

Rt â eku"KK"

EFOC"Vkokpi"Oqfwng



Wugt"Ocpwcn

Chapter Three - Control and Status Commands

51 59 59
514 14599
514 14599



3 19 4
5 95 2

Chapter Five - Setup with NTP

5 9 5 2
1 9 5 99 2
5 8 5 5 2
1 4 5 5 2
5 8 99 2
8 5 5
8 5

Chapter Six - Indicator Mode Button and LEDs

5 9 5 5
4 5 5 5 9

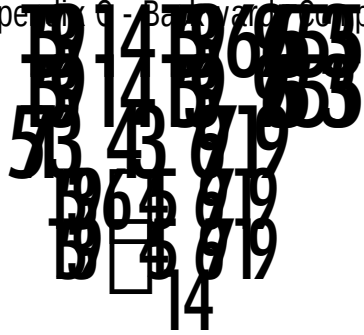
Appendix A - Time Figure-of-Merit (TFOM)

1 9 5
9 1 9 5 4

Appendix B - Upgrading the Firmware

8 5 8 7 5
5 9 8 7 5
5 9 8 7 5 2
7 5 9 9 1 4 9

Appendix C - Backward Compatibility



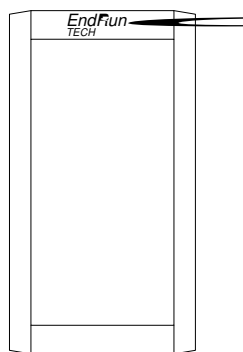
Appendix D - Specifications

Special Modifications - Changes for Customer Requirements

End

End

Praecis II Physical
Description



Performing an
Initial Site Survey

FCC NOTICE

Wukpi "vjg"uvcwu"NGF"kp fkeccđtu."kvøu"gcu{"vq"Łpf"qw"kh" { " ð /u QĀ KK O

Cv"vjku"rqkpv."vjg"wpkv"ku"hwmm{"u{pej tqpklgf."cpf"{qw"oc{"rtqegfg"vq"rgt ocpgpm{"oqwpvki"kv"kp"vjg"
fguktgf"nqecvkkp0

kh"vjku"ugswgpeg"jcu"pqv"qeewttgf"ykvjpk"vygpv{"okpwwgu."{qw"ujqwnf"oqxg"vjg"wpkv"cpflqt"ejcpig"kvu"

```

;822"ku"vjg"Dcwf"Tcvg
:"ku"vjg"Pw o dgt"qh"Fcvc"Dkvu
Pqpg"ku"vjg"Rctkv{
3"ku"vjg"Pw o dgt"qh"Uvqr"Dkvu

```



Chvgt"eqpŁi wtkpi "vjgug"rctc o gvgtu"kp" {qwt"vgt o kpcn"rtqi tco."cr rñ{"r qygt"vq"vjg"Rtcgeku"KK0""Ykv jkp" c" hgy"ugeqpfu." {qwt"vgt o kpcn"rtqi tco"uj qwnf"fkurnc{ "c"ugswgpeg"qh"dqqv" o guuc i gu"uk o knct"vq"vjgug<

```

Qsbfdjt!JJ!CpumpbefS!7121.1173.111!w!2/11!..!Kvo!34!3121!24;1.;15
Qsbfdjt!JJ!GX!7121.1174.111!w!2/11!..!Kvo!36!3121!21;57;33
Qsbfdjt!JJ!GQHB!7131.1119.111!w!12

```

Vjg"Łtuv"nkp" i kxgu"vjg" rctv"pw o dgt"cpf"xgtukqp"qh"vjg"Rtcgeku"KK"dqqwqcfgt"Łt o yctg"cpf"vjg"fcvg" cpf"vk o g"qh"kvu"eq o rkncvkqp0""Vjg"ugeqpf"nkp" i kxgu"vjg" rctv"pw o dgt"cpf"xgtukqp"qh"vjg"Rtcgeku"KK"cr/ rnkecvkp"Łt o yctg"cpf"vjg"fcvg"cpf"vk o g"qh"kvu"eq o rkncvkqp0""Vjg"vjktf"nkp" i kxgu"vjg" rctv"pw o dgt"cpf/ xgtukqp"qh"vjg"Hkgnf"Rtqi tco o cdng" I cvg"Cttc { "HR I C+"eqpŁi wtkvqp0

Hqmqy kpi "vjgug"vj tgg"nkpgu."hcevt{"fghcwnv"qr gtevkqp"ku"vq"ugpf" c"vk o g/ qh/ fc{ " o guuc i g"qpeg/rgt/ ugeqpf0""Vjg"hcevt{"fghcwnv"eqpvkpwqu."qpeg/rgt/ugeqpf."vk o g/ qh/ fc{ " o guuc i g"ht o cv"kp"vjg"pcvkg" Rtcgeku"KK"ht o cv"*GpfTwp"ht o cv+0""Ugg" *Ej crvgt"6"/"Vko g/ qh/ Fc{ "Oguuc i gu"*ht o cv"fguetkrvkqp"qh"vjku" o guuc i gl)

kpkvkcnn{." {qw"ykm"ugg"vjcv"vjg"Łtuv"ejctcevt"kp"vjg" o guuc i g"*vjg"VHQO"ejctcevt+"ku" c";ø0""Y jgp"vjg" i tggp"NGF" dgi kpu"vq" fcu j"cv"vjg"3" J | "tcvg." {qw"uj qwnf"ugg"vjg"ejctcevt"ejcp i g"vq" c";8ø."y jkej" o gcpu" vjcv"vjg"vk o g"ku"ceewtcvg"vq"nguu"vjcp"322" o ketqugeqpfu"cpf"vjg"htgswgpe{ "ku"r jcu g"nqemg f0

kh{qw"fq"pqv"ugg"ejctcevtu"fkurnc{gf"d{" {qwt"vgt o kpcn"rtqi tco" y jgp"vjg"wpkv"ku"r qygtgf"wr." {qw" o wuv"vtqwdngu jqqv" {qwt"ugvwr0""Cp"kp eqttgevn{ "yktgf"ecdng"ku"vjg" o quv"eq o o qp"rtqdng o 0""Tghgt"vq" *Cr/ r gpfkz" F"ó"Urgekhkecvkpu*"ht"vjg"Rtcgeku"KK" TU/454"uk i pcn"eqppgevkpu0



kh{qw"ctg"wpcedng"vq"Łpf"cp{ "gtqtu"kp" {qwt"ugvwr."cu" c"ncuv"tguqtv" {qw"uj qwnf"tguvqts"vjg"hcevt{"fghcwnv" ugwkpi u"vq"vjg"Rtcgeku"KK0""Kv"ku"rquukdng"vjcv"kvu"ugtkcn"rtqv"rctc o gvgtu"ctg"kp eqttgev."uq"tguvqtkpi"vjg" hcevt{"fghcwnv"ugwkpi u"ykm"eqttgei"vjcv0""Tghgt"vq" *Ej crvgt"8"ó"Kpfkecvqt"Oqfg"Dwvqp*"ht"vjg"rtqeg/ fwtg"vq"tguvqts"vjg"hcevt{"fghcwnv"ugwkpi u0

Qpeg" {qw" jcxg"uweeguuhwnn{ "guvcdnku jgf" eq o o wpkecvkqpu" ykvj" vjg" Rtcgeku" KK." {qw" o c { "rtqegfg" vq" kp/
uvcnkp i "cpf" eqpLi wtkpi "vjg" uqhvy ctg" {qw" kpvpgf" vq" wug" vq" u {pej tqpk |g" {qwt" eq o rwygtø" enqem" vq" WVE0

Connecting Instruments to the Praecis II

Vjg" Rtcgeku" KK" rtqkfgu" v y q" rtgekukqp" qwwrww" uki pcnu" ecr cdng" qh" ftkxki" r tqr gtn { "vgt o kpcvfg" eqczkn"
ecdng u<" 3RRU" cpf" 32" O J |0"" Vjgug" v y q" uki pcnu" ctg" FE" eqw rngf" cpf" uqwtegf" htq o "C fxcpegf" EOQU"
*CE OQU+ "ftkxgtu" y jkej" ctg" cdng" vq" o ckpvckp" qwwrww" VVN" ngxgmu" kpvq" c" 72" qj o "nqcf0"" Vjg { "ctg" ce/
eguugf" xkc" vjg" v y q" UOC" lcemu" qp" vjg" uc o g" gpf" qh" vjg" Rtcgeku" KK" vjcv" vjg" TU/454" cpf" r qygt" kprww"
lcemu" ctg" nqecvfg0"" Ectg" u j qwnf" dg" vcmgp" pqv" vq" u j qtv" ektewkv" vjgug" qwwrwwu" qt" vq" eqppgev" vjg o "vq" qvjgt"
xqnvci g" uqwtegu0

Kh" {qwt" rtk o ct { "c r nkecvkqp" hqt" vjg" Rtcgeku" KK" ku" cu" c" htgswgpe { "uvcpfctf." {qw" u j qwnf" eqpukfgt" qrgtcv/
kpi" vjg" NGF" kp fkecvqtu" kp" vjg" Uki pcn" Swcnkv { "Oqfg0"" Tghgt" vq" **Ejcrvgt" 8" 6" Kpfkecvqt" Oqfg" Dwwqp"**
fgvcknu0" Kp" vjku" o qfg. {qw" yknn" cnyc {u" mpqy" y jgvjgt" vjg" Rtcgeku" KK" ku" ewttgpn { "nqemgf" vq" c" EFOC"
uki pcn" y jkn" {qw" ctg" rgtqto kpi" o gcuwtg o gpvu" dcugf" qp" kvu" 32" O J | "qwwrww" htgswgpe {0"" Vjg" j qnfqxgt"
ceewtce { "qh" vjg" uvcpfctf" VEZQ" yknn" fg i tefg" vq" vjg" 7" z" 32" : "ngxgn" hcktn { "swkenn { "hqnnqy kpi" EFOC"
uki pcn" nquu. "fgrgpfkpi" wrqp" vjg" c o dkgpv" vgo rgtcvwtg" gpxktqp o gpv0

