Wpksgtuks{ 'qh'Rkvudwt i j

ORTHOPAEDIC ROBOTICS LABORATORY

4237'iwo o gt'wpf gt i t cf wc vg"

cduxt cev'dqqmgv







HQTGY CTF

Vj g''Qtý qr cgf le''Tqdqvleu''Ncdqtcvqt { 'ku''c''eqmcdqtcvkxg''ghtqtv'dgw ggp''y g''F gr ctvo gpv''qh'' Dkqgpi kpggtkpi "cpf "F gr ctvo gpv''qh''Qtý qr cgf le'''Uvti gt {0'Vj g''o kuukqp''qh''y g''QTN''ku''y g'' r tgxgpvkqp'' qh'' f gi gpgtcvkxg'' lqkpv'' f kugcugu'' d { " ko r tqxkpi " f kci pquvle." tgr ckt." cpf " tgj cdktkcvkqp'' r tqegf wtgu'' hqt'' o wuewqungrgvcn'' kplwtkgu'' wukpi " uvcv/qh'y g/ctv'' tqdqvle'' vgej pqrqi {0'Vj g''QTN''y qwrf "rkmg''vq''eqo o gpf "y g''y qtnt''qh''y g''uvvf gti tcf wcvg''uvvf gpwu'' f wtkpi ''y g''uvo o gt''qh'42370'Uvvf gpwu''o cf g''uki pkhlecpv'ko r cewi'kp''y g''uvwf { ''qh''cpmg.''npgg.'' y tkuv.''cpf ''uj qwrf gt''f gi gpgtcvkxg''f kugcugu0'Vj g''y qtm''qh''qvt''uvvf gpvu.''y kj ''y g''j gr'' qh''qvt'' o gpvqtu.''eqpvtkdwgu''i tgcvn{ ''q''y g''y qtnf ''qh''Qty' qr cgf ke''Tgugctej ''cpf ''q''cm''r cvkgpwi'y j q'' dgpghkv0

Qwt 'tgco_





Ncwtc'Dgej ctf " Encuu''qh''4238" Dkqgpi kpggtkpi " Wpkxgtukv{ "qh" Rkvudwti j



Ej t ki'Eqo q Ercuu'qh'4239" Dkqgpi kpggtkpi " Wpkxgtukx{ "qh" O kej ki cp



Vtgpvqp'I knwtcr" Encuu''qh''4238" Dkqgpi kpggtkpi " Wpkxgtukx{ "qh" Rkwudwti j



Uco kniRcvgn Encuu''qh'423: " Dkqgpi kpggtkpi " Wpkxgtukk{ "qh" Rkwudwti j



Cwftc'Ucy {gt" Encuu'qh'4237" Dkqgpi kpggtkpi " Wpkxgtukx{ "qh Xkti kpkc



Uvgr j cpłg'Ugzvqp" Encuu"qh'4238" Dkągpi kpggtkpi " Wpkxgtukk{ "qh" Rkvudwti j



Lqg'Vcmcj cuj k" Encua''qh'4238" Dkqgpi kpggtkpi " Wpkxgtukk{ "qh" Rkwudwti j

Vcdrg'qh'eqpvgpvu

30' F guli p'qh'E wuxqo li gf 'Nqy gt 'Ngi 'Ur gelo gp'Hiz vwt gu'qh'8'F QH' Tqdqyle 'Vguylpi 'U{ uvgo Ncwtc'Dgej ctf.'Mgxlp'Dgm'Rj F.'O cEcnwu'J qi cp.'O F.'Tlej ctf 'F gdunk'' Rj F F grct vo gpv'qh'Dlqgpi lpggt lpi 'cpf 'F grct vo gpv'qh'Qt vj qrcgf ke 'Uwti gt.{	Rci g'8/:
40' Tguwqt cwlqp'qh'Uj qwuf gt 'cpf 'Mpgg'Vguwlpi 'Crrctcwwu Ej tku'Eqo q. 'Vtgpvqp'I knutcr. 'Tkej ctf 'F gdumk 'Rj F F grct vo gpv'qh'Dkqgpi kpggt pi 'cpf 'F grct vo gpv'qh'Qt vj qrcgf ke 'Uwti gt {	Rci g';/33
50' Cpcn(kpi 'Eqort gudqp'Hqt egu'qh'Kpvgt pcnHkzcvkqp'O gvj qf u'hqt Vt cpuxgt ug'Rt az lo criVi kt f 'Uecri akf 'Ht cevvt gu	
Uco kniRcvgn 'P cvg''Vkgf gngp. 'O F. 'Nctu'S xkeniO F. 'Tkej ctf 'F gdunk 'Rj F.'' Iqj p''Hqy ngt. 'O F F gr ct vo gpv'qliDkqgpi kpggt kpi ''cpf 'F gr ct vo gpv'qliQt vj qr c gf ke''Uvt i gt {	Rci g'34/35
60' Ngct plpi 'ij g'Uvcpf ctf k gf 'Rlxqv'Uj lhv'Vguv'd{ 'Wug'qh'Rcuulxg'' Gf wecvlqp'Vqqnu Cwf tc''Ucy {gt.'Cvc'C ct.'OF.''Lcuqp'\ myblenk'OF.''Htgf f lg''Hw.'OF. Xqmgt'O wucj n'OF.'Tlej ctf 'F gdunk 'Rj F F gr ct w gpv'qh'Dlqgpi lpggt lpi ''cpf 'F gr ct w gpv'qh'Qt vj qr cgf le ''Uwt i gt {	Rci g'36/37
70' Uwt hceg'Uvt clp'qhi'yj g'Cpvgt qn: vgt chE cr uwg'qhi'yj g'Mpgg Uvgr j cplg''Ugz vqp0'F cplgn'I' wgpvj gt. 'O F . 'Mgxlp''Dgm''Rj F . ''Ugdcuvlcp'' Kcttc cxcn'O F . 'C vc'C ct. 'O F . ''Htgf f lg''Hw. 'O F . ''Xqmgt 'O wucj n'O F . '' Tlej ctf 'F gdunk 'Rj F F gr ct vo gpv'qh'Dkqgpi lpggt lpi ''cpf''F gr ct vo gpv'qh'Qt vj qr cgf le''Uwt i gt {	Rci g'38/3:
80' -S wcpvłł (kpi 'Vkdkql kdwrct 'Mkpgo cvkeu' wukpi 'FOCU9'Oqvkqp'Vt cemkpi U { uvgo 'vq'Kpxguvki cvg'U { pf guoqvke'Kpl wt kgu Lqg''Vcmcj cuj k ''Mgxkp'Dgm'Rj F.'OcEcnwu'J qi cp.'OF.'Tkej ctf'Fgdunk'' Rj F Fgrct vogpv'qhDkqgpi kpggt kpi ''cpf''Fgrct vogpv'qhQt vj qrcgf ke''Uwt i gt {	Rci g'3;/43

F guli p'qh'E wuwqo k gf 'Nqy gt 'Ngi 'Ur gelo gp'Hkz vwt gu'hqt '8'F QH'T qd qvle" Vguvlpi 'U{ uvgo

Dgej ctf. 'NG3='Dgm 'MO 3='J qi cp. 'O X4.3='F gdunk 'TG3.4

30' F gr ctvo gpv'qh'Dkqgpi kpggtkpi .'Wpkxgtukk{ "qh'Rkvudwti j .'Rkvudwti j .'RC
40' F gr ctvo gpv'qh'Qt y qr cgf ke 'Uwti gt { .'Wpkxgtukk{ "qh'Rkvudwti j .'Rkvudwti j .'RC

Kovt qf wevkqp<" J ki j " cpmg" ur tckpu." qt " cpmg" u{pf guo quku" kplwtkgu." ceeqwpv" hqt " 32' " qh" cm' cpmg" ur tckpu"]3_0' Vj g" o quv" eqo o qp" o gej cpkuo u" qh" kplwt {" ctg" gzvgtpcn' tqvcvkqp" cpf " j {r gt/f qtukngzkqp" qh" yj g" cpmg" lqkpv0' Vj g" cpmg" u{pf guo quku" tguvtckpu" vkdkqhkdwrct" o qvkqp." y j kej " ku" xkcn' vq" cpmg" uvcdkrk{ "]4_0' Rtgxkqwu" uwf kgu" qh' cpmg" u{pf guo quku" kplwtkgu" j cxg" tgrkgf " qp" uvcvke" vkcnu" cpf " o cpwcm{" cr r rkgf" nqcf u0' Cf f kkqpcm{." r tgxkqwu" uwf kgu" j cxg" wkrk{ gf" ugevkqpgf" ny gt" ngi " ur geko gpu." y j kej " f kutwr v" y g" r tqzko cn' u{pf guo quku0

Vj g" O LV" O qf gn' HT U4232" tqdqvke" vguvkpi " u{uvgo " ku" ecr cdng" qh" f {pco ke" o cpkr vncvkqp" tgr gcvcdng" vq" 20223" o o 0' Vj g" tqdqvke" vguvkpi " u{uvgo " ku" ewt tgpvn{" wugf " vq" uvwf {" dkqo gej cpkeu" qh" vj g" mpgg." uj qwrf gt." cpf " ur kpg0' J qy gxgt." vj g" ewt tgpv' u{uvgo " ku" kpecr cdng" qh' tki kf n{" hcuvgpkpi " c" hwm' my gt" ngi " ur geko gp" hqt" vguvkpi 0' Vj g" qdlgevkxg" qh' vj ku"r tqlgev' y cu" vq" f guki p" cpf " vguv" vj g" tki kf kv{" qh' c" ewuvqo kj gf" encor kpi " u{uvgo " hqt" hcuvgpkpi " c" hwm' my gt" ngi " ur geko gp" vq" vj g" tqdqvke" vguvkpi "

u{uvgo 0

F guli p'' Et kygt kc <' Kp" cf f kkqp" vq" ceeqo o qf cvkpi " c" hwni' nqy gt" ngi " ur geko gp." y g" ewnqo k gf " nqy gt" ngi " ur geko gp" hz wutgu" o wuv" pqv" f kut wr v" y g" u{pf guo quku" qt" kpj kdkv" hkdwrct" o qvkqp0' Y kj kp" y g" uk g" eqpuvt ckpwl" qh" y g" tqdqvke" vguvkpi " u{ ur geko gp" j gki j v" y kj qwl" r tgxgpvkpi " o qvkqp" qh" y g" tqdqvke" vguvkpi " u{ urgo 0' Vj g" ewunqo k gf " nqy gt" ngi " hkz wutgu" o wuv" tki kf n{" hcuvgp" dqy " y g" vkdkc" cpf " y g" ecnecpgwu0' Gzr gevgf " vkdkqhkdwrct" o qvkqp" ku" cr r tqz ko cvgn{" 2065" of 604: " o o " y kj " kpj kdkgf " hkdwrct" o qvkqp"]3_0' Vj gtghqtg." kp" qt f gt" vq" svctkh{" y g" hkz wutg" cu" tki kf ." o qxgo gpv" qh" y g" ur geko gp" cpf" hkzwstg" o wav' dg" nguu" yj cp" 207" o o "f wtkpi " vguvkpi 0' Cffkkqpcm{." yj g" hkzwstg" o wav' cnuq" r tgxgpv' dgpfkpi " qh' yj g" vkdkc0' O qxgo gpv' qh' yj g" o gfkcn' o cngqnwu" y kyj " tgur gev' vq" yj g" vkdkc" o kf/ uj ch'o wav'dg"nguu'yj cp"207" o o "f wtkpi "yguvkpi 0

Hipen' F guki p<' Vj g" hkpen' enco r "f guki p" eqpukuru" qh'' dqy' o cuu/r tqf wegf "cpf "ewurqo "f guki pgf " o cygtkenu0' Vj g" nqy gt" ngi "ur geko gp" ku' heuvgpgf " vq" yj g" tqdq vke" vguvkpi "u{urgo "y kyj "y g" r tqz ko en' vkdke" kphgtkqt" vq" yj g" f kuren' vkdke0' Vj g" r tqz ko en' vkdke" ku'' heuvgpgf "y kyj " yq "uetgy u" vq" e" ewurqo "f guki pgf " r nevg" *Hki wtg" 3F +" yj kej " ku'' heuvgpgf "f ktgevn{" vq" y g"deug"qh'yj g''tqdq vke''ygurkpi 'u{urgo 0



Hi wt g'3<'H pcn'ewurqo k gf 'hz wt g'f guki p''q" hcurgp 'hwni'ngy gt 'hgi ''ur geko gp''q'tqdqvke''gurkpi " u{urgo 0C+': 242''V/urqwgf ''cnwo kpwo ''eqpurt wev0' D+'Nqenedng''dcmi'lqkpv0E+''Uo cmi'kdke''r revg0F+'' Rtqzko cni'kdke''r revg0

