STRUCTURED ANALYSIS/DESIGN

LSA TASK 302
SUPPORT SYSTEM ALTERNATIVES

SUBTASK 302.2.5
SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

APJ 966-237

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This report consolidates the Structured Analysis and Structured Design for the Logistic Support Analysis (LSA) Tasks. Included are the Data Flow Diagrams (DFDs) for the LSA Subtask 302.2.5, "Support System Alternative Risk Analysis", with the corresponding descriptions of the processes, data flows, data stores, and external entities identified on each DFD. The DFDs are further developed into procedures which identifies how to use the data to carry out the processes and accomplish the LSA Subtask. Venture Evaluation Review Technique (VERT) Batch Input files are also provided to assist, as tools, giving both technical and managerial aspects of a task.

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APJ 966-237

STRUCTURED ANALYSIS/DESIGN

LSA TASK 302

SUPPORT SYSTEM ALTERNATIVES

LSA SUBTASK 302.2.5

SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

under

CONTRACT DAAA21-86-D-0025

for

HQ US AMCCOM

INTEGRATED LOGISTIC SUPPORT OFFICE
AMSMC-LSP
ROCK ISLAND, IL

by

AMERICAN POWER JET COMPANY

RIDGEFIELD, NJ — ARLINGTON, VA

WILLIAMSBURG, VA — ST. LOUIS, MO

FEBRUARY 1991

FOREWORD

APJ, under contract to HQs, AMCCOM, has initiated the automation of the LSA Tasks (MIL-STD-1388-1) and the assessment of the ILS elements (AR 700-127). A major goal is to unify military and contractor approach to the performance of ILS and LSA.

Detailed to meet all requirements of ILS and LSA, the automated process will continue to provide the flexibility in selecting tasks and elements to be addressed at each life cycle stage. A major advantage of this approach is to insure that the application of each task element is consistent with prescribed Army policies and procedures.

This report consolidates the Structured Analysis and Structured Design under one cover for the respective LSA Task. Structured Analysis provides a logical model of the method to perform an LSA Task. This logical model facilitates the development of a Structured Design that provides the detailed procedures to perform the analysis. Both the logical model and detailed procedures are used to develop the application software programs which will be provided to Government and contractor personnel to assist in the performance of the LSA Task.

Included in this report are the Data Flow Diagrams (DFDs) for LSA Subtask 302.2.5, "Support System Alternative Risk Analysis" and the corresponding descriptions of the processes, data flows, data stores, and external entities identified on each DFD (Annex B). In addition, the DFDs are further developed into step-by-step procedures (Annex C) which identify how to use the data to carry out the processes which ultimately lead to accomplishing the LSA Subtask.

To assist managers in planning and controlling this task, Venture Evaluation Review Technique (VERT) Batch Input files are provided (Annex D). These VERT tools provide government agencies with complete packages to give contractors that cover both technical and managerial aspects of a task. This approach establishes a standardized form of communication and management between contractors performing the task and government personnel reviewing the task.

To view this work in context, this report also presents a brief overview of Structured Analysis and its place in the overall systems development process. Additionally, Annex E provides a brief working description of Structured Systems Analysis fundamentals. The overview and certain portions of the introductory text are repeated verbatim in every report in this series so that each report is free standing.

EXECUTIVE SUMMARY

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LSA SUBTASK 302.2.5
SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

The American Power Jet Company (APJ) is under contract to the Army Armament Munitions and Chemical Command (AMCCOM) to provide "how to" procedures for selected ILS and LSA tasks. The results of this effort are a series of Structured System Analysis and Structured System Design reports.

The intent of this work is to be compatible with CALS, LOGPARS, and other similar efforts to enhance performance, training, and automation. Our basic structure facilitates the downstream application of Artificial Intelligence and streamlining of these critical functions.

STRUCTURED SYSTEM ANALYSIS

Excelerator, a Computer Aided Software Engineering (CASE) tool, was used to prepare the Structured System Analysis. Each LSA Task is modeled by a series of Data Flow Diagrams (DFDs), depicting activities and accompanying data flows needed to produce intermediate or final products. Complex activities are "broken down" or "exploded" into lower level data flow diagrams.

Each DFD can contain four types of objects:

- **Processes** or activities
- **Data Flows** - inputs to a process or data output generated from a process
- **Data Stores** - identifies sources for the data
- **External Entities** - indicates who to contact for guidance.

Each object is described either by developing detailed procedures or identifying its data content. The object descriptions are placed in a Data Dictionary which is built-up as the Data Flow Diagrams are expanded, detailed, and eventually completed.

STRUCTURED SYSTEM DESIGN

The Structured Design amplifies the processes and data flows developed in the Structured Analysis into procedures used to accomplish the LSA Tasks and Subtasks. The Analysis provides the method and the Design implements it.

In addition to the narrative portions of the Structured Design, "Input Screens" are developed for each process or set of processes. The charts structure and organize the data needed to perform a LSA task and make decisions on Weapon System supportability. By formalizing the data requirements in this manner, a standard set of output reports can be specified.

AUTOMATION

The Structured Design material can of course be used in a manual fashion. However, automation of the task achieves several objectives:

The analyst performing the LSA Task is taken through a series of automated steps leading to a successful result. More time is spent actually doing the work instead of determining what must be done next. Help is available at every step to guide the analyst through the task.

The information is organized so that productivity improves because more time is spent gathering, analyzing, and interpreting the data instead of tedious record keeping.

All data is structured and stored by the software so it can be easily retrieved, edited, and added to.

Output reports are standardized through a report generation facility using preprogrammed report formats. Efficiency improves since the analyst is relieved of the burden of writing and formatting reports. Decision makers receive reports in familiar formats so the most significant sections can be quickly found.

A large volume of data will be captured and stored over a period of time, creating a large "knowledge base". This knowledge base provides a body of procedures, sources, data, and lessons learned for an analyst to query and apply against a new or update analysis effort. This available information forms the of basis an Artificial Intelligence (AI) expert system.

Automation of selected LSA subtasks are being prototyped to demonstrate the principles involved and gain user experience. Although fully general, all prototypes are designed for ready development and adaptation to specific weapon systems.

LSA SUBTASK 302.2.5 DESCRIPTION

To place this LSA Subtask in context, it is one of 5 subtasks of LSA Task 302, "Support System Alternatives", and address the risk associated with the support system alternatives. Input for this subtask comes from LSA Tasks 205 and 301 as well as the previous subtask of 302.

The approach for this subtask is to develcp the pool of data needed for the risk analysis. This pool of data covers all potential new system/equipment, as well as the current system/ equipment and all potential system support concepts. Based on performance, operational, economic, schedule, and readiness factors, each major ILS element is assessed. The selected alternative support concept is applied to the selected new system/equipment to determine shortcomings within the overall logistic structure of the Army or for adverse effects to the development program. These shortcomings are further delineated to the specific ILS subelement affected. The potential of changes to either the support concept or the new system/ equipment are then investigated and the risks assessed against the possibility of not achieving the desired changes.

The results of this subtask feed LSA Task 303.

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LIST OF FIGURES

INTRODUCTION

PURPOSE

The purpose of this report series is to present the results of the APJ Structured Analysis/Design under Contract DAAA21-86-D-0025 for coordination with the AMCCOM Program Manager prior to in-depth programming of ILS and LSA functions and processes. LSA Task 302 "Support System Alternatives", (LSA Subtask 302.2.5, "Support System Alternative Risk Analysis") is addressed in this report.

BACKGROUND

The Department of the Army has a requirement for management control over contractor and Government agency response to the requirements of AR 700-127, "Integrated Logistic Support", and MIL-STD-1388-1, "Logistic Support Analysis". HQs AMCCOM has initiated action to structure each of the LSA tasks, the assessment of each ILS element, the form of the results, and the detailed processes to insure consistency with current Army policies, procedures, and techniques.

This approach (undertaken by AMCCOM and APJ) will insure uniformity in efforts and products, reproducibility of analyses, and a well-defined structure which can be coordinated among all participants in the logistic process to arrive at common understanding and procedures.

SCOPE

This report summarizes the results of the Structured Analysis of the identification of LSA Task 302, "Support System Alternatives", LSA Subtask 302.2.5, "Support System Alternative Risk Analysis", and presents the associated Data Flow Diagrams (DFDs) developed from the Structured Analysis and the corresponding procedures developed in the Structured Design. The portions of the Data Dictionary relating to the DFDs for this LSA Subtask include the labels, names, descriptions, processes, data flows, data stores, and external entities. (The Data Dictionary is a "living document" that evolves through the analysis and design process).

The Data Dictionaries developed for each of the individual LSA Subtasks are integrated together into a Master Data Dictionary. Integration of the individual Data Dictionary involves the combination of similar Data Flows, Data Stores, and External Entities. The resulting Master Data Dictionary may well contain some minor differences from the definitions that appear in this report. All processes, and of course, the content of the Structured Design will remain identical.

The Structured Design portion of this report develops the processes and data flows developed in the DFDs into procedures which are used to accomplish the LSA Tasks. The DFDs provide the method and the Design implements it, by formulating a guide for programmers to write software applications.

This report presents a brief overview of Structured Analysis and its place in the overall systems design process to assist the reader who may not be fully briefed on the symbols and conventions used. It is supported by Annex E, which defines each element in Structured Analysis.

LSA SUBTASK 302.2.5 - Description

The major goal of Task 302 is to establish viable support system alternatives for further evaluation, trade-off analyses in Task 303, and determine the best support system for the selected new system/equipment.

The goal of Subtask 302.2.5 is to identify those risks associated with each support system alternative formulated relative to each potential selection of the new system/ equipment. The major inputs consist of the supportability and supportability-related design factors from Task 205 and the functional requirements identification from Task 301.

The approach for this subtask is to develop the pool of data needed for the risk analysis. This pool of data covers all potential new system/equipment, as well as the current system/ equipment and all potential system support concepts. Based on performance, operational, economic, schedule, and readiness factors, each major ILS element is assessed. The selected alternative support concept is applied to the selected new system/equipment to determine shortcomings within the overall logistic structure of the Army or for adverse effects to the development program. These shortcomings are further delineated to the specific ILS subelement affected. The potential of changes to either the support concept or the new system/equipment are then investigated and the risks assessed against the possibility of not achieving the desired changes.

The final product of this subtask will be a series of recommendations to the PM/ILSMT for their ultimate decision on those support concepts which are acceptable, i.e., permits new system/equipment to meet threshold requirements, rejects as unsatisfactory, acceptances with recognized penalties and potential changes in support concepts based on the risk analysis.

The LSA Task Description with associated task inputs and outputs is extracted from MIL-STD-1388-1A and is included as Annex A.

APPROACH

The APJ approach to Structured Analysis and Structured Design of an LSA Subtask is:

1. Scope the Subtask defined in MIL-STD-1388-1A with the overall task and determine its relationship with other LSA Tasks.

2. Review all pertinent documentation (e.g., ARs, MIL-STDs, etc.) applicable to the specific topic.

3. Prepare the Top Level DFDs in context of the Subtask, and develop lower level DFDs to further quantify any complex process identified in the top level DFD.

4. Complete the Data Dictionary portion of the Analysis by describing all processes, data flows, data stores and external entities.

5. Apply staff experience in logistic support analysis to assure that the topic has been exhaustively addressed.

6. From the completed DFDs, prepare the step-by-step procedures that form the structured design.

7. Review Data Item Description and other applicable material to develop output reports.

8. If required, revise DFDs and Data Dictionary based on preparation of detailed procedures.

9. Validate results in discussions with Army activities and personnel directly involved in the applicable or related LSA tasks.

NOTE: Structured Analysis and preparation of Data Flow Diagrams (DFDs) was further assisted by the application of Structured Analysis software. Licensed by Index Technology Corporation, Excelerator provides for automated tracking of names, labels, descriptions, multiple levels of detail in the data flow diagrams, and industry standards in symbols and diagramming practices.

LSA SUBTASK 302.2.5 - SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

The Data Flow Diagram is a tool that shows the flow of data, (i.e., data flows from sources) and is processed by activities to produce intermediate or final products.