Command Summary

EQOOCPF	HWPEVKQP
<p>ECN ECN?z</p>	<p>Ykvj"pq"rctc o gygt":zø"vjkueq o o cpf"ujqyu"vjg"vk o kpi" ecnkdtcvkqp"hcevqt"o c{"dg"/202227"vq"-02227"cpf" - "cfxcpegu"vjg"vk o kpi"qwrrwu0"</p> <p>Ykvj"c"rctc o gygt"vjkueq o o cpf"ugvu"vjg vk o kpi"ecnkdtcvkqp"hcevqt"y jgtg"z" o c{"dg"/202227"vq"-02227"cpf" - "cfxcpegu"vjg"vk o kpi"qwrrwu0"</p>
<p>EJCPPGNUGV EJCPPGNUGV?z</p>	<p>Ykvj"pq"rctc o gygt":zø"vjkueq o o cpf"ujqyu"vjg"ugngevfg"EFOC" tgegkxgt"ejcppgn"ugv0"</p> <p>Ykvj"c"rctc o gygt"vjkueq o o cpf"ugvu"vjg"ejcppgn"ugv"y jgtg"z" o c{"dg"C"ht"Ptvtj"C o gkcec"Egnnwct."M"ht"Ptvtj"C o gkcec" - " Mqtgc"Egnnwct."K"ht"Kpfc"qt"R"ht"Ptvtj"C o gkcec"REU0"</p> <p>Hqt"Lrcrpgug"wpkvu"vjg"ejcppgn"ugv"ecppqv"dg"cnvgtgf"cpf"y knn" cny c{"u"ujqy"DI BOOFMTFU?L"ht"Lrcrpe"Egnnwct0</p>
<p>EVKOG EVKOG?z</p>	<p>Ykvj"pq"rctc o gygt":zø"vjkueq o o cpf"ujqyu"vjg"uvcvwu"qh"vjg" eqpvkpwqwu."qpeg/rgt/ugeqpf"qwrrwu0"</p> <p>Ykvj"c"rctc o gygt"vjkueq o o cpf"gpdcngu"qt"fkucdngu"vjg"eqp/ vkpwqwu"qwrrwu."y jgtg"z" o c{"dg"QP"qt"QHH0</p>
<p>FUVUVCTV FUVUVCTV?o.u.j</p>	<p>Ykvj"pq"rctc o gygtu"vjkueq o o cpf"ujqyu"vjg"ewttgpp"ugvvpkiu hqt"vjg"Fc{nkijv"Ucxkpiu"Vko g"*FUV+"wugt"qxtgkfg0</p> <p>Ykvj"rctc o gygtu"vjkueq o o cpf"y knn"qxtgkfg"vjg"FUU"kphqt o c/ vkqp"cu"vtcpu o kvvgf"d{"vjg"EFOC"dcug"uvcvkqp"cpf"wug"vjg"FUU" kphq"cu"gpvgtgf"y jgtg< o "ku"o qpvj"qh"FUU"uvctv"rqkp0 u"ku"Uwpfc{"qh"vjg"o qpvj"qh"FUU"uvctv"rqkp0 j"ku"j qwt"qh"vjg"vtcpukvqp"qh"FUU"uvctv"rqkp0</p> <p>ETUTUBSU?2.2.2"y knn"fkucdng"vjg"Fc{nkijv"Ucxkpiu"Vko g" wugt" qxtgkfg0"Vjg"vko g"o qfg"o wuv"dg"NQECNOCP"kp"qtfgt"ht" vjg"Rtcgeku"kk"vq" wug"vjg"ETUTUBSU"kphqt o cvkqp0"*Ugg"UNPEF0+</p>

<p>FUVUVQR FUVUVQR?o.u.j</p>	<p>Ykvj"pq"rctc o gygtu"vjku"eq o o cpf"ujqyu"vjg"ewttgpn"ugvvpki u hqt"vjg"Fc{ nki jv"Ucxkpi u"Vk o g"*FUV+"wugt"qxgttkfg}</p> <p>Ykvj"rctc o gygtu"vjku"eq o o cpf"y knn"qxgttkfg"vjg"FUUV"kphqt o c/ vkqp"cu"vtcpu o kwgf"d{ "vjg"EF OC"dcug"uvcvkqp"cpf"wug"vjg"FUUV" kphq"cu"gpvgtgf"y jgtg< o "ku" o qpvj"qh"FUUV"uvqr"r qkp\0 u"ku"Uwpfc{ "qh"vjg" o qpvj"qh"FUUV"uvqr"r qkp\00 j"ku"j qwt"qh"vjg"vtcpukvkqp"qh"FUUV"uvqr"r qkp\0</p> <p>ETUTUBSU?2.2.2"y knn"fkucdng"vjg"Fc{ nki jv"Ucxkpi u"Vk o g" wugt" qxgttkfg\0""Vjg"vk o g" o qfg" o wuv"dg"NQECNOCP"kp"qtfgt" hqt" vjg"Rtcgeku"KK"vq" wug"vjg"ETUTUPQ"kphqt o cvkqp\0""*Ugg"UNPEF\0+</p>
<p>GOWN GOWN?z</p>	<p>Ykvj"pq"rctc o gygt"-z\0"vjku"eq o o cpf"ujqyu"vjg"g o wncvkqp" o qfg" hqt"vjg"eqpvkpwquw".qpeg/rgt/ugeqpf."vk o g/qh/ fc{ "qwwrvw" *ugg"DUJNE\0)</p> <p>Ykvj"c"rctc o gygt"vjku"eq o o cpf"ugvu"vjg"g o wncvkqp" o qfg"y jgtg" z" o c{ "dg" PQPG."VTWGVKOG"qt"VTKODNG\0</p>
<p>GXGPV GXGPV?z</p>	<p>Ykvj"pq"rctc o gygt"-z\0"vjku"eq o o cpf"ujqyu"vjg"ewttgpn"ugvvpki " hqt"vjg"gxgpv"vk o gvc i i kpi "hwpevkqp\0</p> <p>Ykvj"c"rctc o gygt"vjku"eq o o cpf"gpcedngu"qt"fkucdngu"vjg"gxgpv" vk o gvc i i kpi "hwpevkqp"y jgtg"z"ku"QP"qt"QHH</p>
<p>HNVOU I</p>	<p>Vjku"eq o o cpf"ujqyu"vjg"u{ uvgo "hcwnv"uvcvwu"cu"jw o cp/htkgnfn{ " o guuc i gu\0</p>
<p>HNVUVCV</p>	<p>Vjku"eq o o cpf"ujqyu"vjg"u{ uvgo "hcwnv"uvcvwu"cu"c" o cej kpg/ htkgnfn{ "jgzcfgek o cn"eqfg\0</p>
<p>JG NR JG NR"z</p>	<p>Ykvj"pq"rctc o gygt"-z\0"vjku"eq o o cpf"ujqyu"c"nkuv"qh"cmn"cxckn/ cdng"eq o o cpf\0</p> <p>Ykvj"c"rctc o gygt"vjku"eq o o cpf"y knn"ujqy"jgnr"kphqt o cvkqp" urgekLe"vq"z."y jgtg"z"ku"cpqvjgt"eq o o cpf\0""Hqt"gzc o r ng<" IFMQ! GMUNTH"y knn"ujqy"jgnr"kphqt o cvkqp"urgekLe"vq"vjg"GMU . NTH"eq o o cpf\0</p>
<p>NGCR NGCR?e.h</p>	<p>Ykvj"pq"rctc o gygtu"vjku"eq o o cpf"ujqyu"vjg"ewttgpn"ugvvpki "hqt" vjg" wugt/qxgttkfg"ngcr"ugeqpf" kphqt o cvkqp\0</p> <p>Ykvj"rctc o gygtu"vjku"eq o o cpf"y knn"qxgttkfg"vjg"ngcr"ugeqpf" kphqt o cvkqp"cu"vtcpu o kwgf"d{ "vjg"EF OC"dcug"uvcvkqp"cpf"wug" vjg"ngcr"ugeqpf" kphqt o cvkqp"cu"gpvgtgf"y jgtg< e"ku"vjg"ewttgpn"ngcr"ugeqpf\0 h"ku"vjg"hwwtg"ngcr"ugeqpf\0</p> <p>MFBQ?2.2"y knn"hqteg"vjg"Rtcgeku"KK"vq" wug"vjg"ngcr"ugeqpf" kphq" cu"vtcpu o kwgf"d{ "vjg"EF OC"dcug"uvcvkqp\0</p>

CONTROL & STATUS COMMANDS

" Ugy<" " " **ETUTUBSU>5-2-3=DS?=MG?**
" Rtcgeku"KK"tgurqpug<" **PL=DS?=MG?**

· Factory Default Setting: 0,0,0

DSTSTOP

pcn0"Wpngu"vjg"wpkv"ku"dgkpi"uwdlgevfg"vq"qww/qh/urgekLecvkqp"gpixktqpo"gpvcn"eqpfkvpkqpu."vjk"y"qwnf"
kpfkcevg"vjcv"vjg"quekncvqt"htgswgpe{"jcu"ftkhvgf"pgct"vq"vjg"gpf"qh"nhkg"tg"ikqp0"Vjku"ujqwnf"pqt"ocnn{"
qpn{"qeewt"chvgt"cdqww"vvp{"gctu"qh"qrgtcvkqp0"Vjg"wpkv"y"kn"eqpvkpwg"vq"hwpevkqp"wpvkn"vjg"quekncvqt"
htgswgpe{"Lpcnn{"tgcejgu"qpg"qh"vjg"cevwn"FC"gpfrqkpvu0"Vjg"wpkv"ujqwnf"dg"tgwvtpgf"vq"vjg"hcevqt{"
hqt"quekncvqt"tgrnceg"ogpv"cv"vjg"ewuvq"ogt"ou"eqxgpkpgegl