Vy q"uo cm" ewurqo "fguki pgf" r ncvgu" *Hki wtg" 3Ē+" ctg" hcuvgpgf" vq" vj g" vkdkc" cr r tqzko cvgn{"o kf/uj chv" wukpi "dqpg" uetgy u0' Vj g" r ncvgu" o kpko kļ g" vj g" co qwpv" qh" uqhv" vkuuvg" fkuugevkqp" cpf" kpetgcug"

Hıgzkap	Gzvgt pcn' T qvcvkqp" *Po+	Ecnecpgwu" encor'/" urgekogp" *oo+	Vkdk:'е́ксо r 'б" o gf kcn' o спудпич' *о о +	Vkdkc'encor'ő" vkdkc'ökf/ujchv" *oo+	Ogf kcnb cngqnwu" ó'Wadkc'b kf/uj chv" *oo+
2Å	32	205:	2022	2035	2025
32Å	32	2052	2024	2034	2026
/52Å	32	2068	2088	208:	2037
32'Po	2	2046	2046	2082	2048

Vcdug'3<Ej cpi g'kp''y tgg/f ko gpukqpcn'f kncpeg''dgw ggp'f ki kkk gf 'ncpf o ctmu

Think for the set of t

Hi wt g'4<'Gz kuskpi "enco r "sugf "sq "hcusp"r qwgf



lqkpv'vguvkpi "*Hki wtg'4+0

Vj g" cpmg" lqkpv" ku" o cpkr wrcvgf " yj tqwi j " yj g" ecnecpgwu0' Uetgy u" ctg" kpugtvgf " kp" yj g" ecnecpgwu" yj tqwi j " yj g" vcnwu0' Crrt qzko cvgn{" 6" eo " qh" yj g" j gcf " qh" yj g" uetgy " ku" nghv" gzr qugf 0' Vj g" gpvktg" uetgy /ecnecpgwu" eqo r ngz " ku" r qwgf " kp" dqpf q" r ww{ " *50." Uckpv" Rcwn" OP +0' Vj g" e{nkpf tkecn" hqto " ku" hcuvgpgf " yj g" tqdqvke" vguvkpi " u{ uvgo " wukpi " cp" gzkuvkpi " erco r " qtki kpcm{ " fguki pgf " hqt" mpgg"

3C+0

uxcdktks{" qh" y g" dqpg/r rr.y" lqkpv0' Vj g" y q" r rr.yu" ctg" cwcej gf " vq" menrcdrg" dcm' lqkpvu" *Hki wtg" 3D+" vq" cmqy " o wr.kr rg" hcuvgpkpi " qr vkqpu0' Vj g" menrcdrg" dcm' lqkpv" ku" hcuvgpgf " vq" c" xgt vkccn' eqput vev" y j kej " eqpukuru" qh" ewurqo " dcug." : 242" V/urq.wgf " cnwo kpwo ." cpf " ewurqo " cf cr vgt" r rr.y" *Hki wtg"

> **Eqpenvukqp<'** Vj g" ej cpi g" kp" f kucpeg" dgw ggp" erco r " cpf" ur geko gp" rcpf o ctnu" o gv" yj g" f guki p" etkgtkc" d{" tgo ckpkpi " wpf gt" 207" o o " hqt" cm" rqcf kpi " eqpf kkqpu0' Vj g" hkz wtg" cnq" r tgxgpvgf " dgpf kpi "qh'yj g"vkdkc"kp"cm'tkcnn0Vj gtghqtg."yj g

o o 0'T guwnu''ct g''uwo o ct k gf ''kp''Vcd ng''30

Vj g" ej cpi g" kp" f kncpeg" dgy ggp" enco r " cpf" ur geko gp" ncpf o ctmu" tcpi gf " htqo " 2022/2068" o o 0' Vj g" cxgtci g" ej cpi g" kp" f kncpeg" y cu" 204; " o o 0' Vj g" ej cpi g" kp" f kncpeg" dgy ggp" yj g" o gf kcn" o cmgqnwu" cpf " yj g" vkdkc" o kf/uj chv" tcpi gf " htqo " 2025/2048" o o 0' Vj g" cxgtci g" ej cpi g" y cu" 2084"

o gf ken'o engqnvu'epf ''y g''vkdke''o kf/uj ehv'dqnv0

r qukkqp." c" o gej cpkecn' f ki kkt gt" *Hctq" Cto ." Ncmg" Oct{." HN+" y cu" wugf " vq" eqmgev" nqecvkqp" qh" cpcvqo kecn" cpf " erco r " rcpf o ctmk" ecrecpgwu" encor " dqnv." ecnecpgwu" cpcvqo kecn' dqnv." vkdkc" encor "dqnx." o gf kcn' o cmgqnvu." cpf " vkdkc" o kf/ uj chv" dqno" Vj g" o gej cpkecn" f ki kkt gt" ku" ceewtcvg" vq" 2027" o o 0' Nqecvkqp" qh' yj g" ncpf o ctmu" y cu" tgeqmgevgf " cv" xctkqwu" mqcf kpi " eqpf kkqpu" tgrtgugpvkpi "pqto cn' cpmg" o qvkqp" cpf "kplvt{" uvcvgu <" 32" Po " gzvgtpcn" tqvcvkqp" cv" 2Å" hrgzkqp." 32" Po "cv" 32Å' f qtukhngzkqp." 32" Po "gzvgtpcn' tqvcvkqp" cv" 52Å" r repycthigzkqp." cpf " 32" P o " f qtukhigzkqp0' Kp" qtfgt" vq" svcpvkh{" tki kfkv{." vjg" vjtgg/fko gpukqpcn" f krxcpeg" dgw ggp" ecrecpgcn" rcpf o ctmu" cpf " dgw ggp" vkdkcn' ncpfoctmu'' ku" ecnewncygf 0' OCVNCD" *Ocy Y qtmu." P cvkem" OC+" y cu" wugf " vq" f gvgto kpg" f kuvcpeg" dgw ggp" y g" ecnecpgwu" enco r " dqnv" cpf " ecnecpgwu" cpcvqo kecn" dqnv." yj g" vldlc" encor "vq" yj g" o gf lcn' o cmgqnvu." yj g" vldlc" encor" cpf" y g" vkdkc" o kf/uj chv" dqnv." cpf" y g"

erco r " ecp" dg" eqpulf gtgf " c" tki kf " hkz wttg" hqt" hwni nqy gt" ngi " ur geko gpu0' Vj g" uwf { " ku" nko ksgf " d { " vj g" nko ksgf " xqnwo g" vj g" o gej cpkecn' f ki kkl gt" ku" cdng" vq" f ki kkl g0' F wg" vq" vj g" ukl g" qh' vj g" ur geko gp." kv' y cu" ko r quuldng" vq" f ki kkl g" c" ncpf o ctni' qp" vj g" r tqzko cn' kdkc0' C" r tqzko cn' kdkc" ncpf o ctni' y qwrf " j cxg" dggp" dgpghkekcn' kp" hwt yj gt" xcnkf cvkpi " vj g" wug" qh'yj g'hz wtg'vq" r tgxgpv'kdkc"dgpf kpi 0

Uli plikecpeg<' Vj g" f guki p" qh" c" hwn" nqy gt" ngi " ur geko gp" h/z wt g" gpcdngu" wktk cvkqp" qh' y g" O LV" O qf gn' HTU4232" tqdqvke" vguvkpi " kp" cpmg" u{pf guo quku" uwuf kgu0' Kp" eqplwpevkqp" y kyj " c" o qvkqp" vtcemkpi " u{uvgo ." vkdkqhkdwrct " o qvkqp" kp"

T gigt gpegu≺']3_" O ctmqm' "gv' cn0' HCK0' 42340']4_" Xcp'J gguv."gv'cn0IDIL0042360

Cempqy ngf i go gpvi⊀'

kpvcev' cpf" kplwtgf" uvcvgu" ecp" dg" eqorctgf0' Hwtvjgt." fkhlgtgpv' v{rgu" qh' u{pfguo quku" uwtikecn' hkzcvkqp" ogjqfu" ecp" dg" kpxguvkicvgf" kp" xkstq0' Vjg" uwwf{" ecp" jgnr" kortqxg" tgjcdkrkscvkqp" cpf" rcvkgpv' qweqogu" chvgt" cpmg" u{pfguo quku" uwtigtkgu0

uwrrqtvgf "d{ "y g" F grctvo gpv" qh" Dkqgpi kpggtkpi "

cpf ''y g'F gr ct vo gpv''qh'Qt y qr cgf ke ''Uwti gt {0

Vj ku'r tqlgev'y cu

Tguvqtcvkqp'qh'Ujqwnfgt'cpf'Mpgg'Vguvkpi'Crrctcvwu

Eqo q. "ELO="I knixter." VCO="F gdunk 'TGO

Qtyj qr cgf le 'Tqdqvleu'Ncdqtcvqt { .'F gr ctvo gpvu'qh'Qtyj qr cgf le 'Uwti gt { "cpf Dkqgpi kpggtkpi .'Wpkxgtukx{ "qh'Rkvudwti j .'Rkvudwti j .'Rc

Kpvt qf wevkqp<Vj g"Uj qwrf gt "Vguvkpi "

Crrctcwu'Tgxkukgp''KX'*UVCT/KX+'y cu'' f guki pgf "kp"4227"\q"ko r tqxg"qp"c"r tgxkqwu" f {pco ke''uj qwrf gt''yguvkpi ''cr r ctcwu'']3_0' Qtki kpcm{ "dwkn/vq"uko wncvg"lqkpv"mkpgo cvkeu"qh" y g'u qwf gt 'lqkpv.'y g'UVCT/KX''pqy 'j cu'y g'' cdkrkv{ "\q"\guv"yi g"mkpgo cvkeu"qh'yi g"mpgg"lqkpv0' UVCT/KX"cpcn{| gulhqtegulcpf lmkpgo cvkeu" kpxqnxgf "kp"uj qwrf gt "cpf "mpgg"o qvkqp"vq" ko r tqxg'tgj cd'r tqyqeqnu'cpf "gxcnwcyg'uwti kecn" r tqegf wtgu0'UVCT/KX''wkrkt gu''ukz ''cewcvqtu''vq'' etgcvg'f {pco ke'o qvkqp''cv'y g'i ngpqj wo gtcn'qt'' r cvgmqhgo qtcn'lqkpv0Ecdngu''cvcej gf ''vq''o wueng'' vgpf qpu'kp''yj g''uj qwrf gt ''qt ''npgg''ctg''eqpvtqmgf ''d{ " y g'cewcvqtu'vq'etgcvg'o qvkqp'cv'y g'lqkpv0' J qy gxgt."cdqw'y tgg"{gctu"ci q"y g"UVCT/KX" eqo r wgt 'uvgr r gf 'hwpevkqpkpi 'cpf 't guwngf 'kp''pq'' eqpvtqn'qh'ý g'cewcvqtu0Kp'cffkkqp.'uqo g'qh'ý g' eqpvtqn'j ctf y ctg"cpf "uqhy ctg"y gtg"qwf cvgf " cpf "y gtg"y cu'dtqnpp"gs wkr o gpy'y cy'pggf gf " hlzgf 0'Vj ku'r tqlgev'r rcppgf "vq'tgguvcdrkuj "eqpvtqn" qh'y g''cewcyqtu'y ky ''pgy n{ 'kpuvcmgf 'j ctf y ctg'' cpf 'f gxgnur 'c'wugt/htkgpf n{ 'kpvgthceg'kp' NcdXKGYÎ 0

Kp"qtf gt"vq"ceeqo r nkuj "vj ku'i qcn"vj gtg"y cu"c" ugtkgu"qh"uvgr u"vj cv"pggf gf "vq"dg"vcmgp<

- 30' Kpuvcm'pgy 'j ctf y ctg''l'uqhy ctg
- 40' Wrfcvg'y kt/pi ''qh'j ctfy ctg''gpenquwtg
 50' Tgi ckp'o qvkqp''eqpvtqn'qh''cewcvqtu'' y tqwi j 'CET/Xkgy
- 70' Etgcvg''wugt''kpvgthceg''kp''NcdXKGY \hat{I}

