S M E

!

"#$%!$%%&'!()$*$+,--.!/,0'!1(!1#'!,*'+2,!(3!1#'!4,/&-1.!5'+,1'!,1!1#'!)'6&'%1!(3!
7)'%$2'+1!8,)2(9!+(1$+*!1#,1!1#')'!,)'!,!+&0:')!(3!;-$+$/,-!<2&/,1()%!,+2!
<+*$+''$+*!<2&/,1()%!(+!/,0=&%!>#(!,)'!+(1!'33'/1$?'-.!)'=)'%'+1'2!(+!1#'!
@+/-,%%3'2!7)(3'%%$(+,-!A@7B!5'+,1'C!!"#'$)!$+1')'%1%!,+2!:,/D*)(&+2!,-$*+!0()'!
/-(%'-.!>$1#!4,/&-1.!1#,+!>$1#!&+/-,%%3'2!=)(3'%%$(+,-%C!!"#'!E&-'%!/(00$11''!>,%!
1,%D'2!:.!1#'!4,/&-1.!5'+,1'!<F'/&1$?'!;(00$11''!1(!-((D!$+1(!/-,)$3.$+*!,+2!
=(1'+1$,--.!'F=,+2$+*!1#'!0'0:')%#$=!'-$*$:$-$1.!(3!1#'!4,/&-1.!5'+,1'!1(!$+/-&2'!
1',/#$+*!&+/-,%%$3$'2!=)(3'%%$(+,-%C!!!

!

G31')!/,)'3&-!%1&2.!(3!1#'!1')0$+(-(*.!&%'2!1(!$2'+1$3.!,+2!/-,%%$3.!'0=-(.''%!(+!
/,0=&%9!,%!>'--!,%!,+!'F,0$+,1$(+!(3!1#'!,==)(=)$,1'+'%%!(3!$+/-&2$+*!,22$1$(+,-!
'0=-(.''%!>#(%'!0,$+!)'%=(+%$:$-$1.!$%!1',/#$+*!$+!1#'!3,/&-1.!%'+,1'9!1#'!E&-'%!
/(00$11''!0,D'%!1#'!3(--(>$+*!)'/(00'+2,1$(+!1(!)'?$%'!1#'!4,/&-1.!5'+,1'!E&-'%!
,+2!;(+%1$1&1$(+H!!!

!

J! E'=-,/'!1#'!/&))'+1!2'3$+$1$(+!(3!'-$*$:$-$1.H!K"#'!1',/#$+*L)'%',)/#!3,/&-1.!$%!
2'3$+'2!,%!,--!3&--M1$0'!AI℃N!<4"B!&+$?')%$1.!='))%(++'-!>#(!,)'!1'+&)'29!
1'0=(),).9!=)(:,1$(+,).!()!$+%1)&/1()%!>$1#!3,/&-1.!%1,1&%!,1!-',%1!ON!=')/'+1!
(3!>#(%'!@+$?')%$1.!2&1$'%!$+/-&2'!1',/#$+*9!)'%',)/#9!,+2L()!-$:),).!%')?$/'℃!
<-$*$:-'!0'0:')%!(3!1#'!3,/&-1.!,-%(!%')?'!,%!1#'!'-'/1(),1'℃P!

!

J! Q$1#!1#'!3(--(>$+*H!!!G--!'0=-(.''%!>#(!#,?'!1',/#$+*L-$:),).!
)'%=(+%$:$-1'%!(3!ON R!()!0()'!,+2!℃O!4"<!()!*)',1')!>$--!:'!'-$*$:-'!3()!
0'0:')%#$=!$+!1#'!4,/&-1.!5'+,1'9!$+/-&2$+*H!!1'0=(),).!3,/&-1.9!
=)(:,1$(+,).!3,/&-1.9!1'+&)'2!3,/&-1.9!/(+1$+*'+1!&+/-,%%$3$'2!=)(3'%%$(+,-%9!
=)(?$%$(+,-!&+/-,%%3'2!=)(3'%%$(+,-%9!,+2!)'*&-,)!&+/-,%%3'2!=)(3'%%$(+,-%C!!!
"#'%'!'0=-(.''%!,--!#,?'!1#'!'M/-,%%!2'%$*+,1$(+!(3!4G!()!4S℃!

