
* <>/197<5 B63 B/17B /AAC;>B7=<A B6/B A173<B7ABA /1BC/::G ;/93 6/A 033< /<
7;>=@B/<B :7<3 =4 @3A3/16 3 5 C<0/@ (173<B7471 27A1=D3@G /<2 @3/
A=<7<5 7A / 6756:G <C/<132 /<2 ==>=@BC<7AB71 3<23/D=@ < B3::7<5 B63 AB=@G =4
B63 27A1=D3@G =4 07</@G >C:A/@A 4=@ E6716 63 3D3<BC/::G E=< /#=03: %@7H3
'CAA3:: C:A3 B:/9A =4 B63 >@=13AA :3/27<5 C> B= B63 27A1=D3@G 3
3F>/7<A B63 2/B/ 1:::31B7=< /<2 1/@34C: <=B3 B/97<5 =< B63 036/D7=@ =4 >C:A/@A
/<2 B63 L3@ @=@M 7< 67A 2/B/ B6/B 3;3@532 47@AB /A /< /<=<G/<13 /<2 /4B3@ 4C@
B63@ @34:31B7=< /A /< 7<B3@3AB7<5 /03@ @/B7=< /<2 C:B7;/B3:G /A />/BB3@<
23A1@707<5 />@3D7=CA:G C<723<B74732 >63<=;3<=< 7A AB=@G C<23@A1=@3A B6
<C/<132 /BB3<B7=< B= 13@B/7< 97<2A =4 >/BB3@<A /<2 B63 @3/A=<7<5 >@=13AA3A B=
4::=E B6/B 16/@/1B3@7H3 A173<B7471 @3/A=<7<5K<C/<13 B6/B 1/< 03 274471C:B B=
C<>/19 /<2 1/>BC@3 7< C<23@AB/<27<5 B63 A173<B7471 >@=13AA
< ;=AB 1/A3A J B3/163@A 2= <=B 6=:2 B63 3>7AB3;:=571:/AAC;>B7=<A
=4 / A173<B7AB)67A 7A >/@B71C:/@:G /< 7AAC3 E7B6 J B3/163@A E6= ;/G 6/D3 :7B
B:3 =@ <= A173<13 0/195@=C<2 /<2 /@3 3F>31B32 B= B3/16 /:: B63 27A17>:7<3A
C<23@AB/<2 23D3:=>;3<B: 7AAC3A E=@9 E7B6 ABC23<BA E6= 6/D3 27443@3<B
<(B)7(/97C/B)5(B3)1(6(AF 90 676.37(2=C/B)5=@)1)-237(6/)3>B I Ë¼z· 624=#rÂ=1=<7<5 >B

>:7<3 0G A6/@7<5 =<:G 3F/;>:3A B6/B AB/<2 =CB 4=@ =<3 @3/A=< =@ /<=B63@ AC16
/A B6=A3 B6/B E/@ @/<B 67AB=@71/: @31=5<7B7=< '3D=:CB7=</@G A173<13 B6/B 1CB/
/1 @=AA 27A17>:7</@G 0=C<2/@73A =@ B6/B A674BA B63 1C@ @3/@/275; 7A 4/@ :3
1=;;=< B6/< B63 3D3@G2/G A173<13 B6/B 7<D=:D3A A=:D7<5 A;/:3@ A1/:3 >CHH:3A
/<2 A:=557<5 B6@=C56 2/B/

3A>7B3 B63 16/::3<53A C<23@AB/<27<5 3>7AB3;=:5G 7A 1:3/@:G / 93G B=
23D3:=>7<5 / >=>C:/B7=< B6/B 9<=EA 6=E B= B67<9 /0=CB A173<B7471 3D723<13
(BC23<BA 1/< :3/@< B= B67<9 /0=CB 3>7AB3;=:571/: 7AAC3A (;7B6 3B /:
/<2 3F>:717B @34:31B7=< =< 3>7AB3;=:5G @3AC:BA 7< ;=@3 7<4=@;32 D73EA =4 B63

B7D3 @3/A=<7<5 >@=13AA3A B6/< B63 ABC23<BA 7< 1=<B@=: 1:/AA@==;A C@B63@
E63< =<3 ABC23<B CA3A /< 3D723<13 3D/:C/B7=< AB@/B35G 7< / 27A1CAA7=< B63
AB@/B35G 7A ;=@3 :793:G B= 03 CA32 0G 67A =@ 63@ 1:/AA;/B3A <23@A=< 3B /:
%:CB/ /<2 67<< *<4=@BC</B3:G ;=AB B3/163@A 2= <=B >@=D723

