Wpksgtuks{ 'qh'Rkvud Wt i j

ORTHOPAEDIC ROBOTICS LABORATORY

423; 'iWo o gt 'Wpf gt i t cf Wcvg cduxt cev'dqqmgv

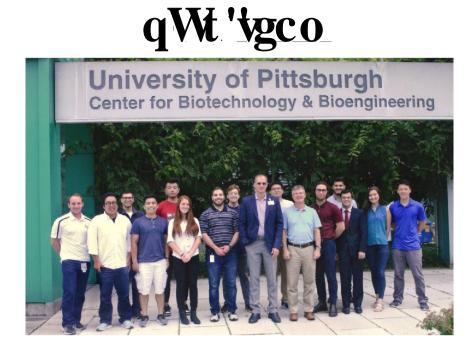






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O lej cgriMcucdkp Ercuu''qh''4242'' Dkqgpi kpggtkpi '' Wpkxgtukx{ ''qh'Rkwudwti j



Lces wgłpg'O ej crg" Ercuu"qh'4243" Dkągpi kpggtkpi " Wpkxgtuks{ "qh'Rksudwti j



Lqegn{ p'J cy m Ercuu''qh''4242 Dkqgpi kpggtkpi Wpkxgtukx{ ''qh'Rkvudwti j

wdrg'qh'eqpygpu

30'	Swcpvła(kpi '5F 'Xqawo g'qh'y g'Iagpqj wogt calEcruwag'Hqaqqy kpi 'č''	Rci g'7/8			
	Uj qwaf gt 'F kangecykgp'lat qo 'O T 'Ct vj t qi t co 'F c vc				
	Lqegn{p'N'J cy m'Tqdgtv'V'Vkuj gto cp. 'Ej tkuvqr j gt'O 'I kddu. 'Xqmgt				
	O wucj n 'Crulgt v'Nkp. 'T kej ctf 'G'F gdunk				
	Fgrctvogpv'qhDkqgpikpggtkpi'cpf'Fgrctvogpv'qhQtvjqrcgfke'Uwtigt{				
40'	Jqy'Dqp{'Oqtrjqqqi{'Chhgevu'VkdkqhgoqtcnEqpvcev'Rtguuwtg''	Rci g'9/:			
	Vj t qwi j 'Kpwcev.'CNEF.'cpf 'NGV'Uwwgu'cv'Fkhigt gpv'Cpi ngu'qh'Higz kqp				
	Lees wgrkpg'O eJ crg. "Ugpg'Rqrco crw. "Nwrg'O cwct. "I gtcrf 'Hgttgt. 'Ecrxkp				
	Ej cp. 'Xqmgt'O wucj n'Tkej ctf 'G'F gdunk				
	Fgrctvogpv'qh'Dkqgpikpggtpi'cpf'Fgrctvogpv'qh'Qtvjqrcgfke'Uvtigt{				
		Rci g';/32			
50'	Rn:pg'qh'Gngxcvhqp'Chhgevu'O czło wo 'Gzvgt pcn'T qvcvhqp'hp'Uwdl gevu				
	y kyj 'Kuquevgf 'Uwrteur kpevwu'Vgetu				
	O kei cen'Mcuucdken. 'Nyng'O cyct. 'Eco kmp'I ai puan. 'Vao 'I cm. 'I co gu				

O kej cgn¹Mcuucdkep. "Nwng'O cwct. 'Eco kng'Iqj puqp. 'Vqo 'I cng. 'Ico gu Kti cpi .''Y knkco 'Cpf gtuv.''Xqmgt'O wucj n'Tkej ctf 'G'F gdunk F grctvo gpv'qhDkqgpi kpggt kpi ''cpf ''F grctvo gpv'qhQt yj qrcgf ke 'Uwti gt.{

S wcpwła kpi '5F 'Xqnwo g'dhi I ngpqj wo gt cniE cr uwng'Hqnqy kpi 'c'Uj qwnf gt " F kungecwlap 'ht qo 'EnlpleeniO T'Ct vj t qi t co 'F cwc

Lqegn{p'N0J cy m³.'Tqdgtv'V0Vkuj gto cp⁴.'Ej tkuvqr j gt'O 0I kddu⁴.''Xqmgt'O wucj n^{4.3}.''

