

-"&)"8S R*;\$480= \$:\$T8.)"8(<

YR /)&')"/8;#,' =/+8'#"
:ac 7",8,J">'\$9/] ,7)/&#/] \$+]3;
FNc +'J'&/&"+#/] #')+#/] "\$&'4/
F5c +/)" /7'8;#,\$&;)" &4/ \$')=A/
F& +/ &&
BR 9"\$8,) ,=#K@ =,8J
4"# 4"#1&/
44)&. \$& 4"88"4'&))&1&# ,J, \$&,87/
LB 4/9\$"4/8;#,' .,&)'78'#'" 9"\$8,) ,=/
LYNa .,) ,J /#/[],7# ,J, ,74'#/
\$ '\$91#=#/
1=,/4"# 1=),+ +4"#1&1
'N X"3">'\$9/] #/J)139/
'FR X1#9A"] +#'e# 'J, =KU/#"
'L< X,&,.8'&"34,J)/X"
PNc A'#&)/8;#/] #')+#/] "\$&'4/
> >/\$
fR >/\$&,&/ =KU/#"
fcc >/\$&,&/ \$')='>#KU \$,9)/^'#" @
gB< [8'9&),9/)'=" ,J)/X"
gg< [8'9&),[#A'X/8,J)/X"
ca₂ 1J8'9"\$8,&/
Va₂ max 4/9\$"4/8;#,' .,&)'78'#'" 9"\$8,) ,=/
Va₂ LYNa .,&)'78'#'" 9"\$8,) ,=/ #/ 1),+#' LYNa

44"1"8("

l/ .,\$8'=#" # \$9,8;9, ='\$]&"8'&"@ "#&#\$"+#,')/3+"&" \$.,) -
&"+#,@#/19" " .)/9&"9" #/e8, .)/9&">'\$9,' .)"4'##" + &/9,4 +'-
=1^4 +="= \$.,)&/ + 5\$.178"9' :8/)1\$; , 9/9 J)78] #/ 7/@=/)9/U
" 9/#,[. l#/>"&'8;#; .),J)'\$\$")1_& #/1>#,-&'U#">'\$9" +,34,?#,\$&"
\$.,),+ ,?=#"] &)'#"),+,>#J, .),A'\$\$/ . K #/\$& ,]^41 +)'4'#")/7, -
&/ 9,4.8'9\$#,@ #/1>#,@ J)1..K , \$1^'\$&+8]'&\$] #/ \$&K9' #/1>#KU
="A".8"# : .'=/J,J"9" , 4'="A"#K , 7",8,J"" , ."U,8,J"" " ."U,X" -
3",8,J"" , [8'9&),'#9" , "#?'#)"" ; + "&,J' \$8,?'8/\$; #,+/] ,&)/\$8; -
4'="9, -7",8,J">'\$9/] " [8'9&),##, -&'U#">'\$9/] \$X')/ #/1>#J, \$,-
.),+ ,?=#"] &)'#"),+,>#J, .),A'\$\$/ +J)'78' #/ 7/@=/)9/U" 9/#,[.

L),A'\$\$.,=J,&,+9" \$.,)&\$4'#/ + \$.,)&' +K\$e"U =,\$&"?'#@" # -
+,34,?'# 7'3 1>/\$&"] &+,>'\$9" 4K\$8]^J, &)'#)/ , +)/>/ , ."U,8,J/ ,
,71>'##KU # &,8;9, .),X'\$\$",#/8;#;41 4/\$&)'\$&+1, #, " 1>/\$&+1_
^"U + &)'#"),+,>#4 .),A'\$\$' \$.)"4'##"4 \$,+)'4'##,J, 7",4'=" -
A"# \$9,J, [8'9&),##,J, ,7,)1=,+/#"] . L),A'\$\$.,=J,&,+9" \$.,)&"+#,@
[8"&K #'+,34,?'# 7'3 +,\$."&/#"] 1 \$.,)&\$4'#+ \$.,)&"+#,J, =1U/, 7'3
) /3+"&"] "#&)'\$/ 9\$/4,\$& ,]&'8;#;@ =]'&'8;#;,\$&" .

N/ '\$J,=#]e#"@ =#; &)1=#, .)'=\$&/+'&; \$.,)& +K\$e"U =,\$&"-
'?'#@" 7'3 .)"4'##" [8'9&),##,@ 4'="A"# \$9,@, 7",8,J">'\$9,@ ,
7", "#?'#)#,@ ="/J#,\$&">'\$9,@ /..)/&1)K . a=#,@ "3 , \$#,+#KU 3/-
=> 9,#&),8] \$,\$& ,]#"]>'8,+9/]+8]'&\$] ="/J#,\$&"9/ \$,\$& ,]#"]
3=,)+;] \$ A'8;_ +K]+8'#"] .)'=./&,8,J">'\$9"U " ./&,8,J">'\$9"U
.),A'\$\$,+ , #/8">"] "#X'9A"@ + ,)J/#"34' , .)'=)/\$. ,8,?'##,\$&"
9 ./&,8,J"]4 " .),J#,3"),+/#"] "U)/3+"&"] . F)/38">#K' .)'",=K
&)'#"),+,>#J, .),A'\$\$/ ,&\$8'?"+/_&\$] 3/9,#,4')#,\$&" \$&/#,+8'-
#"] \$.,)&"+#,@ X,)4K : /=.&/A"] 9 #/J)139/4 , ,&+'&#/])/'9A"] ,) -
J/#"34/ #/ &)'#"),+,>#K' #/J)139", 4,)X,X1#9A",#/8;#,' \$,\$& ,]-
#" , \$,\$& ,]#" ."U,8,J"" " ."U,X"3",8,J"" .

a\$# ,+#,' +#"4/##" +4'& ,=">'\$9"U)'9,4'#=/A"]U 1='8'#, ,78/-
\$&" ="/J#,\$&">'\$9"U 4'& ,="9 , 7/3")1_ ^"U\$] #/ 1#"9/8;#KU 4'="A"# -
\$9"U4'& ,="9/U " .)"7,)/U , #'\$&/#=#/)&#;4 8/7,)/& ,)#,4 " ="/J#,\$&" -
>'\$9,4 ,7,)1=,+/#"" . F 4'& ,=">'\$9"U)'9,4'#=/A"]U /#/'8"3")1_&\$]
4'& ,="9")', - " [8'9&),9/=" ,J)/X"" , 4'U/#"34K X,)4"),+/#"] +'-
=1^"U .,9/3/&'8'@ ,A'#9" X1#9A",#/8;#;J, \$,\$& ,]#"] ,)J/#"34/
\$.,)&\$4'#+ . i38,?'#/' "#X,)4/A"] , .),+ ,="4KU "\$\$8' ,+/#"]U .,
,A'#9' +/)'7'8;#,\$&")"&4/ \$)=A/ , =/#K U (J,\$.),4'&)" . L)"+' -
=#K =/##K' ., ,A'#9' \$,\$& /+ /&'8/ \$.,)&\$4'#+ , \$.,)"4'##"4)/3-
8">#KU 4'& ,="9 . L,9/3/#K +/)'#&K "\$.,8;3,+/#"] ."U,8,J">'\$9,J,

" . \$"U,X"3",8,J">'\$9,J, &'\$\$"),+/#"] \$.,)&\$4'#,+ .)" ,A'#9' "U \$,-)'+#,+/&'8;#,@ J,&,+#,\$&".

L)"+'=#K +,34,?#,\$&" "\$.,8;3,+/#"] "#?'#')#,@ 4K\$8" 9,A'#9' 8,9,4,A"@ 9,4.8'9\$/ «\$.,)&\$4'# -8,=9/ »,)'J"\$&)/A"" 7", - 4'U/#">'\$9"U ./)/4'&),+ =]'&'8;#,\$&" \$.,)&\$4'#/ #/ +,=#,4 \$&/=" ,#' " +1\$8,+"]U /&'8'&">'\$9,J, 3/8/.

1. &":\$4.8(U , -&\$4"1"8(W XR8,Y(\$8.;S8\$2\$
"* (&\$4.8(U

a7]3/&'8;#K4 1\$8,+""4 .),+='#"] &'\$&,+] +8]'&\$] \$.,&+'&\$&+"
+\$'U .),A'=1) \$1^'\$&+1_ ^"4 4'?=1#/,=#K4 " #/A",#/8;#K4
[&">'\$9"4 #,)4/4 . N/.)"4') , \$.,)&\$4'# =,8?'# .,#"4/&; A'8; ,
3/=>1, &,>#,' .,"\$/#"" .),+,"4KU &'\$&,+, .)'=\$&/+8]'4KU
\$.A"/8"\$&/4 , + 1\$&#,@ " ."\$;4'##,@ X,)4' , \$1^'\$&+8]_ ^"4
="/J#,\$&"91 X1#9A",#/8;#J, \$,\$&,#"] . c.,)&\$4'# =,8?'# =/&; \$+,j
."\$;4'##,' \$,J8/\$" #/ .),+='#"" +\$'U.),A'=1) .

N',7U,="4, .),+='#"")/3J)13,>#J, 4"9),A"98/ 3/ 1-2=#]
=, &'\$&"),+/#"] , &' . 9 4,4'##&1 .),+='#"] &'\$&,+\$.,)&\$4'# =,8?'#
7K&; &=,U#1+e"4 . "#414 1-2=#] ,&=KU/,7K># ,=\$&/&,># , =8]
.),+='#"] &'\$&"),+/#"] . g&, \$+][3/#, \$ #/8">"4 [XX'9&/
\$1.)9,4.'#\$/A"" .,\$8' 14'#;e'#"] ,7l'4,+ X"3">'\$9"U #/J)13,9.

L)'= &'\$&"),+/#""4 #',7U,="4, .),+,"&;)/34"#91 , ?'8/ -
&'8;# , \$&/#=#/)&"3"),+/###,J, U)/9&')/ .

c.,)&\$4'# =,8?'# 7K&;='&/8;# , .),"#\$&)19&"),+/# , .),A'=1)'
.),+='#"] &'\$&/ " , '\$8" &'\$&=8] #'J,]+8]'&\$] #,+K4 , +K.,8#"&;
.),71 &'\$&/ \$/4,\$&,&'8;# , =8] ,3#/9,48'#"] \$.),A'=1),@ 'J,
.),+='#"] .

N',7U,="4, , >&,7K +\$' .),A'=1)K ,&+>/8" 9)"&')]"4
=,\$&,+)#,\$&" , #/=?'#,\$&" , &,>#,\$&" , / &/9?' "4&; >'&91_
\$&/#=#/)&"3/A"_ 1\$8,+ "@ .),+='#"] &'\$&,+ \$ "\$.,8;3,+/#""4
\$,+)'4'##,@ " &,>#,@ &'U#"9" =8])'J"\$&)/A"" "#X,)4/A"" ,
9,#9)'&#K@.8/# " .),&,9,8K 9/8"7),+9" ,7,)1=,+/#"] " .),+='#"]
"\$8'=#,+/#"@. m'8/&'8;# , , >&,7K &'\$&K .),+,"8" ,=#" " &' ?'
+K\$,9,9+/8"X"A"),+/###K' \$.A"/8"\$&K , >&, .,+Ke/'& [XX'9&"+#,\$&;
4&=#/ , 1\$9,)]& /#/8"3 " "#&').)&/A"_ .,81>/'4KU)'318;&/&,+.

L)" +K.,8#"#" "\$.,)&\$4'#/4" &'\$&,+ #',7U,="4, "\$.,8;3,+/&;
1\$_4,&"+/A"_ =8] +K.,8#"#"] &'\$&/ \$4/9\$4/8;#K4 1\$"8"4 .

<)/X"9 .),+='#"] ="/J#,\$&"9" X1#9A",#/8;#J, \$,\$&,#"]
\$.,)&\$4'#,+ =,8?'# 7K&; 1&+)'?=# .)'= #/ >/8,4 \$'3,#/ #/ , \$#,+ '
)'9,4'#=#/A"@ #/1>#KU\$.A"/8"\$&, + " #198,##, +K.,8#"&;\$] .

1.1. -COHACBHZB\ECAMK\H

L,8'+K' X1#9A",#/8;#K' &'\$&K"\$.,8;31_&\$] =8] 1+'8">'#"]
"U \$.A"X">#,\$&" +)/38">#KU +="=U \$.,)&/ , >&, + \$+,_ ,>)'=; ,
.,+Ke/'& 3#/ >"4,\$&; &'\$&,+

N'\$4,&)] #/ +K\$,91_ =,\$&,+)#,\$&; , #',7U,="4, .,4#"&; , >&, #" ,="# &'\$&#' 4,?'& .)'=\$9/3/&; "&,J,+K@)'318;&/& \$,)'+#,+/'&8;#,@ =]'&8;#,\$&" \$.,)&\$4'#+ , .,\$9,8;91 &)1=#, "3,8"),+/'&; +\$' "#="+" - =1/8;#K' X1#9A",#/8;#K' ./)/4'&)K .L)"+'='##K' #'?' &'\$&K7K8" ,."\$/#K + 8"&)/&1)#,@ 7/3' =/##KU,.)"4'#]8"\$; + &'>#'"" 4#,J, - 8'&#J, .)"/ #/78_='#"@ \$.,)&\$4'#+ -J)'7A,+ " .),e8" ,A'#91 ,&#,\$"&8;#, "U=,\$&,+)#,\$&" ,#/'?#,\$&" " &,>#,\$&".

2. 1(.28\$* ())*.U 1"U ";S8\$* S -"1.2\$2.

c"\$&'4/&">'\$9,' #/78_='#"' &)'#)/ 3/ \$+,"4" \$.,)&\$4#/'4" ., \$+,'@ \$1&"/#/'8,J">#/' ="/J#,\$&">'\$9,@ =]'&'8;#,\$&" .L)" [&,4 =8] ,7-\$1?='#"' #9,&,)KU .)"#A"./'8;#KU +,.)\$,+ #' \$&,8; +/?# , , 9/9"4 ,7)/3,4 , \$1^\$&+8]8\$] \$7,) ="/J#,\$&">'\$9,@ "#X,)4/A"" : \$.,4,^;_ \$, &+'&\$&+1_ ^'J, "#\$&)14'#&/'") (/38">#K' /..)/&#K' 9,4.8'9\$K) "8" 7'3 #'J, (#/.)"4') , 4'&,=,4 .),\$&,J, #/78_='#"']).

F .'=/J,J">'\$9,@ ="/J#,\$&"9' , .)'?=' +\$'J, , \$)/+#"+'&\$] #/78_='/4/ =]'&'8;#,\$& ; \$.)&\$4#/' \$.)'?# '@ 'J, =]'&'8;#,\$& ;_ , =]'&'8;#,\$& ;_ =)1J"U \$.,)&\$4#,'+ #/ , \$#,+' .'=/J,J">'\$9,J, &'\$&'-),+/'#"' .L),+,"&\$] .,"\$/'#" =]'&'8;#,\$&" \$.)&\$4#/' #/ ,.)'=' - 8'##,4 [&/' &)'#"),+,>#J, .),A'\$\$/ \$ A'8;_ \$)/+#"#"] \$4,='8;_ .),U,?='#"' ="\$&/#A"" "8" #/+K9,+ "\$8,+,@)/7,&K . R8] ,.)'='8' - #"] .)">#K ,&98,##" @ ,& 3/.8/#"),+/#K"U)'318;&/&,+, .),+,"& - \$] 9,88'J"/8;#K@ /#/'8"3)/7,&K \$.,)&\$4#/' 3/ /#/'8,J">#K@ .)"', = .),e8KU 8'&.i#&'.)'&')1'&\$])]= .,9/3/&'8'@ , >&,7K .,\$8' "#='9 - \$/A"" " ,A'#9" "4_ ^'@\$] "#X,)4/A"" =/;& ,A'#91 &'91^'J, \$,\$&,- #"] \$.,)&\$4#/' .L),J#,3")1'&\$] 71=1^"@)'318;&/& ; \$,\$&/+8]'&\$] /8J,)"&4 =]'&'8;#,\$&" \$.)&\$4#/' \$ &'4, >&,7K .)'=+'='& ; 'J, +,3-4,?#,\$&" +=)1J"U "\$&1/A"]U.

2.1.-Z\]C_\M`KCZB\ aM\ bH_M`C`\cHZaMdM`KCZB\ aM

S')4"# «.\$"U,="/J#,\$&"9/ » ,3#/'>'& 719+/8;# , «.,\$&/#,+9/ ."\$"U,8,J">'\$9,J, ="/J#,3/ » , "8" .)"#]&" 9+/8"X"A"),+/#J, 3/ - 98_>'#"' , &'91^'4 ."\$"U,8,J">'\$9,4 \$,\$&,#"" >'8,+9/ (J)1..K 8_='@) + A'8,4 "8" ., ,&#,e'#" _ 9 9/9,41 -8"7, ,&='8;# , +3]&,41 ."\$"U,8,J">'\$9,41 \$+,@ \$&+1

=2-E%)-+D(%28-\$+ [& , 78/\$& ; ."\$"U,8,J">'\$9,@ #/19" " ,=#, - +)'4'##, +/?# '@e/] X,)4/ ."\$"U,8,J">'\$9,@ .)/9&"9" , 9,&,) /] \$+]- 3/#/ \$)/3)/7,&9,@ " "\$.,8;3,+/'#"4)/3#,,7)/3#KU 4'&,=,+)/\$., - 3#/'+'#"' "#="+"=1/8;#KU , \$,7'##,\$&'@ >'8,+9/ (J)1..K 8_='@). L"\$"U,="/J#,\$&"9/ +K\$&1./& 9/9 \$,+,91.#,\$& ; \$.,\$,7,+ " \$)'=\$&+ ,.)'='8'#"] "#="+"=1/8;# , -"\$"U,8,J">'\$9"U U)/9&)"\$&"9 8"># , - \$&"=8] .,\$8'=1_ ^'J, .,.)" #' ,7U,="4,\$&" , 9,))'9A",##,J, +,3='@ \$&+"] #/ ")/3+"&" .i\$U,=] "3 [&,J, ,.)'='8'#"] , .)'?=' +\$'J, , #/= , \$,3#/'& ; +K\$,>/'@e1_ ,&+'&\$&+##,\$& ; +\$'U &'U, 9&, 7)'&\$] , \$1^\$&+"& ; [&1 X1#9A"_. Q),+'# ; .),X'\$\$',#/'8"34/ &/9,@ =]' - &'8;#,\$&" +98_>'& , , 9)/@# '@4') , =+/\$,\$&/+8]_ ^"U [8'4'#&/ .

c.'A"/8"\$& =,8?'# \$,7)/&; X/9&K" =/&; "4 ,7,\$#,+/##, ' ,7I]\$##'" , / &/9?' .,=,7)/&; /=9+/&#K' .)"4K ."\$U,8,J, -.'=/J,J">'\$9,J, +,3- = '@\$&+ "]a>'+"=#, , >&, =8] 9,4.8'9\$#,J,)'e#"] [&, @ = + 1 = "#, @ 3/ = />" #/"7,8" [XX'9&"+#, \$,>'&/#" 1\$"8"@\$. 'A"/8"\$&, + ."\$U,8,J" - >'\$9, @\$81?7K" ,.K&#KU &)'#),+ -.)/9&"9,+ .

c1^'\$&+1'&)]=)/38">"@ 4'?=1 .'=/J,J">'\$9,@ ="/J#,\$&"9,@ " ."\$U,="/J#,\$&"9,@ . L'=/J,J">'\$9/] ="/J#,\$&"9/ #'"9,J=/ #' 7K8/ &,8;9, "\$.,8#"'&'8'4 , 9,&,)K@., 3/9/31 "\$\$8'=1'& \$&/&1\$.,)&\$4#',+ , ,&4>/'& "U.)"3#/9" " 3/&'4 .)'='& .,81>'##K' =/##K' 3/9/3>"91. L'=/J,J">'\$9/] ="/J#,\$&"9/ 4,?'& +K.,8#]&; &,8;9, \$81?'7#1_ X1#9A" _ + #1&)" "\$&'4K +,\$."&/#"] ,71>'#"] .n)/9&)'#K4 =8] .' - =/J,J"9"]+8]'&\$] #' &, >&, #/ +='& .),A'\$\$,4 .,3#/#"] +,.)=' - 8'##,@ ,78/\$&" , / &, >&, #/]+8]'&\$] &,) '&'>'\$9'4 X1#=/4#&,4 .)/9&">'\$9,@ =]'&'8;#,\$&" .g&, @?' 3/=/>' .,=>'#]'&\$] " .'=/J,J">' - \$9/] ="/J#,\$&"9/ .

G46+* @ "(H"2\$+&1#9A"] .'=/J,J">'\$9,@ ="/J#,\$&"9" \$+]3/# \$,\$#,+ #K4" [&/./4" 1.)/+8'#"])/3+"&"4 9,88'9&"+/ \$.,)&\$4#',+ " 8">#,\$&" 9/?=,J, \$.,)&\$4#/ . F \$.,&+'&\$&+" "\$ [&"4 .,)'='8' #K &)" &"/ ="/J#,\$&"9" : #/>/8;#/] , 9,))'9&")1_^/] (&'91^/]) " ,7,7^/_^/] ("&,J,+/]) .

;+H+@I(+Q--+D(%28-\$+- .8/#"),+/#" " 1.)/+8'#" 9,88'9&" - +,4 \$.,)&\$4#',+ . L,8#,&/ " ,7I'9&"+#,\$&; "#X,)4/A" .)" #/>/8; - #,@ ="/J#,\$&"9' + 4/9\$"4/8;#,@ \$&'#" .)"78"?'& .8/#"),+/#" +,\$."&/&'8;#KU 3/=/> 9)/8;#K4 .,&)'7#,\$&]4)/3+"&"] +=' \$.,)&/ " \$.,&+'&\$&+1'&.&"4/8;#;41)/3+"&"_ 9/?=,J, \$.,)&\$4#/ .

J"\$LN+C (\$%66"\$8-6LON+C) --D(%28-\$+ - .),+,"&\$] + \$/- 4,4 .),A'\$\$\$' .)J/#"3/A" =]'&'8;#,\$&" 9,88'9&"+/ \$.,)&\$4#',+ " 8">#,\$&" 9/?=,J, \$.,)&\$4#/ , ,)"#&")1] &)'#)/ #/ "34'##"] , .),"\$U,=]^" \$ 9/?=K4 \$.,)&\$4#',4 " + 9,88'9&"+' . a=#,+)'4' # - #, ,A'#"+'&\$] .)/+"8;#,\$&;)/#" .)"#]&KU)'e#"@ . i#X,)4/ - A"] , ,81>'##/] +)'318;&/&' &'91^'@ ="/J#,\$&"9" , .,4,J/'& &)' - #)'1 7K\$&),, &, ># , "\$ 4"#"414,4 ,e"7,9 9,))'9&"),+/&; \$+,_)/7,&1 " \$,+)'e#\$\$+,+/&; \$&'8; ,&#,'e#"@ \$, \$.,)&\$4#/4" , 4' - &,"91 +,\$."&/&'8;#,@)/7,&K .f')'3 9,))'9&")1_^1_ ="/J#,\$&" - 91 ."\$U,8,J " &)'#)' "4'_& +,34,?'#,\$&; 7K\$&),)/J"),+/&; #/ "34'##"] 1),+ #])/3+"&"] 8">#,\$&" \$.,)&\$4#/ " &'4 \$/4K4 ,7'\$.'>"&; +,34,?'#,\$&; 7,8" /9&"+# ,J, , \$/4,\$&]&'8;# ,J, " &+,)>'\$9,J, 1>/\$&"] \$.,)&\$4#',+ + =]'&'8;#,\$&" 9,88'9&"+/ . S' - 91^/] ="/J#,\$&"9/ +K.,8#]'&) ,8; [9\$.)'\$\$ -="/J#,\$&"9" , .,4,J/]

.)"#]&; ,.)/&"+#,')'e'#"' .., \$,+')e'#\$\$+,+/#"_ 1>'7#, -
&)'#"),+,>#,@ =]'&'8;#,\$&" .

F "\$&'4' .),J#,3"),+/#"])'318;&/&,+ 1>'7#, -&)'#"),+,>#,@
)/7,&K .),+,"&\$] ,7,7^/_^/] ="/J#,\$&'9/ +9,#A' 9/?=,J, '\$3,#/ .

OB%BN+0N+G+D(%28-\$+"\$. ,8;31& ,,\$#,#K' =/##K' =8] 9,) -
)'9A"' .'=/J,J">'\$9,J, +,3='@\$&+"]t &'>'#" '\$8'=1_ ^J, '\$3,#/ .

2.2.6HBC_a\ _\M`KCZB\a\ bZ\]COC`cHZaC`C \ bZ\]Ce\L\COC`cHZaC`CZBMBPZ\mCEBZfHKCA

R"/J#,\$&'9/ - [&, \$.,,\$7K "31>'#"] 8">#,\$&" >'8,+9/ .1&'4
"\$.,8;3,+/#"] \$&/#=/)&#KU.),A'=1) &'\$&"),+/#"] . F 9/>'\$&+' \$U'-
4K .\$"U,8,J">'\$9,J, "\$\$8'=,+/#"] 4,?#, "\$.,8;3,+/&; '\$8'=1_ ^1_
.,\$8'=,+/&'8;#,\$&; .),A'=1) "31>'#"] \$&/&1\$\$.)&\$4#,+ .

1. a7^" '\$+='#"] :+,3)/\$&; ,7)/3,+/#" ;,\$,\$&,"#"' 3=,)+;] .

2. i31>'#" '\$,A"/8;#,@ '\$"&1/A"' \$.,)&\$4#/' " 'J, ,9)1?'#"] :
\$,\$&/+ '\$4;" ;.),X'\$"\$" >8#,+ '\$4;" ;+,3)/\$&; 9)/&9/] U/)/9&)" -
\$&'9/),="&'8'@ " =)1J"U>8#,+ '\$4;" ;+3/"4,,&#,e'#"] + '\$4;' .

3. a\$,7'##,\$&" \$.,)&\$4#/' :

/) ="/J#,\$&'9/ .,3#/+/&'8;#,@ \$X')K (U/)/9&)"\$&'9" .,3#/+/
&'8;#KU.),A'\$\$,+):

-+,\$.)]&" (A'8,\$&#,\$&;, ,\$4K\$8'##,\$&; ,+,\$.)]&" +)'4#"
" .),\$&)/#\$&+ /);

-./4]&; (1),+'#;)/3+'&"] +'=",+ ./4]&" , "#="+"=1/8;#K'
" +,3)/\$&#K' ,\$7'##,\$&");

-+,,7)/?'#" (+,\$\$,3=/_ ^" " &+,)>'\$9,' , \$98,##,\$&; 9 X/#-
&/3"),+/#"_ , .),]+8#'" + &+,)>'\$9,@ =]'&'8;#,\$&" , .)"J"#/8; -
#,\$&;, J"79,\$&;, 7'J8,\$&;, \$/4,\$&,&'8;#,\$&; , 1),+'#;)/3+'&"] &+,)-
>'\$9,J, .,&'#A"/8/ 8">#,\$&");

-+#"4/#" ("=K, +8"]#" #/ \$.,)&"+#1_ 1\$. 'e#,\$&; " ="\$A"-
.8"#1 , \$.,&+'&\$&+" 9+/8"X"9/A");

-4Ke8#" (1),+'#;)/3+'&"] ,.)/&"+#,J, 4Ke8#"] ; \$/4, -
\$&,&'8;#,\$&; , \$9,,\$&; .),&'9/#"] 4K\$8"&'8;#KU .),A'\$\$,+ , 8,J"> -
#,\$&; +8"]#" #/ \$.,)&"+#1_ 1\$. 'e#,\$&;);

7) ="/J#,\$&'9/)/3+'&"] \$.,,\$7#,\$&'@ (,7^" , \$. 'A"/8;#K' ,
,=/'##,\$&;);

+)= "/J#,\$&'9/ &'4.)/4#&/ (&. #')+#,@ "\$&'4K, .\$"U,8, -
J">'\$9/] U/)/9&)"\$&'9/ , .),]+8#"] &'4.)/4#&/ + .,+'='#"
" ,7^#");

J) = "/J#,\$&"9/ [4,A",#/8;#, -+,8'+, @ \$X')K :
· \$/4,,A'#9/ 9/9 9,4.,#'#& \$/4,\$,3#/#"] ;
· +,8] " +,8'+K' #/)1e'#"] , 1),+#;)/3+"&"] , A'8'1\$&)'48'# -
#,\$&;, "#A"/&"+#,\$&; ,)'e"&8;#,\$&; , \$/4,,78/=/#" , #/8">" +,-
8'+KU.)"+K>'9 ;
· #/8">" &)'+,?#,\$&" , \$&)/U,+;
· ='.)'\$\$"+#,\$&; , [4,A",#/8;#/])/\$.,8,?'##,\$&; "8" 3/-
49#1&,\$&;
=) = "/J#,\$&"9/ \$.,\$,7#,\$&" 9 ,7^#" _ " 4?'8">#,\$&#K4 ,&-
#,'e'#"]4 : .,&)'7#,\$&; + ,7^#" , ,7^"&8;#,\$&; , U/)/9&)' ,7^' -
#"] (=,4"#"),+/#" , .,=>"##" , 8"=)'\$&+, , 9,#X,)4"34 , [4./&"] ,
9,#X8"9&#,\$&); ,7^#" +9,88'9&"+' , ,7^#" +\$4;' ;
') = "/J#,\$&"9/ 1),+#;)/3+"&"] \$.,)&"+#, @ =]'&8;#,\$&" (.)' -
#,\$"4,\$& #/J)13,9); 4,&"+/A"] ; ,&#,'e'#" 9 #/J)139/4 ; \$.,)&"+#K'
=,\$&"?'#"] ; #/8">" &)'+,?#,\$&" ;
?) #/.)/+8'##,\$&; 8">#,\$&" (=,4"#")1_ ^" 4,&" +K " A'8" ='-
]&8;#,\$&") , &". #/.)/+8'##,\$&" (,7^'\$&+'##/] , 8">#/] , ='8,+/]);
"#&)'\$K (.)',78/=/_ ^" "#&)'\$K , "U J817"#/ , e),&/ , 1\$&, @>'
+,\$&;, \$&.'#; /9&"+#,\$&; .),X'\$\$',#/8;#K' " 8">#,\$&#K' "#&)' -
\$K); 4'>&K " ='/8K (\$&.'#; "U ,7,7^'##,\$&" " ='@\$&+'##,\$&);
") \$/4,\$,3#/#" (p-9,#A'.A"] ; \$/4,,A'#9/ : 1),+#; , /=9+&/&-
#,\$&;, 1\$&, @>" +,\$&;)"#&/A"] , ="XX')#A"),+9/).
4.a7^" +K+,=K ., . \$"U,8,J">'\$9,41 " . \$"U,X"3",8,J">' -
\$9,41 \$&/&1\$\$.)&\$4#,+ .

2.3.1HdBHOgKCZBqHJ\MO\ZBCAChOMZB\BZ\]COC`\\
\ bZ\]Ce\|COC`\\

F #/\$&.]^" +)'4] +\$' 7,8;e" 3#/>'#" .)'=/'&\$] \$.A"/8;#,@
.\$"U,8,J">'\$9,@ " . \$"U,X"3",8,J">'\$9,@ .,=J,&,+9' \$.,)&\$4#,+ ,
,\$,7'##, + \$.,)&' +K\$,9"U =,\$&"?'#"@. F \$+]3" \$ [&"4 /9&1/8;#K4
\$&/#,"&\$] +#'=)'#" + .,+ \$'=#'+#1_ .)/9&"91 \$.,)&"+#KU . \$"U, -
8,J,+ #,+KU \$,+)'4'##KU 4,7"8;#KU \$)'=\$&+ /#8"3/ , 9,#&),8]
" 9,))'9A"" . \$"U,8,J">'\$9,J, " . \$"U,X"3",8,J">'\$9,J, \$,\$&.]#"]
\$.,)&\$4#/ , .,3+,8]_ ^"U ,7\$.'>'&; .,\$&.]##,' \$.,)+,?'=#"
" . \$"U,8,J">'\$91_ .,==')?91 #/)/38">#KU [&/./U \$.,)&"+#, @ ?"3-
#" \$.,)&\$4#/ .
B,4.;_&)'#/] . \$"U,="/J#,\$&"9/ - [&, . \$"U,8,J">'\$9,'
&'\$&"),+/#" \$)'=\$&+/4" 9,4.;_&)'#,@ &'U#"9". L \$"U,8,J">'\$9/]

.,=J,&,+9/ .,=)/3='8]&\$] #/ . \$"U,8,J" _ 8">#,\$&" " . \$"U,8,J" _
"#&'88'9&/, .,[&,41 .)" .,\$&/#,+9' 3/=/>" ., .),+='#" _
9,4.;_&')#KU . \$"U,8,J">'\$9"U "\$\$8'=,+/#"@ #',7U,="4, >'&9,
,)'='8"&,\$] \$ &'4" . \$"U">'\$9"4" 9/>'\$&+/4" " "#&'88'9&1/8;#K4"
\$.,,\$7#,\$&]4" , 9,&,)K' .,)='8]_& J,&,+ #,\$&; 9 \$.,)&"+ #,@
=']&'8;#,\$&" , " #/=?'#,\$&; .

R)1J,@.),78'4,@]+8]&\$] X,)4/8"3/A"] .,81>/4KU =/##KU,
"U 9,4.;_&')#/] ,7)/7,&9/ . B,4.;_&')#/] . \$"U,="/J#,\$&"9/ 1?'
4#J, 8'&]+8]&\$] ,78/\$&;_ .) "4'#'#"] "#X,)4/A",##KU
&'U#8,J"@ N/"7,8")/(\$.,,\$&)/#K4" =8] &'\$&"),+/#"]
\$.,)&\$4#,+ 7K8" \$8'=1_ ^" .,)J)/44K :

- e'\$&#/=A/&'X/9&,)#K@ .,) \$#"9 B[&&'88/ (16PF);
- +,\$;4"A+'&#K@&'\$&H_e)/ .

c.'A"/8"\$&/4" 9,4.8'9\$#KU #/1>#KUJ)1.. (BN<) ., J)'78' #/
7/@=)/9/U " 9/#,["\$.,8;31'&\$] "##,+/A",##/] &'U#8,J"]
.\$"U,X"3",8,J">'\$9,J, &'\$&"),+/#"] \$ /+&=,914'##"),+/#"4
" 9,#&),8'4 X"3",8,J">'\$9"U " . \$"U,4,&,)#KU .,9/3/&'8'@ .

B +/?# '@e"4 . \$"U,8,J">'\$9"4 U)/9&)"\$&"9/4 \$.,)&\$4#/
,&#,\$]&\$] 'J, 8">#,\$&#K' ,,\$7'##,\$&" : &'4.)/4'##& , \$98,##,\$&;
9)"\$91, \$.,&#e'#" 4,&"+/A" 9 =,\$&"?'#_ 1\$. 'U/ " "37'J/#"
#1=/> , ?"3#'\$&, @9,\$&; " \$&)'\$\$,1\$&, @>"+,\$&; 4'8">#,\$&#K' ,&-
#e'#"] \$./)&#')/4" ., 9,4/#=' " &)'#),4 , ?"3'##K@ \$&'8;,
#/8">" &'U"8" "#KU/9A'&1/A"@U)/9&)/ "8" .,)]+8'#"@ . \$"U, -
./&,8,J">'\$9,@ "\$4.&,4/&"9" .

B +/?#K4 . \$"U,X"3",8,J">'\$9"4 " 9,J#"&"+#K4 U)/9&)"\$&" -
9/4 \$.,)&\$4#/, ,&)/?/_ ^"4 'J, .,&'#A"/8;#K' +,34,?'#,\$&"
" &'91^" \$,\$&,#" , ,&#,\$]&\$] ./)/4&)K '\$#\$,4,&,)#KU)/9A"@,
&, >#,\$&;)/J"),+/#"] , 1)/+ #,+e'##,\$&; .,)A'\$\$,+ +,371?'=#"]
" &,)4,?'#"] . i\$\$8'=1'&\$] \$.,,\$7#,\$&; 9 ,A'#9' .,) \$&)/#\$&+'##, -
+)4'##KU ,&#e'#"@ 4'?=1 ,7!'9&/4" , \$&/&">'\$9/] " ="#/4">'\$9/
+K#,\$8"+,\$&;, &. (\$"8/) #)+ #,@ "\$\$&'4K, X1#9A",#/8;#,' \$,\$&,#"
+'J'&/&"+ #,@ #'+ #,@ "\$\$&'4K (FNc) " A'&)/8;#,@ #'+ #,@ "\$\$&'4K
(PNc). aA'#"+/'&\$] X1#9A",#/8;#,' \$,\$&,#" 3)"&'8;#J, /..)/&/ ,
+,34,?'#,\$&; +K.,8#'#"] &, >#KU.),\$&)/#\$&+'##KU ='@ \$&+'@U)/9&' -
)"\$&"9" "#="+"=1/8;#J, .,)X"8] X1#9A",#/8;#,@ /("\$44'&)" , ./ -
)/4&)K +#"4/#"] , ./4]&" ")]= =)1J"UU)/9&)"\$&"9 .

B/?=K@ \$.,)&\$4# U)/9&)"31'&\$] \$+,"4 "#="+"=1/8;#K4 \$, -
>'&/#"4 [&"U U)/9&)"\$&"9 , +/?#,\$&; " 3#/'>"4,\$&; 9,&,)KU .,) ' -
='8]&\$] +3/+"\$4,\$&" ,&'J, \$. 'A"/8"3/A" .

c.,)&\$4# , ,&#,\$]^@\$] 9 \$.,)&1 +K\$e"U =,\$&"?'#@,]+8]_ -
^"@]\$] «e&1>#K4» &,+/),4 , &)'71'& #' 1\$)'=#'##,J, , / "#="+"=1/8; -
,J, ..=U,=/ , ..,3+,8]_^'J, , ,7\$.:'>'& #/'81>e" \$.,)&"+#K') -
318;&/&K N',7U,="4K' =8] [&,J, 9/>'\$&+/ 4,J1& 7K&; + ,.)='8'# -
#,@ \$&'.'#")/3+"&K "8" \$9,4.'#\$"),+/#K =)1J"4" , "4_^"4"\$] -
1 =/##,J, \$.,)&\$4#/ .

F,34,?#,\$& ; ,.)/&"+# ,J, 9,#&),8] ="#/4"9" ."\$U,8,J">' -
\$9"U" ."\$U,X"3",8,J">\$9"U U)/9&)"\$&"9 \$.,)&\$4# ,+ ,+8]_^"U -
#/ \$.,)&"+#1_ [XX'9&"+#,\$&; , .)"3+/#/ ..,3+,8"& ; &)'#)1 -
" ."\$U,8,J1 9,#&),8"),+/& ; "34'##"] + \$,\$& ,]#" "\$.,)&\$4#/ -
" \$+,'+)4'##, 9,))'9&"),+/& ; "U. R8] ."\$U,9,))'9A"" "\$.,8;31'& -
\$] e"),9"@ /)\$#/8 \$.A"/8;#KU 4'&,">'\$9"U ='@\$&+"@&)'#)/ ,
4'& ,+ ."\$U,9,))'9A"" , #/.)"4') 4'& ,= / X1#9A",#/8;# ,J, 7" , -
1.)/+8'#"] \$7",8,J">'\$9,@ ,7)/&# ,@ \$+]3;_ (:ac) .

R8])'e'#"] 19/3/##KU3/= /> #/'81>e"4 ,7)/3,4 ,#/ #/e +3J8]=
.,=U,="& 4,7"8;#K@ 4# ,J,X1#9A",#/8;#K@ 9,4.8'9\$,7!'9&"+# ,J,
.\$"U,8,J">'\$9,J, /#/8"3/ " &'\$&"),+/#"] X")4K «N'@),\$,X&» .

B,4.8'9\$,7\$.:'>"+/'& #,+K@1),+/#; ."\$U,8,J">'\$9,@ " ."\$U, -
X"3",8,J">'\$9,@ ="/J#,\$&"9" 3/ \$>'& ,)"J"#/8;# ,@ "##,+/A",##,@
&'U# ,8,J"" , +98_>/_^@ /+& ,=,914'##&"),+/#" .),A'\$\$/ &'\$&"),+/-
#"] " .9& ,.,8"J)/X_ - \$"#U),##K@/#/8"3 4,&,"9")19" "\$.K&1' -
4,J, .)" +K.,8#'#"" ='@\$&+"@ \$'#\$,)# ,4 4,#'&,) ' -.8/#e'&' (&,>
#K@ "34')&'8;#K@ 4,#'&,) #/ 7/3' [8'9&),4/J#&# ,J,)'3,##/ \$/)
")J'(\$&)"1'4KU ."\$U,X"3",8,J">'\$9"U ..,9/3/&'8"@ . L)"4'##"
\$'#\$,)#KU 4,#'&,) + -.8/#e'& ,+ ..,3+,8]'& 9,#&),8"),+/& ; & ,#91_ -
4,&,) "91)19" (8/&'##&#K' .)" ,=K ,&+'& ,+ ,="#/4"9/ =/+8'#"] #/ .' -
) , , \$9,) , \$&")"\$,+/#"] " .) .) + .),A'\$\$' +K.,8#'#"] 3/=/#"] , U)/9& -
)"31_ ^1_ 1),+/#; ,.&"4/8;#,\$&" +K.,8#'#"] &'\$&/ \$ 1>'& ,4 9,J# -
&" +# ,-.), \$&)/#\$&+### ,@ 9,,) ="/A"" 3/ \$>'& \$.,,\$&+/8'#"])'/8;# ,@
&)'9&,"" .,"\$9/ \$"='8;# ,@ .

i\$, ,8;31'4/] #/4" &'U# ,8,J"] ,&8">/'&\$] ,& ,7^.)"#]& ,J,
.,=U,=/ &'4 , >& ,.,3+,8]'& #/.,8#'#& ; #,+K4 \$,=')?/#"4 +\$j 4# , -
J,,7)/3"" \$1^\$&+1_^"U " 1?' e"),9, .)"4'#]'4KU &'\$& ,+ .1&4 -
+98_>'#"] +#"U = ,.,8#'#&8;# ,J, .),X"8] \$4K\$8,+ ,@[4,A",#/8; -
,@ 3#/>"4,\$&" (cgl) . R/##/] 4'& ,="9/ ..,3+,8]'& ,7!'9&"+# , 1>" -
&K+/& ; .)"3+,8;#K' " #'.),"3+,8;#K' [4,A",#/8;#K')'/9A"" "\$ -
.K&1'4,J, + .)" +]39' 9 &".,+K4 e9/8/4 " \$4K\$8,+K4 98/\$&')/4 ,
"\$.,8;31'4K4 + \$&/#=#)/&#KU &'\$&/U F ,A'#9' "#="+"=1/8;# ,@
\$4K\$8,+ ,@ [4,A",#/8;# ,@ 3#/>"4,\$&" #/)] =1 \$."\$U,4,&,)#K4"

.,9/3/&'8]4" "\$.,8;31'&\$] /#/8"3 X"3",8,J">'\$9"U "\$J#8,+ , U-
)9&)"31_ ^"U "34'#'#" \$)'=>#,@ =]'&'8;#,\$&" (gB<), &,#1\$/
\$,\$1=,+ (L<), ./)/4&),+ '+J'&/&"+#,@ #')+##,@ "\$&'4K (F5c)
" A'#&)/8;#,@ #')+##,@ "\$&'4K (gg<).

F #/\$&,) ^"@ 4,4'#& ="#/4"># ,)/\$e")]'4/] 7"78",&'9/ &'\$&,+
9,4.8'9\$/ «N'@),\$,X&» +98_>/'& ,9,8, 100)/38">#KU /=/.&"),+/# -
#KU.,= &'U#8,J" _ /+&=,914'#&"),+/#"] " .9&.,8"J)/X"" &'\$&,+
g&, 4#J,X/9&,)#K' 8">#,\$&#K' ,),,\$#"9" , ,),,\$#"9" 4?'8">#,\$& -
#KU,&#e#"@ , 4,&"+/A",##KU ,\$,7'##,\$&'@ , ."\$U">'\$9"U \$,\$&,)#"@ ,
\$/4.,&#e#"] , &'4.)/4'#&/ , \$.,\$,7#,\$&'@ " A'##,\$&'@ ."\$U,X" -
3",8,J">'\$9" , 9,J#"&"+#K' " .),9&"+#K' &'\$&K F 9,4.8'9\$' ,7\$ -
. '>+'&\$] +,34,?#,\$&; ."\$U,8,J1 \$/4,41 \$,4,^;_ \$.A"/8;#J,
)'=9&,) / \$A'#/)""+ /=/.&"),+/&; #',7U,="4K' '41 &'\$&K"8" \$,3=;/&;
#,+K' &'\$&K., \$+, "4 ,)"J"#8;#K4 /+&,)9"4 4'&="9/4 .

L)"41^'\$&+,4 7'3714/?#,@ &'U#8,J"" , "\$.,8;31'4,@ + 9,4 -
.8'9\$' «N'@),\$,X&»,]+8]'&\$] &., >&, #/ \$1^'\$&+###, [9,#,4"& +)'4]
.\$"U,8,J/ .)" .,=J,&,+9' 9 .),+'=#" _ &'\$&"),+/#"] , / &/9?' +)'4]
=8] .,81>'#"])'318;&/&,+ &'\$&"),+/#"] " \$,U)/##"] + 7/3' =/##KU
(,&\$1&\$&+1'&'7U,="4,\$&; \$9/#"),+/#"] ")/\$.,3#/+/#"] 714/?#KU
78/#9,+). '&="9/ U),e/ &'4, >&, X,)4K =8] &'\$&"),+/#"] (78/#9")
" =)1J,@\$&'418;#K@4/&')"/8 U)/#]&\$] + 7"78",&'9' &'\$&,+ " .)'=| -
]+8]_&\$] #/ \$'#\$,)#4 4,#'&,) -8/#e'&' , / ,&+'&K "\$.K&1'4,J,
" 'J, X"3",8,J">'\$9" " 4,&,)#K')/9A"" X"9\$")1_&\$] +9,4.;_&)'
" .,=+)J/_&\$] 4/&'4/&'>'\$9,@ ,7)/7,&'9' . 5'318;&/&K &'\$&"),+/#"]
)=\$&'+8]_&\$] ."\$U,8,J1 =8] /#/8"3/ + .)" +K>#,@ X,)4' 78/#9/
" =.,8#]_&\$] =.,8#"&'8;#,@ ="/J#,\$&'>'\$9,@ "#X,)4/A"@ - .), -
X"8]4" \$4K\$8,+,@[4,A",#8;#,@ 3#/'>'4,\$&" .