#1/&\$ + 1/+* 1/(&05 &* &"* " ".*&*\$

,63< @3/A=<7<5 /0=CB 1=;>:3F >63<=;3</ ABC23<BA @3:G =< / A3@73A =4
234/C:B /AAC;>B7=<A B6/B =4B3< 27AB=@B B63 </BC@3 =4 B63 1/CA/:7BG 7<D=:D32
=@ 7<AB/<13 ABC23<BA =4B3< 57D3 :7<3/@ =@ </@ @/B7D3 3F>:/</B7=<A B6/B /@3
AB=@G :793 L47@AB B67A 6/>>3<32 B63< 7B ;/23 B6/B 6/>>3< /<2 A= =<M (C16
3F>:/</B7=<A 6/D3 / 2=;7<= :793 ?C/:7BG B= B63; B6/B /1BC/::G 7A /0A3<B 4@=;
:/<G A173<13 1=<13>BA =<13>BA AC16 /A AG;07=A7A >@3AAC@3 =@ 23<A7BG 274
43@3<B7/:A /<2 3:31B@71/: 17@1C7BA /@3 27AB7<1B:G <=<:7<3/@ 7< 4=@;)63G 7<D=
;CBC/: @3:/B7=</: =@ 1G1:71 >/BB3@<A @=BH3@ =<13>BA ;756B />>3/@
AB@/756B4=@E/@ 2 0CB @3D3/: 1=;>:3F7BG /A A==< /A =<3 27D3A 03:=E B63 AC@4/13
< /227B7=< B= <=<:7<3/@ >/BB3@<A B63G ;/G 7<1:BC23 <=<=0D7=CA 1/CA3A B7;3
23:/GA /<2 A>/B7/: 5/>A 03BE33< 1/CA3A /<2 34431BA 27AB@70CB32 <=<7<B3<B7=<
:/ /53<1G /<2 >@=0/07:7AB71 1/CA/B7=< E63@3 B63 :3D3: =4 1=@ @3A>=<23<13
03BE33< 1/CA3A /<2 34431BA D/@73A 0@/6/A=< /<2 ,7:3<A9G 4=C<2
B6/B ;/<G =4 B63 63C@7AB71A <313AA/@G 4=@ @3/A=<7<5 /0=CB 1=;>:3F AGAB3;A
@C< 1=C<B3@ B= B6=A3 7<D=:D32 7< @3/A=<7<5 /0=CB B63 :7<3/@ AGAB3;A E7B6
E6716 ABC23<BA />>3/@ B= 03 ;=@3 4/:7:7/@

/CA/: 234/C:B /AAC;>B7=<A 7;>/1B E6/B 3D723<13 >3=>:3 /BB3<2 B= /<2
B63 A/:73<13 B6/B B63G /BB/16 B= 7B =@ 3F/;>:3 E63< A>/B7/: 5/>A /<2 B7;3
23:/GA /@3 >@3A33=>:3 /@3 :3AA :793:G B= <=B713 @3:3D/<B 3D723<13 <AB/<13A
=4 27AB@70CB32 1/CA/: /53<1G E63@3 ;/<G >3=>:3 /1B7<5 =< =<3 :3D3: 1=<
B@70CB3 B= /< 3;3@53<B =CB1=;3 =< /<=B63@ :3D3: /@3 274471C:B B= /<:GH3 =@
3F/;>:3 7< B63 1/A3 =4 5:=0/: E/@;7<5 @31=5<7H7<5 =C@ 7<27D72C/: 1=<B@70C
B7=@=0:3; /<2 B6CA E6/B E3 ;756B 2= /0=CB B63; 7A 3FB@3;3:G
274471C:B 031/CA3 3D723<13 =4 B63 >@=0:3; 7A /D/7/:0:3 =<:G /B B63 :3D3: =4 B63
1=:31B7D3 =CB1=;3

<1@3/A7<5:G A173<13 32C1/B7=< @3A3/@16 7A 1=<A723@7<5 6=E B= 63:> ABC
23<BA :3/@< B= B67<9 /0=CB 1/CA/:7(B7;3)]TJ -0/@

31=AGAB3;A /7@ >@3AAC@3 /<2 23<A7BG B6/B 3<5/532 ABC23<BA 7< B67<97<5
/0=CB A7;C:B/<37BG ;C:B7>:3 1/CA3A /<2 34431BA <=<=0D7=CA 1/CA3A <=<:7<
3/@7BG /<2 =CB1=;3A 2C3 B= 0:/<13 =@ 7;0:/<13 03BE33< ;C:B7>:3 D/@7/0:3A

