# 809 How to conduct an EMI investigation

**Title:** 809 How to conduct an EMI investigation.

**Type:** ☒ Skill  X Knowledge

**Performance Objective:** Trainee will be able to:

- Plan an EMI investigation taking into account the objectives and physical and chemical soil properties present.
- Understand the differences between horizontal and vertical dipole modes and select the proper mode for the investigation.
- Design the investigation based on information needed and constraints of the site.
- Complete groundtruthing adequate for the information needed.
- Understand the effects of interferences that may be present at any given site and be able to adapt to them.

**Target Proficiency:**

- ☐ Awareness  X Understanding  ☐ Perform with Supervision
- ☐ Apply Independently  ☐ Proficiency, can teach others

**Trainer Preparation:**

- Trainer should be familiar with the assigned reading/review material in the lesson plan that follows.
- Must be knowledgeable about EMI systems and theory.
- Have local EMI investigation reports available for use as examples, or have future project in mind that may benefit from an EMI investigation.

**Special Requirements:**

Initiate an external learning request with a SF-182 in Aglearn for this activity. Instructions and a template are located on the training webpages for OJT modules.

**Prerequisite Modules:**

None

**Notes:**

None

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**Approved by:**

Shawn McVey
The Five-Step OJT Cycle for **Declarative** Training
(Knowledge)

- **Cycle Step 1**
  - Trainer/Trainee establish shared mental model

- **Cycle Step 2**
  - Trainee reviews materials provided

- **Cycle Step 3**
  - Trainer and Trainee discuss information

- **Cycle Step 4**
  - Trainer observes Trainee perform task and provides feedback

- **Cycle Step 5**
  - Trainer/Trainee debrief
### OJT Module Lesson

**Title:** 809 How to conduct an EMI investigation.

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<thead>
<tr>
<th>WHAT</th>
<th>WHY, WHEN, WHERE, HOW, SAFETY, QUALITY</th>
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<tbody>
<tr>
<td>Cycle step 1</td>
<td>Trainer and trainee review objectives of module.</td>
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| Cycle step 2 | Trainer and trainee read or review the attached:  
- How to Conduct an EMI Investigation.pdf |
| Cycle step 3 | Trainer leads the following discussions: |
| 1. Planning the investigation |  
- Objectives of the investigation  
- Physical and chemical soil property, soil moisture, and soil geomorphology influence on planning an investigation  
- Archaeological objectives and how they influence planning an investigation |
| 2. Depth of soil penetration |  
- When to use either or both of horizontal and vertical dipole modes. |
| 3. Designing the field survey |  
- Grids  
- Line spacing  
- Land cover and land use influences |
| 4. Ground truthing EMI results |  
- Applying to observed patterns  
- Utilizing geo-referenced points for observation |
| 5. Dealing with Interferences |  
- Electrical interference  
- Cultural noise  
- Conductivity anomalies |
| Cycle step 4 | Trainer should provide an existing local EMI investigation plan (and report) or if not available, reference a future MLRA project that may benefit from an EMI investigation. Review the example and ask the trainee to plan an investigation addressing all points discussed in Cycle step 3. |
| Cycle step 5 | Trainer can debrief trainee and address any concerns. |
OJT Module Lesson Measurement of Learning

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<td>Trainee's learning is measured.</td>
<td>ASAP, have the trainee develop a plan for a scheduled EMI investigation.</td>
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**SF-182**

Trainee and/or supervisor access Aglearn to verify completion of the module via its SF-182.