# XRT Flare Mode Discussion

#### Science Goal I: Determine the coronal configuration(s) that lead to flares (arbitrarily called "HOP 101")

- Comment: this is a medium to long timescale project (in contrast with 4, which considers shorter timescales)
- Normal mode program (QT) should run for 12-24 hours previous to the flare.
- XRT QT program: Al/poly(Med-Be) and Thin-Be(Med-Al), 384x384, no binning, long (AEC 2)/ short (AEC 3) pairs, 5 min cadence. Every 15 minutes, G-band to coalign with SOT. The program will also take the same images (single exposure, AEC 1,not pairs) in the preflare buffer. The preflare buffer should cover the 5 min before the flare flag is set with increasing cadence. Q92 for regular images, Q95 for preflare. The program uses ~ 8 Mbits/hour and can be run for 24 hours with 192Mbits. The preflare data needs 45 Mbits.
- XRT FL program: Thin-Be(Thin-Be+Thick-Be) (for continuity) and Med-Be(Med-Be+Thick-Al) with AEC 1, 20 second cadence for the first 5 minutes, than 60 second cadence. Q95. This takes 11Mbits for the first 5 minutes, then 52 Mbits/hour for max 2 hours (in the very rare case of a long duration flare, additional images are taken at 15 min cadence).
- Size of one HOP run Assuming 24 hours of observations with one 60 min long flare: 290 Mbits. Flare patrol images taken with 60 second cadence.

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Nam	e	Loop	Int	Duration	Size(Bits)	Center	Size	Comp	AEC	DMF	Buffer	L Err
	HOP 101			:16:29.2	8.44 M							
Ŧ	Subr-1	3		:16:09.8	7.52 M							
	HOP 101 - Main loop (2813)	1	:04.0	:11.7	2.50 M							
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.1	626. K	1024x	384x384	35%	2	KSC, SSOC	Regular	
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:02.1	626. K	1024x	384x384	35%	3	KSC, SSOC	Regular	
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.1	626. K	1024x	384x384	35%	2	KSC, SSOC	Regular	
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:02.1	626. K	1024x	384x384	35%	3	KSC, SSOC	Regular	
	HOP 101 – Preflare Buffer Images (2815)	10	:04.0	:05:11.5	00.0 M							
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.1	00.0 M	1024x	384x384	43%	1	KSC, SSOC	Preflare-1	
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.1	00.0 M	1024x	384x384	43%	1	KSC, SSOC	Preflare-1	
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.1	00.0 M	1024x	384x384	43%	1	KSC, SSOC	Preflare-2	
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.1	00.0 M	1024x	384x384	43%	1	KSC, SSOC	Preflare-2	
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.1	00.0 M	1024x	384x384	43%	1	KSC, SSOC	Preflare-3	
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.1	00.0 M	1024x	384x384	43%	1	KSC, SSOC	Preflare-3	
V	Subr-2			:11.8	921. K							
	HOP 101 - Gband coalignment (2816)	1	:04.0	:11.8	921. K							
	G-Band - 1x1 - 64ms		:02.0	:02.8	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular	

## HOP 101: QT program XOB for XRT

Version:	15E5
Program Name:	HOP 101
Author:	GRIGIS, Paolo
Date:	2008/11/06 16:48:02
Loop Count:	0
Data rate:	8.53 Kbits/s

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O PRG: 15E6: HOP 101- Flare response