Pq"Ukipcn"Vkog/Qwv< Vjku"dkv"kpfkcevgu"vjcv"vjg"wpkv"jcu"pq"dgpp"cdng"vq"ceswktg"e"EF"OC"
ukipcn"htq"qpg"j"qwt"y"jkn"vjg"Vkog"Hkiwtg/qh/Ogtkv"jcu"dgpp";*ugg"Crgrpfkz"C//VHQO+0"Vjku"eqwnf"
dg"fwg"vq"cxctkv{"qh"tgcuqpu0"Kh"vjgtg"ctg"pq"qvjgt"hcwnvu"vjcv"eqwnf"gzrnckp"vjg"kpcknk{"vq"tgekxg"e"
ukipcn."vjgp"vjgtg"eqwnf"dg"e"dcug"uvcvkqp"qww"ig"qt"cpvgppc"hcwnvtg0"Kh"vjg"eqpfkvpkqp"rgtukuv"kpfgL/
pkvgn{"cpf"e"rtqdn"o"ykv"vjg"cpvgppc"ku"pq"v"gxkfgpv."vjg"wpkv"oc{"pggf"vq"dg"tgwvtpgf"vq"vjg"hcevqt{"
hqt"tgrcktl

HRIC"EqpLi"Hcwnv< Vjku"dkv"kpfkcevgu"vjcv"vjg"o"ketqrtqeguut"y"cu"wpcdng"vq"eqpLiwtg"vjg"
HRIC0"Vjku"y"qwnf"dg"e"hcvcn"hcwnv"cpf"vjg"wpkv"ujqwnf"dg"tgwvtpgf"vq"vjg"hcevqt{"hqt"tgrcktl

HNCUJ"Ytkvg"Hcwnv< Vjku"dkv"kpfkcevgu"vjcv"vjg"o"ketqrtqeguut"y"cu"wpcdng"vq"xgth{"c"y"tkvg"
vq"vjg"HNCUJ"pqp/xqncvkg"rctc"ogvgt"uvqtc"ig"ctgc0"Vjku"ujqwnf"pqv"qeewt"wpfgt"pqt"ocn"qrgtcvkqp0"
Vjg"wpkv"ujqwnf"dg"tgwvtpgf"vq"vjg"hcevqt{"hqt"tgrcktl

Nqecn"Quekncvqt"RNN"Hcwnv< Vjku"dkv"kpfkcevgu"vjcv"vjg"nqecn"quekncvqt"rjcug/nqemgf/nqqr"*RNN+ "
u{pvjguk|gt"ku"wpnqemgf0"Vjku"eqpfkvpkqp"ujqwnf"pqv"pqt"ocnn{"qeewt"wpngu"vjg"wpkv"ku"uwdlgevfg"vq"qww/
qh/urgekLecvkqp"gpixktqpo"gpvcn"eqpfkvpkqpu0"Qvjgt"y"vjk"y"qwnf"dg"e"hcvcn"hcwnv"cpf"vjg"wpkv"ujqwnf"
dg"tgwvtpgf"vq"vjg"hcevqt{"hqt"tgrcktl

Nqecn"Quekncvqt"Hcknwtg< Vjku"dkv"kpfkcevgu"vjcv"vjg"nqecn"quekncvqt"rjcug/nqemgf/nqqr"*RNN+ "
u{pvjguk|gt"jcu"hcngf0"Vjku"eqpfkvpkqp"ujqwnf"pqv"pqt"ocnn{"qeewt"wpngu"vjg"wpkv"ku"uwdlgevfg"vq"qww/
qh/urgekLecvkqp"gpixktqpo"gpvcn"eqpfkvpkqpu0"Qvjgt"y"vjk"y"qwnf"dg"e"hcvcn"hcwnv"cpf"vjg"wpkv"ujqwnf"
dg"tgwvtpgf"vq"vjg"hcevqt{"hqt"tgrcktl

Vkog"Kprwv"Hcwnv< " Vjku"dkv"kpfkcevgu"vjcv"vjg"o"ketqrtqeguut"tgekxgf"cp"gttqpgqwu"vkog"
kprwv"htq"o"vjg"EF"OC"gpikpg0"Kh"vjg"eqpfkvpkqp"rgtukuv"rngcug"tgrqtv"kv"vq"vjg"hcevqt{0

Ockp"Quekncvqt"Hcknwtg< Vjku"dkv"kpfkcevgu"vjcv"vjg"o"ckp"quekncvqt"jcu"hcngf0"Vjku"eqpfkvpkqp"
ujqwnf"pqv"pqt"ocnn{"qeewt"wpngu"vjg"wpkv"ku"uwdlgevfg"vq"qww/qh/urgekLecvkqp"gpixktqpo"gpvcn"eqpfk/
vkqpu0"Qvjgt"y"vjk"y"qwnf"dg"e"hcvcn"hcwnv"cpf"vjg"wpkv"ujqwnf"dg"tgwvtpgf"vq"vjg"hcevqt{"hqt"tgrcktl

Vjg"gzco"rng"tgurqpug"kpfkcevgu"vjcv"vjgtg"jcu"dgpp"e"rgtkqf"ykvjqwv"vtcemkpi"e"EF"OC"ukipcn"vjcv"
gzeggfgf"vjg"vkog/qwv"rgtkqf."vjcv"vjgtg"y"cu"e"HNCUJ"Ytkvg"Hcwnv"cpf"vjcv"vjgtg"ku"e"Nqecn"Quekncvqt"
RNN"hcwnv0

" Swgt{<" " " GMUTUBU=DS?=MG?
" Rtcgeku"KK"tgurqpug<" 1y112B=DS?=MG?!

HELP

Vjku"swgt{/qpn{"eq"o"ocpf"fkurnc{"u"e"ogpw"qh"vjg"cxckncdng"uvcwv"cpf"eqvtn"eq"o"ocpfu"uwr"rqtvgf"
d{"vjg"Rtcgeku"KK."cnqpi"ykvj"vjg"u{pvcz"qh"vjgkt"wuc"ig0"Eq"o"ocpf/urgekLe"jgnr"ku"cnuc"cxckncdng<

CONTROL & STATUS COMMANDS

" Swgt{<" " " **MP=DS?=MG?**
" Rtcgeku"KK"tgurqpug<" **.8;11=DS?=MG?**

" Ugv<" " " **MP>,23;41=ds?=mg?**
" Rtcgeku"KK"tgurqpug<" **PL=DS?=MG?**

Factory Default Setting: +0:00

OSCTYPE

Vjku"eq o o c p f " c n n q y u " { q w " v q " s w g t { " v j g " q u e k n n c v q t " v { r g " h q t " v j k u " w p k v 0 " " V j k u " x c n w g " k u " u g v " c v " v j g " h c e v q t { " c p f " e c p p q " d g " e j c p i g f " d g e c w u g " k v " f g r g p f u " q p " v j g " j c t f y c t g " e q p L i w t c v k q p " q h " { q w t " R t c g e k u " K K 0

" Swgt{<" " " **PTDUZQF=DS?=MG?**
" Rtcgeku"KK"tgurqpug<" **UDYP=DS?=MG?**

PORT

Vjku"eq o o c p f " c n n q y u " { q w " v q " s w g t { " c p f " u g v " v j g " e w t t g p v " u g t k c n " K l Q " r q t v " u g v k p i u 0 " " E j c p i g u " v q " v j g " u g v / v k p i u " v c m g " r n c e g " k o o g f k c v g n { " c p f " c t g " t g v c k p g f " k p " p q p / x q n c v k n g " H N C U J " o g o q t { 0 " " [q w " o w u v " e j c p i g " { q w t " v g t o k p c n " r t q i t c o " v q " o c v e j " v j g u g " u g v k p i u " k p " q t f g t " v q " e q p v k p w g " v q " e q o o w p k e c v g " y k v j " v j g " R t c g e k u " K K 0 " " T g u v q t k p i " v j g " h c e v q t { " f g h c w n v " u g v k p i u " o c { " d g " p g e g u i c t { " u j q w n f " { q w " h q t i g v " v j g " e w t t g p v " u g v k p i u 0 " " U g g " E j c r v g t " 8 " 6 " K p f k e c v q t " O q f g " D w w q p " c p f " N G F u " " h q t " f g v c k n u " q p " t g u v q t k p i " v j g " h c e v q t { " f g h c w n v " u g v / v k p i u 0 " " V j g " d c w f " t c v g . " p w o d g t " q h " f c v c " d k v u . " r c t k v { " c p f " p w o d g t " q h " u v q r " d k v u " o c { " d g " u g v <

Dcwf"tcvg"oc{"dg";822."3;422."5:622."798220
Pwodgt"qh"fcvc"dkvu"oc{"dg"9"qt":0
Rctkv{"oc{"dg"G"*gxgp+."Q"*qff+"qt"P"*pqp+0
Pwodgt"qh"uvqr"dkvu"oc{"dg"3"qt"40