Cndgtv'Nkp⁴. 'Tkej ctf 'G0F gdunk^{3.4}

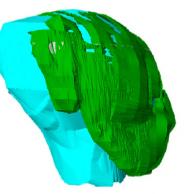
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Uwtigt{

Kpvt qf wevkqp<''Vj g" i ngpqj wo gtcn' lqkpv' ku" yj g" o quv"eqo o qpn{ "f kurqecvgf "lqkpv."wuwcm{ "d{ "cp" cpvgtkqt"uj qwrf gt"f kurqecvkqp"]3_0'Vj ku"v{r g"qh" kplwt { "ecp"tguwn/kp"r gto cpgpv'f ghqto cvkqp"qh"y g" i ngpqj wo gtcn' ecr uwng." y j kej " ecwugu" i tgcvgt" ecr uwrct "rczkw{ "cpf "kpetgcugf "ecr uwrct "xqnwo g"]4_0'C" eqo o qp" uwti kecn'r tqegf wtg" vq" tgf weg" ecruwrct" xqnwo g" ku" ecruwrct" rhecwlqp." dw" ewttgpvn{."j qy "y g"ecr uwrg"ku"r nkecvgf "ku"rcti gn{" uvdlgevkxg" y ky qw" vcmkpi " kpvq" ceeqwpv" y g" o ci pkwf g"cpf "mecvkqp"qh"pqp/tgeqxgtcdng"uvtckp" kp" yj g" ecr uwrg0' Vj wu." yj gt g" gz kuwu" c" pggf " vq" s wcp whi{ "kplwt { "vq "vj g"i ngpqj wo gtch'ecr uwng"cpf " kpf kxkf wcnk g" uwti kecn' tgr ckt0' KV' ku" ewttgpvn{" wpmpqy p"y j gy gt"ej cpi gu"kp"ecr uwrct "xqnwo g" hqmqy kpi "c" uj qwnf gt "f kunqecvkqp" ecp "dg" s wcp why f "wukpi "O T "cty tqi tco 0'Vj gtghqtg." y g" cko "qhi'y ku'uwf { "ku'yq't geqpuxt wev'5F "o qf gnu"qh" y g"i ngpqj wo gtch'ecr uwng"htqo "OT"ctyj tqi tco " vq"cuuguu"ecr uwret "xqnvo g"kp"j gcnj { "r cvkgpvu"epf " r cvkgpvu" y j q" j cxg" wpf gti qpg" qpg" qt" o qtg" cpvgtkqt"uj qwrf gt"f kurqecvkqpu0

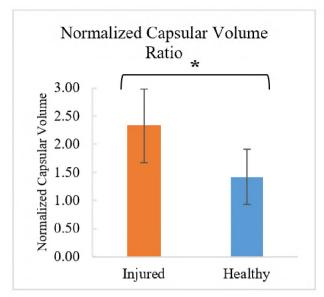
O gyj qf u≺O T "ctyj tqi tco u"qh"yj g"i ngpqj wo gtcn" lqkpv"kp"j gcnj { "uvdlgevu"*p?: +"cpf "uvdlgevu" y cv" j cf " uwuvckpgf " cv" ngcuv" qpg" cpvgtkqt " uj qwrf gt " f kungecvkqp"*p?: +"y gtg" ces wktgf 0'Vj g" ecr uwrct" ur ceg" y cu" f ghkpgf " cu" y g" ur ceg" y ky kp" y g" i ngpqj wo gtcn' ecr uwrg" hkngf " y kj " y g" eqp tcuv' ci gpv"f wtkpi "yj g"O T"ctyj tqi tco 0'Vj g"ecr uwrct" ur ceg."j wo gtwu."cpf "i ngpqkf "y gtg"ugi o gpvgf "kp" OKOKEU" *xgtukqp" 3902." Ocytkcnkug" PX." Dgni kwo +"htqo "yj g"eqtqpcn"uci kwcn"cpf "czkcn" xkgy "hqt"gcej "uwdlgev0Vj ku"etgcvgf "c"o guj ."c"5F " o qf gn'o cf g'wr "qh'yt cpi ngu. "hqt "gcej "xkgy "qh'gcej " uvdlgev0'O guj gu"etgcvgf "htqo "gcej "xkgy "y gtg" y gp"eqo dkpgf "kp"O guj Ncd"d{ "qxgtrc{kpi "y go " *xgtukqp" 30506." KUVK" Kcn{+" vq" o cmg" c" j ki j gt" tguqnwkqp"o guj "hqt"gcej "uwdlgev"*Hki wtg'3+."cpf" y g'xqnwo g''qh''y g''ecr uwrct ''ur ceg''y cu'f gygto kpgf "

wukpi "O guj Ncd0' Vj g" xqnvo g" qh" yj g" ecr uvæct" ur ceg" y cu" cnq" ecnewævgf " y kyj " y g" uvær gtkqt" r qt kqp"tgo qxgf "dgecwug" yj g"kphgtkqt "tgi kqp" qh" y g" ecr uvæg" y cu" gzr gevgf " vq" gzr gtkgpeg" y g" i tgc vgu v'kpl wt {0'Vj ku"y cu"uvcpf ctf k gf "dgw ggp" uvdlge vu"d{"tgo qxkpi "cp{"ecr uvæct"ur ceg"cdqxg" y g"i tgc vgt "wdgtqukk{"qh'y g"j vo gtcn'j gcf 0'Vj gug" xqnvo gu"y gtg" y gp"pqto cnk gf "vq" y g"uk g"qh'y g" j wo gtcn'j gcf "d{ "hkwkpi "c"ur j gtg" vq" y g"j vo gtcn' j gcf "cpf "f kxkf kpi " y g" ecr uvæct" xqnvo g"d{ "y g" tcf kwu" qh" y g" ur j gtg" evdgf 0' Vj g" ecr uvæct" xqnvo gu"qh"gcej "i tqwr " y gtg"eqo r ctgf " y kj "c" y q/uco r mg'v ygu'y kj "uki pkhecpeg"ugv'cv'r >20270