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Nam	e	Loop	Int	Duration	Size(Bits)	Center	Size	Comp	AEC	DMF	Buffer
ł	HOP 101- Flare response (15E6)			:06:22:41.2	279. M						
7 5	Subr-1	1	:02.0	:05:13.3	24.1 M						
V	HOP 101 - Flare response (2817)	15	:20.0	:05:00.0	23.2 M						
	Thin-Be (Thin-Be + Thick-Be) - 1x1 - 128ms		:02.0	:11.3	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	Med-Be (Med-Be + Thick-Al) - 1x1 - 362ms		:02.0	:04.0	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
V	HOP 101 - Gband coalignment (2816)	1	:04.0	:13.3	921. K						
	G-Band - 1x1 - 64ms		:02.0	:13.3	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular
7 5	Subr-2	8	:02.0	:02:01:46.7	193. M						
W	HOP 101 - Flare response - short exposure (2818)	15	:01:00.0	:15:00.0	23.2 M						
	Thin-Be (Thin-Be + Thick-Be) - 1x1 - 16ms		:02.0	:11.3	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	Med-Be (Med-Be + Thick-Al) - 1x1 - 64ms		:02.0	:03.7	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
V	HOP 101 - Gband coalignment (2816)	1	:04.0	:04.0	921. K						
	G-Band - 1x1 - 64ms		:02.0	:13.3	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular
7 5	Subr-3	25	:02.0	:04:15:33.6	61.7 M						
	HOP 101 - Flare response (2817)	1	:10:00.0	:10:00.0	1.54 M						
	Thin-Be (Thin-Be + Thick-Be) - 1x1 - 128ms		:02.0	:11.3	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	Med-Be (Med-Be + Thick-Al) - 1x1 - 362ms		:02.0	:04.0	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
V	HOP 101 - Gband coalignment (2816)	1	:04.0	:13.3	921. K						
	G-Band - 1x1 - 64ms		:02.0	:13.3	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular

## HOP 101: FL program XOB for XRT

Version:	15E6
Program Name:	HOP 101- Flare response
Author:	GRIGIS, Paolo
Date:	2008/11/06 21:06:10
Loop Count:	0
Data rate:	12.1 Kbits/s

- Science Goal 2: Locate and measure the properties of inflows in flare current sheets in the corona related to flares (HOPI02).
- Comment: this is a flare and post-flare project to be run as TOO for a flare on an AR near the limb.
- Normal mode program (QT) should run for 6 hours.
- XRT QT program: C/poly(Med-Be), 768x768, binned 2x2, 60 sec cadence, lossless DPCM compression (lossy compression cannot be used because we need to detect dynamical behavior of faint structures!), AEC 2 (overexposes the quiet Sun at limb to better see faint structures above the limb), FOV offset toward limb. This takes 263Mbits of data in 6 hours.
- XRT FL program: Med-Be(Med-Be+Thick-Al), 768x768, binned 2x2, 30 seconds cadence, DPCM, AEC 2 (overexposes the flare core). This takes about 83Mbit/hour. FOV offset toward limb. Alternatively, this can be run at 1024x1024 with 53 seconds cadence instead.
- Size of one HOP run, assuming 6 hours of observations (with a 60 min long flare): 302 Mbits. Flare patrol images taken with 90 seconds cadence.

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Name	Loop	Int	Duration	Size(Bits)	Center	Size	Comp	AFC	DMF	Buffer	LE
HOP 102	coop		:01:07.5		center	Silec	comp	7120	Dim.	burrer	
▼ Subr-1		:01:00.0	:01:00.0								
<ul> <li>HOP 102 - main loop (2819)</li> <li>C/Poly (Med-Be) - 2x2 - 4096ms</li> </ul>	1	:04.0 :02.0		1.01 M 1.01 M	1024x1024	768x768	57%	2	KSC, SSOC	Regular	
		rogra	nm Y		for						
HOP 102: 0	Qib	rogra									
					́						
Version:	15E7										
Program Name:	HOP 102										
Author:	GRIGIS, Paolo	)									
Date:	2008/11/20	20:16:54									
Loop Count:	0										
Data rate:	15.0 Kbits/s										
	15.0 KDI(5/5										

