

# Cycle 28 Distributed Peer Review Guide

## Introduction

This document explains the process for the review of Chandra proposals by the Distributed Peer Review. Proposals are solicited annually through the [Call for Proposals \(CfP\)](#) and submitted to the Chandra X-ray Center (CXC). The Chandra Observing Policy is contained in Chapter 3 of the Chandra CfP. All proposals are assigned to several Designated Reviewers for review. Assignments are based on scientific content and the scientific interest and experience of the Designated Reviewers while avoiding conflicts of interest. Designated Reviewers are given access to proposals via the Chandra Distributed Review Site (CDRS). Target of Opportunity (TOO), Large Program (LP), and Very Large Program (VLP) proposals will continue to a panel review by TOO and Big Project Panels that will be informed by the Distributed Review outcomes.

## Distributed Peer Review

In Cycle 28 all proposals submitted to the CfP are subject to the Chandra Distributed Peer Review. In the distributed peer review, every proposing team identified a Designated Reviewer who is responsible for reviewing 10-16 other proposals submitted to the CfP. Each Designated Reviewer is matched to the proposals for their review based on their demonstrated scientific interests and experience. All Designated Reviewers provide evaluations, which consist of a numerical assessment and a report. For TOO and LP/VLP proposals, the distributed peer review evaluations will be used to inform the further review of these proposals in TOO and Big Project Panels, respectively.

## Dual Anonymous Peer Review (DAPR)

Since Cycle 23, the Chandra Peer Review has been a dual-anonymous peer review: the proposers do not know the identity of the reviewers and the reviewers do not know the identity of proposers. Proposal evaluations are focused on the science merits of the proposals without reference to the proposing team.

Proposers are asked to ensure that their proposals conform to DAPR standards, as described in Section 7.2 of the [Call for Proposals](#). Reviewers are asked **not** to seek out violations of the DAPR but maintain focus on the scientific merit of the proposals. Flagrant violations of DAPR standards are addressed by CXC Peer Review personnel.

Occasionally, it is necessary for proposers to use and cite proprietary information or data in the justification of their proposal, such information is typically cited as private communication. Reviewers should not assume the provenance of the data and any relation to the proposing team since a proposing team can communicate with any member of the astronomical community. The use of private communication is **not** a violation of DAPR nor should it be counted as a weakness.

After the final evaluation of proposals is complete, a Designated Reviewer may contact the Peer Review Team Lead (Rodolfo Montez Jr.) to express concern about essential team expertise or access needed to conduct the proposed investigation. The Peer Review Team Lead may consult the non-anonymized Team Expertise (TE) document and, if necessary, solicit a written evaluation of the team deficiencies that will be provided to the selection official for a final decision. Such an action is expected to be very rare. The selection official for this review is the CXC Director.

## Target Conflicts and Technical Reviews

Targets are checked for duplication against all other Chandra targets (previously observed, now planned, or proposed by others in this Cycle) within 6 arcmin of the proposed target (plus grid radius for grid observations). A “hard” conflict involves the same instrument as that proposed, and a “soft” conflict involves any other instrument. These target conflict rules are intended to prevent inefficient use of Chandra time on duplicate observations. Target conflicts are resolved by the Distributed Review outcomes and the selection official.

If a proposed observation conflicts with observations of the same target in a previous Cycle, and the proposed investigation can be carried out using the data from the previous observation, the proposed observation should not be approved. However, the Peer Review does consider any and all proposals that purport to perform a scientific investigation that is not feasible with past and/or already approved observations and/or calibration observations. An observer may propose a duplicate target under any of the following conditions: (i) a different instrument, (ii) the same instrument but for a much longer duration leading to increased signal, (iii) for the purpose of studying time variability on a long time scale, or, (iv) when the proposed scientific investigation is not feasible with the prior observation. Under these scientifically-justified cases, there is no target conflict.

Proposals that request targets with high count rates undergo technical reviews by CXC instrument teams prior to the Peer Review. In addition, Joint proposals are sent to the appropriate partner observatory for review. On request, the CXC will provide these technical reviews or further (e.g., Mission Planning) technical reviews of specific proposals. Proposals recommended by the Peer Review are also subject to a feasibility review by the Mission Planning Team before final approval by the selection official.