" Swgt{<" " " **QPSU=DS?=MG?**
" Rtcgeku"KK"tgurqpug<" **:711-9-0-2=DS?=MG?**

" Ugv<" " " **QPSU>2:311-8-p-3=DS?=MG?**
" Rtcgeku"KK"tgurqpug<" **PL=DS?=MG?**

Factory Default Setting: 9600, 8, N, 1

PPSWIDTH

Vjku"eq o o c p f " c n n q y u " { q w " v q " s w g t { " c p f " u g v " v j g " e w t t g p v " 3 R R U " q w v r w v " r w n u g y k f v j 0 " " U g v " x c n w g " k u " t g v c k p g f " k p " p q p / x q n c v k n g " H N C U J " o g o q t { 0 " " V j g " x c n w g " k u " k p " w p k v u " q h " o k n n k u g e q p f u " c p f " o c { " d g " 3 " v q " ; ; ; . " q t " P V R 0 " " V j g " P V R " u g v k p i " e c w u g u " v j g " 3 R R U " r w n u g y k f v j " v q " d g " c w v q o c v k e c n n { " u g v " v q " p p g " d k v " y k f v j " c v " v j g " e w t t g p v n " " u g n g e v g f " d c w f " t c v g " q h " v j g " u g t k c n " K l Q " r q t v 0 " " V j k u " k u " h q t " w u g " y k v j " v j g " 3 R R U " q p " F E F " P V R " t g h t g p e g " e n q e m " f t k x g t u 0 " " * U g g " E j c r v g t " 7 " / " U g v w r " y k v j " P V R " h q t " o q t g " k p h q t o c v k q p " q p " Q Q T X J E U I ? P V R 0 +

" Swgt{<" " " **QQT X J E U I = D S ? = M G ?**
" Rtcgeku"KK"tgurqpug<" **2=DS?=MG?**

```
" Ugv<" " " QQTxJEUI>611=DS?=MG?
" Rtcgeku"KK"tgurqpug<" PL=DS?=MG?

· Factory Default Setting: 1
```

REACQUIRE

Ykvj"vjku"eq o o cpf" {qw"ecp"hqteg"vjg"EF O C"tgegkxgt"vq"uvctv"qxgt"kp"kvu"ugcte j "hqt" c"xcnkf"EF O C" ukipcn0""Vjku"ku" igpgtcmm{"qpn{"wugf"hqt"fgdwi ikpi

```
" Eqo o cpf<" " SFBDRVJSF=DS?=MG?
" Rtcgeku"KK"tgurqpug<" PL=DS?=MG?
```

RESET

Vjku"eq o o cpf"cnmqyu" {qw"vq"rgthqt o "c"uqhvyctg"tgugv"qh"vjg"wpkv0

```
" Eqo o cpf<" " SFTFU=DS?=MG?
" Rtcgeku"KK"tgurqpug"uvq PL" O O OS?=MG?
```

RESPMODE

Vjku"eq o o cpf"cnmqyu" {qw"vq"swgt{"cpf"ugv"vjg"ewttgpn"ugtkcn"klQ"eq o o cpf"tgurqpug" o qfg0""Ugv"xcnwg" ku"tgvcckpgf"kp"pqp/xqncvkng"HNCUJ" o g o qt {0""kp"vjg"hecvqt {" fghcwnv"VGTUG" o qfg."cnn"tgurqpugu"vq"swg/ t{"eq o o cpf"u"ctg"cu"fguetkdgf"kp"vjku"Ejcrvgt0""Y jgp"vjg"tgurqpug" o qfg"ku"ugv"vq"XGTDQUG."c"uvtkpi" eqpukuvkpi"qh"vjg"eq o o cpf"pc o g."c"urceg"ejctcevgt."vjg"gswnu"ukip"ejctcevgt"cpf" c"urceg"ejctcevgt"ku" rtgrgpf"vq"vjg"VGTUG"tgurqpug"uvtkpi" hqt"cm"swgt{"eq o o cpf"gzegrv"IFMQ"cpf"TFUJJOHT


```

" Swgt{<" " " TFUUJOHT=DS?=MG?
" Rtcgeku"KK"tguurqpu<" Dbm!>!/111111111=DS?=MG?
! ! ! ! Diboofmtfu!>!OPSUI!BNFSJDB!DFMMVMBS=DS?=MG?
! ! ! ! Du jnf!>!PGG=DS?=MG?
! ! ! ! ETUTubsu!>!1-1-1=DS?=MG?
! ! ! ! ETUTupq>1-1-1=DS?=MG?
! ! ! ! Fnmv!>!OPOF=DS?=MG?
! ! ! ! Fwfou!>!PGG=DS?=MG?
! ! ! ! Mfbq!>!26-!26=DS?=MG?
! ! ! ! Mp!>! ,1;11=DS?=MG?
! ! ! ! Qpsu!>!68711-9-0-2=DS?=MG?
! ! ! ! QQTxjeui!>!2=DS?=MG?
! ! ! ! Sftqnpf!>!UFSTF=DS?=MG?
! ! ! ! Unpef!>!VUD=DS?=MG?

```

SPSTAT

Vjku"swgt{/qpn{"eqo o ccpf"fkurnc{u"vjg"ewttgpn"uvcvwu"qh"ugngvvgf"uki pcn"rtqeguut"rctc o gyvtu0"Vjku"ku" c"Łzgf/ngpivj"o guucig"hqto cvvgf"cu"ujqyp<

" URU"E JCP"RPQ"CI E"XEFC E""UP0T"HGTT>ET@>NH@

Y jgtg<

URU" ku"vjg"Uki pcn"Rtqeguut"Uvcvg."qpg"qh"CES"*Ceswtkpi+."FGV"*Uki pcn" Fgvgevgf+."NMI "" *Eqfg"Nqemkpi+."VMI ""Ecttkgt"Nqemkpi+."NMF"*Nqemgf+0

EJCP" ku"vjg"EFQC"htgswgpe{"ejcppgn"dgkpi" wugf0" Hqt" Pqtvj" C o gkcecp"htgswgpekgu"vjg"" tgrqvtvgf"ejcppgn" yknn"dg<RTKC."RTKD."UGEC."qt"UGED0"Vjgug"uvcpf" hqt"Rtk o ct{"C."Rtk o ct{"D." Ugeqpfct{"C"qt"Ugeqpfct{"D"ejcppgn" Hqt" Mqtgcp"htgswgpekgu"vjg"tgrqvtvgf"ejcppgn" yknn"dg<RTMC." RTMD."UGMC."qt"UGMD0"Vjgug"uvcpf" hqt"Rtk o ct{"C."Rtk o ct{"D."Ugeqpfct{"C"qt"Ugeqpfct{"D"ejcp/ pgnu0" Hqt"kp fkc p"htgswgpekgu"vjg"tgrqvtvgf"ejcppgn" yknn"dg<3:7K."448K."489K."52:K."58;K."632K."673K." qt"6;4K0"Vjgtg"ctg"o wnvkrng"rtk o ct{"cpf"ugeqpfct{"ejcppgn"kp"vjg"kp fkc p"ejcppgnug"uq"vjg"ejcppgn" pw o dgt"ku"dgkpi" wugf0"

RPQ" ku"vjg"dcug"uvcvkqp"Rugw fqPqkug"Qhhugv."2"vq"733"kp"wpkvu"qh"86"Rugw fqPqkug"eqfg"ejkru0

CI E" ku"vjg"Cwvq o cvke" I ckp"Eqpvtqn" FCE"d{vg."2"vq"477"ykvj"nctigt"pw o dgtu"ko rn{kpi" jki jgt" TH"ickp0"V{rkecn"tcpig"ku"372"vq"4420

XEFC E" ku"vjg"VEZQ"Xqnvci g"Eqpvtqn" FCE"yqtf."2"vq"87757"ykvj"nctigt"pw o dgtu"ko rn{kpi" jki jgt"VEZQ"htgswgpe{0"V{rkecn"tcpig"ku"42222"vq"5:2220

UP0T" ku"vjg"ecttkgt"Uki pcn"vq" Pqkug" Tcvkq."2022"vq"; ;0; ." o gcuwtgf"kp"vjg"U{pe"Ejcppgn"u{ o dq n" tcvg"dcpf ykfvj0"V{rkecn"tcpig"ku"407"vq"33020"

HGTT" ku"vjg"U{pe"Ejcppgn" Htc o g" Gttqt" Tcvg."20222"vq"30222." ykvj" c" jki jgt"pw o dgt"ko rn{/ kpi" o qtg" E{enkecn" Tgfwpfcp e{"Ejgem" hcknwtgu" yjgp" rtqeguukpi" vjg"U{pe"Ejcppgn" o guucig" htc o gu0" Jki jgt"pw o dgtu" yknn"eqttgncvg" ykvj" hqygt"Uki pcn"vq" Pqkug" Tcvkqu0

Swgt{<" " " " TQT@BU>ET@>NH@
Rtcgeku"KK"tgurqpug<" " u

UPLOAD

EVENT

V jku" xgtukqp"qh"vjg"GpfTwp" hqt o cv"ku" wugf" hqt" u j q y kpi" vk o g/ qh/ fc{ "kphqt o cvkqp" y jgp" wukpi" vjg" gxgpp" kprwv" ecrcknk{0""V jku" vk o g/ qh/ fc{ " o guuc i g" u j q y u" vjg" gzcev" vk o g" qh" vjg" tgegkrv" qh" cp" y jgp" cp" gxgpp" uki pcn" qeewtu0""Ugg" *Ejcrvgt"5"/"Eqpvtqn"cpf"Uvcvwu"Eqo o cpf*u" hqt" kphqt o cvkqp" qp" vjg" **FWF**Ou" eq o / o cpf0""Ugg" *Crrgpfkz" F"/"Urgekhekcvkqpu*" hqt" fgvcknu" qp" vjg" gxgpp" kprwv" uki pcn0