0 0 0			O PRG:	15E8: HO	P 102- Flare re	sponse					
Name	Loop Int	t Dura	tion	Size(Bits)	Center	Size	Comp	AEC	DMF	Buffer	LE
HOP 102- Flare response (15E8)				774. K					1		
<ul> <li>Subr-1</li> <li>HOP 102 - Flare response (281A)</li> </ul>	1	:30.0		774. K 774. K							
Med-Be (Med-Be + Thick-Al) - 2x2 - 1	_	:02.0		774. K	1024×1024	768x768	43%	2	KSC, SSOC	Regular	
HOP 102: F	l pro	σran	ר X	ΩB	for >	(RT					
1101 102.1		8' <sup>u</sup> i i	1 7 1			<b>\  \ </b>					
Version:	15E8										
Program Name:	HOP 102- Flare	response					]				
Author:	GRIGIS, Paolo										
Date:	2008/11/21 16	:09:35									
Loop Count:	0										
Data rate:	20.6 Kbits/s										

## • Science Goal 3: Measure the eruption speeds of CMEs as they first develop and leave the solar surface (HOP 103).

- Comment: this is a flare program and preflare program to observe the dynamics of SXR ejecta.
- XRT QT program: Thin-Be(Med-Al), 768x768, binned 2x2, AEC I,Q90, 25 seconds cadence. Preflare buffer are used to improve cadence around the start of the flare (however, we have to keep in mind that the CME may not be so kind as to start exactly at the same time as the flare). Unbinned 384x384 G-band images for coalignment in context. The preflare buffers take Thin-Be(Med-Al), 768x768, binned 2x2, AEC I,Q95 images. This will deliver increased cadence starting about 120 seconds before the flare is detected. Normal mode program takes 280 Mbits for a 6 hour run.
- XRT FL program: Med-AI (Med-AI+Thick-AI),1024x1024,binned 2x2,AEC1, Q90, 10 sec cadence. Unbinned 384x384 G-band for coalignment in context. This take 20Mbits more than the QT program.
- The program will take 360 Mbits for a 6 hour run with one flare and one set of preflare buffer images. Flare patrol images taken with 60 seconds cadence.

						O PRG: 15E9: 1	HOP 103					
	1											
Name		Loop Ir	nt	Duration	Size(Bits)	Center	Size	Comp	AEC	DMF	Buffer	L Err
HOP 103 (15E9)				:10:19.3	13.6 M							
Subr-1		24	:02.0	:10:00.0	12.7 M							
HOP 103 - main loop	(281C)	1	:05.0	:05.0	530. K							
Thin Be (Med-Al) -			:02.0		530. K	1024x1024	768x768	30%	1	KSC, SSOC	Regular	
▼ HOP 103 - preflare but	iffer (281D)	1	:20.0		00.0 M							
Thin Be (Med-Al) -			:06.0		00.0 M		768x768	43%	1		Preflare-1	
Thin Be (Med-Al) -			:06.0		00.0 M		768x768		1		Preflare-2	
Thin Be (Med-Al) -	2x2 - 512 ms		:06.0		00.0 M	1024x1024	768x768	43%	1	KSC, SSOC	Preflare-3	
/ Subr-2		1	:02.0		921. K							
<ul> <li>HOP 101 – Gband coal</li> </ul>		1	:04.0		921. K							
G-Band - 1x1 - 64	lms		:02.0	:11.8	921. K	1024x1024	384x384	52%	0	KSC, SSOC	Regular	
HO	P 103:	QT	pr	ogra	um 2	XOB	for	XI	RT	-		
HO	P 103:	QT	pr	ogra	um 2	XOB	for	XI	RT	-		
HO		QT	pr	ogra	um 2	XOB	for	XI	RT	-		
HO		5E9	pr	ogra	um 2	XOB	for	XI	RT	-		
HO	Version: 1 Program Name: H	5E9		ogra	.m 2	XOB	for	XI	RT	•		
HO	Version: 1: Program Name: H Author: G	5E9 OP 103			.m 2	XOB	for	XI	RT	-		
HC	Version: 1: Program Name: H Author: G	5E9 OP 103 RIGIS, Paolo 008/11/21			.m 2	XOB	for	XI	RT	-		

