1. Simple menu, no MWTO (middle wheel turnover)

a.

ciphertext:

cmfru ibigu mbsgo snyzm ffxid
rtwap pejbi oceqk eyisl ioudh
ebfmq mqzoo vczid yabzn jjhdo
qjgvs lrisy qyzoi uhfou fdplb
ndbnr hnsoz flnhw xgylx kligz
pwjiy bhbuo cibfn ubpec wabvn
kgbmp hnwt

crib:

THEGERMANSBELIEVED
CMFRUIBIGUMBSGOSNY

Reflector: B
Rotors: II III V

b.

ciphertext:

lghjn xkoer gtpli jvacm moait
frlit zhtdr yougo opfmg skocr
abzrh xpxuq xmqmv vydsf ysuwn
ypgpd kbmbr hxbbw cntwx yhhkk
twqpr mccxe mxcfq ncpeg zdhcm
lqefo bfqyg ilxdd votgl uurqu
xrzdm yplko udagg tsguz cadjq
kvhmk wpymk uvdho knkwq oocoj
kygou uyewu fjyxq qkqoq vbghp
ekoid tnuey govhk igkde bl

crib:

THEENIGMACODEWASTHE
JVACMMOAITFRLITZHTD

Reflector: B
Rotors: I II IV

c.

ciphertext:

```
yfedy bfaie gbgch lmyxw conje
vlbkc tyvtt getcl oujbi dnrqr
jfzkc sagcv rvoqu spzvx gmfuo
zcygs nxbei cypif ktqqt alqem
pqznn hxegd jdbsi sxrej ddsqw
wjpbb yahyh tcxcv ekvgy alfep
ogxls f
```

crib (Italian)

```
JSIDIBARRANIJSIDIBARRANIJ
IDNRQRJFZKCSAGCVRVOQUSPZV
```

Reflector: C
Rotors: ? I II (left rotor unknown)

d.

ciphertext:

```
cpkyd sqvwz tuoks rmsjf njcxt
voazc pojhr bwdjx xhtgx hraof
lvvei vxapu qttcf bepes hugkx
heuch hrcvq lpayt hgkdh ojsxh
vrqfy eucnx wcpkr deowb davbd
myeoi avpwp nwoig jtqkt ivioc
wmhhf xtlbc sckyt dfsao ublll
ogpmd raerc geqcu gbwzy gcevu
osmfg gkcfa flziw mqhgh hzjlj
zbvbw xjnmc lu
```

Crib (German):

```
JVEESENMAYERJVEESENMAYERJ
EUCHHRCVQLPAYTHGKDHOJSXHV
```

Reflector: ?
Rotors: ? ? II (left and middle rotor unknown)

e.

ciphertext:

```
dytzh yderl ftgfb jinlv wfxsv
srzzd oqtbc igriu kyffx ksipw
hdijc ckllo pbhlu bqeio pccep
wmnfh zprel ecghn qarvf qjedg
zcwax miaui wpupo tqxjf ubmod
schqv soxyn ampch brqdd nswqi
tehsm gqsjp toyfs agbex cwnfl
virgg tjkxz jstsk wujzd ufgfd
elkdc jmqmh gzngb pyzxl vznzq
nwckd fbmel saula cirlh wbyle
fjqtm nbkki bmanu pmcwx evjzo
gxqds wayfg acgkg srkpj srlol
rhzet ycnpn azzfh escln qjgyr
```

Crib (German, somewhere near the end of the message):

GENXJHEINRICIJHEINRICIJ

Reflector: B
Rotors: unknown

2. Simple menu with MWTO (middle wheel turnover)

The first 5 letters (Buchstabenkenngruppe) in each message will be discarded and are not to be decrypted! Their only purpose is to identify the daily key that has been used for the encryption.

a.