The DFD provides a useful and meaningful partitioning of a system from the viewpoint of identification and separation of all functions, actions, or processes so that each can be introduced, changed, added, or deleted with minimal disruption of the overall program, i.e., it emphasizes the underlying concept of modularity and identifiable transformations of data into actionable products.

A series of four (4) DFDs have been developed to structure the LSA subtask relative to operations and other support functions:

1.	302.2.5	Risk Analysis Overview
2.	302.2.5.3A	Qualify/Quantify Appropriate ILS Elements
3.	302.2.5.4A	Risk Analysis of Alternative System Support Concept
4.	302.2.5.5A	Risk Analysis Related to Cost, Performance, and Schedule Requirements

Each DFD is keyed to the specific task through the identification number assigned in the lower right hand box. The Alpha codes indicate the level of indenture or explosion below the top level, i.e.,:

Top Level.....LSA DFD 302.2.5
First Indenture.....LSA DFD 302.2.5.3A

Each DFD makes reference to the basic LSA task it addresses, as well as the level of indenture (explosion) of the DFD. For example, the first or top level DFD, "302.2.5", refers to the section in MIL-STD-1388-1A which describes the review items. One of the processes (bubbles) on the top level diagram (302.2.5) is expanded and identified as "302.2.5.3A", a second level of "302.2.5" (Alpha "A" indicates the second level).

Four standard symbols are used in the drawing of a DFD (see Annex E - Figure 1).

A copy of each DFD is presented in Annex B, accompanied by the Data Dictionary process elements. Each entry made in the DFDs has a corresponding entry in the Data Dictionary.

This presents only those Data Dictionary entries necessary for the coordination of the overall concept and details of the processes. To facilitate review of the diagrams, data flow identifications, process, an data store descriptions are provided.

As noted above, they will continue to evolve and be expanded in the System Design phase.

VERT DIAGRAMS

The Venture Evaluation Review Technique (VERT) was developed as a network analysis technique to facilitate management decision making. It allows systematic planning and control of programs and enables managers to find solutions to real life managerial problems. The VERT Diagrams and Input Files for this task can be found in Annex D. In order to understand how these Input Files were developed, a brief discussion of the methodology used is provided. The explanation is repeated verbatim in every report.

ANNEX A

LSA TASK 302
SUPPORT SYSTEM ALTERNATIVE

ANNEX A
LSA TASK 302
SUPPORT SYSTEM ALTERNATIVE 1/

302.1 **PURPOSE** To establish viable support system alternatives for the new system/equipment for evaluation, trade-off analysis, and determination of the best system for development.

302.2.5 Identify risks associated with each support system alternative formulated.

302.3 **TASK INPUT**

302.3.1 Delivery identification of any data item required

302.3.2 Functional requirements for system/equipment alternatives under considerations from Task 301.

302.3.3 Supportability and supportability related design constraints for the new system/equipment from Task 205.

302.3.4 Description of new system/equipment alternatives under consideration.

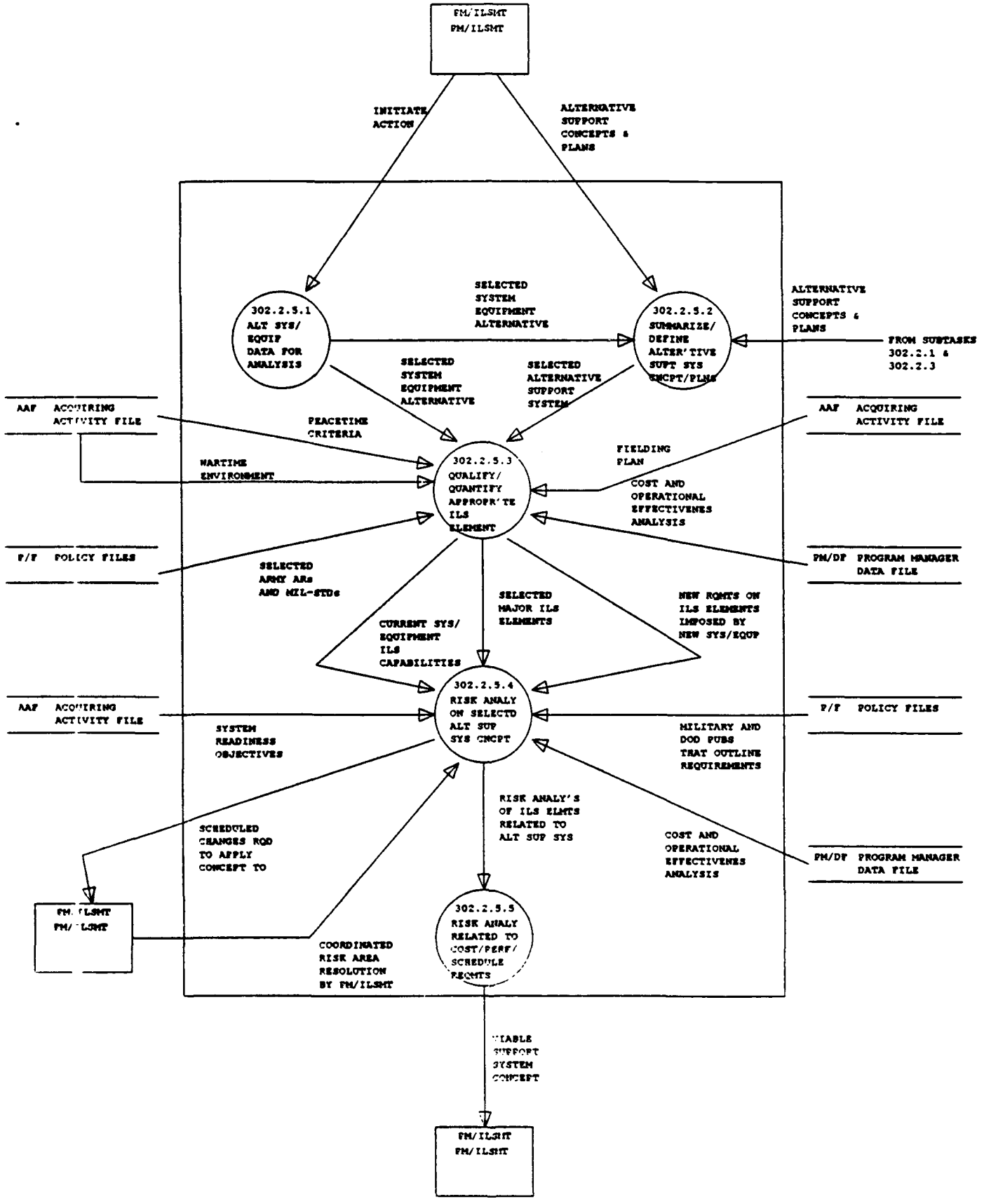
302.4 **TASK OUTPUT**

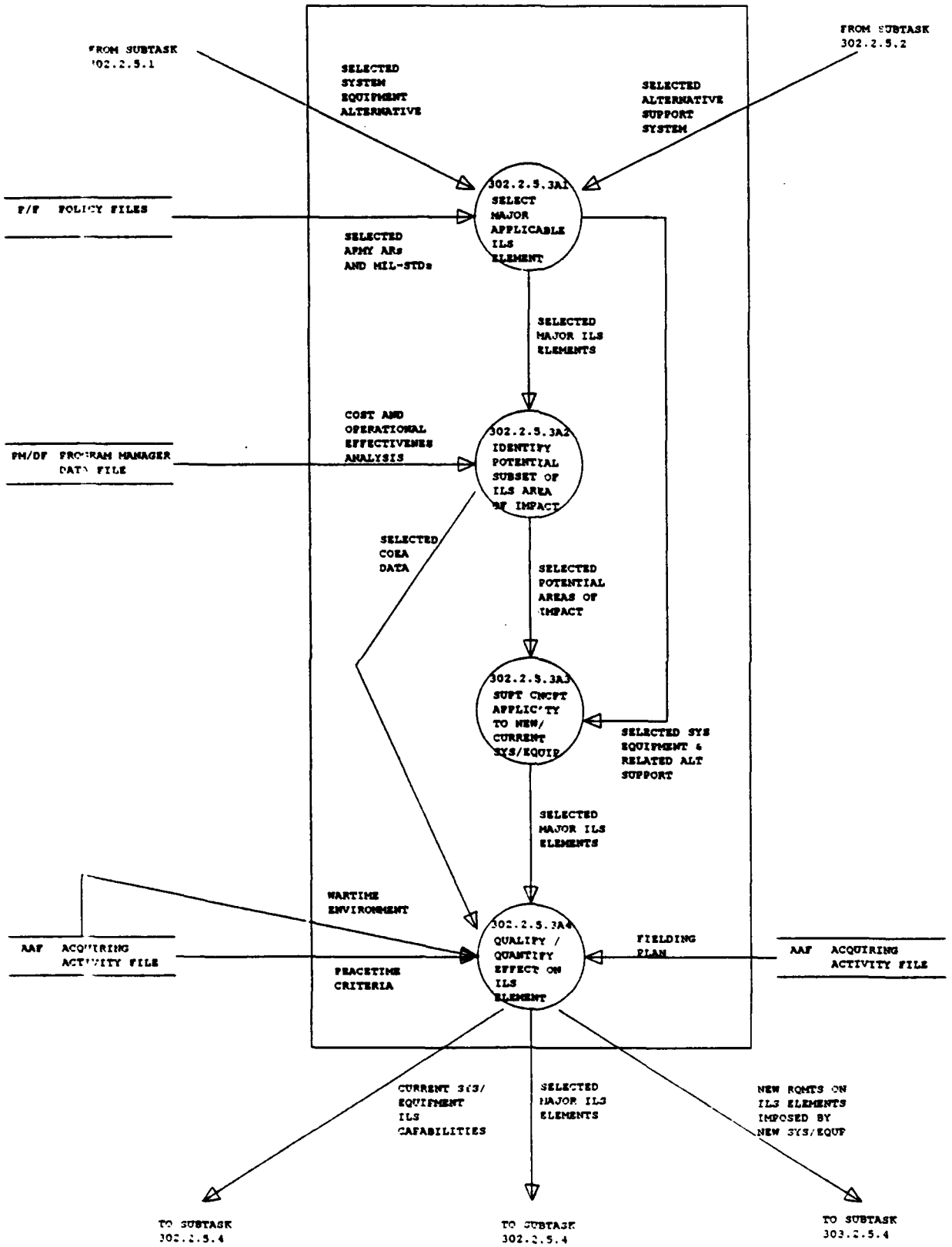
302.4.5 Risks associated with each support system alternative formulated. (302.2.5)

1/ Abstracted verbatim from MIL-STD-1388-1A, April 11, 1983, Pages 34 and 35.

