

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

, -./#/'01.//.2&# /34/# 2'4# 4-3# 52)%6# 74%4./4.8%6# 728.34)9/:# 4-3# ;&/4.4'43# 2<# =%4-31%4.8/# %&># ;4/# ?@6.8%4.2&/9# %&># 4-3# A2&>2&# =%4-31%4.8%6# 728.34)# B21 1.4433# <2(# C213&# %&># D.E3(/.4)# .&# =%4-31%4.8/9# f2.&4# E.3G/# 2&# .// '3/# (3H%(>.&H# 3I ' %6.4):# >.E3(/.4)# %&># .&86' /.2&# G.4-.&# 4-3# <.36>/# 2<# 1%4-31%4.8/:# /4%4./4.8/#%&>#>%4%#/8.3&83J#=#&)#2<#4-3#./ '3/#4-%4#%(/.3#.&#4-3#% (3%/#2<#7, K=#4-%4#G3# % (3#82&83(&3>#G.4-#% (3#821 12&#%8(2//#4-3# 1%4-31%4.8%6# /8.3&83/J# 72#<2(#4-./#/'01.//.2&#G3#-%E3# G2(L3Tf [(3//#)-89(/'01)2(.)-3(/.)-3(2&#)-89(G) 1 1 Tf [(%8%>31)2(.)-3(%#)-2(%&>#)-2(.)-3(&>' /4)-2((-)-2(J) ] TJETU

.4:#/2#&2#/.6E3(#0'6634#42#<.S#.4J#KE.>3&83#/'HH3/4/#4-3(3#  
./#%#<33>0%8L#3<<384:#038%' /3#H.(6/#-%E3#>(2@@3>#2'4#3%(6.3(#4-3(3#%(3&94# 1%&)#G2 1 3&#%&>#038%' /3#  
4-3(3#%(3&94# 1%&)#G2 1 3&#:#G2 1 3&#%(3&94#%44(%843>#42#4-3#@ (2<3//.2&J##

AWX, YZ#@32@63#G2(L.&H#.&#7, K=#%(3#1 2(3#6.L36)#42#3S@3(.3&83#8%(33(#. 1 .4%4.2&/#%&>#-%(// 1 3&4#4-%&#  
4-3.(#&2&[AWX, YZ#82663#H' 3/:#%&>#G2 1 3&#G2(L.&H#.&#82 1 @ '43(#/8.3&83/#%&>#36384(2&.8#3&H.&33(.&H#  
%(3#1 2(3#6.L36)#42#-%E3#3S@3(.3&83>#0'66).&H#%&>#-%(// 1 3&4#4-%&# 1 %63#/4%<<J# , -./# 1 %L3/#4-3#<.36>#63//#  
G3682 1 .&H#%&>#63//#%44(%84.E3#42#%#>.E3(/3#/34#2<#@32@63J#

C.4-.&#%8%>31.:%#3E.>3&83#/-2G/#4-%4#G2 1 3&#% (3# '&>3((3@3/3&43>#.&#/3&2(#263/J#?64-2' H-#4-3(3#  
-%/#033&#%&#.&8(3%/3#>'(.&H#4-3#6%/4#>38%>3:2&6)#!! \ #2<#OP# 1 %4-31%4.8/#@ (2<3//2(/#% (3#G2 1 3&J#  
KE.>3&83#/-2G/#4-3(3

, -3#G%)#4-%4#H(%&4#/'01.//.2&/#%(3#%/ /3//3>#0)#  
OP5;#@(.2(.4./3/#4-3#3S@3(.3&83#2<#(3/3%(8-3(/#.&#%#G%)#4-%4# 1 %L3/#.4#>.<<.8' 64#<2(#63//[3S@3(.3&83>#^#  
2<43&#<3 1 %63#^#(3/3%(8-3(/#42#03#/'883//<'6#.&#4-3.(#%@@6.8%4.2&/J# ] %&36/#2<#>.E3(/3#@32@63#%/ /3//.&H#  
%@@6.8%4.2&/#%&>#.&#4-3#@33(#(3E.3G#@ (283//#%(3# ' /3<' 6#%&>#/-2' 6>#03#82&4.&'3>:#0' 4#4-3)#%62&3#%(3#&2#  
/'<<.8.3&4# ^# 1 2(3# &33>/#42#03#>2&3#0)# OP5;2#

