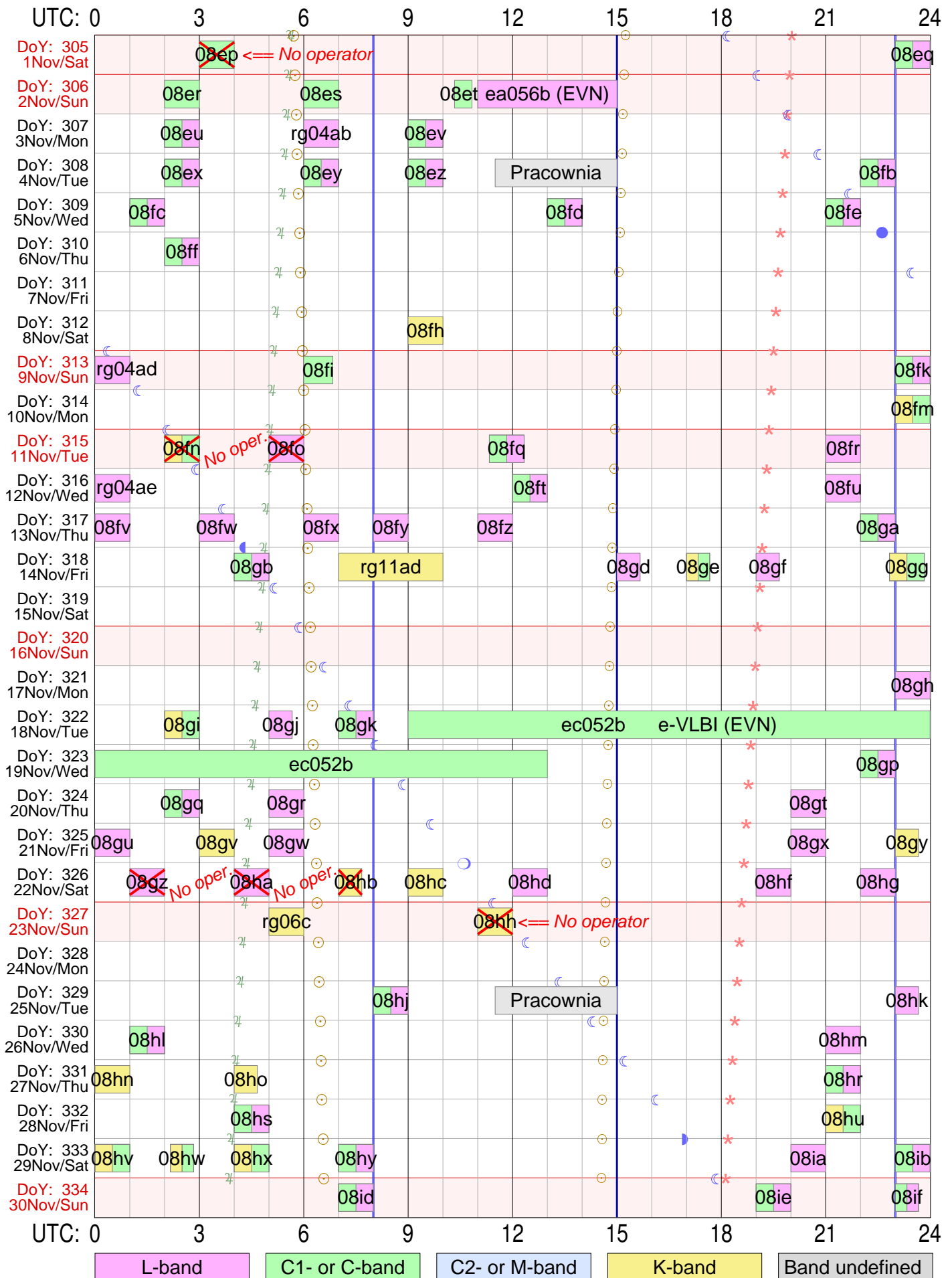


# Tr VLBI plan for Nov 2014



Version: 2014.11.25

Sky events at Tr: ○ Sunrise & sunset    ○●◐ Transit of Moon    ○ Transit of Jupiter    ★ Transit of Aries (0h ST)

Vertical lines in blue mark operator shift times at Tr      Total observing time: 123.7 hours in 82 experiments scheduled

Initial characters 'rk' are omitted from RA experiment names!

Strona zostawiona celowo pusta

# RadioAstron & EVN Experiments

## November 2014

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

ftp://webinet.asc.rssi.ru

Przykład dla log files: cd GRT\_log\_files/2014\_09/2014\_09\_01\_raks08ak

Przykład dla sched files: cd schedule/grtsched/RAKS/rk08ak

DoY	DoM	WD	UT_Start	UT_Stop	Experiment	Band	Uwagi
			h m	h m	name		
305	1	Sob	3 00	4 00	rk08ep	C	112 GB
305	1	Sob	23 00	24 00	rk08eq	C->L	104 GB
306	2	Nie	2 00	3 00	rk08er	C	112 GB
306	2	Nie	6 00	7 00	rk08es	C	112 GB
306	2	Nie	10 20	10 50	rk08et	C	57 GB
306	2	Nie	11 00	15 00	ea056b	L	1554 GB (EVN)
307	3	Pon	2 00	3 00	rk08eu	C->L	104 GB
307	3	Pon	6 00	7 00	rg04ab	L	113 GB
307	3	Pon	9 00	10 00	rk08ev	C->L	104 GB
308	4	Wto	2 00	3 00	rk08ex	C->L	104 GB
308	4	Wto	6 00	7 00	rk08ey	C->L	104 GB
308	4	Wto	9 00	10 00	rk08ez	C->L	104 GB
308	4	Wto	22 00	23 00	rk08fb	C->L	104 GB
309	5	Sro	1 00	2 00	rk08fc	C->L	104 GB
309	5	Sro	13 00	14 00	rk08fd	C->L	104 GB
309	5	Sro	21 00	22 00	rk08fe	C->L	104 GB
310	6	Czw	2 00	3 00	rk08ff	C->L	104 GB
312	8	Sob	9 00	10 00	rk08fh	K	112 GB
313	9	Nie	0 00	1 00	rg04ad	L	113 GB
313	9	Nie	6 00	6 50	rk08fi	C	93 GB
313	9	Nie	23 00	24 00	rk08fk	C->L	104 GB
314	10	Pon	23 00	24 00	rk08fm	K->C	104 GB
315	11	Wto	2 00	3 00	rk08fn	K->C	104 GB
315	11	Wto	5 00	6 00	rk08fo	L	112 GB
315	11	Wto	11 20	12 20	rk08fq	C->L	104 GB
315	11	Wto	21 00	22 00	rk08fr	L	112 GB
316	12	Sro	0 00	1 00	rg04ae	L	113 GB
316	12	Sro	12 00	13 00	rk08ft	C->L	104 GB
316	12	Sro	21 00	22 00	rk08fu	L	112 GB
317	13	Czw	0 00	1 00	rk08fv	L	112 GB
317	13	Czw	3 00	4 00	rk08fw	L	112 GB
317	13	Czw	6 00	7 00	rk08fx	L	112 GB
317	13	Czw	8 00	9 00	rk08fy	L	112 GB
317	13	Czw	11 00	12 00	rk08fz	L	112 GB
317	13	Czw	22 00	23 00	rk08ga	C->L	104 GB
318	14	Pia	4 00	5 00	rk08gb	C->L	104 GB
318	14	Pia	7 00	10 00	rg11ad	K	330 GB
318	14	Pia	15 00	15 40	rk08gd	L	76 GB
318	14	Pia	17 00	17 40	rk08ge	K->C	67 GB
318	14	Pia	19 00	19 40	rk08gf	L	76 GB

318	14	Pia	22 50	23 50	rk08gg	K->C	104 GB
321	17	Pon	23 00	24 00	rk08gh	L	112 GB
322	18	Wto	2 00	3 00	rk08gi	K->C	104 GB
322	18	Wto	5 00	5 40	rk08gj	L	76 GB
322	18	Wto	7 00	8 00	rk08gk	C->L	104 GB
322	18	Wto	9 00	24+14 00	ec052b	C	e-VLBI (EVN)
323	19	Sro	22 00	23 00	rk08gp	C->L	104 GB
324	20	Czw	2 00	3 00	rk08gq	C->L	104 GB
324	20	Czw	5 00	6 00	rk08gr	L	112 GB
324	20	Czw	20 00	21 00	rk08gt	L	112 GB
325	21	Pia	0 00	1 00	rk08gu	L	112 GB
325	21	Pia	3 00	4 00	rk08gv	K	112 GB
325	21	Pia	5 00	6 00	rk08gw	L	112 GB
325	21	Pia	20 00	21 00	rk08gx	L	112 GB
325	21	Pia	23 00	23 40	rk08gy	K	76 GB
326	22	Sob	1 00	2 00	rk08gz	L	112 GB
326	22	Sob	4 00	5 00	rk08ha	L	112 GB
326	22	Sob	7 00	7 40	rk08hb	K	76 GB
326	22	Sob	9 00	10 00	rk08hc	K	112 GB
326	22	Sob	12 00	13 00	rk08hd	L	112 GB
326	22	Sob	19 00	20 00	rk08hf	L	112 GB
326	22	Sob	22 00	23 00	rk08hg	L	112 GB
327	23	Nie	5 00	6 00	rg06c	K	124 GB
327	23	Nie	11 00	12 00	rk08hh	K	112 GB
329	25	Wto	8 00	9 00	rk08hj	C->L	104 GB
329	25	Wto	23 00	23 40	rk08hk	L	76 GB
330	26	Sro	1 00	2 00	rk08hl	C->L	104 GB
330	26	Sro	21 00	22 00	rk08hm	L	112 GB
331	27	Czw	0 00	1 00	rk08hn	K	112 GB
331	27	Czw	4 00	4 40	rk08ho	K	76 GB
331	27	Czw	21 00	22 00	rk08hr	C->L	104 GB
332	28	Pia	4 00	5 00	rk08hs	C->L	104 GB
332	28	Pia	21 00	22 00	rk08hu	K->C	104 GB
333	29	Sob	0 00	1 00	rk08hv	K->C	104 GB
333	29	Sob	2 10	2 50	rk08hw	K->C	67 GB
333	29	Sob	4 00	5 00	rk08hx	K->C	104 GB
333	29	Sob	7 00	8 00	rk08hy	C->L	104 GB
333	29	Sob	20 00	21 00	rk08ia	L	112 GB
333	29	Sob	23 00	24 00	rk08ib	C->L	104 GB
334	30	Nie	7 00	8 00	rk08id	C->L	104 GB
334	30	Nie	19 00	20 00	rk08ie	C->L	104 GB
334	30	Nie	23 00	23 40	rk08if	C->L	67 GB

Razem 80+2 = 82 eksperymenty (78+33 = 111 godz.) RA i EVN

Uaktualniany plik pdf tego dokumentu jest dostępnny w sieci pod adresem:  
<http://cosmo.astro.umk.pl/foswiki/pub/Main/KazB/VLBI2014Nov.pdf>

**rk08eptr**

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 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  
-----

--- Sat    1 Nov 2014    Day 305 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00     16.00     16.00     16.00

03 00 00	0458-020	06 55 34	30.0	213.3	1.9		19.3	0	0	03 00 00
03 14 30	---	07 10 07	28.8	217.2	2.1		21.3	870	28	03 00 01
03 15 00	0458-020	07 10 37	28.7	217.3	2.1		21.4	24	28	03 15 00
03 29 30	---	07 25 09	27.3	221.1	2.4		23.3	870	56	03 15 01
03 30 00	0458-020	07 25 39	27.3	221.3	2.4		23.4	24	56	03 30 00
03 44 30	---	07 40 12	25.8	225.0	2.6		25.1	870	84	03 30 01
03 45 00	0458-020	07 40 42	25.8	225.1	2.6		25.2	24	84	03 45 00
04 00 00	---	07 55 44	24.1	228.8	2.9		26.9	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

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=	4100.00	4100.00	4100.00	4100.00
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 with PCAL = 1MHz  
 LO sum= 4836.00 4836.00 4836.00 4836.00  
 BBC fr= 736.00 736.00 736.00 736.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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 59.095642	0.00
J0501-0159	-02 03 33.86890	*-01 59 14.25635	-01 58 00.58094	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)
3C147	126.4
0458-020	137.8

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:

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

rk08eqtr

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/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 1 Nov 2014 Day 305 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

23 00 00 0507+179 02 58 51 46.6 131.1 -2.2 -28.4 0 0 23 00 00
23 14 30 --- 03 13 24 48.2 135.6 -2.0 -26.2 870 28 23 00 01
23 15 00 0507+179 03 13 54 48.2 135.8 -2.0 -26.1 24 28 23 15 00
23 25 00 --- 03 23 55 49.2 139.0 -1.8 -24.5 600 47 23 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

23 30 00 0507+179 03 28 56 49.7 140.7 -1.7 -23.6 293 47 23 30 00
23 44 30 --- 03 43 29 51.0 145.7 -1.5 -20.8 870 75 23 30 01
23 45 00 0507+179 03 43 59 51.1 145.9 -1.4 -20.7 24 75 23 45 00
23 59 59 --- 03 59 01 52.2 151.4 -1.2 -17.6 899 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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)
* 0507+179	05 07 07.486545	* 05 10 02.369131	05 10 55.740663	0.00
J0510+1800	17 56 58.64618	* 18 00 41.58163	18 01 39.68341	0.00



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    2 Nov 2014    Day 306 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 736.00 736.00 736.00 736.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

02 00 00	1044+719	05 59 21	54.7	31.3	-4.8	-82.0	0	0	02 00 00
02 14 30	---	06 13 53	55.8	31.5	-4.6	-85.2	870	28	02 00 01
02 15 00	1044+719	06 14 23	55.8	31.5	-4.6	-85.4	24	28	02 15 00
02 29 30	---	06 28 56	57.0	31.6	-4.3	-88.7	870	56	02 15 01
02 30 00	1044+719	06 29 26	57.0	31.6	-4.3	-88.8	24	56	02 30 00
02 44 30	---	06 43 58	58.2	31.6	-4.1	-92.3	870	84	02 30 01
02 45 00	1044+719	06 44 28	58.2	31.6	-4.1	-92.4	24	84	02 45 00
03 00 00	---	06 59 31	59.4	31.4	-3.8	-96.1	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: ra6cm2.set

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=	4100.00	4100.00	4100.00	4100.00
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 with PCAL = 1MHz  
 LO sum= 4836.00 4836.00 4836.00 4836.00  
 BBC fr= 736.00 736.00 736.00 736.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)		
* 1044+719	10 44 49.735111	* 10 48 27.619927	10 49 28.137405	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 34.31151	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)
3C147	127.2
1044+719	93.7

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:

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

**rk08estr**

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    2 Nov 2014    Day 306 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

06 00 00	0917+624	10 00 00	79.6	-24.8	0.6	147.3	0	0	06 00 00
06 14 30	---	10 14 33	78.6	-31.9	0.9	137.1	870	28	06 00 01
06 15 00	0917+624	10 15 03	78.6	-32.2	0.9	136.7	23	28	06 15 00
06 29 30	---	10 29 35	77.3	-37.6	1.1	128.2	870	56	06 15 01
06 30 00	0917+624	10 30 05	77.3	-37.8	1.1	127.9	24	56	06 30 00
06 44 30	---	10 44 38	75.9	-41.9	1.4	120.7	870	84	06 30 01
06 45 00	0917+624	10 45 08	75.8	-42.0	1.4	120.5	24	84	06 45 00
07 00 00	---	11 00 10	74.3	-45.2	1.6	114.1	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: ra6cm2.set

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=	4100.00	4100.00	4100.00	4100.00
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 with PCAL = 1MHz  
 LO sum= 4836.00 4836.00 4836.00 4836.00  
 BBC fr= 736.00 736.00 736.00 736.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)
* 0917+624	09 17 40.306860	* 09 21 36.231074	09 22 44.932280	0.00
J0921+6215	62 28 38.64009	* 62 15 52.18031	62 11 41.51020	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)
3C147	127.4
0917+624	96.9

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:

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

**rk08ettr**

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    2 Nov 2014    Day 306 ---

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

10 20 00	1807+698	14 20 43	59.9	34.9	-3.8		-94.1	0	0	10 20 00
10 39 30	---	14 40 16	61.5	34.5	-3.4		-99.0	1170	37	10 20 01
10 40 00	1807+698	14 40 46	61.6	34.5	-3.4		-99.1	24	37	10 40 00
10 50 00	---	14 50 48	62.4	34.2	-3.3		-101.8	600	57	10 40 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

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=	4100.00	4100.00	4100.00	4100.00
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 with PCAL = 1MHz  
 LO sum= 4836.00 4836.00 4836.00 4836.00  
 BBC fr= 736.00 736.00 736.00 736.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 3

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)		
* 1807+698	18 07 18.543586	* 18 06 50.680644	18 06 39.849725	0.00
J1806+6949	69 48 57.10463	* 69 49 28.10848	69 50 01.57623	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	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:

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

1.6 GHZ OBSERVATION OF HESS J1943+213

PI: Kazunori Akiyama

Address: National Astronomical Observatory of Japan, 2-21-1, Osawa, Mitaka, Tokyo, Japan  
 Phone: +81 422 34 3939 EMAIL: kazunori.akiyama@nao.ac.jp  
 Fax: +81 422 34 3814 Phone during observation: +81 422 34 3939

Observing mode: VLBA/MKIV

Schedule for TORUN (Code Tr ) Page 2

1.6 GHZ observation of HESS J1943+213

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 2 Nov 2014 Day 306 ---										
Next scan frequencies:		1610.49	1610.49	1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49
		1674.49	1674.49	1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49
Next BBC frequencies:		689.51	689.51	689.51	689.51	689.51	689.51	657.51	657.51	657.51
		625.51	625.51	625.51	625.51	625.51	625.51	593.51	593.51	593.51
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	16.00	16.00
11 00 00	1929+226	15 00 50	31.2	93.1	-4.5		-40.6	0	0	11 00 00
11 05 00	---	15 05 50	32.0	94.1	-4.4		-40.5	300	38	11 00 01
11 06 00	J1943+213	15 06 51	29.2	92.8	-4.6		-40.1	35	38	11 06 00
11 11 00	---	15 11 51	29.9	93.9	-4.5		-40.0	300	77	11 06 01
11 12 00	J1943+213	15 12 52	30.1	94.1	-4.5		-40.0	54	77	11 12 00
11 17 00	---	15 17 52	30.8	95.1	-4.4		-40.0	300	115	11 12 01
11 18 00	J1943+213	15 18 53	31.0	95.3	-4.4		-39.9	54	115	11 18 00
11 23 00	---	15 23 53	31.7	96.4	-4.3		-39.8	300	154	11 18 01
11 24 00	J1943+213	15 24 54	31.9	96.6	-4.3		-39.8	54	154	11 24 00
11 29 00	---	15 29 54	32.6	97.6	-4.2		-39.7	300	192	11 24 01
11 30 00	J1943+213	15 30 55	32.8	97.8	-4.2		-39.7	54	192	11 30 00
11 35 00	---	15 35 55	33.5	98.9	-4.1		-39.6	300	231	11 30 01
11 36 00	J1943+213	15 36 56	33.7	99.1	-4.1		-39.5	54	231	11 36 00
11 41 00	---	15 41 56	34.4	100.2	-4.0		-39.4	300	269	11 36 01
11 42 00	J1943+213	15 42 57	34.6	100.4	-4.0		-39.4	54	269	11 42 00
11 47 00	---	15 47 57	35.3	101.5	-3.9		-39.2	300	308	11 42 01
11 48 00	J1943+213	15 48 57	35.4	101.8	-3.9		-39.1	54	308	11 48 00
11 53 00	---	15 53 58	36.2	102.9	-3.8		-38.9	300	346	11 48 01
11 54 00	1929+226	15 54 58	39.3	104.8	-3.6		-39.0	35	346	11 54 00
11 59 00	---	15 59 59	40.0	106.0	-3.5		-38.8	300	385	11 54 01

Schedule for TORUN (Code Tr )

Page 3

1.6 GHz observation of HESS J1943+213

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 2 Nov 2014 Day 306 ---										
12 00 00	1923+210	16 00 59	39.6	108.8	-3.4		-37.5	40	385	12 00 00
12 09 00	---	16 10 01	40.9	111.0	-3.3		-36.9	540	454	12 00 01
12 10 00	1923+210	16 11 01	41.0	111.3	-3.3		-36.9	54	454	12 10 00
12 19 00	---	16 20 03	42.3	113.5	-3.1		-36.2	540	523	12 10 01
12 20 00	J1943+213	16 21 03	40.1	109.2	-3.4		-37.5	36	523	12 20 00
12 25 00	---	16 26 04	40.8	110.4	-3.3		-37.2	300	562	12 20 01
12 26 00	J1943+213	16 27 04	40.9	110.6	-3.3		-37.1	54	562	12 26 00
12 31 00	---	16 32 05	41.6	111.9	-3.2		-36.7	300	600	12 26 01
12 32 00	J1943+213	16 33 05	41.8	112.1	-3.2		-36.7	54	600	12 32 00
12 37 00	---	16 38 06	42.5	113.4	-3.1		-36.3	300	638	12 32 01
12 38 00	J1943+213	16 39 06	42.6	113.7	-3.1		-36.2	54	638	12 38 00
12 43 00	---	16 44 07	43.3	114.9	-3.0		-35.8	300	677	12 38 01
12 44 00	J1943+213	16 45 07	43.4	115.2	-3.0		-35.7	54	677	12 44 00
12 49 00	---	16 50 08	44.1	116.5	-2.9		-35.2	300	715	12 44 01
12 50 00	J1943+213	16 51 08	44.2	116.8	-2.9		-35.1	54	715	12 50 00
12 54 00	---	16 55 08	44.8	117.9	-2.8		-34.7	240	746	12 50 01
12 55 00	1929+226	16 56 08	47.7	120.4	-2.6		-34.2	35	746	12 55 00
12 59 00	---	17 00 09	48.2	121.6	-2.5		-33.7	240	777	12 55 01
13 00 00	J1943+213	17 01 09	45.6	119.5	-2.7		-34.1	36	777	13 00 00
13 05 00	---	17 06 10	46.2	120.9	-2.6		-33.6	300	815	13 00 01
13 06 00	J1943+213	17 07 10	46.4	121.2	-2.6		-33.5	54	815	13 06 00
13 11 00	---	17 12 11	47.0	122.6	-2.5		-32.9	300	854	13 06 01
13 12 00	J1943+213	17 13 11	47.1	122.9	-2.5		-32.8	54	854	13 12 00
13 17 00	---	17 18 12	47.7	124.3	-2.4		-32.2	300	892	13 12 01
13 18 00	J1943+213	17 19 12	47.9	124.6	-2.4		-32.0	54	892	13 18 00
13 23 00	---	17 24 13	48.5	126.1	-2.3		-31.4	300	931	13 18 01
13 24 00	J1943+213	17 25 13	48.6	126.4	-2.3		-31.2	54	931	13 24 00
13 29 00	---	17 30 14	49.2	128.0	-2.2		-30.6	300	969	13 24 01
13 30 00	J1943+213	17 31 14	49.3	128.3	-2.2		-30.4	54	969	13 30 00
13 35 00	---	17 36 15	49.9	129.8	-2.1		-29.7	300	1008	13 30 01
13 36 00	J1943+213	17 37 15	50.0	130.1	-2.1		-29.5	54	1008	13 36 00
13 41 00	---	17 42 16	50.6	131.7	-2.0		-28.8	300	1046	13 36 01



Schedule for TORUN (Code Tr )

Page 4

1.6 GHz observation of HESS J1943+213

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 2 Nov 2014 Day 306 ---										
13 42 00	J1943+213	17 43 16	50.7	132.1	-2.0		-28.6	54	1046	13 42 00
13 47 00	---	17 48 17	51.3	133.7	-1.9		-27.8	300	1085	13 42 01
13 48 00	J1943+213	17 49 17	51.4	134.0	-1.9		-27.6	53	1085	13 48 00
13 53 00	---	17 54 18	51.9	135.7	-1.8		-26.8	300	1123	13 48 01
13 54 00	1929+226	17 55 18	54.5	139.4	-1.6		-25.1	36	1123	13 54 00
13 59 00	---	18 00 19	55.0	141.2	-1.5		-24.1	300	1162	13 54 01
14 00 00	J1943+213	18 01 19	52.6	138.1	-1.7		-25.5	37	1162	14 00 00
14 05 00	---	18 06 20	53.1	139.8	-1.6		-24.6	300	1200	14 00 01
14 06 00	J1943+213	18 07 20	53.2	140.2	-1.6		-24.4	53	1200	14 06 00
14 11 00	---	18 12 21	53.7	142.0	-1.5		-23.4	300	1238	14 06 01
14 12 00	J1943+213	18 13 21	53.8	142.3	-1.5		-23.2	53	1238	14 12 00
14 17 00	---	18 18 22	54.2	144.2	-1.4		-22.2	300	1277	14 12 01
14 18 00	J1943+213	18 19 22	54.3	144.6	-1.4		-22.0	53	1277	14 18 00
14 23 00	---	18 24 23	54.7	146.4	-1.3		-20.9	300	1315	14 18 01
14 24 00	J1943+213	18 25 23	54.8	146.8	-1.3		-20.7	53	1315	14 24 00
14 29 00	---	18 30 24	55.2	148.7	-1.2		-19.6	300	1354	14 24 01
14 30 00	J1943+213	18 31 24	55.3	149.1	-1.2		-19.3	53	1354	14 30 00
14 35 00	---	18 36 25	55.7	151.1	-1.1		-18.2	300	1392	14 30 01
14 36 00	J1943+213	18 37 25	55.7	151.4	-1.1		-17.9	53	1392	14 36 00
14 41 00	---	18 42 26	56.1	153.4	-1.0		-16.8	300	1431	14 36 01
14 42 00	J1943+213	18 43 26	56.2	153.8	-1.0		-16.5	53	1431	14 42 00
14 47 00	---	18 48 27	56.5	155.9	-0.9		-15.3	300	1469	14 42 01
14 48 00	J1943+213	18 49 27	56.5	156.3	-0.9		-15.0	53	1469	14 48 00
14 53 00	---	18 54 28	56.8	158.3	-0.8		-13.8	300	1508	14 48 01
14 54 00	1929+226	18 55 28	58.9	163.5	-0.6		-10.6	35	1508	14 54 00
15 00 00	---	19 01 29	59.1	166.2	-0.5		-8.9	360	1554	14 54 01

## SETUP FILE INFORMATION:

==== Setup file: sess314.L1024

Setup group: 11	Station: TORUN	Total bit rate: 1024
Format: MARK5B	Bits per sample: 2	Sample rate: 32.000
Number of channels: 16	DBE type: DBBC_DDC	Speedup factor: 1.00

Disk used to record data.

1st LO=	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00	2300.00
Net SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF SB =	L	L	L	L	L	L	L	L	L
	L	L	L	L	L	L	L	L	L
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	LCP
BBC =	1	5	1	5	2	6	2	6	6
	3	7	3	7	4	8	4	8	8
BBC SB=	U	U	L	L	U	U	L	L	L
	U	U	L	L	U	U	L	L	L
IF =	A1	B1	A1	B1	A1	B1	A1	B1	B1
	A1	B1	A1	B1	A1	B1	A1	B1	B1

The following frequency sets based on these setups were used.

Frequency Set: 7 Setup file default. Used with PCAL = off

LO sum=	1610.49	1610.49	1610.49	1610.49	1642.49	1642.49	1642.49	1642.49
	1674.49	1674.49	1674.49	1674.49	1706.49	1706.49	1706.49	1706.49
BBC fr=	689.51	689.51	689.51	689.51	657.51	657.51	657.51	657.51
	625.51	625.51	625.51	625.51	593.51	593.51	593.51	593.51
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: 7

Track assignments are:

track1= 2, 10, 18, 26, 4, 12, 20, 28, 6, 14, 22, 30, 8, 16, 24, 32  
 barrel=roll\_off

POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* J1943+213	19 41 45.851525	* 19 43 56.237200	19 44 34.803269	0.00
	21 11 08.62167	* 21 18 23.40200	21 20 55.18061	0.00
* 1929+226	19 29 16.894907	* 19 31 24.916800	19 32 02.695623	0.10
	22 37 06.35098	* 22 43 31.25900	22 45 48.60535	0.10
* 1923+210	19 23 49.792437	* 19 25 59.605400	19 26 37.880346	0.10
	21 00 23.30491	* 21 06 26.16200	21 08 36.56732	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)
J1943+213	85.1
1929+226	82.8
1923+210	81.0

**rk08eutr**

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/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    3 Nov 2014    Day 307 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

02 00 00	0602+405	06 03 17	77.4	176.8	-0.1	-2.5	0	0	02 00 00
02 14 30	---	06 17 50	77.3	189.5	0.2	7.5	870	28	02 00 01
02 15 00	0602+405	06 18 20	77.3	189.9	0.2	7.8	22	28	02 15 00
02 25 00	---	06 28 22	76.9	198.2	0.4	14.3	600	47	02 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00

02 30 00	0602+405	06 33 22	76.6	202.3	0.4	17.4	291	47	02 30 00
02 44 30	---	06 47 55	75.6	213.0	0.7	25.5	870	75	02 30 01
02 45 00	0602+405	06 48 25	75.6	213.3	0.7	25.7	23	75	02 45 00
03 00 00	---	07 03 27	74.2	222.9	0.9	32.5	900	104	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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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)
* 0602+405	06 02 20.058853	* 06 05 50.855373	06 06 54.888466	0.00
J0605+4030	40 30 26.00787	* 40 30 08.10354	40 29 46.32622	0.00

**rg04abtr**

RADIOASTRON PULSAR OBSERVATIONS

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 Pulsar observations

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    3 Nov 2014    Day 307 ---

----- This is a 1min calibration scan with auto-level (AGC) ON -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

05 58 00    B0823+26                      10 01 57    58.2 222.7    1.6            27.1    0            0    Stopped  
05 59 00    ---                              10 02 57    58.1 223.1    1.6            27.3    60            0

----- Please make sure Pcal, noise diode (Tsys) and auto-level (AGC) are OFF now -----

06 00 00    B0823+26                      10 03 57    58.0 223.5    1.6            27.5    53            0    06 00 00  
06 19 30    ---                              10 23 30    55.9 230.5    1.9            31.2    1170            37    06 00 01  
  
06 20 00    B0823+26                      10 24 00    55.8 230.6    1.9            31.3    24            37    06 20 00  
06 39 30    ---                              10 43 33    53.4 237.0    2.3            34.3    1170            75    06 20 01  
  
06 40 00    B0823+26                      10 44 03    53.4 237.1    2.3            34.3    24            75    06 40 00  
07 00 00    ---                              11 04 07    50.8 243.1    2.6            36.8    1200            113    06 40 01

SETUP FILE INFORMATION:

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

=====  
Setup file: ra18cm2\_autolevel.set

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:

Disk used to record data.