#7<3BG >3@13<B =4 ABC23<BA CA32 ;=@3 B6/< =<3 AB@/B35G AC16 /A ;3B6=2
:=571/: 27443@3<13A 07/A 16/<13 3B1 B= /11=C<B 4=@ B63 1=<4:71B7<5 A173<B747
7<B3@>@3B/B7=<A E7B67< / 57D3< >@=0:3; /<2 >3@13<B =4 ABC23<BA CA32 ;=@3
B6/< =<3 AB@/B35G /1 @=AA 27443@3@=0:3; BG>3A)67A 7A >@=;7A7<5 >/@B71C
:/@:G 7< 1:/AA@==;A E63@3 ABC23<BA 3<5/53 7< 27A1CAA7=< /0=CB 3D723<13 %:CB/
/<2 67<< 4=C<2 B6/B 13@B/7< 4=@;A =4 @3/A=<7<5 E3@3 :3AA 1=;;=<
AC16 /A @3/A=<7<5 /0=CB 07/A =@ 16/<13)63A3 1=<13>BA E/@@/<B /227B7=</:
/BB3<B7=< B= 63:> ABC23<BA C<23@AB/<2 /<2 />:G B63; < 53<3@/: B63A3 ABC2
73A AB@3AA B63 <332 4=@ /CB63<B71 >@/1B713 7< 63:>7<5 ABC23<BA :3/@< 6=E B=
/;>:G AB@/B3573A 7< >/@B71C:/@ 7<AB/<13A

(173<B7471 3D723<B7/: @3/A=<7<5 7A / 16/:3<57<5 G3B 7;>=@B/@=0:3; A>/13
,3 6/D3 ;C16 B= 0C7:2 =< 7< B/97<5 <3FB AB3>A /<2 A=;3 1:3/@ <332A /@3
>@3A3<B B6/B AC553AB 27@31B7=<A 4=@ =C@ 1=::31B7D3 344=@BA 7< 7;>@=D7<5 B
3<B7471 :7B3@/1G =4 B63 53<3@/: >=>C:/B7=< B6@=C56 32C1/B7=<

4/7@:G 3FB3<A7D3 /<2 7<4=@;/B7D3 @3A3/@16 :7B3@/BC@3 3F7ABA 7B @/7A3A
>CHH:3A 0CB /:A =443@A A=:72 7<4=@;/B7=< /0=CB />>@=/163A B6/B /@3 ;=AB
>@=;7A7<5 ,3 6/D3 B63 ;=AB 7<4=@;/B7=< /0=CB 6=E ABC23<BA @3/A=< 7< B63
1=<B3FB =4 7<?C7@G 0/A32 :3/@<7<5)63 3F7AB7<5 AB/<2/@2A =443@ / AB@=<5 0/A7
4@=; E6716 B= E=@9)63G 2@/E A=:72:G 4@=; B63 @3A3/@16 0/A3 /<2 ;/93 CA3
4C: @31=;;3<2/B7=<A B= 1:/AA@==; B3/163@A)63 4=1CA 6=E3D3@ 7A :/@53:G =<
3F>3@7;3<B/B7=< (B/<2/@2A B6/B 7<1:C23 /<:GH7<5 @3A3/@16 3D723<13 4@=;
>C0:7A632 A=C@13A E=C:2 >@=;=B3 5@3/B3@ A173<B7471 :7B3@/1G 3D3< /;=<5 B6=A
E6= 2= <=B >:/< B= 031=;3 A173<B7ABA