Hi wt g'3<Rquvgt kqt "xkgy "qh'c "5F "tgeqpuvt we kqp"qh'yj g" i ngpqj wo gtcn'ecr uwrct "ur ceg"%i tggp+"cpf "j wo gtcn'j gcf " *dnwg+0

T guwnu Vj g"cxgtci g" vqvcn"ecr uwrct "xqnvo g"qh" y g"kplwtgf "i tqwr "y cu"hqwpf "vq"dg"87' "rcti gt" y cp"y g"ecr uwrct "xqnvo g"qh"y g"j gcnj {"i tqwr " *r ? 20249+"***Hi wt g'4**+0'Vj gtg"y cu"pq"uki pkhecpv" f khigtgpeg "kp"ecr uwrct "xqnvo g"y j gp"y g"uwr gtkqt" r ctv"qh"y g"ecr uwrg"y cu"tgo qxgf "***Hi wt g'5**+0'C" r qy gt" cpcn{uku" y cu" eqpf wevgf " hqt" ecr uwrct" xqnvo g'y kj "y g"uwr gtkqt"r qt vkqp"tgo qxgf ."cpf "c" vqvcn'qh'48"o qtg'uwdlgew''y qwf "dg"pggf gf 'hqt"y g" tguwnu''q"dg"uki pkhecpv0



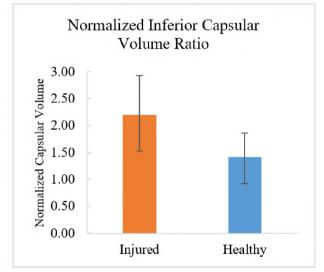
Hi wt g'3</br>

Vqxchi ngpqj wo gtch'ecr uwrct "xqnwo g"kp"j gcnj {"

cpf "kplwtgf "uwdlgeul'ecnewrcvgf 'htqo "5F "tgeqputvevkqp"qh"

O T "ctvj tqi tco 0'Vj g"pqto chk gf "xqnwo g"y cu'87' "rcti gt"

kp"yj g"kplwtgf "uwdlgeul'yi cp"kp"yj g"j gcnj { "uwdlgeu0



Hi wt g'4<I ngpqj wo gtcrl'ecr uwrct "xqnwo g"y ky "uwr gtkqt" r qtskqp"tgo qxgf "kp"j gcnj { "cpf "kplwtgf "uwdlgew" ecnewrcwgf "htqo "5F 'tgeqpuvt weskqp"qh'O T "cty tqi tco 0P q" uki pkhlecpv'f khgtgpeg"kp"pqto cnkj gf "xqnwo g"y cu'hqwpf " dgw ggp"j gcnj { "cpf "kplwtgf "uwdlgewu

F kuewuukqp<5F "o qf gnu"qh"yi g"ecr uwrct "ur ceg"hqt" yi g"i ngpqj wo gtcn"lqkpv"y gtg"uweeguuhwm{

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Tghgt gpegu<'30'Cdtco u"gv'cn0'IDIL0'4236''40' Rctm'gv'cn0'42360'50'F kgv¦ "gv'cn0'42270'MUUVC" Cenpqy ngf i go gpvu<'Vj ku"tgugctej "y cu" eqpf wevgf "cv'ý g"Qt ý qr cgf ke"Tqdqvkeu" Ncdqtcvqt { "cpf "y cu"hwpf gf "d{ 'ý g"Uy cpuqp" Uej qqn'qh'Gpi kpggtkpi "cpf 'ý g"Qhhkeg"qh'ý g" Rtqxquv0

J qy 'Dqp{ 'O qt r j qnqi { 'Chigevu'Vklkqligo qt chE qpvcev'Rt guuwt g'Vj t qwi j " Kpvcev.'CNEF.'cpf 'NGV'Uvcvgu'cv'Fkligt gpv'Cpi ngu'qh'Higz kqp

Lees wgrkpg'O eJ crg³. 'Ugpg'Rqnco crw³. 'Nwng'O cwct³. 'I gtcrf 'Hgttgt³. 'Ecrxkp'Ej cp³."