, -3#%8L#2<#>.E3(/.4)#.&#-3#>./8.@6.&3#8%&#-%E3#%&#. 1 @%84#2&#/28.34)^#3/@38.%66)#.&#-3#8%/3#2<#%6H2(.4- 1.8#  
0.%/J#, -./#./#%#/3(.2' /#@ (20i3 1 #%&>#.49 /#4 - 3#(3/@2&/ .0.6.4) #2<#4 - 2/3#>3/.H&.&H#%&>#>3E3i2@.&H#4 - 3#422i/#42#  
03#%G%(3#2<#4 - 3#2' 482 1 3/#%&>#82((384#4 - 3 1 #K&H%H.&H#%#E%(.34) #2<# /4%L3 - 2i>3(/#%&># 1 %.&4%.&.&H#%#  
H(3%43(#i3E3i#2<#>.E3(/.4)#G.4- .&#43% 1 /#8%&#- 3i@(#>' 83# .4#;4#3&/ ' (3/#%#0(2%>3(#/34#2<#3S@3(.3&83/#%#(3#  
0(2' H- 4# 42# 03%# 2&# 3E%6i' %4.&H# 4- 3# 34- 8%6# 82&/>3(%4.2&/# %&># @243&4.%6# - (1 /# 2<# 4- 3/3# /) /43 1 /J<sup>1</sup>  
D.E3(/.4) #2<#43% 1 /#G- 2#%(3#.&E3/4.H%4.&H#%6H2(.4- 1 /# / - 2' i>#03#%#(4#2<#4 - 3#03/4#@(%84.83J #

C - .63# H3&>3(#%&># 34-&8.4)#.&<2(1%4.2&#%#(3# /4%(4.&H# 42# 03# 1 2(3# (2' 4.&3i)# 82663843>:# /28.2[382&2 1.8#  
0%8LH(2' &>:#8%(3#i3%E3#.&<2(1%4.2&:#/3S' %6.4) #%&>#4(%&/H3&>3(#.>3&4.4) #%(3#&24J# \_ &3#82' i>#%(H' 3#4 - %4#  
4- 3# 6%8L# 2<# 3E.>3&83# ./# %# (3/ ' 64# 2<# 8- %663&H3/# .&# 4- 3# >%4%# 4- %4# %#(3# 82663843># 2&# 24- 3# @ (243843>#  
8- %(%843(. /4.8/# #2<43&4. 1 3/# 03.&H# G.6>6) # E%(.%0i3# 2(# &24# 82663843># %4# %66NJ# \_ &# 42@# 2<# 4- ./ :# >.<<3(3&4#  
2(H%&./%4.2&/# - %E3# 8(3%43># 4- 3.(# 2G&#>3<.&4.2&/# 2# 7, K=:# %&># 4- ./# - %/# 8(3%43># %# / .4' %4.2&# G- 3(3#  
3/4. 1 %43/#2<#>.E3(/.4) #E%()#G.>3i) :#%&>#4- 3# 1 2&.42(.&H#2<#@ (2H(3/ /#./#.&82&/./43&4J#

, -3(3#%(3# / .S# / - (3># (382 1 1 3&>%4.2&/#4 - %4#4- 3# ; = ? :# A = 7# %&># 5 77# 03i.3E3# G.66# - 3i@#4%8L63#4 - 3/3#  
8- %663&H3/#