Setup not used for recording data.

```

1st LO=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = off
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

==== Setup file: ra18cm2.set

```

Setup group:  8      Station: TORUM      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=  2400.00  2400.00  2400.00  2400.00
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:  8  Setup file default.  Used with PCAL = off
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  8

```

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)		
* B0823+26	08 23 50.567067	* 08 26 51.383300	08 27 45.251672	0.00
J0826+2637	26 47 17.50121	* 26 37 23.79000	26 34 14.40587	0.00

rk08evtr

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/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 3 Nov 2014 Day 307 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
09 00 00 0827+243 13 04 26 32.0 268.3 4.5 41.1 0 0 09 00 00
09 14 30 --- 13 18 59 29.9 271.2 4.8 41.1 870 28 09 00 01
09 15 00 0827+243 13 19 29 29.8 271.3 4.8 41.1 24 28 09 15 00
09 25 00 --- 13 29 31 28.3 273.2 5.0 41.1 600 47 09 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
09 30 00 0827+243 13 34 31 27.5 274.2 5.0 41.0 293 47 09 30 00
09 44 30 --- 13 49 04 25.4 277.0 5.3 40.8 870 75 09 30 01
09 45 00 0827+243 13 49 34 25.3 277.1 5.3 40.8 24 75 09 45 00
10 00 00 --- 14 04 36 23.1 280.0 5.5 40.4 900 104 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: ra6cm2.set

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

```

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 45.016738	0.00
J0830+2410	24 21 07.66367	* 24 10 59.82026	24 07 47.20963	0.00



**rk08extr**

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/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    4 Nov 2014    Day 308 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

02 00 00	1044+719	06 07 14	55.3	31.4	-4.7	-83.7	0	0	02 00 00
02 14 30	---	06 21 46	56.4	31.6	-4.5	-87.1	870	28	02 00 01
02 15 00	1044+719	06 22 16	56.5	31.6	-4.5	-87.2	24	28	02 15 00
02 25 00	---	06 32 18	57.2	31.6	-4.3	-89.5	600	47	02 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00

02 30 00	1044+719	06 37 19	57.6	31.6	-4.2	-90.7	294	47	02 30 00
02 44 30	---	06 51 51	58.8	31.5	-4.0	-94.2	870	75	02 30 01
02 45 00	1044+719	06 52 21	58.8	31.5	-4.0	-94.4	24	75	02 45 00
03 00 00	---	07 07 24	60.0	31.3	-3.7	-98.1	900	104	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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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 28.259833	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 33.85279	0.00

rk08eytr

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/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 4 Nov 2014 Day 308 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 736.00 736.00 736.00 736.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

06 00 00	0536+145	10 07 53	25.5	260.2	4.5	37.7	0	0	06 00 00
06 14 30	---	10 22 26	23.3	263.3	4.7	38.0	870	28	06 00 01
06 15 00	0536+145	10 22 56	23.2	263.4	4.7	38.0	24	28	06 15 00
06 25 00	---	10 32 58	21.7	265.4	4.9	38.2	600	47	06 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00

06 30 00	0536+145	10 37 58	21.0	266.5	5.0	38.3	293	47	06 30 00
06 44 30	---	10 52 31	18.8	269.4	5.2	38.3	870	75	06 30 01
06 45 00	0536+145	10 53 01	18.7	269.5	5.2	38.3	24	75	06 45 00
07 00 00	---	11 08 03	16.5	272.5	5.5	38.3	900	104	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: ra6cm2.set

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  2

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

```

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)
* 0536+145	05 36 51.361475	* 05 39 42.365993	05 40 34.452866	0.00
J0539+1433	14 32 10.73038	* 14 33 45.56168	14 34 05.44395	0.00

rk08eztr

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/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 4 Nov 2014 Day 308 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

09 00 00 0827+243 13 08 23 31.5 269.0 4.6 41.1 0 0 09 00 00
09 14 30 --- 13 22 55 29.3 271.9 4.9 41.1 870 28 09 00 01
09 15 00 0827+243 13 23 25 29.2 272.0 4.9 41.1 24 28 09 15 00
09 25 00 --- 13 33 27 27.7 274.0 5.0 41.0 600 47 09 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

09 30 00 0827+243 13 38 28 26.9 275.0 5.1 41.0 293 47 09 30 00
09 44 30 --- 13 53 00 24.8 277.8 5.4 40.7 870 75 09 30 01
09 45 00 0827+243 13 53 30 24.7 277.9 5.4 40.7 24 75 09 45 00
10 00 00 --- 14 08 33 22.5 280.7 5.6 40.3 900 104 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: ra6cm2.set

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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 45.043458	0.00
J0830+2410	24 21 07.66367	* 24 10 59.82026	24 07 47.09671	0.00

rk08fbtr

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/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 4 Nov 2014 Day 308 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
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 1044+719 02 10 31 39.6 18.3 -8.6 -36.8 0 0 22 00 00
22 14 30 --- 02 25 04 40.4 19.5 -8.4 -39.5 870 28 22 00 01
22 15 00 1044+719 02 25 34 40.4 19.5 -8.4 -39.6 25 28 22 15 00
22 25 00 --- 02 35 35 40.9 20.3 -8.2 -41.5 600 47 22 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

22 30 00 1044+719 02 40 36 41.2 20.7 -8.1 -42.4 294 47 22 30 00
22 44 30 --- 02 55 08 41.9 21.8 -7.9 -45.2 870 75 22 30 01
22 45 00 1044+719 02 55 39 42.0 21.9 -7.9 -45.2 25 75 22 45 00
23 00 00 --- 03 10 41 42.8 23.0 -7.6 -48.1 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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 28.307920	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 33.65526	0.00



rk08fctr

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/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 5 Nov 2014 Day 309 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

01 00 00 0602+405 05 11 01 74.2 137.5 -0.9 -32.3 0 0 01 00 00
01 14 30 --- 05 25 33 75.6 146.8 -0.7 -25.7 870 28 01 00 01
01 15 00 0602+405 05 26 03 75.6 147.1 -0.7 -25.4 23 28 01 15 00
01 25 00 --- 05 36 05 76.4 154.4 -0.5 -20.0 600 47 01 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

01 30 00 0602+405 05 41 06 76.7 158.2 -0.4 -17.0 291 47 01 30 00
01 44 30 --- 05 55 38 77.3 170.2 -0.2 -7.7 870 75 01 30 01
01 45 00 0602+405 05 56 08 77.3 170.7 -0.2 -7.4 22 75 01 45 00
02 00 00 --- 06 11 11 77.4 183.7 0.1 2.9 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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)
* 0602+405	06 02 20.058853	* 06 05 50.855373	06 06 54.941208	0.00
J0605+4030	40 30 26.00787	* 40 30 08.10354	40 29 46.38939	0.00

rk08fdtr

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/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 5 Nov 2014 Day 309 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

13 00 00 0917+624 17 12 59 35.3 -30.4 7.8 40.7 0 0 13 00 00
13 14 30 --- 17 27 31 34.2 -28.8 8.1 38.4 870 28 13 00 01
13 15 00 0917+624 17 28 01 34.2 -28.8 8.1 38.3 24 28 13 15 00
13 25 00 --- 17 38 03 33.5 -27.7 8.3 36.7 600 47 13 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

13 30 00 0917+624 17 43 04 33.1 -27.1 8.3 35.9 294 47 13 30 00
13 44 30 --- 17 57 36 32.1 -25.5 8.6 33.6 870 75 13 30 01
13 45 00 0917+624 17 58 06 32.1 -25.4 8.6 33.5 24 75 13 45 00
14 00 00 --- 18 13 09 31.2 -23.7 8.8 31.1 900 104 13 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

```

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)
* 0917+624	09 17 40.306860	* 09 21 36.231074	09 22 45.094903	0.00
J0921+6215	62 28 38.64009	* 62 15 52.18031	62 11 41.06368	0.00

rk08fetr

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/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 5 Nov 2014 Day 309 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

21 00 00 1044+719 01 14 18 37.3 13.5 -9.6 -26.5 0 0 21 00 00
21 14 30 --- 01 28 50 37.9 14.8 -9.3 -29.2 870 28 21 00 01
21 15 00 1044+719 01 29 20 37.9 14.9 -9.3 -29.3 25 28 21 15 00
21 25 00 --- 01 39 22 38.3 15.7 -9.2 -31.1 600 47 21 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

21 30 00 1044+719 01 44 23 38.5 16.1 -9.1 -32.0 294 47 21 30 00
21 44 30 --- 01 58 55 39.1 17.4 -8.8 -34.7 870 75 21 30 01
21 45 00 1044+719 01 59 25 39.1 17.4 -8.8 -34.8 25 75 21 45 00
22 00 00 --- 02 14 28 39.8 18.7 -8.6 -37.6 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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 28.362547	0.00
J1048+7143	71 59 26.88535	* 71 43 35.93838	71 38 33.42103	0.00

**rk08fftr**

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/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    6 Nov 2014    Day 310 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

02 00 00	1954+513	06 15 07	16.8	-16.1	10.3		15.5	0	0	02 00 00
02 14 30	---	06 29 40	16.2	-13.8	10.6		13.3	870	28	02 00 01
02 15 00	1954+513	06 30 10	16.2	-13.7	10.6		13.2	24	28	02 15 00
02 25 00	---	06 40 11	15.9	-12.1	10.7		11.7	600	47	02 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00

02 30 00	1954+513	06 45 12	15.7	-11.3	10.8		10.9	294	47	02 30 00
02 44 30	---	06 59 44	15.3	-9.0	11.1		8.7	870	75	02 30 01
02 45 00	1954+513	07 00 15	15.3	-8.9	11.1		8.6	24	75	02 45 00
03 00 00	---	07 15 17	15.0	-6.5	11.3		6.3	900	104	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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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)
* 1954+513	19 54 22.470017	* 19 55 42.738247	19 56 06.362860	0.00
J1955+5131	51 23 46.42512	* 51 31 48.54613	51 34 39.52553	0.00



**rk08fhtr**

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    8 Nov 2014    Day 312 ---

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

09 00 00	0851+202	13 24 09	29.6	264.3	4.5	39.5	0	0	09 00 00
09 14 30	---	13 38 42	27.4	267.3	4.7	39.7	870	28	09 00 01
09 15 00	0851+202	13 39 12	27.3	267.4	4.7	39.7	24	28	09 15 00
09 29 30	---	13 53 44	25.1	270.3	5.0	39.7	870	56	09 15 01
09 30 00	0851+202	13 54 14	25.1	270.4	5.0	39.7	24	56	09 30 00
09 44 30	---	14 08 47	22.9	273.3	5.2	39.7	870	84	09 30 01
09 45 00	0851+202	14 09 17	22.8	273.4	5.2	39.6	24	84	09 45 00
10 00 00	---	14 24 19	20.6	276.3	5.5	39.4	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: ra1cm2.set

Matching groups in ./rk08fh\_freq.dat:            tr1cm

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:  6  Setup file default.  Used with PCAL = 1MHz
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

```

```

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)
* 0851+202	08 51 57.250618	* 08 54 48.874930	08 55 40.013552	0.00
J0854+2006	20 17 58.41733	* 20 06 30.64078	20 02 55.62605	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    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:

```

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

```

rg04adtr

RADIOASTRON PULSAR OBSERVATIONS

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 Pulsar observations

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 8 Nov 2014 Day 312 ---

----- This is a 1min calibration scan with auto-level (AGC) ON -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

23 57 30 B0525+21 04 24 07 56.5 151.7 -1.1 -17.9 0 0 Stopped
23 58 30 --- 04 25 07 56.6 152.1 -1.1 -17.7 60 0

--- Sun 9 Nov 2014 Day 313 ---

00 00 00 B0525+21 04 26 37 56.7 152.7 -1.1 -17.3 83 0 00 00 00
00 19 30 --- 04 46 10 57.8 160.8 -0.7 -12.3 1170 37 00 00 01
00 20 00 B0525+21 04 46 40 57.8 161.0 -0.7 -12.2 23 37 00 20 00
00 39 30 --- 05 06 14 58.6 169.5 -0.4 -6.8 1170 75 00 20 01
00 40 00 B0525+21 05 06 44 58.6 169.7 -0.4 -6.6 23 75 00 40 00
01 00 00 --- 05 26 47 58.9 178.6 -0.1 -0.9 1200 113 00 40 01

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2\_autolevel.set

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:

Disk used to record data.

Setup not used for recording data.

```

1st LO=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = off
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  1

```

==== Setup file: ra18cm2.set

```

Setup group:  5      Station: TORUM      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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = off
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

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)		
* B0525+21	05 25 51.827467	* 05 28 52.264000	05 29 47.397962	0.00
J0528+2200	21 57 41.80619	* 22 00 04.00000	22 00 36.20236	0.00

**rk08fitr**

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 9 Nov 2014 Day 313 ---

Next scan frequencies:	4836.00	4836.00	4836.00	4836.00						
Next BBC frequencies:	736.00	736.00	736.00	736.00						
Next scan bandwidths:	16.00	16.00	16.00	16.00						
06 00 00	0925+504	10 27 36	80.6	257.4	1.0		66.2	0	0	06 00 00
06 12 00	---	10 39 38	78.9	261.7	1.2		68.0	720	23	06 00 01
06 12 30	0925+504	10 40 08	78.8	261.8	1.2		68.1	24	23	06 12 30
06 24 30	---	10 52 10	77.0	265.2	1.4		69.1	720	46	06 12 31
06 25 00	0925+504	10 52 40	76.9	265.3	1.4		69.1	24	46	06 25 00
06 37 00	---	11 04 42	75.1	268.1	1.6		69.5	720	69	06 25 01
06 37 30	0925+504	11 05 12	75.0	268.2	1.6		69.5	24	69	06 37 30
06 50 00	---	11 17 44	73.2	270.8	1.8		69.6	750	93	06 37 31

SETUP FILE INFORMATION:

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

===== Setup file: ra6cm2.set

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=	4100.00	4100.00	4100.00	4100.00
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 with PCAL = 1MHz  
 LO sum= 4836.00 4836.00 4836.00 4836.00  
 BBC fr= 736.00 736.00 736.00 736.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)	
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 15.280425	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 09 21.62066	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)
3C147	133.1
0925+504	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:

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

rk08fctr

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/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 9 Nov 2014 Day 313 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

23 00 00 0454-234 03 30 24 11.2 159.6 -1.5 -13.2 0 0 23 00 00
23 14 30 --- 03 44 56 11.9 163.0 -1.2 -11.0 870 28 23 00 01
23 15 00 0454-234 03 45 26 11.9 163.1 -1.2 -11.0 24 28 23 15 00
23 25 00 --- 03 55 28 12.3 165.4 -1.0 -9.5 600 47 23 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

23 30 00 0454-234 04 00 29 12.5 166.6 -1.0 -8.7 293 47 23 30 00
23 44 30 --- 04 15 01 13.0 170.0 -0.7 -6.6 870 75 23 30 01
23 45 00 0454-234 04 15 31 13.0 170.1 -0.7 -6.5 24 75 23 45 00
23 59 59 --- 04 30 34 13.3 173.6 -0.5 -4.2 899 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  2

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  4

```

```

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 42.040642	0.00
J0457-2324	-23 29 28.31965	*-23 24 52.02024	-23 23 31.67205	0.00



**rk08fmtr**

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/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 10 Nov 2014 Day 314 ---

----- K-band VLBI scans -----

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

```
23 00 00 0048-097    03 34 20 18.6 222.8 2.7    24.4    0    0    23 00 00
23 14 30 ---        03 48 53 17.0 226.2 3.0    26.0    870    28    23 00 01

23 15 00 0048-097    03 49 23 17.0 226.3 3.0    26.1    24    28    23 15 00
23 25 00 ---        03 59 24 15.9 228.6 3.1    27.2    600    47    23 15 01
```

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies:    736.00    736.00    736.00    736.00

```
23 30 00 0048-097    04 04 25 15.3 229.7 3.2    27.7    293    47    23 30 00
23 44 30 ---        04 18 58 13.6 233.0 3.5    29.1    870    75    23 30 01

23 45 00 0048-097    04 19 28 13.5 233.1 3.5    29.1    24    75    23 45 00
23 59 59 ---        04 34 30 11.7 236.4 3.7    30.5    899    104    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: ra1cm2.set

Matching groups in ./rk08fm\_freq.dat:    tr1cm

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: 3 Setup file default. Used with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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= 4100.00 4100.00 4100.00 4100.00
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 with PCAL = 1MHz
LO sum= 4836.00 4836.00 4836.00 4836.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

```

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)
* 0048-097	00 48 09.975920	* 00 50 41.317387	00 51 27.472307	0.00
J0050-0929	-09 45 24.21201	*-09 29 05.21037	-09 24 11.98370	0.00

**rk08fntr**

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/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 11 Nov 2014 Day 315 ---

----- K-band VLBI scans -----

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

```
02 00 00 0528+134    06 34 50 48.5 203.5 1.1      14.2    0      0 02 00 00
02 14 30 ---          06 49 22 47.6 208.6 1.3      17.2   870    28 02 00 01

02 15 00 0528+134    06 49 52 47.5 208.7 1.3      17.3   24     28 02 15 00
02 25 00 ---          06 59 54 46.8 212.1 1.5      19.2  600    47 02 15 01
```

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00

```
02 30 00 0528+134    07 04 55 46.3 213.8 1.6      20.1  293     47 02 30 00
02 44 30 ---          07 19 27 45.1 218.5 1.8      22.6  870     75 02 30 01

02 45 00 0528+134    07 19 57 45.0 218.7 1.8      22.7   24     75 02 45 00
03 00 00 ---          07 35 00 43.5 223.4 2.1      25.1  900    104 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: ra1cm2.set

Matching groups in ./rk08fn\_freq.dat:    tr1cm

```
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: 6 Setup file default. Used with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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= 4100.00 4100.00 4100.00 4100.00
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: 8 Setup file default. Used with PCAL = 1MHz
LO sum= 4836.00 4836.00 4836.00 4836.00
BBC fr= 736.00 736.00 736.00 736.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 8

```

```

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)
* 0528+134	05 28 06.759218	* 05 30 56.416749	05 31 48.308957	0.00
J0530+1331	13 29 42.28878	* 13 31 55.14945	13 32 26.31749	0.00



1st LO=	2400.00	2400.00	2400.00	2400.00
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: 8 Setup file default. Used with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 8

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)
* 0604+728	06 04 39.220367	* 06 10 48.873417	06 12 42.532593	0.00
J0610+7248	72 49 27.04207	* 72 48 53.18435	72 48 17.85257	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)
0604+728	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:

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

rk08fqtr

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/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 11 Nov 2014 Day 315 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

11 20 00 1823+689 15 56 22 66.8 33.0 -2.5 -114.3 0 0 11 20 00
11 34 30 --- 16 10 54 67.9 31.5 -2.2 -119.1 870 28 11 20 01
11 35 00 1823+689 16 11 24 68.0 31.4 -2.2 -119.3 24 28 11 35 00
11 45 00 --- 16 21 26 68.8 30.2 -2.0 -122.8 600 47 11 35 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

11 50 00 1823+689 16 26 27 69.1 29.5 -1.9 -124.6 294 47 11 50 00
12 04 30 --- 16 40 59 70.2 27.2 -1.7 -130.1 870 75 11 50 01
12 05 00 1823+689 16 41 29 70.2 27.1 -1.7 -130.3 24 75 12 05 00
12 20 00 --- 16 56 32 71.2 24.3 -1.4 -136.5 900 104 12 05 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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 24.624428	0.00
J1823+6857	68 56 09.10322	* 68 57 52.61250	68 58 47.02675	0.00



rk08frtr

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 11 Nov 2014 Day 315 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
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 0925+504.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)		
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 15.413466	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 09 21.15987	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)
0925+504	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:

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

RADIOASTRON PULSAR OBSERVATIONS

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 Pulsar observations

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 11 Nov 2014 Day 315 ---

----- This is a 1min calibration scan with auto-level (AGC) ON -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 732.00 732.00 732.00 732.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

```
23 57 30 B0525+21    04 35 56 57.3 156.5 -0.9    -15.0    0        0    Stopped
23 58 30 ---        04 36 56 57.3 156.9 -0.9    -14.7    60        0
```

--- Wed 12 Nov 2014 Day 316 ---

----- Please make sure Pcal, noise diode (Tsys) and auto-level (AGC) are OFF now -----

```
00 00 00 B0525+21    04 38 27 57.4 157.5 -0.9    -14.3    83        0    00 00 00
00 19 30 ---        04 58 00 58.3 165.9 -0.5    -9.1    1170      37    00 00 01

00 20 00 B0525+21    04 58 30 58.3 166.1 -0.5    -9.0    23        37    00 20 00
00 39 30 ---        05 18 03 58.8 174.7 -0.2    -3.4    1170      75    00 20 01

00 40 00 B0525+21    05 18 33 58.8 175.0 -0.2    -3.3    23        75    00 40 00
01 00 00 ---        05 38 37 58.9 184.0 0.1        2.6    1200     113    00 40 01
```

SETUP FILE INFORMATION:

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

```
===== Setup file: ra18cm2_autolevel.set
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:
```

Disk used to record data.

Setup not used for recording data.

```

1st LO=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = off
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  3

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = off
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

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)
* B0525+21	05 25 51.827467	* 05 28 52.264000	05 29 47.485706	0.00
J0528+2200	21 57 41.80619	* 22 00 04.00000	22 00 36.19201	0.00

rk08fttr

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/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 12 Nov 2014 Day 316 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

12 00 00 2021+614 16 40 25 59.9 51.3 -3.7 -80.8 0 0 12 00 00
12 14 30 --- 16 54 57 61.6 51.7 -3.5 -83.6 870 28 12 00 01
12 15 00 2021+614 16 55 27 61.7 51.8 -3.4 -83.7 24 28 12 15 00
12 25 00 --- 17 05 29 62.9 52.0 -3.3 -85.7 600 47 12 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

12 30 00 2021+614 17 10 30 63.5 52.1 -3.2 -86.7 293 47 12 30 00
12 44 30 --- 17 25 02 65.2 52.2 -3.0 -89.8 870 75 12 30 01
12 45 00 2021+614 17 25 32 65.2 52.2 -2.9 -89.9 24 75 12 45 00
13 00 00 --- 17 40 35 67.0 52.1 -2.7 -93.3 900 104 12 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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)
* 2021+614	20 21 13.300234	* 20 22 06.681752	20 22 22.341933	0.00
J2022+6136	61 27 18.15575	* 61 36 58.80476	61 40 19.58064	0.00

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 12 Nov 2014 Day 316 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

Table with 12 columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, SYNC. Contains observation schedule data for 0048-097 and blank scans.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

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)		
* 0048-097	00 48 09.975920	* 00 50 41.317387	00 51 27.468144	0.00
J0050-0929	-09 45 24.21201	*-09 29 05.21037	-09 24 12.14485	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)
0048-097	135.9

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:

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



rk08fvtr

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 13 Nov 2014 Day 317 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
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 contains scan schedule data for 0529+483.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 6

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)		
* 0529+483	05 29 27.565384	* 05 33 15.865793	05 34 25.972164	0.00
J0533+4822	48 20 47.97038	* 48 22 52.80771	48 23 13.91839	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)
0529+483	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:

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

rk08fwtr

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 13 Nov 2014 Day 317 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
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 1807+698 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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 6

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)		
* 1807+698	18 07 18.543586	* 18 06 50.680644	18 06 39.302588	0.00
J1806+6949	69 48 57.10463	* 69 49 28.10848	69 49 59.29948	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	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:

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

rk08fxtr

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 13 Nov 2014 Day 317 ---

Table with columns: Start UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart. Rows include scan frequencies, BBC frequencies, bandwidths, and observation logs for 0925+504.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

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)
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 15.480024	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 09 20.96621	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)
3C147	136.2
0925+504	101.1

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:

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

rk08fytr

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 13 Nov 2014 Day 317 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

08 00 00	1150+812	12 43 42	61.9	-4.2	0.8		164.0	0	0	08 00 00
08 14 30	---	12 58 15	61.8	-5.3	1.1		159.4	870	28	08 00 01
08 15 00	1150+812	12 58 45	61.7	-5.4	1.1		159.3	25	28	08 15 00
08 29 30	---	13 13 17	61.5	-6.5	1.3		154.7	870	56	08 15 01
08 30 00	1150+812	13 13 47	61.5	-6.5	1.3		154.5	25	56	08 30 00
08 44 30	---	13 28 19	61.2	-7.6	1.6		150.0	870	84	08 30 01
08 45 00	1150+812	13 28 50	61.2	-7.6	1.6		149.9	25	84	08 45 00
09 00 00	---	13 43 52	60.9	-8.7	1.8		145.2	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

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)		
* 1150+812	11 50 23.482386	* 11 53 12.499225	11 53 53.411532	0.00
J1153+8058	81 15 10.31174	* 80 58 29.15457	80 53 13.99457	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)
1150+812	102.0

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:

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



rk08fztr

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 13 Nov 2014 Day 317 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
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 multiple scans.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

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)		
* 1823+689	18 23 51.691232	* 18 23 32.853904	18 23 24.527116	0.00
J1823+6857	68 56 09.10322	* 68 57 52.61250	68 58 46.53488	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	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:

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

rk08gatr

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/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 13 Nov 2014 Day 317 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
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 1150+812 02 46 00 46.1 9.0 -9.1 -36.2 0 0 22 00 00
22 14 30 --- 03 00 33 46.4 9.6 -8.9 -39.3 870 28 22 00 01
22 15 00 1150+812 03 01 03 46.4 9.6 -8.9 -39.4 25 28 22 15 00
22 25 00 --- 03 11 04 46.7 10.1 -8.7 -41.6 600 47 22 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

22 30 00 1150+812 03 16 05 46.8 10.3 -8.6 -42.6 295 47 22 30 00
22 44 30 --- 03 30 37 47.2 10.9 -8.4 -45.8 870 75 22 30 01
22 45 00 1150+812 03 31 08 47.2 10.9 -8.4 -45.9 25 75 22 45 00
23 00 00 --- 03 46 10 47.7 11.5 -8.1 -49.2 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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)
* 1150+812	11 50 23.482386	* 11 53 12.499225	11 53 53.481768	0.00
J1153+8058	81 15 10.31174	* 80 58 29.15457	80 53 13.83042	0.00

rk08gbtr

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/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 14 Nov 2014 Day 318 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

04 00 00 0925+504 08 46 59 82.7 109.3 -0.7 -62.2 0 0 04 00 00
04 14 30 --- 09 01 32 84.7 120.5 -0.5 -53.8 870 28 04 00 01
04 15 00 0925+504 09 02 02 84.7 121.1 -0.5 -53.4 22 28 04 15 00
04 25 00 --- 09 12 03 85.9 134.3 -0.3 -42.1 600 47 04 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

04 30 00 0925+504 09 17 04 86.4 143.8 -0.2 -33.6 287 47 04 30 00
04 44 30 --- 09 31 37 87.1 184.2 0.0 3.9 870 75 04 30 01
04 45 00 0925+504 09 32 07 87.0 185.8 0.0 5.4 18 75 04 45 00
05 00 00 --- 09 47 09 86.1 223.4 0.3 40.1 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

Track assignments are:

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  4

```

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)
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 15.522948	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 09 20.85075	0.00

RADIOASTRON MASER OBSERVATIONS

PI: *Alexei Alakoz*

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 Maser observations

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 14 Nov 2014    Day 318 ---

----- Please, make sure PCAL is OFF for NGC3079 maser observations. -----

Next scan frequencies: 22172.00 22172.00 22172.00 22172.00  
 Next BBC frequencies:    672.00    672.00    672.00    672.00  
 Next scan bandwidths:    16.00    16.00    16.00    16.00

```
07 00 00    NGC3079                      11 47 29    74.7 -70.1    1.7                      88.5    0                      0    07 00 00
07 24 30    ---                                      12 12 03    71.2 -69.4    2.2                      84.2    1470                      47    07 00 01

07 25 00    NGC3079                      12 12 33    71.1 -69.4    2.2                      84.1    24                      47    07 25 00
07 50 00    ---                                      12 37 37    67.6 -68.0    2.6                      80.2    1500                      95    07 25 01
```

----- This is a fringe finder/clock offset calibrator 7.3 deg. from NGC3079 -----

```
07 52 00    0925+504                      12 39 37    61.0 -76.4    3.2                      65.6    82                      95    07 52 00
07 56 30    ---                                      12 44 08    60.3 -75.8    3.2                      65.3    270                      104    07 52 01

