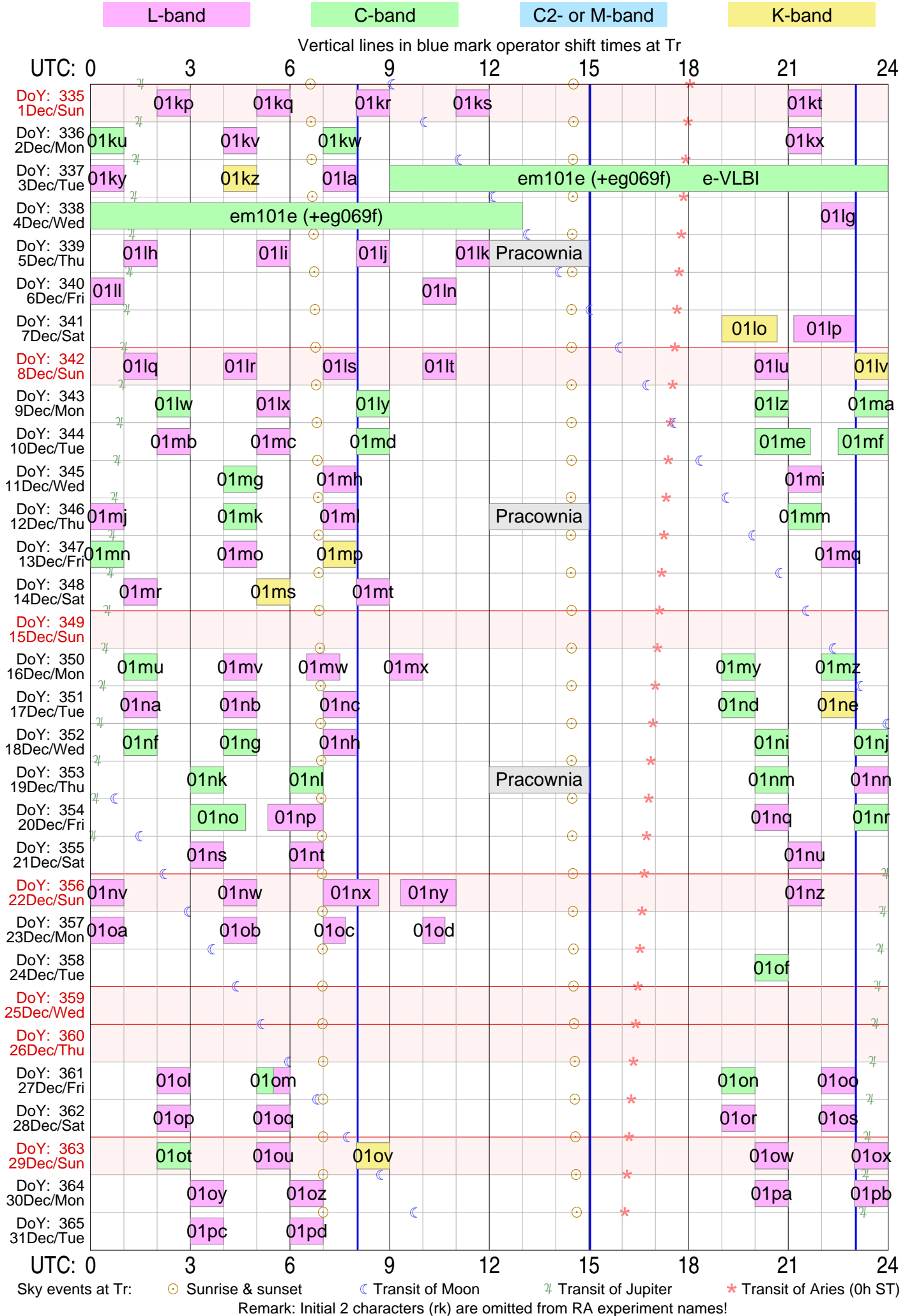


# Tr VLBI schedule for Dec 2013



# RadioAstron and EVN Experiments

## December 2013

Użytkownik i hasło ftp dla logów i schedulów: grt K0&th%

ftp://webinet.asc.rssi.ru

Przykład dla log files: cd GRT\_log\_files/2013\_08/2013\_08\_01\_raks02aa

Przykład dla sched files: cd schedule/grtsched/RAKS/rk02aa

Name	Band	DoY	DoM	WD	UT_Start		UT_Stop		Uwagi
					h	m	h	m	
rk01kp	L	335	1	Nie	2	00	3	00	
rk01kq	L	335	1	Nie	5	00	6	00	
rk01kr	L	335	1	Nie	8	00	9	00	
rk01ks	L	335	1	Nie	11	00	12	00	
rk01kt	L	335	1	Nie	21	00	22	00	
rk01ku	C	336	2	Pon	0	00	1	00	
rk01kv	L	336	2	Pon	4	00	5	00	
rk01kw	C	336	2	Pon	7	00	8	00	
rk01kx	L	336	2	Pon	21	00	22	00	
rk01ky	L	337	3	Wto	0	00	1	00	
rk01kz	K	337	3	Wto	4	00	5	00	
rk01la	L	337	3	Wto	7	00	8	00	
em101e?	C	337	3	Wto	9	00	24+13	00	e-VLBI
rk01lg	L	338	4	Sro	22	00	23	00	
rr01lh	L	339	5	Czw	1	00	2	00	
rk01li	L	339	5	Czw	5	00	6	00	
rk01lj	L	339	5	Czw	8	00	9	00	
rk01lk	L	339	5	Czw	11	00	12	00	
rk01ll	L	340	6	Pia	0	00	1	00	
rk01lm	L	340	6	Pia	7	00	8	00	Cancelled
rk01ln	L	340	6	Pia	10	00	11	00	
rk01lo	K	341	7	Sob	19	00	20	40	
rk01lp	L	341	7	Sob	21	10	23	00	
rk01lq	L	342	8	Nie	1	00	2	00	
rk01lr	L	342	8	Nie	4	00	5	00	
rk01ls	L	342	8	Nie	7	00	8	00	
rk01lt	L	342	8	Nie	10	00	11	00	
rk01lu	L	342	8	Nie	20	00	21	00	
rk01lv	K	342	8	Nie	23	00	24	00	
rk01lw	C	343	9	Pon	2	00	3	00	
rk01lx	L	343	9	Pon	5	00	6	00	
rk01ly	C	343	9	Pon	8	00	9	00	
rk01lz	C	343	9	Pon	20	00	21	00	

rk01ma	C	343	9	Pon	23 00	24 00
rr01mb	L	344	10	Wto	2 00	3 00
rk01mc	L	344	10	Wto	5 00	6 00
rk01md	C	344	10	Wto	8 00	9 00
rk01me	C	344	10	Wto	20 00	21 40
rk01mf	C	344	10	Wto	22 30	24 00
rk01mg	C	345	11	Sro	4 00	5 00
rk01mh	L	345	11	Sro	7 00	8 00
rk01mi	L	345	11	Sro	21 00	22 00
rk01mj	L	346	12	Czw	0 00	1 00
rk01mk	C	346	12	Czw	4 00	5 00
rk01ml	L	346	12	Czw	7 00	8 00
rk01mm	C	346	12	Czw	21 00	22 00
rk01mn	C	347	13	Pia	0 00	1 00
rk01mo	L	347	13	Pia	4 00	5 00
rk01mp	K	347	13	Pia	7 00	8 00
rk01mq	L	347	13	Pia	22 00	23 00
rk01mr	L	348	14	Sob	1 00	2 00
rk01ms	K	348	14	Sob	5 00	6 00
rk01mt	L	348	14	Sob	8 00	9 00
rk01mu	C	350	16	Pon	1 00	2 00
rr01mv	L	350	16	Pon	4 00	5 00
rk01mw	L	350	16	Pon	6 30	7 30
rk01mx	L	350	16	Pon	9 00	10 00
rk01my	C	350	16	Pon	19 00	20 00
rk01mz	C	350	16	Pon	22 00	23 00
rk01na	L	351	17	Wto	1 00	2 00
rk01nb	L	351	17	Wto	4 00	5 00
rk01nc	L	351	17	Wto	7 00	8 00
rk01nd	C	351	17	Wto	19 00	20 00
rk01ne	K	351	17	Wto	22 00	23 00
rk01nf	C	352	18	Sro	1 00	2 00
rk01ng	C	352	18	Sro	4 00	5 00
rk01nh	L	352	18	Sro	7 00	8 00
rk01ni	C	352	18	Sro	20 00	21 00
rk01nj	C	352	18	Sro	23 00	24 00
rk01nk	C	353	19	Czw	3 00	4 00
rk01nl	C	353	19	Czw	6 00	7 00
rk01nm	C	353	19	Czw	20 00	21 00
rk01nn	L	353	19	Czw	23 00	24 00
rk01no	C	354	20	Pia	3 00	4 40
rr01np	L	354	20	Pia	5 20	7 00
rk01nq	L	354	20	Pia	20 00	21 00
rk01nr	C	354	20	Pia	23 00	24 00
rk01ns	L	355	21	Sob	3 00	4 00

rk01nt	L	355	21	Sob	6 00	7 00	
rk01nu	L	355	21	Sob	21 00	22 00	
rk01nv	L	356	22	Nie	0 00	1 00	
rk01nw	L	356	22	Nie	4 00	5 00	
rk01nx	L	356	22	Nie	7 00	8 40	
rk01ny	L	356	22	Nie	9 20	11 00	
rk01nz	L	356	22	Nie	21 00	22 00	
rk01oa	L	357	23	Pon	0 00	1 00	
rk01ob	L	357	23	Pon	4 00	5 00	
rk01oc	L	357	23	Pon	7 00	7 40	
rk01od	L	357	23	Pon	10 00	10 40	
rk01of	C	358	24	Wto	20 00	21 00	
rk01ol	L	361	27	Pia	2 00	3 00	
rk01om	C&L	361	27	Pia	5 00	6 00	Ze zmiana pasma!
rk01on	C	361	27	Pia	19 00	20 00	
rk01oo	L	361	27	Pia	22 00	23 00	
rr01op	L	362	28	Sob	2 00	3 00	
rk01oq	L	362	28	Sob	5 00	6 00	
rk01or	L	362	28	Sob	19 00	20 00	
rk01os	L	362	28	Sob	22 00	23 00	
rk01ot	C	363	29	Nie	2 00	3 00	
rk01ou	L	363	29	Nie	5 00	6 00	
rk01ov	K	363	29	Nie	8 00	9 00	
rk01ow	L	363	29	Nie	20 00	21 00	
rk01ox	L	363	29	Nie	23 00	24 00	
rr01oy	L	364	30	Pon	3 00	4 00	
rk01oz	L	364	30	Pon	6 00	7 00	
rk01pa	L	364	30	Pon	20 00	21 00	
rk01pb	L	364	30	Pon	23 00	24 00	
rk01pc	L	365	31	Wto	3 00	4 00	
rk01pd	L	365	31	Wto	6 00	7 00	

Razem 109 eksperymentow

Do zapisu obserwacji RadioAstronu dedykowany jest dyskpak

TR-00002/1600

montowany w banku A. Gdyby ten się zapełnił, można użyć paka

USN-0203/2000

zamontowanego w banku B obok TR-00002/1600 (lub samego w A). Jeśli zaczęto w Banku B, kolejne eksperymenty trzeba nagrywać także w B.

UWAGA: 1-godzinne eksperymenty RA zwykle wymagają ok. 110 GB wolnego miejsca na dyskpacku (dłuższe odpowiednio więcej).

**rk01kptr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Sun    1 Dec 2013    Day 335 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    632.00    632.00    632.00    632.00  
Next scan bandwidths:    16.00     16.00     16.00     16.00

02 00 00	1128+385	07 54 38	50.4	89.7	-3.6		-49.8	0	0	02 00 00
02 14 30	---	08 09 11	52.5	92.6	-3.4		-49.7	870	28	02 00 01
02 15 00	1128+385	08 09 41	52.6	92.7	-3.4		-49.7	24	28	02 15 00
02 29 30	---	08 24 13	54.8	95.9	-3.1		-49.5	870	56	02 15 01
02 30 00	1128+385	08 24 43	54.9	96.0	-3.1		-49.4	24	56	02 30 00
02 44 30	---	08 39 16	57.0	99.3	-2.9		-48.9	870	84	02 30 01
02 45 00	1128+385	08 39 46	57.1	99.4	-2.9		-48.9	24	84	02 45 00
03 00 00	---	08 54 48	59.3	103.1	-2.6		-48.1	900	112	02 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01kp\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP      LCP      RCP      LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 3 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J1130+3815	11 28 12.513445	* 11 30 53.282614	11 31 37.705181	0.13
* 1128+385	38 31 51.62112	* 38 15 18.54689	38 10 27.14575	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
FAKERA      109.8
1128+385    91.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01kqtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 1 Dec 2013 Day 335 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. It lists observation times and parameters for source 1005+066.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set
Matching groups in ./rk01kq\_freq.dat:
tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1008+0621	10 05 23.466063	* 10 08 00.816156	10 08 45.296929	0.12
* 1005+066	06 36 03.30799	* 06 21 21.21595	06 17 08.51486	0.17