1541 = 2tle = 1tl = 250 = tdh aea =

```
idalv stfdx dmbdl ekczw qrtlt
mfpsi xbgaw ekapn jjofy jkasc
lelmz dewaf xdfiy chllh krqlg
qgxly temld pevqu bqlyt xkixl
bzytg jrcdi lshka dwvcj qfrqx
duifb lbyzd uoibe lnwib kkfnp
yegqk ofqev shfsy cpebq dgksb
piafv hxtxp wgqah swigk nxztr
pkcrd lztfw cngfe djbhl zinie
mfqov bpryb ozvxx opssk stkyi
```

1555 = 2tle = 2tl = 184 = yod zgj =

```
ixwvo tdsgk tvmtv bznkl vfpou
dadtu kddyq pskis xnutm zitvh
qeaid egquw ujciq fbilc qtrrs
kvgss awzta ymacf igobp reubm
uxyqj mvyqd zrdje bubki kcxrh
jgdrn webxd fxing lefhp sfejd
bckoq tvapa rslgg qhpbf ysfpe
vhtoc qyzo
```

crib (German):

```
          mwto
LUFTUNTERS     TUETZUNGSMISSIONEN
JGDRNWEBXD     FXINGLEFHPSFEJDBCK
```

Reflector: B
Rotors: II III IV

b.

ciphertext:

1031 = 2tle = 1tl = 250 = izp rfh =

```
vmopn vljta zjqvf pchog ejrno
hyfmp vpfsp skvwy nfgnf zihwp
sppzl zhomc gjkec gnrln nivsq
svxno agddh bzmfv huxqq txtmj
xixzh bwoxl ewyqh whyrz cjljv
ucynl msuib dripr scbaw xpyhp
wawxi ikhmg ilasy xxcgx kcnud
mdysw rizqh ytofx pjgyn jwuvg
zyluo vlsdo vezyo blmty zlzhs
addry hfvwl xavwk twfwh xqbzk
```

1045 = 2tle = 2tl = 60 = tkl ccz =

```
dqkxp mzjwm fjqwn gvbtf lcukz
cmxcw txeho zaaio mjexc fxjox
hewca pmqgo
```

Crib (German):

```
LUFTSQLAQ   TUMENGLAND
EJRNOHYFM   PVPFSPSKVW
```

Reflector: C
Rotors: III V IV

c.

Ciphertext:

1430 = 1pti = 1pt = 250 = iph xeh =

```
eefsn dmtez afpxl zbwaz xvbtm
ywgvz yrwmc nivbr kjloi ayraf
jbvau uvepy dnldp xbagy nsgoj
xbexc jpvnj gfvma lyrsf kulof
ptagh hpwcb xzjmv qjjhm issog
iyjlu yjxwy nduim kkxrz boygf
bpvvi jeccm bsjkp xqltv snved
dcwdl rimtn qkksd wqyst kdeet
cyqpk fscgk gowyh spcph wcrfn
ujbhp vvgas dikow gyzwu getew
```

Crib (Romanian):

COMUNICATIILEARMATEI
YRWMCNIVBRKJLOIAYRAF

There is an unknown mwto in the crib!

Reflector: B
Rotors: ? ? 3 (left and middle rotor unknown)

d.

1351 = 4tle = 1tl = 250 = mly spv =

qqjul ytoit ghewg xgjrp sfcfd
kwaeb vyfep jbvnd jvxnl tgech
ejeor mfbfc idtdi omrzi qyoii
ypdkq qkohn pifkl ciuco aepqp
xdtrq yplyl ladtu mkvvk hjxok
jxesq mojxv rwggm gtsxr fxwmc
ofebq foril mubku ujuyj yiuiy
dvewx uyecu vqaot tvyfn zwyvn
xspdr stgam jlhrf eydoh qphrv
hylcx bkjzu mvyew viumk gzbbr

1403 = 4tle = 2tl = 250 = tve mjw =

fpahl eaivq crmcr iemio fdbfi
bzolr wthwt lngbl yvojo nnpaq
vegym kxjnf ogiwe lximi ghqbi
xzzoh hophz xudyp uotle xguho
znoyy pqiaz qdivn mnzis ttfsg
gusbb ijguy ikepb qryri ajjfx
fpfej txdur uvatx qrwky lnwys
vmkzo ecgmr vjibs hdmpk trtlz
chzpu lsfnv maikn ncjsw nchic
hvsuu auhub bpvad hhfqu ruvxk

1415 = 4tle = 3tl = 250 = meu zqo =

piavi wxwwz yordd kevvt zclkd
pieaj jbosm njgbu dbaxf okefb
qnnsr meptz bbrdx iwjmn ywcob
zmavg xemqc uimdl znbzt thrso

```
nooja wkmiu tldye jzdwu ulisu
rjfdw svozg onoma mmwiy xaozs
ypukc jdcvv wjtyv dqynm qhknx
hnlyo zxnzl hxcpk brjkt unrmz
addzt rodza vsfox kfxkf idqwn
ufqiu lyruo kctoh fqjfg iovvu
```

