Chapter 1 – INTRODUCTION

The purpose of this document is to provide guidelines for the collection and analysis of data to assess camouflage effectiveness in the visible spectrum. The following guidelines are based on the experience of NATO RTO Task Group SCI-095 on "Enhancement of Camouflage Assessment Techniques" (SCI-095) and have provided useful results. These guidelines can be adapted to meet the circumstances of a specific assessment.

The typical measure of effectiveness for a camouflage system is target detectability in a tactical situation. There are a number of technical parameters describing the physical characteristics of a camouflage material, such as color values, transmission, radar absorption, etc. These parameters can be measured in a laboratory using standardized procedures and apparatus and can provide some indication of field performance. However, there is no laboratory or other readily available measurements for detectability. In fact, the finding of NATO Workshop SCI-012 was that "At the present time, man-in-the-loop assessment is the only robust and effective method to evaluate [camouflage detectability]" [1]. Any such evaluation is complicated by the fact that many factors such as illumination, location, and seemingly random occurrences affect camouflage detection. To reduce the influence of these factors, the camouflage assessments are preferably done in a relative way (one or several camouflaged targets versus an uncamouflaged reference target) rather than in an absolute way (detection distance for this kind of target under these conditions).

Thus, in practice, the measure of effectiveness for camouflage, namely its detectability, is almost always evaluated by a number of observers, either in the field or in so-called photosimulations. The first part of a photosimulation records the field trial situation in imagery. These images are shown in a second step to observers in a laboratory setup.

A complete assessment involves the following steps, which are illustrated in Figure 1:

- Aim of the assessment (Which questions need to be answered?) (Chapter 2);
- Planning and implementing the field trial (Chapter 3);
- Use of field observers and/or collection of imagery (Chapters 4 and 5);
- Photosimulation Experiments (Chapters 5 and 6); and
- Statistical analysis of data (Chapter 7).

The advantages of photosimulation as opposed to a live observer trial are as follows:

- Ability to create a larger statistical data base;
- Field imagery sequence collected under one set of environmental conditions;
- The same imagery is viewed by all observers;
- Decreased cost compared to observer field trials;
- Less time spent in the field collecting data; and
- Experiment can be conducted at multiple locations, using different observer pools, with the same input imagery under controlled laboratory conditions.

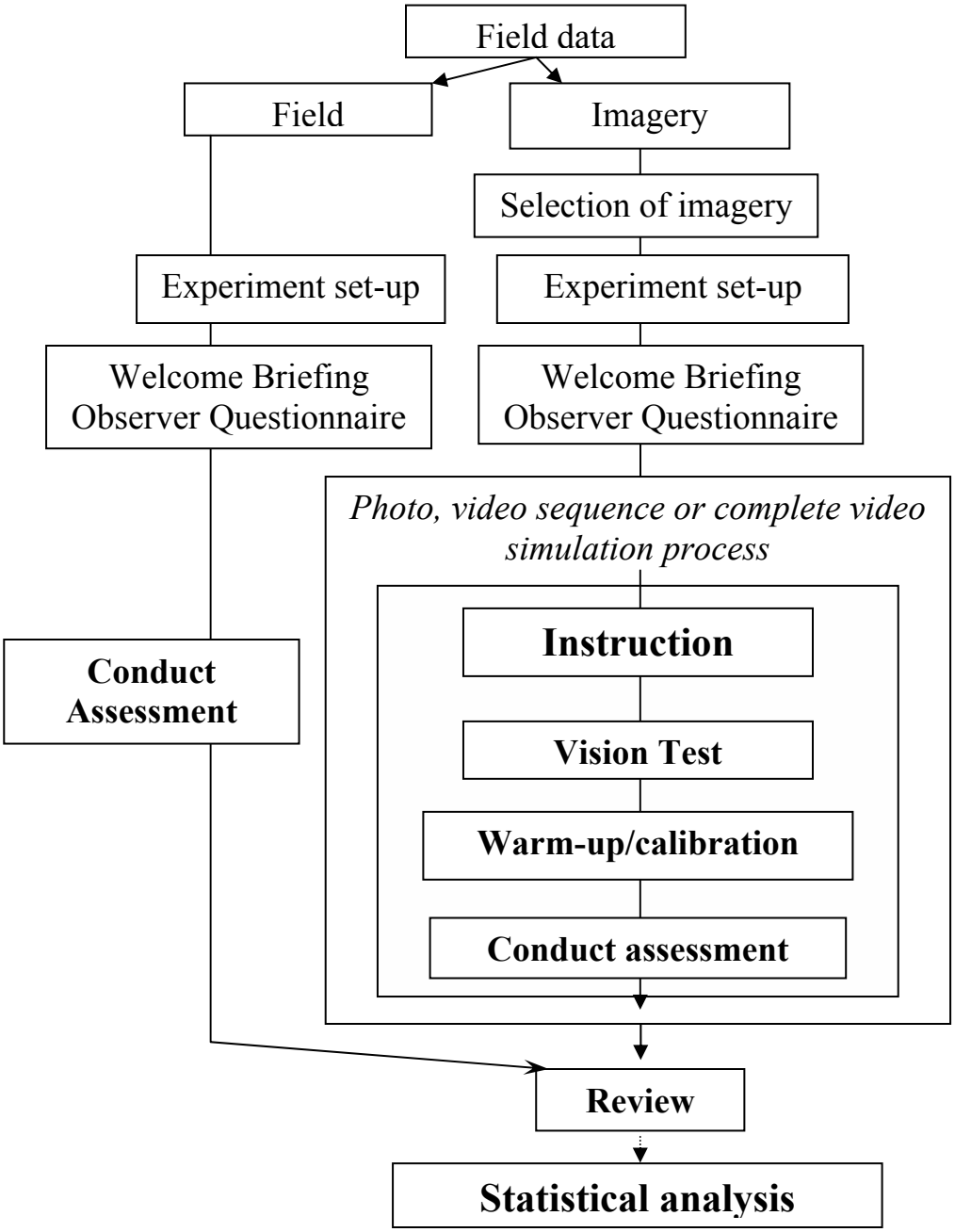

Figure 1: Flow Chart for Assessment.