Image       Image <thimage< th=""> <thimage< th=""> <thi< th=""><th>0.0.0</th><th></th><th></th><th></th><th></th><th></th><th>Ő.</th><th>PRG: 15EA: HO</th><th>P 103 – Flare r</th><th>esponse</th><th></th><th></th><th></th><th></th></thi<></thimage<></thimage<>	0.0.0						Ő.	PRG: 15EA: HO	P 103 – Flare r	esponse				
Imme       Looc Int       Duration       Size(Bits)       Center       Size       Comp       AEC       DMF       Buffer       L         HOP 103 - Flare response       08:53.2       7.31 G       5       5       7       7       10       5       08:53.2       7.31 G       5       5       100.05.00       10.00       05.00       10.00														
HOP 103 - Flare response       :08:53:2       7.31 G         Subr-1       4       :20:59.3       664. M         W HOP 103 - Flare response (281E)       30       :10.0       :05:00.0       165. M         Med-AI (Med-AI+Thick-AI) - 2x2 - 128ms       :02.0       :05:1       5.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         v HOP 1013 - Ghand coalignment (2816)       1       :04.0       :14.8       921. k       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         Subr-2       50       :08:322       :6.65 G       10:00:0       132. M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         v HOP 1013 - Flare response (281E)       24       :25.0       :10:00:0       132. M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         v HOP 1013 - Ghand coalignment (2816)       1       :04.0       :14.8       921. k       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         v HOP 103 - SEL       program Name:       :02.0       :14.8       921. k       1024x1024       1024x1024       43%. 1       KSC, SSOC       Regular </th <th></th> <th></th> <th></th> <th></th> <th></th> <th>Duration</th> <th>Class (Disc)</th> <th>Cantar</th> <th>Cine.</th> <th></th> <th>450</th> <th>DUT</th> <th>Duffer</th> <th>1.5.</th>						Duration	Class (Disc)	Cantar	Cine.		450	DUT	Duffer	1.5.
Subr-1       4       :20:59.3       664. M         # HOP 103 - Flare response (2816)       30       :10.0       :05:00.0       165. M         Med-Al (Med-Al+Thick-Al) - 2x2 - 128ms       :02.0       :05.15.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         V HOP 101 - Cband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         Subr-2       :08:32:2       :6.65 G       :08:32:2       6.65 G        Med-Al(Med-Al+Thick-Al) - 2x2 - 128ms       :02.0       :17.1       5.50 M       1024x1024       384x384       52%       0       KSC, SSOC       Regular         Subr-2       :010:00.0       :12. M       :02.0       :17.1       5.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         Version:       :02.0       :14.8       921. K       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         Version:       :15.6       :02.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         Version:				loop Int				Center	Size	Comp	AEC	DMF	Butter	L Err
*       HOP 103 - Flare response (281E)       30       :10.0       :05:00.0       165. M         Med-Al (Med-Al+Thick-Al) - 2x2 - 128ms       :02.0       :05.1       5.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         V HOP 101 - Cband coalignment (281E)       24       :25.0       :10:00.0       132. M       1024x1024       384x384       52%       0       KSC, SSOC       Regular         Subr-2       :03: 20.0       :14:8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         W HOP 103 - Flare response (281E)       24       :25.0       :10:00.0       132. M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         W HOP 101 - Cband coalignment (2816)       1       :04.0       :14:8       921. K       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         W HOP 101 - Cband coalignment (2816)       1       :04.0       :14:8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         W HOP 101 - Cband coalignment (2816)       1       :04.0       :14:8       921. K       1024x1024       384x384       52%				4										
Med-Al (Med-Ai-Thick-Al) - 2x2 - 128ms       :02.0       :05.1       5.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         V HOP 101 - Gband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         Subr-2       50       :08:322       6.65 G       :08:322       6.65 G		nse (281E)			:10.0									
v       HOP 101 - Cband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         Subr-2       50       :08:322       6.65 5       6.55       6.55       6.55       6.55       7       HOP 103 - Flare response (281E)       24       :25.0       :10:00.0       132. M       1       KSC, SSOC       Regular         w       HOP 103 - Flare response (281E)       1       :04.0       :17.1       :5.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         v       HOP 101 - Cband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         V       HOP 103 - SEC       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         HOP 103 - Flare response         Author:       CRICIS, Paolo         Date:       2008/11/21 16:41:00         Loop Count:       1								1024x1024	1024x1024	43%	1	KSC, SSOC	Regular	Ā
Subr-2       50       :08:32:2       6.65 G         ▼ HOP 103 - Flare response (281E)       24       :25.0       :10:00.0       132. M         Med-Al (Med-Al+Thick-Al) - 2x2 - 128ms       02.0       :17.1       5.50 M       1024x1024       43%       1       KSC, SSOC       Regular         ▼ HOP 101 - Gband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         G-Band - 1x1 - 64ms       :02.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         HOP 103 - FL program XOB for XRT         Version:         15EA         Program Name:       HOP 103 - Flare response         Author:       CRICIS, Paolo         Date:       2008/11/21 16:41:00         Loop Count:       1												,	<b>J</b>	
V         HOP 103 - Flare response (281E)         24         :25.0         :10:00.0         132. M           Med-Al (Med-Al+Thick-Al) - 2x2 - 128ms         :02.0         :17.1         5.50 M         1024x1024         1024x1024         43%         1         KSC, SSOC         Regular           V HOP 101 - Gband coalignment (2816)         1         :04.0         :14.8         921. K         0         KSC, SSOC         Regular           G-Band - 1x1 - 64ms         :02.0         :14.8         921. K         1024x1024         384x384         52%         0         KSC, SSOC         Regular           Version:         :15EA         :02.0         :14.8         921. K         1024x1024         384x384         52%         0         KSC, SSOC         Regular           Version:         :15EA         :02.0         :14.8         921. K         1024x1024         384x384         52%         0         KSC, SSOC         Regular           Version:         :15EA         : <td< td=""><td>G-Band - 1x1 - 64r</td><td>ns</td><td></td><td></td><td>:02.0</td><td>:14.8</td><td>921. K</td><td>1024x1024</td><td>384x384</td><td>52%</td><td>0</td><td>KSC, SSOC</td><td>Regular</td><td></td></td<>	G-Band - 1x1 - 64r	ns			:02.0	:14.8	921. K	1024x1024	384x384	52%	0	KSC, SSOC	Regular	
Med-Al (Med-Al+Thick-Al) - 2x2 - 128ms       :02.0       :17.1       5.50 M       1024x1024       1024x1024       43%       1       KSC, SSOC       Regular         W HOP 101 - Gband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         HOP 101 - Gband coalignment (2816)       1       :04.0       :14.8       921. K       1024x1024       384x384       52%       0       KSC, SSOC       Regular         HOP 103: FL program XOB for XRT         Version:       15EA         Program Name:       HOP 103 - Flare response         Author:       CRICIS, Paolo         Date:       2008/11/21 16:41:00         Loop Count:       1														<u> </u>
<ul> <li>HOP 101 - Gband coalignment (2816) 1 :04.0 :14.8 921. K</li> <li>G-Band - 1x1 - 64ms :02.0 :14.8 921. K 1024x1024 384x384 52% 0 KSC, SSOC Regular</li> <li>HOP 103: FL program XOB for XRT</li> <li>Version: 15EA</li> <li>Program Name: HOP 103 - Flare response</li> <li>Author: CRICIS, Paolo</li> <li>Date: 2008/11/21 16:41:00</li> <li>Loop Count: 1</li> </ul>														
C-Band - 1x1 - 64ms :02.0 :14.8 921.K 1024x1024 384x384 52% 0 KSC, SSOC Regular HOP IO3: FL program XOB for XRT Version: 15EA Program Name: HOP 103 - Flare response Author: CRICIS, Paolo Date: 2008/11/21 16:41:00 Loop Count: 1			128ms					1024×1024	1024x1024	43%	1	KSC, SSOC	Regular	<u> </u>
HOP 103: FL program XOB for XRT          Version:       15EA         Program Name:       HOP 103 - Flare response         Author:       GRIGIS, Paolo         Date:       2008/11/21 16:41:00         Loop Count:       1									201 201	5.00/	•			
Version:1SEAProgram Name:HOP 103 - Flare responseAuthor:CRICIS, PaoloDate:2008/11/21 16:41:00Loop Count:1	G-Band - 1x1 - 64r	ns			:02.0	:14.8	921. K	1024x1024	384x384	52%	0	KSC, SSOC	Regular	
Author:     GRIGIS, Paolo       Date:     2008/11/21 16:41:00       Loop Count:     1		Version:	15EA						ŕ					
Author:     GRIGIS, Paolo       Date:     2008/11/21 16:41:00       Loop Count:     1		December 1												
Date:     2008/11/21 16:41:00       Loop Count:     1		Program Name:	HOP 10	3 - Flar	e respo	onse								
Loop Count: 1		Author:	GRIGIS,	Paolo										
		Date:	2008/1	1/21 16	5:41:00	)								
Data rate: 228. Kbits/s		Loop Count:	1		]									
		Data rate:	228. Kb	oits/s										