Xqmgt'O wucj n^{4.3}.'Tkej ctf 'F gdunk^{3.4}

30' F gr ctvo gpv'qh'Dkqgpi kpggtkpi .'Wpkxgtukx{ "qh'Rkvudwti j .'RC.'Wpksgf 'Uccgu0 40' F gr ctvo gpv'qh'Qtyj qr cgf le'Uwti gt {.'Wpkxgtukx{ "qh'Rkvudwti j .'RC.'Wpksgf 'Uccgu

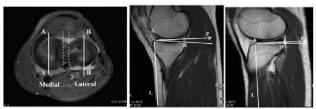
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hgo wtu"y gtg"wugf 0'Vj g{"y gtg"y gp"ugi o gpvgf" wukpi "O ko keu" cpf " vkdkch' r revgcw' ungr gu" y gtg" o gcuwtgf 0Kp"qtf gt "vq"ugi o gpv"dqpgu."c"o cum'y cu" etgcvgf "htqo "vj g'EV'uecp"vj cv'qwrkpgf "vj g"dqpg." y j kej "eqwrf "dg"qdugtxgf "kp" y g"eqtqpcn" uci kwcn" cpf "czkcn'r gtur gevkxgu0'Chygt"ecxky{ "hknkpi ."qt" cwqo cvkecm{ "hkmkpi "kp" gcej "r ctv" qh" yj g" dqpg" y j gtg''y g'r gtko gygt''o cum'y cu'kpycey.''y gtg'' gtg'' uvkm'j qrgu"yj cv'pggf gf "vq"dg"o cpvcm{ "hkngf "kp0' Vj ku'y cu'f qpg''urkeg''d { "urkeg."gcej "urkeg''y kempguu" dgkpi '2085''o o . "kp"y g"czkch'xkgy 0Chygt 'y g'o cum' y cu"eqo r myg." c"r ctv" y cu"ecnewncygf "htqo "yj g" o cum0' Vj ku" f gxgmqr u" c" 5F" o qf gn' qh' yj g" eqo r ngvgn{ "ugi o gpvgf "dqpg0'Ncuvn{ ."vj g"dqpgøu" eqpvqwtu"y gtg"gf kgf "vq"dgeqo g"uo qqvj gt"cpf" tgr nlecvlxg"qh'c"j gcnyj { "dqpg"*Hki 03+0



Hi wt g'3<Eqtqpen'uci kwen"cpf "czken'xkgy u'qh'y g" uo qqy gf "5F '\kdke0

Htqo ''y g'E V'uecp'ugi o gpvu'lp''y g''uci kwcn'r mpg." y g''vdlcn'r mvgcw'umr gu'ecp''dg''o gcuwtgf '*Hki 04+"]8_0'Vj ku''y cu'f qpg''d { 'f gvgto koloi ''y g''mpi ''czku'' cpf ''ku''qty qi qpcn' nkpg''hqt ''tghgtgpeg0' Vj gp. ''kp'' dqy '' y g'' dqpgøu'' o gf kcn' cpf '' mvgtcn'' ukf gu.'' y g'' vcpi gpv'hlog'y cu'etgcvgf 0'Vj ku''cpi gpv'hlog''dgi cp'' cv''y g''r gcm'qhi'y g''rcvgtcn'qt''o gf kcn'tlo ''cpf ''gpf gf '' cv''y g''qty qi qpcn''nkpg0' Vj g''cpi mg''dgy ggp'' y ku'' y cu''y g''vdlkcn'r mvgcw'umr g.''cpf 'y cu'tgeqtf gf 0



Hi wt g'4<Czkcn'cpf 'uci kwcn'xkgy u'qh'y g'\kdkc.'kpenwf kpi " y g'o gf kcn'cpf 'ncvgtcn'cpi ngu'y cv'y gtg'\cngp']8_0

C"eqttgrcvkqpcnlcpcn{uku"y cu"ecttkgf "qw"dgwy ggp" o gf kcn"r revgcw"urqr g."revgtcn"r revgcw"urqr g."cpf " r revgcw" urqr g" f khgtgpvkcn" cpf " r gcm' eqpvcev" r tguuwtg."o gcp"eqpvcev"r tguuwtg."cpf "eqpvcev"ctgc" cv"kpvcev."CNEF."cpf "NGV"uvcvgu"cv"2Å"52Å"82Å" cpf "; 2Å"*r >2027+0P qto crkv{ "y cu"vguvgf "y tqwi j " Uj cr ktq/Y km"Y "Vguv"cpf "vtcpuhqto cvkqpu"y gtg" r gthqto gf "vq"pqto crkv{ g"y g"f cvc0

TGUWNVUCVj g'o gcuwtgo gpv'cpi ngu'y cv'ecp'dg" uggp" kp" Vcdrg" 3" uj qy gf " y cv' y g" vkdkcn' revgtcn' cpi ngu" y gtg" qp" cxgtci g" 408Å" i tgcvgt" y cp" y g" vkdkcn'o gf kcn'cpi ngu0

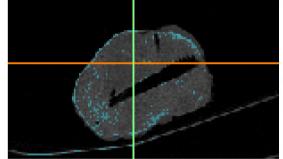
	Specimen 1	Specimen 2	Specimen 3	Specimen 4	Specimen 5	Specimen 6	Specimen 7	Specimen 8	Average Angles:
Uci kwcn xkgy cpi ngÅ *o gf kcn#6	608''	709"	40 "	905"	909"	309"	807"	40 "	60
Uci kwcn xkgy cpi ngÅ *ncvgtcn+":	07"	905"	605"	:0"	: 0, "	70, "	90 "	: 05"	907