L)" ,7)/7,&'9' X"3",8,J">'\$9"U " ."\$U,4,&,)#KU =/##KU "\$-
.,8;31_&\$] \$.A"/8;#K' 4/&'4/&'>'\$9" 4'&=K #,)4"),+9" , \$#" -
?/_ ^" +8"]#" "#="+"=1/8;#KU ."\$U,="#/4">'\$9"U ,\$,7'##,\$&'@
(&'4.)/4'#&/) " X"3",8,J">'\$9"U U)/9&)"\$&'9 , ,&)/?/_ ^"U "\$-
U,=#,' X,#,+, '\$,\$&,)#" "\$.K&1'4KU .

F >/&#,\$&," "\$.,8;31'&\$] Z-#,)4"),+9/ .9&.,8"J)/X">'\$9"U
.,9/3/&'8'@ \$.)"+'=#"4 "U 9 7'3)/34')#K4 +'8">"/4 " .,\$8'=1 -
_ ^"4 /#/8"3,4 + .)" +]39' 9 [&./4 +K.,8#]'4KU \$A'#/)""+ . L,81 -
>'##K' 3#/'>'#"] 9,))'8")1_& \$ "#="+"=1/8;#,@ 3#/'>'4,\$&;_
+.)]4,4 (\$J8/\$,+###,4) "8" ,7)/ (.)" \$178">#,\$&#,@)/\$\$, -
J8/\$,+###,\$&" , +#1&)'###'4 9,#X8"9&'),8'+KU 4,&"+/A"@ #/.)/+ -
8#"]U .f'4 7,8;e' #,4"#8;#/] Z+'8">"/ , &'4 7,8;e" 3#/'>'#" "

.,3"&"+#,J, "8" #'J/&"+#,J, \$4K\$8/.)"=j& [&,41 \$4K\$8,+,41 98/-
\$&')1 "\$.K&1'4K@ ,&#,\$"&'8;#, =)1J"U &'\$&,+KU&'4 + 9,#9)'&#,4
"\$8'=",+/#"" .f'4 7,8")/\$\$,J8/\$,+/#K)'/9A"" ..)/3#K4 4,=/8; -
#,\$&]4 \$4K\$8,+,J, 98/\$&')/ (. = 4,=/8;#,\$&]4" + =/##,4 \$81>/'
.,#4/_&\$] X"3",8,J">'\$9")'/9A"" FNc " PNc ,.\$"U,4,&,)#K'
)'/9A"") ., 3#/91 " ., #,4"#/81 , &'4 7,8" #'.,)'='8"+e"\$] , "8"
/47"+/8'#&#,' ,&#,e'#"" 1 "\$.K&1'4,J, 9 &'4' &'\$&"),+/#"] .

F,34,?#,\$&; \$)/+##"])'318;&/&,+ .),+='##KU &'\$&,+" \$, &-
+&'\$&+1_ ^"U.),X"8'@ \$ \$,U)/###, @ 7/3, @ =/##KU .,3+,8]'& ,A' -
#"&; + ="#/4"9' "34'##" \$,\$&,#"] \$.,)&\$4'#/ , \$+]3/##,J,
\$&)'#"),+,>#K4 .),A'\$\$,4 , .)'=\$&/&,+K4 \$&)'\$,4 , 8">#,\$&#K4"
X/9&)/4" , \$,\$&,#"4 3=,)+;] "8" .),+,"4K4" 9,))'9A",##K4"
"8")/7"8"&/A",##K4" 4',.)]"&"]4" .

N/)" \$1#9' 1 .,9/3/#K)'318;&/&K &'\$&"),+/#"] /+&,\$9"4 &' -
\$&,4),8'+, @ \$/4,"=#&"X"9/A"" , ,&)/?/_ ^" .,3"&"+#K' "34'#" -
#"] \$,\$&,#"] .,\$8' 9,))'9&")1_ ^"U 4',.)]"&"@ .

5"\$1#,9 1 -L),&,9,8 . \$"U,8,J">'\$9,J, /#/8"3/ " &'\$&"),+/#"]

F \$&),9/U .),X"8] «N'@),,\$,X&» ,&)/?'#K #'4'#,+/#"] e9/8 ;
J,)"3,#&/8;#K' \$&,87"9" ,&)/?/_& +K)/?'##,\$&; , #/.)/+8'##,\$&;
")/37), \$ #,4"),+/##KU ."9&,.,8"J)/X">'\$9"U .,9/3/&'8'@ .,
/#/8"3")1'4K4 e9/8/4 &'\$&/ ,&#,\$"&'8;#, #18'+, @ +)'&'9/8;# , @
,\$" , \$, &+&'\$&+1_ ^"@ X,#,+,41 \$,\$&,#" _ . c.)/+/ -)'318;&/&K 1-
J, "\$8'=",+/#"] , \$8'+/ -)'318;&/&K "\$8'=",+/#"] .,\$8' ."U,9,) -
)'9A"" . F A#&)')" \$1#9/ #/)/3#,\$&#,4 .),X"8' +"#K .,3"&"+#K'
"34'##"] - .,+Ke'#"" 3#/>'#"@ ., e9/8/4 «,] #'3/+"\$4,\$&; » ,
«,] /9&"+#,\$&;», «,' #/\$&),'#" » " \$#"?'#" ., e9/8/4 «,] ,
,7"=/ » , «,' 7'\$8" » , «,] [4,A"] » . <)1.."),+9/ \$4K\$8,+KU
98/\$&'),+ " "U)/3#,#/.)/+8'##K' &'#=#A"" .,=>)'9"+/_& \$,.)] -
'##K@ U)/9&)' "34'##"@ .

S'\$&"),+/#"" "\$.,8;31'&\$] =8] ,A'#9" X"3",8,J">'\$9,@ A#K
=]'&'8;#,\$&" .)" X"3">'\$9,@ #/J)139' (.)" ,A'#9' \$&/&">'\$9,@

" ="/4">'\$9,@ 4Ke'>#,@ +K#,\$8"+,\$&") " 9,J#"&"+#,@ #/J)139'
(.) +K.,8##"" ."\$U,8,J">'\$9"U " ."\$U,X"3",8,J">'\$9"U &'\$&,+).

a\$,71_ 3#/>"4,\$&;, #/ #/e +3J8]= "4'_& .)'=8/J/'4K' +,3-
4,?#,\$&" &'U#,8,J"" /+&=,914'#&"),+/#"] " ."9&,,8"J)/X"" ,
.,3+,8]_^"")J"\$&"),+/&; 9/9 ."\$U,4,&)#1_ =]'&'8;#,\$&; , &/9
" ."\$U,[4,A",#/8;#K')/'9A"" "\$.K&1'4,J, .)" +K.,8##"" 3/=-/
#"@.),'9&"+#KU &'\$&,+

L"\$U,8,J .,81>'&)/#" #'=\$&1.#1_ +,34,?#,\$&; +"31/8;#,-
J, /#/8"3/ =8]='&'8;#J, .),\$4,&)/ +'\$U\$,\$&+/8]_^"U .),A'\$\$/ &'-
\$&"),+/#"] , \$"#U),##,)/3+)'#1&KU +, +)'4'#" , 9/9 3/)'J"\$&"), -
+/#KUX"3",8,J">'\$9"U "\$J#/8,+ ++"=' J)/X"9,+ " &)'#=#,+ .)"+"] -
3/##KU9 4,4'#&/4 .)'=]'8'#"] 3/=#" @&'\$&,+

i\$.,8;31'&\$] &/9?' " 4'&= \$,3=#"] "\$.K&1'4K4 J)/X">'\$9,J,
,7)/3/ +,&+&#/ 3/=#" &'\$&/. F"31/8;#K@/#/8"3 .,3+,8]'& ."\$U,8,J1
,A'#"&; ,\$,7'##,\$&" "\$.K&1'4,J, , \$+]'3/##K', #/.)"4) , \$9,#-
X8"9&#K4" '\$"&1/A"]4" , \$,4#'#"]4" " .,"\$9/4" "U)'e'#"] , / &/9?'
,)/#/8"3"),+/&; ."\$U,8,J">'\$9"" " ."\$U,X"3",8,J">'\$9"" 4'U/#"34K
,)'#]&"])'e'#"] "\$.K&1'4K4 " \$,.,\$&/"&;)'318;&/&K &/9,J, \$171-
'9&"+#J, /#/8"3/ \$,71'9&"+#K4 .),X"8'4 \$&/&1\$\$.)&\$4'#/ .

L)" +K.,8##"" .),'9&"+#KU)" \$1#,>#KU &'\$&,+ &'\$&")1'-
4K4 4,?'& "\$.,8;3,+/&;\$] A+&,+/] ./'8"&)/ =8] +K7,)/ A+&/
X)/J4'#&,+)" \$1#9/ , / ."\$U,8,J .,81>'& =,.,8#"&'8;#1_ +,34,? -
#,\$&; /#/8"3/ A+&,+KU.)'=.,>&'#" @ "\$.K&1'4,J, .)" +K.,8#' -
#" "4)/38">#KU 3/=#" @.

F/?#K4 [8'4'#&,4 &'U#,8,J"" «N'@),\$,X&»]+8]'&\$] 9,#&),8;
X"3",8,J">'\$9"U .,9/3/&'8'@ , , \$1^'\$&+8]'4K@ + .),A'\$\$/ +K.,8#' -
#"] &'\$&,+ >&, .,3+,8]'& ,A'#"&; "34'##"] ., \$)/+##" _ "\$U,=-
#K4 \$,\$&,#"4 , / &/9?' \$9,),\$&; +,\$\$&/#,+8'#"] [&"U .,9/3/&'8'@
.,\$8' 3/+)e'#"] &'\$&/.

c.'A"/8"\$&/4" BN< "\$.,8;31'&\$] &/9?' /+&,4/&"3"),+/##/]
"\$&'4/ \$9)"##"J -="/J#,\$&"9" ."\$U,X"3">'\$9,J, .,&'#A"/8/
\$.,&\$4'#+ , 9,&,) /] .,3+,8]'& , \$1^'\$&+8]'&; 9/9 "#="+"=1/8;#1_
[9\$.)'\$\$ -="/J#,\$&"91, &/9 ")/#?"),+/#" \$.,)&\$4'#+ + #1&")
J)1..K . i\$\$8'=#,+/#"] .),+,&=]'&\$] 9/9 «#/ X,#' » &)'#"),+9 , &/9
" «.')'= \$,)'#+,+/#"4" ».

c,.,\$&/+8'#" "34'##" @ ./)/4'&),+ ."\$U,X"3">'\$9,J, .,&'# -
A"/8/ \$.,)&\$4'#+ + &'>'#" 4/9),A"98/ .,=J,&,9" .,3+,8"8, +K-
='8"&;)/3#K' J)1..K "\$.K&1'4KU \$ #/'7,8" +K)/?'##K4" ."\$U, -
X"3",8,J">'\$9"4" ,&98,##"4" .

N/ , \$#, +/#" [&"U "\$\$8'=, +/#" @)/3)/7, &/# / =/. &/A", ##/]
e9/8/ . \$"U, X"3", 8, J">' \$9, J, ., &#A"/8/ 9/?=, J, \$.,) &\$4#/ . 5' -
318; &&, 4 + K>"\$8#" @ + =/##, 4 .), J)/44#, 4 , 7\$. '>'#"] +8]' &\$]
.,)'='8#" 1), + #] &)' +, ?#, \$&" (Stress Factor) 1 &'4 ./)/4 &)">' -
\$9, J, /#8"3/ "\$., 8; 31'4KU &'\$&, + KU.), J)/44 , ., 81>'##KU .)"
)/3#KU)'?"4/U "\$\$8'=, +/#"] .

R/##K @4' &, = =/J#, \$&"9" "\$., 8; 31' &\$] #/4" 9/9 .)" .), X'\$ -
\$, #/8; #, 4 , &7,) + \$, \$&/+ #/A", #/8; #, @ 9, 4/#=K , &/9 " =8] \$9)" -
#"#J, +, @ , A'#9" \$, \$&,]#"] \$.,) &\$4#/ .)' = +K., 8#"#"4 .,)' = ' -
8'##, @ &)'#), +, >#, @ 3/= />" "8" + .)' = \$&/) &, +, 4)'?"4' (&/78"A/
1). c144/ 7/88, + #"?' 40 \$+ = '&'8; \$&+1' &, 7 1\$&, @>" +, 4. \$"U, 8, J" -
>' \$9, 4 \$, \$&,]#"] \$.,) &\$4#/ , + K\$, 9, @ J, &, + #, \$&" 9 &)'#), +, >#K4
" \$,)' + #, + /&'8; #K4 #/J) 139/4; .)" \$144' 7/88, + , & 41 =, 60
\$,.) &\$4# #1? = /&\$] + . \$"U, 8, J">' \$9, @ ., ==)'?9' ; '\$8" \$.,) &\$4#
#/7") /& \$1441 7/88, + , & 61 =, 80, , # #1? = /&\$] + . \$"U, 9,) '9A"
" . \$"U, 8, J">' \$9, @ ., 4, ^" .

S/78"A/ 1 - a.)='8'#" 1), + #] #'+), &"3/A"" " . \$"U, ./&"3/A""

L)'=8,?'#"]	L, >&" #"9, J=/	i#, J=/	f/\$& ,	L, >&" +\$'J=/
1. p "\$.K&K+/_ 1=, +8'&+,)'#"]	1	2	3	4
2. p 7K\$&), 1\$&/_	1	2	3	4
3. p 8'J9, 4, J1 3/.8/9/&;	1	2	3	4
4. p U, &'8 7K 7K&; &/9"4 ?' \$>/ \$&8"+K4 9/9 " =)1J"	1	2	3	4
5. :K+/'& , >&,] .), "J)K+/_ "3-3/ &, J, , >&, #' =, \$&/&, >#, 7K\$&), .)"#"4/_)'e#"]	1	2	3	4
6. p >1+\$&+1 \$7] 7, =)K4	1	2	3	4
7. p \$., 9, # , U8/= #, 9), + # " \$, 7)/#	1	2	3	4
8. a?" = /#" &)1= #, \$&'@, >'#; &)' +, ?' & 4#]	1	2	3	4
9. p \$8"e9, 4 .)'?" +/_ "3-3/ .1\$&]9, +	1	2	3	4
10. p +, 8#' \$>/ \$&8"+	1	2	3	4
11. p .)"#"4/_ +\$' \$8"e9, 4 78"39, 9\$)=A1	1	2	3	4
12. #' #' U+ /&'&1+')'##, \$&" +\$7'	1	2	3	4
13. p >1+\$&+1 \$7] +7'3, ./ \$#, \$&"	1	2	3	4
14. p \$&/)_ \$; "37'J/&; 9)"&">' \$9"U \$" - &1/A" @' &)1= #, \$&'@	1	2	3	4
15. Q 4#] 7K+/'& U/#=)/	1	2	3	4

L)'=8,?'#"]	L,>&" #"9,J=/ 1	i#,J=/ 2	f/\$&, 3	L,>&" +\$'J=/ 4
16. p 7K+/_ =,+8'#	1	2	3	4
17. F\$]9" .1\$&]9" ,&+8'9/_& " +,8#1_&4'#]	1	2	3	4
18. p &/9 \$"8;#; .)'?"+_ \$+,")/3,>/ -),+/#"] , >&, .,&,4 #' 4,J1 , #"U 3/-7K&;	1	2	3	4
19. p 1)/+#,+e'##K@ >'8,+9	1	2	3	4
20. '#] ,U+/&K+'& \$"8;#;' >1+\$&+,7'\$-.,9,@\$&+/, 9,J=/] =14/_ , \$+,"U =' -8/U" 3/7,&U	1	2	3	4

QS*%)S

1. c.'A"/8"\$&/4" BN< ., J)'78' #/ 7/@=/)9/U " 9/#,[.)" ,A'#9' . \$"U,8,J">'\$9,J, " . \$"U,X"3",8,J">'\$9,J, \$&/&1\$/\$.,)&\$ -4'#/ "\$.,8;31_&\$])/38">#K' 4'&=#K)'e'#"] 3/=/> ., +K]+8'#" _.),78'4#KU .,+='#>'\$9"U 4,='8'@ +)/3#K' .)'",=K &)'#"),+,> -# ,J, .),A'\$\$/ .

2. L),+='##K' "\$\$8'=,+/#"] .,9/3/8" +,34,?#,\$&; +K]+8'#"] «.').1&/##KU » . \$"U,\$,A"/8;#KU \$+[3'@4'?=1 .)" +K>#K4"),8' -+K4" 4,='8]4" ,7\$8'=1'4KU \$, \$&)19&1),@U 3=,)+,;] " 7,8'3#" .

3. L\$"U,="/J#,\$&"9/ " . \$"U,9,))'9A"] . \$"U,8,J">'\$9,J, \$&/&1\$/\$.,)&\$4'#/ , 9/9 4'&=# 1.)/+8'#"] \$,\$&,#"4 \$.,)&\$4'#/ , - ,7^/] 3/=/>/ &)'#')\$9,J, \$,\$&/+/, \$. 'A"/8"\$&,+ BN<, +)/>/ " . \$"U, -8,J/ 9,4/#=K .

3. XR8,Y(\$8.;S8.U 1(.28\$* (,.

a\$#,#K4 "\$&,>#"9,4 .,81>'#"] =/##KU + X"3">'\$9,@ 918;&1)' " \$.,)&']+8]_&\$] A'8#/.)/+8###K' #/78_='#"] " /..)/&#K' "\$\$8'=,+/#"])/38">#KU .)/4'&),+ . N/"7,8;e"@ 1='8;#K@+'\$ =/#- #KU+X"3">'\$9,@ 918;&1)' " \$.,)&' \$,\$&/+8]'& X1#9A",#/8;#/] ="/ - J#,\$&"9/. L)" 3/#]&"]U X"3">'\$9,@ 918;&1),@" \$.,)&,4 -.) /9&">' - \$9" #/ +\$'U [&./U \$.,)&'"+#,@ .,=J,&, +9" , =+"J/&'8;#,@)'9)'/A"" " X"3">'\$9,@)'/7"8"&/A"" ,)/3)/7,&9' "#="+"=1/8;#KU .),J)/44 ")'9,4#=#/A"@ ., ,3=,)+"&'8;#;41 3/#]&"_ X"3">'\$9"4" 1.)/? - #'#"]4" >)'3+K>/@# , +/?# , 3#/&; X"3">'\$9,' \$,\$&,#'" (X"3">' - \$91_ .,=J,&, +8'##,\$&;)>'8,+9/ .

`"3">'\$9,' \$,\$&,#'" (.,=J,&, +8'##,\$&;) \$98/=K+/'&\$] "3 4# , - J"U .)/4'&),+ - \$,\$&,#'"] 9,\$&#,-4Ke'>#,@ "\$\$&'4K, \$')='># , - \$,\$1="\$&, @ =KU/&'8;#,@ , "\$\$&'4K ." ^+/'#'"] " +K='8'#"] , #)+ - #,@ [#=,9)"##,@ , "441##,@ "\$\$&'4.

`"3">'\$9,' \$,\$&,#'" (.,=J,&, +8'##,\$&;) >'8,+9/ .,)'='8]'& - \$] \$.,4,^;_ #/J)13,>#KU &'&,+ "8" X1#9A",#/8;#KU .),7 . N/J)1 - 3,>#K' &'&K "8" X1#9A",#/8;#K' [&, "\$\$8'=,+/#" \$,\$&,#'"] 9/- 9,@8"7, "\$\$&'4K ,)J/#"34/ .)" 9,#&),8;#;4 "\$.K&/#"] =/##,@ \$- \$&'4K \$&/#=#/)&#,@#/J)139,@ \$.,\$8'=1_ ^"4 /#/8"3,4)'318;&/&, + "34)'#" @ .

3.1.-EChG _OdCJHKa\ePKaJ\CKMOgKC`ZCZBCdK\d _G]MBHOgKQ\ZBHfG

1.=6%B+%/"(8+@C L]&'9)/&#,' "34)'#" mCH \$.,4,^;_ \$.),4'&)/ >)'3 15-\$'91#=#K' "#&')+/8K . aA'#9/ : -mCH 1+'8">"+/'&\$] -U,),e, ; -mCH #' "34'#]'&\$] ,& "34)'#"] 9 "34)'#" _ -1=,+8'&+,-)" &'8;#; , ; -mCH 14'#;e/'&\$] -#'1=,+8'&+,"&'8;#; , . 2.=6%B+8+(D" L,8,?'#" "\$=]. L,\$8' 9)/&9,+)'4'##,J, ,&=KU/ (3-5 4"#1&) "\$\$8'=1'4K@ ='8/'& J817,9"@ +=,U " +K=,U / 3/&'4 \$#,+/' +=,U (# 4/9\$"4/8;#K@) " 3/=')?"+/'& =KU/#'" . F)'4] 3/=')?9" =KU/#'"])' - J"\$&)"1'&\$] '\$91#=#,4'),4 .

aA'#9/ .),7K .), "3+,="&\$] ., \$8'=1_ ^"4 ./)/4'&)/4 :

F,3)/\$&, 8'&	1?>"#K	m'#"^"#K
c&/)e' 14	>50	>40
10-14	>35	>20
6-10	>20	>15

Q \$.,)&\$4'#,+ +)'4] 3/=')?9" =KU/#"] ,& 60 \$ =, #'\$9,8; - 9"U 4"#1&.

3.=6%B+U"(H-

F .,8,?'#"" \$"=] .,\$8' ,&=KU/ (3-5 4"#1&) "\$.K&1'4K@ +K- .,8#]'& #'\$9,8;9, J817,9"U=KU/&'8;#KU="+?'#@" (3-5)" #/ +K=-, - U' (#, #' 4/9\$"4/8;#;4) 3/=')?"+/'& =KU/#"" .

Q 3=,) +KU #'&)"#),+###KU 8"A +)'4] 3/=')?9" =KU/#"] \$,- \$&/+8]'& 25-30\$, 1 \$.,)&\$4'#,+ - 30-90\$.

L)" 3/7,8'+/#"]U \$)'='>#, -,\$,\$1="\$&,@\$"\$&'4K, ,)J/#,+ =KU/#"] ,/#'4"]U +)'4] 3/=')?9" =KU/#"] 14#;e/'&\$] .

3.2.-EChG _OdCJHKa\ ePKaJ\CKMOgKC`ZCZBCdK\d ZHE_HcKZCZP_ZBCZ\ZBHfG

1.=6%B+LWI"

Q "\$.K&1'4,J, , #/U,=]^J,\$] + .,8,?'#"" 8j?/ #/ \$. "#' + &'>#"" 5 4"# , ,.)='8]_& .18;\$., 15-\$'91#=#K4 "#&')+8/4 , 3/&'4 +&'>#"" 45\$ "\$.K&1'4K@ +K.,8#]'& 30.)"\$'=#@" .L,\$8' #/J)139" \$.,)&\$4'# 8,?'&\$] , " 1 #J, .,=\$>"&K+/_& .18;\$ 3/ .')+K' 15 \$, / .,&,4 3/ .,\$8'=#"" 15\$, \$.')+, @ 4"#1&K+,\$\$&/#+8#"] .

i#='9\$ 51X;' +K>"\$8]'&\$] ., X,)418' (1):

$$i\#='9\$ 51X;' = \frac{4r(5_1 + 5_2 + 5_3) - 200}{10}, \quad (1)$$

i#='9\$ 51X;' ,A'#"+/'&\$] +7/88/U:

4#;e' "8")/+#, 3 -, &8">#K@)'318;&/&;

,& 4=, 6 -U,)e"@)'318;&/&;

,& 7=, 9 -)\$)'=#"@)'318;&/&;

,& 10=, 14 -1=,+8'&+,) "&'8;#K@)'318;&/&;

7,8;e' "8")/+#, 15 -#"39"@)'318;&/&.

2.=6%B+X"8L(%*+

S)'U4,4'#&#/] .),7/ .)"4#]'&\$] =8] ,A'#9" /=./&A"" ,)J/ - #"#34/ \$.,)&\$4'#/ 9 \$9,)\$&#,@)/7,&' ")/7,&' #/ +K#,\$8"+,\$&;.

L)" .),+='#"' .),7K "\$.K&1'4K@ +K.,8#]'& .,\$8'=,+/&'8;#,
3 \$&1.'#" #/J)139":

1-] \$&1.'#; - 20.)"\$'=#"@ 3/ 30\$, (/34"#9/);

2-] \$&1.'#; (+K.,8#]'&\$] >)'3 3 4"# .,\$8' .')+,@) +98_>/'&
15-\$'91#=#K@7'J #/ 4'\$&' + 4/9"\$4/8;#;4 &'4.' ("4"&")1] \$9,-
),\$&#,@7'J);

3-] \$&1.'#; - >)'3 4 4"# "\$.K&1'4K@ +K.,8#]'& 3-4"#1&#K@
7'J #/ 4'\$&' , + &'4.' 180e/J,+ + 1 4"# ("4"&")1])/7,&1 #/ +K#,\$-
8"+,\$&);).

L,\$8' ,9,#>/#"] 9/?=,@ #/J)139" #/ .),&]'?#"' +\$'J, .)'",=/
,&=KU/)'J"\$&)"1'&\$] +,\$\$&/#,+8'#"' fcc " YR. L18;\$ \$>"&'&\$]
, 10-\$'91#=#K4 "#&')+8/4 . Q U),e, &)'#"),+/#K U \$.,)&\$4#,+
)'/9A"] .,\$8' 9/?=,J, [&/./ .),7K - #,)4,&,#">'\$9/] , / +)'4] +,\$-
\$&/#,+8'#"] .,\$8' .')+ ,J, [&/./ #' .)'+Ke/'& 3 4"#, .,\$8' +&,) ,
J, - 44"# , .,\$8' &)'&:'J, - 54"# .

3. Q"@%16D%"86-C

L),7/ .),+,"&\$] #/ +8,&)'#/?)' (+8,[)J,4'&)' . a.)'='8] -
'&\$] "\$U,=#,' /)&)"8;#,' =/+8'#"' " .18;\$ 3/ 60 \$. i\$.K&1'4K@
+K.,8#]'& +)/^#"' .'=8'@ \$, \$9,),\$&:_ 60 ,7/4"# + &'>'#"
5 4"# . L,\$8' +K.,8#]'#"] .),7K &/9?' .,)'='8]'&\$] /)&)"8;#,'
=/+8'#"' " .18;\$ 3/ 60 \$. aA'#9/ .),7K .),+,"&\$] ., 9,8">'\$&+'# -
#K4 " 9/>'\$&+'###K4 ./)/4'&)/4 .

Y%@-H"28*"((+C%Z"(\$+),+,"&\$] .1&'4)/\$>'&/ .,9/3/&'8] 9/-
>'\$&+/'/9A"' \$)'='># , -\$,\$1="\$&,@\$"\$&'4K #/ #/J)1391 (LB5) (2).

$$LB5 = \frac{5/2 - 5/1}{5_2 - 5_1}, \quad (2)$$

J=' 5/s - .18;\$, +,' =/+8'#"' =, #/J)139";

5/2 - .18;\$, +,' =/+8'#"' .,\$8' #/J)139";

5_s - .18;\$ =, #/J)139" 3/ 60\$;

5_2 - .18;\$.,\$8' #/J)139" 3/ 60\$.

N),4/8;#,' 3#/'>'#" =/##,J, .,9/3/&'8] 0,5-1,0.

Y+H"28*"((+C %Z"(\$+)'/9A"' .,=)/314'+/'& ,&#'\$#" #/78_=/ -
'4KU "34'#'#"@ 9 &,41 "8" "#,41 &".1)'/9A"@ . H_7K' ,&98,#'#"] ,&
#,)4,&,#">'\$9,J, &"./)'/9A"')/\$A'#"+/_&\$] 9/9 +8-4-H(S" .

;,%6%8%(-H"2\$-: 8-4)'/9A"' \$)'='># , -\$,\$1="\$&,@\$"\$&'4K #/
X"3">'\$91_ #/J)1391 U)/9&)'31'&\$] 1>/^#'"4 .18;\$/ #/ 30-50%,., -
+Ke'#'"4 4/9"\$4/8;#;J, /)&)"8;#;J, =/+8'#"] #/ 10-3544)&.\$&.

\$#"?#"4 4#"4/8;#J, /&)"8;#J, =/+8#"] #/ 4-1044)&. \$& F,\$\$&/#,"&'8;#K@ .)" ,= 2-34"#1&K.

L, #/78_=#"4 9 #,)4,&,">'\$9"4 4,J1& 7K&; ,&#'\$#K)' - /9A"" , U)/9&)"31_^^"\$] 1)'?#"4 fcc + ,&+'& #/ #/J)1391 " #' - 3#/>"&'8;#K4 \$#"?#"4 4/9\$"4/8;#J, (=, 10 44)&. \$&), 4#" - 4/8;#J, (=, 5 44)&. \$&) /&)"8;#J, =/+8#"] " , \$8'=,+/&'8;# , 14#;e#"4 .18;\$,+J, /&)"8;#J, =/+8#"] .R/##K' "34#"#"] =4,#\$&)"1_& +K\$,91_ \$&.'#; &)"#),+###,\$&" \$)= '># , - \$,\$1="\$&,@\$"\$&'4K " " /=.&/A"" 9 X"3">'\$9"4 #/J)139/4 .

U-4%8%(-H"2\$-: (+28"(-H"2\$-:) 8-4)'/9A"" U)/9&)"31'&\$] 3#/>"&'8;#K4 , #' /='9+/&#K4 #/J)139' 1>/^#"4 .18;\$/ . c"\$&,8" - >'\$9,' /&)"8;#,' =/+8#" 1+'8">+'&\$] 4/8, "8" ,&/'&\$] #"3 - 4'##K4 . R"/\$&,8">'\$9,' /&)"8;#,' =/+8#" .,+Ke/'&\$] "8" #' "34#]'&\$] . c8'=,+/&'8;# , .18;\$,+ ' =/+8#" .)" [&,4 14#;e/'& - \$]. S/9"4 ,7)/3,4 , 1+'8">'#" 4#"1&#J, ,7!4/ 9),+,,7)/^#"] .),"\$U,="& .)"41^'\$&+'##, 3/ \$>'& 1>/^#"] \$)= '>#KU \$,9)/^' - #"@ F,\$\$&/#,"&'8;#" >/\$&,&K\$)= '>#KU \$,9)/^'#" @ " /&)"8;#J, =/+8#"] .),"\$U,="& 4'=8'##, (=, 5-104"#1&). <".&,">'\$9"@ &.")'/9A"" #/78_='/&\$] .,\$8' 3/7,8'+/#"@ , .)" #'=\$&/&,>#,@ X"3">' - \$9,@/9&"+#,\$&," .)" NPR.

U-4"68%(-H"2\$-: 8-4)'/9A"" U)/9&)"31'&\$] 3#/>"&'8;#K4 1>/^#"4 fcc ,)'39"4 .,+Ke'#"4 4/9\$"4/8;#J, (=, 180- 20044)&. \$&) " 14)'##K4 .,+Ke'#"4 4#"4/8;#J, /&)"8;# - #J, =/+8#"] . F,\$\$&/#,"&'8;#K@ .)" ,= 3#/>"&'8;# , 1=8"#]'&\$] . F\$&)'&'&\$] .)" /&)"8;#KU J'.)'"]U , .)'&)"#),+###,\$&" , X"3">'\$9,4 .)'#/.)]?'#" .

[-28%(-H"2\$-: 8-4)'/9A"" U)/9&)"31'&\$] .,+Ke'#"4 4/9 - \$"4/8;#J, /&)"8;#J, =/+8#"] =, 160-18044)&. \$&, 3#/>"&'8;# - #K4 1+'8">'#"4 fcc (>50%). "#4/8;#,' /&)"8;#,' =/+8#" 3#/>"&'8;# , \$#"?/'&\$] " #')'=9, #' ,.)'=8]'&\$] (X'#,4'# «7'\$9, - #>#J, &,#/ »). F,\$\$&/#,"&'8;#K@ .)" ,= 1=8"#]'&\$] . N/78_='/&\$] .)" NPR, .)'1&,48'#" , ,,\$8' 3/7,8'+/#"@ .

5'/9A"] 2%28L4"(H+8S' 4%)\"'% ' +\$2-' +@l(%D%#68"6-+@t (%D%)+* @(-C U)/9&)"31'&\$] &'4, >&, #'.,\$)=\$&+'##, .,\$8' #/J)139" 4/9\$"4/8;#,' /&)"8;#,' =/+8#" #"? , >'4 #/ 2-@"8" 5-@4"#1&' +,\$\$&/#,"&'8;#"] . a=#,+)'4##, #/78_='/&\$] +K)/?'##,' 1+'8">'#" fcc . L,=,7#/])'/9A"] 19/3K+/'& #/ #'.,8#,A'##,\$& ;)'J18]&.)#KU 4'U/'#34,+ 9),+,,7)/^#"] " #/78_='/&\$] .,\$8'

"#X'9A",##KU 3/7,8'+/#" @ , .)" 1&,48'#"" , J".,9"#'3"" , #'=,\$&/ - &, >#, @&)'#"),+/##, \$&" .

4. Y%1WW-Z-"(8 *S(%2@-*%28(YQ "\$.,8;31'&\$] =8] ,A'#9" \$&'.#' &)'#"),+/##, \$&" \$')='>#, -,\$,\$1="\$&, @\$"\$&'4K " \$,\$&,#"] +,\$\$&/#,+8'#"] \$.,)&\$4#/ .,\$8' X"3">'\$9,@ #/J)139" " ..)'='8]& - \$] ., X,)418' (3):

$$BF = \frac{fcc \ r \ 10}{LR}, \quad (3)$$

J=' fcc ->/\$&, &/ \$')='>#KU \$,9)/^'#" @ ;
LR -.18;\$,+, ' =/+8'#"" , 44)&. \$&

Q+'8">'#" BF, \$+]3/##, ' \$ 14#;e#"4 LR,]+8]&\$] .,9/3/ - &'8'4 ='&)'#"),+/##, \$&" \$')='>#, -,\$,\$1="\$&, @\$"\$&'4K.

5. O46)"@("(-")-+28%@-H"2\$%D%-'(-'+@I(%D%,)+*@"(-C([() Q),+#; RR + , \$#,+ #,4 ..)'='8]&\$] \$&'.#;_ .),U,="4,\$&" .)'9/."88]),+ , >/\$&, &, @\$')='>#KU \$,9)/^'#" @ " \$&'.#;_ [8/\$&">- #,\$&" 9),+#,\$#KU \$,\$1=,+ . RR &'4 +Ke' , >'4 7,8;e' \$,.)&" +8' - #"" .)'9/."88]),+ , >'4 7,8;e' fcc " >'4 #'?' [8/\$&">'\$9,' \$,.) , - &" +8'#"" 9)1.#KU \$,\$1=,+ . F #,)4' 1 3=,) ,+ ,J, >'8,+9/ RR)/+ #, 60-8044)&. \$& L,\$8' #/J)13,9 ")/38"># ,J,),=/ +,3='@\$&+" @R #' 4#]&\$] "8" #'\$9,8;9, ., #'?/'&\$] (=, 10 44)&. \$&). 5'39,' \$#"?' - #"" 1),+ #] =/'&\$,8">'\$9,J, =/+8'#"] +, +)'4])/7,&K "8" , #/.)&" + , 'J, ..,+Ke'#"" " 4'=8'##K@ (7,8" 2 4"#) +,3+)/& 9 "\$U,=#K4 3#/- >'#"4]/\$A'#'+/'&\$] 9/9 #'78/J,.)]&#K@ "\$4.&,4 .

6. O46)"@("(-" 2-28%@-H"2\$%D%+\$2-' +@I(%D%)+*@"(-C([() cR - [&, +'\$; 3/./ \$ [#]J"" , 9,&,)K4 X/9&">'\$9" ,78/=/'& \$&)'1] 9),+ " +/# #,4 1>/\$&9' \$,\$1="\$&,J,)1\$8/. H/7"8;#,\$&; "\$&,- 8">'\$9,J, /)&)'8;# ,J, =/+8'#"] 3/+"\$& ,& \$,9)/&"&'8;# ,@ X1#9 A"" 4",9)/= / , "\$&8">'\$9,J, ,7l'4/ \$')=A/ , \$,\$&,#"] [8/\$&"># , - \$&" \$,\$1="\$&, @\$&'#9", J'4,="#/4">'\$9,J, 1=)/ " fcc . F #,)4' 1 3=,) ,+ ,J, >'8,+9/ cR 9,8'78'&\$] ,& 100 =, 120 44)&. \$& L)" #/J)139' cR 1+'8">"+/'&\$] #/ 20-8044)&. \$&, / .,\$8' " .)' - 9)/^'#"] +,3+)/^/'&\$] 9 "\$U,=#,41 3#/>'#" _ + &'>'#" 2-34"#1&. '=8'##, ' +,\$\$&/#,+8'#"" "\$U,=#KU 3#/>'#" @ cR \$+"='&'8;\$&+1'& , #'=,\$&/&, >#,\$&" \$')='>#, -,\$,\$1="\$&, @\$"\$&'4K.

L)" ,A'#9' "34'##" @ "\$&8">'\$9,J, =/+8'#"] ., = +8'#"]#4 #/J)139" \$,.,\$&/+8]_ & .,81>'##K' \$="+J" 4/9\$4/8;# ,J, =/+8'#"]

" >/&,&K\$')=>#KU \$,9)/^#" @ \$ [&"4" ?' .,9/3/&'8]4" + .,9,'
 (4)" (5):

$$cR = \frac{cR) - cR.}{cR.} r 100\%, \quad (4)$$

$$cR = \frac{fcc) - fcc.}{fcc.} r 100\%, \quad (5)$$

J=') - ./)/4'&) .)")/7,&' ;
 . - ./)/4'&) + .,9,' .

S/9,' \$,.,\$&/+8'#"" .,3+,8]'& ,U)/9&)"3,+/&; \$,\$&,#"" \$') -
 ='>#, -,\$,\$1="\$&,@'J18]A"" . F #,)4' ,#/ , \$1^'\$&+8]'&\$] 3/ \$>'&"3-
 4'##"@ =/+8'#"] (1>2),.)" \$')=>#,@ #'=\$&/&,>#,\$&")'J18]A"]
 "=& 3/ \$>'&1+'8">'#"] fcc (2>1).

7.=L@l2%*%+*@"(-" + #,)4' 1 3=,) +,J, >'8,+9/ \$,\$&/+8]'&
 ,9,8, 25-30%+'8">"#K 4"#"4/8;#J, =/+8'#"] . 'U/#,9/)=,"J)/ -
 X"] .,3+,8]'& .,)'='8"&; "\$&"##1_ +'8">"#1 LR,)/+#1_)/3#,\$&"
 4'?=1 7,9,+K4 " 4"#"4/8;#K4 =/+8'#""4 . L)" .,)'='8'#"" LR
 \$.,4,^;_ ./)/&/ 5"+/-5,>>" ,# ,9/3K+/'&\$] #'\$9,8;9, 3/+K-
 e'##K4 , &/99/9 + [&,4 \$81>' 'J, +'8">"#/ +K>"\$8]'&\$] +K>"&/#"4
 "3 4/9\$"4/8;#J, =/+8'#"] +'8">"#K 4"#"4/8;#J, (6):

$$LR = cR - RR, \quad (6)$$

8.]6")(")-(+'-H"2\$%")+*@"(-" ([[])]+8]'&\$] .,9/3/&'8'4 \$,-
 J8/\$,+/#,\$&")'J18]A"" \$')=>#J, +K7),\$/ " .)"X')">\$9,J, \$,-
 .,)&"+8'#"] . F 9,4.8'9\$' \$=)1J"4" ./)/4'&)/4" =/'& +,34,?#,\$&;
 .,)'='8"&; \$,\$&,#"" .)'9/."88])#J,)1\$8/. cRR .,)'='8]'&\$] .,
 &/U,,\$A"88,J)/44' . F &'U\$81>]/U, 9,J=/ .,)'='8'#"" YR , \$1^'\$&+8] -
 '&\$] ., N.c.B,)&9,+1 , cRR 4,?# ,)/\$\$>"&/&; ., X,)418/4 (7)" (8):

$$cRR = \frac{LR}{3} + RR, \quad (7)$$

$$cRR = RR + 0,42r LR, \quad (8)$$

F'8">"#/ cRR,)/\$\$>"&/##/] ., X,)418' (8), #'\$9,8;9, +Ke' .
 c)'=#"" 3#/>'#"] cRR 1 3=,) +KU 8"A \$,.,&+'&\$&+1_& 75-
 8544)&. \$&

9. _-(L8(S: %B\'' \$6%*(-(_O) - [&, 9,8">'\$&+, 9),+" ,.)'9/ -
 >"+/4,' \$')=A'4 3/ 4"#1&1. L, a \$1=]&, 4'U/#">'\$9,@ X1#9A"
 4",9/)=/ , 9,&,)] ,&)/?/'& \$,\$&,#"' "\$&'4K 9),+,,7)/^'#"] . F' -
 8">"#/ a 3/+"\$& ,& +,3)/\$&/, ..8/ , 4/\$\$K &'8/ , &'4.)/&1)K ,9)1 -
 ?/_^'J, +,3=1U/,"#&'#\$"+#,\$&" X"3">'\$9,@ #/J)139".

N,)4/ a =8] \$,\$&,#"] ..9,] "4"& =,+8;#, e"),9"@ ="/./ -
 3,# " \$1^\$&+'##, 3/+"\$& ,& 4'&,"=9" ..)'='8'#"] :

.)]4,@ 4'&,(9/&'&)"3/A"]) - 3,5-7,08;

4'&,(= <),8;4/#/ (/A'&"8'#,+K@) - 2,5-4,08;

4'&,(= 4'U/#,9/)=,"J)/X">'\$9"@ - 3,0-6,08.

N/"7,8" .),\$&,@ 4'&,(= ..)'='8'#"] a ,.,3+,8]_^"@ ,)"# -
 &"),+,>#, ..)'='8"&; 'J, +'8">"#1 , - ..)'='8'#"' a ., X,)418'
 c&/)/ (9):

$$ca = 90,97 + 0,54 LR - 0,57r RR - 0,61r F, \quad (9)$$

$$a = ca \text{ r fcc} ,$$

J=' ca - "\$\$&,8">'\$9"@,7l'4 9),+" , 48;

LR - .18;\$,+,' =/+8'#"' , 44)&. \$&;

RR - =/"\$&,8">'\$9,' =/+8'#"' , 44)&. \$&;

F - +,3)/\$& + J,=/U.

c>"&'&\$] , >&, a , ..)'='8'##K@ ., c&/))1 , ,&8">'&\$] #/
 +20%,& +'8">"#K a , #/@='##,J, /A'&"8'#,+K4 4'&,(=,4 .

i\$\$8'=,+/&'8" H"8;'&)/#=" P/#=) .)'=8,?"8" X,)4181)/\$ -
 >'&/ a , , \$#,+/#1_ #/ +K>"\$8'#"' &/9 #/3K+/4,J,)'=1A"),+/# -
 #,J, =/+8'#"] . R8] [&,J, \$#/>/8/ ..)'='8]_& cRR ., X,)418' (10):

$$cRR = cR + \frac{RR}{2}, \quad (10)$$

l/&'4 ., X,)418' (11)+K>"\$8]'&\$] +'8">"#/ 5YR:

$$5YR = \frac{LR \text{ r } 100}{cRR}, \quad (11)$$

a&\$_=/,

$$a = 5YR \text{ r fcc} .$$

10. = "6-W"6-H"2\$%" 2%46%8-*@("(-[=]) ,71\$8,+8"+/'& .,\$&, -]#\$&+, \$)'=#="#/4">'\$9,J, =/+8'#"] ("8" 'J, ,&98,##"] ,& #,) - 4K). 5/\$\$>"&K+/'&\$] ., X,)418/4 (12)" (13):

$$L_c = \frac{cRR r 1330r 60}{a}, \quad (12)$$

J=' cRR - \$)'=#="#/4">'\$9,' =/+8'#"' , 44)&. \$&;
1330 -9,[XX"A"#& =8] .)'+,=/ 44)&. \$& +="#K;
60 ->"\$8, \$'91#=#+4"#1&' .

$$L_c = 3r \frac{cRR}{ci}!, \quad (13)$$

J=' ci - \$)'=#>#K@ "#='9\$,)/+ #K@+ \$)'=#'4 2,2+0,38/4"# *4t.

L)'X')>'\$9,' \$,.)&"+8'#"' +K)/?/'&\$] 8"7, + 1\$8,+ #KU
'="#A/U , 8"7, +="#/U. c)'=#"' 3#/>'#"] Lc 9),+,&,91 \$,\$&/+8]_&
30-501\$8 '= . " ,&)/?/_&)/'9A" _ .)'9/."88])#J,)1\$8/, 3/+"\$]-
^1_ ,& ,7l'4/ A")918")1_ ^@ 9),+ "

L, "34'#'#" _ .,9/3/&'8@ YR (.)" .),+='#"')]=/ .),7 " +K-
>"\$8'#"] 9,[XX"A"#&, +) 4,?#, \$1="&; , X1#9A",#/8;#;4 \$,\$&,-
#"' ")'3')+ #KU +,34,?#,\$&]U ,)J/#"34/ .

11. Q"D"8+8-*(S: -("\$2 Y"6)% (Qa) ,&)/?/'& \$&'.'#; +8]"#"]
#/ \$)'=#>#, -\$,\$1="\$&1_ =]'&'8;#,\$&; .)/"\$4./&">'\$9,@ "##')+/-
A"' " +K\$>"&K+/'&\$] ., X,)418' (14):

$$F_i = \left(1 - \frac{RR}{fcc}\right) r 100, \quad (14)$$

J=' RR - =/"\$&,8">'\$9,' =/+8'#"' , 44)&. \$&;
fcc ->/\$&, &/ \$)'=#>#KU \$,9)/^'#"@ , 1=4"# .

L,8,?'&'8;#,' 3#/>'#"' F_i J,+)"& , .),78/=/#"' "\$4./&" -
>'\$9"U +8]"# @, ,&)"A/&'8;#,' -./)/"\$4./&">'\$9"U .
c)'=#"' 3#/>'#"] F_i B')=, \$,\$&/+8]_&, &-10=, +10%.