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
FAKERA	109.8
1005+066	97.2

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg



rk01krtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 1 Dec 2013 Day 335 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for sources 1015+057 and ---.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01kr\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
J1018+0530	10 15 51.237788	* 10 18 27.848283	10 19 12.071271	0.10
* 1015+057	05 45 32.82524	* 05 30 29.96198	05 26 12.08313	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
FAKERA      109.8
1015+057    94.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{(-0.6)}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01kstr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
```

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Sun    1 Dec 2013    Day 335 ---										
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00										
Next BBC frequencies:    632.00    632.00    632.00    632.00										
Next scan bandwidths:    16.00    16.00    16.00    16.00										
11 00 00	1150+497	16 56 07	44.8	-62.6	5.0		55.1	0	0	11 00 00
11 14 30	---	17 10 39	42.9	-60.7	5.3		53.6	870	28	11 00 01
11 15 00	1150+497	17 11 09	42.9	-60.6	5.3		53.6	24	28	11 15 00
11 29 30	---	17 25 42	41.0	-58.7	5.5		52.1	870	56	11 15 01
11 30 00	1150+497	17 26 12	40.9	-58.7	5.5		52.1	24	56	11 30 00
11 44 30	---	17 40 44	39.1	-56.7	5.8		50.5	870	84	11 30 01
11 45 00	1150+497	17 41 14	39.0	-56.7	5.8		50.5	24	84	11 45 00
12 00 00	---	17 56 17	37.1	-54.7	6.0		48.9	900	112	11 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ks\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1153+4931	11 50 47.999856	* 11 53 24.466639	11 54 07.167766	0.16
* 1150+497	49 47 50.09408	* 49 31 08.83011	49 26 13.13981	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1150+497    94.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01kttr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 1 Dec 2013 Day 335 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0048-097.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01kt\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0050-0929	00 48 09.975920	* 00 50 41.317387	00 51 24.604121	0.10
* 0048-097	-09 45 24.21202	*-09 29 05.21038	-09 24 31.58625	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0048-097    117.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01kutr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                  EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                  Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time.    Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon    2 Dec 2013    Day 336 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00

Next BBC frequencies: 636.00 636.00 636.00 636.00

Next scan bandwidths: 16.00 16.00 16.00 16.00

00 00 00	0201+113	05 58 15	28.0	250.9	3.9		35.4	0	0	00 00 00
00 14 30	---	06 12 48	25.9	254.1	4.1		36.1	870	28	00 00 01
00 15 00	0201+113	06 13 18	25.8	254.3	4.1		36.2	24	28	00 15 00
00 29 30	---	06 27 50	23.7	257.4	4.4		36.8	870	56	00 15 01
00 30 00	0201+113	06 28 20	23.7	257.5	4.4		36.8	24	56	00 30 00
00 44 30	---	06 42 52	21.5	260.6	4.6		37.2	870	84	00 30 01
00 45 00	0201+113	06 43 23	21.4	260.7	4.6		37.2	24	84	00 45 00
01 00 00	---	06 58 25	19.2	263.8	4.9		37.6	900	112	00 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01ku\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00  636.00  636.00  636.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J0203+1134	02 01 06.003328	* 02 03 46.657060	02 04 33.157628	0.10
* 0201+113	11 20 22.95393	* 11 34 45.40941	11 38 48.78077	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0201+113    143.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```



**rk01kvtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Mon    2 Dec 2013    Day 336 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies:  632.00  632.00  632.00  632.00  
 Next scan bandwidths:  16.00  16.00  16.00  16.00

Start UT	Source	LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
04 00 00	0919-260	09 58 55	10.1	188.4	0.6		5.6	0	0	04 00 00
04 14 30	---	10 13 27	9.8	191.6	0.9		7.8	870	28	04 00 01
04 15 00	0919-260	10 13 57	9.7	191.8	0.9		7.9	24	28	04 15 00
04 29 30	---	10 28 29	9.2	195.0	1.1		10.0	870	56	04 15 01
04 30 00	0919-260	10 28 59	9.2	195.1	1.1		10.1	24	56	04 30 00
04 44 30	---	10 43 32	8.6	198.4	1.4		12.2	870	84	04 30 01
04 45 00	0919-260	10 44 02	8.6	198.5	1.4		12.3	24	84	04 45 00
05 00 00	---	10 59 04	7.8	201.8	1.6		14.4	900	112	04 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01kv\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    3                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0921-2618	09 19 16.702133	* 09 21 29.353855	09 22 07.535550	0.55
* 0919-260	-26 05 54.56401	*-26 18 43.38618	-26 22 15.37258	0.92

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0919-260    95.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01kwtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Mon 2 Dec 2013 Day 336 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 636.00 636.00 636.00 636.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0827+243.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra6cm2.set

Matching groups in ./rk01kw\_freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0830+2410	08 27 54.398594	* 08 30 52.086193	08 31 42.816513	0.11
* 0827+243	24 21 07.66368	* 24 10 59.82027	24 07 55.76260	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0827+243    125.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01kxtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Mon    2 Dec 2013    Day 336 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies:  632.00  632.00  632.00  632.00  
 Next scan bandwidths:  16.00  16.00  16.00  16.00

Start UT	Source	LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
21 00 00	0122-003	03 01 42	33.3	209.0	1.6		16.9	0	0	21 00 00
21 14 30	---	03 16 15	32.2	213.1	1.8		19.1	870	28	21 00 01
21 15 00	0122-003	03 16 45	32.1	213.2	1.8		19.2	24	28	21 15 00
21 29 30	---	03 31 17	30.9	217.2	2.1		21.3	870	56	21 15 01
21 30 00	0122-003	03 31 47	30.8	217.3	2.1		21.4	24	56	21 30 00
21 44 30	---	03 46 19	29.4	221.2	2.3		23.3	870	84	21 30 01
21 45 00	0122-003	03 46 50	29.4	221.4	2.3		23.4	24	84	21 45 00
22 00 00	---	04 01 52	27.8	225.3	2.6		25.2	900	112	21 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01kx\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0125-0005	01 22 55.178117	* 01 25 28.843828	01 26 13.059973	0.15
* 0122-003	-00 21 31.21935	*-00 05 55.93219	-00 01 33.22266	0.24

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0122-003    128.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01kytr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:        +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                                      Start / Stop                                      Early    Disk    TPStart  
Stop UT                                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Tue    3 Dec 2013    Day 337 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00

Next BBC frequencies:    632.00    632.00    632.00    632.00

Next scan bandwidths:    16.00    16.00    16.00    16.00

00 00 00	0604+728	06 02 12	70.3	2.3	-0.2	-175.4	0	0	00 00 00
00 14 30	---	06 16 44	70.3	-0.9	0.1	178.2	870	28	00 00 01
00 15 00	0604+728	06 17 14	70.3	-1.0	0.1	177.9	24	28	00 15 00
00 29 30	---	06 31 47	70.2	-4.2	0.3	171.5	870	56	00 15 01
00 30 00	0604+728	06 32 17	70.2	-4.3	0.3	171.3	24	56	00 30 00
00 44 30	---	06 46 49	70.0	-7.4	0.6	164.9	870	84	00 30 01
00 45 00	0604+728	06 47 19	69.9	-7.5	0.6	164.7	24	84	00 45 00
01 00 00	---	07 02 22	69.6	-10.5	0.8	158.2	900	112	00 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ky\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0610+7248	06 04 39.219004	* 06 10 48.872063	06 12 37.345179	2.19
* 0604+728	72 49 27.04431	* 72 48 53.18669	72 48 24.71437	0.52

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0604+728    127.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```



rk01kztr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Tue 3 Dec 2013 Day 337 ---

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0642+449.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra1cm2.set

Matching groups in ./rk01kz\_freq.dat:

tr1cm Values from Bob Campbell by email (23-04-2013)

Setup group: 6 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  21500.00  21500.00  21500.00  21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  5  Setup file default.  Used pcal sets:  1
LO sum=  22236.00  22236.00  22236.00  22236.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0646+4451	06 42 53.021452	* 06 46 32.025999	06 47 35.332300	0.14
* 0642+449	44 54 30.82734	* 44 51 16.59009	44 50 05.92777	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0642+449    145.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01latr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Tue    3 Dec 2013    Day 337 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies:    632.00    632.00    632.00    632.00  
 Next scan bandwidths:    16.00    16.00    16.00    16.00

07 00 00	0749+540	13 03 21	46.3	-56.5	5.2	58.1	0	0	07 00 00
07 14 30	---	13 17 53	44.5	-54.8	5.4	56.3	870	28	07 00 01
07 15 00	0749+540	13 18 23	44.5	-54.8	5.4	56.2	24	28	07 15 00
07 29 30	---	13 32 56	42.7	-53.1	5.6	54.5	870	56	07 15 01
07 30 00	0749+540	13 33 26	42.7	-53.0	5.7	54.4	24	56	07 30 00
07 44 30	---	13 47 58	40.9	-51.3	5.9	52.6	870	84	07 30 01
07 45 00	0749+540	13 48 28	40.9	-51.3	5.9	52.5	24	84	07 45 00
08 00 00	---	14 03 31	39.1	-49.5	6.2	50.7	900	112	07 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01la\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J0753+5352	07 49 06.444761	* 07 53 01.384572	07 54 08.745856	0.17
* 0749+540	54 00 46.40352	* 53 52 59.63704	53 50 27.82203	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0749+540    131.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**em101etr**

E-EVN: EM101E, EG069F, EG082  
PI: James Miller-Jones, Marcin Gawronski 2x

Address: JIVE                      Oude Hoogeveensedijk 4                      Dwingeloo                      Netherlands  
Phone:    +31 521 596 536                      EMAIL:    zparagi@jive.nl  
Fax:       +31 521 596 539                      Phone during observation: +31 521 596 530

Observing mode: realtime e-vlbi

Schedule for TORUN                      (Code Tr )                      Page    2

e-EVN: EM101E, EG069F, EG082

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Tue    3 Dec 2013    Day 337 ---										
Next scan frequencies: 4942.49 4942.49 4942.49 4942.49 4974.49 4974.49 4974.49 4974.49										
5006.49 5006.49 5006.49 5006.49 5038.49 5038.49 5038.49 5038.49										
Next BBC frequencies: 742.49 742.49 742.49 742.49 774.49 774.49 774.49 774.49										
806.49 806.49 806.49 806.49 838.49 838.49 838.49 838.49										
Next scan bandwidths: 16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00										
16.00 16.00 16.00 16.00 16.00 16.00 16.00 16.00										
-----										
09 00 00	OQ208	15 03 40	63.2	208.2	0.9		18.8	0	0	09 00 00
09 15 00	---	15 18 43	62.0	214.9	1.2		23.0	900	116	09 00 01
09 15 40	OQ208	15 19 23	62.0	215.2	1.2		23.2	33	116	09 15 40
09 30 00	---	15 33 45	60.6	221.2	1.4		26.7	860	227	09 15 41
09 30 40	OQ208	15 34 25	60.6	221.5	1.4		26.9	33	227	09 30 40
09 45 00	---	15 48 48	59.1	227.0	1.7		29.9	860	338	09 30 41
09 45 40	OQ208	15 49 28	59.0	227.2	1.7		30.1	34	338	09 45 40
10 00 00	---	16 03 50	57.3	232.4	1.9		32.7	860	449	09 45 41
10 04 00	1749+096	16 07 51	41.7	144.5	-1.7		-20.7	49	449	10 04 00
10 15 00	---	16 18 53	42.7	147.9	-1.6		-18.9	660	534	10 04 01
10 15 40	1749+096	16 19 33	42.7	148.1	-1.5		-18.8	34	534	10 15 40
10 30 00	---	16 33 55	43.8	152.8	-1.3		-16.2	860	645	10 15 41
10 30 40	1749+096	16 34 35	43.8	153.0	-1.3		-16.0	34	645	10 30 40
10 45 00	---	16 48 58	44.7	157.8	-1.1		-13.3	860	756	10 30 41
10 45 40	1749+096	16 49 38	44.8	158.0	-1.0		-13.2	34	756	10 45 40
11 00 00	---	17 04 00	45.5	162.9	-0.8		-10.3	860	867	10 45 41
11 00 40	1749+096	17 04 40	45.5	163.2	-0.8		-10.2	34	867	11 00 40
11 15 00	---	17 19 03	46.0	168.2	-0.6		-7.2	860	978	11 00 41

Schedule for TORUN (Code Tr )

Page 3

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
11 15 40	1749+096	17 19 43	46.1	168.4	-0.5		-7.0	34	978	11 15 40
11 30 00	---	17 34 05	46.4	173.5	-0.3		-3.9	860	1089	11 15 41
11 30 40	1749+096	17 34 45	46.4	173.8	-0.3		-3.8	34	1089	11 30 40
11 45 00	---	17 49 08	46.6	178.9	-0.1		-0.7	860	1200	11 30 41
11 47 00	J1743-0350	17 51 08	33.1	181.9	0.1		1.2	56	1200	11 47 00
12 00 00	=1741-038	18 04 10	32.9	185.8	0.3		3.5	780	1301	11 47 01
12 00 50	J1743-0350	18 05 00	32.9	186.0	0.3		3.6	44	1301	12 00 50
12 01 50	=1741-038	18 06 00	32.9	186.3	0.4		3.8	60	1308	12 00 51
12 01 50	J1752-0147	18 06 00	35.0	184.0	0.2		2.4	-22	1308	No stop
12 03 10	---	18 07 20	35.0	184.4	0.2		2.6	58	1319	12 01 51
12 03 10	J17535	18 07 20	35.4	184.0	0.2		2.4	-12	1319	No stop
12 05 30	---	18 09 41	35.4	184.8	0.3		2.9	128	1337	12 03 11
12 05 30	J1752-0147	18 09 41	35.0	185.1	0.3		3.1	-12	1337	No stop
12 06 40	---	18 10 51	35.0	185.4	0.3		3.3	58	1346	12 05 31
12 06 40	J17535	18 10 51	35.3	185.1	0.3		3.1	-12	1346	No stop
12 09 00	---	18 13 11	35.3	185.8	0.3		3.5	128	1364	12 06 41
12 09 00	J1752-0147	18 13 11	35.0	186.2	0.3		3.7	-12	1364	No stop
12 10 10	---	18 14 22	34.9	186.5	0.4		3.9	58	1373	12 09 01
12 10 10	J17535	18 14 22	35.3	186.2	0.3		3.7	-12	1373	No stop
12 12 30	---	18 16 42	35.3	186.9	0.4		4.1	128	1391	12 10 11
12 12 30	J1752-0147	18 16 42	34.9	187.2	0.4		4.3	-12	1391	No stop
12 13 40	---	18 17 52	34.9	187.6	0.4		4.5	58	1400	12 12 31
12 13 40	J17535	18 17 52	35.2	187.3	0.4		4.4	-12	1400	No stop
12 16 00	---	18 20 13	35.2	188.0	0.4		4.8	128	1418	12 13 41
12 16 00	J1752-0147	18 20 13	34.8	188.3	0.5		5.0	-12	1418	No stop
12 17 10	---	18 21 23	34.8	188.6	0.5		5.2	58	1427	12 16 01
12 18 00	J1743-0350	18 22 13	32.5	191.1	0.6		6.7	28	1427	12 18 00
12 19 00	=1741-038	18 23 13	32.5	191.4	0.6		6.8	60	1435	12 18 01
12 19 00	J1752-0147	18 23 13	34.8	189.2	0.5		5.5	-22	1435	No stop
12 20 20	---	18 24 33	34.7	189.6	0.5		5.8	58	1445	12 19 01
12 20 20	J17535	18 24 33	35.1	189.3	0.5		5.6	-12	1445	No stop
12 22 40	---	18 26 54	35.0	190.0	0.5		6.0	128	1463	12 20 21

Schedule for TORUN (Code Tr )

Page 4

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
12 22 40	J1752-0147	18 26 54	34.7	190.3	0.6		6.2	-12	1463	No stop
12 23 50	---	18 28 04	34.6	190.7	0.6		6.4	58	1472	12 22 41
12 23 50	J17535	18 28 04	35.0	190.4	0.6		6.2	-12	1472	No stop
12 26 10	---	18 30 24	34.9	191.1	0.6		6.6	128	1490	12 23 51
12 26 10	J1752-0147	18 30 24	34.6	191.4	0.6		6.8	-12	1490	No stop
12 27 20	---	18 31 34	34.5	191.7	0.6		7.0	58	1499	12 26 11
12 27 20	J17535	18 31 34	34.9	191.4	0.6		6.8	-12	1499	No stop
12 29 40	---	18 33 55	34.8	192.1	0.7		7.2	128	1517	12 27 21
12 29 40	J1752-0147	18 33 55	34.5	192.4	0.7		7.4	-12	1517	No stop
12 30 50	---	18 35 05	34.4	192.8	0.7		7.6	58	1526	12 29 41
12 30 50	J17535	18 35 05	34.8	192.5	0.7		7.5	-12	1526	No stop
12 33 10	---	18 37 25	34.7	193.2	0.7		7.9	128	1544	12 30 51
12 33 10	J1752-0147	18 37 25	34.3	193.5	0.7		8.0	-12	1544	No stop
12 34 20	---	18 38 36	34.3	193.8	0.8		8.3	58	1553	12 33 11
12 35 10	J1743-0350	18 39 26	31.9	196.1	0.9		9.6	27	1553	12 35 10
12 36 10	=1741-038	18 40 26	31.9	196.4	0.9		9.8	60	1561	12 35 11
12 36 10	J1752-0147	18 40 26	34.2	194.4	0.8		8.6	-23	1561	No stop
12 37 30	---	18 41 46	34.2	194.8	0.8		8.8	57	1572	12 36 11
12 37 30	J17535	18 41 46	34.6	194.5	0.8		8.6	-12	1572	No stop
12 39 50	---	18 44 07	34.5	195.2	0.8		9.1	128	1590	12 37 31
12 39 50	J1752-0147	18 44 07	34.1	195.5	0.9		9.2	-12	1590	No stop
12 41 00	---	18 45 17	34.0	195.8	0.9		9.4	58	1599	12 39 51
12 41 00	J17535	18 45 17	34.4	195.5	0.9		9.3	-12	1599	No stop
12 43 20	---	18 47 37	34.3	196.2	0.9		9.7	128	1617	12 41 01
12 43 20	J1752-0147	18 47 37	33.9	196.5	0.9		9.8	-12	1617	No stop
12 44 30	---	18 48 47	33.9	196.9	0.9		10.0	58	1626	12 43 21
12 44 30	J17535	18 48 47	34.3	196.6	0.9		9.9	-12	1626	No stop
12 46 50	---	18 51 08	34.2	197.3	0.9		10.3	128	1644	12 44 31
12 46 50	J1752-0147	18 51 08	33.8	197.6	1.0		10.4	-12	1644	No stop
12 48 00	---	18 52 18	33.7	197.9	1.0		10.6	58	1653	12 46 51
12 48 00	J17535	18 52 18	34.1	197.6	1.0		10.5	-12	1653	No stop
12 50 20	---	18 54 38	34.0	198.3	1.0		10.9	128	1671	12 48 01

Schedule for TORUN (Code Tr )

Page 5

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
12 50 20	J1752-0147	18 54 38	33.6	198.6	1.0		11.0	-12	1671	No stop
12 51 30	---	18 55 48	33.6	198.9	1.0		11.2	58	1680	12 50 21
12 51 30	J1753-0102	18 55 48	34.3	198.9	1.0		11.2	-15	1680	No stop
12 52 40	---	18 56 59	34.3	199.2	1.1		11.4	55	1689	12 51 31
12 52 40	J1752-0147	18 56 59	33.5	199.3	1.1		11.4	-15	1689	No stop
12 53 50	---	18 58 09	33.4	199.6	1.1		11.6	55	1698	12 52 41
12 54 40	J1743-0350	18 58 59	31.0	201.7	1.2		12.9	27	1698	12 54 40
12 55 40	=1741-038	18 59 59	30.9	202.0	1.3		13.0	60	1706	12 54 41
12 55 40	J1752-0147	18 59 59	33.4	200.2	1.1		12.0	-23	1706	No stop
12 57 00	---	19 01 19	33.3	200.6	1.1		12.2	57	1716	12 55 41
12 57 00	J17535	19 01 19	33.7	200.3	1.1		12.0	-12	1716	No stop
12 59 20	---	19 03 40	33.6	201.0	1.2		12.4	128	1734	12 57 01
12 59 20	J1752-0147	19 03 40	33.2	201.2	1.2		12.6	-12	1734	No stop
13 00 30	---	19 04 50	33.1	201.6	1.2		12.8	58	1743	12 59 21
13 00 30	J17535	19 04 50	33.5	201.3	1.2		12.6	-12	1743	No stop
13 02 50	---	19 07 10	33.4	202.0	1.2		13.0	128	1761	13 00 31
13 02 50	J1752-0147	19 07 10	33.0	202.3	1.2		13.2	-12	1761	No stop
13 04 00	---	19 08 20	32.9	202.6	1.3		13.3	58	1770	13 02 51
13 04 00	J17535	19 08 20	33.3	202.4	1.2		13.2	-12	1770	No stop
13 06 20	---	19 10 41	33.2	203.0	1.3		13.6	128	1788	13 04 01
13 06 20	J1752-0147	19 10 41	32.8	203.3	1.3		13.7	-12	1788	No stop
13 07 30	---	19 11 51	32.7	203.6	1.3		13.9	58	1797	13 06 21
13 07 30	J17535	19 11 51	33.1	203.4	1.3		13.8	-12	1797	No stop
13 09 50	---	19 14 11	32.9	204.0	1.3		14.2	128	1815	13 07 31
13 09 50	J1752-0147	19 14 11	32.5	204.3	1.4		14.3	-12	1815	No stop
13 11 00	---	19 15 22	32.5	204.6	1.4		14.5	58	1824	13 09 51
13 11 50	J1743-0350	19 16 12	29.9	206.6	1.5		15.6	27	1824	13 11 50
13 12 50	=1741-038	19 17 12	29.8	206.9	1.5		15.8	60	1832	13 11 51
13 12 50	J1752-0147	19 17 12	32.4	205.1	1.4		14.8	-23	1832	No stop
13 14 10	---	19 18 32	32.3	205.5	1.4		15.0	57	1842	13 12 51
13 14 10	J17535	19 18 32	32.7	205.3	1.4		14.9	-12	1842	No stop
13 16 30	---	19 20 53	32.5	206.0	1.4		15.2	128	1861	13 14 11



Schedule for TORUN (Code Tr )

Page 6

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
13 16 30	J1752-0147	19 20 53	32.1	206.2	1.5		15.4	-12	1861	No stop
13 17 40	---	19 22 03	32.0	206.5	1.5		15.6	58	1870	13 16 31
13 17 40	J17535	19 22 03	32.4	206.3	1.5		15.4	-12	1870	No stop
13 20 00	---	19 24 23	32.3	207.0	1.5		15.8	128	1888	13 17 41
13 20 00	J1752-0147	19 24 23	31.9	207.2	1.5		15.9	-12	1888	No stop
13 21 10	---	19 25 33	31.8	207.5	1.5		16.1	58	1897	13 20 01
13 21 10	J17535	19 25 33	32.2	207.3	1.5		16.0	-12	1897	No stop
13 23 30	---	19 27 54	32.0	208.0	1.6		16.4	128	1915	13 21 11
13 23 30	J1752-0147	19 27 54	31.6	208.2	1.6		16.5	-12	1915	No stop
13 24 40	---	19 29 04	31.6	208.5	1.6		16.7	58	1924	13 23 31
13 24 40	J17535	19 29 04	32.0	208.3	1.6		16.5	-12	1924	No stop
13 27 00	---	19 31 24	31.8	209.0	1.6		16.9	128	1942	13 24 41
13 27 00	J1752-0147	19 31 24	31.4	209.2	1.6		17.0	-12	1942	No stop
13 28 10	---	19 32 34	31.3	209.5	1.7		17.2	58	1951	13 27 01
13 29 00	J1743-0350	19 33 25	28.7	211.3	1.8		18.2	26	1951	13 29 00
13 30 00	=1741-038	19 34 25	28.6	211.6	1.8		18.4	60	1959	13 29 01
13 30 00	J1752-0147	19 34 25	31.2	210.0	1.7		17.5	-24	1959	No stop
13 31 20	---	19 35 45	31.1	210.4	1.7		17.7	56	1969	13 30 01
13 31 20	J17535	19 35 45	31.5	210.2	1.7		17.6	-12	1969	No stop
13 33 40	---	19 38 05	31.3	210.8	1.7		17.9	128	1987	13 31 21
13 33 40	J1752-0147	19 38 05	30.9	211.0	1.8		18.0	-12	1987	No stop
13 34 50	---	19 39 16	30.8	211.3	1.8		18.2	58	1996	13 33 41
13 34 50	J17535	19 39 16	31.2	211.1	1.8		18.1	-12	1996	No stop
13 37 10	---	19 41 36	31.0	211.8	1.8		18.5	128	2014	13 34 51
13 37 10	J1752-0147	19 41 36	30.6	212.0	1.8		18.6	-12	2014	No stop
13 38 20	---	19 42 46	30.5	212.3	1.8		18.7	58	2023	13 37 11
13 38 20	J17535	19 42 46	30.9	212.1	1.8		18.6	-12	2023	No stop
13 40 40	---	19 45 07	30.7	212.8	1.8		19.0	128	2041	13 38 21
13 40 40	J1752-0147	19 45 07	30.3	213.0	1.9		19.1	-13	2041	No stop
13 41 50	---	19 46 17	30.2	213.3	1.9		19.2	57	2050	13 40 41
13 41 50	J17535	19 46 17	30.6	213.1	1.9		19.1	-12	2050	No stop
13 44 10	---	19 48 37	30.4	213.7	1.9		19.5	128	2068	13 41 51

Schedule for TORUN (Code Tr )

Page 7

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
13 44 10	J1752-0147	19 48 37	30.0	213.9	1.9		19.6	-13	2068	No stop
13 45 20	---	19 49 47	29.9	214.2	1.9		19.8	57	2077	13 44 11
13 45 20	J1753-0102	19 49 47	30.7	214.3	1.9		19.8	-15	2077	No stop
13 46 30	---	19 50 57	30.6	214.6	2.0		19.9	55	2086	13 45 21
13 46 30	J1752-0147	19 50 57	29.8	214.6	2.0		19.9	-15	2086	No stop
13 47 40	---	19 52 08	29.7	214.9	2.0		20.1	55	2095	13 46 31
13 48 30	J1743-0350	19 52 58	27.0	216.5	2.1		21.0	26	2095	13 48 30
13 49 30	=1741-038	19 53 58	26.9	216.7	2.2		21.1	60	2103	13 48 31
13 49 30	J1752-0147	19 53 58	29.6	215.4	2.0		20.3	-24	2103	No stop
13 50 50	---	19 55 18	29.5	215.7	2.0		20.5	56	2113	13 49 31
13 50 50	J17535	19 55 18	29.9	215.5	2.0		20.4	-12	2113	No stop
13 53 10	---	19 57 39	29.7	216.2	2.1		20.8	128	2131	13 50 51
13 53 10	J1752-0147	19 57 39	29.3	216.4	2.1		20.9	-13	2131	No stop
13 54 20	---	19 58 49	29.1	216.7	2.1		21.0	57	2141	13 53 11
13 54 20	J17535	19 58 49	29.6	216.5	2.1		20.9	-12	2141	No stop
13 56 40	---	20 01 09	29.4	217.1	2.1		21.3	128	2159	13 54 21
13 56 40	J1752-0147	20 01 09	28.9	217.3	2.1		21.3	-13	2159	No stop
13 57 50	---	20 02 19	28.8	217.6	2.2		21.5	57	2168	13 56 41
13 57 50	J17535	20 02 19	29.3	217.4	2.1		21.4	-12	2168	No stop
14 00 10	---	20 04 40	29.0	218.1	2.2		21.7	128	2186	13 57 51
14 00 10	J1752-0147	20 04 40	28.6	218.2	2.2		21.8	-13	2186	No stop
14 01 20	---	20 05 50	28.5	218.5	2.2		22.0	57	2195	14 00 11
14 01 20	J17535	20 05 50	28.9	218.4	2.2		21.9	-12	2195	No stop
14 03 40	---	20 08 10	28.7	219.0	2.2		22.2	128	2213	14 01 21
14 03 40	J1752-0147	20 08 10	28.3	219.1	2.3		22.3	-13	2213	No stop
14 04 50	---	20 09 20	28.2	219.4	2.3		22.4	57	2222	14 03 41
14 05 40	J1743-0350	20 10 11	25.4	220.9	2.4		23.2	26	2222	14 05 40
14 06 40	=1741-038	20 11 11	25.3	221.2	2.4		23.3	60	2230	14 05 41
14 06 40	J1752-0147	20 11 11	28.0	219.9	2.3		22.7	-24	2230	No stop
14 08 00	---	20 12 31	27.9	220.3	2.3		22.9	56	2240	14 06 41

Schedule for TORUN (Code Tr )

Page 8

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
14 08 00	J17535	20 12 31	28.3	220.1	2.3		22.8	-12	2240	No stop
14 10 20	---	20 14 51	28.1	220.7	2.3		23.1	128	2258	14 08 01
14 10 20	J1752-0147	20 14 51	27.6	220.9	2.4		23.2	-13	2258	No stop
14 11 30	---	20 16 02	27.5	221.2	2.4		23.3	57	2267	14 10 21
14 11 30	J17535	20 16 02	27.9	221.0	2.4		23.2	-12	2267	No stop
14 13 50	---	20 18 22	27.7	221.6	2.4		23.5	128	2285	14 11 31
14 13 50	J1752-0147	20 18 22	27.3	221.8	2.4		23.6	-13	2285	No stop
14 15 00	---	20 19 32	27.2	222.1	2.4		23.7	57	2294	14 13 51
14 15 00	J17535	20 19 32	27.6	221.9	2.4		23.7	-12	2294	No stop
14 17 20	---	20 21 53	27.4	222.5	2.5		24.0	128	2312	14 15 01
14 17 20	J1752-0147	20 21 53	26.9	222.7	2.5		24.0	-13	2312	No stop
14 18 30	---	20 23 03	26.8	223.0	2.5		24.2	57	2321	14 17 21
14 18 30	J17535	20 23 03	27.2	222.9	2.5		24.1	-12	2321	No stop
14 20 50	---	20 25 23	27.0	223.4	2.5		24.4	128	2339	14 18 31
14 20 50	J1752-0147	20 25 23	26.6	223.6	2.5		24.5	-13	2339	No stop
14 22 00	---	20 26 33	26.5	223.9	2.6		24.6	57	2348	14 20 51
14 22 50	J1743-0350	20 27 23	23.6	225.2	2.7		25.3	26	2348	14 22 50
14 23 50	=1741-038	20 28 24	23.5	225.5	2.7		25.4	60	2356	14 22 51
14 23 50	J1752-0147	20 28 24	26.3	224.4	2.6		24.8	-24	2356	No stop
14 25 10	---	20 29 44	26.1	224.7	2.6		25.0	56	2366	14 23 51
14 25 10	J17535	20 29 44	26.6	224.6	2.6		24.9	-12	2366	No stop
14 27 30	---	20 32 04	26.3	225.1	2.6		25.2	128	2384	14 25 11
14 27 30	J1752-0147	20 32 04	25.9	225.3	2.7		25.3	-13	2384	No stop
14 28 40	---	20 33 14	25.8	225.6	2.7		25.4	57	2393	14 27 31
14 28 40	J17535	20 33 14	26.2	225.4	2.7		25.3	-12	2393	No stop
14 31 00	---	20 35 35	25.9	226.0	2.7		25.6	128	2411	14 28 41
14 31 00	J1752-0147	20 35 35	25.5	226.2	2.7		25.7	-13	2411	No stop
14 32 10	---	20 36 45	25.4	226.4	2.7		25.8	57	2420	14 31 01
14 32 10	J17535	20 36 45	25.8	226.3	2.7		25.7	-12	2420	No stop
14 34 30	---	20 39 05	25.5	226.9	2.7		26.0	128	2439	14 32 11

Schedule for TORUN (Code Tr )

Page 9

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
14 34 30	J1752-0147	20 39 05	25.1	227.0	2.8		26.1	-13	2439	No stop
14 35 40	---	20 40 16	25.0	227.3	2.8		26.2	57	2448	14 34 31
14 35 40	J17535	20 40 16	25.4	227.2	2.8		26.1	-12	2448	No stop
14 38 00	---	20 42 36	25.2	227.8	2.8		26.4	128	2466	14 35 41
14 38 00	J1752-0147	20 42 36	24.7	227.9	2.8		26.5	-13	2466	No stop
14 39 10	---	20 43 46	24.6	228.2	2.8		26.6	57	2475	14 38 01
14 39 10	J1753-0102	20 43 46	25.4	228.3	2.8		26.7	-15	2475	No stop
14 40 20	---	20 44 56	25.2	228.6	2.9		26.8	55	2484	14 39 11
14 40 20	J1752-0147	20 44 56	24.5	228.5	2.9		26.7	-15	2484	No stop
14 41 30	---	20 46 07	24.3	228.8	2.9		26.9	55	2493	14 40 21
14 42 20	J1743-0350	20 46 57	21.5	230.0	3.0		27.4	26	2493	14 42 20
14 43 20	=1741-038	20 47 57	21.4	230.2	3.1		27.5	60	2500	14 42 21
14 43 20	J1752-0147	20 47 57	24.1	229.2	2.9		27.1	-24	2500	No stop
14 44 40	---	20 49 17	24.0	229.5	2.9		27.2	56	2511	14 43 21
14 44 40	J17535	20 49 17	24.4	229.4	2.9		27.1	-12	2511	No stop
14 47 00	---	20 51 37	24.1	230.0	3.0		27.4	128	2529	14 44 41
14 47 00	J1752-0147	20 51 37	23.7	230.1	3.0		27.4	-13	2529	No stop
14 48 10	---	20 52 48	23.6	230.4	3.0		27.6	57	2538	14 47 01
14 48 10	J17535	20 52 48	24.0	230.3	3.0		27.5	-12	2538	No stop
14 50 30	---	20 55 08	23.7	230.8	3.0		27.8	128	2556	14 48 11
14 50 30	J1752-0147	20 55 08	23.3	230.9	3.0		27.8	-13	2556	No stop
14 51 40	---	20 56 18	23.2	231.2	3.1		27.9	57	2565	14 50 31
14 51 40	J17535	20 56 18	23.6	231.1	3.0		27.9	-12	2565	No stop
14 54 00	---	20 58 39	23.3	231.7	3.1		28.1	128	2583	14 51 41
14 54 00	J1752-0147	20 58 39	22.9	231.8	3.1		28.2	-13	2583	No stop
14 55 10	---	20 59 49	22.7	232.1	3.1		28.3	57	2592	14 54 01
14 55 10	J17535	20 59 49	23.2	232.0	3.1		28.2	-12	2592	No stop
14 57 30	---	21 02 09	22.9	232.5	3.1		28.5	128	2610	14 55 11
14 57 30	J1752-0147	21 02 09	22.5	232.6	3.2		28.5	-13	2610	No stop
14 58 40	---	21 03 19	22.3	232.9	3.2		28.6	57	2619	14 57 31

Schedule for TORUN (Code Tr )

Page 10

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
14 59 30	J1743-0350	21 04 09	19.4	234.0	3.3		29.1	25	2619	14 59 30
15 00 30	=1741-038	21 05 10	19.3	234.2	3.3		29.2	60	2627	14 59 31
15 00 30	J1752-0147	21 05 10	22.1	233.3	3.2		28.8	-24	2627	No stop
15 01 50	---	21 06 30	21.9	233.7	3.2		28.9	56	2637	15 00 31
15 01 50	J17535	21 06 30	22.4	233.6	3.2		28.9	-12	2637	No stop
15 04 10	---	21 08 50	22.1	234.1	3.2		29.1	128	2655	15 01 51
15 04 10	J1752-0147	21 08 50	21.7	234.2	3.3		29.2	-13	2655	No stop
15 05 20	---	21 10 00	21.5	234.5	3.3		29.3	57	2664	15 04 11
15 05 20	J17535	21 10 00	22.0	234.4	3.3		29.2	-12	2664	No stop
15 07 40	---	21 12 21	21.7	234.9	3.3		29.4	128	2682	15 05 21
15 07 40	J1752-0147	21 12 21	21.2	235.0	3.3		29.5	-13	2682	No stop
15 08 50	---	21 13 31	21.1	235.3	3.3		29.6	57	2691	15 07 41
15 08 50	J17535	21 13 31	21.5	235.2	3.3		29.6	-12	2691	No stop
15 11 10	---	21 15 51	21.2	235.8	3.4		29.8	128	2710	15 08 51
15 11 10	J1752-0147	21 15 51	20.8	235.8	3.4		29.8	-13	2710	No stop
15 12 20	---	21 17 02	20.7	236.1	3.4		29.9	57	2719	15 11 11
15 12 20	J17535	21 17 02	21.1	236.0	3.4		29.9	-12	2719	No stop
15 14 40	---	21 19 22	20.8	236.6	3.4		30.1	128	2737	15 12 21
15 14 40	J1752-0147	21 19 22	20.4	236.7	3.4		30.1	-13	2737	No stop
15 15 50	---	21 20 32	20.2	236.9	3.5		30.2	57	2746	15 14 41
15 16 40	J1743-0350	21 21 22	17.3	237.9	3.6		30.7	25	2746	15 16 40
15 17 40	=1741-038	21 22 22	17.2	238.1	3.6		30.7	60	2753	15 16 41
15 17 40	J1752-0147	21 22 22	20.0	237.3	3.5		30.4	-24	2753	No stop
15 19 00	---	21 23 43	19.8	237.7	3.5		30.5	56	2764	15 17 41
15 19 00	J17535	21 23 43	20.3	237.6	3.5		30.5	-12	2764	No stop
15 21 20	---	21 26 03	20.0	238.1	3.5		30.7	128	2782	15 19 01
15 21 20	J1752-0147	21 26 03	19.5	238.2	3.6		30.7	-13	2782	No stop
15 22 30	---	21 27 13	19.4	238.5	3.6		30.8	57	2791	15 21 21
15 22 30	J17535	21 27 13	19.8	238.4	3.6		30.8	-12	2791	No stop
15 24 50	---	21 29 34	19.5	238.9	3.6		31.0	128	2809	15 22 31

Schedule for TORUN (Code Tr )

Page 11

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
15 24 50	J1752-0147	21 29 34	19.1	239.0	3.6		31.0	-13	2809	No stop
15 26 00	---	21 30 44	18.9	239.3	3.6		31.1	57	2818	15 24 51
15 26 00	J17535	21 30 44	19.4	239.2	3.6		31.1	-13	2818	No stop
15 28 20	---	21 33 04	19.1	239.7	3.6		31.2	127	2836	15 26 01
15 28 20	J1752-0147	21 33 04	18.6	239.8	3.7		31.3	-13	2836	No stop
15 29 30	---	21 34 14	18.5	240.0	3.7		31.4	57	2845	15 28 21
15 29 30	J17535	21 34 14	18.9	240.0	3.7		31.3	-13	2845	No stop
15 31 50	---	21 36 35	18.6	240.5	3.7		31.5	127	2863	15 29 31
15 31 50	J1752-0147	21 36 35	18.2	240.6	3.7		31.5	-13	2863	No stop
15 33 00	---	21 37 45	18.0	240.8	3.7		31.6	57	2872	15 31 51
15 33 00	J1753-0102	21 37 45	18.7	241.0	3.7		31.7	-15	2872	No stop
15 34 10	---	21 38 55	18.6	241.3	3.8		31.8	55	2881	15 33 01
15 34 10	J1752-0147	21 38 55	17.9	241.1	3.8		31.7	-15	2881	No stop
15 35 20	---	21 40 05	17.7	241.4	3.8		31.8	55	2890	15 34 11
15 36 10	J1743-0350	21 40 55	14.7	242.2	3.9		32.2	25	2890	15 36 10
15 37 10	=1741-038	21 41 56	14.6	242.5	4.0		32.3	60	2898	15 36 11
15 37 10	J1752-0147	21 41 56	17.5	241.8	3.8		32.0	-24	2898	No stop
15 38 30	---	21 43 16	17.3	242.1	3.8		32.1	56	2908	15 37 11
15 38 30	J17535	21 43 16	17.7	242.0	3.8		32.0	-13	2908	No stop
15 40 50	---	21 45 36	17.4	242.5	3.9		32.2	127	2926	15 38 31
15 40 50	J1752-0147	21 45 36	17.0	242.6	3.9		32.2	-13	2926	No stop
15 42 00	---	21 46 46	16.8	242.8	3.9		32.3	57	2935	15 40 51
15 42 00	J17535	21 46 46	17.2	242.8	3.9		32.3	-13	2935	No stop
15 44 20	---	21 49 07	16.9	243.3	3.9		32.4	127	2953	15 42 01
15 44 20	J1752-0147	21 49 07	16.5	243.3	3.9		32.5	-13	2953	No stop
15 45 30	---	21 50 17	16.3	243.6	4.0		32.6	57	2962	15 44 21
15 45 30	J17535	21 50 17	16.8	243.5	3.9		32.5	-13	2962	No stop
15 47 50	---	21 52 37	16.5	244.1	4.0		32.7	127	2980	15 45 31
15 47 50	J1752-0147	21 52 37	16.0	244.1	4.0		32.7	-13	2980	No stop
15 49 00	---	21 53 48	15.9	244.4	4.0		32.8	57	2989	15 47 51

Schedule for TORUN (Code Tr )

Page 12

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
15 49 00	J17535	21 53 48	16.3	244.3	4.0		32.8	-13	2989	No stop
15 51 20	---	21 56 08	16.0	244.8	4.0		32.9	127	3008	15 49 01
15 51 20	J1752-0147	21 56 08	15.5	244.9	4.1		33.0	-13	3008	No stop
15 52 30	---	21 57 18	15.4	245.1	4.1		33.0	57	3017	15 51 21
15 53 20	J1743-0350	21 58 08	12.4	246.0	4.2		33.3	25	3017	15 53 20
15 54 20	=1741-038	21 59 08	12.3	246.2	4.2		33.4	60	3024	15 53 21
15 54 20	J1752-0147	21 59 08	15.1	245.5	4.1		33.2	-24	3024	No stop
15 55 40	---	22 00 29	15.0	245.8	4.1		33.2	56	3035	15 54 21
15 55 40	J17535	22 00 29	15.4	245.8	4.1		33.2	-13	3035	No stop
15 58 00	---	22 02 49	15.1	246.3	4.1		33.4	127	3053	15 55 41
15 58 00	J1752-0147	22 02 49	14.6	246.3	4.2		33.4	-13	3053	No stop
15 59 10	---	22 03 59	14.5	246.6	4.2		33.5	57	3062	15 58 01
15 59 10	J17535	22 03 59	14.9	246.5	4.2		33.4	-13	3062	No stop
16 01 30	---	22 06 20	14.6	247.0	4.2		33.6	127	3080	15 59 11
16 01 30	J1752-0147	22 06 20	14.2	247.1	4.2		33.6	-13	3080	No stop
16 02 40	---	22 07 30	14.0	247.3	4.2		33.7	57	3089	16 01 31
16 02 40	J17535	22 07 30	14.4	247.3	4.2		33.6	-13	3089	No stop
16 05 00	---	22 09 50	14.1	247.8	4.3		33.8	127	3107	16 02 41
16 05 00	J1752-0147	22 09 50	13.7	247.8	4.3		33.8	-13	3107	No stop
16 06 10	---	22 11 00	13.5	248.1	4.3		33.9	57	3116	16 05 01
16 06 10	J17535	22 11 00	13.9	248.0	4.3		33.9	-13	3116	No stop
16 08 30	---	22 13 21	13.6	248.5	4.3		34.0	127	3134	16 06 11
16 08 30	J1752-0147	22 13 21	13.2	248.6	4.3		34.0	-13	3134	No stop
16 09 40	---	22 14 31	13.0	248.8	4.4		34.1	57	3143	16 08 31
16 10 30	J1743-0350	22 15 21	10.0	249.6	4.5		34.3	25	3143	16 10 30
16 11 30	=1741-038	22 16 21	9.9	249.8	4.5		34.4	60	3151	16 10 31
16 11 30	J1752-0147	22 16 21	12.8	249.2	4.4		34.2	-24	3151	No stop
16 12 50	---	22 17 42	12.6	249.5	4.4		34.2	56	3161	16 11 31
16 12 50	J17535	22 17 42	13.0	249.5	4.4		34.2	-13	3161	No stop
16 15 10	---	22 20 02	12.7	250.0	4.4		34.4	127	3179	16 12 51

Schedule for TORUN (Code Tr )

Page 13

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
16 15 10	J1752-0147	22 20 02	12.2	250.0	4.5		34.4	-13	3179	No stop
16 16 20	---	22 21 12	12.1	250.3	4.5		34.4	57	3188	16 15 11
16 16 20	J17535	22 21 12	12.5	250.2	4.5		34.4	-13	3188	No stop
16 18 40	---	22 23 32	12.2	250.7	4.5		34.5	127	3206	16 16 21
16 18 40	J1752-0147	22 23 32	11.7	250.7	4.5		34.6	-13	3206	No stop
16 19 50	---	22 24 43	11.6	251.0	4.5		34.6	57	3215	16 18 41
16 19 50	J17535	22 24 43	12.0	250.9	4.5		34.6	-13	3215	No stop
16 22 10	---	22 27 03	11.7	251.4	4.5		34.7	127	3233	16 19 51
16 22 10	J1752-0147	22 27 03	11.2	251.5	4.6		34.7	-13	3233	No stop
16 23 20	---	22 28 13	11.1	251.7	4.6		34.8	57	3242	16 22 11
16 23 20	J17535	22 28 13	11.5	251.7	4.6		34.8	-13	3242	No stop
16 25 40	---	22 30 34	11.2	252.2	4.6		34.9	127	3260	16 23 21
16 25 40	J1752-0147	22 30 34	10.7	252.2	4.6		34.9	-13	3260	No stop
16 26 50	---	22 31 44	10.6	252.5	4.6		34.9	57	3269	16 25 41
16 26 50	J1753-0102	22 31 44	11.3	252.7	4.6		35.0	-15	3269	No stop
16 28 00	---	22 32 54	11.1	253.0	4.7		35.0	55	3279	16 26 51
16 28 00	J1752-0147	22 32 54	10.4	252.7	4.7		35.0	-15	3279	No stop
16 29 10	---	22 34 04	10.2	252.9	4.7		35.1	55	3288	16 28 01
16 32 40	NRA0512	22 37 35	31.2	296.0	5.9		44.6	109	3288	16 32 40
16 36 40	---	22 41 35	30.7	296.6	6.0		44.3	240	3319	16 32 41
16 38 40	J1818+5017	22 43 36	50.4	293.6	4.4		59.4	32	3319	16 38 40
16 40 10	=1817+502	22 45 06	50.2	293.8	4.4		59.3	90	3330	16 38 41
16 40 10	J1809+5007	22 45 06	48.8	294.8	4.6		58.3	-19	3330	No stop
16 43 40	---	22 48 37	48.3	295.2	4.7		57.9	191	3357	16 40 11
16 44 10	J1818+5017	22 49 07	49.6	294.3	4.5		58.9	12	3357	16 44 10
16 45 10	=1817+502	22 50 07	49.5	294.5	4.5		58.8	60	3365	16 44 11
16 45 10	AMHER	22 50 07	48.9	294.2	4.6		58.2	-14	3365	No stop
16 48 40	---	22 53 37	48.5	294.7	4.6		57.9	196	3392	16 45 11
16 48 40	J1818+5017	22 53 37	49.0	294.9	4.6		58.5	-13	3392	No stop
16 50 10	=1817+502	22 55 08	48.8	295.1	4.6		58.3	77	3404	16 48 41



Schedule for TORUN (Code Tr )

Page 14

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
16 50 10	AMHER	22 55 08	48.2	294.9	4.6		57.7	-14	3404	No stop
16 53 40	---	22 58 38	47.8	295.3	4.7		57.4	196	3431	16 50 11
16 54 10	J1818+5017	22 59 08	48.2	295.6	4.7		58.0	17	3431	16 54 10
16 55 10	=1817+502	23 00 08	48.1	295.7	4.7		57.9	60	3438	16 54 11
16 55 10	AMHER	23 00 08	47.6	295.5	4.7		57.2	-14	3438	No stop
16 58 40	---	23 03 39	47.1	296.0	4.8		56.9	196	3466	16 55 11
16 58 40	J1818+5017	23 03 39	47.6	296.2	4.7		57.5	-13	3466	No stop
17 00 10	=1817+502	23 05 09	47.4	296.4	4.8		57.4	77	3477	16 58 41
17 00 10	AMHER	23 05 09	46.9	296.2	4.8		56.8	-14	3477	No stop
17 03 40	---	23 08 40	46.4	296.6	4.9		56.4	196	3504	17 00 11
17 03 40	J1818+5017	23 08 40	47.0	296.8	4.8		57.0	-13	3504	No stop
17 05 10	=1817+502	23 10 10	46.8	297.0	4.9		56.9	77	3516	17 03 41
17 05 10	J1809+5007	23 10 10	45.4	298.0	5.0		55.8	-18	3516	No stop
17 08 40	---	23 13 41	45.0	298.5	5.1		55.4	192	3543	17 05 11
17 09 10	J1818+5017	23 14 11	46.2	297.5	4.9		56.5	12	3543	17 09 10
17 10 10	=1817+502	23 15 11	46.1	297.7	4.9		56.4	60	3551	17 09 11
17 10 10	AMHER	23 15 11	45.5	297.5	5.0		55.8	-14	3551	No stop
17 13 40	---	23 18 41	45.1	297.9	5.0		55.4	196	3578	17 10 11
17 13 40	J1818+5017	23 18 41	45.6	298.1	5.0		56.0	-13	3578	No stop
17 15 10	=1817+502	23 20 12	45.4	298.3	5.0		55.9	77	3589	17 13 41
17 15 10	AMHER	23 20 12	44.9	298.1	5.1		55.3	-14	3589	No stop
17 18 40	---	23 23 42	44.4	298.6	5.1		54.9	196	3617	17 15 11
17 19 10	J1818+5017	23 24 12	44.9	298.8	5.1		55.5	17	3617	17 19 10
17 20 10	=1817+502	23 25 13	44.8	298.9	5.1		55.4	60	3624	17 19 11
17 20 10	AMHER	23 25 13	44.2	298.8	5.1		54.8	-14	3624	No stop
17 23 40	---	23 28 43	43.8	299.2	5.2		54.4	196	3651	17 20 11
17 23 40	J1818+5017	23 28 43	44.3	299.4	5.2		55.0	-13	3651	No stop
17 25 10	=1817+502	23 30 13	44.1	299.6	5.2		54.8	77	3663	17 23 41
17 25 10	AMHER	23 30 13	43.6	299.4	5.2		54.3	-14	3663	No stop
17 28 40	---	23 33 44	43.1	299.9	5.3		53.9	196	3690	17 25 11

Schedule for TORUN (Code Tr )

Page 15

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
17 28 40	J1818+5017	23 33 44	43.6	300.0	5.2		54.5	-13	3690	No stop
17 30 10	=1817+502	23 35 14	43.5	300.2	5.3		54.3	77	3702	17 28 41
17 30 10	J1809+5007	23 35 14	42.2	301.2	5.4		53.2	-18	3702	No stop
17 33 40	---	23 38 45	41.7	301.7	5.5		52.9	192	3729	17 30 11
17 34 10	J1818+5017	23 39 15	42.9	300.7	5.3		53.9	12	3729	17 34 10
17 35 10	=1817+502	23 40 15	42.8	300.9	5.4		53.8	60	3737	17 34 11
17 35 10	AMHER	23 40 15	42.3	300.7	5.4		53.2	-14	3737	No stop
17 38 40	---	23 43 46	41.8	301.2	5.5		52.9	196	3764	17 35 11
17 38 40	J1818+5017	23 43 46	42.4	301.3	5.4		53.4	-13	3764	No stop
17 40 10	=1817+502	23 45 16	42.2	301.5	5.4		53.3	77	3775	17 38 41
17 40 10	AMHER	23 45 16	41.6	301.4	5.5		52.7	-14	3775	No stop
17 43 40	---	23 48 46	41.2	301.8	5.5		52.4	196	3802	17 40 11
17 44 10	J1818+5017	23 49 17	41.6	302.0	5.5		52.8	17	3802	17 44 10
17 45 10	=1817+502	23 50 17	41.5	302.2	5.5		52.7	60	3810	17 44 11
17 45 10	AMHER	23 50 17	41.0	302.0	5.6		52.2	-14	3810	No stop
17 48 40	---	23 53 47	40.5	302.5	5.6		51.8	196	3837	17 45 11
17 48 40	J1818+5017	23 53 47	41.1	302.6	5.6		52.4	-13	3837	No stop
17 50 10	=1817+502	23 55 17	40.9	302.8	5.6		52.2	77	3849	17 48 41
17 50 10	AMHER	23 55 17	40.3	302.7	5.6		51.7	-14	3849	No stop
17 53 40	---	23 58 48	39.9	303.1	5.7		51.3	196	3876	17 50 11
17 53 40	J1818+5017	23 58 48	40.4	303.3	5.7		51.8	-13	3876	No stop
17 55 10	=1817+502	00 00 18	40.3	303.5	5.7		51.7	77	3888	17 53 41
17 55 10	J1809+5007	00 00 18	39.0	304.5	5.8		50.5	-18	3888	No stop
17 58 40	---	00 03 49	38.6	305.0	5.9		50.2	192	3915	17 55 11
17 59 10	J1818+5017	00 04 19	39.8	304.0	5.8		51.2	12	3915	17 59 10
18 00 10	=1817+502	00 05 19	39.6	304.1	5.8		51.1	60	3922	17 59 11
18 00 10	AMHER	00 05 19	39.1	304.0	5.8		50.6	-14	3922	No stop
18 03 40	---	00 08 50	38.6	304.5	5.9		50.2	196	3949	18 00 11
18 03 40	J1818+5017	00 08 50	39.2	304.6	5.8		50.7	-13	3949	No stop
18 05 10	=1817+502	00 10 20	39.0	304.8	5.9		50.6	77	3961	18 03 41

Schedule for TORUN (Code Tr )

Page 16

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
18 05 10	AMHER	00 10 20	38.5	304.7	5.9		50.0	-14	3961	No stop
18 08 40	---	00 13 51	38.0	305.1	6.0		49.7	196	3988	18 05 11
18 09 10	J1818+5017	00 14 21	38.5	305.3	5.9		50.1	17	3988	18 09 10
18 10 10	=1817+502	00 15 21	38.4	305.4	5.9		50.0	60	3996	18 09 11
18 10 10	AMHER	00 15 21	37.8	305.3	6.0		49.5	-14	3996	No stop
18 13 40	---	00 18 51	37.4	305.8	6.0		49.1	196	4023	18 10 11
18 13 40	J1818+5017	00 18 51	38.0	305.9	6.0		49.6	-13	4023	No stop
18 15 10	=1817+502	00 20 22	37.8	306.1	6.0		49.4	77	4035	18 13 41
18 15 10	AMHER	00 20 22	37.2	306.0	6.1		48.9	-14	4035	No stop
18 18 40	---	00 23 52	36.8	306.4	6.1		48.6	196	4062	18 15 11
18 18 40	J1818+5017	00 23 52	37.4	306.5	6.1		49.0	-13	4062	No stop
18 20 10	=1817+502	00 25 22	37.2	306.7	6.1		48.9	77	4073	18 18 41
18 20 10	J1809+5007	00 25 22	36.0	307.8	6.3		47.7	-18	4073	No stop
18 23 40	---	00 28 53	35.5	308.3	6.3		47.3	192	4100	18 20 11
18 24 10	J1818+5017	00 29 23	36.7	307.3	6.2		48.4	12	4100	18 24 10
18 25 10	=1817+502	00 30 23	36.6	307.4	6.2		48.3	60	4108	18 24 11
18 25 10	AMHER	00 30 23	36.0	307.3	6.2		47.8	-14	4108	No stop
18 28 40	---	00 33 54	35.6	307.8	6.3		47.4	196	4135	18 25 11
18 28 40	J1818+5017	00 33 54	36.2	307.9	6.3		47.9	-13	4135	No stop
18 30 10	=1817+502	00 35 24	36.0	308.1	6.3		47.7	77	4147	18 28 41
18 30 10	AMHER	00 35 24	35.4	308.0	6.3		47.3	-14	4147	No stop
18 33 40	---	00 38 55	35.0	308.5	6.4		46.9	196	4174	18 30 11
18 34 10	J1818+5017	00 39 25	35.5	308.6	6.3		47.3	17	4174	18 34 10
18 35 10	=1817+502	00 40 25	35.4	308.7	6.4		47.2	60	4182	18 34 11
18 35 10	AMHER	00 40 25	34.8	308.7	6.4		46.7	-14	4182	No stop
18 38 40	---	00 43 55	34.4	309.1	6.5		46.3	196	4209	18 35 11
18 38 40	J1818+5017	00 43 55	35.0	309.2	6.4		46.8	-13	4209	No stop
18 40 10	=1817+502	00 45 26	34.8	309.4	6.4		46.6	77	4220	18 38 41
18 40 10	AMHER	00 45 26	34.3	309.3	6.5		46.1	-14	4220	No stop
18 43 40	---	00 48 56	33.8	309.8	6.5		45.7	196	4247	18 40 11

Schedule for TORUN (Code Tr )

Page 17

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop      Early   Disk   TPStart
Stop UT          LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
--- Tue   3 Dec 2013   Day 337 ---

18 43 40  J1818+5017  00 48 56  34.4 309.9  6.5      46.2  -13   4247  No stop
18 45 10  =1817+502   00 50 27  34.2 310.1  6.5      46.0   77   4259  18 43 41

18 45 10  J1809+5007  00 50 27  33.1 311.2  6.7      44.8  -18   4259  No stop
18 48 40  ---         00 53 57  32.7 311.7  6.7      44.4  192   4286  18 45 11

18 49 10  J1818+5017  00 54 27  33.8 310.6  6.6      45.5   13   4286  18 49 10
18 50 10  =1817+502   00 55 27  33.7 310.7  6.6      45.4   60   4294  18 49 11

18 50 10  AMHER       00 55 27  33.1 310.7  6.6      44.9  -14   4294  No stop
18 53 40  ---         00 58 58  32.7 311.2  6.7      44.5  196   4321  18 50 11

18 53 40  J1818+5017  00 58 58  33.3 311.2  6.7      45.0  -13   4321  No stop
18 55 10  =1817+502   01 00 28  33.1 311.4  6.7      44.8   77   4333  18 53 41

18 55 10  AMHER       01 00 28  32.5 311.4  6.7      44.4  -14   4333  No stop
18 58 40  ---         01 03 59  32.1 311.9  6.8      43.9  196   4360  18 55 11

18 59 10  J1818+5017  01 04 29  32.6 312.0  6.8      44.3   16   4360  18 59 10
19 00 10  =1817+502   01 05 29  32.5 312.1  6.8      44.2   60   4367  18 59 11

19 00 10  AMHER       01 05 29  32.0 312.1  6.8      43.8  -14   4367  No stop
19 03 40  ---         01 09 00  31.6 312.5  6.9      43.4  196   4395  19 00 11

19 03 40  J1818+5017  01 09 00  32.1 312.6  6.8      43.8  -14   4395  No stop
19 05 10  =1817+502   01 10 30  32.0 312.8  6.9      43.6   76   4406  19 03 41

----- Eff pointing check -----

19 11 10  J2113+4012  01 16 31  47.9 277.6  4.0      51.3  273   4406  19 11 10
19 15 10  =2111+400   01 20 31  47.3 278.3  4.1      51.2  240   4437  19 11 11

19 15 30  J2113+4012  01 20 52  47.2 278.4  4.1      51.1   14   4437  19 15 30
19 17 30  =2111+400   01 22 52  46.9 278.7  4.1      51.1  120   4453  19 15 31

19 17 30  J2115+3742  01 22 52  45.5 275.7  4.1      49.1  -20   4453  No stop
19 21 00  ---         01 26 22  45.0 276.4  4.2      49.0  190   4480  19 17 31

19 21 30  J2113+4012  01 26 52  46.3 279.4  4.2      50.9   9   4480  19 21 30
19 22 30  =2111+400   01 27 53  46.2 279.6  4.2      50.9  60   4487  19 21 31

19 22 30  V1396CYG    01 27 53  44.1 281.8  4.5      50.3  -22   4487  No stop
19 26 00  ---         01 31 23  43.6 282.4  4.5      50.1  188   4515  19 22 31