ANNEX B

SUBTASK 302.2.5
SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS
DATA FLOW DIAGRAMS AND PROCESS DATA DICTIONARY


PM/ILSMT
PM/ILSMT
INITIATE ACTION
ALTERNATIVE SUPPORT CONCEPTS & PLANS
302.2.5.1 ALT SYS/ EQUIP DATA FOR ANALYSIS
SELECTED SYSTEM EQUIPMENT ALTERNATIVE
302.2.5.2 SUMMARIZE/ DEFINE ALTER'TIVE SUPT SYS CNCPT/PLNS
ALTERNATIVE SUPPORT CONCEPTS & PLANS
FROM SUBTASKS 302.2.1 & 302.2.3
SELECTED SYSTEM EQUIPMENT ALTERNATIVE
SELECTED ALTERNATIVE SUPPORT SYSTEM
AAF ACQUIRING ACTIVITY FILE
PEACETIME CRITERIA
AAF ACQUIRING ACTIVITY FILE
WARTIME ENVIRONMENT
FIELDING PLAN
302.2.5.3 QUALIFY/ QUANTIFY APPROPR'TE ILS ELEMENT
COST AND OPERATIONAL EFFECTIVENES ANALYSIS
F/F POLICY FILES
SELECTED ARMY ARs AND MIL-STDs
PM/DF PROGRAM MANAGER DATA FILE
CURRENT SYS/ EQUIPMENT ILS CAPABILITIES
SELECTED MAJOR ILS ELEMENTS
NEW RQMTS ON ILS ELEMENTS IMPOSED BY NEW SYS/EQUP
AAF ACQUIRING ACTIVITY FILE
302.2.5.4 RISK ANALY ON SELECTD ALT SUP SYS CNCPT
F/F POLICY FILES
SYSTEM READINESS OBJECTIVES
MILITARY AND DOD PUBS THAT OUTLINE REQUIREMENTS
RISK ANALY'S OF ILS ELMTS RELATED TO ALT SUP SYS
SCHEDULED CHANGES RQD TO APPLY CONCEPT TO
COST AND OPERATIONAL EFFECTIVENES ANALYSIS
PM/DF PROGRAM MANAGER DATA FILE
PM/ILSMT PM/ILSMT
302.2.5.5 RISK ANALY RELATED TO COST/PERF/ SCHEDULE RQMTS
COORDINATED RISK AREA RESOLUTION BY PM/ILSMT
VIABLE SUPPORT SYSTEM CONCEPT
PM/ILSMT PM/ILSMT
302.2.5
Created by: JMC
Revised by: chau
Date changed: 13-FEB-91


FROM SUBTASK
302.2.5.1
SELECTED
SYSTEM
EQUIPMENT
ALTERNATIVE
FROM SUBTASK
302.2.5.2
SELECTED
ALTERNATIVE
SUPPORT
SYSTEM
302.2.5.3A1
SELECT
MAJOR
APPLICABLE
ILS
ELEMENT
P/F POLICY FILES
SELECTED
ARMY ARs
AND MIL-STDs
SELECTED
MAJOR ILS
ELEMENTS
COST AND
OPERATIONAL
EFFECTIVENESS
ANALYSIS
302.2.5.3A2
IDENTIFY
POTENTIAL
SUBSET OF
ILS AREA
OF IMPACT
PM/DF PROGRAM MANAGER
DATA FILE
SELECTED
COEA
DATA
SELECTED
POTENTIAL
AREAS OF
IMPACT
302.2.5.3A3
SUPT CNCPT
APPLIC'TY
TO NEW/
CURRENT
SYS/EQUIP
SELECTED SYS
EQUIPMENT &
RELATED ALT
SUPPORT
SELECTED
MAJOR ILS
ELEMENTS
WARTIME
ENVIRONMENT
AAF ACQUIRING
ACTIVITY FILE
302.2.5.3A4
QUALIFY /
QUANTIFY
EFFECT ON
ILS
ELEMENT
FIELDING
PLAN
AAF ACQUIRING
ACTIVITY FILE
PEACETIME
CRITERIA
CURRENT SYS/
EQUIPMENT
ILS
CAPABILITIES
SELECTED
MAJOR ILS
ELEMENTS
NEW RQMTS ON
ILS ELEMENTS
IMPOSED BY
NEW SYS/EQUP
TO SUBTASK
302.2.5.4
TO SUBTASK
302.2.5.4
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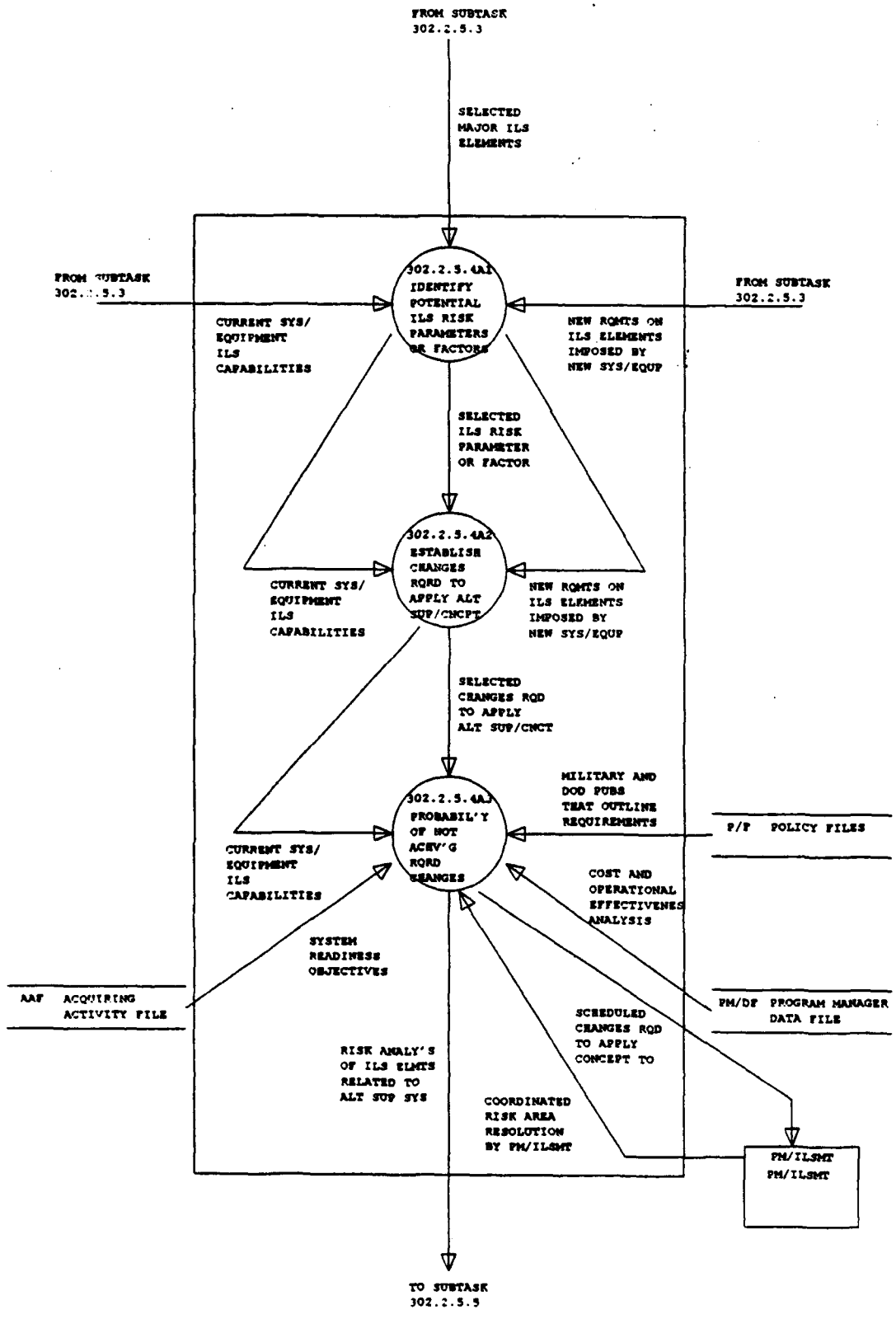
303.2.5.4
302.2.5.3A
Created by: JMC
Revised by: chau
Date changed: 13-FEB-91



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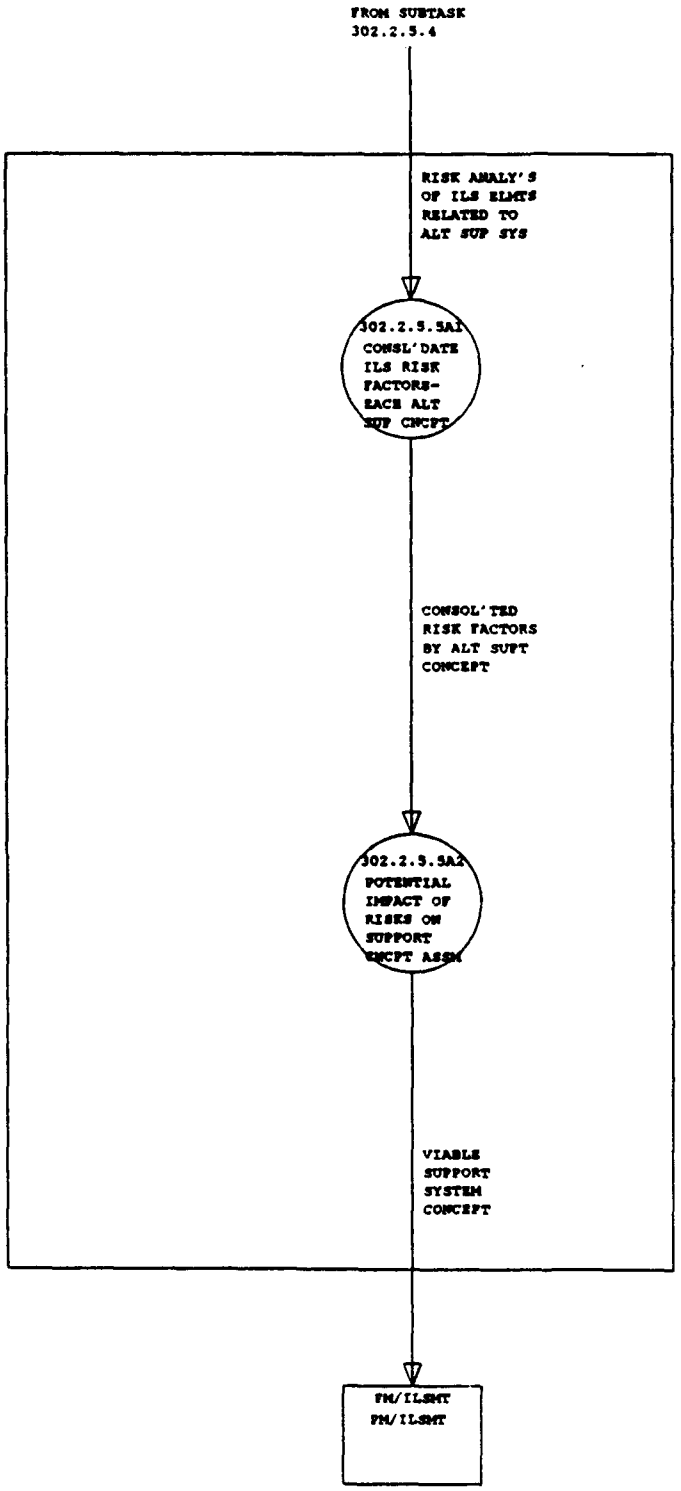


302.2.5.5A Created by: JMC Revised by: chau Date changed: 13-FEB-91

	Name	Label	Description
	302.2.5.1	ALT SYS/ EQUIP DATA FOR ANALYSIS	POOL OF NEW SYSTEM/EQUIPMENT AND THEIR POTENTIAL ALTERNATIVES WHICH MAY BE SELECTED AS A RESULT OF THIS ANALYSIS TO SATISFY THE REQUIREMENTS OF THE PM/ILSMT TO MEET THE NEW OR CHANGED THREAT. THESE ALTERNATIVES ARE PROVIDED TO THE LOGISTICIAN BY THE PM AND/OR ILSMT.
	302.2.5.2	SUMMARIZE/ DEFINE ALTER'TIVE SUPT SYS CNCPT/PLNS	FOR THE ALTERNATIVE NEW SYSTEM/EQUIPMENT SELECTED FOR THIS ITERATION OF THE SUBTASK, IDENTIFY, SUMMARIZE, AND DEFINITIZE THE APLICABLE ALTERNATIVE SUPPORT SYSTEM CONCEPTS AND PLANS AS DEVELOPED IN SUBTASKS 302.2.1 AND 302.2.3.
	302.2.5.3	QUALIFY/ QUANTIFY APPROPR'TE ILS ELEMENT	PURPOSE: IDENTIFY ALL ILS ELEMENTS WHICH MAY BE AFFECTED BY THE NEW SUPPORT SYSTEM CONCEPT, OR WILL IMPACT THE EXISTING SUPPORT SYSTEM. DESCRIBE AND QUANTIFY THE EXISTING ILS ELEMENTS WITHIN THE EXISTING U.S. MILITARY ENVIRONMENT. ADDRESS BOTH PEACETIME AND WARTIME ENVIRONMENTS UNDER ALL CONDITIONS WHICH MAY BE ENCOUUNTERED BY THE NEW SYSTEM/EQUIPMENT AND ITS SUPPORT SYSTEM. QUANTIFY AND/OR QUALIFY EACH ILS ELEMENT WHICH IMPACTS (OR IS IMPACTED BY) THE SELECTED ALTERNATIVE SUPPORT SYSTEM CONCEPT AS IT APPLIES TO THE SELECTED NEW SYSTEM/EQUIPMENT ALTERNATIVE. A MAJOR AREA OF CONCERN IS THE ABILITY OF THE SELECTED SUPPORT SYSTEM CONCEPT TO PROVIDE THE SUPPORT REQUIRED BY THE SELECTED NEW SYSTEM/EQUIPMENT TO MAINTAIN AT LEAST THRESH HOLD REQUIREMENTS IN PERFORMANCE, COST AND SCHEDULING UNDER CONDITIONS DESCRIBED IN AR 700-127, MIL-STD-210A AND MIL-STD-810, WITH PARTICULAR REFERENCE TO THE LIMITS OF EACH ENVIRONMENT TO WHICH ARMY MATERIEL MAY BE EXPOSED. SOURCES: 1. AR 700-127 "INTEGRATED LOGISTICS SUPPORT" 2. MIL-STD-210A "CLIMATIC EXTREMES FOR MILITARY EQUIPMENT" 3. MIL-STD-810 "ENVIRONMENTAL TEST METHODS & ENGINEERING GUIDELINES" 4. AR 700-9 "POLICIES OF THE ARMY LOGISTIC SYSTEM" 5. COST AND OPERATIONAL-EFFECTIVENESS ANALYSIS (COEA)