1421 = 4tle = 4tl = 143 = uhf vgz =

```
ckusx ozmph fneqq dtnjy qiwfz
pcimw dhhbd zenqk ggqqp ajtzq
vstpy cmkdr kylzr javgu jnzck
hytta ktxko fxelh ljbnc hulna
etsfd lnyew syucj mhxji jwjbk
jwezr hzjsk xsvuv jvp
```

Crib (German):

REGIAAERONAUTICA
BQNNSRMEPTZBBRDX — mwto unknown

Reflector: B
Rotors: unkown

e.

1900 = 3tle = 1tl = 250 = beb rat =

```
uqhuu evhkf nxazw rwhil nbhby
rwkzn vlpkh eyggx qtbjj zjnjo
mjxmg zakxr oqpzb istuf odtdf
nbhmk ncdjd mgrsw bxzwh yygvo
lbvla jgafe qdyjf uyrmt rqidp
mxlkl dohdc evhmo bnorz mhxqu
iyjzt wiflz gpovo yaozz swreh
ygyfa lpvyt cvawp prrnb olpbh
rhhng fxqxs vwijy sokfa xpxby
udjto tuuua nbvui agosg pfxwm
```

1913 = 3tle = 2tl = 250 = vzc qag =

```
szuna wsxww zcmnz pzvsf gkmqp
ghwol pajzv wjpey flzhg bqlcw
iwaoi lfugc jjbeh qyowt ictpp
cyour rgpxx vulpj glwvl pzrrz
kgmpf ruify cgnng iypkb yfpfk
eudhq mycuy rbzdw vsoup ujdmo
```

```
jkogb xsgkw unhka zldeg zcuif
jthuc kyobp ytpmw rqrvp gtkur
xowvj bvkcz jftfm xsgjy fkyef
vdcny rrdmv yqgoq farho qpzdn

1924 = 3tle = 3tl = 215 = fzk pwm =

arrru bgidm fniqv zliqp uwlwf
cnfmg pprtz gbtyn yhrik nnfkb
mwccw xvoal grhzw mpnje ufwpz
dqoxt vgide ephfd dsdsk ycnzs
chqba bfegf dmkrl fsykg rjfgy
hzghs sgsoh jcpyy wrnkn ahcys
nrcvx dukcg dvpxg fabpd qianw
bfenc ceiwf ttfkz mkvrk lxymy
rfmes abiyn nlvrb

crib (German):

XCHURCHILLXCHURCHILLX (somewhere near the beginning of 1tl)
Reflectors and rotors: unknown
```

3. Unknown crib position, menu and mwto

The first 5 letters (Buchstabenkenngruppe) in each message will be discarded and are not to be decrypted! Their only purpose is to identify the daily key that has been used for the encryption.

All messages have been encrypted using reflector B.

a.

1216 = 1tle = 1tl = 240 = qtd hnh =

```
cuufb lyqsv flpqz kqppz tmdqv
jlwih hvqjz ugfsr oqmmu vjupx
meohs dplaf ewzxp fbkzl ayscy
sffds zmyeu agzip drthg lwedb
kbqxj ykcbn qjjwc zbzhk gfeft
cdqom euemu qtfry sbuub gkfxq
ditkb dnwbz kmsmh vscxs fdzun
khpwx kzxml enqmn jqmnq apdlc
jwpmt utaex qhsyp ivtjv tclls
dtjbz cwiyk qgzns
```

crib (English):

SOLVINGENIGMAMESSAGESIS – crib is somewhere in the middle of the message

b.

1600 = 1pti = 1pte = 145 = ofw emm =

```
rlhev xudjm brjnz rahye vdjif
tqsby uhkcs mpqxb yetpd njqbp
oyhht ecmyc epoeg awsop spiqi
tbkbh fsjdc chanr dpqag cyxvq
vvzxc hqyvf zzptp centx bjhuw
wchom qgtuo gyjah gtiqi
```

crib clue: Apparently something is unusual in this message.