```

Schedule for TORUN (Code Tr )

Page 18

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
19 26 00	J2113+4012	01 31 23	45.7	280.2	4.3		50.8	-21	4515	No stop
19 27 30	=2111+400	01 32 53	45.4	280.5	4.3		50.7	69	4526	19 26 01
19 27 30	V1396CYG	01 32 53	43.4	282.6	4.5		50.0	-22	4526	No stop
19 31 00	---	01 36 24	42.9	283.2	4.6		49.9	188	4553	19 27 31
19 31 30	J2113+4012	01 36 54	44.9	281.2	4.4		50.5	9	4553	19 31 30
19 32 30	=2111+400	01 37 54	44.7	281.3	4.4		50.5	60	4561	19 31 31
19 32 30	V1396CYG	01 37 54	42.7	283.5	4.6		49.8	-22	4561	No stop
19 36 00	---	01 41 25	42.1	284.0	4.7		49.6	188	4588	19 32 31
19 36 00	J2113+4012	01 41 25	44.2	281.9	4.5		50.4	-21	4588	No stop
19 37 30	=2111+400	01 42 55	44.0	282.2	4.5		50.3	69	4600	19 36 01
19 37 30	V1396CYG	01 42 55	41.9	284.3	4.7		49.6	-22	4600	No stop
19 41 00	---	01 46 26	41.4	284.9	4.8		49.4	188	4627	19 37 31
19 41 30	J2113+4012	01 46 56	43.4	282.9	4.5		50.1	9	4627	19 41 30
19 42 30	=2111+400	01 47 56	43.2	283.0	4.6		50.1	60	4635	19 41 31
19 42 30	V1396CYG	01 47 56	41.2	285.1	4.8		49.3	-22	4635	No stop
19 46 00	---	01 51 27	40.7	285.7	4.8		49.1	188	4662	19 42 31
19 46 00	J2113+4012	01 51 27	42.7	283.6	4.6		49.9	-21	4662	No stop
19 47 30	=2111+400	01 52 57	42.5	283.9	4.6		49.8	69	4673	19 46 01
19 47 30	J2115+3742	01 52 57	41.0	281.1	4.6		48.2	-20	4673	No stop
19 51 00	---	01 56 27	40.5	281.7	4.7		48.1	190	4700	19 47 31
19 51 30	J2113+4012	01 56 57	41.9	284.5	4.7		49.6	10	4700	19 51 30
19 52 30	=2111+400	01 57 58	41.8	284.7	4.7		49.6	60	4708	19 51 31
19 52 30	V1396CYG	01 57 58	39.7	286.8	5.0		48.8	-22	4708	No stop
19 56 00	---	02 01 28	39.2	287.3	5.0		48.6	188	4735	19 52 31
19 56 00	J2113+4012	02 01 28	41.3	285.3	4.8		49.4	-21	4735	No stop
19 57 30	=2111+400	02 02 58	41.1	285.5	4.8		49.3	69	4747	19 56 01
19 57 30	V1396CYG	02 02 58	39.0	287.6	5.0		48.5	-22	4747	No stop
20 01 00	---	02 06 29	38.5	288.2	5.1		48.3	188	4774	19 57 31
20 01 30	J2113+4012	02 06 59	40.5	286.2	4.9		49.1	9	4774	20 01 30
20 02 30	=2111+400	02 07 59	40.3	286.4	4.9		49.0	60	4782	20 01 31

Schedule for TORUN (Code Tr )

Page 19

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
20 02 30	V1396CYG	02 07 59	38.3	288.4	5.1		48.2	-22	4782	No stop
20 06 00	---	02 11 30	37.8	289.0	5.2		48.0	188	4809	20 02 31
20 06 00	J2113+4012	02 11 30	39.8	286.9	5.0		48.8	-21	4809	No stop
20 07 30	=2111+400	02 13 00	39.6	287.2	5.0		48.8	69	4820	20 06 01
20 07 30	V1396CYG	02 13 00	37.6	289.2	5.2		47.9	-22	4820	No stop
20 11 00	---	02 16 31	37.1	289.8	5.3		47.6	188	4847	20 07 31
20 11 30	J2113+4012	02 17 01	39.0	287.8	5.0		48.5	9	4847	20 11 30
20 12 30	=2111+400	02 18 01	38.9	288.0	5.1		48.5	60	4855	20 11 31
20 12 30	V1396CYG	02 18 01	36.9	290.0	5.3		47.5	-21	4855	No stop
20 16 00	---	02 21 31	36.4	290.6	5.3		47.3	189	4882	20 12 31
20 16 00	J2113+4012	02 21 31	38.4	288.6	5.1		48.3	-21	4882	No stop
20 17 30	=2111+400	02 23 02	38.2	288.8	5.1		48.2	69	4894	20 16 01
20 17 30	J2115+3742	02 23 02	36.7	286.3	5.1		46.8	-19	4894	No stop
20 21 00	---	02 26 32	36.2	286.9	5.2		46.6	191	4921	20 17 31
20 21 30	J2113+4012	02 27 02	37.6	289.5	5.2		47.9	11	4921	20 21 30
20 22 30	=2111+400	02 28 03	37.5	289.6	5.2		47.8	60	4929	20 21 31
20 22 30	V1396CYG	02 28 03	35.5	291.6	5.5		46.9	-21	4929	No stop
20 26 00	---	02 31 33	35.0	292.2	5.5		46.6	189	4956	20 22 31
20 26 00	J2113+4012	02 31 33	37.0	290.2	5.3		47.6	-21	4956	No stop
20 27 30	=2111+400	02 33 03	36.8	290.4	5.3		47.5	69	4967	20 26 01
20 27 30	V1396CYG	02 33 03	34.8	292.5	5.5		46.5	-21	4967	No stop
20 31 00	---	02 36 34	34.3	293.0	5.6		46.3	189	4995	20 27 31
20 31 30	J2113+4012	02 37 04	36.2	291.1	5.4		47.3	9	4995	20 31 30
20 32 30	=2111+400	02 38 04	36.1	291.2	5.4		47.2	60	5002	20 31 31
20 32 30	V1396CYG	02 38 04	34.1	293.3	5.6		46.2	-21	5002	No stop
20 36 00	---	02 41 35	33.6	293.8	5.7		45.9	189	5029	20 32 31
20 36 00	J2113+4012	02 41 35	35.6	291.8	5.5		47.0	-21	5029	No stop
20 37 30	=2111+400	02 43 05	35.4	292.0	5.5		46.8	69	5041	20 36 01
20 37 30	V1396CYG	02 43 05	33.4	294.1	5.7		45.8	-21	5041	No stop
20 41 00	---	02 46 36	32.9	294.6	5.8		45.6	189	5068	20 37 31

Schedule for TORUN (Code Tr )

Page 20

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
20 41 30	J2113+4012	02 47 06	34.8	292.7	5.6		46.6	9	5068	20 41 30
20 42 30	=2111+400	02 48 06	34.7	292.8	5.6		46.5	60	5076	20 41 31
20 42 30	V1396CYG	02 48 06	32.7	294.9	5.8		45.5	-21	5076	No stop
20 46 00	---	02 51 36	32.2	295.4	5.8		45.2	189	5103	20 42 31
20 46 00	J2113+4012	02 51 36	34.2	293.4	5.6		46.2	-21	5103	No stop
20 47 30	=2111+400	02 53 07	34.0	293.6	5.7		46.1	69	5115	20 46 01
20 47 30	J2115+3742	02 53 07	32.4	291.3	5.6		45.1	-20	5115	No stop
20 51 00	---	02 56 37	31.9	291.9	5.7		44.8	190	5142	20 47 31
20 51 30	J2113+4012	02 57 07	33.4	294.3	5.7		45.8	11	5142	20 51 30
20 52 30	=2111+400	02 58 07	33.3	294.4	5.7		45.8	60	5149	20 51 31
20 52 30	V1396CYG	02 58 07	31.4	296.4	6.0		44.7	-21	5149	No stop
20 56 00	---	03 01 38	30.9	297.0	6.0		44.4	189	5176	20 52 31
20 56 00	J2113+4012	03 01 38	32.8	295.0	5.8		45.5	-21	5176	No stop
20 57 30	=2111+400	03 03 08	32.6	295.2	5.8		45.4	69	5188	20 56 01
20 57 30	V1396CYG	03 03 08	30.7	297.2	6.0		44.3	-21	5188	No stop
21 01 00	---	03 06 39	30.2	297.8	6.1		44.0	189	5215	20 57 31
21 01 30	J2113+4012	03 07 09	32.1	295.9	5.9		45.1	9	5215	21 01 30
21 02 30	=2111+400	03 08 09	31.9	296.0	5.9		45.0	60	5223	21 01 31
21 02 30	V1396CYG	03 08 09	30.0	298.0	6.1		43.9	-21	5223	No stop
21 06 00	---	03 11 40	29.6	298.6	6.2		43.6	189	5250	21 02 31
21 06 00	J2113+4012	03 11 40	31.4	296.6	6.0		44.7	-21	5250	No stop
21 07 30	=2111+400	03 13 10	31.2	296.8	6.0		44.6	69	5262	21 06 01
21 07 30	V1396CYG	03 13 10	29.4	298.8	6.2		43.5	-21	5262	No stop
21 11 00	---	03 16 40	28.9	299.4	6.3		43.2	189	5289	21 07 31
21 11 30	J2113+4012	03 17 11	30.7	297.5	6.1		44.3	9	5289	21 11 30
21 12 30	=2111+400	03 18 11	30.6	297.6	6.1		44.2	60	5296	21 11 31
21 12 30	V1396CYG	03 18 11	28.7	299.6	6.3		43.0	-21	5296	No stop
21 16 00	---	03 21 41	28.2	300.2	6.4		42.7	189	5324	21 12 31
21 16 00	J2113+4012	03 21 41	30.1	298.2	6.1		43.9	-21	5324	No stop
21 17 30	=2111+400	03 23 12	29.9	298.4	6.2		43.8	69	5335	21 16 01

Schedule for TORUN (Code Tr )

Page 21

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
21 17 30	J2115+3742	03 23 12	28.3	296.3	6.1		42.9	-20	5335	No stop
21 21 00	---	03 26 42	27.8	296.8	6.2		42.7	190	5362	21 17 31
21 21 30	J2113+4012	03 27 12	29.4	299.1	6.2		43.5	10	5362	21 21 30
21 22 30	=2111+400	03 28 12	29.3	299.2	6.2		43.4	60	5370	21 21 31
21 22 30	V1396CYG	03 28 12	27.4	301.2	6.5		42.2	-21	5370	No stop
21 26 00	---	03 31 43	27.0	301.8	6.5		41.9	189	5397	21 22 31
21 26 00	J2113+4012	03 31 43	28.8	299.8	6.3		43.1	-21	5397	No stop
21 27 30	=2111+400	03 33 13	28.6	300.0	6.3		43.0	69	5409	21 26 01
21 27 30	V1396CYG	03 33 13	26.8	302.0	6.5		41.7	-21	5409	No stop
21 31 00	---	03 36 44	26.3	302.6	6.6		41.4	189	5436	21 27 31
21 31 30	J2113+4012	03 37 14	28.1	300.7	6.4		42.6	10	5436	21 31 30
21 32 30	=2111+400	03 38 14	27.9	300.8	6.4		42.5	60	5444	21 31 31
21 32 30	J2115+3742	03 38 14	26.3	298.7	6.4		41.8	-20	5444	No stop
21 36 00	---	03 41 45	25.8	299.3	6.4		41.5	190	5471	21 32 31
21 36 00	J2113+4012	03 41 45	27.5	301.4	6.5		42.2	-20	5471	No stop
21 37 30	=2111+400	03 43 15	27.3	301.6	6.5		42.1	70	5482	21 36 01
21 42 30	J0237+2848	03 48 16	62.6	214.7	1.2		22.9	109	5482	21 42 30
21 44 30	=0234+285	03 50 16	62.4	215.5	1.2		23.5	120	5498	21 42 31
----- fringe finder -----										
21 44 40	J0237+2848	03 50 26	62.4	215.6	1.2		23.5	4	5498	21 44 40
21 50 40	=0234+285	03 56 27	61.9	218.2	1.3		25.1	360	5544	21 44 41
21 53 40	J0519+0848	03 59 27	42.8	152.4	-1.3		-16.4	33	5544	21 53 40
21 55 10	=0516+087	04 00 58	42.9	152.9	-1.3		-16.1	90	5556	21 53 41
21 55 10	J0530+0900	04 00 58	42.3	149.2	-1.5		-18.1	-22	5556	No stop
21 58 40	---	04 04 28	42.6	150.3	-1.4		-17.5	188	5583	21 55 11
21 59 10	J0519+0848	04 04 58	43.2	154.2	-1.3		-15.4	8	5583	21 59 10
22 00 10	=0516+087	04 05 59	43.3	154.5	-1.2		-15.2	60	5591	21 59 11
22 00 10	V998ORI	04 05 59	43.3	149.9	-1.5		-17.8	-24	5591	No stop
22 03 40	---	04 09 29	43.6	151.0	-1.4		-17.2	186	5618	22 00 11



Schedule for TORUN (Code Tr )

Page 22

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
22 03 40	J0519+0848	04 09 29	43.5	155.6	-1.2		-14.5	-25	5618	No stop
22 05 10	=0516+087	04 10 59	43.6	156.1	-1.1		-14.2	65	5629	22 03 41
22 05 10	V998ORI	04 10 59	43.7	151.5	-1.4		-16.9	-24	5629	No stop
22 08 40	---	04 14 30	43.9	152.6	-1.3		-16.3	186	5656	22 05 11
22 09 10	J0519+0848	04 15 00	43.8	157.5	-1.1		-13.5	5	5656	22 09 10
22 10 10	=0516+087	04 16 00	43.9	157.8	-1.1		-13.3	60	5664	22 09 11
22 10 10	V998ORI	04 16 00	44.0	153.1	-1.3		-16.0	-24	5664	No stop
22 13 40	---	04 19 31	44.3	154.3	-1.2		-15.3	186	5691	22 10 11
22 13 40	J0519+0848	04 19 31	44.1	159.0	-1.0		-12.6	-25	5691	No stop
22 15 10	=0516+087	04 21 01	44.2	159.5	-1.0		-12.3	65	5703	22 13 41
22 15 10	V998ORI	04 21 01	44.4	154.8	-1.2		-15.0	-24	5703	No stop
22 18 40	---	04 24 32	44.6	156.0	-1.1		-14.4	186	5730	22 15 11
22 19 10	J0519+0848	04 25 02	44.4	160.8	-0.9		-11.5	5	5730	22 19 10
22 20 10	=0516+087	04 26 02	44.4	161.2	-0.9		-11.3	60	5738	22 19 11
22 20 10	V998ORI	04 26 02	44.7	156.5	-1.1		-14.1	-24	5738	No stop
22 23 40	---	04 29 32	44.9	157.6	-1.1		-13.4	186	5765	22 20 11
22 23 40	J0519+0848	04 29 32	44.6	162.4	-0.8		-10.6	-25	5765	No stop
22 25 10	=0516+087	04 31 03	44.6	162.9	-0.8		-10.3	65	5776	22 23 41
22 25 10	J0530+0900	04 31 03	44.3	159.0	-1.0		-12.6	-22	5776	No stop
22 28 40	---	04 34 33	44.5	160.2	-0.9		-11.9	188	5804	22 25 11
22 29 10	J0519+0848	04 35 03	44.8	164.3	-0.7		-9.5	7	5804	22 29 10
22 30 10	=0516+087	04 36 03	44.8	164.6	-0.7		-9.3	60	5811	22 29 11
22 30 10	V998ORI	04 36 03	45.2	159.9	-0.9		-12.1	-24	5811	No stop
22 33 40	---	04 39 34	45.4	161.1	-0.9		-11.4	186	5838	22 30 11
22 33 40	J0519+0848	04 39 34	45.0	165.8	-0.7		-8.6	-25	5838	No stop
22 35 10	=0516+087	04 41 04	45.0	166.3	-0.6		-8.3	65	5850	22 33 41
22 35 10	V998ORI	04 41 04	45.5	161.6	-0.9		-11.1	-24	5850	No stop
22 38 40	---	04 44 35	45.6	162.8	-0.8		-10.4	186	5877	22 35 11
22 39 10	J0519+0848	04 45 05	45.2	167.7	-0.6		-7.4	5	5877	22 39 10
22 40 10	=0516+087	04 46 05	45.2	168.1	-0.6		-7.2	60	5885	22 39 11

Schedule for TORUN (Code Tr )

Page 23

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
22 40 10	V998ORI	04 46 05	45.7	163.3	-0.8		-10.1	-24	5885	No stop
22 43 40	---	04 49 36	45.9	164.5	-0.7		-9.3	186	5912	22 40 11
22 43 40	J0519+0848	04 49 36	45.3	169.3	-0.5		-6.5	-25	5912	No stop
22 45 10	=0516+087	04 51 06	45.3	169.8	-0.5		-6.2	65	5924	22 43 41
22 45 10	V998ORI	04 51 06	45.9	165.1	-0.7		-9.0	-24	5924	No stop
22 48 40	---	04 54 37	46.0	166.3	-0.6		-8.3	186	5951	22 45 11
22 49 10	J0519+0848	04 55 07	45.4	171.2	-0.4		-5.3	5	5951	22 49 10
22 50 10	=0516+087	04 56 07	45.5	171.6	-0.4		-5.1	60	5958	22 49 11
22 50 10	V998ORI	04 56 07	46.1	166.8	-0.6		-8.0	-24	5958	No stop
22 53 40	---	04 59 37	46.2	168.1	-0.6		-7.2	186	5985	22 50 11
22 53 40	J0519+0848	04 59 37	45.5	172.8	-0.3		-4.4	-25	5985	No stop
22 55 10	=0516+087	05 01 08	45.6	173.3	-0.3		-4.0	65	5997	22 53 41
22 55 10	J0530+0900	05 01 08	45.5	169.4	-0.5		-6.4	-23	5997	No stop
22 58 40	---	05 04 38	45.6	170.6	-0.4		-5.7	187	6024	22 55 11
22 59 10	J0519+0848	05 05 08	45.6	174.8	-0.2		-3.2	7	6024	22 59 10
23 00 10	=0516+087	05 06 08	45.6	175.1	-0.2		-3.0	60	6032	22 59 11
23 00 10	V998ORI	05 06 08	46.4	170.4	-0.4		-5.9	-24	6032	No stop
23 03 40	---	05 09 39	46.5	171.6	-0.4		-5.1	186	6059	23 00 11
23 03 40	J0519+0848	05 09 39	45.7	176.3	-0.2		-2.2	-25	6059	No stop
23 05 10	=0516+087	05 11 09	45.7	176.9	-0.1		-1.9	65	6071	23 03 41
23 05 10	V998ORI	05 11 09	46.5	172.2	-0.4		-4.8	-24	6071	No stop
23 08 40	---	05 14 40	46.6	173.4	-0.3		-4.0	186	6098	23 05 11
23 09 10	J0519+0848	05 15 10	45.7	178.3	-0.1		-1.0	5	6098	23 09 10
23 10 10	=0516+087	05 16 10	45.7	178.7	-0.1		-0.8	60	6105	23 09 11
23 10 10	V998ORI	05 16 10	46.6	173.9	-0.3		-3.7	-24	6105	No stop
23 13 40	---	05 19 41	46.6	175.2	-0.2		-2.9	186	6133	23 10 11
23 13 40	J0519+0848	05 19 41	45.7	179.9	-0.0		-0.1	-25	6133	No stop
23 15 10	=0516+087	05 21 11	45.7	180.4	0.0		0.3	65	6144	23 13 41
23 15 10	V998ORI	05 21 11	46.7	175.7	-0.2		-2.6	-24	6144	No stop
23 18 40	---	05 24 41	46.7	177.0	-0.1		-1.8	186	6171	23 15 11

Schedule for TORUN (Code Tr )

Page 24

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
23 19 10	J0519+0848	05 25 12	45.7	181.8	0.1		1.1	5	6171	23 19 10
23 20 10	=0516+087	05 26 12	45.7	182.2	0.1		1.3	60	6179	23 19 11
23 20 10	V9980RI	05 26 12	46.7	177.5	-0.1		-1.5	-24	6179	No stop
23 23 40	---	05 29 42	46.7	178.8	-0.1		-0.7	186	6206	23 20 11
23 23 40	J0519+0848	05 29 42	45.7	183.4	0.2		2.1	-25	6206	No stop
23 25 10	=0516+087	05 31 13	45.7	184.0	0.2		2.4	65	6218	23 23 41
23 25 10	J0530+0900	05 31 13	45.9	180.0	0.0		0.0	-23	6218	No stop
23 28 40	---	05 34 43	45.9	181.3	0.1		0.8	187	6245	23 25 11
23 29 10	J0519+0848	05 35 13	45.6	185.4	0.3		3.3	7	6245	23 29 10
23 30 10	=0516+087	05 36 13	45.6	185.7	0.3		3.5	60	6253	23 29 11
23 30 10	V9980RI	05 36 13	46.7	181.1	0.1		0.7	-24	6253	No stop
23 33 40	---	05 39 44	46.7	182.4	0.1		1.5	186	6280	23 30 11
23 33 40	J0519+0848	05 39 44	45.6	187.0	0.3		4.2	-24	6280	No stop
23 35 10	=0516+087	05 41 14	45.5	187.5	0.4		4.6	66	6291	23 33 41
23 35 10	V9980RI	05 41 14	46.7	182.9	0.1		1.8	-24	6291	No stop
23 38 40	---	05 44 45	46.7	184.2	0.2		2.6	186	6318	23 35 11
23 39 10	J0519+0848	05 45 15	45.4	188.9	0.4		5.4	6	6318	23 39 10
23 40 10	=0516+087	05 46 15	45.4	189.3	0.4		5.6	60	6326	23 39 11
23 40 10	V9980RI	05 46 15	46.7	184.7	0.2		2.9	-24	6326	No stop
23 43 40	---	05 49 46	46.6	186.0	0.3		3.7	186	6353	23 40 11
23 43 40	J0519+0848	05 49 46	45.3	190.5	0.5		6.4	-24	6353	No stop
23 45 10	=0516+087	05 51 16	45.3	191.0	0.5		6.7	66	6365	23 43 41
23 45 10	V9980RI	05 51 16	46.6	186.5	0.3		4.0	-24	6365	No stop
23 48 40	---	05 54 46	46.5	187.8	0.4		4.7	186	6392	23 45 11
23 49 10	J0519+0848	05 55 16	45.2	192.4	0.6		7.5	6	6392	23 49 10
23 50 10	=0516+087	05 56 17	45.1	192.8	0.6		7.7	60	6400	23 49 11
23 50 10	V9980RI	05 56 17	46.5	188.3	0.4		5.1	-24	6400	No stop
23 53 40	---	05 59 47	46.4	189.6	0.4		5.8	186	6427	23 50 11
23 53 40	J0519+0848	05 59 47	45.0	194.0	0.7		8.4	-24	6427	No stop
23 55 10	=0516+087	06 01 17	44.9	194.5	0.7		8.8	66	6438	23 53 41

Schedule for TORUN (Code Tr )

Page 25

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 3 Dec 2013 Day 337 ---										
23 55 10	J0530+0900	06 01 17	45.5	190.6	0.5		6.4	-22	6438	No stop
23 58 40	---	06 04 48	45.4	191.9	0.6		7.2	188	6465	23 55 11
--- Start: Tue 3 Dec 2013 Day 337 -- Stop: Wed 4 Dec 2013 Day 338 ---										
23 59 10	J0519+0848	06 05 18	44.8	195.9	0.8		9.6	7	6465	23 59 10
00 00 10	=0516+087	06 06 18	44.7	196.2	0.8		9.8	60	6473	23 59 11
00 00 10	V9980RI	06 06 18	46.2	191.9	0.6		7.2	-23	6473	No stop
00 03 40	---	06 09 49	46.1	193.1	0.6		8.0	187	6500	00 00 11
00 03 40	J0519+0848	06 09 49	44.6	197.4	0.8		10.5	-24	6500	No stop
00 05 10	=0516+087	06 11 19	44.5	197.9	0.9		10.8	66	6512	00 03 41
00 05 10	V9980RI	06 11 19	46.0	193.7	0.6		8.3	-23	6512	No stop
00 08 40	---	06 14 50	45.9	194.9	0.7		9.0	187	6539	00 05 11
00 08 40	J0519+0848	06 14 50	44.4	199.1	0.9		11.5	-24	6539	No stop
00 10 10	=0516+087	06 16 20	44.3	199.6	0.9		11.8	66	6551	00 08 41
00 14 10	J0147+5840	06 20 21	53.2	306.6	4.5		68.3	11	6551	00 14 10
00 17 10	=0144+584	06 23 21	52.9	306.9	4.6		67.8	180	6574	00 14 11
00 17 30	J0147+5840	06 23 41	52.8	306.9	4.6		67.8	14	6574	00 17 30
00 19 00	=0144+584	06 25 11	52.6	307.0	4.6		67.6	90	6585	00 17 31
00 19 00	J0151+5454	06 25 11	51.5	301.1	4.5		63.7	-27	6585	No stop
00 22 30	---	06 28 42	51.1	301.4	4.6		63.2	183	6612	00 19 01
00 23 00	J0147+5840	06 29 12	52.2	307.3	4.7		67.0	3	6612	00 23 00
00 24 00	=0144+584	06 30 12	52.0	307.4	4.7		66.8	60	6620	00 23 01
00 24 00	V596CAS	06 30 12	53.4	306.2	4.5		68.3	-18	6620	No stop
00 27 30	---	06 33 43	52.9	306.5	4.6		67.8	192	6647	00 24 01
00 27 30	J0147+5840	06 33 43	51.6	307.7	4.7		66.3	-18	6647	No stop
00 29 00	=0144+584	06 35 13	51.4	307.8	4.8		66.1	72	6659	00 27 31
00 29 00	V596CAS	06 35 13	52.8	306.6	4.6		67.6	-18	6659	No stop
00 32 30	---	06 38 44	52.3	306.9	4.6		67.1	192	6686	00 29 01
00 33 00	J0147+5840	06 39 14	51.0	308.2	4.8		65.5	12	6686	00 33 00
00 34 00	=0144+584	06 40 14	50.8	308.3	4.9		65.3	60	6694	00 33 01

Schedule for TORUN (Code Tr )

Page 26

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
00 34 00	V596CAS	06 40 14	52.2	307.1	4.7		66.9	-18	6694	No stop
00 37 30	---	06 43 44	51.7	307.3	4.7		66.3	192	6721	00 34 01
00 37 30	J0147+5840	06 43 44	50.4	308.6	4.9		64.8	-18	6721	No stop
00 39 00	=0144+584	06 45 15	50.3	308.7	4.9		64.6	72	6732	00 37 31
00 39 00	V596CAS	06 45 15	51.6	307.5	4.7		66.1	-18	6732	No stop
00 42 30	---	06 48 45	51.1	307.8	4.8		65.6	192	6760	00 39 01
00 43 00	J0147+5840	06 49 15	49.8	309.1	5.0		64.0	12	6760	00 43 00
00 44 00	=0144+584	06 50 15	49.7	309.1	5.0		63.9	60	6767	00 43 01
00 44 00	V596CAS	06 50 15	51.0	307.9	4.8		65.4	-18	6767	No stop
00 47 30	---	06 53 46	50.6	308.2	4.9		64.9	192	6794	00 44 01
00 47 30	J0147+5840	06 53 46	49.3	309.5	5.1		63.3	-18	6794	No stop
00 49 00	=0144+584	06 55 16	49.1	309.6	5.1		63.1	72	6806	00 47 31
00 49 00	J0151+5454	06 55 16	47.7	304.2	5.0		59.9	-26	6806	No stop
00 52 30	---	06 58 47	47.3	304.6	5.1		59.5	184	6833	00 49 01
00 53 00	J0147+5840	06 59 17	48.6	310.0	5.2		62.5	4	6833	00 53 00
00 54 00	=0144+584	07 00 17	48.5	310.0	5.2		62.4	60	6841	00 53 01
00 54 00	V596CAS	07 00 17	49.8	308.8	5.0		63.9	-18	6841	No stop
00 57 30	---	07 03 48	49.4	309.1	5.1		63.4	192	6868	00 54 01
00 57 30	J0147+5840	07 03 48	48.1	310.4	5.3		61.9	-18	6868	No stop
00 59 00	=0144+584	07 05 18	47.9	310.5	5.3		61.7	72	6880	00 57 31
00 59 00	V596CAS	07 05 18	49.2	309.2	5.1		63.2	-18	6880	No stop
01 02 30	---	07 08 49	48.8	309.5	5.1		62.7	192	6907	00 59 01
01 03 00	J0147+5840	07 09 19	47.5	310.9	5.3		61.1	12	6907	01 03 00
01 04 00	=0144+584	07 10 19	47.4	311.0	5.4		60.9	60	6914	01 03 01
01 04 00	V596CAS	07 10 19	48.6	309.7	5.2		62.5	-18	6914	No stop
01 07 30	---	07 13 49	48.2	310.0	5.2		62.0	192	6942	01 04 01
01 07 30	J0147+5840	07 13 49	47.0	311.3	5.4		60.4	-18	6942	No stop
01 09 00	=0144+584	07 15 20	46.8	311.4	5.4		60.2	72	6953	01 07 31
01 09 00	V596CAS	07 15 20	48.0	310.1	5.2		61.7	-18	6953	No stop
01 12 30	---	07 18 50	47.6	310.5	5.3		61.2	192	6980	01 09 01

Schedule for TORUN (Code Tr )