5382 1 1 3&>%4.2&#1# K&/ ' (3#4- %4#3>' 8%4.2&#&# 1 %4- 3 1 %4.8/#%&># /4%4. /4.8/# (3@ (3/3&4/#%&># (3<384/#  
4- 3#.&43(3/4/#2<#%#0(2%>#%#(4#2<#/28.34) #%&>#4- %4#%66# /4' >3&4/#%#(3#3&82' (%H3>#42#  
/4' >)# 1 %4- 3 1 %4.8/#%&># /4%4. /4.8/#0) #0(.&H.&H#0%8L#%&#? 7[

%8%>3 1.8#)3%(:#"Tjg \ #2<#G-.43#/4'>3&4/#G3(3#%G%(>3>#%#<(/4b\*`!#82 1 @%(3>#42#"!! \ #2<#0%8L:#?/.%&#%&># 1.&2(.4)#34-&.8#/4'>3&4/J##

, -./#>.<<3(3&83#./#L&2G&#%/#%&#%G%(>.&H#H%@J#;#&#/8.3&83:#3&H.&33(.&H#%&>#438-&2H)##/'Of384/#^#&86'>.&H#024-# 1 %4-3 1 %4.8%6#/8.3&83/#%&>#82 1 @'43(#/8.3&83#^#4-3#%G%(>.&H#H%@#./#6%(H3/4#034G33&#G-.43#/4'>3&4/#%&>#0%8L#/4'>3&4/J#;&#4-3#\*+!gb\*+##%8%>3 1.8#)3%(:#2<#4-3' #

# !+a:dd+#G-.43#/4'>3&4/:#"aJd \ #G3(3#%G%(>3>#%#<(/4b\*`!#  
# !h:+"+#?/.%&#/4'>3&4/:#h"Jd \ #(383.E3>#%#<(/4b\*`!#  
# !+:+!+#0%8L#/4'>3&4/:#ddJ\* \ #(383.E3>#%#<(/4b\*`!J2##

? 1 2&H#%8%>3 1.8#/4%<<#%8(2//#OP# f K;#4-3(3#./#%6/2#%#6%8L#2<#H3&>3(#>.E3(/.4)#%&>#4-./#-%/(3 1 %.&3>#6%(H3i)# &8-%&H3>#.&#(383&4#)3%(/J##

# ;&#4-3#\*+!gb\*+##%8%>3 1.8#)3%(:#4-3(3#G3(3#d:"R+#MRa \ N#<3 1 %63# /4%<<#%&>#!R:R\*+Mdd \ N# 1 %63# /4%<<#G2(L.&H#.&#0.2H.8%6:# 1 %4-3 1 %4.8%6#%&>#@-)/.8%6#/8.3&83/J##  
# ;&#\*+!ab!T:#4-3/3#<.H'(3/#G3(3#d:!h+#MR\* \ N#%&>#!R:+RT#ld" \ N#(3/@384.E36)J##

C.4-.&#.&/4.4'4.2&/:#4-3(3#%(3# 1 2(3# 1 %63#4-%&#<3 1 %63# /4%<<#@ (2H(3//.&H#.&42#4-3# 1 2/4#/3&.2(#%8%>3 1.8#(263/J#53/3%(8-#0)#4-3#A=7#/-2G3>#4-%4' #

# ;&#

\_&3#<'(4-3(#.1@6.8%4.2&#2<#4-3/3#H(2'@/#03.&H# '&>3((3@/3/3&43>#.&# /4%4./4.8/:# 1%4-3 1%4.8/#%&>#>%4%# /8.3&83#./#4-%4#4#.&8(3%/3/#%6H2(.4- 1.8#0.%/J#

?/#-.H-6.H-43>#0)#4-3#?6%&#,'(&H#;&/4.4'43`#

\_E3(#4-(33[I '%(43(/#2<#@2<3//.2&%6/#.&#4-3/3#k?;#%&>#>%4%# /8.3&83I#<36>/#H620%66)#%(3# 1%63# Mh" \ Ni#63//#4-%&#%#1 '%(43(#%(3#G2 1 3&#M\* \* \ N#M C 2(6>#K82&2 1.8#e2(' 1:#\*+!' Nj#;&#4-3#OP:#4-./# >(2@/#42#\*+ \ #G2 1 3&J# , -./#/#4%(L# 1%63#>2 1.&%&83#(3/ '64/#.&#%#<33>0%8L#622@#/-%@.&H#H3&>3(# 0.%/#.&#?;#%&>#1%8-.&3#63%(&.&H#/#)/43 1 /J<sup>10</sup>#