Writcfgf'J ctfy ctg'bpf'Ugwwr <Kp"qtfgt"vq" i ckp"eqpvtqn"qh"y g"cewcvqtu"qpeg"ci ckp."y g" u{uwgo "tgs wktgf"j ctfy ctg"o qfkhecvkqpu0'Hktuv"c" REK8293G'FCS "ectf."y ktgf"vq"cp"CVK882/82" mcf"egm"qp"yjg"uj qwfgt"o qwpv"y cu"fktgevn{" kpuvcngf 'kpvq"yjg"eqo r wgt0Vjgp."c"pgy "Rctngt" CET"; 852"o qvkqp"eqpvtqngt"y cu"o qwpvgf" fktgevn{"kp"yjg"j ctfy ctg"gpenquvtg"vq"tgrnceg"yjg" qnf"dtgcnqwddqz0Vjg"o qvkqp"eqpvtqngt"y cu" y ktgf "xkc"48/r kp"ecdm"vq"ukz "Ctkgu"ugtxq"ftkxgu0 P gz v. 'pgy 'Rctngt 'RKQ 'o qf wgu'y gtg' kpuxcngf " hqt 'y g' kpr wu'cpf 'qwr wu'qh'y g''u { ugo 0'V j gug'' o qf wgu''eqppgev' q''y g''o q vlqp ''eqptqngt ''xkc'' ECP qr gp ''eqppgev kqp0'V j g''cpcmi ''kpr wu'htqo '' y g''ukz 'O NR/522/EQ''mcf ''egmu''*qpg''qp''gcej " cewcvqt +''y gtg''y gp''y ktgf ''y tqwi j ''ukz ''uki pcn'' eqpf kkqpgtu''kpvq ''y g''cpcmi ''kpr w'RKQ ''o qf wg0' C''47/r kp''o qf wg''y cu'cf f gf ''vq''y g'' j ctf y ctg''hqt'' y g''nko kv''uy kej gu''qh'y g''u { ugo 0'Hkpcm{ . 'pgy '' mcf ''egml'ecdngu''cpf ''c''pgy ''ho kv''uy kej ''y gtg'' kpuvcngf ''vq''tg rceg''r tgxkqwm{ ''dtqngp'' gs wkr o gpv0'Hki wtg'3' tj qy u''y g''wr f cvgf '' j ctf y ctg''gpemuwtg0

F gxgmr o gpv'qh'c 'Wugt/Ht lgpf n('Kovgt hceg'lp" NcdXKGY Î <Vj g'CET'', 852''o qwqp'' eqpytqmgt"eqo gu"y ky "c"uqhw ctg"r tqi tco "ecmgf" CET/Xkgy 0CET/Xkgy "cmqy u"hqt "wugt "kpr w" cpf "r tqxkf gu'nkxg'hggf dcem "uwej "cu'nqcf "egm" f cvc0Vj ku'uqhy ctg"cnuq"cmqy u'y g'wugt"vq"etgcvg" r tqi tco u'cpf "nqcf "yj go "qpvq"yj g'o qvkqp" eqpvtqmgt0'Vj ku'hgcwxtg'y km'dg'wkrk gf 'kp''y g'' eqf kpi 'qh'NcdXKGY Î 'hqt'y g'wugt kpvgthceg0' Gcej "eqo r qpgpv"*nqcf "egm'f cvc. "cewcvqt" o qxgo gpv."cewcvqt"ewttgpv'r qukkqp."gve0+"j cu"cp" cuuqekcvgf 'r ctco gvgt 'kp'CET/Xkgy 0 Kpeqtr qtcvkpi ''y gug''r ctco gygtu''kpvq''NcdXKGY \hat{I} " cmy u'hqt'o qpkqtkpi "cpf "eqpvtqmkpi "y g"gpvktg" UVCT/KX''u{uvgo 0'Vj g''ukz''r ctco gygtu''uj qy p''kp'' **H**i wt g'4'qdvckp''y g'ewttgpv'r qukkqp''qh'gcej " cewcyqt"htqo "CET/Xkgy "cpf "cmqy "vj g"wugt"vq" xkgy "vj g"r qukkqp"kp"NcdXKGY Î 0Wukpi "vj ku" r ctco gygt"o gy qf "hqt"o quy'cur gevu"qh'y g" eqf kpi ."c"wugt/ht kgpf n{ "kpvgthceg"y cu'f gxgmr gf " vq"qdvckp"eqo r ngvg"eqpvtqn'qh'yj g"cewcvqtu0'Y kyj " dwwqpu'f ktgevn{ "cxckrcdrg"qp"yj g"wugt "kpygthceg." y gtg'ku'pq'ugwr 'tgs wktgf 'kp'CET/Xkgy 'r tkqt'vq'' vguvkpi 0'Nkxg'hggf dcem'uwej "cu''y g"ewttgpv'nqcf " qp"gcej "cewcvqt"*czku+."yj g"ewttgpv'r qukkqp"qh" gcej "czku."cpf "y g"ewttgpv'xgmekv{ "qh"gcej "czku" ctg"cnuq"xkukdng"vq"vj g"vugt0"Uvcwuu"NGF u"ctg"cnuq" kpenxf gf. "cmqy kpi "hqt" uko r ng"gttqt" j cpf nkpi "cpf" czku'uvcwu'hggf dcem0Kp"cf f kkqp. 'y g'wugt 'j cu"

eqpvtqn'qxgt"cp{ 'eqo dkpcvkqp"qh'czgu'y kj " f kır mego gpv'qt 'hqteg"eqpvtqn0'Hqt"f kır mego gpv' eqpvtqn"y g'wugt 'uko r n{ "gpvgtu'c'r qukkqp'hqt" gcej "czku'y g{ 'y kıj 'vq'o qxg"cpf "enem'y g"o qxg" dwwqp0'Hqt 'hqteg"eqpvtqn 'hqteg'hggf dceni'nqr u" hqt"gcej "czku'y gtg'etgcvgf "cpf 'mcf gf "qpvq"y g" o qvkqp"eqpvtqmgt 'kp'CET/Xkgy 0'Cu'hct"cu" vguvkpi 'i qgu.'y g'wugt 'ci ckp'r kemi'y g"czku'qt 'czgu' wpf gt 'hqteg'eqpvtqn'f ghkpgu'y g'hqteg'ugv'r qkpv." cpf 'uvctwi'hqteg'eqpvtqn'qpeg'y g'mcf "egmi'j cxg" dggp" gtqgf 0'**Hi wt g'5'**tij qy u'y g'wugt/htkgpf n{ "kpythceg'y cv'y cu'f gxgmr gf 'kp'NcdXKGY Î 0

Ecrkdtcvkqp'qhUVCT/KX'U{ uvgo <' Vq ecnkdtcvg''y g'u{uvgo .''y g'f kur ncego gpv'' vtcpuf wegtu"cpf "mcf "egmu"o wuv'dg"uecngf " eqttgevn{0Vj g'f kur ncego gpv'vtcpuf wegtu'j cxg'c" ugv'705"o knko gvgtu'r gt'tgxqnwkqp'hqt''y g'uecng." uq'y ku'y cu'ugv'kp'NcdXKGY Î 0'Vq'uecng'y g'nqcf" egmu."j qy gxgt."o wnkr ng"uvgr u"ctg"tgs wktgf 0Kp" y g'j ctf y ctg'gpenquwtg. "gcej "uki pcn'eqpf kkqpgt" j cu'dcncpeg"cpf "i ckp"qhhugv'mpqdu'y cv'o wuv'dg" ugv'uq"yj cv'gcej "mcf "egm'tgcf u'xgt { "enqug"vq" | gtq" y ký "pq"ncf "cr r ngf 0Qpeg"ý gug"ctg"ugv"nqt "cm" ukz "uki pen'eqpf kkqpgtu. "e"ueeng"o wuv'dg"hqwpf "hqt" y g''ncf "egmu'kp''qtf gt''nqt''y g''ncf ''vq''dg''xkgy gf " kp''P gy vqpu.'tcy gt''y cp''xqnu0'Vq''hkpf ''y ku'uecng'' hcevqt"c"ur tkpi "uecng"y cu'wugf 0'Y gki j wi'y gtg" j wpi 'htqo ''y g'ur tkpi 'uecng'hqt'xcnkf cvkqp0'Vj gp." y g"cewcvqtu"y gtg"cwcej gf "vq"y g"ur tkpi "uecngu" cpf "o qxgf "vq"tgcej "nqcf u"kp"kpetgo gpvu"qh"y q" r qwpf u."cm'y g'y c{"wr "vq"hqtv{"r qwpf u0'Vj g" xqnxci g'y cu'tgeqtf gf "cv'gcej "kpetgo gpv0Vj g" xqnxci g'xu0r qwpf u'f cvc'y cu'r nqwgf "cpf "c'nkpgct" hkv'y cu'wugf ''vq'hkpf ''y g''unqr g0Qpeg''y ku''xqnv'r gt'' r qwpf 'uecng'y cu'qdvckpgf. 'kv'uko r n{ 'pggf gf 'vq'dg'' eqpxgtvgf "vq"xqnu'r gt "P gy vqp0'Vj ku'xcnvg"wtpgf " qwi'vq"dg"202348565"XIP "cpf "y cu'ugvikp"yj g" NcdXKGY Î 'eqf g0

Vguvipi 'cpf 'Xcuff cvkqp<Chxgt 'uecngu'y gtg" qdvckpgf 'cpf 'r tqi tco gf 'kp'NcdXKGY Î 'hqt'y g" f kur mego gpv'tcpuf wegtu'cpf ''nqcf ''egmu." xcuff cvkqp'f cvc'y cu'qdvckpgf ''q'cuuguu'y g" ceewtce{ ''qh'y g''u{urgo 0'Vq''yguv'y g'f kur mego gpv'' ceewtce{.'c'f ki kculecutr gt 'y cu'wugf ''q'o gcuvtg" wugt/ugv'f kurcpegu'hqt''gcej ''cewcvqt0Krku'' ko r qtvcpv'\q''pqvg'y cv'y g''o gcuvtgo gpv'y kj ''y g" ecutr gt ''y cu''cuugp'y kj qw'mpqy mf i g''qh'y g'' ur gekhgf ''cti gv'f kurcpeg''qh'y g''cewcvqt0Gcej '' cewcvqt ''y cu''- 1/'208''o kmlo gygtu'qh'y g''cti gv' f kır nego gp0'Vj g''ncf "egnileeng'y cu'xchf cvgf " wukpi 'ur tkpi 'uecng'tgcf kpi u''cpf "eqo r ctkpi ''gcej " tgcf kpi ''q''y g''crwch'nteg''kp''NcdXKGY Î 0' Ci ckp. 'y g''ur tkpi ''uecng''tgcf kpi ''y cu''cngp" dhpf n(''q''y g''cr r kgf ''nteg0Ukpeg''y g''ur tkpi " uecngu''wugf ''j cf ''j wo cp''gttqt''kp''y g''gcf kpi ''cpf '' y g''ncf ''egm1'ctg''ecr cdng''qh''ntegu''wr ''q'522'' r qwpf u ''y g''gttqt''qh'y g''ncf ''egm1'ku''j ki j gt''y cp'' y g''gttqt''qh'y g''f kur nego gpv'tcpuf wegtu0' J qy gxgt. "gxgp''y kj ''o qtg''uqwtegu''qh''gt'qt. ''y g'' ncf ''egm1'y gtg''- 1/'6'P gy 'qpu''qh'y g''cti gv''ncf 0

Cempqy ngf i o gpwk'Vj ku'r tqlgev'y cu" eqo r ngvgf 'y kj 'y g'j gn "cpf 'uwr r qtv'htqo ''lqg" O eHgttqp''qh'Etquutqcf u'Eqpuwnkpi .''y g" F gr ctvo gpv'qh'Qty qr cgf ke''Uwti gt { "cv'y g" Wpkxgtukk{ "qh'Rkwudwti j .''cpf ''y g'F gr ctvo gpv'qh'' Dkqgpi koggtkpi ''cv'y g''Wpkxgtukk{ "qh'Rkwudwti j 0

Tgłyt gpegu[×]]3_'F gdunk TG'gv'cn⁰C'' *Pgy 'F {pco ke 'Vginkpi 'Cr r ct cwu'Vq'' Uwf { 'I rgpqj wo gt crlLqkpv'O qvkqp*'L0' Dkqo gej cpkeu'3; ; 7='4: *9+=''. 8; /: 96



Hi wtg'3<J ctf y ctg'Gpenquwtg'Y ktkpi



His wtg'4<NcdXKGY Î 'Retco gygt'Eqf g

E STAR IV - Reborn	a Press a		1.4 million			
STOP	Enable Drives	Zero Position of All Axes	Home All Axes	Kill All Motion		Chris Como Trenton Gilstrap 2015
Muscle	Move / Jog Axis? Axis 0 Axis 1 Axis 2 Axis 3 Axis 3 Axis 4 Axis 5	Axis 0 0.024215 Axis 1 0.024856 Axis 2 0.03059; Axis 3 0.00637; Axis 4 0.003824 Axis 5 0.014021	Move To Position (mm) Axis 0 \bigcirc 0 Axis 1 \bigcirc 0 Axis 2 \bigcirc 0 Axis 3 \bigcirc 0 Axis 4 \bigcirc 0 Axis 4 \bigcirc 0 Axis 5 \bigcirc 0	Current Velocity (mm/s) Axis 0 0 Axis 1 0 Axis 2 0 Axis 3 0 Axis 3 0 Axis 4 0 Axis 5 0	Absolute? (T) Jog Forward?	Nove VEL Nove ACC Load Cell Scale (V/N)
ACR9630 Connected? Programs Loaded? Muscle	Force Control Axis? Axis 0 Axis 1 Axis 2 Axis 3 Axis 3 Axis 4 Axis 5	Zero Load CellsLoad On Axis (N)Axis 0Axis 10Axis 20Axis 30Axis 40.19323f Axis 50.386472	Start Force Control Force Setpoint (N) Axis 0 0 0 Axis 1 0 Axis 2 0 Axis 3 0 Axis 3 0 Axis 4 0 Axis 5 0	1 Force Control Threshold (N) Force Control Gain Axis 0 0.5 Axis 1 0.5 Axis 2 0.5 Axis 3 0.5 Axis 4 0.5 Axis 5 0.5	Axis 0 Axis 1 Axis 2 Ax Drive Enable Drive Fault Kill All Moves Kill All Motion Jog Active Currently Home Failed to Find Home	is 3 Axis 4 Axis 5

