

**U. S. Department Of Energy (DOE)  
Office Of Environmental Management (EM)  
Standing Operating Policies and Procedures (SOPP)**

Title: External Technical Reviews for the Environmental Management (EM) Program

EM ORG: EM-20 SOPP #: 26

Revision #: 0

Effective Date: April 1, 2008

1. **POLICY:** This policy has been developed to guide individuals and teams who will be involved in External Technical Reviews (ETR) of U.S. Department of Energy's Office of Environmental Management (EM) projects.
2. **OBJECTIVES:** The purpose of this procedure is to establish the Environmental Management Program's actions and responsibilities required to support the Department's External Technical Reviews process.
3. **CANCELLATIONS:** This SOPP does not cancel any previous SOPPs.
4. **APPLICABILITY:** The provisions of this procedure will apply to Program Offices, Site Offices, site contractors, and external technical review teams.
5. **REFERENCES:**
  - a. DOE Order 413.3A, Program and Project Management for Acquisition of Capital Assets, dated July 28, 2006.
  - b. DOE Manual 413.3-1, Section 9.5, Project Management for Acquisition of Capital Assets
  - c. External Technical Review Process Guide (Draft), dated March 2008
6. **CONTACT:** Mark Gilbertson, EM-20, Deputy Assistant Secretary for Engineering and Technology, (202)-586-0755, [mark.gilbertson@em.doe.gov](mailto:mark.gilbertson@em.doe.gov)
7. **DEFINITIONS:**
  - a. External Technical Review (ETR) – An ETR is an independent review focusing on technical scope and risk, with the goal of reducing technical risk and uncertainty. Issues such as technology development, systems integration, design, operations, maintenance, and nuclear safety should be reviewed to support critical and other project decisions. Cyber and physical security could also be reviewed, as needed. Personnel independent of the project team implementing the technical scope and external to the office responsible for the technical scope conduct the ETR.
    - i. The three main goals of an ETR are:
      - (1) To determine if the technology, process, system, or design under review will meet project objectives and requirements.
      - (2) To identify any issues preventing successful implementation of the technology, process, system, or design under review.
      - (3) To identify any issues or data needed to support critical or other project or program decisions.An ETR is not an External Independent Review (EIR), which are reviews of the project scope, cost, and schedule baseline required by DOE Order 413.3A.
  - b. Lines of Inquiry (LOI) – Key data/items related to the ETR objectives, which can be tailored to meet the specific scope of review.
8. **REQUIREMENTS:**
  - a. Charter – The ETR team shall prepare a charter that delineates the scope of the review, team membership, lines of inquiry, and the cost and schedule of the review. Figure 2 of the ETR guide provides a typical schedule timeline,

and Attachment C lays out a list of schedule activities. At a minimum, it should contain the elements listed in Attachment A of the ETR Guide.

- b. Final ETR Report – The ETR team shall prepare a final report that documents the observations and recommendations made by the team. See Section 3.3 and Attachment F of the ETR Guide for more details.
- c. Issue Response Plans – Following the completion of the ETR team report, the responsible field office shall prepare an Issue Response Plan that provides the action planned to address each team recommendation. See Section 3.3.4 and Attachment G of the ETR Guide for more details.
- d. Closeout Document – The field office shall issue a closeout document after all issues are resolved. See Section 3.3.5 of the ETR Guide for more details.
- e. No training is required to implement this SOPP.

**9. ROLES & RESPONSIBILITIES:**

- a. Team Leader: The team leader is selected by the Field Office, in consultation with EM-20, to organize and direct the conduct of the ETR. The specific duties are listed below:
  - i. Serve as the ETR Team primary point of contact.
  - ii. Develops the ETR Charter and lines of inquiry in partnership with the Team.
  - iii. Remain onsite as necessary during the entire review process, and actively participate in the process described in the Charter. This commitment includes development of written input, and participation in team meetings.
  - iv. Organize the team's work and make assignments to the Team Members ensuring that the required products are effectively delivered. Ensure that no single team member will be left to complete a disproportionate amount of work.
  - v. Review the ETR request to assure that specific topics or emphasis requested are properly understood and identified in the Charter. Obtain clarification from the requesting DOE official, as appropriate.
  - vi. Support Field Office with recommendations for members of the review team having expertise that is appropriate for the type of review and the project to be reviewed.
  - vii. Coordinate arrangements and agenda for review with the Field Office.
  - viii. Identify written materials to be provided to team members in advance of the onsite visit and required date by which these materials will be available.
  - ix. Accept requests for additional information from team members following initial review of materials provided in advance; communicate these requests to the Field Office; obtain agreement on time for responses to requests.
  - x. Conduct team conference calls approximately one week (or as needed) prior to onsite visit to confirm arrangements and to clarify questions and potential lines of inquiry among team members.
  - xi. Coordinate team's arrival. Identify required check-in at site security office and time and place for initial team meeting with project officials.
  - xii. Present initial briefing describing review team charge and review process to onsite project participants.
  - xiii. Participate as a subject-matter-expert as needed.
  - xiv. Require team members to provide summary statements of observations and significant concerns approximately one day before the planned exit briefing to allow team review and discussion.