07 57 00    0925+504                      12 44 38    60.3 -75.7    3.2                      65.3    24                      104    07 57 00
08 02 00    ---                                      12 49 39    59.5 -75.1    3.3                      64.9    300                      113    07 57 01
```

----- Please, make sure PCAL is OFF for NGC3079 maser observations. -----

```
08 05 00    NGC3079                      12 52 40    65.5 -67.0    2.8                      78.0    142                      113    08 05 00
08 19 30    ---                                      13 07 12    63.5 -65.9    3.1                      76.0    870                      141    08 05 01

08 20 00    NGC3079                      13 07 42    63.5 -65.9    3.1                      75.9    24                      141    08 20 00
08 44 30    ---                                      13 32 16    60.1 -63.9    3.5                      72.6    1470                      188    08 20 01

08 45 00    NGC3079                      13 32 46    60.1 -63.8    3.5                      72.5    24                      188    08 45 00
09 09 30    ---                                      13 57 20    56.8 -61.7    3.9                      69.3    1470                      235    08 45 01
```

----- Please, make sure PCAL is OFF for NGC3079 maser observations. -----

```
09 10 00    NGC3079                      13 57 50    56.7 -61.6    3.9                      69.2    24                      235    09 10 00
09 34 30    ---                                      14 22 24    53.5 -59.3    4.3                      66.1    1470                      282    09 10 01

09 35 00    NGC3079                      14 22 54    53.4 -59.3    4.3                      66.0    24                      282    09 35 00
10 00 00    ---                                      14 47 58    50.2 -56.8    4.8                      62.8    1500                      330    09 35 01
```

## SETUP FILE INFORMATION:

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

=====  
Setup file: ralcm2.set

Matching groups in ./rg1lad\_freq.dat:

tr1cm

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 with PCAL = off
LO sum=	22172.00	22172.00	22172.00
BBC fr=	672.00	672.00	672.00
Bandwd=	16.00	16.00	16.00
Matching frequency sets:	3		

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)		
* NGC3079	09 58 35.011191	* 10 01 57.802000	10 02 57.095605	0.00
NGC3079_H20	55 55 15.50111	* 55 40 47.26000	55 36 08.16358	0.00
* 0925+504	09 25 51.973728	* 09 29 15.440209	09 30 15.528064	0.00
J0929+5013	50 26 44.31059	* 50 13 35.98961	50 09 20.83736	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)
NGC3079	98.8
0925+504	102.0





1st LO=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

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)
* 0604+728	06 04 39.220367	* 06 10 48.873417	06 12 42.796922	0.00
J0610+7248	72 49 27.04207	* 72 48 53.18435	72 48 18.53251	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)
0604+728	120.3

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:

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

**rk08getr**

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/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 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

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----- K-band VLBI scans -----

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

17 00 00	1150+812	21 49 07	45.1	-6.7	9.9		26.1	0	0	17 00 00
17 15 00	---	22 04 10	44.8	-5.9	10.2		23.0	900	29	17 00 01

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies: 736.00 736.00 736.00 736.00

17 20 00	1150+812	22 09 11	44.8	-5.6	10.3		21.9	294	29	17 20 00
17 40 00	---	22 29 14	44.5	-4.6	10.6		17.7	1200	67	17 20 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 ./rk08ge\_freq.dat: tr1cm

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 with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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)		
* 1150+812	11 50 23.482386	* 11 53 12.499225	11 53 53.580000	0.00
J1153+8058	81 15 10.31174	* 80 58 29.15457	80 53 13.60889	0.00

rk08gfr

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  
-----

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Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

19 00 00	1823+689	23 49 27	51.1	-34.4	5.4	71.0	0	0	19 00 00
19 19 30	---	00 09 00	49.5	-33.4	5.8	67.2	1170	37	19 00 01
19 20 00	1823+689	00 09 30	49.4	-33.4	5.8	67.1	24	37	19 20 00
19 40 00	---	00 29 34	47.8	-32.3	6.1	63.3	1200	76	19 20 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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)		
* 1823+689	18 23 51.691232	* 18 23 32.853904	18 23 24.463681	0.00
J1823+6857	68 56 09.10322	* 68 57 52.61250	68 58 46.18442	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	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:

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

rk08ggtr

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/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 14 Nov 2014 Day 318 ---

----- K-band VLBI scans -----

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 50 00 2022+542 03 40 05 32.5 -40.6 7.3 42.4 0 0 22 50 00
23 04 30 --- 03 54 37 31.2 -38.8 7.5 40.4 870 28 22 50 01
23 05 00 2022+542 03 55 07 31.1 -38.7 7.5 40.3 24 28 23 05 00
23 15 00 --- 04 05 09 30.2 -37.4 7.7 38.9 600 47 23 05 01

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00

23 20 00 2022+542 04 10 10 29.7 -36.8 7.8 38.2 294 47 23 20 00
23 34 30 --- 04 24 42 28.4 -34.8 8.0 36.2 870 75 23 20 01
23 35 00 2022+542 04 25 12 28.4 -34.8 8.0 36.1 24 75 23 35 00
23 50 00 --- 04 40 15 27.1 -32.7 8.3 34.0 900 104 23 35 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 ./rk08gg\_freq.dat: tr1cm

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 with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  7

```

```

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)
* 2022+542	20 22 37.651026	* 20 23 55.844020	20 24 18.906780	0.00
J2023+5427	54 17 49.43890	* 54 27 35.82889	54 30 57.63881	0.00





1st LO=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 3

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)
* 2328+107	23 28 08.785997	* 23 30 40.852261	23 31 27.027019	0.00
J2330+1100	10 43 45.52196	* 11 00 18.70969	11 05 25.17102	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)
2328+107	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:

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

**rk08gitr**

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/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 18 Nov 2014 Day 322 ---

----- K-band VLBI scans -----

```
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
```

```
02 00 00 0607-157   07 02 26 20.3 193.4 0.9      8.3   0      0   02 00 00
02 14 30 ---       07 16 58 19.7 197.0 1.1     10.5  870   28   02 00 01

02 15 00 0607-157   07 17 28 19.7 197.2 1.1     10.6  24   28   02 15 00
02 25 00 ---       07 27 30 19.2 199.7 1.3     12.1  600   47   02 15 01
```

----- C-band VLBI scans -----

```
Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies:   736.00   736.00   736.00   736.00
```

```
02 30 00 0607-157   07 32 31 18.9 200.9 1.4     12.9  293   47   02 30 00
02 44 30 ---       07 47 03 18.1 204.5 1.6     15.0  870   75   02 30 01

02 45 00 0607-157   07 47 33 18.1 204.6 1.6     15.1  24   75   02 45 00
03 00 00 ---       08 02 36 17.1 208.3 1.9     17.2  900  104   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: ra1cm2.set

Matching groups in ./rk08gi\_freq.dat:        tr1cm

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:  3  Setup file default.  Used with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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)
* 0607-157	06 07 25.981282	* 06 09 40.949536	06 10 22.483509	0.00
J0609-1542	-15 42 03.30591	*-15 42 40.67271	-15 42 55.30310	0.00

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 18 Nov 2014 Day 322 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

05 00 00	1015+359	10 02 55	72.3	169.2	-0.3		-8.0	0	0	05 00 00
05 19 30	---	10 22 29	72.5	182.3	0.1		1.7	1170	37	05 00 01
05 20 00	1015+359	10 22 59	72.5	182.7	0.1		2.0	23	37	05 20 00
05 40 00	---	10 43 02	72.0	196.0	0.4		11.7	1200	76	05 20 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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

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)		
* 1015+359	10 15 16.226760	* 10 18 10.988103	10 19 02.543856	0.00
J1018+3542	35 57 41.35603	* 35 42 39.44084	35 37 56.74163	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)
1015+359	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:

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

rk08gktr

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/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 18 Nov 2014 Day 322 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

07 00 00 0814+425 12 03 15 51.9 276.9 3.7 53.7 0 0 07 00 00
07 14 30 --- 12 17 47 49.7 279.4 4.0 53.3 870 28 07 00 01
07 15 00 0814+425 12 18 18 49.6 279.5 4.0 53.2 24 28 07 15 00
07 25 00 --- 12 28 19 48.2 281.2 4.2 52.8 600 47 07 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

07 30 00 0814+425 12 33 20 47.4 282.0 4.2 52.6 293 47 07 30 00
07 44 30 --- 12 47 52 45.3 284.4 4.5 51.9 870 75 07 30 01
07 45 00 0814+425 12 48 22 45.2 284.5 4.5 51.9 24 75 07 45 00
08 00 00 --- 13 03 25 43.1 286.9 4.7 51.0 900 104 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: ra6cm2.set

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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 17.385217	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 38.34266	0.00



ec052btr

E-EVN: EC052B, RSC02, TE114

PI: Cseh, Cui

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: ec052b, rsc02, te114

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, Stop UT, LST, EL, AZ, HA, UP, ParA, Early Dwell, Disk GBytes, TPStart SYNC. Includes scan frequencies and bandwidths for various times on Nov 18, 2014.

Schedule for TORUN (Code Tr )

Page 3

e-EVN: ec052b, rsc02, te114

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 18 Nov 2014 Day 322 ---										
11 15 40	1749+096	16 19 37	42.7	148.2	-1.5		-18.7	34	997	11 15 40
11 30 00	---	16 33 59	43.8	152.8	-1.3		-16.2	860	1108	11 15 41
11 32 00	2029+121	16 36 00	28.2	107.9	-3.9		-35.8	15	1108	11 32 00
11 45 00	---	16 49 02	30.0	110.9	-3.7		-35.0	780	1208	11 32 01
11 45 40	2029+121	16 49 42	30.1	111.1	-3.7		-35.0	34	1208	11 45 40
12 00 00	---	17 04 04	32.1	114.5	-3.5		-34.0	860	1318	11 45 41
12 00 40	2029+121	17 04 44	32.2	114.6	-3.5		-34.0	34	1318	12 00 40
12 15 00	---	17 19 07	34.1	118.1	-3.2		-32.8	860	1428	12 00 41
12 15 40	2029+121	17 19 47	34.2	118.3	-3.2		-32.8	34	1428	12 15 40
12 30 00	---	17 34 09	36.1	121.9	-3.0		-31.5	860	1538	12 15 41
12 30 40	2029+121	17 34 49	36.2	122.1	-3.0		-31.4	34	1538	12 30 40
12 45 00	---	17 49 12	38.0	125.9	-2.7		-29.9	860	1649	12 30 41
12 45 40	2029+121	17 49 52	38.0	126.0	-2.7		-29.8	34	1649	12 45 40
13 00 00	---	18 04 14	39.7	130.0	-2.5		-28.1	860	1759	12 45 41
13 02 00	3C454.3	18 06 15	23.6	94.3	-4.8		-38.6	33	1759	13 02 00
13 13 00	---	18 17 16	25.3	96.5	-4.6		-38.4	660	1844	13 02 01
13 13 40	3C454.3	18 17 56	25.4	96.7	-4.6		-38.4	34	1844	13 13 40
13 28 00	---	18 32 19	27.5	99.7	-4.4		-38.1	860	1954	13 13 41
13 28 40	3C454.3	18 32 59	27.6	99.8	-4.4		-38.0	34	1954	13 28 40
13 43 00	---	18 47 21	29.7	102.9	-4.1		-37.6	860	2064	13 28 41
13 43 40	3C454.3	18 48 01	29.8	103.1	-4.1		-37.5	34	2064	13 43 40
13 58 00	---	19 02 24	31.9	106.3	-3.9		-36.9	860	2174	13 43 41
13 58 40	3C454.3	19 03 04	32.0	106.4	-3.9		-36.9	34	2174	13 58 40
14 13 00	---	19 17 26	34.0	109.7	-3.6		-36.1	860	2285	13 58 41
14 13 40	3C454.3	19 18 06	34.1	109.9	-3.6		-36.0	34	2285	14 13 40
14 28 00	---	19 32 29	36.1	113.3	-3.4		-35.0	860	2395	14 13 41
14 28 40	3C454.3	19 33 09	36.2	113.5	-3.4		-35.0	34	2395	14 28 40
14 43 00	---	19 47 31	38.2	117.1	-3.1		-33.8	860	2505	14 28 41
14 43 40	3C454.3	19 48 11	38.3	117.2	-3.1		-33.8	34	2505	14 43 40
14 58 00	---	20 02 34	40.2	121.0	-2.9		-32.4	860	2615	14 43 41
14 58 40	3C454.3	20 03 14	40.2	121.2	-2.9		-32.4	34	2615	14 58 40
15 13 00	---	20 17 36	42.1	125.1	-2.6		-30.8	860	2726	14 58 41

Schedule for TORUN (Code Tr )

Page 4

e-EVN: ec052b, rsc02, te114

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 18 Nov 2014 Day 322 ---										
15 13 40	3C454.3	20 18 16	42.1	125.2	-2.6		-30.7	34	2726	15 13 40
15 28 00	---	20 32 39	43.9	129.3	-2.4		-28.9	860	2836	15 13 41
15 30 00	J0010+1724	20 34 39	35.1	109.0	-3.6		-36.5	64	2836	15 30 00
15 33 00	=0007+171	20 37 39	35.6	109.7	-3.6		-36.4	180	2859	15 30 01
15 33 00	0011+1446	20 37 39	33.3	111.4	-3.6		-35.3	-22	2859	No stop
15 36 30	---	20 41 10	33.8	112.2	-3.5		-35.1	188	2886	15 33 01
15 36 30	J0010+1724	20 41 10	36.1	110.5	-3.5		-36.1	-22	2886	No stop
15 38 00	=0007+171	20 42 40	36.3	110.9	-3.5		-36.0	68	2897	15 36 31
15 38 00	0011+1446	20 42 40	34.0	112.6	-3.5		-35.0	-22	2897	No stop
15 41 30	---	20 46 11	34.5	113.4	-3.4		-34.8	188	2924	15 38 01
15 42 10	J0010+1724	20 46 51	36.9	111.9	-3.4		-35.7	18	2924	15 42 10
15 43 00	=0007+171	20 47 41	37.0	112.1	-3.4		-35.7	50	2931	15 42 11
15 43 00	0011+1446	20 47 41	34.7	113.8	-3.4		-34.6	-22	2931	No stop
15 46 30	---	20 51 12	35.2	114.6	-3.3		-34.4	188	2958	15 43 01
15 46 30	J0010+1724	20 51 12	37.5	112.9	-3.3		-35.4	-23	2958	No stop
15 48 00	=0007+171	20 52 42	37.7	113.3	-3.3		-35.3	67	2969	15 46 31
15 48 00	0011+1446	20 52 42	35.4	115.0	-3.3		-34.3	-22	2969	No stop
15 51 30	---	20 56 12	35.9	115.9	-3.3		-34.0	188	2996	15 48 01
15 52 10	J0010+1724	20 56 52	38.2	114.3	-3.2		-35.0	17	2996	15 52 10
15 53 00	=0007+171	20 57 43	38.4	114.5	-3.2		-34.9	50	3003	15 52 11
15 53 00	0011+1446	20 57 43	36.1	116.2	-3.2		-33.9	-22	3003	No stop
15 56 30	---	21 01 13	36.6	117.1	-3.2		-33.6	188	3029	15 53 01
15 56 30	J0010+1724	21 01 13	38.8	115.4	-3.2		-34.7	-23	3029	No stop
15 58 00	=0007+171	21 02 43	39.0	115.8	-3.1		-34.5	67	3041	15 56 31
15 58 00	0011+1446	21 02 43	36.8	117.5	-3.2		-33.4	-22	3041	No stop
16 01 30	---	21 06 14	37.2	118.4	-3.1		-33.1	188	3068	15 58 01
16 02 10	J0010+1724	21 06 54	39.6	116.9	-3.1		-34.2	17	3068	16 02 10
16 03 00	=0007+171	21 07 44	39.7	117.1	-3.1		-34.1	50	3074	16 02 11
16 03 00	0011+1446	21 07 44	37.4	118.8	-3.1		-33.0	-22	3074	No stop
16 06 30	---	21 11 15	37.9	119.7	-3.0		-32.7	188	3101	16 03 01
16 06 30	J0010+1724	21 11 15	40.2	118.0	-3.0		-33.8	-23	3101	No stop
16 08 00	=0007+171	21 12 45	40.4	118.4	-3.0		-33.6	67	3113	16 06 31

Schedule for TORUN (Code Tr )

Page 5

e-EVN: ec052b, rsc02, te114

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
--- Tue 18 Nov 2014 Day 322 ---										
16 08 00	0011+1446	21 12 45	38.1	120.1	-3.0		-32.5	-22	3113	No stop
16 11 30	---	21 16 16	38.5	121.0	-2.9		-32.2	188	3140	16 08 01
16 12 10	J0010+1724	21 16 56	40.9	119.5	-2.9		-33.2	17	3140	16 12 10
16 13 00	=0007+171	21 17 46	41.0	119.7	-2.9		-33.2	50	3146	16 12 11
16 13 00	0011+1446	21 17 46	38.7	121.4	-2.9		-32.0	-22	3146	No stop
16 16 30	---	21 21 16	39.2	122.3	-2.8		-31.7	188	3173	16 13 01
16 16 30	J0010+1724	21 21 16	41.5	120.6	-2.8		-32.8	-23	3173	No stop
16 18 00	=0007+171	21 22 47	41.7	121.0	-2.8		-32.6	67	3185	16 16 31
16 18 00	0011+1446	21 22 47	39.4	122.7	-2.8		-31.5	-22	3185	No stop
16 21 30	---	21 26 17	39.8	123.6	-2.8		-31.1	188	3212	16 18 01
16 22 10	J0010+1724	21 26 57	42.2	122.2	-2.7		-32.2	17	3212	16 22 10
16 23 00	=0007+171	21 27 48	42.3	122.4	-2.7		-32.1	50	3218	16 22 11
16 23 00	0011+1446	21 27 48	40.0	124.0	-2.7		-31.0	-23	3218	No stop
16 26 30	---	21 31 18	40.4	125.0	-2.7		-30.6	187	3245	16 23 01
16 26 30	J0010+1724	21 31 18	42.8	123.4	-2.7		-31.7	-23	3245	No stop
16 28 00	=0007+171	21 32 48	43.0	123.8	-2.6		-31.6	67	3256	16 26 31
16 28 00	0011+1446	21 32 48	40.6	125.4	-2.7		-30.4	-23	3256	No stop
16 31 30	---	21 36 19	41.0	126.4	-2.6		-30.0	187	3283	16 28 01
16 32 10	J0010+1724	21 36 59	43.5	124.9	-2.6		-31.1	17	3283	16 32 10
16 33 00	=0007+171	21 37 49	43.6	125.2	-2.6		-31.0	50	3290	16 32 11
16 33 00	0011+1446	21 37 49	41.2	126.8	-2.6		-29.8	-23	3290	No stop
16 36 30	---	21 41 20	41.6	127.8	-2.5		-29.4	187	3317	16 33 01
16 36 30	J0010+1724	21 41 20	44.0	126.2	-2.5		-30.5	-23	3317	No stop
16 38 00	=0007+171	21 42 50	44.2	126.6	-2.5		-30.4	67	3328	16 36 31
16 38 00	0011+1446	21 42 50	41.8	128.2	-2.5		-29.2	-23	3328	No stop
16 41 30	---	21 46 21	42.2	129.2	-2.4		-28.8	187	3355	16 38 01
16 42 10	J0010+1724	21 47 01	44.7	127.8	-2.4		-29.8	17	3355	16 42 10
16 43 00	=0007+171	21 47 51	44.8	128.1	-2.4		-29.7	50	3362	16 42 11
16 43 00	0011+1446	21 47 51	42.4	129.6	-2.4		-28.6	-23	3362	No stop
16 46 30	---	21 51 21	42.8	130.6	-2.3		-28.1	187	3388	16 43 01
16 46 30	J0010+1724	21 51 21	45.2	129.1	-2.3		-29.3	-23	3388	No stop
16 48 00	=0007+171	21 52 52	45.4	129.5	-2.3		-29.1	67	3400	16 46 31

Schedule for TORUN (Code Tr )

Page 6

e-EVN: ec052b, rsc02, te114

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 18 Nov 2014 Day 322 ---										
16 48 00	0011+1446	21 52 52	43.0	131.1	-2.3		-27.9	-23	3400	No stop
16 51 30	---	21 56 22	43.4	132.1	-2.3		-27.4	187	3427	16 48 01
16 52 10	J0010+1724	21 57 02	45.8	130.8	-2.2		-28.5	17	3427	16 52 10
16 53 00	=0007+171	21 57 52	45.9	131.0	-2.2		-28.4	50	3433	16 52 11
16 53 00	0011+1446	21 57 52	43.5	132.6	-2.2		-27.2	-23	3433	No stop
16 56 30	---	22 01 23	43.9	133.6	-2.2		-26.7	187	3460	16 53 01
16 56 30	J0010+1724	22 01 23	46.3	132.1	-2.2		-27.9	-23	3460	No stop
16 58 00	=0007+171	22 02 53	46.5	132.6	-2.1		-27.6	67	3472	16 56 31
16 58 00	0011+1446	22 02 53	44.1	134.1	-2.2		-26.5	-23	3472	No stop
17 01 30	---	22 06 24	44.5	135.1	-2.1		-26.0	187	3499	16 58 01
17 02 10	J0010+1724	22 07 04	47.0	133.8	-2.1		-27.0	17	3499	17 02 10
17 03 00	=0007+171	22 07 54	47.1	134.1	-2.1		-26.9	50	3505	17 02 11
17 03 00	0011+1446	22 07 54	44.6	135.6	-2.1		-25.8	-23	3505	No stop
17 06 30	---	22 11 25	45.0	136.6	-2.0		-25.2	187	3532	17 03 01
17 06 30	J0010+1724	22 11 25	47.4	135.2	-2.0		-26.3	-23	3532	No stop
17 08 00	=0007+171	22 12 55	47.6	135.7	-2.0		-26.1	67	3544	17 06 31
17 08 00	0011+1446	22 12 55	45.1	137.1	-2.0		-25.0	-23	3544	No stop
17 11 30	---	22 16 26	45.5	138.2	-1.9		-24.5	187	3571	17 08 01
17 12 10	J0010+1724	22 17 06	48.0	137.0	-1.9		-25.4	17	3571	17 12 10
17 13 00	=0007+171	22 17 56	48.1	137.3	-1.9		-25.3	50	3577	17 12 11
17 13 00	0011+1446	22 17 56	45.6	138.7	-1.9		-24.2	-23	3577	No stop
17 16 30	---	22 21 26	46.0	139.8	-1.8		-23.6	187	3604	17 13 01
17 16 30	J0010+1724	22 21 26	48.5	138.4	-1.8		-24.7	-23	3604	No stop
17 18 00	=0007+171	22 22 57	48.6	138.9	-1.8		-24.4	67	3615	17 16 31
17 18 00	0011+1446	22 22 57	46.1	140.3	-1.8		-23.4	-23	3615	No stop
17 21 30	---	22 26 27	46.5	141.4	-1.8		-22.8	187	3642	17 18 01
17 22 10	J0010+1724	22 27 07	49.0	140.3	-1.7		-23.7	17	3642	17 22 10
17 23 00	=0007+171	22 27 57	49.1	140.6	-1.7		-23.6	50	3649	17 22 11
17 23 00	0011+1446	22 27 57	46.6	141.9	-1.7		-22.5	-23	3649	No stop
17 26 30	---	22 31 28	46.9	143.0	-1.7		-21.9	187	3676	17 23 01
17 26 30	J0010+1724	22 31 28	49.4	141.8	-1.7		-22.9	-23	3676	No stop
17 28 00	=0007+171	22 32 58	49.6	142.3	-1.6		-22.7	67	3687	17 26 31

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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

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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 18 Nov 2014 Day 322 ---										
17 28 00	0011+1446	22 32 58	47.1	143.5	-1.7		-21.7	-23	3687	No stop
17 31 30	---	22 36 29	47.4	144.7	-1.6		-21.0	187	3714	17 28 01
17 32 10	J0010+1724	22 37 09	49.9	143.7	-1.6		-21.9	17	3714	17 32 10
17 33 00	=0007+171	22 37 59	50.0	144.0	-1.6		-21.7	50	3721	17 32 11
17 36 00	J0216-0105	22 41 00	19.8	120.7	-3.6		-31.1	52	3721	17 36 00
17 39 00	=0213-013	22 44 00	20.2	121.4	-3.5		-30.8	180	3744	17 36 01
17 39 00	0210-0018	22 44 00	21.6	122.2	-3.5		-30.5	-19	3744	No stop
17 42 30	---	22 47 31	22.0	123.1	-3.4		-30.2	191	3771	17 39 01
17 42 30	J0216-0105	22 47 31	20.6	122.2	-3.5		-30.5	-18	3771	No stop
17 44 00	=0213-013	22 49 01	20.8	122.6	-3.5		-30.4	72	3782	17 42 31
17 44 00	0210-0018	22 49 01	22.2	123.4	-3.4		-30.1	-19	3782	No stop
17 47 30	---	22 52 31	22.6	124.2	-3.3		-29.8	191	3809	17 44 01
17 48 10	J0216-0105	22 53 12	21.3	123.5	-3.4		-30.0	22	3809	17 48 10
17 49 00	=0213-013	22 54 02	21.5	123.7	-3.4		-30.0	50	3815	17 48 11
17 49 00	0210-0018	22 54 02	22.8	124.6	-3.3		-29.6	-19	3815	No stop
17 52 30	---	22 57 32	23.2	125.4	-3.2		-29.3	191	3842	17 49 01
17 52 30	J0216-0105	22 57 32	21.9	124.5	-3.3		-29.7	-18	3842	No stop
17 54 00	=0213-013	22 59 03	22.1	124.9	-3.3		-29.5	72	3854	17 52 31
17 54 00	0210-0018	22 59 03	23.4	125.8	-3.2		-29.2	-19	3854	No stop
17 57 30	---	23 02 33	23.9	126.6	-3.1		-28.8	191	3881	17 54 01
17 58 10	J0216-0105	23 03 13	22.6	125.9	-3.2		-29.1	22	3881	17 58 10
17 59 00	=0213-013	23 04 03	22.7	126.1	-3.2		-29.0	50	3887	17 58 11
17 59 00	0210-0018	23 04 03	24.0	127.0	-3.1		-28.7	-19	3887	No stop
18 02 30	---	23 07 34	24.5	127.8	-3.1		-28.3	191	3914	17 59 01
18 02 30	J0216-0105	23 07 34	23.1	126.9	-3.2		-28.7	-18	3914	No stop
18 04 00	=0213-013	23 09 04	23.3	127.3	-3.1		-28.6	72	3926	18 02 31
18 04 00	0210-0018	23 09 04	24.6	128.2	-3.0		-28.2	-19	3926	No stop
18 07 30	---	23 12 35	25.0	129.0	-3.0		-27.8	191	3953	18 04 01
18 08 10	J0216-0105	23 13 15	23.8	128.3	-3.1		-28.1	22	3953	18 08 10
18 09 00	=0213-013	23 14 05	23.9	128.5	-3.0		-28.0	50	3959	18 08 11

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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.