V jg" qpn{ " fkhgtgpeg" dgvy ggp" vjku" cpf" vjg" rtgxkquw" GpfTwp" hqt o cv"ku" vjg" c f fkvkqp" qh" uwd/ugeqpfu" kphqt o cvkqp<

" **U!ZZZZ!EEE!II;EE;TT/tttttttttt!{[[!n!DD!GG=DS?=MG?**

V"" ku"vjg"Vko g"Hkiwtg"Qh"Ogtkv"*VHQO+"ejctcevt0""Cpf"ku"qpg"qh<
 " " " ;" kpfkecvgu"gttqt"@"-1/"32" o knkugeqpfu."qt"wpu{pej tqpk|gf"eqpfkvkqp
 " " " : " kpfkecvgu"gttqt">"-1/"32" o knkugeqpfu
 " " " 9" kpfkecvgu"gttqt">"-1/"3" o knkugeqpf
 " " " 8" kpfkecvgu"gttqt">"-1/"322" o ketugeqpfu
 [[[["" ku"vjg" {gct.
 FFF"" ku"vjg"fc{ "qh"vjg" {gct.
 J J "" ku"vjg"j qwt"qh"vjg"fc{.
 O O "" ku"vjg" o kpwwg"qh"vjg"j qwt.
 U U "" ku"vjg"ugeqpf"qh"vjg" o kpwwg.
 0uuuuuuuu" ku"vjg"uwd/ugeqpfu" kphqt o cvkqp0
 | \ \ " ku"vjg"vk o g" | qpg"*qt"nqecn+"qhhugv"*kp"wpkvu"qh"j cnh/j qwtu+" cpf"
 " " ku"pqp/|gtq"qpn{ " y jgp"vjg"vk o g" o qfg"ku"NQECN"qt"NQECNOCP00
 o "" ku"vjg"Vko g"Oqfg"ejctcevt"cpf"ku"qpg"qh<
 " " " I"?" IRU.
 " " " N"?"NQECN"qt"NQECNOCP.
 " " " W"?"WVE
 EE" ku"vjg"ewttgpn"ngcr"ugeqpfu0
 HH" ku"vjg"hwvwtg"ngcr"ugeqpfu0""Kh" c"ngcr"ugeqpf"ku"rgpfkpi."vjku"xcnwg" y knn" o cvej"vjg"ewttgpn
 " " ngcr"ugeqpfu"xcnwg"wpvkn"kv"ku" y kvj kp"46"j qwtu"qh"vjg"vtcpukvqp0""Ykvj kp"46"j qwtu"qh" c"ngcr
 " " ugeqpf"vtcpukvqp"kv" y knn" u j q y " vjg"cevwc n"hwvwtg"ngcr"ugeqpfu"xcnwg0
 >ET@>NH@ku"cp" CUEKk"ecttki g"tgvwtp"*EVTN/O."2z2F+"cpf"nkp g"hg g f"*EVTN/L."2z2C+0

Basic NTP Setup

Dcuke"ugvwr"ku"tgnvckxgn{"uk o rng."kh<

É [qw"jcxg"dggp"cdng"vq"uweeguuhwnn{"eq o o wpkecvg"ykvj"vjg"Rtcgeku"KK"cpf"mpqy"y jkej"ugtkcn"KlQ"fgxkeg"qp"{qwt"jquv"eq o rrwgt"{qw"ctg"wukpi0

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Vq"eq o rngvg"vjg"ugvwr."vjgug"igpgtca"uvgru"yknndg"rgthqt o gf0""Vjg"gzc o rng"y jkej"hqnnqyu"ikxgu"vjg"fgvckngf"uvgr/d{/uvgr"kpvtwevkqpu0

30" Kuuwg"vjg"eq o o cpf"vq"vjg"Rtcgeku"KK"vq"ugv"kv"vq"g o wncvg"vjg"VtwgVk o g"enqem"v{rg0""Vjgp" o cmg"uwtg"vjcv"vjg"Rtcgeku"KK"ugtkcn"KlQ"rqtvrctc o gygtu"ctg"eq o rcvkdnng"ykvj"vjg"VtwgVk o g"PVR"tghgtgpeg"enqem"ftkxgt0"Tghgt"vq"*Ejcrvgt"5ó"Eqpvtqn"cpf"Uvcvwu"Eq o o cpf"u*hqt"fgvckngf"kphqt o cvkqp"qp"wukpi"vjg"ugtkcn"KlQ"rqtvr"ykvj"vjg"Rtcgeku"KK0

40" Pgzv."etgcvg"cu{" o dqnke"nkpm"kp"{qwt"lfgx"fkgevt{"y jkej"rqkpwu"vq"vjg"ugtkcn"KlQ"rqtvr"vq"y jkej" {qwt"Rtcgeku"KK"ku"eqppgevgf0""Vjg"u{" o dqnke"nkpm" o wuv"dg"ecmngf"vtwg2."y jgp" {qw"ctg"wukpi"vjg"VtwgVk o g"PVR"tghgtgpeg"enqem"ftkxgt0

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GZCORNG

Vjg"hqnnqykp i"gzc o rng"ykn"ugv"wr"PVR"qp"cu"Nkpwz"u{uvg o 0""Hktuv."uvqr"vjg"rqygt/wr"fgbcwnv."eqp/vkpwqw."qpeg/rgt/ugeqpf."vk o g/qh/fc{" o guucig"qwwrww"d{"ugpfkpi"vjku"eq o o cpf"htq o {"qwt"vgt o kpcn"rtqitc o "vq"vjg"Rtcgeku"KK<

dujnf>pgg=DS?=MG?

Vjg"Rtcgeku"KK"ykn"tgurqpf<""**PL=DS?=MG?**

Pqy"ugpf"vjku"eq o o cpf"vq"ejcpi"vjg"vk o g/qh/fc{" o guucig"htq o cv"vq"VtwgVk o g"g o wncvkkp<

fnvm>usvfujnf=DS?=MG?

Vjg"Rtcgeku"KK"ykn"tgurqpf<""**PL=DS?=MG?**

Pqy" {qw"pggf"vq" o cmg"uwtg"vjcv"vjg"ugtkcn"KlQ"rqtvrctc o gygtu"qh"vjg"Rtcgeku"KK"ctg"eq o rcvkdnng"ykvj"vjqug"gzrgevgf"d{"vjg"VtwgVk o g"PVR"tghgtgpeg"enqem"ftkxgt<"";822.".:."P."30"" [qw"ecp"ejgem"vjg"ewt/tgpv"ugvkkpi"u"d{"ugpfkpi<

qpsu=DS?=MG?

Vjg"Rtcgeku"KK"ujqwnf"tgurqpf<""**:711-9-0-2=DS?=MG?**

kh"vjg"RQTV"eq o o cpf"tgurqpfu"ykvj"fkhhgtgpv"ugvkkpiu."vjgp" {qw" o wuv"ejcpi"vjg" o "wukpi"RQTV"eq o / o cpf"ykvj"vjg"cr rtrtkcvg"ctiwo gpvu<

rcemgv"vjcv"ctg"ugpv"kp"tgurqpug"vq"PVR"enkppv"tgsuwgv"rcemgvu0""Kv"kfgpvkLgu"vjg"uqwteg"qh"{qwt"PVR"
ugtxgt0u"tghgtgpeg"vkog0

Tg/uvctv"pvr"vq"jcxg"kv"dgi"kp"wukpi"vjg"Rtcgeku"kk"cu"vjg"rtghgtgf"u{pej"tqpk|cvkqp"rggt0

Wug"vjg"PVR"wkknv{"pvr"s"vq"ejgem"vjcv"pvr"ku"cdng"vq"eqo"owpkecvg"ykvj"vjg"Rtcgeku"kk0""Chvgt"kuwkp"i"
vjg"eqo"ocpf O

ouqr

{qw"ykm"ugg"vjg"pvr"s"eqo"ocpf"rtq"orv<

ouqr?

Wug"vjg"eqo"ocpf

qffst

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gpc"em"FlOg"Ry"Jk"Jd"jcxg"lwuv"eqp rnc{"o"cup V

40" Pqy"etgcvg"c"u{ o dqke"nkpm"kp}{qwt"lfgx"fktgevqt{"y jkej"rqkpvu"vq"vjg"ugtkcn"klQ"rqtv"vjcv}{qwt"Rtcgeku"KK"ku"eqppgevgf"vq0"Vjg"u{ o dqke"nkpm"ujqwnf"dg"ecnngf"rcnkucfg20

50" Pqy"gfkv"vjg"pvr0eqph"Łng"uq"vjcv" PVR"y knm"wug"vjg"Vtk o dng"Rcnkucfg" PVR"tghgtgpeg"enqem"ftkxgt0

GZCORNG

Vjg"hqnnq ykpi"gzc o rng"y knm"ugv"wr" PVR"qp"c"Nkpwz"u{uvgo0"Hktuv."uvqr"vjg"r qygt"wr"fg hcwv."eqp/vkpwqwu."qpeg/rgt/ugeqpf."vko g/qh/fc{"o guucig"qwwrww"d{"ugpfkpi"vjku"eqo o cpf"htqo {"qwt"vgtokpcn"rtqitco"vq"vjg"Rtcgeku"KK<

dujnf>pgg=DS?=MG?

Vjg"Rtcgeku"KK"y knm"tgurqpf<

PL=DS?=MG?

Pqy"ugpf"vjku"eqo o cpf"vq"ejcpi g"vjg"vko g/qh/fc{"o guucig"hqto cv"vq"Vtk o dng"Rcnkucfg"g o wncvkqp<

fnvm>us jncmf=DS?=MG?