- Science Goal 4: Find the locations and basic observable properties of flare initiation sites in the corona (HOP 104)
- Comment: this is similar to number 1, but the emphasis is more on short term phenomena and triggering for the flare.
- Normal mode program (QT) should run for 6 hours.
- XRT QT program: Al/poly(Med-Be) and Thin-Be(Med-Al), 384x384, no binning, AEC 1, 45 sec cadence. Every 15 minutes, G-band to coalign with SOT. The program will also take the same images (single exposure, AEC 1, not pairs) in the preflare buffer. The preflare buffer should cover the 4 min before the flare flag is set with increasing cadence. Q90 for regular images, Q95 for preflare. The program uses 30 Mbits/hour and can be run for 6 hours with 180Mbits. The preflare data needs 45 Mbits.
- XRT FL program: (same as for HOP 101) Thin-Be(Thin-Be+Thick-Be) (for continuity) and Med-Be(Med-Be+Thick-AI) with AEC 1, 20 second cadence for the first 5 minutes, than 60 second cadence. Q95. This takes IIMbits for the first 5 minutes, then 52 Mbits/hour for max 2 hours (in the very rare case of a long duration flare, additional images are taken at 15 min cadence).
- The program takes about 280 Mbits for a 6 hour run with one 60min long flare. Flare patrol images are taken with 60 second cadence.