?6H2(.4- 1 /#>2&94#@3(<2(1#/4%4./4.8%66)#G366#2&#H(2'@/#4-%4#%(3# '&>3((3@/3/3&43>#.&#>%4%#/34/#' /3>#42#(%.&# %6H2(.4- 1 /J# e2(# 3S% 1 @63:# %6H2(.4- 1 /# 0'.64# '/.&H# 4(%.&.&H# >%4%# G.4-# %&# '&>3((3@/3/3&4%4.2&# 2<# 06%8L# @32@63#8%&#8(3%43#2' 482 1 3/#4-%4#>./%>E%&4%H3#4-%4#H(2'@J# , -./#(3@/3/3&4%4.2&#0.%/#8%&#63#>#42#(%8.%6# >./8(.1.&%4.2&#.<#@32@63#>3/.H&.&H#%&>#>3E362@.&H#4-3#%6H2(.4- 1 /#%(3#&24#%G%(3#2<#4-3 1 J#K&H%H.&H#%# E%(.34)#2<#/#4%L3-26>3(/#%&>#1%.&4%.&.&H#%#H(3%43(#63E362<#>.E3(/.4)#G.4-.&#43% 1 /#8%&#-36@#(3>' 83#.4J#

;&#%8%>3 1.%:#2&3#82&/3 I ' 3&83#2<#

B2&/.>3(%0i3#G2(L#-%/#033&#>2&3#42#.1@(2E3#>.E3(/.4)#G.4-.&#/4%4./4.8/:#1%4-31%4.8/#%&>#>%4%#/8.3&83:#  
0'4#4-3(3#./#4.66#%#i2&H#G%)#42#H2#42#2E3(8213#4-3#'&>3((3@/3/3&4%4.2&#2<#G213&:#83(4%.&#34-&.8#  
1.&2(4.3/:#@32@i3#>3&4.<).&H#4-31/3iE3/#G.4-#2&3#2<#4-3#H(2'@/#.&#-3#AWX,YZ#8211'&.4):#@32@i3#G.4-#  
>./%0.6.4.3/#%&>#4-2/3#<(21#>./%>E%&4%H3>#/28.2382&21.8#0%8LH(2'&>/#G.4-.&#4-3#@<(2<3//.2&J#

5382113&>%4.2&#1# K&/'(3#4-%4#3>'8%4.2&#.&#1%4-31%4.8/#%&>#/#4%4./4.8/#(3@/3/3&4/#%&>#(3<i384/#  
4-3#.&43(3/4/#2<#%#0(2%>#@%#(4#2<#/28.34)#%&>#4-%4#%66#/#4'>3&4/#%#(3#3&82'(%H3>#  
42#/#>)'1%4-31%4.8/#%&>#/#4%4./4.8/#0)'#0(&H.&H#0%8L#%&#?7[A3E3i#  
I'%6.<.8%4.2&#.&#1%4-/#42#3&82'(%H3#12(3#/#>3&4/#42#4%L3#4-3#/'Of384#%/#4#  
WB7K#%&>#G.>3&.&H#@%(4.8.@%4.2&#.&#B2(3#=%4-31%4.8/J##