/@ :3AA @3A3/@16 6/A :=932 /B 6=E ABC23<BA =4 27443@3<B /53A @3/A=< /0=CB
>C0:7A632 A173<B7471 @3>=@BA =4 @3/: E=@:2 ABC273A 67<< /<2 "/:6=B@/
67<< /<2 1=::3/5C3A 3 5 C<5 /<2 67<< %:CB/ /<2 67<<
6/D3 B/93< A=;3 7;>=@B/<B 47@AB AB3>A 63@3 "=@3 @3A3/@16 4=1CA32 =< 7<B3@
>@3B7<5 47<27<5A 7A <33232 =<B7<C32 3F>:=@/B7=< =4 B63 0/@ @73@A B= C<23@
AB/<27<5 7A /:A =<33232 A= B6/B E3 1/< 47<2 />>@=/163A B6/B =443@ B63 ;=AB
:3D3@/53 7< A=:D7<5 B63 >@=0:3; =@ 7<AB/<13 E=@9 4=1CA32 =< 63:>7<5 ABC
23<BA 3F/;7<3 B637@ 1/CA/: 234/C:B /AAC;>B7=<A ;/G AGAB3;/B71/:G 7;>/1B
6=E B63G 53<3@/B3 3F>:/<B7=<A (7;7:/@:G 63:>7<5 ABC23<BA C<23@AB/<2 B63
3>7AB3;:=5G =4 A173<13 63:>A B63; B= D73E A173<13 /A /< 3<23/D=@ 27443@3<B:G
/<2 B= @3/:7H3 B6/B 7B 7A ;=@3 B6/< 8CAB :3/@<7<5 4/1BA

03BB3@ 0@7253 03BE33< @3A3/@16 /<2 >@/1B713 7A <33232 ,67:3 / 4/7@
/;=C<B 7A 9<=E< /0=CB 3D723<13 3D/:C/B7=< A97::A /<2 B63 3>7AB3;:=571/
9<=E:3253 B6/B AC>>=@BA B63; B63A3 47<27<5A 6/D3 033< A=:E B= ;/93 B637@
E/G 7<B= ;/7<AB@3/; >@/1B713)67A :/19 =4 /< 34431B7D3 0@7253 7A />3@3<<7/
>@=0:3; 7< />:G7<5 @3A3/@16 47<27<5A 4 4CBC@3 7<D3AB75/B7=<A E3@3 ;=@3
1=:A3:G A7BC/B32 /B B63 7<B3@A31B7=< =4 >@/1B713 /<2 0/A71 @3A3/@16 =< :3/@<7<
7< L%/AB3C@NA &C/2@/<BM (B=93A K/ 0@7253 ;756B <= :=<53@ 03 <313A

A/@G ,3 <332 /113AA70:3 >32/5=573A B6/B 0C7:2 C>=< B63 @3A3/@16 @3AC:BA)63
97<2 =4 E=@9 B6/B (/<2=D/: /<2 1=::3/5C3A 3 5 (/<2=D/: /<2 '37A3@
/@3 3<5/532 7<K23A75<7<5 1=;>CB3@ >@=5@/;A B6/B B3/16 B63 3>7AB3;:=5G
=4 A173<13K6=:2A >@=;7A3 63@3

%=@0/0:G B63 07553AB 6C@2:3 6=E3D3@ 6/A B= 2= E7B6 AC>>=@B7<5 B3/16
3@A)= /AAC;3 B6/B B3/163@A E7:: 03 /0:3 B= B3/16 B63 3>7AB3;:=5G =4 A173<13
7< /:: 7BA <C/<13A E7B6=CB / 1=<A723@/0:3 7<D3AB;3<B 7< >@=43AA7=</: 23D3:=>
;3<B /<2 7<AB@C1B7=</: ;/B3@7/:A 7A 7@ @/B7=</::G =>B7;7AB71)63 BG>3 =4
<C/<132 C<23@AB/<27<5 1/:32 4=@ 7< B63 A173<13 32C1/B7=< @3A3/@16 1=;3A
4@=; / 233> C<23@AB/<27<5 =4 A173<B7471 7<?C7@G /<2 B63 3F>3@B7A3 /AA=17/B32
E7B6 6/D7<5 =>=@BC<7B73A B= 3<5/53 7< A173<13)67A AB/<2A 7< A6/@> 1=<B@/AB
B= B63 1=;4=@B :3D3: B6/B ;/<G B3/163@A 3A>317/:G /B B63 3:3;3<B/@G :3D3:
6/D3 E7B6 A173<13 /<2 B63 6756 @/B3 =4 B3/163@ BC@<=D3@ >/@B71C:/@:G 7< C@0/
A16==:A

