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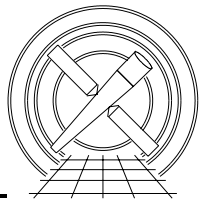

MEMORANDUM

November 21, 2008

From: Paul Plucinsky
To: CDO, USINT, ACIS Ops
Subject: CDO and USINT Actions and Responsibilities for Configuring TOOs
Cc: ARCOPS, SOT MP
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Abstract

This memo summarizes the responsibilities of and actions to be taken by the *Chandra Director's Office* (CDO) and *Uplink Support Interface* (USINT) to configure *Chandra* Target of Opportunity Observations (TOOs). The intent of the memo is to streamline the process and to prevent confusion for future TOOs.

1 Different Classes of TOOs

Chandra TOOs are separated into "peer-reviewed" (PR) and "Directors' Discretionary Time" (DDT) requests and are also separated into "Fast" (0-4 days), "Medium" (4-12 days), and "Slow" (12-30 days), and "glacial" (> 30 days) response times. The actions and responsibilities of CDO and USINT may vary depending on the TOO type and response time.

2 Overview of the Process

In addition to CDO and USINT, there are three other groups which may be involved in the process of configuring a TOO: "Archive Operations" (ArcOps), "ACIS Operations" (ACIS Ops), and SOT MP. The general process is as follows with a detailed discussion included in the subsections below. First, CDO must evaluate and approve the TOO request. If the TOO request is accepted, CDO must inform the rest of the groups that the TOO has been approved and CDO must set those parameters in the "Observation Catalog" (OBSCAT) which only CDO should set. Once CDO completes those tasks, CDO should transfer the responsibility for the final configuration of the observation to USINT. The USINT scientist will then finalize the configuration with the "Guest Observer" (GO) and request OBSCAT changes be made by arcops. When the OBSCAT parameters have been updated, ACIS

Ops will assign the SIMODE. Once the SIMODE is assigned, the USINT scientist will ask the GO to verify the final configuration of the observation. Once the GO agrees to a final configuration, SOT MP may extract the observation from the OBSCAT for the creation of the "Observation Request" (OR) to send to FOT MP. In the case of a Fast TOO, SOT MP may create the OR by hand in order to expedite the load generation process. I now discuss the details of each of these steps including the mechanism by which one group informs the other groups of a transfer of responsibility at the end of a stage.

2.1 Stage 1: TOO Approval and Initial Configuration by CDO

When CDO approves a TOO, an email message is generated by `rps_too@head.cfa.harvard.edu` and sent to the "cdo", "usint", "fotmp", "acisdude", "cus", and "too_arc" mailing lists. This email serves as the indication that the TOO has been approved and the process of configuration must begin (if informal discussions have not already begun). The process by which the parameters for a TOO observation are ingested into the OBSCAT varies depending on the type of the TOO. For a PR TOO, the parameters have already been ingested into the OBSCAT when the accepted proposals for the previous cycle were ingested. For a DDT TOO, the parameters are ingested from the RPS forms after CDO approves the TOO. [**CDO please provide an update here as to how the parameters are ingested with the new web-based TOO form.**] CDO frequently discusses the proposed observation with the GO and makes modifications to the observation proposed by the GO. These modifications may affect the exposure time, the instrument selected, the number and type of followup observations, the constraints on the observation and/or followup observations, and even the pointing direction. These modifications are usually the result of several emails and/or phone calls between CDO and the GO which the rest of the *Chandra* operations team have not seen or heard. Therefore it is **crucial** that once CDO has made modifications to the proposed observation, that CDO requests any changes necessary to the OBSCAT to implement these modifications. CDO is responsible for reviewing the OBSCAT configuration for the following parameters:

TARGET.NAME

COORD.RA, COORD.DEC – target coordinates

TOTAL.OBS.TIME – approved observation time

INST.DETECTOR – ACIS-I/ACIS-S/HRC-I/HRC-S

INST.GRATING – NONE/HETG/LETG

ROLL.CONSTRAINT, ROLL.ANGLE, ROLL.TOLERANCE – parameters to specify a roll constraint

PHASE.DEPENDENT – parameter to specify if a phase constraint is approved for this observation

MONITOR.OBS, NUMBER.OBS, MONITOR.FACTOR, MONITOR.INTERVAL, MONITOR.TOLERANCE - parameters to specify a series of monitoring observations.

