! " # $ % & ' ( ) * ' ' ( ) + % , - . / 0 / 1 - % / 1 % " 2 3 0 - % 3 1 . % " 4 5 6 3 0 - % # 1 7 / 5 8 1 9 - 1 : ; %

%

< 1 ; : 5 4 0 : / 8 1 3 = % : - 3 9 + %

The i c i al ea m f hi c e i cl de 6 e me ge c medici e h icia (e f h m i i e a i al), 1 NASA fligh ge , 3 NASA cie i de el i g e l a i medical ca abili ie , 2 EMT ai ed i ilde e medici e ca abli ie , a d 1 e gi ee f c ed de el i g medical ca abili ie f ace a lica i . Y ima i f c ac f c e e i a e:

%

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/ 0) 1 (' !) * % $ 2 1 3) ' 4 & 5 # &)) * # & 5 ' / 3 #) & 3) $ ' 6 ' 7 % 8 " ( ) * '
! 4 9 : ' ; < = < '
: » # 3) ? ' < = < ' @ A B ' C D E E '
F) " " ? ' @ E G ' < C C ' = H B E '
1 2 1 & ( ) * $ I 3 % " % * 1 (% J) (8 '
: » # 3) ' - % 8 * $? ' K - 8 * $ (1 L ' < 6 @ ' 2 0 + ' ; < = < '
'
7) & ' 4 1 $ M) * + ' N . '
4 0) * 5) & 3 L ' .) 2 1 * M 0) & M ' 6 ' ! & $ 3 - 8 M O '
H E G 6 C A @ 6 C D C A '
P) & Q 1 0 # & J) 1 $ M) * I 3 8 1 & $ 3 - 8 M O J) (8 '
'

> - 0 : 4 5 - + ' ' K ' D ? E D ' ,

B^' 4X8#2'21*M#3#21&M$'V#M-' ` #"()*&)$$'Y#*$M'!#('] ` Y!^'1&('F1*(#%28"0%&1*L'9)$8$3#M1M#%&']F,9^'M*1#&#&5'$%'M-)L'-1U)'P1$#3'0)(#31"'$Z#""$'>%*')WM*)0)')&U#*%&0)&M$''

<^' ,*%U#()')(831M#%&'%>'U1"8)'M%')&5#&))*$'#&U%"U)('#&'*)$)1*3-'%&'-801&'$213)>"#5-M' 2-L$#%"%5L'1&('0)(#31"'31*)'

@^' 4W2%$)')&5#&))*$'M%'3%00%&'2*13M#3)'1&('")1*&#&5'()U#3)$')02"%L)('#&'M-)'0)(#31"' 3%008&#ML+'$83-'1$'0)(#31"'$#08"1M#%&$'1&('5*%82')U)&M'1&1"L$#$+'M%'>13#"#M1M)'1'3%00%&' 8&()*$M1&(#&5'13*%$$'(#$3#2"#&)$J'

'

B?% ! ; ; - ; ; 9 - 1:%

K1P")'E'%8M"#&)$'M-)'01M)*#1"'PL'V-#3-'$M8()&M$'#&'M-)'@DEA'/)3M#%&'V#""'P)'1$$)$$)(J'K1P")'B' %8M"#&)$'M-)'01M)*#1"'PL'V-#3-'$M8()&M$'#&'M-)'DDEA'/)3M#%&'V#""'P)'1$$)$$)(J';%M)'M-1M'M-)'2*#01*L' 1$$)$$0)&M'(#$M#&3M#%&'P)MV))&'M-%$)'M1Z#&5'M-)'822)*'(#U#$#%&'$)3M#%&'V#""'P)'21*M#3#21M#%&'#&'M-)' 21L"%1('()U)"%20)&M'13M#U#ML'>%*'M-)'*%3Z)M""18&3-J'.)M1#"$'%&'M-#$'13M#U#ML'V#""'P)'5#U)&'(8*#&5'M-)' >#*$M'V))Z'%>'3"1$$'1&('#&'M-)'1$$#5&0)&M'(%380)&MJ'

''

Table 1: Di ib i f c e a e me f 4519 Sec i

` #"()*&)$$'Y#*$M'!#('4W10'	EDa'
F,9'F)*M#>#31M#%&'	E=a'
Y#)"('/#08"1M#%&'4U1"81M#%&$'	<=a'
,1*M#3#21M#%&'	EDa'
Y#&1"'4W10'	<=a'
'	**(CCD%**