,6/B 7A =0D7=CA 3D3< 4@=; B67A 0@734 =D3@D73E 7A 6=E 16/:3<57<5 B63
>@=0:3; A>/13 =4 A173<B7471 @3/A=<7<5 /<2 32C1/B7=< 7A =E3D3@ B63 >/G =44
4@=; 3<5/57<5 E7B6 B67A >@=0:3; A>/13 7A / A173<B7471/:G :7B3@/B3 >=>C:/B7=<
1@7B71/: 1=<AC;3@A =4 B63 /0C<2/<13 =4 /D7/:0:3 A173<B7471 7<4=@;/B7=< E6=
1/< @3/A=< 34431B7D3:G /0=CB 3D723<13 /<2 / 53<3@/B7=< =4 A173<B7ABA 1/>/0:3 =4
C<23@AB/<27<5 / 1=;>:3F 2G</;71 E=@:2 (C0AB/<B7/: @3A=C@13A /:@3/2G 3F7AB
B= AC>>=@B B63A3 344=@BA)63 7;>3@/B7D3 7A 1:3/@

)63 /CB6=@ E=C:2 :793 B= /19<=E:3253 B63 1=<B@70CB7=<A =4 "35/< %=E3:: /<2
'30311/ "7::3@ 7< /AA7AB7<5 E7B6 B63 :7B3@/BC@3 @3D73E 7< B67A >/>3@

0@/6/A=< /<2 * ,7:3<A9G)63 AB@/B74732 :3/@<7<5 H=<3 F;/7<7<5 1=:
:/0=@/B7D3 :3/@<7<5 23A75< 7< 23;=5@/>671::G 27D3@A3 ;/B63;/B71A 1:/AA@==;A %/>3@
>@3A3<B32 /B B63 /<<C/: ;33B7<5 =4 B63 ;3@71/< 2C1/B7=</: '3A3/@16 AA=17/B7=<
"=<B@3/: /<2/

<23@A=< ' #5CG3< /673: "1#C@:3< @16=272=C (7;
'3H<7BA9/G/ ")7::;/<<A /<2! 7:03@B)63 A<=E0/: >63<=;3<=< (>@3/2
=4 E/GA =4 B/:97<5 /<2 E/GA =4 B67<97<5 /1 @=AA 5@=C>A +9*8682@3<
/0.1 0&+ J

/7:/@53=< ' ' 3:/< /<2 "319 @3>@3A16==:3@A B@C:G 7<27443@3<B B=
1/CA/: ;316/<7A; %/>3@ >@3A3<B32 /B B63 073<<7/: ;33B7<5 =4 B63 (=173BG 4=@ '3A3/@16
7< 67:2 3D3:=>:3<B =AB=< "

/C3@ &"*0&#& &0". 5 *!0-_2 1 Tf <75C: +&# 0-_2 1 Tf <31 &"*0&#& uÅ7/ Æ" 2# #p7 77 "d1

=@B=< ' ,)63 >3@13>B7=< =4 1/CA/:7BG 7< 7<4/<BA %/>3@ >@3A3<B32 /B B63
073<<7/: ;33B7<5 =4 B63 (=173BG =4 '3A3/@16 7< 67:2 3D3:=>;3<B (/< @/<17A1=

@/13G ,)7<93@7<5 E7B6) ""(%& "(0 ,, * J

@3; (/<2! '7>A F>:/</B7=< /<2 3D723<13 7< 7<4=@:/: /@5C;3<B
+\${&0&2" &"* " J

C19:/<2 ! /<2 67<< <B35@/B7<5 3D723<13 /<2 ;=23:A /B B63 B6
@/23 >@3:7;7</@G 7<D3AB75/B7=< %/>3@ >@3A3<B32 /B B63 ;3@71/< 2C1/B7=</:
'3A3/@16 AA=17/B7=< =<43@3<13 671/5= !

C::=19 " A>31BA =4 B63 G=C<5 167:2NA B63=@G =4 1/CA/B7=< %6 27AA
*<7D3@A7BG =4 %3<<AG:D/<7/

C::=19 " %@3A16==: 167:2@3<NA C<23@AB/<27<5 =4 1/CA/: 1=<0&0&7%=<A
+1.* (+# "2"(+)""*0 (/5 %+(+\$5 J

C::=19 " /CA/: @3/A=<7<5 ()JTJ63

@7D3@ ' % #3EB=< /<2 \$A0=@<3 AB/0:7A67<5 B63 <=@;A =4 A173<B7471
/@5C;3<B/B7=< 7< 1:/AA@=&A " !1 0&+* J

C<0/@ =<13>B 27A1=D3@G 7< / A173<B7471 2+57&0&2" &"* "
J

C<0/@ =E A173<B7ABA @3/:G @3/A=< (173<B7471 @3/A=<7<5 7< @3/: E=@:2 :/0=
@/B=@73A' % *&/) /+# */&\$%032 ' (B3@<03@5 /<2 /D72A=< J
/;0@7253 " ")%@3AA

3:B=D716 % ' (>7@= /<2' ! =C:A=< !3/@<7<5 B3/167<5 /<2 B3AB7<5
4=@ 1=;>:3F 1=<13>BC/: C<23@AB/<27/6%+5 #+. "3 "" . 0&+* +# "/0/ 32
@323@79A3</<2 38/@ J 7::A2/:3 # !