ADDITIONAL.CONSTRAINTS - additional constraints which cannot be captured in the existing OBSCAT parameters

TRIGGER.TARGET and associated parameters – to specify if this TOO can trugger subsequent TOOs

It is crucial that CDO enter into the OBSCAT any constraints associated with the TOO observation. In the past, we have encountered the difficulty that constraints had been negotiated between CDO and the GO which were impossible to implement. By taking the process all the way through to specifying the OBSCAT parameters for the constraints, CDO can ensure that the approved constraints can be implemented given the capabilities of the *Chandra* spacecraft.

Once the above parameters have been specified in the OBSCAT to CDO's satisfaction, CDO will send an email to the "usint" and "mpweekly" mail lists indicating that the TOO observation is ready for detailed instrument configuration. If no modifications are necessary and the OBSCAT configuration as ingested is correct, CDO may send the email once the OBSCAT parameters have been verified. In the case of a Fast TOO, CDO should include the word "URGENT" in the title of the email.

HANDOFF PROCESS: CDO sends an email to "usint" and "mpweekly" mail lists that the target is ready for detailed instrument configuration and includes the word "URGENT" in the title if this is a Fast TOO.

2.2 Stage 2: USINT Detailed Instrument Configuration

Once the parameters in Stage 1 above have been finalized and CDO has sent an email announcing that fact, USINT takes over the responsibility of finalizing the configuration for the observation. The USINT scientist is responsible for configuring all of the parameters for an observation except those specified by CDO above and except for the "SIMODE" parameter and the "Dropped Chip Count" parameter. It is the hope that the USINT scientist will not entertain additional requests from the GO which require CDO approval, nevertheless given the ingenuity of *Chandra* GOs this may happen at some point in the future.

The assignment of the USINT scientist to the TOO observation depends on the selected instrument, the target category, and the availability of the USINT scientists. In the past there has been confusion as to which USINT scientist will assume the USINT responsibility because the selected instrument was in the process of being changed, or the target

category on the RPS TOO form was incorrect, or some USINT scientists were on travel. CDO will set the instrument in Stage 1 and this will remove any confusion as to which instrument needs to be supported and hence which USINT scientists are candidates to configure the observation. The "USINT coordinator" will review the target category and science objectives and determine which USINT scientist is most appropriate to support the observation. The USINT coordinator will make **positive** email or phone contact with the USINT scientist to confirm that the preferred USINT scientist is available and aware of the TOO. This is important since many of the USINT scientists do not have cell phones which receive alerts about a TOO. If the USINT coordinator determines that the preferred USINT scientist is not available, the USINT coordinator will assume the role of USINT scientist for this observation or ask another USINT scientist to adopt the responsibilities. It is the **responsibility of the USINT coordinator** to ensure that a USINT scientist is responding to the TOO request in a timely manner.

The primary USINT coordinator is Scott Wolk and the secondary USINT coordinator is Dan Schwartz. Both are accessible for urgent communications through their *Chandra* operations cell phones. The USINT coordinator on-duty will be posted on the web page "https://icxc.harvard.edu/cus/" and will be updated weekly to inform the rest of the *Chandra* team who is fulfilling the responsibility for the given week. If neither USINT coordinator is available, a substitute will be arranged and posted on the web page.

Table 1: Contact Information for USINT Coordinators

Name	Office	Office Phone	Cell Phone
Scott Wolk	C-33	x6-7766	6177214360
Dan Schwartz	B-439	x5-7232	6175125627

The USINT scientist may request changes to the OBSCAT parameters. The change requests are made through the usual process for USINT-requested changes on the target web pages: "https://icxc.harvard.edu/cgi-bin/usg/ocatdata2html.cgi?OBSID". If the TOO is a Fast TOO, the USINT scientist should send an email to the mail lists "arcops" and "acisdude" for an ACIS observation with the word "URGENT" in the subject line. If the OBSCAT configuration is correct and the SIMODE is already assigned, the USINT scientist can proceed to step 5 below.

HANDOFF PROCESS: USINT sends an email to "arcops" and "acisdude" mail lists that OBSCAT changes have been requested and includes the word "URGENT" in the title if this is a Fast TOO.

2.3 Stage 3: ArcOps Makes the Requested OBSCAT Changes

ArcOps makes the requested OBSCAT changes and indicates this by filling in the check box on the "Target Parameter Update Status Form" on the page at: "https://icxc.harvard.edu/cgi-

bin/usg/orupdate.cgi" and also replying to the email from the USINT scientist with a cc to the "acisdude" mail list. It is essential that one of the Archive team members monitors the "acrops" mail list to respond to TOOs out of normal business hours. SIMODEs for the HRC are assigned automatically by ArcOps and do not require any action by the HRC Ops team.