Vcdrg'3<O gf ken'epf "revgten'vkdken'r revgew'urqr g"epi rgu"qh" y g": "eef exgtke'ur geko gpu0

Qww'qh'y gug'yguwu "pq'uvcykuylecn'eqttgrcykqpcn'y cu" hqwpf 0'Qpg" qh" y g" eqttgrcykqpcn'i tcr j u." qh" y g" Unqr g"F khhgtgpykcn'd { "Eqpycev'Ctgc"2Å'CNEF." uj qy gf 'y cv'y g'eqttgrcykqp't'y cu'/2082; ."cpf 'y g" r ''y cu''20830'Rqy gt"Cpcn{uku''f gygto kpgf ''y cv''3: " ur geko gpu" y gtg" pggf gf " vq" i gpgtcvg" c" o qtg" ceewtcvg"tguwn0

F KUE WUUKQP <'Cu'uvcvgf "kp''y g''Rqy gt''Cpcn{uku." 32"o qtg"ur geko gpu"ctg" pggf gf "vq" hwt y gt " y ku" uwf {0'K/'ku"eqpenwf gf "'y cv''y g"4F "vkdkcn'urqr gu" dqy "kp"o gf kcn''cpf "rcvgt"ukf gu"f kf "pqv'eqttgrcvg" y kj "eqpvcev''r tguuwtg"f cvc"kp"kpvcev."CNEF."qt" NGV'uvcvgu0

Uqo g''ko kcvkqpu'qh'y ku'uwf { "kpenvf gf 'c" uecp"qh'c"dqpg"y cv'y cu''f ghqto gf "cpf "ej qr r {." gxgp"y j gp"uo qqy gf 0'Vj g"ecf cxgt"j cf "xkukdrg" etcemu='y gtghqtg.'kv'y cu''pqv'kpenvf gf 'kp"y g''uwf {0' Kp"cf f kkqp."uqo g"dqpgu"j cf "r tqo kpgpv''wppgnu" htqo ''y g''NGV'r tqegf wtgu'y cv'o cf g''kv''f khhewnv''q" ugi o gpv'*Hki 05+0'Vq''i gpgtcvg''cp''ceewtcvg''o cum" guvko cvgu''qp'y j gtg''q''hkm'y g''j qrg'y gtg'o cf g''d{" eqpukf gtkpi ''y g''uwttqwpf kpi ''dqpg0



Hi wt g'5<Czkcn'xkgy "qh'ecf cxgtke '\kdkc''E V'\uecp."y kj " O ko keu"o cum"y j gtg"c"r tqo kpgpv'j qrg"ecp"dg"qdugtxgf 0

Vj g'E V'uecpu'y gtg''cngp"cv'cp"qdrks wg"cpi rg0'Vj g" vkdkcn" ecf cxgtke" ko ci gu" y gtg" pqv" uecppgf " uvtcki j v."cpf "y g"qt y qi qpcn'rkpg"j cf "vq"dg"o cf g" vq"o cvej "y ky "y g"ungy gf "cpi rg"qh'y g"dqpg0

Y ký "ý g"o qf gnu"cpf "o gcuwtgo gpw"ý cv" y gtg" o cf g." uvcvkuvkecn" uj cr g" o qf grkpi " qp" ecf cxgtke"npggu"ecp"dg"hwt ý gt"kpxguvki cvgf 0'Kp" cf f kkdqp."qvj gt"dqp{"o qtr j qmi {"f khigtgpegu"ecp" dg"eqpukf gtgf "vq"r tqxkf g"cp"gzr rcpcvkqp"qp"CEN" qt"CNE "kplwt { "ý cv"ecp"dg"gzr rckpgf "d{"o crikpi " hgo qtcrlo gcuwtgo gpv"eqo r ctkuqpu"cu"y gnf0" TGHGT GP E GU<]3_"Mguurgt "gv"cr0MUUVC0422: "]4_"P gtk0'CENUI 0']5_"P qxctgwk"gv"cr0'423; "]6_" J cuj go k"gv"cr0'IDIU0422: "]7_"Rhgkhgt "gv"cr0'IDIU0' 423: "]8_"J cuj go k"gv"cr0'CIUO 0'422;

Rncpg'qh'Gngxcvhqp'Chigevu'O czko wo 'Gzvgt pcn'T qvcvhqp'hp'Uwdlgevu'Y kyj 'Kuqncvgf " Uwrt cur hpcvwu'Vgct u

O kej cgn¹Mcuucdkcp³. "Nwng'O cwct³. 'Eco kng'Iqj puqp⁴. "Vqo 'I cng⁴. 'Ico gu'Kti cpi ⁵. "Y knkco 'Cpf gtuv⁴." Xqmgt 'O wucj n^{4.3}. 'Tkej ctf 'F gdunk^{3.4}