3@@/@7 " /<2 ") 67)63 </BC@3 =4 </ID3 3F>:/</B7=<A =4 </BC@/: A3:31
B7=<*0".* 0&+* (+1.* (+# &" " !1 0&+* J

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;=B7=< /<2 6C;/< /1B7=< <

Suggestions for Further Reading

ADOLESCENT AND ADULT DEVELOPMENT AND PSYCHOLOGY

- A Children and Adolescents: A Biocultural Approach to Psychological Development A
- Women's Way of Knowing: The Development of Self, Voice, and Mind
- The Adolescent Years: Social Influences and Educational Challenges
- Identity and the Life Cycle
- Unstable Ideas: Temperament, Cognition, and Self
- A
- Birth to Maturity
- The Evolving Self: Problem and Process in Human Development
- A

Critical Thinking
to Critical Thinking

Asking the Right Questions: A Guide

Thinking in Psychology

Less than Critical Thinking A

A

Argumentation: The Study of Effective Reasoning

A

DECISION-MAKING, JUDGMENT, AND BELIEF

Processes of Constitutional Decisionmaking, A A

Critical Reasoning: Understanding and Criticizing Arguments and Theories A

A American Political Science Review,

A The Nature of Reasoning

Heuristics and Biases: The Psychology of Intuitive Judgment

Rational Choice in an Uncertain World: The Psychology of Judgment and Decision Making A

Journal of Personality and Social Psychology

A Choices, Values, and Frames

Erkenntnis

Group Processes and Intergroup Relations

Inevitable Illusions: How Mistakes mqb...rcglmqbacklbD...jeclrbvgzjxwtSlml...zrcobb1cgl

EDUCATION AND COGNITIVE SCIENCE, PSYCHOLOGY,
AND DEVELOPMENT

- A A The Handbook of Competence and Motivation, A The Culture of Education A The Process of Education A The Relevance of Education Toward a Theory of Instruction A
- Daedalus Educating the Evolved Mind: Conceptual Foundations for an Evolutionary Educational Psychology The Development and Education of the Mind: The Selected Works of Howard Gardner The Disciplined Mind: Beyond Facts and Standardized Tests, the K-12 Education that Every Child Deserves Frames of Mind: The Theory of Multiple Intelligences, The Unschooled Mind: How Children Think and How Schools Should Teach A Causal Learning: Psychology, Philosophy, and Computation A Psychological Review A TRENDS in Cognitive Sciences A A The Scientist in the Crib: What Early Learning Tells Us about the Mind

Cognitive Development: The Learning Brain

Intrinsic and Extrinsic Motivation: The Search for Optimal Motivation and Performance

Educational Psychology: Reflection for Action

The Handbook of Education and Human Development: New Models of Learning, Teaching, and Schooling

Educational Psychology: Developing Learners

How People Learn: Mind, Brain, Experience and School

Child and Adolescent Development for Educators

The MIT Encyclopedia of the Cognitive Sciences

Applying Cognitive Science to Education: Thinking and Learning in Scientific and Other Complex Domains

The Person and the Situation: Essential Contributions of Social Psychology

The Cambridge Handbook of the Learning Sciences

Developmental Psychology

| | |
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| Advances in Experimental Social Psychology, | A |
| on American Society | A |
| Intelligence | Applied |
| Thinking Styles | |
| Race and Identity: Perspectives | A |

- ▼ A In Praise of the Cognitive Emotions and Other Essays in the Philosophy of Education
- ▼ A The Students Are Watching: Schools and the Moral Contract
- ▼ A Horace's Hope: What Works for the American High School
- ▼ A Coming to Public Judgment: Making Democracy Work in a Complex World
- ▼ A Key Concepts in the Philosophy of Education