Hi wtg'5<Fgxgnprgf 'Wugt 'Køvgt hreg'kp'NcdXKGY Î

Cpcn(| kpi 'Eqo rtgudqp'Hqtegu'qh'KpvgtpcnHkzcvkqp'Ogyj qf u'hqt 'Vtcpuxgtu' Rt qz ko cnVj kt f 'Uecr j qkf 'Ht cewt gu

Uco kniF 0Rcygn². "P cyg"Vkgf gmgp⁴. "Nctu"O 0S xkenf. 'Tkej ctf 'G0F gdunk³. "Iqj p"Hqy ngt⁴"

³F gr ctvo gpv'qh'Dkqgpi kpggtkpi .'Wpkxgtukk{ "qh'Rkvudwti j .'Rkvudwti j .'RC.'Wpkygf 'Uvcvgu0 ⁴F gr ct vo gpv"qh"Qt y qr cgf le"Uvit gt {. "Wplx gt uls/{ "qh"Rkvud wti j ."Rkvud wti j ."RC. "Wplxgf "Uc yu0

Kovt of wevlop <' Kovgtpcn' hlzcvkop " wugf " cu" vtgcvo gpv' hqt" uecr j qkf " htcewstgu" j cu" kpetgcugf " y kj " cf xcpegu" kp" uwti kech' vgej pks vgu"]3_0' Rtqzko ch' r qng" uecr j qkf" htcewtgu" rtgugpv" c" enkplecn' ej cmgpi g" f wg" vg" y gkt" nqy gt" uweeguu" tcvg" y j gp" ecuv' ko o qdknk cvkqp" cpf" kpvgtpcn" hkzcvkqp" ctg" wknk{gf"]4_0' Kpvgtpcn' hkzcvkqp" y ký " j gcf rguu" eqo r tguukqp" uetgy u" *J ÉÜ+" r tqxkf gu" c" eqortguukxg" hqteg" cv' yjg" htcewytg" ukvg" wkwakt gf" vq" rtqo qvg" j gcnkpi 0' Fkhhgtgpegu" kp" i gqo gvtkecn' f guki p" dgw ggp" J EU" ngcf " vq" f khigt gpegu" kp" eqo r tguukqp" y cv" xct{" dcugf " qp" y g" nqecvkqp" qh" y g" htcewtg0' Cu" c" tguwn." y g" qdlgevkxg" qh" y ku" uwf {" ku" vq" cpcn{| g" eqortguukqp" hqtegu" dcugf " qp" y g" uetgy " v{rg" wkak gf" hqt" hkzcvkqp" cpf" yjg" nqecvkqp" qh" yjg" uko wncvgf" vtcpuxgtug'htcewtg0

O gvj qf u' Gki j v{/gki j v' *p?6" hqt" gcej " qh" y g" 33" uko wncwgf " htcewitg " nqecwlqpu " cpf " hqt " gcej " qh 4" uetgy u+" r qn{ wtgyj cpg" hqco " dnqemu" *Ucy dqpg." Xcuj qp" Kncpf." Y C." WUC+" qh' 37" r qwpf u'' r gt" ewdle" hqqv" f gpukv{ " y gtg" ew' vq" 4: 0 0 " z" 320 0 " z" 320 0 " vq" tgrtgugpv' c" uecrj qkf 0' C" htcewtg" y cu" uko wrcvgf " y ky " c" j qtk qpvcnlvtcpuxgtug" eww" crqpi " y g" 4: o o " rgpi y " qh" yj g" drqen0' Vj g" rqecvkqp" qh' yj g" j qtk qpvcn' ew' xctkgf " htqo "40 o "htqo "y g" vqr "gf i g" qh" y g" dnqem' y tqwi j " 440 o ." kpetgo gpvkpi " d{" 400 " hqt" gcej " r quukdng" htcewstg" ukg0' C" J EU' y cu" kpugtvgf " kp" y g" egpvgt" qh" yj g"uecrj qkf "uq" yj cv'eqo rtguukqp" y qwrf "qeewt" cv'' yj g" ukowncvgf "htcewutg" ukwg0'Vjg" hwm("yitgcfgf "4600" Cewtcm" Üccpfctf" J EÜ" *Cewo gf." J kmudqtq." QT." WUC+" cpf " fqwdrg" y tgcf gf " 460 o " Hzqu" J $\bar{E}\bar{U}$ *Ütt{mgt." Mcncoc|qq." OK" WÜC+" ygtg" kpugtvgf" ceeqtf kpi " vq" o cpwhcewstgtøu" r tqvqeqn' d{" c" hgnqy uj kr "

vtckpgf 'j cpf 'uwti gqp0

Vj g" co qwpv" qh" eqo r tguukqp" qeewttkpi " cv" yj g" htcewtg" ukg" y cu" o gcuwtgf " y kj " ugpuqtu" r ncegf " kp" dgw ggp" twddgt" cpf " uvckprguu" uvggn' *Hki wtg" 3+0' Vj g" HrgzkHqteg" Hqteg"Ugpuqtu



Hk wtg'3<Gzrgt to gpychligwyr 'y j gtg'ij g'ilk gu'dhiij g'iar 'dmenicpf " dqwqo 'dıqeniy gtg'xct lgf '\q'ilo wncvg'f kligt gpv'\t cpuxgt ug'lit cevvt g njecvkipu

*Vgmuecp" Kpe." Dquvqp." OC." WUC+" o gcuvtgf" y g" hqteg" yj cv" y cu" crrnkgf " qxgt" yj g" rtguuwtg" ugpukskxg" kpmkpi " necvgf " y kj kp" c" ukrx gt" ugpukpi " ct gc0 Uckprguu" uvggn" r ncvgu" r tqxkf gf " tki kf " uvvr r qtv" vq" yj g" u{ uvgo ." cpf " y g" uvckpnguu" uvggn" f kueu" cmqy gf " hqt " hqteg" vq" dg" vtcpuhgttgf" fktgevn{" qxgt" y g" ugpukpi " ctgc" qh' y g" ugpuqtu0' Vjg" twddgt" rtqxkfgf" yjg" pgeguuct{" f ghqto cvkqp" tgs vktgf" hqt" ceewtce {" htqo " y g" HrgzkHqteg" ugpuqtu0' Vj g" ugpuqtu." twddgt." cpf " o gvcn' tguwngf " kp" c" uko wrcvgf " htcewstg" y kempguu" qh' 40760 o 0' Kp" cffkkkqp." w q" M/y ktgu" y gtg" r ncegf " ctqwpf " y g" egpvgt" qh'' yj g" uetgy " vq" r tgxgpv" tqvcvkqp" qh'' yj g" u{ uvgo " y j gp" y g" uetgy " y cu" kpugt vgf " qxgt" y g" egpvtch' i vkf g"

yktg0

Vj g" J EU" y cu" kpugt vgf " kpvq" yj g" hqco " dnqem' wpvkn' yj g" uetgy "j gcf "y cu" hnwij "y kj " y g" hqco " drqem0' Qpeg" y g" uetgy " y cu" kpugtvgf." GNH "Uqhy ctg" *Vgmuecp" Kpe." Dquvqp." O C." WUC+" y cu" wktk gf " vq" tgeqtf " y g" hqteg" o gcuwtgf " kp " y g" ugpuqtu0' C" r cktgf " v vguv' cpf " w q/ y c{ " cpcn{uku" qh" xctkcpeg" *CPQXC+" y gtg" r gthqto gf "

Tguwnu'' Vj gtg" y cu" c" uki pkhecpv' ghigev' qh" htcewtg" mecvkqp" qp" eqortguukqp" *r>02223+." y ky " c" o czko wo "fkhnigtgpeg" kp" eqortguukqp" qeewttkpi" dgw ggp" y g" hzcvgf " htcewtg" nqecvgf " 440 o " htqo " y g" vqr " gf i g" qh" y g" vqr " drqeni' i gpgtcvkpi " 33063' " qh" y g" eqortguukqp" i gpgtcvgf " d{" c" hkzcvgf " htcewtg" nqecvgf " 80 o "htqo "yj g" vqr "gf i g" qh" yj g" vqr "drqem0' Vj gtg" y cu" cnuq" c" uki pkhkecpv" fkhhgtgpeg" kp" yjg" eqortguukqp" i gpgtcvgf " dgw ggp" y g" Ut { mgt " cpf " Cewtcm' uetgy u" cv' egtvckp" htcewetg" mecvkqpu0' Hqt" c" htcewetg" mecvgf" 40 o "htqo "yj g" vqr "gf i g" qh" yj g" vqr "dnqem" yj g" Uxt { mgt " uetgy "igpgtcvgf "ukipkhkecpvn{"oqtg"eqortguukqp" *r >02223+" yj cp" yj g" Cewtcm' uetgy " y kyj " pgctn{" ¢5085" vko gu" o qtg" eqo r tguukqp" *Vcdng" 3+0' Vjg" Cewtcm' uetgy " i gpgtcvgf " uki pkhkecpvn{" i tgcvgt " eqo r tguukqp" yi cp" Üvt { mgt" uetgy " y kyi " c" 340 o " vqr " drqem' hkzcvkqp" r > 0223 + cpf c'3: 0 o vqr dnqemhlzcvlqp r > 0223 + 0

vq" cuuguu" f khigt gpegu" dgwy ggp" y g" hkz cvkqp" o gy qf u" cv"

ukowncvgf "htcewytg"

rqecvkqpu0'

gcej "

qh" yig"

Uki pkhkecpeg'y cu'ugv'cv'r >20270

Top Block Length			
(mm)	Acutrak	Stryker	
	Average	Average	
	Compression (N)	Compression (N)	
2*	6.3 ± 1.16	22.9 ± 3.33	
4	29.1 ± 1.96	33.2 ± 3.70	
6	42.9 ± 2.37	44.8 ± 3.08	
8	40.3 <u>+</u> 3.78	40.7 <u>±</u> 1.19	
10	44.4 ± 3.14	37.2 ± 2.82	
12*	37.4 ± 2.24	23.7 ± 2.27	
14	36.1 ± 2.71	33.3 ± 3.11	
16	32.2 ± 5.13	27.2 ± 8.28	
18*	15.6 ± 2.17	6.8 ± 2.23	
20	8.7 ± 0.54	6.5 ± 5.12	
22	6.1 ± 1.12	3.9 ± 0.86	

 $\label{eq:Vcdrg} Vcdrg'3{<}Fkrre{u'cxgtcig'eqortgunkqp'i gpgtcvgf'cv'gcej'ikowrvgf'' ht cewtg'iqecvkqp''sogcp'ÕUF=!; r>0223+$

F kuewuukup<' Vj ku" uwuf {" gzco kpgf" y g" ghigewu" qh' uetgy " v{rg" cpf" vtcpuxgtug" htcewetg" mecvkqp" qp" eqo rtguukqp" htteg" i gpgtcvgf " cv" y g" htcewetg" uksg0' Vj g" tguwnu" qh" y ku" uwuf {" uj qy " yj cv' y gtg" ku" c" f khigtgpeg" kp" eqo rtguukqp" htteg" i gpgtcvgf " dcugf " qp" y g" mecvkqp" qh' y g" htcewetg0' Qwt" f cvc" f qgu" pqv" uwr qtv" rtgxkqwu" nkystcwstg" qp" y g" f kuxtkdwskqp" qh" eqo r tguukqp" hqteg" dcugf "qp" y g" htcewtg" nqecvkqp" hqt" y g" Cewtcm' 4" J EU"]5_0' Htqo " qwt" f cvc." y g" Cewtcm' 4" i gpgtcvgu" i tgcvgt" eqo r tguukqp" hqteg" hqt" y g" 80 o " y tqwi j " 320 o " vqr " dnqem" ngpi yi u" cu" qrrqugf " vq" yi g" rtgxkqwun{" hqwpf" dgml ewtxg" fkuxtkdwkqp0' Kp" cffkkqp." qwt" fcvc" jcu" uj qy p" uki pkhecpv' f khhgtgpegu" dgw ggp" yj g" Cewtcm' J EU" cpf " y g" Ut { ngt " Hzqu" J EU" cv" egtvckp" nqecvkqpu0' i gpgtcvgf " ukipkhkecpvn{"itgcvgt" Utt { mgt " Vj g" eqortguukqp" cv' yj g" 40 o " vqr " dnqem' ngpi yj ." y j kej " uko wrcvgf " c" rtqzko cn' rqng" htcewtg " uwti kecm{" tgrcktgf " y tqwi j " y g" fqtucn' crrtqcej 0' Vj g" Cewtcm' uetgy " i gpgtcvgf " uki pkhecpvn{ " i tgcvgt " eqo r tguukqp" hqt" egtvchp" htcewstgu" y cv' eqwnf " dg" tgr chtgf " y tqwi j " yj g" xqrct" uwti kech' vgej pks wg" rqecvgf " cv' vj g" y ckuv' qh' y g" uecrj qkf 0' Qwt" f cvc" uwr q t u" r t gx kq wu" r kgt c wt g" uj qy kpi " yj g" f khhgtgpeg" kp" eqo r tguukqp" dgw ggp" yj g" Ut { mgt" J EU' cpf " Cewtcm' J EU' hqt" htcewtgu'' y cv' qeewt" gzcewa{ " cv' yj g" y ckuv' *340 o " vqr " drqem' ngpi yj +"]6_0