30' F gr ctvo gpv'qh'Dkqgpi kpggtkpi .'Wpkxgtukx{ ''qh'Rkxudwti j .'RC.'Wpksgf 'Ucvgu0 40' F gr ctvo gpv'qh'Rj {ukecn'Vj gtcr {.'Wpkxgtukx{ ''qh'Rkxudwti j .'RC.'Wpksgf 'Ucvgu0 50' F gr ctvo gpv'qh'Qtyj qr cgf ke''Uvti gt {.''Wpkxgtukx{ ''qh'Rkxudwti j .'RC.''Wpksgf ''Uvcvgu0

KP VT QF WE VKQP <" Tqvcvqt" ewhh" vgctu" chigev" o qtg" yj cp" 42' " qh" yj g" r qr wrcykqp" cpf " j cxg" kpetgcukpi "r tgxcngpeg"y kj "ci g^{3.4}0P qp/qr gtcvkxg" vtgcvo gpv"ku"qhygp"kpkkcm{ "rtguetkdgf "vq"rcvkgpvu" y ky "tqvcvqt" ewhh' vgctu" cpf "hqewugu" qp" uvtgpi yj gpkpi " yj g" tqvcvqt" ewhh" cpf " uecr wrct" o wuengu⁵0J ki j "ttgcvo gpv"hcknwtg"tcvgu"j cxg"dggp" tgr qt vgf " hqt" pqp/qr gtcvkxg" vtgcvo gpv" cpf " ecp" tguwn/kp'r ckp''cpf 'f kucdkrkv{ "go r j cuk kpi 'vj g''pggf " vq'ko r tqxg'wr qp'ewttgpv'tgcvo gpv'o gy qf u⁶0'K/ku'' mpqy p"y cv"kp"j gcnj { "uvdlgevu."gzvgtpcn"tqvcvkqp" qh" y g" i ngpqj wo gtch' lqkpv' ku" ceeqo r cpkgf " d{" uecr wrct" gzygtpcn' tqycykqp⁷0' Vj ku'' eqqtf kpcygf " i ngpqj wo gtcn' o qvkqp" o ckpvckpu" y g" j wo gtcn' j gcf "kp" vj g"egpvgt "qh" vj g"i ngpqkf ⁸0'T qvcvqt "ewhh" vgctu"ecp"cnygt"uj qwrf gt"nkpgo cvkeu"tguwnkpi "kp" f get gcugf "hwpe kapcrkv{0'Vj g"qdlge kxgu"qh'y ku" uwuf { "y gtg"\q"f gygto kpg"yj g"tgrcykqpuj kr "dgw ggp" ingpqj wo gtch' mkpgo cvkeu'' cpf '' o czko wo '' i ngpqj wo gtcn' gz vgtpcn' tqvc vkqp" *GT+" r tg/" cpf " r quv gz gtekug 'vj gtcr { 'kp''uwdlgevu''y ky ''cp''kuqrcvgf '' uwr tcur kpcwu"vgct"f wtkpi "i ngpqj wo gtch"kpvgtpch" cpf "gzvgtpcn' tqvcvkqp" cv'; 2" fgi tggu" qh" j wo gtqyj qtceke''cdf wevkqp0

O GVJ QFU[<] Vy gpv{" uwdlgevu" *o gcp" ci g" 7: (8Õ904" {gctu." o gcp" DO K 480, Õ60 +" y kj " c" u{o r vqo cvke" tqvcvqt" ewhi" vgct" kuqncvgf " vq" y g" uwr tcur kpcwu'vgpf qp"y gtg"tgetwksgf "hqt'y g"uwvf {" chvgt"r tqxkf kpi "KTD/cr r tqxgf "y tkvgp"kphqto gf " eqpugpv0'Cm'uvdlgevu"r ctvkekr cvgf "kp"c"34/y ggm" uvtwewtgf " gzgtekug" y gtcr {" r tqi tco 0' I ngpqj wo gtcn'mkpgo cvkeu'y gtg"eqmgevgf "wukpi "c" f {pco ke"uvgtgqtcf kqi tcr j {"*F UZ +"u{uvgo "r tg/" cpf "r quv/gzgtekug"y gtcr {0'Uvdlgevu"y gtg"ugcvgf " y kj "y g"chhgevgf "ukf g"i ngpqj wo gtcn'lqkpv'cv'y g"