- xv. Establish responsibilities among team members and timelines for completion of summaries and detailed write-ups supporting significant concerns and observations.
- xvi. Conduct and provide a copy of the exit brief for onsite project participants with support from team members as appropriate.
- xvii. Review and consolidate all Team comments to ensure consistency throughout the report.
- xviii. Provide a draft copy of the report to all members of the Review Team for final consensus on the content and to the Field Office for a review for factual accuracy of the observations included.
- xix. Incorporate team member comments as appropriate as the final authority on the report content. Correct errors in fact identified by the project team review. Since a significant level of effort may be required to incorporate comments, the Team Leader may task Team Members to rewrite their sections as appropriate.
- xx. Approve and issue the final report.
- b. Team Members: Team members are chosen by the Field Office to objectively review the technical scope, and identify issues within their specific expertise areas. If an ETR is significant in technical scope, team members may serve as focus area leads for sub-teams of reviewers. Team members' duties are listed below:
  - i. Ensure receipt and review of all advanced materials provided prior to site review and advise the Team Leader if additional information is needed.
  - ii. Conduct a thorough review of the document(s) and personnel interviews. Focus efforts on specified areas and responsibilities.
  - iii. Advise Team Leader of project personnel that Team Members will want to interview on site.
  - iv. Participate in pre-review conference calls and onsite interviews.
  - v. Remain onsite during the entire review process, as needed.
  - vi. Submit draft input in accordance with this guidance.
  - vii. Prepare questions resulting from review of advanced material received and provide to Team Leader in advance.
  - viii. Communicate directly with identified project participants to clarify understanding of material review and perceived omissions or deficiencies.
  - ix. Prepare written comments on a timely basis as required by the Review.
  - x. Ensure all comments are unclassified and coordinate their comments with an Authorized Derivative Classifier if there is a question.
  - xi. Review draft report to assure individual observations are accurately described and to identify possible conflicts with other observations.
- c. Remote Reviewers (if any):
  - i. The Remote Reviewer write-ups/concerns/questions (unclassified) must be provided to the Team Leader prior to the Kick-Off Meeting as outlined in the Review Schedule.
  - ii. Review draft report to assure individual observations are accurately described and to identify possible conflicts with other observations.
- d. Project Liaison: Project liaisons are assigned by the Field Office and act as a conduit for communication between the Field Office and the ETR team. Project Liaison's duties are listed below:
  - i. Serve as the project and site primary point of contact.

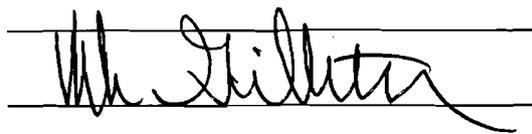
- ii. Coordinates with the Team Leader on arrangements, facilities and resources at the site for the review.
- iii. Coordinates the project's review of the ETR report.
- e. DOE EM-20: EM-20 directs the ETR process, and tracks technical issues resulting from the execution of the ETR. The division's duties and responsibilities are below:
  - i. Approves ETR requests.
  - ii. Approves the ETR Team charter and LOI.
  - iii. Consults with the field office regarding designation of team leader and team members.
  - iv. Works with the field office to ensure funding is sufficient for the ETR.
  - v. Assigns an ETR team sponsor from the EM-20 staff to coordinate activities between the ETR team and other the EM organizations (i.e. EM-10,50,60), track issues identified during the ETR, and to validate the closure of the Issue Response Plan. The sponsor may also be a member of the ETR Team.
  - vi. Reviews issue response plan.
  - vii. Tracks technical issues in Issue Response Plan.
- f. Field Offices:
  - i. Identify the need for ETRs.
  - ii. Identify review team leader and members.
  - iii. Approve Charter and submit to EM-20 for approval.
  - iv. Review Draft ETR report for factual accuracy.
  - v. Develop issue response plans, and address comments as needed.
  - vi. Prepare status reports, and route to EM-20.
  - vii. Resolve issues, and assemble draft closeout documents.
  - viii. Issue the final closeout document after EM-20 validation.
- g. Federal Project Directors:
  - i. Identify Need for ETRs.
  - ii. Work with Field Office elements, as needed, to accomplish Field Office responsibilities.