Name	Label	Description
302.2.5.3A1	SELECT MAJOR APPLICABLE ILS ELEMENT	PROCESS: IN ACCORDANCE WITH AR 700-127 DATED 1 MARCH 1988, A TOTAL OF 15 MAJOR ILS ELEMENTS ARE TO BE ADDRESSED IN THIS ANALYSIS. 1. DESIGN INFLUENCE 2. MAINTENANCE PLANNING 3. MANPOWER & PERSONNEL 4. SUPPLY SUPPORT 5. SUPPORT EQUIPMENT & TMDE 6. TRAINING AND TRAINING DEVICES 7. TECHNICAL DATA 8. COMPUTER RESOURCES SUPPORT 9. TRANSPORTATION AND TRANSPORTABILITY 10. FACILITIES 11. STANDARDIZATION & INTEROPERABILITY 12 RELIABIILTY, AVAILABILITY AND MAINTAINABILITY (RAM) 13. SUPPORT MANAGEMENT AND ANALYSIS 14 COST ANALYSIS AND FUNDING 15. MATERIEL FIELDING AND PLANNING FOR THIS PROCESS, REVIEW EACH MAJOR ILS AREA RELATIVE TO THE SELECTED NEW SYSTEM/EQUIPMENT TO DETERMINE IF IT MAY BE AFFECTED BY THE SELECTED ALTERNATIVE SUPPORT CONCEPT. THIS CONSTITUTES THE FIRST MAJOR SCREENING OF ILS ELEMENTS TO BE CONSIDERED IN THE RISK ANALYSIS IN SUBTASK 302.2.5.4. THIS PROCESS PROVIDES THE MAJOR GUIDELINES TO SUBTASK 302.2.5.3A2 AS TO WHICH MAJOR ILS ELEMENTS ARE TO BE ADDRESSED IN THE IN-DEPTH EVALUATION OF ILS SUB-ELEMENTS WHICH ARE TO BE COVERED IN THE SPECIFIC RISK ANALYSES.

	Name	Label	Description
	302.2.5.3A2	IDENTIFY POTENTIAL SUBSET OF ILS AREA OF IMPACT	PROCESS: WITHIN EACH MAJOR ILS ELEMENT, SEVERAL SUBSETS OF REQUIREMENTS MUST BE ADDRESSED IN THIS ANALYSIS TO ESTABLISH THE BOUNDS ON THE RISK ANALYSIS TO BE PERFORMED IN SUBTASK 302.2.5.3A3. SELECT THOSE SUBSETS OF ILS ELEMENTS FOR WHICH THE ALTERNATIVE SUPPORT CONCEPTS MAY AFFECT THE NEW SYSTEM/EQUIPMENT OVER ITS LIFE CYCLE ENVIRONMENT. REJECT THOSE ILS SUBSETS WHICH WILL HAVE LITTLE OR NO SIGNIFICANT AFFECT ON THE NEW SYSTEM/EQUIPMENT SUPPORT. THE SUBSETS OF ILS ELEMENTS TO BE CONSIDERED ARE LISTED IN APPENDIX E TO THE LATEST EDITION OF AR 700-127. FOR EXAMPLE, DESIGN INFLUENCE (FROM AR 700-127, DATED 1 MARCH 1988) ADDRESSES: a. MANPRINT b. ENERGY EFFICIENCY c. HAZARDOUS MATERIELS USAGE OR DISPOSAL d. LCC e. HUMAN FACTORS ENGINEERING f. SAFETY g. BUILT-IN-TEST-EQUIPMENT (BITE) h. SOURCE SELECTION OR WEIGHTING i. TESTING FEEDBACK OR CORRECTIONS j. CONTRACTOR INCENTIVES k. RAM-DRIVEN SUPPORT COSTS l. PREPLANNED PRODUCT IMPROVEMENT (AR 70-15) m. TRANSPORTABILITY n. FACILITY LIMITATIONS o. NUCLEAR HARDENING REQUIREMENTS p. PACKAGING/HANDLING CONSTRAINTS q. DESIGN FOR DISCARD/TESTABILITY r. SYSTEM READINESS OBJECTIVE s. SELECTED TRACKING OF PARTS/COMPONENTS/END ITEMS BY SERIAL NUMBER t. USE OF METRIC MEASUREMENTS u. EMBEDDED TRAINING IT CAN BE SEEN THAT THESE ILS SUBSETS WILL APPLY TO MAJOR SYSTEM/EQUIPMENT, SUCH AS A NEW BATTLE TANK. HOWEVER, MANY OF THESE SUBSETS CAN BE ELIMINATED FROM CONSIDERATION FOR A NEW SHOVEL, A SHOWER UNIT, OR EVEN A NEW ARTILLERY ROUND.
	302.2.5.3A3	SUPT CNCPT APPLIC'TY TO NEW/ CURRENT SYS/EQUIP	PROCESS: THE OBJECTIVE OF THIS PROCESS IS TO IDENTIFY THE APPLICABILITY OF THE ALTERNATIVE SUPPORT CONCEPTS TO THE MULTIPLE NEW SYSTEM/EQUIPMENT AND OPERATIONAL ALTERNATIVES, AS WELL AS TO THE CURRENT SYSTEM/ EQUIPMENT. THE RESULTS OF THIS PROCESS WILL FORM THE BASIS FOR THE QUALIFICATION OR QUANTIFICATION IN SUBTASK 302.2.5.3A4 FOR DIRECT APPLICATION TO THE RISK ANALYSIS TO BE PERFORMED IN SUBTASK 302.2.5.4.

	Name	Label	Description
	302.2.5.3A4	QUALIFY / QUANTIFY EFFECT ON ILS ELEMENT	PURPOSE: QUALIFY AND/OR QUANTIFY THE IMPACT OF THE NEW ALTERNATIVE SYSTEM SUPPORT CONCEPT ON THE SPECIFIC MAJOR ILS ELEMENTS OR THEIR SUBSETS FOR BOTH THE CURRENT SYSTEM/EQUIPMENT AND THE ALTERNATIVE SYSTEM/ EQUIPMENTS. AS A EXAMPLE, ONE ALTERNATIVE SYSTEM SUPPORT CONCEPT APPLIED TO THE NEW SYSTEM/EQUIPMENT MAY REQUIRE 50% OF ALL PERSONNEL WITH A CRITICAL MOS NOW REQUIRED IN A MORE CRITICAL APPLICATION. THIS INFORMATION CAN THEN BE USED IN SUBTASK 302.2.5.4 TO DETERMINE THE RISK (PROBABILITY OF FAILURE TO PROVIDE FOR REDUCTION IN O&S COSTS, OR TO IMPROVE SYSTEM READINESS DUE TO THE LACK OF SKILLS AVAILABLE) OF INTRODUCING THIS ALTERNATIVE SUPPORT CONCEPT. EACH APPLICABLE MAJOR ILS ELEMENT AND THE SELECTED SUBSETS ARE TO BE ADDRESSED IN THIS MANNER AS THE MAJOR INPUT TO THE RISK ANALYSIS IN SUBTASK 302.2.5.5. THE OUTPUTS WILL ADDRESS THE QUALIFICATION/QUANTIFICATION OF THE ILS ELEMENT RELATED TO (1) THE FUNCTIONAL REQUIREMENTS OF THE NEW SYSTEM/ EQUIPMENT, AND (2) THE CURRENT SUPPORT SYSTEM AS RELATED TO THE CURRENT SYSTEM/EQUIPMENT. THE MAJOR ILS ELEMENTS ADDRESSED IN THIS ANALYSIS WILL ALSO BE PROVIDED TO THE RISK ANALYSIS AS A GUIDE TO THE EXTENT OF IMPACT OF THE PROPOSED SUPPORT CONCEPTS.
	302.2.5.4	RISK ANALY ON SELECTD ALT SUP SYS CNCPT	PURPOSE: TO PERFORM A STANDARD RISK ANALYSIS ON EACH SELECTED ALTERNATIVE SUPPORT CONCEPT AS IT APPLIES TO THE SELECTED NEW SYSTEM/EQUIPMENT ALTERNATIVE. THIS RISK ANALYSIS ADDRESSES THE PROBABILITY THAT THE SELECTED SUPPORT CONCEPT MAY BE RESPONSIBLE FOR THE INABILITY OF THE NEW SYSTEM/EQUIPMENT TO SATISFY ALL PERFORMANCE, COST, AND SCHEDULE REQUIREMENTS UNDER ALL ENVIRONMENTAL CONDITIONS IN WHICH THE NEW SYSTEM/EQUIPMENT CAN BE EXPECTED TO OPERATE. THIS RISK ANALYSIS MUST ADDRESS ALL ELEMENTS OF ILS, AS SET FORTH IN AR 700-127 AND WITHIN THE LIMITS AND/OR BOUNDS DESCRIBED IN MIL-STD-210A, MIL-STD-810, AND AR 700-9.
	302.2.5.4A1	IDENTIFY POTENTIAL ILS RISK PARAMETERS OR FACTORS	PROCESS: THIS PROCESS WILL PROVIDE THE FIRST LEVEL IDENTIFICATION AND/OR QUANTIFICATION OF THE RISKS ASSOCIATED WITH THE APPLICATION OF THE NEW SUPPORT CONCEPT TO EITHER THE NEW SYSTEM/EQUIPMENT AND/OR TO THE CURRENT SYSTEM/EQUIPMENT. SUBTASK 302.2.5.3A1 SELECTED THE PERTINENT MAJOR ILS ELEMENTS FROM THE CURRENT ARMY REGULATIONS. SUBTASK 302.2.5.3A2 THEN STRATIFIED THE APPLICABLE SUBSETS OF ILS ELEMENTS FROM AR 700-127. IN THIS PROCESS, EACH OF THESE SELECTIONS ARE FURTHER RELATED TO THE SPECIFIC FUNCTION, PERFORMANCE, READINESS, MANPOWER/PERSONNEL REQUIREMENTS, OR O&S COSTS WHICH MAY BE AFFECTED BY THE NEW ALTERNATIVE SUPPORT CONCEPT. FOR EXAMPLE, MANPOWER AND PERSONNEL MAY BE THE SELECTED MAJOR ILS ELEMENT. SPECIAL SKILL REQUIREMENTS MAY THE SELECTED ILS SUBSET TO BE ADDRESSED. IN THE PROCESS, THE ANALYSIS WILL DETERMINE WHETHER THE ALTERNATIVE SUPPORT CONCEPT UNDER CONSIDERATION MAY REQUIRE THIS AREA TO BE ADDRESSED SINCE A CRITICAL MOS IS REQUIRED TO SUPPORT THIS CONCEPT AT A MAINTENANCE ECHLON WHERE THIS MOS IS NOT NORMALLY PROVIDED IN A STANDARD ARMY MAINTENANCE PLAN. THUS CRITICAL MOSs SHOULD BE SELECTED FOR DOWNSTREAM EVALUATION.