12. =6%B+)@C%46)"@("(-QW/-H"2\$%:6+B%8%24%2%B(%28-
U+6*+6)2\$-: 28"4-8"28

i=] &\$&/+ "31>'#"' +,\$\$&/#,"&'8;#KU .),A'\$\$,+ (="#/4"9"
fcc) .,\$8' .)'9)/^'#"] =,3"),+/##, @ 4Ke'>#,@)/7,&K. `3">' -
\$9/] #/J)139/ 3/=j&\$] ++="= ' +,\$U,?='#"] #/ \$&1.'#;91. FK\$,&/ \$&1
'#;9" " +)'4] +K.,8'#'#"] 4Ke'>#,@)/7,&K 3/+"\$& ,& .,8/ , +,3-
)/\$&/. F)'4] +,\$U,?='#"] 5 4"#. L,\$8' ,9,#>/#"] X"3">'\$9,@

#/J)139" "\$.K&1'4K@ ,&=KU/'& \$"=]. N/>"#/] \$, +&,),@ 4"#1&K
 1 #J, 3)/3/ ., 30\$'9 .,=\$>"&K+/_& .18;\$:
 \$ 60-@=, 90-@\$+,,\$\$&/#,"+'&'8;#J, .)"=, / (F₁);
 \$ 120-@=, 150-@\$ (F₂);
 \$ 180-@=, 210-@\$ (F₃).
 5'318;&/&K&'\$\$"),+/#"] +K>"\$8]_& +++"=' "#='9\$/ </>+)= \$9, -
 J, \$&' .-&'\$\$&/ (i<cS) (15):

$$i<cS = \frac{tr \ 100}{(F_1 + F_2 + F_3) r \ 2'} \quad (15)$$

J=' t - X/9&">'\$9,' +)'4] +K.,8#'#"] X"3">'\$9,@ #/J)139" + \$.

FK\$,&/ \$&1.'#;9" .)" .),+='#"" </>+)= \$9,J, \$&' .-&'\$\$&/ =8]
 41?>"# - 51\$4, =8] ?'#^"# - 46\$4.
 aA'#9/)'318;&/&,+ </>+)= \$9,J, \$&' .-&'\$\$&/
 4'#" 55 -#"39"@.,9/3/&'8; ;
 55-64 -.9/3/&'8; #'?' \$)'=#'J, ;
 65-79 -.9/3/&'8; \$)'=#'@;
 80-89 -.9/3/&'8; +K\$,9"@
 90" 7,8" -.9/3/&'8; ,>'#; +K\$,9"@

3.3. HZB\ECAMK\ZCZBCdK\dME_\CEHZb\EMBCEK\ZBhfG ZbCEBZfHKG\EHhJCA

R8])e#"] 3/=> 1.)/+8'#"] &)'#"),+9,@ \$.,)&\$4#/ +,34,? -
 #,\$&; ,A'#"&; [#)'J&">'\$9"" .,9/3/&'8" 'J,)/7,&,\$.,\$7#,\$&"
 \$.,)&\$4#/ "4"& 7,8;e,' 3#/>'#" , &9. 3#/#" \$.,)&"+#,J,)'318; -
 &/&/ " +8"]#" #/ #J, ,&='8;#KU .,9/3/&'8"@ [#)'J&">'\$9,@ .),"3 -
 +,="&'8;#,\$&" \$1^'\$&+##, ,78'J>"& .,#"4/#" 3/=> 1.)/+8'#"]
 &)'#"),+9,@ , ,A'#91 \$,\$&,[#"] \$.,)&\$4#/ " 'J, .,&'A"/8;#KU +,3-
 4,?#,\$&'@. /9\$"4/8;#K@ 1),+ '#; .,&)'78'#"] 9"\$8,),= / U)/9&' -
)"31'& 4,^#,\$& /(),7#KU .),A'\$,\$,+ [#)'J,,7'\$.'>'#" . /9\$"4/8; -
 #K@ 9"\$8,),=#K@ =,8J ,&)/?/'& '49,\$& /#/(),7#KU .),A'\$,\$,+ .
 N/"7,8;e"@ 1),+ '#; .,&)'78'#"] 9"\$8,),= / +9,#A' 1.)/?#'#"] 71-
 ='& \$, ,&+&'\$\$&+,+&/&; 4/9\$"4/8;#41)/7,>'41 1),+ #_ .,&)'78'#"]
 9"\$8,),= / . c144/)#, ' .,&)'78'#" 9"\$8,),= / +, +)'4] +,\$\$&/#,+8'-
 #"] /+ #, 9"\$8,),=#,41 =,8J1.
 c144/ .,&)'78'#"] 9"\$8,),= / +, +)'4])/7,&K " +,\$\$&/#,+8'-
 #"] .,)'='8]'& [#)'J&">'\$9"" 3/&)/&K \$.,)&\$4#/ " \$,\$&/+8]'& 9"\$-
 8,),=#K@ 3/.,)\$ (16):

$$RO_2 = VO_2 + SDO_2, 8.$$

F \$+,_ ,>)'=; , 9"\$8,)=#K@ =,8J)/+ '# \$144' /8/9&/&#,@
 " 8/9&/&#,@X)/9A"" (17):

$$SDO_2 = DO_{2al} + DO_{2lact}, 8. \quad (17)$$

Q),+'#; 9"\$8,)=#,J, 3/.),\$/ \$,\$&/+"&+\$+,_ ,>)'=; (18):

$$\frac{RO_2}{t} = \frac{VO_2}{t} + \frac{DO_2}{t}, \frac{8}{4} \quad (18)$$

R"#/4"91 .,&)'78#"] 9"\$8,)=#/ +, +)'4])/7,&K 4,?'# , .)'= -
 \$&/+"&; =+1U9,4.,##&#K4 [9\$.,##A"/8;#K4 1)/+##"4 \$.)' -
 ='8;#K4 3#/>'#"4 ,)/+ #K4 4/9\$"4/8;#41)/7,>'41 1),+ #_ =8]
 =/##,J, 1.)/?#'"] . c#"?'#" 1),+ #] .,&)'78#"] +, +)'4] +,\$\$&/
 #,+8#"] 4,?'& 7K&; &/9?' +K)/?'# , [9\$.,##A"/8;#,@ X1#9A""@
 \$7,8" 7K\$&),@/8/9&/&#,@ " 4'=8'##,@ 8/9&/&#,@X)/9A""@ .

R8] .,)'='8#"] 4/9\$"4/8;#J, 1),+ #] .,&)'78#"] 9"\$8,)=#/
 "\$.,8;31_&\$])/38">#K' 4'&=#K :

- 4'&=#,9)/&#,@ .)'='8;#,@ #/J)139" +&'>'#" 5-64"# ;
- 4'&=#,+,&,)#KU 1.)/?#'"@ \$ +,3)/\$&/_ ^@ #/J)139,@ =,
 =,\$&"?'#"] 4/9\$"414/ /(),7#,@ .),"3+,#&'8;#,\$&" ;
- 4'&=# \$&1.#>/&J, 1+'8">'#"] #/J)139" +, +)'4] ,=#,9)/& -
 #,J, +K.,8#"] 1.)/?#'"] ;
- 4'&=# #'.)'K+#,J, 8#"@#J, 1+'8">'#"] #/J)139" +, +)'4]
 ,=#,9)/&#J, +K.,8#"] 1.)/?#'"] . L)"4#]_&\$] &/9?' =)1J"
 4'&=#K .

/9\$"4/8;#K@ 1),+'#; .,&)'78#"] 9"\$8,)=#/ 3/+"\$&,& .), -
 "3+,#&'8;#,\$&" \$')=A/ " /&)'",+'#3#,@)/3#"AK #/\$K^#"] 9), -
 +" 9"\$8,)=#,4 (19):

$$VO_{2max} = Qr (A - B) = SVr HRr (A - B), \quad (19)$$

J=' VO_{2max} - 4/9\$"4/8;#K@ 1),+'#; .,&)'78#"] 9"\$8,)=#/ , 8/4"# ;

Q - .),"3+,#&'8;#,\$&" \$')=A/ , 8/4"# ;

(Y - F) - /&)'", -+'#3#/])/3#"A/ #/\$K^#"] 9),+" 9"\$8,)=#,4 ,
 48 (a₂/10048 9),+") ;

SV - 1=/)#K@,7l'4 \$')=A/ , 48/1=;

HR ->/\$&,&/ \$')='>#KU \$,9)/^#"@ , 1= /4"# .

i3+'\$&# , , >& .),"3+,#&'8;#,\$&" \$')=A/ +\$.,)&'+#,@ =']&'8; -
 #,\$&" \$,\$&/+8] & ,& 20-308/4"# =, 408/4"# , 1=/)#K@,7l'4 - ,& 130
 =, 200 48/1=, >/\$&,&/ \$')='>#KU \$,9)/^#"@ =,\$&"J/'&

200 1=,4"# " 7,8" . L)" "#&#\$"+#,@ #/J)139' /&')", -+ '#,3#/ /3#"A/ =,\$&"J/'& 15-20a₂ 48/10048 9),+" .

S/9"4 ,7)/3,4 , 1),+'#; /(),7#,@ [#')J'&">'\$9,@ .),"3+," - &'8;#,\$&" U)/9&)"31'&\$] \$8'=1_ ^"4" ,#,#+K4" X/9&,)/4" :[#') - J'&">'\$9"4" +,34,?#,\$&]4" \$)=A/ , A")918]&,)#K4" 4'U/#"34/4" " =KU/#"4 . F \$+,_ ,>)'=; , 19/3/##K' .,9/3/&'8" 3/+"\$]& ,&)]=/ X/9&,)+ :

- 9"\$8,)=#,@ '49,\$&" 9),+" ;
- \$9,),\$&" = "XX13" 9"\$8,)=/ "3 &9/#' @ ?"3#'#,#, @ '49,\$&" 9),+" ,

- J817"#K " >/\$&,&K=KU/#"] ;
- 4/9\$"4/8;#,@ +'#&"8]A"" 8'J9"U;
- ="XX13",##,@ \$.,\$,7#,\$&" 8'J9"U;
- .),A'#&/ "\$.,8;31'4,J, 9"\$8,)=/ ;
- \$&)19&1)K' 9,8">'\$&+ / 4"&,U,#=)" @ ;
- 3/./\$,+ [#')J'&">'\$9"U \$17\$&)/&,‡
- 4,^#,\$&" ,9"\$8"&'8;#KU X')4'#&,+ ;
- \$&'.#" 9/."88]"3/A"" 4KeA ;
- ,7l'4#,@ \$9,),\$&" 9),+,&,9/ +&9/#]U;
- 9"\$8,&#,-^'8,>#J,)/+#+'\$"] 9),+" " &=.

F #/1>#,-4'&,">'\$9,@ 8"&)/&1)' + #/\$&,'^" +)4] "4'_&\$] 4#J,>"\$8'##K' =/##K' , 4/9\$"4/8;#4 .,&)'78#" 9"\$8,)=/ " 'J, +'8">"# #/ '= "#A1 4/\$\$K &'8/ 1 \$.,)&\$4'#+)/38">#,@ \$.' - A"/8"3/A"" . N/"7,8;e" +'8">"#K 4/9\$"4/8;#J, .,&)'78#" 9"\$8,)=/ =, 6,7 8/4"# #/78_=/_&\$] 1 8K?#"9,+ -J,#^'9,+ " J)'7A,+ +J)'78' /9='4">'\$9,@ .FK\$,9" +'8">"#K 1 8K?#"9,+ ,7l]#\$]_&\$] + 3#/>"&'8;#,@ \$&'.#" &'4, >&, #"\$,)'+#1_&\$] " &)'#")1_&\$] #/ .)'\$>'##,@ 4'\$&#,\$&" \$.)',=,8#"4 7,8;e'J, >"\$8/ .,='4,+ " \$.1\$9,+ .<)'7AK + J)'78' /9='4">'\$9,@ .)" +K\$,9,@\$,7\$&+###,@ 4/\$\$' &'8/ + "\$81 9,#\$&)19A"" 8,=9")/3+ "+/_& #/ \$,)'+#,+/&'8;#,@ ="\$&/#A"" +K\$,91_ 4,^#,\$& ; .

3.3.1.\$JHKaMM_MbBMJ\CKK\HLHEA\ZACEBZfHKG\EHhJCA
KMCZKCA\K\BCE\K`MePKaJ\CKMOgKC`ZCZBCdK\zbCEBZfHKCA
ZbE\fhKHK\Hf MbbMEMBK\G\cfbOHazM*(6\$8. 111»
 \ \] `CEfCKMOgKC`ZBMBPZM

a.&"4/8;#K@ 1),+'#; X1#9A",#/8;#J, \$,\$&,'#"] U)/9&)"31'& J,&,+ #,\$& \$.,)&\$4'/ +K.,8#]& ; &)'#"),+,>#K' " \$,)'+#,+/&'8;#K'

3/=>" , \$.,\$,7\$&+1] =,\$&"?#" _ +K\$,9"U \$.,)&"+#KU)'318;&/&,+ .
`1#9A",#/8;#/] .,=J,&,+8'##,\$&; - \$,\$&,#'" &)'#"),+###,\$&" ,)J/ -
#"34/ ,.)?'=' +\$J, ,)J/#,+ , ,7\$.>"+/_^"U &)/#\$.,)& 9"\$8,),=/
F ,,\$#,+ ' =,\$&"?#"] \$.,)&"+#,J,)'318;&/&/ " 'J,),\$&/ 8'?/&
/=/.&/A",##K' .),A'\$K + ,)J/"34' \$.,)&\$4#/ . S)'#"),+,>#/#]
" \$,)'+#,+/&'8;#/] =]'&'8;#,\$&;]+8]'&\$] ,,\$#,+,@ =8] "U \$,+)'e# -
\$&+,+/#"]. <)'78] #/ 7/@=)9/U " 9/#,[,&#,\$"&\$] 9 +="=4 \$.,)&/ ,
,)=l]+8]_ ^"4 +K\$,9" &)'7,+/#"] 9 \$,\$&,#'"_ X1#9A",#"),+/#"]
\$)'=>#, -,\$,\$1="\$&,@\$"\$&'4K (=,\$&"J/'&\$] +K\$,9"@ \$)'=>#K@ +K-
7),\$, .,+Ke/'&\$] /)&)'"/8;#,' =/+8'#"). N/J)139" ,.)'=l]+8]'4K'
9 X1#9A",#")1_ ^"4 "\$&'4/4 , 1 \$.,)&\$4#,+ -J)'7A,+]+8]_&\$] 9/9
+ +K\$,9,@\$&'.'#" ="#/4">'\$9"4" , &/9" + +K\$,9,@\$&'.'#" \$&/&">'-
\$9"4" . R"#/4">'\$9"@ 9,4.,##& .,)'='8]'&\$] 9/9 .),A'#& ,& 4/9-
\$"4/8;# , =,\$&"J#1&,@+'8">#"K .,&)'78'#"] 9"\$8,),=/
\$9"@- 9/9 .),A'#& ,& 4/9\$"4/8;# , =,\$&"J#1&,J, .),"3+,8;#J, 4K-
e'>#J, \$,9)/^#"] .

a7,7^#" " /#/8"3 "\$\$8'=,+/#"@ , .),+='###KU #/ \$.,)&\$4' -
#/U-J)'7A/U ,,\$#,+#,J, \$,\$&/+ /NB 5: ., J)'78' #/ 7/@=)9/U" 9/#,[,
. ,3+,8"8 \$X,)418"),+/&; X/9&,)K , .,)'='8]_ ^" " X,)4")1_ ^"
1),+/#; X1#9A",#/8;#,@ .,=J,&,+8'##,\$&" \$.,)&\$4#,+ .)" .),+ ' -
='#" .,)'='8"4."@\$9,@)'J/&K . F ,7\$8'=,+/#" 1>/&\$&+,+8"
9 +K\$,9,9+8"X"A"),+###KU \$.,)&\$4#,+ -J)'7A,+ (4 - 34\$ 5 -
4\$49); 4 ?'#"^#"K , 5 41?>#" . c)'=#"@ +,3)/\$& ,7\$8'=,+/###KU
\$.,)&\$4#,+ 24,1±3,2J,=/. i\$\$8'=,+/#"] .),+,"8"\$; \$.)'4'##" -
'4 "\$&'4K "#&'J)/8;#J, 4,#"&,"#J/ X1#9A",#/8;#J, \$,\$&,#"]
«ci aNY 111» (,\$9,+9"@ 3/+,= .)"7,,\$&),'#"]) " "\$\$8'=,+/
#"] 1),+##] J,)4,#,+ +\$8_#'. i31>/8/\$; &/9?' 8/7"8;#,\$&; 4Ke'> -
#,@ " ?"),+,@ 4/\$\$K &'8/ 4'&=,4 9/8".)'4'&)" . i\$\$8'=,+/#"]
" 3/7,) .),7 .),+,"8"\$; + #,4)' \$.,)&\$4#/ .)" ,&\$1&\$&+"" ., -
\$&,),##"U 8"A, .)" .,\$&],##,@ &'4.)/&1)' 20-22c, + .,8,'#" "
8'/?/ , .,\$8' 5 4"#1& /=/.&/A" 9 ,9)1?/_ ^"4 1\$8,+"]4 , .)" \$., -
9,@#,4 =KU/#" . F\$' ,7\$8'=,+/#"] 7K8" .),+='#K +1&)'##" >/\$K
(\$ 9 =, 10>/\$,+), #' 4'#" >'4 >)'3 12>/\$,+ ., ,9,#>/#" .,\$8'= -
#@&)'#"),+9" . a7\$8'=,+/#"] .),+,"8"\$; #/ 1-@3-@6-@' 9-@=#;
,)'7K+/#"] +:)/3"8" .

c&/&"\$&">'\$9/] 7)/7,&9/)'318;&/&,+ .),+,"8/\$; \$ "\$.,8;3, -
+/#"4 ./9'&/ .),J)/44 c&/&"\$&"9/ 6.0. FK>"\$8]8"\$; \$)'=#'/)"X -
4'&">'\$9" .,9/3/&'8" . R,\$&,+)'#,\$&;)/38">"@ 4'?=1 /#/8"3")1' -
4K4" .,9/3/&'8]4" + ="#/4"9' ,A'#"+8/\$; #'.)/4'&)">'\$9"4

9)"&)"4 /##/ -Q"&#. R,\$&,+)"#K4" .)"3#/+8"\$; .,9/3/&'8
.)" 5<0,05.

Q\$&/#,+8'#, , >&, .,&"4/8;#K@ 1),+ '#; X1#9A",#/8;#J, \$,-
\$&,#"] ,.)='8]_& :

. X1#9A",#/8;#K' +,34,?#,\$&" , \$#,#KU X"3",8,J">'\$9"U \$"-
\$&'4 (\$)'=># , -\$,\$1="\$&,@#')+ #, -4Ke'>#,@ , +'J'&/&"+#,@ #')+ #,@
"\$&'4K " &=.), "441##K@ \$&/&1\$J,)4,#/8;#K@ \$&/&1\$."U,8,J" -
>'\$9"@ \$&/&1\$1),+ '#; ,7^@ " \$. 'A"/8;#,@)/7,&,\$.,\$7#,\$&" , \$,-
,&#,'e#" "U \$+,3)/\$&,4 " .,8,4 ;

. \$. 'A"X"9/ \$.,)&"+#,@ =]&'8;#,\$&" , \$.,&#'\$##,@ \$ +="=,4
\$.,)&/ ,.),=,8?"&'8;#,\$&; " \$&/? 3/#]&"@ 1\$. 'e#,\$&; +=,\$&"?'#"
\$.,)&"+#KU)'318;&/&,+

. 4'&=">'\$9" , \$#,#K ,)J/#"3/A"" &)'#"),+,>#J, .),A'\$\$/ :
)?'4 &)'#"),+9 , ,7'4 " "#&#'\$"+#,\$&; #/J)13,9, \$.,&#,'e#" "
\$)'=\$&+ " 4'&=,+)/3+"&"] X"3">'\$9"U 9/>'\$&+ , \$. "U,X"3">'\$9/
#/.)]?'##,\$&; , 9/8'#=); ")'J8/4'#& \$,)'+ #,+/#"@ ;

. \$. 'A"/8;# , -7K&,+K' " [9,8,J, -J',J)/X">'\$9" 1\$8,+"] .),+' -
='#"] &)'#"),+,>#KU 3/#]&"@ " \$,)'+ #,+/#"@ ;

. &)/="A",##K' " #'&)/="A",##K' \$)'=\$&+/ +,\$\$&/#,+8'#"] .
F ,.)='8'##KU 1\$8,+"]U #'9,&,)K' "3 X/9&,) +]+8]_&\$]
&)"JJ')/4")/3+"&"] 3/7,8'+/#"@ " \$#"?'#"] X1#9A",#/8;#KU +,3-
4,?#,\$&'@ , + &,4 >"\$8' ='X"A"& +"&/4"#,+ " 4"#')/8,+ , \$#"?'#"
"441#,)'/9&"+#,\$&" , #'\$7/8/#\$"),+/#,\$&; .'^+,J,)/A",#/ , [4, -
A",#/8;# , -\$. "U,8,J">'\$9"@ \$&)'\$\$. '.)'U8/?='#" , .)'J)' + , J'., -
9\$"] , ='\$"#U),#3 .)" \$4'#' >/\$,+KU .,]\$,+ , #'39,' 9/>'\$&+ , \$.,) -
&"+#,J, "#+'#&/)] .

F , \$#,' ,7,\$#,+/#"] 9,#A'.A"" "31>'#"] X1#9A",#/8;#J,
\$,\$&,#"] \$.,)&\$4#,+ - &,')"] X1#9A",#/8;#KU "\$&'4 ,)J/#"34/
" 1>'#" , J,4', \$&/3' , / &/9?' &,')"] /=/.&/A"" .

H_7,@ +="= /=/.&/A"" \$,3='&\$] #/ , \$#,' 4'U/#"34,+ J,4', -
\$&/3/: 8,9/8;#KU , "\$&'4#KU"8" .),&'9/_^"U #/ 1),+ #' A'8,\$&#,-
J, ,)J/#"34/ " "J)/_ ^"U)'e/_ ^1_ ,),8; , J8/+ #K4 ,7)/3,4 ,
+ \$,U)/#'#"" X"3",8,J">'\$9"U 9,\$\$&/#& c.,)&"+#/] =]&'8;#,\$&;
)/3="+J'/& .)'='8K J,4', \$&/&">'\$9"U J)/#"A , .,&"4/8;#KU =8]
3=),+ ,J, >'8,+9/ .

L,\$9,8;91 .)"\$.,\$78'#"" 9 4Ke'>#,@ =]&'8;#,\$&" .)'=\$&/+ -
8]'& \$,7,@ "#&'J)/A" _)/3#,,7)/3#KU X1#9A"@)J/#"34/ , &, [XX'9&
/=/.&/A"" ,7\$.'>"+/'&\$] .),A'\$\$/4")'J18"),+/#"] , 9,&,)K'
#/.)/+8'#K #/ \$,U)/#'#"" X"3",8,J">'\$9"U .)/4'&),+ .

l#/] , \$1^\$&+##KU)/38">"]U 1),+#] X1#9A",#/8;#J, \$,\$&,-
[#"] \$.,)&\$4#,+ - J)'7A,+ , \$. 'A"/8"3")1_ ^"U\$] + 9,)&9,4 , \$)'=-
#4 \$.)"#&' , #/ ="\$&/#A"]U 10004, 50004, #/4" 7K8+K.,8#'# \$)/+ -
#"&'8;#K@ /#/8"3 , \$#,+#KU X1#9A",#/8;#KU .,9/3/&'8'@ \$.,)&\$4' -
#,+ - J)'7A,+ #/ 7/@=)/9/U" 9/#,[)/38">#KU \$. 'A"/8"3/A"@ .c&/&-
\$&">'9" =,\$&,+)'#,@)/3#"AK + 3#/>'#"]U .,9/3/&'8'@ X1#9A", -
#/8;#J, \$,\$&,#"] " J,)4,#/8;#J, \$&/&1\$#' +K]+8##, .

aA#9/ `ca \$.)'4#'#"4 «ci aNY 111» .),+,"8/\$; ., .,
&)'4 , \$#,+#K4 "#&'J)/8;#K4 .,9/3/&'8]4 , + \$,\$&/+ 9,&,)KU +U,=]&
\$8'=1_ ^" .,9/3/&'8" X1#9A",#/8;#J, \$,\$&,#"] \$)'=># , -
\$,\$1="\$&,@\$"\$&'4K (ccc):

FaH -+,8'4">'9"@ \$&/&1\$.)=#/J)139/ 8'+,J, ?'81=,>9/ , ,7l -
'4 A")918")1_ ^"@ 9),+ . N,)4/ 0±20%.L)" J".,+,8'4"" <-20%.
L)" J".,+,8'4"" >20%.

ici - "#='9\$ \$,\$&,#"] "#,&),."" (l/\$'9²). N,)4/ 3/+"\$& ,&
.,8/ " +,3)/\$&/, ,A#"+/'&\$] ., A#&'8;#K4 &/78"A/4. n)/9&)"31 -
'& 4/9\$"4/8;#,' 1\$9,)'#" 9),+ ." +K7),\$' "3 8'+,J, ?'81=,>9/
+/,)&1 . Q+'8">"+/'&\$] .)" 181>e'#"" " \$#"?/'&\$] .)" 1U1=e'#""
\$,9)/&"4,\$&" 4",9/)=/ .

ic - "#='9\$ \$,9)/&"4,\$&" 4",9/)=/ (103*l/\$'9). N,)4/ 3/+" -
\$& ,& .,8/ " +,3)/\$&/, ,A#"+/'&\$] ., A#&'8;#K4 &/78"A/4. n)/9 -
&)"31& \$)'=#__ \$9,)\$& ; +K7),\$/ 9),+ "3 8'+,J, ?'81=,>9/
+/,)&1 . Q+'8">"+/'&\$] .)" 181>e'#"" " \$#"?/'&\$] .)" 1U1=e'#""
\$,9)/&"4,\$&" 4",9/)=/ .

iNa - "#,&),."] - \$,9)/&"4,\$& ; 8'+,J, ?'81=,>9/ . N,)4/
0±20%.L)" J"., "#,&),."" <-20%.L)" J".)'#,&),."" >20%.Q+' -
8">"+/'&\$] .)" 181>e'#"" " \$#"?/'&\$] .)" 1U1=e'#"" \$,9)/&"4,\$&"
4",9/)=/ .

`F -X)/9A"] +K7),\$/ 8'+,J, ?'81=,>9/ . N,)4/ 60±3%.

LiLcc - .18;\$,+,@ "#='9\$.)'X')>'9,J, \$,\$1="\$&,J, \$,.) , -
&"+8'#"] (10~3*="#*\$'9/\$45/4²). n)/9&)"31& .,\$&/J)1391 (.)" -
X')>'9,' \$,\$1="\$&,' \$,.) ,&"+8'#").

Qi5Hm -1=)/#K@ "#='9\$)/7,&K 8'+,J, ?'81=,>9/ (J*4/1=4²).
N,)4/ 3/+"\$& ,& .,8/ , +,3)/\$&/ " &'4.)/&1)K &'8/. a&)/?/'& \$14 -
4/)#K@ 7/8/#\$ +,8'4">'9,J, \$&/&1\$/" \$,9)/&"4,\$&" 8'+,J, ?'81 -
=,>9/ . L,8,?'&'8;# , 9,))'8")1& \$)/7,&,\$,,\$,7#,\$&;_ .

BRi - 9,#>#K@ =/'\$&,8">'9"@ "#='9\$ 8'+,J, ?'81=,>9/
(48/4²). N,)4/ 3/+"\$& ,& .,8/ " +,3)/\$&/ . L)" #,)4,+,8'4"" #39"@

BRi ,&)/?/'& \$#"?'##1_ ="/\$&,8">\$91_ X1#9A"_ 8'+,J, ?'81 -
=,>9/. L)" 181>e'#"" [&,@X1#9A"" BRi 1+'8">"+/'&\$] .

YR\$) - \$)'=#" /)&)'"/8;#,' =/+8'#"" (44)&. \$&). N,)4/ \$+]-
3/#/ \$ +,3)/\$&,4 . a&)/?/'& =/+8'#"" 9),+" + #1&)" 9/."88]),+ - J' -
4,="#/4">\$9" 3#/>"4,' =/+8'#"" 9),+" .

Qi - 1=)/#K@ "#='9\$ (48/1=)/4²). N,)4/ 3/+"\$"& ,& .,8/ , +,3-
)/\$&/ " &'4.)/&1)K &'8/. a.)='8]& +4\$&' \$ YR\$) J'4,="#/4">' -
\$9" @\$&/&1\$#="+"=114/ .

ci - \$)'=>#K@ "#='9\$ (8/4"#/4²). N,)4/ 3/+"\$"& ,& .,8/ , +,3-
)/\$&/ " &'4.)/&1)K &'8/. a&)/?/'& ,7l'4 .')X13",##,J, 9),+,&,9/
9),+" . B,))'8")1'& \$)/7,&,\$.,\$,7#,\$&;_ .

fcc ->/\$&,/&\$)'=>#KU \$,9)/^#"@ (1=4"#) .

DO₂l - "#='9\$ =,\$&/+9" 9"\$8,)=/ (48/4"#/4²). L)]4, .),,,) -
A",#/8;# , 3/+"\$"& ,& \$,=')?/#"] 9"\$8,)=/ + /)&)'"/8;#,@ 9),+"
(c/a₂) " .')X13",##,J, 9),+,&,9/ (ci). B,))'8")1'& \$)/7,&,\$., -
\$,7#,\$&;_ .

i: - "#&J)/8;#K@ 7/8/#\$. N,)4/ 0+100%.L)'=\$&/+8]& \$,7,@
\$1441 .),A'#&#KU ,&98,##"@ ,& #,)4K +\$'U+Ke'19/3/##KU .,9/ -
3/&'8'@ f'4 7,8;e' ,&98,##"" + ,&)"A/&'8;#1_ \$&),#1 , &'4
4#;e' /=/.&/A",##K' +,34,?#,\$&" ccc 9 X"3">\$9"4 #/J)139/4 .

f'4 7,8;e' ,&98,##"" + .,8,?'&'8;#1_ \$&),#1 , &'4 7,8;e'
"#&J)/8;#K@ 7/8/#\$ (i:) ccc . Q \$.,)&\$4#,+ +K\$,9,J, 1),+#]
+ \$.,9,@#,4 \$,\$&,#"" #/ ."9' \$.,)&"+#,@ X,)4K i: 4,?'& =,\$&-
J/&; 300-7001. ' ., / \$)/31 ?' .,\$8' \$,)'+#,#/#" @ "8" "3#1)"&'8;#KU
&)'#"),+9 4,?'& .,1\$9/&,\$] =, 400 1. ' ., #, + &'>'#" #'\$9,8;9"U
>/\$,+ "8" \$1&,9\$#,+ / +,3+)^/&,\$] #/ .)'?#" @ 1),+#; . L, .,9/3/ -
&'8_ i: 4,?'# , \$1="&; ,7 [XX'9&"+#,\$&" +,\$\$&/#,"&'8;#KU 4), -
.)]&" @ " X"3",8,J">\$9,@ \$&,"4,\$&" #/J)139" .

B5 - 9/)="/8;#K@)'3')+ . N,)4/ 5±1 1\$8,+ #KU'="#"A (1. ' .).
a&)/?/'& \$.,&#,e'#"" .),=,8?'&'8;#,\$&" X/3 \$)'=>#J, A"98/
(+)'4] ="/\$&,8K, PEP, VET).Q U,),e, &)'#"),+###KU \$.,)&\$4#,+
+ \$.,9,@#,4 \$,\$&,#"" 4,?'& =,\$&"J/&; ='\$]&" , / .)" 4/9\$"4/8; -
#KU X"3">\$9"U #/J)139/U 4,?'& \$#"?/&,\$] =, '='#"AK . B5 .)"
X"3">\$9"U #/J)139/U)/\$U,=1'&\$] (14'#;e/'&\$]) =8] .,==')?/#"]
+K\$,9,J, i: . L,\$8' \$,)'+#,#/#" @ "8" &)'#"),+9 B5 +\$'J=/ #'?' ,
>'4 1 ,&=,U#1+e'J, \$.,)&\$4#/ . S, '\$&; B5, 9/9 " i: , ,&)/?/'&
X"3",8,J">\$91_ \$&,"4,\$&; #/J)139" . L)" 1+'8">'#" B5 1+'8" -
>"+/'&\$] " Y5.

Y5 - / = . & / A", ##K@)'3')+ . N,)4/ 500±1001. ' . a&)/?/'& \$14-4/) #K@ 7/8/#\$ i: " B5. Q \$.,)&\$4#,+ +K\$,9,J, 1),+ #] + \$.,9,@- #,4 \$,\$&,#"" #/ . '9' \$.,)&"+#,@ X,)4K - Y5 4,?'& =,\$&"J/&; 15001. ' . c)/31 ?' .,\$8' \$,)'+#,+/#" @ "8" "3#1)"&'8;#KU &)'#"), - +,9 Y5 4,?'& \$#"?/&;\$] =, 2001. ' ., #, + &'>'#" #'\$9,8;9"U >/\$,+ "8" \$1&,9+,3+)/^/&;\$] #/ "\$U,=#K@1),+'#; (&/78"A/ 2).

S/78"A/ 2 - R"#/4"9/ .,9/3/&'8' @ X1#9A",#/8;#J, \$,\$&,#"" \$.,)&\$4#,+ -J)'7A,+ #/ 7/@=)9/U" 9/#,[+K\$,9,@9+/8"X"9/A""

L,9/3/&'8;	R#" .)'7K+/#"			
	1	3	6	9
m"),+]/ &9/#;, %	+0,048	-0,016	+0,49	-0,18
Ke'>#]/ &9/#;, %	+0,014	+0,18	+0,39	+0,07
DO ₂ l, 48/4"#/4 ²	+0,61	-0,05	+0,06	-0,02
CaO ₂ , 48/10048	-0,02	+0,34	+0,01	+0,81
SpO ₂ , %	+0,11	-0,21	+0,06	-0,02
ci , 8/4"#/4 ²	-0,03	+0,24	+0,09	-0,05
fcc , 1=./4"#	-0,01	-0,03	-0,02	-0,12
YR \$)., 44 Hq	-0,03	-0,16	-0,41	+0,03
ic , 1000\$'9	+0,11	+0,01	+0,44	+0,13
ici , 1\$'9 ²	+0,09	+0,16	+0,46	+0,11
BRi , 48/4 ²	+0,01	+0,06	-0,23	+0,55
BN , 1. ' .	+0,04	+0,06	-0,67	+0,12
B5, 1. ' .	+0,06	+0,05	+0,05	-0,01
Y5, 1. ' .	+0,07	+0,02	+0,02	-0,04

FKe'19/3/##K' .,9/3/&'8" +U,=] &+ &)" J)1..K X1#9A",#/8; - #KU.,9/3/&'8' @ \$)'=># , -\$,\$1="\$&, @ "\$&\$'4K:

1 - A'#&)/8;#]/ J'4,="#/4"9/ : J'4,="#/4">'\$9")J18]&,)K (FaH, ici , ic , `F , LiLcc),)/7,&/ 8'+,J, ?'81=,>9/ (Qi5Hm), =/"\$&,8">'\$9/ X1#9A"] (BRi), J'4,="#/4">'\$9" @ \$&/&1\$YR\$), Qi);

2 - .)'X')>'\$9/ J'4,="#/4"9/ : .)'X13",##K@ 9),+,&,9 (ci , fcc), &)/#\$.,)& 9"\$8,),=/ (DO₂l);

3 - "#&'J)/8;#K' .,9/3/&'8" \$)'=># , -\$,\$1="\$&, @ "\$&\$'4K: i: ("#&'J)/8;#K@ 7/8/#\$ "8" &'91^" X1#9A",#/8;#,' \$,\$&,#""), B5 (9/)="/8;#K@)'3')+), Y5 (/ = . & / A", ##K@)'3')+).

F 9,4.8'9\$#,4 ,7\$8'=,+/#"" "31>/8"\$; X"3",8,J">'\$9" .,9/3/ - &'8" \$.,)&\$4#,+ -J)'7A,+ +\$)/+#"&'8;#;4 /\$. '9&' . R8] .,)'='8#"]

= "#/4"9" X1#9A",#8;#J, \$,\$&,#"] +K\$,9,9+/8"X"A"),+##KU
J)'7A,+ 7K8" .,=+'J#1&K \$&/&"\$&">'\$9,@,7)/7,&9')'318;&/&K
,7\$8'=,+/#"] 9 J)'7A,+ #/ 7/@=/)9/U" 9/#,[+K\$e'@9+/8"X"9/ -
A"" , >8'#,+ #/A",#8;#,@ 9,4/#=K 5\$.178"9" :8/)1\$; , #/ 1-@
3-@ 6-@ 9-@=#; .)'7K+/#"] + :)/3"8"" . L,9/3/&'8" X1#9A", -
#8;#J, \$,\$&,#"] ., ,&98,#'"]4 ,& 1\$8,+#, @#,)4K ,A'#"+/ -
8"\$; 3#/9/4" «+»"8" «-».

Y#/8"3 .,9/3/&'8'@ X1#9A",#8;#J, \$,\$&,#"] \$.)&\$4#,+ -
J)'7A,+ .,3+,8"8 +K]+&; \$#"?'#"" 7,8;e"#\$\$+/_ .,9/3/&'8'@ ,/\$\$, -
A""),+##KU \$ =]&'8;#,\$&;_ "\$\$&'4, ,7'\$.'>"+/_^"U &)/#\$.)&
" 1&"8"3/A"_ 9"\$8,)=/ (DO₂, SpO₂, ci) " .,9/3/&'8'@ , ,&)/?/_ -
^"U \$,9)/&"&'8;#1_ \$.,\$,7#,\$&; 4",9)/=/ (ic , ici , BRi)#/ 3-@
" 9-@=#; .)'7K+/#"] + :)/3"8"" . Y#/8,J">#/] &'#=#A"] 3/X"9\$ -
,+/#/ ., .,9/3/&'8]4 /=/.&/A"" (B5, YR). B,[XX"A"#& #/.)?' -
#"] 4",9)/=/ (BN) , #/.)&"+ , "4'8 &'#=#A"_ .,+Ke'#"] 9 9-41
=#_ .)'7K+/#"] + :)/3"8"" .

F ,A'#9' ,7^J, X1#9A",#8;#J, \$,\$&,#"] \$.)&\$4#,+ =, -
\$&,+)'#K@+98/= &'91^"U .,9/3/&'8'@ , \$&),@ /=/.&/A"" \$')=A/ (., -
9/3/&'8" ci +.,9,' " .,\$8' #/J)139") " .,9/3/&'8'@ =,8J,+)'4##,@
/=/.&/A"" (X"3">'\$9/])/7,&,\$.,\$,7#,\$&; , /[,7#K' +,34,?#,\$&" ,
9,#>#K@="/\$&,8">'\$9" @ "#=#9\$ 8'+,J, ?'81=,>9/ (BRi).

R"#/4"9/ .,9/3/&'8'@)" &4,J)/44K .,9,] ,., 9,&,)K4 .,81>' -
#K =,\$&,+)'#K' "34'#'"] , .,3+,8"8/ \$='8/&; +K+,=, >&, .)" 9,4 -
. '#\$),+##KU /=/.&/A",##KU .)'\$&),@9/U ,)J/#"34/)/\$&j& +/)" -
/A",##K@)/34/U RR, , , SDNN,/ iN , iF5 " LYL5 3#/>'&'8;#,
14#;e/_&\$] . g&, , + \$+,_ ,>)'=; , \$+='#&'8;\$&+1&,7 1+'8">'#""
X1#9A",#8;#,@ /9&"+#,\$&" /=/.&/A",##KU ()'3')+#KU) +,34,?# , -
\$&'@)J/#"34/ " \$,)'+#,+&'8;#,@ #/=j?#,\$&" \$.)&\$4#,+ .

L,+Ke'#"" 4Ke'>#J, 9,4.,##&/ " \$#"?'#"" ?"),+J, 9,4 -
. ,##&/ 4,?'& \$81?'&; .)"4'),4 9,4.'#\$/&,)#@)/'9A"" ,)J/#"3 -
4/ #/ #'7K>#K' 98"4/&">'\$9"" 1\$8,+]" " .&/'#"" . L,=,7#K' 3/9, -
#4')#,\$&" "34'#'"] \$,\$&/+&'8/ .),"\$U,=]& \$, \$.)&\$4#/'4"
+&)'#/?')#4 3/8' , +K.,8#'#"" 1.)/?#'#"@ a`L " c`L , \$.,\$,7 -
\$&+1_ ^"U .,+Ke'#"_ \$9,)\$&#,-\$"8,+KU .,9/3/&'8'@ .

L,9/3/&'8" J,)4,#8;#J, \$&/&1\$7K8" "\$\$8'=,+/#K +.)7/U
\$8_#K, +3]&,@+ 1&)'##"" >/\$K (9.00-10.00)#/ 1-@ 3-@ 6-@ 9-@
=#; .)'7K+/#"] + :)/3"8"" (&/78"AK 3, 4)" 3/4,),'##,@ =8] =, -
\$&/+9"+ :8/)1\$; .

<,4,#/8;#K@ \$&/&1\$\$.)&\$4'#,+ ,)'J"\$&)"1'4K@ ., .,9/3/ -
 &'8]4 &'\$\$,\$&'),#/ , ='J"=),["/=),\$&'),# -\$18;X/&/, \$,,&+'&\$&+,+/8
 1),+#_ 1\$8,+#, @,.)4K . Q),+'#; 9,)&"3,8/ 1 41?>"# " ?'##^"# #' -
 3#/>"&'8;#, .)'+Ke/8 #,)41 #/ 3-@=#; .)'7K+/#"] +:)/3"8"" ,>&,
 \$,,&+'&\$&+1&.)'=\$&/+8'#"]4 , \$),>#,@ /=./&/A"" + ,&+'& #/ +,3-
 ='@&\$+ "\$&)'\$\$")1_^'J, X/9&,) / .

S/78"A/ 3 -R"#/4"9/ .,9/3/&'8'@ J,)4,#/8;#J, \$&/&1\$/
 \$.)&\$4'#,+ -J)'7A,+ #/ 7/@=)9/U" 9/#,[
 +K\$,9,@9+/8"X"9/A"" (41?>"#K)

R#" .)'7K+/#"]											
1			3			6			9		
S, /8 4,8;	B, /8 4,8;	R, 49J 10048	S, /8 4,8;	B, /8 4,8;	R, 49J 10048	S, /8 4,8;	B, /8 4,8;	R, 49J 10048	S, /8 4,8;	B, /8 4,8;	R, 49J 10048
0,27± 0,01	2,6± 0,1	0,4± 0,02	0,05± 0,01	14,2± 0,1	0,5± 0,02	0,19± 0,01	1,7± 0,2	0,4± 0,02	0,13± 0,01	6,4± 0,15	0,7± 0,03

=6-"H+(-" . J - 8"28%28"6%(Y - \$%68-/%,@ -)"D-)6%14-+)6%28"6%(
 2L@IW+8

S/78"A/ 4 -R"#/4"9/ .,9/3/&'8'@ J,)4,#/8;#J, \$&/&1\$/
 \$.)&\$4'#,+ -J)'7A,+ #/ 7/@=)9/U" 9/#,[
 +K\$,9,@9+/8"X"9/A"" (?##^"#K)

R#" .)'7K+/#"]											
1			3			6			9		
S, /8 4,8;	B, /8 4,8;	R, 49J 10048	S, /8 4,8;	B, /8 4,8;	R, 49J 10048	S, /8 4,8;	B, /8 4,8;	R, 49J 10048	S, /8 4,8;	B, /8 4,8;	R, 49J 10048
0,21 ±0,02	0,76± 0,01	0,4± 0,01	0,1± 0,01	12,2± 0,2	0,1± 0,05	0,11± 0,01	6,2± 0,4	0,4± 0,02	0,43± 0,05	7,2± 0,13	0,5± 0,02

=6-"H+(-" . J - 8"28%28"6%(Y - \$%68-/%,@ -)"D-)6%14-+)6%28"6%(
 2L@IW+8

Q ,7\$8'=1'4KU \$.)&\$4'#,+ 7K8/ +K]+8'#/ "#="+"=1/8;#/
 \$&)19&1)//9&"+#,\$&"/=/.&"+#KU "\$\$&'4 ,)J/#"34/ .i .,[&,41 +\$'
 "\$.K&1'4K' 7K8")/3='8'#K #/ .]&; J)1.. ., "#="+"=1/8;#K4

,\$,7'##,\$&]4 X1#9A",#"),+/#"] /=/.&"+#KU "\$&'4. a7)/3,+/-
e"\$] J)1..K "\$.K&1'4KU)/38">/8"\$; .. \$,=')?/#" 9,)&"3,8/
+\$8_#',.,9/3/&'8]4 +'J'&/'&"+#J, 7/8/#\$/ " 9/)=",J'4,=#/4" -
9". a=#/ "3 J)1.. ,9/3/8/\$; \$ +K\$,9"4 \$,=')?/#"4 9,)&"3,8/
(500-650#4,8; /8), ,#/ 7K8/ ,7,3#/>#/' 9/9 J)1.. / 1 " ,A'#"+/8/\$;
9/9 J)1.. / \$, \$8"e9,4 +K\$,9,@ /9&"+#,\$&;_ /=/.&"+#KU "\$&'4,
\$+]3/##KU\$ +,3=@\$&+"4\$&)'\$\$")1_ ^"U X/9&,),+ ; J)1.. / \$#"39"4
\$,=')?/#"4 9,)&"3,8/ (220-350#4,8; /8) ,7,3#/>#/' 9/9 J)1.. / 2
" ,A'#"+/8/\$; 9/9 J)1.. / \$.,=/+8'##,\$&;_ /=/.&"+#KU "\$&'4
+\$+]3" \$.)'1&,48'#"4 ; ,&/'8;#K' 3 J)1..K "\$.K&1'4KU U)/9&' -
)'3,+/8"\$; 9/9 J)1..K \$ /=/.&"+#,\$&;_ \$)'=#'@ \$&'.'#" ., .,9/3/ -
&'8]4 9/)=",J'4,=#/4"9" \$, \$)'=#'@ 9,#A'#&)/A'"@ 9,)&"3,8/
+\$8_#'. Q "\$.K&1'4KU \$ +K\$,9"4 \$,=')?/#"4 9,)&"3,8/ ,=#,+)' -
4'##, ,&4'>/8/\$; .,+Ke'##/] /9&"+#,\$&; \$"4./&">'\$9,J, ,&='8/ +'-
J'&/'&"+#,@#')+#,@ "\$&'4K, \$#"39"4 \$,=')?/#"4 9,)&"3,8/ -., -
+Ke'##/] /9&"+#,\$&; ./)/\$"4./&">'\$9,J, ,&='8/ +'J'&/'&"+#,@#')+ -
#,@ "\$&'4K. L,81>'##K' =/##K' .,=&+')?=/_& "3+'\$&#K@X/9&
, +3/"4,\$+]3" /9&"+#,\$&" "\$4./&">'\$9,J, ,&='8/ #')+#,@ "\$&'4K
\$1),+#'4 9,#A'#&)/A'" 9,)&"3,8/ .

