

Chapter 2 – DESIGN OF ASSESSMENT

In military operations, the conditions present when an observation (detection) opportunity occurs are highly variable and generally unpredictable. As such, to obtain a true appreciation of the relative detectability of different camouflage treatments, one should deliberately vary conditions (backgrounds, observers, time of day, visibility, etc.) between detection trials and merge results to obtain an overall appreciation of average detectability. Irrespective of the number of different conditions selected to be used in the trials, the same set of conditions should be used with each camouflage treatment being evaluated. The variables relevant to the aim of the assessment are listed in accordance with their roles.

Dependent variables:

- Detection range;
- Recognition range; and
- Identification range.

Independent variables (controlled systematically on more than one level):

- Camouflage measure. Deterministic, several levels (e.g. three types of camouflage nets and no camouflage measure at all);
- Background. Deterministic, e.g. two levels (coniferous and deciduous);
- Time of the day. Deterministic, e.g. two levels (morning and afternoon); and
- Background section. Stochastic, one level for each target (the background section is nested within the background).

Fixed variables (kept constant on one level):

- Time of the year;
- Target vehicle. One specific type of vehicle;
- Direction of observation;
- Instruction of observers;
- Detection means. Eye observation only (sensor);
- Placing of targets within background section;
- Geographical area; and
- Weather (visibility greater than 4 km).

Randomized variables:

- Other weather conditions, especially illumination;
- Observers;
- Observation technique;
- Observation time; and
- Error of measurement.

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The objective of such an assessment is to provide information for the evaluation and comparison of several camouflage measures against specific backgrounds. Typically, one or more camouflaged targets and one uncamouflaged target are compared. Due to the fact that the different parts of even apparently homogeneous backgrounds may influence the detectability of the targets differently, each of the targets must be displayed against each of the background sections within a given background. The observations against one combination of the targets and background sections within a given background are called a sub trial.

For each subtrial, we will have a sequence of imagery collections or a number of field observations. The observations will be performed by observers walking, being driven/flowed down an observation path perpendicular to the background, approximately South to North. Imagery collection will follow the same path. The weather should be stable and preferably dry and clear, which is considered under most circumstances to represent a worst-case situation for camouflaged targets.

A minimum of 15 – 20 observers is recommended for good statistical sensitivity for a detection experiment, which is of primary interest in camouflage assessment. If the purpose of the test is recognition or identification, a larger number of observers is recommended, dependent on the difficulty of the task. The military target detection training/experience level of the observers may have little effect on detection, but may have a significant impact on the results of a recognition/identification test.