Name	Label	Description
302.2.5.4A2	ESTABLISH CHANGES RQRD TO APPLY ALT SUP/CNCPT	PURPOSE: MAJOR GOAL OF THIS SUBTASK IS TO DETERMINE THE CHANGES REQUIRED IN MILITARY OR ARMY PROCEDURES, POSTURE, RESOURCES, GOALS, ENVIRONMENTS, IN ORDER TO APPLY THE ALTERNATIVE SUPPORT CONCEPT TO THE CURRENT SYSTEM/ EQUIPMENT AND/OR TO THE ALTERNATIVE NEW SYSTEM/EQUIPMENT, TO ACHIEVE THE SRO AND COEA REQUIRED THRESHHOLDS FOR THE SPECIFIC ILS ELEMENT AND/OR SUBELEMENT SELECTED IN PROCESS 302.2.5.3A1. AS AN EXAMPLE, IT MIGHT BE REQUIRED THAT PERSONNEL WITH A PARTICULAR MOS BE MADE AVAILABLE IN GREATLY INCREASED NUMBERS TO SATISFY A GIVEN POPULATION LEVEL OF THE NEW SYSTEM/EQUIPMENT. LIKEWISE, IT MIGHT BE NECESSARY TO PROCURE A PARTICULAR TEST EQUIPMENT AT AN EXCEEDINGLY HIGH COST TO SUPPORT THE NEW ELECTRONIC COMPONENTS WHICH ADD SOPHISTICATION TO THE NEW SYSTEM/ EQUIPMENT.
302.2.5.4A3	PROBABIL'Y OF NOT ACHV'G RQRD CHANGES	PROCESS: WITHIN THE SELECTED ILS ELEMENT AND/OR SUBELEMENTS, DETERMINE THE PROBABILITY OF NOT ACHIEVING THE REQUIRED CHANGES TO PROVIDE FOR APPLICATION OF THE SELECTED ALTERNATIVE SUPPORT CONCEPT TO THE CURRENT SYSTEM/EQUIPMENT AND/OR TO THE ALTERNATIVE NEW SYSTEM/EQUIPMENT. THIS PROBABILITY OF FAILURE WILL BE BASED ON THE REQUIRED CHANGES DEVELOPED IN SUBTASK 302.2.5.4A2, AND PHYSICAL, ECONOMICAL, AND ENVIRONMENTAL CONDITIONS PREVALENT IN THE MILITARY, AND IN PARTICULAR TO THE DEPARTMENT OF THE ARMY AT THE PROPOSED TIME OF IMPLEMENTATION OF THE ALTERNATIVE SUPPORT CONCEPT. SOURCES OF BASELINE CONDITIONS FOR THE RISK ANALYSIS WILL BE DEVELOPED FROM THE PROGRAM MANAGER, ILSMT, AND EXISTING ARMY AND DOD PUBLICATIONS (REGULATIONS, PROCEDURES, DIRECTIVES, CIRCULARS, STANDARDS, ETC.)
302.2.5.5	RISK ANALY RELATED TO COST/PERF/ SCHEDULE REQMTS	PURPOSE: USING THE RESULTS OF THE ILS ELEMENT RISK ANALYSIS FOR EACH ALTERNATIVE SUPPORT CONCEPT, ESTABLISH THE PROBABILITY THAT EACH OF THE OVERALL ALTERNATIVE SUPPORT CONCEPTS MAY BE UNABLE TO SATISFY THE COST, PERFORMANCE, AND SCHEDULING REQUIREMENTS OF THE CURRENT SYSTEM/ EQUIPMENT AND THE NEW SYSTEM/EQUIPMENT ALTERNATIVES. THE INPUTS ARE THOSE SUB-RISK ANALYSES ACCOMPLISHED ON THE INDIVIDUAL ILS ELEMENTS AND/OR SUBELEMENTS SELECTED IN PROCESS 302.2.5.3.
302.2.5.5A1	CONSL'DATE ILS RISK FACTORS- EACH ALT SUP CNCPT	PURPOSE: BASED ON THE RISK POTENTIAL FOR THE INDIVIDUAL ILS ELEMENTS, CONSOLIDATE THE RISK AREAS AND LEVELS BY THE SELECTED ALTERNATIVE SUPPORT SYSTEM CONCEPTS AS THEY MAY AFFECT COST, PERFORMANCE, AND SCHEUDLE OF THE NEW SYSTEM/EQUIPMENT.

Name	Label	Description
302.2.5.5A2	POTENTIAL IMPACT OF RISKS ON SUPPORT CNCPT ASSM	PURPOSE: DETERMINE THE POTENTIAL IMPACT OF ALL ILS RISKS AND RISK FACTORS IDENTIFIED TO THE TOTAL SELECTED ALTERNATIVE SUPPORT SYSTEM CONCEPT RELATIVE TO COST, PERFORMANCE AND SCHEDULE. THE INFORMATION SHOULD THEN BE PREPARED FOR FORWARDING TO THE PM/ILSMT FOR THEIR ULTIMATE DECISION ON: 1. ACCEPTABLE - MEETS THRESHHOLD REQUIREMENTS 2. ACCEPT W/RECOGNIZED PENALTIES FOR DEFICIENCES 3. REJECT AS UNSATISFACTORY - DOES NOT MEET THRESHHOLD REQUIREMENTS 4. INSTITUTE CHANGES IN SUPPORT CONCEPTS BASED ON THE RISK FACTOR ANALYSIS.

Name	Label	Description
ALT/SUP/SYS/CNC	ALTERNATIVE SUPPORT CONCEPTS & PLANS	PURPOSE: DATA CONTAINING ALTERNATIVE SUPPORT PLANS AND CONCEPTS WHICH INCLUDE ALL OR A COMBINATION OF THE FOLLOWING: 1. THE NUMBER OF LEVELS OF SUPPORT TO BE USED 2. POSSIBILITY OF HAVING CONTRACTOR SUPORT. 3. A COMBINATION OF MILITARY AND CONTRACTOR MAINTENANCE SUPPORT 4. DIFFERENT SPARING TECHNIQUES 5. DIFFERENT TESTING OR SUPPORT EQUIPMENT SOURCE OF DATA: TASK 302.2.1 AND 302.2.3 PROVIDES THE FULL SCOPE OF ALTERNATIVE SUPPORT CONCEPTS AND PLANS TO BE USED IN THIS ANALYSIS, PROVIDED THAT THEY ARE APPROVED BY AND/OR PROVIDED BY THE PM/ILSMT.
CHNG/RQD/TO/APP	SCHEDULED CHANGES RQD TO APPLY CONCEPT TO SYS/EQUIP	PURPOSE: BASED ON SHORTCOMINGS OF EACH ALTERNATIVE SUPPORT CONCEPT TO PROVIDE OPTIMUM SUPPORT FOR THE NEW SYSTEM/EQUIPMENT, THIS DATA FLOW PROVIDES THE LOGISICIAN A VEHICLE BY WHICH HE CAN PROVIDE INFORMATION TO THE PM/ILSMT RELATIVE TO CHANGES REQUIRED IN THE SUPPORT CONCEPT OR IN THE NEW SYSTEM/EQUIPMENT PERFORMANCE, DESIGN, OPERATIONS, OR AREA OF SUPPORT. THE PM/ILSMT USES THIS INFORMATION TO MAKE A FINAL DETERMINATION OF THE ACCEPTABLE RISK FOR EACH ALTERNATIVE SUPPORT CONCEPT.
COEA	COST AND OPERATIONAL EFFECTIVENES ANALYSIS	DATA RELATING TO THE INVESTIGATION OF THE COST AND OPERATIONAL EFFECTIVENESS ANALYSIS FOR THE SYSTEM UNDER INVESTIGATION. THE DATA SHALL CONTAIN AT THE LEAST A COPY OF THE UPDATED COST AND OPERATIONAL EFFECTIVENESS ANALYSIS. REFERENCE: PROGRAM MANAGER'S DATA FILE ACQUIRING ACTIVITY FILES
CONSLDT/RISK/FC	CONSOL'TED RISK FACTORS BY ALT SUPT CONCEPT	THIS DATA PROVIDES SUBTASK 302.2.5.5A2 WITH THE CONSOLIDATED ILS RISK FACTORS ASSOCIATED WITH EACH OF THE ALTERNATIVE SUPPORT SYSTEM CONCEPTS.
COOR/RISK/AREA/	COORDINATED RISK AREA RESOLUTION BY PM/ILSMT	PURPOSE: PM/ILSMT RETURNS TO THE LOGISTICIAN THEIR POSITION ON ACCEPTABLE LIMITS OF RISK AND COORDINATION OF THE DEGREE OF CHANGES WHICH THEY WOULD SUPPORT RELATIVE TO NEW SYSTEM/EQUIPMENT PERFORMANCE, COST, OPERATIONS, etc. IN ORDER TO ACCEPT A GIVEN SUPPORT SYSTEM CONCEPT.
CUR/ILS/CAPABIL	CURRENT SYS/ EQUIPMENT ILS CAPABILITIES	A COMPREHENSIVE ANALYSIS OF THE ILS ELEMENTS AS THEY RELATE TO CURRENT SYSTEMS/EQUIPMENT WITHIN THE PRESENT U.S. MILITARY ENVIRONMENT. FOR EXAMPLE, CURRENT TRAINING LEVELS, CURRENT SKILLS AVAILABLE, EXISTING TRANSPORTATION CAPABILITIES, ETC.