L,)'318;&/'&/'4 "\$\$8'=,+/#"] #/4" 7K8" +K='8'#K "#="+"=1 -
/8;#K' &".K \$),>#,@ /=/.&/A'" \$.,)&\$4#,+ -J)'7A,+ 9 1\$8,+"]4
)'7K+/#"] +:)/3"8" :

. *S2%\$-:L6%*(I X1#9A",#/8;#J, \$,\$&,'#"] .)" +K)/?'##,4
./)/\$"4./&">'\$9,4 &".')'J18]A'" " +K\$,9,@ [9,#,4'3/A'"@ X1#9-
A"@.)" /=/.&/A'" 9 #/J)139', +K\$,9"4 (+Ke' 10001.'.) /=/.&/A",# -
#K4 " 9/)="/8;#K4 (+Ke' 8 1.'.))'3')+4 , 9,4.'#\$\$),+/#K4 J,) -
4,#/8;#K4 \$&/'&1\$,4

. *Sb" 26)("D%1),+#; X1#9A",#/8;#J, \$,\$&,'#"] .)" ./)/ -
\$"4./&"9,&,#">'\$9,4 &".')'J18]A'" \$.)'U,=,4 #/ "\$4./&"9,& -
#">'\$9"@ &". ,7\$.'>#"])/7,&,\$.,\$7#,\$&" .)" X"3">'\$9,@
#/J)139' +Ke' \$)'=#'J, (800-10001.'.) /=/.&/A",##K4 " 9/)="/8; -
#K4 (7-8 1.'.))'3')+4 ,.,+Ke'#"4 1),+#] 9,)&"3,8/ #/ 5%+Ke'
1\$8,+#, @#,)4K ;

. 26")(-: &". X1#9A",#/8;#J, \$,\$&,'#"] +'J'&/'&"+#,@ " \$)' -
='>#,-,\$,\$1="\$&,@\$"\$&'4K.)" #,)4/8;#4 &".')'J18]A'" ,14')##,@
\$"#1\$,+,@/)"&4" " /=/9+ 1),+#] /=/.&/A'" 9 #/J)139', \$)'=#"4
(700-8001.'.) /=/.&/A",##K4 " 9/)="/8;#K4 (6-7 1.'.))'3')+4 ,., -
+Ke'#"4 1),+#] 9,)&"3,8/ #/ 10%+Ke' 1\$8,+#, @#,)4K ;

. (-c" 26)("D%1),+#; X1#9A",#/8;#J, \$,\$&,#"] U)/9&' -)'3,+/8\$] &/U"9/)"@ ")"J"=#K4)" &4,4 .)" J".)'\$4./&"9,&, - #>'\$9,@)'/9A"" #/ #/J)1391, #"? ' \$)'=#'J, (600-7001.'.) /=/.&/ - A",##K4 " 9/)"#/8;#K4 (5-6 1.'.))'3')+ ,4 , ..,+Ke'#"4 1),+#] 9,)&"3,8/ #/ 15%+Ke' 1\$8,+#, @#,)4K ;

. 2(-c"((S: 1),+#; X1#9A",#/8;#J, \$,\$&,#"] U)/9&)"3, - +/8\$] ="3/=/.&/A",##, -J".)'\$4./&"9,&,#>'\$9"4 &".,4 .)" \$"4- ./&"9,&,#>'\$9,@)'/9A"" #/ #/J)1391, #"? ' 6001.'.) /=/.& - &/A",##K4 " 9/)"#/8;#K4 (#"? ' 5 1.'.))'3')+ ,4 , ..,+Ke'#"4 1),+#] 9,)&"3,8/ #/ 20%+Ke' 1\$8,+#, @#,)4K .

N/ , \$#, +/#"" "38,?##,J, 4,?#, \$='8/&; \$8'=1_ ^"" +K+, =K:

1. Y=/.&/A"] \$.,)&\$4#,+ 9 +K\$,9,"#&#\$"+#K4 X"3">'\$9"4 #/J)139/4 ,7\$.>"+/'&\$] +K\$,9"4 X1#9A",#/8;#K4 ..&#A"/8,4 \$+K\$,9,@/9&"+#,\$&;_ .8/\$&">'\$9,J, " [#]J'&">'\$9,J, ,74#,+ .

2. N/"7,8" "#X,)4/&"+#K4" ..,9/3/&'8]4" X1#9A",#/8;#J, \$,\$&,#"] =8] ,A'#9" /=/.&/A"" \$.,)&\$4#,+ 9 1\$8,+"]4 :)/3"8""]+8]_&\$] "#='9\$ =,\$&/+9" 9"\$8,)=/ 9 &9/#]4 (DO2I), 1=/)#K@ "# = '9\$ (Qi), 9,#>#K@ ="/\$&,8">'\$9"@ "#='9\$ (BRi), X/3/ +K7),\$/ (F), 9,[XX"A"#& #/.)]?#"] 4",9/)=/ (BN), /=/.&/A",##K@)' - 3')+ (Y5) " 9/)"#/8;#K@)'3')+ (B5).

3.3.2.\$JHKaMePKaJ\CKMOgKC`ZCZBCdK\zbCEBZfHKG`ÆHhJCA Z\ZbCOgLCAMK\HfKC`CePKaJ\CKMOgKGZ\ZBHf aME_\COC`cHZaC`CZb\ECfHBE`cHZaC`@CK\BCE\K`M

1. _(%D%WL(\$Z-%(+@I(2E28""+ \$+6)-%@%D-H"2\$%8D%8%- 6-(D+ «=%@-24"\$8q4%68» +98_>/'& \$8'=1_ ^"" ="/J#,\$&">'\$9" 78,9" ()"\$1#9" 2, 3, 4):

§ [8'9&),9/)"=,J)/X"] (gB<);

§ ,A'#9/ +/)"7'8;#,\$&")" &4/ \$')=A/ (F5c);

§ .),+='#"" 9/)"=,+\$918])#KU &\$&, + ("31>'#" /=/.&/A"" \$')=>#, -,\$,\$1="\$&,@ "\$&'4K 9 X"3">'\$9"4 #/J)139/4), ,A'#9/ X"3">'\$9,@)/7,&,\$,\$,7#,\$&" ;

§ ,A'#9/ =KU/&'8;#,@X1#9A"".

a78/\$&; .)"4#'#"] :

§ 1@"\$86%\$+6)-%D6+W-C\$#,+#, @ 4'&= "31>'#" \$')=>#, - \$,\$1="\$&,@ "\$&'4K. gB< +, +)'4] X"3">'\$9,@ #/J)139" (\$&)'\$ \$gB<)-,A'#9/ #/)1e'#"@)" &4/ \$')=A/ ")'.8])"3/A"" , +K3+/##KU X"3">'\$9,@ #/J)139,@

§ %Z"(\$+*+6-+B"@I(%28-6-8'+ 2"6)Z+ - +K]+8'#" «+'J'&/ -
&"+#,J, » .,&'#A"/8/ \$')=A/ ")/###U .)3#/9,+ =3/=/.&/A"" \$') -
='>#, -,\$,\$1="\$&,@\$"\$&'4K (1&,48'#"] , #/)1e'#"@)?'4/ &)'#"), -
+,9, «.')'&)'#"),+/#,\$&" »);

§ 6+)-%dYU - +,34,?#,\$&; 4,#"&,) "#J/ \$')='>#,@ =]'&'8;#,\$&"
+, +)'4] +K.,8#'#"] \$.,)&"+#KU 1.)/?#'#"@ (+.,8'+KU 1\$8,+"]U);

§ *S4%@"(-"8"28-6%*+(-C W-/-H"2\$%:6+B%8%24%2%B(%28-
D6"B(%'86"(+c"6" Dansprint- &)'U\$&1.'#>/&K@),&,9,8 #/J)139",
"\$U,=] "3 +'8">"#K =,8?#J, , \$#,+#,J, ,74'#/ , #/)/3#KU [&./U
&)'#"),+,>#J, .),A'\$\$/ .

5"\$1#,9 2 - #,J,X1#9A",#/8;#/] "\$\$&'4/ 9/)=",8,J">'\$9,J,
4,#"&,) "#J/ «L,8"\$.'9&) c.,)& »

5"\$1#,9 3 -L),&,9,8 "\$\$8'=,+/#"] «L,8"\$.'9&) c.,)& »:
X,#,+, ' "\$\$8'=,+/#" , ,)&,\$&/&">'\$9/] .),7/

5"\$1#,9 4 -L),&,9,8 "\$\$8'=,+/#"] «L,8"\$.'9&) c.,)& »:
"\$8'=,+/#" F5c

2. a22@")%*+(-"*+6-+B"@I(%286-8'+ 2"6)Z+(Q])

F .,\$8'=#" J,=K ,A'#9/ X1#9A",#/8;#J, \$,\$&,#"] \$.,)&\$ -
4'#,+ " /9&"+#,\$&; "U +'J&&"+#,@ #')+##,@ "\$\$&'4K .),+,"&\$]
.,\$)'=\$&+,4 "31>#"] +/)"7'8;#,\$&")" &4/ \$')=A/ (F5c), >&, "4' -
'& #' &,8;9, #/1>#1_ , #, " .)/9&">'91_ A'##,\$&; . L,= F5c .,#" -
4/_& "34'##"] fcc "8" =8"&'8;#,\$&" .,\$8'=,+/&'8;#KU "#&')+/-
8,+ R-R +, +)'4'#" , "8" "U 9,8'7/#"] +,9)1J \$)'=#'J, 3#/>#"] .
Q4#;e'#" F5c #/)] =1 \$ &/9"4" 98"#"9, -"#&\$)14'#&/8;#K4" ., -
9/3/&'8]4" , 9/9 [."3,=K "e'4" 4",9/)=/ , ?'81=,>9,+/] /)"&4"] ,
\$#"?'#" X)/9A" "3J#/#"] 8'+,J, ?'81=,>9/ , \$)'J"\$&)/A"@ .,3= -
#"U .,&'A"/8,+ /\$\$,A"")1'&\$] 1 \$.,)&\$4'#,+ \$ 9/)="/8;#,@ ./&, -
8,J" @ \$.8,U"4 .),J#,3,4 .

a&4'># , 14'#;e'#" F5c , &/9 #/3K+/'4K@)"J"=#K@ \$)'=> -
#K@)"&4 .,]+8]'&\$] 1 +,3)/\$&#KU\$.,&\$4'#,+ .)" \$,\$&,#" .)' -
&)'#"),+/##,\$&" . Q4#;e'#" F5c +,34,?# , " .)" &/9"U3/7,8'+/-
#"U, 9/9 "#X/)9& 4",9/)=/ , J".)'&,#">'9/] 7,8'3#; , 3/\$&,@#/
\$)'=>#/] #'=\$&/&,>#,\$&; , 9/)=,"4",./&"] , \$/U/)#K@ ="/7'& , U), -
#">'9" 8'J,>#K' 3/7,8'+/#"] .

Q\$&/#,+8'# , , >&, "#=#+"=1/8;#/] \$1&,>#/] ="#/4"9/)" &4/
\$)'=A/ #/ .),&]?'#" 9,)&9,J, .),4'?1&9/ +'4'#" 1\$&,@>"+/.,
\$)/+#'#" _ \$ =)1J"4" .,9/3/&'8]4" gB<. FK\$,9/] +,\$.),"3+,"= -
4,\$&; .,9/3/&'8'@ F5c .,3+,8]'& "U "\$.,8;3,+/& ; + 9/>'\$&+' 9)" -
&)'"] ,A'#9" X1#9A",#/8;#J, \$,\$&,#"] 3=,)+KU \$.,&\$4'#,+ .

'& , = "31>#"] F5c #/U,="&\$] + #.)')K+#,4)/3+"&"" , "="&
#/9,.8'#" 4/&')"/8,+ " ,7,7^#" ,.K&/)/38">#KU "\$\$8' =,+/-
&'8'@ / 'J, \$8,?#,' .),J)/44#,' ,7\$. '>#" ,&/'&\$] + \$&/=" "
98#" ">\$9,@ ,A'#9" .

Y..)/&#K@ 9,4.8'9\$ «L,8\$. '9&) c.,)& » .,3+,8]'& .),+, -
="&; ,A'#91 [XX'9&" +#, \$&" "\$.,8;3,+/#" +/)" /7'8;#,\$&" \$')='># , -
J,)" &4/ 1 \$.,)&\$4#,+ \$\$"#=),4,4 .)'&)'#"),+/#,\$&" =8])/3)/ -
7,&9" 4'& , =,+ 9,))'9A"" X1#9A",#8;#J, \$,\$&,'#"] \$.,)&\$4#,+
+,\$\$&/#,"&'8;#K@ .)' , = ")/3)/7,&9" 4'& , =,+ 9,))'9&"),+9"
" ,.&"4"3/A"" &)'#"),+,>#J, .),A'\$\$/ .

F \$,+)'4'##,4 \$.,)&' +K\$e"U =,\$&"?'#@" +/?#@"e"4 +,.) , -
\$,4 \$.,)&" +#, @ X"3",8,J""]+8]'&\$] "31>#" +8]"#"] X"3">\$9"U
#/J)13,9 #/ ,)J/"34 \$.,)&\$4#,+ \$A'8;_ =,\$&"?'#"] ,.&"4/8;#J,
1),+#[X1#9A",#"),+/#"] "\$\$&'4 ?'3#,'7\$. '>#" , .)" 14'#;e' -
#" X"3",8,J">\$9,@ «A'#K /=./&A"" ». F \$+]3" \$ "\$.,8;3,+/#"4
#/)/\$&/_ ^"U ., ,7'41 " "#&'#\$"+#,\$&" X"3">\$9"U #/J)13,9 \$&/#,-
+"&\$] /9&1/8;#K4 ,.)='8'#" +)'?"4' 4,#"&,"#J/ /=./&" + #KU
+,34,?#,\$&'@ ,)J/"34/ , .),J#,3"),+/#")"\$9/)/3+"&"] ='3/=./& -
A"" #/ X,#' \$#"?'#"] X1#9A",#8;#KU +,34,?#,\$&'@ " \$.,)&" + #KU
)'318;&/&,+ ,/ &/9?' +)'4#" .,8#J, +,\$\$&/#,+8'#"] ,)J/"34/ .

a)J/"34 \$.,)&\$4#,+ , \$ 1>'&,4 4/\$\$"+#,\$&" " 3#/>"&'8;#J,
,7'4/ X"3">\$9"U #/J)13,9 ,&8">/'&\$] 1]3+"4,\$&,_)'J18]&,)#KU
"\$\$&'4, "\$.,8;31'4KU ,)J/"34,4 =8] ,.&"4"3/A"" X1#9A",#"),+/-
#" " +,\$\$&/#,+8'#"] +'=1^"U "\$\$&'4 ,)J/"34/ .

#,J,>"\$8'##K' "\$\$8' =,+/#" [2, 9, 10] .,9/3/8" , >&, 7,8"
)/##" +98_>#" +)'J18]A" _ .)/\$'4./&">\$9,J, 3+'#/ FNc ., =
+8]"#""4 "\$\$&'4/&">\$9"U X"3">\$9"U #/J)13,9]+8]'&\$] 3/8,J,4
[9,#,4#J, X1#9A",#"),+/#"] ,)J/"34/ + .,9,' , 1\$9,)##,J,
+98_>#"] +[#')J,3/&)/_ =]'&'8;#,\$& ; .)" #/J)139/U " 19,)>' -
#"] .)' , =/ +,\$\$&/#,+8'#"] .,\$8' #/J)139" .

i)\$8' =,+/#" , .),+'=##K' + J)1.. '\$.,)&\$4#,+ + 7/3,+4
" .)'=\$,)' +#,+/'&'8;#4 .)' , =/U 9/9 , \$#,+ #,J, \$,\$&/+/, &/9 ")' -
3')+/ #/A",#8;#,@ 9,4/#=K 5\$.178"9" :8/)1\$; ., J)'78' #/ 7/@
=/)9/U " 9/#,[, .,9/3/8" , >&, .),A'\$\$K +,\$\$&/#,+8'#"] 9,))'8")1_&
\$.,+Ke'#""4 /9&" +#, \$&" .)/\$'4./&">\$9,J, ,&'8/ , >&, ,&'4>/ -
8,\$; .,),\$&1 .,9/3/&'8'@ \$. '9&)/8;#KU U)/9&)'\$&"9 . F >/&\$&,\$&,
4,^#,\$& ; +K\$,9,>/&,&#KU 9,8'7/#" @ 1\$"8"+/8/\$; #/ 34 % ,&
786,5±81,44\$ =, 1053,1±139,94\$, ., ,&#,\$"&'8;#41 .,9/3/&'8_ ., -
+Ke/8/\$; ,& 36,5±6,1% =, 40,9±6,6% .

a7 1\$'8'#"" /+&,#,4#J, 9,#&1)/ 1.)/+8'#"] \$+="'&'8;\$&+,+/8
,,\$& .,9/3/&'8] S5 ,& 2596,5±261,34\$ =, 2939,5±289,14\$ "8" #/
13%. :;e/] ,7^/] 4,^#,\$&; \$. '9&)/ S5 " .),78/=/'"" HF-
9,4.,##&/ + \$&)19&1)' F5c &)/9&,+/8,\$; #/4" 9/9 /=./&'A",##, -
&),X">'9,' ='@\$&+"781?=/^"U #')+ ,+ #/ \$')=A' . a&\$_=/ +K\$,-
9" .,9/3/&'8" \$. '9&)/8;#,@ 4,^#,\$&" + \$,+ ,91.#,\$&" \$ 4/9\$ "4/8; -
#K4" +'8">"#/4" +)'4'##KU U)/9&)' "\$&"9 \$+="'&'8;\$&+1_& ,7
1\$&,@>" +,\$&" ,)J/#"34/ \$.,)&\$4#,+ 9 X"3">'9"4 #/J)139/4
" \$&)'\$\$,+K4 X/9&,)/4 .

Q\$'8'#"" .)/\$"4./&">'9"U +8"]#@" #/ \$')=>#1_ =]'&'8; -
#,\$&; ., .)"#A".1 X1#9A",#/8;#J, /#&/J,#"34/ .,#"?/'& /9&" +
#,\$&; \$"4./&">'9,J, 3+##/ FNc . F)'318;&/&' +'8">"#/ Y , \$#" -
?/8/\$; \$ 41,5±4,7%=, 31,7±4,2%.Y9&" +,\$&; \$,\$1=,="+J/&'8;#J,
A'#&)/ .,#"?/8/\$; ,& 1816,8±355,14\$ =, 1796,2±263,14\$. a7)/^/8,
+##4/#" \$#"?'#"" \$. '9&)/8;#,@ 4,^#,\$&" ,>#; #"39,>/\$&,&#KU
9,8'7/#" @ (VLF) ,& 667,4±77,34\$ =, 551,6±60,14\$, ,&)/?/_^"U)/ -
7,&1 9,)9,+ , -J14,)/8;#KU A'#&),+)'J18]A"" \$')=>#,@ =]'&'8;# , -
\$&". c8' =,+/&'8;# , , #/.)]?'##,\$&; +K\$e"U)'J18]&,)#KU A'#&),+
\$#"?'&\$] , / /=./&" +#K' +,34,?#,\$&" ,)J/#"34/ .,+Ke/_&\$] .
F 9,#&'9\$&\$1?'=#"] 198/=K+/_&\$] &/9?' 3/)'J"\$&)" ,+##K' #/4"
\$#"?'#"])/\$>'&#KU .,9/3/&'8' @ LF/HF - ,& 1,79±0,221\$8 '= . =,
1,24±0,151\$8 '= . " VLF/HF - ,& 0,57±0,111\$8 '= . =, 0,39±0,08
1\$8 '= ., 3#/>'#"] 9,&,)KU \$#"?/_&\$] #/ 44%" 46%\$,&+&\$&+##,.

i3+ '\$&# , , >& , "#&'J)/8;#K4" .,9/3/&'8]4" \$144/)#J, +8"]#"]
#@),J14,)/8;#KU 4'U/#"34,+ #/ \$')=># , -\$,\$1="\$&1_ =]'&'8;#,\$&;
+K\$&1./_& .,9/3/&'8" "#='9\$/ #/.)]?'#"] " "#='9\$/ A'#&)/8"3/A"" .
Q\$&/# ,+8'# , , >& , 3/ +)'4] #/78_ =]'#"] , \$,9&]7)] 2016J. ., /.)'8;
2017J. , .)" /= '9+ /&# , @)'/9A"" ,)J/#"34/ #/ &)'#") ,+ ,>#K@ .), -
A'\$ \$,.9/3/&'8; \$&)'\$ \$ "#='9\$/ \$#"?/8\$] #/ 40% - ,& 120,9±14,41\$8
'= . =, 80,8±11,51\$8 '= . , "#='9\$ A'#&)/8"3/A"" \$#"?/8\$] #/ 45% - ,&
2,36±0,221\$8 '= . =, 1,63±0,171\$8 '= .

F'8">"#/ .,9/3/&'8] LY5c \$#"?/8/\$; \$ 5 =, 4 7/88,+ .
F J)1.. ' \$)/+##"] , 1 \$&1='& ,+.' =/J,J">'9,J, 1#"+')\$"&'& / , 3/
)'4] &)'#") ,+ ,>#KU 3/#]&" @)/3+ ,)/>" +/8/\$; .),&" + ,. ,8,?#/
&#=#A"] 1\$'8'#"] \$"4./&">'9"U +8"]#@" #/ \$')=>#1_ =]'&'8; -
#,\$&; , ,&)/?/_^"U #/)/\$&/#" 4,7"8"3/A",##KU .),A'\$ \$,+ +)'J1 -
8]&,)#KU \$"\$&'4/U ., ,7\$.>'#_ /=./&'A"" 9 +,3='@\$&+"_X"3" -
>'9"U #/J)13,9 . F)'318;&/&' \$')=#"" 3#/>'#"] +)'4'##KU .,9/3/&' -
8' @ ., 9,&,)K4 ,A'#"+/'&\$] /9&" +,\$&; .)/\$"4./&">'9,J, 3+##/ ,

\$#"?/8"\$; , / "\$4./&">'\$9,J, - .,+Ke/8"\$; . F >/&#,\$&," +8">"#/
Mx-Mn \$#"?/8/\$; #/ 20% - ,& 176,6±18,94\$ =, 148,2±15,34\$;
RMSSD -#/ 118% -\$ 54,7±7,04\$ =, 25,1±3,34\$; .,9/3/&'8; pNN50
\$#"?/8\$] #/ 121% - ,& 11,5±2,84\$ =, 5,2±1,14\$ (5<0,05).c&)'4" -
&'8;#; , #/ 43%, \$#"?/8\$] \$. '9&) +K\$,9,>/&,&#KU9,8'7/#" @ - ,&
658,8±194,04\$ =, 460,5±56,94\$. L,9/3/&'8; \$144/)#@ 4,^#,\$&"
\$. '9&)/ \$#"?/8\$] #/ 46% - ,& 2358,4±230,84\$ =, 1614,2±219,64\$.
c)'=" #39,>/&,&#KU\$. '9&)/8;#KU U)/9&)'\$&"9 #/78_=/8\$]),\$&
#/ 10% +8">"#K \$. '9&)/8;#,@ 4,^#,\$&" LF - 9,8'7/#" @ - ,&
1570,0±180,14\$ =, 1724,7±145,54\$ " \$#"?'#" #/ 21% .,9/3/&'8]
VLF - ,& 530,4±29,94\$ =, 439,8±14,34\$. 5/\$>'&#K@ .,9/3/&'8;
LF/HF .,+Ke/8\$] #/ 34% - ,& 1,75±0,231\$8 '= . =, 2,34±0,361\$8 '= .
L,9/3/&'8; VLF/HF .,+Ke/8\$] #/ 18% - ,& 0,49±0,12 =,
0,58±0,151\$8 '= .

N/ &,&8;#K@), \$& #/.)]?##,\$&" +)J18]A"" \$')=>#,@ =] -
&'8;#,\$&" \$&1='#&,+19/3K+/8, .,+Ke#'" +8">"#K "#='9\$/ #/.)] -
'#"] #/ 96% - ,& 124,5±12,31\$8 '= . =, 244,6±27,01\$8 '= . " #'='9\$/
A#&)/8"3/A"" #/ 32% - ,& 1,98±0,101\$8 '= . =, 2,62±0,151\$8 '= .

L,81>'##K' #/4" =/##K' \$+'='&'8;\$&+1_&, \$1^'\$&+##,4), -
\$&' /9&"+#,\$&" "\$4./&">'\$9,J, ,&='8/ FNc " /=)'#)J">'\$9,J, 9/#/ -
8/)J18]A"" .)" 14#;e#"" +8"]#"] ./)/"\$4./&">'\$9,J, ,&='8/
FNc " U,8#"')J">'\$9,J, 9/#/8/)J18]A"" #/ =]&'8;#,\$& \$"#1\$,-
+,J, 138/ \$&1='#&,+5'318;&/&K "\$\$8'=,+/#"] \$,J8/\$1_&\$] \$8"&)/ -
&1)#K4" =/##K4" [19, \$ 219],+9,&,)KU /+&,)K ,&4'>/_& =,\$&,+)' -
#,' 1+8">'#" #/.)]?#"] 4'U/#"34,+)J18]A"" \$')=>#J,)" &4/
" 3#/>'&'8;#1_ A#&)/8"3/A" _ 1),+#] 1.)/+8#"] \$')=>#,@ =] -
&'8;#,\$&;_ 8_='@, \$ #"39,@ /=/.&/A"" @ 9 X"3">'\$9"4 #/J)139/4.
FK)/?'##K@),\$& "\$4./&">'\$9,@)J18]A"" .)" X"3">'\$9"U #/J)13-
9/U 1 #'&)'#),+##KU 8_='@ .)" +,="& 9 \$#"?'#" _ /=/.&"+#KU
+,34,?#,\$&'@ \$')=>#,-,\$,\$1="\$&,@\$\$&'4K " ,&)/?'&\$] #/ U)/9 -
&)'\$&"9/U \$')=>#J,)" &4/ + "\$U,=#,4 \$,\$&,#"" [16, \$ 476].

I/ +'4] "\$\$8'=,+/#"] +8">"#/ LY5c \$&1='#&,+.,+Ke/8/\$;
,& =,#,3,8,J">'\$9,J, (5 7/88,+)=, .)'4,)7"=#,J, (6 7/88,+)\$,\$&,-
]#"] . F,3#"9#,#'" .)'4,)7"=#,J, \$,\$&,#"] , ., 4#'"_ :/'+\$9, -
J, 5. . " =). [16, \$ 479],&)/?'& \$#"?'#" X1#9A",#/8;#KU)'3) -
+,+ " +K)/?'##,' #/.)]?#")J18]&,)#KU "\$&'4,]+8]]\$; .,9/3/ -
&'8'4 +K\$,9,@ +'),]#&,\$&")/3+"&"] ./&,8,J">'\$9,J, \$,\$&,#"] .
F/?#, .,4#"& , >&, "34#'"] .,9/3/&'8'@ +)/'7'8;#,\$&" \$')=> -
#J,)" &4/ .)'?/_& ., +'4#" 4'&7,8">'\$9" " \$&)19&1)#K'

#/)1e'#"] + "\$.,8#"&'8;#KU ,)J/#/U , .,[&,41 ,)J/#"34 + &'>#'""
#9,&,),J, +)'4'#" \$.,\$,7'# .,==')?"+/&; +K\$,91_)/7,&,\$., -
\$,7#,\$&;, #, 3/&'4 4,?'& #/\$&1."&; \$)K+ /=/.&/A"" + +"'=')/3-
8">#KU#/)1e'#"@ , \$)/3+"&'4 ./&,8,J">'\$9"U ,&98,#'#"@ + ,) -
J/#/U-4"e'#]U .

R8] &'\$&"),+/#"] + .,8'+KU 1\$8,+"]U >/^' "\$.,8;31'&\$] \$8'-
=1_^] /..)/&1)/ :

=%68+8-*(S: 1@"\$86%\$+6)-%D6«Wardioline» ()"\$1#,9 5)=/'&
+,34,?#,\$&; +K.,8#'#" [8'9&),9/)=",J)/X"" + «.,8'+KU » 1\$8,+"]U,
,)+='#" 4/\$\$,+,J, \$9)"##J/ \$.,)&\$4#,+ .



5"\$1#,9 5 -L,)&/'"+#K@[8'9&),9/)=",J)/X «Cardioline»

]4-6%""86 \$%'4l08"6(S: «Spirobank MIR» /..)/&#K@ 9,4 -
.8'9\$ =8] .,)'='8'#" 8'J,>#,J,)'3')+/ , "34')#" ,7lj4#KU
" \$9,),\$&#KU .,9/3/&'8'@ =KU/#"] (? "3#'##,@ '49,\$&" 8'J9"U, ,7l -
'4/ X,)\$"),+/##,J, +K=,U/ " =)1J"U .,9/3/&'8'@) ()"\$1#9" 6, 7).



5"\$1#,9 6 -c.",4'&) 9,4.;_&')#K@ «Spirobank MIR»

5"\$1#,9 7 -L),&,9,8 \$."),4'&)"

3.4.: \CfH]MK\cHZa\H \ZZOH_CAMK\d

N/"7,8")/\$.),\$&)/# ##K4 .),J)/44#K4 .),=19&,4 =8]
)'e'#"] 3/=/> 4,='8"),+/#"] " /#/8"3/ =+"?'#" @ +#/e'@ \$&)/#'
\$8'=1'& #/3+/&; 3D Studio Max. a+8/'#" 3D-418;&"4'="/
.,3+,8]'& &)'#')1 [XX'9&"+#")'/8"3,+K+/&; .'=/J,J">'\$9"@
.)"#A". #/J8]=#,\$&": ='4,#\$&)/A"] =+"J/&'8;#KU ='@\$&+",@
&/9&">'\$9"U 3/4K\$8,+ \$.,)&"+#,J, ,7,)1=,+/#"] " &)'#/?'),+
+ 3D-J)/X"9' , 4,='8"),+/#" \$.,)&"+#KU .),J)/44 - +,&
#'.8#K@ .)')>#; +,34,?#,\$&'@ 4,='8"),+/#"] =+"?'#"@
+X"3">'\$9,@ 918;&1)' " \$.,)&' .

L),J)/44/ AutoCAD .)'=\$&/+8]'& +,34,?#,\$&; ,A"X),+9"
=+"?'#@" >'8,+9/ , #/.)"4) , \$, \$&),7,X,&,J)/X"" .)"
"\$.,8;3,+/#"" [8'9&),##KU .8/#e&,+ ("J"&/@3'),+). L8/# +,=#,J,
\$&/=",#/ - >)'&'? , \$,3=##K@ + .),J)/44' AutoCAD, .,3+,8]'&
,&\$8?'"+/;& =+"?'#"] 8,=9" " \$.,)&\$4#'/ +8,=9' , +3/+"\$4,\$&" ,& "U
#/U,?=#"] #/= 1),+#'4 4,)] , \$9,),\$&;_ =+"?'#"] , 1),+#'4 +,=K.

'&,=K .,&'9,[8'9&),##,J, "34')#"] =+"?'#@" >'8,+9/ -
&'U#,8,J"] «motion capture», 309/#"),+/#"" .,3+,8]_& .),+,"&;
"\$8'=#,+/#"" =+"?'#@" >'8,+9/ (\$.,)&"+#KU + >/\$&#,\$&),
\$+,34,?#,\$&;_)J"\$&)/A"" , "34')#"] " /#/8"3/ U)/9&)"\$&"9
,),A'\$\$,+)/38">"@ .),)=K (7",4'U/#">'\$9"U , X"3",8,J">'\$9"U ,
7",U"4">'\$9"U , ."\$U,8,J">'\$9"U " =).).

:',4'U/#">'\$9"@ .),A'\$\$, .)'=\$&/+8]_ ^"@ \$,7,@.!)'4'^#"
&'8/ >'8,+9/ " /"8" 'J, 3+#+;+ +, +)'4'#" " .),\$&)/#\$&+ ,]+8]'&\$]
,=#"4 "3 &'91^"U «+KU,=,+» =+"J'&'8;#,@ =]'&'8;#,\$&" >'8,+9/ .
N/ ,.&"4/8;#,' ,7'\$.'>'#" 7",4'U/#">'\$9,@ .),J)/44K =+"?'#"]
=,8?#K 7K&; #/.)/+8'#K +\$' , \$&/8;#K' .),A'\$\$\$K .,==')?/#"]
?'3#='&'8;#,\$&" . R8] /=+9'&/#,@ .,\$&/#,+9" A'8" " 3/=/>
\$.,)&"+#KU =+"?'#@" , / &/9?' =8] ,.&"4"3/A"" 1.)/+8'#"]
" 9,#&),8] +.),A'\$\$\$' "U,\$+,#"] " \$,+)'e'#\$&+,+/#"] #',7U,="4,
"\$8'=#,+/;& 7",4'U/#">'\$9" U)/9&)"\$&"9" =+"?'#@" , 9,&,)K'
)J"\$&)"1_&\$] , "34')_&\$] " /#/8"3")1_&\$])/38">#K4" 4'&,=/4" .
F #/\$&.]^" +)'4] =,4"#")1_& 7'\$9,#&/9&#K' ,.&'9, -[8'9&),##K'
4'&,=K . a\$#,+#K' "3 #": \$&),7,\$9,.">'\$9/] \$&)',X,&,J)/44'&)"] ,
7",4'U/#">'\$9/] 9"#4/,&,J)/X"] " 9,4.;_&)'#K@ +="',/#/8"3 .

]86%B%2\$%4-H"2\$26"6"%W%8%D6+""86-C]+8]'&\$] #/"7,8"
&,>#K4 4'&,=,4 "34')#"] 9"#4/8">'\$9"U U)/9&)"\$&"9 =+"?'#"]
>'8,+9/ . Y7\$8_&#K' .,J)'e#,\$&" .)" "34')#"" 9,,)=#/#& &, >'9
&'8/ \$.,)&\$4#'/ \$,\$&/+8]_& 0,001 4, \$9,),\$&" - 0,05 4/\$
" 1\$9,)'#"] - 1,5 4/\$. a=#/9, [&, =,\$&/&,># , =),J,@ , J),4,3=9"@,
&)1='49"@ " #'=\$&/&,># , J"79"@ 4'&,= , .)"4'#"4K@ 8'e;
+8/7,)/&,)#KU 1\$8,+"]U.

e-%'"E+(-H"2\$+C\$-("'+8%D6+W-C

c .,]+8'#""4 + 70-U J,=/U .)'A"3",##KU +K\$,9,\$9,),\$&#KU
9"#,9/4') \$ +K\$,9,@ \$&/7"8;#,\$&;_ &)/#\$.,)&/ .8'#9" + X"8;4,+,4
9/#/8' (±19/=) .)" >/\$&,&'\$!49" 509/\$) " 9"#,/#/8"3/&.,+ X"8;4,+ ,
+ 9,&,)KU \$&/#=#/)&#K@9"#,.,)'A")1_ ^"@ 78,9 \$.,)]?'# >)'3
"\$&'41 /#/8,J, -A"X),+,J, .),7)/3,+/#"] \$4"9),9,4.;_&),4 , 7,8"
e"),9,')/\$.,)\$&)/##"" .,81>"8" 9"#4/,&,J)/X">'\$9" 4'&,=K

"34')#"] 7",4'U/#">'\$9"U U)/9&)"\$&"9 =+"?'#@" . F\$8'=\$&+" 7,8" .),\$&,@ " J"79,@ .),A'=1)K ,A"X),+9" &,>'9 4'&,<= 7",4'U/#">'\$9,@ 9"#4/,&,J)/X"" \$&/8=,4"#"),+/&; + [9\$.)"4'#,@ 7",4'U/#"9' \$.,)&/ 80-90Jj (\$,7'##, .)" /#8"3' &'U#"9" \$.,)&"+#KU =+"?'#@" . L, \$)/+##" _ \$, \$&)',X,&,J)/44'&)">'\$9"4 4'&,<=,4 , 4'&,<= 7",4'U/#">'\$9,@ 9"#4/,&,J)/X"" 4'#" &,>'#. c144/)#/ \$)'=#]] ,e"79/ &,>#,\$&" 9"#4/,&,J)/X">'\$9,J, 4'&,<=/ .)" ,.)'='8'#" 9,,)="#/& &,>'9 ,7'9&/ \$,\$&/+8]& 4-5 44 . L)" 3/=##KU .)/4'&)/U =+"?'#"] &'\$&,7'9&/ (., .)'4'^#" _ - 0,54, ., \$9,),\$&" - 6 4/\$ " 4/9\$'4/8;#41 1\$9,)'#" _ 30 4/\$) /7\$8_&#K' .,J)'e#,\$&" \$,\$&/+8]_&: ., .)'4'^#" _ - 5 44, ., \$9,),\$&" - 0,1 4/\$ " ., 1\$9,)'#" _ - 6 4/\$. a&#,\$"&'8;#/] ,e"79/ 4'&,<=/ .)")/\$>'&' 9"#4/,&">'\$9"U U)/9&)"\$&"9 \$,\$&/+8]&: ., .)'4'^#"4 - 1-3%.,, \$9,),\$&" - 3-5 " ., 1\$9,)'#" _ - 10-30%.

i\$. ,8;3,+/#" +="=',,3,7)/?'#@" =8] 7",4'U/#">'\$9,J, /#8"3/ =+"?'#@" \$=')?"+/8,\$; 8"4"&,4 >/&,&K +="=',\$'49" (50-60 <A) " ,&\$1&\$&+"4 +="=',9/4') \$ 3/&+,,4 . L,\$8' .,]+8'#"] &/9"U +="=',9/4') , ,7'\$.'>"+/_^"U +K=')?91 =, 1/500 \$ " &'4 \$/4K4 \$+,,=]^"U «\$4/3K+/#" » +="=',,3,7)/?'#"] =, 4"#414/ .)" +K\$,9"U \$9,),\$&]U =+"?'#"] , / &/9?' +K\$,9,>/&,&#KU +="=',9/4') " +="=',4/J#"&,X,#,+ ,.,3+,8]_ ^"U .),3+,="&; \$'491 \$>/&,&,@=, 500 <A .)"4'#" +="=',/#8"3")1_ ^"U "\$&'4 + 7",4'U/#">'\$9"U "\$\$8'=,+/#"]U \$&/8, 7,8" &,>#K4 " 4,?'& "\$.,8;3,+/&,\$] =/'? .)" /#8"3' 7K\$&)KU=+"?'#@" 1=) #,J, " &,8>9,+J, &"/ .

Y%'4108"6(S: *-)"%+(+@-/ CJ, ,\$,+K4" =,\$&,"#\$&+/4"]+8]_&\$] =,\$&/&,># , +K\$,9/ &,>#,\$&; "34')#"@ , ,&#,\$"&'8;#/] .),\$&,&/ " J"79,\$&; "\$.,8;3,+/#"] , +,34,?'#,\$&; /+&,4/,&">'\$9,@ ,A"X),+9" &,>'9 =+"?'1^J,\$] ,7'9&/ " \$.,)]?'#"] +="=',,3,7)/?'#"] \$ e"),9"4 ="/./3,#,4 /#8,J,+KU \$"J#/8,+ ,.,81>'4KU ,&=)1J"U \$)'=\$&+)J"\$&)/A"" " "34')#" =+"?'#@" (&'#3,J)/X"] , J,#",J)/X"] , 9/)=,J)/X"] " &. .). i\$U,=#K@ 4/,&)"8 #' &)'71'& .)'=+)'&'8;#,@ ,7)/7,&9" " /#8"3 4,?'# , #/>#"/&; \$)/31 .,\$8' +="=',\$'49" "8" + .),A"\$ \$" (.)" "\$.,8;3,+/#" 1\$&),@\$&+ /+&,4/,&">'\$9,@ ,A"X),+9" +)?'4' «on-line». L, \$)/+##" _ \$X,&,J)/44'&)">'\$9"4 " 9"#4/,&,J)/X">'\$9"4 4'&,<=/4" , +="=',/#8"3")1_ ^" "\$&'4K ,&#,\$"&'8;# , #'=),J" " 9,44')>'\$9" =,\$&1.#K. R, #'=/+J, +)'4'#" &,>#,\$&; .,)'='8'#"] 9,,)="#/& &,>'9 \$.,4,^;_ 9"#,/#8"3")1_ ^"U "\$&'4 (16 44 .8'9/) 7K8/

+Ke' , >'4 1 +="' ,/#/8"3")1_^"U "\$\$&'4. n,&])/38">"] + &,>#,\$&"
4'?=1 # "4" 7K8" \$&/&"\$&">'\$9" =,\$&,+)'#K (\$144/)#/] \$)'=#]]
,e"79/ ,.)'='8'#"] 9,,)'="#/& &,>'9 ,7'9&/ 4,8 44 " 5,8 44
\$,,&+'&\$&+'##, =8] 9"#, " +="' ,4'& , =, + (5<0,1).

3.4.1.\$ZChHKKCZB\HJ\cHZaCi bC_`CBCAOHKKCZBCBCEBZfHKCA
ABHZBM\JE\ bEC]Cj_HK\ aCKBECOGK\ZBMKJ\ ZLM_MKKGf
\KBHEAMOO\EHfHK\bC_MKKGfH\CfH]MK\cHZa\]ZZOH_CAMK\i

c A'8;_ +K]+8'#"] &'U#">'\$9"U \$,7'##,\$&'@ J)'78" 9/?=K@
\$.,)&\$4# .),U,="8 #/ 8,=9' 9,#&),8;#K@ ,&)'3,9 ="\$&/#A"" 2004
\$ "#&'#\$"+#,\$&:_ 90% 4/9\$"4/8;#,@ . L)'=8,?'##/] 4'&,"9/ 9,4 -
.8'9\$#,J, 7",4'U/#">'\$9,J, 9,#&),8] &'U#">'\$9,@ .,=J,&,+8'##, -
\$&" J)'7A,+]+8]'&\$] 1#"9/8;#,@ ., \$+,41 \$,=')?/#" _ , \$,,&+'&-
\$&+1'&4"),+41 1),+#_ #,+3#K " +98_>/'& ,A'#91 [XX'9&"+"#,\$&"
\$8'=1_^"U ./)/4'&),+ &'U#"9" J)'78" :

- \$&'.'#; "\$.,8;3,+/#"] '\$J4'#&,+ &'8/ .)" +K.,8#'" J)'79/ ;
- \$&'.'#; \$"#U),#"3/A"] =+"?'#"@ +.),A'\$ \$' J)'78" ;
-)/+#,4')#,\$&; U,=/ 8,=9" ;
- [XX'9&"+"#,\$&; .)'='>" 1\$"8"] \$ 8,./\$&" +'\$8/ #/ 8,=91 =8]

" .),=+"?'#"]
:,"4'U/#">'\$9"@ /#/8"3 &'U#"9" J)'78" +98_>/8 9,8">'\$&+'# -
#,' " 9/>'\$&+'##,' ,."\$/#" ="#/4">'\$9"U " 9"#4/&">'\$9"U .,9/ -
3/&'8'@ J)'78" , 8"4"&")1_^"U \$9,),\$& ; .),U,?'=#"] \$,)'+#,+/ -
&'8;#,@ ="\$&/#A"" .

F 9/>'\$&+' ,,\$#,+#KU 9)"&')"+)/A",#/8;#,\$&" 1.)/+8'#"]
\$.,)&"+#K4" =+"?'#"4")/\$\$4/&)+/8"\$; : [9,#,4"3/A"] [#']J""
4Ke'>#J, \$,9)/^#""] (3/ \$>'&4#"4"3/A"" 8"e#"U =+"?'#"@ .)"
+98_>'#" +)/7,&1 +'=1^"U 4Ke'>#KU J)1..); 4#"4"3/A"] 9,8" -
>'\$&+/ \$&'.'#@ \$+,7,=K =+"?'1^@\$] "\$\$&'4K; \$,,&#,e#" 4'? -
4Ke'>#,@ 9,,)'="#/A"" ., .)"#A".1)'A".),9#J, &,)4,?'#"] ;
4/9\$"4/8;#,' "\$.,8;3,+/#")/9&"+#KU \$"8.

F 7",4'U/#">'\$9,4 /#/8"3' =+"?'#"@ 4/&')"/8;#KU &'8 (J)'7 -
A/, +'\$8/, 8,=9") 1>"&K+/8"\$; &/9" +3/"4,='@\$&+"], .)" 9,&,)KU
.,8,?'#" "8" =+"?'#" 9/?=,J, &'8/ 3/+"\$"& ,& .,8,?'#"] "8"
=+"?'#"] +\$U,\$&/8;#KU +A'8,\$&#,@J)'7#,@ 4'U/#">'\$9,@ "\$\$&'4'
(<c .)" "34'#"#" A'#&)/ =/+8'#"] #/ ,,)1 (PR). n)/9&)"\$&" -
9/ 7",4'U/#">'\$9"U .,9/3/&'8'@ &'U#"9" J)'78" \$.,)&\$4#,+ .)"+' -
=#/ +&/78"A' 5.