Page 27

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
01 13 00	J0147+5840	07 19 20	46.3	311.8	5.5		59.6	12	6980	01 13 00
01 14 00	=0144+584	07 20 20	46.2	311.9	5.5		59.5	60	6988	01 13 01
01 14 00	V596CAS	07 20 20	47.5	310.6	5.3		61.0	-18	6988	No stop
01 17 30	---	07 23 51	47.1	310.9	5.4		60.5	192	7015	01 14 01
01 17 30	J0147+5840	07 23 51	45.8	312.2	5.6		59.0	-18	7015	No stop
01 19 00	=0144+584	07 25 21	45.7	312.4	5.6		58.8	72	7027	01 17 31
01 19 00	J0151+5454	07 25 21	44.1	307.5	5.5		56.1	-25	7027	No stop
01 22 30	---	07 28 52	43.7	307.9	5.6		55.7	185	7054	01 19 01
01 23 00	J0147+5840	07 29 22	45.2	312.8	5.7		58.2	5	7054	01 23 00
01 24 00	=0144+584	07 30 22	45.1	312.9	5.7		58.0	60	7062	01 23 01
01 24 00	V596CAS	07 30 22	46.3	311.6	5.5		59.6	-18	7062	No stop
01 27 30	---	07 33 53	45.9	311.9	5.6		59.1	192	7089	01 24 01
01 27 30	J0147+5840	07 33 53	44.7	313.2	5.8		57.5	-18	7089	No stop
01 29 00	=0144+584	07 35 23	44.6	313.4	5.8		57.3	72	7100	01 27 31
01 29 00	V596CAS	07 35 23	45.8	312.0	5.6		58.8	-18	7100	No stop
01 32 30	---	07 38 53	45.4	312.4	5.6		58.3	192	7127	01 29 01
01 33 00	J0147+5840	07 39 24	44.1	313.8	5.8		56.7	12	7127	01 33 00
01 34 00	=0144+584	07 40 24	44.0	313.9	5.9		56.6	60	7135	01 33 01
01 34 00	V596CAS	07 40 24	45.2	312.5	5.7		58.1	-17	7135	No stop
01 37 30	---	07 43 54	44.8	312.9	5.7		57.6	193	7162	01 34 01
01 37 30	J0147+5840	07 43 54	43.7	314.2	5.9		56.1	-18	7162	No stop
01 39 00	=0144+584	07 45 25	43.5	314.4	5.9		55.9	72	7174	01 37 31
01 39 00	V596CAS	07 45 25	44.7	313.0	5.7		57.4	-17	7174	No stop
01 42 30	---	07 48 55	44.3	313.4	5.8		56.9	193	7201	01 39 01
01 43 00	J0147+5840	07 49 25	43.1	314.8	6.0		55.3	12	7201	01 43 00
01 44 00	=0144+584	07 50 25	43.0	314.9	6.0		55.1	60	7209	01 43 01
01 44 00	V596CAS	07 50 25	44.1	313.5	5.8		56.7	-17	7209	No stop
01 47 30	---	07 53 56	43.7	313.9	5.9		56.2	193	7236	01 44 01
01 47 30	J0147+5840	07 53 56	42.6	315.2	6.1		54.6	-18	7236	No stop
01 49 00	=0144+584	07 55 26	42.4	315.4	6.1		54.4	72	7247	01 47 31

Schedule for TORUN (Code Tr )

Page 28

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop				Early	Disk	TPStart		
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
01 49 00	J0151+5454	07 55 26	40.6	310.9	6.0		52.2	-24	7247	No stop
01 52 30	---	07 58 57	40.2	311.3	6.1		51.8	186	7274	01 49 01
01 53 00	J0147+5840	07 59 27	42.0	315.8	6.2		53.8	6	7274	01 53 00
01 54 00	=0144+584	08 00 27	41.9	315.9	6.2		53.7	60	7282	01 53 01
01 54 00	V596CAS	08 00 27	43.0	314.5	6.0		55.2	-17	7282	No stop
01 57 30	---	08 03 58	42.7	314.9	6.1		54.7	193	7309	01 54 01
01 57 30	J0147+5840	08 03 58	41.5	316.3	6.3		53.2	-17	7309	No stop
01 59 00	=0144+584	08 05 28	41.4	316.4	6.3		52.9	73	7321	01 57 31
01 59 00	V596CAS	08 05 28	42.5	315.0	6.1		54.5	-17	7321	No stop
02 02 30	---	08 08 58	42.1	315.4	6.1		54.0	193	7348	01 59 01
02 03 00	J0147+5840	08 09 28	41.0	316.8	6.3		52.4	13	7348	02 03 00
02 04 00	=0144+584	08 10 29	40.9	316.9	6.4		52.2	60	7356	02 03 01
02 04 00	V596CAS	08 10 29	42.0	315.6	6.2		53.8	-17	7356	No stop
02 07 30	---	08 13 59	41.6	315.9	6.2		53.3	193	7383	02 04 01
02 07 30	J0147+5840	08 13 59	40.5	317.3	6.4		51.7	-17	7383	No stop
02 09 00	=0144+584	08 15 29	40.3	317.5	6.4		51.5	73	7394	02 07 31
02 09 00	V596CAS	08 15 29	41.4	316.1	6.3		53.1	-17	7394	No stop
02 12 30	---	08 19 00	41.1	316.4	6.3		52.6	193	7421	02 09 01
02 13 00	J0147+5840	08 19 30	39.9	317.9	6.5		50.9	13	7421	02 13 00
02 14 00	=0144+584	08 20 30	39.8	318.0	6.5		50.8	60	7429	02 13 01
02 14 00	V596CAS	08 20 30	40.9	316.6	6.3		52.3	-17	7429	No stop
02 17 30	---	08 24 01	40.6	317.0	6.4		51.8	193	7456	02 14 01
02 17 30	J0147+5840	08 24 01	39.5	318.4	6.6		50.3	-17	7456	No stop
02 19 00	=0144+584	08 25 31	39.3	318.5	6.6		50.0	73	7468	02 17 31
02 19 00	J0151+5454	08 25 31	37.3	314.5	6.5		48.3	-23	7468	No stop
02 22 30	---	08 29 02	36.9	314.9	6.6		47.8	187	7495	02 19 01
02 23 00	J0147+5840	08 29 32	38.9	319.0	6.7		49.5	7	7495	02 23 00
02 24 00	=0144+584	08 30 32	38.8	319.1	6.7		49.3	60	7503	02 23 01
02 24 00	V596CAS	08 30 32	39.9	317.7	6.5		50.9	-17	7503	No stop
02 27 30	---	08 34 02	39.5	318.0	6.6		50.4	193	7530	02 24 01

Schedule for TORUN (Code Tr )

Page 29

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop          Early  Disk  TPStart
Stop UT          LST      EL  AZ  HA  UP  ParA  Dwell  GBytes  SYNC
-----
--- Wed   4 Dec 2013   Day 338 ---

02 28 00  J0147+5840  08 34 33  38.5 319.5  6.8      48.7   13   7530  02 28 00
02 29 00  =0144+584   08 35 33  38.4 319.6  6.8      48.6   60   7538  02 28 01

02 29 00  V596CAS    08 35 33  39.4 318.2  6.6      50.2  -17   7538  No stop
02 32 30  ---        08 39 03  39.0 318.6  6.6      49.7  193   7565  02 29 01

02 32 30  J0147+5840  08 39 03  38.0 320.0  6.8      48.1  -17   7565  No stop
02 34 00  =0144+584   08 40 34  37.9 320.2  6.9      47.8   73   7576  02 32 31

----- Eff pointing check -----

02 40 00  J1038+0512  08 46 35  36.8 144.0 -1.9     -20.8   -7   7576  02 40 00
02 48 00  =1036+054   08 54 36  37.4 146.3 -1.7     -19.5  473   7638  02 40 01

02 48 10  J1038+0512  08 54 46  37.5 146.4 -1.7     -19.5    4   7638  02 48 10
02 50 10  =1036+054   08 56 46  37.6 147.0 -1.7     -19.2  120   7654  02 48 11

02 50 10  J1035+0522  08 56 46  38.1 148.0 -1.6     -18.6  -14   7654  No stop
02 53 40  ---        09 00 17  38.4 149.1 -1.6     -18.0  196   7681  02 50 11

02 54 10  J1038+0512  09 00 47  38.0 148.2 -1.6     -18.5   16   7681  02 54 10
02 55 10  =1036+054   09 01 47  38.0 148.5 -1.6     -18.4   60   7689  02 54 11

02 55 10  RYSEX      09 01 47  38.2 149.3 -1.6     -17.9  -14   7689  No stop
02 58 40  ---        09 05 18  38.4 150.4 -1.5     -17.3  196   7716  02 55 11

02 58 40  J1038+0512  09 05 18  38.3 149.5 -1.6     -17.8  -13   7716  No stop
03 00 10  =1036+054   09 06 48  38.4 150.0 -1.5     -17.6   77   7727  02 58 41

03 00 10  RYSEX      09 06 48  38.5 150.9 -1.5     -17.1  -14   7727  No stop
03 03 40  ---        09 10 18  38.8 151.9 -1.4     -16.5  196   7754  03 00 11

03 04 10  J1038+0512  09 10 49  38.7 151.2 -1.5     -16.9   17   7754  03 04 10
03 05 10  =1036+054   09 11 49  38.8 151.5 -1.5     -16.7   60   7762  03 04 11

03 05 10  RYSEX      09 11 49  38.9 152.4 -1.4     -16.2  -14   7762  No stop
03 08 40  ---        09 15 19  39.1 153.5 -1.4     -15.6  196   7789  03 05 11

03 08 40  J1038+0512  09 15 19  39.0 152.6 -1.4     -16.1  -13   7789  No stop
03 10 10  =1036+054   09 16 49  39.1 153.0 -1.4     -15.9   77   7801  03 08 41

03 10 10  RYSEX      09 16 49  39.2 153.9 -1.3     -15.4  -14   7801  No stop
03 13 40  ---        09 20 20  39.5 155.0 -1.3     -14.7  196   7828  03 10 11

```



Schedule for TORUN (Code Tr )

Page 30

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
03 14 10	J1038+0512	09 20 50	39.4	154.3	-1.3		-15.2	17	7828	03 14 10
03 15 10	=1036+054	09 21 50	39.5	154.6	-1.3		-15.0	60	7836	03 14 11
03 15 10	RYSEX	09 21 50	39.6	155.5	-1.2		-14.5	-14	7836	No stop
03 18 40	---	09 25 21	39.8	156.6	-1.2		-13.9	196	7863	03 15 11
03 18 40	J1038+0512	09 25 21	39.7	155.7	-1.2		-14.4	-13	7863	No stop
03 20 10	=1036+054	09 26 51	39.8	156.2	-1.2		-14.1	77	7874	03 18 41
03 20 10	J1035+0522	09 26 51	40.2	157.3	-1.1		-13.4	-15	7874	No stop
03 23 40	---	09 30 22	40.4	158.4	-1.1		-12.8	195	7901	03 20 11
03 24 10	J1038+0512	09 30 52	40.0	157.4	-1.1		-13.4	16	7901	03 24 10
03 25 10	=1036+054	09 31 52	40.1	157.8	-1.1		-13.2	60	7909	03 24 11
03 25 10	RYSEX	09 31 52	40.1	158.7	-1.1		-12.7	-14	7909	No stop
03 28 40	---	09 35 23	40.3	159.8	-1.0		-12.0	196	7936	03 25 11
03 28 40	J1038+0512	09 35 23	40.3	158.9	-1.1		-12.6	-13	7936	No stop
03 30 10	=1036+054	09 36 53	40.3	159.3	-1.0		-12.3	77	7948	03 28 41
03 30 10	RYSEX	09 36 53	40.4	160.3	-1.0		-11.8	-14	7948	No stop
03 33 40	---	09 40 23	40.6	161.4	-0.9		-11.1	196	7975	03 30 11
03 34 10	J1038+0512	09 40 53	40.6	160.6	-1.0		-11.5	17	7975	03 34 10
03 35 10	=1036+054	09 41 54	40.6	161.0	-1.0		-11.3	60	7983	03 34 11
03 35 10	RYSEX	09 41 54	40.7	161.9	-0.9		-10.8	-14	7983	No stop
03 38 40	---	09 45 24	40.8	163.0	-0.9		-10.2	196	8010	03 35 11
03 38 40	J1038+0512	09 45 24	40.8	162.1	-0.9		-10.7	-13	8010	No stop
03 40 10	=1036+054	09 46 54	40.8	162.6	-0.9		-10.4	77	8021	03 38 41
03 40 10	RYSEX	09 46 54	40.9	163.5	-0.8		-9.9	-14	8021	No stop
03 43 40	---	09 50 25	41.0	164.6	-0.8		-9.2	196	8049	03 40 11
03 44 10	J1038+0512	09 50 55	41.0	163.9	-0.8		-9.6	17	8049	03 44 10
03 45 10	=1036+054	09 51 55	41.1	164.2	-0.8		-9.4	60	8056	03 44 11
03 45 10	RYSEX	09 51 55	41.1	165.1	-0.7		-8.9	-14	8056	No stop
03 48 40	---	09 55 26	41.2	166.3	-0.7		-8.2	196	8083	03 45 11
03 48 40	J1038+0512	09 55 26	41.2	165.3	-0.7		-8.8	-13	8083	No stop
03 50 10	=1036+054	09 56 56	41.2	165.8	-0.7		-8.5	77	8095	03 48 41

Schedule for TORUN (Code Tr )

Page 31

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
03 50 10	J1035+0522	09 56 56	41.6	167.1	-0.6		-7.8	-15	8095	No stop
03 53 40	---	10 00 27	41.7	168.2	-0.6		-7.1	195	8122	03 50 11
03 54 10	J1038+0512	10 00 57	41.4	167.2	-0.6		-7.7	15	8122	03 54 10
03 55 10	=1036+054	10 01 57	41.4	167.5	-0.6		-7.5	60	8130	03 54 11
03 55 10	RYSEX	10 01 57	41.4	168.4	-0.6		-7.0	-14	8130	No stop
03 58 40	---	10 05 27	41.5	169.6	-0.5		-6.3	196	8157	03 55 11
03 58 40	J1038+0512	10 05 27	41.5	168.6	-0.6		-6.8	-13	8157	No stop
04 00 10	=1036+054	10 06 58	41.6	169.1	-0.5		-6.5	77	8169	03 58 41
04 00 10	RYSEX	10 06 58	41.6	170.1	-0.5		-6.0	-14	8169	No stop
04 03 40	---	10 10 28	41.6	171.2	-0.4		-5.3	196	8196	04 00 11
04 04 10	J1038+0512	10 10 58	41.7	170.5	-0.5		-5.7	17	8196	04 04 10
04 05 10	=1036+054	10 11 59	41.7	170.8	-0.5		-5.5	60	8203	04 04 11
04 05 10	RYSEX	10 11 59	41.7	171.7	-0.4		-5.0	-14	8203	No stop
04 08 40	---	10 15 29	41.8	172.9	-0.4		-4.3	196	8230	04 05 11
04 08 40	J1038+0512	10 15 29	41.8	172.0	-0.4		-4.8	-13	8230	No stop
04 10 10	=1036+054	10 16 59	41.8	172.5	-0.4		-4.5	77	8242	04 08 41
04 10 10	RYSEX	10 16 59	41.8	173.4	-0.3		-4.0	-14	8242	No stop
04 13 40	---	10 20 30	41.8	174.6	-0.3		-3.3	196	8269	04 10 11
04 14 10	J1038+0512	10 21 00	41.9	173.8	-0.3		-3.7	17	8269	04 14 10
04 15 10	=1036+054	10 22 00	41.9	174.1	-0.3		-3.5	60	8277	04 14 11
04 15 10	RYSEX	10 22 00	41.9	175.1	-0.2		-3.0	-14	8277	No stop
04 18 40	---	10 25 31	41.9	176.2	-0.2		-2.3	196	8304	04 15 11
04 18 40	J1038+0512	10 25 31	42.0	175.3	-0.2		-2.8	-13	8304	No stop
04 20 10	=1036+054	10 27 01	42.0	175.8	-0.2		-2.5	77	8316	04 18 41
04 20 10	J1035+0522	10 27 01	42.2	177.1	-0.1		-1.8	-15	8316	No stop
04 23 40	---	10 30 32	42.2	178.3	-0.1		-1.0	195	8343	04 20 11
04 24 10	J1038+0512	10 31 02	42.0	177.2	-0.1		-1.7	15	8343	04 24 10
04 25 10	=1036+054	10 32 02	42.0	177.5	-0.1		-1.5	60	8350	04 24 11
04 25 10	RYSEX	10 32 02	41.9	178.4	-0.1		-1.0	-14	8350	No stop
04 28 40	---	10 35 32	42.0	179.6	-0.0		-0.2	196	8378	04 25 11

Schedule for TORUN (Code Tr )

Page 32

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
04 28 40	J1038+0512	10 35 32	42.0	178.7	-0.1		-0.8	-13	8378	No stop
04 30 10	=1036+054	10 37 03	42.0	179.2	-0.0		-0.5	77	8389	04 28 41
04 30 10	RYSEX	10 37 03	42.0	180.1	0.0		0.1	-14	8389	No stop
04 33 40	---	10 40 33	41.9	181.3	0.1		0.8	196	8416	04 30 11
04 34 10	J1038+0512	10 41 03	42.0	180.5	0.0		0.3	17	8416	04 34 10
04 35 10	=1036+054	10 42 03	42.0	180.9	0.0		0.5	60	8424	04 34 11
04 35 10	RYSEX	10 42 03	41.9	181.8	0.1		1.1	-14	8424	No stop
04 38 40	---	10 45 34	41.9	183.0	0.1		1.8	196	8451	04 35 11
04 38 40	J1038+0512	10 45 34	42.0	182.0	0.1		1.2	-13	8451	No stop
04 40 10	=1036+054	10 47 04	42.0	182.5	0.1		1.5	77	8463	04 38 41
04 40 10	RYSEX	10 47 04	41.9	183.5	0.2		2.1	-14	8463	No stop
04 43 40	---	10 50 35	41.9	184.6	0.2		2.8	196	8490	04 40 11
04 44 10	J1038+0512	10 51 05	42.0	183.9	0.2		2.3	17	8490	04 44 10
04 45 10	=1036+054	10 52 05	42.0	184.2	0.2		2.5	60	8498	04 44 11
04 45 10	RYSEX	10 52 05	41.8	185.1	0.3		3.1	-14	8498	No stop
04 48 40	---	10 55 36	41.8	186.3	0.3		3.8	196	8525	04 45 11
04 48 40	J1038+0512	10 55 36	41.9	185.4	0.3		3.2	-13	8525	No stop
04 50 10	=1036+054	10 57 06	41.9	185.9	0.3		3.5	77	8536	04 48 41
04 50 10	J1035+0522	10 57 06	42.0	187.2	0.4		4.3	-15	8536	No stop
04 53 40	---	11 00 36	41.9	188.3	0.4		5.0	195	8563	04 50 11
04 54 10	J1038+0512	11 01 07	41.8	187.2	0.4		4.3	15	8563	04 54 10
04 55 10	=1036+054	11 02 07	41.8	187.6	0.4		4.5	60	8571	04 54 11
04 55 10	RYSEX	11 02 07	41.7	188.5	0.4		5.1	-14	8571	No stop
04 58 40	---	11 05 37	41.6	189.6	0.5		5.8	196	8598	04 55 11
04 58 40	J1038+0512	11 05 37	41.7	188.7	0.4		5.2	-13	8598	No stop
05 00 10	=1036+054	11 07 08	41.7	189.2	0.5		5.5	77	8610	04 58 41
05 00 10	RYSEX	11 07 08	41.5	190.1	0.5		6.1	-14	8610	No stop
05 03 40	---	11 10 38	41.5	191.3	0.6		6.8	196	8637	05 00 11
05 03 40	J1038+0512	11 10 38	41.6	190.4	0.5		6.2	-13	8637	No stop
05 05 10	=1036+054	11 12 08	41.6	190.9	0.5		6.5	77	8648	05 03 41

Schedule for TORUN (Code Tr )

Page 33

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop          Early  Disk  TPStart
Stop UT          LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
--- Wed   4 Dec 2013   Day 338 ---

05 05 10  J1035+0522   11 12 08  41.6 192.2  0.6      7.3  -15   8648  No stop
05 08 40  ---          11 15 39  41.5 193.3  0.7      8.0  195   8676  05 05 11

05 09 10  J1038+0512   11 16 09  41.5 192.2  0.6      7.3   15   8676  05 09 10
05 10 10  =1036+054    11 17 09  41.4 192.5  0.6      7.5   60   8683  05 09 11

05 12 10  J1310+3220   11 19 10  61.1 124.9 -1.9     -35.6 -30   8683  05 12 10
05 14 10  =1308+326    11 21 10  61.3 125.6 -1.8     -35.3  90   8699  05 12 11

----- fringe finder -----

05 14 20  J1310+3220   11 21 20  61.3 125.6 -1.8     -35.3   4   8699  05 14 20
05 20 20  =1308+326    11 27 21  62.1 127.8 -1.7     -34.1 360   8745  05 14 21

05 22 20  J1455+2131   11 29 21  39.7 108.3 -3.4     -37.8  22   8745  05 22 20
05 23 50  =1453+217    11 30 51  39.9 108.7 -3.4     -37.7  90   8757  05 22 21

05 23 50  J1504+2218   11 30 51  39.3 105.9 -3.6     -38.6 -20   8757  No stop
05 27 20  ---          11 34 22  39.8 106.7 -3.5     -38.4 190   8784  05 23 51

05 27 50  J1455+2131   11 34 52  40.5 109.6 -3.4     -37.4  10   8784  05 27 50
05 28 50  =1453+217    11 35 52  40.6 109.9 -3.3     -37.4  60   8792  05 27 51

05 28 50  TVLM513      11 35 52  40.9 107.5 -3.4     -38.4 -19   8792  No stop
05 32 20  ---          11 39 23  41.4 108.3 -3.4     -38.2 191   8819  05 28 51

05 32 20  J1455+2131   11 39 23  41.1 110.7 -3.3     -37.1 -19   8819  No stop
05 33 50  =1453+217    11 40 53  41.4 111.1 -3.3     -37.0  71   8830  05 32 21

05 33 50  TVLM513      11 40 53  41.6 108.7 -3.3     -38.1 -19   8830  No stop
05 37 20  ---          11 44 24  42.1 109.5 -3.3     -37.9 191   8858  05 33 51

05 37 50  J1455+2131   11 44 54  41.9 112.1 -3.2     -36.7  11   8858  05 37 50
05 38 50  =1453+217    11 45 54  42.1 112.3 -3.2     -36.6  60   8865  05 37 51

05 38 50  TVLM513      11 45 54  42.3 109.9 -3.3     -37.8 -19   8865  No stop
05 42 20  ---          11 49 24  42.8 110.8 -3.2     -37.5 191   8892  05 38 51

05 42 20  J1455+2131   11 49 24  42.5 113.2 -3.1     -36.4 -19   8892  No stop
05 43 50  =1453+217    11 50 55  42.7 113.6 -3.1     -36.2  71   8904  05 42 21

05 43 50  TVLM513      11 50 55  43.0 111.1 -3.2     -37.4 -19   8904  No stop
05 47 20  ---          11 54 25  43.5 112.0 -3.1     -37.1 191   8931  05 43 51

```

Schedule for TORUN (Code Tr )

Page 34

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
05 47 50	J1455+2131	11 54 55	43.3	114.6	-3.0		-35.9	11	8931	05 47 50
05 48 50	=1453+217	11 55 56	43.4	114.9	-3.0		-35.8	60	8939	05 47 51
05 48 50	TVLM513	11 55 56	43.7	112.4	-3.1		-37.0	-19	8939	No stop
05 52 20	---	11 59 26	44.2	113.3	-3.0		-36.7	191	8966	05 48 51
05 52 20	J1455+2131	11 59 26	43.9	115.8	-2.9		-35.5	-19	8966	No stop
05 53 50	=1453+217	12 00 56	44.1	116.2	-2.9		-35.4	71	8978	05 52 21
05 53 50	J1504+2218	12 00 56	43.5	113.3	-3.1		-36.6	-20	8978	No stop
05 57 20	---	12 04 27	44.0	114.2	-3.0		-36.3	190	9005	05 53 51
05 57 50	J1455+2131	12 04 57	44.6	117.3	-2.9		-35.0	9	9005	05 57 50
05 58 50	=1453+217	12 05 57	44.8	117.6	-2.8		-34.9	60	9012	05 57 51
05 58 50	TVLM513	12 05 57	45.1	115.0	-2.9		-36.2	-19	9012	No stop
06 02 20	---	12 09 28	45.6	115.9	-2.9		-35.9	191	9039	05 58 51
06 02 20	J1455+2131	12 09 28	45.2	118.5	-2.8		-34.5	-20	9039	No stop
06 03 50	=1453+217	12 10 58	45.4	118.9	-2.8		-34.4	70	9051	06 02 21
06 03 50	TVLM513	12 10 58	45.8	116.3	-2.8		-35.7	-19	9051	No stop
06 07 20	---	12 14 29	46.2	117.3	-2.8		-35.4	191	9078	06 03 51
06 07 50	J1455+2131	12 14 59	46.0	120.0	-2.7		-34.0	10	9078	06 07 50
06 08 50	=1453+217	12 15 59	46.1	120.3	-2.7		-33.9	60	9086	06 07 51
06 08 50	TVLM513	12 15 59	46.4	117.7	-2.8		-35.2	-19	9086	No stop
06 12 20	---	12 19 29	46.9	118.7	-2.7		-34.9	191	9113	06 08 51
06 12 20	J1455+2131	12 19 29	46.6	121.3	-2.6		-33.5	-20	9113	No stop
06 13 50	=1453+217	12 21 00	46.7	121.7	-2.6		-33.3	70	9125	06 12 21
06 13 50	TVLM513	12 21 00	47.1	119.1	-2.7		-34.7	-19	9125	No stop
06 17 20	---	12 24 30	47.6	120.1	-2.6		-34.3	191	9152	06 13 51
06 17 50	J1455+2131	12 25 00	47.3	122.9	-2.5		-32.8	10	9152	06 17 50
06 18 50	=1453+217	12 26 00	47.4	123.1	-2.5		-32.7	60	9159	06 17 51
06 18 50	TVLM513	12 26 00	47.8	120.5	-2.6		-34.1	-19	9159	No stop
06 22 20	---	12 29 31	48.2	121.5	-2.5		-33.7	191	9187	06 18 51
06 22 20	J1455+2131	12 29 31	47.8	124.2	-2.4		-32.3	-20	9187	No stop
06 23 50	=1453+217	12 31 01	48.0	124.6	-2.4		-32.1	70	9198	06 22 21

Schedule for TORUN (Code Tr )

Page 35

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```

-----
Start UT  Source          Start / Stop          Early   Disk   TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
--- Wed   4 Dec 2013   Day 338 ---

06 23 50  J1504+2218  12 31 01  47.5 121.4 -2.6   -33.6  -21   9198  No stop
06 27 20  ---         12 34 32  48.0 122.4 -2.5   -33.2  189   9225  06 23 51

06 27 50  J1455+2131  12 35 02  48.5 125.8 -2.4   -31.6   9   9225  06 27 50
06 28 50  =1453+217   12 36 02  48.6 126.1 -2.3   -31.4  60   9233  06 27 51

06 28 50  TVLM513     12 36 02  49.0 123.4 -2.4   -32.9  -20   9233  No stop
06 32 20  ---         12 39 33  49.5 124.4 -2.4   -32.5  190   9260  06 28 51

06 32 20  J1455+2131  12 39 33  49.0 127.2 -2.3   -30.9  -20   9260  No stop
06 33 50  =1453+217   12 41 03  49.2 127.6 -2.3   -30.7  70   9272  06 32 21

06 33 50  TVLM513     12 41 03  49.7 124.9 -2.3   -32.3  -20   9272  No stop
06 37 20  ---         12 44 34  50.1 125.9 -2.3   -31.8  190   9299  06 33 51

06 37 50  J1455+2131  12 45 04  49.7 128.9 -2.2   -30.2  10   9299  06 37 50
06 38 50  =1453+217   12 46 04  49.8 129.2 -2.2   -30.0  60   9307  06 37 51

06 38 50  TVLM513     12 46 04  50.3 126.4 -2.3   -31.6  -20   9307  No stop
06 42 20  ---         12 49 34  50.7 127.5 -2.2   -31.1  190   9334  06 38 51

06 42 20  J1455+2131  12 49 34  50.2 130.3 -2.1   -29.5  -20   9334  No stop
06 43 50  =1453+217   12 51 05  50.4 130.8 -2.1   -29.3  70   9345  06 42 21

06 43 50  TVLM513     12 51 05  50.9 128.0 -2.2   -30.9  -20   9345  No stop
06 47 20  ---         12 54 35  51.3 129.1 -2.1   -30.4  190   9372  06 43 51

06 47 50  J1455+2131  12 55 05  50.8 132.0 -2.0   -28.6  10   9372  06 47 50
06 48 50  =1453+217   12 56 05  50.9 132.4 -2.0   -28.5  60   9380  06 47 51

06 48 50  TVLM513     12 56 05  51.5 129.5 -2.1   -30.1  -20   9380  No stop
06 52 20  ---         12 59 36  51.9 130.7 -2.0   -29.6  190   9407  06 48 51

06 52 20  J1455+2131  12 59 36  51.3 133.5 -1.9   -27.9  -20   9407  No stop
06 53 50  =1453+217   13 01 06  51.5 134.0 -1.9   -27.7  70   9419  06 52 21

06 53 50  J1504+2218  13 01 06  51.2 130.5 -2.1   -29.6  -22   9419  No stop
06 57 20  ---         13 04 37  51.6 131.7 -2.0   -29.0  188   9446  06 53 51

06 57 50  J1455+2131  13 05 07  51.9 135.3 -1.9   -27.0   8   9446  06 57 50
06 58 50  =1453+217   13 06 07  52.0 135.7 -1.8   -26.8  60   9454  06 57 51