## Proposal Types and Classifications

**General Observing (GO) Proposals:** The majority of proposals are GO type, requesting <400 ks of observing time.

**Targets of Opportunity (TOO):** TOOs are difficult to schedule and place a burden on Chandra's operations. The planning system can typically accommodate about one rapid-response TOO per month. The actual number that can be accomplished will depend on several factors, including how easily the TOO can be accommodated into the pre-planned schedule. Thus a limit to the number of rapid response TOOs is imposed. There are 4 levels of rapidity recognized, each with a quota (as listed in the CfP). Proposals for TOOs are reviewed as any other proposal. Starting in Cycle 25, all TOO proposals are reviewed together in TOO panels. For purposes of time allocation at the Peer Review, the TOO panel will be charged for the requested exposure time weighted by the probability that the TOO will be triggered during the Chandra Cycle (as indicated by the PI and/or updated by the panel).

**Large and Very Large Projects (LP/VLP, V/LP):** Chandra observations requiring 400-1000 ks (LP) or > 1 Ms (VLP) of observing time and designated as LP/VLP by the PI. Some may also be classified as TOOs.

V/LP proposals are evaluated by the Distributed Review and the Big Project Panel (BPP). Observing time from V/LP proposals does not count toward the Distributed Review's allocated time. The Distributed Review outcomes (merged grades and reports of V/LP proposals) are provided to the BPP. All V/LP proposals are then evaluated and ranked by the BPP, which consists of invited BPP panelists. The BPP convenes after any other topical panels have met. Only the BPP can decide to recommend changes to the requested observing time of V/LP proposals.

**Guaranteed Time Observer (GTO) Proposals:** GTO teams are guaranteed time but cannot reserve targets in advance of the Peer Review. Targets in potential GTO programs that are within 6 arcmin of those in GO proposals are judged to be target duplication conflicts. In this case, the GTO teams may choose either to withdraw conflicted targets or to submit proposals to the Peer Review for evaluation in the same manner as for GO proposals.

A GO proposing team can enter into a pre-arranged collaboration with a GTO team to propose a hybrid GO+GTO proposal. Under such a collaboration, the GO team must clearly delineate the GO request and the GTO request within the Scientific Justification. The GTO team is only revealed within the Team Expertise document and not within the Scientific Justification.

**Multi-Cycle Observing Proposals:** Multi-cycle observations may be proposed when scientifically-justified time constraints or observatory-limited resources require an observing period longer than a single cycle. The amount of time available from Cycles 28 and 29 is limited to 10% (~2 Ms) and 5% (~1 Ms) of the total time respectively. Quotas for future cycle time will be applied at the review if that time is over-subscribed. Joint time (see below) constrained to lie in future cycles may also be requested. If approved, joint time for future cycles will be reserved by the CXC and forwarded as requests to our joint facilities for the appropriate future cycle(s).

**Joint Proposals:** Joint proposals are those that request HST, JWST, XMM-Newton, NuStar, SWIFT, NRAO, and/or NOAO observing time in conjunction with the proposed Chandra Observation(s) as specified in Chapter 5 of the CfP. For joint proposals, the Designated Reviewer must indicate if the joint time request is justified. If a Designated Reviewer does not feel the joint request is justified, it must be addressed in their report.

### Constrained Observations, Resource Costs and High Ecliptic Latitude Time:

Proposers must specify all constraints on the CPS forms, and all constrained observations must be explicitly recommended for approval by the peer review and approved by the selection official. Requests to add constraints when the target is scheduled will not be honored, even if the constraints are described in the science justification. Reviewers should be diligent in notifying the CXC of any constraints buried in the text of a proposal or any constraints that may be misclassified or incorrectly specified in the CPS forms. Please note that stating observing "preferences" is no longer allowed on proposal documents. Observations with other observatories obtained through Joint Proposals are not coordinated unless an explicit coordination constraint is listed and approved.

A "Resource Cost" (RC) will be calculated for each proposed non-TOO target. The RC quantifies the difficulty of scheduling each non-TOO observation and is nominally 1.6 RC units per kilosecond. The RC replaces "constraint categories" used in earlier Cycles, and also folds the ecliptic latitude into the calculation. The RC will be calculated for all non-TOO targets including those with no user-imposed science constraints. Targets near the ecliptic poles are difficult to schedule, therefore even observations without constraints may incur a non-zero RC by virtue of a target's sky position.