hqecn'r qkpv''qh''y g"FUZ "u{uvgo 0'Uwdlgevuø''cto u" y gtg" r qukkqpgf " qp" c" uvcpf " cv' ; 2" f gi tggu" qh" j wo gtqy qtcele" cdf wevkqp" cpf "; 2" f gi tggu" qh" gndqy "hgzkqp" cpf "y gtg" cungf " vq" r gthqto " cp" gzvgtpcn/tqvcvkqp'\cum0Vj g'F UZ 'r tqxkf gf 'htco g/" d{/htco g" ko ci gu" qh" yi g" uwdlge uw uecr wnc" cpf " j wo gtwu" vj tqwi j qwi' vj g"gzvgtpch' tqvcvkqp" vcun0' Qweqo g" r ctco gvgtu" kpenwf gf " i ngpqj wo gtcn" gzvgtpcn' tqvcvkqp." grgxcvkqp." cpf " r rcpg" qh" grgxcvkqp0'Ej cpi gu"kp"i rgpqj vo gtcn'mkpgo cvkeu" y gtg"ecrewrcygf "cu"r quv gz gtekug" x cnwgu" o kpwu" rtg/gzgtekug"vjgtcr{"xcnwgu0'Ujcrktq/Ykm'ycu" wugf "vg"vguv"hqt "pqto crkv{ "cpf "c"r cktgf "V/vguv"qt" Y kreqzqp"Uki pgf 'Tcpm'Vguv'y cu'wugf 'vq'eqo r ctg" tqvcvqtu" dghqtg" cpf " chvgt" gzgtekug" vj gtcr {0' C" Ur geto cp" eqttgrcvkqp" y cu" eqpf wevgf " vq" yg" tgncvkqpujkr" f gygto kpg" dgw ggp" i ngpqj wo gtch' gngxcwlqp" cpf " i ngpqj wo gtch' gzvgtpcn'tqvcvkqp"cu"y gm'cu"i ngpqj wo gtcn'r ncpg" qh''gngxcvkqp''cpf ''i ngpqj wo gtcn'gzvgtpcn'tqvcvkqp0' Uki pkhkecpeg''y cu''ugv'cv'r > 20270

TGUWNVU<'Vj gtg"y cu"c"uki pkhecpv"kpetgcug"kp" y g" o czko wo " i ngpqj wo gtcn' gzvgtpcn' tqvcvkqp" r quv"gzgtekug"y gtcr { "qh"605Õ (2"f gi tggu"*Vcdng" 3+0'Vj gtg"y cu "j qy gxgt."pq"ej cpi g"kp"r ncpg"qh" gngxcvkqp" qt" i ngpqj wo gtcn' gngxcvkqp" cpi ngu" cv' o czko wo " gzvgtpcn' tqvcvkqp0' Qh" y g" w gpv{" uwdlgewu" vgugf ." 87' " i ckpgf " gzvgtpcn' tqvcvkqp" r quv'gzgtekug" y gtcr { "cpf" 57' " muv" gzvgtpcn' tqvcvkqp0' Vj qug" uwdlgevu" y cv' kpetgcugf ." i ckpgf " ; (8Õ609" f gi tggu" qh" i ngpqj wo gtcn' gzvgtpcn' tqvcvkqp"cpf 'vj qug'y cv'f getgcugf "muv'cp"cxgtci g" qh" 707Õ40, "f gi tggu0' P q" uki pkhecpv' eqttgncvkqp" cpi gy ggp"ej cpi g"kp" i ngpqj wo gtcn' gzvgtpcn' dw" y gtg" y cu" c" o qf gtcvg" r qukkxg" eqttgrcvkqp" dgw ggp" ej cpi g" kp" i ngpqj wo gtcn" r ncpg" qh" grgxcvkqp"cpf "ej cpi g"kp"o czko wo 'i ngpqj wo gtcn" gz vgtpcn" tqvcvkqp" *hki wtg" 40' T?207: ." T $^{4}?2056$." r >2023+0'Cp"kpetgcug"kp"i ngpqj wo gtcn'r ncpg" qh" grgxcvkqp" f wtkpi " y g" gz vgtpcn" tqvcvkqp" vcun" eqttgrcvgf " vq" cp" kpetgcug" kp" o czko wo " i ngpqj wo gtcn'gz vgtpcn'tqvcvkqp0 **F KUE WUUKQP** <' Vj g" tguvnu" uwi i guv" y cv"

tqvcvkqp"*hki wtg"30'T?2665."T⁴?265:."r?26275+."

F KUE WUUKQP <" Vj g" tguwnu" uwi i guv" y cv" kpetgcugf "i ngpqj wo gtcn"r ncpg"qh"gngxcvkqp"o c{" tguwn/"kp"kpetgcugf "o czko wo "gzvgtpcn"tqvcvkqp0' Kpetgcugf "i ngpqj wo gtcn"r ncpg"qh"gngxcvkqp"o c{" dg"f wg"vq"gky gt"cp"kpetgcug"kp"j wo gtqy qtceke" j qtkl qpvcn"cf f wevkqp."qt"uecr wnqy qtceke"gzvgtpcn" tqvcvkqp0'Uwdlgevuø'cto u'y gtg"j gnf "kp"r nceg"uq"y ku" kpetgcug" kp"i ngpqj wo gtcn"r ncpg"qh"gngxcvkqp"ku"