Ui plthecpeg<'Vj g"tguwnu" qh" y ku" uwf { " y km"r tqxkf g"

uwti gqpu" y ky " wughwn' kphqto cvkqp" y cv' y km' j gn " y go "

kp" f gvgto kpkpi " y g" qr vko cn' hkzcvkqp" vgej pks wg" hqt" c" uecrj qkf " hicewstg" dcugf " qp" y g" mecvkqp" qh' y g" hicewstg" y tqwi j " gkj gt" y g" xqnct" qt" f qtucn' crrtqcej 0' Vj g" Ut { mgt" uetgy " i gpgtcvgu" i tgcvgt" eqo r tguukqp" hqt" hicewstgu" mecvgf " cv" y g" rtqzko cn' r qng" qh' y g" uecrj qkf." y j kng" y g" Cewstcn' uetgy " i gpgtcvgu" i tgcvgt" eqo r tguukqp" hqt" hicewstgu" mecvgf " cv" y g" uecrj qkf "

htqo "

y g"

Cempqy ngf i go gpviK' Uwrrqtv'

F gr ctvo gpv'qh'Qtyj qr cgf ke 'Uwti gt {

Tghgt gpegu≺

y ckn0

]3_" Tj go tgx" U." Qqygu" F." Dggtgu" H." Og{regtu" U." Uej kr r gt" K." õĒwttgpv" o gyj qf u" qh' f kei pquku" cpf " vtgcvo gpv" qh'' uecr j qkf " htcewtguö" *Kpygt pc vkqpc n' Lqwt pc n' qh' Go gt i gpe { " O gf kekpg.*" 4233"]4_" Vtwo drg" O." Xq" F." õRtqzko cn' Rqrg" Uecr j qkf " Htcewtgu" cpf " P qpwpkqpö" *L" qh' y g " Co gt kecp " Uqekgv " hqt " Uwt i gt { " qh' y g " J cpf* ." 4223." 377/393"]5_" Uwi cyj cp" J ." Mkr cvtkem' O." Lq {eg" V." J cttkuqp" L" õC" dkqo gej cpkecn' uwf { " qp" xctkcvkqp" qh" eqo r tguukxg" hqteg" crupi " y g " Cewtcm' 4" uetgy ö" *Kplwt { " Kpv0' L0' E ct g " Kplwt gf* ." 4234." 427/42: "]6_" Cuuctk' U." F ctxkuj " M." Ku{cu" C." õDkqo gej cpkecn' uetgy uö"*Kplwt { "Kpv0' L0' E ct g " Kplwt gf* ."4234."337; /3387

Ngctpkpi 'vj g'Uvcpf ctf k gf 'Rkxqv'Uj khv'Vguv'd{ 'Wug'qh'Rcuukxg'Gf wecvkqp'Vqqnı

 $Lcuqp'RO \ gvpkenk^3$. 'Cokt'Cvc'Tcj pgo ck/C | ct³. 'Cwftc'O O'Ucy {gt³. 'Htgffkg'J O'Hw³. 'Tkej ctf 'GOF gdunk³. ' Xqmgt'O wucj n³

³Qtvj qr cgf ke Tqdqvkeu Ncdqtcvqt {. "F gr ctvo gpw" qh Qtvj qr cgf ke Uvti gt { "cpf 'Dkqgpi kpggt kpi . "Wpkxgtukx{ " qh'Rkvudwti j .'Rkvudwti j .'RC.'Wpkgf 'Uvcvgu

KP VTQF WEVKQP<' Vj g'r kxqv'uj khv'vguv'ku'vj g o quv" ur gekhle" f kci pquvke" enkplecn" vguv" hqt" cpvgtkqt" etwelcvg" nki co gpv' *CEN+" kplwt { " cpf " tgrcvgu" vq" r cvkgpv' ucvkuhcevkqp" cpf " uvcdkrkv{ " qweqo gu"]3_0' C" 4F " uko r ng" ko ci g" cpcn{uku" o gyj qf " j cu" dggp" ko r ngo gpvgf " qp" c" vcdngv" eqo r wgt "vq" s wcp vkh{ "y g" vt cpunc vkqp "qh' y g" ncvgtcn' mpgg" eqo r ctvo gpv' f wtkpi " y g" r kxqv' uj khv' vguv." y ky "y g"iqcn'qh" guvcdrkuj kpi "c"tgr tqf wekdrg." s wcp vkxc vkxg" o gcuwt go gp v' u { uvgo " cmqy kpi " hqt " cp" qdlgevkxg" gxcnvcvkqp" qh' vguv' tguvnu"]4_0' J qy gxgt." y ku" s wcpvkhkecvkqp" ku" f gr gpf gpv" qdlgevkxg" wrqp" uvcpfctfk{cvkqp" qh" yjg" enkpkecn' rkxqv' ujkhv' vguv' tgs wktgf "vq" i gpgtcvg" yj g"vtcpurcvkqp" qh' yj g"rcvgtcn' npgg" eqorctvo gpv0' Vj gtghqtg." y g" qdlgevkxg" qh" y ku" uwuf { " y cu" vq" f gygto kpg" vj g" cdkrkv{ " qh" uvudlgevu" qh" fkhhġtgpv" umkm" ngxgnu" vq" ngctp" cpf" rgthqto" vgp" uvcpf ctf k gf " r kxqv" uj khv" vguvu"]5." 6_." eqo r ctgf " vq" cp" gzrgtkgpegf "qtyjqrcgfke" uwtigqp "*iqnf "uvcpfctf+0'KV" y cu" j {r qy gult gf " y cv" uwdlgevu" y qwrf " r tqf weg" mkpgocvkeu" ukoknct" vq" yjg" iqnf" uvcpfctf0' Hwtyj gto qtg." chygt" y cvej kpi " cp" kpuvtwevkqpcn' xkf gq." vtkcnu" 8/32" y qwrf "f khhgt" nguu" htqo "y g" i qnf "uvcpf ctf" eqo r ctgf " vq" vtkcnu" 3/7" qh" vj g" uvcpf ctf k gf " r kxqv" uj khv" vguvO

O GVJ QFUK' Kpurkwakqpcn'tgxkgy 'dqctf 'crrtqxcn y cu" qdvckpgf " hqt" y g" wug" qh' j wo cp" r ctvkekr cpvu." y ky " kphqto gf "eqpugpv" qh' gcej "rctvkekrcpv" qdvckpgf "rtkqt" vq" vguvkpi 0' Vy q" mpggu" htqo " c" y j qng" nqy gt" gzvtgo kv{" ecf cxgt" *ci g" 72" {gctu+" y gtg" uvqtgf " cv" /42ÅE" cpf" y cy gf " cv' tqqo " vgo r gtcwtg" hqt " 6: " j qwtu" dghqtg" vguvkpi 0' Vjg" CEN' y cu'' vtcpugevgf " cpf " c" o gfkcn' o gpkugevqo {" y cu" r gthqto gf " qp" qpg" mpgg" y j krg" y g" qyjgt" mpgg" y cu" nghv" kpvcev0' Gngevtqo ci pgvke" *GO +" ugpuqtu" y gtg" hkzgf" vq" y g" kplwtgf" mpgg" vq" tgeqtf" mkpgo cvkeu" f wtkpi "r kxqv" uj khv" vguvkpi 0' I qrf "uvcpf ctf" mpgg" mkpgo cvkeu" cpf " vtcpuncvkqp" qh' y g" ncvgtcn' mpgg" eqorctvo gpv" y cu" tgeqtf gf "htqo " cp" gzrgtkgpegf " uwtigqp"rtkqt"vq"vguvkpi0'Chygt"ycvejkpi"c"wyq/ o kpwg" kpuvt we wapen' xkf gq" qp" y g" uvepf et f k gf "r kxqv' uj khv" vguv." ukzvggp" uvdlgevu" *p"?" 38="5" qt yj qr cgf ke" uwti gqpu." 4" ur qt u" o gf kekpg" hgmqy u." 6" tgukf gpvu." 5" cyj ngvke" vtckpgtu" cpf " 6" o gf kech' uwwf gpvu+" r gthqto gf " vgp" vtkcnu" qh' y g" uvcpf ctf k gf " r kxqv' uj khv' vguv' qp" dqyj " kplwtgf " cpf " eqpvtqn' mpggu0' Mpgg " mkpgo cvkeu" y cu" ecr wtgf " wukpi " y g" ugpuqtu" qh" cp" grgevtqo ci pgvke" vtcenkpi " u{uvgo " *P guv' qh' Dkt f u." Cuegpukqp" Vgej pqnqi {+" hkzgf " vq" vjg" hgo wt " cpf " vkdkc" cu" rtgxkqwun{" tgrqtvgf"]7_0' Mpgg" hngzkqp" cping." kpvgtpcnlgzvgtpcn' tqvcvkqp." cpf "xctwulxcn wu" xcnwgu" y gtg" f gvgto kpgf" f wtkpi" y g" crrnkgf" r kxqv' uj khv' vguv0' Vj g" 4F " uko r ng" ko ci g" cpcn{uku" o gvj qf " y cu" wugf " vq" s wcpvkh{" cpvgtkqt" vtcpuncvkqp" qh' y g" ncvgtcn' mpgg" eqorctvo gpv" wukpi " c" vcdngv" eqorwgt " cpf " ewuvqo " uqhy ctg" cu" rtgxkqwun{" tgr qtvgf"]4_" Vj gug" o gcuwtgo gpvu" y gtg" o cf g" hqt" cm' ukzvggp" uwdlgevu." vgp" vtkcnu" gcej ." y j kng" mpgg" mkpgo cvkeu" y cu" eqmgevgf " hqt" ugxgp" qh" y g" uvdlgevu0' Qpg/uco r ng" v/vguvu" y gtg" vugf " vq" eqo r ctg" tgeqtf gf " o qvkqpu0' Uki pkhlecpeg" y cu" ugv"

cv'r>20270

TGUWNVUK' Qxgtcm" y g" cpvgtkqt" vtcpurcvkqp" qh" y g" ncvgtcn" npgg" eqo r ctvo gpv" y cu" uki pkhkecpvn{" uo cmgt" yj cp" yj g" i qnf " uvcpf ctf " xcnwgu" hqt " dqy " ukcnu" 3/7" cpf " 8/32" kp" yi g" kplwtgf " mpgg" *r>2027." Vcdrg" 3+0' Vj g" cpvgtkqt" vtcpurcvkqp" qh' vj g" rcvgtcn' mpgg" eqo r ctvo gpv' hqt" vkcnu" 3/7" cpf " 8/32" f getgcugf." f kxgti kpi " hcty gt" htqo "iqnf "uvcpfctf "xcnwgu0' Pq"uvcvkuvkecm{" uki pkhecpv" fkhegtgpeg" kp" cpvgtkqt" vtcpurcvkqp" qh" y g" ncvgtcn' mpgg" eqorctvo gpv' y cu' qdugtxgf " kp " y g" eqpvtqn" mpgg" hqt" vtkcnu" 3/7" pqt" 8/32" y j gp" eqo r ctgf " vq" iqnf" uvcpfctf" xcnwgu." y ky " kortqxgo gpv" kp" fkhgtgpeg" htqo " i qnf " uvcpf ctf " xcnwgu" pqvgf 0' C" uvcvkuvkecm{ "uki pkhkecpv" f khhgtgpegu" kp" yj g" vqvcn" tcpi g" qh" hrgzkqp" fwtkpi " y g" r kxqv" uj khv" vguv" cpf " cno quv" fqwdng" y g" vqvcn' tcpi g" qh'' kpvgtpcn'' tqvcvkqp" y gtg" qdugtxgf " y j gp" eqo r ctgf " vq" i qrf " uvcpf ctf " *r " >2027." Vcdrg" 4+0' P q" uki pkhkecpv" f khhgtgpeg" y cu" qdugtxgf " kp" crrnkgf "tcpi g"qh'xctwulxcni wu'tqvcvkqp"*r "? '2087+0