**10. PROCEDURES:** See attached flowchart.

**11. APPENDICES:**

- a. External Technical Review (ETR) Process Guide, with attachments:
  - i. ETR Charter
  - ii. ETR Suggested Lines of Inquiry
  - iii. Example Review Schedule
  - iv. ETR Kick-Off Meeting Agenda
  - v. ETR Close-Out Meeting Agenda
  - vi. ETR Report Format
  - vii. ETR Issue Response Plan

Approved by:



Signature:

Name & Title:

Mark Gilbertson, Deputy Assistant Secretary for Office of Engineering and Technology

Date:

April 3, 2008

## Attachment A, ETR Charter

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### OUTLINE:

- Title
- Introduction/ Background
- Scope of Review
- Team Membership
- Period of Performance
- Lines of Inquiry
- Approvals
- Attachment: List of initial information needed

### TITLE: <insert text>

*The title uniquely identifies the subject of the review. The subject may be the name of a project or technical issue. The title established in the Charter is retained for all other ETR deliverables. Further, attempts should be made to make the title unique and descriptive enough to facilitate ease of retrieval via key word search.*

### Example:

TITLE: External Technical Review – Demonstration Bulk Vitrification System

### INTRODUCTION/BACKGROUND

*The introduction/ background clearly and concisely state the following:*

- *the originator of the ETR request*
- *the organization accepting responsibility for completing the ETR*
- *a brief summary description of the project or technical issue being reviewed.*
- *Any other background material*
- *A statement on how the results of the ETR will be used*

### Example

As directed by the US Department of Energy, the Washington Savannah River Company (WSRC) is preparing to engage a team of independent technical reviewers to assess SRS consideration of alternatives and selection of preferred methods for disposition of the tetraphenylborate (TPB) contamination and restoration of Tank 48H to service.

## Attachment A, ETR Charter

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### SCOPE OF REVIEW

***The scope should describe the technical areas of the project or technical issues that will be reviewed. Additionally, provide explanation of any aspects of the project or technical issue that are notably excluded from the review.***

#### Example

The review will focus on these five primary technical subject areas:

- Mission Integration – This subject area review is intended to focus on the overall integration of the DBVS project into the Hanford Site’s mission supporting tank waste treatment. This part of the review scope is intended to focus on the flowdown of mission performance requirements that the DBVS project has been tasked to demonstrate.
- Flowsheet – This subject area review is intended to focus on the DBVS overall flowsheet. This review shall be limited to those systems that are specific to the internal boundaries of the DBVS project, and is not intended to include secondary support systems such as effluent treatment or utility supply. The need to extend the review to any of the secondary support systems will be evaluated on an individual basis as the need arises.
- Vitrification System – This subject area review is intended to focus on the design of the vitrification system, and shall include specific evaluations of the following areas:
  - o Testing and Scale-Up Program
  - o Waste Package and Glass Recipe Formulation
  - o Refractory and Container Design
- Primary Supporting Equipment – This subject area review is intended to focus on the design of the major supporting equipment needed to ensure functionality of the vitrification system, and shall include specific evaluation of the following areas:
  - o Feed Mixer and Dryer Equipment
  - o Off Gas Treatment Equipment
- Nuclear Safety and Operations – This subject area review is intended to focus on the ability of the system to meet nuclear safety and operational standards required for a RCRA permitted research and development pilot scale facility. This review shall include specific evaluation of the following areas:
  - o Nuclear Safety and Authorization Basis Requirements
  - o Operations and Maintenance Feasibility

## Attachment A, ETR Charter

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### **MEMBERSHIP**

*The Membership section contains details regarding the review team. Specifically, list each team member's name, subject area expertise and employment affiliation. Further, the list must clearly identify the designated Team Lead and Subteam leads, as needed.*

Example:

<b>Name</b>	<b>Subject Area Expertise</b>	<b>Company</b>
Person 1, Team Leader	Vitrification technology	DOE Office XYZ
Person 1	Chemistry	DOE Office XYZ
Person 2	Nuclear fuel and waste management	DOE Office XYZ
Person 3	Technology integration	XYZ Laboratory
Person 4	Requirements management	ABC Consulting

### **PERIOD OF PERFORMANCE**

*The period of performance provides estimated start and finish dates for the review. The start date is the expected date that the Kick Off meeting will be held. The finish date is the expected date for delivery of the final report. Other key intermediate milestones should also be included.*

Example

The ETR is expected to begin in May 2006 and be completed by the end of September 2006. The primary deliverable for this work will be a final report of ETR review activities and recommendations delivered no later than September 29, 2006.

### **LINES OF INQUIRY (LOIs)**

*The LOIs established by the Review Team to address the scope of the review.*

### **APPROVALS**

## Attachment B, ETR Suggested Lines of Inquiry

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The three key objectives of an ETR are:

1. To determine if the technology, process, system, or design under review will meet project objectives and requirements,
2. To identify any issues (showstoppers) preventing successful implementation of the technology, process, system, or design under review, and
3. To identify issues or data needed to support critical or other project or program decisions. These objectives should become the key lines of inquiry of the ETR, tailored to meet the specific scope of the review.

<b>Technical Scope Considerations</b>
<p><b>1. Have alternatives been identified and effectively evaluated?</b></p> <ul style="list-style-type: none"> <li>▪ Major alternatives have been identified and analysis of these alternatives is in the work scope of the conceptual design.</li> <li>▪ Alternative analysis includes comparisons of LCC, Feasibility (including technology development requirements), stakeholder values, safety, regulatory compliance, and other factors as appropriate.</li> <li>▪ The preferred alternative is identified and justified.</li> </ul>
<p><b>2. Are technical objectives well known and defined?</b></p> <ul style="list-style-type: none"> <li>▪ Functional and performance requirements for the project are documented, approved (by users, key stakeholders, and DOE program office as appropriate) and are under configuration control.</li> <li>▪ Trade-off studies are performed as needed to reach a reasonable level of project risk consistent with project phase and overall project cost/schedule.</li> <li>▪ The trade-off studies include alternative design and process control and optimization approaches with consideration of technical safety requirements.</li> </ul>
<p><b>3. Is technology development well planned and executed?</b></p> <ul style="list-style-type: none"> <li>▪ The technology development requirements for each alternative are identified and documented.</li> <li>▪ The maturity of new technology to be used on the project has been evaluated and factored into risk analysis.</li> <li>▪ New technology has been tested and determined to meet project objectives (technical, cost and schedule).</li> <li>▪ Simulation and/or mockup facilities are defined and established as necessary.</li> </ul>
<p><b>4. Are quality assurance and scientific investigation adequate?</b></p> <ul style="list-style-type: none"> <li>▪ Equipment and material needs for processing and production, including availability and reliability, are defined.</li> </ul>
<p><b>5. Are technical bases substantial and documented?</b></p> <ul style="list-style-type: none"> <li>▪ The design basis will be subject to peer review by appropriate technical experts.</li> </ul>

**Attachment C, Example Review Schedule**

**(Page 1 of 2)**

<b>Dates</b>	<b>Week</b>	<b>XYZ Recovery System External Technical Review (ETR)</b>
5/8 – 5/12		ETR Team Leader finalize and submit to Field Office complete ETR planning package, including review process, charter, proposed membership and tentative schedule
5/15 – 5/19		<ul style="list-style-type: none"> <li>– Field Office review, approve and submit the planning package to Program Office for review and approval</li> <li>– Program Office concur with charter and personnel selection</li> </ul>
5/22 – 5/26		<ul style="list-style-type: none"> <li>– ETR Team Leader let contracts for approved team members</li> <li>– Project submit proposed review package, for Program Office approval</li> </ul>
5/29 – 6/2 (Holiday week)		<ul style="list-style-type: none"> <li>– Project distribute review packages to review team members</li> <li>– Conference call with review team to resolve any outstanding questions</li> <li>– Finalize and issue agenda for kickoff meeting</li> <li>– Release members to travel</li> </ul>
6/5 – 6/8	1	<p><b>Review Team on site (T-F)</b></p> <ul style="list-style-type: none"> <li>– Kickoff Meeting</li> <li>– Technical briefings and tours</li> <li>– Agreement on scope, level of detail, sub-assignments and rough outline of report</li> <li>– Identification of any additional specialty skills required</li> </ul>
6/12 – 6/16	2	<ul style="list-style-type: none"> <li>– External technical review</li> <li>– Conference call meeting(s)</li> </ul>
6/19 – 6/23	3	<p><b>Team on site (M-F)</b></p> <ul style="list-style-type: none"> <li>– Continued reviews, discussions, interviews</li> <li>– Establish completeness and validity of prior XYZ Recovery System assessments and responses</li> <li>– Mid-point review with Project and DOE management</li> </ul>
6/26 – 6/30	4	<ul style="list-style-type: none"> <li>– External technical review</li> <li>– Conference call meeting(s)</li> </ul>
7/3 – 7/7 (Holiday week)	5	<ul style="list-style-type: none"> <li>– External technical review</li> <li>– Conference call meeting(s)</li> </ul>