nkngn{ "ecwugf "d{ "uecr wrct "gz vgtpcn'tqvcvkqp0 Vj qug" uvdlgevu" vj cv" kpetgcugf " i ngpqj vo gtcn" r ncpg" qh" grgxcvkqp" kpet gcugf " yj gkt " o czko wo " i ngpqj wo gtch'gzvgtpch'tqvcvkqp"d{"; B"f gi tggu" uwi i guvkpi "vj cv'kpetgcugf "r rcpg"qh"grgxcvkqp"ku"cp" ko r qtvcpv" hcevqt" kp" gz vgtpcn' tqvcvkqp" vcumu0' Kp" qrgtcvlxg"kpvgtxgpvkqpu"tqvcvqt"ewhh"rcvkgpvu"ecp" vcmg"wr "vq"c" { gct"chygt"uwti gt { "vq"hwm{ "tgeqxgt" gzvgtpcn'' tqvcvkqp⁹0' Vj g'' 34/y ggm'' uvtvevvtgf " gzgtekug"y gtcr { "eqwf "dg"eqpukf gtgf "uweeguuhwn" kh" kv" ku" f gvgto kpgf " vj cv" kpetgcugf " o czko wo " gzvgtpcn"tqvcvkqp" y cu"ecwugf "d{"uvtgpi y gpkpi " ny gt" ugttcwu" cpvgtkqt" o wuengu" ngcfkpi " vq" kpetgcugf "uecr wrct" gzvgtpcn' tqvcvkqp0' Hwwtg" uwf kgu'y km'f gygto kpg'y j cv'tqrg'uecr wrqy qtceke" o qvkqpu" r m { u" kp" yj ku" qdugtxgf " i mpqj wo gtcn" o qvkqp0

UK PKHECPEG Vj gug" hkpf kpi u" rtqxkf g" tckqpcng"\q'lixty gt"gzco kpg"uecr wqvj qtceke"cpf" j wo gtqy qtceke"o qxkqp"hqt"rtgf kevqtu'y cv'o ki j v' f kukpi wkuj "y qug"uwdlgevu"y cv'y qwrf "qt"y qwrf " pqv" dgpghkv" htqo " pqp/qr gtcvkxg" kpvgtxgpvkqpu0' Vj ku" eqwrf "rtqxkf g" kphqto cvkqp" y cv'o c{" j grr " etgcvg"c 'hwpevkqpcn'tqvcvqt "ewhii"kpf gz 'hqt"uwdlgevu" y ky " kuqncvgf " uwr tcur kpcwu" vgctu" vq" j grr " dguv" f gvgto kpg'vtgcvo gpv0

20.0 (Deg) 15.0 **External Rot** 10.0 5.0 ¥e-20.0 -15.0 -10.0 -5.0 5.0 10.0 15.0 20.0 25.0 -5.0 ence -10.0 Differ -15.0 Difference Plane of Elev (Deg)

Hi wtg'40Ej cpi g'lp''Rrcpg''qh'Grgxcvlqp''Xu0Ej cpi g'lp''

Hi wt g'30Ej cpi g'lp'Grgxcvlqp'Xu0Ej cpi g'lp'O cz Gzvgtpcn'Tqvcvlqp

Difference Elevation at Max ER (Deg)

KO CI GU'CPF 'VCDNGUK

Oczło wo 'GT'*Å+

Grgxcvkqp'cv'O cz"

GT[¯]'*Å⊦

Rn:pg'qh'

Gıgxcvkqp'¢v'O cz" GT'*Å+

-10.0

O cz 'Gz vgtpcn'T qvc vkqp

Max External Rot (Deg)

Difference M

P cvkqpcn'l¥puvkswg''qh'J gcnj 'i tcpv' 7T23CT28; 725'ku'i tcvghwm{ 'cempqy ngf i gf 0 **TGHGT GP E GU** [co co qvq'' C'' gv' cn0' L'' Uj qwrf gt'Gnd''Uvti ''4232.'']4_'O kpci cy c'J ''gv'cn0'L'' Qtyj qr ''4235.'']5_'' Mwj p'' gv' cn0' LUGU''422; .'']6_'' F ws wkp''gv' cn0' CLUO ''4232.'']7_''O eEnvtg''gv0'cn0' 4223.'']8_''Ui tqk''E krgpvk''423: .'']9_''J cttku''L0'gv''cn0' Qtyj qr gf keu''42350

Rtg

;40803402

7604ÕB209

/206ÕB70

20.0

15.0

10.0

5.0

-5.0

-10.0

-15.0

-5.0

Vcdng'30Cxgtci g'tqvcvkqp"cpi ngu'hqt 'r tg/"cpf 'r quv/ gzgtekug'yj gtcr { "cpf 'yj g'uki pkhecpv'f khgtgpegu0

5.0

10.0

15.0

20.0

Rquv

;80,0340,

7702ÕB20B

306ÕB607

r

20253

207:3

20588

CEMP QY NGFI GO GP VU&Uwrr qtv'htqo 'y g"