Vjg"Rtcgeku"KK"y knm"tgurqpf<

PL=DS?=MG?

Pqy" {qw"pggf"vq"o cmg"uwtg"vjcv"vjg"ugtkcn"klQ"rqtv"rctc o gvtu"qh"vjg"Rtcgeku"KK"ctg"eqo rcvkdng"ykvj"vjg"Vtk o dng"Rcnkucfg" PVR"tghgtgpeg"enqem"ftkxgt<" ;822." :."Q."3"d{"ugpfkpi<

qpsu=DS?=MG?

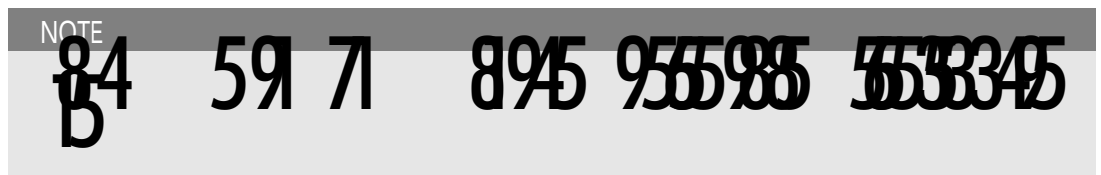
Vjg"Rtcgeku"KK"ujqwnf"tgurqpf<

: 711-9-p-2=DS?=MG?

kh"vjg"qpsu"eqo o cpf"tgurqpfu"ykvj"fkhhgtgpv"ugwkp iu."vjgp" {qw"o wuv"ejcpi g"vjg"o "wukpi"vjg"qpsu"eqo o cpf<

qpsu> : 711-9-p-2=DS?=MG? ! !

Vjg"Rtcgeku"KK"ku"pqy"eqpŁiwtgf"hqtrrgtcvkqp"ykvj"vjg"Vtk o dng"Rcnkucfg" PVR"tghgtgpeg"enqem"ftkxgt0



1PPS NTP Setup

```
[qw"ctg"tgcf{"vq"ugvwr"wukpi"vjg"3RRU/ftkxgp"FEF"ecrcdkkv{"qh"vjg"Rtcgeku"KK"kh
```

```
É [qw"jcxg"dggp"cdng"vq"uweeguuhwn{"eq o o wpkecvg"ykvj"vjg"Rtcgeku"KK"cpf"mpqy"y jkej"ugtkcn"KlQ"
fgxkeg"qp"{qwt"jquv"eq o rwwgt{"qw"ctg"wukpi
```

```
É [qw"jcxg"kpucnngf"cp"wr/vq/fcvg"PVR"xgtukqp"6"qp"{qwt"jquv"eq o rwwgt"cpf"vjg"Vtwgk o g"tghgtpeg"
enqem"ftkxgt"ku"eq o rknngf"kpvg"vjg"PVR"fcg o qp0"[qw"o wuv"cnug"jcxg"vjg"Cvq o "tghgtpeg"enqem"ftkxgt"
eq o rknngf"kpvg"vjg"fcg o qp0"Hqt"Nkpwz."{qw"o wuv"jcxg"vjg"RRU/tgncvgf"jgc fgt"kpenwfg"Łngu"rtgugpv"qp"
{qwt"u{uvg o "kp"qtfgt"vq"eq o rknng"vjg"PVR"fcg o qp"ykvj"vjg"Cvq o "tghgtpeg"enqem"ftkxgt0"Cu"qh"vjku"
ytkvpi."mgtpgn"xgtukqp"50404"fqgu"pqv"pcvkgxg{"eqpvckp"vjg"vk o grru0j"Łng0
```

```
É [qw"jcxg"rgthqt o gf"cp{"mgtpgn"o qfkŁecvkpu"cpf"tgeq o rknckvqpu"vjcv"o c{"dg"pggfgf"vq"uwr rqtv"
3RRU/ftkxgp"FEF"qrgtcvkqp"qp"{qwt"rncvht o 0"Kk{"qw"ctg"qp"vjg"Nkpwz"rncvht o ."mgtpgn"xgtukqp"
40805:"cpf"jki jgt"pqy"jcxg"RRU"uwr rqtv"cu"o"eq o rknng"qrvkqp"ht"vjg"uvpcfctf"mgtpgn"cxckncdng"htq o "
y y y0mgtpgn0qti0"Wpfgt"Nkpwz."{qw"y knn"cnug"pggf"vjg"nfcwcej"vknkv{0"Kv"o wuv"dg"o"tgegpv"gpqwi j"
xgtukqp"vq"uwr rqtv"vjg"RRU"nkpg"fkuekrnkpg0"V{rg"mebuubdi"ykvj"pq"eq o o cpf"nkpg"ctiw o gpvu"vq"ugg"o"
nkuv"qh"uwr rqtvgf"nkpg"fkuekrnkpgu0
```

```
É [qw"jcxg"rgthqt o gf"Duke"PVR"Ugvwr"cu"fguetkdgf"rtgxkqwn{"kp"vjku"Ejcrvgt0
```

```
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o gpvu"ku"cnyc{"u"kp"eqplwpevkqp"ykvj"qpg"qh"vjg"uvpcfctf"PVR"tghgtpeg"enqem"ftkxgtu."uwej"cu"vjg"Vtw/
gVk o g"ftkxgt0"PVR"pggf"vjg"vk o g/qh/fc{"o guucig"htq o "vjg"PVR"tghgtpeg"enqem"ftkxgt"vq"fgvgt o kpg"
vjg"eqttgev"ugeqpf"ht"vjg"tkup i"gf i g"qh"vjg"pgzv"3RRU0
```

```
Ukpeg"vjg"Rtcgeku"KK"uwr rqtvu"o"uugt"ugngevcng"3RRU"rwnug ykfvj"*ugg"Ejcrvgt"5"6"Eapvtqn"cpf"Uvcvwu"
Ego o cpfu."{qw"ujqwnf"ugv"kv"vq"vjg":PVR0"xcnwg"y jgp"{qw"ctg"wukpi"kv"ht"3RRU/ftkxgp"FEF"qrgtc/
vkqp"ykvj"PVR"d{"kuwkp i"vjku"eq o o cpf<
```

```
qqt xjeui !> !ouq=DS?=MG?
```

```
Kp"vjku"o qfg."vjg"3RRU/ftkxgp"FEF"rwnug ykfvj"y knn"dg"ugv"vq"vjg"y kfvj"qh"qpg"dkv"cv"vjg"ugngevgf"dcwf"
tcvg"qh"vjg"ugtkcn"KlQ"rqtv."cu"tgswtg f"d{"vjg"PVR"tghgtpeg"enqem"ftkxgtu0
```

```
Qp"Nkpwz"rncvht o u."{qw"o wuv"nqcf"vjg"RRU"mgtpgn"o qfwngu<
```

```
npeqspcf!qqt`dpsf!qqt`mejtd
```

```
cpf"{qw"o wuv"uvctv"vjg"nfcwcej"fcg o qp<
```

```
mebuubdi!QQT!0efw0usvf1
```

```
Vq"eq o rngv"vjg"ugvwr."kv"qpn{"tg o ckpu"vq"gfkv"vjg"pvr0eqph"Łng"uq"vjcv"PVR"y knn"uug"vjg"3RRU"mgtpgn"
o gcuwtg o gpvu0
```

Configure NTP

```
pvs
```


tfswfs!238/238/33/1!njoqpm!5!nbyqpm!5
gvehf!238/238/33/1!gmbh3!2!gmbh4!2

Vjgug"nkpgu"vgmn"pvr"vq"vug"vk o gvc i u"vj cv"vjg"mgtpgn"ecr vwtgu"qp"vjg"rqukvxg"vtcpukvqpu"qh"vjg"FEF"
nkpg"qh"vjg"ugtkcn"klQ"rqtv"rqpvgf"vq"d{"lfgx/vtwg20""Kv"ykn"cuuqekcvg"vjgug"3RRU"o gcuwtg o gpvu"ykvj"
vjg"tghgtpeg"enqem"ftkxgt"y jke j"jcu"vjg"÷r tghgtømg{y qtf0""Kp"vjku"gzco rng."vjcv"y qwnf"dg"vjg"Vtw/
gVko g"tghgtpeg"enqem"ftkxgt"vjcv"y cu"ugvwr"kp"**Dcuke"PVUgvrw**0

Tguvctv"pvr"vq"jcxg"kv"dgikp"wukpi"vjg"Rtcgeku"KK"cu"vjg"rtghgttgf"u{pejtqpk|cvkqp"rggt"ykvj"3RRU"
o gcuwtg o gpv"ecrcdkkv{"gpcdnf0

Wug"vjg"PVU"wkknv{"pvr"vq"ejgem"vjcv"pvr"ku"cdng"vq"eq o o wpkecvg"ykvj"vjg"Rtcgeku"KK0""Chygt"kuuwkpi"
vjg"eq o o cpf

ouqr

{qw"ykn"ugg"vjg"ouqr"eq o o cpf"rtq o r v<

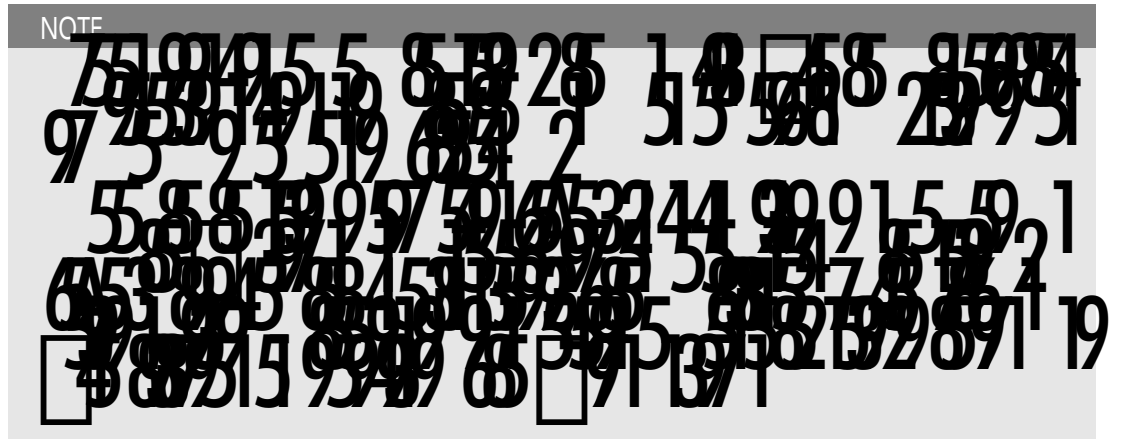
ouqr?