, -3#'&>3((3@/3/3&4%4.2&#2<#G213&#.&#1%4-31%4.8/:#/#4%4./4.8/#%&>#>%4%#/8.3&83#@<(2<3//.2&/#/#>'3#42#  
/1%663(#&'103(/#2<#G213&#3&43(&H#821@%(3>#42#13&:#%&>#@<(2@2(4.2&%436)#12(3#G213&#4-%&#13&#  
i3%E.&H#%4#3%8-#/4%H3#.&#4-3#8%(33(#@%4-J#.&#2(>3(#2#1%L3#%&#1@%84:#4-3#138-%&./1/#&33>3>#42#%>>(3//#  
4-./#/-2'i>#i22L#%4#4-3#G-2i3#4(%f3842()):#<(21#@(.1%())#/#8-22i/#42#'.&.E3(/.4)J#,-3(3#&33>/#42#03#%>E.83#  
<2(#@(.1%())#%&>#/382&>%(#/#8-22i#/#4'>3&4/#4-%4#3&#%0i3#4-31#42#/33#4-3#<'6#0(3%>4-#2<#8%(33(/#4-%4#%#(3#  
%E%.i%Oi3#G.4-.&#7,K=:#%&>#4-3#H2E3(&13&4#/-2'i>#3&/'(3#4-%4#4/#/#8-22i#3E%δ'%4.2&#134-2>/#>2#&24#  
i3%>#/8-22i/#42#>./82'(%H3#/#4'>3&4/#<(21#'#>3(4%L.&H#7,K=#1'%6.<.8%4.2&/#038%' /3#%#/#4'>3&4#1%)#&24#

4-3#3I '%6.4)#%84:#WD] 5:#82&/' 13#@ (24384.2&#6%G#2(#%&4.[82 1 @34.4.2&#6%GJ# , -3#>.<<3(3&4.%6# . 1 @%84# 2&#  
@32@i3#82 ' 6>#03#H' %(>3>#%H%.&/4#0)#20/3(E.&H#(382 1 1 3&>%4.2&/#.&#8' ((3&4#6.43(%4' (3:#/ ' 8- #%/#4- 3#;KKK#  
] h++R# /4%&>%( >#<2(#%6H2(.4- 1 .8#0.%/#82&/.>3(%4.2&/J# ] 2//.0i3#<(% 1 3G2(L/#.&86' >3' #>.E3(/.4)#2<#43% 1 /#  
G-2#%(3#8(3%4.&H#%6H2(.4- 1 /i#03&8- 1 % (L.&H#@ (283>' (3/#%&>#8(.43(.%#<2(#4- 3#/3i384.2&#2<#E%.>%4.2&#>%4%#  
/34/#<2(#0.%/#1 '%6.4)#82&4(26i#H' .>3i.&3/#2&#3/4%06./ - &H#%&>#82 1 1 ' &.8%4.&H#4- 3#%@@6.8%4.2&#02' &>%(./3/i#  
/' HH3/4.2&/#<2(# ' /3(3S@384%4.2&# 1 %&%H3 1 3&4J<sup>13</sup># 7 ' 8-#%#<(% 1 3G2(L#82' i>#03# / -%@3>#.&#82&f' &84.2&#  
G.4-#4-3#&3G#D%4%:# , 38- &2i2H)#%&>#?&%6)4.8/#MD% , ?N# ' &4#%4#4-3#B2 1 @34.4.2&#%&># = (L34/#? ' 4-2(.4)#  
MB = ?NJ#

5382 1 1 3&>%4.2&#T# K] 75BbOP5;#/-2' 6>#.&4(2>' 83#1 .>[8%(33(#%883i3(%4.2&#H(%&4/#G- .8-#%(3#2@3&#  
42#.&.>.E.>' %6/# G-2#%(3#&2#i2&H3(#0 1 . \_ G/%>E(G) 1 T f c.2/.9/. 1 ( , ) = !3#2@3&#