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O PRG: 15EB: HOP 104

Nar	ne	Loop	Int	Duration	Size(Bits)	Center	Size	Comp	AEC	DMF	Buffer	L Err	
	HOP 104			:10:49.3	51.5 M								
Ŧ	Subr-1	14	:02.0	:10:30.0	50.6 M								
	# HOP 104 - Main loop (2820)	1	:10.0	:10.0	3.61 M								
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:03.2	1.80 M	1024×1024	512x512	57%	0	KSC, SSOC	Regular		
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:06.2	1.80 M	1024×1024	512x512	57%	0	KSC, SSOC	Regular		
,	<ul> <li>HOP 101 – Preflare Buffer Images (2815)</li> </ul>	1	:35.0	:35.0	00.0 M								
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.6	00.0 M	1024x1024	384x384	43%	1	KSC, SSOC	Preflare-1		
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.6	00.0 M	1024×1024	384x384	43%	1	KSC, SSOC	Preflare-1		
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.6	00.0 M	1024x1024	384x384	43%	1	KSC, SSOC	Preflare-2		
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.6	00.0 M	1024x1024	384x384	43%	1	KSC, SSOC	Preflare-2		
	Al/poly (Med-Be) - 1x1 - 512 ms		:02.0	:05.6	00.0 M	1024x1024	384x384	43%	1	KSC, SSOC	Preflare-3		
	Thin Be (Med-Al) - 1x1 - 512 ms		:02.0	:05.6	00.0 M	1024×1024	384x384	43%	1	KSC, SSOC	Preflare-3		
Ŧ	Subr-2	1	:02.0	:11.8	921. K								
,	<ul> <li>HOP 101 - Gband coalignment (2816)</li> </ul>	1	:04.0	:11.8	921. K								
	G-Band - 1x1 - 64ms		:02.0	:11.8	921. K	1024x1024	384x384	52%	0	KSC, SSOC	Regular		