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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 18 Nov 2014 Day 322 ---										
18 09 00	0210-0018	23 14 05	25.2	129.4	-3.0		-27.6	-18	3959	No stop
18 12 30	---	23 17 36	25.6	130.3	-2.9		-27.3	192	3986	18 09 01
18 12 30	J0216-0105	23 17 36	24.3	129.3	-3.0		-27.7	-18	3986	No stop
18 14 00	=0213-013	23 19 06	24.5	129.7	-3.0		-27.5	72	3997	18 12 31
18 14 00	0210-0018	23 19 06	25.8	130.6	-2.9		-27.1	-18	3997	No stop
18 17 30	---	23 22 36	26.2	131.5	-2.8		-26.7	192	4024	18 14 01
18 18 10	J0216-0105	23 23 16	24.9	130.7	-2.9		-27.1	22	4024	18 18 10
18 19 00	=0213-013	23 24 07	25.0	130.9	-2.9		-27.0	50	4031	18 18 11
18 19 00	0210-0018	23 24 07	26.4	131.9	-2.8		-26.6	-18	4031	No stop
18 22 30	---	23 27 37	26.8	132.8	-2.7		-26.2	192	4058	18 19 01
18 22 30	J0216-0105	23 27 37	25.4	131.8	-2.8		-26.6	-18	4058	No stop
18 24 00	=0213-013	23 29 07	25.6	132.1	-2.8		-26.4	72	4069	18 22 31
18 24 00	0210-0018	23 29 07	26.9	133.1	-2.7		-26.0	-18	4069	No stop
18 27 30	---	23 32 38	27.3	134.0	-2.6		-25.6	192	4096	18 24 01
18 28 10	J0216-0105	23 33 18	26.1	133.2	-2.7		-26.0	22	4096	18 28 10
18 29 00	=0213-013	23 34 08	26.2	133.4	-2.7		-25.9	50	4103	18 28 11
18 29 00	0210-0018	23 34 08	27.5	134.4	-2.6		-25.4	-18	4103	No stop
18 32 30	---	23 37 39	27.8	135.3	-2.6		-25.0	192	4129	18 29 01
18 32 30	J0216-0105	23 37 39	26.5	134.3	-2.7		-25.5	-18	4129	No stop
18 34 00	=0213-013	23 39 09	26.7	134.7	-2.6		-25.3	72	4141	18 32 31
18 34 00	0210-0018	23 39 09	28.0	135.7	-2.5		-24.8	-18	4141	No stop
18 37 30	---	23 42 40	28.4	136.6	-2.5		-24.4	192	4168	18 34 01
18 38 10	J0216-0105	23 43 20	27.1	135.7	-2.6		-24.8	22	4168	18 38 10
18 39 00	=0213-013	23 44 10	27.2	135.9	-2.5		-24.7	50	4174	18 38 11
18 39 00	0210-0018	23 44 10	28.5	137.0	-2.5		-24.2	-18	4174	No stop
18 42 30	---	23 47 40	28.9	137.9	-2.4		-23.7	192	4201	18 39 01
18 42 30	J0216-0105	23 47 40	27.6	136.8	-2.5		-24.3	-18	4201	No stop
18 44 00	=0213-013	23 49 11	27.7	137.2	-2.5		-24.1	72	4213	18 42 31
18 44 00	0210-0018	23 49 11	29.0	138.3	-2.4		-23.6	-18	4213	No stop
18 47 30	---	23 52 41	29.4	139.2	-2.3		-23.1	192	4240	18 44 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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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 18 Nov 2014 Day 322 ---										
18 48 10	J0216-0105	23 53 21	28.2	138.3	-2.4		-23.5	22	4240	18 48 10
18 49 00	=0213-013	23 54 12	28.3	138.5	-2.4		-23.4	50	4246	18 48 11
18 49 00	0210-0018	23 54 12	29.5	139.6	-2.3		-22.9	-18	4246	No stop
18 52 30	---	23 57 42	29.9	140.5	-2.2		-22.4	192	4273	18 49 01
18 52 30	J0216-0105	23 57 42	28.6	139.4	-2.3		-23.0	-18	4273	No stop
18 54 00	=0213-013	23 59 12	28.7	139.8	-2.3		-22.8	72	4285	18 52 31
18 54 00	0210-0018	23 59 12	30.0	140.9	-2.2		-22.2	-18	4285	No stop
18 57 30	---	00 02 43	30.3	141.9	-2.1		-21.8	192	4312	18 54 01
18 58 10	J0216-0105	00 03 23	29.1	140.9	-2.2		-22.2	22	4312	18 58 10
18 59 00	=0213-013	00 04 13	29.2	141.2	-2.2		-22.1	50	4318	18 58 11
18 59 00	0210-0018	00 04 13	30.5	142.3	-2.1		-21.6	-18	4318	No stop
19 02 30	---	00 07 44	30.8	143.2	-2.1		-21.1	192	4345	18 59 01
19 02 30	J0216-0105	00 07 44	29.5	142.1	-2.2		-21.7	-18	4345	No stop
19 04 00	=0213-013	00 09 14	29.7	142.5	-2.1		-21.4	72	4356	19 02 31
19 04 00	0210-0018	00 09 14	30.9	143.6	-2.0		-20.9	-18	4356	No stop
19 07 30	---	00 12 45	31.2	144.6	-2.0		-20.4	192	4383	19 04 01
19 08 10	J0216-0105	00 13 25	30.1	143.6	-2.1		-20.9	22	4383	19 08 10
19 09 00	=0213-013	00 14 15	30.1	143.8	-2.0		-20.8	50	4390	19 08 11
19 09 00	0210-0018	00 14 15	31.4	145.0	-2.0		-20.1	-18	4390	No stop
19 12 30	---	00 17 45	31.7	146.0	-1.9		-19.6	192	4417	19 09 01
19 12 30	J0216-0105	00 17 45	30.4	144.8	-2.0		-20.3	-18	4417	No stop
19 14 00	=0213-013	00 19 16	30.6	145.2	-2.0		-20.0	72	4428	19 12 31
19 14 00	0210-0018	00 19 16	31.8	146.4	-1.9		-19.4	-18	4428	No stop
19 17 30	---	00 22 46	32.1	147.4	-1.8		-18.9	192	4455	19 14 01
19 18 10	J0216-0105	00 23 26	30.9	146.3	-1.9		-19.4	22	4455	19 18 10
19 19 00	=0213-013	00 24 16	31.0	146.6	-1.9		-19.3	50	4462	19 18 11
19 19 00	0210-0018	00 24 16	32.2	147.8	-1.8		-18.7	-18	4462	No stop
19 22 30	---	00 27 47	32.5	148.8	-1.7		-18.1	192	4488	19 19 01
19 22 30	J0216-0105	00 27 47	31.3	147.5	-1.8		-18.8	-17	4488	No stop
19 24 00	=0213-013	00 29 17	31.4	148.0	-1.8		-18.6	73	4500	19 22 31



Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Tue 18 Nov 2014 Day 322 ---										
19 24 00	0210-0018	00 29 17	32.6	149.2	-1.7		-17.9	-18	4500	No stop
19 27 30	---	00 32 48	32.8	150.2	-1.6		-17.4	192	4527	19 24 01
19 28 10	J0216-0105	00 33 28	31.7	149.1	-1.7		-17.9	23	4527	19 28 10
19 29 00	=0213-013	00 34 18	31.8	149.4	-1.7		-17.8	50	4533	19 28 11
19 29 00	0210-0018	00 34 18	33.0	150.6	-1.6		-17.1	-18	4533	No stop
19 32 30	---	00 37 49	33.2	151.6	-1.6		-16.6	192	4560	19 29 01
19 32 30	J0216-0105	00 37 49	32.1	150.3	-1.7		-17.3	-17	4560	No stop
19 34 00	=0213-013	00 39 19	32.2	150.8	-1.6		-17.1	73	4572	19 32 31
19 34 00	0210-0018	00 39 19	33.3	152.1	-1.5		-16.3	-17	4572	No stop
19 37 30	---	00 42 50	33.6	153.1	-1.5		-15.8	193	4599	19 34 01
19 38 10	J0216-0105	00 43 30	32.5	152.0	-1.6		-16.4	23	4599	19 38 10
19 39 00	=0213-013	00 44 20	32.5	152.2	-1.5		-16.3	50	4605	19 38 11
19 41 00	J0010+1724	00 46 20	53.7	194.2	0.6		8.9	21	4605	19 41 00
19 44 00	=0007+171	00 49 21	53.6	195.4	0.6		9.6	180	4628	19 41 01
19 44 00	0011+1446	00 49 21	51.1	194.4	0.6		8.9	-24	4628	No stop
19 47 30	---	00 52 51	50.9	195.8	0.7		9.7	186	4655	19 44 01
19 47 30	J0010+1724	00 52 51	53.5	196.8	0.7		10.5	-23	4655	No stop
19 49 00	=0007+171	00 54 21	53.4	197.4	0.7		10.8	67	4667	19 47 31
19 49 00	0011+1446	00 54 21	50.9	196.3	0.7		10.1	-24	4667	No stop
19 52 30	---	00 57 52	50.7	197.6	0.8		10.9	186	4694	19 49 01
19 53 10	J0010+1724	00 58 32	53.2	199.0	0.8		11.8	17	4694	19 53 10
19 54 00	=0007+171	00 59 22	53.2	199.3	0.8		12.0	50	4700	19 53 11
19 54 00	0011+1446	00 59 22	50.6	198.2	0.8		11.2	-24	4700	No stop
19 57 30	---	01 02 53	50.5	199.5	0.8		12.0	186	4727	19 54 01
19 57 30	J0010+1724	01 02 53	53.0	200.7	0.9		12.9	-23	4727	No stop
19 59 00	=0007+171	01 04 23	52.9	201.3	0.9		13.2	67	4738	19 57 31
19 59 00	0011+1446	01 04 23	50.4	200.1	0.9		12.3	-23	4738	No stop
20 02 30	---	01 07 54	50.2	201.4	0.9		13.1	187	4765	19 59 01
20 03 10	J0010+1724	01 08 34	52.7	202.9	1.0		14.2	17	4765	20 03 10
20 04 00	=0007+171	01 09 24	52.6	203.2	1.0		14.4	50	4772	20 03 11

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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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 18 Nov 2014 Day 322 ---										
20 04 00	0011+1446	01 09 24	50.1	201.9	1.0		13.4	-23	4772	No stop
20 07 30	---	01 12 54	49.9	203.2	1.0		14.2	187	4799	20 04 01
20 07 30	J0010+1724	01 12 54	52.4	204.5	1.0		15.1	-23	4799	No stop
20 09 00	=0007+171	01 14 25	52.3	205.1	1.1		15.5	67	4810	20 07 31
20 09 00	0011+1446	01 14 25	49.8	203.7	1.0		14.5	-23	4810	No stop
20 12 30	---	01 17 55	49.6	205.0	1.1		15.2	187	4837	20 09 01
20 13 10	J0010+1724	01 18 35	52.1	206.6	1.1		16.4	17	4837	20 13 10
20 14 00	=0007+171	01 19 26	52.0	207.0	1.1		16.6	50	4844	20 13 11
20 14 00	0011+1446	01 19 26	49.5	205.6	1.1		15.5	-23	4844	No stop
20 17 30	---	01 22 56	49.3	206.8	1.2		16.3	187	4870	20 14 01
20 17 30	J0010+1724	01 22 56	51.8	208.3	1.2		17.3	-23	4870	No stop
20 19 00	=0007+171	01 24 26	51.6	208.8	1.2		17.7	67	4882	20 17 31
20 19 00	0011+1446	01 24 26	49.2	207.3	1.2		16.6	-23	4882	No stop
20 22 30	---	01 27 57	48.9	208.6	1.3		17.3	187	4909	20 19 01
20 23 10	J0010+1724	01 28 37	51.3	210.3	1.3		18.5	17	4909	20 23 10
20 24 00	=0007+171	01 29 27	51.3	210.6	1.3		18.7	50	4915	20 23 11
20 24 00	0011+1446	01 29 27	48.8	209.1	1.3		17.6	-23	4915	No stop
20 27 30	---	01 32 58	48.6	210.3	1.3		18.3	187	4942	20 24 01
20 27 30	J0010+1724	01 32 58	51.0	211.9	1.4		19.4	-23	4942	No stop
20 29 00	=0007+171	01 34 28	50.9	212.4	1.4		19.7	67	4954	20 27 31
20 29 00	0011+1446	01 34 28	48.4	210.8	1.4		18.6	-23	4954	No stop
20 32 30	---	01 37 59	48.2	212.1	1.4		19.3	187	4981	20 29 01
20 33 10	J0010+1724	01 38 39	50.5	213.9	1.5		20.6	17	4981	20 33 10
20 34 00	=0007+171	01 39 29	50.5	214.2	1.5		20.7	50	4987	20 33 11
20 37 00	J0216-0105	01 42 29	35.4	169.4	-0.6		-6.3	75	4987	20 37 00
20 40 00	=0213-013	01 45 30	35.5	170.3	-0.5		-5.8	180	5010	20 37 01
20 40 00	0210-0018	01 45 30	36.4	171.9	-0.4		-4.8	-17	5010	No stop
20 43 30	---	01 49 00	36.5	173.0	-0.4		-4.2	193	5037	20 40 01
20 43 30	J0216-0105	01 49 00	35.6	171.4	-0.5		-5.2	-16	5037	No stop
20 45 00	=0213-013	01 50 31	35.6	171.9	-0.4		-4.9	74	5049	20 43 31

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 18 Nov 2014 Day 322 ---										
20 45 00	0210-0018	01 50 31	36.5	173.5	-0.3		-3.9	-17	5049	No stop
20 48 30	---	01 54 01	36.5	174.6	-0.3		-3.3	193	5076	20 45 01
20 49 10	J0216-0105	01 54 41	35.7	173.1	-0.4		-4.1	24	5076	20 49 10
20 50 00	=0213-013	01 55 31	35.7	173.4	-0.4		-4.0	50	5082	20 49 11
20 50 00	0210-0018	01 55 31	36.6	175.0	-0.3		-3.0	-17	5082	No stop
20 53 30	---	01 59 02	36.6	176.1	-0.2		-2.3	193	5109	20 50 01
20 53 30	J0216-0105	01 59 02	35.8	174.5	-0.3		-3.3	-16	5109	No stop
20 55 00	=0213-013	02 00 32	35.8	174.9	-0.3		-3.0	74	5120	20 53 31
20 55 00	0210-0018	02 00 32	36.6	176.6	-0.2		-2.1	-17	5120	No stop
20 58 30	---	02 04 03	36.6	177.7	-0.1		-1.4	193	5147	20 55 01
20 59 10	J0216-0105	02 04 43	35.8	176.2	-0.2		-2.3	24	5147	20 59 10
21 00 00	=0213-013	02 05 33	35.8	176.5	-0.2		-2.1	50	5154	20 59 11
21 00 00	0210-0018	02 05 33	36.7	178.1	-0.1		-1.1	-17	5154	No stop
21 03 30	---	02 09 04	36.7	179.2	-0.0		-0.5	193	5181	21 00 01
21 03 30	J0216-0105	02 09 04	35.9	177.6	-0.1		-1.5	-16	5181	No stop
21 05 00	=0213-013	02 10 34	35.9	178.0	-0.1		-1.2	74	5192	21 03 31
21 05 00	0210-0018	02 10 34	36.7	179.7	-0.0		-0.2	-17	5192	No stop
21 08 30	---	02 14 04	36.7	180.8	0.0		0.5	193	5219	21 05 01
21 09 10	J0216-0105	02 14 45	35.9	179.3	-0.0		-0.4	24	5219	21 09 10
21 10 00	=0213-013	02 15 35	35.9	179.6	-0.0		-0.3	50	5226	21 09 11
21 10 00	0210-0018	02 15 35	36.7	181.3	0.1		0.8	-17	5226	No stop
21 13 30	---	02 19 05	36.6	182.4	0.1		1.4	193	5253	21 10 01
21 13 30	J0216-0105	02 19 05	35.9	180.6	0.0		0.4	-17	5253	No stop
21 15 00	=0213-013	02 20 36	35.9	181.1	0.1		0.7	73	5264	21 13 31
21 15 00	0210-0018	02 20 36	36.6	182.8	0.2		1.7	-17	5264	No stop
21 18 30	---	02 24 06	36.6	183.9	0.2		2.4	193	5291	21 15 01
21 19 10	J0216-0105	02 24 46	35.9	182.4	0.1		1.4	23	5291	21 19 10
21 20 00	=0213-013	02 25 36	35.9	182.7	0.1		1.6	50	5297	21 19 11
21 20 00	0210-0018	02 25 36	36.6	184.4	0.2		2.6	-17	5297	No stop
21 23 30	---	02 29 07	36.5	185.5	0.3		3.3	193	5324	21 20 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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.

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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 18 Nov 2014 Day 322 ---										
21 23 30	J0216-0105	02 29 07	35.8	183.7	0.2		2.2	-17	5324	No stop
21 25 00	=0213-013	02 30 37	35.8	184.2	0.2		2.5	73	5336	21 23 31
21 25 00	0210-0018	02 30 37	36.5	185.9	0.3		3.6	-17	5336	No stop
21 28 30	---	02 34 08	36.5	187.0	0.4		4.2	193	5363	21 25 01
21 29 10	J0216-0105	02 34 48	35.8	185.5	0.3		3.3	23	5363	21 29 10
21 30 00	=0213-013	02 35 38	35.7	185.7	0.3		3.4	50	5369	21 29 11
21 33 00	J0753+5352	02 38 38	45.6	55.8	-5.3		-57.3	-95	5369	21 33 00
21 45 00	=0749+540	02 50 40	47.1	57.1	-5.1		-58.7	625	5462	21 33 01
21 46 00	J0809+5218	02 51 41	44.2	57.2	-5.3		-55.6	35	5462	21 46 00
21 47 30	=0806+524	02 53 11	44.4	57.4	-5.3		-55.7	90	5473	21 46 01
21 47 30	J0809+5341	02 53 11	45.2	55.8	-5.3		-56.9	-16	5473	No stop
21 51 30	=0805+538	02 57 12	45.7	56.2	-5.2		-57.3	224	5504	21 47 31
21 51 30	J0807+5117	02 57 12	44.7	59.4	-5.2		-55.6	-21	5504	No stop
21 53 00	=0803+514	02 58 42	44.9	59.6	-5.2		-55.8	69	5515	21 51 31
21 53 00	J0809+5218	02 58 42	45.1	58.0	-5.2		-56.3	-16	5515	No stop
21 54 30	=0806+524	03 00 12	45.3	58.2	-5.2		-56.5	74	5527	21 53 01
21 54 30	J0809+5341	03 00 12	46.1	56.6	-5.2		-57.7	-16	5527	No stop
21 58 30	=0805+538	03 04 13	46.6	57.0	-5.1		-58.2	224	5558	21 54 31
21 58 30	J0753+5352	03 04 13	48.8	58.6	-4.8		-60.3	-22	5558	No stop
22 00 00	=0749+540	03 05 43	49.0	58.8	-4.8		-60.5	68	5569	21 58 31
22 01 00	J0809+5218	03 06 43	46.1	59.0	-5.1		-57.2	35	5569	22 01 00
22 02 30	=0806+524	03 08 13	46.3	59.2	-5.0		-57.4	90	5581	22 01 01
22 02 30	J0809+5341	03 08 13	47.1	57.5	-5.0		-58.7	-17	5581	No stop
22 06 30	=0805+538	03 12 14	47.6	57.9	-5.0		-59.1	223	5612	22 02 31
22 06 30	J0807+5117	03 12 14	46.7	61.2	-4.9		-57.2	-21	5612	No stop
22 08 00	=0803+514	03 13 44	46.9	61.4	-4.9		-57.4	69	5623	22 06 31
22 08 00	J0809+5218	03 13 44	47.0	59.8	-5.0		-58.0	-16	5623	No stop
22 09 30	=0806+524	03 15 14	47.2	60.0	-4.9		-58.2	74	5635	22 08 01
22 09 30	J0809+5341	03 15 14	48.0	58.3	-4.9		-59.5	-17	5635	No stop
22 13 30	=0805+538	03 19 15	48.5	58.7	-4.9		-60.0	223	5665	22 09 31

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 18 Nov 2014 Day 322 ---										
22 13 30	J0753+5352	03 19 15	50.7	60.3	-4.6		-62.1	-22	5665	No stop
22 15 00	=0749+540	03 20 45	50.9	60.5	-4.6		-62.3	68	5677	22 13 31
22 16 00	J0809+5218	03 21 46	48.1	60.8	-4.8		-58.9	35	5677	22 16 00
22 17 30	=0806+524	03 23 16	48.3	61.0	-4.8		-59.1	90	5688	22 16 01
22 17 30	J0809+5341	03 23 16	49.0	59.2	-4.8		-60.4	-17	5688	No stop
22 21 30	=0805+538	03 27 16	49.5	59.6	-4.7		-60.9	223	5719	22 17 31
22 21 30	J0807+5117	03 27 16	48.7	63.1	-4.7		-58.8	-22	5719	No stop
22 23 00	=0803+514	03 28 47	48.9	63.3	-4.7		-59.0	68	5731	22 21 31
22 23 00	J0809+5218	03 28 47	49.0	61.6	-4.7		-59.7	-16	5731	No stop
22 24 30	=0806+524	03 30 17	49.2	61.8	-4.7		-59.8	74	5742	22 23 01
22 24 30	J0809+5341	03 30 17	49.9	60.0	-4.7		-61.3	-17	5742	No stop
22 28 30	=0805+538	03 34 18	50.4	60.4	-4.6		-61.7	223	5773	22 24 31
22 28 30	J0753+5352	03 34 18	52.7	61.9	-4.3		-63.9	-23	5773	No stop
22 30 00	=0749+540	03 35 48	52.9	62.1	-4.3		-64.1	67	5785	22 28 31
22 31 00	J0809+5218	03 36 48	50.1	62.6	-4.6		-60.5	35	5785	22 31 00
22 32 30	=0806+524	03 38 18	50.3	62.7	-4.5		-60.7	90	5796	22 31 01
22 32 30	J0809+5341	03 38 18	50.9	60.8	-4.5		-62.2	-17	5796	No stop
22 36 30	=0805+538	03 42 19	51.5	61.3	-4.5		-62.7	223	5827	22 32 31
22 36 30	J0807+5117	03 42 19	50.7	64.9	-4.4		-60.3	-22	5827	No stop
22 38 00	=0803+514	03 43 49	50.9	65.1	-4.4		-60.5	68	5838	22 36 31
22 38 00	J0809+5218	03 43 49	51.0	63.4	-4.5		-61.3	-17	5838	No stop
22 39 30	=0806+524	03 45 19	51.2	63.5	-4.4		-61.5	73	5850	22 38 01
22 39 30	J0809+5341	03 45 19	51.9	61.6	-4.4		-63.0	-17	5850	No stop
22 43 30	=0805+538	03 49 20	52.4	62.0	-4.4		-63.5	223	5881	22 39 31
22 43 30	J0753+5352	03 49 20	54.7	63.5	-4.1		-65.6	-23	5881	No stop
22 45 00	=0749+540	03 50 50	54.9	63.7	-4.1		-65.8	67	5892	22 43 31
22 46 00	J0809+5218	03 51 50	52.1	64.3	-4.3		-62.2	35	5892	22 46 00
22 47 30	=0806+524	03 53 21	52.3	64.5	-4.3		-62.3	90	5904	22 46 01
22 47 30	J0809+5341	03 53 21	52.9	62.5	-4.3		-63.9	-18	5904	No stop
22 51 30	=0805+538	03 57 21	53.5	62.9	-4.2		-64.4	222	5935	22 47 31

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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.

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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 18 Nov 2014 Day 322 ---										
22 51 30	J0807+5117	03 57 21	52.7	66.8	-4.2		-61.8	-23	5935	No stop
22 53 00	=0803+514	03 58 52	53.0	67.0	-4.2		-62.0	67	5946	22 51 31
22 53 00	J0809+5218	03 58 52	53.0	65.1	-4.2		-62.9	-17	5946	No stop
22 54 30	=0806+524	04 00 22	53.2	65.3	-4.2		-63.0	73	5958	22 53 01
22 54 30	J0809+5341	04 00 22	53.9	63.2	-4.2		-64.7	-18	5958	No stop
22 58 30	=0805+538	04 04 23	54.4	63.7	-4.1		-65.2	222	5988	22 54 31
22 58 30	J0753+5352	04 04 23	56.7	65.1	-3.8		-67.4	-23	5988	No stop
23 00 00	=0749+540	04 05 53	56.9	65.2	-3.8		-67.5	67	6000	22 58 31
23 01 00	J0809+5218	04 06 53	54.1	66.1	-4.1		-63.7	35	6000	23 01 00
23 02 30	=0806+524	04 08 23	54.3	66.2	-4.0		-63.9	90	6012	23 01 01
23 02 30	J0809+5341	04 08 23	54.9	64.1	-4.0		-65.6	-18	6012	No stop
23 06 30	=0805+538	04 12 24	55.5	64.5	-4.0		-66.1	222	6042	23 02 31
23 06 30	J0807+5117	04 12 24	54.8	68.6	-3.9		-63.3	-23	6042	No stop
23 08 00	=0803+514	04 13 54	55.0	68.8	-3.9		-63.4	67	6054	23 06 31
23 08 00	J0809+5218	04 13 54	55.1	66.9	-4.0		-64.5	-17	6054	No stop
23 09 30	=0806+524	04 15 24	55.3	67.0	-3.9		-64.6	73	6065	23 08 01
23 09 30	J0809+5341	04 15 24	55.9	64.8	-3.9		-66.5	-18	6065	No stop
23 13 30	=0805+538	04 19 25	56.4	65.3	-3.9		-66.9	222	6096	23 09 31
23 13 30	J0753+5352	04 19 25	58.8	66.6	-3.6		-69.1	-23	6096	No stop
23 15 00	=0749+540	04 20 55	59.0	66.8	-3.6		-69.3	67	6108	23 13 31
23 16 00	J0809+5218	04 21 55	56.2	67.8	-3.8		-65.3	35	6108	23 16 00
23 17 30	=0806+524	04 23 26	56.4	68.0	-3.8		-65.4	90	6119	23 16 01
23 17 30	J0809+5341	04 23 26	57.0	65.7	-3.8		-67.4	-18	6119	No stop
23 21 30	=0805+538	04 27 26	57.5	66.1	-3.7		-67.8	222	6150	23 17 31
23 21 30	J0807+5117	04 27 26	57.0	70.5	-3.7		-64.7	-24	6150	No stop
23 23 00	=0803+514	04 28 57	57.2	70.6	-3.7		-64.8	66	6162	23 21 31
23 23 00	J0809+5218	04 28 57	57.2	68.6	-3.7		-66.0	-18	6162	No stop
23 24 30	=0806+524	04 30 27	57.4	68.8	-3.7		-66.1	72	6173	23 23 01
23 24 30	J0809+5341	04 30 27	58.0	66.4	-3.7		-68.2	-19	6173	No stop
23 28 30	=0805+538	04 34 27	58.5	66.8	-3.6		-68.6	221	6204	23 24 31

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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

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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 18 Nov 2014 Day 322 ---										
23 28 30	J0753+5352	04 34 27	60.9	68.1	-3.3		-70.8	-23	6204	No stop
23 30 00	=0749+540	04 35 58	61.1	68.3	-3.3		-71.0	67	6215	23 28 31
23 31 00	J0809+5218	04 36 58	58.3	69.5	-3.6		-66.8	35	6215	23 31 00
23 32 30	=0806+524	04 38 28	58.5	69.7	-3.5		-67.0	90	6227	23 31 01
23 32 30	J0809+5341	04 38 28	59.1	67.2	-3.5		-69.1	-19	6227	No stop
23 36 30	=0805+538	04 42 29	59.6	67.7	-3.5		-69.5	221	6258	23 32 31
23 36 30	J0807+5117	04 42 29	59.1	72.3	-3.4		-66.0	-24	6258	No stop
23 38 00	=0803+514	04 43 59	59.3	72.5	-3.4		-66.2	66	6269	23 36 31
23 38 00	J0809+5218	04 43 59	59.3	70.3	-3.4		-67.5	-18	6269	No stop
23 39 30	=0806+524	04 45 29	59.5	70.5	-3.4		-67.6	72	6281	23 38 01
23 39 30	J0809+5341	04 45 29	60.0	68.0	-3.4		-69.9	-19	6281	No stop
23 43 30	=0805+538	04 49 30	60.6	68.4	-3.4		-70.3	221	6312	23 39 31
23 43 30	J0753+5352	04 49 30	63.0	69.6	-3.1		-72.6	-23	6312	No stop
23 45 00	=0749+540	04 51 00	63.2	69.8	-3.1		-72.7	67	6323	23 43 31
23 46 00	J0809+5218	04 52 00	60.4	71.2	-3.3		-68.3	35	6323	23 46 00
23 47 30	=0806+524	04 53 31	60.7	71.4	-3.3		-68.4	90	6335	23 46 01
23 47 30	J0809+5341	04 53 31	61.2	68.8	-3.3		-70.8	-19	6335	No stop
23 51 30	=0805+538	04 57 31	61.7	69.2	-3.2		-71.2	221	6365	23 47 31
23 51 30	J0807+5117	04 57 31	61.3	74.2	-3.2		-67.4	-25	6365	No stop
23 53 00	=0803+514	04 59 01	61.5	74.4	-3.2		-67.5	65	6377	23 51 31
23 53 00	J0809+5218	04 59 01	61.4	72.0	-3.2		-69.0	-19	6377	No stop
23 54 30	=0806+524	05 00 32	61.7	72.2	-3.2		-69.1	71	6388	23 53 01
23 54 30	J0809+5341	05 00 32	62.1	69.5	-3.2		-71.6	-20	6388	No stop
23 58 30	=0805+538	05 04 32	62.7	69.9	-3.1		-72.0	220	6419	23 54 31
23 58 30	J0753+5352	05 04 32	65.1	71.1	-2.8		-74.3	-23	6419	No stop
23 59 59	=0749+540	05 06 03	65.3	71.2	-2.8		-74.5	66	6431	23 58 31
--- Wed 19 Nov 2014 Day 323 ---										
00 06 00	OJ287	05 12 04	36.2	105.5	-3.7		-38.0	235	6431	00 06 00
00 15 00	---	05 21 05	37.5	107.6	-3.6		-37.5	540	6500	00 06 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
00 15 40	OJ287	05 21 45	37.6	107.7	-3.6		-37.5	34	6500	00 15 40
00 30 00	---	05 36 08	39.6	111.2	-3.3		-36.6	860	6610	00 15 41
00 32 00	J0950+0615	05 38 08	20.8	108.3	-4.2		-35.0	35	6610	00 32 00
00 35 00	=0947+064	05 41 08	21.2	109.0	-4.2		-34.8	180	6633	00 32 01
00 35 00	0940+0526	05 41 08	22.0	111.7	-4.0		-34.1	-20	6633	No stop
00 38 30	---	05 44 39	22.5	112.5	-3.9		-33.9	190	6660	00 35 01
00 38 30	J0950+0615	05 44 39	21.7	109.8	-4.1		-34.6	-20	6660	No stop
00 40 00	=0947+064	05 46 09	22.0	110.1	-4.1		-34.6	70	6672	00 38 31
00 40 00	0940+0526	05 46 09	22.7	112.8	-3.9		-33.8	-20	6672	No stop
00 43 30	---	05 49 40	23.2	113.6	-3.9		-33.6	190	6699	00 40 01
00 44 10	J0950+0615	05 50 20	22.5	111.0	-4.0		-34.3	20	6699	00 44 10
00 45 00	=0947+064	05 51 10	22.7	111.2	-4.0		-34.3	50	6705	00 44 11
00 45 00	0940+0526	05 51 10	23.4	113.9	-3.8		-33.5	-20	6705	No stop
00 48 30	---	05 54 41	23.9	114.7	-3.8		-33.2	190	6732	00 45 01
00 48 30	J0950+0615	05 54 41	23.2	112.0	-3.9		-34.1	-20	6732	No stop
00 50 00	=0947+064	05 56 11	23.4	112.3	-3.9		-34.0	70	6744	00 48 31
00 50 00	0940+0526	05 56 11	24.1	115.1	-3.7		-33.1	-20	6744	No stop
00 53 30	---	05 59 41	24.5	115.9	-3.7		-32.9	190	6770	00 50 01
00 54 10	J0950+0615	06 00 22	23.9	113.3	-3.8		-33.7	20	6770	00 54 10
00 55 00	=0947+064	06 01 12	24.1	113.5	-3.8		-33.6	50	6777	00 54 11
00 55 00	0940+0526	06 01 12	24.7	116.2	-3.7		-32.8	-20	6777	No stop
00 58 30	---	06 04 42	25.2	117.0	-3.6		-32.5	190	6804	00 55 01
00 58 30	J0950+0615	06 04 42	24.5	114.3	-3.8		-33.4	-20	6804	No stop
01 00 00	=0947+064	06 06 12	24.7	114.6	-3.7		-33.3	70	6815	00 58 31
01 00 00	0940+0526	06 06 12	25.4	117.4	-3.6		-32.4	-20	6815	No stop
01 03 30	---	06 09 43	25.9	118.2	-3.5		-32.1	190	6842	01 00 01
01 04 10	J0950+0615	06 10 23	25.3	115.6	-3.7		-33.0	20	6842	01 04 10
01 05 00	=0947+064	06 11 13	25.4	115.8	-3.7		-33.0	50	6849	01 04 11
01 05 00	0940+0526	06 11 13	26.1	118.6	-3.5		-32.0	-20	6849	No stop
01 08 30	---	06 14 44	26.5	119.4	-3.4		-31.7	190	6876	01 05 01