06 58 50  TVLM513     13 06 07  52.6 132.8 -1.9   -28.5  -20   9454  No stop
07 02 20  ---         13 09 38  53.0 134.0 -1.9   -27.9  190   9481  06 58 51

```

Schedule for TORUN (Code Tr )

Page 36

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
07 02 20	J1455+2131	13 09 38	52.4	136.9	-1.8		-26.2	-20	9481	No stop
07 03 50	=1453+217	13 11 08	52.5	137.4	-1.8		-25.9	70	9492	07 02 21
07 03 50	TVLM513	13 11 08	53.1	134.5	-1.8		-27.7	-20	9492	No stop
07 07 20	---	13 14 38	53.5	135.7	-1.8		-27.1	190	9519	07 03 51
07 07 50	J1455+2131	13 15 09	53.0	138.8	-1.7		-25.2	10	9519	07 07 50
07 08 50	=1453+217	13 16 09	53.0	139.1	-1.7		-25.0	60	9527	07 07 51
07 08 50	TVLM513	13 16 09	53.7	136.2	-1.8		-26.8	-20	9527	No stop
07 12 20	---	13 19 39	54.0	137.5	-1.7		-26.1	190	9554	07 08 51
07 12 20	J1455+2131	13 19 39	53.4	140.4	-1.6		-24.3	-21	9554	No stop
07 13 50	=1453+217	13 21 10	53.5	140.9	-1.6		-24.0	69	9566	07 12 21
07 13 50	TVLM513	13 21 10	54.2	138.0	-1.7		-25.8	-20	9566	No stop
07 17 20	---	13 24 40	54.5	139.2	-1.6		-25.2	190	9593	07 13 51
07 17 50	J1455+2131	13 25 10	53.9	142.4	-1.5		-23.2	9	9593	07 17 50
07 18 50	=1453+217	13 26 10	54.0	142.7	-1.5		-23.0	60	9601	07 17 51
07 18 50	TVLM513	13 26 10	54.7	139.8	-1.6		-24.9	-20	9601	No stop
07 22 20	---	13 29 41	55.0	141.1	-1.5		-24.2	190	9628	07 18 51
07 22 20	J1455+2131	13 29 41	54.3	144.0	-1.4		-22.3	-21	9628	No stop
07 23 50	=1453+217	13 31 11	54.4	144.6	-1.4		-22.0	69	9639	07 22 21
07 23 50	J1504+2218	13 31 11	54.4	140.8	-1.6		-24.2	-22	9639	No stop
07 27 20	---	13 34 42	54.7	142.1	-1.5		-23.5	188	9666	07 23 51
07 27 50	J1455+2131	13 35 12	54.8	146.1	-1.3		-21.1	7	9666	07 27 50
07 28 50	=1453+217	13 36 12	54.9	146.4	-1.3		-20.9	60	9674	07 27 51
07 28 50	TVLM513	13 36 12	55.6	143.5	-1.4		-22.8	-20	9674	No stop
07 32 20	---	13 39 43	55.9	144.8	-1.4		-22.0	190	9701	07 28 51
07 32 20	J1455+2131	13 39 43	55.2	147.8	-1.3		-20.1	-21	9701	No stop
07 33 50	=1453+217	13 41 13	55.3	148.4	-1.2		-19.8	69	9713	07 32 21
07 33 50	TVLM513	13 41 13	56.0	145.4	-1.3		-21.7	-20	9713	No stop
07 37 20	---	13 44 43	56.3	146.7	-1.3		-20.9	190	9740	07 33 51
07 37 20	J1455+2131	13 44 43	55.5	149.7	-1.2		-19.0	-21	9740	No stop
07 38 50	=1453+217	13 46 14	55.7	150.3	-1.2		-18.6	69	9752	07 37 21

Schedule for TORUN (Code Tr )

Page 37

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
07 42 00	1749+096	13 49 24	25.1	108.3	-4.0		-35.3	61	9752	07 42 00
07 56 00	---	14 03 26	27.1	111.5	-3.8		-34.5	840	9860	07 42 01
08 00 00	1749+096	14 07 27	27.6	112.4	-3.7		-34.3	233	9860	08 00 00
08 14 00	---	14 21 29	29.5	115.7	-3.5		-33.3	840	9968	08 00 01
08 14 40	1749+096	14 22 10	29.6	115.9	-3.5		-33.2	34	9968	08 14 40
08 25 00	---	14 32 31	31.0	118.3	-3.3		-32.4	620	10048	08 14 41
08 27 00	J1743-0350	14 34 32	20.5	128.2	-3.2		-28.2	66	10048	08 27 00
08 30 00	=1741-038	14 37 32	20.9	128.9	-3.1		-27.9	180	10072	08 27 01
08 30 50	J1743-0350	14 38 22	21.0	129.1	-3.1		-27.9	44	10072	08 30 50
08 31 50	=1741-038	14 39 22	21.1	129.3	-3.1		-27.8	60	10079	08 30 51
08 31 50	J1752-0147	14 39 22	21.9	126.3	-3.2		-29.0	-20	10079	No stop
08 33 10	---	14 40 43	22.1	126.6	-3.2		-28.8	60	10090	08 31 51
08 33 10	J17535	14 40 43	22.2	126.2	-3.2		-29.0	-11	10090	No stop
08 35 30	---	14 43 03	22.5	126.7	-3.2		-28.8	129	10108	08 33 11
08 35 30	J1752-0147	14 43 03	22.4	127.2	-3.2		-28.6	-11	10108	No stop
08 36 40	---	14 44 13	22.5	127.5	-3.1		-28.5	59	10117	08 35 31
08 36 40	J17535	14 44 13	22.7	127.0	-3.2		-28.7	-11	10117	No stop
08 39 00	---	14 46 34	22.9	127.6	-3.1		-28.4	129	10135	08 36 41
08 39 00	J1752-0147	14 46 34	22.8	128.0	-3.1		-28.3	-11	10135	No stop
08 40 10	---	14 47 44	22.9	128.3	-3.1		-28.1	59	10144	08 39 01
08 40 10	J17535	14 47 44	23.1	127.8	-3.1		-28.3	-11	10144	No stop
08 42 30	---	14 50 04	23.4	128.4	-3.1		-28.1	129	10162	08 40 11
08 42 30	J1752-0147	14 50 04	23.2	128.9	-3.0		-27.9	-11	10162	No stop
08 43 40	---	14 51 14	23.3	129.1	-3.0		-27.8	59	10171	08 42 31
08 43 40	J17535	14 51 14	23.5	128.7	-3.0		-28.0	-11	10171	No stop
08 46 00	---	14 53 35	23.8	129.2	-3.0		-27.7	129	10189	08 43 41
08 46 00	J1752-0147	14 53 35	23.6	129.7	-3.0		-27.5	-11	10189	No stop
08 47 10	---	14 54 45	23.7	130.0	-3.0		-27.4	59	10198	08 46 01
08 48 00	J1743-0350	14 55 35	22.9	133.2	-2.8		-26.0	29	10198	08 48 00
08 49 00	=1741-038	14 56 35	23.0	133.5	-2.8		-25.9	60	10206	08 48 01



Schedule for TORUN (Code Tr )

Page 38

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
08 49 00	J1752-0147	14 56 35	24.0	130.4	-2.9		-27.2	-20	10206	No stop
08 50 20	---	14 57 55	24.1	130.8	-2.9		-27.1	60	10216	08 49 01
08 50 20	J17535	14 57 55	24.3	130.3	-2.9		-27.3	-11	10216	No stop
08 52 40	---	15 00 16	24.5	130.9	-2.9		-27.0	129	10234	08 50 21
08 52 40	J1752-0147	15 00 16	24.4	131.3	-2.9		-26.8	-11	10234	No stop
08 53 50	---	15 01 26	24.5	131.6	-2.9		-26.7	59	10243	08 52 41
08 53 50	J17535	15 01 26	24.7	131.2	-2.9		-26.9	-11	10243	No stop
08 56 10	---	15 03 46	24.9	131.7	-2.8		-26.6	129	10261	08 53 51
08 56 10	J1752-0147	15 03 46	24.8	132.2	-2.8		-26.4	-11	10261	No stop
08 57 20	---	15 04 57	24.9	132.5	-2.8		-26.3	59	10270	08 56 11
08 57 20	J17535	15 04 57	25.1	132.0	-2.8		-26.5	-11	10270	No stop
08 59 40	---	15 07 17	25.3	132.6	-2.8		-26.2	129	10288	08 57 21
08 59 40	J1752-0147	15 07 17	25.2	133.1	-2.8		-26.0	-11	10288	No stop
09 00 50	---	15 08 27	25.3	133.3	-2.7		-25.9	59	10297	08 59 41
09 00 50	J17535	15 08 27	25.5	132.9	-2.8		-26.1	-11	10297	No stop
09 03 10	---	15 10 47	25.7	133.5	-2.7		-25.8	129	10315	09 00 51
09 03 10	J1752-0147	15 10 47	25.5	133.9	-2.7		-25.6	-11	10315	No stop
09 04 20	---	15 11 58	25.7	134.2	-2.7		-25.5	59	10325	09 03 11
09 05 10	J1743-0350	15 12 48	24.8	137.5	-2.5		-24.0	29	10325	09 05 10
09 06 10	=1741-038	15 13 48	24.9	137.7	-2.5		-23.9	60	10332	09 05 11
09 06 10	J1752-0147	15 13 48	25.9	134.7	-2.7		-25.3	-20	10332	No stop
09 07 30	---	15 15 08	26.0	135.0	-2.6		-25.1	60	10343	09 06 11
09 07 30	J17535	15 15 08	26.2	134.6	-2.7		-25.3	-11	10343	No stop
09 09 50	---	15 17 29	26.4	135.2	-2.6		-25.1	129	10361	09 07 31
09 09 50	J1752-0147	15 17 29	26.2	135.6	-2.6		-24.9	-11	10361	No stop
09 11 00	---	15 18 39	26.4	135.9	-2.6		-24.7	59	10370	09 09 51
09 11 00	J17535	15 18 39	26.6	135.4	-2.6		-24.9	-11	10370	No stop
09 13 20	---	15 20 59	26.8	136.0	-2.6		-24.6	129	10388	09 11 01
09 13 20	J1752-0147	15 20 59	26.6	136.5	-2.5		-24.4	-11	10388	No stop
09 14 30	---	15 22 09	26.7	136.8	-2.5		-24.3	59	10397	09 13 21

Schedule for TORUN (Code Tr )

Page 39

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
09 14 30	J17535	15 22 09	26.9	136.3	-2.5		-24.5	-11	10397	No stop
09 16 50	---	15 24 30	27.2	136.9	-2.5		-24.2	129	10415	09 14 31
09 16 50	J1752-0147	15 24 30	27.0	137.4	-2.5		-24.0	-11	10415	No stop
09 18 00	---	15 25 40	27.1	137.7	-2.5		-23.9	59	10424	09 16 51
09 18 00	J17535	15 25 40	27.3	137.2	-2.5		-24.1	-11	10424	No stop
09 20 20	---	15 28 00	27.5	137.8	-2.4		-23.8	129	10442	09 18 01
09 20 20	J1752-0147	15 28 00	27.3	138.3	-2.4		-23.6	-11	10442	No stop
09 21 30	---	15 29 10	27.4	138.6	-2.4		-23.4	59	10451	09 20 21
09 21 30	J1753-0102	15 29 10	28.0	138.0	-2.4		-23.7	-14	10451	No stop
09 22 40	---	15 30 21	28.2	138.3	-2.4		-23.5	56	10460	09 21 31
09 22 40	J1752-0147	15 30 21	27.6	138.9	-2.4		-23.3	-14	10460	No stop
09 23 50	---	15 31 31	27.7	139.2	-2.4		-23.1	56	10469	09 22 41
09 27 50	1749+096	15 35 32	38.6	134.9	-2.3		-25.6	186	10469	09 27 50
09 38 50	---	15 46 33	39.7	138.1	-2.1		-24.0	660	10554	09 27 51
09 39 30	1749+096	15 47 13	39.8	138.3	-2.1		-23.9	34	10554	09 39 30
09 53 50	---	16 01 36	41.2	142.6	-1.8		-21.7	860	10665	09 39 31
09 54 30	1749+096	16 02 16	41.2	142.8	-1.8		-21.6	34	10665	09 54 30
10 08 50	---	16 16 38	42.5	147.2	-1.6		-19.3	860	10776	09 54 31
10 09 30	1749+096	16 17 18	42.5	147.4	-1.6		-19.1	34	10776	10 09 30
10 23 50	---	16 31 41	43.6	152.1	-1.3		-16.6	860	10887	10 09 31
10 24 30	1749+096	16 32 21	43.7	152.3	-1.3		-16.5	34	10887	10 24 30
10 38 50	---	16 46 43	44.6	157.0	-1.1		-13.7	860	10998	10 24 31
10 39 30	1749+096	16 47 23	44.6	157.3	-1.1		-13.6	34	10998	10 39 30
10 53 50	---	17 01 46	45.4	162.2	-0.8		-10.8	860	11109	10 39 31
10 54 30	1749+096	17 02 26	45.4	162.4	-0.8		-10.6	34	11109	10 54 30
11 08 50	---	17 16 48	46.0	167.4	-0.6		-7.6	860	11220	10 54 31
11 09 40	J1743-0350	17 17 38	32.8	172.0	-0.5		-4.8	-13	11220	11 09 40
11 10 40	=1741-038	17 18 38	32.8	172.3	-0.4		-4.6	47	11228	11 09 41
11 10 40	J1752-0147	17 18 38	34.6	169.5	-0.6		-6.3	-21	11228	No stop
11 12 00	---	17 19 59	34.7	169.9	-0.6		-6.0	59	11238	11 10 41

Schedule for TORUN (Code Tr )

Page 40

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
11 12 00	J17535	17 19 59	35.0	169.5	-0.6		-6.3	-11	11238	No stop
11 14 20	---	17 22 19	35.0	170.3	-0.5		-5.8	129	11256	11 12 01
11 14 20	J1752-0147	17 22 19	34.7	170.7	-0.5		-5.6	-11	11256	No stop
11 15 30	---	17 23 29	34.8	171.0	-0.5		-5.4	59	11265	11 14 21
11 15 30	J17535	17 23 29	35.1	170.6	-0.5		-5.6	-11	11265	No stop
11 17 50	---	17 25 50	35.1	171.3	-0.5		-5.2	129	11283	11 15 31
11 17 50	J1752-0147	17 25 50	34.8	171.7	-0.5		-5.0	-11	11283	No stop
11 19 00	---	17 27 00	34.8	172.1	-0.4		-4.8	59	11292	11 17 51
11 19 00	J17535	17 27 00	35.2	171.7	-0.5		-5.0	-11	11292	No stop
11 21 20	---	17 29 20	35.2	172.4	-0.4		-4.6	129	11310	11 19 01
11 21 20	J1752-0147	17 29 20	34.9	172.8	-0.4		-4.3	-11	11310	No stop
11 22 30	---	17 30 30	34.9	173.1	-0.4		-4.1	59	11319	11 21 21
11 22 30	J17535	17 30 30	35.2	172.8	-0.4		-4.3	-11	11319	No stop
11 24 50	---	17 32 51	35.3	173.5	-0.4		-3.9	129	11337	11 22 31
11 24 50	J1752-0147	17 32 51	35.0	173.8	-0.3		-3.7	-11	11337	No stop
11 26 00	---	17 34 01	35.0	174.2	-0.3		-3.5	59	11346	11 24 51
11 26 00	J1753-0102	17 34 01	35.7	173.9	-0.3		-3.7	-15	11346	No stop
11 27 10	---	17 35 11	35.7	174.2	-0.3		-3.5	55	11355	11 26 01
11 27 10	J1752-0147	17 35 11	35.0	174.6	-0.3		-3.3	-15	11355	No stop
11 28 20	---	17 36 21	35.0	174.9	-0.3		-3.1	55	11364	11 27 11
11 29 10	J1743-0350	17 37 11	33.0	177.8	-0.1		-1.3	29	11364	11 29 10
11 30 10	=1741-038	17 38 12	33.1	178.1	-0.1		-1.2	60	11372	11 29 11
11 30 10	J1752-0147	17 38 12	35.0	175.5	-0.2		-2.7	-21	11372	No stop
11 31 30	---	17 39 32	35.0	175.9	-0.2		-2.5	59	11383	11 30 11
11 31 30	J17535	17 39 32	35.4	175.5	-0.2		-2.7	-12	11383	No stop
11 33 50	---	17 41 52	35.4	176.2	-0.2		-2.3	128	11401	11 31 31
11 33 50	J1752-0147	17 41 52	35.1	176.6	-0.2		-2.0	-12	11401	No stop
11 35 00	---	17 43 02	35.1	177.0	-0.2		-1.8	58	11410	11 33 51
11 35 00	J17535	17 43 02	35.4	176.6	-0.2		-2.1	-12	11410	No stop
11 37 20	---	17 45 23	35.4	177.3	-0.1		-1.6	128	11428	11 35 01
11 37 20	J1752-0147	17 45 23	35.1	177.7	-0.1		-1.4	-12	11428	No stop
11 38 30	---	17 46 33	35.1	178.0	-0.1		-1.2	58	11437	11 37 21

Schedule for TORUN (Code Tr )

Page 41

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
11 38 30	J17535	17 46 33	35.4	177.7	-0.1		-1.4	-12	11437	No stop
11 40 50	---	17 48 53	35.4	178.4	-0.1		-1.0	128	11455	11 38 31
11 40 50	J1752-0147	17 48 53	35.1	178.7	-0.1		-0.8	-12	11455	No stop
11 42 00	---	17 50 04	35.1	179.1	-0.0		-0.5	58	11464	11 40 51
11 42 00	J17535	17 50 04	35.4	178.7	-0.1		-0.8	-12	11464	No stop
11 44 20	---	17 52 24	35.5	179.5	-0.0		-0.3	128	11482	11 42 01
11 44 20	J1752-0147	17 52 24	35.1	179.8	-0.0		-0.1	-12	11482	No stop
11 45 30	---	17 53 34	35.1	180.2	0.0		0.1	58	11491	11 44 21
11 46 20	J1743-0350	17 54 24	33.0	182.9	0.2		1.7	28	11491	11 46 20
11 47 20	=1741-038	17 55 24	33.0	183.2	0.2		1.9	60	11499	11 46 21
11 47 20	J1752-0147	17 55 24	35.1	180.7	0.0		0.4	-22	11499	No stop
11 48 40	---	17 56 45	35.1	181.1	0.1		0.7	58	11509	11 47 21
11 48 40	J17535	17 56 45	35.5	180.8	0.0		0.5	-12	11509	No stop
11 51 00	---	17 59 05	35.4	181.5	0.1		0.9	128	11527	11 48 41
11 51 00	J1752-0147	17 59 05	35.1	181.9	0.1		1.1	-12	11527	No stop
11 52 10	---	18 00 15	35.1	182.2	0.1		1.3	58	11536	11 51 01
11 52 10	J17535	18 00 15	35.4	181.9	0.1		1.1	-12	11536	No stop
11 54 30	---	18 02 36	35.4	182.6	0.1		1.5	128	11554	11 52 11
11 54 30	J1752-0147	18 02 36	35.1	182.9	0.2		1.8	-12	11554	No stop
11 55 40	---	18 03 46	35.1	183.3	0.2		2.0	58	11563	11 54 31
11 55 40	J17535	18 03 46	35.4	182.9	0.2		1.8	-12	11563	No stop
11 58 00	---	18 06 06	35.4	183.7	0.2		2.2	128	11581	11 55 41
11 58 00	J1752-0147	18 06 06	35.0	184.0	0.2		2.4	-12	11581	No stop
11 59 10	---	18 07 16	35.0	184.4	0.2		2.6	58	11590	11 58 01
11 59 10	J17535	18 07 16	35.4	184.0	0.2		2.4	-12	11590	No stop
12 01 30	---	18 09 37	35.4	184.7	0.3		2.8	128	11608	11 59 11
12 01 30	J1752-0147	18 09 37	35.0	185.1	0.3		3.0	-12	11608	No stop
12 02 40	---	18 10 47	35.0	185.4	0.3		3.3	58	11617	12 01 31
12 03 30	J1743-0350	18 11 37	32.8	188.0	0.4		4.8	28	11617	12 03 30
12 04 30	=1741-038	18 12 37	32.8	188.3	0.5		5.0	60	11625	12 03 31
12 04 30	J1752-0147	18 12 37	35.0	186.0	0.3		3.6	-22	11625	No stop
12 05 50	---	18 13 57	34.9	186.4	0.3		3.8	58	11635	12 04 31

Schedule for TORUN (Code Tr )

Page 42

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
12 05 50	J17535	18 13 57	35.3	186.1	0.3		3.6	-12	11635	No stop
12 08 10	---	18 16 18	35.3	186.8	0.4		4.1	128	11653	12 05 51
12 08 10	J1752-0147	18 16 18	34.9	187.1	0.4		4.3	-12	11653	No stop
12 09 20	---	18 17 28	34.9	187.5	0.4		4.5	58	11662	12 08 11
12 09 20	J17535	18 17 28	35.2	187.1	0.4		4.3	-12	11662	No stop
12 11 40	---	18 19 48	35.2	187.8	0.4		4.7	128	11681	12 09 21
12 11 40	J1752-0147	18 19 48	34.8	188.2	0.4		4.9	-12	11681	No stop
12 12 50	---	18 20 59	34.8	188.5	0.5		5.1	58	11690	12 11 41
12 12 50	J17535	18 20 59	35.2	188.2	0.4		4.9	-12	11690	No stop
12 15 10	---	18 23 19	35.1	188.9	0.5		5.3	128	11708	12 12 51
12 15 10	J1752-0147	18 23 19	34.8	189.2	0.5		5.5	-12	11708	No stop
12 16 20	---	18 24 29	34.7	189.6	0.5		5.7	58	11717	12 15 11
12 16 20	J17535	18 24 29	35.1	189.3	0.5		5.6	-12	11717	No stop
12 18 40	---	18 26 50	35.0	190.0	0.5		6.0	128	11735	12 16 21
12 18 40	J1752-0147	18 26 50	34.7	190.3	0.6		6.2	-12	11735	No stop
12 19 50	---	18 28 00	34.6	190.6	0.6		6.4	58	11744	12 18 41
12 19 50	J1753-0102	18 28 00	35.4	190.5	0.6		6.3	-15	11744	No stop
12 21 00	---	18 29 10	35.4	190.8	0.6		6.5	55	11753	12 19 51
12 21 00	J1752-0147	18 29 10	34.6	191.0	0.6		6.6	-15	11753	No stop
12 22 10	---	18 30 20	34.6	191.3	0.6		6.8	55	11762	12 21 01
12 23 00	J1743-0350	18 31 10	32.2	193.7	0.8		8.2	27	11762	12 23 00
12 24 00	=1741-038	18 32 10	32.2	194.0	0.8		8.4	60	11770	12 23 01
12 24 00	J1752-0147	18 32 10	34.5	191.9	0.7		7.1	-23	11770	No stop
12 25 20	---	18 33 31	34.5	192.3	0.7		7.4	57	11780	12 24 01
12 25 20	J17535	18 33 31	34.8	192.0	0.7		7.2	-12	11780	No stop
12 27 40	---	18 35 51	34.8	192.7	0.7		7.6	128	11798	12 25 21
12 27 40	J1752-0147	18 35 51	34.4	193.0	0.7		7.8	-12	11798	No stop
12 28 50	---	18 37 01	34.3	193.4	0.7		8.0	58	11807	12 27 41
12 28 50	J17535	18 37 01	34.7	193.1	0.7		7.8	-12	11807	No stop
12 31 10	---	18 39 22	34.6	193.8	0.8		8.2	128	11825	12 28 51
12 31 10	J1752-0147	18 39 22	34.3	194.1	0.8		8.4	-12	11825	No stop
12 32 20	---	18 40 32	34.2	194.4	0.8		8.6	58	11834	12 31 11

Schedule for TORUN (Code Tr )

Page 43

e-EVN: EM101E, EG069F, EG082

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 4 Dec 2013 Day 338 ---										
12 32 20	J17535	18 40 32	34.6	194.1	0.8		8.4	-12	11834	No stop
12 34 40	---	18 42 52	34.5	194.8	0.8		8.8	128	11852	12 32 21
12 34 40	J1752-0147	18 42 52	34.1	195.1	0.8		9.0	-12	11852	No stop
12 35 50	---	18 44 02	34.1	195.5	0.9		9.2	58	11861	12 34 41
12 35 50	J17535	18 44 02	34.5	195.2	0.8		9.0	-12	11861	No stop
12 38 10	---	18 46 23	34.4	195.9	0.9		9.5	128	11879	12 35 51
12 38 10	J1752-0147	18 46 23	34.0	196.2	0.9		9.6	-12	11879	No stop
12 39 20	---	18 47 33	33.9	196.5	0.9		9.8	58	11888	12 38 11
12 40 10	J1743-0350	18 48 23	31.5	198.7	1.1		11.1	27	11888	12 40 10
12 41 10	=1741-038	18 49 23	31.5	199.0	1.1		11.3	60	11896	12 40 11
12 41 10	J1752-0147	18 49 23	33.9	197.0	0.9		10.1	-23	11896	No stop
12 42 30	---	18 50 44	33.8	197.4	1.0		10.4	57	11906	12 41 11
12 42 30	J17535	18 50 44	34.2	197.2	0.9		10.2	-12	11906	No stop
12 44 50	---	18 53 04	34.1	197.9	1.0		10.6	128	11924	12 42 31
12 44 50	J1752-0147	18 53 04	33.7	198.1	1.0		10.8	-12	11924	No stop
12 46 00	---	18 54 14	33.6	198.5	1.0		11.0	58	11933	12 44 51
12 46 00	J17535	18 54 14	34.0	198.2	1.0		10.8	-12	11933	No stop
12 48 20	---	18 56 34	33.9	198.9	1.0		11.2	128	11951	12 46 01
12 48 20	J1752-0147	18 56 34	33.5	199.2	1.1		11.4	-12	11951	No stop
12 49 30	---	18 57 45	33.5	199.5	1.1		11.6	58	11961	12 48 21
12 49 30	J17535	18 57 45	33.9	199.2	1.1		11.4	-12	11961	No stop
12 51 50	---	19 00 05	33.7	199.9	1.1		11.8	128	11979	12 49 31
12 51 50	J1752-0147	19 00 05	33.3	200.2	1.1		12.0	-12	11979	No stop
12 53 00	---	19 01 15	33.3	200.5	1.1		12.2	58	11988	12 51 51
12 53 00	J17535	19 01 15	33.7	200.3	1.1		12.0	-12	11988	No stop
12 55 20	---	19 03 36	33.6	201.0	1.2		12.4	128	12006	12 53 01
12 55 20	J1752-0147	19 03 36	33.2	201.2	1.2		12.6	-12	12006	No stop
12 56 30	---	19 04 46	33.1	201.6	1.2		12.8	58	12015	12 55 21
12 56 30	J1753-0102	19 04 46	33.9	201.5	1.2		12.7	-15	12015	No stop
12 57 40	---	19 05 56	33.8	201.8	1.2		12.9	55	12024	12 56 31
12 57 40	J1752-0147	19 05 56	33.0	201.9	1.2		12.9	-15	12024	No stop
12 58 50	---	19 07 06	33.0	202.2	1.2		13.1	55	12033	12 57 41

## SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: sess313.C1024

Matching groups in /aps3/opt/share/sched\_10.2/catalogs/freq.dat:

tr6cm            E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:	2	Station:	TORUN	Total bit rate:	1024
Format:	MKIV1:2	Bits per sample:	2	Sample rate:	32.000
Number of channels:	16	DBE type:		Speedup factor:	0.50

Disk used to record data.

1st LO=	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00
	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00	4200.00
Net SB=	L	L	U	U	L	L	U	U	
	L	L	U	U	L	L	U	U	
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	
BBC =	1	2	1	2	3	4	3	4	
	5	6	5	6	7	8	7	8	
BBC SB=	L	L	U	U	L	L	U	U	
	L	L	U	U	L	L	U	U	
IF =	C	A	C	A	C	A	C	A	
	C	A	C	A	C	A	C	A	

The following frequency sets based on these setups were used.

Frequency Set:	6	Setup file default.	Used pcal sets:	1				
LO sum=	4942.49	4942.49	4942.49	4942.49	4974.49	4974.49	4974.49	4974.49
	5006.49	5006.49	5006.49	5006.49	5038.49	5038.49	5038.49	5038.49
BBC fr=	742.49	742.49	742.49	742.49	774.49	774.49	774.49	774.49
	806.49	806.49	806.49	806.49	838.49	838.49	838.49	838.49
Bandwd=	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
	16.00	16.00	16.00	16.00	16.00	16.00	16.00	16.00
Matching frequency sets:	6							

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = OFF						
PCALXB1=	S1	S2	S3	S4	S5	S6	S7	S8
PCALXB2=	M1	M2	M3	M4	M5	M6	M7	M8
PCALFR1=	0	0	0	0	0	0	0	0
PCALFR2=	0	0	0	0	0	0	0	0

Track assignments are:

track1= 2, 10, 18, 26, 3, 11, 19, 27, 66, 74, 82, 90, 67, 75, 83, 91  
barrel=roll\_off

SOURCES USED IN RECORDING SCANS --

e-EVN: EM101E, EG069F, EG082

Catalog positions marked with \*.

Precession of date coordinates is based on stop time of first scan.

Names used in schedule marked with \*.

Short names used in VLA and SNAP files marked with +.

Observation date used in B1950/J2000 coordinate conversion (PRECDATE): 1979.900

No adjustments are made for rates (DRA, DDEC).

Scan hours are for recording scans only.

Baseline hours are only counted for scans above horizon at both ends.

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J17535	17 50 52.816542 -01 26 32.11338	* 17 53 28.290600 *-01 27 06.29200	17 54 10.819113 -01 27 03.39912	0.00 0.00
* J1743-0350 1741-038	17 41 20.616009 -03 48 48.89990	* 17 43 58.856133 *-03 50 04.61670	17 44 42.153744 -03 50 13.59786	0.20 0.30
* J1753-0102	17 50 35.447069 -01 02 13.39368	* 17 53 10.448843 *-01 02 48.85402	17 53 52.843805 -01 02 46.29020	0.00 0.00
* J1752-0147	17 49 42.498835 -01 46 37.39945	* 17 52 18.363781 *-01 47 16.68546	17 53 01.001052 -01 47 15.25858	0.00 0.00
* AMHER	18 14 58.431105 49 50 56.91227	* 18 16 13.192800 * 49 52 05.11200	18 16 32.320071 49 52 40.63092	0.00 0.00
* J1809+5007	18 08 01.170607 50 06 50.37595	* 18 09 15.070500 * 50 07 28.18700	18 09 33.904480 50 07 54.69472	0.00 0.00
* V998ORI	05 29 29.296296 09 47 04.79270	* 05 32 14.489250 * 09 49 11.85820	05 33 02.492153 09 49 39.47308	0.00 0.00
* J0530+0900	05 27 39.008754 08 58 22.85271	* 05 30 23.227500 * 09 00 37.92300	05 31 10.954352 09 01 07.90031	0.00 0.00
* V1396CYG	20 58 12.051355 39 52 23.63061	* 21 00 06.095490 * 40 04 09.51810	21 00 37.742672 40 07 49.11911	0.00 0.00
* J2115+3742	21 12 44.469033 37 29 56.03237	* 21 14 44.117900 * 37 42 25.72400	21 15 17.471480 37 46 17.12788	0.00 0.00
* V596CAS	01 55 56.994789 58 16 40.70084	* 01 59 24.086500 * 58 31 13.34990	02 00 25.546541 58 35 27.59888	0.00 0.00
* J0151+5454	01 48 18.839204 54 39 48.95530	* 01 51 36.288800 * 54 54 37.68900	01 52 34.650214 54 58 56.91819	0.00 0.00
* RYSEX	10 33 24.605760 05 22 48.06979	* 10 36 00.591020 * 05 07 14.59210	10 36 44.619857 05 02 48.39027	0.00 0.00
* J1035+0522	10 32 21.484250 05 38 04.61084	* 10 34 57.605900 * 05 22 32.81500	10 35 41.676637 05 18 06.95179	0.00 0.00
* TVLM513	14 58 54.341003 23 01 49.63176	* 15 01 08.131610 * 22 50 01.21860	15 01 44.391638 22 46 46.96881	0.00 0.00
* J1504+2218	15 02 11.246974 22 29 52.47620	* 15 04 25.275200 * 22 18 14.28600	15 05 01.604801 22 15 03.21234	0.00 0.00



* J0147+5840	01 44 24.000042	* 01 47 46.541223	01 48 46.655248	2.66
0144+584	58 25 48.56646	* 58 40 44.97262	58 45 07.08543	1.74
* J0237+2848	02 34 55.589591	* 02 37 52.405678	02 38 43.928071	0.11
0234+285	28 35 11.40773	* 28 48 08.98998	28 51 49.53140	0.10
* J0519+0848	05 16 26.910741	* 05 19 10.811125	05 19 58.464547	0.14
0516+087	08 45 53.30185	* 08 48 56.73468	08 49 40.60122	0.27
* J1038+0512	10 36 10.827228	* 10 38 46.779881	10 39 30.782122	0.12
1036+054	05 28 06.89952	* 05 12 29.08645	05 08 01.74298	0.17
* J1310+3220	13 08 07.560132	* 13 10 28.663851	13 11 07.171954	0.12
1308+326	32 36 40.23870	* 32 20 43.78277	32 16 10.02300	0.10
J1407+2827	14 04 45.615156	* 14 07 00.394414	14 07 36.971979	0.24
* QQ208	28 41 29.23519	* 28 27 14.69022	28 23 14.54111	0.34
* J1455+2131	14 53 16.335948	* 14 55 31.846310	14 56 08.627760	0.20
1453+217	21 43 44.75328	* 21 31 39.17553	21 28 19.99354	0.32
J1640+3946	16 38 48.169686	* 16 40 29.632770	16 40 56.316919	0.13
* NRA0512	39 52 30.08655	* 39 46 46.02836	39 45 19.04919	0.10
J1751+0939	17 49 10.387929	* 17 51 32.818572	17 52 11.641480	0.10
* 1749+096	09 39 42.82574	* 09 39 00.72829	09 39 02.19106	0.10
* J1818+5017	18 17 16.882413	* 18 18 30.519237	18 18 49.325499	0.37
1817+502	50 16 01.52436	* 50 17 19.74367	50 17 58.23577	0.35
* J2113+4012	21 11 33.260021	* 21 13 29.486338	21 14 01.866801	0.79
2111+400	40 00 25.23968	* 40 12 51.38819	40 16 42.34091	0.69

The solar corona can cause unstable phases for sources too close to the Sun.  
 SCHED provides warnings at individual scans for distances less than 10 degrees.  
 The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)	Source	Sun distance (deg)	Source	Sun distance (deg)
J17535	27.2	J2115+3742	87.8	J0519+0848	163.8
J1743-0350	23.9	V596CAS	133.7	J1038+0512	92.5
J1753-0102	27.5	J0151+5454	134.6	J1310+3220	74.2
J1752-0147	26.8	RYSEX	93.1	QQ208	62.8
AMHER	75.1	J1035+0522	93.4	J1455+2131	50.7
J1809+5007	74.9	TVLM513	51.2	NRA0512	62.0
V998ORI	162.6	J1504+2218	50.3	1749+096	36.2
J0530+0900	162.3	J0147+5840	132.3	J1818+5017	75.6
V1396CYG	86.6	J0237+2848	151.5	J2113+4012	88.9

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.  
 For common VLBI bands, this is:

327 MHz	117. deg	8.4 GHz	17. deg
610 MHz	81. deg	15.0 GHz	12. deg
1.6 GHz	45. deg	22.0 GHz	9. deg
2.3 GHz	36. deg	43.0 GHz	6. deg
5.0 GHz	23. deg		

**rk01lgtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```
-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----  
  
--- Wed    4 Dec 2013    Day 338 ---  
  
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    632.00    632.00    632.00    632.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00  
  
22 00 00 0235+164            04 09 45 49.5 214.5 1.5            20.8    0            0    22 00 00  
22 14 30 ---                      04 24 17 48.2 219.4 1.7            23.4    870            28    22 00 01  
  
22 15 00 0235+164            04 24 48 48.2 219.6 1.8            23.5    24            28    22 15 00  
22 29 30 ---                      04 39 20 46.7 224.2 2.0            25.9    870            56    22 15 01  
  
22 30 00 0235+164            04 39 50 46.6 224.4 2.0            26.0    24            56    22 30 00  
22 44 30 ---                      04 54 22 45.1 228.9 2.2            28.2    870            84    22 30 01  
  
22 45 00 0235+164            04 54 52 45.0 229.0 2.3            28.2    24            84    22 45 00  
23 00 00 ---                      05 09 55 43.2 233.4 2.5            30.2    900            112    22 45 01  
-----
```

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01lg\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0238+1636	02 35 52.630215	* 02 38 38.930107	02 39 27.239440	0.10
* 0235+164	16 24 04.01608	* 16 36 59.27450	16 40 37.18418	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0235+164    149.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01lhr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Thu 5 Dec 2013 Day 339 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 12 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Contains scan schedule data for Dec 5, 2013.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01lh\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 6 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 7

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1018+0530	10 15 51.237788	* 10 18 27.848283	10 19 12.216019	0.10
* 1015+057	05 45 32.82524	* 05 30 29.96198	05 26 11.17380	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1015+057    98.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01litr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
```

--- Thu    5 Dec 2013    Day 339 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies:  632.00  632.00  632.00  632.00  
 Next scan bandwidths:  16.00  16.00  16.00  16.00

05 00 00	1023+131	11 10 54	48.8	196.5	0.7	10.1	0	0	05 00 00
05 14 30	---	11 25 26	48.1	201.7	1.0	13.2	870	28	05 00 01
05 15 00	1023+131	11 25 57	48.0	201.9	1.0	13.3	24	28	05 15 00
05 29 30	---	11 40 29	47.1	207.0	1.2	16.2	870	56	05 15 01
05 30 00	1023+131	11 40 59	47.1	207.1	1.2	16.3	24	56	05 30 00
05 44 30	---	11 55 31	46.0	212.1	1.5	19.1	870	84	05 30 01
05 45 00	1023+131	11 56 01	46.0	212.2	1.5	19.2	24	84	05 45 00
06 00 00	---	12 11 04	44.7	217.1	1.7	21.8	900	112	05 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01li\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1025+1253	10 23 16.285230	* 10 25 56.285371	10 26 41.492654	0.11
* 1023+131	13 09 05.49473	* 12 53 49.02185	12 49 23.96843	0.11

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1023+131    99.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01ljtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time.    Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Thu    5 Dec 2013    Day 339 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00

Next BBC frequencies:    632.00    632.00    632.00    632.00

Next scan bandwidths:    16.00    16.00    16.00    16.00

08 00 00	0827+243	14 11 24	22.1	-78.7	5.7		40.2	0	0	08 00 00
08 14 30	---	14 25 56	19.9	-76.0	5.9		39.7	870	28	08 00 01
08 15 00	0827+243	14 26 26	19.8	-75.9	5.9		39.7	24	28	08 15 00
08 29 30	---	14 40 59	17.7	-73.2	6.2		39.0	870	56	08 15 01
08 30 00	0827+243	14 41 29	17.7	-73.1	6.2		39.0	24	56	08 30 00
08 44 30	---	14 56 01	15.6	-70.4	6.4		38.3	870	84	08 30 01
08 45 00	0827+243	14 56 31	15.5	-70.3	6.4		38.3	24	84	08 45 00
09 00 00	---	15 11 34	13.4	-67.5	6.7		37.4	900	112	08 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01lj\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0830+2410	08 27 54.398594	* 08 30 52.086193	08 31 42.939134	0.11
* 0827+243	24 21 07.66368	* 24 10 59.82027	24 07 55.34204	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0827+243    128.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01ktr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Thu 5 Dec 2013 Day 339 ---

Table with columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Rows include scan frequencies, BBC frequencies, bandwidths, and observation logs for 11:00:00 to 12:00:00.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01k\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J1146+3958	11 44 21.020907	* 11 46 58.297919	11 47 41.763500	0.13
* 1144+402	40 15 14.23940	* 39 58 34.30431	39 53 40.16473	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1144+402    93.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01ltr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST                      EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Fri    6 Dec 2013    Day 340 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00							
Next BBC frequencies:	632.00	632.00	632.00	632.00							
Next scan bandwidths:	16.00	16.00	16.00	16.00							
00 00 00	0149+218	06 14 01	32.3	264.3	4.3		40.2	0	0	00 00 00	
00 14 30	---	06 28 34	30.2	267.3	4.6		40.4	870	28	00 00 01	
00 15 00	0149+218	06 29 04	30.1	267.4	4.6		40.4	24	28	00 15 00	
00 29 30	---	06 43 36	27.9	270.4	4.8		40.4	870	56	00 15 01	
00 30 00	0149+218	06 44 06	27.8	270.5	4.8		40.4	24	56	00 30 00	
00 44 30	---	06 58 39	25.7	273.3	5.1		40.3	870	84	00 30 01	
00 45 00	0149+218	06 59 09	25.6	273.4	5.1		40.3	24	84	00 45 00	
01 00 00	---	07 14 11	23.3	276.4	5.4		40.1	900	112	00 45 01	

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ll\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	1	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 1 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 1

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0152+2207	01 49 31.744133	* 01 52 18.059044	01 53 06.302311	0.11
* 0149+218	21 52 20.74785	* 22 07 07.69973	22 11 21.12343	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0149+218    139.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01lntr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST                      EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Fri    6 Dec 2013    Day 340 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
10 00 00	0917+449	16 15 40	27.5 -51.3	6.9		41.2	0	0	10 00 00	
10 14 30	---	16 30 12	25.9 -49.1	7.1		39.6	870	28	10 00 01	
10 15 00	0917+449	16 30 42	25.8 -49.0	7.1		39.6	24	28	10 15 00	
10 29 30	---	16 45 15	24.2 -46.8	7.4		38.0	870	56	10 15 01	
10 30 00	0917+449	16 45 45	24.1 -46.7	7.4		37.9	24	56	10 30 00	
10 44 30	---	17 00 17	22.6 -44.5	7.6		36.3	870	84	10 30 01	
10 45 00	0917+449	17 00 47	22.5 -44.4	7.6		36.2	24	84	10 45 00	
11 00 00	---	17 15 50	21.0 -42.1	7.9		34.4	900	112	10 45 01	

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ln\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  1  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  1

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0920+4441	09 17 41.919222	* 09 20 58.458485	09 21 54.208583	0.14
* 0917+449	44 54 39.62449	* 44 41 53.98501	44 37 59.35647	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0917+449    121.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01lotr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: K-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Sat    7 Dec 2013    Day 341 ---

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00  
 Next BBC frequencies:    736.00    736.00    736.00    736.00  
 Next scan bandwidths:    16.00    16.00    16.00    16.00

19 00 00	2200+420	01 21 05	55.8	272.1	3.3	54.3	0	0	19 00 00
19 14 30	---	01 35 38	53.6	274.8	3.5	54.1	870	28	19 00 01
19 15 00	2200+420	01 36 08	53.6	274.9	3.5	54.1	24	28	19 15 00
19 29 30	---	01 50 40	51.4	277.5	3.8	53.7	870	56	19 15 01
19 30 00	2200+420	01 51 10	51.3	277.6	3.8	53.7	24	56	19 30 00
19 44 30	---	02 05 42	49.2	280.1	4.0	53.1	870	84	19 30 01
19 45 00	2200+420	02 06 13	49.1	280.2	4.0	53.1	24	84	19 45 00
19 59 30	---	02 20 45	46.9	282.6	4.3	52.5	870	111	19 45 01
20 00 00	2200+420	02 21 15	46.9	282.7	4.3	52.4	24	111	20 00 00
20 14 30	---	02 35 47	44.8	285.0	4.5	51.7	870	139	20 00 01
20 15 00	2200+420	02 36 18	44.7	285.1	4.5	51.7	24	139	20 15 00
20 29 30	---	02 50 50	42.6	287.4	4.8	50.8	870	167	20 15 01
20 30 00	2200+420	02 51 20	42.5	287.5	4.8	50.8	24	167	20 30 00
20 40 00	---	03 01 22	41.1	289.1	5.0	50.2	600	186	20 30 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra1cm2.set

Matching groups in ./rk01lo\_freq.dat:

tr1cm                      Values from Bob Campbell by email (23-04-2013)

Setup group:    2                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00



Disk used to record data.