2009 = 3pti = 1pte = 216 = yxt ywl =

```
aghev aukqf zlvti vlkpo xqjmm
vcynq ldcdz bgbjm kskbu lnmid
ecqgy xwcrh pocjk njovj mxcfu
ukant eiumk rrrfs damps mixsc
aslab asfcw tkpsx wvzdn ejtjt
bakrn lbmqc ovfid pbxbg apqde
pvayo fsndu uigmv txqtb jqstq
rqvii sfalj upyjg pgvel rfhcl
mvaem vyhog nwtac j
```

```
2022 = 3pti = 2pte = 250 = izl gxo =

wetlk cgqfp sxysr xvtdh xkomu
aatot wqmxe grgcj gykfp ncwna
kfune kdwzf nwnay jphpk gkhje
dmggf rdntn ybicq ztnla jdjqe
ebgxi shojc vnkfc moebw dccgo
khfve pbldy kvsuc yysde rxxoe
skdjt rsnlg fgeho unwum yenhb
tmalp hkfae hwosy tpayc tkzof
kjxst paumo knrld sfxru rkyqn
zsbgr gqlno gclbj wcrtx uaish


2035 = 3pti = 3pte = 156 = oqp kyr =

okhev veeof tfgbq sjwvr dopyr
pqaxr plvyf woxen cbcds lkoho
csazc mfdwf iootg qzxef hpimz
hkzwg lmxtd dejmn fzjug wshfo
jkphn bwtqo srfdp iijlw mfglg
bnqni fwqik arrko wjkzr iyfpt
uindq n

c.

1819 = 1tle = 1tl = 250 = els cbu =

fmcvn hmelx mfbia jkzzf wcjuz
gsmuc qhzzq junii oiavw hswmb
dmcuv csneh cijvx bdbvy gfdws
eojbx upshp erfuk gwknh viwhb
duhcg hhaok xnevd cewpc dimeh
vvqhq jojwh qayor iltzz nplik
pemhd raryn mvold bvcyd ajdvy
gbprk zbngt vzouj mbgtj pcoig
icthg ngkiu aoiij vzqpl tjozy
jozbn tjurl yizmo brofu yvjlm
```

crib (German) clue: From our sources, there is an ongoing operation, carried out by the Jerries, to counterfeit the British and American currency. Let's see if we can find what they are talking about.

d.

It seems that these two successive messages have been encrypted with a Kriegsmarine M3 Enigma. The first and the last two 4-letter groups (message indicator) of each message are to be discarded when deciphering!

BDU 0942/16/113 62

```
jcah qfug njfq gnuv aptx lfve rcjj ottf aaqk uuoa
iiha eire dmog bhyu kfuv auhx ydcc eoko kmyp pxwc
ypdr rjvj ggkd wwwp uvuj hrqi sgzd yxgg mxtj lbdq
qxrk drww arkd ijmh ppef dfxm ochu yfox oinb wtmw
vsqi vmah hpqf rjaf lhku nmyf ksyu nwyl htky nday
peet fhsd ohbf newv jqbj hnkl nrrs qmsw hdxk mqnp
jcah qfug
```

Crib (German): JKODORJKODORJ
                EETFHSDOHBFNE

BDU 0958/16/114 29

```
cbxf kpgn ryoy ahpu hwnz ddhx pfnl oowz svpw aish
vltr kywf hqmk lkty rcle njmr oyna xfli rsan domj
ahtd mngs kdob xqzu ttte kcbk ksfd cbxf kpgn
```

Crib clue: From the intel captured from the enemy, we know that the Grundstellung for today is JSB and we also have a small fragment of the bigram table, which tells us that KP corresponds to RW.

Reflector: B
Rotors: unknown

e.

Two more messages encrypted with the Enigma M3. The first and the last two 4-letter groups (message indicator) of each message are to be discarded when deciphering!

BDU 1239/24/201 208

```
dcck lsgr qjwb vgoc gszg ypui qwhg pewa nidt slie
ofak vtiq xoly oixs ntct xsbm btvq dexz ackt ebsy
lwen glbv gcpb hhpi qios bpda timn zcer bnnu mxpn
fnax gccw kgew fvbx kbwe exve gjni mkhv opaa uytu
ljqx coju qpxm fogb rsmj iwmc kyww qhhr osjo hchw
dcck lsgr
```

Crib (German):

ANGRIFFENRAUMGEBIET
XZACKTEBSYLWENGLBVG

Reflector: B

BDU 1403/24/202 64

rrqa cnmg wkrs gsdo dgvb kdxh cist plqf oced droi
vcly rytm vcqp sshq rrqa cnmg

Crib clue: Maybe the message is sent from the same place and refers
to the guy in the first message.