HANDOFF PROCESS: ArcOps sends an email to "usint" and "acisdude" mail lists that OBSCAT changes have been made and fills in the check box on the page "https://icxc.harvard.edu/cgi-bin/usg/orupdate.cgi".

2.4 Stage 4: SIMODE Assigned by ACIS Ops

Once the OBSCAT parameters have been updated by ArcOps, ACIS Ops must extract the OBSCAT parameters and assign the appropriate SIMODE for ACIS. In the case of a FAST TOO, ACIS Ops can only assign a pre-existing SIMODE since it can take up to a day to build and verify a new SIMODE. After assigning the SIMODE, ACIS Ops sends an email to that effect to the "usint" and "mpweekly" mail lists and fills in the check box on the page "https://icxc.harvard.edu/cgi-bin/usg/orupdate.cgi". It is important to note that ACIS Ops can only modify two parameters in the OBSCAT, SIMODE and "dropped chip count". All other parameters MUST be modified by CDO and USINT. The ACIS Ops scientist on-duty for SIMODE assignment is listed on the web page: "http://asc.harvard.edu/acis/home.html".

The SOT and FOT MP teams may decide that they need to take the minimal information necessary for an OR and create an OR by hand in order to meet the rapid turnaround for a Fast TOO. In this case, ACIS Ops might be asked to provide an SIMODE through email which ACIS Ops believes will be the one which will be eventually assigned in the OBSCAT. This raises the possibility that an error in SIMODE selection could occur. Given how little time (minutes) it takes to assign an ACIS SIMODE using the SACGS SW, it should be the preferred option in almost all cases to make the OBSCAT edits quickly and then allow ACIS Ops the opportunity to assign the SIMODE with the SACGS SW.

HANDOFF PROCESS: ACIS Ops sends an email to "usint" and "mpweekly" mail lists that an SIMODE has been assigned to the TOO observation and fills in the check box on the page "https://icxc.harvard.edu/cgi-bin/usg/orupdate.cgi".

2.5 Stage 5: Signoff by USINT

Once the OBSCAT parameters have been updated to the satisfaction of the USINT scientist and the SIMODE has been assigned, USINT will email the GO with an URGENT message that the TOO observation is configured and asks the GO to review the configuration. The USINT scientist will fill in the check box on the page: "https://icxc.harvard.edu/cgi-bin/usg/orupdate.cgi" to indicate that the requested changes have been made by ArcOps and ACIS Ops. Hopefully, the changes have been made correctly. If not, the USINT

scientist will have to back up to step 2 above and issue even more urgent changes to the OBSCAT. If the changes are agreed to by the GO, the USINT scientist should go to the target page: "https://icxc.harvard.edu/cgi-bin/usg/ocatdata2html.cgi?OBSID" and sign off on the observation as "User Approves this ObsID as is". The USINT scientist should then send an email to the "mpweekly" list that the TOO OBSID has been signed off.

HANDOFF PROCESS: USINT sends an email to the "mpweekly" mail list that the TOO observation is signed off and checks on the bottom of the target page: "https://icxc.harvard.edu/cgi-bin/usg/ocatdata2html.cgi?OBSID" that the observation is "'User Approves this ObsID as is".

2.6 Stage 6: OR Extraction by SOT MP

Once the OBSCAT has been signed off by the USINT scientist and if time permits, SOT MP may extract the observation from the OBSCAT to create an OR to pass to FOT MP. As noted above, for some Fast TOOs, SOT MP may create an OR by hand and distribute the OR for review.

HANDOFF PROCESS: SOT MP sends an email containing the OR for the TOO observation to the "mpweekly" mail list.

3 Caveats

It should be noted that some individuals may fulfill more than one of the above roles at different points throughout the year or may in fact fulfill two roles for a given TOO. For example, the same individual might fulfill the role of USINT scientist and ACIS Ops scientist for a given TOO. However, the USINT and ACIS Ops roles are distinct and should not be confused. The roles are clearly distinguished by the parameters which each role has responsibility for in the OBSCAT.

4 Conclusions

The six stage process described above defines clearly the responsibilities of the CDO and USINT groups and defines how the groups should communicate with each other when in the process of configuring a TOO. If this process is followed, it should reduce the confusion which has occurred during past TOO configurations and should produce a final configuration with the minimum effort on the part of all groups.