**Attachment C, Example Review Schedule**  
**(Page 2 of 2)**

7/10 – 7/14	6	<b>Team on site (T-F)</b> <ul style="list-style-type: none"> <li>– Final discussions with Project, DOE, team interactions and determination of recommendations</li> </ul>
7/17-21	7	<ul style="list-style-type: none"> <li>– Conduct DOE EM-20 briefing</li> </ul>
		<ul style="list-style-type: none"> <li>– Close-Out Meeting</li> </ul>
		<b>Approve &amp; Issue Final Report</b>
7/24 – 7/28	8	<ul style="list-style-type: none"> <li>– Submit report draft material, as assigned</li> </ul>
7/31 – 8/3	9	<ul style="list-style-type: none"> <li>– Issue draft report for team review</li> </ul>
8/7-8/10	10	<ul style="list-style-type: none"> <li>– Team comments on draft</li> </ul>
8/14 – 8/18	11	<ul style="list-style-type: none"> <li>– Conference call meeting(s) to resolve open comments</li> </ul>
8/21 – 8/25	12	<ul style="list-style-type: none"> <li>– Incorporate all comment resolutions and prepare final report</li> </ul>
8/28 – 9/1	13	<ul style="list-style-type: none"> <li>– EM Management Briefing</li> <li>– Issue Final Report</li> </ul>

**Attachment D, ETR Kick-Off Meeting Agenda**

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<b>Topic</b>	<b>Presenter</b>
Review Team Introductions	Team Leader
Purpose of Review	Team Leader
Scope of Review	Team Leader
Review Process Overview	Team Leader
Field Office Introductions	Field Office Representative or Project Liaison
Technical Issue overview and status	Field Office Representative or Project Liaison
Site tour (as needed)	Field Office Representative or Project Liaison

**Attachment E, ETR Close-Out Meeting Agenda**

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<b>Topic</b>	<b>Presenter</b>
Purpose of Meeting	Team Leader
Presentation of technical issues <ul style="list-style-type: none"><li>▪ General Overview of Recommendations</li><li>▪ Area 1</li><li>▪ Area 2</li><li>▪ Conclusions</li></ul>	Team Leader Responsible Team Member Responsible Team Member Team Leader
Discussion	All
Path Forward for report issuance	Team Leader

## Attachment F, ETR Report Format

(Page 1 of 1)

### **REPORT CONTENT:**

#### **ACRONYMS**

#### **EXECUTIVE SUMMARY**

*Briefly state who requested the review, what organization was responsible for conducting the review, what project/technical scope was reviewed. Provide a summary table of the technical issues/recommendations identified during the review.*

#### **INTRODUCTION/BACKGROUND**

##### **Review Process**

*Provide an overview of the approach used to conduct the review. Reference planning documents.*

##### **Technical Scope Reviewed**

*Provide a detailed description of the technical scope that was reviewed*

*Provide the following for each technical issue identified during the review:*

- **Subject Area**  
*Identify the applicable subject area reviewed*
- **Condition at Review**  
*State the contributing factors that were observed during the review that lead to the identification of the technical Issue*
- **Technical Issue**  
*State the technical issue identified during the review.*
- **Recommendation**  
*State the review team's recommendation for addressing the identified technical issue.*
- **Benefit of Action**  
*State how the technical scope will be benefited by adequately addressing the identified technical issue.*

#### **RESULTS**

*Provide results and recommendations in summary narrative and in terms of the five observation categories listed in Table 4.*