FKEWUKOP<' Vj ku'uwf { "gzco kpgf ''y g"cdktkv{ qh" r ctvkekr cpvu" vq" ngctp" yj g" uvcpf ctf k gf " r kxqv" uj khv" vguv." xkc" cpcn{uku" qh" mpgg" mkpgo cvkeu" cpf " cpvgtkqt" vtcpuncvkqp" qh' yjg" ncvgtcn' mpgg" eqorctvo gpv' eqorctgf "vq" c" i qnf "uvcpfctf0' Y j kng" uko knct "vq" yj g" iqnf "uvcpfctf "kp" yjg" kpvcev" mpgg." uvdlgevu"

fgo qpuxtcvgf "fkhhkewnv{"tgrnkecvkpi "y g"mpgg" o qvkqp" xcnwgu" tgrtgugpvcvkxg" qh" c" uvcpfctfk;gf" rkxqv' ujkhv' vguv." cpf " cp" kpcdktkv{" vq" r tqf weg" cpvgtkqt" vtcpurcvkqp" qh" y g" revgten" mpgg" eqo r etvo gpv" eqo r etcdrg" vq" i qrf " uvcpf ctf " xcnwgu" qp" cp" kplwtgf " mpgg" gxgp" chwgt" cp" kpuvtwevkqpcn' xkfgq0' Vgp" vtkcnu" y gtg" kpuvhhkekgpv' kp" cmqy kpi " yj g" uwdlgevu" vq" ngctp" cpf " fqewo gpv" r gthqto cpeg" ko r tqxgo gpv" qp" y g" kplwtgf " mpgg" fkurtqxkpi" yig" j{rqyiguku" wpfgt" uwwf{0' Hwww.tg" uwuf kgu" y km' cuuguu" r cuukxg" cpf " cevkxg" kpuvt wevkqpcn' vqqnu." c" mpgg" uko wncvqt" cu" y gml cu" kpf kxkf wcnkf gf" hggf dcem' cpf " etksks wg" qh'' vgej pks wg" vq" f gx gnqr " vj g" j cpf/g{g'unkm'\q'r gthqto '\y ku'enkplecn'gzco 0

UN PHIECPEC' Vj ku'uwuf { 'r tqxkf gu'wughwn kphqtocvkqp" vq" uwtigqpu" cpf" qyigt" enkpkekcpu" tgi ctf k
pi " y g" cdktk
{" vq" ngctp" y g" uvcpf ctf k gf " r kxqv" ujkhw" vguv." wukpi "kpuvtwevkqpcn" xkfgq" cpf "rcrgt" kpuvt wevkqpu'y kj qwitgegkx kpi 'kpf kx kf wcn'hggf dcemiqt

VCDNGU<

Vcdrg"3					
Mpgg	Vtkcni	Uwdlgewu" *o o +	I qrf" Uccpf ctf" *o o +	Cduqnwg" Fkhgtgpeg" *o o +	R/xcmvg'' *r '>2@7+
Kølwtgf	3/7	502	· 06	706	r ''>''20223
	8/32	40	. w	708	r '>20223
Eqpvtqn	3/7	307	300	205	r "? "202; 4
	8/32	308	50	204	r "? "20149

Vcdng'4<"Mipgg'mipgo cvkeu'f wtkpi 'uvcpf ctfkj gf 'r kxqv'uj kin√'yguv'%o gcp'%UF ++					
Tcpi g"qh'O qvkqp	I qnf "Ucpf ctf " *UF +	Uwdlgewu" *UF +	Fkhngtgpeg" *fgi0+	R/xcnwg" *r '>2@7+	
C+"Hngzkqp"*fgi0+	8608''*408+	770 '*708+	:0	r "? "20238	
Ď+'Kpvgtpcn'tqvcvkqp'*f gi 0+	66 B' *4 Q +	450 2'™909 +	430B	r "? "20223	
E+'Xcni wu'*fgi 0+	3703"*205+	3406"*3304+	409	r "? "20872	

VCDNGU<

CEMPQY NGFI ĞOGPVUK' Vjg" igpgtqwu" uwrrqtv" qh" Vjg" Y cmceg" JO' Eqwngt" Hqwpf cwqp" cpf" Wpkxgtukv{ " qh" Rkvudwti j " F gr ct vo gpv" qh" Qt y qr cgf ke" Uwti gt { 'ku'i tcvghwm{ 'cempqy ngf i gf 0

I tqqf "gv"cn0L'Dkqo gej 'Gpi '3;:5

TGHGT GP E GU[']]3_" C { gpk" gv" cn0' MUUVC " 4234"]4_" J quj kpq" gv" cn0' MUUVC" 4235"]5_" J quj kpq" gv" cn0' MUUVC" 4234"]6_" O wucj n'' gv'' cn0' MUUVC" 4234"]7_"

etksks wg"qh'vgej pks wg0

Uwthceg'Uttclp'lp'tjg'CpwgtqncwgtcnEcruwug'qh'tjg'Mpgg

Ugr j cpkg"N0Ugz vqp3. 'F cpkgnI wgp y gt3.4. 'Mgxkp'O 0Dgm3. 'Ugdcuvkcp"Ktettel exen3. 'C vc'C0T cj pgo ck/C| ct3. 'Htgffkg" J 0'Hw³. 'Xqmgt 'O wucj n³. 'Tkej ctf 'G0F gdunk³

³Qty qr gf le "Tqdqvleu"Ncdqtcvqt {. 'F gr ctvo gpw"qh"Qty qr gf le "Uwti gt { "cpf "Dlqgpi lpggtlpi . "Wplxgtulx{ "qh" Rkvudwti j .'Rkvudwti j .'Rgppu{ nxcpkc.'WUC ⁴Vtcwo c'F gr ctvo gpv.'J cppqxgt'O gf kech'Uej qqn'*O J J +'J cppqxgt.'I gto cp{

Kpvt qf wevkqp<'' Mpgg" kplwtkgu" ctg" qpg" qh" y g" o quv" eqo o qp" tgcuqpu" hqt" rj {ukekcp" crrqkpvo gpvu0' Vjg" o quv" eqo o qpn{" kplwtgf" nki co gpv" kp" y g" mpgg" tgs wktkpi "uwti gt { "ku" yj g" cpvgtkqt" etwekcvg" nki co gpv" *ČEN+"]3_0' ČEN" tgeqputtwevkqp" ku" y g" ukzy " o quv" eqo o qp" qt y qr gf ke" uwti kecn" r tqegf wtg" kp" y g" WU." y kj " cp" guvko cvgf " 372.222" CEN" tgeqpuvt vevkqpu" r gthqto gf " cppwcm{ "]4_0' J qy gxgt." kplwtkgu" qh' y g" cpvgtqncvgtcn" ecruwng" ctg" qhygp" wpfgt" fkci pqugf " kp" eqplwpevkqp" vq" oqtg" eqo oqp" CEN" rtqegf wtgu0 Wpf gt" f kci pquku" qh' cpvgtqrcvgtcn' ecr uwrg" kplwtkgu" ecp" ngcf " vq" f getgcugf " tqvcvkqpcn' uvcdkrkv{ " qh' y g" npgg" cpf " gctn{" cty tkku0' P qto cn' uvtwewtg" cpf " hwpevkqp" qh' y g" mpgg" y cu" tguvqtgf" kp" qpn{" 59' " qh" y g" r cvkgpvu" wpf gti qkpi 'CEN'tgeqpuxtwevkqp']5_0

Uki pkhkecpv' enkpkecn' kpygtguv' gzkuvu'' kp'' cpygtqncygtcn' ecruwrg/kplwtkgu" y ky " cpwgtkqt" etwekcwg" nki co gpv' *CEN+/fghkekgpv" mpggu" cpf "rqvgpvkcn" uwtikecn" vtgcvo gpv" qh" y g" ecr uwng" cv" y g" vko g" qh" CEN" uwti gt {"]6_0' Mpqy ngf i g" qh" yi g" hwpevkqp" qh" yi g" cpvgtqncvgtcn" ecr uwng" ecp" ngcf " vq" f gx gnqr o gpv" qh" cp" kplwt { " o qf gn" cpf " o qtg" kphqto gf " ej qkegu" qh' tgr ckt0' Tgr ckt " qh" y g" cpvgtqncvgtcn" ecruwrg" eqwnf " kpetgcug" CEN" uwti gt{" uweeguu0' Vj g" r wtr qug" qh' yj ku" uwuf { " y cu" vq" f gvgto kpg" y g" uwtheeg" uvtekp" qh" y g" epvgtqnevgten' eer uwng" kp" tgur qpug" vq" o wnkr ng" nqcf kpi " eqpf kkqpu" kp" y g" CEN" kpvcev" cpf "f ghkekgpv" mpgg" f wtkpi "52Å" 82Å' cpf "; 2Å' qh' hrgzkqp0' KV' y cu" j {r qy guk gf " y cv' y g" i tgcvguv' uwthceg" utckp" kp" y g" cpvgtqrcvgtcn' ecr uwrg" y km' dg" hqwpf " cv' c" ; 2/f gi tgg" hgz kqp" cpi ng" y kj " c" eqo dkpgf " kpvgtpcn" tqvcvkqp"vqtsvg"cpf "cpvgtkqt"vkdkcninqcf0

Ogyj qf u≮"Uz "htguj "htq|gp" ecf cxgtke" mpggu" *o gcp" ci g" 7509" {gctu." tcpi g" 68/7; " {gctu+" y gtg" f kuugevgf " wpvkn' vjg'' cpvgtqncvgtcn' ecruwrg'' y cu'' engctn{ "xkukdrg0' Hqtv{ "drcem' o ctngtu" y gtg" r rcegf " qp" y g" cpvgtqrcvgtcn" ecruwrg" kp" c" 7" z" : " i tkf " dgi kppkpi " htqo " I gtf {øu"

wdgteng" r quvgt kqtn{" vq" y g" NEN" kpugt vkqp" cpf " htqo " yj g" NËN" kpugt kqp" uwr gt kqtn{ " vq" yj g" NËN" qt ki kp0' Vj g" ur geko gpu" y gtg" y gp" nqcf gf " wukpi " c" tqdqvke" vguvkpi " u{uvgo " *O LV" O qf gn' HTU4232." Éj kpq." Lcr cp+0' Vj g" hgo wt" y cu" tki kf n{ "hkz gf "t grcvkx g" vq" y g" rqy gt" r rcvg" qh" yj g" tqdqvke" vguvkpi " u{uvgo " cpf " yj g" vkdkc" y cu" cwcej gf " vq" yj g" wrrgt" gpf " rncvg" qh" yj g" tqdqvke" o cpkrwncvqt" y tqwi j "c" 8/f gi tgg/qh/htggf qo 'wpkxgtucn hqteglo qo gpv" ugpuqt" *WHU." CVK F gnc" KR82" *UK882/ 82+." Cr gz." P E+0' Vj g" tqdqv" y cu" wugf " vq" cr r n{ " mqcf u" vq" vj g" mpgg" cv" 5" mgzkqp" cpi ngu" cpf " c" FOCU" 9" O qvkqp" Ecr wtg" U{uvgo " *Ur kec" Vgej pqrqi {" Eqtrqtcvkqp." J ckmw." J K+" y cu" wktk{ gf " vq" vtcem" o qvkqp" qh" y g" o ctngtu" cwcej gf " vq" y g" uwthceg" qh" y g" ecr uwrg0' Vj g" mcfu" y gtg< Cpvgtkqt" Vkdkcn' Nqcf." Eqo dkpgf" Cpvgtkqt" Vkdkcn' Nqcf" cpf " Kpvgtpcn' Tqvcvkqp" Vqts wg." Gzvgtpcn' Tqvcvkqp'' Vqts wg." Eqo dkpgf '' Gzvgtpcn' Tqvcvkqp" Vqtsvg" y kj "Xctvu" Vqtsvg." Kpvgtpcn' Tqvcvkqp" Vqtswg." Eqo dkpgf "Kovgtpcn' Tqvcvkqp" vqtswg" y kj " Xcni wu" Vqts wg." Rquvgt kqt "Vkdkcn" Nqcf." Eqo dkpgf "Rquvgtkqt "Vkdkcn" Nqcf "y kj "Gzvgtpcn" Tqvcvkqp" Vqts wg." Xcni wu" Vqts wg." cpf " Xctwu" Vqts wg0' Vj g" vgp" rqcf kpi " eqpf kkqpu" y gtg" cr r rkgf " cv" 52Å" 82Å" cpf"; 2Å' qh' mpgg" mgzkqp" hqt" y g" kpvcev' cpf " CEN"

f ghlelgpv'mpgg0

Rgcm' o czko wo "rtkpekrcn' uvtckp" y cu' eqo rwgf "d{" eqo r ctkpi " yj g" 5F " o ctngt" r qukkqpu" kp" c" pqp" uvtckpgf " tghgtgpeg" eqphki wtcvkqp" vq" vj g" nqcf gf " eqphki wtcvkqpu" wukpi " CDCS WU' o qf grkpi " uqhy ctg" *F cuucwn/" U{uvgo u." Xgnk {/Xkmceqwdnc{." Htcpeg+0' Vjg" rgcm' o czko wo " r tkpekr cn' uvtckpu" eqo r wgf " d{" CDCS WU" y gtg" cxgtci gf " qxgt" y g" 8" ur geko gpu" cpf " eqo r ctgf " y ky "Úwsf gp u" √Vgu u0' Vy q" 4" vckngf " √Vgu u" y ky " Dqphgttqpk" eqttgevkqpu" y gtg" wkrk gf " vq" f gvgto kpg" uki pkhecpeg" dgyy ggp" hrgzkqp" cpi ngu" cv" gcej " nqcf kpi " eqpf kkqp" kp" dqy " y g" CEN" f ghkekgpv' cpf " CEN" Kovcev' uvcvgu0' C" qpg" vckrgf " v/Vguv" eqo r ctgf " y g" uki pkhlecpeg"

qh" CEN" f ghkelgpv" xgtuwu" CEN" Kovcev" uvcvg" hqt" gcej " nqcf kpi "eqpf kkqp"cv'gcej 'hgzkqp"cpi ng0