```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 3 Setup file default. Used pcal sets: 1
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J2202+4216	22 00 39.362504	* 22 02 43.291371	22 03 18.228424	0.14
* 2200+420	42 02 08.59073	* 42 16 39.97987	42 21 05.72458	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
2200+420    95.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

1.6 GHz      45. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



Setup group: 6                    Station: TORUN                    Total bit rate: 256  
 Format: MKIV1:4                    Bits per sample: 2                    Sample rate: 32.000  
 Number of channels: 4                    DBE type:                    Speedup factor: 1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U
IF SB =	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	U	U	L	L
IF =	C	A	C	A

The following frequency sets based on these setups were used.

Frequency Set: 4 Setup file default. Used pcal sets: 1  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 632.00 632.00 632.00 632.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

The following pulse cal sets were used with this setup:

Pulse cal detection set: 1 PCAL = 1MHZ  
 PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4  
 PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4  
 PCALFR1= 1000 1000 13000 13000 0 0 0 0  
 PCALFR2= 1000 1000 13000 13000 0 0 0 0

Track assignments are:

track1= 2, 18, 3, 19  
 barrel=roll\_off

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
J2253+1608	22 51 29.519738	* 22 53 57.747937	22 54 39.691357	0.68
* 2251+158	15 52 54.34810	* 16 08 53.56093	16 13 35.01817	0.72

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.  
 SCHED provides warnings at individual scans for distances less than 10 degrees.  
 The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
2251+158	95.2

## RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                    Profsoyuznaya 84/32                    117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                    (Code Tr )                    Page    2

RadioAstron AGN survey

UP: D =&gt; Below limits; H =&gt; Below horizon mask; W =&gt; still slewing at end; blank =&gt; Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are L0 sum (band edge).

SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source          Start / Stop          Early   Disk   TPStart
Stop UT          LST      EL   AZ   HA   UP   ParA Dwell  GBytes  SYNC
-----
```

--- Sun    8 Dec 2013    Day 342 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies:  632.00  632.00  632.00  632.00  
 Next scan bandwidths:  16.00  16.00  16.00  16.00

```
01 00 00 1123+264    07 22 04 37.7 96.0 -4.1    -41.7    0        0    01 00 00
01 14 30 ---        07 36 37 39.9 99.1 -3.8    -41.3    870     28    01 00 01

01 15 00 1123+264    07 37 07 40.0 99.2 -3.8    -41.3    24     28    01 15 00
01 29 30 ---        07 51 39 42.1 102.5 -3.6    -40.8    870     56    01 15 01

01 30 00 1123+264    07 52 09 42.2 102.6 -3.6    -40.7    24     56    01 30 00
01 44 30 ---        08 06 42 44.3 106.0 -3.3    -40.0    870     84    01 30 01

01 45 00 1123+264    08 07 12 44.4 106.2 -3.3    -40.0    24     84    01 45 00
02 00 00 ---        08 22 14 46.5 109.9 -3.1    -39.0    900    112    01 45 01
```

## SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

===== Setup file: ra18cm2.set

Matching groups in ./rk01lq\_freq.dat:

tr18cm                    E-mail Borkowski 12Mar98, preferred alternative

```
Setup group:    4                    Station: TORUN                    Total bit rate:    256
Format: MKIV1:4                    Bits per sample: 2                    Sample rate: 32.000
Number of channels: 4                    DBE type:                    Speedup factor:    1.00
```

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J1125+2610	11 23 14.869303	* 11 25 53.711923	11 26 38.142412	0.11
* 1123+264	26 26 49.99097	* 26 10 19.97857	26 05 31.40278	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1123+264    94.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01lrtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167 EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 8 Dec 2013 Day 342 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
04 00 00 0821+394 10 22 34 65.8 246.9 1.9 45.5 0 0 04 00 00
04 14 30 --- 10 37 06 63.7 251.4 2.2 47.3 870 28 04 00 01
04 15 00 0821+394 10 37 36 63.7 251.6 2.2 47.4 24 28 04 15 00
04 29 30 --- 10 52 09 61.6 255.7 2.4 48.7 870 56 04 15 01
04 30 00 0821+394 10 52 39 61.5 255.8 2.4 48.7 24 56 04 30 00
04 44 30 --- 11 07 11 59.4 259.5 2.7 49.7 870 84 04 30 01
04 45 00 0821+394 11 07 41 59.3 259.7 2.7 49.7 24 84 04 45 00
05 00 00 --- 11 22 44 57.0 263.2 2.9 50.3 900 112 04 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01lr\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 6 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0824+3916	08 21 37.310231	* 08 24 55.483856	08 25 52.264410	0.13
* 0821+394	39 26 28.25687	* 39 16 41.90401	39 13 39.29307	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
0821+394	133.6

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg

**rk01lstr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST                      EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Sun    8 Dec 2013    Day 342 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00							
Next BBC frequencies:	632.00	632.00	632.00	632.00							
Next scan bandwidths:	16.00	16.00	16.00	16.00							
07 00 00	0738+313	13 23 03	27.2	-73.4	5.7		42.3	0	0	07 00 00	
07 14 30	---	13 37 36	25.1	-70.8	5.9		41.5	870	28	07 00 01	
07 15 00	0738+313	13 38 06	25.0	-70.7	5.9		41.5	24	28	07 15 00	
07 29 30	---	13 52 38	23.0	-68.2	6.2		40.7	870	56	07 15 01	
07 30 00	0738+313	13 53 08	22.9	-68.1	6.2		40.6	24	56	07 30 00	
07 44 30	---	14 07 41	20.9	-65.5	6.4		39.7	870	84	07 30 01	
07 45 00	0738+313	14 08 11	20.8	-65.4	6.4		39.7	24	84	07 45 00	
08 00 00	---	14 23 13	18.8	-62.8	6.7		38.6	900	112	07 45 01	

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ls\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	5	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.



```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0741+3112	07 38 00.178559	* 07 41 10.703308	07 42 05.602114	0.18
* 0738+313	31 19 02.05925	* 31 12 00.22924	31 09 46.59685	1.24

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0738+313    143.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01ltr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Table with columns: Start UT, Source, Start / Stop (LST, EL, AZ, HA, UP), ParA, Early Dwell, Disk GBytes, TPStart SYNC. Includes scan data for Sun 8 Dec 2013, Day 342.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01lt\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1043+2408	10 40 25.199378	* 10 43 09.035779	10 43 55.202751	0.11
* 1040+244	24 24 19.59845	* 24 08 35.40931	24 03 58.60253	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1040+244    102.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01lutr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia  
Phone: +7-495-3332167  
EMAIL: yyk@asc.rssi.ru  
Fax: +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start. Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time. Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```
-----  
Start UT  Source          Start / Stop          Early  Disk  TPStart  
Stop UT   LST      EL  AZ  HA  UP  ParA Dwell  GBytes  SYNC  
-----  
  
--- Sun   8 Dec 2013   Day 342 ---  
  
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:  632.00  632.00  632.00  632.00  
Next scan bandwidths:  16.00   16.00   16.00   16.00  
  
20 00 00 2200+420    02 25 12 46.3 -76.7 4.4    52.2    0    0 20 00 00  
20 14 30 ---      02 39 44 44.2 -74.3 4.6    51.5   870    28 20 00 01  
  
20 15 00 2200+420    02 40 14 44.1 -74.2 4.6    51.4   24    28 20 15 00  
20 29 30 ---      02 54 46 42.0 -71.9 4.9    50.6   870    56 20 15 01  
  
20 30 00 2200+420    02 55 17 42.0 -71.8 4.9    50.5   24    56 20 30 00  
20 44 30 ---      03 09 49 39.9 -69.6 5.1    49.6   870    84 20 30 01  
  
20 45 00 2200+420    03 10 19 39.8 -69.5 5.1    49.6   24    84 20 45 00  
21 00 00 ---      03 25 21 37.7 -67.2 5.4    48.5   900   112 20 45 01  
-----
```

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01lu\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256  
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000  
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J2202+4216	22 00 39.362504	* 22 02 43.291371	22 03 18.202745	0.14
* 2200+420	42 02 08.59073	* 42 16 39.97987	42 21 05.58872	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
2200+420    94.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01lvtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 8 Dec 2013 Day 342 ---

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 12 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times for source 0234+285.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra1cm2.set

Matching groups in ./rk01lv\_freq.dat:

tr1cm Values from Bob Campbell by email (23-04-2013)

Setup group: 8 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used pcal sets: 1
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 7

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0237+2848	02 34 55.589591	* 02 37 52.405678	02 38 43.927702	0.11
* 0234+285	28 35 11.40773	* 28 48 08.98998	28 51 49.98677	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0234+285    147.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01lwtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia  
Phone: +7-495-3332167  
EMAIL: yyk@asc.rssi.ru  
Fax: +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT Source Start / Stop Early Disk TPStart  
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC  
-----

--- Mon 9 Dec 2013 Day 343 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

02 00 00	0355+508	08 26 11	50.6	-65.3	4.4	60.1	0	0	02 00 00
02 14 30	---	08 40 43	48.6	-63.5	4.7	58.7	870	28	02 00 01
02 15 00	0355+508	08 41 13	48.6	-63.4	4.7	58.6	24	28	02 15 00
02 29 30	---	08 55 46	46.6	-61.6	4.9	57.1	870	56	02 15 01
02 30 00	0355+508	08 56 16	46.6	-61.6	4.9	57.1	24	56	02 30 00
02 44 30	---	09 10 48	44.7	-59.8	5.2	55.5	870	84	02 30 01
02 45 00	0355+508	09 11 18	44.6	-59.7	5.2	55.5	24	84	02 45 00
03 00 00	---	09 26 21	42.7	-57.8	5.4	53.9	900	112	02 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01lw\_freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256  
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000  
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  5  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0359+5057	03 55 45.261370	* 03 59 29.747271	04 00 35.782594	0.16
* 0355+508	50 49 20.28582	* 50 57 50.16177	51 00 10.99465	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0355+508    149.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early   Disk   TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
```

--- Mon    9 Dec 2013    Day 343 ---

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00  16.00  16.00  16.00

05 00 00 0814+425      11 26 40 57.4 270.0 3.1      54.3    0      0    05 00 00
05 14 30 ---            11 41 13 55.2 272.8 3.4      54.2   870     28   05 00 01

05 15 00 0814+425      11 41 43 55.1 272.9 3.4      54.2   24     28   05 15 00
05 29 30 ---            11 56 15 52.9 275.6 3.6      53.9   870     56   05 15 01

05 30 00 0814+425      11 56 45 52.8 275.7 3.6      53.9   24     56   05 30 00
05 44 30 ---            12 11 18 50.7 278.3 3.9      53.5   870     84   05 30 01

05 45 00 0814+425      12 11 48 50.6 278.4 3.9      53.5   24     84   05 45 00
06 00 00 ---            12 26 50 48.4 280.9 4.1      52.9   900    112   05 45 01
```

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
 Setup file: ra18cm2.set

Matching groups in ./rk01lx\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

```
Setup group:    6                      Station: TORUN                      Total bit rate:    256
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000
Number of channels: 4                      DBE type:                      Speedup factor:    1.00
```

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 14.618420	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 48.94649	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0814+425    135.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01lytr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon    9 Dec 2013    Day 343 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

08 00 00	0953+254	14 27 10	33.3	268.4	4.5		41.6	0	0	08 00 00
08 14 30	---	14 41 42	31.1	271.3	4.7		41.6	870	28	08 00 01
08 15 00	0953+254	14 42 12	31.1	271.4	4.7		41.6	24	28	08 15 00
08 29 30	---	14 56 45	28.9	274.3	5.0		41.4	870	56	08 15 01
08 30 00	0953+254	14 57 15	28.8	274.4	5.0		41.4	24	56	08 30 00
08 44 30	---	15 11 47	26.6	277.2	5.2		41.2	870	84	08 30 01
08 45 00	0953+254	15 12 17	26.6	277.3	5.2		41.2	24	84	08 45 00
09 00 00	---	15 27 20	24.3	280.1	5.5		40.8	900	112	08 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01ly\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0953+254	09 53 59.738485	* 09 56 49.875379	09 57 38.153530	0.00
J0956+2515	25 29 33.58568	* 25 15 16.04978	25 11 01.73391	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0953+254    114.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01lztr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon    9 Dec 2013    Day 343 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

20 00 00	0106+013	02 29 08	36.0	204.9	1.3		14.7	0	0	20 00 00
20 14 30	---	02 43 41	35.0	209.2	1.6		17.0	870	28	20 00 01
20 15 00	0106+013	02 44 11	34.9	209.3	1.6		17.1	24	28	20 15 00
20 29 30	---	02 58 43	33.8	213.5	1.8		19.4	870	56	20 15 01
20 30 00	0106+013	02 59 13	33.8	213.7	1.8		19.5	24	56	20 30 00
20 44 30	---	03 13 45	32.5	217.7	2.1		21.6	870	84	20 30 01
20 45 00	0106+013	03 14 16	32.4	217.9	2.1		21.6	24	84	20 45 00
21 00 00	---	03 29 18	31.0	222.0	2.3		23.7	900	112	20 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01lz\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0108+0135	01 06 04.517940	* 01 08 38.771109	01 09 23.045541	0.32
* 0106+013	01 19 01.13991	* 01 35 00.31729	01 39 30.58343	0.37

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
FAKERA	111.6
0106+013	118.6

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg

**rk01matr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon    9 Dec 2013    Day 343 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

23 00 00	0336-019	05 29 38	30.6	212.2	1.8		18.7	0	0	23 00 00
23 14 30	---	05 44 10	29.4	216.2	2.1		20.8	870	28	23 00 01
23 15 00	0336-019	05 44 40	29.3	216.3	2.1		20.8	24	28	23 15 00
23 29 30	---	05 59 13	28.0	220.2	2.3		22.8	870	56	23 15 01
23 30 00	0336-019	05 59 43	27.9	220.3	2.3		22.9	24	56	23 30 00
23 44 30	---	06 14 15	26.5	224.0	2.6		24.7	870	84	23 30 01
23 45 00	0336-019	06 14 45	26.4	224.2	2.6		24.7	24	84	23 45 00
23 59 59	---	06 29 48	24.8	227.9	2.8		26.5	899	112	23 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01ma\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor:    1.00

Disk used to record data.



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0339-0146	03 36 58.953147	* 03 39 30.937787	03 40 15.166395	0.10
* 0336-019	-01 56 16.89660	*-01 46 35.80420	-01 43 58.40231	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0336-019    147.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mbtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Tue 10 Dec 2013    Day 344 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

02 00 00	1055+018	08 30 07	29.9	135.7	-2.5		-24.8	0	0	02 00 00
02 14 30	---	08 44 40	31.4	139.6	-2.2		-22.9	870	28	02 00 01
02 15 00	1055+018	08 45 10	31.4	139.7	-2.2		-22.9	24	28	02 15 00
02 29 30	---	08 59 42	32.8	143.7	-2.0		-20.8	870	56	02 15 01
02 30 00	1055+018	09 00 12	32.8	143.8	-2.0		-20.8	24	56	02 30 00
02 44 30	---	09 14 45	34.0	147.9	-1.7		-18.6	870	84	02 30 01
02 45 00	1055+018	09 15 15	34.1	148.1	-1.7		-18.5	24	84	02 45 00
03 00 00	---	09 30 17	35.2	152.4	-1.5		-16.1	900	112	02 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mb\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1058+0133	10 55 55.313729	* 10 58 29.605207	10 59 13.289696	0.10
* 1055+018	01 50 03.53709	* 01 33 58.82359	01 29 24.64892	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1055+018    92.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01mctr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early   Disk   TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Tue 10 Dec 2013 Day 344 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 632.00 632.00 632.00 632.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

05 00 00	1123+264	11 30 37	63.0	182.0	0.1		1.3	0	0	05 00 00
05 14 30	---	11 45 09	62.8	189.1	0.3		6.1	870	28	05 00 01
05 15 00	1123+264	11 45 39	62.8	189.4	0.3		6.2	23	28	05 15 00
05 29 30	---	12 00 12	62.3	196.4	0.6		10.9	870	56	05 15 01
05 30 00	1123+264	12 00 42	62.3	196.6	0.6		11.0	23	56	05 30 00
05 44 30	---	12 15 14	61.5	203.3	0.8		15.4	870	84	05 30 01
05 45 00	1123+264	12 15 44	61.5	203.6	0.8		15.5	23	84	05 45 00
06 00 00	---	12 30 47	60.5	210.2	1.1		19.7	900	112	05 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mc\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1125+2610	11 23 14.869303	* 11 25 53.711923	11 26 38.209523	0.11
* 1123+264	26 26 49.99097	* 26 10 19.97857	26 05 31.01939	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1123+264    96.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mdtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Tue 10 Dec 2013    Day 344 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

08 00 00	0851+202	14 31 06	19.5	277.7	5.6		39.3	0	0	08 00 00
08 14 30	---	14 45 39	17.4	280.5	5.8		38.9	870	28	08 00 01
08 15 00	0851+202	14 46 09	17.3	280.5	5.8		38.9	24	28	08 15 00
08 29 30	---	15 00 41	15.2	283.3	6.1		38.5	870	56	08 15 01
08 30 00	0851+202	15 01 11	15.1	283.4	6.1		38.4	24	56	08 30 00
08 44 30	---	15 15 44	13.0	286.2	6.3		37.9	870	84	08 30 01
08 45 00	0851+202	15 16 14	12.9	286.3	6.3		37.8	24	84	08 45 00
09 00 00	---	15 31 16	10.8	289.1	6.6		37.1	900	112	08 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01md\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0854+2006	08 51 57.250618	* 08 54 48.874930	08 55 38.035849	0.11
* 0851+202	20 17 58.41733	* 20 06 30.64078	20 03 04.58172	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0851+202    127.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01metr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )                                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time.    Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source          Start / Stop          Early   Disk   TPStart
Stop UT   LST      EL   AZ   HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Tue 10 Dec 2013    Day 344 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 636.00 636.00 636.00 636.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

Start UT	Source	LST	EL	AZ	HA	UP	ParA	Early Dwell	Disk GBytes	TPStart SYNC
20 00 00	1642+690	02 33 05	34.3	-13.4	9.9		22.8	0	0	20 00 00
20 14 30	---	02 47 37	33.8	-12.0	10.1		20.2	870	28	20 00 01
20 15 00	1642+690	02 48 07	33.8	-11.9	10.1		20.2	24	28	20 15 00
20 29 30	---	03 02 40	33.4	-10.4	10.3		17.6	870	56	20 15 01
20 30 00	1642+690	03 03 10	33.4	-10.4	10.4		17.5	24	56	20 30 00
20 44 30	---	03 17 42	33.0	-8.9	10.6		14.9	870	84	20 30 01
20 45 00	1642+690	03 18 12	33.0	-8.8	10.6		14.8	24	84	20 45 00
20 59 30	---	03 32 44	32.7	-7.3	10.8		12.3	870	111	20 45 01
21 00 00	1642+690	03 33 15	32.7	-7.3	10.9		12.2	24	111	21 00 00
21 14 30	---	03 47 47	32.4	-5.7	11.1		9.6	870	139	21 00 01
21 15 00	1642+690	03 48 17	32.4	-5.7	11.1		9.5	24	139	21 15 00
21 29 30	---	04 02 49	32.2	-4.1	11.3		6.9	870	167	21 15 01
21 30 00	1642+690	04 03 19	32.2	-4.1	11.4		6.8	24	167	21 30 00
21 40 00	---	04 13 21	32.1	-3.0	11.5		5.1	600	186	21 30 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01me\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor:    1.00



Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J1642+6856	16 42 18.064877	* 16 42 07.848507	16 42 00.843536	0.28
* 1642+690	69 02 13.21709	* 68 56 39.75637	68 55 10.18811	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
FAKERA      111.8
1642+690    92.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg

```

**rk01mftr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP   ParA Dwell  GBytes  SYNC
-----
```

--- Tue 10 Dec 2013    Day 344 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 636.00 636.00 636.00 636.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

22 30 00	0307+380	05 03 29	65.8	243.6	1.9	43.3	0	0	22 30 00
22 44 30	---	05 18 02	63.8	248.4	2.1	45.4	870	28	22 30 01
22 45 00	0307+380	05 18 32	63.7	248.6	2.1	45.4	24	28	22 45 00
22 59 30	---	05 33 04	61.7	252.9	2.4	47.0	870	56	22 45 01
23 00 00	0307+380	05 33 34	61.6	253.0	2.4	47.0	24	56	23 00 00
23 14 30	---	05 48 07	59.5	256.9	2.6	48.2	870	84	23 00 01
23 15 00	0307+380	05 48 37	59.4	257.1	2.6	48.2	24	84	23 15 00
23 29 30	---	06 03 09	57.3	260.6	2.9	49.0	870	111	23 15 01
23 30 00	0307+380	06 03 39	57.2	260.8	2.9	49.0	24	111	23 30 00
23 44 30	---	06 18 12	55.0	264.1	3.1	49.6	870	139	23 30 01
23 45 00	0307+380	06 18 42	54.9	264.2	3.1	49.6	24	139	23 45 00
23 59 59	---	06 33 44	52.7	267.4	3.4	49.9	899	168	23 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01mf\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0310+3814	03 07 37.554068	* 03 10 49.879926	03 11 46.147692	0.13
* 0307+380	38 03 34.47086	* 38 14 53.83785	38 18 06.12939	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0307+380    150.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  1  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  1

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0745-0044	07 43 21.047496	* 07 45 54.082323	07 46 38.436910	0.10
* 0743-006	-00 36 55.80442	*-00 44 17.53994	-00 46 29.72482	0.11

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0743-006    135.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mhtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Wed 11 Dec 2013    Day 345 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

07 00 00	1823+689	13 34 53	54.3	35.9	-4.8		-78.6	0	0	07 00 00
07 14 30	---	13 49 26	55.6	36.2	-4.6		-81.7	870	28	07 00 01
07 15 00	1823+689	13 49 56	55.7	36.3	-4.6		-81.8	24	28	07 15 00
07 29 30	---	14 04 28	57.0	36.5	-4.3		-85.0	870	56	07 15 01
07 30 00	1823+689	14 04 58	57.0	36.5	-4.3		-85.1	24	56	07 30 00
07 44 30	---	14 19 30	58.3	36.7	-4.1		-88.4	870	84	07 30 01
07 45 00	1823+689	14 20 01	58.4	36.7	-4.1		-88.5	24	84	07 45 00
08 00 00	---	14 35 03	59.7	36.7	-3.8		-92.0	900	112	07 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mh\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=   2300.00   2300.00   2300.00   2300.00
Net SB=           L           L           U           U
IF SB =          L           L           L           L
Pol.  =          RCP          LCP          RCP          LCP
BBC   =           1           2           1           2
BBC SB=           U           U           L           L
IF    =           C           A           C           A

```

The following frequency sets based on these setups were used.

```

Frequency Set:   6   Setup file default.   Used pcal sets:   1
LO sum=   1668.00  1668.00  1668.00  1668.00
BBC fr=    632.00  632.00  632.00  632.00
Bandwd=    16.00  16.00  16.00  16.00
Matching frequency sets:   6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:   1   PCAL = 1MHZ
PCALXB1=   S1   S3   S1   S3   S1   S2   S3   S4
PCALXB2=   S2   S4   S2   S4   M1   M2   M3   M4
PCALFR1=  1000 1000 13000 13000   0   0   0   0
PCALFR2=  1000 1000 13000 13000   0   0   0   0

```

Track assignments are:

```

track1=   2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1823+689	18 23 51.691232	* 18 23 32.853904	18 23 23.881887	0.00
J1823+6857	68 56 09.10322	* 68 57 52.61250	68 58 35.20557	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source           Sun distance (deg)
1823+689         92.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz         117. deg
610 MHz         81. deg
1.6 GHz         45. deg
2.3 GHz         36. deg
5.0 GHz         23. deg
8.4 GHz         17. deg
15.0 GHz        12. deg
22.0 GHz         9. deg
43.0 GHz         6. deg

```

**rk01mitr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Wed 11 Dec 2013    Day 345 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

21 00 00	0316+413	03 37 11	78.1	195.1	0.3	12.1	0	0	21 00 00
21 14 30	---	03 51 44	77.3	207.4	0.5	21.7	870	28	21 00 01
21 15 00	0316+413	03 52 14	77.3	207.8	0.5	22.0	23	28	21 15 00
21 29 30	---	04 06 46	76.1	218.4	0.8	29.9	870	56	21 15 01
21 30 00	0316+413	04 07 16	76.1	218.8	0.8	30.2	23	56	21 30 00
21 44 30	---	04 21 48	74.6	227.8	1.0	36.4	870	84	21 30 01
21 45 00	0316+413	04 22 19	74.5	228.0	1.0	36.6	23	84	21 45 00
22 00 00	---	04 37 21	72.7	235.8	1.3	41.6	900	112	21 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mi\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0319+4130	03 16 29.567260	* 03 19 48.160090	03 20 46.339160	1.30
* 0316+413	41 19 51.91699	* 41 30 42.10412	41 33 45.86439	2.72

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0316+413    149.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```



```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP      LCP      RCP      LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  7  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  7

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1159+2914	11 56 57.786211	* 11 59 31.833912	12 00 14.759336	0.11
* 1156+295	29 31 25.73868	* 29 14 43.82678	29 09 51.76793	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
FAKERA	112.0
1156+295	92.3

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg

**rk01mkr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
```

--- Thu 12 Dec 2013 Day 346 ---

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:  636.00  636.00  636.00  636.00
Next scan bandwidths:  16.00  16.00  16.00  16.00

04 00 00 0805-077    10 38 20 21.3 220.2 2.5    23.0    0    0    04 00 00
04 14 30 ---          10 52 52 19.8 223.7 2.7    24.7   870    28    04 00 01

04 15 00 0805-077    10 53 23 19.8 223.8 2.7    24.8    24    28    04 15 00
04 29 30 ---          11 07 55 18.2 227.2 3.0    26.4   870    56    04 15 01

04 30 00 0805-077    11 08 25 18.2 227.3 3.0    26.5    24    56    04 30 00
04 44 30 ---          11 22 57 16.5 230.7 3.2    28.0   870    84    04 30 01

04 45 00 0805-077    11 23 28 16.5 230.8 3.2    28.0    24    84    04 45 00
05 00 00 ---          11 38 30 14.7 234.2 3.5    29.5   900   112    04 45 01
```

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01mk\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

```
Setup group:    1                      Station: TORUN                      Total bit rate:    256
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000
Number of channels: 4                      DBE type:                      Speedup factor:    1.00
```

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1   S3   S1   S3   S1   S2   S3   S4
PCALXB2=  S2   S4   S2   S4   M1   M2   M3   M4
PCALFR1= 1000 1000 13000 13000   0   0   0   0
PCALFR2= 1000 1000 13000 13000   0   0   0   0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0808-0751	08 05 49.552832	* 08 08 15.536033	08 08 57.885249	0.11
* 0805-077	-07 42 22.40697	*-07 51 09.88655	-07 53 44.24929	0.13

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0805-077    127.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01mltr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Thu 12 Dec 2013 Day 346 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0106+612.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01ml\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP      LCP      RCP      LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0109+6133	01 06 36.621965	* 01 09 46.344482	01 10 42.573238	0.49
* 0106+612	61 17 32.64077	* 61 33 30.45526	61 38 15.12077	0.11

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
FAKERA	112.1
0106+612	123.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg

**rk01mmtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Thu 12 Dec 2013    Day 346 ---

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00						
Next BBC frequencies:	636.00	636.00	636.00	636.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
21 00 00	0212+735	03 41 08	67.6	-14.8	1.4		146.5	0	0	21 00 00
21 14 30	---	03 55 40	67.0	-16.9	1.6		141.1	870	28	21 00 01
21 15 00	0212+735	03 56 10	66.9	-16.9	1.6		140.9	24	28	21 15 00
21 29 30	---	04 10 43	66.3	-18.8	1.9		135.6	870	56	21 15 01
21 30 00	0212+735	04 11 13	66.2	-18.9	1.9		135.5	24	56	21 30 00
21 44 30	---	04 25 45	65.5	-20.6	2.1		130.4	870	84	21 30 01
21 45 00	0212+735	04 26 15	65.5	-20.6	2.1		130.3	24	84	21 45 00
22 00 00	---	04 41 18	64.7	-22.2	2.4		125.3	900	112	21 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01mm\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:	1	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0212+735	02 12 49.921893	* 02 17 30.813373	02 18 56.201292	0.00
J0217+7349	73 35 40.08547	* 73 49 32.62180	73 53 36.38599	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0212+735    123.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mnr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Fri 13 Dec 2013    Day 347 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 636.00 636.00 636.00 636.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

00 00 00	0834-201	06 41 37	12.4	152.3	-1.9	-17.3	0	0	00 00 00
00 14 30	---	06 56 10	13.4	155.7	-1.7	-15.3	870	28	00 00 01
00 15 00	0834-201	06 56 40	13.4	155.8	-1.7	-15.2	24	28	00 15 00
00 29 30	---	07 11 12	14.2	159.2	-1.4	-13.1	870	56	00 15 01
00 30 00	0834-201	07 11 42	14.3	159.3	-1.4	-13.1	24	56	00 30 00
00 44 30	---	07 26 15	15.0	162.8	-1.2	-10.9	870	84	00 30 01
00 45 00	0834-201	07 26 45	15.0	162.9	-1.2	-10.9	24	84	00 45 00
01 00 00	---	07 41 47	15.6	166.5	-0.9	-8.6	900	112	00 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01mn\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP    LCP    RCP    LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0836-2016	08 34 24.601685	* 08 36 39.215245	08 37 18.402583	0.11
* 0834-201	-20 06 30.40854	*-20 16 59.50423	-20 19 58.55379	0.11

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0834-201    115.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01motr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time.    Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Fri 13 Dec 2013    Day 347 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

04 00 00	0821+394	10 42 17	63.0	253.0	2.3		47.8	0	0	04 00 00
04 14 30	---	10 56 49	60.9	256.9	2.5		49.0	870	28	04 00 01
04 15 00	0821+394	10 57 19	60.8	257.1	2.5		49.1	24	28	04 15 00
04 29 30	---	11 11 52	58.7	260.7	2.8		49.9	870	56	04 15 01
04 30 00	0821+394	11 12 22	58.6	260.8	2.8		49.9	24	56	04 30 00
04 44 30	---	11 26 54	56.4	264.2	3.0		50.5	870	84	04 30 01
04 45 00	0821+394	11 27 24	56.3	264.3	3.0		50.5	24	84	04 45 00
05 00 00	---	11 42 27	54.1	267.5	3.3		50.8	900	112	04 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mo\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0824+3916	08 21 37.310231	* 08 24 55.483856	08 25 52.408014	0.13
* 0821+394	39 26 28.25687	* 39 16 41.90401	39 13 39.25637	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0821+394    138.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used pcal sets: 1
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1055+018	10 55 55.313729	* 10 58 29.605207	10 59 13.380905	0.00
J1058+0133	01 50 03.53709	* 01 33 58.82359	01 29 24.04101	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1055+018    96.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```





```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 3 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J0136+4751	01 33 55.103060	* 01 36 58.594805	01 37 52.317221	0.15
* 0133+476	47 36 12.85363	* 47 51 29.10002	47 55 57.78012	0.10

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0133+476    128.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01mrtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:        +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Sat 14 Dec 2013    Day 348 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 632.00 632.00 632.00 632.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