4.

These messages have all been ecrypted with the Enigma M4. The first and the last two 4-letter groups (message indicator) of each message are to be discarded when deciphering!

a.

bdu de kxr 1703/31/75 62

akhl tuud dlit gxou wuqm ecay xumw uhle dyfr lfxu
cfrj yjba horq dhas qsld agrf kbcv xoow xing zitg
vxss khld zmct gcxz kkbe pldy vnsk aslz eabb joud
gvka bdgw qwpy kklq gqfs olus jthe nidy wfar ikzn
vcsx qyet shjw fpzc tlvh kwvw gweh egra fyvx jqxj
bgjf dlqz lxmj qshs akup ndqo tqab ojdl parh lvvl
akhl tuud

Clue: From the bigram table, we know that ak=st, hl=ej, tu=zp and ud=vl.

bdu de kxr 1724/31/77 58

fvek imrr rgrx agdo odpi ynxz bprm kbwf ykwc navq
tkfa fydo sbmx rplv xnpd rsaa teck qbzb oewp krrb
sgfz ohhv alel clkm kvlf dtgr wums yxkw dmzy cbjf
qyja flnp vnhh jevi cifj gcsm ckdo mqxo ohaz ckzt
wklq lkpu hjyd qcng nbdh dsch dlxg ufwb qxei adcv
lczg xqyg nplv zqnf hqro vile fvek imrr

Crib: KENNGRUPPENHEFT
      VNHHJEVICIFJGCS

Reflector and rotors: Bthin β VII IV I

Mwto: unknown

b.

peb de hem 0925/4/62 42

tblq cvmz nxxr rkbe pyyw zokr pomm zhif tisu ayiv
umnx xfgg cgwl fqhk qcdl jwhs mwhk alth dkrs webo
zlnz yzwk dknc isgo ylyy anpw wxev dpur xrfy wjro
psuh eqzw dnvv rblc ioxn pqkt xxwb gdcp oirm kevp
tblq cvmz

crib: EINSNULSMN   AQOPXYYGEBIET
      XRFYWJROPS   UHEQZWDNVVRBL

Reflector and rotors: unknown

Clue: Intel says the fast rotor could be II, and, from a piece of burnt paper, recovered yesterday, we know two of the plugs that were used: FS and YN.

c.

```
                              ßß
                             cyj
                    iced dkdf rivl
                             oew
                             cyj
```

This message was encoded with the Short Signal Book (Kurzsignalheft). From yesterday's decrypts, we know that U-190 signaled its position in the vicinity of our convoy (codename CK with 32 ships). So this might be our way into today's key. Our best guess is that this message looks like:

GELEITZUG 30-40 DAMPFER. Quadrat AK 62 41. U-190.

A few months ago, we have captured their Short Signal Book (Kurzsignalheft), the 4-Letter Groups Book (Buchgruppenheft) and the Number Table (Schlüsselzahlentafel).

First, we encode the message with the Short Signal Book:

```
GELEITZUG 30-40 DAMPFER = 8985
Quadrat AK 62           = 4276
        41              = 4293
```

We add to the ecoded message a key from the Number Table (Schlüsselzahlentafel), without carry:

```
8985 4276 4293 +
3551 4198 4375
--------------
1436 8364 8568
```

Then we translate the result with the Buchgruppenheft into four-letter groups:

```
1436 = QDWK
8364 = ECKI
8568 = YRAY
```

Finally, we add the codename for U-190:

```
U-190                   = UOI
```

So, we guess that we have the following crib:

```
QD    WKECKIYRAYUOI
IC    EDDKDFRIVLOEW
```

This will hopefully help us get the key for today!…

Crib clue: From our intel, we know that two of the plugs are OY and WE. From our analysis, it's highly possible that the reflector for today is C thin, and the fast rotor is III.

d.