TguwnuK'Gcej "urgekogp"ycu"hqwpf "vq" jcxg"c" f khhgtgpv" nqcf kpi " eqpf kkqp" yj cv" r tqf wegf " yj g" j ki j guv" r gcm' o czko wo "r tkpekr cn' uvtckp0' Hqt" cm' ur geko gpu" y g" j ki j guv" r gcm' o czko wo " r tkpekr cn' uvtckp" qh' y g" cpvgtqncvgtcn' ecr uwrg" y cu'' hqwpf " dgw ggp" hqwt" ngcf kpi " eqpf kkqpu<" Cpvgt kqt " Vkdkcn" Nqcf." Eqo dkpgf " Cpvgtkqt" Vkdkcn' Nqcf" y kj " Kovgtpcn' Tqvcvkqp" Vqts wg." Kpvgtpcn" Tqvcvkqp" Vqtsvg." cpf" Eqo dkpgf" Kpvgtpcn" Tqvcvkqp" Vqts wg" cpf " Xcni wu" Vqts wg" *Hki wtg" 3+0' Vj g" j ki j guv" r gcm" o czko wo " r tkpekr cn' uvtckpu" y gtg" hqwpf " kp" dqyj " CEN" Kovcev' cpf " CEN" f ghkekgpv' uvcvgu0' Vj g" CEN" f ghkelgpv" uvcvg" y cu" i gpgtcm{" hqwpf" vq" j cxg" jkijgt" o czko wo "rtkpekrcn" utckp" y cp" y g" CEN" Kovcev" uvcvg0' Hkpcm{." j ki j gt" hrgzkqp" cpi ngu" eqttgrcvgf " y kyj "jkijgt" uvtckpu" kp" vjg" o clqtkv{" qh" mqcf kpi" eqpf kkqpu" *Hki wtg" 4+0' Hqt" gzco r ng." qpg" o czko wo " y cu" hqwpf " vq" dg" cv" 82Å" hrgz kqp" y kyj " Kpvgt pcn" Tqvcvkqp" Vqts wg"kp''y g'CEN'f ghkekgpv'uvcvg0



Hi wt g''30' O gcp" O czko wo "Rtkpekr cn' Utckp" cv' hrgzkąp" cpi rg" qh' 52" f gi tggu0' CV" ?" Cpvgtkqt" vcpurcvkąp0' CVKT" ?" Cpvgtkqt" Vtcpurcvkąp"- "Kpvgtpcn' tqvcvkąp0' GT "?" Gzvgtpcn' tqvcvkqp0' GT XT"?" Gzvgtpcn' tqvcvkqp" - "Xctwu" vqts wg0' KT"?" Kpvgtpcn' tqvcvkqp0' KT XI "?" Kpvgtpcn' tqvcvkqp" - "Xcni wu" vqts wg0' RV" ?" Rquvgtkqt" vcpurcvkqp0' RVGT"?" Rquvgtkqt" vcpurcvkqp" - "Gzvgtpcn' tqvcvkqp0' XI "?" Xcni wu" vqts wg0' XT"? "Xctwu" vqts wg0'I tcr j "ku" tgr tgugpvcvksg" qh'' f khgtgpeg" dgw ggp" mcf kpi " eqpf kkqpu" cpf "CEN" ucvg" cv' y g" uco g" hrgzkqp" cpi rg0' Dnwg" ?" CEN" f ghelgpv' Tgf "?" CEN" Kpvcev0' Uvcvkuvkccm{" uki pkhecpv'f khgtgpeg'*, r >2027+



Hi wtg" 40' O gcp" O czko wo "Rtkpekr cn' Utckp" f wtkpi "Cpygtkqt" Vkdkcn' Nqcf0' I tcrj "ku" tgr tgugpvckxg" qh' f khgtgpeg" dgw ggp" hrgzkqp"cpi rg"cpf "CEN"ucvg"f wtkpi "uco g"rqcf kpi "eqpf kkqp" y kj " ucvknkecn' f khgtgpeg" dgw ggp "52" cpf "82" f gi tggu"cpf "52" cpf "; 2" f gi tggu0Dnwg?CEN'f ghkekgpv/cpf 'Tgf "? "CEN'føvcev

Fkewukqp<" Y j gp" eqo r ctkpi " y g" CEN" f ghkekgpv" cpf "kpvcev" uvcvgu" vj gtg" y cu" c" uki pkhkecpv" f khhgtgpeg" *r " >"2027+"dgw ggp"36"qh"yj g"52"eqo r ctgf "uvcvgu0'Kp"yj g" CEN" f ghkekgpv" uvcvg" eqo r ctkpi " y g" hrgzkqp" cpi rgu" 52" x" 82" cpf " 52" x"; 2" f kur m { gf " uvcvkuvkecn' uki pkhkecpeg" chygt" crrnkecykqp" qh" c" Dqphgttqpk" eqttgevkqp" *r" >" 202389+0' Vj g" CEN" kpvcev' mpgg" mgzkqp" cpi ngu" fkurnc{gf" o kpqt" uvcvkuvkecm{" uki pkhkecpv" fkhlgtgpegu." qpn{" 6" qh" 52" eqo r ctgf " uvcvgu0' Y j gp" yj g" CEN' ku" f ghlelgpv" y g" uvtckpu" qp" y g" cpvgtqrcvgtcn' ecr uwrg" ctg" i tgcvgt" eqo r ctgf " vq" y j gp" y g" CEN" ku" kpvcev" dgecwug" yj g" ecr uwrg" ku" cevkpi " cu" c" r tko ct { " tguvtckpv0' Cnuq." cu" yj g"hrgzkqp" cpi ng" qh" yj g" npgg" kpet gcugu" ht qo "52" vq" 82" cpf "52" vq"; 2" y g" uvt ckpu" cnuq" kpet gcug" cu" o qt g" mcf " ku" ceegr vgf " d{ " yj g" ecr uwng" y j gp" yj g" CEN" ku" f ghkekgpv0' Qxgtcm" y j gp" y g" CEN" ku" kpvcev' rguu" uvtckp" ku" r rcegf " qp" yj g" cpvgtqncvgtcn' ecr uwng0' Hkpcm{." yj g" xcnwgu" qh' yj g" r gcm' o czko wo " r tkpekr cn' uvtckp" y gtg" hqwpf " vq" dg" o wej " i tgcvgt" vj cp" vj g" wnko cvg" uvtckpu" vj cv' ecp" dg" j grf " d{ " vgpf qpu" cpf " nki co gpvu0' Kp" eqpenvukqp." yj g" cpvgtqncvgtcn' ecr uwrg" kp" y g" CEN" f ghkekgpv' uvcvg" y ky " jkijgt "hngzkqp" cpingu" cpf "hqwt "qh" yjg "vgp "vguvgf " nqcfkpi "eqpfkkkqpu" tguwnu" kp" yjg" jkijguv" uwthceg" uxtckp0

Ui pkłecpeg<' Wpf gtucpf kpi "yj g"ncf kpi eqpf kkqpu" yj cv" o quv" i tgcvn{" uvtckp" yj g" cpvgtqncvgtcn" ecr uvrg" kp" mpggu" y kyj "cpf" y kyj qw" CEN" f co ci g" y km' ko r tqxg" kplwt{" o qf gnu0' Mpqy ngf i g" qh" o czko wo " r tkpekr cn' uvtckp" r cvgtpu" y km' cnq" j gn" uvti gqpu" vq" o qtg" ceewtcvgn{" tgr ckt" f co ci g" y j gp" dqyj " y g" CEN" cpf "yj g"cpvgtqncvgtcn'ecr uvrg"ctg'f co ci gf "]6.7_0 **Cempqy ngf i go gpvu**K^Vj cpmu''vq''y g'F gr ctvo gpv''qh'' Dkqgpi kpggtkpi ''cpf ''y g''F gr ctvo gpv''qh''Qt'y qr gf keu'' cv''y g''Wpkxgtuk{ ''qh''Rkwudwti j 0

Tghgt gpegı≺

30' O k{ cucmc "gv'cn0'Co "L'Mpgg"Unt i 0'6. "6566: . "3; ; 3

- 40' Ur kpf ngt" MR." Y tki j v' TY 0' *P*" *Gpi n*" *L*" *O gf* 0" **57**; *42+4357/4364."422:
- 50' Dkcw' gy' cn⁰ *Enp*^{*n*} *Qty qr* "*Tgrcv*"*Tgu*0"**67:** 3: 2/3: 9." 4229
- 60' I wgpy gt" gv" cn0' Cpygtqncygtcn' tqycyqt {" kpuxcdkrkx{" qh" y g" mpgg0' Mpgg" Uwti " Urqt u" Vtcwo cyqn' Ct y tque042370
- 70' O qqtg"gv'cn0*Cpp"Dkqo gf 'Gpi* **'5:** *3+88/98."4232

cxgtci g''qecvkqp''qh''y g''yp''r qkpw''y cu'f gygto kpgf 0

Fgxgnqr 'O gej cpkecn'F ki kk/gt Vj g" o gej cpkecn' f ki kkt gt" y cu" xcntf cvgf " dcugf " qp" ku" ceewtce{" cpf " tgr gcvcdkrkv{0' Vq" gxcnvcvg" tgr gcvcdkrkv{." c" dqn/" y cu" f ki kkk gf " vgp" vko gu" cpf " yj g" f khhgtgpeg" qh" y g" z.{. | " nqecvkqp" qh' gcej " r qkpv' f ki kvk gf " cpf " y g"

hkdwrc0

- " mkpgo cvkeu0 Chyst" xchf cvkpi " y g" u{uvgo ." c" r tcevkeg" vguv" qp" c" ur geko gp" y cu" r gthqto gf " vq" f gvgto kpg" c" dcugnkpg" hqt" rj {ukqnqi ke" mkpgo cvkeu" qh' yj g"
- u{uvgo "hqt" y g'vkdkc" cpf "hkdwnc Octmgt" vtkcfu" y gtg" f guki pgf" vq" vtcem"
- C" o gej cpkech' f ki kkt gt" y cu" f guki pgf " vq" tgi kuvgt" r qkpvu" kp" yj g" FOCÜ9" u{uvgo "kp" qtf gt" vq" etgcvg" cp" cpcvqo kecn' eqqtf kpcvg"

mapgo_cvkeu.