Wug"vjg"eq o o cpf

qffst

vq"fkurnc{"vjg"PVU"rggtu"y jke j" {qwt"eq o r wvgt"ku"wukpi 0""Qpg"qh"vjg o "ujqwnf"dg"vjg"VtwgVko g"tghgt/
gpeg"enqem"ftkxgt"y jke j" {qw"jcxg"lwuv"eqpLi wtgf0"" [qw"ujqwnf"xgthk{"vjcv"ku"dgkpi"-:tgcejgf0""* [qw"
oc{"jcxg"vq"eqpvkpwg"kuuwkpi"vjg"rggtu"eq o o cpf"htc"okpwwg"qt"v y q"dgthqt" {qw"ykn"ugg"vjg"÷tgcejø"
eqwpv"kpvetg o gpv0+"" [qw"ujqwnf"cnug"ugg"vjg"RRU"tghenqem"kp"vjg"rggt"nkuv0""Kh" {qw"jcxg"qvjgt"rggtu"eqp/
Li wtgf."xgthk{"vjcv"vjg"qhhugv"kphqt o cvkqp"ht"vjg"VtwgVko g"cpf"RRU"rggtu"cpf" {qwt"qvjgt"rggtu"ku"kp"
ci tgg o gpv"vq"ykvj"kp"chgy"o knnkugeqpfu."cuuw o kpi"vjcv"vjg"qvjgt"rggtu"ctg"u{pejtqpk|gf"vq"vjcv"ngxgn"
qh"ceewtce{0

Kv"oc{"cnug"dg"wughwn"vq"uvctv"vjg"PVU"fcg o qp"kp"÷fgdwi ø"o qfg"*ouqe! e+"vq"eqpLt o "uweeguuhwn"
eqpLi wtcvkp0""Tghgt"vq"vjg"PVU"fqew o gpvcvkqp"ht"fgvckngf"wucig"qh"vjg"fgdwi"wkknvkvgu0



[qw"ykn"vjgp"ugg"vjg"Rtcgeku"KK"ugpf"vjg"ejctcevg"÷Eø"gxgt{"vjtg"ugeqpfu"y jng"kv"ku"yckvkpi"htq"{"qw"vq"dgikp"wrnqcfkpi"vjg"ko cig"Łng"Ujqwnf"{"qw"pggf"vq"cdqtv"vjg"wrnqcf"rtqegu"pqy."ugpf"EVTN/Z"vq"vjg"Rtcgeku"KK"Kk"{"qw"cdqtv"cv"vjku"vko g."{"qwt"ewttgvp"Łto yctg"ykn"tg o ckp"kpvcv"Kk"{"qw"cdqtv"chvgt"vjg"Łng"vtcpuhgt"ku"kp"rtqitguu."{"qw"ykn"pqv"tgvc"kp"{"qwt"qtkikpcn"Łto yctg" [qw"ykn"pggf"vq"tg/wrnqcf"kv]

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Problems With The Upgrade

Ujqwnf"{"qw"jcxg"fhŁewnvku"ykvj"vjg"wr itc"fg"fwg"vq"ceqttwrv"Łng."rqygt"hcwnwtg"fwtkpi"wrnqcf."qt"qvjgt"ceekfgpv."fq"pqv"dg"cnctogf" Gxgp"vjqwi j"{"qw"oc{"jcxg"nquv"vjg"gzkukpi"cr rnkecvkqp"rtqitc o."vjg"Rtcgeku"KK"dqvnqcfgt"rtqitc o"ykn"tg o ckp"kpvcv" Qp"dqv"wr."kv"ykn"ejgem"vq"ugg"kh"cxcnf"cr/rnkecvkqp"rtqitc o"ku"kp"vjg"HNCUJ"og o qt{"Kk"vjgtg"ku"pqv."kv"ykn"ko og fkecvgn{"iq"kpqv"vjg"÷yckvkpi"htq"fqy"pnqcf"o qfg."ugpfkpi"vjg"÷Eø"ejctcevg"gxgt{"vjtg"ugeqpfu" [qw"oc{"vjgp"tg/vt{"vjg"wrnqcf"rtqegfwtg."chvgt"{"qw"jcxg"eqttgevgf"vjg"qtkikpcn"rtqdn go

Kv"ku"rquukdng"htq"vjg"dqvnqcfgt"rtqitc o"vq"dg"hqngf"d{"ceqttwrv"fg"cr rnkecvkqp"rtqitc o"vjcv"jcu"dggp"rtgxkqwun{"fqy"pnqcf"kpqv"HNCUJ"Kp"vjku"ecug."kv"ykn"cvwg"orv"vq"uvctv"vjg"cr rnkecvkqp"rtqitc o" I gpgtcm{"vjku"ykn"tguwnv"kp"cehcnwtg"vjcv"ykn"htqeg"cycevj"fq"kpvkcvg"tgdaqv"Vjku"rtqegu"ykn"dg"tgrgcvgf"kpfgŁpkvgn{"wpnguu"{"qw"kpvtgxpgp

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Upgrade Using Linux and Minicom

Wukpi"njojdpn"vq"rgthqt o"vjg"wr itc"fg"ecp"dg"rtqdn go cvke" Hqmqy"vjku"rtqegfwtg<

30" Wug"njojdpn"vq"vcnm"vq"vjg"wpkv" Kuuwg"vjg"vqmpbe"eq o o cpf"cpf"yckv"htq"vjg"öDö"ejctcevgtu"vq"uvctv

40" Pqy"gzkv"htq o"njojdpn"ykvj"EVTN/C" S"Vjgp"v{"rg"vjku"eq o o cpf<

"



Vjg"ejcppgnugv"eqo o cpf"jcu"dggp"ejcpi g f"unki jvn{"d{"cf f kpi" c"pgy" rctc o gygt"örö"vq"hqteg"vjg"Rtcg/
eku"vq"ugcte j"REU"ejcppgnu"

" **diboofmtfu!>!q**"

Additional Outputs

Vjgtg"ctg"vyq"pgy"qwwrwwu"qp"vjg"Rtcgeku"KK"vjcv"fkf"pqv"gzkuv"kp"vjg"Rtcgeku"Ev0""Vjgug"ctg" c"3"Rwnug/
Rgt/Ugeqpf"*3RRU+" c p f"32" O J | .dqvj"qp"UOC"eqppgevtu0""UrgekŁecvkqpu"ctg"ujqyp"kp"**Crrgpfkz" F**"
/"**Urgekhkecvkqpu**0

Pulse Width

Vjg"ncevt{" fghcwnv"ugv kpi" hqt"vjg"3RRU"uki pcn"ku"qpg" o k n k u g e q p f" y k f g" k p" v j g" R t c g e k u" K K 0"" K p" v j g" R t c g /
eku"Ev."vjg"3RRU" rwnug" ykf v j" y c u" f g r g p f g p v" w r q p" v j g" d e w f" t e v g" q h" v j g" u g t k e n" r q t v 0"" V j g" 3 R R U" u k i p c n" k u"
qwwrww"qp"vjg" TU/454" Fcvc" Ectktgt" Fgygev"*FEF+"nkpg" c p f" v j g" p g y" U O C" e q p p g e v t 0"" V q" e j c p i g" v j g"
3RRU" rwnug" ykf v j" v q" o c v e j" v j c v" q h" v j g" q n f" R t c g e k u" E v" u k o r n {" w u g" v j g" **QVMTFXJEUI**" e q o o c p f" c u <

" **QQTXJEUI>OUQ**"

Vjku"ugv kpi" y k m n" d g" u c x g 0" k p" p q 0" x q n c v k n g" o g o q t {" u q" { q 0" y k m n" p q" p g g f" v q" f q" v j k u" c 0" k p" w p n g u u" { q w"
t g u g v" h c e v t {" f g h c w n v" u g v k p i u" w u k p i" v j g" k p f k e c v q t" O q f g" D w w q p" c u" f g u e t k d g f" k p" E j c r v g t" 8 0

Time-of-Day Message

Vjg"GpfTwp"vk o g/qh/fc{" o g u u c i g" j c u" d g g p" e j c p i g" v q" c f f" h g c r" u g e q p f u" k p h q t o c v k q p 0"" V j k u" k u" v j g"
o g u u c i g" h q t o c v" h q t" v j g" t g u r q p u g" v q" v j g" **UJNF**" e q o o c p f. " k u" v u g f" u q t" g { ? k m n" d g" u O O O