Name	Label	Description
FIELDING PLAN	FIELDING PLAN	THE PROPOSED FIELDING PLAN FOR THE NEW SYSTEN/EQUIP WITH PARTICULAR REFERENCE TO THE PROPOSED TOTAL POPULATION, POTENTIAL GEOGRAPHICAL/ENVIRONMENTAL AREAS OF APPLICATION, AND THE NATURE OF UNITS TO WHICH IT WILL BE ASSIGNED (RELATIVE TO NATURE OF SUPPORT CUKRRENTLY AVAILABLE AT THE UNIT)
INIT/ACT	INITIATE ACTION	PURPOSE: THE REQUIRED ACTIONS OF THOSE (IF MORE THAN ONE) ACTIVITIES NECESSARY TO ACTUATE AN ILS ELEMENT ASSESSMENT FOR A SYSTEM AND/OR EQUIPMENT WHICH PROVIDES THE FORMAL AUTHORIZATION FOR THE PERFORMANCE OF AN ILS EFFORT. THESE INITIATING ACTIONS ARE NORMALLY PERFORMED BY THE ILSMT AND/OR THE PROGRAM MANAGER. INCLUDE DATA IDENTIFYING THE NEED FOR ASSESSING AN ALTERNATIVE SYSTEM/EQUIPMENT OR FOR IMPLEMENTATION OF A SPECIFIC ILS/LSA TASK, AS APPLICABLE. THIS MAY BE BASED ON AN EVALUATION OF THE EXISTING REQUIREMENTS ON THE BASELINE SYSTEM/EQUIPMENT OR ON THE ILS/LSA TASKS NEEDED TO FULLY DOCUMENT AND/OR EVALUATE THE IMPACT OF ILS ON THE NEW OR EXISTING SYSTEM/EQUIPMENT OVER ITS LIFE CYCLE. THESE DATA MAY: 1. IDENTIFY THE SPECIFIC ILS/LSA TASK TO BE IMPLEMENTED 2. ESTABLISH MISSION PROFILE 3. IDENTIFY THE RESOURCES THAT EXIST AND/OR MUST BE DEVELOPED 4. ESTABLISH PRIORITIES. SOURCE OF DATA: PROGRAM MANAGER OR ILSMT
MIL/DOD/PUBS	MILITARY AND DOD PUBS THAT OUTLINE REQUIREMENTS	DESCRIPTION: ALL MILITARY (ARMY AND DOD) PUBLICATIONS, SUCH AS REGULATIONS, CIRCULARS, STANDARDS, ETC. THAT CONTAIN DATA RELATIVE TO CURRENT AND/OR ANTICIPATED CAPABILITIES, GOALS, REQUIREMENTS, OR COST DATA THAT CAN BE USED TO MEASURE DIFFERENCES BETWEEN PERFORMANCE OF ALTERNATIVE SUPPORT CONCEPTS.
NEW ILS REQMENT	NEW RQMTS ON ILS ELEMENTS IMPOSED BY NEW SYS/EQUP	FOR THE SELECTED ILS ELEMENTS, IDENTIFY THOSE NEW REQUIREMENTS WHICH MAY BE IMPOSED BY THE PROPOSED ALTERNATIVE SUPPORT SYSTEM CONCEPT. THESE RESULTS MAY INCLUDE SUCH ITEMS AS NEW SKILLS REQUIRED, NEW FORMS OR SIZES OF TRANSPORT NEEDED, SPECIAL TDME, NEW FACILITIES, ETC.
PEACETIME	PEACETIME CRITERIA	PURPOSE: DATA IDENTIFYING PEACETIME STANDARDS THAT MUST BE APPLIED TO THE SELECTED ALTERNATIVE. THIS DATA CONTAINS: - STANDARDS FOR STORAGE (TIME, LOCATION, ETC.). - READINESS (PREPARATION TIME TO USE). SOURCE OF DATA: ACQUIRING ACTIVITY FILE.
POT/ILS/ELE	SELECTED POTENTIAL AREAS OF IMPACT	DESCRIPTION: FROM SUBTASK 302.2.5.3A2, A SELECTION OF THE POTENTIAL ILS AREAS AND SUBSETS OF ILS ELEMENTS WHICH MAY BE IMPACTED BY THE ALTERNATIVE SUPPORT CONCEPTS RELATIVE TO IMPROVEMENT OF SYSTEM READINESS, OPTIMIZATION OF MANPOWER & PERSONNEL REQUIREMENTS, AND/OR REDUCTION OF O&S COSTS

Name	Label	Description
RISK/ANAL/ILS/E	RISK ANALY'S OF ILS ELMTS RELATED TO ALT SUP SYS CONCEPTS	CONTAINS THE RESULTS OF THE RISK ANALYSIS OF THE INDIVIDUAL ILS ELEMENTS AS THEY RELATE TO LIFE CYCLE SUPPORT OF THE NEW SYSTEM/EQUIPMENT ALTERNATIVES UNDER EACH OF THE ALTERNATIVE SUPPORT CONCEPTS. THESE RISK ANALYSIS RESULTS ARE USED TO ESTABLISH THE OVERALL PROBABILITY OF BEING UNABLE TO SATISFY THE COST, PERFORMANCE AND SCHEDULE REQUIREMENTS OF THE NEW SYSTEM/EQUIPMENT.
RQRD/CHANGES	SELECTED CHANGES RQD TO APPLY ALT SUP/CNCT	FROM THE TOTAL LIST OF REQUIRED CHANGES TO CURRENT SUPPORT SYSTEM OR TO CURRENT SYSTEMS/EQUIPMENT DEVELOPED IN SUBTASK 302.2.5.4A2, PROVIDE EACH CHANGE TO THE NEXT SUBTASK SO THAT THE RISK ANALYSIS CAN BE APPLIED.
SEL/ALT/SUP/SYS	SELECTED ALTERNATIVE SUPPORT SYSTEM CONCEPT	PURPOSE: FOR EACH NEW SYSTEM/EQUIPMENT CONCEPT CONSIDERED, A SERIES OF ALTERNATIVE SUPPORT SYSTEM CONCEPTS MUST ALSO BE PREPARED TO ESTABLISH THE BASIS FOR A TRADEOFF ANALYSIS WHICH WILL HIGHLIGHT THE MOST EFFECIENT AND EFFECTIVE SUPPORT CONCEPT. THIS DATA FLOW PERMITS THE SELECTION OF ONE OF THESE ALTERNATIVES FOR EACH ITERATION OF THE PROCESS LEADING TO THE DATA BASE FOR A TRADEOFF ANALYSIS. THE DATA CONTAINS THE ALTERNATIVE SUPPORT SYSTEM CONCEPT SELECTED AS SUBTASK 302.2.2.2 OR 303.2.2.2, FOR THE ALTERNATIVE NEW SYSTEM/EQUIPMENT UNDER ANALYSIS. THIS DATA IDENTIFIES LOGISTIC SUPPORT CONSIDERATIONS ASSOCIATED WITH OPERATION AND MAINTENANCE TASKS REQUIRED AT EACH MAINTENANCE LEVEL. THE LOGISTIC SUPPORT CONSIDERATIONS INCLUDE: 1. SUPPORT ELEMENTS A. SUPPORT EQUIPMENT B. REPAIR PARTS AND SUPPORT C. TRAINED PERSONNEL D. EQUIPMENT PUBLICATIONS E. FACILITIES F. TECHNICAL ASSISTANCE G. CONTRACT MAINTENANCE 2. MANAGEMENT ELEMENTS A. COST ASSOCIATED WITH THE SUPPORT ELEMENTS B. SCHEDULES C. PERFORMANCE D. SUPPORT READINESS VALUES SOURCE OF DATA: THESE ALTERNATIVES HAVE BEEN DESCRIBED AND QUANTIFIED IN TASKS 302 AND 303.2.2.2.

Name	Label	Description
SEL/ARMY/PUBS	SELECTED ARMY ARs AND MIL-STDs	PURPOSE TO PROVIDE THE LOGISTICIAN WITH THOSE REFERENCES FROM THE DEPARTMENT OF THE ARMY POLICY FILES REQUIRED TO PROPERLY ASSESS, IDENTIFY, QUANTIFY, AND QUALIFY THOSE ILS ELEMENTS WHICH MAY IMPACT, OR BE IMPACTED BY, THE SELECTED SUPPORT SYSTEM CONCEPT. THESE SOURCES OF INFORMATION CONTAIN AS A MINIMUM: 1. AR 700-127 2. MIL-STD-210A 3. MIL-STD-810 4. AR 700-9
SEL/COEA/DATA	SELECTED COEA DATA	COST, PERFORMANCE, AND/OR EFFECTIVENESS REQUIREMENTS/LIMITS THAT MAY BE AFFECTED BY A CHANGE IN THE SPECIFIC ILS ELEMENT DUE TO THE INTRODUCTION OF A NEW SYSTEM/EQUIPMENT OR AN ALTERNATIVE SUPPORT CONCEPT REQUIRED BY THE NEW SYSTEM/EQUIPMENT.
SEL/ILS/ELE	SELECTED MAJOR ILS ELEMENTS	PURPOSE: INDICATE SELECTED ILS ELEMENTS APPLICABLE TO THE NEW EQUIP/SYSTEM WHICH MAY IMPACT EXISTING EQUIPMENT/SYSTEMS. THESE ILS ELEMENTS WILL CONSTITUTE THE BASIS FOR ESTABLISHING RECOMMENDATIONS FOR SUPPORT CHANGES TO EITHER THE EXISTING SUPPORT SYSTEM OR TO THE ILS REQUIREMENTS FOR THE NEW EQUIPMENT/SYSTEM. THESE SELECTED ILS ELEMENTS ARE USED ITERATIVELY IN THE ANALYSES FOR ASSESSING THE ADEQUACY OF THE ALTERNATIVE SUPPORT SYSTEMS TO PROVIDE FOR LIFE CYCLE SUPPORT OF THE NEW SYSTEM/EQUIPMENT AND THE NEW SYSTEM/EQUIPMENT ALTERNATIVES.
SEL/RISK/PARA	SELECTED ILS RISK PARAMETER OR FACTOR	SUBTASK 302.2.5.4A1 DEVELOPED A SERIES OF POTENTIAL RISK FACTORS RELATED TO A SELECTED ALTERNATIVE SUPPORT CONCEPT AS APPLIED TO THE CURRENT SYSTEM/EQUIPMENT AND/OR A SELECTED ALTERNATIVE NEW SYSTEM/EQUIPMENT. THIS DATA FLOW WILL PROVIDE EACH OF THESE POTENTIAL RISK FACTORS TO THE NEXT SUBTASK FOR PURPOSES OF CONDUCTING THE ACTUAL RISK ANALYSIS.
SEL/SYS/EQP&ALT	SELECTED SYS EQUIPMENT & RELATED ALT SUPPORT CONCEPT	DESCRIPTION: SUBTASK 302.2.5.3A3 REQUIRES INFORMATION RELATIVE TO THE SYSTEM/EQUIPMENT AND THE ALTERNATIVE SUPPORT CONCEPT SELECTED IN SUBTASKS 302.2.5.1 AND 302.2.5.2. THIS INFORMATION WAS CARRIED OVER TO SUBTASK 302.2.5.3A1 TO PROVIDE FOR SELECTION OF THE APPLICABLE ILS ELEMENTS. THIS DATA FLOW PROVIDES FOR THE TRANSFER OF THE SELECTED SYSTEMS/EQUIPMENTS AND THE ALTERNATIVE SUPPORT CONCEPT WHICH IS TO QUALIFIED AND/OR QUANTIFIED IN SUBTASK 302.2.5.3A4.

Name	Label	Description
SEL/SYS/EQUIP/A	SELECTED SYSTEM EQUIPMENT ALTERNATIVE	PURPOSE: SELECT NEW SYSTEM/EQUIPMENT ALTERNATIVES - ALL IDENTIFIED SYSTEM/EQUIPMENT ALTERNATIVES, WITH THEIR RELATED DOCUMENTATION, ARE CORRELATED AND PREPARED FOR FURTHER SUPPORT ANALYSIS ON A SELECTED (INDIVIDUAL) BASIS. EACH OF THE ALTERNATIVES WILL BE ANALYZED IN AN ITERATIVE PROCESS. SOURCE OF DATA: THE PM AND/OR ILSMT ARE THE ONLY OFFICIAL SOURCES FOR IDENTIFICATION OF ALTERNATIVES TO THE NEW SYSTEM/EQUIPMENT. OTHER POTENTIAL CANDIDATES MAY BE OFFERED TO THE PM AND/OR ILSMT. HOWEVER, APPROVAL IS REQUIRED BEFORE EFFORTS ARE EXPENDED TO INCLUDE THESE SUGGESTIONS IN THE TRADEOFF ANALYSES.
SRO	SYSTEM READINESS OBJECTIVES	PURPOSE: IDENTIFY THE SYSTEM READINESS OBJECTIVES WHICH HAVE BEEN PROVIDED AS PART OF THE SYSTEM CONCEPT PAPER (SCP) OR THE JUSTIFICATION FOR MAJOR SYSTEM NEW START (JMSNS). FURTHER IN THE LIFE CYCLE, THE RESULTS OF TASK 205.2.2 CAN BE USED. THIS TASK ESTABLISHES THE SUPPORTABILITY, COST, AND READINESS OBJECTIVES FOR THE NEW SYSTEM, BASED ON NEW SYSTEM/EQUIPMENT DETAILS AS THEY ARE DEVELOPED. SOURCE OF DATA: 1. LSA TASK 205.2.2 2. SYSTEM CONCEPT PAPER FOR THE NEW SYSTEM/EQUIPMENT 3. JUSTIFICATION FOR MAJOR SYSTEM NEW START (JMSNS).
VIABLE SUPT CNC	VIABLE SUPPORT SYSTEM CONCEPT	BASED ON THE RESULTS OF THE RISK ANALYSIS ON THE OVERALL ALTERNATIVE SUPPORT SYSTEM CONCEPTS, A DEFINITION OF THE VIABLE SUPPORT SYSTEM CONCEPTS THAT WILL HAVE A HIGH PROBABILITY OF MEETING THE NEW SYSTEM/EQUIPMENT REQUIREMENTS RELATIVE TO COST, PERFORMANCE AND SCHEDULING.
WARTIME	WARTIME ENVIRONMENT	PURPOSE: DATA IDENTIFIES WARTIME ENVIRONMENTS IN WHICH THE SELECTED ALTERNATIVE MUST OPERATE IN ORDER TO ACCOMPLISH ITS INTENDED MISSION(S). DATA INCLUDES CLIMATIC CONDITIONS AS DESCRIBED IN MIL-STD-210C. SOURCE OF DATA: ACQUIRING ACTIVITY FILE.