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" ') 0 $ + (- (* . !
< 0 = - (. ' ' % ! , 1 ! Q 5 @ ! / , + ! : ' ! / , 1 , * ( ) $ X

_! G22$+*!@7%!>$--!/#,+*'!:,-,+/'!(3!%',1%!:'1>''+!1#'!/(--'*'%!$+!1#'!5'+,1'9!
,+2!>(&-2!,-%(!$+/)',%'!1#'!+&0:')!(3!1(1,-!5'+,1()%!$3!1#'!ISHI!),1$(!$%!
0,$+1,$+'2C!
! O!+'>!0'0:')%!3)(0!!8,)1(+!5/#((-!A,22'2!1(!^b!3,/&-1.!>$1#!E,+D!!
c!IN!K"'0=!4,/P!>#(!#,?'!,-)',2.!:''+!%')?$+*!$+!5'+,1'B!!!
! ! O!/&))'+1!5'+,1()%!J!)'0,$+!,1!O!5'+,1()%!
! IS!+'>!0'0:')%!3)(0!<2&/,1$(+!!A,22'2!1(!^d!3,/&-1.!>$1#!E,+DB!
! ! ^!/&))'+1!5'+,1()%!J!/#,+*'!1(!e!5'+,1()%!
! ! d!+'>!0'0:')%!3)(0!!<+*$+'')$+*!A,22'2!1(!fS!3,/&-1.!>$1#!E,+DB!
! ! ! O!/&))'+1!5'+,1()%!J!/#,+*'!1(!f!5'+,1()%!
! ! OS!+'>!0'0:')%!3)(0!!g',-1#!7)(3'%%$(+%!A,22'2!1(!^f!>$1#!E,+DB!
! ! ! e!/&))'+1!5'+,1()%!J!/#,+*'!1(!h!5'+,1()%!
! !Id!+'>!0'0:')%!3)(0!!g&0,+1'%!A,22'2!1(!eIB!
! ! J!cI!%',1!
! Ie!+'>!0'0:')%!3)(0!!+,1&),-!%/$'+/'%!A,22'2!1(!O^B!
! ! J!+(!/#,+*'!
! Ih!+'>!0'0:')%!3)(0!!%(/!%/$!A,22'2!1(!O^B!
! ! J!+(!/#,+*'!
! If!+'>!0'0:')%!3)(0!!4$+'!G)1%!A,22'2!1(!edB!
! ! J!cI!5',1!
! I!+'>!0'0:')!3)(0!!\$:),).!!J!+(!/#,+*'!
Z!!"(1,-!(3!h!+'>!5'+,1()%!$3!),1$(!$%!0,$+1,$+'2C!!
!

R

S

J! Q')'/(00'+2!1#,1!1#'!-,+*&,*'!&%'2!$+!7(-$/.!OCNf!A4,/&-1.![+1')+,-!
a$%=&1'%!$'!W)'$?,+/'%B!:')'?$%'2!1(!)'3-'/1!1#'!%,0'!/-,)3/,1$(+!(3!
-,+*&,*'!&%'2!3()!4,/&-1.!5'+,1'!0':')%#$=!%(!1#,1!1'0=(),).!3,/&-1.9!
/(+1$+*'+1!&+/-,%%$3$'2!=)(3'%%$(+,-%9!=)(?$%$(+,-!&+/-,%%3'2!=)(3'%%$(+,-%9!
,+2!)'*&-,)!&+/-,%%3'2!=)(3'%%$(+,-%!:'!$+/-&2'2!$+!1#$%!=(-$/.C!!"#'!1.='%!(3!
2$%=&1'%!1#,1!1#'.!,)'!-$D'-.!1(!#,?'!>$--!:'!-$+D'2!1(!1#'$)!1',/#$+*!/,=,/$1.!
(+!/,0=&%!,+2!1#'.!%#(&-2!:'!,//()2'2!,!=,+'-!(3!='')%!:,%'2!(+!1#'!1.='%!
(3!2$%=&1'%!1#,1!0$*#1!,)$%'C!
!

"#'!/&))'+1!-,+*&,*'!&%'2!$+!7(-$/.!OCNf!$%H!!K"#'!1')0!i3,/&-1.!0':')i!
)'3')%!1(!='')%(+%!>#(9!,1!1#'!1$0'!1#'!*)$'?,+/'!$%!3$-'29!,)'!3&--M1$0'!
0':')%!(3!1#'!3,/&-1.!()!>#(!#(-2!,!3),/1$(+,-!1$0'!,==($+10'+1!(3!OC!()!

!

J! Q$1#!)'*,)2!1(!1#'!,==)(=)$,1'!=(-$/.!1(!/(?')!a$%0$%%,-!3()!;,&%'9!1#'!E&-'%!/(0 0$11''!)'/(0 0'+2%!1#,1!,--!&+/-,%%3'2!=)(3'%%$(+,-%9!)'*,)2-'%%!(3!1',/#$+*!)'%=(+%$:$-$1$'%9!)'0,$+!/(?')'2!&+2')!7(-$/.!f℃IS!Aa$%/$=-$+,).!G/1$(+!,+2!"')0$+,1$(+B℃!!7(-$/.!e℃S^!Aa$%0$%%,-!3()!;,&%'B!%='/3/,--.!%1,1'%!1#,1!$1!,==-$'%!1(!,!K3,/&-1.!0'0:')!>#(!#,%!1'+&)'!,1!Q$/#$1,!51,1'!@+$?')%$1.!()!>#(%'!1')0!(3!,==($+10'+1!#,%!+(1!'F=$)'2P!A$'!K=)(:,1$(+,).P!,+2!K1'0=(),).!3,/&-1.PB℃!

!

J!