Schedule for TORUN (Code Tr )

Page 18

e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
01 08 30	J0950+0615	06 14 44	25.9	116.6	-3.6		-32.7	-20	6876	No stop
01 10 00	=0947+064	06 16 14	26.1	116.9	-3.6		-32.6	70	6887	01 08 31
01 10 00	0940+0526	06 16 14	26.7	119.7	-3.4		-31.6	-20	6887	No stop
01 13 30	---	06 19 45	27.2	120.6	-3.4		-31.3	190	6914	01 10 01
01 14 10	J0950+0615	06 20 25	26.7	117.9	-3.5		-32.3	20	6914	01 14 10
01 15 00	=0947+064	06 21 15	26.8	118.1	-3.5		-32.2	50	6920	01 14 11
01 15 00	0940+0526	06 21 15	27.4	120.9	-3.3		-31.2	-20	6920	No stop
01 18 30	---	06 24 46	27.8	121.8	-3.3		-30.8	190	6947	01 15 01
01 18 30	J0950+0615	06 24 46	27.2	118.9	-3.4		-31.9	-20	6947	No stop
01 20 00	=0947+064	06 26 16	27.4	119.3	-3.4		-31.8	70	6959	01 18 31
01 20 00	0940+0526	06 26 16	28.0	122.1	-3.2		-30.7	-20	6959	No stop
01 23 30	---	06 29 46	28.5	123.0	-3.2		-30.4	190	6986	01 20 01
01 24 10	J0950+0615	06 30 26	28.0	120.3	-3.3		-31.4	20	6986	01 24 10
01 25 00	=0947+064	06 31 17	28.1	120.5	-3.3		-31.4	50	6992	01 24 11
01 25 00	0940+0526	06 31 17	28.7	123.4	-3.2		-30.2	-20	6992	No stop
01 28 30	---	06 34 47	29.1	124.2	-3.1		-29.9	190	7019	01 25 01
01 28 30	J0950+0615	06 34 47	28.5	121.3	-3.3		-31.1	-20	7019	No stop
01 30 00	=0947+064	06 36 17	28.7	121.7	-3.2		-30.9	70	7031	01 28 31
01 30 00	0940+0526	06 36 17	29.3	124.6	-3.1		-29.8	-20	7031	No stop
01 33 30	---	06 39 48	29.7	125.5	-3.0		-29.4	190	7058	01 30 01
01 34 10	J0950+0615	06 40 28	29.3	122.7	-3.2		-30.5	20	7058	01 34 10
01 35 00	=0947+064	06 41 18	29.4	122.9	-3.2		-30.5	50	7064	01 34 11
01 35 00	0940+0526	06 41 18	29.9	125.9	-3.0		-29.3	-20	7064	No stop
01 38 30	---	06 44 49	30.3	126.7	-2.9		-28.9	190	7091	01 35 01
01 38 30	J0950+0615	06 44 49	29.8	123.8	-3.1		-30.1	-20	7091	No stop
01 40 00	=0947+064	06 46 19	30.0	124.2	-3.1		-30.0	70	7103	01 38 31
01 40 00	0940+0526	06 46 19	30.5	127.1	-2.9		-28.7	-21	7103	No stop
01 43 30	---	06 49 50	30.9	128.0	-2.9		-28.4	189	7129	01 40 01
01 44 10	J0950+0615	06 50 30	30.5	125.2	-3.0		-29.6	20	7129	01 44 10
01 45 00	=0947+064	06 51 20	30.6	125.4	-3.0		-29.5	50	7136	01 44 11

Schedule for TORUN (Code Tr )

Page 19

e-EVN: ec052b, rsc02, te114

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.

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-----
Start UT  Source          Start / Stop          Early  Disk  TPStart
Stop UT          LST      EL    AZ    HA  UP    ParA  Dwell  GBytes  SYNC
-----
--- Wed 19 Nov 2014  Day 323 ---

01 45 00  0940+0526   06 51 20  31.1 128.4 -2.8   -28.2  -21   7136  No stop
01 48 30  ---          06 54 50  31.5 129.3 -2.8   -27.8  189   7163  01 45 01

01 48 30  J0950+0615   06 54 50  31.0 126.3 -2.9   -29.1  -20   7163  No stop
01 50 00  =0947+064     06 56 21  31.2 126.7 -2.9   -29.0   70   7174  01 48 31

01 50 00  0940+0526   06 56 21  31.7 129.7 -2.7   -27.7  -21   7174  No stop
01 53 30  ---          06 59 51  32.1 130.6 -2.7   -27.3  189   7201  01 50 01

01 54 10  J0950+0615   07 00 31  31.7 127.7 -2.8   -28.5   20   7201  01 54 10
01 55 00  =0947+064     07 01 22  31.8 128.0 -2.8   -28.4   50   7208  01 54 11

01 55 00  0940+0526   07 01 22  32.3 131.0 -2.7   -27.1  -21   7208  No stop
01 58 30  ---          07 04 52  32.6 131.9 -2.6   -26.7  189   7235  01 55 01

01 58 30  J0950+0615   07 04 52  32.2 128.9 -2.8   -28.1  -20   7235  No stop
02 00 00  =0947+064     07 06 22  32.4 129.3 -2.7   -27.9   70   7246  01 58 31

02 00 00  0940+0526   07 06 22  32.8 132.3 -2.6   -26.5  -21   7246  No stop
02 03 30  ---          07 09 53  33.2 133.2 -2.5   -26.1  189   7273  02 00 01

02 04 10  J0950+0615   07 10 33  32.9 130.3 -2.7   -27.4   19   7273  02 04 10
02 05 00  =0947+064     07 11 23  33.0 130.6 -2.7   -27.3   50   7279  02 04 11

02 05 00  0940+0526   07 11 23  33.4 133.7 -2.5   -25.9  -21   7279  No stop
02 08 30  ---          07 14 54  33.7 134.6 -2.4   -25.4  189   7306  02 05 01

02 08 30  J0950+0615   07 14 54  33.4 131.5 -2.6   -26.9  -21   7306  No stop
02 10 00  =0947+064     07 16 24  33.5 131.9 -2.6   -26.7   69   7318  02 08 31

02 10 00  0940+0526   07 16 24  33.9 135.0 -2.4   -25.2  -21   7318  No stop
02 13 30  ---          07 19 55  34.3 136.0 -2.3   -24.8  189   7345  02 10 01

02 14 10  J0950+0615   07 20 35  34.0 133.0 -2.5   -26.2   19   7345  02 14 10
02 15 00  =0947+064     07 21 25  34.1 133.2 -2.5   -26.1   50   7351  02 14 11

02 15 00  0940+0526   07 21 25  34.4 136.4 -2.3   -24.6  -21   7351  No stop
02 18 30  ---          07 24 55  34.8 137.3 -2.3   -24.1  189   7378  02 15 01

02 18 30  J0950+0615   07 24 55  34.5 134.2 -2.4   -25.7  -21   7378  No stop
02 20 00  =0947+064     07 26 26  34.6 134.6 -2.4   -25.5   69   7390  02 18 31

02 20 00  0940+0526   07 26 26  34.9 137.8 -2.2   -23.9  -21   7390  No stop
02 23 30  ---          07 29 56  35.3 138.7 -2.2   -23.4  189   7417  02 20 01

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Schedule for TORUN (Code Tr )

Page 20

e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
02 24 10	J0950+0615	07 30 36	35.1	135.7	-2.3		-24.9	19	7417	02 24 10
02 25 00	=0947+064	07 31 26	35.2	136.0	-2.3		-24.8	50	7423	02 24 11
02 25 00	0940+0526	07 31 26	35.4	139.2	-2.2		-23.2	-21	7423	No stop
02 28 30	---	07 34 57	35.8	140.1	-2.1		-22.7	189	7450	02 25 01
02 28 30	J0950+0615	07 34 57	35.5	136.9	-2.3		-24.4	-21	7450	No stop
02 30 00	=0947+064	07 36 27	35.7	137.4	-2.2		-24.1	69	7462	02 28 31
02 32 00	J1023+2856	07 38 28	51.3	112.1	-2.8		-39.5	48	7462	02 32 00
02 35 00	=1020+292	07 41 28	51.7	112.9	-2.7		-39.2	180	7485	02 32 01
02 35 00	1013+2811	07 41 28	52.4	116.4	-2.5		-37.6	-22	7485	No stop
02 38 30	---	07 44 59	52.9	117.4	-2.5		-37.2	188	7512	02 35 01
02 38 30	J1023+2856	07 44 59	52.2	113.9	-2.7		-38.8	-22	7512	No stop
02 40 00	=1020+292	07 46 29	52.4	114.3	-2.6		-38.7	68	7523	02 38 31
02 40 00	1013+2811	07 46 29	53.1	117.9	-2.5		-37.0	-22	7523	No stop
02 43 30	---	07 49 59	53.6	118.9	-2.4		-36.6	188	7550	02 40 01
02 44 10	J1023+2856	07 50 40	53.0	115.5	-2.6		-38.3	18	7550	02 44 10
02 45 00	=1020+292	07 51 30	53.1	115.7	-2.5		-38.2	50	7556	02 44 11
02 45 00	1013+2811	07 51 30	53.8	119.3	-2.4		-36.4	-22	7556	No stop
02 48 30	---	07 55 00	54.2	120.4	-2.3		-36.0	188	7583	02 45 01
02 48 30	J1023+2856	07 55 00	53.5	116.7	-2.5		-37.8	-22	7583	No stop
02 50 00	=1020+292	07 56 31	53.7	117.2	-2.5		-37.6	68	7595	02 48 31
02 50 00	1013+2811	07 56 31	54.4	120.9	-2.3		-35.8	-22	7595	No stop
02 53 30	---	08 00 01	54.9	122.0	-2.2		-35.3	188	7622	02 50 01
02 54 10	J1023+2856	08 00 41	54.3	118.4	-2.4		-37.1	18	7622	02 54 10
02 55 00	=1020+292	08 01 31	54.4	118.6	-2.4		-37.0	50	7628	02 54 11
02 55 00	1013+2811	08 01 31	55.1	122.4	-2.2		-35.1	-23	7628	No stop
02 58 30	---	08 05 02	55.5	123.5	-2.2		-34.6	187	7655	02 55 01
02 58 30	J1023+2856	08 05 02	54.9	119.7	-2.3		-36.6	-22	7655	No stop
03 00 00	=1020+292	08 06 32	55.1	120.2	-2.3		-36.4	68	7667	02 58 31
03 00 00	1013+2811	08 06 32	55.7	124.0	-2.1		-34.3	-23	7667	No stop
03 03 30	---	08 10 03	56.1	125.2	-2.1		-33.8	187	7694	03 00 01

Schedule for TORUN (Code Tr )

Page 21

e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
03 04 10	J1023+2856	08 10 43	55.6	121.5	-2.2		-35.8	18	7694	03 04 10
03 05 00	=1020+292	08 11 33	55.7	121.7	-2.2		-35.7	50	7700	03 04 11
03 05 00	1013+2811	08 11 33	56.3	125.7	-2.0		-33.6	-23	7700	No stop
03 08 30	---	08 15 04	56.7	126.8	-2.0		-33.0	187	7727	03 05 01
03 08 30	J1023+2856	08 15 04	56.2	122.8	-2.2		-35.2	-23	7727	No stop
03 10 00	=1020+292	08 16 34	56.3	123.3	-2.1		-35.0	67	7738	03 08 31
03 10 00	1013+2811	08 16 34	56.9	127.3	-2.0		-32.8	-23	7738	No stop
03 13 30	---	08 20 04	57.3	128.6	-1.9		-32.2	187	7765	03 10 01
03 14 10	J1023+2856	08 20 45	56.9	124.7	-2.1		-34.3	17	7765	03 14 10
03 15 00	=1020+292	08 21 35	57.0	125.0	-2.0		-34.2	50	7772	03 14 11
03 15 00	1013+2811	08 21 35	57.5	129.1	-1.9		-31.9	-23	7772	No stop
03 18 30	---	08 25 05	57.9	130.3	-1.8		-31.3	187	7799	03 15 01
03 18 30	J1023+2856	08 25 05	57.4	126.2	-2.0		-33.6	-23	7799	No stop
03 20 00	=1020+292	08 26 35	57.6	126.7	-2.0		-33.4	67	7810	03 18 31
03 20 00	1013+2811	08 26 35	58.1	130.8	-1.8		-31.0	-24	7810	No stop
03 23 30	---	08 30 06	58.5	132.1	-1.7		-30.3	186	7837	03 20 01
03 24 10	J1023+2856	08 30 46	58.1	128.1	-1.9		-32.7	17	7837	03 24 10
03 25 00	=1020+292	08 31 36	58.2	128.4	-1.9		-32.5	50	7844	03 24 11
03 25 00	1013+2811	08 31 36	58.7	132.7	-1.7		-30.0	-24	7844	No stop
03 28 30	---	08 35 07	59.0	134.0	-1.7		-29.3	186	7870	03 25 01
03 28 30	J1023+2856	08 35 07	58.6	129.6	-1.8		-31.9	-23	7870	No stop
03 30 00	=1020+292	08 36 37	58.8	130.2	-1.8		-31.6	67	7882	03 28 31
03 30 00	1013+2811	08 36 37	59.2	134.5	-1.6		-29.0	-24	7882	No stop
03 33 30	---	08 40 08	59.6	135.9	-1.6		-28.3	186	7909	03 30 01
03 34 10	J1023+2856	08 40 48	59.2	131.7	-1.7		-30.8	16	7909	03 34 10
03 35 00	=1020+292	08 41 38	59.3	132.0	-1.7		-30.6	50	7915	03 34 11
03 35 00	1013+2811	08 41 38	59.7	136.4	-1.5		-28.0	-24	7915	No stop
03 38 30	---	08 45 09	60.1	137.8	-1.5		-27.2	186	7942	03 35 01
03 38 30	J1023+2856	08 45 09	59.7	133.3	-1.7		-29.9	-24	7942	No stop
03 40 00	=1020+292	08 46 39	59.9	133.9	-1.6		-29.6	66	7954	03 38 31

Schedule for TORUN (Code Tr )

Page 22

e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
03 40 00	1013+2811	08 46 39	60.2	138.4	-1.5		-26.9	-24	7954	No stop
03 43 30	---	08 50 09	60.6	139.8	-1.4		-26.1	186	7981	03 40 01
03 44 10	J1023+2856	08 50 49	60.3	135.5	-1.6		-28.7	16	7981	03 44 10
03 45 00	=1020+292	08 51 40	60.4	135.8	-1.5		-28.6	50	7987	03 44 11
03 45 00	1013+2811	08 51 40	60.7	140.4	-1.4		-25.7	-24	7987	No stop
03 48 30	---	08 55 10	61.1	141.8	-1.3		-24.9	186	8014	03 45 01
03 48 30	J1023+2856	08 55 10	60.8	137.2	-1.5		-27.8	-24	8014	No stop
03 50 00	=1020+292	08 56 40	60.9	137.8	-1.5		-27.4	66	8026	03 48 31
03 50 00	1013+2811	08 56 40	61.2	142.5	-1.3		-24.5	-25	8026	No stop
03 53 30	---	09 00 11	61.5	143.9	-1.2		-23.6	185	8053	03 50 01
03 54 10	J1023+2856	09 00 51	61.3	139.5	-1.4		-26.5	16	8053	03 54 10
03 55 00	=1020+292	09 01 41	61.4	139.8	-1.4		-26.3	50	8059	03 54 11
03 55 00	1013+2811	09 01 41	61.6	144.6	-1.2		-23.2	-25	8059	No stop
03 58 30	---	09 05 12	61.9	146.1	-1.2		-22.3	185	8086	03 55 01
03 58 30	J1023+2856	09 05 12	61.8	141.3	-1.3		-25.4	-24	8086	No stop
04 00 00	=1020+292	09 06 42	61.9	141.9	-1.3		-25.0	66	8097	03 58 31
04 00 00	1013+2811	09 06 42	62.1	146.7	-1.1		-21.9	-25	8097	No stop
04 03 30	---	09 10 13	62.3	148.3	-1.1		-21.0	185	8124	04 00 01
04 04 10	J1023+2856	09 10 53	62.3	143.7	-1.2		-24.0	15	8124	04 04 10
04 05 00	=1020+292	09 11 43	62.4	144.0	-1.2		-23.7	50	8131	04 04 11
04 05 00	1013+2811	09 11 43	62.5	149.0	-1.0		-20.5	-25	8131	No stop
04 08 30	---	09 15 13	62.7	150.5	-1.0		-19.6	185	8158	04 05 01
04 08 30	J1023+2856	09 15 13	62.7	145.6	-1.2		-22.8	-25	8158	No stop
04 10 00	=1020+292	09 16 44	62.8	146.2	-1.1		-22.4	65	8169	04 08 31
04 10 00	1013+2811	09 16 44	62.8	151.2	-1.0		-19.1	-25	8169	No stop
04 13 30	---	09 20 14	63.1	152.8	-0.9		-18.1	185	8196	04 10 01
04 14 10	J1023+2856	09 20 54	63.1	148.1	-1.1		-21.2	15	8196	04 14 10
04 15 00	=1020+292	09 21 45	63.2	148.5	-1.0		-21.0	50	8203	04 14 11
04 15 00	1013+2811	09 21 45	63.2	153.5	-0.9		-17.7	-25	8203	No stop
04 18 30	---	09 25 15	63.4	155.2	-0.8		-16.6	185	8229	04 15 01

Schedule for TORUN (Code Tr )

Page 23

e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
04 18 30	J1023+2856	09 25 15	63.5	150.1	-1.0		-20.0	-25	8229	No stop
04 20 00	=1020+292	09 26 45	63.6	150.8	-1.0		-19.6	65	8241	04 18 31
04 20 00	1013+2811	09 26 45	63.5	155.9	-0.8		-16.1	-26	8241	No stop
04 23 30	---	09 30 16	63.7	157.6	-0.7		-15.1	184	8268	04 20 01
04 24 10	J1023+2856	09 30 56	63.9	152.7	-0.9		-18.3	15	8268	04 24 10
04 25 00	=1020+292	09 31 46	63.9	153.1	-0.9		-18.1	50	8274	04 24 11
04 25 00	1013+2811	09 31 46	63.8	158.3	-0.7		-14.6	-26	8274	No stop
04 28 30	---	09 35 17	64.0	160.0	-0.7		-13.5	184	8301	04 25 01
04 28 30	J1023+2856	09 35 17	64.2	154.8	-0.8		-17.0	-25	8301	No stop
04 30 00	=1020+292	09 36 47	64.3	155.5	-0.8		-16.5	65	8313	04 28 31
04 33 00	J1321+2216	09 39 47	38.1	104.1	-3.7		-39.0	62	8313	04 33 00
04 35 00	=1318+225	09 41 48	38.4	104.6	-3.7		-38.9	120	8328	04 33 01
04 35 00	1311+2227	09 41 48	39.9	106.7	-3.5		-38.5	-20	8328	No stop
04 38 30	---	09 45 18	40.4	107.6	-3.4		-38.3	190	8355	04 35 01
04 38 30	J1321+2216	09 45 18	38.9	105.4	-3.6		-38.7	-19	8355	No stop
04 40 00	=1318+225	09 46 49	39.1	105.8	-3.6		-38.6	71	8367	04 38 31
04 40 00	1311+2227	09 46 49	40.7	107.9	-3.4		-38.2	-20	8367	No stop
04 43 30	---	09 50 19	41.2	108.8	-3.4		-37.9	190	8394	04 40 01
04 44 10	J1321+2216	09 50 59	39.7	106.7	-3.5		-38.4	21	8394	04 44 10
04 45 00	=1318+225	09 51 49	39.8	106.9	-3.5		-38.3	50	8400	04 44 11
04 45 00	1311+2227	09 51 49	41.4	109.1	-3.3		-37.8	-20	8400	No stop
04 48 30	---	09 55 20	41.9	110.0	-3.3		-37.6	190	8427	04 45 01
04 48 30	J1321+2216	09 55 20	40.3	107.8	-3.4		-38.1	-19	8427	No stop
04 50 00	=1318+225	09 56 50	40.5	108.1	-3.4		-38.0	71	8438	04 48 31
04 50 00	1311+2227	09 56 50	42.1	110.4	-3.3		-37.5	-19	8438	No stop
04 53 30	---	10 00 21	42.6	111.2	-3.2		-37.2	191	8465	04 50 01
04 54 10	J1321+2216	10 01 01	41.1	109.1	-3.3		-37.8	21	8465	04 54 10
04 55 00	=1318+225	10 01 51	41.3	109.3	-3.3		-37.7	50	8472	04 54 11
04 55 00	1311+2227	10 01 51	42.8	111.6	-3.2		-37.1	-19	8472	No stop
04 58 30	---	10 05 22	43.3	112.5	-3.1		-36.9	191	8499	04 55 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
04 58 30	J1321+2216	10 05 22	41.7	110.2	-3.3		-37.5	-19	8499	No stop
05 00 00	=1318+225	10 06 52	42.0	110.6	-3.3		-37.4	71	8510	04 58 31
05 00 00	1311+2227	10 06 52	43.5	112.9	-3.1		-36.7	-19	8510	No stop
05 03 30	---	10 10 22	44.0	113.8	-3.0		-36.5	191	8537	05 00 01
05 04 10	J1321+2216	10 11 03	42.5	111.6	-3.2		-37.1	21	8537	05 04 10
05 05 00	=1318+225	10 11 53	42.7	111.8	-3.2		-37.0	50	8544	05 04 11
05 05 00	1311+2227	10 11 53	44.2	114.2	-3.0		-36.3	-19	8544	No stop
05 08 30	---	10 15 23	44.6	115.1	-2.9		-36.0	191	8570	05 05 01
05 08 30	J1321+2216	10 15 23	43.1	112.7	-3.1		-36.7	-19	8570	No stop
05 10 00	=1318+225	10 16 54	43.4	113.1	-3.1		-36.6	71	8582	05 08 31
05 10 00	1311+2227	10 16 54	44.9	115.5	-2.9		-35.9	-19	8582	No stop
05 13 30	---	10 20 24	45.3	116.4	-2.9		-35.6	191	8609	05 10 01
05 14 10	J1321+2216	10 21 04	43.9	114.2	-3.0		-36.3	21	8609	05 14 10
05 15 00	=1318+225	10 21 54	44.0	114.4	-3.0		-36.2	50	8615	05 14 11
05 15 00	1311+2227	10 21 54	45.5	116.8	-2.8		-35.4	-19	8615	No stop
05 18 30	---	10 25 25	46.0	117.8	-2.8		-35.1	191	8642	05 15 01
05 18 30	J1321+2216	10 25 25	44.5	115.3	-2.9		-35.9	-19	8642	No stop
05 20 00	=1318+225	10 26 55	44.7	115.7	-2.9		-35.8	71	8654	05 18 31
05 20 00	1311+2227	10 26 55	46.2	118.2	-2.8		-34.9	-19	8654	No stop
05 23 30	---	10 30 26	46.7	119.2	-2.7		-34.6	191	8681	05 20 01
05 24 10	J1321+2216	10 31 06	45.3	116.8	-2.8		-35.4	21	8681	05 24 10
05 25 00	=1318+225	10 31 56	45.4	117.0	-2.8		-35.3	50	8687	05 24 11
05 25 00	1311+2227	10 31 56	46.9	119.6	-2.7		-34.4	-19	8687	No stop
05 28 30	---	10 35 27	47.3	120.6	-2.6		-34.0	191	8714	05 25 01
05 28 30	J1321+2216	10 35 27	45.9	118.0	-2.8		-34.9	-19	8714	No stop
05 30 00	=1318+225	10 36 57	46.1	118.4	-2.7		-34.8	71	8726	05 28 31
05 30 00	1311+2227	10 36 57	47.5	121.0	-2.6		-33.8	-20	8726	No stop
05 33 30	---	10 40 27	48.0	122.0	-2.5		-33.4	190	8753	05 30 01
05 34 10	J1321+2216	10 41 08	46.6	119.6	-2.7		-34.3	21	8753	05 34 10
05 35 00	=1318+225	10 41 58	46.7	119.8	-2.7		-34.3	50	8759	05 34 11

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
05 35 00	1311+2227	10 41 58	48.1	122.4	-2.5		-33.2	-20	8759	No stop
05 38 30	---	10 45 28	48.6	123.4	-2.4		-32.8	190	8786	05 35 01
05 38 30	J1321+2216	10 45 28	47.2	120.8	-2.6		-33.9	-19	8786	No stop
05 40 00	=1318+225	10 46 58	47.4	121.2	-2.6		-33.7	71	8797	05 38 31
05 40 00	1311+2227	10 46 58	48.8	123.9	-2.4		-32.6	-20	8797	No stop
05 43 30	---	10 50 29	49.2	124.9	-2.4		-32.2	190	8824	05 40 01
05 44 10	J1321+2216	10 51 09	47.9	122.4	-2.5		-33.2	20	8824	05 44 10
05 45 00	=1318+225	10 51 59	48.0	122.6	-2.5		-33.1	50	8831	05 44 11
05 45 00	1311+2227	10 51 59	49.4	125.4	-2.3		-32.0	-20	8831	No stop
05 48 30	---	10 55 30	49.8	126.5	-2.3		-31.5	190	8858	05 45 01
05 48 30	J1321+2216	10 55 30	48.5	123.7	-2.4		-32.7	-20	8858	No stop
05 50 00	=1318+225	10 57 00	48.6	124.1	-2.4		-32.5	70	8869	05 48 31
05 50 00	1311+2227	10 57 00	50.0	126.9	-2.3		-31.3	-20	8869	No stop
05 53 30	---	11 00 31	50.4	128.0	-2.2		-30.8	190	8896	05 50 01
05 54 10	J1321+2216	11 01 11	49.2	125.4	-2.3		-31.9	20	8896	05 54 10
05 55 00	=1318+225	11 02 01	49.3	125.6	-2.3		-31.8	50	8903	05 54 11
05 55 00	1311+2227	11 02 01	50.6	128.5	-2.2		-30.6	-20	8903	No stop
05 58 30	---	11 05 32	51.0	129.6	-2.1		-30.0	190	8929	05 55 01
05 58 30	J1321+2216	11 05 32	49.7	126.7	-2.3		-31.3	-20	8929	No stop
06 00 00	=1318+225	11 07 02	49.9	127.1	-2.2		-31.1	70	8941	05 58 31
06 00 00	1311+2227	11 07 02	51.2	130.1	-2.1		-29.8	-21	8941	No stop
06 03 30	---	11 10 32	51.6	131.2	-2.0		-29.3	189	8968	06 00 01
06 04 10	J1321+2216	11 11 12	50.4	128.4	-2.2		-30.5	20	8968	06 04 10
06 05 00	=1318+225	11 12 03	50.5	128.7	-2.2		-30.4	50	8974	06 04 11
06 05 00	1311+2227	11 12 03	51.8	131.7	-2.0		-29.0	-21	8974	No stop
06 08 30	---	11 15 33	52.1	132.8	-1.9		-28.4	189	9001	06 05 01
06 08 30	J1321+2216	11 15 33	50.9	129.8	-2.1		-29.9	-20	9001	No stop
06 10 00	=1318+225	11 17 03	51.0	130.3	-2.1		-29.7	70	9013	06 08 31
06 10 00	1311+2227	11 17 03	52.3	133.3	-1.9		-28.2	-21	9013	No stop
06 13 30	---	11 20 34	52.7	134.5	-1.9		-27.6	189	9040	06 10 01



Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
06 14 10	J1321+2216	11 21 14	51.5	131.6	-2.0		-29.0	19	9040	06 14 10
06 15 00	=1318+225	11 22 04	51.6	131.9	-2.0		-28.9	50	9046	06 14 11
06 15 00	1311+2227	11 22 04	52.8	135.0	-1.8		-27.3	-21	9046	No stop
06 18 30	---	11 25 35	53.2	136.2	-1.8		-26.7	189	9073	06 15 01
06 18 30	J1321+2216	11 25 35	52.0	133.0	-1.9		-28.3	-21	9073	No stop
06 20 00	=1318+225	11 27 05	52.2	133.5	-1.9		-28.0	69	9085	06 18 31
06 20 00	1311+2227	11 27 05	53.4	136.7	-1.7		-26.4	-21	9085	No stop
06 23 30	---	11 30 36	53.7	138.0	-1.7		-25.8	189	9111	06 20 01
06 24 10	J1321+2216	11 31 16	52.6	134.9	-1.8		-27.3	19	9111	06 24 10
06 25 00	=1318+225	11 32 06	52.7	135.2	-1.8		-27.2	50	9118	06 24 11
06 25 00	1311+2227	11 32 06	53.9	138.5	-1.7		-25.5	-21	9118	No stop
06 28 30	---	11 35 36	54.2	139.8	-1.6		-24.8	189	9145	06 25 01
06 28 30	J1321+2216	11 35 36	53.1	136.4	-1.8		-26.5	-21	9145	No stop
06 30 00	=1318+225	11 37 07	53.2	137.0	-1.7		-26.3	69	9156	06 28 31
06 33 00	J1544+3240	11 40 07	42.5	90.1	-4.1		-45.5	71	9156	06 33 00
06 35 00	=1542+328	11 42 08	42.8	90.5	-4.0		-45.5	120	9172	06 33 01
06 35 00	1548+3335	11 42 08	42.8	88.8	-4.1		-46.1	-17	9172	No stop
06 38 30	---	11 45 38	43.3	89.5	-4.1		-46.1	193	9199	06 35 01
06 38 30	J1544+3240	11 45 38	43.3	91.2	-4.0		-45.5	-17	9199	No stop
06 40 00	=1542+328	11 47 08	43.5	91.5	-4.0		-45.5	73	9210	06 38 31
06 40 00	1548+3335	11 47 08	43.5	89.8	-4.0		-46.1	-17	9210	No stop
06 43 30	---	11 50 39	44.0	90.5	-4.0		-46.1	193	9237	06 40 01
06 44 10	J1544+3240	11 51 19	44.2	92.4	-3.9		-45.4	23	9237	06 44 10
06 45 00	=1542+328	11 52 09	44.3	92.5	-3.9		-45.4	50	9244	06 44 11
06 45 00	1548+3335	11 52 09	44.3	90.8	-3.9		-46.1	-17	9244	No stop
06 48 30	---	11 55 40	44.8	91.5	-3.9		-46.1	193	9270	06 45 01
06 48 30	J1544+3240	11 55 40	44.8	93.3	-3.8		-45.4	-17	9270	No stop
06 50 00	=1542+328	11 57 10	45.0	93.6	-3.8		-45.4	73	9282	06 48 31
06 50 00	1548+3335	11 57 10	45.0	91.8	-3.9		-46.1	-17	9282	No stop
06 53 30	---	12 00 41	45.6	92.5	-3.8		-46.0	193	9309	06 50 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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
--- Wed 19 Nov 2014 Day 323 ---										
06 54 10	J1544+3240	12 01 21	45.7	94.5	-3.7		-45.3	23	9309	06 54 10
06 55 00	=1542+328	12 02 11	45.8	94.6	-3.7		-45.3	50	9315	06 54 11
06 57 00	J1622+1426	12 04 11	26.5	101.7	-4.3		-37.4	34	9315	06 57 00
06 59 00	=1620+145	12 06 11	26.8	102.1	-4.3		-37.3	120	9331	06 57 01
06 59 00	1628+1154	12 06 11	23.9	102.5	-4.4		-36.8	-25	9331	No stop
07 02 30	---	12 09 42	24.5	103.3	-4.3		-36.7	185	9358	06 59 01
07 02 30	J1622+1426	12 09 42	27.4	102.9	-4.2		-37.2	-25	9358	No stop
07 04 00	=1620+145	12 11 12	27.6	103.2	-4.2		-37.1	65	9369	07 02 31
07 04 00	1628+1154	12 11 12	24.7	103.6	-4.3		-36.6	-25	9369	No stop
07 07 30	---	12 14 43	25.2	104.3	-4.2		-36.5	185	9396	07 04 01
07 08 10	J1622+1426	12 15 23	28.2	104.1	-4.1		-37.0	15	9396	07 08 10
07 09 00	=1620+145	12 16 13	28.3	104.3	-4.1		-36.9	50	9403	07 08 11
07 09 00	1628+1154	12 16 13	25.4	104.7	-4.2		-36.4	-25	9403	No stop
07 12 30	---	12 19 44	25.9	105.4	-4.2		-36.3	185	9429	07 09 01
07 12 30	J1622+1426	12 19 44	28.8	105.1	-4.1		-36.8	-25	9429	No stop
07 14 00	=1620+145	12 21 14	29.0	105.4	-4.0		-36.7	65	9441	07 12 31
07 14 00	1628+1154	12 21 14	26.1	105.8	-4.1		-36.2	-25	9441	No stop
07 17 30	---	12 24 44	26.6	106.5	-4.1		-36.0	185	9468	07 14 01
07 18 10	J1622+1426	12 25 25	29.6	106.3	-4.0		-36.5	15	9468	07 18 10
07 19 00	=1620+145	12 26 15	29.8	106.5	-3.9		-36.5	50	9474	07 18 11
07 21 00	J1726+3213	12 28 15	34.1	80.1	-5.0		-44.4	52	9474	07 21 00
07 23 00	=1724+322	12 30 15	34.4	80.5	-4.9		-44.4	120	9490	07 21 01
07 23 00	1720+3104	12 30 15	34.5	82.6	-4.8		-44.0	-18	9490	No stop
07 26 30	---	12 33 46	35.0	83.3	-4.8		-44.1	192	9517	07 23 01
07 26 30	J1726+3213	12 33 46	34.9	81.2	-4.9		-44.5	-18	9517	No stop
07 28 00	=1724+322	12 35 16	35.1	81.4	-4.9		-44.6	72	9528	07 26 31
07 28 00	1720+3104	12 35 16	35.2	83.6	-4.8		-44.2	-18	9528	No stop
07 31 30	---	12 38 47	35.7	84.2	-4.7		-44.2	192	9555	07 28 01
07 32 10	J1726+3213	12 39 27	35.7	82.2	-4.8		-44.7	22	9555	07 32 10
07 33 00	=1724+322	12 40 17	35.9	82.4	-4.8		-44.7	50	9561	07 32 11
07 33 00	1720+3104	12 40 17	35.9	84.5	-4.7		-44.3	-18	9561	No stop
07 36 30	---	12 43 48	36.5	85.2	-4.6		-44.3	192	9588	07 33 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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
--- Wed 19 Nov 2014 Day 323 ---										
07 36 30	J1726+3213	12 43 48	36.4	83.0	-4.7		-44.8	-18	9588	No stop
07 38 00	=1724+322	12 45 18	36.6	83.3	-4.7		-44.8	72	9600	07 36 31
07 38 00	1720+3104	12 45 18	36.7	85.5	-4.6		-44.3	-18	9600	No stop
07 41 30	---	12 48 48	37.2	86.1	-4.5		-44.4	192	9627	07 38 01
07 42 10	J1726+3213	12 49 29	37.2	84.1	-4.6		-44.9	22	9627	07 42 10
07 43 00	=1724+322	12 50 19	37.4	84.2	-4.6		-44.9	50	9633	07 42 11
07 46 00	J1544+3240	12 53 19	53.3	106.5	-2.9		-43.1	107	9633	07 46 00
07 48 00	=1542+328	12 55 20	53.6	107.1	-2.8		-43.0	120	9649	07 46 01
07 48 00	1548+3335	12 55 20	53.7	104.9	-2.9		-44.1	-18	9649	No stop
07 51 30	---	12 58 50	54.2	105.8	-2.8		-43.9	192	9676	07 48 01
07 51 30	J1544+3240	12 58 50	54.1	108.0	-2.8		-42.7	-18	9676	No stop
07 53 00	=1542+328	13 00 20	54.3	108.4	-2.7		-42.6	72	9687	07 51 31
07 53 00	1548+3335	13 00 20	54.4	106.2	-2.8		-43.8	-18	9687	No stop
07 56 30	---	13 03 51	54.9	107.1	-2.8		-43.5	192	9714	07 53 01
07 57 10	J1544+3240	13 04 31	54.9	109.5	-2.7		-42.2	22	9714	07 57 10
07 58 00	=1542+328	13 05 21	55.0	109.7	-2.7		-42.2	50	9720	07 57 11
07 58 00	1548+3335	13 05 21	55.1	107.5	-2.7		-43.4	-18	9720	No stop
08 01 30	---	13 08 52	55.6	108.4	-2.7		-43.1	192	9747	07 58 01
08 01 30	J1544+3240	13 08 52	55.5	110.7	-2.6		-41.8	-19	9747	No stop
08 03 00	=1542+328	13 10 22	55.8	111.1	-2.6		-41.7	71	9759	08 01 31
08 03 00	1548+3335	13 10 22	55.8	108.8	-2.6		-43.0	-18	9759	No stop
08 06 30	---	13 13 53	56.3	109.8	-2.6		-42.7	192	9786	08 03 01
08 07 10	J1544+3240	13 14 33	56.3	112.3	-2.5		-41.3	21	9786	08 07 10
08 08 00	=1542+328	13 15 23	56.4	112.5	-2.5		-41.2	50	9792	08 07 11
08 10 00	J1622+1426	13 17 23	36.8	118.7	-3.1		-33.0	32	9792	08 10 00
08 12 00	=1620+145	13 19 23	37.1	119.2	-3.1		-32.8	120	9808	08 10 01
08 12 00	1628+1154	13 19 23	34.2	119.4	-3.2		-32.3	-25	9808	No stop
08 15 30	---	13 22 54	34.6	120.2	-3.1		-32.0	185	9835	08 12 01
08 15 30	J1622+1426	13 22 54	37.6	120.1	-3.0		-32.4	-25	9835	No stop
08 17 00	=1620+145	13 24 24	37.8	120.5	-3.0		-32.3	65	9846	08 15 31
08 17 00	1628+1154	13 24 24	34.8	120.6	-3.1		-31.9	-25	9846	No stop
08 20 30	---	13 27 55	35.3	121.5	-3.0		-31.5	185	9873	08 17 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
08 21 10	J1622+1426	13 28 35	38.3	121.6	-2.9		-31.9	15	9873	08 21 10
08 22 00	=1620+145	13 29 25	38.4	121.8	-2.9		-31.8	50	9879	08 21 11
08 22 00	1628+1154	13 29 25	35.5	121.9	-3.0		-31.4	-25	9879	No stop
08 25 30	---	13 32 56	35.9	122.8	-2.9		-31.0	185	9906	08 22 01
08 25 30	J1622+1426	13 32 56	38.8	122.7	-2.8		-31.4	-25	9906	No stop
08 27 00	=1620+145	13 34 26	39.0	123.1	-2.8		-31.3	65	9918	08 25 31
08 27 00	1628+1154	13 34 26	36.1	123.2	-2.9		-30.9	-25	9918	No stop
08 30 30	---	13 37 56	36.6	124.1	-2.9		-30.5	185	9945	08 27 01
08 31 10	J1622+1426	13 38 37	39.6	124.2	-2.7		-30.8	15	9945	08 31 10
08 32 00	=1620+145	13 39 27	39.7	124.5	-2.7		-30.7	50	9951	08 31 11
08 34 00	J1726+3213	13 41 27	45.0	94.4	-3.8		-45.0	45	9951	08 34 00
08 36 00	=1724+322	13 43 27	45.3	94.8	-3.7		-45.0	120	9967	08 34 01
08 36 00	1720+3104	13 43 27	45.4	97.3	-3.6		-44.1	-19	9967	No stop
08 39 30	---	13 46 58	45.9	98.1	-3.6		-44.0	191	9994	08 36 01
08 39 30	J1726+3213	13 46 58	45.8	95.6	-3.7		-44.9	-19	9994	No stop
08 41 00	=1724+322	13 48 28	46.1	95.9	-3.6		-44.9	71	10005	08 39 31
08 41 00	1720+3104	13 48 28	46.2	98.4	-3.5		-43.9	-19	10005	No stop
08 44 30	---	13 51 59	46.7	99.2	-3.5		-43.8	191	10032	08 41 01
08 45 10	J1726+3213	13 52 39	46.7	96.8	-3.6		-44.8	21	10032	08 45 10
08 46 00	=1724+322	13 53 29	46.8	97.0	-3.6		-44.8	50	10038	08 45 11
08 46 00	1720+3104	13 53 29	46.9	99.5	-3.5		-43.7	-19	10038	No stop
08 49 30	---	13 57 00	47.4	100.3	-3.4		-43.6	191	10065	08 46 01
08 49 30	J1726+3213	13 57 00	47.3	97.8	-3.5		-44.7	-19	10065	No stop
08 51 00	=1724+322	13 58 30	47.6	98.1	-3.5		-44.6	71	10077	08 49 31
08 51 00	1720+3104	13 58 30	47.6	100.7	-3.4		-43.5	-20	10077	No stop
08 54 30	---	14 02 00	48.2	101.5	-3.3		-43.4	190	10104	08 51 01
08 55 10	J1726+3213	14 02 41	48.2	99.0	-3.4		-44.5	21	10104	08 55 10
08 56 00	=1724+322	14 03 31	48.3	99.2	-3.4		-44.5	50	10110	08 55 11
08 59 00	J1544+3240	14 06 31	63.0	129.5	-1.6		-33.4	106	10110	08 59 00
09 01 00	=1542+328	14 08 31	63.3	130.3	-1.6		-32.9	120	10126	08 59 01
09 01 00	1548+3335	14 08 31	63.5	127.5	-1.7		-34.8	-20	10126	No stop
09 04 30	---	14 12 02	63.9	128.9	-1.6		-34.1	190	10153	09 01 01

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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
--- Wed 19 Nov 2014 Day 323 ---										
09 04 30	J1544+3240	14 12 02	63.7	131.7	-1.5		-32.2	-20	10153	No stop
09 06 00	=1542+328	14 13 32	63.8	132.3	-1.5		-31.8	70	10164	09 04 31
09 06 00	1548+3335	14 13 32	64.1	129.5	-1.6		-33.8	-20	10164	No stop
09 09 30	---	14 17 03	64.5	130.9	-1.5		-33.0	190	10191	09 06 01
09 10 10	J1544+3240	14 17 43	64.3	134.1	-1.4		-30.8	20	10191	09 10 10
09 11 00	=1542+328	14 18 33	64.4	134.4	-1.4		-30.6	50	10197	09 10 11
09 11 00	1548+3335	14 18 33	64.7	131.5	-1.5		-32.6	-20	10197	No stop
09 14 30	---	14 22 04	65.1	133.0	-1.4		-31.8	190	10224	09 11 01
09 14 30	J1544+3240	14 22 04	64.7	135.9	-1.4		-29.8	-21	10224	No stop
09 16 00	=1542+328	14 23 34	64.9	136.5	-1.4		-29.4	69	10236	09 14 31
09 16 00	1548+3335	14 23 34	65.2	133.6	-1.4		-31.4	-20	10236	No stop
09 19 30	---	14 27 05	65.6	135.1	-1.4		-30.6	190	10263	09 16 01
09 20 10	J1544+3240	14 27 45	65.3	138.4	-1.3		-28.3	19	10263	09 20 10
09 21 00	=1542+328	14 28 35	65.4	138.7	-1.3		-28.1	50	10269	09 20 11
09 23 00	J1622+1426	14 30 35	45.4	139.4	-1.9		-23.8	31	10269	09 23 00
09 25 00	=1620+145	14 32 35	45.6	140.0	-1.8		-23.5	120	10285	09 23 01
09 25 00	1628+1154	14 32 35	42.7	139.6	-1.9		-23.4	-25	10285	No stop
09 28 30	---	14 36 06	43.0	140.7	-1.9		-22.9	185	10311	09 25 01
09 28 30	J1622+1426	14 36 06	45.9	141.2	-1.8		-22.9	-25	10311	No stop
09 30 00	=1620+145	14 37 36	46.0	141.6	-1.8		-22.6	65	10323	09 28 31
09 30 00	1628+1154	14 37 36	43.1	141.1	-1.9		-22.6	-25	10323	No stop
09 33 30	---	14 41 07	43.5	142.2	-1.8		-22.1	185	10350	09 30 01
09 34 10	J1622+1426	14 41 47	46.4	143.0	-1.7		-21.9	15	10350	09 34 10
09 35 00	=1620+145	14 42 37	46.5	143.3	-1.7		-21.8	50	10356	09 34 11
09 35 00	1628+1154	14 42 37	43.6	142.7	-1.8		-21.8	-25	10356	No stop
09 38 30	---	14 46 08	43.9	143.8	-1.7		-21.2	185	10383	09 35 01
09 38 30	J1622+1426	14 46 08	46.8	144.4	-1.6		-21.1	-25	10383	No stop
09 40 00	=1620+145	14 47 38	46.9	144.9	-1.6		-20.9	65	10395	09 38 31
09 40 00	1628+1154	14 47 38	44.1	144.3	-1.7		-21.0	-25	10395	No stop
09 43 30	---	14 51 08	44.4	145.4	-1.6		-20.4	185	10422	09 40 01
09 44 10	J1622+1426	14 51 49	47.3	146.3	-1.5		-20.1	15	10422	09 44 10
09 45 00	=1620+145	14 52 39	47.4	146.6	-1.5		-20.0	50	10428	09 44 11

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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
--- Wed 19 Nov 2014 Day 323 ---										
09 47 00	J1726+3213	14 54 39	55.7	112.1	-2.5		-41.1	36	10428	09 47 00
09 49 00	=1724+322	14 56 39	56.0	112.7	-2.5		-40.9	120	10444	09 47 01
09 49 00	1720+3104	14 56 39	55.9	115.8	-2.4		-39.1	-21	10444	No stop
09 52 30	---	15 00 10	56.4	116.8	-2.3		-38.7	189	10470	09 49 01
09 52 30	J1726+3213	15 00 10	56.5	113.7	-2.4		-40.5	-21	10470	No stop
09 54 00	=1724+322	15 01 40	56.7	114.1	-2.4		-40.4	69	10482	09 52 31
09 54 00	1720+3104	15 01 40	56.6	117.3	-2.3		-38.5	-21	10482	No stop
09 57 30	---	15 05 11	57.1	118.4	-2.3		-38.1	189	10509	09 54 01
09 58 10	J1726+3213	15 05 51	57.2	115.4	-2.4		-39.9	19	10509	09 58 10
09 59 00	=1724+322	15 06 41	57.3	115.6	-2.3		-39.8	50	10515	09 58 11
09 59 00	1720+3104	15 06 41	57.3	118.8	-2.2		-37.9	-21	10515	No stop
10 02 30	---	15 10 12	57.7	119.9	-2.2		-37.4	189	10542	09 59 01
10 02 30	J1726+3213	15 10 12	57.8	116.7	-2.3		-39.4	-21	10542	No stop
10 04 00	=1724+322	15 11 42	58.0	117.1	-2.3		-39.2	69	10554	10 02 31
10 04 00	1720+3104	15 11 42	57.9	120.4	-2.2		-37.2	-21	10554	No stop
10 07 30	---	15 15 12	58.4	121.6	-2.1		-36.7	189	10581	10 04 01
10 08 10	J1726+3213	15 15 53	58.6	118.5	-2.2		-38.6	19	10581	10 08 10
10 09 00	=1724+322	15 16 43	58.7	118.7	-2.2		-38.5	50	10587	10 08 11
10 12 00	J1544+3240	15 19 43	69.1	165.2	-0.4		-10.5	74	10587	10 12 00
10 14 00	=1542+328	15 21 43	69.1	166.3	-0.4		-9.7	120	10603	10 12 01
10 14 00	1548+3335	15 21 43	69.9	163.3	-0.5		-11.9	-20	10603	No stop
10 17 30	---	15 25 14	70.0	165.4	-0.4		-10.4	190	10629	10 14 01
10 17 30	J1544+3240	15 25 14	69.2	168.4	-0.3		-8.2	-21	10629	No stop
10 19 00	=1542+328	15 26 44	69.3	169.3	-0.3		-7.6	69	10641	10 17 31
10 19 00	1548+3335	15 26 44	70.0	166.3	-0.4		-9.8	-20	10641	No stop
10 22 30	---	15 30 15	70.2	168.5	-0.3		-8.3	190	10668	10 19 01
10 23 10	J1544+3240	15 30 55	69.4	171.8	-0.2		-5.9	19	10668	10 23 10
10 24 00	=1542+328	15 31 45	69.4	172.3	-0.2		-5.5	50	10674	10 23 11
10 24 00	1548+3335	15 31 45	70.2	169.4	-0.3		-7.6	-20	10674	No stop
10 27 30	---	15 35 16	70.3	171.5	-0.2		-6.1	190	10701	10 24 01
10 27 30	J1544+3240	15 35 16	69.5	174.4	-0.2		-4.0	-20	10701	No stop
10 29 00	=1542+328	15 36 46	69.5	175.3	-0.1		-3.4	70	10713	10 27 31

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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

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Start UT	Source	Start / Stop					Early	Disk	TPStart	
Stop UT		LST	EL	AZ	HA	UP	ParA	Dwell	GBytes	SYNC
--- Wed 19 Nov 2014 Day 323 ---										
10 29 00	1548+3335	15 36 46	70.3	172.4	-0.2		-5.4	-20	10713	No stop
10 32 30	---	15 40 17	70.4	174.6	-0.1		-3.9	190	10740	10 29 01
10 33 10	J1544+3240	15 40 57	69.5	177.8	-0.1		-1.6	20	10740	10 33 10
10 34 00	=1542+328	15 41 47	69.5	178.3	-0.0		-1.2	50	10746	10 33 11
10 36 00	J1622+1426	15 43 47	50.5	164.9	-0.7		-9.3	35	10746	10 36 00
10 38 00	=1620+145	15 45 47	50.6	165.6	-0.6		-8.9	120	10761	10 36 01
10 38 00	1628+1154	15 45 47	47.9	164.1	-0.7		-9.7	-24	10761	No stop
10 41 30	---	15 49 18	48.0	165.3	-0.7		-8.9	186	10788	10 38 01
10 41 30	J1622+1426	15 49 18	50.7	167.0	-0.6		-8.0	-24	10788	No stop
10 43 00	=1620+145	15 50 48	50.8	167.5	-0.5		-7.7	66	10800	10 41 31
10 43 00	1628+1154	15 50 48	48.1	165.9	-0.6		-8.6	-24	10800	No stop
10 46 30	---	15 54 19	48.2	167.1	-0.6		-7.8	186	10827	10 43 01
10 47 10	J1622+1426	15 54 59	50.9	169.1	-0.5		-6.7	16	10827	10 47 10
10 48 00	=1620+145	15 55 49	50.9	169.4	-0.5		-6.5	50	10833	10 47 11
10 48 00	1628+1154	15 55 49	48.2	167.7	-0.6		-7.5	-24	10833	No stop
10 51 30	---	15 59 20	48.3	169.0	-0.5		-6.7	186	10860	10 48 01
10 51 30	J1622+1426	15 59 20	51.0	170.8	-0.4		-5.7	-24	10860	No stop
10 53 00	=1620+145	16 00 50	51.1	171.4	-0.4		-5.3	66	10872	10 51 31
10 53 00	1628+1154	16 00 50	48.4	169.5	-0.5		-6.4	-24	10872	No stop
10 56 30	---	16 04 20	48.5	170.8	-0.4		-5.6	186	10899	10 53 01
10 57 10	J1622+1426	16 05 01	51.1	173.0	-0.3		-4.4	16	10899	10 57 10
10 58 00	=1620+145	16 05 51	51.2	173.3	-0.3		-4.2	50	10905	10 57 11
11 00 00	J1726+3213	16 07 51	64.7	137.8	-1.3		-28.5	33	10905	11 00 00
11 02 00	=1724+322	16 09 51	64.9	138.7	-1.3		-27.9	120	10920	11 00 01
11 02 00	1720+3104	16 09 51	64.5	142.6	-1.2		-25.2	-23	10920	No stop
11 05 30	---	16 13 22	64.8	144.2	-1.1		-24.2	187	10947	11 02 01
11 05 30	J1726+3213	16 13 22	65.3	140.2	-1.2		-27.0	-23	10947	No stop
11 07 00	=1724+322	16 14 52	65.4	140.9	-1.2		-26.6	67	10959	11 05 31
11 07 00	1720+3104	16 14 52	64.9	144.9	-1.1		-23.8	-23	10959	No stop
11 10 30	---	16 18 23	65.2	146.5	-1.0		-22.7	187	10986	11 07 01
11 11 10	J1726+3213	16 19 03	65.8	142.8	-1.1		-25.4	17	10986	11 11 10
11 12 00	=1724+322	16 19 53	65.9	143.2	-1.1		-25.1	50	10992	11 11 11

Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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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 19 Nov 2014 Day 323 ---										
11 12 00	1720+3104	16 19 53	65.3	147.3	-1.0		-22.3	-23	10992	No stop
11 15 30	---	16 23 24	65.6	148.9	-1.0		-21.2	187	11019	11 12 01
11 15 30	J1726+3213	16 23 24	66.2	144.9	-1.1		-24.1	-23	11019	No stop
11 17 00	=1724+322	16 24 54	66.3	145.6	-1.0		-23.6	67	11031	11 15 31
11 17 00	1720+3104	16 24 54	65.7	149.7	-0.9		-20.7	-23	11031	No stop
11 20 30	---	16 28 24	66.0	151.4	-0.9		-19.6	187	11058	11 17 01
11 21 10	J1726+3213	16 29 05	66.7	147.7	-1.0		-22.3	17	11058	11 21 10
11 22 00	=1724+322	16 29 55	66.7	148.1	-1.0		-22.0	50	11064	11 21 11
11 25 00	J1544+3240	16 32 55	67.8	207.7	0.8		19.4	47	11064	11 25 00
11 27 00	=1542+328	16 34 55	67.6	208.8	0.8		20.1	120	11079	11 25 01
11 27 00	1548+3335	16 34 55	68.8	207.3	0.8		19.3	-17	11079	No stop
11 30 30	---	16 38 26	68.5	209.2	0.8		20.6	193	11106	11 27 01
11 30 30	J1544+3240	16 38 26	67.4	210.6	0.9		21.3	-18	11106	No stop
11 32 00	=1542+328	16 39 56	67.3	211.4	0.9		21.8	72	11118	11 30 31
11 32 00	1548+3335	16 39 56	68.4	210.0	0.8		21.1	-17	11118	No stop
11 35 30	---	16 43 27	68.2	211.9	0.9		22.3	193	11145	11 32 01
11 36 10	J1544+3240	16 44 07	66.9	213.5	1.0		23.1	22	11145	11 36 10
11 37 00	=1542+328	16 44 57	66.9	213.9	1.0		23.4	50	11151	11 36 11
11 37 00	1548+3335	16 44 57	68.0	212.6	0.9		22.9	-17	11151	No stop
11 40 30	---	16 48 28	67.8	214.4	1.0		24.0	193	11178	11 37 01
11 40 30	J1544+3240	16 48 28	66.6	215.6	1.1		24.5	-18	11178	No stop
11 42 00	=1542+328	16 49 58	66.4	216.3	1.1		25.0	72	11190	11 40 31
11 42 00	1548+3335	16 49 58	67.6	215.2	1.0		24.5	-18	11190	No stop
11 45 30	---	16 53 29	67.3	216.9	1.1		25.6	192	11217	11 42 01
11 46 10	J1544+3240	16 54 09	66.0	218.3	1.2		26.2	22	11217	11 46 10
11 47 00	=1542+328	16 54 59	66.0	218.6	1.2		26.4	50	11223	11 46 11
11 49 00	J1622+1426	16 56 59	50.7	193.0	0.6		8.0	49	11223	11 49 00
11 51 00	=1620+145	16 58 59	50.7	193.7	0.6		8.5	120	11238	11 49 01
11 51 00	1628+1154	16 58 59	48.3	191.0	0.5		6.7	-23	11238	No stop
11 54 30	---	17 02 30	48.2	192.3	0.6		7.5	187	11265	11 51 01
11 54 30	J1622+1426	17 02 30	50.5	195.1	0.7		9.3	-22	11265	No stop
11 56 00	=1620+145	17 04 00	50.5	195.6	0.7		9.6	68	11277	11 54 31



Schedule for TORUN (Code Tr )

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e-EVN: ec052b, rsc02, te114

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 19 Nov 2014 Day 323 ---										
11 56 00	1628+1154	17 04 00	48.2	192.8	0.6		7.8	-23	11277	No stop
11 59 30	---	17 07 31	48.1	194.1	0.6		8.6	187	11304	11 56 01
12 00 10	J1622+1426	17 08 11	50.3	197.2	0.7		10.6	18	11304	12 00 10
12 01 00	=1620+145	17 09 01	50.3	197.5	0.8		10.7	50	11310	12 00 11
12 01 00	1628+1154	17 09 01	48.0	194.7	0.7		8.9	-22	11310	No stop
12 04 30	---	17 12 32	47.9	195.9	0.7		9.7	188	11337	12 01 01
12 04 30	J1622+1426	17 12 32	50.1	198.8	0.8		11.5	-22	11337	No stop
12 06 00	=1620+145	17 14 02	50.0	199.4	0.8		11.9	68	11349	12 04 31
12 08 00	J1726+3213	17 16 02	69.0	173.4	-0.2		-4.7	35	11349	12 08 00
12 10 00	=1724+322	17 18 03	69.1	174.6	-0.2		-3.8	120	11364	12 08 01
12 10 00	1720+3104	17 18 03	68.0	178.3	-0.0		-1.2	-23	11364	No stop
12 13 30	---	17 21 33	68.0	180.3	0.0		0.2	187	11391	12 10 01
12 13 30	J1726+3213	17 21 33	69.1	176.7	-0.1		-2.3	-22	11391	No stop
12 15 00	=1724+322	17 23 03	69.1	177.6	-0.1		-1.7	68	11403	12 13 31
12 15 00	1720+3104	17 23 03	68.0	181.2	0.0		0.8	-22	11403	No stop
12 18 30	---	17 26 34	67.9	183.2	0.1		2.2	188	11429	12 15 01
12 19 10	J1726+3213	17 27 14	69.1	180.1	0.0		0.0	19	11429	12 19 10
12 20 00	=1724+322	17 28 04	69.1	180.6	0.0		0.4	50	11436	12 19 11
12 20 00	1720+3104	17 28 04	67.9	184.0	0.1		2.8	-22	11436	No stop
12 23 30	---	17 31 35	67.9	186.0	0.2		4.2	188	11463	12 20 01
12 23 30	J1726+3213	17 31 35	69.1	182.6	0.1		1.9	-21	11463	No stop
12 25 00	=1724+322	17 33 05	69.1	183.5	0.1		2.5	69	11474	12 23 31
12 25 00	1720+3104	17 33 05	67.9	186.9	0.2		4.8	-22	11474	No stop
12 28 30	---	17 36 36	67.8	188.9	0.3		6.2	188	11501	12 25 01
12 29 10	J1726+3213	17 37 16	69.0	186.0	0.2		4.3	19	11501	12 29 10
12 30 00	=1724+322	17 38 06	69.0	186.5	0.2		4.6	50	11508	12 29 11
12 33 00	J1544+3240	17 41 06	60.8	237.2	1.9		36.8	64	11508	12 33 00
12 35 00	=1542+328	17 43 07	60.6	237.8	2.0		37.1	120	11523	12 33 01
12 35 00	1548+3335	17 43 07	61.8	237.5	1.9		37.4	-18	11523	No stop
12 38 30	---	17 46 37	61.4	238.7	2.0		38.0	192	11550	12 35 01
12 38 30	J1544+3240	17 46 37	60.1	239.0	2.0		37.7	-18	11550	No stop
12 40 00	=1542+328	17 48 07	59.9	239.5	2.1		37.9	72	11561	12 38 31

Schedule for TORUN (Code Tr )

Page 35

e-EVN: ec052b, rsc02, te114

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
--- Wed 19 Nov 2014 Day 323 ---										
12 40 00	1548+3335	17 48 07	61.2	239.2	2.0		38.2	-18	11561	No stop
12 43 30	---	17 51 38	60.7	240.4	2.0		38.8	192	11588	12 40 01
12 44 10	J1544+3240	17 52 18	59.4	240.9	2.1		38.5	22	11588	12 44 10
12 45 00	=1542+328	17 53 08	59.3	241.2	2.1		38.7	50	11595	12 44 11
12 47 00	J1726+3213	17 55 09	68.5	196.4	0.5		11.5	15	11595	12 47 00
12 49 00	=1724+322	17 57 09	68.4	197.5	0.5		12.3	120	11610	12 47 01
12 49 00	1720+3104	17 57 09	67.0	200.2	0.6		14.0	-20	11610	No stop
12 52 30	---	18 00 40	66.8	202.0	0.7		15.2	190	11637	12 49 01
12 52 30	J1726+3213	18 00 40	68.3	199.5	0.6		13.7	-19	11637	No stop
12 54 00	=1724+322	18 02 10	68.2	200.3	0.6		14.2	71	11649	12 52 31
12 54 00	1720+3104	18 02 10	66.7	202.8	0.7		15.8	-20	11649	No stop
12 57 30	---	18 05 40	66.5	204.6	0.7		17.0	190	11676	12 54 01
12 58 10	J1726+3213	18 06 20	68.0	202.6	0.7		15.8	21	11676	12 58 10
12 59 00	=1724+322	18 07 11	67.9	203.0	0.7		16.1	50	11682	12 58 11

SETUP FILE INFORMATION:

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

==== Setup file: sess314.C1024

Setup group: 8 Station: TORUN Total bit rate: 1024  
 Format: MARK5B Bits per sample: 2 Sample rate: 32.000  
 Number of channels: 16 DBE type: DBBC\_DDC Speedup factor: 1.00

Disk used to record data.