Name	Label	Description
AAF	ACQUIRING ACTIVITY FILE	CONTAINS THOSE RECORDS, DOCUMENTS, DECISION PAPERS AND SCHEDULES THAT WERE PREPARED AS PART OF THE ACQUISITION INITIATION, JUSTIFICATION, AND PLANNING PRIOR TO THE ASSIGNMENT OF A PROGRAM MANAGER. THE ITEMS IN THIS DATA STORE INCLUDE: A. REQUIRED OPERATIONAL CHARACTERISTICS B. O&O PLAN C. DESIRED R&M PARAMETERS D. THREAT ANALYSIS DATA E. READINESS OBJECTIVES DATA F. FUNCTIONAL REQUIREMENTS DATA G. PROJECTED SCHEDULE DATA H. LOGISTICS RESOURCES DATA I. TOA J. TOD K. COST & OPERATIONAL EFFECTIVENESS ANALYSIS (COEA) DATA L. PROJECTED COST DATA M. JUSTIFICATION OF MAJOR SYSTEM NEW START (JMSNS) DATA N. DESIGN SPECIFICATIONS

Name	Label	Description
P/F	POLICY FILES	CONTAINS THOSE MILITARY PUBLICATIONS, DECISION PAPERS, MISSIONS & FUNCTIONS, etc, WHICH ARE NEEDED TO ESTABLISH THE LOGISTICAL SUPPORT AND REVIEW REQUIREMENTS OF THE ITEM/EQUIPMENT DEVELOPMENT PROGRAM. THIS DATA STORE INCLUDES: 1. AR 12-16, "MUTUAL LOGISTICS SUPPORT BETWEEN THE U.S. AND OTHER NORTH ATLANTIC TREATY ORGANIZATION FORCES" 1a. AR 70-1, "SYSTEMS ACQUISITION POLICY AND PROCEDURES" 1b. AR 70-2, "RESEARCH, DEVELOPMENT, & ACQUISITION MATERIEL STATUS RECORDING" 1c. AR 70-10, "R&D - TEST & EVALUATION DURING DEVELOPMENT AND ACQUISITION OF MATERIEL" 1d. "AR 570-9, "MANPOWER AND EQUIPMENT CONTROL - HOST NATION SUPPORT" 2. AR 700-9, "POLICIES OF THE ARMY LOGISTIC SYSTEM" 3. AR 700-82, "JOINT REGULATION GOVERNING THE USE AND APPLICATION OF UNIFORM SOURCE MAINTENANCE AND RECOVERABILITY CODES" 4. AR 700-127, "INTEGRATED LOGISTICS SUPPPORT" 5. AR 725-50, "REQUISITIONING, RECEIPT AND ISSUE SYSTEM" 6. AR 750-1, "MAINTENANCE OF SUPPLIES & EQUIPMENT - ARMY MATERIEL MAINTENANCE CONCEPTS & POLICIES" 7. AMC-R-700-27, "LEVEL OF REPAIR ANALYSIS (LORA) PROGRAM" 8. AMC-R-750-10, "DEPOT MAINTENANCE INTERSERVICE" 9. DA PAM 700-4 10. DA PAM 700-28, "INTEGRATED LOGISTIC SUPPORT PROGRAM ASSESSMENT ISSUES AND CRITERIA" 11. DA PAM 700-50, "INTEGRATED LOGISTIC SUPPORT - DEVELOPMENTAL SUPPORTABILITY TEST AND EVALUATION GUIDE" 12. DA PAM 700-55, "INSTRUCTIONS FOR PREPARING THE INTEGRATED LOGISTIC SUPPORT PLAN" 12a. DA PAM 738-750, "THE ARMY MAINTENANCE MANAGEMENT SYSTEMS (TAMMS)" 13. DA PAM 750-21, "LOGISTIC SUPPORT MODELLING" 14. AMC PAM 700-4, "LOGISTICS SUPPORT ANALYSIS TECHNIQUES GUIDE (WITH PALMAN)" 14a. AMC PAM 700-11, "LOGISTICS SUPPORT ANALYSIS REVIEW TEAM GUIDE" 15. AMC PAM 750-2, "MAINTENANCE OF SUPPLIES AND EQUIPMENT GUIDE TO RELIABILITY CENTERED MAINTENANCE" 16. MIL-STD-152, "TECH REVIEW GUIDELINES" 17. MIL-STD-210A, "CLIMATIC EXTREMES FOR MILITARY EQUIPMENT" 18. MIL-STD-470, -471, "MAINTAINABILITY STANDARDS" 19. MIL-STD-756, "RELIABILITY MODELLING & PREDICTIONS" 20. MIL-STD-780, "MAINTENANCE ENGINEERING ANALYSIS CONTROL NUMBER (MEACNS) FOR AERONAUTICAL EQUIPMENT, UNIFORM NUMBERING SYSTEM 21. MIL-STD-781, "RELIABILITY DESIGN QUALIFICATION AND PRODUCTION ACCEPTANCE TESTS: EXPONENTIAL DISTRIBUTION 22. MIL-STD-785B, "RELIABILITY PROGRAM FOR SYSTEMS AND EQUIPMENT DEVELOPMENT & PRODUCTION" 23. MIL-STD-810, "ENVIRONMENTAL TEST METHODS & ENGINEERING GUIDELINES" 24. MIL-STD-881, "WORK BREAKDOWN STRUCTURES FOR DEFENSE MATERIEL ITEMS 25. MIL-STD-882, "SYSTEM SAFETY PROGRAM REQUIREMENTS" 26. MIL-STD-965, "PARTS CONTROL PROGRAM" 27. MIL-STD-1369A, "INTEGRATED LOGISTIC SUPPORT PROGRAM REQUIREMENTS" 28. MIL-STD-1388-1A, "LOGISTICS SUPPORT ANALYSIS" 29. MIL-STD-1388-2A, "LOGISTICS SUPPORT ANALYSIS RECORD" 30. MIL-STD-1629, "PROCEDURES FOR PERFORMING A FAILURE MODE, EFFECTS

Name	Label	Description
		& CRITICALITY ANALYSIS" 31. MIL-HDBK-472, "MAINTAINABILITY PREDICTION" 32. MIL-M-24100B, "FUNCTIONALY ORIENTED MAINTENANCE MANUALS (FOMM) FOR EQUIPMENT & SYSTEMS"
PM/DF	PROGRAM MANAGER DATA FILE	Contains those files and data which are normally developed by and/or retained by the Program Manager for proper management of the Development Program. These files include: 1. Engineering Drawings 2. Engineering Characteristics 3. DT/OT Results 4. Concept Formulation Package (CFP) 5. Design Concept Paper (DCP) 6. Type Technical Reviews Required 7. Milestone Schedules 8. Funding Profiles 9. Required Operational Capabilities (ROC) 10. Item/Equipment Specifications 11. Item/Equipment Missions and Functions 12. Equipment, Manpower, and Technical Risk Assessments (From LSA Task 301.2.3) 13. Tradeoff Determination Analysis (TOD) 14. Tradeoff Analysis (TOA) 15. Beast Technical Approach Analysis (BTA) 16. Cost and Operational-Effectiveness Analysis (COEA) 17. Hardware Specifications 18. RAM Requirements

	Name	Label	Description
	PM/ILSMT	PM/ILSMT	The Program Manager or those activities, agencies or authorities that are responsible for the initiation of the requirement for an ILS element assessment during a development program for a system and/or equipment in accordance with AR 700-127. The key action (output) required of this external entity is the directive, authority, or other documentation that initiates the requirement for the application of this ILS assessment to a specific system/equipment development program at a specified point in it's life cycle in accordance with AR 700-127.

ANNEX C

LSA TASK 302.2.5
SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

ANNEX C
LSA SUBTASK 302.2.5
SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

PROCESS 302.2.5 - SUPPORT SYSTEM ALTERNATIVE RISK ANALYSIS

PURPOSE:

The goal of this subtask is to identify the risks associated with each support system alternative formulated.

PROCESS 302.2.5.1 - Alternative System/Equipment Data For Analysis

PURPOSE:

The objective of this process is to provide a pool of logistic data on those current and/or new systems/equipment which may be selected, as a result of this risk analysis, to satisfy the requirements of the PM/ILSMT to meet a new or changed threat. These alternatives are to be provided to the logistician by the PM and/or the ILSMT.

PROCEDURES:

1. Obtain from the PM or ILSMT:

   A. Identification of the new system/equipment, current system/equipment, and all potential alternative systems/equipment which are determined by the PM/ILSMT to be considered in this analysis.

   B. A comprehensive database containing detailed physical, economic, operational, engineering, and technological characteristics of each system/equipment identified in item A. above.

2. For each applicable system/equipment, identify all performance, operational and economic characteristics which may affect (or be affected by) changes in the ILS elements or subelements set forth in AR 700-127.

3. Compile the accumulated data with the applicable system/equipment alternative identification document and select one (if more than one system/equipment) alternative for analysis in Process 302.2.5.3.

PROCESS 302.2.5.2 - Summarize/Definitize Alternative Support System Concepts

PURPOSE:

For the alternative system/equipment selected, identify, summarize, and definitize the applicable alternative support system concepts and plans as developed in Subtasks 302.2.1 and 302.2.3.

PROCEDURE:

1. Obtain from the PM and/or ILSMT:

   A. Identification of all support system concepts which the PM/ILSMT may consider to be applicable to the new, current, and/or any alternative system/equipments.

      The support alternatives considered shall not be restricted to existing standard support concepts, but shall include identification of innovative concepts which could improve system readiness, optimize manpower and personnel requirements, or reduce O&S costs. Contractor logistic support (total, in part, or on an interim basis) shall be considered in formulating the alternative support concepts.

   B. A comprehensive data base which contains detailed physical, economic, operational, engineering, and technological characteristics for each support system concept developed in item A. above.

2. For each applicable support system concept, identify all performance, economic, operational, manpower or personnel factors which may be influenced by application and/or changes in the ILS elements that comprise the support system concept defined in 1A. above.

3. Compile the accumulated data for all applicable alternative support system concepts established for the selected system/ equipment, and select one concept for analysis in Process 302.2.5.3 below.

PROCESS 302.2.5.3 - Qualify/Quantify Appropriate ILS Element

PURPOSE:

Identify all applicable ILS elements which may be affected by the selected support system concept, or will impact the existing support system already in place for similar system/equipments.

NOTE: In this process, the ILS elements within the existing U.S. military environment will be described and quantified. This process will address both peacetime and wartime environments under all conditions which may be encountered by the new system/equipment and its support system.

A major area of concern is the ability of the selected concept to adequately support the new system/equipment to maintain at least threshold requirements in performance, cost and schedule. All conditions described in AR 700-127, MIL-STD-470A and MIL-STD-810 (with reference to the bounds or limits of the environments to which Army materiel may be exposed) must be covered.

PROCESS 302.2.5.3A1 - Select Major Applicable ILS Element

PURPOSE:

To review the 15 major ILS elements to determine if the selected alternative support concept will (or might) cause the selected new system/equipment to fail to meet threshold performance, cost, and schedule requirements.