Soon to come!

e.

dgb de bdu 1004/7/311 62

```
dbrv buia hhob bhve arna xzyf dxfh izfa fjrp foet
anvc ebyg ggph bias blgp ukvg tzpp rybc edte yzaf
lwbn nieb ngpx xfdv mytj boqa fuya jtvp hhbx cgdd
rtqm pajb vaks qzfj wtex vykq pvbl fymh gatz yygp
lplj lcdr tfzt atuv tpqd utcq arfb hguz azlm lqty
tbjz pktn mfxw nsxf ecqm dqix dhzz gjgs sojz pdzh
dbrv buia
```

Crib clue: Our best guess is that we might have AAA=======VVVBDUUUXX in the beginning of the message, but we don't know to whom this message was intended, so we have 7 missing letters between AAA and VVV. This month the Germans only used the reflector Bthin.

5.

a.

Two hours ago, our HF/DF located a U-boat transmission from Square CE 8128. After we encode this location with the Short Signal, the Number Table and translate it into 4-letter groups, we get BMMB KOTH.

It seems that a flaw in their cipher machine gives us a good start for a crib. We don't know what the first four letters might stand for, but, maybe, if we can figure out this U-boat's 3-letter codename, we will be able to get the key for today. This month the Germans only used reflector B and extra-rotor β. From the fragments of papers recovered from a sinking U-boat, a few days ago, we have reasons to believe that the letters L and O have remained unsteckered, and that the plugs IM and CB have been used.

```
              ßß
             acu
        afkh mbll bwrx
             wow
             acu
```

Half an hour ago, our Y stations intercepted the following message:

bzj de bdu 0225/9/235 15

bnzn ydwq gssy xvpk zfeg lswg vrhs oalt amju cayu
oabe tlxf nlpf bnzn ydwq

b.

This morning, November 12, 1944, our Y station in Cheadle, Staffordshire, intercepted a message with bearing 22.10 °, Norway. Hut 8 immediately received the request, coming directly from Air Vice Marshal Sir Ralph Cochrane, to give it absolute priority. Maybe this message was sent to the 9. Staffel of JG 5 at Bardufoss airfield. Due to unfavorable radio propagation conditions, there are some garbled letters.

ocg de jrg 0821/12/185 26

abnx lqol gben qahg phbd utdz us=i qzlb ncvx rlfc
m=as scfx nxld cngy mexp jezj stgc ==yh xcnl yub=
xyir jtpi dyep bvlu abnx lqol

c.

Yesterday, one of the Nazi agents just turned himself to the authorities immediately after reaching British shore. His story is that he had tricked the Jerries into believing he would spy for them, just to reach England. He says he knows another Abwehr agent that had boarded a U-boat, leaving Kiel. Since their mission was connected, they both share the same OTPs. He also told us that the radio codename of the Abwehr agent is ULJM. He mentioned that somwehere in the beginning of the message, the words FUR ABWEHR OFFIZIER might appear. This morning, our Y stations have intercepted a U-boat message, with a very peculiar addressing form. The first 4 letters in the OTP key – utmj - serve only as an indicator and will not be used for deciphering. Let's check if we can decrypt this one, to find the Enigma keys for today and verify the story.

gfe de vts de uljm 14/0909/36 44

kumo fmyk jebo itiz aojm uppa qujk mrfo wrpx fvry
beeb bfma xklf tudz ohgw cppi hrpe xcvd npcs tasa
fhzd anjb gudo kyof ytdj uusl rewy ieyj korz dcop
eyko pvfp tmlz nbqv ufro hbpt rfah qmhq pobu xuei
hhav xaok kumo fmyk

OTP:

utmj cjno eaic hufn zqfe oyja byvh csvz xsji nkjb
ujyj reyg ulvx ejwi zwpe rizs rlvq fgze agqh mtvp
uqgw ruxu lazh qgar buuk snms ldcp byfe tefa dboh

d.

A Soviet 6,000-tonner has just been reported being sunk with two hits, near Norway. Let's see whether the Jerries have just announced another petty victory, after so many days without results. If so, they've made another mistake that could help us read their traffic today.

fdu de sje 0920/17/56 32

tmem uhow upqo pkvj hzye jqfs rpzq qtdo ffyj ryoc
wepm jkbf nykp xgsy mwds wpca bwfk awbm nxmy kkil
grdt wmhj sqze uidn uiyk eexk hvwg qkfo zdki pplo
tmem uhow

sje de fdu 0950/17/58 8

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