1st L0=	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	U
	L	L	U	U	L	L	U	U	U
IF SB =	U	U	U	U	U	U	U	U	U
	U	U	U	U	U	U	U	U	U
Pol. =	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	LCP
	RCP	LCP	RCP	LCP	RCP	LCP	RCP	LCP	LCP
BBC =	1	5	1	5	2	6	2	6	
	3	7	3	7	4	8	4	8	
BBC SB=	L	L	U	U	L	L	U	U	U
	L	L	U	U	L	L	U	U	U
IF =	A1	B1	A1	B1	A1	B1	A1	B1	B1
	A1	B1	A1	B1	A1	B1	A1	B1	B1

The following frequency sets based on these setups were used.

```

Frequency Set: 6 Setup file default. Used with PCAL = off
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

```

Track assignments are:

```

track1= 18, 26, 2, 10, 20, 28, 4, 12, 22, 30, 6, 14, 24, 32, 8, 16
barrel=roll_off

```

#### POSITIONS OF SOURCES USED IN RECORDING SCANS

Source	Source position (RA/Dec)		(Date)	Error (mas)
	(B1950)	(J2000)		
* 0011+1446	00 08 40.698007	* 00 11 15.225000	00 12 02.418709	0.00
	14 29 20.49298	* 14 46 01.62000	14 51 09.13172	0.00
* 0210-0018	02 08 09.666622	* 02 10 43.160000	02 11 30.302060	0.00
	-00 32 25.01408	*-00 18 18.48000	-00 14 06.89102	0.00
* 0940+0526	09 37 27.307569	* 09 40 04.812000	09 40 51.914854	0.00
	05 40 08.56293	* 05 26 30.82000	05 22 22.45302	0.00
* 1013+2811	10 10 45.377002	* 10 13 35.442000	10 14 25.778946	0.00
	28 26 12.42661	* 28 11 19.33000	28 06 41.60917	0.00
* 1311+2227	13 08 55.922618	* 13 11 21.314000	13 12 03.418939	0.00
	22 43 34.25289	* 22 27 38.85000	22 22 55.66526	0.00
* 1548+3335	15 46 27.444086	* 15 48 23.979000	15 48 56.990274	0.00
	33 44 07.51799	* 33 34 59.78000	33 32 28.37681	0.00
* 1628+1154	16 26 09.701637	* 16 28 30.480000	16 29 11.174121	0.00
	12 00 37.83167	* 11 54 03.66000	11 52 20.98114	0.00
* 1720+3104	17 18 32.570766	* 17 20 26.687000	17 20 59.281426	0.00
	31 07 27.82854	* 31 04 31.72000	31 03 57.21240	0.00
* J0010+1724	00 07 59.381121	* 00 10 33.990627	00 11 21.253194	0.11
0007+171	17 07 37.52315	* 17 24 18.76117	17 29 27.03621	0.11
* J0216-0105	02 13 39.235191	* 02 16 12.211953	02 16 59.205838	0.24
0213-013	-01 19 12.27625	*-01 05 18.82460	-01 01 11.48262	0.66
* J0753+5352	07 49 06.444761	* 07 53 01.384572	07 54 12.195047	0.17
0749+540	54 00 46.40352	* 53 52 59.63704	53 50 17.73591	0.10
* J0807+5117	08 03 15.847603	* 08 07 01.013549	08 08 08.722271	0.34
0803+514	51 26 18.97293	* 51 17 38.67599	51 14 41.44312	0.32
* J0809+5341	08 05 50.645017	* 08 09 41.732819	08 10 51.170532	3.18
0805+538	53 50 15.17584	* 53 41 25.09270	53 38 24.24151	1.69

* J0809+5218	08 06 01.897769	* 08 09 49.187056	08 10 57.492395	2.01
0806+524	52 27 48.91531	* 52 18 58.25308	52 15 57.62363	1.13
J0854+2006	08 51 57.250618	* 08 54 48.874930	08 55 40.344957	0.11
* 0J287	20 17 58.41733	* 20 06 30.64078	20 02 54.23355	0.10
* J0950+0615	09 47 25.677640	* 09 50 03.467510	09 50 50.586834	0.49
0947+064	06 29 05.98317	* 06 15 03.81723	06 10 48.25750	1.05
* J1023+2856	10 20 34.890703	* 10 23 24.046142	10 24 14.027221	0.14
1020+292	29 12 02.71224	* 28 56 50.98797	28 52 07.92274	0.14
* J1321+2216	13 18 46.850234	* 13 21 11.202555	13 21 52.967930	0.13
1318+225	22 31 53.67204	* 22 16 12.10823	22 11 33.80528	0.15
* J1544+3240	15 42 07.416281	* 15 44 05.656641	15 44 39.196512	0.28
1542+328	32 50 11.77600	* 32 40 48.32082	32 38 11.96977	0.38
* J1622+1426	16 20 15.912163	* 16 22 33.995783	16 23 13.849169	0.21
1620+145	14 33 18.41916	* 14 26 20.59703	14 24 30.64638	0.31
* J1726+3213	17 24 43.004883	* 17 26 35.124676	17 27 07.126523	0.26
1724+322	32 15 52.56901	* 32 13 23.02215	32 12 56.82075	0.41
J1751+0939	17 49 10.387929	* 17 51 32.818572	17 52 14.209508	0.10
* 1749+096	09 39 42.82574	* 09 39 00.72829	09 39 05.29121	0.10
J2031+1219	20 29 32.681262	* 20 31 54.994269	20 32 37.125878	0.10
* 2029+121	12 09 28.75297	* 12 19 41.34013	12 23 01.71500	0.10
J2253+1608	22 51 29.519738	* 22 53 57.747937	22 54 42.619102	0.68
* 3C454.3	15 52 54.34810	* 16 08 53.56093	16 13 53.39557	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)	Source	Sun distance (deg)
0011+1446	131.0	J0809+5341	118.2
0210-0018	151.3	J0809+5218	118.3
0940+0526	90.8	0J287	105.8
1013+2811	91.2	J0950+0615	88.8
1311+2227	54.7	J1023+2856	89.5
1548+3335	53.0	J1321+2216	53.1
1628+1154	33.8	J1544+3240	52.0
1720+3104	56.3	J1622+1426	35.7
J0010+1724	131.4	J1726+3213	57.9
J0216-0105	151.7	1749+096	44.2
J0753+5352	120.6	2029+121	79.4
J0807+5117	118.8	3C454.3	113.2

rk08gptr

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/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 19 Nov 2014 Day 323 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
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 0605-085 03 09 39 17.6 133.1 -3.0 -26.3 0 0 22 00 00
22 14 30 --- 03 24 12 19.1 136.5 -2.7 -24.7 870 28 22 00 01
22 15 00 0605-085 03 24 42 19.2 136.6 -2.7 -24.7 24 28 22 15 00
22 25 00 --- 03 34 44 20.2 139.0 -2.6 -23.5 600 47 22 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

22 30 00 0605-085 03 39 44 20.7 140.2 -2.5 -22.9 293 47 22 30 00
22 44 30 --- 03 54 17 22.0 143.8 -2.2 -21.0 870 75 22 30 01
22 45 00 0605-085 03 54 47 22.1 143.9 -2.2 -20.9 24 75 22 45 00
23 00 00 --- 04 09 49 23.3 147.7 -2.0 -18.9 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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: 10 Setup file default. Used with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets: 10

```

```

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

```

==== Setup file: ra18cm2.set

```

Setup group:  11      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=  2400.00  2400.00  2400.00  2400.00
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: 11 Setup file default. Used with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets: 11

```

```

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)
* 0605-085	06 05 36.027963	* 06 07 59.699233	06 08 43.839175	0.00
J0607-0834	-08 34 20.29746	*-08 34 49.97823	-08 35 04.07160	0.00

rk08gqtr

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/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 20 Nov 2014 Day 324 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

02 00 00 0529+483 07 10 19 74.2 262.3 1.6 63.7 0 0 02 00 00
02 14 30 --- 07 24 51 72.0 266.0 1.8 64.4 870 28 02 00 01
02 15 00 0529+483 07 25 21 72.0 266.1 1.8 64.4 24 28 02 15 00
02 25 00 --- 07 35 23 70.5 268.3 2.0 64.7 600 47 02 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

02 30 00 0529+483 07 40 24 69.7 269.4 2.1 64.7 293 47 02 30 00
02 44 30 --- 07 54 56 67.5 272.2 2.3 64.6 870 75 02 30 01
02 45 00 0529+483 07 55 26 67.4 272.3 2.4 64.6 24 75 02 45 00
03 00 00 --- 08 10 29 65.2 275.0 2.6 64.3 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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:  8  Setup file default.  Used with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  8

```

```

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

```

==== Setup file: ra18cm2.set

```

Setup group:  9      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=  2400.00  2400.00  2400.00  2400.00
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:  9  Setup file default.  Used with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  9

```

```

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)
* 0529+483	05 29 27.565384	* 05 33 15.865793	05 34 26.154528	0.00
J0533+4822	48 20 47.97038	* 48 22 52.80771	48 23 14.83793	0.00



rk08grtr

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 20 Nov 2014 Day 324 ---										
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00										
Next BBC frequencies: 732.00 732.00 732.00 732.00										
Next scan bandwidths: 16.00 16.00 16.00 16.00										
05 00 00	0814+425	10 10 48	68.6	251.1	1.9		50.2	0	0	05 00 00
05 14 30	---	10 25 21	66.5	255.5	2.1		51.9	870	28	05 00 01
05 15 00	0814+425	10 25 51	66.4	255.7	2.1		51.9	24	28	05 15 00
05 29 30	---	10 40 23	64.3	259.6	2.4		53.0	870	56	05 15 01
05 30 00	0814+425	10 40 53	64.2	259.7	2.4		53.1	24	56	05 30 00
05 44 30	---	10 55 26	62.0	263.3	2.6		53.8	870	84	05 30 01
05 45 00	0814+425	10 55 56	62.0	263.4	2.6		53.8	24	84	05 45 00
06 00 00	---	11 10 58	59.7	266.8	2.9		54.2	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

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

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)		
* 0814+425	08 14 51.669840	* 08 18 15.999600	08 19 17.450309	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 38.21862	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    118.2

```

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:

```

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

```

rk08gttr

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 20 Nov 2014 Day 324 ---

Table with 11 columns: Start UT, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists scan frequencies, BBC frequencies, and bandwidths, followed by a detailed schedule of observations with timestamps and parameters.

SETUP FILE INFORMATION:

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

==== Setup file: ra18cm2.set

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= 2400.00 2400.00 2400.00 2400.00
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 with PCAL = 1MHz
LO sum= 1668.00 1668.00 1668.00 1668.00
BBC fr= 732.00 732.00 732.00 732.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 5

```

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)
* 2022+542	20 22 37.651026	* 20 23 55.844020	20 24 18.707429	0.00
J2023+5427	54 17 49.43890	* 54 27 35.82889	54 30 56.98440	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)
2022+542    95.1

```

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:

```

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

```

**rk08gutr**

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 21 Nov 2014    Day 325 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

00 00 00	0633+734	05 13 56	67.8	16.3	-1.5		-143.8	0	0	00 00 00
00 14 30	---	05 28 28	68.3	14.0	-1.2		-149.5	870	28	00 00 01
00 15 00	0633+734	05 28 58	68.3	13.9	-1.2		-149.7	24	28	00 15 00
00 29 30	---	05 43 31	68.8	11.4	-1.0		-155.5	870	56	00 15 01
00 30 00	0633+734	05 44 01	68.8	11.3	-1.0		-155.7	24	56	00 30 00
00 44 30	---	05 58 33	69.2	8.6	-0.7		-161.7	870	84	00 30 01
00 45 00	0633+734	05 59 03	69.2	8.5	-0.7		-161.9	24	84	00 45 00
01 00 00	---	06 14 06	69.5	5.5	-0.5		-168.3	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)		
* 0633+734	06 33 06.424963	* 06 39 21.961221	06 41 17.322198	0.00
J0639+7324	73 27 35.83984	* 73 24 58.04034	73 23 45.56661	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)
0633+734	121.3

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:

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

**rk08gvtr**

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  
-----

--- Fri 21 Nov 2014    Day 325 ---

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

03 00 00	0814+425	08 14 25	79.2	175.2	-0.1		-3.9	0	0	03 00 00
03 14 30	---	08 28 58	79.1	189.5	0.2		7.7	870	28	03 00 01
03 15 00	0814+425	08 29 28	79.1	190.0	0.2		8.1	22	28	03 15 00
03 29 30	---	08 44 00	78.5	203.5	0.4		18.9	870	56	03 15 01
03 30 00	0814+425	08 44 30	78.4	203.9	0.4		19.2	22	56	03 30 00
03 44 30	---	08 59 03	77.4	215.6	0.7		28.2	870	84	03 30 01
03 45 00	0814+425	08 59 33	77.3	216.0	0.7		28.5	23	84	03 45 00
04 00 00	---	09 14 35	75.8	226.1	0.9		35.9	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: ra1cm2.set

Matching groups in ./rk08gv\_freq.dat:            tr1cm

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 with PCAL = 1MHz
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

```

```

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 17.483900	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 38.14451	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    119.1

```

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:

```

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

```



**rk08gwtr**

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 21 Nov 2014 Day 325 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

05 00 00	0604+728	10 14 45	58.4	-29.4	4.0	95.0	0	0	05 00 00
05 14 30	---	10 29 17	57.3	-29.5	4.3	91.5	870	28	05 00 01
05 15 00	0604+728	10 29 47	57.2	-29.5	4.3	91.3	24	28	05 15 00
05 29 30	---	10 44 20	56.2	-29.5	4.5	87.9	870	56	05 15 01
05 30 00	0604+728	10 44 50	56.1	-29.5	4.5	87.8	24	56	05 30 00
05 44 30	---	10 59 22	55.1	-29.3	4.8	84.4	870	84	05 30 01
05 45 00	0604+728	10 59 52	55.0	-29.3	4.8	84.3	24	84	05 45 00
06 00 00	---	11 14 55	53.9	-29.1	5.0	80.9	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 3

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)
* 0604+728	06 04 39.220367	* 06 10 48.873417	06 12 43.197789	0.00
J0610+7248	72 49 27.04207	* 72 48 53.18435	72 48 19.76164	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)
0604+728	123.2

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:

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

rk08gxtr

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 21 Nov 2014     Day 325 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

20 00 00	2021+614	01 17 13	51.6	-47.2	4.9	68.1	0	0	20 00 00
20 14 30	---	01 31 45	50.0	-46.1	5.2	65.8	870	28	20 00 01
20 15 00	2021+614	01 32 15	50.0	-46.1	5.2	65.7	24	28	20 15 00
20 29 30	---	01 46 48	48.4	-44.9	5.4	63.3	870	56	20 15 01
20 30 00	2021+614	01 47 18	48.4	-44.9	5.4	63.3	24	56	20 30 00
20 44 30	---	02 01 50	46.8	-43.7	5.7	61.0	870	84	20 30 01
20 45 00	2021+614	02 02 20	46.8	-43.7	5.7	60.9	24	84	20 45 00
21 00 00	---	02 17 23	45.2	-42.4	5.9	58.5	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

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  7

```

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)		
* 2021+614	20 21 13.300234	* 20 22 06.681752	20 22 21.945498	0.00
J2022+6136	61 27 18.15575	* 61 36 58.80476	61 40 18.62375	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)
3C48	148.2
2021+614	97.9

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:

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

rk08gytr

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

--- Fri 21 Nov 2014 Day 325 ---

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 contains scan data for source 0804+499 at various times.

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 ./rk08gy\_freq.dat: tr1cm

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 with PCAL = 1MHz
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

```

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)
* 0804+499	08 04 58.395748	* 08 08 39.666289	08 09 46.336356	0.00
J0808+4950	49 59 23.07807	* 49 50 36.53037	49 47 37.70266	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)
3C147	142.6
0804+499	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:

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

rk08gztr

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 22 Nov 2014 Day 326 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

01 00 00	0633+734	06 18 02	69.6	4.8	-0.4		-170.0	0	0	01 00 00
01 14 30	---	06 32 35	69.7	1.8	-0.1		-176.2	870	28	01 00 01
01 15 00	0633+734	06 33 05	69.7	1.7	-0.1		-176.4	24	28	01 15 00
01 29 30	---	06 47 37	69.7	-1.3	0.1		177.3	870	56	01 15 01
01 30 00	0633+734	06 48 07	69.7	-1.4	0.1		177.0	24	56	01 30 00
01 44 30	---	07 02 39	69.6	-4.4	0.4		170.8	870	84	01 30 01
01 45 00	0633+734	07 03 10	69.6	-4.5	0.4		170.6	24	84	01 45 00
02 00 00	---	07 18 12	69.3	-7.5	0.6		164.2	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 6

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)		
* 0633+734	06 33 06.424963	* 06 39 21.961221	06 41 17.401404	0.00
J0639+7324	73 27 35.83984	* 73 24 58.04034	73 23 45.70711	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)
0633+734	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:

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



rk08hatr

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 22 Nov 2014 Day 326 ---

```
Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
```

04 00 00	0604+728	09 18 32	62.4	-27.5	3.1	110.0	0	0	04 00 00
04 14 30	---	09 33 04	61.4	-28.3	3.3	106.0	870	28	04 00 01
04 15 00	0604+728	09 33 34	61.3	-28.3	3.3	105.8	24	28	04 15 00
04 29 30	---	09 48 07	60.3	-28.8	3.6	101.9	870	56	04 15 01
04 30 00	0604+728	09 48 37	60.3	-28.8	3.6	101.8	24	56	04 30 00
04 44 30	---	10 03 09	59.2	-29.2	3.8	98.0	870	84	04 30 01
04 45 00	0604+728	10 03 39	59.2	-29.2	3.8	97.8	24	84	04 45 00
05 00 00	---	10 18 42	58.1	-29.4	4.1	94.1	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 6

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)
* 0604+728	06 04 39.220367	* 06 10 48.873417	06 12 43.263942	0.00
J0610+7248	72 49 27.04207	* 72 48 53.18435	72 48 19.92130	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)
0604+728	123.7

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:

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

**rk08hbtr**

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 22 Nov 2014    Day 326 ---

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

```
07 00 00    0814+425            12 19 01    49.5 279.6    4.0            53.2    0            0    07 00 00  
07 19 30    ---                    12 38 34    46.7 282.9    4.3            52.4 1170            37    07 00 01  
  
07 20 00    0814+425            12 39 05    46.6 282.9    4.3            52.3    24            37    07 20 00  
07 40 00    ---                    12 59 08    43.7 286.2    4.7            51.3 1200            76    07 20 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 ./rk08hb\_freq.dat:    tr1cm

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 with PCAL = 1MHz
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

```

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 17.530732	0.00
J0818+4222	42 32 07.73231	* 42 22 45.41481	42 19 38.04063	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    120.1

```

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:

```

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

```

**rk08hctr**

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 22 Nov 2014    Day 326 ---

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

09 00 00	0953+254	14 19 21	34.5	266.8	4.4		41.5	0	0	09 00 00
09 14 30	---	14 33 53	32.3	269.8	4.6		41.6	870	28	09 00 01
09 15 00	0953+254	14 34 23	32.2	269.9	4.6		41.6	24	28	09 15 00
09 29 30	---	14 48 56	30.1	272.8	4.9		41.5	870	56	09 15 01
09 30 00	0953+254	14 49 26	30.0	272.9	4.9		41.5	24	56	09 30 00
09 44 30	---	15 03 58	27.8	275.7	5.1		41.3	870	84	09 30 01
09 45 00	0953+254	15 04 28	27.7	275.8	5.1		41.3	24	84	09 45 00
10 00 00	---	15 19 31	25.5	278.6	5.4		41.0	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: ra1cm2.set

Matching groups in ./rk08hc\_freq.dat:    tr1cm

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: 6 Setup file default. Used with PCAL = 1MHz  
 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

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)	
* 0953+254	09 53 59.738485	* 09 56 49.875379	09 57 40.527263	0.00
J0956+2515	25 29 33.58568	* 25 15 16.04978	25 10 48.49032	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	97.1

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:

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

**rk08hdr**

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 22 Nov 2014    Day 326 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies: 732.00 732.00 732.00 732.00  
Next scan bandwidths: 16.00 16.00 16.00 16.00

12 00 00	2022+542	17 19 51	63.2	68.2	-3.1		-73.9	0	0	12 00 00
12 14 30	---	17 34 23	65.3	69.5	-2.8		-75.7	870	28	12 00 01
12 15 00	2022+542	17 34 53	65.3	69.5	-2.8		-75.7	24	28	12 15 00
12 29 30	---	17 49 25	67.4	70.7	-2.6		-77.6	870	56	12 15 01
12 30 00	2022+542	17 49 55	67.5	70.8	-2.6		-77.6	24	56	12 30 00
12 44 30	---	18 04 28	69.5	71.9	-2.3		-79.6	870	84	12 30 01
12 45 00	2022+542	18 04 58	69.6	72.0	-2.3		-79.6	24	84	12 45 00
13 00 00	---	18 20 00	71.7	73.0	-2.1		-81.7	900	112	12 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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)
* 2022+542	20 22 37.651026	* 20 23 55.844020	20 24 18.660043	0.00
J2023+5427	54 17 49.43890	* 54 27 35.82889	54 30 56.83869	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)
2022+542	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:

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



## 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 22 Nov 2014 Day 326 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 732.00 732.00 732.00 732.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

```
19 00 00 1842+681    00 21 00 49.7 -34.9 5.6      67.7    0    0    19 00 00
19 14 30 ---          00 35 32 48.5 -34.1 5.9      65.0   870    28    19 00 01

19 15 00 1842+681    00 36 02 48.5 -34.1 5.9      64.9   24    28    19 15 00
19 29 30 ---          00 50 34 47.3 -33.2 6.1      62.2   870    56    19 15 01

19 30 00 1842+681    00 51 04 47.2 -33.2 6.1      62.1   24    56    19 30 00
19 44 30 ---          01 05 37 46.0 -32.2 6.4      59.4   870    84    19 30 01

19 45 00 1842+681    01 06 07 46.0 -32.2 6.4      59.3   24    84    19 45 00
20 00 00 ---          01 21 09 44.8 -31.1 6.6      56.6   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

```
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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)
* 1842+681	18 42 43.397968	* 18 42 33.641683	18 42 28.003074	0.00
J1842+6809	68 06 19.82590	* 68 09 25.22773	68 10 42.66498	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)
1842+681	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:

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

rk08hgtr

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 22 Nov 2014    Day 326 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

22 00 00	0633+734	03 21 29	61.2	27.0	-3.3		-107.1	0	0	22 00 00
22 14 30	---	03 36 02	62.2	26.3	-3.1		-111.3	870	28	22 00 01
22 15 00	0633+734	03 36 32	62.3	26.3	-3.1		-111.4	24	28	22 15 00
22 29 30	---	03 51 04	63.2	25.4	-2.8		-115.7	870	56	22 15 01
22 30 00	0633+734	03 51 34	63.2	25.4	-2.8		-115.8	24	56	22 30 00
22 44 30	---	04 06 06	64.2	24.3	-2.6		-120.3	870	84	22 30 01
22 45 00	0633+734	04 06 37	64.2	24.2	-2.6		-120.5	24	84	22 45 00
23 00 00	---	04 21 39	65.1	22.9	-2.3		-125.3	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)		
* 0633+734	06 33 06.424963	* 06 39 21.961221	06 41 17.472559	0.00
J0639+7324	73 27 35.83984	* 73 24 58.04034	73 23 45.82997	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)
0633+734	122.1

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:

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

**rg06ctr**

RADIOASTRON MASER OBSERVATIONS

PI: *Alexei Alakoz*

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 Maser observations

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 23 Nov 2014    Day 327 ---

----- This is a fringe finder/clock offset calibrator 7.3 deg. from IC1396N -----

Next scan frequencies: 22228.00 22228.00 22228.00 22228.00  
Next BBC frequencies:    728.00    728.00    728.00    728.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

04 50 00 2135+508    10 12 36 14.5    5.7-11.4    -5.4    0    0    04 50 00  
04 55 00 ---                      10 17 37 14.5    6.5-11.3    -6.2    300    10    04 50 01

----- Please, make sure PCAL is OFF for IC1396N maser observations. -----

05 00 00 IC1396N    10 22 38 21.8    5.8-11.3    -6.7    259    10    05 00 00  
05 29 30 ---                      10 52 13 22.4    10.0-10.8    -11.4    1770    66    05 00 01  
  
05 30 00 IC1396N    10 52 43 22.4    10.0-10.8    -11.5    24    66    05 30 00  
06 00 00 ---                      11 22 48 23.3    14.2-10.3    -16.3    1800    124    05 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 ./rg06c\_freq.dat:    tr1cm

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= 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 with PCAL = off
LO sum= 22228.00 22228.00 22228.00 22228.00
BBC fr= 728.00 728.00 728.00 728.00
Bandwd= 16.00 16.00 16.00 16.00
Matching frequency sets: 3

```

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)		
* IC1396N	21 39 09.678974	* 21 40 41.750000	21 41 09.760296	0.00
IC1396N_H20	58 02 31.36343	* 58 16 11.90000	58 20 42.80993	0.00
* 2135+508	21 35 15.499567	* 21 37 00.986207	21 37 32.854652	0.00
J2137+5101	50 48 05.19436	* 51 01 36.12906	51 06 03.30400	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)
IC1396N	105.5
2135+508	103.1

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:

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

rk08hhtr

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 23 Nov 2014 Day 327 ---

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, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, TPStart, 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: ra1cm2.set
Matching groups in ./rk08hh\_freq.dat: tr1cm