S/78"A/ 5 -S)'U78,>#K@/#/8"3 ,,)#KU +3/"4,=@\$&+"@
 >/\$&'@&'8/ \$.,)&\$4'#/ \$8,=9,@

i\$8'=1'4K' ./)/4&)K	f/\$&" &'8/ \$.,)&\$4'#/		
	8'+/] \$&./ (3/=#]] #,J/)	./)/+] \$&./ (.)'=#]] #,J/)	9,8'#, (8'+/] #,J/)
R"\$&/#A"] .1&" PR, \$4	1,26	3,55	3,55
L8,^/=; 1>/\$&9/, + 9,&,)4 .)'4'^/&\$] PR, \$4 ²	2,01	3,98	2,27
L)'=#' -3/=#" 9,8'7/#" PR, \$4	2,02	6,3	7,3
'="/8;#; -8/&')/8;#;' 9,- 8'7/#" PR, \$4	1,84	1,79	1,81
F'9&,) " .8,^/=; 1>/\$&9/ +9,&,)4 .)'4'^/&\$] A'#&) =/+8'#"] ./)/+, @ " 8'+, @ \$&,.K			
L)'=#' -3/=#" 9,8'7/#" PR: ./)/+, @ " 8'+, @ \$&,, @, 9,8'#,4			
'="/8;#; -8/&')/8;#;' 9,- 8'7/#" PR: ./)/+, @ " 8'+, @ \$&,, @, 9,8'#,4			

i\$\$8'=1'4K' .)/4'&)K	f/\$&" &'8/ \$.,)&\$4'#/		
	8'+/] \$&.,/ (3/=#]] #,J/)	.)/+/] \$&.,/ (.)'=#]] #,J/)	9,8'#, (8'+/]) #,J/)
a&#,e'#'" [88".\$/ .)/+, @ " 8'+, @ \$&.,K, 9,8'#/ +3/+"- \$"4,\$&" ,& +'9&,) / =/+8'#"] #/ ,,)1			
c"8K =/+8'#"] b)/+, @ " 8'+, @ \$&.,, @, 9,8'#,4 (9J)			

f+\$@0H"(-"
L)" 7",4'U/#">\$9,4 /#/8"3' ="#/4">\$9"U .)/4'&),+
+J)'78' #/ 9/#,[+K]+8'#)]= ,\$,7'##,\$&'@ :
1. N/78_='/&\$] 1+'8">#" \$"8K =/+8'#"] #/ ,,)1 9,8'#,4
+##"3 8,=9" , " \$#"?'#" =/+8'#"] .)/+, @ " 8'+, @ \$&.,, @, >&, .)" +, -
="& 9 1+'8">#" _ /\$"#U),##,\$&" + ,&&/89"+/#" (.)"98/=K+/'4/]
\$"8/ =/+8'#"] #/ ,,)1).
2. L)" +3/"4,='@\$&+" 3/=#'@8'+, @ #,J" \$,,) , @ #/78_='/&\$]
\$4'^#" [88".\$/ #/ #/)1?#1_ >/&\$; \$&.,K, .)" [&,4 .)']4'^#"
+'9&,) / =/+8'#"] , \$1^\$&+8]&\$] ., ="/J, #/8" \$#/)1?" +, + #1&);.
3. L)" +3/"4,='@\$&+" 9,8'#/ 8'+, @ #,J" \$,,) #, @ ., =1e9, @
.), "\$U, ="& 3#/>"&'8;#, ' .)'=#' -7,9,+,' 9,8'7/#" \$"8K =/+8'#"] ,
>&, .)" +, ="& 9 \$#"?'#" [XX'9&"+#,\$&" .)'=>" 1\$"8"@+ A'8,\$&-
#, @J)'7#, @ 4'U/#">\$9, @ "\$\$&'4' .
4. F3/"4,='@\$&+" .)/+, @ \$&.,K .)'=#'@ #,J" \$,,) , @ U/)/9-
&)'31_&\$] .)]4,8"# @#K4 +'9&,)4 , ,=#/9, =+"?'#" #/>"#/'&\$]
\$.]&9" , >&, \$, ,&+'&\$&+##, .)" J)'79' ,.1\$9/'& #,\$ 8,=9" , "3-3/ >'J,
.), "\$U, ="& 9,8'7/#" 8,=9" +.)' = -#/3/=.

5. N/"7,8;e/ .8,^/=; [88".\$/ +K]+8#/ #/ .)/+, @ \$&,. ' , +9,&,)4 .)'4'^/&\$] A'#&) =/+8'#"] (PR), >&, \$+="'&'8;\$&+1'& , #[XX'9&"+#,\$&" &'U#"9" U,=/ (/ "4'##, , .)"U,= \$&,.K #/ ,,.)1 " ,&&/89"+/#" \$&,.K ,& ,,.)K).

6. L)'4'^#" A'#&)/ =/+8'#"] +.)'=#' -3/= #'4 #/.)/+8'#" (/)\$&,\$]#" -=8"#/) +, +)'4] +K.,8#'#"] =+"?'#"] 1+'8"># , #/ .)/+, @ \$&,. ' , &/9?' 1+'8"># , .)'4'^#" A'#&)/ =/+8'#"] #/ 8' - +, @ \$&,. ' " 9,8'#' , +4="'/8;# , -8/&')/8;# ,4 (+.)/+ , -+8'+ , .) R/##K@ ="#/4">'\$9"@ ./)/4'&) .,3+,8]'& \$1="&; , .,8,?'#"" &'8/ +, +)'4] =+"?'#"] ,&#,\$'&'8;# , ,,.)K " .)'4'^#" PR +=,8; \$&,.K. a\$, - 7'##,\$&" .),\$&)/#\$&+'##, -+)'4'##KU .,9/3/&'8'@ &'U#"9" J)'78" .)'+'=#K +&/78"A' 6.

S/78"A/ 6 -a\$,7'##,\$&" .),\$&)/#\$&+'##, -+)'4'##KU .,9/3/&'8'@ &'U#"9" J)'78"

:",4'U/#">'\$9" U)/9&)'\$&"9" J)'79/	L)/4'&)K
S'4. (>/\$&,&/=+"?'#@" +4'#1&1)	48-50
R8"#/ e/J/ 3/U+/&/" +KU,=/ 8,./\$&" , 4	1,83
R8"&'8;#,\$&; ,,.)# ,J, .)'",=/ , \$	0,56
R8"&'8;#,\$&; X/3K 3/U+/&/, \$	0,16
R8"&'8;#,\$&; X/3K .,=&]J"+/#"" , \$	0,16
R8"&'8;#,\$&; X/3K ,&&/89"+/#"] , \$	0,20
R8"&'8;#,\$&; X/3K "3+8'>'#"] , \$	0,16
/9\$"4/8;#/] \$9,)\$&; J)'79/ , 4/\$	2,93
/9\$"4/8;#/] \$9,)\$&; .),#,\$/ , 4/\$	2,04
/9\$"4/8;#K@ 1J,8 /&/9" 8,./\$&" +X/3' 3/U+/&/=8] 9)/@# '@ &,>9" , J)/=	58 J)/=
/9\$"4/8;#K@ 1J,8 /&/9" 8,./\$&" +X/3' +KU,=/ 8,./\$&" =8] 9)/@# '@&,>9" , J)/=	143 J)/=

"\$%"()+Z-- :

1. a7)/&"&; +#"4/#" #/)/7,&1 #,J " =+"?'#"" , \$" &/3/: #' ,7U,="4, \$&)'4"&,\$] 9 4/9\$"4/8;# , @ \$9,)\$&" 9,).1\$/ +4,4'#& /&/9" ; \$,U)/#'"_ &)/'9&,)"" " \$9,)\$&")/7,&K)19, 8,9&'@ " .8'> ., &)'4 , \$]4 .

2. Q=)'?"'+/&; .)]4,8"#' @#,\$&; " \$&/7"8;#,\$&; U,=/ 8,=9" ; &)/'9&,)_" =+"?'#"] 8,=9" ; 1\$&, @>"+,\$&;&'4./ J)'78" ; 1+'8">" - +/&; \$9,)\$&; .),#,\$/ +'8\$/.

3. N' =, .1\$9/&; .)" =+"?'#"" 8,=9" 9"8'+, @ " 7,)&+, @ 9/>9" , / &/9?' .),\$&)/#\$&+'##,J, \$4'^#"] 8,=9" .

4. gXX'9&"+#,\$&; .)'= />" 1\$"8"] \$ 8,./\$&" +'\$8/ #/ 8,=91 =8]
" .),=+"?'#"] : #/78_='/&\$] 7,8;e,@ 1J,8 /&/9" , >&, .)"+,="&
9.),+/81 +'\$8/ + #/>/8' J)'79/ " \$#"?'#"_ ,.,)#,@ X/3K J)'79/ ;
#,7U,="4, \$8'="&; 3/ .,8,?'#"4 8,./\$&" + ,.,)#,@ X/3' J)'79/ ,
\$&)'4]\$; 9/9 4,?#, 78"?' 9 .).'#="918])#41 .,8,?'#"_ ., ,&-
#,e'#"_ 9 +,=' (\$,7'##, + X/3' "3+8'>'#"] +'\$8/) ()"\$1#9" 8, 9).
a\$#,+#/] 3/= />/ - \$&)'4"&,\$] 9 14'#;e'#"_ \$1^\$&+'##,J, 9,8'7/ -
#"] PR " 9 .)]4,8"#@#,\$&" +'9&,)/ =+"?'#"] A'#&)/ =/+8'#"] #/
.)/+,@ " 8'+,@\$&,. ' .

5"\$1#,9 8 -:",4'U/#"9/ #/>/8;#,@ \$&/=" J)'79/
\$.,)&\$4'#/ -9/#,"\$&/

5"\$1#,9 9 -:",4'U/#"9/ 3/+'e/_^@ \$&/=" J)'79/ \$.,)&\$4'#/ -9/#,"\$&/

3.5.?E`CZb\ECfHBE\cHZaCePKaJ\CKMOgKCBHZZB\ECAMK\H

F .)/9&"9' \$.,)&/ +K\$e"U =,\$&"?#"@ e"),9, .)"4#]_&\$] 9/9 8/7,)/&,)#K' , &/9 " .,8'+K' 4'&=K &'\$&"),+/#"] X1#9A",#/8; - #,J, \$,\$&,#"] 9+/8"X"A"),+/##KU \$.,)&\$4#,+ \$,A'#9,@ [#')J' - &">'\$9,@\$&,"4,\$&")/7,&K .

5/#' &'\$&"),+/#" + 8/7,)/&,)#KU 1\$8,+"]U 3/#"4/8, \$)/+#" - &'8;#, 4#J, +)'4#" , " #' +\$J=/ 7K8, =,\$&1.#K4 #/ &)'#"),+,>#KU \$7,)/U , + \$+]"3" \$ >'4 .),+,"8,\$; 8"e; + +=1^"U 9,4/#=/U +#/>/8' " 9,#A' .,=J,&,"&'8;#J, .)" ,=/ . c,,&+'&\$&+'##, +,34,?#,\$& "U .)"4#"#"] 7K8/ ,J)/#">'##,@ . S,>#,' ,.)'='8'#" "#="+"=1/8;#KU 3,# &)'#"),+9 , .)"41^\$&+'##,@ #/.)/+8'##,\$&" &)'#"),+,>#KU 3,# ., 1),+#_ fcc &/9?' +\$J=/ &)'7,+/8, #/8">"] 7K\$&),='@\$&+1_ ^"U [)J,\$.)',4'&)">'\$9"U "\$&'4 " /"8" 7",U"4">'\$9"U /#/8"3/&,),+ " \$&/A",#/#KU [)J,4'&),+ . L,]+8'#" 4,7"8;#KU [)J,\$.)',4'&)">' - \$9"U "\$&'4, 4,7"8;#KU 7",U"4">'\$9"U /#/8"3/&,),+ .,3+,8]'& .), - +,="& &'\$&"),+/#" , /#/8,J">#,' 8/7,)/&,)#41 , + .,8'+KU 1\$8,+"]U. F,34,?#,\$& +K]+8]& "##="+"=1/8;#K' 3,#K .)"41^\$&+'##,@ #/.)/+8'##,\$&" &)'#"),+,>#KU #/J)13,9 ., fcc + .,8'+KU 1\$8,+"]U .,]+ "8/\$; 3/ \$>'& "\$.,8;3,+/#"] 4,7"8;#KU "\$&'4 \$ e"),9"4)/= "1 - \$,4 ,U+&/ \$"J#/8/ .

c,,&+'&\$&+'##, .,]+ "8/\$; .),78'4/ \$,3=#"] 4,7"8;#KU 8/7, -)/&)"@ =8] "\$&'4#J, 9,#&),8] &)'#"),+,># ,-\$,)'+#,+/&'8;#,@ =]'&'8;#,\$&" ,&='8;#KU \$.,)&\$4#,+ " A'8KU 9,4/#= . c,3=#" &/- 9"U 4,7"8;#KU 8/7,)/&)"@ .,3+,8"& .),+,"& \$,+) '4'##1_ ="/ - J#,\$&"91 X1#9A",#/8;#KU +,34,?#,\$&'@ ,)J/#"34/ \$.,)&\$4#,+ #',.)'=\$&+'##, #/ +,=#,4 \$&/=",'# .

N/7,) &'\$&,+ =8] .),+='#"] X1#9A",#/8;#,@ ="/J#,\$&"9" =,8?'# +98_>/&; 9/9 .,8'+K' , &/9 " 8/7,)/&,)#K' &'\$&K .,\$9,8;91 ,#" .)'=\$&/+8]_& "#X,)4/A" ,)/38">#KU /\$. '9&/U X1#9A",#/8; - #,@.,=J,&,+8'##,\$&" . B/9 8/7,)/&,)#K' , &/9 " .,8'+K' &'\$&K"4'_& \$+," #'=\$&/&9" " .)"41^\$&+ / ,.,[&,41 #/ \$,+) '4'##,4 [&/.')/3 - +"&"] .)/+,4')#/ 3/= /> / ,7l="##"] [&"U 4'&=,+ \$ A'8;_ [9,#, - 4"" \$)'=\$&+" +)'4#" , .,+Ke'#"] =,\$&,+)'#,\$&" &'\$&,+

H/7,)/&,)#K' 4'&=K &'\$&"),+/#"] .,3+,8]_& .,81>"&; "#X,)4/A" , 9,&,)1_ #+,34,?#, 7K8,)/#" .,81>"&; \$.,4,^;_ .,8'+KU &'\$&,+ / &/9?' .,3+,8]_& 9,#&),8"),+&; 1\$8,+"] +#'e#@ \$)'=K . S/9, #/.)'4' ,)'J18]#, +K.,8#]'&\$] [)J,\$.)',4'&)">'\$9, &'\$&"),+/#" =8] .,)'='8'#"] &/9"U .,9/3/&'8'@ , 9/9 "#="+"=1/8;#K' 3,#K 4,^#,\$&" ., fcc , 4/9\$"4/8;#,' .,&)'78'##" 9"\$8,)= / ,

+ '#&"8]&,)#K' .,),J" , [9,#,4">#,\$&; J)'79/ , 9,#A'#&)/A"] 8/9&/&/9),+" " & .

L,8'+K' &'\$&K + \$+,_ ,>)'=; , "4'_& & ,.)"41^'\$&+, , >& ,.,3+,8]_& ,A'#"&; ,=#,+)'4##, \$,7^@ &/9?' " \$. 'A"X">'\$91_ =8] J)'78")/7,&,\$.,\$,7#,\$&; . g&" &'\$&K "4'_& 7,8" #"391_ \$&,"4,\$&; , 3/"4/_& 4#;e' +)'4#" " .,3+,8]_& .),+,"=&; &'\$&"),+/#" 7,8" >/& , =8] .,81>'#"] ,.)/&"+#,@ " #X,)4/A" " , \$,\$&,"#"" \$.)&\$4#,+ .

c.,)&"+#K@)'318;&/& +J)'78' #/ 7/@=/)9/U-+)'4] .)',=,8#"] ="\$&/#A"" 3/+"\$"& ,& =+1U ,#,#+K U X/9&,),+ : 4,^#,\$&" 4'U/#">'\$9,@)/7,&K , .),"3+,"=4,@ J)'7A/4" , 3/+"\$]^@ ,& "U X1#9A",#/8;#,@ .,=J,&,+8'##,\$&" " . \$"U">'\$9,@ 4,7"8"3/A"" . a\$#,+,,8/J/_^"4" .)/4'&)/4" +,3='@\$&+"]+8]_&\$] .,9/3/&'8" X1#9A",#/8;#,@ .,=J,&,+8'##,\$&" .

F,34,?#,\$&; 1+'8">"+/&;)/7,&,\$.,\$,7#,\$&; 7/@=/),>#"9/ ,J)/#">#/' =KU/&'8;#,@ " \$)'='># , -\$,\$1="\$&,@\$"\$&'4/4" . S/9, .)" #/.)]?'##,@)/7,&' #/' ="\$&/#A"")'39, 1+'8">"+/'&\$] 8jJ,>#/' +#-&'8]A"] . f/\$&,&/ =KU/#"] +,3)/\$&/'& =, 60-70 +=,U,+ . Q\$9,)'#" &'4./ J)'78" +8'>j& 3/ \$,7,@ #/)/^"+/#" 8jJ,>#,@ +'#&'8]A"" . Q+'8">'#" >/&,&K=KU/#"] .)"+,="& 9 &,41, >&, J)'7'A #' 1\$. '+/ - '& J817,9, +3=,U#1&; +\$8'=\$&+" >'J, ,7l'4 'J, =+"?'#"] \$.,&+'&- \$&+1'&)"4) #, 35%?'3#'##,@ j49,\$&" 8'J9"U. g&, ,7\$&,&'8;,\$&+, .)"+,="& 9 #' ,7U,"=4,\$&" 1+'8">'#"] ,7lj4/ 8jJ9"U " \$. 'A"/8;#,@ &)'#"),+9" =KU/&'8;#KU 4KeA. F "\$81 [&,J, &)'#"),+9/ J)'7A/ - 7/@=/),>#"9/ =,8?#/' .)'=1\$4/&)" +/&; /=/.&/A" _ \$.)&\$4#/' 9 4/9 - \$"4/8;#,@ 1&"8"3/A"" 9"\$8,)=/ "3 +,3=1U/

Y(),7#/')/7,&,\$.,\$,7#,\$&; , .,)'='8]4/ .)" 9/)=,")\$. ")/ - &,)# ,4 &'\$&"),+/#" \$.)&\$4#,+ ,]+8]&\$] #' &,8;9, 7/3"\$,4 =8] ='4,#\$&)/A"" +K\$,9"U \$.)&"+#KU =,\$&"?'#"@, #, " \$)'=\$&+,4 #/'81>e'J, " 7K\$&),J, +,\$\$&/#,+8'#"] \$.)&\$4#,+ .,\$8' X"3">' - \$9"U#/J)13,9. Y(),7#/')/7,&,\$.,\$,7#,\$&; ,\$,7'##, +/?#/' +J)'78' #/ 7/@=/),>#"9/ " 9/#,[. FK\$,9" /(),7#K' \$.,\$,7#,\$&" \$.)&\$4#/' - 98_>' +,@ X/9&,) +,\$\$&/#,+8'#"] 9/9 .,\$8' =8"&'8;#,@)/7,&K #' - 7,8;e,@ "#&'#\$"+#,\$&" ,&/9" .,\$8' 4,^#KU 9)/&9,+)'4##KU #/J)1 - 3,9. F .),A'\$ \$' /#/(),7#KU ()K+9,+KU, \$"8,+KU 9)/&9,+)'4##KU) #/J)13,9 #/9/.8"+/_&\$] .),=19&K)/\$./=/ , =8] +,\$\$&/#,+8'#"] 9,&,-)KU, / &/9?' =8] .),A'\$ \$,+ \$1.)9,4.'#\$/A"" &)'71'&\$] .,\$&1.8#" =,\$&/&,># ,J, 9,8">'\$&+/' 9"\$8,)=/ . Q\$. 'e#/' 8"9+"=/'A"] <"9"\$8,)= - #,J, =,8J/ » - 3/8,J .),A'\$ \$,+ +,\$\$&/#,+8'#"] " &)'#"),+/#,\$&"

\$.)&\$4#/ . S/9"4 ,7)/3,4 ,=KU/&'8;#K' (/(),7#K') .),A'\$K]+8]_&-
\$] X1#=/4'#&,4 =8])/3+"&"] /#(/),7#KU "\$&'4. a\$#,#K4" .,9/3/ -
&'8]4" /(),7#,@ +K#,\$8"+,\$&"]+8]_&\$] 4/9\$"4/8;#,' .,&)'78#" "
9"\$8,)=/ (VO₂max)" .),J /#(/),7#J, ,74'#/ (LYNa).

VO₂max.)'=\$&/+8]'& \$,7,@ \$/4,' +K\$,9,' .,&)'78#" "9"\$8, -
)=/ , 9,&),' 4,?'& 7K&; =,\$&"J#1&, + .),A'\$' ="#/4">'\$9,@
#/J)139" .)" 3/='@\$&+,+/#"" 7,8;e"U J)1.. 4KeA. a>'+"=#, , >&,
#/"K\$e"@ 8"4"& 1&"8"3/A"" 9"\$8,)=/ (a₂)]+8]'&\$] ,=#"4 "3 ., -
9/3/&'8"@ X"3">'\$9,@ X,)4K "8" &)'#"),+/#,\$&" . Q &)'#"),+/#KU
J)'7A,+ =8] ,7'\$.'>'#"] =,8?#K4 9,8">'\$&+,4 9"\$8,)=/ &)'71'&\$]
1),+#; 8'J,>#,@ +'#&"8]A"" , =,\$&"J/_^@ #/ ."9' X"3">'\$9,@
#/J)139" =, 200 48/4"# " +Ke' . N, X/9&,)4 , 8"4"&")1_^"4
/(),7#1_)/7,&,\$.,\$7#,\$&; , #/"7,8" >/\$&,]+8]'&\$] \$)'=>#,-
\$,\$1="\$&/] "\$&'4/.

S)'#"),+,>#K@ 1),+#; .,)'='8]'&\$] 9/9 \$144/ .18;\$/ +.,9,'
" .8_\$ 60%,& 'J, .)"),\$&/ .)" #/J)139' . N/.)"4) , .18;\$ +.,9,'
70 1=4"# , .)" #/J)139' - 1401=4"# , .)"),\$& - 401=4"# , 60%,&
)"),\$&/ - 42.S)'#"),+,>#K@ 1),+#; - 70+42=112=4"# .

S)'#"),+,>#K@ 1),+#; .,)'='8]'&\$] ., .,&)'78#" _ 9"\$8,) -
=/, &' . 70%,& LB (4/9\$"4/8;#,' .,&)'78#" "9"\$8,)=/). N/.)" -
4) : LB .)" .),J,+,@ #/J)139' = 28,548/4"#/9J, .)" 70%,& 4/9-
\$"414/ - 20,548/4"#/9J (.)" fcc 130 1=4"#). S)'#")1_^"@ 1), -
+#; #/J)139" .)" .18;\$' 1301=4"# .

S)'#"),+,>#K@ 1),+#; .,)'='8]'&\$] " ., +K]+8#" _ .),J/
/#(/),7#J, ,74'#/ (LYNa), &' .)'39,J, +,3)/\$&/#"] VE/VO₂ (+'#-
&"8]A",##K@[9+"+/8'#& ., 9"\$8,)=1). N/.)"4) , VE/VO₂ +.,9,' -
29,1;.)")/3#KU \$&1.'#]U #/J)139" - 24,9 - 20,5 - 20,7 - 22,3 - 24,5;
LYNa - 22,3 -.)" #/J)139' 75F&" .18;\$' 1301=4"# .

Q J)'7A,+ #/ 7/@=)/9/U " 9#[,.9/3/&'8; LB #/U,="&\$]
+.)'='8/U 5,2-5,68/4"# . N/"7,8;e" 3#/>'#"] .,9/3/&'8] .,&)'78#" "
9"\$8,)=/ #/ ='#"A1 4/\$\$K &'8/ ,&4>/_&\$] 1 J)'7A,+ - \$&/@'),+=,
75-78 48/ 9J4"# . Q J)'7A,+ - \$.)"#&'),+ [&/ +8">"#/ \$,\$&/+8]'&
+\$)'=#'4 67 48/9J4"# ++="1&,J, , >&, "U 4/\$\$/ &'8/ #/U,="&\$] ,7K>#,
+ .)'='8/U 85-909J c8'=1& "4'&; ++="1, >&, + J)'78' #/ 7/@=)/9/U
" 9#[, 1),+#; .,&)'78#"] 9"\$8,)=/ #/ ='#"A1 +'\$/ "4"& 4'#;e"
3#/>'#" , >'4 + =)1J"U +="U \$.)&/ , & 9. 1.)/?##" +K.,8#]'&\$]
++=' , J=' \$1^'\$&+##,' 3#/>'#" "4"& #' 4/\$\$/ &'8/.

L)" .),+='#"](J,\$.)",4'&)" " 4/9\$"4/8;#K@ 9"\$8,)=#K@
=,8J .,)'='8]'&\$] .,\$8' .,+&,)#KU 1.)/?##"@ +K\$,9,@ "#&'\$"+-
#,\$&" (,7K>#, +Ke' 95-97%9 4/9\$"4/8;#,@ \$9,),\$&" #/ ,&)'39').

Q.)/?##"] +K.,8#]_&\$] =, ,&9/3/, =8"&'8;#,\$&; .,+&,)#KU
 1.)/?##" @ # '.)'+Ke/'& 60 \$; .)" 1+'8">'#" +)'4#" ,&=KU/"#-
 &'#\$"+#,\$&; 1.)/?##" @ +,3)/\$&/'&.

B"\$8,)=#K@ =,8J ,.)='8]_&\$] .1&'4 /#/8"3/ J/3,+KU ,7l' -
 4,+ , 3/7)/##KU +, +)'4] +,\$\$&/#+8'#"] .,\$8' 1.)/?##" @ .5/34')K
 J/3,+KU .)"U,=,+ ,.)='8]_&\$] .1&'4 +K>"&/#"] "3 .,&)'78'#"]
 9"\$8,)=/ +'8">'#K a₂ - .,&)'78'#"] .,9,] . L,&)'78'#" .,9,]
 ,.)='8]_&\$] .,\$8' 30 4"# ,&=KU/'.)'= 1.)/?##"4 + ,9, ' , \$"=]
 (SMR u sitting metabolic rate)+\$' "34)'#" J/3,+KU ,7l'4,+ .)" +, -
 =]&\$] 9 \$&/#=#/)&1 (STPD). 5/\$>'& +'8">'#K ,7^J, 9"\$8,)=#,J,
 =,8J/, 'J, /8/9&/&#,@ " 8/9&/&#,@X)/9A"" .),+,"&\$] .1&'4 /#/8"3/
 3/+"\$4,\$&" <1),+##; .)"U,=/ a₂ - +)'4] +,\$\$&/#+8'#"] » ")'e' -
 #"] 7"[9\$.,##A"/8;#J, 1)/+##"] . c8'=1& "4&; + + "=1, >&, ., -
 \$9,8;91 , \$#,+##/] 8/9&/&#/] X)/9A"] 9"\$8,)=#,J, =,8J/ "4"& +K\$, -
 91_ 9,))'8]A" _ \$9,#A#&)/A"@ 8/9&/&/ + 9),+ " .,\$8' 1.)/?##"] ,
 &, + \$.,)&"+#,@ .)/9&"9' =8] ,A'#9" /#/[] ,7#KU +,34,?#,\$&'@
 \$.,)&\$4#/"\$.,8;31_& ,.)='8'#" 8/9&/&/9),+ " .

R8] [)J,\$.),"4'&)">'\$9,J, &'\$&"),+/#"] \$.,8'+K4 &'\$&"),+/-
 #""4 "\$.,8;31'&\$] 4,7"8;#/] /..)/&1)/ . L)"4#]'&\$] \$%4@"\$2@C
 (+D6L/%H(%B'28-6%*+(-C (+ *%)(%' 28+)-%(" , 4%)\$%(86%@'dYU
 2 D+/%+(+@-/%CJ, , \$#,+##K' .)"41^\$&+ / :

. [)J,\$.),"4'&)">'\$9"@ &'\$& \$ #'.)'K+#,@)'J"\$&)/A"@
 ,& 1 =, 12 gB<-,&+'=#" @, "34)'#"4 =KU/&'8;#J, ,7l'4/ " ,.)' -
 ='8'#"4 \$,\$&/+ / +K=KU/'4,J, +,3=1U/(O₂/CO₂);

. 7'\$.),+,#/] .)'= /> / gB< u3/."\$; 7'3 .,4'U ;

. ="#/4">'\$9"@ 9,#&),8; +\$'U ./)/4'&),+ &'\$&/ #/ =+1U4, -
 #"&)/U ;

. /#/8"3 9/?=,J, \$)'=>#J, " =KU/&'8;#J, A"98/ +)?'4'
)'/8;#J, +)'4#" (&/78"A/ 7).

S/78"A/ 7 -c)/+##&'8;#/] U)/9&)'\$&"9/ [)J,\$.),"4'&)">'\$9"U
 ./)/4'&),+ \$.,)&\$4#,+ " \$.,)&\$4# ,9 , J)'7A,+ #/ 7/@=)/9/U
 (41?>"#K " ?'##^"#K) .,)'318;&/&/4 &'\$&"),+/#"]

L,9/3/&'8;	1?>"#K	m'#^"#K)
VE, 8	134±4,2	94±2,8	p<0,001
VE (LYNa), 8	120,1±4,2	82,7±6,0	p<0,001
fR , +4"#	46,8±1,3	44,5±0,9	p=0,064
fR , %	112,6±3,1	108±2,4	p=0,142

L,9/3/&'8;	1?>"#K	m'#^"#K)
5R, /7\$	24,2±2,4	29,3±3,1	p=0,151
5R, %	76,3±10,4	94,8±12,9	p=0,142
VO ₂ max,48/4"#	3702±131,6	2603,7±67,8	p<0,001
VO ₂ (LYNa), 48/4"#	3470,4±192,3	2454,4±146,8	p<0,001
VO ₂ ,48/4"#/9J	54,7±1,7	44,2±1,7	p<0,001
VO ₂ /fcc (LYNa)	24,4±3,2	27,9±4,4	p=0,011
VO ₂ /fcc ,/7\$.	24±1,9	15,7±1,0	p<0,001
VO ₂ /fcc , %	155,2±10,5	153,8±10,7	p=0,988
VcO ₂ max,48/4"#	3660,2±97,8	2547,8±75,7	p=0,011
VcO ₂ (LYNa), 48/4"#	3489,8±127,8	2345,3±120,1	p=0,011

a7\$8'=,+/#" J)'7A,+ \$, \$&/?'4 3/#]&"@\$.,) &,4 7,8" 3 8'& .),+,"=8,\$; #/ J)'7#,4 [J,4'&)' «Dansprint» (n=26)&/78"A/ 7). c)'=#"@ +,3)/\$& ,7\$8'=,+/##KU \$.,)&\$4#,+ \$,\$&/+"8 18,9±0,78'&, 9,8">'\$&+, _#,e'@ " =' +1e'9 , +98_>'##KU + "\$\$8'=,+/#" , 7K8, \$,..,\$&/+"4, . F\$' \$.,)&\$4#K .),U,"=8" [J,\$.),'4'&)">'\$9,' "\$-\$8'=,+/#" («Oxycon Mobile», Jaeger)'4/#"]) \$,A'#9,@ \$8'=1_ - ^"U .,9/3/&'8'@ : 4/9\$"4/8;#/] 4"#1&#/] +'#&"8]A"] (VE max),4/9-\$"4/8;#,' ..,&)'78'#" 9"\$8,) =/ (VO₂ max),+ &,4 >"\$8' #/ 1),+#' /#/[),7#,J, ..,J/ (VO₂ (LYNa)), 4/9\$"4/8;#K@ 9"\$8,) =#K@ .18;\$ (VO₂/HR max).a.)='8'#" ..,J/ /#/[),7#,J, ,74'#/ (LY - Na) +K.,8#]8" 4'& ,=,4 V-slope.

L),=,8?'&'8;#,\$&; \$&/#=#/)&#J, &'\$&/ \$,\$&/+8]8/ 8 4"# , #/ .),&]?'#"" 2 4"#1& \$.,)&\$4# =,\$&"J/8 \$174/9\$"4/8;#,@ >/\$&,&K \$)'=>#KU \$,9)/^#"@ (fcc),)/\$\$>'&/##,@ .., X,)418' : 220- +,3)/\$& (8'&). R/8" + &'>'#" 6 4"# #/J)1391 ..==)'?"+/8" #/ 1),+#' , #,7U,"=4,4 =8] \$,U)/#'"] =,\$&"J#1&J, 1),+#] fcc .L, - 9/3/&'8" X1#9A"" +#e'#'J, =KU/#"] (FR , MasterScreen Pneumo, Jaeger),A'#"+/8"\$; "\$U,=#, , #/ 1-@ 5-@ 10-@4"#1&' ..,\$8' X"3">' - \$9,@#/J)139".

Y#/[]),7#K@ ..,J - #/' +K\$e/] "#&'#\$"+#,\$&; #/J)139", fcc "8" ..,&)'78'#"] 9"\$8,) =/ .)")/7,&' 7,8;e,@ J)1..K 4KeA, + &'>'#" 9,&,)@ .),"3+,\$&+, 8/9&/&/)/+#, 'J, 1&"8"3/A"" . a# .)'= - \$&/+8]&\$,7,@ 1),+#; ..,&)'78'#"] 9"\$8,) =/ (VO₂) +, +)'4] X"3" - >'\$9,@#/J)139", .)" 9,&,)@ /[]),7#, ' ..,)"3+,\$&+, [#']J"" =,..,8 - #]'&\$] /#/[),7#K4 ..,)"3+,\$&+,4 [#']J"" , >&,]+8]'&\$] ,&)/?'#""4

.,+Ke'#"] 1),+#] 8/9&/ + 4KeA/U " /&')"/8;#,@ 9),+" .
R8] ,A'#9" .),"3+,"=&'8;#,\$&" \$)'=>#,@ 4KeAK .)"4#]_& &/9,@
.,9/3/&'8; , 9/9 9"\$8,)=#K@ .18;\$ #/J)139", .)'=\$&/+8]_^"@ \$,-
7,@ .,&)'78#" 9"\$8,)=#/ #/ ,=#, \$)'=>#,' \$,9)/^#" "
(VO₂/fcc), &)'#= 9,&,)J, + 3#/>"&'8;#,@ 4)' ,&)/?/'& 1=/)#K@
,7l'4 \$)'=A/ . F #/\$&,)'^4 "\$\$8'=,+/#"" [)J,\$.),"4'&"] 7K8/
.),+='#/ \$"\$.,8;3,+/#""4 J)'7#,J, [)J,4'&)/ «Dansprint»\$ A'-
8;_ "31>#"] .,9/3/&'8'@ /(),7#,@ '49,\$&" . F J)1..' J)'7A,+
41?\$9,J, .,8/ +K]+8'#K 7,8;e"" [)J,\$.),"4'&)">'\$9"" .,9/3/&' -
8" &)'#"),+/#,\$&" . L,81>'##K' =,\$&,+)'#K')/38">"] , \$+]3/##K'
\$)/3#"A'@ .,8/ , "4'_& .,)'='8]_^" 3#/>#"" =8] .,9/3/&'8'@ J/-
3,,74#/#/ X,#' #/J)139".

f)'3 ,=# 4\$]A &)'#"),+,>#J, .),A'\$\$/ + .,=J,&,"&'8;#4
.)",=' J,"=>#J, A"98/ 7K8, .),+='#, .,+&,)#,' &\$&"),+/#"" #/
J)'7#,4 [)J,4'&)' «Dansprint»,'318;&/&K 9,&,)J, .)'=\$&/+8'#K
+&/78"A' 8.

S/78"A/ 8 -c)/+#"&'8;#/] U)/9&)'\$&'9/ [)J,\$.),"4'&)">'\$9"U
./)/4'&),+ J)'7A,+ #/ 7/@=)9/U(41?>"#K " ?'##^"#K), 3/#"4/_ -
^"U\$] J)'78'@ #/ 7/@=)9/U.,)'318;&/&/4 .,+&,)#J, &\$&"),+/#"]

L,9/3/&'8;	1?>"#K	m'#^"#K)
VE, 8	135±6,1	95±4,7	p<0,001
VE (LYNa), 8	122,3±5,3	83,2±5,8	p<0,001
fR , +4"#	47,3±1,7	44,9±1,1	p>0,005
5R, /7\$	24,6±3,1	29,5±2,6	p>0,005
VO ₂ max, 48/4"#	3712±112,2	2609±54,7	p<0,001
VO ₂ (LYNa), 48/4"#	3460,7±174,9	2448,2±154,4	p<0,001
VO ₂ /fcc (LYNa)	26,2±2,9	29,1±3,8	p>0,005
Vc O ₂ max, 48/4"#	3649,8±89,2	2539,2±68,5	p>0,005
Vc O ₂ (LYNa), 48/4"#	3479,2±109,4	2335,7±114,7	p>0,005

Y#/8"3 .),+='##,J, "\$\$8'=,+/&'8;\$9,J, 4'&)'"/8/ ., ,\$,7'# -
#,\$&]4 [#)J,,7'\$.'>#"] .,3+,8"8 .,)'='8"& \$,,&#,e'#" /(),7 -
#KU" /#/(),7#KU .),A'\$\$,+ + [#)J,,7'\$.'>#"" .)" +K.,8'#'#" "
)/7,&K)/3#,@ .),=,8?"&'8;#,\$&" \$ 4/9\$"4/8;#,@ "#&'#\$"+#,\$&_ -
., +)'4#" "U.)',=,8'#"] (&/78"A/ 9).

S/78"A/ 9 -a&#,\$"&'8;#K@ +98/= /(),7#KU " /# /(),7#KU
 .),A'\$\$,+ +,7^"@ [#')J'&">'\$9"@ 7/8/#\$)/7,&K)/3#,@
 .),=,8?"&'8;#,\$&" , \$4/9\$4/8;#,@ "#&'8;#"+#,\$&;_
 .. +)'4#" "U+K.,8#'#"] +J)'78' #/ 7/@= /)9/U

L),=,8?" - &'8;#,\$&; 1.)/?#' - #"] , \$	n)/9&') [#')J,,7'\$ '>#"]	'U/#">'\$9/ 4,^#,\$&; , % 4/9\$4/8;#,@	F98/= /(),7#KU .),A'\$\$,+ , %			L'=/J,J " - >'\$9/ #./)/+ - 8'##,\$&; &)'#"),+ - 9"
			,7^"@	9)'&"# - X,\$X/&- #K@	J8"9,8" - &">'\$9"@	
10	L)"41^' -	100	-	100	76	c9,),\$ & #,- \$'8,+]
30	\$&+'##, /# /(),7#K@	88	23	77	41	c9,),\$& - #/] +K- #,\$8" - +,\$&;
60		77	42	58	22	
120	c4'e/ # - #K@#/[-) ,7#,- /(),7#K@	68	60	40	15	FK#,\$8" - +,\$&;
240	L)"41^' - \$&+'##, /(),7#K@	53	76	24	11	
360		51	83	16	9	

i\$.,8;3,+/#"" + &)'#"),+,>#4 .),A'\$\$')'318;&/&,+ []J,\$." -
),4'&)">'\$9"U "\$\$8'=,+/#"@ \$.,\$,7\$&+1'& ,.&"4"3/A"" X1#9A",-
 #/8;#KU +,34,?#,\$&'@ ,)J/#"34/ =8] =,\$&"?'#"] &/9"U\$.A"/8"3" -
),+/###KU 'J, \$+,@\$&+9,&,)K' \$,\$&/+8]_&,\$#,+1 =8] /= '9+&#,@
 4,7"8"3/A"" /(),7#J, " /# /(),7#J, [#')J'&">'\$9,J, .,&'#A"/8/
 \$.)&\$4#,+ + 9,#9)'&#KU 1\$8,+"]U .)',=,8'#"] &)'#"),+,>#KU
 #/J)13,9 " \$,)'+#,+/&'8;#,@ = "\$&/#A"".

F98/=)/9A"@ /(),7#J, [#')J,,7'\$.'>#"] +,7^1_ [#')J, -
 .),=19A"_ + J)'78' #/ 7/@= /)9/U" 9/#,[#/ \$,)'+#,+/&'8;#,@ = "-
 \$&/#A"" 5004 \$,\$&/+8]'& 50-60%./ #/ = "\$&/#A"" 10004 - 70-80%.
 Y9&"+#,\$&; /# /(),7#KU .),A'\$\$,+ + [#')J,,7'\$.'>#"" #/ = "\$&/#-
 A"" 500 4 3#/>"&'8;#; +Ke' , >'4 .)" .)',=,8'#"" = "\$&/#A""
 10004. S/9, #/ = "\$&/#A"" 5004 +98/= + [#')J,,7'\$.'>#"" /# /(),7 -
 #,J, 9)'&"#X,\$X/&#J, 4'U/#"34/ \$,\$&/+8]'& 17-20%" J8"9,8" -
 &">'\$9,J, - 28-35%.S,J=/ 9/9 #/ = "\$&/#A"" 10004 +98/= 9)'&"# -
 X,\$X/&#J, 4'U/#"34/ + [#')J,,7'\$.'>#"")/+ # 10-12%,
 / J8"9,8"&">'\$9,J, - 15-24%B/9 +="#," 3 &/78"AK 9,.)" 1+'8">' -
 #"" .),=,8?"&'8;#,\$&" \$,)'+#,+/&'8;#,@ = "\$&/#A"" 14#;e/'&\$]
 +98/= + [#')J,,7'\$.'>#"" /# /(),7#KU .),A'\$\$,+ .

4. 6\$&X\$;\$2() "*" , (" \$* \$:"88\$* (2&":Y\$4
 8. ∴ < 1.& , . = (, .8\$?

n/)/9&')"\$&"9" &'8,\$8,?'#"]]+8]_&\$] ,=#"4" "3 .,9/3/&'8'@ ,
 9,&,)K' ,9/3K+/_& +8"]#" #/ 1\$. 'U \$,)'+# ,+&'8;# ,@ =]&'8;#,\$&" .
 S/9" .,9/3/&'8" ,9/9 &,&8;#K')/34')K &'8/ , .),,)A"" &'8/ , \$,4/ -
 &,&". ,]+8]_&\$] J'#&">'\$9" ,71\$8,+8'##K4" .)"3#/9/4" , 9,&,)K'
 #/)] = 1 \$ =)1J"4" X"3" ,8,J">'\$9"4" , . \$"U ,8,J">'\$9"4" , 7" ,U"4">' -
 \$9"4" X/9&,) /4" .,3+ ,8]_& ,.)'='8]& ; .)'\$. '9&" + # , \$& ; \$. ,)&\$4' #/
 + & , 4 "8" "# , 4 + '=' \$. ,)& / .

F "\$\$8' = , + / # "] U 9 , 4 . , # # & # , J , \$, \$ & / + / &'8/ J)'7A , + \$ & / + "8"\$;
 3 / = / > " , .)'='8"& ; , 9/9 , &8"> / _ &\$] =)1J , & =)1J / J)'7AK # / 7 / @ = /) -
 9 / U # / 9 ,) , &9"" " = 8"##K' = "\$& / # A"" , 9 / # , "\$&K , 9 / 9"" 9)"&')""
 # , 7U , = "4 , "\$. , 8 ; 3 , + / & ; = 8] , & 7 ,) / + = / ##K' + " = K \$. ,)& / , 9 / 9""
 4 ,) X , 8 , J ">' \$9"" . , 9 / 3 / &'8" 8"4"& ") 1 _ & X"3">' \$91 _) / 7 , & , \$. , -
 \$, 7 # , \$ & ; \$. ,)&\$4' # , + .

a7\$8' = , + / # K "\$8 ; # '@ e"" \$. ,)&\$4' # K \$ &) / # K " 4" / (89 >'8 , -
 + '9) , 3 / \$81 ?' ##K' 4 / \$ &) / \$. ,)& / , 4 / \$ &) / \$. ,)& / 4 ? = 1 # /) , = # , J ,
 98 / \$ \$ / . <)'7AK # / 7 / @ = /) 9 / U (\$.) "# &) K " \$ & / @)'K , 9 / # , "\$&K 9 / 9
 41 ? > "#K , & / 9 " ?' # ^ "#K , , &8"> / _ &\$] , & # \$. ,)&\$4' # , + = , \$ & , +) # ,
 7 , 8" + K \$, 9"4" 3 # / > '#"] 4" & , & 8 ; # K U) / 34') , + &'8/ (= 8" # / &'8/ ,
 4 / \$ \$ / &'8/ , , 9) 1 ? # , \$ & ; J) 1 = # , @ 98' & 9") , . , ,) A" @ &'8/ (= 8" # / 9 ,) -
 . 1 \$ / , = 8" # K 9 , #' > # , \$ & '@) , 9 , 8">' \$ & + , 4 4Ke' > # , @ 4 / \$ \$ K , 7 , 8" # " 3 -
 9"4 3 # / > '#""4 ?") , + , @ 4 / \$ \$ K (& / 78" A / 10) .

L)' , 78 / = / _ ^ "4 \$, 4 / & , & " . , 4 1 41 ? > "#] + 8] & \$] 41 \$ 918 ; # K @
 (95 %) , 1 ?' # ^ "# - / & 8' & ">' \$9" @ (47 , 6 %)

S / 78" A / 10 - L) , = , 8 ; # K' " . , .)' > # K') / 34') K &'8/ + K \$, 9 , 9 + / 8" -
 X" A") , + / ## K U J)' 7A , + # / 7 / @ = /) 9 / U" 9 / # , [,
 + K \$ & 1 . / _ ^ " U # /) / 3 # K U = "\$ & / # A"] U

L, 9/3/&'8"	:/@=)/9/ v		B/#,[v		:/@=)/9/ w			
	n=29 500-10004		n=14 100004		n=30 500-10004		n=18 500-10004	
	M±s	V	M±s	V	M±s	V	M±s	V
R8" # / 9 ,) . 1 \$ / , \$4	83,6±2,52	3.02	83,5±2,48	2,97	81,3±3,26	4,01	76,5±2,81	3,67
R8" # / & 18 , + ^ / , \$4	55,1±2,58	4,69	55,3±2,79	5,01	53,3±2,98	5,59	50,6±2,29	4,52
R8" # /) 19" , \$4	81,53,07	3,76	81,8±4,04	4,94	80,3±3,85	4,80	72,7±2,22	3,05

L,9/3/&'8"	:/@=)/9/ v				B#[, v		:/@=)/9/ w	
	n=29 500-10004		n=14 100004		n=30 500-10004		n=18 500-10004	
	M±s	V	M±s	V	M±s	V	M±s	V
R8"/#/.8'>/, \$4	35,3±1,9	15,43	35,3±1,9	85,61	34,4±2,1	6,24	31,6±1,6	95,34
R8"/#/.)'=.8' - >:], \$4	26,6±1,6	16,07	26,5±2,0	77,81	26,2±1,9	7,45	23,6±1,6	67,01
R8"/#/#,J", \$4	99,2±3,1	33,15	100,1±4,4	74,47	97,8±5,0	5,12	90,6±3,2	13,54
R8"/#/'7=)/, \$4	49,7±1,9	53,93	48,8±3,1	56,45	49,1±3,1	6,35	46,2±2,0	74,48
R8"/#/'J,8#" , \$4	42,4±2,4	25,71	42,6±2,9	16,81	41,2±3,2	7,86	37,4±2,1	105,61
Y9),4"/8;#K@ ="/4&), \$4	42,3±1,6	43,87	43,4±1,8	04,15	41,7±1,6	3,87	38,3±1,4	33,72
S/3,J)'7#+K@ ="/4&), \$4	28,4±1,8	16,60	29,1±2,4	18,30	28,4±2,2	7,99	27,9±2,1	47,67

B/9 +="# , "3 &/78"AK 10, J)'7AK #/ 7/@=)/9/U #/ ="\$&/#A"
500-10004 =,\$&,+)# , #' ,&8">/_&\$] ,& J)'7A,+ #/ 7/@=)/9/U #/
=8"##K' ="\$&/#A" .. , +\$'4 ,9/3/&'8]4 : &,&/8;#K4)/34')/4 &'8/
.),..)A"]4 , \$,\$&/+1&'8/, U,&] 3/4&#/'&#=#A"] .)'78/=/#"] =8"-
#K &'8/, +\$'/ ,7U+/&/ J)1=#,@ 98'&9" " +'8">"# &'\$&,+ L,.'\$91
1+K\$,9,9+/'8"X"A"),+##KU J)'7A,+ #/ =8"##K' ="\$&/#A" .

