

A REVIEW OF THE RESPONSE TO POINTS CONTAINED IN ASAP 1970 SUMMER STUDY -
MILITARY TECHNOLOGY OF THE 1980 DECADE (U)

1. BACKGROUND.

During the period 13-24 July 1970, members of the Army Scientific Advisory Panel, under the chairmanship of Dr. Harold M. Agnew, met at the Army War College, Carlisle, Pa., to review the technology base of the Land Combat System-I (LCS-I) study. This long range study was undertaken in 1968 to develop a concept for the Army in the field for the 1990 decade. The purpose of the study was to formulate goals and policies to provide a basis for research and exploratory development, and guidance for doctrinal, materiel, and organizational studies in the combat development process. The basic approach was to develop conceptual solutions to future Army problems based on projected threat environments and future technologies. As an intermediate step three alternative conceptual designs for a land combat system were developed and from these a subsequent design has been developed and is currently in the final stages of publication. The ASAP 1970 review of this study occurred at about mid-point when the three alternative conceptual designs were being completed.

The overall objective of the ASAP review of the study was to insure that the technologies and conceptual systems adequately represented those which, if supported, could be applied to Army operations in the 1990s. More specific objectives were to review the materiel concepts developed at that time for completeness and technical credibility and to suggest other exploitable principles/systems concepts which would warrant further effort in this study. In addition, more general aspects of the study were evaluated including the overall study approach, the development of technological projections, environmental forecasting, and the development of conceptual designs. The report on the 1970 ASAP study was published by OCRD in January 1971.

Following publication of the ASAP report, a committee was formed by the Army advanced concepts organizations (ACO) responsible for the LCS-I study to recommend the actions to be taken on the ASAP recommendations. An oral report on these actions was given to the ASAP meeting held during October 1970. This paper provides a status update and indicates the major actions that have now been completed in the final LCS-I study and those which have been deferred.

2. STATUS OF RESPONSES TO ASAP COMMENTS.

2.1 The LCS-I Approach

2.1.1 The Advanced Concepts Organizations (ACO) fulfill an essential role in the Army planning process and the LCS-I type study should be continued as a permanent part of Army planning. . . . the LCS-I approach can be improved in several important areas . . . - The ACO still exist and LCS-I has continued. The effort on LCS-I during 1971 and 1972 was much lower than that being used at the time of the ASAP review in 1970.

2.1.2 The LCS-I study is most important but its schedule is too long and drawn out. - The validity of this conclusion was accepted by the ACO. The initial effort involved the development of a new study process and the study group has been unable to complete it more quickly. Future studies of this type will be completed within a much shorter time period- perhaps two-three years.

2.1.3 The basic study approach obscures the essential perspective of what is really worth doing. - This issue was thoroughly discussed and it was concluded that a fundamental reorientation of the study would prolong its completion to an unacceptable extent. By command decision, therefore, the basic approach was continued but a sharper focus on selected and fundamental Army problems was emphasized in developing the final DELTA Design.

2.1.4 Conceptual design teams appeared to emphasize organization at the expense of combat capability. - This tendency was recognized and corrected in the development of the final design, called DELTA.

2.1.5 The benefits of identifying the key unknowns in interesting materiel systems is likely to be equally important to the development of preferred conceptual designs. - These unknowns are now discussed in some detail in each of the descriptions of proposed materiel systems included in the LCS-I report. They provide a guide for increased emphasis in the R&D program.

2.1.6 Technical advances and new concepts by other services, other countries, and industry should be more fully emphasized. - A substantial effort was made in this area and the results are reflected in the final product. There was some difficulty, however, in obtaining this information quickly although a start was made in building up a data base.

2.1.7 Greater emphasis should be given to the possibility of increased Army involvement in control of civil disturbances. - The DELTA Design gives special attention to this area including conceptual materiel systems of the less-than-lethal type.

