February 17, 1993

STAR Note 94
STAR Configuration Management Plan

Objectives

The use of a formal configuration management system will assist the STAR Project Management in achieving the detector performance requirements on schedule and at the lowest possible cost. Effective utilization of the STAR Detector Configuration Management Plan will ensure that all technical requirements are clearly defined, documented and controlled throughout the construction period. Following the Configuration Management Plan will provide a systematic review of all changes to assure that the impact of proposed changes on performance, cost, and schedule are identified and thoroughly evaluated prior to a decision to incorporate a change.

The functions of configuration management required to meet the above objectives include the primary tasks of configuration identification, configuration control (change control) and configuration status accounting.

Configuration Identification

Activities include the development, preparation and baselining of selected STAR technical documentation defining the evolving configuration of the STAR Detector. At the conclusion of STAR subsystem design reviews, selected technical documentation will be designated as part of the configuration baseline (i.e., Technical Baseline) and placed under formal configuration control. The principal technical baseline documents will be the STAR Parameters Notebook, and all engineering drawings and specifications related to the STAR baseline detector.

Configuration Control

Activities include the establishment of a configuration change control procedure and the processing of changes to the baseline through this procedure.

Configuration Status Accounting

Activities include the record–keeping and reporting function of configuration management to assure definition of "as designed" and records of the "as built" STAR Detector, subsystems and components.

Organization/Responsibilities

The responsibilities of DOE are delineated in DOE Order 4700.1 and the "Thresholds" stated in the Appendix L–1. The responsibilities of RHIC are delineated in the RHIC Project Management Plan.

The STAR Project Director is responsible for all aspects of the project including configuration management. The Project Director is responsible for the design, construction and commissioning of the detector, and for ensuring that the project design meets stated technical objectives within cost and schedule constraints.

The STAR Project Manager is responsible for the day–to–day administration of configuration management activities. These activities include: the development and maintenance of the baseline detector configuration, change controls, change documentation, status reporting, and distribution of technical documents.

The STAR Systems Integration Group is responsible for the creation and maintenance of subsystem envelope & interface drawings and overall detector system drawings (quadrant drwg. and 3–d model). Systems Integration, along with cognizant subsystem managers, is also responsible for determining the degree to which potential changes impact the detector baseline configuration. If the impact is anything other than insignificant, it is their responsibility to notify the Project Manager of the need to submit a change to the Change Control Board (CCB) for review.

The STAR CCB is identical to the STAR Technical Committee and is composed of a Chairman, permanent members, and advisors as follows:

Chairman: STAR Project Director

Members: STAR Collaboration Spokesperson
STAR Collaboration Deputy Co-Spokespeople
STAR Project Manager
Cognizant STAR Subsystem Managers

Advisors: STAR Systems Integration Group (MI, EI, FI)
STAR Safety Officer
STAR Environmental Health & Safety Coordinator
STAR Quality Assurance Coordinator
Others as appropriate

The CCB is responsible for evaluating all submitted configuration and parameter documents and providing a systematic review of all changes to assure that the impact of proposed changes on performance and scope, cost, and schedule are identified and thoroughly evaluated prior to a decision to incorporate a change.

The Project Manager, Systems Integration Group and each cognizant subsystem manager are responsible for the maintenance of relevant documentation, traceability, and control of approved changes in accordance with established procedures.

Configuration status accounting, including the maintenance of records of "as built" STAR Detector subsystems is the responsibility of the Project Manager, Systems Integration Group and each cognizant subsystem manager.

Configuration Identification

A limited set of "controlled documents" will provide the technical baseline of the STAR Detector. The baseline configurations for individual subsystems of the STAR Detector will be defined in the STAR Parameters Notebook, and by the subsystem design drawings and specifications. The baseline configurations of the subsystem interfaces and subsystem envelopes for STAR will be developed and maintained by the Systems Integration Group.

The approved technical baseline contained in these documents details performance criteria and design specifications for the detector and its subsystems. The technical baseline will mature as the project progresses through its various stages. It is established at the start of the project and is the basis for detailed engineering. At the completion of the design phase, the technical baseline will contain all of the drawings and specifications necessary for fabrication, assembly, construction, installation, and checkout of the project's equipment. The final technical baseline is fully defined only at the completion of construction.

The objective of the Parameters Notebook will be to provide a concise, accurate definition of the STAR Detector parameters. It is intended to keep the Parameters Notebook format reasonably flexible to accommodate the differing needs of each STAR subsystem.

The initial technical baseline is defined in the following:

Conceptual Design Report (CDR)

The Conceptual Design Report, issued June, 1992 represents the preliminary technical baseline.

Update to the CDR & Parameters Notebook

The Update to the CDR and the Parameters Notebook dated December 22, 1992, are based on the Conceptual Design Report, incorporating changes that were approved prior to the baseline Cost & Schedule review of January 1993.

The initial configuration of STAR, as contained in the documents discussed, has been approved as the initial technical baseline. It will be continuously updated reflecting the progress made in the design phase and will incorporate approved changes made during the design and construction phases.

The approved initial technical baseline documents are "Controlled Documents" and can be changed by action within the Change Control system.

Change Control

As the project progresses, the technical requirements will become better defined and technical changes may be required. A STAR Change Control Procedure has been developed which details procedures for a consistent method of review, approval, implementation, and reporting of technical changes. Evaluation of such changes will be made to assess their impact on all systems as well as upon detector performance parameters, project costs, and schedules.

Technical baseline design changes are processed through this controlled system in order to:

- Assure that baseline changes are defined, documented, and approved, and authority and responsibilities for such approval are defined.

- Provide assurance that decisions are made at the appropriate management level, and assure change accountability and traceability.

The STAR Change Control Procedure is reported in STAR Note 95.

Approvals

Changes which only impact the technical baseline documents (Parameters Notebook, drawings, specification, technical documents) but have no significant impact on the overall project scope, cost and schedule may be approved by the Change Control Board.

Changes which do have an impact on overall STAR project scope, cost, and schedule will require approval by the RHIC Project Head and, as necessary, forwarding to DOE for approval by Higher Authority in accordance with the Change Control Threshold Summary included in the STAR Management Plan.

Conformance and Verification

Each Subsystem Manager is responsible to STAR Management for ensuring that the design, specifications, and drawings for any component of the system conforms to the STAR technical baseline performance criteria, parameters and designs.

The cognizant subsystem manager is also responsible for ensuring that the latest approved drawings and specifications are used for construction, fabrication, and installation.

The cognizant subsystem manager will ensure that the "as built" element conforms to the design drawings and specifications through periodic inspection, and appropriate acceptance tests.

The Project Manager will maintain complete records of the final detector system as built.

The STAR Quality Assurance Program provides for development of procedures which will assist in verification of configuration conformance. It also provides for periodic audit of compliance with the established procedures and evaluation of their effectiveness.