<)'7AK #/ 9/#,[,&8">/_&\$] =,\$&,+)# , 4#;e'@ =8"#,@ &'8/
+,\$,4 &'8/, .),..)A"]4" &'8/, 3#/'>#"4" &'\$&,+L,.'\$91 ,& J)'7A,+
#/ 7/@=)/9/U "4'] ,="#/9,+K@ \$ # "4" ,7U+/&J)1=" " #' ,&8">/]\$,
., \$,\$&/+1&'8/.

S/9'4 ,7)/3,4 , #'7U,="4, ,&4'&"&; , >&, J)'7AK #/ 7/@=)/9/U
" 9/#,[U)/9&)'31_&\$] ,,\$,7K4 , ,.)='8"##K4 &".,4 &'8,\$8,?' -
#"] , ,&8">/_ ^"4 "U 9/9 ,& #'\$.,) &\$'4#,+ , &/9 " =)1J ,& =)1J/, >&,
.,3+,8]'& \$,3=/'&; 4,)X,8,J">'\$9" 4,='8" =8] ,&7,)/ +9/?=K@"3
[&"U+"=,+ \$.,)&/ .

c A'8;_ 9,4.8'9&,+/#"] \$7,)#KU 9,4/#= , / &/9?' 9,#&),8] 3/
4,)X,X1#9A",#/8;#K4 \$,\$&,"#"4 +K\$,9,9+/'8"X"A"),+##KU
J)'7A,+ #/ 7/@=)/9/U" 9/#,[#/4")/3)/7,&/#K \$.A"/8;#K' e9/ -
8K 4,)X,8,J">'\$9,J,)/3+"&"] +3),\$8KU\$.,) &\$'4#,+ (&/78"AK 11-
13). F e9/8K +98_>'#K #/"7,8" "#X,)4/&"+#K' .,9/3/&'8" &'8, -
\$8,?'#"] , +K='8"+e"\$] +)'318;&/&' X/9&,)#J, /#/8"3/ . B/&'J, -
)"/8;#K' e9/8K =8] "#="+"=1/8;#,@ ,A'#9" 4,)X,8,J">'\$9,J,

) /3+"&"] J)'7A,+ #/ 7/@=/)9/U " 9/#,["4'_& 5 J)/=A"@ ,A'#9" :
 # "39,' - 17/88, #"? '\$)'=#'J, - 2,\$)'=#" - 3,+Ke' '\$)'=#'J, - 4,
 +K\$,9,' - 5 7/88,+ . i&,J,+/] ,A'#9/ 4,)X,8,J">'\$9,J,)/3+"&"]
)/\$\$>"&K+/'&\$] 9/9 '\$)'=#"@ 7/88 "3 \$144K ,A'#,9 ., +\$j4 .)" -
 3#/9/4 e9/8K .

S/78"A/ 11 -E9/8/ =8] ,A'#9" 4,)X,8,J">'\$9,J,)/3+"&"]
 +K\$,9,9+/8"X"A"),+/#K U J)'7A,+ #/ 7/@=/)9/U(?'#^#K)

L)"3#/9"	:/88K				
	1	2	3	4	5
R8"#/ &'8/, \$4	157,2-160,3	160,4-163,5	163,6-169,9	170,0-173,1	173,2-176,3
/\$\$/ &'8/, 9J	56,3-59,5	59,6-62,9	63,0-69,9	70,0-73,3	73,4-76,7
Ke'>#/] 4/\$\$/ , %	42,8-44,5	44,6-46,3	46,4-50,0	50,1-51,8	51,9-53,6
m"),+/] 4/\$\$/ , %	27,4-22,1	22,0-18,0	17,9-12,6	12,5-11,4	11,3-10,3
R8"#/ #,J" /=8"#/ &'8/, %	52,3-52,8	52,9-53,5	53,6-55,0	55,1-55,7	55,8-56,4
R8"#/ .8'>/ , \$4	28,2-29,3	29,4-30,4	30,5-32,8	32,9-33,9	34,0-35,1
5/34/U)19, \$4	161,0-166,5	166,6-172,3	172,4-183,9	184,0-189,6	189,7-195,3
R8"#/ 9,) .1\$/ \$"=] \$+K&]#1&K 4" ++')U)19/4" , \$4	131,3-133,4	133,5-135,7	135,8-140,2	140,3-142,5	142,6-144,6
R8"#/ 9,) .1\$/ ,& 7-J, e'@# ,J, ., - 3+,#9/, \$4	62,3-63,1	63,2-64,0	64,1-66,1	66,2-67,0	67,1-67,9
'"3">'\$9,')/3- +"&"	0,6-1,5	1,6-2,5	2,6-3,5	3,6-4,5	4,6-5,5
	N"39,'	N"?' '\$)'= - #"	c)'=#"	FKe' '\$)'=#'J,	FK\$,9,'

S/78"A/ 12 - E9/8/ =8] ,A'#9" 4,)X,8,J">'\$9,J,)/3+"&"] +K\$,9, -
 9+/8"X"A"),+/#K U J)'7A,+ #/ 7/@=/)9/U
 #/ ="\$&/#A"" 500-10004 (41?>"#K)

L)"3#/9"	:/88K				
	1	2	3	4	5
R8"#/ &'8/, \$4	174,2-177	177,1-180,0	180,1-186,1	186,2-189,0	189,1-192,0
/\$\$/ &'8/, 9J	73,6-76,6	76,7-79,8	79,9-86,3	86,4-89,5	89,6-92,6

L)"3#/9"	:/88K				
	1	2	3	4	5
Ke'>#/] 4/\$\$/ , %	47,9–49,1	49,2–50,4	50,5–53,1	53,2–54,5	54,6–55,8
m"),+/] 4/\$\$/ , %	13,1–11,4	11,3–9,7	9,6–6,3	6,2–5,9	5,8–5,5
R8"#/ #, - J"/=8"#/ &'8/ , %	52,3–52,8	52,9–53,5	53,6–54,9	55,0–55,6	55,7–56,3
R8"#/ .8'>/ , \$4	38,8–40,2	40,3–41,7	41,8–44,7	44,8–46,2	46,3–47,7
5/34/U)19, \$4	179,4–183,5	183,6–187,7	187,8–196,2	196,3–200,4	200,5–204,6
R8"#/ 9,).1\$/ \$"=] \$+K&]#1-&K4" ++')U)1-9/4" , \$4	126,6–132,8	132,9–139,1	139,2–151,8	151,9–158,1	158,2–164,4
R8"#/ 9,).1\$/ ,& 7-J, e'@#, - J, .,3+,#9/ , \$4	61,1–64,0	64,1–66,3	66,4–70,9	71,0–73,2	73,3–75,4
`"3"> '\$9,')/3+"&""	0,6–1,5	1,6–2,5	2,6–3,5	3,6–4,5	4,6–5,5
	N"39,'	N"?' \$)'=#"	c)'=#"	FKe' \$)'=#'J,	FK\$,9,'

S'8,\$8,?'#"" – [&, ,=#" # "3 X/9&,),+ , ,.)'='8]_ ^"U \$.,)&" + - #K@ 1\$. 'U , =,+ ,8;# , 3#/>"4K@ \$&)19&1)#,-4'U/#">' \$9"@ X/9&,) . N'\$, ,&+'&\$&+" \$.,)&\$4'#/ =/'? ., ,=#,41 X/9&,)1 1\$. 'U/ "8" X1#9A",#/8;#,@ "\$&'4K \$.,)&" + #, J,)'318;&/&/ +K#1?='/& \$.,)&\$4'#/ 9,4.'#\$"),+/&; [&, #'\$, ,&+'&\$&+" 3/ \$>'&=)1J"U "\$&'4 ,)J/#"34/ .

S/78"A/ 13– E9/8/ =8] ,A'#9" 4,)X,8,J">' \$9,J,)/3+"&"] +K\$,9,9+/8"X"A"),+/##KU J)'7A,+ #/ 9/#,[(41?>"#K)

L)"3#/9"	:/88K				
	1	2	3	4	5
R8"#/ &'8/ , \$4	165,5–169,9	170,0–174,6	174,7–183,9	184,0–188,6	188,7–193,1
/\$\$/ &'8/ , 9J	66,9–71,6	71,7–76,6	76,7–86,5	86,6–91,4	91,5–96,2
Ke'>#/] 4/\$\$/ , %	45,4–47,1	47,2–49,1	49,2–53,0	53,1–55,0	55,1–56,9
m"),+/] 4/\$\$/ , %	19,5–15,6	15,5–11,7	11,6–8,1	8,0–7,0	6,9–6,0

R8"/ #, - J"/=8"/ &8/, %	52,1–52,8	52,9–53,6	53,7–55,4	55,5–56,2	56,3–57,0
R8"/ .)'=.8' - >:] /=8"/ .8'/> , %	60,2–65,6	65,7–71,0	71,1–82,0	82,1–87,5	87,6–93,0
5/34/U)19, \$4	167,2–173,6	173,7– 180,1	180,2– 193,3	193,2–199,9	200,0– 206,4
R8"/ 9,).1\$/ \$"=] \$+K&]#1 &K4" ++')U)1- 9/4" , \$4	129,7–133,4	133,5– 137,2	137,3– 145,0	145,1–148,9	149,0– 152,7
R8"/ 9,).1\$/ , & 7-J, e'@#J, ,3+,#9/ , \$4	62,6–63,9	64,0–65,2	65,3–68,0	68,1–69,4	69,5–70,7
'"3">\$9,')/3- +"&"	0,6–1,5	1,6–2,5	2,6–3,5	3,6–4,5	4,6–5,5
	N"39,'	N"?' \$)'=#"	c)'=#"	FKe' \$)'=#'J,	FK\$,9,'

c.,)&\$4'# , U)/9&')"31_ ^"@ \$] \$)'=#"4" " +Ke' \$)'=#"U 3#/-
>#"4" [&"U .,9/3/&'8'@ , #/U,="&\$] + U,).e'@ \$.,)&"+#,@ X,)4' .
i31>#" \$,\$&/+&8/ \$.,)&\$4'#/ + J,=">#,4 A"98' .,=J,&,+9" .,3 -
+,8"&.)/+8;#, ,A'#&; 1),+ '#; 'J, .,=J,&,+8'##,\$&" .

R8])e'#"] 3/=/>" ,&7,)/ #/"7,8" .)'\$.9&"+#KU \$.,)&\$4'#,+
=8] 3/#]&"@J)'78'@ #/ 7/@=)9/U"8" 9/#,[=,8?#K +.)+1_ ,>)'=;
1>"&K+/&,\$] \$&/7"8;#K' .,9/3/&'8" 1, 2, 5, 6, 7, 8, 99,&,)K' 8"4"&" -
)1_& \$.,)&"+#1_)'318;&/&"+#,\$&:. N'7,8;e" ,&98,##"] +3#/-
>#"]U 8/7"8;#KU .,9/3/&'8'@ (3, 4)4,J1& 7K&; 1\$&)/##K + .),A'\$ \$'
#./)/+8'##,@ &)'#"),+9" . c.,)&\$4'K , .,81>"+e" ,A'#91 4,)X,8, -
J">\$9,J,)/3+"&"] «\$)'=#" » , «K\$,9,' » ,]+8]_&\$] #/"7,8" .)'\$.9 -
&"+#K4" =8] 3/#]&"@J)'78'@ #/ 7/@=)9/U"8" 9/#,[.

R8])e'#"] 3/=/>" 9,#&),8] 4,)X,8,J">\$9,J, \$&/&1\$/J)'7A,+
#/ 7/@=)9/U" 9/#,[#',7U,="4, ,7)/^&; +#"4/#" #/ 3#/>#"] 8/-
7"8;#KU .,9/3/&'8'@ : ?"),+,@ " 4Ke'>#,@ 4/\$\$K (&/78"A/ 14).

S/78"A/ 14– aA'#9/ 4,)X,8,J">\$9,J,)/3+"&"] J)'7A/
(7/@=)9/ " 9/#,[]

L)"3#/9"	l#/>#" .)"3#/9/	aA'#9/ ., e9/8' , 7/88
R8"/ &8/ , \$4	185	3
/\$\$/ &8/ , 9J	79,5	2

L)"3#/9"	l#/>'#" .)"3#/9/	aA'#9/ ., e9/8' , 7/88
Ke'>#/] 4/\$\$/ , %	48,6	1
m"),+/] 4/\$\$/ , %	9,2	3
R8"#/ #,J" /=8"#/ &'8/ , %	54,1	3
R8"#/ .8'>/ /=8"#/)19" , %	43,1	3
5/34/U)19, \$4	188	3
R8"#/ 9,).1\$/ \$"=] \$+K&]#1- &K4" ++')U)19/4" , \$4	146	3
R8"#/ 9,).1\$/ ,& 7-J, e'@#J, ,,3+,#9/ , \$4	66,6	3

L)'=8,?'##K' + #/\$&]^"U)'9,4'#=/A"]U 4,)X,X1#9A", -
#/#;#K' 9)"&')"" (\$&/#=/)&K &'8,\$8,?'#"] +3),\$8KU \$.,)&\$4'#+
" e9/8K 4,)X,8,J">'\$9,@ .)"J,=#,\$&"))/\$e"]_& .)'=\$&/+8'#"]
, &'8,\$8,?'#" J)'7A,+ #/ 7/@=/'9' " 9/#,[, / &/9?' +,,)1?/_& &)' -
#'),+ " +)/>'@ ,7l'9&"+#K4" 9)"&')]"4" =8] ,)"#&/A"" , ,&7,)/ ,
9,#&),8] " 1.)/+8'#"] .,=J,&,+9,@ \$.,)&\$4'#+ .

5. 8.-&.4;"88\$* S &"8(&\$4\$)8\$2\$ -&\$Y"***.
4 2&"::;" 8. :.<1.&.,.= (,.8\$?

F \$,+)4'##,4 \$.,)&' +K\$,9"@\$.,)&"+#K@)'318;&/& ,71\$8,+
8+'/&\$] 4#,J"4" X/9&,)/4" ,+8"]_ ^"4" #/ .,=J,&,+91 \$.,)&\$4'#/

#/)/38">#KU [&/./U 'J, X"3">'\$9,J, \$,+)'e'#\$&+,+/#"] .
c.,)&"+#/] &)'#"),+9/ -.),A'\$\$.'=/J,J">'\$9"@ , +,3='@\$&+1
_ ^"@ #/ 8">#,\$&; \$.,)&\$4'#/ , 'J, ."\$U,8,J">'\$9,' " X"3">'\$9,' \$,-
\$&,#'" . a&.)/+ #K4 .,8,?'#"4 + =]&'8;#,\$&" &)'#')/]+8]_&\$]
,7^" .)"#A".K .'=/J,J"9" ,.)"#A".K &)'#'" " 4'&,"9" X"3">' -
\$9,J, +,\$."&/#"] , / &/9?' \$.'A"/8;#K' .)"#A".K \$.,)&"+#,@ &)'#" -
,+9" . a.,)/ #/ X1#=#/4#&/8;#,' .,8,?'#" ,7^"@ " \$.,)&"+#,@
'./=/J,J"9" .,3+,8]& 1.,)]=,>"& ; .'=/J,J">'\$9,' \$,=)'?/#"
" +,\$."&/&'8;#1_ #/.)/+8'##,\$& ; \$.,)&"+#,@ &)'#"),+9" .

N/8">" , '='#\$&+, " 9/>'\$&+, X1#9A",#"),+/#"] [&"U 9,4., -
##&, + .,3+,8]& #/"7,8" A'8\$,,7)/3#, .,\$&),"& ; 3/#]&"] X"3">' -
\$9"4" 1.)/?#'"4" , [XX'9&"+#, 1.)/+8]& ; .'=/J,J">'\$9"4 &)'#" -
,+,>#K4 .),A'\$\$,4 " 'J,)'318;&/&/4" .

F .),A'\$\$' .,\$&),'#"] \$.,)&"+#,@ .,=J,&,+9" A'8,\$&#,\$&;
&)'#"),+,>#J, .),A'\$\$/ ,7'\$.'>+'/&\$] #/ ,,\$#,+' .,)'='8'##,@
\$&)19&1)K 9,&,) /] .)'=\$&/+8]& \$,7,@ ,&#,\$"&'8;# , 1\$&,@>" +K@
,)]=,9 ,7l'="###"] 9,4.,##&, + (.,=\$"\$&'4 , \$&,) ,# " ,&='8;#KU
3+'#;' +), "U 3/9,#,4')#,' ,&#,'e'#" =)1J \$ =)1J,4 " ,7^1_ ., -
\$8' =,+/&'8;#,\$& ; .

L,+Ke'#")'318;&/&,+ \$.,)&\$4'#,+ +\$'3,##KU +="/U \$.,)&/ ,
99,&,)K4 ,&#,\$"&\$] J)'78] #/ 7/@=)/9/U" 9/#,[, +, 4#,J,4 .,)' -
='8]&\$] .)/+8;#K4 +K7,),4 4'&,"9" .,\$&),'#"] \$.,)&"+#,@
&)'#"),+9" . F \$+,_ ,>)'=; ,)/A",#/8;#,' .,\$&),'#" \$.,)&"+#,@
&)'#"),+9" + 3#/>"&'8;#,@ \$&'.'#" 3/+"\$"& ,& +K7,)/ 9,8">' -
\$&+'##KU .,9/3/&'8'@ ,7l'4/ , "#&'#\$"+#,\$&" " #/.)/+8'##,\$&"
&)'#"1_ ^"U +,3='@\$&+."@

Q+'8">'#" =8"&'8;#,\$&" \$,)'+#,+/&'8;#J, .)'",=/ " +K#1? -
='##,' \$,9)/^#" .),=,8?"&'8;#,\$&" .,=J,&+"&'8;#J, .)'=] + -
8]_& .,+Ke'##K' &)'7,+/#"] 9 9/>'\$&+1 &)'#"),+,>#KU #/J)13,9
+ [&"U .)"] ,=/U . B8"4/&">'\$9" 1\$8,+"] 5'\$.178"9" :8/)1\$; #'
. ,3+,8]_& .,+Ke/& ; ,7l'4K \$.'A"/8"3"),+##KU #/J)13,9 + .,=J, -
&,"&'8;#4 .)'",=' , " [&,& #'=\$&/&,9 .)"U,"&\$] 9,4.'#\$"),+/&;
=,\$&"?'#"4 7,8" +K\$,9,J, 1),+ #] ,7^"@)/7,&,\$.,,\$7#,\$&" .

:1)#,)/3+"+/_ ^"@ \$] \$.,)& , #198,## , +,3)/\$&/_ ^/] 9,#91 -
)#A"] #/ 4"),+,@ \$.,)&"+#,@ /)'# , .)" .,+Ke/_ ^"4\$] 1),+ #'

\$.)&"+#KU =,\$&"?'#@ +K="+J/_& #,+K' .),78'4K .)'=' ,7^@
" \$. 'A"/8;#,@ \$.)&"+#,@ .,=J,&,+9,@ +J)'78' #/ 7/@=)9/U" 9/#,[.
FK\$,9"@ 1),+'#; \$,+)'4##KU \$.)&"+#KU)'318;&/&,+ &)'71'&
,& \$.)&\$4'#/ #' &,8;9, +K\$,9,J, 1),+'#] X"3">'\$9,@ .,=J,&,+8'##, -
\$&," #, " \$,+)'e'##,J, +8/'=#"])/A",#/8;#,@ &'U#"9,@="?'#@,
/ &/9?' \$.,\$,7#,\$&" + #'\$&/#=#)&#KU \$"&1/A"]U ='@\$&+,+/&;&+,>)' -
\$9", \$/4,\$&,&8;#; . L,[&,41 ,=#,@ "3 /9&1/8;#KU .),78'4 \$.)&" +
#,@ .,=J,&,+9" + J)'78' #/ 7/@=)9/U" 9/#,[]+8]'&\$] .),78'4/ [X-
X'9&"+#,\$&" "\$&'4K [#')J,,7\$.'>'#"] X"3">'\$9,@ /9&"+#,\$&".

Q\$. 'U + \$,)'+#,+/&'8;#,@ =']&'8;#,\$&" J)'7A,+ #/ 7/@=)9/U
&)'71'& 3#/>'&'8;#;J, /#/[),7#;J, +98/= / + =,.,8#'" 9 7,8;e,@
4Ke'>#,@ "\$'8' " /[,7#,@ 4,^#,\$&" ,)J/#'34/ . S, '\$&:, /#/[),7#K'
,)A'\$&\$K ,7)/3,+/#"] [#']J""]+8]_&\$] ,=#"4 "3 3#/>"4KU X/9&,+ ,
,.)'='8]_ ^"U 1),+'#; \$,)'+#KU)'318;&/&,+ J)'7A,+ -7/@=/
,>#'"9,+ " J)'7A,+ -9/#,"\$&,+ . F &)'#"),+,>#;4 .),A'\$&' /#/[),7#K'
+,34,?'#,\$&" ,7K>#; ,A'#"+/_& ., .),)\$&1 9,#A'#&)/A"" 8/9&/&
+9),+" , / \$9,)\$&; +,\$\$&/#,+8'#"] ., 9,#A'#&)/A"" [&,J, 4'&/7,8'&/
#/ &)'&:'@ " +,\$;4,@ 4"#1&U .,\$8' #/J)139". S/9" "\$\$8'=#,+/#"]
,,3+,8]_ & .,81>"&; 9/>'\$&+'##1_ U)/9&)'\$&"91 +98/= / J8"9,8"3/
+[#']J,,7\$.'>'#"" 1.)/?#'"@ . F [&,@\$+]'3" "31>'#" 9,8">'\$&+'# -
#KU/\$.'9&,+ [&,@.),78'4K , 7'31\$8,+#, , /9&1/8;#; .

FK.,8#'" 8_7,J, X"3">'\$9,J, 1.)/?#'"] \$+]'3/#, \$.)'+' , -
=,4 ,)J/#'34/ #/ 7,8" +K\$,9"@ 1),+'#; X1#9A",#/8;#,@ /9&"+#, -
\$&," >'4 + \$,\$&,&#" .,9,] , <3/J)1?/'& » ,)J/#K " "\$&'4K,]+8]'&\$]
<\$(+)'U#/J)139,@>. FK3K+/' "37K&,>#;')/\$U,=#,+/#"")'3)+#KU
+,34,?'#,\$&'@ ,)J/#'34/ " 1&,48'#" , #/J)139/ &'4 \$/4K4 \$&"418"-
)1'&),\$&)/7,&,\$.,\$,7#,\$&" : + +,\$\$&/#,"&'8;#;4 .)'=')/7,& -
\$.,\$,7#,\$&; \$,)'+#KU)'318;&/&,+ &)'71'& ,)A'\$&\$K ,7)/3,+/#"] [#']J""]+8]_&\$]
\$&/#/+8"+'&\$]. F/?#, .)" [&,4 ,J)/#">"&; +8">"#1 #/J)139" 1),+ -
#'4 , .)'=,U)/#]_ ^"4 ,)J/#'34 ,&.'&)'#"),+/#,\$&" .

S/9"4 ,7)/3,4 , #/J)139", +K.,8#]'4K' \$.)&\$4'#,4 +, +)4]
&)'#"),+9" " \$,)'+#,+/#"@ , +K.,8#]_&),8;)/3=)/?'&'8] , +,371? -
=/_ ^"J, .)"\$.,\$,7#&'8;#K' "34'##"] +,)J/#'34' .

F , \$#,+' X"3",8,J">'\$9,@ 98/\$\$X"9/A"" X"3">'\$9"U 1.)/? -
#'"@ 8'/?& "34'##"] , 9,&,)K' .),"\$U,=]& +,)J/#'34' +)'318;&/ -
&' 4Ke'>#,@ =']&'8;#,\$&" , .)" [&,4 1>"&K+/_&\$] 4,^#,\$&; +K.,8 -
#]'4,@)/7,&K , " =8"&'8;#;,\$&; , U)/9&') 1\$"8"@ " =)1J"" X/9&,)K .

P"98">'\$9" 1.)/?##"])/3='8]_&\$] #/ J)1..K 4/9\$"4/8;#,@ , \$174/9\$"4/8;#,@ , 7,8;e,@ " 14)'##,@ 4,^#,\$&" .

FK='8]_& «+#e#_ » " «+#1&)'##_ » \$&,)#K &)'#"),+,> - #KU" \$,)'+#,+/&'8;#KU #/J)13,9.

L,9/3/&'8]4" +#'e#@ \$&,)#K #/J)13,9]+8]_&\$] +'8">"#K , U)/9&)'31_ ^" \$,+)'e/'41_)/7,&1 + " +#'e# +K)/?##KU)/34')/U (.)=,8?'&'8;#,\$& ; , >"\$8, .,+&)'#"@ &)'#"),+,>#KU 1.)/?##"@ , \$9,) \$& ; " &'4. =+"?'#"@ , +'8">"#/ .)'4^/'4,J, +'- \$/ " =)1J" .,9/3/&'8").

L,9/3/&'8]4" +'#1&)'##@\$&,)#K #/J)13,9]+8]_&\$] +'8">"#K X1#9A",#/8;#KU " \$+]3/##KU\$ #'4" \$=+"J,+ + ,)J/#"34' , +K3K+/- 4KU+K.,8#]'4,@)/7,&,@ (1+'8">'#" fcc , ,7l'4/ 8'J,>#,@ +'#&"- 8]A"" " .,&)'78#"] 9"\$8,)=/ , 1=/)#J, " 4"#1&#J, ,7l'4,+ 9), - + " " =)1J"U.,9/3/&'8'@).

F#'e#"4" .,9/3/&'8]4" .,8;31_&\$] .)" .8/#"),+/#"" " 1>'& &)'#"),+,>#,@)/7,&K , \$ #'4" \$.,,\$&+/+8]_&\$] " ,&+'&#K')/'9A"" ,)J/#"34/ #/ 3/=/#1_)/7,&1 .L,9/3/&'8" ?' X1#9A",#/8;#KU \$=+"- J,+ + ,)J/#"34' .,4,J/_& .,)'='8"& ; A'8\$,,7)/3#1_ 4')1 &)'#"), - +,>#KU#/J)13,9 , 1J8178'## , A'#"& ; "U \$,,&+'&\$&+" (8"7, #'\$,,& - +'&\$&+") X1#9A",#/8;#K4 +,34,?'#,\$&]4 ,)J/#"34/ " +8"]#" #/)/3+"&" &)'#"),+/#,\$&" .

L,9/3/&'8" +#'e#@ " +'#1&)'##@\$&,)# #/J)13,9 #' "\$98_>/- _& =)1J =)1J/ , ,#" &'\$#, +3/"4,\$+]3/#K " "\$.,8;31_&\$] +'="#\$&+' : 1+'8">'#" «+#e#@ » \$&,)#K #/J)139" .)" +,="& 9 1+'8">'#" _ \$=+"J,+ + X1#9A",#/8;#4 \$,\$&]#")/38">#KU "\$&'4 " ,)J/#,+ , 9)/3+"&"_ " 1J8178#"_ .),A'\$,\$,+ 1&,48#"] . a=#/9, .)" ,=#"U " &'U ?' +#'e#"U U)/9&)'\$&"9/U «+#1&)'##]] » \$&,)#/ #/J)139" 4,?'& "34#]&;\$] .,= +8"]#"4 \$/4KU)/38">#KU .)">"# . i34#' - #" 1\$8,+@+K.,8#"] #/J)139" (9 .)"4)1 , &)'#"),+9/ + \$)'=#' - J,);' , .)"4#'" =,.,8#&'8;#KU &'U#>'\$9"U \$)'=\$&+ "8" 4'& , - =">'\$9"U .)"4,+ (#.)"4' , +K.,8#'" 1.)/?##"] \$ 3/=)'?9,@ =KU/#"]) .)" ,=#"U " &'U ?' +#'e#"U .)/4&)/U #/J)139" 4,J1& .)"+'\$&" 9 .,+Ke#"_ /9&"+#,\$&" X1#9A",#/8;#KU "\$&'4 ,)J/#"3 - 4/ \$.,)&\$4#/ . L, 4)' 1+'8">'#"]/7,&,\$.,\$7#,\$&" (9/9)'318; - &/&\$"\$&'4/&">'\$9"U &)'#"),+9 .)" ,=#,@ " &,@?' «+#e#@ » \$&,-),#' #/J)139" «+#1&)'##]] » \$&,)#/ #/J)139" 14#;e/'&\$] - .)"\$ - U,="&/=/.&/A"] ,)J/#"34/ .

a7^1_ +8">"#1 #/J)139" ,.)='8]_& " ,7l'4 " "#&'#\$"+-
#,\$&:. a7l'4 #/J)139" - [&, .),=,8?"&'8;#,\$&; " +,3='@\$&+"]
" \$144/)#,' 9,8">'\$&+,)/7,&K , +K.,8###,@ 3/ +)'4] ,&='8;#J,
1.)/?##"] "8" \$)'"" 1.)/?##"@ (/7,&/ ,#"4/'&\$] 9/9 +4'U/#" -
>'\$9,4 , &/9 " +X"3",8,J">'\$9,4 \$4K\$8'). i#&'#\$"+#,\$&; #/J)139" -
[&, #/.)]?##,\$&;)/7,&K " \$&'.'#; " 9,#A'#&)/A"" +, +)'4'#" .

C\$8")/\$\$4/&)+/&; 9/?=,' X"3">'\$9,' 1.)/?##" 9/9 #9"@
+,3='@\$&+1_ ^"@X/9&,) , &, .,#]&" ,7l'4/ \$+]3/##,@ \$ #4 #/J)13-
9" 71='&,&#,\$&,\$] , .)'?=' +\$J, , 9=8"&'8;#,\$&" +,3='@\$&+]/ "#-
&'#\$"+#,\$&; #/J)139" -9\$'8' +,3='@\$&+]

c, ,&#,'e#" ,7l'4/ " "#&'#\$"+#,\$&" #/J)139" .) +K.,8###"
X"3">'\$9"U 1.)/?##"@ U/)/9&)"31&\$] ,7)/&# , -),,.)A",#/8;#,@
3/+"\$4,\$&;_ : >'4 7,8;e' ,7l'4 #/J)139" , 3/=+/4,@ +1.)/?##" ,
&'4 4#;e' " "#&'#\$"+#,\$&; , " #/,7),& , >'4 7,8;e' "#&'#\$"+#,\$&;
#/J)139" , &'4 4#;e' " ,7l'4 .g&/ 3/9,#,4)#,\$&; ,7l]#\$]&\$] \$1^ -
\$&+##K4" X"3",8,J">'\$9"4" " 7",U"4">'\$9"4" ,,\$7##,\$&]4")/7, -
&K)/38">#,@ .),=,8?"&'8;#,\$&" , >&, .,\$81?"8, , \$#,+/#"4 =8]
98/\$\$X"9/A"" 1.)/?##"@ ., <3,#/4 ,&#,\$&'8;#,@ 4,^#,\$&" ».

L)" .,+&,)#" ,=#,J, " &,J, ?' 1.)/?##"] "8" .) +K.,8# -
#")]=/ ,=#,&.#KU 1.)/?##"@ ,A'#9/ \$ «+e#@ » \$&,)#K ,7l -
'4/ " "#&'#\$"+#,\$&")/7,&K .),+,"&\$] \$144"),+/#"4 >/\$&#KU
\$8/J'4KU #/J)139".

L)" +K.,8###" #'\$9,8;9"U "8" 4#,J"U)/3#KU ., U/)/9&)'1
1.)/?##"@ \$144/)#K@ ,7l'4 #/J)139" >/^ +\$J, ,A'#"+/]&\$]
\$ «+e#@ » \$&,)#K ., \$144' +)'4#" , 3/&)/>##,J, #/ +\$' 1.)/? -
##"] + &'>'#" ,&='8;#J, 3/#]&"] "8")]=/ 3/#]&"@(3/ #'='8_ , 3/
4'\$]A " &=). L,81>##/] \$144/ , ,=#/9, , =/'& 8'e; .)"78"3"&'8; -
#K' +8">"#K , #"U. N/.)"4) , >/\$ 7'J/ " >/\$, 3/&)/>##K@ #/ J"4 -
#/\$&">'\$9" 1.)/?##"] , -[&,]+#, #)/+#,3#/>#K' \$8/J'4K' .

F .,=J,&,+&'8;#4 .)'",=' J)'7AK 7,8;e,' +"4/#" 1='8] -
&)/3+&" ,7^@ X"3">'\$9,@ .,=J,&,+9" . c [&,@A'8;_ "\$.,8;31 -
_&\$] 9/9 A"98">'\$9" 1.)/?##"] , #/.)/+8###K' #/)/3+&" +K#,\$-
8"+,\$&" , &/9 " /A"98">'\$9" - \$.,,\$7\$&+1_ ^")/3+&"_ \$"8,+KU
\$.,,\$7#,\$&'@.

B8/\$\$X"A"),+/&; =/##K' #/J)139" 4,?#, \$ 1>&,4 3,# "#&'#-
\$"+#,\$&" ., .'=/J,J">'\$9"4 " X"3",8,J">'\$9"4 U/)/9&)"\$&'9/4 ,
78"39"4 9 \$.A"/8"3"),+###K4 3,#/4 "#&'#\$"+#,\$&" + J)'7#,4
\$.,)&' (&/78"AK 15" 16).

S/78"A/ 15 -B8/\$\$X"9/A] &)'#"),+,>#KU #/J)13,9 ,7^@ X"3">' -
 \$9, @.,=J,&,+9" , #/.)/+8'##KU #/)/3+"&"
 +K#,\$8"+,\$&" " 7K\$&),&K

i#&'#\$"+#,\$&; #/J)13,9	L'=/J,J">'\$9" U/)/9&)'"\$&"9"		`"3",8,J">'\$9" U/)/9&)'"\$&"9"	
	c9,),\$&; , %,& 4/9\$"4/8;#,@ +7'J'	c9,),\$&; , %,& 4/9\$"4/8;#,@ +.8/+/#""	fcc , 1=4"#	H/9&/&9),+" , 44,8; /8
/8/]	4'#" 70	4'#" 60	=, 120	=, 4
Q4')'##/]	70-84	61-75	121-145	5-10
.,8;e/]	85-95	76-85	146-165	8-12
c174/9\$"4/8;#/]	96-98	86-95	166-180	7,8" 12
/9\$"4/8;#/]	7,8" 98	7,8" 96	7,8" 180	#' 1>"&K+/'&\$]

S/78"A/ 16 -B8/\$\$X"9/A] &)'#"),+,>#KU #/J)13,9
 ,7^@ X"3">'\$9, @.,=J,&,+9" , #/.)/+8'##KU
 #/)/3+"&" "\$8,+KU\$.,,\$7#,\$&'@

i#&'#\$"+#,\$&; #/J)13,9	L'=/J,J">'\$9" U/)/9&)'"\$&"9"		`"3",8,J">'\$9" U/)/9&)'"\$&"9"	
	F\$,&]J,^#"] , %,& 4/9\$"4/8; - #J,	S'4. =+ "- ?'#"@, =+ "- ?'#"@/4"#	fcc , 1=4"#	H/9&/&9),+" , 44,8; /8
/8/]	4'#" 60	4'#" 30	=, 139	=, 4
Q4')'##/]	61-79	31-40	140-165	5-10
.,8;e/]	80-90	30-40	165-180	8-12
c174/9\$"4/8;#/]	91-95	20-30	#' 1>"&K+/'&\$]	#' 1>"&K+/'&\$]
/9\$"4/8;#/]	7,8" 96	4'#" 30	#' 1>"&K+/'&\$]	#' 1>"&K+/'&\$]

=6-""H+(- . Q"2 '+\$2-' +@I(%D%%8CD%N"(-@46")"@C"82@%'+\$2-' +@I(%'L
 "2L 46"%)%@"+"%4%)""8(%D% %8CD%N"(-@8+(D- - 8.4.) * %)(%')*- -
 c"(- .

c,=')?/#" &)'#"),+,>#J, 3/#]&"] #/ 9/?=,4 9,#9)'&#,4
 [&/. ' .,=J,&,+9" ..)'='8']&\$] 4#J"4" X/9&,) /4" : A'8;_ " 3/= /> /-
 4" , 3/9,#,4')#,\$&]4" 9,8'7/#"] X1#9A",#/8;#,@ /9&"+#,\$&" ,)J/ -
 #"34/ \$.,)&\$4# / +.),A'\$'\$' 7,8" "8" 4'#" =8"&8;#,@ 4Ke'>#,@
 =]&8;#,\$&" , +'8">"#,@ #/J)139" ,,\$7'##,\$&]4" .,=7,)/ " \$,>'&/ -
 #"] &)'#"),+,>#KU 1.)/?#'#"@ ,)?'4,4)/7,&K " ,&=KU/ " =)1J"-
 4" 3# />"4K4" .)/4'&)/4" .

c.'A"/8;#K' &)'#"),+,>#K' #/J)139" + .')'+1_ ,>)'=; U/)/9 - &)'31_&\$] 3/=##, @ \$9,) ,&\$;_ 8,=9" . c9,) ,&\$; 8,=9" 4,?'&)/\$ - \$>"&K+&,\$)+ .),A#&/U ,& 4/9\$"4/8;# ,@ 'j \$9,) ,&\$" #/ ,&)'39/U =, 50 4'&),+ , "8" \$,)'+# ,+&'8;# ,@ \$9,) ,&\$;_ #/ 500"8" 10004'&),+ . L)" [&,4 \$,)'+# ,+&'8;#/] \$9,) ,&\$; 4,?'& 3/=+&,\$] \$ 1>'&,4 +,3- 4,?'# ,&\$' @ \$.)&\$4'#/ #/ =/##K@4,4'& .,=J,&,+9" "8" 9/9 .),J# , - 3")1'4/] +9,#9)'&#K' \$),9" .),+='#"] \$,)'+# ,+/#" @ (&/78"A/ 17).

S/78"A/ 17 -n/)/9&)'\$&"9/ \$. 'A"/8;#KU &)'#"),+,>#KU #/J)13,9 +J)'78' #/ 7/@=)/9/U" 9/#,[

	L'=/J,J">'\$9/] U/)/9&)'\$&"9/			/9\$"4/8;#K@ ,7'4 ,9,8">'\$&+,		
	c9,) ,&\$; , % ,& \$,)'+ #,+&'8; - #,@	L),=,8?" - &'8;# ,&\$;)/7,&K , 4"# .	R8"&'8; - #,\$& ,&=K- U, \$	F ,=- #,4 3/#] - &"", 94	I/ 4' - 4' - \$]A, 94	I/ J,=, %
I, #K 4, ^#, \$&")/7, &K , .)' - "41^'\$&+##, ' [#]'J, , 7\$ - .>#"						
c,)'+# ,+&'8;#/]	#/ 5004	1,5–2,5	–	3	8	40
	#/ 10004	3,5–5,0	–	3	8	40
V 3, #/ /9\$"4/8;#/] "#&'#\$"+- #, \$&; (/#[/], 7#, - /8/9&/&#,')	c+Ke' 115 =, 15\$		–	20	6	=, 8
	110–115	=, 30\$	–	25	12	
IV 3, #/ c174/9\$"4/8;#/] "#&'#\$- \$" +#, \$&; (/#[/], 7#, - 8/9&/&#,') c,)'+# ,+&'8;#/] "#&'#\$- \$" +#, \$&; 5/3+"&" ="\$&/#A", ##, @ +K#, \$8"+, \$&"	105	1,5–2,5	–	3	8	40
	95	3,5–5,0	–	3	8	40
	100–110	1–1,5	10–20	5	18	=, 10
		1–2	10–30			
	95–105	1–1,5	10–30	8	24	
		1,5–2	10–40			
	2–3	40–90				
	3–5	30–90				
III 3, #/ : , 8; e/] "#&'#\$"+#, \$&; (\$4'e/##, ' \$/#/[/], 7#K4 "/ [/], 7#K4 J8"9, 8"3, 4)	85–95	6–10	120–180	12	30	=, 30
		10–15	60–90			
	75–80	30–30	–	16	45	–
II 3, #/ Q4)'##/] "#&'#\$"+#, \$&; (/ [/], 7#K@ J8"9, 8"3)	70–75	R, 180	–	30	90	60
I 3, #/ /8/] "#&'#\$"+#, \$&; (/ [/], 7#, ' \$ 1>/\$&"4 J8"- 9, 8"3/ " 8" , 8"3/)	50–69		–	–	–	30

R8] \$,)'+#,+/&'8;#,@ \$9,),\$&" + =/##K@4,4'#& .,=J,&,+9" 7,8;e,' 3#/>'#'" "4'& \$,,&+'&\$&+" " #' &,8;9, .'=/J,J">\$9"4 , #, " X"3",8,J">\$9"4 U)/9&')\$&"9/4 . R8])/3+"&"] \$. 'A"/8;#,@ \$9,),\$&#,@ " \$"8,+,@ +K#,\$8"+,\$&" J)'7A,+ e"),9, "\$.,8;31_&\$] .,+&,)#K@ " "#&')+/8;#K@ 4'&=K &)'#"),+9" . L,+&,)#K@ 4'&=.)'=\$&/+8] & \$,7,@ #'=#,9)/&#,' +K.,8#'" &)'#"),+,>#KU #/J)13,9,)/3='8'##KU =,\$&/&,>#K4" =8] +,\$\$&/#,+8'#"] "#&')+/8/ - 4" ,&=KU/ (. ,8#,' "8" >/\$&">#,' +,\$\$&/#,+8'#"). '&=# #/.)/+8' #/)/3+"&" 4/9\$"4/8;#KU \$9,),\$&#KU" \$"8,+KU\$.,\$,7#,\$&'@. R8"- &'8;#,\$& ;=#,J, .,+&,)#"] ,& #'\$9,8;9"U '\$91#=#, 10 4"# \$"#&'#\$"+#,\$&;_ ,& 85 =, 100% ,& 4/9\$"4/8;#,@ . L)"41^'\$&+, =/##,J, 4'&=/ - +,34,?#,\$& ;=\$&"J/& ; 4/9\$"4/8;#,@ "#&'#\$"+#,- \$&" +K.,8#'"] #/J)139" + 9/?=,4 .,+&,)#" " ,.&"4/8;#,' =,3" -),+/#" +'8">"#K +,3=@\$&+"] N'=\$&/&,9 4'&=/ - =8"&'8;#K@ .),4?1&,9 +)'4#" 4'?=1 .,+&,)#"4" 3#/>"&'8;#; 1+'8">+'& .),=,8?"&'8;#,\$& ;=#,J, 1.)/?#'"] .

R8] .)/+"8;#;J, +K7,)/ .)/4&),+ &)'#"),+,>#KU #/J)13,9,)'J8/4'&#"1'4KU \$.,4,^;_ .,+&,)#;J, " "#&')+/8;#;J, 4'&=,+ &)'#"),+9" , #'7U="4, 1>"&K+/&; 3/=+/41_ "#&'#\$"+#,\$&;)/7, - &K(&/78"A/ 18).

S/78"A/ 18 -L)"4')#K' .)/4&)K &)'#"),+,>#KU 1.)/?#'"@ A"98">\$9,J, U)/9&')/ ,#/.)/+8'##KU #/)/3+"&" X"3">\$9"U 9/>\$&+.,+&,)#K4 4'&=,4

I, #/ 4, ^#, \$&"	F)'4])/7,&K, \$	i#&'#\$"+#,\$&; % LB	B,8">\$&+, .,+&,)#"@ ,)/3	F)'4] ,&=KU/, 4"#	fcc , 1=4"#
5/3+"&" \$9,),\$&#KU9/>\$&+					
V 3, #/ 	<40	96-100	4-12	6-9	186-192
		91-95	8-19	4-7	
		85-90	12-25	2-5	
5/3+"&" \$. 'A"/8;#;@ +K#,\$8"+,\$&"					
IV 3, #/ 	50-180	93-96	3-7	7-10	193-200
		89-92,5	5-10	5-8	
		85-88	7-13	3-6	
III 3, #/ 	190-900	95-97,5	1-3	10-13	181-192
		90-94	2-5	8-11	
		85-89	3-7	6-10	

I, #/ 4, ^#, \$&"	F)'4]) /7, &K, \$	i#&'#\$"+#,\$&; , % LB	B,8">'\$&+ , ,, +&,)'#"@ ,)/3	F)'4] ,&=KU/, 4"#	fcc , 1=4"#
5/3+"&" /[] ,7# , @ +K#,\$8"+,\$&"					
II 3, #/	1000- 1800	96-100	1	-	171-180
		91-95	2	11-12	
		85-90	2-3	10-11	
I 3, #/	>1800	90-100	1	-	<-170
		85-90	2	11-13	

i#&')+/8;#K@ 4'&, = U/) /9&')"31'&\$] #' ,=#,9) /&#K4 ., +&,)' -
#"4 "#&'#\$"+#KU #/J)13,9 ,)/3='8'##KU #' .), =,8?'&'8;#K4 "#-
&')+/8,4 ,&=KU/ (#' .,8#,' +,\$\$&/# ,+8'#") .

'&, = #/.) /+8'# #/)/3+"&" \$9,) ,&\$# ,@ " \$"8,+ ,@ +K#,\$8"+ , -
\$&". R8"&'8;#,\$&; ,=#,J, ., +&,)'#"] ,& 15 =, 3 4"# \$ "#&')+/8/4"
,&=KU/ =, 90 \$'91# = " "#&'#\$"+#,\$&;_ ,& 88 =, 98% ,& 4/9\$"4/8; -
,@ L)"41^\$&+ , : 4/9\$"4/8;# , =, .1\$&"4K@ .)) ,& \$.'A"/8;# ,@
) /7, &,\$. , \$,7#,\$&" 3/ \$>'& &)'#")1_ ^'J, [XX'9&/ #' &,8;9, \$/4, @
#/J)139", #, " "#&')+/8/ ,&=KU/. N' =,\$&/&,9: &)'71'& .,\$& ,]##,J,
9,#& ,8] \$,\$& ,]#"] \$')='># , -\$,\$1="\$& ,@\$"\$&'4K =8] .) ,X"8/9&"9
')#/.)]'?#"] (&/78"A/ 19).