#### HOP 104: QT program XOB for XRT

HOP 101 - Gband coalignment

Loops: 1

Interval:

**a** +

Change Sequence: HOP 101 - Gband coalignment (2816)

:04.0

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1267 matches

PRG: 15E6: HOP 101- Flare response

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Na	ime	Loop	Int	Duration	Size(Bits)	Center	Size	Comp	AEC	DMF	Buffer
	HOP 101- Flare response (15E6)			:06:22:41.2	279. M						
¥.	Subr-1	1	:02.0	:05:13.3	24.1 M						
	# HOP 101 – Flare response (2817)	15	:20.0	:05:00.0	23.2 M						
	Thin-Be (Thin-Be + Thick-Be) - 1x1 - 128ms		:02.0	:11.3	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	Med-Be (Med-Be + Thick-Al) - 1x1 - 362ms		:02.0	:04.0	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	<ul> <li>HOP 101 - Gband coalignment (2816)</li> </ul>	1	:04.0	:13.3	921. K						
	G-Band - 1x1 - 64ms		:02.0	:13.3	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular
Ŧ	Subr-2	8	:02.0	:02:01:46.7	193. M						
	<ul> <li>HOP 101 – Flare response – short exposure (2818)</li> </ul>	15	:01:00.0	:15:00.0	23.2 M						
	Thin-Be (Thin-Be + Thick-Be) - 1x1 - 16ms		:02.0	:11.3	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	Med-Be (Med-Be + Thick-Al) - 1x1 - 64ms		:02.0	:03.7	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	<ul> <li>HOP 101 - Gband coalignment (2816)</li> </ul>	1	:04.0	:04.0	921. K						
	G-Band - 1x1 - 64ms		:02.0	:13.3	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular
V	Subr-3	25	:02.0	:04:15:33.6	61.7 M						
	# HOP 101 – Flare response (2817)	1	:10:00.0	:10:00.0	1.54 M						
	Thin-Be (Thin-Be + Thick-Be) - 1x1 - 128ms		:02.0	:11.3	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	Med-Be (Med-Be + Thick-Al) - 1x1 - 362ms		:02.0	:04.0	774. K	1024x	384x384	43%	1	KSC, SSOC	Regular
	<ul> <li>HOP 101 - Gband coalignment (2816)</li> </ul>	1	:04.0	:13.3	921. K						
	G-Band - 1x1 - 64ms		:02.0	:13.3	921. K	1024x	384x384	52%	0	KSC, SSOC	Regular

### HOP 104: FL program XOB for XRT (same as HOP101)

,	Version:	15E6
I	Program Name:	HOP 101- Flare response
	Author:	GRIGIS, Paolo
1	Date:	2008/11/06 21:06:10
	Loop Count:	0
1	Data rate:	12.1 Kbits/s

#### • Explanation of XRT-specific acronyms used in this document

- XOB: "XRT OBservation program": comes in two flavors, QT (Quiet Time) and FL (FLare)
- AEC: "Automatic Exposue Control": AEC 1 is standard, 2 overexposes slightly, 3 underexposes slightly
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