#### **ATTACHMENTS**

*Include the following planning documents:*

- *References*
- *Charter*
- *Definitions*
- *Review Team biographies*

**Attachment G, ETR Issue Response Plan**

**(Page 1 of 1)**

<b>ID</b>	<b>Recommendation</b>	<b>Response</b>	<b>Action Office</b>	<b>Target Complete Date</b>
6-2	A program to investigate processes that will dissolve the material and could be processed through the Saltstone systems should be initiated to address the risk that the water and salt flushes are not sufficiently effective in achieving compliance with the TPD acceptance criterion established	Initiate pilot testing with surrogate material. (SST-GES-2006-00014)	Field Office	mm/dd/yy

**ID**

*Provide a unique identifier for each recommendation to be addressed by the issue response plan. Use the same identifiers as established in the External Technical Review report.*

**Recommendation**

*Provide a descriptive statement for each recommendation to be addressed by the issue response plan. Recommendations listed in the issue response plan are those identified in the External Technical Review Report.*

**Response**

*Indicate the identified actions to be taken to address the recommendation. If the response to the recommendation is provided in a separate report, the report may be referenced here.*

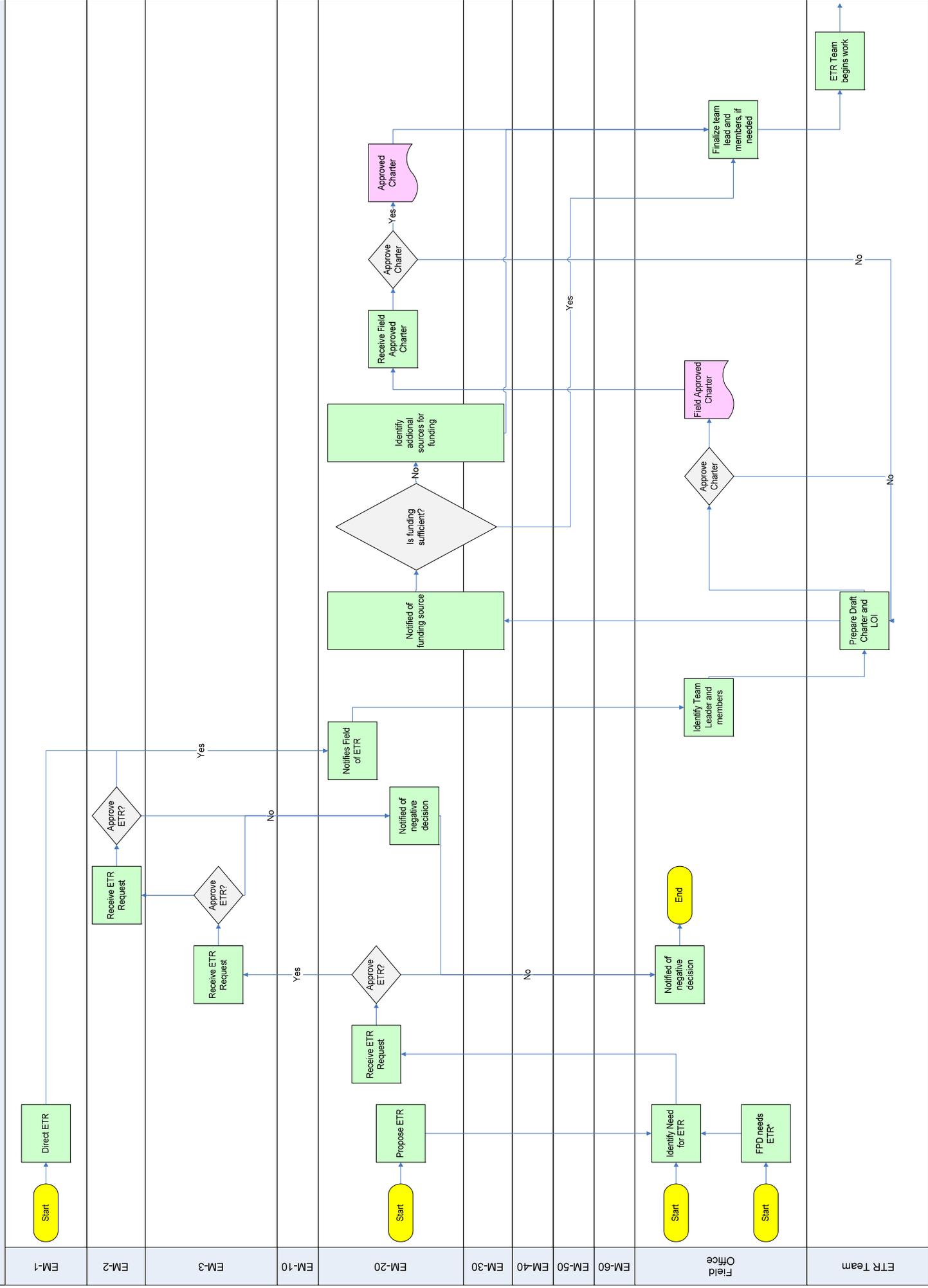
**Action Office**

*Indicate which office (i.e., Field Office, EM-20, etc.) has responsibility for responding to the recommendation and ensuring actions are completed to address the recommendation.*

**Target Complete Date**

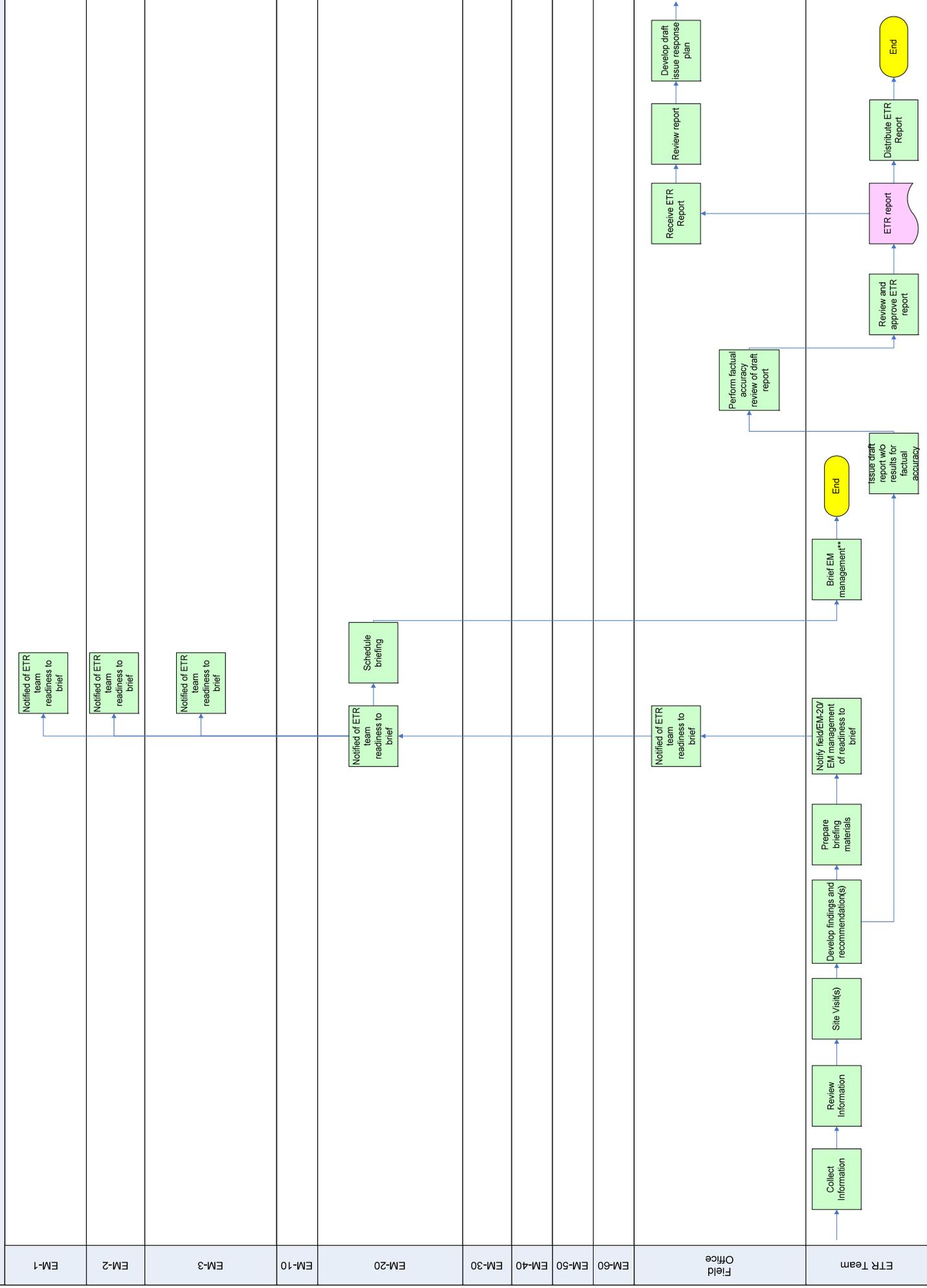
*Provide the expected data by which the identified response actions will be completed.*