LOGIC, ARGUMENTATION, AND RHETORIC

- ▼ A Elements of Argumentation
- ▼ A Putting Logic in its Place: Formal Constraints on Rational Belief
- ▼ A The Rhetoric of Reason: Writing and the Attractions of Argument
- ▼ A The Aims of Argument: A Text and Reader
- ▼ A Attacking Faulty Reasoning: A Practical Guide to Fallacy-Free Arguments
- ▼ A Foundations of Decision-Making Agents: Logic, Probability and Modality
- ▼ A The Logic of Real Arguments
- ▼ A Argumentation and Debate: Critical Thinking for Reasoned Decision Making
- ▼ A Argumentation: Understanding and Shaping Arguments
- ▼ A A Concise Introduction to Logic
- ▼ A Logic and Contemporary Rhetoric
- ▼ A Philosophy of Science
- ▼ A Rhetoric: An Historical Introduction
- ▼ A The Realm of Rhetoric
- ▼ A The New Rhetoric: A Treatise on Argumentation

- Practice
- Teaching Rhetorica: Theory, Pedagogy, Advocacy and Opposition: An Introduction to Argumentation
- Argument and Argumentation
- Fallacies and Argument Appraisal
- Rhetorical Argumentation: Principles of Theory of Practice
- The Uses of Argument
- A Systematic Theory of Argumentation: The Pragma-Dialectical Approach
- Informal Logic: A Pragmatic Approach
- Fundamentals of Critical Argumentation
- A Rulebook for Arguments
- Essentials of Argument

PHILOSOPHY OF SCIENCE

- The Philosophy of Science
- Otto Neurath: Philosophy Between Science and Politics
- What Is This Thing Called Science?
- Causation and Counterfactuals
- Philosophy of Science: The Central Issues
- Origins of Logical Empiricism
- Explaining Science: A Cognitive Approach
- Theory and Reality: An Introduction to the Philosophy of Science

- ▼ / A / Liaisons: Philosophy Meets the Cognitive and Social Sciences ;
- ▼ / A /
- ▼ / A / Philosophical Applications of Cognitive Science ;
- ▼ / Can Theories Be Refuted?: Essays on the Duhem-Quine Thesis ;
- ▼ / Revolutions and Reconstructions in the Philosophy of Science ;
- ▼ / " "
- ▼ / Science, Truth, and Democracy ;
- ▼ / The Advancement of Science: Science without Legend, Objectivity without Illusion ; ;
- ▼ / Abusing Science: The Case Against Creationism ;
- ▼ / A /
- ▼ / Philosophy of Science: An Anthology ▼ ▼ ▼
- ▼ / A ▼ ▼ A ▼ ▼ ▼
- ▼ / Philosophy and Science: The Wide Range of Interaction ▼ ▼ ▼
- ▼ / Who Knows: From Quine to Feminist Empiricism ;
- ▼ / A /
- ▼ / Philosophy of Science: A Very Short Introduction ; ;
- ▼ / A / Philosophy of Science ▼ ▼ ▼

REASONING ABOUT EVIDENCE, RISK,
AND COMPLEX CAUSALITY

Psychological Bulletin
The Logic of Failure: Recognizing and Avoiding Error in
Complex Situations
Test Theory for a
New Generation of Tests,
Journal of Experimental
Psychology: Human Perception and Performance
Studies in Science Education
Causal Patterns in Ecosystems
Judgment under
Uncertainty: Heuristics and Biases
Econometrica
Theory and Evidence
Encyclopedia of Philosophy,
Proceedings of the 25th Annual Conference of the Cognitive Science
Society, 2003
The Perception of Risk
Risk And Reason: Safety,
Law, And The Environment

SCIENCE AND SOCIETY

Isis
Society's Choices:
Social and Ethical Decision Making in Biomedicine

Theories of Science in Society

A History of Science in Society: From Philosophy to Utility

Social Epistemology

Cultural Boundaries of Science: Credibility on the Line

Knowledge in a Social World

Synthese

Between Science and Values

Science in Public: Communication, Culture, and Credibility

Philosophy of Science

Feminism, Science, and the

RmD

Quarterly Review of Biology
Science Talk: Changing Notions of Science in American
Popular Culture

Communicating
Uncertainty: Media Coverage of New and Controversial Science

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SCIENCE EDUCATION

A A A
Benchmarks for Science Literacy

A A
American Biology Teacher

Science Education

Journal of Applied
Developmental Psychology

A A A A

A A A
Argumentation in Science
Education Perspectives from Classroom-Based Research