01 00 00	1036+054	07 45 44	30.4	127.4	-2.9	-28.6	0	0	01 00 00
01 14 30	---	08 00 16	32.1	131.2	-2.7	-27.0	870	28	01 00 01
01 15 00	1036+054	08 00 46	32.1	131.3	-2.6	-26.9	24	28	01 15 00
01 29 30	---	08 15 19	33.7	135.2	-2.4	-25.1	870	56	01 15 01
01 30 00	1036+054	08 15 49	33.8	135.3	-2.4	-25.1	24	56	01 30 00
01 44 30	---	08 30 21	35.2	139.3	-2.2	-23.1	870	84	01 30 01
01 45 00	1036+054	08 30 51	35.3	139.5	-2.1	-23.1	24	84	01 45 00
02 00 00	---	08 45 54	36.7	143.8	-1.9	-20.9	900	112	01 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mr\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
J1038+0512	10 36 10.827228	* 10 38 46.779881	10 39 31.123775	0.12
* 1036+054	05 28 06.89952	* 05 12 29.08645	05 07 59.62118	0.17

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1036+054    102.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01mstr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: K-band, dual-pol

Schedule for TORUN                      (Code Tr )                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
```

--- Sat 14 Dec 2013    Day 348 ---

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00  
 Next BBC frequencies:    736.00    736.00    736.00    736.00  
 Next scan bandwidths:    16.00    16.00    16.00    16.00

05 00 00	1038+064	11 46 23	41.2	201.5	1.1	12.8	0	0	05 00 00
05 14 30	---	12 00 55	40.3	206.1	1.3	15.4	870	28	05 00 01
05 15 00	1038+064	12 01 26	40.3	206.3	1.3	15.5	24	28	05 15 00
05 29 30	---	12 15 58	39.2	210.8	1.6	18.0	870	56	05 15 01
05 30 00	1038+064	12 16 28	39.2	210.9	1.6	18.1	24	56	05 30 00
05 44 30	---	12 31 00	38.0	215.3	1.8	20.4	870	84	05 30 01
05 45 00	1038+064	12 31 30	38.0	215.4	1.8	20.5	24	84	05 45 00
06 00 00	---	12 46 33	36.6	219.8	2.1	22.7	900	112	05 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra1cm2.set

Matching groups in ./rk01ms\_freq.dat:

tr1cm                      Values from Bob Campbell by email (23-04-2013)

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  22236.00 22236.00 22236.00 22236.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1041+0610	10 38 40.885155	* 10 41 17.162502	10 42 01.578589	0.10
* 1038+064	06 25 58.53276	* 06 10 16.92354	06 05 46.10527	0.11

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1038+064    102.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mttr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Sat 14 Dec 2013    Day 348 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

08 00 00	1005+066	14 46 53	17.2	257.2	4.6		36.1	0	0	08 00 00
08 14 30	---	15 01 25	15.1	260.2	4.9		36.5	870	28	08 00 01
08 15 00	1005+066	15 01 55	15.0	260.3	4.9		36.5	24	28	08 15 00
08 29 30	---	15 16 27	12.9	263.3	5.1		36.9	870	56	08 15 01
08 30 00	1005+066	15 16 58	12.8	263.4	5.1		36.9	24	56	08 30 00
08 44 30	---	15 31 30	10.6	266.3	5.4		37.1	870	84	08 30 01
08 45 00	1005+066	15 32 00	10.5	266.4	5.4		37.1	24	84	08 45 00
09 00 00	---	15 47 03	8.3	269.5	5.6		37.2	900	112	08 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mt\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
J1008+0621	10 05 23.466063	* 10 08 00.816156	10 08 45.730218	0.12
* 1005+066	06 36 03.30799	* 06 21 21.21595	06 17 05.86890	0.17

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1005+066    110.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mutr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 16 Dec 2013    Day 350 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

01 00 00	0059+581	07 53 37	37.9	-40.3	6.8		48.0	0	0	01 00 00
01 14 30	---	08 08 09	36.5	-38.6	7.1		45.8	870	28	01 00 01
01 15 00	0059+581	08 08 39	36.4	-38.6	7.1		45.8	24	28	01 15 00
01 29 30	---	08 23 12	35.1	-36.9	7.3		43.6	870	56	01 15 01
01 30 00	0059+581	08 23 42	35.0	-36.9	7.3		43.6	24	56	01 30 00
01 44 30	---	08 38 14	33.8	-35.2	7.6		41.4	870	84	01 30 01
01 45 00	0059+581	08 38 44	33.7	-35.1	7.6		41.4	24	84	01 45 00
02 00 00	---	08 53 47	32.5	-33.3	7.8		39.1	900	112	01 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01mu\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP    LCP    RCP    LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0059+581	00 59 43.470970	* 01 02 45.762378	01 03 39.451913	0.00
J0102+5824	58 08 04.84745	* 58 24 11.13660	58 28 58.68366	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0059+581    121.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mvtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 16 Dec 2013    Day 350 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

04 00 00	0133+476	10 54 06	16.8	-27.3	9.3		24.3	0	0	04 00 00
04 14 30	---	11 08 39	15.9	-25.0	9.5		22.2	870	28	04 00 01
04 15 00	0133+476	11 09 09	15.8	-24.9	9.5		22.2	24	28	04 15 00
04 29 30	---	11 23 41	15.0	-22.5	9.8		20.1	870	56	04 15 01
04 30 00	0133+476	11 24 11	14.9	-22.5	9.8		20.0	24	56	04 30 00
04 44 30	---	11 38 44	14.1	-20.1	10.0		17.9	870	84	04 30 01
04 45 00	0133+476	11 39 14	14.1	-20.0	10.0		17.8	24	84	04 45 00
05 00 00	---	11 54 16	13.4	-17.5	10.3		15.6	900	112	04 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mv\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 3 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0133+476	01 33 55.103060	* 01 36 58.594805	01 37 52.293497	0.00
J0136+4751	47 36 12.85365	* 47 51 29.10004	47 55 57.99013	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0133+476    127.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01mwtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 16 Dec 2013    Day 350 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00							
Next BBC frequencies:	632.00	632.00	632.00	632.00							
Next scan bandwidths:	16.00	16.00	16.00	16.00							
06 30 00	1055+018	13 24 31	30.3	223.3	2.4		24.3	0	0	06 30 00	
06 44 30	---	13 39 03	28.7	227.1	2.7		26.1	870	28	06 30 01	
06 45 00	1055+018	13 39 33	28.7	227.2	2.7		26.2	24	28	06 45 00	
06 59 30	---	13 54 06	27.0	230.9	2.9		27.8	870	56	06 45 01	
07 00 00	1055+018	13 54 36	27.0	231.0	2.9		27.8	24	56	07 00 00	
07 14 30	---	14 09 08	25.2	234.5	3.2		29.3	870	84	07 00 01	
07 15 00	1055+018	14 09 38	25.2	234.7	3.2		29.3	24	84	07 15 00	
07 30 00	---	14 24 41	23.3	238.2	3.4		30.7	900	112	07 15 01	

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mw\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	5	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

```

1st LO=   2300.00   2300.00   2300.00   2300.00
Net SB=       L       L       U       U
IF SB =       L       L       L       L
Pol.  =       RCP      LCP      RCP      LCP
BBC   =         1         2         1         2
BBC SB=        U        U        L        L
IF    =         C         A         C         A

```

The following frequency sets based on these setups were used.

```

Frequency Set:   3   Setup file default.   Used pcal sets:   1
LO sum=   1668.00  1668.00  1668.00  1668.00
BBC fr=    632.00   632.00   632.00   632.00
Bandwd=    16.00   16.00   16.00   16.00
Matching frequency sets:   3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:   1   PCAL = 1MHZ
PCALXB1=  S1   S3   S1   S3   S1   S2   S3   S4
PCALXB2=  S2   S4   S2   S4   M1   M2   M3   M4
PCALFR1= 1000 1000 13000 13000   0   0   0   0
PCALFR2= 1000 1000 13000 13000   0   0   0   0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1055+018	10 55 55.313729	* 10 58 29.605207	10 59 13.482696	0.00
J1058+0133	01 50 03.53709	* 01 33 58.82359	01 29 23.35974	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1055+018    99.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01mxtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 16 Dec 2013    Day 350 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

09 00 00	1156+295	15 54 56	41.5	264.6	3.9	43.2	0	0	09 00 00
09 14 30	---	16 09 28	39.3	267.6	4.2	43.4	870	28	09 00 01
09 15 00	1156+295	16 09 58	39.2	267.7	4.2	43.4	24	28	09 15 00
09 29 30	---	16 24 30	37.0	270.7	4.4	43.4	870	56	09 15 01
09 30 00	1156+295	16 25 01	37.0	270.8	4.4	43.4	24	56	09 30 00
09 44 30	---	16 39 33	34.8	273.6	4.7	43.3	870	84	09 30 01
09 45 00	1156+295	16 40 03	34.7	273.7	4.7	43.3	24	84	09 45 00
10 00 00	---	16 55 05	32.5	276.6	4.9	43.1	900	112	09 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01mx\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP      LCP      RCP      LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1156+295	11 56 57.786212	* 11 59 31.833913	12 00 14.910572	0.00
J1159+2914	29 31 25.73868	* 29 14 43.82678	29 09 50.81058	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1156+295    96.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```





```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00  636.00  636.00  636.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0322+222	03 22 41.745721	* 03 25 36.814357	03 26 27.820605	0.00
J0325+2224	22 13 30.30088	* 22 24 00.36553	22 26 55.51901	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0322+222    149.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01mztr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 16 Dec 2013    Day 350 ---

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00						
Next BBC frequencies:	636.00	636.00	636.00	636.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
22 00 00	0336-019	04 57 04	32.9	203.0	1.3		13.6	0	0	22 00 00
22 14 30	---	05 11 36	31.9	207.2	1.5		15.9	870	28	22 00 01
22 15 00	0336-019	05 12 06	31.9	207.3	1.5		16.0	24	28	22 15 00
22 29 30	---	05 26 39	30.8	211.4	1.8		18.2	870	56	22 15 01
22 30 00	0336-019	05 27 09	30.8	211.5	1.8		18.3	24	56	22 30 00
22 44 30	---	05 41 41	29.6	215.5	2.0		20.4	870	84	22 30 01
22 45 00	0336-019	05 42 11	29.5	215.6	2.0		20.5	24	84	22 45 00
23 00 00	---	05 57 14	28.2	219.6	2.3		22.5	900	112	22 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01mz\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:	1	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP    LCP    RCP    LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0336-019	03 36 58.953148	* 03 39 30.937788	03 40 15.164093	0.00
J0339-0146	-01 56 16.89659	*-01 46 35.80419	-01 43 59.40221	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0336-019    141.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01natr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Tue 17 Dec 2013 Day 351 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for scans on Dec 17, 2013.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01na\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 6 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 7

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1239+376	12 39 45.151329	* 12 42 09.812390	12 42 49.820512	0.00
J1242+3720	37 36 31.63208	* 37 20 05.69271	37 15 16.79082	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1239+376    92.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

GNPAS06: Warning: 01 LO information missing for EFLSBERG

rk01nbtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Tue 17 Dec 2013 Day 351 ---

Table with columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Rows include scan frequencies, BBC frequencies, bandwidths, and observation logs for 1045-188.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01nb\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 6 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1045-188	10 45 40.093264	* 10 48 06.620604	10 48 48.652689	0.00
J1048-1909	-18 53 44.08720	*-19 09 35.72683	-19 14 00.93963	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1045-188    93.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01nctr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Tue 17 Dec 2013    Day 351 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00							
Next BBC frequencies:	632.00	632.00	632.00	632.00							
Next scan bandwidths:	16.00	16.00	16.00	16.00							
07 00 00	1642+690	13 58 32	65.4	34.5	-2.7		-109.1	0	0	07 00 00	
07 14 30	---	14 13 05	66.6	33.3	-2.5		-113.6	870	28	07 00 01	
07 15 00	1642+690	14 13 35	66.7	33.3	-2.5		-113.7	24	28	07 15 00	
07 29 30	---	14 28 07	67.9	31.8	-2.2		-118.5	870	56	07 15 01	
07 30 00	1642+690	14 28 37	67.9	31.7	-2.2		-118.7	24	56	07 30 00	
07 44 30	---	14 43 10	69.0	29.9	-2.0		-123.8	870	84	07 30 01	
07 45 00	1642+690	14 43 40	69.1	29.8	-2.0		-124.0	24	84	07 45 00	
08 00 00	---	14 58 42	70.1	27.5	-1.7		-129.6	900	112	07 45 01	

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01nc\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	6	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 7

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1642+690	16 42 18.064877	* 16 42 07.848507	16 42 00.903789	0.00
J1642+6856	69 02 13.21708	* 68 56 39.75636	68 55 07.95366	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1642+690    92.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01ndtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Tue 17 Dec 2013 Day 351 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 636.00 636.00 636.00 636.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Contains scan schedule data for 17 Dec 2013.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra6cm2.set

Matching groups in ./rk01nd\_freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0003-066	00 03 40.288767	* 00 06 13.892888	00 06 57.427404	0.00
J0006-0623	-06 40 17.29998	*-06 23 35.33541	-06 18 53.73725	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
FAKERA	112.9
0003-066	93.0

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg

**rk01netr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: K-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Tue 17 Dec 2013    Day 351 ---

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

22 00 00	0420-014	05 01 00	35.0	191.3	0.6		6.8	0	0	22 00 00
22 14 30	---	05 15 33	34.5	195.7	0.9		9.4	870	28	22 00 01
22 15 00	0420-014	05 16 03	34.5	195.9	0.9		9.4	24	28	22 15 00
22 29 30	---	05 30 35	33.8	200.2	1.1		12.0	870	56	22 15 01
22 30 00	0420-014	05 31 05	33.8	200.3	1.1		12.0	24	56	22 30 00
22 44 30	---	05 45 38	33.0	204.6	1.4		14.5	870	84	22 30 01
22 45 00	0420-014	05 46 08	32.9	204.7	1.4		14.5	24	84	22 45 00
23 00 00	---	06 01 10	31.9	209.0	1.6		16.9	900	112	22 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra1cm2.set

Matching groups in ./rk01ne\_freq.dat:

tr1cm                      Values from Bob Campbell by email (23-04-2013)

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used pcal sets: 1
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0420-014	04 20 43.539850	* 04 23 15.800727	04 24 00.225678	0.00
J0423-0120	-01 27 28.70027	*-01 20 33.06557	-01 18 44.41498	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0420-014    148.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01nftr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Wed 18 Dec 2013 Day 352 ---

----- C-band VLBI scans -----

Table with columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. Rows include scan frequencies, BBC frequencies, bandwidths, and scan details for 0322+222.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra6cm2.set

Matching groups in ./rk01nf\_freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0322+222	03 22 41.745721	* 03 25 36.814357	03 26 27.825079	0.00
J0325+2224	22 13 30.30088	* 22 24 00.36553	22 26 55.55216	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
FAKERA	112.9
0322+222	148.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg





```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0808+019	08 08 51.138133	* 08 11 26.707316	08 12 11.842737	0.00
J0811+0146	01 55 51.17945	* 01 46 52.22014	01 44 11.08197	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0808+019    138.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01nhtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Wed 18 Dec 2013    Day 352 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

07 00 00	1239+376	14 02 29	69.0	229.1	1.3		34.8	0	0	07 00 00
07 14 30	---	14 17 01	67.3	235.3	1.6		38.3	870	28	07 00 01
07 15 00	1239+376	14 17 31	67.2	235.5	1.6		38.5	24	28	07 15 00
07 29 30	---	14 32 04	65.3	241.0	1.8		41.3	870	56	07 15 01
07 30 00	1239+376	14 32 34	65.3	241.2	1.8		41.4	24	56	07 30 00
07 44 30	---	14 47 06	63.3	246.1	2.1		43.6	870	84	07 30 01
07 45 00	1239+376	14 47 36	63.2	246.3	2.1		43.7	24	84	07 45 00
08 00 00	---	15 02 39	61.1	250.9	2.3		45.5	900	112	07 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01nh\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1239+376	12 39 45.151329	* 12 42 09.812390	12 42 49.871046	0.00
J1242+3720	37 36 31.63208	* 37 20 05.69271	37 15 16.46553	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1239+376    93.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Wed 18 Dec 2013    Day 352 ---										
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00										
Next BBC frequencies: 636.00 636.00 636.00 636.00										
Next scan bandwidths: 16.00 16.00 16.00 16.00										
20 00 00	0333+321	03 04 37	68.4	160.9	-0.5		-13.5	0	0	20 00 00
20 14 30	---	03 19 10	69.0	169.2	-0.3		-7.7	870	28	20 00 01
20 15 00	0333+321	03 19 40	69.0	169.5	-0.3		-7.5	23	28	20 15 00
20 29 30	---	03 34 12	69.3	178.1	-0.1		-1.4	870	56	20 15 01
20 30 00	0333+321	03 34 42	69.3	178.4	-0.0		-1.2	23	56	20 30 00
20 44 30	---	03 49 14	69.1	187.0	0.2		5.0	870	84	20 30 01
20 45 00	0333+321	03 49 45	69.1	187.3	0.2		5.2	23	84	20 45 00
21 00 00	---	04 04 47	68.7	196.1	0.5		11.3	900	112	20 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
 Setup file: ra6cm2.set

Matching groups in ./rk01ni\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0333+321	03 33 22.404692	* 03 36 30.107611	03 37 24.947046	0.00
J0336+3218	32 08 36.66043	* 32 18 29.34220	32 21 14.94309	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0333+321    150.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0422+004	04 22 12.515417	* 04 24 46.842063	04 25 31.871007	0.00
J0424+0036	00 29 16.67918	* 00 36 06.32936	00 37 53.38182	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0422+004    149.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01nktr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Thu 19 Dec 2013    Day 353 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

03 00 00	1034-293	10 05 46	7.0	173.0	-0.5		-4.9	0	0	03 00 00
03 14 30	---	10 20 19	7.2	176.1	-0.3		-2.7	870	28	03 00 01
03 15 00	1034-293	10 20 49	7.2	176.2	-0.3		-2.6	24	28	03 15 00
03 29 30	---	10 35 21	7.3	179.4	-0.0		-0.4	870	56	03 15 01
03 30 00	1034-293	10 35 51	7.3	179.5	-0.0		-0.3	24	56	03 30 00
03 44 30	---	10 50 23	7.2	182.7	0.2		1.9	870	84	03 30 01
03 45 00	1034-293	10 50 54	7.2	182.8	0.2		2.0	24	84	03 45 00
04 00 00	---	11 05 56	7.0	186.1	0.5		4.2	900	112	03 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01nk\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP    LCP    RCP    LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1034-293	10 34 55.824626	* 10 37 16.079738	10 37 56.640463	0.00
J1037-2934	-29 18 26.97260	*-29 34 02.81349	-29 38 21.31277	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1034-293    92.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01nltr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Thu 19 Dec 2013 Day 353 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 636.00 636.00 636.00 636.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for multiple scans.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra6cm2.set

Matching groups in ./rk01nl\_freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0827+243	08 27 54.398594	* 08 30 52.086193	08 31 43.355193	0.00
J0830+2410	24 21 07.66367	* 24 10 59.82026	24 07 54.10578	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0827+243    142.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01nmtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
```

--- Thu 19 Dec 2013    Day 353 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 636.00 636.00 636.00 636.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

20 00 00	0340+362	03 08 34	72.2	155.8	-0.6	-17.8	0	0	20 00 00
20 14 30	---	03 23 06	72.9	165.3	-0.4	-10.9	870	28	20 00 01
20 15 00	0340+362	03 23 36	72.9	165.6	-0.3	-10.7	23	28	20 15 00
20 29 30	---	03 38 09	73.3	175.6	-0.1	-3.3	870	56	20 15 01
20 30 00	0340+362	03 38 39	73.3	175.9	-0.1	-3.0	23	56	20 30 00
20 44 30	---	03 53 11	73.2	186.1	0.1	4.6	870	84	20 30 01
20 45 00	0340+362	03 53 41	73.2	186.5	0.2	4.8	23	84	20 45 00
21 00 00	---	04 08 44	72.8	196.7	0.4	12.4	900	112	20 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01nm\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error
	(B1950)	(J2000)		(mas)
* 0340+362	03 40 14.791324	* 03 43 28.952413	03 44 25.755429	0.00
J0343+3622	36 12 44.44799	* 36 22 12.42969	36 24 51.22694	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0340+362    149.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01nntr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Thu 19 Dec 2013 Day 353 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0420+022.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01nn\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0420+022	04 20 16.064039	* 04 22 52.214653	04 23 37.770886	0.00
J0422+0219	02 12 29.61654	* 02 19 26.93072	02 21 16.32125	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0420+022    149.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01notr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.

Early: Seconds between end of slew and start.    Dwell: On source seconds.

Disk: GBytes recorded to this point.

TPStart: Recording start time.    Frequencies are LO sum (band edge).

SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Fri 20 Dec 2013    Day 354 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    636.00    636.00    636.00    636.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

03 00 00	2010+723	10 09 43	37.4	10.9-10.0	-22.2	0	0	03 00 00
03 14 30	---	10 24 15	37.8	12.1 -9.8	-24.9	870	28	03 00 01
03 15 00	2010+723	10 24 45	37.8	12.2 -9.7	-25.0	25	28	03 15 00
03 29 30	---	10 39 18	38.3	13.4 -9.5	-27.7	870	56	03 15 01
03 30 00	2010+723	10 39 48	38.3	13.5 -9.5	-27.8	25	56	03 30 00
03 44 30	---	10 54 20	38.8	14.7 -9.3	-30.5	870	84	03 30 01
03 45 00	2010+723	10 54 50	38.9	14.7 -9.2	-30.6	25	84	03 45 00
03 59 30	---	11 09 22	39.4	15.9 -9.0	-33.3	870	111	03 45 01
04 00 00	2010+723	11 09 53	39.5	16.0 -9.0	-33.4	25	111	04 00 00
04 14 30	---	11 24 25	40.1	17.1 -8.8	-36.1	870	139	04 00 01
04 15 00	2010+723	11 24 55	40.1	17.2 -8.7	-36.2	25	139	04 15 00
04 29 30	---	11 39 27	40.8	18.3 -8.5	-38.9	870	167	04 15 01
04 30 00	2010+723	11 39 57	40.8	18.3 -8.5	-39.0	25	167	04 30 00
04 40 00	---	11 49 59	41.3	19.1 -8.3	-40.9	600	186	04 30 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01no\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate:    32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00



Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP      LCP      RCP      LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00  636.00  636.00  636.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 2010+723	20 10 16.209319	* 20 09 52.303862	20 09 42.266953	0.00
J2009+7229	72 20 20.74133	* 72 29 19.35101	72 32 09.70992	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
2010+723    98.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg

```

**rk01nptr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Fri 20 Dec 2013    Day 354 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
05 20 00	1101+384	12 30 06	69.1	232.9	1.4	37.5	0	0	05 20 00	
05 34 30	---	12 44 38	67.3	238.8	1.7	40.8	870	28	05 20 01	
05 35 00	1101+384	12 45 08	67.2	239.0	1.7	40.9	24	28	05 35 00	
05 49 30	---	12 59 41	65.3	244.3	1.9	43.4	870	56	05 35 01	
05 50 00	1101+384	13 00 11	65.2	244.4	1.9	43.5	24	56	05 50 00	
06 04 30	---	13 14 43	63.2	249.1	2.2	45.5	870	84	05 50 01	
06 05 00	1101+384	13 15 13	63.1	249.3	2.2	45.6	24	84	06 05 00	
06 19 30	---	13 29 45	61.1	253.5	2.4	47.1	870	111	06 05 01	
06 20 00	1101+384	13 30 16	61.0	253.6	2.4	47.1	24	111	06 20 00	
06 34 30	---	13 44 48	58.9	257.5	2.7	48.2	870	139	06 20 01	
06 35 00	1101+384	13 45 18	58.8	257.6	2.7	48.2	24	139	06 35 00	
06 49 30	---	13 59 50	56.7	261.2	2.9	49.0	870	167	06 35 01	
06 50 00	1101+384	14 00 20	56.6	261.3	2.9	49.0	24	167	06 50 00	
07 00 00	---	14 10 22	55.1	263.6	3.1	49.3	600	186	06 50 01	

## SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01np\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group:	4	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U
IF SB =	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	U	U	L	L
IF =	C	A	C	A

The following frequency sets based on these setups were used.

Frequency Set:	4	Setup file default.	Used pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	4			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ
PCALXB1=	S1 S3 S1 S3 S1 S2 S3 S4	
PCALXB2=	S2 S4 S2 S4 M1 M2 M3 M4	
PCALFR1=	1000 1000 13000 13000 0 0 0 0	
PCALFR2=	1000 1000 13000 13000 0 0 0 0	

Track assignments are:

track1= 2, 18, 3, 19  
barrel=roll\_off

## POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1101+384	11 01 40.567856	* 11 04 27.313945	11 05 14.388049	0.00
J1104+3812	38 28 42.95187	* 38 12 31.79894	38 07 41.71595	0.00

## EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.  
SCHED provides warnings at individual scans for distances less than 10 degrees.  
The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
1101+384	113.4



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0605-085	06 05 36.027963	* 06 07 59.699233	06 08 41.819087	0.00
J0607-0834	-08 34 20.29746	*-08 34 49.97823	-08 35 08.23920	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0605-085    147.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01nrtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Fri 20 Dec 2013 Day 354 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 636.00 636.00 636.00 636.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0149+218.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra6cm2.set

Matching groups in ./rk01nr\_freq.dat:
tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0149+218	01 49 31.744133	* 01 52 18.059044	01 53 06.187547	0.00
J0152+2207	21 52 20.74786	* 22 07 07.69974	22 11 21.11661	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0149+218    124.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Sat 21 Dec 2013 Day 355 ---										
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00										
Next BBC frequencies: 632.00 632.00 632.00 632.00										
Next scan bandwidths: 16.00 16.00 16.00 16.00										
03 00 00	1222+216	10 13 39	49.4	128.7	-2.2		-30.2	0	0	03 00 00
03 14 30	---	10 28 12	51.1	133.4	-2.0		-27.9	870	28	03 00 01
03 15 00	1222+216	10 28 42	51.1	133.5	-1.9		-27.9	24	28	03 15 00
03 29 30	---	10 43 14	52.7	138.4	-1.7		-25.3	870	56	03 15 01
03 30 00	1222+216	10 43 44	52.7	138.6	-1.7		-25.2	24	56	03 30 00
03 44 30	---	10 58 17	54.1	143.8	-1.5		-22.4	870	84	03 30 01
03 45 00	1222+216	10 58 47	54.1	144.0	-1.4		-22.3	24	84	03 45 00
04 00 00	---	11 13 49	55.4	149.7	-1.2		-19.0	900	112	03 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
 Setup file: ra18cm2.set

Matching groups in ./rk01ns\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 36.831012	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 17 57.58154	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1222+216    92.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
-----										
--- Sat 21 Dec 2013 Day 355 ---										
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00										
Next BBC frequencies: 632.00 632.00 632.00 632.00										
Next scan bandwidths: 16.00 16.00 16.00 16.00										
06 00 00	0851+202	13 14 09	31.1	262.2	4.3		39.3	0	0	06 00 00
06 14 30	---	13 28 41	28.9	265.3	4.6		39.6	870	28	06 00 01
06 15 00	0851+202	13 29 11	28.8	265.4	4.6		39.6	24	28	06 15 00
06 29 30	---	13 43 44	26.6	268.3	4.8		39.7	870	56	06 15 01
06 30 00	0851+202	13 44 14	26.6	268.4	4.8		39.7	24	56	06 30 00
06 44 30	---	13 58 46	24.4	271.3	5.1		39.7	870	84	06 30 01
06 45 00	0851+202	13 59 16	24.3	271.4	5.1		39.7	24	84	06 45 00
07 00 00	---	14 14 19	22.0	274.4	5.3		39.6	900	112	06 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
 Setup file: ra18cm2.set

Matching groups in ./rk01nt\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0851+202	08 51 57.250618	* 08 54 48.874930	08 55 38.366520	0.00
J0854+2006	20 17 58.41733	* 20 06 30.64078	20 03 03.22866	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0851+202    138.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01nutr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Sat 21 Dec 2013    Day 355 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
21 00 00	0346-279	04 16 37	8.9	186.1	0.5		4.2	0	0	21 00 00
21 14 30	---	04 31 09	8.6	189.4	0.7		6.3	870	28	21 00 01
21 15 00	0346-279	04 31 39	8.6	189.5	0.7		6.4	24	28	21 15 00
21 29 30	---	04 46 12	8.2	192.7	0.9		8.6	870	56	21 15 01
21 30 00	0346-279	04 46 42	8.2	192.8	1.0		8.7	24	56	21 30 00
21 44 30	---	05 01 14	7.6	196.0	1.2		10.8	870	84	21 30 01
21 45 00	0346-279	05 01 44	7.6	196.1	1.2		10.9	24	84	21 45 00
22 00 00	---	05 16 47	6.9	199.4	1.5		13.0	900	112	21 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01nu\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	5	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  5  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0346-279	03 46 34.026315	* 03 48 38.144579	03 49 14.490614	0.00
J0348-2749	-27 58 20.96624	*-27 49 13.56570	-27 46 52.03908	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0346-279    119.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01nvtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 22 Dec 2013 Day 356 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Contains scan schedule data for Dec 22, 2013.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01nv\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 6 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=   2300.00   2300.00   2300.00   2300.00
Net SB=           L           L           U           U
IF SB =           L           L           L           L
Pol.  =           RCP          LCP          RCP          LCP
BBC   =           1           2           1           2
BBC SB=           U           U           L           L
IF    =           C           A           C           A

```

The following frequency sets based on these setups were used.

```

Frequency Set:   5   Setup file default.   Used pcal sets:   1
LO sum=   1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:   5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:   1   PCAL = 1MHZ
PCALXB1=   S1   S3   S1   S3   S1   S2   S3   S4
PCALXB2=   S2   S4   S2   S4   M1   M2   M3   M4
PCALFR1=  1000 1000 13000 13000   0   0   0   0
PCALFR2=  1000 1000 13000 13000   0   0   0   0

```

Track assignments are:

```

track1=   2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0234+285	02 34 55.589591	* 02 37 52.405678	02 38 43.861052	0.00
J0237+2848	28 35 11.40774	* 28 48 08.98999	28 51 50.44479	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source           Sun distance (deg)
0234+285         134.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz          117. deg
610 MHz          81. deg
1.6 GHz          45. deg
2.3 GHz          36. deg
5.0 GHz          23. deg
8.4 GHz          17. deg
15.0 GHz         12. deg
22.0 GHz          9. deg
43.0 GHz          6. deg

```

**rk01nwtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Sun 22 Dec 2013    Day 356 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
04 00 00	1044+719	11 17 46	71.2	-6.9	0.5	166.7	0	0	04 00 00	
04 14 30	---	11 32 18	70.9	-10.3	0.7	160.1	870	28	04 00 01	
04 15 00	1044+719	11 32 48	70.9	-10.4	0.7	159.9	24	28	04 15 00	
04 29 30	---	11 47 21	70.4	-13.6	1.0	153.4	870	56	04 15 01	
04 30 00	1044+719	11 47 51	70.4	-13.7	1.0	153.2	24	56	04 30 00	
04 44 30	---	12 02 23	69.8	-16.6	1.2	147.0	870	84	04 30 01	
04 45 00	1044+719	12 02 53	69.8	-16.7	1.2	146.8	24	84	04 45 00	
05 00 00	---	12 17 56	69.1	-19.4	1.5	140.7	900	112	04 45 01	

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01nw\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	6	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.