'

Table 2: Di ib i f c e a e me f 5519 Sec i

` #"()*&)$$'Y#*$M'!#('4W10'	EDa'
F,9'F)*M#>#31M#%&'	Da'
Y#)"('/#08"1M#%&'4U1"81M#%&$'	<=a'
,1*M#3#21M#%&'	E=a'
,1L"%1(').U)"%20)&M'	EDa'
Y#&1"'4W10'	'BDa'
'	**(CCD%**

'

/M8()&M$'V#""'P)'5*1()('8$#&5'M-)'$M1&(1*('5*1()'$3-)0)'P1$)('%&'2)*3)&M15)$J'b&'%M-)*'V%*($+' 5*1()$'1P%U)'A<a'V#""'*)3)#U)'1&'!+'P)MV))&'A<a'1&('1P%U)'A=a'V#""'*)3)#U)'1&'!6+'P)"%V'A=a' 1&('1P%U)'CGa'1'7c+')M3J''

'

K-)'Y#&1"'4W10'V#""'P)'5#U)&'#&'1'>%*01M'>10#"#1*'M%'M-%$)'#&'M-)'0)(#31"'3%008&#ML'P8M'01L'P)'

E?% F82/0;%G87-5-.%

K-)'>%""%V#&5'M%2#3$'V#""'P)'1((*)$$)(?''

' 7*#)>'%U)*U#)V'%>'-801&'2-L$#%"%5#31"'1(12M1M#%&'#&'$213)')&U#*%&0)&M$'

' ,-L$#3#1&+'$3#)&M#$M+'1&(')&5#&))*'(#>>)*)&3)$'#&'M-#&Z#&5+'M*1#&#&5+'1&('>1#"8*)'1&1"L$#$'

' ,*%P1P#"#$M#3'*#$Z'1$$)$$0)&M$'%>'0)(#31"')U)&M$'#&'$213)')&U#*%&0)&M$'

' .#15&%$#$'#&'18$M)*)')&U#*%&0)&M$+'#&3"8(#&5'M*1#&#&5'%>'&%&60)(#31"'2)*$%&&)"'1&('0)(#31"'()U#3)$'

' K*)1M0)&M'#&'18$M)*)')&U#*%&0)&M$+'#&3"8(#&5'M*1801+'138M)+'1&(' 3-*%&#3' 0)(#31"'3%&(#M#%&$'

' /822"L'*)$%8*3)' 01&15)0)&M' 1&(' 2"1&&#&5']#&3"8(#&5' 2-1*013)8M#31"$'M-*%85-'M-)'2*%Q)3M'3%02%&)&M+'P8M'&%M'1&')W-18$M#U)'(#$38$$#%&^'

' N)(#31"'()U#3)'3%&$#()*1M#%&$+'%2M#0#O#&5'>%*'>")W#P")'>8&3M#%&1"#ML+'01$$+'2%V)*+'1&('U%"80)'

' `Y!'1&('F,9'M*1#&#&5'1&('3)*M#>#31M#%&'

'

V#""' -)"2' 3%%*(#&1M)' M*1&$2%*M1M#%&' 10%&5' M-)' 5*%82J' !((#M#%&1"' #&>%*01M#%&' V#""' P)'
2*%U#()('#&'3"1$$J'
' '/8&(1L'N1*3-'BB&('R'/1M8*(1L'N1*3-'BCM-?'!((#M#%&1"'")3M8*)$'%&'$2)3#>#3'0)(#31"'*#Z+'
#&6>#)"('0)(#31"'$#08"1M#%&$+'$%8&(#&5'*%3Z)M'21L"%1('"18&3-+'`Y!'3%8*$)'3%02")M#%&'
' K-)'Y#)"('3%02%&)&M'%>'M-)'3%8*$)'V#""'3%02")M)'%&'/1M8*(1L'N1*3-'BCM-J'!""'21*M#3#21&M$'
N\/K'$M1L'M-*%85-'M-)'/1M8*(1L'13M#U#M#)$'M%'-)"2'8$'$)38*)'1&('3")1&'M-)'>13#"#M#)$+'1&('
01L'&%M'")1U)')1*"LJ'
Y#&1"')W10'R''
' 4W10'(#$M*#P8M)('&%'"1M)*'M-1&'K8)$(1L'N1*3-'<E$M'
' :*1"')W10$'K8)$(1L'!2*#"'GM-'R'/3-)(8")'K7.'
'