The Virus
and the Whale: Explore Evolution in Creatures Small and Large

A A A
Scientific Inquiry and Nature of
Science: Implications for Teaching, Learning, and Teacher Education

Teaching Science for Understanding: A Practical Guide

- A National Science Education Standards
- A Studies in Science Education
- Democratizing Science and Technology Education: Perspectives from the Philosophy of Education A
- International Journal of Science Education
- A Journal of the Learning Sciences
- A Designing for Science: Implications from Everyday, Classroom, and Professional Settings
- A Cognition and Instruction: Twenty-Five Years of Progress A
- A History of Education Quarterly
- Understanding the Evolution vs. Intelligent Design Controversy: Epistemology and Science Education
- Revitalizing Undergraduate Science: Why Some Things Work and Most Don't A
- A They're Not Dumb, They're Different: Stalking The Second Tier A

SCIENTIFIC METHODS

- A Science Rules: A Historical Introduction to Scientific Methods
- Scientific Literacy and The Myth Of The Scientific Method
- A A Beginner's Guide to Scientific Method, A
- A What Science Is and How It Works

| | | |
|--|--|---|
| | The Validation of Scientific Theories | |
| | Understanding Scientific Reasoning | A |
| | Scientific Method: A Historical and Philosophical Introduction | |
| | Theories of Scientific Method: An Introduction | |
| | The Scientific Life: A Moral History of a Late Modern Vocation | |
| | An Introduction to Scientific Research | |

SCIENTIFIC THINKING AND REASONING

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| | A | |
| | Imagining the Impossible: Magical, Scientific, and Religious Thinking in Children | |
| | Scientific and Technological Thinking | |

Teaching Thinking

Critical Thinking Skills: Social Studies

A

A Critical Thinking: A Statement of Expert Consensus for

Reason and Teaching.

Intermediality: The Teachers' Handbook of Critical Media Literacy

Critical Thinking Activities for Grades K-3

Infusing the Teaching of Critical and Creative Thinking into Secondary Science: A Lesson Design Handbook

Infusing the Teaching Of Critical And Creative Thinking into Content Instruction: A Lesson Design Handbook for the Elementary Grades

Second Thoughts: Critical Thinking from a Multicultural Perspective

The Thinking Classroom: Learning and Teaching in a Culture of Thinking

TECHNOLOGY AND EDUCATION

The Race between Education and Technology

Educational Technology

Educating the First Nations

Contributors

Eamonn Callan

Creating Citizens

Tina Grotzer

Project
Understandings of Consequence
Studies in Science Education
Causal Patterns in Science,

Jerome Kagan

Cultures
What is Emotion?
Three

Richard E. Nisbett

The Geography of
Thought: How Asians and Westerners Think Differently...and Why
Culture of Honor: The Psychology of Violence in the South

David N. Perkins

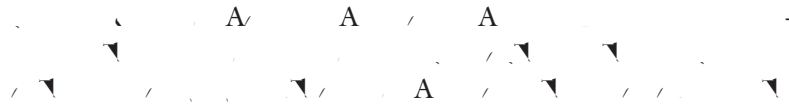
Smart Schools: From Training Memories to Educating Minds The Eureka Effect: The Art and Logic of Breakthrough Thinking King Arthur's Round Table: How Collaborative Conversations Create Smart Organizations
Making Learning Whole: How Seven Principles of Teaching Can Transform Education

Lee S. Shulman

A Preparation for the Profession of Teaching, Learning, and Learning to Teach Educating Lawyers: The Wisdom of Practice: Essays

A A A

The American Academy of Arts and Sciences



Selected Publications of the American Academy

1. *Journal of the American Academy of Arts and Sciences*, 1958, 58, 1, 1-10.

2. *Journal of the American Academy of Arts and Sciences*, 1959, 59, 2, 1-10.

3. *Journal of the American Academy of Arts and Sciences*, 1960, 60, 3, 1-10.

4. *Journal of the American Academy of Arts and Sciences*, 1961, 61, 4, 1-10.

5. *Journal of the American Academy of Arts and Sciences*, 1962, 62, 5, 1-10.

6. *Journal of the American Academy of Arts and Sciences*, 1963, 63, 6, 1-10.

7. *Journal of the American Academy of Arts and Sciences*, 1964, 64, 7, 1-10.

8. *Journal of the American Academy of Arts and Sciences*, 1965, 65, 8, 1-10.