```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1044+719	10 44 49.735111	* 10 48 27.619927	10 49 28.471961	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 44.15514	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1044+719    117.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Sun 22 Dec 2013    Day 356 ---

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00   16.00   16.00   16.00
```

07 00 00	1928+738	14 18 15	53.6	27.0	-5.2	-80.9	0	0	07 00 00
07 14 30	---	14 32 48	54.6	27.2	-4.9	-84.2	870	28	07 00 01
07 15 00	1928+738	14 33 18	54.6	27.2	-4.9	-84.4	24	28	07 15 00
07 29 30	---	14 47 50	55.6	27.3	-4.7	-87.8	870	56	07 15 01
07 30 00	1928+738	14 48 20	55.7	27.3	-4.7	-87.9	24	56	07 30 00
07 44 30	---	15 02 53	56.7	27.3	-4.4	-91.4	870	84	07 30 01
07 45 00	1928+738	15 03 23	56.7	27.3	-4.4	-91.5	24	84	07 45 00
07 59 30	---	15 17 55	57.7	27.2	-4.2	-95.1	870	111	07 45 01
08 00 00	1928+738	15 18 25	57.7	27.2	-4.2	-95.2	24	111	08 00 00
08 14 30	---	15 32 57	58.7	27.0	-3.9	-98.9	870	139	08 00 01
08 15 00	1928+738	15 33 28	58.8	27.0	-3.9	-99.0	24	139	08 15 00
08 29 30	---	15 48 00	59.8	26.6	-3.7	-102.8	870	167	08 15 01
08 30 00	1928+738	15 48 30	59.8	26.6	-3.6	-103.0	24	167	08 30 00
08 40 00	---	15 58 32	60.5	26.2	-3.5	-105.7	600	186	08 30 01

## SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01nx\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group:	6	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U
IF SB =	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	U	U	L	L
IF =	C	A	C	A

The following frequency sets based on these setups were used.

Frequency Set:	6	Setup file default.	Used pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	6			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ
PCALXB1=	S1 S3 S1 S3 S1 S2 S3 S4	
PCALXB2=	S2 S4 S2 S4 M1 M2 M3 M4	
PCALFR1=	1000 1000 13000 13000 0 0 0 0	
PCALFR2=	1000 1000 13000 13000 0 0 0 0	

Track assignments are:

track1= 2, 18, 3, 19  
barrel=roll\_off

## POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)	
* 1928+738	19 28 49.350195	* 19 27 48.495148	19 27 26.893812	0.00
J1927+7358	73 51 44.92742	* 73 58 01.56986	74 00 02.34850	0.00

## EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.  
SCHED provides warnings at individual scans for distances less than 10 degrees.  
The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
1928+738	98.4



## SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ny\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group:	5	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U
IF SB =	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	U	U	L	L
IF =	C	A	C	A

The following frequency sets based on these setups were used.

Frequency Set:	5	Setup file default.	Used pcal sets:	1
LO sum=	1668.00	1668.00	1668.00	1668.00
BBC fr=	632.00	632.00	632.00	632.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	5			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ
PCALXB1=	S1 S3 S1 S3 S1 S2 S3 S4	
PCALXB2=	S2 S4 S2 S4 M1 M2 M3 M4	
PCALFR1=	1000 1000 13000 13000 0 0 0 0	
PCALFR2=	1000 1000 13000 13000 0 0 0 0	

Track assignments are:

track1= 2, 18, 3, 19  
barrel=roll\_off

## POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)	
* 1807+698	18 07 18.543586	* 18 06 50.680644	18 06 38.764987	0.00
J1806+6949	69 48 57.10463	* 69 49 28.10848	69 49 44.90885	0.00

## EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun.  
SCHED provides warnings at individual scans for distances less than 10 degrees.  
The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
1807+698	93.3

rk01nztr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia  
Phone: +7-495-3332167  
EMAIL: yyk@asc.rssi.ru  
Fax: +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Sun 22 Dec 2013 Day 356 ---										
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00										
Next BBC frequencies: 632.00 632.00 632.00 632.00										
Next scan bandwidths: 16.00 16.00 16.00 16.00										
21 00 00	0451-282	04 20 33	8.5	172.6	-0.6		-5.0	0	0	21 00 00
21 14 30	---	04 35 06	8.7	175.8	-0.3		-2.8	870	28	21 00 01
21 15 00	0451-282	04 35 36	8.7	175.9	-0.3		-2.8	24	28	21 15 00
21 29 30	---	04 50 08	8.8	179.2	-0.1		-0.6	870	56	21 15 01
21 30 00	0451-282	04 50 38	8.8	179.3	-0.1		-0.5	24	56	21 30 00
21 44 30	---	05 05 11	8.8	182.5	0.2		1.7	870	84	21 30 01
21 45 00	0451-282	05 05 41	8.8	182.6	0.2		1.8	24	84	21 45 00
22 00 00	---	05 20 43	8.6	186.0	0.4		4.1	900	112	21 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01nz\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256  
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000  
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0451-282	04 51 15.126310	* 04 53 14.646791	04 53 49.954056	0.00
J0453-2807	-28 12 29.38806	*-28 07 37.32655	-28 06 27.05037	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0451-282    125.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01oatr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Mon 23 Dec 2013    Day 357 ---

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies:  632.00  632.00  632.00  632.00
Next scan bandwidths:  16.00  16.00  16.00  16.00

00 00 00 0201+113    07 21 03 15.8 268.4 5.3       37.8    0       0    00 00 00
00 14 30 ---        07 35 35 13.6 271.3 5.5       37.8  870      28    00 00 01

00 15 00 0201+113    07 36 05 13.5 271.4 5.5       37.8    24      28    00 15 00
00 29 30 ---        07 50 38 11.4 274.3 5.8       37.7  870      56    00 15 01

00 30 00 0201+113    07 51 08 11.3 274.4 5.8       37.7    24      56    00 30 00
00 44 30 ---        08 05 40  9.1 277.3 6.0       37.5  870      84    00 30 01

00 45 00 0201+113    08 06 10  9.0 277.4 6.0       37.4    24      84    00 45 00
01 00 00 ---        08 21 13  6.8 280.3 6.3       37.1  900     112    00 45 01
```

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01oa\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

```
Setup group:    5                      Station: TORUN                      Total bit rate:    256
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000
Number of channels: 4                      DBE type:                              Speedup factor:    1.00
```

Disk used to record data.



```

1st LO=   2300.00   2300.00   2300.00   2300.00
Net SB=           L           L           U           U
IF SB =           L           L           L           L
Pol.  =           RCP          LCP          RCP          LCP
BBC   =           1           2           1           2
BBC SB=           U           U           L           L
IF    =           C           A           C           A

```

The following frequency sets based on these setups were used.

```

Frequency Set:   4  Setup file default.  Used pcal sets:   1
LO sum=   1668.00  1668.00  1668.00  1668.00
BBC fr=    632.00  632.00  632.00  632.00
Bandwd=    16.00  16.00  16.00  16.00
Matching frequency sets:   4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:   1  PCAL = 1MHZ
PCALXB1=  S1   S3   S1   S3   S1   S2   S3   S4
PCALXB2=  S2   S4   S2   S4   M1   M2   M3   M4
PCALFR1= 1000 1000 13000 13000   0   0   0   0
PCALFR2= 1000 1000 13000 13000   0   0   0   0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0201+113	02 01 06.003329	* 02 03 46.657061	02 04 33.052345	0.00
J0203+1134	11 20 22.95394	* 11 34 45.40942	11 38 48.05310	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0201+113    121.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01obtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Mon 23 Dec 2013 Day 357 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 1123+264.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01ob\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1123+264	11 23 14.869304	* 11 25 53.711924	11 26 38.666355	0.00
J1125+2610	26 26 49.99096	* 26 10 19.97856	26 05 28.53678	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1123+264    108.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Mon 23 Dec 2013    Day 357 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies:  632.00  632.00  632.00  632.00  
 Next scan bandwidths:  16.00  16.00  16.00  16.00

07 00 00	1222+216	14 22 12	51.2	226.4	1.9	27.8	0	0	07 00 00
07 14 30	---	14 36 44	49.5	231.0	2.2	30.1	870	28	07 00 01
07 15 00	1222+216	14 37 14	49.5	231.2	2.2	30.1	24	28	07 15 00
07 29 30	---	14 51 47	47.7	235.6	2.4	32.1	870	56	07 15 01
07 30 00	1222+216	14 52 17	47.7	235.7	2.4	32.2	24	56	07 30 00
07 40 00	---	15 02 18	46.4	238.6	2.6	33.4	600	75	07 30 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01oc\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 36.901092	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 17 57.14144	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1222+216    94.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01odtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Mon 23 Dec 2013 Day 357 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 1239+376.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01od\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 4 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1239+376	12 39 45.151329	* 12 42 09.812390	12 42 50.066969	0.00
J1242+3720	37 36 31.63208	* 37 20 05.69271	37 15 15.29909	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1239+376    97.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01oftr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia  
Phone: +7-495-3332167  
EMAIL: yyk@asc.rssi.ru  
Fax: +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT Source Start / Stop Early Disk TPStart  
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC  
-----

--- Tue 24 Dec 2013 Day 358 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 636.00 636.00 636.00 636.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

20 00 00	2309+454	03 28 16	49.2 -73.5	4.3	55.7	0	0	20 00 00
20 14 30	---	03 42 49	47.1 -71.3	4.5	54.7	870	28	20 00 01
20 15 00	2309+454	03 43 19	47.1 -71.2	4.5	54.7	24	28	20 15 00
20 29 30	---	03 57 51	45.0 -69.1	4.8	53.6	870	56	20 15 01
20 30 00	2309+454	03 58 21	44.9 -69.0	4.8	53.6	24	56	20 30 00
20 44 30	---	04 12 54	42.9 -66.9	5.0	52.4	870	84	20 30 01
20 45 00	2309+454	04 13 24	42.8 -66.8	5.0	52.4	24	84	20 45 00
21 00 00	---	04 28 26	40.8 -64.6	5.3	51.1	900	112	20 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01of\_freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256  
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000  
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.



```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP    LCP    RCP    LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 2309+454	23 09 28.211645	* 23 11 47.408972	23 12 27.003884	0.00
J2311+4543	45 27 37.24974	* 45 43 56.01648	45 48 49.75862	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
2309+454    96.6

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01oltr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Fri 27 Dec 2013 Day 361 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. It lists observation times and parameters for source 0406+121.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01ol\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0406+121	04 06 35.476887	* 04 09 22.008713	04 10 10.539693	0.00
J0409+1217	12 09 49.31041	* 12 17 39.84767	12 19 45.73096	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

Source	Sun distance (deg)
0406+121	146.4

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

327 MHz	117. deg
610 MHz	81. deg
1.6 GHz	45. deg
2.3 GHz	36. deg
5.0 GHz	23. deg
8.4 GHz	17. deg
15.0 GHz	12. deg
22.0 GHz	9. deg
43.0 GHz	6. deg

**rk01omtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167                      EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378                      Phone during observation: +7-915-1546281

UWAGA: zmiana pasma w czasie tego eksperymentu!!!

```
#####
##### Observing mode: C&L-band, dual-pol #####
#####
```

Schedule for TORUN                      (Code Tr )                      Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT    Source                      Start / Stop                      Early    Disk    TPStart
Stop UT                      LST                      EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC
-----
```

--- Fri 27 Dec 2013    Day 361 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 636.00 636.00 636.00 636.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

```
05 00 00 1036+054    12 37 38 36.3 217.5 2.0                      21.5    0                      0    05 00 00
05 14 30 ---                      12 52 11 34.9 221.6 2.2                      23.6    870                      28    05 00 01

05 15 00 1036+054    12 52 41 34.9 221.8 2.2                      23.7    24                      28    05 15 00
05 24 00 ---                      13 01 42 33.9 224.3 2.4                      24.9    540                      45    05 15 01
```

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 632.00 632.00 632.00 632.00

```
05 30 00 1036+054    13 07 43 33.3 225.9 2.5                      25.6    353                      45    05 30 00
05 44 30 ---                      13 22 16 31.7 229.7 2.7                      27.4    870                      73    05 30 01

05 45 00 1036+054    13 22 46 31.6 229.9 2.7                      27.4    24                      73    05 45 00
06 00 00 ---                      13 37 48 29.8 233.7 3.0                      29.1    900                      102    05 45 01
```

## SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01om\_freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:	1	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

1st LO=	4200.00	4200.00	4200.00	4200.00
Net SB=	L	L	U	U
IF SB =	U	U	U	U
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	L	L	U	U
IF =	C	A	C	A

The following frequency sets based on these setups were used.

Frequency Set:	4	Setup file default.	Used pcal sets:	1
LO sum=	4836.00	4836.00	4836.00	4836.00
BBC fr=	636.00	636.00	636.00	636.00
Bandwd=	16.00	16.00	16.00	16.00
Matching frequency sets:	4			

The following pulse cal sets were used with this setup:

Pulse cal detection set:	1	PCAL = 1MHZ						
PCALXB1=	S1	S3	S1	S3	S1	S2	S3	S4
PCALXB2=	S2	S4	S2	S4	M1	M2	M3	M4
PCALFR1=	1000	1000	13000	13000	0	0	0	0
PCALFR2=	1000	1000	13000	13000	0	0	0	0

Track assignments are:

track1= 2, 18, 3, 19  
barrel=roll\_off

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01om\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group:	4	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U
IF SB =	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP
BBC =	1	2	1	2
BBC SB=	U	U	L	L
IF =	C	A	C	A

The following frequency sets based on these setups were used.

```

Frequency Set:  5  Setup file default.  Used pcal sets:  1
LO sum=    1668.00  1668.00  1668.00  1668.00
BBC fr=     632.00  632.00  632.00  632.00
Bandwd=     16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* 1036+054	10 36 10.827228	* 10 38 46.779881	10 39 31.536492	0.00
J1038+0512	05 28 06.89952	* 05 12 29.08645	05 07 57.03231	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1036+054    116.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01ontr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Fri 27 Dec 2013 Day 361 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 2309+454.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01on\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 2309+454	23 09 28.211645	* 23 11 47.408972	23 12 26.934591	0.00
J2311+4543	45 27 37.24974	* 45 43 56.01648	45 48 49.39011	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
2309+454    94.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time. Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Fri 27 Dec 2013    Day 361 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 636.00 636.00 636.00 636.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

22 00 00	0458-020	05 40 26	34.3	191.7	0.6	7.0	0	0	22 00 00
22 14 30	---	05 54 58	33.8	196.0	0.9	9.5	870	28	22 00 01
22 15 00	0458-020	05 55 28	33.8	196.2	0.9	9.6	24	28	22 15 00
22 29 30	---	06 10 01	33.1	200.4	1.1	12.1	870	56	22 15 01
22 30 00	0458-020	06 10 31	33.1	200.6	1.1	12.2	24	56	22 30 00
22 44 30	---	06 25 03	32.3	204.8	1.4	14.6	870	84	22 30 01
22 45 00	0458-020	06 25 33	32.2	204.9	1.4	14.7	24	84	22 45 00
23 00 00	---	06 40 36	31.2	209.2	1.6	17.0	900	112	22 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra6cm2.set

Matching groups in ./rk01oo\_freq.dat:

tr6cm                      E-mail Borkowski 23Apr03 (CR 1May03)

Setup group:    1                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0458-020	04 58 41.344688	* 05 01 12.809884	05 01 57.092648	0.00
J0501-0159	-02 03 33.86890	*-01 59 14.25635	-01 58 11.66025	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0458-020    147.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0356+322	03 56 34.795463	* 03 59 44.912919	04 00 40.445882	0.00
J0359+3220	32 12 19.24958	* 32 20 47.15555	32 23 07.71593	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0356+322    146.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 3 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1308+326	13 08 07.560133	* 13 10 28.663852	13 11 07.982203	0.00
J1310+3220	32 36 40.23870	* 32 20 43.78277	32 16 03.73990	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1308+326    93.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01ortr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sat 28 Dec 2013 Day 362 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
19 00 00 0059+581 02 43 53 75.0 -59.0 1.7 100.2 0 0 19 00 00
19 14 30 --- 02 58 25 73.1 -59.9 1.9 96.1 870 28 19 00 01
19 15 00 0059+581 02 58 55 73.1 -60.0 1.9 96.0 24 28 19 15 00
19 29 30 --- 03 13 28 71.2 -60.4 2.2 92.5 870 56 19 15 01
19 30 00 0059+581 03 13 58 71.1 -60.4 2.2 92.4 24 56 19 30 00
19 44 30 --- 03 28 30 69.2 -60.5 2.4 89.2 870 84 19 30 01
19 45 00 0059+581 03 29 00 69.2 -60.5 2.4 89.1 24 84 19 45 00
20 00 00 --- 03 44 03 67.2 -60.3 2.7 86.1 900 112 19 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01or\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0059+581	00 59 43.470970	* 01 02 45.762378	01 03 39.078785	0.00
J0102+5824	58 08 04.84745	* 58 24 11.13660	58 28 59.45101	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0059+581    113.8

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```



rk01ostr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sat 28 Dec 2013 Day 362 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
22 00 00 0648-165 05 44 22 18.8 163.1 -1.1 -10.5 0 0 22 00 00
22 14 30 --- 05 58 55 19.4 166.8 -0.9 -8.3 870 28 22 00 01
22 15 00 0648-165 05 59 25 19.4 166.9 -0.9 -8.2 24 28 22 15 00
22 29 30 --- 06 13 57 19.8 170.6 -0.6 -5.9 870 56 22 15 01
22 30 00 0648-165 06 14 27 19.8 170.7 -0.6 -5.8 24 56 22 30 00
22 44 30 --- 06 29 00 20.1 174.4 -0.4 -3.5 870 84 22 30 01
22 45 00 0648-165 06 29 30 20.1 174.5 -0.4 -3.4 24 84 22 45 00
23 00 00 --- 06 44 32 20.2 178.3 -0.1 -1.0 900 112 22 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01os\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 5 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00   632.00   632.00   632.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0648-165	06 48 10.295571	* 06 50 24.581861	06 51 04.162240	0.00
J0650-1637	-16 34 05.88130	*-16 37 39.72548	-16 38 50.58455	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0648-165    139.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01ottr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: C-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 29 Dec 2013 Day 363 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 636.00 636.00 636.00 636.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
02 00 00 0727-115 09 45 02 19.1 214.9 2.2 20.5 0 0 02 00 00
02 14 30 --- 09 59 34 17.8 218.4 2.5 22.4 870 28 02 00 01
02 15 00 0727-115 10 00 04 17.8 218.5 2.5 22.4 24 28 02 15 00
02 29 30 --- 10 14 37 16.4 221.9 2.7 24.2 870 56 02 15 01
02 30 00 0727-115 10 15 07 16.3 222.0 2.7 24.3 24 56 02 30 00
02 44 30 --- 10 29 39 14.8 225.4 3.0 25.9 870 84 02 30 01
02 45 00 0727-115 10 30 09 14.8 225.5 3.0 25.9 24 84 02 45 00
03 00 00 --- 10 45 12 13.1 228.9 3.2 27.5 900 112 02 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra6cm2.set

Matching groups in ./rk01ot\_freq.dat:

tr6cm E-mail Borkowski 23Apr03 (CR 1May03)

Setup group: 1 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=  4200.00  4200.00  4200.00  4200.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP    LCP    RCP    LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  3  Setup file default.  Used pcal sets:  1
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   636.00   636.00   636.00   636.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 0727-115	07 27 58.097813	* 07 30 19.112473	07 31 00.528586	0.00
J0730-1141	-11 34 52.58107	*-11 41 12.60063	-11 43 09.68647	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0727-115    142.3

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

**rk01outr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Sun 29 Dec 2013    Day 363 ---

Next scan frequencies:	1668.00	1668.00	1668.00	1668.00						
Next BBC frequencies:	632.00	632.00	632.00	632.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
05 00 00	1222+216	12 45 31	58.0	188.8	0.3		5.6	0	0	05 00 00
05 14 30	---	13 00 04	57.5	195.1	0.6		9.6	870	28	05 00 01
05 15 00	1222+216	13 00 34	57.5	195.3	0.6		9.8	23	28	05 15 00
05 29 30	---	13 15 06	56.8	201.4	0.8		13.6	870	56	05 15 01
05 30 00	1222+216	13 15 36	56.8	201.6	0.8		13.7	23	56	05 30 00
05 44 30	---	13 30 09	55.9	207.5	1.1		17.3	870	84	05 30 01
05 45 00	1222+216	13 30 39	55.8	207.7	1.1		17.4	24	84	05 45 00
06 00 00	---	13 45 41	54.7	213.5	1.3		20.8	900	112	05 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01ou\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:	5	Station:	TORUN	Total bit rate:	256
Format:	MKIV1:4	Bits per sample:	2	Sample rate:	32.000
Number of channels:	4	DBE type:		Speedup factor:	1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  4  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

Track assignments are:

```

track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1222+216	12 22 23.408709	* 12 24 54.458394	12 25 37.082539	0.00
J1224+2122	21 39 23.03696	* 21 22 46.38857	21 17 56.05388	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1222+216    99.9

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```

rk01ovtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: K-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 29 Dec 2013 Day 363 ---

Next scan frequencies: 22236.00 22236.00 22236.00 22236.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 1228+126.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra1cm2.set

Matching groups in ./rk01ov\_freq.dat:

tr1cm Values from Bob Campbell by email (23-04-2013)

Setup group: 7 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 21500.00 21500.00 21500.00 21500.00
Net SB=      L      L      U      U
IF SB =      U      U      U      U
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      L      L      U      U
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 7 Setup file default. Used pcal sets: 1
LO sum= 22236.00 22236.00 22236.00 22236.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 7

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1228+126	12 28 17.569280	* 12 30 49.423382	12 31 32.359973	0.00
J1230+1223	12 40 01.74883	* 12 23 28.04365	12 18 41.86713	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1228+126    95.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



**rk01owtr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
 Phone:    +7-495-3332167  
 EMAIL:    yyk@asc.rssi.ru  
 Fax:       +7-495-3332378  
 Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
 Early: Seconds between end of slew and start.    Dwell: On source seconds.  
 Disk: GBytes recorded to this point.  
 TPStart: Recording start time.    Frequencies are LO sum (band edge).  
 SYNC: Time correlator is expected to sync up.

```
-----
Start UT  Source                Start / Stop                Early  Disk  TPStart
Stop UT   LST      EL    AZ    HA  UP    ParA Dwell  GBytes  SYNC
-----
```

--- Sun 29 Dec 2013    Day 363 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 632.00 632.00 632.00 632.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

20 00 00	2351+456	03 47 59	52.6	-76.8	3.9	57.2	0	0	20 00 00
20 14 30	---	04 02 32	50.5	-74.5	4.1	56.4	870	28	20 00 01
20 15 00	2351+456	04 03 02	50.4	-74.5	4.1	56.3	24	28	20 15 00
20 29 30	---	04 17 34	48.3	-72.3	4.4	55.4	870	56	20 15 01
20 30 00	2351+456	04 18 04	48.3	-72.2	4.4	55.3	24	56	20 30 00
20 44 30	---	04 32 37	46.2	-70.1	4.6	54.3	870	84	20 30 01
20 45 00	2351+456	04 33 07	46.1	-70.0	4.6	54.3	24	84	20 45 00
21 00 00	---	04 48 09	44.0	-67.8	4.9	53.1	900	112	20 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01ow\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    4                      Station: TORUN                      Total bit rate:    256  
 Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
 Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 2351+456	23 51 49.972507	* 23 54 21.680217	23 55 05.133991	0.00
J2354+4553	45 36 22.77745	* 45 53 04.23639	45 58 02.72368	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
2351+456    99.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia
Phone: +7-495-3332167
EMAIL: yyk@asc.rssi.ru
Fax: +7-495-3332378
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.
Early: Seconds between end of slew and start. Dwell: On source seconds.
Disk: GBytes recorded to this point.
TPStart: Recording start time. Frequencies are LO sum (band edge).
SYNC: Time correlator is expected to sync up.

Start UT Source Start / Stop Early Disk TPStart
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC

--- Sun 29 Dec 2013 Day 363 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 632.00 632.00 632.00 632.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 11 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0202+149.

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01ox\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0202+149	02 02 07.396228	* 02 04 50.413896	02 05 37.454547	0.00
J0204+1514	14 59 50.93936	* 15 14 11.04358	15 18 13.62988	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0202+149    116.1

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01oytr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are L0 sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 30 Dec 2013    Day 364 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

03 00 00	1226+023	10 49 08	34.8	148.8	-1.7		-18.1	0	0	03 00 00
03 14 30	---	11 03 41	35.9	153.1	-1.4		-15.8	870	28	03 00 01
03 15 00	1226+023	11 04 11	35.9	153.2	-1.4		-15.7	24	28	03 15 00
03 29 30	---	11 18 43	36.8	157.6	-1.2		-13.2	870	56	03 15 01
03 30 00	1226+023	11 19 13	36.8	157.7	-1.2		-13.2	24	56	03 30 00
03 44 30	---	11 33 46	37.6	162.2	-0.9		-10.6	870	84	03 30 01
03 45 00	1226+023	11 34 16	37.6	162.4	-0.9		-10.5	24	84	03 45 00
04 00 00	---	11 49 18	38.2	167.1	-0.7		-7.7	900	112	03 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01oy\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    6	Station: TORUN	Total bit rate:    256
Format: MKIV1:4	Bits per sample: 2	Sample rate: 32.000
Number of channels: 4	DBE type:	Speedup factor: 1.00

Disk used to record data.

```

1st LO=  2300.00  2300.00  2300.00  2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  6  Setup file default.  Used pcal sets:  1
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   632.00  632.00  632.00  632.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(J2000)	(Date)	Error (mas)
* 1226+023	12 26 33.245835	* 12 29 06.699731	12 29 50.254903	0.00
J1229+0203	02 19 43.30547	* 02 03 08.59797	01 58 25.58461	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1226+023    92.5

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

**rk01oztr**

RADIOASTRON AGN SURVEY

PI: *Yuri Kovalev*

Address: ASC Lebedev                      Profsoyuznaya 84/32                      117997 Moscow, Russia  
Phone:    +7-495-3332167  
EMAIL:    yyk@asc.rssi.ru  
Fax:       +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN                      (Code Tr )    Page    2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start.    Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time.    Frequencies are LO sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT    Source                      Start / Stop                      Early    Disk    TPStart  
Stop UT                      LST            EL    AZ    HA    UP    ParA    Dwell    GBytes    SYNC  
-----

--- Mon 30 Dec 2013    Day 364 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

06 00 00	1219+044	13 49 38	37.9	207.8	1.4	16.3	0	0	06 00 00
06 14 30	---	14 04 10	36.8	212.1	1.7	18.7	870	28	06 00 01
06 15 00	1219+044	14 04 40	36.8	212.3	1.7	18.8	24	28	06 15 00
06 29 30	---	14 19 13	35.6	216.5	1.9	21.0	870	56	06 15 01
06 30 00	1219+044	14 19 43	35.5	216.6	1.9	21.1	24	56	06 30 00
06 44 30	---	14 34 15	34.1	220.7	2.2	23.1	870	84	06 30 01
06 45 00	1219+044	14 34 45	34.1	220.9	2.2	23.2	24	84	06 45 00
07 00 00	---	14 49 48	32.6	225.0	2.4	25.2	900	112	06 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

=====  
Setup file: ra18cm2.set

Matching groups in ./rk01oz\_freq.dat:

tr18cm                      E-mail Borkowski 12Mar98, preferred alternative

Setup group:    5                      Station: TORUN                      Total bit rate:    256  
Format: MKIV1:4                      Bits per sample: 2                      Sample rate: 32.000  
Number of channels: 4                      DBE type:                      Speedup factor:    1.00

Disk used to record data.

```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	(Date)	Error (mas)
* 1219+044	12 19 49.255032	12 23 06.077807	0.00
J1222+0413	04 29 53.60821	04 08 30.75741	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1219+044    95.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```





```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0454-234	04 54 57.297216	* 04 57 03.179228	04 57 40.247583	0.00
J0457-2324	-23 29 28.31965	*-23 24 52.02024	-23 23 47.80000	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0454-234    127.2

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 2 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

Track assignments are:

```

track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 0119+115	01 19 03.080127	* 01 21 41.595043	01 22 27.056408	0.00
J0121+1149	11 34 09.31507	* 11 49 50.41305	11 54 16.87650	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
0119+115    104.0

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```



```

1st LO= 2300.00 2300.00 2300.00 2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set: 5 Setup file default. Used pcal sets: 1
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 632.00 632.00 632.00 632.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set: 1 PCAL = 1MHZ
PCALXB1= S1 S3 S1 S3 S1 S2 S3 S4
PCALXB2= S2 S4 S2 S4 M1 M2 M3 M4
PCALFR1= 1000 1000 13000 13000 0 0 0 0
PCALFR2= 1000 1000 13000 13000 0 0 0 0

```

```

Track assignments are:
track1= 2, 18, 3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1327+321	13 27 34.876201	* 13 29 52.864906	13 30 31.302213	0.00
J1329+3154	32 09 38.80938	* 31 54 11.05448	31 49 39.58638	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1327+321    92.4

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz     9. deg
43.0 GHz     6. deg

```

rk01pdtr

RADIOASTRON AGN SURVEY

PI: Yuri Kovalev

Address: ASC Lebedev Profsoyuznaya 84/32 117997 Moscow, Russia  
Phone: +7-495-3332167  
EMAIL: yyk@asc.rssi.ru  
Fax: +7-495-3332378  
Phone during observation: +7-915-1546281

Observing mode: L-band, dual-pol

Schedule for TORUN (Code Tr ) Page 2

RadioAstron AGN survey

UP: D => Below limits; H => Below horizon mask; W => still slewing at end; blank => Up.  
Early: Seconds between end of slew and start. Dwell: On source seconds.  
Disk: GBytes recorded to this point.  
TPStart: Recording start time. Frequencies are L0 sum (band edge).  
SYNC: Time correlator is expected to sync up.

-----  
Start UT Source Start / Stop Early Disk TPStart  
Stop UT LST EL AZ HA UP ParA Dwell GBytes SYNC  
-----

--- Tue 31 Dec 2013 Day 365 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 632.00 632.00 632.00 632.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

06 00 00	1149-084	13 53 34	23.0	212.6	2.0	19.1	0	0	06 00 00
06 14 30	---	14 08 07	21.8	216.3	2.3	21.1	870	28	06 00 01
06 15 00	1149-084	14 08 37	21.8	216.4	2.3	21.1	24	28	06 15 00
06 29 30	---	14 23 09	20.4	220.0	2.5	23.0	870	56	06 15 01
06 30 00	1149-084	14 23 39	20.4	220.1	2.5	23.0	24	56	06 30 00
06 44 30	---	14 38 12	18.9	223.6	2.8	24.8	870	84	06 30 01
06 45 00	1149-084	14 38 42	18.9	223.7	2.8	24.8	24	84	06 45 00
07 00 00	---	14 53 44	17.2	227.2	3.0	26.5	900	112	06 45 01

SETUP FILE INFORMATION:

NOTE: If DOPPLER, FREQ, or BW were used, see the individual scans for the final BBC settings.

==== Setup file: ra18cm2.set

Matching groups in ./rk01pd\_freq.dat:

tr18cm E-mail Borkowski 12Mar98, preferred alternative

Setup group: 4 Station: TORUN Total bit rate: 256  
Format: MKIV1:4 Bits per sample: 2 Sample rate: 32.000  
Number of channels: 4 DBE type: Speedup factor: 1.00

Disk used to record data.

```

1st LO=   2300.00   2300.00   2300.00   2300.00
Net SB=      L      L      U      U
IF SB =      L      L      L      L
Pol.  =      RCP     LCP     RCP     LCP
BBC   =      1      2      1      2
BBC SB=      U      U      L      L
IF    =      C      A      C      A

```

The following frequency sets based on these setups were used.

```

Frequency Set:  2  Setup file default.  Used pcal sets:  1
LO sum=   1668.00  1668.00  1668.00  1668.00
BBC fr=    632.00  632.00  632.00  632.00
Bandwd=    16.00  16.00  16.00  16.00
Matching frequency sets:  2

```

The following pulse cal sets were used with this setup:

```

Pulse cal detection set:  1  PCAL = 1MHZ
PCALXB1=  S1  S3  S1  S3  S1  S2  S3  S4
PCALXB2=  S2  S4  S2  S4  M1  M2  M3  M4
PCALFR1= 1000 1000 13000 13000  0  0  0  0
PCALFR2= 1000 1000 13000 13000  0  0  0  0

```

```

Track assignments are:
track1=  2, 18,  3, 19
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec) (B1950)	Source position (RA/Dec) (J2000)	(Date)	Error (mas)
* 1149-084	11 49 43.843431	* 11 52 17.209511	11 53 01.130221	0.00
J1152-0841	-08 24 21.93425	*-08 41 03.31399	-08 45 46.30391	0.00

#### EFFECT OF SOLAR CORONA

The solar corona can cause unstable phases for sources too close to the Sun. SCHED provides warnings at individual scans for distances less than 10 degrees. The distance from the Sun to each source in this schedule is:

```

Source      Sun distance (deg)
1149-084    97.7

```

Barry Clark estimates from predictions by Ketan Desai of IPM scattering sizes that the Sun will cause amplitude reductions on the longest VLBA baselines at a solar distance of  $60 \text{ deg } F^{-0.6}$  where  $F$  is in GHz.

For common VLBI bands, this is:

```

327 MHz      117. deg
610 MHz      81. deg
1.6 GHz      45. deg
2.3 GHz      36. deg
5.0 GHz      23. deg
8.4 GHz      17. deg
15.0 GHz     12. deg
22.0 GHz      9. deg
43.0 GHz      6. deg

```



## Basic Parameters of RadioAstron Space Radio Telescope (SRT)

for more details see <http://www.asc.rssi.ru/radioastron/documents/rauh/en/rauh.pdf>

<b>Satellite Overview</b>					
Mass	msat [kg]	3660			
Lifetime	$\tau$ Mission [yr]	5			
Main reflector diameter	Dant [m]	10			
Pointing accuracy	$\sigma_p$ [arcsec]	10			
Slew rate	$\Delta$ slew [deg/s]	0.35			
<b>Nominal Orbit</b>					
Perigee height	Hp [km]	400 – 65,000			
Apogee height	Ha [km]	265,000 – 360,000			
Orbital period	Porb [day]	8.2 – 9.5			
Orbital eccentricity	e	0.59 – 0.96			
Orbital inclination	i [deg]	0 – 75			
Argument of perigee precession	$\omega'$ [deg/yr]	40			
<b>Observing System</b>					
Polarisation		Dual Circular (LCP, RCP)			
Continuum bandwidth	Bc [MHz]	32			
Spectral channels per IF	Nchan	16 000 000			
Observing band	[GHz]	0.3	1.6	5	22 (wide)
System Temperature	Tsys [K]	162	38	80	92
SEFD	[Jy]	19000	3400	9500	30000
Bandwidth	B [MHz]	16	$2 \times 16$	$2 \times 16$	$2 \times 16$
Angular resolution <sup>1</sup>	$\theta_{min}$ [ $\mu$ as]	530	100	35	7
Baseline sensitivity <sup>2</sup>	$\sigma_n$ [mJy]	16	3	4	13
Image noise <sup>3</sup>	$\sigma_m$ [mJy/beam]	0.35	0.06	0.08	0.25

<sup>1</sup> – Fringe spacing for Ha = 350, 000 km.

<sup>2</sup> – Noise on the baseline between RadioAstron and the Green Bank Telescope (GBT) for an integration time of 300 sec and a single polarisation 16 MHz channel.

<sup>3</sup> – Image noise is calculated for a continuum, dual polarisation observation, with a bandwidth of 32 MHz per polarisation and a total integration time of  $\tau_{obs} = 1$  hr. Participating ground telescopes: Effelsberg (WSRT, at 90cm), Jodrell Bank, GBT, and the VLBA.



# Contents

Graphical Plan of Experiments .....	1
Experiment Listing .....	2
rk01kptr .....	5
rk01kqtr .....	7
rk01krtr .....	9
rk01kstr .....	11
rk01kttr .....	13
rk01kuttr .....	15
rk01kvtr .....	17
rk01kwtr .....	19
rk01kxtr .....	21
rk01kytr .....	23
rk01kztr .....	25
rk01latr .....	27
em101etr .....	29
rk01lgtr .....	74
rk01lhtr .....	76
rk01litr .....	78
rk01ljtr .....	80
rk01lktr .....	82
rk01lltr .....	84
rk01lntr .....	86
rk01lotr .....	88
rk01lptr .....	90
rk01lqtr .....	92
rk01lrtr .....	94
rk01lstr .....	96
rk01lttr .....	98
rk01lutr .....	100
rk01lvtr .....	102
rk01lwtr .....	104
rk01lxtr .....	106
rk01lytr .....	108
rk01lztr .....	110
rk01matr .....	112
rk01mbtr .....	114
rk01mctr .....	116
rk01mdtr .....	118
rk01metr .....	120
rk01mftr .....	122
rk01mgtr .....	124
rk01mhtr .....	126
rk01mitr .....	128
rk01mjtr .....	130
rk01mktr .....	132
rk01mltr .....	134
rk01mmtr .....	136
rk01mntr .....	138
rk01motr .....	140
rk01mptr .....	142
rk01mqtr .....	144
rk01mrtr .....	146
rk01mstr .....	148
rk01mttr .....	150
rk01mutr .....	152
rk01mvtr .....	154
rk01mwtr .....	156
rk01mxtr .....	158
rk01mytr .....	160
rk01mztr .....	162
rk01natr .....	164
rk01nbtr .....	166

rk01nctr	168
rk01ndtr	170
rk01netr	172
rk01nftr	174
rk01ngtr	176
rk01nhtr	178
rk01nitr	180
rk01njtr	182
rk01nktr	184
rk01nltr	186
rk01nmtr	188
rk01nntr	190
rk01notr	192
rk01nptr	194
rk01nqtr	196
rk01nrtr	198
rk01nstr	200
rk01nttr	202
rk01nutr	204
rk01nvtr	206
rk01nwtr	208
rk01nxtr	210
rk01nytr	212
rk01nztr	214
rk01oatr	216
rk01obtr	218
rk01octr	220
rk01odtr	222
rk01oftr	224
rk01oltr	226
rk01omtr	228
rk01ontr	231
rk01ootr	233
rk01optr	235
rk01oqtr	237
rk01ortr	239
rk01ostr	241
rk01ottr	243
rk01outr	245
rk01ovtr	247
rk01owtr	249
rk01oxtr	251
rk01oytr	253
rk01oztr	255
rk01patr	257
rk01pbtr	259
rk01pctr	261
rk01pdtr	263
RadioAstron Overview	265