2.1.8 Careful examination should be given to enhancing the capabilities of the individual soldier. - This aspect was, in fact, borne in mind and is reflected in numerous aspects in the DELTA Design. A basic objective was to provide substantially improved weapons and equipments so that greater force capability with reduced manpower levels would be available within projected dollar constraints. A special study of the individual soldier's combat effectiveness per se, however, was not carried out.

2.2 Compendium of Plausible Materiel Options (CPMO)

2.2.1 Much of the CPMO is extremely conservative, especially when viewed in the context of the Army in the 1990s. There is a need for continuous updating and dialogue between the technologist and those concerned with military operations. - The materiel concepts after the CPMO for the final LCS-I land combat system design continued to be conservative. However, the dialogue between the technologist and those developing the operational concept was improved. A feedback process between the two was introduced which resulted in an updating of the new conceptual materiel systems before final acceptance for the LCS-I study.

2.2.2 Many of the CPMO Materiel Summary Sheets provide inadequate descriptions of materiel concepts. - The descriptions of new materiel concepts developed after the CPMO and the ASAP 1970 study represent a considerable improvement over the items in the CPMO in terms of the quality and quantity of the technical descriptions. Moreover, these latter materiel concepts were staffed throughout the Army Materiel Command to ensure completeness and agreement on technical projections.

2.2.3 There should be a more direct and selective approach to determining the more critical deficiencies in Army capabilities as compared to the morphologic approach in the initial CPMO. - In response to this recommendation, the approach to developing new materiel concepts was changed to respond directly to one of filling specific operational needs as they were surfaced during the development of the final (DELTA) operational concept.

2.2.4 The CPMO should contain items specifically designed for use by Allies not able to provide such materiel for themselves. - Due to manpower and time constraints, this recommendation was deferred to any follow-on action after LCS-I.

2.2.5 Each system in the CPMO should include treatment of the trade-offs between complexity, cost, and performance of the system. - Trade-offs of this nature are included in the more recent conceptual materiel systems although it has not been possible to develop families of such systems based on parameter curves, as illustrated in the ASAP report.

2.2.6 Modern computerized preliminary design models should be used to accomplish designs rapidly and consistently. - It has not been possible as yet to carry out this recommendation.

2.3 Firepower

Numerous valuable recommendations were made regarding individual fire-power items in the CPMO. These are too numerous to report on individually in this summary. Each recommendation was carefully considered and appropriate action taken, in virtually all instances. Selected examples follow:

2.3.1 Bombs and missiles that hit the target . . . should be exploited in many applications. Specifically, terminal guidance in antitank warfare should be actively considered. - These new developments employing LASER guidance and dual mode seeker capabilities were emphasized as a result of this recommendation and had a major influence on the DELTA Design. A highlight of the concept is the anticipated improvements in antitank defense and the consequent freeing of the tank from this role for use primarily in offensive operations. LCS-I seeks a lightweight (25-35 ton) high agility tank which will depend more on maneuverability and the good tactical use of terrain than on heavy armor protection.

2.3.2 Greater emphasis should be placed on the use of PSYOP in firepower functions. - PSYOP operations of all types were not addressed in LCS-I to permit the necessary focus on other areas.

2.3.3 Large numbers of light assault weapons (LAW) might be distributed to Army Reservists throughout the NATO countries as part of a proliferation and defense in depth concept. - This suggestion was considered and found to need considerable study and analysis of political and other factors and consequently was not included in LCS-I. However, a somewhat similar concept of proliferated antitank weapons among rear area US troops in Europe recently has been examined.

2.3.4 There is a need to recognize the main existing combat capability gaps and develop solutions. A major example of the response to this suggestion has been the development in the concept of a counter-maneuver force to achieve substantial degradation of enemy movement. A countermaneuver battalion has been conceived that would have the ability, with supporting artillery fires, to rapidly emplace barriers of advanced types of mines including FASCAM to counter both ground vehicles and low-flying aircraft and to be controlled from a command post.