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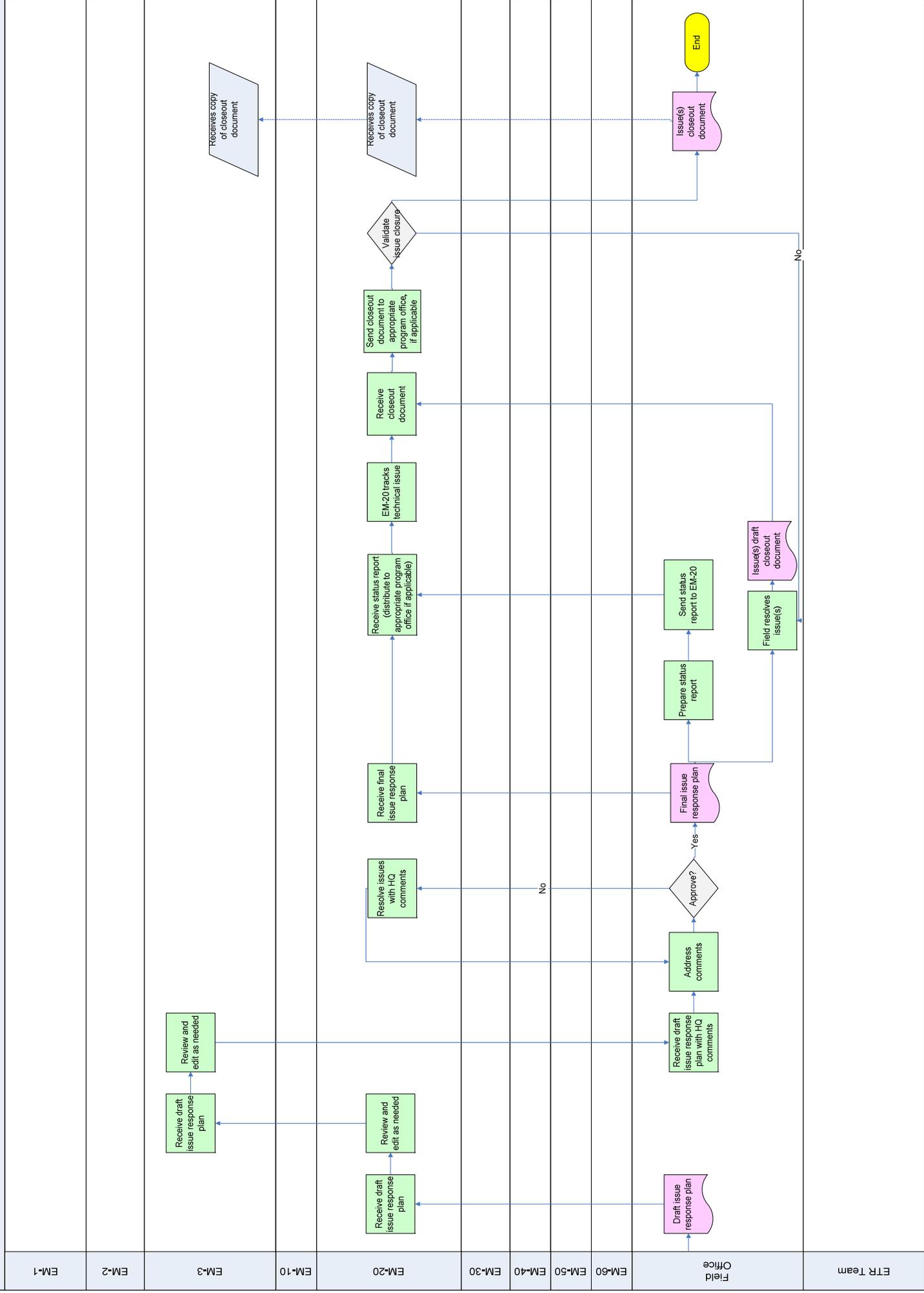
\* ETR needed to support CD process.  
 \*\* Briefing will be held before final report is issued.

Standing Operating Policies and Procedures (SOPP) – External Technical Reviews (ETR)



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