Praecis Cf Mode Configuration

Pqv"vqq" o cp{ "fkhhgtgpegu"gzkuv"dgvyggp"vjg"Rtcgeku"KK"cpf"vjg"Rtcgeku"Eh0" Jqy gxgt."vjg"xgtukqp"kp/
hqt o cvkqp" o c{ "ecwug"rtqdnq o u"hqt"uq o g"gs wr o gpv"vjcv" jcu"dgpp"fgxgnqrgf"vq"y qtm"urgekŁecm{ "y kvj"
vjg"Rtcgeku"Eh0""Vjg"Rtcgeku"Eh"Oqfg" y knn"uqnxg"vjku"rtqdnq o "d{ "tgurqpfpki"vq"vjg"WFS"eq o o cpf"cu"
enqugn{ "cu"rquukdnq"vq"vjg" y c{ "vjg"Rtcgeku"Eh"fkf0"Vjku"ujqwnf"dg"uwŁekgpv"vq" o ckpvckp"kpvgtqr gtcdkn/
kv{ "dgvyggp"vjg"Rtcgeku"KK"*eqpŁiwtgf"cu"Rtcgeku"Eh"Oqfg+"cpf"qvjgt"gs wr o gpv0

Xgtukqp"kp hqt o cvkqp"*WFS"eq o o cpf+"hqt"Rtcgeku"KK"eqpŁiwtgf"cu"Rtcgeku"Eh"Oqfg<

! Qsbfdjt!Dg!GX!7121.1174.111!w!2/11!!!Kvo!36!3121!21;57;33!!
! Qsbfdjt!QHB!7131.1119.111!w!12=DS?=MG?

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o cvej"vjcv"qh"vjg"Rtcgeku"Eh0

Jqy gxgt."dgukfgu"vjg"tgurqpug"vq"vjg"WFS"eq o o cpf."vjgtg"ctg"vyq"qvjg"u o cmn"fkhhgtgpegu"vjcv"tg o ckp0"
Vjg"wpkv" y knn"tgurqp f"kpucpv n{ "vq" c"DI BOOFMTFU"eq o o cpf"cpf"vjgtg"ctg"vyq"pgy"hcwnv"dkvu"kp"tg/
urqpug"vq"vjg"GMUTUBU"eq o o cpf0""Ugg"fgvcknu"kp"vjg"Rtcgeku"KK"cpf"Rtcgeku"Eh"FWF " O cge

*LEGACY Command

Vjku"ku"c"urgekcn"eq o o c p f " k p v g p f g f " q p n { " h q t " v j q u g " y j q " t g s w k t g " e j c p i k p i " v j g " e q p L i w t c v k q p " q h " v j g " R t c g e k u " K K " v q " q p g " q h " v j g " n g i c e { " r t q f w e v " e q p L i w t c v k q p u < " R t c g e k u " E h " q t " R t c g e k u " E v 0 " " Q p e g " v j k u " j c u " d g g p " e j c p i g f " k v " y k n n " p q v " d g " c h h g e v g f " d { " t g u g w k p i " h c e v q t { " f g h c w n v u " * u g g " *Ejcrvgt"8"/"Kpfkecvqt"OqfgDwwqp*+0

Y j g p { " q w " e j c p i g " v j g " + M F H B D Z " u g w k p i " v j g " w p k v " y k n n " c w v q o c v k e c n n { " t g u g v " h c e v q t { " f g h c w n v u 0 " " [q w " y k n n " p g g f " v q " v { r g " c " *SFTFU* " e q o o c p f " v q " t g u v c t v " v j g " w p k v " c p f " r t q r g t n { " u g v " w r " j c t f y c t g " h q t " { q w t " p g y " e q p L i w / t c v k q p 0

+M F H B D Z " k u " p q v " u j q y p " k p " v j g " R t c g e k u " K K " *IFMQ* " o g p w . " p q t " c u " r c t v " q h " v j g " t g u r q p u g " v q " v j g " *TFUUJOHT* ! e q o o c p f 0 " U { p v c z " k u < " + M F H B D Z ? z . " y j g t g " z " k u " 3 " h q t " R t c g e k u " K K . " 4 " h q t " R t c g e k u " E h " O q f g " c p f " 5 " h q t " R t c g / e k u " E v " O q f g 0

" Swgt{<" "	"	+M F H B D Z = D S ? = M G ?
" Rtcgeku"KK"tgurqpug<"		+M F H B D Z > 2 !) Q s b f d j t ! J J *
! ! ! !		W p n g u u " u r g e k L g f " c v " v k o g " q h " q t f g t . " c n n " R t c g e k u " K K " c t g " u j k r r g f " y k v j " v j k u e q p L i w t c v k q p 0
" " " "		

" Swgt{<" "	"	<i>IFMQ</i> ! + M F H B D Z = D S ? = M G ?
" Rtcgeku"KK"tgurqpug<"		k p h q t o c v k q p " t g n c v g f " v q " v j g " + M F H B D Z " e q o o c p f " k u " f k u r n c { g f 0

" Ug<" "	"	+M F H B D Z > 3 = D S ? = M G ?
" Rtcgeku"KK"tgurqpug<"		PL
! ! ! !		V j g " w p k v " y k n n " c w v q o c v k e c n n { " t g u g v " h c e v q t { " f g h c w n v u " v q " v j q u g " q h R t c g e k u " E h " O q f g 0 " [q w " y k n n " p g g f " v q " v { r g " c " <i>SFTFU</i> " e q o o c p f " k p " q t f g t " v q " r t q r g t n { " u g v " w r " v j g " j c t f y c t g 0 " " V j g " p g y " , N G I C E [" u g w k p i " y k n n " d g u v q t g f " k p " H N C U J " c p f " t g o c k p " e q p L i w t g f " c u " c " R t c g e k u " E h " w p v k n " { q w u r g e k L e c n n { " e j c p i g " k v " w u k p i " v j g " + M F H B D Z " e q o o c p f 0
" " " "		
" " " "		
" " " "		



3"Rwnug/Rgt/Ugeqpf*3RRU+"Vko kpi"Ejctcevgtkuvek<

Ukipcn< Rqukvxg"VVN"rwnug" B "72Ω)

Ceewtce{<">32" o ketqugeqpfu"vq"WVE"v{ rkecn" y jgp"nqemgf0""Htkpig"ctgc"tgegrvkqp" o c{ "fgitcfcg"vjg" cduqnvvg"vk o kpi"ceewtce{ "fwg"vq"kpetgcug"rtqrcicvkqp"fgnc{0

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Eqppgevqt<"UOC"dwnmjgcf"lcem)

32"O J|"Htgswgpe{"Ejctcevgtkuvek<

Ukipcn< Rqukvxg"VVN"rwnug" B "72Ω)

Ceewtce{<">32/33"vq"WVE"htq"46/jqwt"cxgtc"i kpi "vk o gu" y jgp"nqemgf0

Uvedknkv{<" { * + ">"32/;"htq" ">"324"ugeqpfu." { * + ">"32/9l "htq" "@324"ugeqpfu)

Eqppgevqt<"UOC"dwnmjgcf"lcem)

KlQ"Ukipcnu<

FEF<"Qwvrvw"cv"TU/454"ngxgnu0""Ugg"FEF"3"Rwnug/Rgt/Ugeqpf"Qwvrvw"Ejctcevgtkuvek"*dgnqy+0

EVU<"Kprvw"cv"TU/454"ngxgnu0""Ugg"EVU"Kprvw"Gxgpv"Vko gvc i kpi"Ejctcevgtkuvek"*dgnqy+0

Ugtken"klQ<"TZF."VZF"cv"TU/454"ngxgnu0""

" Wugt/ugngevcndng"rctc o gvtu<"; 822."3; 422."5 : 622."79822"dcwf="9"qt": "fcvc"dkvu="

" qff."gxgp"qt"pq"rctkv{="3"qt"4"uvqr"dkvu)

Eqppgevqtu<"TL/67"Eqppgevqt"TL/67"vq"FD;H"cfcrvgtlecdng"cuug o dn{ "kpenwfgf0

TL/67"Rkp" qp"Rtcgeku"KK	FD;H"Rkp" qp"Cfcrvgt	Ukipcn"Pc o g
3	3	Fcvc"Ecttlgt"Fgvgev"*FEF+ FEF"ku"ftkxgp"d{"vjg"3RRU"ukipcn"htqo"vjg" Rtcgeku"KK0""Hcnkpi"gf ig"ku"qp/vk o g0
4	4	Vtcpu okv"Fcvc"*VZF+ VZF"ku"ftkxgp"d{"vjg"Rtcgeku"KK0
5	5	Tgegkxg"Fcvc"*TZF+ TZF"ku"ftkxgp"d{"vjg"jqv"eq o rrwgt0
6	6	Pqv"Eqppgevfg
7	7	I tqwpf"*I PF+ I PF"ku"eqppgevfg"vq"vjg"rqygt"uwrrn{ i tqwpf"qp"vjg"Rtcgeku"KK0
8	8	Pqv"Eqppgevfg
9	9	Engct"Vq"Ugpf"*EVU+ EVU"ku"ftkxgp"d{"Tgswguv"Vq"Ugpf"*TVU+ htqo"vjg"jqv"eq o rrwgt0""Vjg"Rtcgeku"KK" vk o gvc i u"vjg"tkukpi"gf ig"qh"EVU" y jgp"vjg" Gxgpv"vk o gvc i kpi "hwpevkqp"ku"QP"*ugg"vjg" GXGPV"eq o o cpf+."qt"kh"vjg"Rtcgeku"KK"ku" qrgtcvkpi"kp"Vtk o dng"Rcnkucfg"g o wncvkqp" o qfg"*ugg"vjg"GOWN"eq o o cpf+0
:	:	Pqv"Eqppgevfg