2.4 Mobility

2.4.1 Consideration should be given to specialized vehicles that are terrain-independent rather than all-purpose ground vehicles. - This was

considered in conjunction with AMCA and it was concluded that it would be all around more cost effective in difficult terrain to rely basically for rapid tactical movement on airmobile operations. Consequently, the DELTA Design requires appropriate aircraft for moving combat troops and supplies. Ground vehicles, except for the high agility tank and a rough terrain transporter which would be new, would be inherited from the Army of the late 1980s. For European operations in particular, a fleet of commercial-type vehicles is proposed.

2.4.2 The vehicles shown in the CPMO should be reworked to eliminate inconsistencies. - No further work has been carried out on the vehicles contained in the CPMO as they were superseded in the DELTA Design by the vehicles mentioned in the preceding paragraph.

2.4.3 The Army should take the lead in organizing a single national effort leading to development of automated traffic control/collision avoidance systems for high density dispersed departure/destination aircraft. - In partial fulfillment of this recommendation the DELATA Design includes a conceptual system for airspace control by the Army over the divisional area which would be integrated with the USAF system over other combat zone areas. This system is an integral part of a conceptual system for automated navigation position location and reporting.

2.4.4 Alternative vehicle design concepts for the CHARLIE ACD should be developed which provide similar capability without reliance on air cushion operation. - The advanced air mobility concept in this ACD, based on an air cushion vehicle was not carried forward into the DELTA Design. Consequently, no requirement now exists for this vehicle in LCS-I.

2.4.5 There should be a concept for optimized prepositioning of certain forces/vehicles for use in Europe and for air/sea rapid deployment in other potential conflict areas. - This concept is included in the DELTA Design but it does not include special vehicles for remote area use.

2.4.6 Army aircraft survivability needs to be improved through technology and tactics. - This issue was addressed primarily in terms of the suppression of enemy air defense weapons and the need to render infrared seeking missiles ineffective. Certain tactical concepts are included which would minimize exposure to enemy fires and maximize protection by escorting aerial attack aircraft and supporting artillery fires.

2.5 Command, Control, Communications and Intelligence

2.5.1 A larger role should be allocated to sensors and IBCS. - A major operational capability objective in LCS-I is to establish and maintain under all conditions a near real-time integrated battlefield control system. This system comprises seven subsystems: An intelligence subsystem, tactical position location system, automated air defense fire control, tactical fire direction system, an automated logistics control

system, an operations subsystem for force control, and a commanders integrating subsystem for selectively extracting and displaying data from the other systems.

2.5.2 Battlefield sensors hold great promise.- These devices have been fully incorporated as far as technological projections permit in the concept of intelligence and target acquisition and the counter-maneuver barrier concept.

2.5.3 Emphasis should be given to navigation and position location, enemy emitter locations, real-time intelligence, and aircraft identification. - All of these areas have been included under a system for navigation and position location and the IBCS, and the ASA function.

2.5.4 Field experimentation, CPX exercises, and war gaming might be undertaken to develop a basis for quantifying some of the contributions of the C3&I processes to overall combat effectiveness. - This was considered a valuable suggestion but it has not been possible as yet to include it as a part of LCS-I. However, MASSTER has conducted several experiments in this area.

2.6 Conflict Situations and Army Tasks 1985-1990 (CSAT 90s)

2.6.1 The CSAT 90s study was excellent but it has apparently not been fully utilized in the preparation of the three ACDs. - This observation lead to greater emphasis in the use of the CSAT for the preparation of the DELTA Design. The lack of hard intelligence on potential threat sources continues to be a problem.

2.6.2 A number of valuable suggestions were made for the improvement of future iterations of the CSAT portion of the study. There has not yet been a second cycle of the CSAT.

3. SUMMARY.

Altogether, the 1970 ASAP Summer Study was extremely helpful to ACO for its many suggestions in all areas relating to LCS-I in particular and long range conceptual studies in general. These have been incorporated insofar as has been possible and those which have been deferred will be borne in mind during the planning and execution of any follow-on actions.