, -3#@ (2@2(4.2&#2<#4-3#@ (2<3//2(%43#G-2#%(3#G2 1 3&#-#/#.&8(3%/3>#0 ' 4#H3&>3(#@%(4)#./#4.66#%#62&H#G%)#  
2<<J# , -3(3#/#%#&33>#2(# 1 2(3#<' &.&H#/' @2(4#<2(# 1 .>[8%(33(#3/3%(8-3(/#M4- 2/3#.&#3(1 %&3&4#%8%>3 1 .8#  
@2/.4.2&/#03i2G#@ (2<3//2(# G-2#%(3#&2#i2&H3(#36.H.0i3#<2(#4- 3# c3G#;&E3/4.H%42(# ?G%(>#M c ; ?N# /8-3 1 3NJ#  
7 ' 8-# %# /8-3 1 3# G2' 6># / ' @2(4# .&>.E.>' %6/# G-2# (3#8-3># 1 .>[8%(33(# 03<2(3# @ (243843># 3% (i) # 8%(33(#  
/' @2(4#G%/#.&4(2>' 83>J#;4#G2' 6># / ' @2(4#%6i3&43># /8.3&4./4/#G-2#-%E3#-#%#%#3(2>#2#>3 1 %&>.&H#8% (&H#  
G2(L#2(#G2(L(3%643>#(3/@2&/0.6.4.3/# [[#<2(3S% 1 @i3#4-2/3#4%L3&#2&#>' (&H#4-3#B2E.>[! g#@%&>3 1 .8#^#  
%&># 3&%0i3# 4-3 1 # 42# (3<28' /# 2&# (3/3%(8- J# , -./# G2' 6># 03&3<4# 1 .>[8%(33(# G2 1 3&#:# 0 ' 4# %6/2# 34- &.8#  
1 .&2(.4.3/:#G-2#-%E3#3S@3(.3&83>#/. 1 .6% (#>./%>E%&4%#H3/ :#%&># 1 3&#G.4-#8% (&H#(3/@2&/0.6.4.3/#G-2#-%E3#  
4%L3&#2&#6% (H3#%> 1 .&./4(%4.E3#0' (>3&/J#

D.<<3(3&4#2(H%&./%4.2&/# -%E3#8(3%43>#4-3.(#2G&#>3<.&4.2&/#2<#7 , K = :#%&>#4- . /# -% /#8(3%43>#%# / .4' %4.2&#  
G-3(3#4-3(3#%(3#G.>3i) #E%().&H#3/4. 1 %43/#2<#>.E3(/.4)#G.4- .&#7 , K = J#; / / ' 3/#% (3#%6/2#%@@% (3&4#G.4-#4-3#  
>3<.&4.2&# %&># 8%43H2(/%4.2&# 2<# KD;# >%4%J# = %&) # 3 1 @62) 3(/# >2&94# 8266384# >3 1 2H(%@ - .8# .&<2(1 %4.2&#  
82&/./43&46):# %&># 4-3# .&<2(1 %4.2&# 03.&H# 82663843># . /# &24# %6G%) /# (3i3E%&4# <2(# %>> (3//.&H# 3 1 3(H.&H#  
>.E3(/.4)# 82&83(/J# , -3(3# . /# %# &33># <2(# 1 ' 8-# 1 2(3# >34%.6# .&# 4-3# %E%.6%0i3# /4%4./4.8%6# .&<2(1 %4.2&#  
82&83(&.&H#@ (243843>#8- % (%843(. /4.8/#%&># ' &>3((3@ (3/3&43>#H(2' @/J#

, -3(3#/#2<43&#%#6%8L#2<# 1 3%&.&H# ' 6#>%4%#42#>./83(&#G-34-3(#/2 1 3#H(2' @/#% (3# ' &>3((3@ (3/3&43>#^# / ' 8-#  
%/#AWX , YZ#H(2' @/:# .&>.E.>' %6/#<2 1 # /28.2382&2 1 .8#>./%>E%&4%#H3># 0%8LH(2' &> /#%&># 8%(3#i3%E3(/J#  
O&63/ /# /2 1 3# 1 3%/ ' (3# 2<# %H(33 1 3&4# . /# (3#8-3># 2&# 4-3# /4%4./4.8%6# .&<2(1 %4.2&# 4-#4# ' &>3(@.&/# 4-3#  
82&83(&/#%02' 4#>.E3(/.4):#@ (2H(3/ /#./#>.<<.8' 64#42# 1 3%/ ' (3J#

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