Targets at high ecliptic latitude ( $> 55$  degrees) heat the Aspect Camera Assembly and are always at a thermally unfavorable pitch angle. Approximately 4.0 Ms of observing time on targets situated above 55 deg or below -55 deg ecliptic latitude will be available at the Cycle 28 Peer Review. In addition, high ecliptic latitude targets will incur a higher RC than targets at lower latitudes.

## Panels

**TOO Panels:** The Distributed Review outcomes are used to inform further evaluation of the TOO programs in TOO panels. The purpose of the TOO panels is to create rank-ordered lists of TOOs, mitigate overlapping TOO programs, and recommend the highest-ranked proposals for approval. To avoid conflicts of interest, we create two or more panels dealing with the similar specialized subject matter. Each topical area is allocated observing time and other quotas (e.g. Joint time, TOO triggers, RC) in proportion to the request for that topical area.

**Big Project Panel (BPP):** The Distributed Review outcomes are used to inform further evaluation of the V/LP programs in the BPP. The purpose of the BPP is to create rank-ordered lists of V/LPs and to recommend the highest-ranked proposals on each list for approval. Similar to the TOO panels, this panel will be allocated quotas for V/LP TOOs, joint time, RC etc. In the unlikely event that there is time remaining after V/LP allocation in the BPP, it will be transferred to the highest-ranked proposals in the topical areas that were previously rejected because of quota limits. This time will be divided approximately equally among the topical areas.

The BPP is composed of subject matter experts from a variety of topics submitted to the CfP. Proposals will be presented to the BPP by the primary and secondary reviewers. V/LP proposals will be provided to all panelists before the review. The BPP chair will also serve as a panelist.

When necessary, the BPP will be made aware of any potential target conflicts between highly-ranked non-LP/VLP proposals and LP/VLP proposals. The BPP may elect to remove such conflicted targets from the V/LP recommended targets list.

## Procedure for Large Projects

V/LPs will be evaluated by the Distributed Peer Review to produce a merged distributed review report. In addition, each V/LP proposal will have a primary and secondary reviewer who will submit a preliminary report. At the time of the review, the distributed review report and the preliminary reports will be combined into a single report and made available for the Big Projects Panel (BPP).

Following the deliberations of the BPP, panelists will update reports as needed. The BPP reports will be available for update by BPP panel members via the PAS for up to about 2 weeks following the review.

## Tasks and Responsibilities

### Designated Reviewer Tasks:

- Confirm role as a Designated Reviewer and agree to the terms of non-disclosure and [CXC Code of Conduct](#).
- Report any potential conflicts of interest via their CXC account or email to the Peer Review HelpDesk (cxoreview@cfa.harvard.edu).
- Read all assigned proposals.
- Submit grades and reports by the specified first-round deadline.
- Review reports from other Designated Reviewers, then revise their own grades and reports by the specified second-round deadline (if deemed necessary).

### Distributed Review Procedures

The proposals to be reviewed by each Designated Reviewer are loaded into the Chandra Distributed Review Software (CDRS). The software interface is accessed individually by each Designated Reviewer. In CDRS each Designated Reviewer can access proposals, record scores and evaluations, and submit their reviews. After completion of the first-round of evaluations, Designated Reviewers will be given access to the evaluations from other Designated Reviewers for the proposals they have evaluated. During this second-round each Designated Reviewer can review the other reports and, if deemed necessary, reevaluate and revise their review.

**Scoring Categories:** There are four main scoring categories. Each proposal requires a score in each category to complete a single review. The scoring categories are detailed below.

Category	Description
Scientific Merit	The importance of the scientific motivation addressed in the proposal and the potential impact of the results on our scientific understanding. Reviewers may consider many aspects of scientific merit that can include, but are not limited to, impact, timeliness, novelty, potential, and significance.
Use of Chandra Capabilities	Motivation for using Chandra for the proposed program. Reviewers may consider the numerous strengths of Chandra, including, but not limited to, sensitivity, resolution (spatial, spectral, and/or timing), and field of view.
Technical Justification	Technical justification for the proposed program. Reviewers may consider the observing configuration (exposure, instrument, etc.), observing strategy (timing constraints, target selection, etc.), visibility, and any special analysis raised in the proposal.
Clarity of Proposal	Readability and clarity of all aspects of the proposal. Reviewers may consider clarity of arguments, text, and figures found in the proposal.