O GVJ QFU

Ko" qtfgt" vq" cuuguu" y g" FOCU9øu" cdkrkv{" vq" vtcem"

y g'ceewtce { 'cpf 'tgr gcvcdktkv{ 'qh'y g'o gy qf qmi {0

tghgttgf "vq" cu" j ki j "cpmg" ur tckpu." v{r kecm{ "qeewt" cu" c" tguwn/" qh" gzvgtpcn" tqvcvkqp" qt" j {rgt" fqtukhngzkqp" qh" yig" hqqv." yikej" oc{" fkutwrv" yig" u{pfguoqvke" nki co gpvu" cpf " eqo r tqo kug" yj g" kpvgi tkv{ " qh" yj g" f kuvcn" vkdkc." hkdwrc." cpf "vcnwu"]3_0 Uwti kecn' vtgcvo gpv' uggmu" vq" uvcdkrkt g" y g" f kuvcn' vkdkqhkdwrct" uvtwewetg" vq" cmqy " yjg" u{pfguo quku" vq" jgcn0' Dgecwug" cp" kpetgcug" kp" hkdwnc" f kur ncego gpv" tgncvkxg" vq" yj g" vkdkc" r tqxkf gu" cp" ghhgevlaxg" ogyiqf" qh" fgvgtokpkpi" c" u{pfguoqvke" kplwt{." swcpvkh{kpi" uwej" fkurncego gpvu" ctg" qh" ko o gpug" kpvgtguv" enkpkecm{ "]4_0' Vq" s wcpvkh{ " y g" tki kf " dqf {" o qvkqp" dgw ggp" y g" vkdkc" cpf " hkdwnc." c" tqdqvke" vguvkpi "u{uvgo "y cu" wugf "o cpkr wrcvg" yj g" hqqv' tgrcvkxg" vq" yig" vkdkc0' Jqygxgt." cp" gzvgtpcn" u{uvgo "ycu" pgeguuct { " vq" vtcem' hkdwrct " o qvkqp0' Vj g" qdlgevkxg" qh' y ku" uwwf {" y cu" vq" f gxgmqr " c" r tqvqeqn' vq" f gxgmqr " c" rtqvqeqn" vq" o gcuwtg" hkdwnc" o qvkqp" wukpi " c" o qvkqp" ecr wtg" u{uvgo " *FOCÜ9." Ür kecvgm" J K+" cpf " cuuguu"

Kolwtkgu" vq" yg" cpmg" u{pfguoquku." eqooqpn{"

KP VT QF WE VKQP

30' F gr ct vo gpv'qh'Dkqgpi kpggtkpi . 'Wpkxgtukv{ "qh'Rkvudwti j . 'Rkvudwti j . 'RC. 'Wpkygf 'Uvcvgu0 40' F gr ctvo gpv'qh'Qt y qr cgf ke 'Uvti gt {. "Wpksgtuks{ "qh'Rkvudwti j. "Rc. "Wpksgf 'Uvcvgu0

Iqugr j 'O 'Vcmcj cuj k³. 'Mgxkp'O 'Dgm³. 'O cEcnwu'X'J qi cp^{3.4}''cpf 'Tkej ctf 'G'F gdunk³

S WCP VKHI KPI 'VKOKQHKOWNCT'MKP GO CVKE U'WUKPI 'F O CU9'O QVKQP" VTCEMIE I 'U UVGO 'VQ'E XGUVE CG'U PFGUO QVE 'E LWIEU



cv'52q''qh'r repycthrgzkqp''cu fqtukhngzkqp0' Vjg" FOCÜ9" u{uvgo "ycu" wugf" vq" tgeqtf " y g " r qukkqp " qh' y g " o ctngt " vtkcfu" cv " y g "

7 Ö 'n



eqqtf kpcvg'u{uvgo 0 Hqwt" nqcf kpi " eqpf kkqpu" y gtg" uko wncvgf." gcej " tgrgcvgf" y tgg" vkogu"vq"fgvgtokpg" tgr gcvcdkrkv{0' Hqwt" vguvkpi " eqpf kkqpu" ygtg" crrnkgf <" 32" Po" gzvgtpcn" tqvcvkqp" *GT+" vqtswg" y cu" crrnkgf" cv" 2^q" qh" hrgzkqp." 32" Po "vqtswg" y cu" crrnkgf" vq" y g" cpmg." 32" Po " GT" vqtswg" y cu" crrnkgf" y gm' cu'' cv'' 32q'' qh''

vq"yjg"dqpg"*Hki wtg"3+0 Vjg" ogfken' cpf " revgten' o engqrk" cpf " w q" r qkpu" nqecvgf " kphgtkqtn{ " cpf " uwr gtkqtn{ " cnqpi " y g" vkdkcn" etguv" y gtg" f ki kxk gf" vq" f ghkpg" yj g" vkdkc" cpcvqo kecn"

Vtcem'Rj {ukqnqi kecn'Oqvkqp C" ecf cxgtke" ur geko gp" y ky " u{pf guo quku" kpvcev" y cu" o qwpvgf " qp " yj g " tqdqvke " vguvkpi " u{uvgo ." r tgugtxkpi " yj g" u{pf guo quku0' O ctngt" vtkcf u" y gtg" tki kf n{ " cwcej gf "

vq"ceewtcvgn{"tgeqtf "yj gug"npqy p"f kur ncego gpvu0

Fgxgnqr 'O ctngt 'Vtkcf u C" o ctngt" vtkcf" eqpukuvkpi " qh' hqwt" eqpvtcuv' dcugf" o ctngtu" *hqwty " o ctngt" hqt" tgf wpf cpe{+" y cu" hzgf" vq" yj g" tqdqvke" vguvkpi " u{uvgo ." y j kej " f kur ncegf " yj g" vtkcf " y tgg" vtkcni" qh" 72" o o " *ncti g" f kur ncego gpv+" cpf " tqvcvgf " y g" vtkcf " y tgg" vtkcnu" qh" 37^q" *rcti g" tqvcvkqp+0' Vj g" eco gtc" u{ uvgo " y cu" xcrkf cvgf " dcugf " qp" ku" cdkrkv{ "

Ceewtce{" y cu" f gvgto kpgf " d{ " f ki kkk kpi " c" dqnv" cpf " yj gp" vtcpurcvkpi " yj g" dqnv' 4" o o 0' *F kuvcpeg" f gygto kpgf " wukpi "c"nkpgct "tcpurcvqt "ceewtcvg"vq"32" 0+Ю

Fcvc 'Cpcn uku

Cml' xkfgq" fcvc" y cu" r tqeguugf " kp" yj g" FOCU9" uqhwy ctg" vq" gz vtcev" z.{. | " eqqtf kpcvgu" qh" vj g" vtcengf " o ctngtu0' Cm' o ctngt" f cvc" y cu" cpcn{| gf " kp" O cvcd" *OcyjYqtmu" Kpe0" OC+0' Hqt" dqyj "yjg" ogej cpkecn" fkikkt gt" cpf "yj g" o ctngt" vtkcfu." gttqt" cuuqekcvgf "y kyj " fkurncego gpv" cpf "tqvcvkqp" y cu" ecnewncvgf "cu" y g" cduqnwg" fkhgtgpeg" qh' y g' qdugtxgf " o qwqp" cpf " y g" mpqy p'o qvkqp0

XCNHF CVHQP 'ETHVGTHC

Cxgtci g" tgr qtvgf " rkvgtcvvtg" xcrwgu" hqt " o gcuvtgf " hkdwret" f kur reego gpv' y cu' hqwpf " vq" dg" 4057" o o " $\overline{]50}$ Vj gtghqtg." yj g" xcnkf cvkqp" etkygtkc" hqt" ceewtce{" cpf" tgr gcvcdktkv{" y cu" ugv" cv' Ö2042" o o ." cp" qtf gt" qh" o ci pkwf g" dgwgt0' Vj ku" xcrkf cvkqp" et kvgt kc" y cu" crrnkgf "vq" dqyj "yjg" o gej cpkecn' f ki kkk gt" cpf "vtcemkpi " mkpgo cvkeu''qh'y g''o ctngt 'vtkcfu0

TGUWNVU

O gej cpkecn'F ki kk∤ gt

Vj g" ceewtce { " qh" vj g" f ki kkt gt" y cu" f gvgto kpgf " vq" dg" 2037'o o "cpf 'tgr gcvcdng'vq'2033'o o 0

Octngt 'Vtkcf u

Vj g" gttqt" qh" yj g" eco gtc" u{uvgo " hqt" s wcpvkh{kpi " mkpgo cvkeu" y cu" hqwpf " vq" dg" Ö' 2088" o o " hqt" ncti g" fkurncego gpvu" cpf" Ö' 2046" fgitggu" hqt" tqvcvkqpu" *Hki wtg'4+0

Rj { ukqnqi kecn'O qvkqp Hqt" gcej " r j {ukqnqi kecn' vguvkpi " eqpf kkqp." xctkcvkqp" kp" vtcpuncvkqp" tcpi gf " htqo " 2026" o o " vq" 208; " o o " *Vcdng" 3+0' Kp" cm' vguvkpi " eqpf kvkqpu." o gf kcn' rcvgtcn' *0 N+" vtcpuncvkqp" y cu" qdugtxgf." tcpi kpi " htqo " 2088" ó" 3073" 00" *Vcdrg" 3+0' Cffkkqpcm{." cv' rgcuv' c" 207" 00" r quvgt kqt "f kur ncego gpv" y cu "qdugt xgf "f wt kpi "cm" vguvkpi "eqpfkxkqpu." y j kej "y cu"gur gekcm{ "rtgxcrgpv"

f wtkpi "gzvgtpcn'tqvcvkqp"cv'2q"qh'hngzkqp0



Hi wtg'4<Gttqt"cuuqekcvgf "y kj "rcti g"f kur rcego gpvu"cpf "rcti g" tqvcvkqpu0

FKEWUKOP

Vj g" f guki p" etkytkc" guvcdnkuj gf " hqt" ceewtce{" cpf " tgr gcvcdkrkv{" qh" yj g" o gej cpkecn' f ki kkt gt" y cu" 2042" o o 0' Vj g" o gej cpkecn' f ki kkt gt" o gv' vj g" guvcdnkuj gf" f guki p" etksgtkc" hqt" dqyj " ceewtce{" cpf " tgr gcvcdkrkv{0' Ceewtce{" qh" vtcemkpi " o ctngt" vtkcfu" hqt " nctig" fkur mego gpvu" cpf " mti g" tqvcvkqpu" y cu" i tgcvgt" y cp" y g" guvcdnkuj gf "f guki p" etksgtkc0'J qy gxgt." 2088" o o " gttqt" hqt" c" ncti g" vtcpuncvkqpu" cpf " tqvcvkqp" tguwnu" kp" 3054' " cpf " 30 8' " gttqt" tgur gevkxgn{." y j kej " y cu" f ggo gf "vq" dg" ceegr vcdrg" cv' y ku" vko g0' Dgecwug" gzr gevgf "hkdwrct " o qvkqp "ku " uo cm "hwt y gt " cpcn{uku" y km¹ kpxguvki cvg¹ y g¹ u{uvgo¹ ceewtce{¹ hqt¹ uo cm¹

vtcpuncvkqpu'cpf 'tqvcvkqpu0 Rj { ukqnqi kecn'O qvkqp

Vj tqwi j qwi' cmi' vguvkpi " eqpf kvkqpu." y g" xctkcvkqp" dgw ggp" vtkcnu" y cu" qp" cxgtci g" 2043" o o " kpf kecvkpi " yjg" cdkrkv{" vq" r gthqto " r j {ukqmqi kecn' vguvkpi " eqpf kkqpu" vq" c" j ki j " f gi tgg" qh" tgr gcvcdkrkv{0' Kp" cm' vguvkpi" eqpf kkqpu" r gthqto gf." o gf kcn/ncvgtcn" f kur ncego gpv" *o qtvkug" y kf gpkpi +" y cu" qdugtxgf 0' Vj ku" ku" eqpewttgpv' y kj " uqo g" rkvgtcwtg" hkpf kpi u" y cv' tgr qtv" nevgten" f kur neego gpv" qh" y g" hkdwne"]4_" f wtkpi " u{pf guo qvke" kplwtkgu0' Y j krg" cm' vguvkpi " eqpf kvkqpu" tguwngf " kp " nctigt " r quvgtkqt " f kur ncego gpvu" vj cp " tgrqtvgf "kp" rkvgtcwvtg." c" rko kvcvkqp" qh" yj ku" uvvsf { "ku" yj cv"

qpn{ 'qpg''ur geko gp''y cu''yuvgf 0

Hwwtg'Fktgevkqpu Wrqp" eqorngwlqp" qh' cffkwlqpcn' xcnkfcwlqp" qh' y g" FOCU9" u{uvgo ." yi ku" o gyi qf qrqi {" ecp" dg" wugf " kp" y g" cpcn{uku" qh" cffkkqpcn' cpmg" ur geko gpu" vq" kpxguvki cvg" u{pfguoqvke" cpf " kplwtkgu'' tgrckt"

Xcp" J gguv." V0" Kplwtkgu" vq" vj g" Cpmg"

50 Octmuch "MO" U{ pf guo qvke" Kplwtkgu." HCK" 4234-55"

Vj ku" rtqlgev" y cu" uwrrqtvgf " d{" y g" F gr ctvo gpv" qh" Dkqgpi kpggtkpi " cpf " y g" F gr ctvo gpv" qh" Qtyj qr cgf ke"

30

U{ pf guo quku. "IDLU. "4236<, 8'825/350

40 Rqtvgt'F 0'QCILO.''4236⊲''395/3:40

CEMPQY NGFI GO GPVU

TGHGTGPEGU

99; "/": 80

Uwti gt{0

r tqegf wtgu0

	Vguvipi 'Eqpf kiqp				
Vt c purc vkqp 'F kt gevkqp	52 ^q 'Recpycthgz0 32"	2 ^q "Hngz0-32"Po"	32 ^q " Fqtukhngz0 32	32'Po'Fqtukhngz0	
	Po'GT	GT	Po 'GT		
ON"*o o +'*- "? "ncvgt cn+	3058Õ2028	3073Õ2028	3082Õ2O2:	2088Õ2026	
CR"*o o +'* <u> </u>	/6067Õ2058	/8024Õ205:	/60, 3Õ208;	/2077Õ2052	
c p v g t k q t +					
$UK^* o o +'^* ''? ''uwr gt kqt +$	/2044Õ204:	/205; Õ202:	/203; Õ2029	2056Õ2089	

Vcdrg'3<Hkdwrct"tcpurctkqpu'fwg"tq"gzvgtpcn'tqvcvkqp"cpf"oczkowo"fqtukhrgzkqp