S/78"A/ 19 -L)"4')#K' .) /4'&)K &)'#" ,+ ,>#KU 1.) /?#'"@
A"98">'\$9,J, U/) /9&') / , #/.) /+8'##KU #/)/3+"&"
=+"J/&'8;#KU 9/>'\$&+"#&')+/8;#K4 4'&, =,4

I, #/ 4, ^#, \$&"	F)'4]) /7, &K, \$	i#&'#\$"+#,\$&; , %	B,8">'\$&+ , ,, +&,)'#"@ ,)/3	F)'4] ,&=KU/, \$	fcc , 1=4"#
5/3+"&" \$. 'A"/8;# ,@ +K#,\$8"+,\$&"					
IV 3, #/	15-45	85-87,5	4-5	15-60	193-200
	10-30	81-84	6-7	10-60	
	7-20	77,5-80	8-9	5-45	
III 3, #/	20-100	80-82,5	8-9	20-90	181-192
	15-90	76-79	10-11	15-90	
	15-60	72,5-75	12-13	15-60	
5/3+"&" /[] ,7# , @ +K#,\$8"+,\$&"					
II 3, #/	90-180	77,5-80	10-13	20-90	171-180
	60-120	74,5-77	14-17	15-90	
	45-90	72,5-75	18-21	10-90	

I,#/ 4,^#,\$&"	F)'4])7,&K , \$	i#&'#\$"+#,\$&; , %	B,8">'\$&+ , ,+&,)#"@ ,)3	F)'4] ,&=KU/, \$	fcc , 1=/4"#
	>120	72,5-75	15-19	30-90	<170
I 3,#/	>90	69-72	20-24	20-90	
	>60	65-68	25-30	15-90	

L)"4')#K' &)'#"),+,>#K' 1.)/?#'#"] (.,+&,)#J, " "#&') -
+/8;#J, 4'&,=,+), #/.)/+8'##K' #/)/3+"&" X"3">'\$9"U 9/>'\$&+ ,
.)"4'#]_&\$] + \$,.,&+'&\$&+" \$.)"4')#K4)/\$.)'='8'#"4 &)'#"), -
+,>#,@ #/J)139" ., 9/>'\$&+/4 .,=J,&,+9" + J,=">#4 A"98' . R,3" -
),+9/ (+)'4])/7,&K , 9,8">'\$&+ ,.,+&,)#"@ , +)'4] ,&=KU/" &=.) #/
.),&]?#'" J,=">#J, A"98/ .,=J,&,+9" =,8?#/, &+'>/&; .)"#A".1
.,\$&'##,\$&" 1+'8">'#"] #/J)13,9 " .)'=I]+8'#"] 4/9\$"4/8;#KU
&)'7,+/#"@ 9,)J/#"341 \$.,)&\$4#,+ .

5.1.,CKJHbJ\ld bC_`CBCAaKMJ\CKMOgK@aCfMK_G
&HZbPhO\A:\HOMEPZgC`EHhOKMhMi_MEaM] aMKCk
ACO\fb\iZaCf J\AaOH

c"\$&'4/ .,=J,&,+9" .)'=1\$4/&)"+'& .,)'='8'##1_ \$&)19&1)1
9,&,) / U/)/9&)"31'&\$] :

- A'8'\$,7)/3#K4 .,)] =9,4 +3/"4,\$+]3")/38">#KU \$&,)# \$, -
=)'?/#"] .,=J,&,+9" \$.,)&\$4#,+ (9,4.,##&,+ ,7^@ " \$.A"/8; -
#,@X"3">'\$9,@ " X"3"9, -&'U#">'\$9,@.,=J,&,+9");
- #'7U,="4K4 \$,.,&#e#"4 .)/4'&),+ &)'#"),+,>#,@
#/J)139" (>/\$&#KU' ,7^"U +'8">"# " ,7l'4/ " "#&'#\$"+#,\$&"), &)'-
#"),+,>#KU " \$,)'+#,+/&'8;#KU #/J)13,9;
- .,)'='8'##,@ .,\$8'=,+/&'8;#,\$&;_)/38">#KU 3+#;'+ &)'#"
),+,>#J, .),A'\$\$/ ,]+8]_ ^"U\$] X/3/4" .),A'\$\$/ .,=J,&,+9" , +K-
)/?/_ ^"4" 'J, 3/9,#,4')#K' "34'##"] +, +)'4'#" .

cU'4/ .,=J,&,+9")/38">'&\$] =8])/3#KU \$.A"/8"3/A"@
(2004, 10004). L)" e"),9"U +,34,?#,\$&]U "#="+"=1/8"3/A"" .8/ -
#"),+/#"] 3/#]&"@,\$#,+#K' .,8,?'#"] &)'#"),+9" 7/3")1_&\$] #/
7",8,J">'\$9"U 3/9,#,4')#,\$&]U)/3+"&"] \$.,)&"+#,@ X,)4K . <8/+
#K4" 9,4.,##&/4" .8/#"),+/#"]]+8]_&\$] : ,7^/] \$&)/&'J"] .,=J, -
&,+9", 9/8'#=/); \$,)'+#,+/#"@ " 1>7#, -&)'#"),+,>#KU \$7,)+ , &-
91^" " [&/.#K' ,7\$8'=,+/#"] , &'\$&"),+/#" X"3">'\$9"U 9/>'\$&+ ,
=8"&'8;#,\$&; &)'#"),+9 , .),J/44"),+/#" \$,=)'?/#"] &)'#"),+9
+4"9),A"98/U .

L),=,8?"&'8;#,\$&; +,8# #/J)13,9)/38">#,@ #/.)/+8'##,\$&"
,71\$8,+8'#/ .,\$&/#,+9,@ 3/=/> #/ [&/./U .,=J,&,+9" ", 9/9 .)/+"8, ,
\$,,&+'&\$&+1&=8"&'8;#,\$&" 4'3,A"98,+ , / /4.8"&1=/ +,8# + J,="> -
#,4 A"98' .,)'='8]&\$] "#&'#\$"+#,\$&;_ "\$.,8;3,+/#"] #/J)13,9
19/3/##,@ #/.)/+8'##,\$&" . N/"7,8;e/] /4.8"&1=/ .,)'='8]'& .)' -
"41^'\$&+'##,')/3+"&" \$,,&+'&\$&+1_^"U X1#9A",#/8;#KU +,34,? -
#,\$&'@\$.)&\$4#,+ . L),78'4/ .8/#"),+/#"] #/ +\$'U [&/./U 1\$8,?-
#]'&\$] +\$8'=\$&+" 9,#91)'&##KU +3/"4,,&#e'#" @ #/J)13,9)/3#,@
X"3",8,J">'\$9,@ #/.)/+8'##,\$&" .

FK='8'#K \$8'=1_^" .)'#A".K .,\$&),'#"] &)'#"),+,9 + A"9-
8/U .,=J,&,+9" :

.)/3+"&" "\$8,+KU 9/>'\$&+,\$>'&/#" "\$&)'#"),+,9,@ /[],7#,@
,)"3+,"&'8;#,\$&" ;

.)/7,&/ .,)/3+"&"_ \$9,),\$&#,-"\$8,+KU "\$.)"#&)'\$9"U 9/>'\$&+
"\$.,8;31] J)'78_ #/ +,=#,4 \$&/=",'# +.)+, @ 3,#' "#&'#\$"+#,\$&" ;

.)/7,&/ .,)/3+"&"_ /#/[],7#KU (J8"9,8"&">'\$9"U) 9/>'\$&+
+\$>'&/#" \$+K.,8#'#"4 1.)/?##" @ 4/8,@ "#&'#\$"+#,\$&" ,.)" [&,4
=,.,1\$9/'&\$] "\$.,8;3,+/#" "\$8,+KU" \$9,),\$&#,-"\$8,+KU &)'#"),+,9 .

L8/#"),+/#" &)'#"),+,>#J, .),A'\$\$/ #/ =8"&'8;#K' .)',=K
\$1^'\$&+'##, 1\$8,?#]'&\$] ., \$)/+##" _ \$.8/#"),+/#"4 4/9),A"9 -
8/. a=#/9, \$/4 .)'#A". "\$.,8;3,+/#"] #/J)13,9 .)'41^'\$&+'##,J,
+,3=@\$&+"#/#, .,)'='8'##,' +'=1^" X"3">'\$9,' 9/>'\$&+ ,)/\$.), -
\$&)/#]'&\$] " #/ 7,8" =8"&'8;#K' [&/.K .,=J,&,+9" . 5/'8"3/A"] . ' -
)>"\$8'##KU .)'#A".,+ #' "\$98_>/'& ,=#,+)'4'##J, \$,+)'e'# -
\$&+,+/#"])/3#KU \$&,),# .,=J,&,+8'##,\$&" . L)" &)'#"),+,9/U + A"9-
8/U 8_7,@ .),=,8?"&'8;#,\$&" J8/+#K4 ,,\$&'&\$] X/9&,) 91418]A"
[XX'9&,+ &)'#"),+,9" +\$,,&+'&\$&+" "\$3/=/>/4" [&/./ .

F J,=+,4 .8/#' A"98">#,\$&; .,=J,&,+9" ,7\$.'>"+/'&\$] ,
+.)+1_ ,>)'='; , 3/ \$>'&\$4'##,\$&" [&/.,+ .,=J,&,+9" . L,\$&),'#"
[&/./ .)'=.8/J/'& .,\$8'=,+/&'8;#1_ \$4'#1 4'3,A"98,+ : /[],7#,-
"\$8,+,@ #/.)/+8'##,\$&" (#/9,.'&'8;#K'), #/)/3+"&" \$.A"/8;#,@ ,
="&\$/#A",##,@ " "\$8,+,@ +K#,\$8"+,\$&" (&)/#\$X,4")1_^"), #/
)/3+"&" \$9,),\$&#KU, \$9,),\$&#,-"\$8,+KU 9/>'\$&+ ")/'8"3/A" _ =+ "-
J/'8;#J, " X1#9A",#/8;#J, .,&'#A"/8/ + \$,)'#+,+/'&'8;#,@ =] -
&'8;#,\$&" ()/'8"3/A",##K'). S/9,' .,\$&),'#" [&/.,+ .,=J,&,+9"
,7\$.'>"+/'& :

.)/A",#/8;#1_ .,\$8'=,+/'&'8;#,\$&; +,3=@\$&+"#/#/ +/?# '@e"
=+"J/'&'8;#K' \$.,,\$7#,\$&" ;

.)/A",#/8;#,' \$,>'&/#" 4"e'#@ &)'#"),+,>#J, +,3='@\$&+']
,\$#,+#[] +K#,\$8"+,\$&; \$9,),\$&#,-\$"8,+K' \$.,\$,7#,\$&" " ,&)/7,&9/
&'U#"9,-&'U#">\$9,@4,='8" \$,)'+#,+/&'8;#J, .),U,?='#"] ;

. =,\$&/&,># , +K\$,9/] 9,#A'#&)/A"] &)'#"),+,>#J, +,3='@
\$&+"]=8] [XX'9&"+#J,)/3+"&"] &)'#")1'4KU \$.,\$,7#,\$&'@;

. >)'=,+/#" #/.)/+8'##,\$&" &)'#"),+9" ,"\$98_>/_ ^" ,=#, -
,7)/3" , \$&/7"8"3/A" _ X/9&,) + #/J)139" ,.)"+K9/#" .

L)")/3)/7,&9' J,=+,J, .8/#/ #'7U,="4, 1>"&K+/&;

. .)"4'##" ,.)='8'##,J, \$, ,&#,e'#"] &)'#"),+,>#KU
#/J)13,9)/38">#,@ "#&#\$"+#,\$&" " #/.)/+8'##,\$&" ="9&1'&\$).)" -
>#"#4" X,)4"),+/#"] \$. 'A"X">'\$9"U [XX'9&,+ /=.&/A"" 9)/7,&' ,
+3/"4#K4 +8"]#"4 1.)/?##" @ , +K.,8#]4KU +)/3#KU =+"J/'8; -
#KU(('#)J'&">'\$9"U))?'4/U =)1J #/ =)1J/. N.)"4') , 7/3,+/] .,= -
J,&,+9/ - [&, , .)'?=' +\$'J, , #/9,.8'#" \$&)"19&1)#KU"34'##" @
(X1#9A",#/8;#KU " X"3",8,J">'\$9"U) + ,)J/"34' \$.,)&\$4'#/ .
S, '\$&; \$,3=#'" ,.)='8'##,@ 7/3K .,=J,&,+8'##,\$&" - [&, #' 9,8" -
>'\$&+, 9"8,4'&),+ "8" &,# +K.,8'##,@ &)'#"),+,>#,@ #/J)139"
/ &,&\$.'A"X">'\$9" @ \$8'=, 9,&,)K@ [&/ #/J)139/ , \$&/+"8/ + ,)J/"34'
\$.,)&\$4'#/ ;

. #'7U,="4, .#"4/&; , >&, +#/>8' \$.,4,^;_)/3#,,7)/3#KU
1.)/?##" @ X,)4")1'&\$] X1#9A",#/8;#/] "\$&'4/ , / 3/&'4 [&/ "\$&'4/
71='&8"4"&"),+/&; #\$. 'A"X">'\$9" .),+8'#"] " #' .,3+,8"& =,\$&">;
&'U.,9/3/&'8' @ , 9,&,)K' #' 7K8" 3/&),#1&K.)" " X,)4"),+/#"] ;

. +/?#,@ 3/9,#,4')#,\$&;_)/\$.)'='8'#"] #/J)13,9 ., [&/./4
" 78,9/4 J,=">#J, A"98/ &)'#"),+9"]+8]'&\$] #'198,##,' .,+Ke'#"
\$&'.'#" "U \$144/)#J, +,3='@\$&+"#/# ,)J/"34 \$.,)&\$4'#+ . N'+,3-
4,?# , .),J)'\$\$"+#,')/3+"&" &)'#"),+/#,\$&" , '\$8" +,3='@\$&+"
#/J)13,9 , #/.)"4') , +.)+4 #/9,."&'8;#4 4'3,A"98' 71='& +Ke' ,
>'4 +, +&,)4 " &)'&;'4 4'3,A"98/U . S, ?' 4,?# , \$9/3/&; " , ="#4" -
9' #/J)13,9 + &)/#\$X,)4")1_ ^"U ")/'8"3/A",##KU 4'3,A"98/U +.) -
+,4 , +&,)4 " &)'&;'4 78,9/U J,=">#J, A"98/ .,=J,&,+9" ;

.)/A",#/8;#/] .,\$8'=,+/&'8;#,\$&; /=.&/A"" 9 &)'#"),+,> -
#K4 #/J)139/4 X,)4")1'&\$] + #/.)/+8'#" ,& \$,3=#'"] 1\$8,+ "@=8]
X1#9A",#/8;#,@ [9,#,4">#,\$&" >)'3 .,+Ke'#" 4,^#,\$&" ("8"
1+'8">'#" X"3",8,J">'\$9"U)'3'+, + "\$&'4) 9 1\$&,@>"+,\$&'X1#9-
A"@.)" [9\$&)'4/8;#KU \$,)'+#,+/&'8;#KU #/J)139/U.

5.2.-OMK\ECAMK\HBC_CBCAaZbCEBZfHKOAMJ\CKMOgKCi
aCfMK_G&HZbPhO\la\HOMEpZgC`EHhOKMhMi_MEaM] aMKCK
A`C_\cKcf J\laOH(1000f)

<=,+,@ .8/# \$,\$&,"& "3 >'&K)'U 78,9,+ (4/9),A"98,+) .), -
=,8?"&'8;#,\$&,_ ., 12#='8; ()"\$1#,9) .

1-i hOCa(1-i hMLCAGi- ,9&]7); , #,]7); , ='9/7); -#/.)/+8'# #/
.,=&]J"+/#" ,&\$&/_ ^"U 9/>'\$&+ (4 #='8" #/9,."&'8;#K@ , 4 #='8"
&)/#X,)4")1_ ^"@ " 4 #='8")/'8"3/A",##K@ 4'3,A"98 , ., \$U'4' :
3#='8" #/J)13,>#K'+1#='8] +,\$\$&/#,"&'8;# , -. ,==')?"+/_ ^/]);

1- !"\$%>(*+ (%*,./02) - «34*%6(,"+238 »:
·)/3+"&" /],7#, @ +K#,\$8"+,\$&";
·)/3+"&" \$.A"/8;#,@ \$"8K;
· \$,+)'e#\$&+,+/#" &'U#"9" J)'78" (1+'8">'#" [XX'9&"+#, -
\$&" ,,)K " .),9/&/ 8,=9");
·)/3+"&" 9)/&"#X,\$X/&#J, 4'U/"34/ [#)J,,7\$.>'#"]
" 7K\$&),&K 9),&9" ,&)'39" 10-12 '\$91# = +98_>/_&\$] + 3/#]&"]
/],7#, @ #/.)/+8'##,\$&" . ,='8"),+/#" \$,)'+#,+/&'8;#,@ =] -
&'8;#,\$&" -#/+\$. ,4,J/&'8;#KU &)'#"),+,>#KU 3/#]&"]U \$4,='8"), -
+/&; \$)'=#="\$&/#A",##1_ \$9),&\$; #/ 9),&9"U ,&)'39/U
100-1254.

2- !"\$%>(*+ (3%./02) - «3490:\$%<3%043=?%0!(0:@A(»:
·)/3+"&" \$.A"/8;#,@ +K#,\$8"+,\$&";
·)/3+"&" \$"8,+,@ +K#,\$8"+,\$&";
· \$,+)'e#\$&+,+/#" &'U#"9" J)'78" (\$&/7"8;#,\$&; " .,4'U, -
1\$&, @>" +,\$&#/)/3#KU)'?"4/U);
· 4,='8"),+/#" \$,)'+#,+/&'8;#,@ =] &'8;#,\$&" #/ +\$. ,4,J/ -
&'8;#KU 3/#]&"]U " + 2-3,\$#,+ #KU \$4,='8"),+/&; \$)'=#="\$&/#A" -
,##1_ \$9),&\$; +\$)"" =, 50%="\$&/#A"" .

3- !"\$%>(*+ (B"*4/02) - «*%3,0%+23%6%B9%,%C(,"+238»:
· .),)/7,&9/ \$4'e/##,J, /],7#, -#/[],7#,J, " /#/[],7#, -
J8"9,8"&">'\$9,J,)?'4,+ ;
· \$,+)'e#\$&+,+/#" ="\$&/#A",##, @ \$9),&\$" ;
· \$,+)'e#\$&+,+/#" &'U#"9" J)'78" #/ .)'='8;#KU \$9),&\$]U,
)/3+"&" 9)/&"#X,\$X/&#J, 4'U/"34/ [#)J,,7\$.>'#" " 7K\$&
) ,&K - 1] >/\$&; \$=+,##KU &)'#"),+,>#KU 3/#]&"]@.,\$+]'&'&\$])/3-
+"&"_ 7K\$&),&K " \$,+)'e#\$&+,+/#" \$&/)&/. ,='8"),+/#" \$,-
)'+#,+/&'8;#,@ =] &'8;#,\$&" - .),)/7,&9/ ="\$&/#A",##, @ \$9),&\$" ,
,&)/7,&9/ \$&/)&/.

2-i hOCa(2-i hMLCAGi – dKAMEgeHAEMOQfMEB – EMLA\B\H
AH_Pm\]LAHKgHAC_CBCAa(\$&)19&1)/.,+&,)']&\$] , 3/ "\$98_>'#" -
'4 &,J,, >&, 1-@4'3,A"98 J,)#K@, 7'3 +,=K);

1- !"\$%>(*+ (.3C402 – «34*%6(,"+238 »):

· .,+Ke'#")/7,&,\$.,\$,7#,\$&" + /(),7#,4 " \$4'e/##,4)' -
?"4/U [#']J,,7\$.>'#"] + \$. 'A"/8;#KU " +\$. ,4,J/&'8;#KU)'?" -
4/U 1.)/?#'#"@ ;

·)/3+"&" \$. 'A"/8;#,@ \$"8K;

· \$,+')e#\$&+,+/#" &'U#"9" J)'78" – 9,#A'#&)/A"] 1\$"8"@
\$,>'&/#" #/.)]?'#" ")/\$\$8/78'#"] ;

·)/3+"&" 9)'/&"#X,\$X/&#J, 4'U/#"34/ [#']J,,7\$.>'#"]

" 7K\$&,&K – 9,)&9" ,&)'39" +98_>/_&\$] + 3/#]&" /(),7#,@
" \$4'e/##,@ #/.)/+8'##,\$&" . ,='8"),+/#" ="\$&/#A",##,J, &'4./
" \$9,),\$&" #/ 9,)&9"U ,&)'39/U.

2- !"\$%>(*+ (? "C04+2!40,) – «3490:\$%<3%043=?%0!(-

0:@A(»):

· .,+Ke'#")/7,&,\$.,\$,7#,\$&" + \$4'e/##,4 " /#/(),7#, -

J8"9,8"&">'\$9,4)?'4/U ;

·)/3+"&" \$. 'A"/8;#,@ +K#,\$8"+,\$&";

· \$,+')e#\$&+,+/#" &'U#"9" J)'78" #/ ="\$&/#A",##,@ \$9,),\$&" .

3- !"\$%>(*+ (!40, -460"+2) – «*%3,0%+23%6%B9%,%0

C("+238 »):

· ,&)/7,&9/ 4,='8" \$,)'+#,+/&'8;#J, .),U,?='#"] ="\$&/#A"";

· \$,+')e#\$&+,+/#" «\$. 'A"/8;#,@ 7K\$&,&K»;

· \$,+')e#\$&+,+/#" &'U#"9" J)'78" «\$&/7"8;#,\$&; – .,4'U, -
1\$&,@>"+,&\$&+1\$8,+"]U 1&,48'#"] ;

·)/3+"&" \$. 'A"/8;#KU \$9,),\$&#KU 9/>'\$&+ #/ 9,)&9"U ,&)'3-

9/U (10–20\$'9), \$. 'A"/8;#K' 3/#]&" =8] .,+Ke'#" [XX'9&"+#,\$&"
\$&/)&. ,='8"),+/#" .),U,?='#"] ="\$&/#A"" – .),)/7,&9/ ,&-
='8;#KU 9,4.,#'#&,+ (\$&/)& X"#"e , ="\$&/#A",##K@U,=) " \$,)'+#, -
+/&'8;#,@ ="\$&/#A"" + A'8,4 (7'3 4,&"+/A"" " \$ \$, ,&+'&\$&+1_'^@
4,&"+/A""@).

3-@78.9 (1-@\$,)'+#,+/&'8;#K@) – /.)'8; , 4/@, "_#; – 9,))'9 -

&"),+9/ ")/3+"&" +'=1^"U 3+'#;'+ .,=J,&,+8'##,\$&" (1-@[&/. B17-
9/ :8/)1\$" (/.)'8;), [&/.K B179/ 4")/ (4/@);

1- !"\$%>(*+ (460"+2) – «C%==,43%C("+23%84*%6(-
,"+238 »):

· +,\$\$&/#,+8'#" #')+#, @ [#']J"" ;

. .,==')?/#" /(),7#, @)/7,&,\$.,\$,7#,\$&" ;
. 10-12=#'+#K@78,9 .,==')?/#"] \$. 'A"/8;#KU \$"8,+KU 9/-
>'\$&+ - +,\$\$&/#,+8'#'" \$. 'A"/8;#,@ \$"8K " \$. 'A"/8;#,@ \$"8,+,@
+K#,\$8"+,\$&" ;

. cS< - \$"8,+,@ /9A'#& ")/\$\$8/78'#'" . i#="+=1/8;#/] 9,) -
)'9&"),+9/ &'U#"9" =+"?'#@" + ,="#,>9/U " 9,4/#=#KU 8,=9/U
\$+K='8'#'"4 +'=1^"U 3+#;'+' ;

.)/3+"&" 9)/&"#X,\$X/&#J, 4'U/#"34/ [#]J,,7\$. '>'#"]
" 7K\$&),&K+\$)'"" 9,)&9"U ,&)'39,+ ., 10-12\$'91#=#+9,#A' &)'#" -
) ,>#J, 3/#]&"] "8" .)" .),+='#'" \$=+,'##KU &)'#" ,>#KU 3/-
#]&"@+1-@"U >/\$&". cR -#/ +\$.,4,J/&'8;#KU &)'#" ,+9/U -\$4,=' -
8" ,+/& \$)'=#'="\$&/#A",##1_ \$9,)\$& #/ ,&)'39/U 40-80\$'91#=#.

2- !\$%'(*+ (!4) - <3490:\$%<3%043=?%0!(0:@A(»:

.)/3+"&" \$. 'A"/8;#,@ ="\$&/#A",##,@ +K#,\$8"+,\$&" + \$4' -
e/##,4 " J8"9,8"&">\$9,4)?'4/U ;

. .,==')?/#" 1),+#] \$. 'A"/8;#KU \$"8,+KU 9/>'\$&+;

. cS< -#/ ="\$&/#A",##KU " .)'='8;#KU \$9,)\$&]U;

3- !\$%'(*+ ((@32) - <=%0"C3%C4,"+238):

.)/3+"&" \$,)'+# ,+/&'8;#,@ " \$9,)\$&#,@+K#,\$8"+,\$&" »;

. \$9,)\$& IRc . c&/& ,+/] 4,^#,\$& ; ,9,4.,##&K cR ;

. \$,)'+# ,+/&'8;#/] =]'&'8;#,\$& (>'4.",#/& 5\$.178"9" :'/ -
)1\$;) - "_8; , /+J1\$&- 6#='8; (., ,&)/7,&/##,@ \$U'4' ;)/'8"3/A"] -
a8"4."@\$9" "JK).

1- !\$%'(*+ ((@+2 1- (2- 3"B"+() - <C%==,43%C(,"+23%
34*%6(,"+238 »:

. +,\$\$&/#,+8'#'" #')+#, @ [#]J'" ;

. .,==')?/#" /(),7#, @)/7,&,\$.,\$,7#,\$&" ;

. 10-12=#'+#K@78,9 \$"8,+KU #/J)13,9 - +,\$\$&/#,+8'#'" \$. ' -
A"/8;#,@ \$"8K " \$. 'A"/8;#,@ \$"8,+,@ +K#,\$8"+,\$&" ;

. cS< - \$"8,+,@ /9A'#& ")/\$\$8/78'#'" . i#="+=1/8;#/] 9,) -
)'9&"),+9/ &'U#"9" =+"?'#@" + ,="#,>9/U " 9,4/#=#KU 8,=9/U
\$+K='8'#'"4 +'=1^"U 3+#;'+' ;

.)/3+"&" 9)/&"#X,\$X/&#J, 4'U/#"34/ [#]J,,7\$. '>'#"]
" 7K\$&),&K+\$)'"" 9,)&9"U ,&)'39,+ ., 10-12\$'91#=#.)" .),+=' -
#" \$=+,'##KU &)'#" ,>#KU 3/#]&"@+1-@"U >/\$&". cR -#/
+\$.,4,J/&'8;#KU &)'#" ,+9/U \$4,='8" ,+/& \$)'=#'="\$&/#A",##1_
\$9,)\$& #/ ,&)'39/U 40-80\$'91#=#.

2- !\$%'(*+ ((@+2 3 3"B"+() - <3490:\$%<3%
,043=?%0!(0:@A(»:

- .,+Ke'#" /#[],7#,@ J8"9,8">'\$9,@ 4,^#,\$&" ;
- .,==')?/#" 1),+#] \$. 'A"/8;#KU \$"8,+KU9/>'\$&+;
-)/3+"&" \$9,),\$&#,@ " \$"8,+,@ +K#,\$8"+,\$&" -IRc , cR ;
- cS< -#/ ="\$&/#A",##KU " .)'='8;#KU \$9,),\$&]U.

3- !\$%'(*+ (4C9:=,, 4- - 6- 3"B"+() - «%0"C3%C4,"+23%
0"4+(\$4'(%338 »:

- .,==')?/#" \$. 'A"/8;#KU \$. 'A"/8;#KU \$9,),\$&#KU9/>'\$&+;
- \$9,),\$& IRc , \$&/)&,+/] 4,^#,\$& ; , 9,4.,##&K cR ;
- ,&)/7,&9/ &'U#"9,-&/9&">'\$9,@4,='8" .),U,?='#"] ="\$&/#A"";
- +,\$\$&/#,"&'8;#K' 4'),.)]&] , \$#"?'#" ,7|4/ " "#&'#-
\$"+#,\$&" #/J)13,9 ;
- +K)/7,&9/ \$,)'+#,+/&'8;#J, .,+='#"] ;
- \$,)'+#,+/&'8;#/] =']&'8;#,\$& ; (a8"4."@\$9" "J)K).

T.,;W)"8("

i\$. ,8;3,+/#" #,+KU &'U# ,8,J"@ \$,.) ,+ ,?=#"] &)'#") ,+ ,> -
,J, .) ,A'\$\$/ " ,A'#9" .) , "3+ ,="&'8;#,\$&" \$,.)&\$4# ,+ J)'7A ,+ ,
"4_ ^"U = ,8J,\$) ,>#K' .)\$. '9&" +K +)/'8"3/A"" 3/= /> \$,.)&/
+K\$e"U = ,&"?'#" @ , =/'& + ,34 ,?#,\$& ; \$,+)e'#\$& ,+ ,/& ; 1) ,+ #; "U
., =J ,& ,+9" .

c1^ \$& +1& 4# ,J, .) ,&" ,+ ,)'>" @ + . , =U , = ' 9 +K7 ,)1 9)"&)'"+
,A'#9" X1#9A" ,#/8;# ,J, \$, \$& ,]#"] ,)J/#"34/ \$,.)&\$4# ,+ , ")' -
318 ;&/& ,A'#9" 3/+"\$& ,&)/314# ,J, \$, ,&# ,e'#"] .) ,+)'##KU 4' -
& ,="9 ,&7 ,)/ " \$,+) '4'##KU \$)'=\$& +

P'8; \$,.) ,+ ,?=#"] &)'#") ,+ ,># ,J, .) ,A'\$\$/ + \$,.)&' +K\$e"U
= ,&"?'#" @ - . , =J ,& ,+9/ \$,.)&\$4#/ , .) ,X'\$\$" ,#/8/ +K\$,9 ,J, 98/\$-
\$/ . : ,8;e"\$& ,+ ,&'U#">'\$9"U /\$. '9& ,+ \$,.) ,+ ,?=#"] &)'#") ,+ ,> -
,J, .) ,A'\$\$/ , \$)'=\$& +X"3" ,8 ,J">'\$9 ,J, - ="# /4">'\$9 ,J, 9 ,#& ,)8]
X1#9A" ,#/8;# ,J, \$, \$& ,]#"] ,)J/#"34/ , .) '4#]'4KU + .) ,A'\$\$'
#/78_ ='#"] , = ,8?#K ,A'#" + /& ;\$] #' \$17'9&" + # , , / 7K& ; 1.) /+8]' -
4K4" " . , =>#] & ;\$] + ,34 ,?#,\$&]4 9 ,#& ,)8] , 7K& ; + , \$,.) , "3+ ,="4K -
4" + \$"&1/A"]U &)'#") ,+ ,9 " \$,.)' + # ,+ /#" @ .

a7l'9&" + # , ' "\$. ,8;3,+/#" +\$'U .)'4'##KU . ,9/3/&'8'@ , .) " -
4#]'4KU + .) ,A'\$\$' \$,.) ,+ ,?=#"] &)'#") ,+ ,># ,J, .) ,A'\$\$/ , . , -
4 ,J/'& .) /+ "8;# , ,A'#"& ; + ,34 ,?#,\$&" \$,.)&\$4#/ , 81>e' " & ,>#"
\$='8/& ; .) ,J# ,3 'J, .)\$. '9&" + # , \$&" + 1\$8 ,+"]U =8"&'8;# ,J, 8 ,#J" -
&1 ="# /8;# ,J, #/78_ ='#"] . F \$,+) '4'##KU 1\$8 ,+"]U \$,.)&/ +K\$e"U
= ,&"?'#" @ , \$,71_ 3# />"4 , \$& ; .) ,7)'&'&) /##" +K] +8'#"
#/'7 ,8" , = /)'##KU , .)\$. '9&" + #KU \$,.)&\$4# ,+ , & /99/9)'9 ,) = #K'
= ,&"?'#"] ='4 ,# \$&)")1_ & \$] "4'## , &'4" , 9& , ,78 = /'& #/'7 ,8"
, &"4/8;#K4" . ,9/3/&'8]4" , U /) /9&)'#K4" =8] = /## ,J, + " = / \$,.)&/ .
c , = # , @ \$& ,) , #K , \$,.)&\$4#K , , &8"> /_ ^"\$] . , \$,+ , "4 4 ,)X ,8 ,J" -
>'\$9"4 , X1#9A" ,#/8;#K4 , . \$"U ,8 ,J">'\$9"4 , \$,7'## , \$&]4 , . , -
) /3# ,41 / = / . &")1_ & \$] 9 1\$8 ,+"]4 =]&'8;# , \$&" , \$ =)1J , @ - A'8'#/ -
.) /+8'## /] =]&'8;# , \$& ; ,9/3K + /'& +8"]#" # / . , =J ,& ,+91 #/'7 ,8"
, = /)'##KU \$,.)&\$4# ,+ " X ,)4" ,+ /#" 1 # "U \$. 'A"X">'\$9 ,J, 4 ,) -
X ,X1#9A" ,#/8;# ,J, \$& /&1\$ / . \$"U ,8 ,J">'\$9 ,J, # / \$& ,) , , &8">#KU
. ,9/3/&'8'@ 7" ,4'U /#"9" .

c)'=" . ,9/3/&'8'@ , .) ='8]_ ^"U 1\$. 'e# , \$& ; +K\$&1.8'#"]
+J)'78' , , = # , "3 , \$# ,+ #KU 4' \$& 3 /#"4 /_ & . ,9/3/&'8" &'8 , \$8 ,?'#"] , 9 , -
& ,)K' 1>"&K + /_ & \$] .) " \$,.)&" + # ,4 ,&7 ,)' # /) /38">#KU [& / . /U 4# ,J, -
8'&#' @ . , =J ,& ,+9" , +K7 ,)' = "\$& /#A"" , 9 ,4.8'9& ,+ /#" [9' . /?' @ ,

#/8/=9' ., \$/ =, > #, J, 4 '\$ & / " & =. S / 9 "" ., 9 / 3 & ' 8 " , 9 / 9 & , & / # K ') / 3 - 4) K & ' 8 / , ' J , .) , ,) A "" , , \$, 7 ## , \$ & " & ' 8 , \$ 8 , ? ' # "] , \$ 1 ^ \$ & + ' ## , + 8 "] _ & # / X " 3 " > \$ 9 1 _) / 7 , & , \$. , \$, 7 # , \$ & ; , \$,) + # , + / & ' 8 ; # 1 _ =] - & ' 8 ; # , \$ & ; , + K 7 ,) \$. ,) & " + # , @ \$. ' A " / 8 " 3 / A "" . a # " " 4 ' _ & + K \$, 9 1 _ # / \$ 8 ' = \$ & + ' ## 1 _ , 7 1 \$ 8 , + 8 ' ## , \$ & ; , > & , , # /) = 1 \$ 1 > ' & , 4 . \$ " U , 8 , J " > ' - \$ 9 " U , X " 3 " , 8 , J " > \$ 9 " U , 7 " , U " 4 " > \$ 9 " U X / 9 & ,) , + , = / & + , 3 4 , ? # , \$ & ; , .) ' = ' 8 " & ; .) \$. ' 9 & " + # , \$ & ; \$. ,) & \$ 4 # , + . B / 9 . , 9 / 3 K + / _ & " \$ \$ 8 ' = , - + / # "] , . , 9 / 3 & ' 8 " & ' 8 , \$ 8 , ? ' # "] , 9 / 3 K + / _ & \$ 1 ^ \$ & + ' ## , ' + 8 "] # " # / X ,) 4 ") , + / # " " # = " + " = 1 / 8 ; # , J , \$ & " 8] J) ' 7 8 " , \$, +) e # \$ & + , + / # " & ' U # " 9 " J) ' 7 9 , + K U = + " ? ' # " @ , X " 3 " > \$ 9 1 _) / 7 , & , \$. , \$, 7 # , \$ & ; / & 8 ' - & , + " " U \$. ,) & " + # K ' = , \$ & " ? ' # "] .

N / + \$ ' U [& / . / U \$, .) , + , ? = ' # "] &) # ") , + , > # , J , .) , A ' \$ \$ / \$. ,) & \$ 4 # , + , 9) , 4 ' & , J , , + / ? # , , A ' # " & ; # / 8 " > " 1 \$ & / # , + 9 " # / 1 \$. ' U (+ K . , 8 # " # " \$. ,) & \$ 4 # , 4 . , \$ & / + 8 ' ## K U 3 / = / > ; , 9) 1 ? ' # " \$. ,) & \$ 4 ' - # / , . \$ " U , 8 , J " > \$ 9 " @ 9 8 " 4 / & + \$ 4 ; ' " 9 , 4 / # = ' ; / # / 4 # 3 ? " 3 # " , + 3 8 - & K " \$. / = K 9 / ;) K , " U .) " > # K ; 7 " , J) / X "] \$. ,) & \$ 4 # / , ' J ,) ' 3 1 8 ; - & / & K " = , \$ & " ? ' # "] ; 8 " > # , ' ? ' 8 / # " , . 8 / # ") , + / # " \$, 7 \$ & + ' ## , @ \$. ,) & " + # , @ 9 / ;) K) .

a \$, 7 , ' + # " 4 / # " # , 7 U , = " 4 , 1 = ' 8 " & ; " # &) .) & / A "") ' 3 1 8 ; & / & , + , . , 8 1 > ' ## K U + " \$ \$ 8 ' = , + / # "] U . , + K] + 8 # " _ . , 9 / 3 & ' 8 ' @ 1 \$. ' e # , \$ & " \$. ,) & \$ 4 # / , / \$ \$, A "") , + / ## K U \$ X # , & " / 4 " 9 /) = " , J ' 4 , = # / 4 " 9 " . Q ? ' # / [& / . ' .) + " > # , J , , & 7 , / A ' 8 \$, , 7) / 3 # , , A ' # " & ; & / 9 " . , 9 / 3 & ' - 8 " , 9 / 9 1 = /) # K @ " # = ' 9 \$, \$) = ' > # K @ " # = ' 9 \$, " # = ' 9 \$ = , \$ & / + 9 " 9 " \$ 8 ,) , = / + & 9 / # " . i \$ \$ 8 ' = , + / # " + /) / 7 8 ; # , \$ & " \$) = ' > # , J ,) " & 4 / . , 3 + , 8] & = / - J # , \$ &) , + / & ; J " .) 9 " # & " > \$ 9 " @ " 8 " J " . , 9 " # & " > \$ 9 " @ + /) / # & X 1 # 9 A " , # ") , + / # "] \$ " \$ & ' 4 K 9) , + , , 7) / ^ # "] " \$ = ' 8 / & ; .) , J # , 3 .

L) " # A " . / 8 ; # , 3 # / > ' # " .) " \$, .) , + , ? = ' # " " &) # ") , + , > # , J , .) , A ' \$ \$ / " 4 " & , A ' # 9 / \$, \$ & ,] # "] 3 = ,) , + ;] , . , \$ 9 , 8 ; 9 1 = / ? ' # ' 3 # / > " - & ' 8 ; # K ' " 4 _ ^ " \$] , & 9 8 , # ' # "] 4 , J 1 & # ' & , 8 ; 9 , + , \$.) .] & \$ & + , + / & ; 1 \$. ' e # , 4 1 \$. ,) & " + # , 4 1 \$, +) e # \$ & + , + / # " _ , # , " \$) ; ' 3 # , 1 \$ 1 J 1 7 " & ; \$] . , = + 8 "] # " 4 &) # ") , + , 9 .

L) " # A " . / 8 ; # , + / ? # , @ .) " \$, .) , + , ? = ' # " " &) # ") , + , > # , J , .) , A ' \$ \$ / J) ' 7 A , +] + 8] & \$] , A ' # 9 / \$. ' A " X " > \$ 9 , @ = + " J / & ' 8 ; # , @ , = / -) ## , \$ & " , / " 4 ## , , « > 1 + \$ & + / + , = K » " « \$ &) / U / + , = K » . a . K & # K @ &) ' - #) 4 , ? ' & , A ' # " & ; [& " 9 / > ' \$ & + / + & ' > ' # " # / 7 8 _ = ' # "] 3 / # / > " # / _ ^ " 4 J) ' 7 A , 4 . R / 8 ; # ' @ e " \$, +) 4 ' ## K ' 4 ' & , = " 9 " 7 " , 4 ' U / # " > \$ 9 " U " \$ \$ 8 ' = , + / # " @ = / _ & + , 3 4 , ? # , \$ & ; 9 , # &) , 8] &) # ") , + , > # , J , .) , A ' \$ \$ / , \$.) + # , + / & ' 8 ; # , @ J , & , + # , \$ & " J) ' 7 A / .

c,+)e'##, ,>+'=#/ #'7U,="4,\$&; .)" \$,.)+,?='#"' &)' -
#"),+,>#J, .),A\$\$/ 7,8;e' +#"4/#"] 1='8]&; . \$"U,8,J">'\$9"4
" . \$"U,X"3",8,J">'\$9"4 9/>'\$&+/4. c8'=1'& ,&4'&"&; , >&, #\$,+./ -
='#"' X/9&">'\$9,J, 1),+#] \$.,\$,7#,\$&'@ \$)'9,4#='1'4K4 .)" .) -
+ ">#4 ,&7,) ' , + #/>8' '\$3,#/ #']+8]&\$] \$&),J"4 .),&"+,.,9/3/#" -
'4 . Q\$. 'U + J)'78' .,)'='8]&\$] 9,4.8'9\$4 \$.,\$,7#,\$&'@ " 4,?'&
,),]+8]&,\$] =,\$&/&,># ,.3=#, . Q>"&K+&; [&, +/?# , .,&41 , >&,)' -
318;&/&.)+ ">#J, &'\$&"),+/#"] =/'& '^ \$8"e9,4 4/8, "#X,)4/A"
, .)\$. '9&"+#,\$&" \$.,)&\$4#/ ,J,&,+#,\$&" 'J, 9\$,)'+#,#/#"]4 .

L)'=)/\$. ,8,?'##,\$&; J)'7A,+ 9 &'4 "8" "#K4 +/)/#&/4 &)' -
#"),+,>#,@ " \$,)'+#,#/&'8;#,@ =]&'8;#,\$&" +, 4#J,4 ,71\$8,+ -
8'#/ "U 4,)X,X1#9A",#/8;#K4" ,,\$7'##,\$&]4" , [XX'9&"+#,\$&;_ -
) /38">#KU 9,4.,##&,+ [#]'J,,7\$.'>#"] ,)J/#"34/ , \$&)19&1)#; -
X1#9A",#/8;#K4" ,,\$7'##,\$&]4" 4KeA , / &/9?' "\$8,@ ,.=+"?# , -
\$&;_ " 1)/+#,#e'##,\$&;_ #)'+#KU .),A\$\$,+ .

