

EXECUTIVE SUMMARY

This first volume of the Accreditation Support Package (ASP-I) is designed to provide a potential user with a characterization of the current status of the subject model with respect to criteria related to its general acceptability for use. The information presented in this volume should characterize the model well enough to provide an initial determination of its suitability for a particular application. It should also provide confidence that the model is well enough managed and supported to yield consistent results across its spectrum of users and applications. The information provided to characterize the subject model consists of the following elements.

- a. A description of the configuration management baseline for the model, including version history, current version status, model development policy (including beta site provisions), documentation availability, and a summary of configuration management policies, procedures, guidelines and support functions in place for the model;
- b. A summary of implicit and explicit assumptions and limitations inherent in the model because of its design and/or coding assumptions or structure, as well as any implied constraints to the use of the model that are a consequence of these assumptions or structures. A listing of known errors or anomalies found as a result of prior V&V efforts is also included;
- c. A review of the model's development, verification and validation (V&V) and usage histories, as well as a summary of prior accreditations;
- d. A review of the status of model documentation and its conformity to accepted software documentation standards, as well a review of documentation with respect to verification requirements, and;
- e. A summary of overall software quality as characterized by conformance to accepted design and coding practices.

ASP-I provides the details of these information elements in a single document. The degree to which each information element is complete and current provides a general indication of whether the model is suitable for further consideration for use in a particular application.

The CM Baseline described in Section 2 of COVART

covers twenty-five years of development history leading up to the current version, which is 4.1. Planned upgrades for version 4.2 are described along with deficiencies reported on prior versions. Model management and configuration control board (CCB) personnel are identified and a schedule for the current CM cycle is also provided. Users may submit deficiency reports via a number of channels for review by the model manager, who maintains documentation of their status and provides information about them to the CCB during its review process. Changes precipitate new versions on a quasi-annual basis, depending upon levels of effort required for their accomplishment and documentation. The software and associated manuals are available from the SURVIAC.

The Summary of Assumptions, Limitations, and Errors (SALE) provided in Section 3 covers the penetration equations, the FASTGEN target database and associated shotlines, threat selection, fragments and vulnerable areas common to all model uses. Factors specific to each of the input files normally used are also described along with known errors and their implications.

The V&V Status and Usage History described in Section 4 summarizes activities performed by various users and DoD agencies for a wide array of acquisition and evaluation programs. While formal documentation of these seems difficult to obtain, there is evidence of prior accreditations by Army, Navy, contractor, and joint service agencies. Various versions of COVART have been in use since 1965. The Joint Technical Coordinating Group for Munitions Effectiveness (JTTCG/ME) produced the first official version in 1973 and it has been modified and enhanced numerous times since then. Portions of the code have been verified by the developer and though the penetration equations have never been formally validated, they have been widely used over the past 30 years. COVART is certainly the most used vulnerability analysis tool available.

The Documentation Assessment Report (DAR) provides an assessment of the single volume of COVART documentation available with respect to standards that call for four types of manuals (i.e., User, Analyst, Programmer, and Software Design). The COVART User's Manual provides much of the information desired, but several areas were deemed incomplete. While there is no Programmer's Manual for COVART, some of the desired information is covered in the User's Manual and this condition also holds for the Analyst's Manual. Like many programs with long development histories that pre-date rigorous software development standards, a Software Design Document has never been produced. Recommended improvements to the documentation are also provided in this section.

The Software Quality Assessment (SQA) presented in Section 6 examined four measures in the evaluation of the code:

1. Use of standards (e.g. ANSI and/or JTTCG/AS),
2. Programming conventions,
3. Computational efficiency, and
4. Maintainability

COVART 4.1 code is of good quality and received a score slightly below the middle of the fully compliant range. Weaker areas were use of standards and programming conventions, but the score for computational efficiency (97.5%) was nearly perfect. The score for maintainability was lower due to difficulties associated with routine traceability. While strict ANSI compliance tests yielded several warnings, the code was successfully compiled on 16-bit, 32-bit, and 64-bit test machines without error. Users planning to modify COVART for a particular application should be aware that it is a large program consisting of two main and 223 subroutine modules.