L?% M30J/1N%=/;:%31.%"422=/-;%

!''()M1#")('213Z#&5'"#$M'31&'P)'>%8&('%&'M-)'3%8*$)'F1&U1$'V)P$#M)J',")1$)'*)U#)V'M-)'213Z#&5'
"#$M'1$'$%%&'1$'2%$$#P")'M%'()M)*0#&)'V-1M'L%8'1*)'"13Z#&5J'b>'L%8'-1U)'#$$8)$'>#&(#&5'1&L'$822"#)$+'
2")1$)'")M'M-)'#&$M*83M#%&1"'M)10'Z&%V'1$'$%%&'1$'2%$$#P")'$%'V)'31&')#M-)*'EJ'9)&M'L%8'
)X8#20)&M+'%*'BJ'_)"2'L%8'>#&('1&%M-)*'3"1$$01M)'V#M-'V-%0'L%8'31&'$-1*)J';%M)'M-1M"M-)'V)1M-)*'
(8*#&5'M-)'>#)"('3%02%&)&M'#$'1&M#3#21M)('M%'P)'3%"('1&('M-)')&U#*%&0)&M'#$'"13Z#&5'M*1(#M#%&1"'
>13#"#M#)$+'$%'L%8'$-%8"('2"1&'133%*(#&5"LJ'`)'V#""'-1U)'2%M1P")'V1M)*'1&('2%*M6162%MML'M%#")M$+'1$'
V)""'1$'3%00%&'>13#"#M#)$'M%'3%%Z'>%%(J'f%8'V#""'&%M'-1U)'133)$$'M%')")3M*#3#ML'%*'#&M)*&)MJ'f%8'01L'
P)'1P")'M%'-1U)'$01""'M)WM'0)$$15#&5'3121P#"#ML+'P8M'(%'&%M'1&M#3#21M)'M-)'1P#"#ML'M%'01Z)'2-%&)'
#

O?%M5-6-55-.%":4.-1:%$39-;%31.%M581841;%

F\'7%8"()*'*)3%5&#O)$'M-1M'$M8()&M$g'")51"'#&>%*01M#%&'(%)$&gM'1"V1L$'1"#5&'V#M-'-%V'M-)L'
#()&M#>LJ'/M8()&M$'01L'82(1M)'M-)#*'2*)>)**)('&10)$'1&('2*%&%8&$'U#1'M-)'$M8()&M'2%*M1"h'M-%$)'
2*)>)**)('&10)$'1&('2*%&%8&$'1*)'"#$M)('%&'#&$M*83M%*$g'3"1$$'*%$M)*$J'b&'M-)'1P$)&3)'%>'$83-'
82(1M)$+'M-)'&10)'M-1M'122)1*$'%&'M-)'3"1$$'*%$M)*'#$'M-)'$M8()&Mg$'")51"'&10)J'

R?%S8185%G8.-%

!""'$M8()&M$')&*%"")('#&'1'\&#U)*$#ML'%>'F%"%*1(%'7%8"()*'3%8*$)'1*)'*)$2%&$#P")'>%*'Z&%V#&5'1&('
1(-)*#&5'M%'M-)'_%&%*'F%()J'i#%"1M#%&$'%>'M-)'2%"#3L'01L'#&3"8()?'2"15#1*#$0+'3-)1M#&5+'
>1P*#31M#%&+'"L#&5+'P*#P)*L+'M-*)1M+'8&18M-%*#O)('133)$$'M%'131()0#3'01M)*#1"$+'3"#3Z)*'>*18(+'
$8P0#MM#&5'M-)'$10)'%*'$#0#"1*'V%*Z'#&'0%*)'M-1&'%&)'3%8*$)'V#M-%8M'2)*0#$$#%&'>*%0'1""'3%8*$)'
#&$M*83M%*$'#&U%"U)(+'1&('1#(#&5'131()0#3'(#$-%&)$MLJ'!""'#&3#()&M$'%>'131()0#3'0#$3%&(83M'V#""'
P)'*)2%*M)('M%'M-)'_%&%*'F%()']-%&%*I3%"%*1(%J)(8^h'<=<