B,#&),8; &)'#"),+,>#J, .),A\$\$/)'e/'& &/9?' 3/=/>1 ,A'#9"
,)\$. '9&" + =/8;# '@e'J, \$,+)e'#\$&+,+/#"] + .),A\$\$' .,=J,&,+9" .
L)'=+/'&'8;#K@ /#/8"3 =/##KU ,.81>'##KU + #/>8' '\$3,#/ , .)'=1 -
\$4/&)"+'& 1J8178'##1_ ,A'#91 4,)X,&"/ " X"3">'\$9,@ .,=J,&,+ -
8'##,\$&" \$.,)&\$4#/ ,., "&,J/4 9,&),@ .),J#,3")1_&\$] 'J, .)\$. '9 -
&" +K B/>'\$&+'##K@.)'=+/'&'8;#K@ ,,\$4,&) J)'7A,+ &)'71'& ,A'#9"
"U &'U#">'\$9,@ .,=J,&,+8'##,\$&" . c1^\$&+'##,' 3#/>'#" =8] ,7'9 -
&"+"3/A"")/(\$4/&)"+'4,J, [&/./ .,=J,&,+9" "4"& [XX'9&"+#,\$&;
#)' +#, -4Ke'># , -="+J/&'8;#KU ="XX')#A"),+9 , \$.,\$,7#,\$&;
9/'=9+&#K4 ,A'#9/4 X1#9A",#/8;#J, \$,\$&,#"] , +,\$.)]"&_ +,3-
#"9/_^"U \$"&1/A"@ .)"#]&_ ")/8"3/A"")'e'#"@ , +,34,?'#,\$&;
&).'8"+, .)'#,\$&; #/J)139". F A'8,4 #/)/(\$4/&)"+'4,4 [&/.'
#,'7U,="4, &^/&'8;#,' 9,4.8'9\$#,' 4'="A"#9,' ,7\$8' =,+/#"' =8]
,A'#9" \$,\$&,#"] 3=,)+,;] . F/?# '@e' .,8,?'#" ,7\$8' =,+/#"] #/
7/3,+4 [&/.' .,=J,&,+9" -#,'7U,="4,\$&; ,)"#&"),+&,\$] #' \$&,8;-
9, #/ /7\$,8_&#K' .,9/3/&'8" 1),+#])/38">#KU 9/>'\$&+ " \$.,\$,7# , -
\$&'@9,8;9, #/ &'4.K "U .),,\$&/ , .),J#,\$&">'\$9/] 3#/>"4,\$&; 9, -
&,)KU 3#/>"&'8;# , +Ke' . `1#9A",#/8;# , .)\$. '9&" +K' J)'7AK ,7-
8/=/_& +K\$,9,@ /#/[),7#,@ 4,^#,\$&;_ " X1#9A",#/8;#,@ .,="+"? -
#,\$&;_ , .)' +,\$U,=]& \$.,)&\$4# ,+ 9,#&),8;#,@ J)1..K ., .,9/3/&'8]4
/8/9&/&#,@ " 8/9&/&#,@4,^#,\$&")/7,&K , 4/9\$"4/8;#J, 9"\$8,) = -
#J, =,8J/, +)'4#" =,\$&"?'#" 1),+#] 4/9\$"4/8;#J, .,&)'78'#"]
9"\$8,) =/ . L\$"U,X"3",8,J">'\$9" ,,\$7'##,\$&" 1 .)\$. '9&" +K'U

J)'7A,+ #/ 7/3,+4 [&/' .,=J,&,+9" \$+="'&'8;\$&+1_&, +K\$,9,@8/-
7"8;#,\$&" "U #')+#,@ "\$&'4K, / \$.A"/8;#K' =+"J/&'8;#K' &'-
\$&K- , +K\$,9,4 1),+#' ,7^@ " \$.A"/8;#,@ +K#,\$8"+,\$&,"
\$.),=,8 -?'&'8;#K4 +)'4#4 1=)'?/#"] 9)"&">'\$9,@ 4,^#,\$&"
#/J)139", 3#/>"&'8;#K4 9"\$8,)=#K4 .18;\$,4 " 4/9\$4/8;#,@
9)"&">'\$9,@ 4,^#,\$&;_ #/J)139". aA'#9/ &'U#">'\$9,@ .,=J,&,+
8'##,\$&" +98_>/'& 1?' #' \$&,8;9, +"31/8;#K@9,#&),8; , \$9,8;9,
,\$1^'\$&+8]'41_ \$.,4,^;_ \$.A"/8;#,@ /..)/&1)K &,>#1_)'J" -
\$&)/A" _)/38">#KU .)/4'&),+ J)'79,+KU =+"?'#"@. N/ 7/3,+4
[&/' .,=J,&,+9" J)'7A,+ +#"4/#"" 1='8]'&\$] 4,&"+/A"" 9 =,\$&"-
'?#"_ +K\$,9,J, 1),+#] 4/\$&)'\$&+/, ."\$U,8,J">'\$9,@ 1\$&,@>"+, \$&"
\$.,)&\$4'#/ + 1\$8,+"]U +,3)/\$&/_ ^'@ #/.)]?'##,\$&" &)'#"),+,> -
#,@)/7,&K " .)"\$1^'J, &)'#"),+,>#,@ =]'&'8;#,\$&" [4,A",#/8; -
#J, \$&)'\$\$/. c.,\$7#,\$&; #/\$&)/"+/;&,\$] #/ /9&"+#1_)/7,&1 , 14' -
#" 4,7"8"3,+/&; "\$8K #/ ="\$&/#A"" , ."\$U">'\$9/] 1\$&,@>"+, \$&"
.)" +K.,8#"" #/.)]?'##,@ &)'#"),+,>#,@)/7,&K -.)+, \$&' -
'##,' A'##'@e" 9/>'\$&+, \$.,)&\$4'#/ .

c.,\$7#,\$&; ='4,#\$&)" ,+/&; 81>e")'318;&/&K + #/'7,8"
,&+'&\$&+'##KU\$,)'+#,+/#"]U - ,7]3/&'8;#,' 1\$8,+"" #/ =/8;# '@e"U
[&/'/U .,=J,&,+9" \$.,)&\$4'#/ . F 8,9,4,A"]U \$.,)&"+#K@)'318;&/&
,71\$8,+8'# +3/"4,=@\$&+"4 =+1U,\$#,+#KU (J,4'&)">'\$9"U .)/ -
4'&),+ : 4'U/#">'\$9,@ \$&,"4,\$&" .),=+"?'#"] ., ="\$&/#A"" " +,3-
4,?#,\$&" ,)J/#"34/ J'#") ,+/&; " .,\$&/+8]&; [#')J"_ 9 4KeA/4
+)/34)' ,/=9+/ \$&,"4,\$&")/7,&K . F 8,9,4,A"]U 4'U/#">'\$9/
\$&,"4,\$&; =+"?'#"] .,)'='8]'&\$] \$.,)&" +8#""4 +,=#,@ \$)'=K .
aA'#9/ 4'U/#">'\$9,@ \$&,"4,\$&")/7,&K J)'7A/ , [#')J,&)/&K +J)'78'
,)'='8]_&\$] 9/9 \$144/)/7,&K , 3/&)/>"+/4,@ #/ 9/?=K@ J)'7,9 ;
4'U/#">'\$9/ \$&,"4,\$&;)/7,&K \$,\$&,"& &/9?' "3 .)/4'&),+ .18;\$/ -
A"" \$9,),\$&" =+"?'#"] , 9"8'+,@ " 7,)&+, @ 9/>9". f'4 +Ke' &'U#" -
>'\$9"@1),+#; J)'7A/ , &'4 4'#;e' + \$&,"4,\$&;)/7,&K +U,=]& «. , -
4'U" » + =+"?'#"" .

c"\$&'4/ ,&7,)/ \$.,)&\$4'#+ " "U .,=J,&,+9" +4#J,8' .), -
A'\$\$' ,71\$8,+8"+/'& "34'##" \$, ,&#e#"] 3#/>"4,\$&" 9)"&)" +
+3/+"\$4,\$&" ,& [&/'/ 4#J,8'&#J, \$,+)'e'#\$&+,+/#"] ,)/3#KU 3/=/>,
,)J/#"3/A",##KU , 4'&,">'\$9"U .,=U,=,+ 9.),78'4' #/1>#J, \$.,), -
+,?'=#"] \$.,)&\$4'#+ . F)/7,&' 9,4.8'9\$#, @ #/1>#,@ J)1..K .,
J)'78' #/ 7/@=)/9/U" 9/#, ["\$.,8;31'&\$] 9,4.8'9\$ 9)"&)" + , ..3+, -
8]_ ^"U ,7i'9&" +#, ,A'#" +/&; +,34,?#,\$&" \$.,)&\$4'#+ #/)/3#KU

[&/./U .,=J,&,+9" , +)/3#K' +,3)/\$&#K' .)' ,=K : 4,)X,8,J">\$9"@ , \$.)&"+#, -.='/J,J">\$9"@ , \$,A"/8;#K@, X1#9A",#/8;#K@, . \$"U,8,J" - >\$9"@ 4="A"#\$9"@ .

R8] 1),+#] «L,=J,&,+9/ , ,&7,) " ,)"#&/A"] ,&=/8##,J,)' - 3')+/ » ,.)='8'#K &/9" 9)"&)" : ,.&"4/8;#K@ +,3)/\$& #/>/8/ 3/- #]&"@\$.,)&,4 ; \$,\$&,#" 3=,) ,+;] ; /#&),,4'&)">\$9" ,.9/3/&'8" ; \$, ,&+'&\$&+" ./\$.)&#J, +,3)/\$&/ 7",8,J">\$9,41 +,3)/\$&1; 1),+'#; .),]+8'#"] =+"J/&'8;#KU 9/>\$&+ ,71\$8,+8'##KU .)" ,=#K4" 3/- =/&9/4" ; 4,&"+/A"] ; ,\$,+'#" &'U#"9" =+"?'#"@ " .),]+8'#" \$.A'/ - 8"3"),+/#K4 +,\$.)]&"@ ; \$.A"X">\$9" &)'7,+/#"] +="= \$.)&/ .

R8] 1),+#] «L,=J,&,+9/ , ,&7,) " ,)"#&/A"] 78"?!/@e'J,)' - 3')+/ » : 1\$&,@>"+/]4,&"+/A"] 9 =,\$&"?'#"_ +K\$,9,J, 4/\$&')\$&+; ,&\$1&\$&+" ,&98,#'#"@ + \$,\$&,#" 3=,) ,+;] , \$,,\$,7#KU +,\$.)]& - \$&+,+/&1\$. 'e#,41 \$.,)&"+#,41 \$,+)'e'#\$&+,+/#" ; ,.&"4/8;#K@ +,3)/\$& =4,#\$&)/A" .)' +KU \$,.)&"+#KU 1\$. 'U,+ " =,\$&"?'#"] #/' +K\$e"U)'318;&/&,+; . \$"U,8,J">\$9/] " X1#9A",#/8;#K@ J,&,+ #,\$& 9 .)'#'\$#"_ 7,8;e"U #/J)13,9;)'3') +K =/8;# '@e'@ /=/.&/ - A" X1#9A",#/8;#KU "\$&'4 " 4'U/#"34,+ , .)" , \$&/ =+"J/&'8;#KU 9/>\$&+ \$,+)'e'#\$&+,+/#"] +/?#'@e"U [8'4#&,+ &'U#"9" , &/9&">' - \$9,@' . \$"U,8,J">\$9,@ .,=J,&,+8'##,\$&" .

R8] 1),+#] «L,=J,&,+9/ , ,&7,) + #/A",#/8;#K' \$7,)#K' 9, - 4/#=K ., +="=4 \$,.)&/ " =/8;# '@e" \$,.) ,+ ,?'#" \$,.)&\$4# ,+ » 3#/>"4K: ="#/4"9/ \$,.)&"+#,J,)'318;&/&/ " \$,.)&"+#,J, 4/\$&') - \$&+/, .K& , \$&/7"8;#,\$& ; " #/'=?#,\$& ; 1>/\$&"] + 4'?=1#/,)=#KU \$,.)+#+/#"]U ; +K\$,9"@ 1),+'#; &'U#">\$9,@ .,=J,&,+8'##,\$&" (+/)'&"+#,\$& ; &'U#"9" ,+K.,8'#" \$8,?'#KU [8'4#&,+) ; X1#9A", - #/8;#,' \$,\$&,#" ,)J/#"34/ \$,.)&\$4#/' ; . \$"U,8,J">\$9/] 1\$&,@>+ , \$& ; ,+K\$,9/] 4,&"+/A"] ; \$, ,&+'&\$&+" "#="+"=1/8;#K4 "8" J)1. - ., +K4 4,='8;#K4 U)/9&)"\$&"9/4 , 1&+)'=?#K4 4'?=1#/,)=# ,@ " #/A",#/8;# ,@ X'=')/A"]4" ; 4'?=1#/,)=#K@)'@&"#J \$,\$&,#" 3=,) ,+;] (,&\$1&\$&+"&)/+4 " U),#">\$9"U 3/7,8'+/#"@); 3/98_>'#" ")'9,4#=#/A" 9,4.8'9\$# ,@ #/1># ,@J)1..K .

F/?#'@e"4 9,4.,##&,4 \$,.)&"+#,@ &)'#"),+9"]+8]'&\$] #/J)139/. c4K\$8 &)'#"),+,># ,@)/7,&K - +K3K+]/)\$U,=,+/#")/ - 7,>"U .,&'#A"/8,+ ,)J/#"34/ " 1&,48'#" , \$&"418"),+/& ; +,\$\$&/# , - +"&'8;#K' .),A'\$&K ; +)'318;&/&' &)'#"),+9/ \$,.) ,+ ,?='/&\$] #' &,8;9 , +,\$\$&/# ,+8'#"4 , #, " \$+)'U+,\$\$&/# ,+8'#"4)/7,&,\$, \$,7 - #,\$&" (\$1.)9,4.'#\$/A"@) .

N/J)139" 4,J1&)/38">/&,\$] ., .)"#/=8'?#,\$&" 9 &,41 "8"
"#,41 \$&)19&1)#,41 ,7)/3,+/#" _ &)'#"),+,>#J, .),A'\$\$/ . F >/\$&
#,\$&", \$8'=1'&)/38">/&; #/J)139" ,&='8;#KU &)'#"),+,>#KU " \$,-
)'+#,+/&'8;#KU 1.)/?#'#" @ "8" "U 9,4.8'9\$,+ , #/J)139" &)'#"), -
+,>#KU3/#]&" @ =#' @ \$144/)#K' #/J)139" 4"9), - " 4'3,A"98,+ ,.' -
)",=,+ " [&/.,+ &)'#"),+9" , 4/9),A"98,+ , &)'#"),+,>#J, J,=/
i\$.,8;3,+/#" .,8'+KU &'\$\$,+ \$ 4,7"8;#K4" []J,\$.),4'&)" -
>\$9"4" 9,4.8'9\$/4" .,3+,8]& \$,'=#" &; .,8,?'&'8;#K' \$&,)#K
9/9 8/7,)/&,)#KU , &/9" .,8'+KU &'\$\$,+ 14#;e"&; +)4] " \$&,"4,\$&;
,),+='#"] &'\$\$&"),+/#"] .

a7]3/&'8;#K4]+8]&\$] &'\$\$&"),+/#" #' &,8;9, /[],7#J, 9,4 -
.,#'#&/ X1#9A",#/8;#,@ .,=J,&,+8'##,\$&" , #, &/9?' .),+='#" &'-
\$&"),+/#"] "\$8,+KU U)/9&)"\$&"9 4KeA , ,=#,9)/&#J, " 4#J, -
9)/&#J, \$.)"#& -&'\$\$&/ . \$"U,X"3",8,J">'\$9,J, &'\$\$&"),+/#"] .

a\$#,+, @ &'U#8,J" 4#J,\$&1.'#>/&, @ "\$&'4K \$,.)+,?='#"]
\$.)&\$4#,+ "\$8/4" 9,4.8'9\$#, @ #/1>#,@ J)1..K , "U ,)"#&/A"
" .,=J,&,+9" 9 &)'#"),+,>#,@ " \$,)'+#,+/&'8;#,@ =]'&'8;#,\$&"]+ -
8]&\$] .),J)/44/ ,&7,)/ " =/8;# '@e'J, \$,.)+,?='#"] , +98_>/_ -
^/] "#X,)4/&"+#K' 9)"&)'"" " .),)"&'&#K' .,9/3/&'8" , U)/9&') -
#K' =8] +="/ \$,.)&/ , 9,4.8'9\$ &'\$\$,+ =8] ,A'#9" +,34,?'#,\$&'@
\$,.)&\$4#,+ , ,7,7^##K' " = "XX')#A"),+/#K' e9/8K , #/.)/+8' -
#"] ,)"#&/A" &)'#"),+,>#J, .),A'\$\$/ .

L)" X,)4"),+/#" &'U#8,J" =]'&'8;#,\$&" 9,4.8'9\$#, @
#/1>#,@ J)1..K ., J)'78' #/ 7/@=)9/U" 9/#,[4K "\$U,="8" "3 ., -
3"A"" ="/8'9&"9" " ,)J/#">'\$9,J, '="#\$&+ / =+1U\$&,)# : X,)4/8"3, -
+/#J, .,=U,= / , \$#,+/#J, #/ 9,8">'\$&+'##,@ ,A'#9' , " \$,=)?) / -
&'8;#J, .,=U,= / , \$#,+/#J, #/ +K]+8'#" 9,4.'#\$&,)#KU \$, -
\$,7#,\$&'@ \$,.)&\$4#,+ . S'U#8,J"] \$,.)+,?='#"] \$,.)&\$4#,+
,U+/&K+/'& &)" 1),+#[4#J,8'&# '@ "U .,=J,&,+9" - ,&=/8'##J, ,
78"?/@e'J,)'3'+/ " \$,.)&\$4#,+ +K\$,9,@9+/8"X"9/A"" .

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Q&,>#'#K =8] J)'7A,+ #/ 7/@=)9/U" 9/#,[.,#]&"] «&)'#"), -
+/#,\$&; » -,\$,\$&,"#"" , U)/9&')"31_ ^" J,&,+#,\$&; \$,.)&\$4# / (X" -
3",8,J">'\$91_ , X1#9A",#/8;#1_ , . \$"U,[4,A",#/8;#1_) 9 =,\$&"?' -
#_ +K\$,9"U \$,.)&"+#KU)'318;&/&,+; «X1#9A",#/8;# / .,=J,&,+ -
8'##,\$&; » -,\$,\$&,"#"" &)'#"),+/#,\$&" ,)J/#"34/ , .)'?=' +\$J, ,) -
J/#,+ , ,7'\$.'>+/_ ^"U &)/#\$.,)& 9"\$8,)=/ .

FK]+8#K X/9&,)K , X,)4")1_^" 1),+#; X1#9A",#/8;#,@
.,=J,&,+8##,\$&" :

. 4,)X,X1#9A",#/8;#K' : X"3">\$9,')/3+"&" , X1#9A",#/8; -
#K' +,34,?#,\$&" ,#,#+#KU X"3",8,J">\$9"U "\$&\$'4 (9/)=,)\$. " -
)&,)#K' , #')+#, -4Ke'>#K' , +'J'&/&"+#,' ,7\$.>#" " &=.), .\$. -
U,8,J">\$9"@ \$&/&1\$1),+#; ,7^"@ " \$.A"/8;#,@)/7,&,\$.,\$7#, -
\$&,\$.,&#e'#" "U\$+,3)/\$&,4 " .,8,4 ;

. \$.,)&"+#/] =]&'8;#,\$& : " \$.A"X"9/ , \$.,&#'\$##/] \$+=",4
\$.,)&/ , .),=,8?'&'8;#,\$& ; " \$&/? 3/#]&"@ 1\$.e#,\$& ; +=,\$&"?'#"
\$.,)&"+#KU)'318;&/&,+

. 4'&,">\$9" ,#,#+K ,)J/#"3/A" &)'#"),+,>#J, .),A'\$\$/ :
)?'4 &)'#"),+9 , ,7l'4 " "#&'#\$"+#,\$& ;#/J)13,9 , \$.,&#e'#"
\$)'=\$&+ " 4'&,"+ ,)/3+"&"] X"3">\$9"U 9/>\$&+ , \$.U,X"3">\$9/
#/.)]?'##,\$& ; ,9/8#=#/); ")'J8/4#& \$,)'+#,+/#"@ ;

. \$.A"/8;# , -7K&,+K' " [9,8,J, -J',J)/X">\$9" 1\$8,+"] .),+' -
=##"] &)'#"),+,>#KU 3/#]&"@ " \$,)'+#,+/#"@ ;

. &)/="A",##K' " #'&)/="A",##K' \$)'=\$&+/+,\$\$&/#,+8#"] .

i31>#" X1#9A",#/8;#,@ .,=J,&,+8##,\$&" \$.,)&\$4#,+ .,3+, -
8"8, \$,3=/&,\$&),@#1_\$\$&'41 .,=J,&,+9" +K\$,9,9+/8"X"A"),+/#KU
\$.,)&\$4#,+ , 7/3")1_1_\$] #/ &,)'" X1#9A",#/8;#KU "\$&\$'4 ,)J/ -
#"34/ , 1>#" , J,4,\$&/3' " &,)'" /=./&A" . :K8, 17'="&'8;# , =, -
9/3/# , , >&,\$.,)&"+#/] =]&'8;#,\$& ;)/3="+J'/& .)'='8K J,4,\$&/&"> -
\$9"UJ)/#"A , ,.&'4/8;#KU =8] 3=,),+J, >'8,+9/ . :K8" .)'=8,?'#K
#/1># , ,7,\$#,+/#K' .,=U,=K 9 "31>#_ 1),+#] X1#9A",#/8;#,@
.,=J,&,+8##,\$&" +K\$,9,9+/8"X"A"),+/#KU \$.,)&\$4#,+ :

. .)"#A". "\$&\$'4#J, .,=U,=/ ;

. 9,4.8'9\$#K@ .)"#A". ="/J#,\$&'9" A'8,\$&#J, ,)J/#"34/ ;

. 98#">\$9"@ .)"#A". A'8,\$&#J, ,)J/#"34/ \$1>&,4 +3/"4, -
\$+]3" \$,\$&,#"] 3=,),+;] " 1),+#] X1#9A",#/8;#J, \$,\$&,#"] ;

. ,7]3/&'8;#,' "\$\$8'="+/#" + .,9,' " .)" "\$.,8;3,+/#" &-
\$&")1_^"U #/J)13,9;

. 1>'& \$.A"X"9" 4Ke'>#,@ =]&'8;#,\$&" " ,\$.7'##,\$&" ='/ -
J#,\$&'9" X1#9A",#/8;#J, \$,\$&,#"] , #/.)/+8##KU #/ 9,#&),8;
/=./&A" &'U\$"\$&'4 " X1#9A"@.)J/#"34/ , 9,&,)K']+8]_&\$] +'=1-
^"4" +=/##,4 +'=' \$.,)&/ ;

. .)"#A". +K7,)/ #'7,8" "#X,)4/&"+#KU 4'&,"+ " \$)'=\$&+
="/J#,\$&'9" , "U \$,+)'e#\$\$&+,#/" , ,&)/7,&/##K' 4'&,">\$9"

.,=U,=K , ,A'#9/)'318;&/&,+ ,7\$8'=,+/#"] #/ ,,\$#,+')/3)/7,&/##KU
9)"&')"+ ,,\$#,+#KU ./)/4&),+ ;

.)" #A". +K='8'#"] #/"7,8" "#X,)4/&"+#KU ./)/4&),+ ,
"4_ ^"U =,\$&,+)#1_ 9,))'8]A",##1_ \$+]3; \$)/7,&,\$.,\$7#,\$&;_ .

G4B4<(3%C%9F%464 34604C+"3(. B".,"+23%=(HIK 6%
90"/+" 34/4 B40*4M(*43%F

Q.)/+8'#" &)'#"),+,>#K4 .),A'\$\$,4 .)'=1\$4/&"+/'&)'e' -
#" \$8'=1_ ^"U 3/=/>:

1) 9,4.8'9\$#1_ ,A'#91 \$,\$&,"#"] 3=,)+;] \$.,)&\$4'#,+ ;

2) +K]+8'#" .)">"##, -\$8'=\$&+'##KU\$+]3'@ + "\$&'4' «A'8;
&)'#"),+9" -\$.,,\$7 &)'#"),+9" -9,#'>#K@)'318;&/&»;

3))/3)/7,&91 1.)/+8]_ ^"J,)'e'#"] .

F #/\$&,"^" +)'4] ,,\$&/_&\$] \$)';3#K' .),78'4K \$"#&'.)'&/ -
A"@ .,81>'##KU =/##KU " "U "\$.,8;3,+/#"4 +.),A'\$\$(1.)/+8' -
#"] &)'#"),+9,@ . F &, ?' +)'4] =8] +K.,8#'#"] 1.)/+8'#>'\$9"U
X1#9A"@#',7U,="4 ,&8/?'##K@ 4'U/#"34 .)"#]&"])'e'#"@ . c, -
+)'e'\$&+,+/#" .),A'\$\$/ .)"#]&"] ,7,\$#,+##KU ,7l'9&"+#KU)' -
e'#"@ + "\$&'1/A"]U +K\$,9,@\$8,?#,\$&" =,\$&"J/'&\$] .1&'4 "\$.,8;3, -
+/#"] #/1>#J, .,=U,=/ 9 =/##,41 .),A'\$\$(1 . R8] .)"#]&"] [XX'9 -
&"+#J,)'e'#"] &)'#") =,8?'# 7K&;+,,)1?'# #/+K9/4" "\$&'4#J,
" "\$&'1/A",##J, .,=U,=/ 9 ,)J/#"3/A" &)'#"),+,>#J, .),A'\$\$/ ,
"4&; +,34,?#,\$& ; "\$.,8;3,+/&; \$,+)'4'##K' 4,='8" " 4'&,=K .)" -
#]&"])'e'#"@ .

a7l'9&"+#/] ,A'#9/ 1),+#] J,&,+#,\$&" \$.,)&\$4'#/ 9 #/.)]?'# -
#,@\$,)'+#,+/&'8;#,@ =]&'8;#,\$&" +,34,?#/ &,8;9, .)" "\$&'4#4
+"='#" +3/"4,\$+]3" &'91^"U .,9/3/&'8'@ /=./&'A" "\$U 9,#'>#K4"
3#/>'#"4" . F+'='#" +\$X')1 \$.,)&"+#,@ =]&'8;#,\$&" \$,+)'4'##KU
4/&'4/&">'\$9"U 4'&,=,+ " +K>"\$8"&'8;#,@ &'U#"9" .,3+,8]'&)' -
e/&;)]= .)"#A"."/8;# , #,+KU 3/=/>, \$+]3/##KU\$,A'#9,@ ,&#e' -
#"] «+,3=@\$&+"- /=./&"+#K@ [XX'9&» " ,7l'9&"+'3/A"@ .),A'\$\$/
\$&/#,+8'#"] \$.,)&"+#J, 4/\$&)'\$&+/.

a7l'9&"+# , + [&,@ ,78/\$&" \$1^'\$&+1_ & =+' .)"#A"."/8;#K'
+,34,?#,\$&" 1.,)]>'#"] 7,8;eJ, ,7l'4/ #' ,7U,="4,@ =8] .)" -
#]&"])'e'#"] "#X,)4/A" :

1) +,-.)+KU , +K]+8'#" ,,\$#,+#KU #/"7,8" \$1^'\$&+'##KU
" /= '9+ /&#KU =/##KU, #' ,7U,="4KU =8] .)"#]&"] 1.)/+8]_ ^"J,
)'e'#"] ;

2) +, -+&,)KU, e"),9,' .)"4'##'" + [&,4 .),A'\$'\$' "#X,)4/ -
A",##KU &'U#,8,J"@

5/A",#/8;#/] ,)J/#"3/A"] =]&'8;#,\$&" 9,4.8'9\$#, @ #/1>#,@
J)1..K ., J)'78' #/ 7/@=/)9/U" 9/#,[.)'=1\$4/&)"+'& 9,88'J"/8; -
#,\$&; .)" .)"#]&"")'e'#"] , +98_>'#" "\$.,)&\$4'#+ + 9,4/#=1
[8"&K \$.,)&/ \$=/8;# '@e"4 "U \$.,)+,?='#"4 , A'8'#/.)/+8'##1_
)/7,&1 9,88'9&"+/ \$,&)1=#"9,+ , &)'#),+ , +)/>'@, \$. 'A"/8"\$&,+ .,
/#&),.,8,J"" , ."\$U,8,J"" , X1#9A",#/8;#,@ ="/J#,\$&"9' , 7",4'U/ -
#"9' " \$+]3/##K4 \$#"4" \$4'?#K4 \$. 'A"/8;#,\$&]4 .

-(\$, (*-\$;ST\$4.880= (* \$)8,(\$4

1. :/8;\$'+> , F. B. B,#&1)K #,+,@ \$&)/&'J'" .,=J,&,+9" \$.)&\$4#,+ ,8"4."@\$9,J, 98/\$\$/ / F. B. :/8;\$'+> // S',)" " .)/9 - &"9/ X"3">\$9,@ 918;&1)K-2001. -x 4. -c. 9-10.

2. :/#; , Y. c., I/J),=#K@ , <. . F,34,?#K' ,e"79" .)" .),+' - =#'" /#/8"3/ +)/"/7'8;#,\$&")" &4/ \$')=A/ / Y. c. :/#; , <. . I/J),= - #K@/L,78'4K 3=,)+;] " [9,8,J'" . - 2016. -x 3 (25). -c. 119-124.

3. :'8,A')9,+9"@" , I.:. g)J,4'&)">'9" " 9/)"="8,J">'9" 9)"&)"'" X"3">'9,@)/7,&,\$.,\$7#,\$&" / I.:. :'8,A')9,+9"@" . - :. c,+&\$9"@\$.,) & , 2005. - 31\$.

4. :')#e&'@# , N. Y. a>')9" ., X"3",8,J'" /9&"+#,\$&". / N. Y. :)#e&'@# . - :. ='A"#/ , 1996. -c. 200-210.

5. F/\$"8;'+/ , F. F. `3",8,J"] >'8,+9/ : 1>7. =8] &'U# X"3. 918;& / L,=)'= . F. F. F/\$"8;'+,@ . - :. `3918;&1)/ " \$.,) & , 1984. - 31\$.

6. F')8"# , c. F. a>')9" ., &,)'" " 4'&,"=9' J)'78" #/ 7/@=)9/U " 9/#,[/ \$,\$&/'&'8": c. F. F')8"# , F. ` . B+)'")# , L. F. B+/e19, <. N. c'4/'+/ . - F,)#? : i3=/&'8;\$&+, aYa «P'#&)/8;#,->)'#3'4#,' 9#"?#,' "3=/&'8;\$&+,» , 2007. - 17\$.

7. F')U,e/#\$9"@" , W. F. L),J)/44"),+/#" " ,)J/#"3/A"] &)'- #"),+,>#J, .),A'\$\$/ / W. F. F')U,e/#\$9"@" . - :. `3918;&1)/ " \$.,) & , 1985. - 17\$.

8. F"#,J)/=,+ , <. L. S',)"] \$.,) &"+#,@ &)'#"),+9" : 1>7. ., - \$,7" / <. L. F"#,J)/=,+ ; cL7<Y`B "4. L. ` . H'\$J/X&/ . - cL7 : 1999. - 10\$.

9. F,@#/) , W. S',)"] \$.,) &/ - 4'&,"=8,J"] .),J)/44"),+/- #"] / W. F,@#/) , c. R. :,@>'#9, , F. Y. :/)&e . - "#\$9 : n/)+\$& , 2001 - 31\$.

10. F,89,+ , N. i . :,[#)J'&"9/ \$.,) &/ / N. i . F,89,+ , F. i . a8'@#"9,+ . - :. c,+&\$9"@\$.,) & , 2011. - 16\$.

11. F,\$9)'\$#\$9"@" , c. Y. F8"]#" .)"4'##"] J,J#">'9"U \$)'=\$&+#/ .)/4'&)K \$)'=>#,-,\$,\$1="\$&,@\$"\$&'4K +.),A'\$\$/ /=. - &/A'" 9 \$. 'A"X">'9,@ 4Ke'>#,@ =]'&'8;#,\$&" / c. Y. F,\$9)'\$# - \$9"@' =). // Q.)/+8'#" =+?"#"]4" . - F'8"9" H19" , 2010. -c. 131.

12. <,)7/#'+/ , C. L. `1#9A",#/8;#K' \$+,@\$&+/,=J,&,+8'##, - \$&" \$.,) &\$4#,+)/38">#,@ \$. 'A"/8"3/A'" / C. L. <,)7/#'+/ , C. Y. c,8,.,+/ , i . N. c,8,.,+ // F.,)\$K X1#9A",#/8;#,@ .,=J,&,+ - 9" +\$.,) &' " X"3">'9,4 +,\$."&/#" . - F,8J,J)/= , 2008. -c. 29-41.

13. <)'78] #/ 7/@=)9/U " 9/#,[. L),J)/44/ =8] ='&\$9,-
_#,e'\$9"U \$.,)&"+#KU e9,8 " \$. 'A"/8"3"),+###KU ='&\$9,-
_#,e'\$9"U e9,8 ,8"4." @\$9,J,)'3')+/ . / c. C. m19,+ , S. Y. m19,+/
Y. c. R179,+ \$9" @- # ., 2003. - 10\$.

14. <17/, F. L. i34')#"] " +K>"\$8'#"] + \$.,)&"+#, -
. '=/J,J">'\$9,@ .)/9&"9' : 1>'7. .,\$,7"" =8] +13,+ X"3. 918;&1)K /
F. L. <17/, . L. E'\$&/9,+ , N. : . :17#,+ , . L. :.)"\$#9,+ . - :
'"3918;&1)/ " \$.,)& , 2006. - 22\$.

15. R,#\$9,@ R. R. :",4'U/#"9/ : 1>'7#"9 =8] "#\$&"&1&,+X"3" -
>'\$9,@918;&1)K / R. R. R,#\$9,@ F. . I/A"),\$9" @ - : ."3918;&1 -
)/ " \$.,)& , 1979. - 26\$.

16. R/+K=,+ , F. W. #,J,8'&#]] ="#/4"9/ .,9/3/&'8'@ \$,\$&/+/
4/\$\$K &'8/ \$.,)&\$4#,+ , 3/#"4/_^"U\$] J)'78'@ #/ 7/@=)9/U" 9/#,[/
F. W. R/+K=,+ , S. ` . Y7)/4,+ / , W. L. B,)#"8,+ // L,=J,&,+9/ \$.,)& -
&"+#,J,)'3')+/ " 3=,)+,' : /&)"8K F\$),\$. #/1>.-)/9& . 9,#X.
«Y9&1/8;#K' .),78'4K X"3">'\$9,@ 918;&1)K " .,=J,&,+9" \$.,)&"+#, -
J,)'3')+/ » (26-29,9&[7]) 1998J.). -F,8J,J)/= , 1998. -c. 88-90.

17. R/+K=,+ , F. W. S'91^"@ 9,#&),8; #/)/38">#KU [&./U .,= -
J,&,+9" \$.,)&\$4#,+ , 3/#"4/_^"U\$] J)'78'@ #/ 7/@=)9/U" 9/#,[/
F. W. R/+K=,+ [" =).] // L,=J,&,+9/ \$.,)&"+#,J,)'3')+/ " 3=,)+,' :
/&)"8K F\$),\$. #/1>.-)/9& . 9,#X. «Y9&1/8;#K' .),78'4K X"3">' -
\$9,@ 918;&1)K " .,=J,&,+9" \$.,)&"+#,J,)'3')+/ » (26-29,9&[7])
1998J.). -F,8J,J)/= , 1998. -c. 140-141.

18. R/+K=,+ , F. W. Y#&),,4'&)">'\$9"" " J'#&">'\$9"" /\$. '9 -
&K\$.,)&"+#,J, .,&'#A"/8/ +K\$,9,9+/8"X"A"),+###KU J)'7A,+ 5'\$-
.178"9" :8/)1\$; / F. W. R/+K=,+ , C. <. B/88/1) , F. F. E/#&/),+ "> ,
Y. W. m1)/+\$9" @ - Y9&1/8;#K' +,.),\$K .,=J,&,+9" \$.,)&\$4#,+
+K\$,9,@ 9+/8"X"9/A"" " \$.,)&"+#,J,)'3')+/ +.8/+/#"" " =)1J"U
+="/U +,=#,J, \$.,)&/ : /&)"8K F\$),\$\$" @\$9,@ #/1>.-)/9& . 9,#X.
c 4'?=1#/,=#K4 1>/\$&"4 (27-28 #,[7]) 2014, J. F,8J,J)/=). -
F,8J,J)/= : `<:aQ FLa «F<Y`B » , 2014. -c. 127-133.

19. R/+K=,+ , F. W., E/#&/),+ "> , F. F., B/88/1) , C. <.,
E/#&/),+ "> , Y. F. S'U#,8,J"] ,&7,)/ " ,)"#&/A"" J)'7A,+ #/ 7/@
=)9/U " 9/#,[+ "\$\$&'4' 4#,J,8'&# '@ .,=J,&,+9" . L,\$,7"" + 2 >. /
F. W. R/+K=,+ [" =).]. - ,3K); : <LQ "4#" i . L. E/4]9"#/ , 2015. -
f/\$&; 1. - 320\$, f/\$&; 2. - 320\$.

20. R/+K=,+ , F. W., B/88/1) , C. <., E/#&/),+ "> , F. F., F8/\$,+ / ,
c. F., /)"#"> , F. F., m1)/+\$9" @ Y. W., B1)/8'+/ , a. a. B,4.8'9\$#/
,A'#9/ \$.,)&"+#,J, .,&'#A"/8/ \$"8;# '@e"U J)'7A,+ #/ 7/@=)9/U

" 9/#,[5\$.178"9" :8/)1\$; // S',)] " .)/9&"9/ X"3">'\$9,@ 918;&1)K, x 3, 2015. -c. 94-98.

21. R/+K=,+ , F. W., E/#&/),+> , F. F., m1)/+\$9" @, Y. W., B/8-8/1) , C. <., E/#&/),+> , Y. F., L)"J,="> , R. N., H'@4/# R. W. ,) - X,X1#9A",#/8;#K' 9)"&)"'" ,&7,)/ " 9,#&),8] + J)'78' #/ 7/@=)/-9/U " 9/#,[/ F. W. R/+K=,+ [" =).]: 4'&,">'\$9")'9,4'#=/A"'" . - L"#\$9: L,8'\$<Q , 2015. - 88\$.

22. R1#/' + , Y. ` . n)/9&') &)'#"),+,>#KU #/J)13,9 J)'7A,+ . / Y. ` . R1#/' + // <)'7#, @ \$.,)& . - .: ``"3918;&1)/ " \$.,)& , 1978. - c. 37-41.

23. C4>19 i . ` . <)'7#, @ \$.,)& : 1>'7#"9 =8] i`B / N. ` . C4>19 - .: ``"3918;&1)/ " \$.,)& - 1976. -c. 159-161.

24. m4/)' + , N. F. S)'#"),+9/ J)'7A,+ . 2' "3=., .') . " =, . . / N. F. m4/)' + . - .: ``"3918;&1)/ " \$.,)& , 1981. - 11\$.

25. l/U/),+ , C. N. g#A"98,.'="] X"3">'\$9,@ .,=J,&, +9" ('& , - =">'\$9" , \$#,+K)/3+"&"] X"3">'\$9"U 9/>'\$&+) / L,= ,7^@)'= . Y. F. B/)/\$'+/ . - .: H'.&,\$, 1994. - 36\$.

26. i+/#>'#9, , C. i . S',)] " .)/9&"9/ \$.,)&/ : 1>'7.-4'&=, ., - \$,7" : + 3 >. / C. i . i+/#>'#9, . - "\$\$9 : f'&K)' >'&+)'&" , 1997-1998. - 54\$.

27. B/).4/# , F. H. S'\$&"),+/#" + \$.,)&"+#,@ 4'="A"#' / F. H. B/).4/# , l. . . : '8,A')9,+9" @ - .: ``"3918;&1)/ " \$.,)& , 1989. - 25\$.

28. B/).4/# , F. H. i\$\$8' =,+/#" X"3">'\$9,@)/7,&,\$.,\$7#,\$& 1 \$.,)&\$4#,+ / F. H. B/).4/# , l. . . : '8,A')9,+9" @ , i . Y. <1=9,+ . - .: ``"3918;&1)/ " \$.,)& , 1974. - 9\$.

29. B+/e19, L. F. B)"&)"'" ,A'#9" X1#9A",#/8;#J, \$,\$&,#"] J)'7A,+ #/ 7/@=)/9/U+K\$,9,@9+/8"X"9/A"'" / L. F. B+/e19 // F'\$&#. \$.,)& . #/19" . - 2008. -S. 4. - C. 18-24.

30. B1)/4e"# , W. ` . L8/#"),+/#" , 9,#&),8; " 1>'&+.) ,A'\$\$' \$.,)&"+#,@ .,=J,&, +9" : 1>'7. .,\$7" / W. ` . B1)/4e"# , Y. N. R"-&]#&# . -cL7 .: cL7<Q`B "4 . L. ` . H'\$J/X&/ , 2007. - 43\$.

31. HK\$'#9, , C. ` "3">'\$9/])/7,&,\$.,\$7#,\$& ; " , \$,7'##,\$& 4,7"8"3/A"'" [#)'J'&">'\$9"U 4'U/#"34,+ .)" #/J)139/U)/38">#J, U)/9&')/ 1 9+/8"X"A"),+/#KU \$.,)&\$4#,+)/38">#,@ \$. 'A"/8"3/ - A"'" / C. HK\$'#9, , H. c&/#9'+> , <. </&"8,+ / // N/19/ + ,8"4. . \$.,) - &' . - 2013. -S. 1. -c. 61-65.

32. /&+"+ , H. L. a\$#,+K \$.,)&"+#,@ &)'#"),+9" : 1>'7. .,\$7" =8] "#-&, + X"3. 918;&1)K / H. L. /&+"+ - .: ``"3918;&1)/ " \$.,)& , 1977. - 28\$.

33. /&+"+ , H. L. c.,)& , \$.,)&"+#/] &)'#"),+9/ // S',)] " 4' - &,"9/ X"3">'\$9,@ 918;&1)K (,7^" , \$#,+K &,')" " 4&,"9" X" - 3">'\$9,J, +,\$."&/#"] : &,')&'9, -4&,">'\$9" /\$. '9&K \$.,)&/ " .),X'\$\$",#/8;#, -.)"98/= #KU X,)4 X"3">'\$9,@ 918;&1)K): 1>'7. =8] "#-&,+ X"3. 918;&1)K - .: ``3918;&1)/ " \$.,)& , 1991. - f/\$&; II. - 5/3='8 1, J8 XII-XIII. - c. 425-491.

34. /&+"+ , H. L. a7^/] &,')] \$.,)&/ : 1>'7. 9#. =8] 3/+')e/ - _^"U 1),+ # @ +K\$e. X"3918;&1)#,J, ,7)/3,+/#"] / H. L. /&+"+ . - .: F,'#3=/& , 1997. - 30\$.

35. /&+"+ , H. L. a\$#,+K ,7^@ &,')" \$.,)&/ " "\$&'4K .,= - J,&, +9" \$.,)&\$4#,+ / H. L. /&+"+ . - B.: a8"4."@\$9/] 8"&')/&1)/ , 1999 - 32\$.

36. /&+"+ , H. L. a7^/] &,')] \$.,)&/ " " .)"98/= #K' /\$. '9 - &K 1>'7#'"9 =8] +13,+/ H. L. /&+"+ . - 4' "3=., "\$.) . " =, . . - cL7 .: "3=-+, «H/#; » , 2005. - 38\$.

37. ,)3 , C.Y. a.)='8#" =,8" J8"9,8"&">'\$9,J, 4'U/#"34/ + [#]J,,7'\$.'>#"" 4#,J,9)/&#, .,+&,)]_ ^ @\$] #/J)139" \$174/9- \$"4/8;#,@ 4,^#,\$&" / C. Y. ,)3 , H. . E914/&, + , i . Y. Y#"&)/- &,+/ // N/1>#K' &)1=KNii X"3">'\$9,@ 918;&1)K " \$.,)&/ 5'\$.17 - 8"9" : '8/)1\$; : \$7. #/1>. &)1=,+ /)'=9,8 .: N. <. B)1>"#\$9"@ (J8.)'= .) [" =).]; N/1>."\$\$8'=. "#-&X"3. 918;&1)K " \$.,)&/ 5'\$.178"9" : '8/ -)1\$; . y "#\$9 , 2010. -FK. . 9 -c. 207-212.

38. N/>"#\$9/] , c. F. a\$#,+K \$.,)&"+#,@ \$&/&"\$&"9! 1>'7#,' .,\$,7" =8] "\$&"&1&, +X"3">'\$9,@ 918;&1)K / c. F. N/>"#\$9/] . - B"+ : FK\$e/] e9,8/ , 1987. - 18\$.

39. N"9,#,)+ , N. Y. L,\$&),'#" J,=">#J, A"98/ &)'#"),+9" J)'7A,+ (13-178'&) #/ 7/@=/)9/U " 9/#,[: 4'&,">'\$9")'9,4#=#/ - A"" / N. Y. N"9,#,)+ , F. ` . B/+)'"# , C.i . B/)&/e,+ . .: ``3918; - &1)/ " \$.,)& , 1988. - 45\$.

40. a3,8"# , N. <. c,+)'4###/] "\$&'4/ \$.,)&"+#,@ &)'#"),+ - 9" . /N.<. a3,8"# - .: ``3918;&1)/ " \$.,)& , 1970. -c. 240-305.

41. a3,8"# , N. <. N/\$&,8;#/] 9#"J/ &)'#')/ : N/19/ .,7'?=/&; / N. <. a3,8"# - .: Y\$&)'8; , 2002. - 86\$.

42. L8/#"),+/#" 1>'7#, -&)'#"),+,>#J, .),A'\$\$/ ., J)'78' #/ 7/@=/)9/U " 9/#,[+ \$. 'A"/8"3"),+###KU 1>'7#, -\$. ,)&"+#KU 1>)'?'=#"]U (RWcE , cRWcE , Qa5, EFc , PaL). '&,">' - \$9")'9,4#=#/A"" "#"\$&)'\$&+/ \$.,)&/ " &1)"34/ 5'\$.178"9" : ' - 8/)1\$; / m19,+ c. C., m1)/+\$9"@ Y. F., L)"81A9"@ L. ., " =) / . # , 2000. - 16\$.

43. L8/&,#,+ , F. N. S',)] " 4'&,"9/ \$.,)&"+#,@ &)'#"),+9" / F. N. L8/&,#,+ . - B""+ , F"^/ e9,8/ , 1984. - 33\$.

44. L8/&,#,+ , F. N. L,=J,&,9/ 9+/8"X"A"),+###KU \$.,)&\$4' - #,+ / F. N. L8/&,#,+ . - :`"3918;&1)/ " \$.,)& , 1986. - 28\$.

45. L8/&,#,+ , F. N. c,+)'4###/ "\$\$&'4/ .,=J,&,9" \$.,)&\$4' - #/ / F. N. L8/&,#,+ . - :cYY , 1995. - 42\$.

46. L8/&,#,+ , F. N. a7^/] &,)"] .,=J,&,9" \$.,)&\$4'#,+ ,8"4."@\$9,4 \$.,)&' / F. N. L8/&,#,+ . - B""+ , a8"4."@\$9/] 8"&)/ - &1)/, 1997 - 58\$.

47. L8/&,#,+ , F. N. c"\$&'4/ .,=J,&,9" \$.,)&\$4'#,+ + ,8"4 - .@\$9,4 \$.,)&' : ,7^/] &,)"] " " .)/9&">'\$9" .)"8,?'#"] : 1>'7- #9 &)'#')/ +K\$e'@ 9+/8"X"9/A"" / F. N. L8/&,#,+ . - B""+ , a8"4 - .@\$9/] 8"&)/&1)/ , 2004. - 80\$.

48. c,+)'4###/ "\$\$&'4/ \$.,)&"+#,@ .,=J,&,9" / .,=)'= . ` . L. c1\$8,+/, F. H. cK>/ , : . N. E1\$&"#/ . - :cYY , 1995. - 44\$.

49. c,8,=9,+ , Y. c. `3",8,J"] \$.,)&/ : 1>'7. .,\$,7" / Y. c. c,8,=9,+ , C. : . c,8,J17 ; c.-L'&)'7 . J,\$. /9/= . X"3. 918;&1)K "4 . L. ` . H'\$J/X&/ . - cL7 . , 1999. - 23\$.

50. c,#;9"# , F. R. `3">'\$9/)/7,&,\$.,\$,7#,\$&; " [#')J,,7'\$ - .'>'#" 4Ke'>#,@ X1#9A"" + .,\$&#&/8;#;4 ,#&,J'#'3' >'8,+9/ / F. R. c,#;9"# // `3",8,J"] >'8,+9/ . - 2007. -S. 3. -c. 81-99.

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52. Q"84,) , R?. X. `3",8,J"] \$.,)&/ " =+"J/&'8;#,@ /9&"+#, - \$&". / R?. X. Q"84,) , R. H. B,\$&"88. L')'+,= \$/#J8. - B""+ : a8"4 - .@\$9/] 8"&)/&1)/ , 1997. - 50\$.

53. `"\$9/8,+ , F. R. c.,)& + "\$\$&'4' .,=J,&,9" \$.,)&\$4'#,+ : Q>'7#"9 / F. R. `"\$9/8,+ . - : c,+&\$9"@ \$.,)& , 2010. - 39\$.

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5.2. Планирование подготовки спортсменов национальной команды Республики Беларусь по гребле на байдарках и каноэ в годичном цикле (1000 м)	77
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Производственно-практическое издание

Каллаур Елена Георгиевна
Шантарович Владимир Владимирович
Шкуматов Леонид Макарович
Загородный Геннадий Михайлович

ТЕОРЕТИЧЕСКИЕ И ПРАКТИЧЕСКИЕ АСПЕКТЫ ПОДГОТОВКИ СПОРТСМЕНОВ ПО ГРЕБЛЕ НА БАЙДАРКАХ И КАНОЭ

Практическое пособие

Корректор А. М. Зиновик
Компьютерная верстка П. С. Максименко
Оформление обложки П. С. Максименко

Подписано в печать 19.12.2017. Формат 60×84/16. Бумага офсетная.
Печать цифровая. Усл. печ. л. 5,81. Уч.-изд. л. 4,32. Тираж 100 экз. Заказ 162.

Полиграфическое исполнение:
Государственное учреждение «Республиканский учебно-методический
центр физического воспитания населения»
Свидетельство №1/42 от 1 октября 2013
Ул. Гусовского, 4-1, 220073, Минск

Издатель: РНПЦ спорта
Свидетельство № 1/447 от 14 ноября 2014 г.
Ул. Воронянского, 50/1, 220007, Минск