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 with PCAL = 1MHz
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

```

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)		
* 1842+681	18 42 43.397968	* 18 42 33.641683	18 42 27.976119	0.00
J1842+6809	68 06 19.82590	* 68 09 25.22773	68 10 42.51695	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)
1842+681	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:

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



rk08hjtr

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/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 25 Nov 2014 Day 329 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

08 00 00 0106+612 13 31 01 24.8 2.6-11.7 -3.3 0 0 08 00 00
08 14 30 --- 13 45 33 24.9 4.5-11.4 -5.7 870 28 08 00 01
08 15 00 0106+612 13 46 03 24.9 4.6-11.4 -5.8 24 28 08 15 00
08 25 00 --- 13 56 05 25.1 5.9-11.2 -7.5 600 47 08 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

08 30 00 0106+612 14 01 06 25.2 6.6-11.2 -8.3 294 47 08 30 00
08 44 30 --- 14 15 38 25.5 8.4-10.9 -10.7 870 75 08 30 01
08 45 00 0106+612 14 16 08 25.5 8.5-10.9 -10.8 24 75 08 45 00
09 00 00 --- 14 31 11 25.8 10.4-10.7 -13.3 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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)
* 0106+612	01 06 36.621798	* 01 09 46.344314	01 10 46.586432	0.00
J0109+6133	61 17 32.64124	* 61 33 30.45573	61 38 28.85962	0.00

rk08hktr

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 25 Nov 2014 Day 329 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

23 00 00 0605-085 04 33 29 25.1 153.8 -1.6 -15.5 0 0 23 00 00
23 19 30 --- 04 53 02 26.3 159.0 -1.3 -12.5 1170 37 23 00 01
23 20 00 0605-085 04 53 32 26.3 159.2 -1.3 -12.5 24 37 23 20 00
23 40 00 --- 05 13 35 27.2 164.6 -0.9 -9.3 1200 76 23 20 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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 6

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 43.985084	0.00
J0607-0834	-08 34 20.29746	*-08 34 49.97823	-08 35 05.32330	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)
3C147	145.2
0605-085	137.9

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:

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

rk08hltr

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/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 26 Nov 2014 Day 330 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
01 00 00 0953+254 06 33 48 43.0 105.9 -3.4 -39.7 0 0 01 00 00
01 14 30 --- 06 48 21 45.1 109.4 -3.2 -38.7 870 28 01 00 01
01 15 00 0953+254 06 48 51 45.2 109.6 -3.1 -38.7 24 28 01 15 00
01 25 00 --- 06 58 52 46.6 112.1 -3.0 -37.9 600 47 01 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
01 30 00 0953+254 07 03 53 47.3 113.4 -2.9 -37.5 293 47 01 30 00
01 44 30 --- 07 18 26 49.3 117.4 -2.7 -36.1 870 75 01 30 01
01 45 00 0953+254 07 18 56 49.3 117.5 -2.6 -36.0 24 75 01 45 00
02 00 00 --- 07 33 58 51.3 121.9 -2.4 -34.3 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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 40.675765	0.00
J0956+2515	25 29 33.58568	* 25 15 16.04978	25 10 47.72600	0.00

**rk08hmtr**

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 26 Nov 2014 Day 330 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 732.00 732.00 732.00 732.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

21 00 00	2309+454	02 37 06	56.7	278.5	3.4	58.4	0	0	21 00 00
21 14 30	---	02 51 38	54.6	280.9	3.7	57.8	870	28	21 00 01
21 15 00	2309+454	02 52 08	54.5	280.9	3.7	57.8	24	28	21 15 00
21 29 30	---	03 06 40	52.4	283.2	3.9	57.0	870	56	21 15 01
21 30 00	2309+454	03 07 10	52.3	283.3	3.9	57.0	24	56	21 30 00
21 44 30	---	03 21 43	50.2	285.5	4.2	56.1	870	84	21 30 01
21 45 00	2309+454	03 22 13	50.1	285.6	4.2	56.1	24	84	21 45 00
22 00 00	---	03 37 15	47.9	287.9	4.4	55.1	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 5

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)		
* 2309+454	23 09 28.211645	* 23 11 47.408972	23 12 30.224166	0.00
J2311+4543	45 27 37.24974	* 45 43 56.01648	45 49 08.53034	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)
3C48	144.3
2309+454	115.6

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
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



rk08hntr

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

--- Thu 27 Nov 2014 Day 331 ---

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, Stop UT, Source, LST, EL, AZ, HA, UP, ParA, Dwell, GBytes, SYNC. It lists observation times and parameters for source 0906+015.

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 ./rk08hn\_freq.dat: tr1cm

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:  5  Setup file default.  Used with PCAL = 1MHz
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

```

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)
* 0906+015	09 06 35.181592	* 09 09 10.091598	09 09 56.930284	0.00
J0909+0121	01 33 48.12919	* 01 21 35.61771	01 17 51.33927	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)
0906+015    104.7

```

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:

```

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

```

**rk08hotr**

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  
-----

--- Thu 27 Nov 2014    Day 331 ---

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

04 00 00	0605-085	09 38 14	14.1	233.8	3.5		29.4	0	0	04 00 00
04 19 30	---	09 57 48	11.6	238.1	3.8		31.0	1170	37	04 00 01
04 20 00	0605-085	09 58 18	11.6	238.2	3.8		31.1	24	37	04 20 00
04 40 00	---	10 18 21	9.0	242.5	4.2		32.6	1200	76	04 20 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 ./rk08ho\_freq.dat:    tr1cm

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:  2  Setup file default.  Used with PCAL = 1MHz
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:  2

```

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)
* 0605-085	06 05 36.027963	* 06 07 59.699233	06 08 44.014134	0.00
J0607-0834	-08 34 20.29746	*-08 34 49.97823	-08 35 05.52108	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    138.7

```

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:

```

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

```

rk08hrtr

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/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 27 Nov 2014 Day 331 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

21 00 00 2345-167 02 41 02 11.2 221.9 2.9 24.7 0 0 21 00 00
21 14 30 --- 02 55 34 9.7 225.1 3.1 26.3 870 28 21 00 01
21 15 00 2345-167 02 56 05 9.7 225.2 3.1 26.4 24 28 21 15 00
21 25 00 --- 03 06 06 8.6 227.4 3.3 27.4 600 47 21 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

21 30 00 2345-167 03 11 07 8.0 228.4 3.4 27.9 293 47 21 30 00
21 44 30 --- 03 25 39 6.3 231.5 3.6 29.3 870 75 21 30 01
21 45 00 2345-167 03 26 09 6.3 231.6 3.6 29.4 24 75 21 45 00
22 00 00 --- 03 41 12 4.5 234.8 3.9 30.8 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

```

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

```

==== Setup file: ra18cm2.set

```

--- WARNING --- This group does not match an entry in the frequency catalog.
                 This might be ok because the catalog is not complete.
                 But be very careful to be sure that the setup is correct.

```

```

Setup group:    7          Station: TORUM          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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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)
* 2345-167	23 45 27.682203	* 23 48 02.608529	23 48 49.282973	0.00
J2348-1631	-16 47 52.60223	*-16 31 12.02222	-16 26 13.84453	0.00

rk08hstr

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/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 28 Nov 2014 Day 332 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

04 00 00 1015+359 09 42 11 71.4 156.0 -0.6 -17.5 0 0 04 00 00
04 14 30 --- 09 56 43 72.1 165.1 -0.4 -11.0 870 28 04 00 01
04 15 00 1015+359 09 57 14 72.1 165.4 -0.4 -10.7 23 28 04 15 00
04 25 00 --- 10 07 15 72.4 172.0 -0.2 -5.9 600 47 04 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

04 30 00 1015+359 10 12 16 72.5 175.4 -0.1 -3.4 291 47 04 30 00
04 44 30 --- 10 26 48 72.5 185.2 0.1 3.9 870 75 04 30 01
04 45 00 1015+359 10 27 18 72.5 185.6 0.1 4.1 23 75 04 45 00
05 00 00 --- 10 42 21 72.1 195.5 0.4 11.4 900 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  3

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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)
* 1015+359	10 15 16.226760	* 10 18 10.988103	10 19 02.930404	0.00
J1018+3542	35 57 41.35603	* 35 42 39.44084	35 37 54.77515	0.00



**rk08hutr**

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/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 28 Nov 2014    Day 332 ---

----- K-band VLBI scans -----

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

21 00 00	0954+658	02 44 59	40.4	31.0	-7.2		-48.3	0	0	21 00 00
21 14 30	---	02 59 31	41.5	32.3	-7.0		-50.7	870	28	21 00 01
21 15 00	0954+658	03 00 01	41.5	32.4	-7.0		-50.8	24	28	21 15 00
21 25 00	---	03 10 03	42.4	33.2	-6.8		-52.5	600	47	21 15 01

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
Next BBC frequencies:    736.00    736.00    736.00    736.00

21 30 00	0954+658	03 15 04	42.8	33.7	-6.7		-53.4	294	47	21 30 00
21 44 30	---	03 29 36	44.0	34.9	-6.5		-55.8	870	75	21 30 01
21 45 00	0954+658	03 30 06	44.0	34.9	-6.5		-55.9	24	75	21 45 00
22 00 00	---	03 45 08	45.4	36.1	-6.2		-58.5	900	104	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: ra1cm2.set

Matching groups in ./rk08hu\_freq.dat:    tr1cm

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 with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  7

```

```

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)
* 0954+658	09 54 57.847936	* 09 58 47.245116	09 59 54.785810	0.00
J0958+6533	65 48 15.53882	* 65 33 54.81801	65 29 13.31868	0.00

rk08hvtr

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/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

--- Sat 29 Nov 2014 Day 333 ---

----- K-band VLBI scans -----

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

00 00 00 0804+499 05 45 28 67.5 83.8 -2.4 -67.6 0 0 00 00 00
00 14 30 --- 06 00 01 69.7 86.2 -2.2 -68.2 870 28 00 00 01
00 15 00 0804+499 06 00 31 69.8 86.3 -2.2 -68.2 24 28 00 15 00
00 25 00 --- 06 10 32 71.3 88.1 -2.0 -68.4 600 47 00 15 01

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00

00 30 00 0804+499 06 15 33 72.0 89.0 -1.9 -68.4 293 47 00 30 00
00 44 30 --- 06 30 05 74.2 92.0 -1.7 -68.4 870 75 00 30 01
00 45 00 0804+499 06 30 36 74.3 92.1 -1.7 -68.4 24 75 00 45 00
01 00 00 --- 06 45 38 76.5 95.7 -1.4 -67.8 900 104 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: ra1cm2.set

Matching groups in ./rk08hv\_freq.dat: tr1cm

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 with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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)
* 0804+499	08 04 58.395748	* 08 08 39.666289	08 09 46.679087	0.00
J0808+4950	49 59 23.07807	* 49 50 36.53037	49 47 37.63523	0.00

**rk08hwtr**

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/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
-----
```

--- Sat 29 Nov 2014 Day 333 ---

----- K-band VLBI scans -----

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

```
02 10 00 0722+145    07 55 50 50.8 191.4 0.5      7.1   0      0   02 10 00
02 25 00 ---          08 10 52 50.3 197.1 0.7      10.5  900   29   02 10 01
```

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 736.00 736.00 736.00 736.00

```
02 30 00 0722+145    08 15 53 50.1 199.0 0.8      11.6  293   29   02 30 00
02 50 00 ---          08 35 56 48.9 206.2 1.2      15.9 1200   67   02 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 ./rk08hw\_freq.dat:    tr1cm

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:  4  Setup file default.  Used with PCAL = 1MHz
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

```

Track assignments are:

```

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

```

==== Setup file: ra6cm2.set

```

--- WARNING --- This group does not match an entry in the frequency catalog.
                This might be ok because the catalog is not complete.
                But be very careful to be sure that the setup is correct.

```

```

Setup group:    3          Station: TORUM          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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  7

```

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)
* 0722+145	07 22 26.966166	* 07 25 16.807764	07 26 08.676434	0.00
J0725+1425	14 31 12.28332	* 14 25 13.74657	14 23 15.02820	0.00

**rk08hxtr**

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/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
-----
```

--- Sat 29 Nov 2014 Day 333 ---

----- K-band VLBI scans -----

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

```
04 00 00 1150+497    09 46 08 69.8 87.5 -2.1   -67.3   0     0   04 00 00
04 14 30 ---          10 00 40 72.0 90.3 -1.9   -67.4  870    28   04 00 01

04 15 00 1150+497    10 01 10 72.1 90.4 -1.9   -67.4   24    28   04 15 00
04 25 00 ---          10 11 12 73.6 92.5 -1.7   -67.3  600    47   04 15 01
```

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 736.00 736.00 736.00 736.00

```
04 30 00 1150+497    10 16 13 74.3 93.6 -1.6   -67.1  293    47   04 30 00
04 44 30 ---          10 30 45 76.5 97.3 -1.4   -66.3  870    75   04 30 01

04 45 00 1150+497    10 31 15 76.6 97.5 -1.4   -66.3   24    75   04 45 00
05 00 00 ---          10 46 17 78.8 102.3 -1.1  -64.5  900   104   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: ra1cm2.set

Matching groups in ./rk08hx\_freq.dat:    tr1cm

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:  6  Setup file default.  Used with PCAL = 1MHz
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

```

```

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

```

==== Setup file: ra6cm2.set

```

--- WARNING --- This group does not match an entry in the frequency catalog.
                This might be ok because the catalog is not complete.
                But be very careful to be sure that the setup is correct.

```

```

Setup group:    3          Station: TORUM          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=  4100.00  4100.00  4100.00  4100.00
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:  8  Setup file default.  Used with PCAL = 1MHz
LO sum=  4836.00 4836.00 4836.00 4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  8

```

```

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)
* 1150+497	11 50 47.999856	* 11 53 24.466639	11 54 09.776521	0.00
J1153+4931	49 47 50.09409	* 49 31 08.83012	49 25 55.62843	0.00



rk08hytr

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/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 29 Nov 2014 Day 333 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00

07 00 00 1015+359 12 46 37 58.9 250.8 2.5 44.2 0 0 07 00 00
07 14 30 --- 13 01 10 56.8 254.7 2.7 45.5 870 28 07 00 01
07 15 00 1015+359 13 01 40 56.7 254.9 2.7 45.5 24 28 07 15 00
07 25 00 --- 13 11 41 55.3 257.4 2.9 46.1 600 47 07 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

07 30 00 1015+359 13 16 42 54.5 258.6 3.0 46.4 293 47 07 30 00
07 44 30 --- 13 31 14 52.4 262.0 3.2 47.0 870 75 07 30 01
07 45 00 1015+359 13 31 45 52.3 262.1 3.2 47.0 24 75 07 45 00
08 00 00 --- 13 46 47 50.1 265.5 3.5 47.4 900 104 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: ra6cm2.set

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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)
* 1015+359	10 15 16.226760	* 10 18 10.988103	10 19 02.971228	0.00
J1018+3542	35 57 41.35603	* 35 42 39.44084	35 37 54.61650	0.00

**rk08iatr**

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 29 Nov 2014    Day 333 ---

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
Next BBC frequencies:    732.00    732.00    732.00    732.00  
Next scan bandwidths:    16.00    16.00    16.00    16.00

20 00 00	0804+499	01 48 45	35.1	51.8	-6.4		-47.0	0	0	20 00 00
20 14 30	---	02 03 18	36.9	53.7	-6.1		-48.6	870	28	20 00 01
20 15 00	0804+499	02 03 48	36.9	53.8	-6.1		-48.7	24	28	20 15 00
20 29 30	---	02 18 20	38.7	55.7	-5.9		-50.2	870	56	20 15 01
20 30 00	0804+499	02 18 50	38.8	55.8	-5.8		-50.3	24	56	20 30 00
20 44 30	---	02 33 23	40.6	57.7	-5.6		-51.9	870	84	20 30 01
20 45 00	0804+499	02 33 53	40.6	57.8	-5.6		-51.9	24	84	20 45 00
21 00 00	---	02 48 55	42.6	59.8	-5.3		-53.5	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

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=	2400.00	2400.00	2400.00	2400.00
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 with PCAL = 1MHz  
 LO sum= 1668.00 1668.00 1668.00 1668.00  
 BBC fr= 732.00 732.00 732.00 732.00  
 Bandwd= 16.00 16.00 16.00 16.00  
 Matching frequency sets: 4

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)	
* 0804+499	08 04 58.395748	* 08 08 39.666289	08 09 46.710543	0.00
J0808+4950	49 59 23.07807	* 49 50 36.53037	49 47 37.67097	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)
0804+499	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:

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

rk08ibtr

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/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 29 Nov 2014 Day 333 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
Next BBC frequencies: 736.00 736.00 736.00 736.00
Next scan bandwidths: 16.00 16.00 16.00 16.00
23 00 00 1150+497 04 49 15 29.9 46.1 -7.1 -41.7 0 0 23 00 00
23 14 30 --- 05 03 47 31.5 48.1 -6.8 -43.4 870 28 23 00 01
23 15 00 1150+497 05 04 17 31.5 48.2 -6.8 -43.5 24 28 23 15 00
23 25 00 --- 05 14 19 32.7 49.5 -6.7 -44.6 600 47 23 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00
23 30 00 1150+497 05 19 20 33.3 50.2 -6.6 -45.2 294 47 23 30 00
23 44 30 --- 05 33 52 35.0 52.2 -6.3 -46.9 870 75 23 30 01
23 45 00 1150+497 05 34 22 35.0 52.3 -6.3 -46.9 24 75 23 45 00
23 59 59 --- 05 49 25 36.8 54.3 -6.1 -48.6 899 104 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

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00  736.00  736.00  736.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00  732.00  732.00  732.00
Bandwd=   16.00  16.00  16.00  16.00
Matching frequency sets:  6

```

```

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)
* 1150+497	11 50 47.999856	* 11 53 24.466639	11 54 09.806956	0.00
J1153+4931	49 47 50.09409	* 49 31 08.83012	49 25 55.45118	0.00

**rk08idtr**

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/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 30 Nov 2014 Day 334 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 736.00 736.00 736.00 736.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

```
07 00 00 1023+131    12 50 34 40.6 229.0 2.4    27.7    0    0    07 00 00
07 14 30 ---          13 05 06 38.9 233.0 2.6    29.5   870    28    07 00 01

07 15 00 1023+131    13 05 36 38.9 233.2 2.6    29.5   24    28    07 15 00
07 25 00 ---          13 15 38 37.7 235.9 2.8    30.6   600    47    07 15 01
```

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 732.00 732.00 732.00 732.00

```
07 30 00 1023+131    13 20 39 37.0 237.2 2.9    31.2   293    47    07 30 00
07 44 30 ---          13 35 11 35.2 240.9 3.1    32.6   870    75    07 30 01

07 45 00 1023+131    13 35 41 35.1 241.0 3.1    32.6   24    75    07 45 00
08 00 00 ---          13 50 44 33.1 244.7 3.4    33.8   900   104    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: ra6cm2.set

```
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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  5

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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)
* 1023+131	10 23 16.285230	* 10 25 56.285371	10 26 44.161443	0.00
J1025+1253	13 09 05.49476	* 12 53 49.02188	12 49 08.02734	0.00



rk08ietr

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/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 30 Nov 2014 Day 334 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00
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 2135+508 00 52 32 60.6 -73.9 3.2 66.7 0 0 19 00 00
19 14 30 --- 01 07 04 58.5 -72.1 3.5 65.5 870 28 19 00 01
19 15 00 2135+508 01 07 34 58.4 -72.0 3.5 65.4 24 28 19 15 00
19 25 00 --- 01 17 36 57.0 -70.8 3.7 64.5 600 47 19 15 01

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00
Next BBC frequencies: 732.00 732.00 732.00 732.00

19 30 00 2135+508 01 22 37 56.3 -70.2 3.8 64.1 293 47 19 30 00
19 44 30 --- 01 37 09 54.2 -68.4 4.0 62.7 870 75 19 30 01
19 45 00 2135+508 01 37 39 54.2 -68.3 4.0 62.7 24 75 19 45 00
20 00 00 --- 01 52 42 52.1 -66.5 4.3 61.2 900 104 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: ra6cm2.set

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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  6

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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 with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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)
* 2135+508	21 35 15.499567	* 21 37 00.986207	21 37 32.641841	0.00
J2137+5101	50 48 05.19436	* 51 01 36.12906	51 06 02.82166	0.00

**rk08iftr**

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/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 30 Nov 2014 Day 334 ---

----- C-band VLBI scans -----

Next scan frequencies: 4836.00 4836.00 4836.00 4836.00  
 Next BBC frequencies: 736.00 736.00 736.00 736.00  
 Next scan bandwidths: 16.00 16.00 16.00 16.00

```
23 00 00 0923+392    04 53 11 42.3 78.2 -4.6    -49.1    0    0    23 00 00
23 15 00 ---        05 08 14 44.5 80.8 -4.3    -49.7   900   29   23 00 01
```

----- L-band VLBI scans -----

Next scan frequencies: 1668.00 1668.00 1668.00 1668.00  
 Next BBC frequencies: 732.00 732.00 732.00 732.00

```
23 20 00 0923+392    05 13 15 45.2 81.7 -4.2    -49.8   293    29   23 20 00
23 40 00 ---        05 33 18 48.2 85.3 -3.9    -50.3  1200   67   23 20 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

```
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=  4100.00  4100.00  4100.00  4100.00
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 with PCAL = 1MHz
LO sum=  4836.00  4836.00  4836.00  4836.00
BBC fr=   736.00   736.00   736.00   736.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  7

```

```

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

```

==== Setup file: ra18cm2.set

```

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=  2400.00  2400.00  2400.00  2400.00
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:  8  Setup file default.  Used with PCAL = 1MHz
LO sum=  1668.00  1668.00  1668.00  1668.00
BBC fr=   732.00   732.00   732.00   732.00
Bandwd=   16.00   16.00   16.00   16.00
Matching frequency sets:  8

```

```

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)
* 0923+392	09 23 55.319218	* 09 27 03.013939	09 27 59.310150	0.00
J0927+3902	39 15 23.56637	* 39 02 20.85177	38 58 08.78759	0.00

# RadioAstron Mission

[http://www.asc.rssi.ru/radioastron/description/intro\\_eng.htm](http://www.asc.rssi.ru/radioastron/description/intro_eng.htm)

RadioAstron project is an international collaborative mission to launch a free flying satellite carrying a 10-meter radio telescope in high apogee orbit around the Earth. The aim of the mission is to use the space telescope to conduct interferometer observations in conjunction with the global ground radio telescope network in order to obtain images, coordinates, motions and evolution of angular structure of different radio emitting objects in the Universe with the extraordinary high angular resolution.

The orbit of RadioAstron satellite will have apogee radius in the range up to 350 000 km. The spacecraft's operational lifetime will be no less than five years. Space-ground Very Long Baseline Interferometer (VLBI) measurements with this orbit will provide morphological and coordinate information on galactic and extragalactic radio sources with fringe size up to 8 micro arc second at the shortest wavelength 1.35 cm.

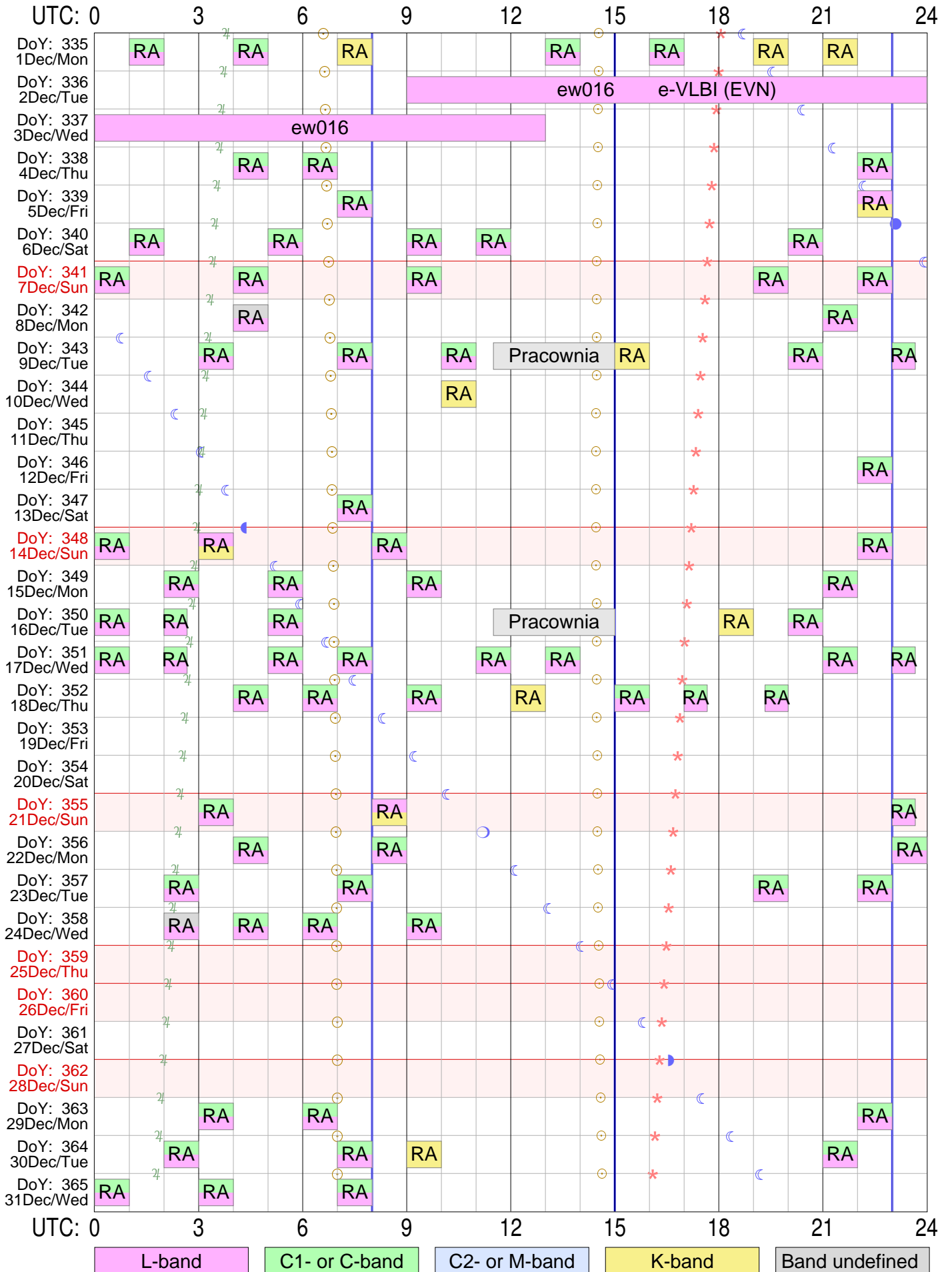
The RadioAstron program, initiated by Astro Space Center (ASC) of Lebedev Physical Institute of Russian Academy of Sciences (RAS) in collaboration with other institutions of RAS and Federal Space Agency (FSA), has expanded into a broad international collaboration: scientists from over 20 countries are constructing the instruments, planning the mission profile, and assuring ground radio telescopes support for RadioAstron. Russia will provide the satellite, most of the on-board hardware, interferometer integration and all kinds of the tests. General designer of satellite and SRT construction is Lavochkin Association (LA) of the RosKosmos.

Several other countries contribute to the on-board scientific payload. The 92-cm receiver is being built in India - National Center for Radio Astrophysics (NCRA) and Russia (Nizhny Novgorod, OAO KB "Gorizont"), the 18-cm receiver in Australia (CSIRO - Commonwealth Scientific and Industrial Research Organization), the 6-cm receiver by Russia, the 1.35-cm receiver by Finland (HUT - Helsinki University of Technology) and upgraded in USA (National Radio Astronomy Observatory- NRAO) and Russia (Moscow Institute of Radioengineering and Electronics - IRE), rubidium on-board frequency standard was built by the European Space Agency (ESA) at Neuchatel observatory in Switzerland. H-maser on-board frequency standard is being developed in Russia (Nizhny Novgorod, ZAO "Vremya-CH"). Russian (ASC) recording system on 6-system HDD and tapes will be able to accept a digital data stream at a maximum data rate of 128 Mbit/s. The correlator will be able to process the data from up to 5 interferometer stations (including the space element) at a maximum data rate of 128 Mbit/s. European Space Agency (ESA) participated in testing of the space radio telescope antenna. On board operating spacecraft system and command communication centers at Bear Lake (near Moscow) and near Ussuriisk (Eastern Russia), and also a tracking station at Pushchino are under preparation.

Main scientific goal of the mission is the study of various astronomical objects with unprecedented angular resolution up to few millionth of an arcsecond. The resolution achieved with RadioAstron will allow us in principle to study the following phenomena and problems:

- central engine of AGN and physical processes near super massive black holes providing an acceleration of cosmic rays — size, velocity and shape of emitting region in the core, spectrum, polarization and variability of emitting components;
- cosmological models, dark matter and dark energy - by studying dependence of above mentioned AGN's parameters with redshift, and by observing gravitational lensing;
- structure and dynamics of star and planets forming regions in our Galaxy and in AGN — by studying maser and Mega maser radio emission;
- neutron (quark?) stars and black holes in our Galaxy, their structure and dynamics — by VLBI and measurements of visibility scintillations, proper motions and parallaxes;
- structure and distribution of interstellar and interplanetary plasma — by fringe visibility scintillations of pulsars;
- building of high accuracy astronomical reference system of coordinates;
- building of high accuracy model of the Earth gravity field.

# Tr VLBI plan for Dec 2014



Version: 2014.11.20

Sky events at Tr: ☉ Sunrise & sunset    ☾☽ Transit of Moon    ♃ Transit of Jupiter    \* Transit of Aries (0h ST)

Vertical lines in blue mark operator shift times at Tr

Total observing time: 110.7 hours in 86 experiments scheduled

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