**Scores:** Valid range is 0.0--5.0, with 5.0 being the highest score indicating outstanding performance in a given category. The general breakdown of final scoring ranges is provided in the following table:

4.5–5.0	Outstanding	Proposal provides outstanding motivation and information to assess the given category.
3.5–4.5	Good/Very Good	Proposal provides good motivation and/or information to assess the given category.
2.5–3.5	Average	Proposal provides adequate motivation or information for the category, but lacks motivation to assess the given category.
1.5–2.5	Fair	The proposal does not provide sufficient motivation or information to assess the given category.
0.1–1.5	Poor	The proposal needs improvement in the given category for reasons given in the report notes.
0	Infeasible	This proposal was deemed non-feasible and was not reviewed (discuss with CXC representative first).

Scoring is performed via the CDRS by Designated Reviewers for each proposal assigned to them. The Designated Reviewers scores will remain anonymous to all other reviewers and proposers.

**Scoring Pointers:** Chandra science covers a broad range of scientific endeavors. The goal of the peer review is to ensure a strong science portfolio that includes well-motivated and compelling science. Every proposal is different and should be evaluated as such.

It is recommended that you start each proposal review with an average score (3.0) for each category, then add or remove points based on the presence or absence of motivating information for each category.

The Technical Justification scoring thresholds (Poor, Fair, Average, Good/Very Good, Outstanding) are based on your judgement of what is needed to achieve the proposed science. A proposal asking for an observation with no constraints may have different Technical Justification thresholds than a proposal with one or many constraints.

*Special note for "Use of Chandra Capabilities" and other missions:* While it is possible that proposed science may be achieved by another mission, there is no guarantee that another mission will do the science and cases with strong scientific merit should not be dismissed because another mission could perform the observation(s). Please refrain from limiting *Chandra's* access to that science.

## Distributed Peer Review Reports

Each Designated Reviewer must enter a written report into CDRS for each proposal assigned to them. The reports have a modest allowance of characters, the reports should refrain from summarizing the proposal but instead focus on the strengths and weaknesses that resulted in the score. **If your evaluation of a given scoring category falls below Fair**, please provide detailed and constructive feedback in your review report that would help improve that categorical area.

During the second round, other Designated Reviewers will be able to read reports and use them to reevaluate their original evaluation of a given proposal. Upon completion of the Peer Review, a concatenated report will be generated from all anonymized reports for a given proposal. The reports will be shared with the proposing team.

## Allocations

**Observing Time:** After allowing for observing efficiency, about 8-11 Msecs of GO observing time will be distributed among the topical area for possible award. The amount of time allotted to a specific topical area depends on the number and median observing time request of those GO (i.e., not including V/LPs) proposals to be reviewed by that topical area. Approximately 4 Ms is allocated to the BPP with a minimum of 1 Ms to VLPs.

**Slew Tax:** The time allocation of each panel will be increased by a fixed percentage in order to include a slew tax of 1.5 ks per 30ks of proposed exposure per target in the review. The exposure time charged to each target at the review will be increased by the resulting slew. Grid observations will be charged a lower slew tax as described in the CfP. The slew tax amount is calculated in and available for display from the panel software.

#### **Other Allocations:**

- RC
- TOO triggers for each (oversubscribed) response type
- time on each joint facility (if oversubscribed)
- time in future cycles (if oversubscribed)

## **Confidentiality, Conflict of Interest and Conduct at reviews**

Information in proposals and evaluations must be treated as confidential and not discussed with anyone outside of the CXC Peer Review Team before, during, or after the review. Following NASA's guidelines, a log will be kept of all conflicts of interest and their mitigation. Full details of conflict of interest rules and expectations for conduct at the review are given in the [CXC Code of Conduct](#).

## Miscellaneous

Members of the NASA Project Science team at MSFC, members of the CXC, and scientists at NASA HQ do not receive any guaranteed time for their participation in Chandra and must compete in the peer review. GTO teams may propose for observing time in the peer review, as described earlier in this document.