NOTE: In accordance with the latest update to AR 700-127 (dated 1 March 1988), a total of 15 major ILS elements are addressed in this analysis:

1. Design Influence
2. Maintenance Planning
3. Manpower & Personnel
4. Supply Support
5. Support Equipment & TMDE
6. Training and Training Devices
7. Technical Data
8. Computer Resources Support
9. Transportation and Transportability
10. Facilities
11. Standardization & Interoperability
12. Reliability, Availability and Maintainability (RAM)
13. Support Management and Analysis
14. Cost Analysis and Funding
15. Materiel Fielding and Plarning.

PROCEDURES:

1. Review each major ILS element above relative to the selected system/equipment. Determine how the selected alternative support concept, for the system/equipment under review, impacts ILS characteristics (i.e., transportability) relative to performance, readiness, schedule, resource requirements and/or O&S costs. Rate the potential impact on the system's ILS characteristics as either "minor "or" major". For those areas not impacted, indicate "No Impact" for that element.

2. This process constitutes the first screening of the ILS elements to be considered in the risk analysis in Process 302.2.5.4 below. It also provides guidelines to Process 302.2.5.3A2, indicating which major elements to address in the evaluation of ILS subelements.

TABLE 302.2.5.3A1-1 SCREENING OF MAJOR ILS ELEMENTS

ALT SYSTEM/EQUIPMENT _____ ALT SUPPORT CONCEPT _____			
MAJOR ILS ELEMENTS	POTENTIAL IMPACT ON NEW SYSTEM/EQUIPMENT		
ELEMENT NO.	NO IMPACT	MINOR	MAJOR
1. DESIGN INFLUENCE			
2. MAINTENANCE PLANNING			
3. MANPOWER/PERSONNEL			
4. SUPPLY SUPPORT			
5. SUPPORT EQUIP/TMDE			
6. TRAINING/TRAINING DEVICES			
7. TECHNICAL DATA			
8. COMPUTER RESOURCES SPT			
9. TRANS/TRANSPORTABILITY			
10. FACILITIES			
11. STANDARDIZATION/OP			
12. RAM			
13. SUP MANAGE/ANALYSIS			
14. COST ANALYSIS/FUNDING			
15. MATERIEL FIELDING/PLAN			

PROCESS 302.2.5.3A2 - Identify Potential Subset of ILS Area of Impact

PURPOSE:

For each major ILS element previously selected this process provides an opportunity to identify related ILS areas or subelement characteristics affected by the selected alternative support concept.

PROCEDURES:

1. Within each major ILS element, several subsets of requirements must be addressed to establish the bounds of the risk analysis to be performed in Process 302.2.5.3A3. Keeping in mind the selected support concept, match the 15 major ILS elements, with Tables 302.2.5.3A2-1 through 302.2.5.3A2-15, and identify the ILS subelements that cause the selected system/equipment to fail to meet the threshold requirements for performance, cost, and schedule.

> **NOTE:** For example, because of the recent Saudi Arabia operations, the nature of desert warfare and the performance of military equipment being engaged under those environmental conditions must be assessed.

2. In this process, select for analysis those of ILS subelements which match the major ILS elements selected in Process 302.2.5.3A1. Reject those subelements which do not apply to the selected system/equipment, select for analysis only those which may affect the selected system/equipment over its life cycle.

3. Use the following tables, (based on the logisticians experience, training, and background) to summarize the magnitude of the potential impact: "no impact", "minor", "major". For all subelements deemed "MAJOR", include a statement which defines the conditions under which the system/equipment might be affected by the support concept (i.e., transportability might be seriously affected if only medium lift helicopters were available for forward movement into the battleground).

4. The results of this analysis will be used in Process 302.2.5.3A3 to determine the applicability of the selected support concept to the selected system/equipment.

TABLE 302.2.5.3A2-1 - DESIGN INFLUENCE

ALT SYSTEM/EQUIPMENT _____

ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. MANPRINT			
2. ENERGY EFFICIENCY			
3. HAZARDOUS MATERIALS			
4. LCC			
5. HUMAN FACTORS ENG.			
6. SAFETY			
7. BITE			
8. SOURCE SELECTION			
9. TESTING FEEDBACK			
10. CONTRACTOR INCENTIVES			
11. RAM-DRIVEN SUPPORT			
12. PPI (AR 70-15)			
13. TRANSPORTABILITY			
14. FACILITY LIMITATIONS			
15. NUCLEAR HARDENING			
16. PACKAGING/HANDLING			
17. DESIGN FOR DISCARD			
18. SRO			
19. TRACKING OF PARTS, ETC			
20. USE OF METRIC			
21. EMBEDDED TRAINING			

TABLE 302.2.5.3A2-2 - MAINTENANCE PLANNING

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. MAINTENANCE CONCEPT			
2. MAINTENANCE FACILITIES			
3. MAINTENANCE TASKS			
4. MAINTENANCE ORGANIZATIONS			
5. EXPENDITURE LIMITS			
6. MAINTENANCE STANDARDS			
7. PROVISIONING PLAN			
8. OPER'NAL READINESS FLOAT			
9. REPAIR CYCLE FLOAT			
10. CONTRACTOR SUPPORT			
11. RQMNTS-RESTORE SERVIC'TY			
12. HOST NATION SUPPORT			
13. INTERSERVICE AGREEMENTS			
14. DEPOT MAINT. SUPPORT			
15. IM/TDA MAINT SUPPORT			
16. BATTLEFIELD DAMAGE ASSES			
17. DIRECT EXCHANGE			
18. MANPRINT CONSIDERATIONS			
19. NUCLEAR HARDNESS RQMNTS			

TABLE 302.2.5.3A2-3 MANPOWER AND PERSONNEL

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. NUMBER PERSONNEL RQRD			
2. SKILLS AND GRADES RQRD			
3. MANPRINT CONSIDERATIONS			
4. RETENTION CONSTRAINTS			
5. LITERACY RQMTS			
6. QQPRI			
7. SPECIAL SKILL RQMNTS			
8. HAZARDOUS SKILL RQMNTS			
9. HUMAN FACTORS CONSIDERATIONS			
10. SECURITY CLEARANCE RQMNTS			

TABLE 302.2.5.3A2-4 - SUPPLY SUPPORT

ALT SYSTEM/EQUIPMENT _____

ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. INITIAL PROVISIONING			
2. SPARE OR REPAIR PARTS			
3. SUPPLY FACILITIES			
4. BASIC SUSTAINMENT (POL, AMMUNITION, CONSUM-ABLES, ETC.)			
5. HANDLING EQUIPMENT			
6. SMR/IMC			
7. DLA/GSA/ARMY/OTHER SERVICE ITEMS			
8. POMCUS STOCKS			
9. WAR RESERVES (AR 11-11 AND AR 710-1)			
10. BASIC ISSUE ITEMS/ ON BOARD SPARES			
11. MAJOR OR SECONDARY ITEMS			
12. CATALOGING (NAT'L STOCK NO. ASSIGNMNTS, ETC.)			
13. USE OF METRIC MEASREMNTS			
14. SETS, KITS OUTFITS			
15. POST-PROVISIONING ASSMNT OR REVIEWS			
16. PHYSICAL DIMENSIONS, TO INCLUDE WEIGHT, HEIGHT AND CUBE			
17. CONTAINER REQUIREMENTS			
18. STORAGE SPACE			
19. ADMINISTRATIVE SUPPORT STORAGE			
20. NUCLEAR (HCIs)			
21. PARTS/COMPNTS/END ITEM SERIAL NUMBER TRACKING			
22. DECONTAMINATION EQPMNT PRECAUTIONS			
23. PRECAUTIONS FOR EXPLSVS RADIOACTIVE MATERIEL			
24. RESCINDED			
25. RESCINDED			
26. SECURITY REQUIREMENTS (SYSTEM, PARTS, MANUALS ETC.)			

TABLE 302.2.5.3A2-5 - PACKAGING, HANDLING, AND STORAGE

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. HANDLING EQUIPMENT			
2. SMR/IMC			
3. SECURITY REQUIREMENTS (SYSTEM, PARTS, MANUALS, ETC.)			
4. DISPOSAL/DEMILITZTION			
5. SETS, KITS, OUTFITS			
6. POST-PROVISIONING ASSESSMENT OR REVWS			
7. PHYSICAL DIMENSION, TO INCLUDE WEIGHT, HEIGHT, AND CUBE			
8. CONTAINER REQMNT'S			
9. STORAGE SPACE			
10. ADMINISTRATIVE SPT STORAGE			
11. PRESERVATION/PACKAGING HNDLG REQMNTS (AR 700-15)			
12. PALLET/HARDSTAND REQMNTS, AIR DELIVERY			
13. DECONTAMINATION EQUIP./ PRECAUTIONS			
14. PRECAUTIONS FOR EXPLOSIVE/RADIOACTIVE MATERIEL			
15. HANDLING CONSTRAINTS			
16. LIFTING AND TIEDOWN REQUIREMENTS			

TABLE 302.2.5.3A2-6 - SUPPORT EQUIPMENT AND TMDE

ALT SYSTEM/EQUIPMENT _____

ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. TMDE (COMMON AND PECULIAR)			
2. CALIBRATION EQUIPMENT AND PROCEDURES			
3. AUTOMATIC TEST EQUIPMENT			
4. SUPPORT AND HANDLING EQUIPMENT			
5. ELECTRIC GENERATORS			
6. POL AND AMMUNITION VHCLS.			
7. TOOLS AND TOOL KITS			
8. SYSTEM MAJOR ITEM CMPNTS			
9. BOIP (AR 71-2)			
10. ASSOCIATED SUPPORT ITEMS OF EQUIPMENT			
11. RECOVERY OR EVACUATION EQUIPMENT			
12. IM MOBILE MAINTENANCE FACILITIES (COMPONENTS)			
13. TEST PROGRAM SETS			
14. MANPRINT CONSIDERATIONS			
15. INSTALLATION UNITS (COMMUNICATION, WPNS, CHMCL DETC'N, SMOKE, ETC)			
16. DEPOT MAINTENANCE PLANT EQUIPMENT			

TABLE 302.2.5.3A2-7 - TRAINING AND TRAINING DEVICES

ALT SYSTEM/EQUIPMENT _____

ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. FACTORY TRAINING			
2. INSTRUCTOR AND KEY PERSONNEL TRAINING			
3. NEW EQUIPMENT TRAINING PLAN			
4. NEW EQUIPMENT TRAINING TEAM REQUIREMENTS			
5. SYSTEM TRAINING PLAN (REPLACES INDIVIDUAL AND COLLECTIVE TRAINING PLAN)			
6. RESIDENT SCHOOL TRAINING			
7. ARMY TRAINING AND EVALUATION PROGRAM			
8. TRAINING MATERIALS, AIDS, AND DEVICES			
9. TRAINING AMMUNITION			
10. JOINT SERVICE TRAINING			
11. DISPLACED EQUIPMENT TRAINING PLAN			
12. TRAINING EQUIPMENT			
13. EXTENSION COURSE TRAINING			
14. STUDENT TRAINING REQUIREMENTS			
15. FIELD MANUALS			
16. SOLDIER MANUALS			
17. SKILL LEVELS AND SKILL SPECIALTIES			
18. SKILL QUALIFICATION TEST			
19. TRAINING INSTRUCTIONS			
20. MATERIALS AND LESSONS			
21. JOINT SERVICE TRAINING AGREEMENTS			
22. TRAINING DEVICE SUPPORT			
23. DEPOT TRAINING/TRAINING DEVICES			
24. EXPLOSIVE ORDNANCE DISPOSAL TRAINING			
25. MANPRINT CONSIDERATIONS			

TABLE 302.2.5.3A2-8 - TECHNICAL DATA

ALT SYSTEM/EQUIPMENT _____

ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. TECHNICAL MANUALS			
2. TECHNICAL BULLETINS			
3. TRANSPORTABILITY GUIDANCE TECHNICAL MANUALS			
4. IDENTIFICATION LISTS			
5. COMPONENT LISTS			
6. REPAIR PARTS AND SPECIAL TOOLS LIST			
7. MAINTENANCE ALLOCATION CHART			
8. LUBRICATION INSTRUCTIONS			
9. SUPPLY BULLETINS			
10. PROVISIONING TECHNICAL DOCUMENTATION			
11. CALIBRATION PROCEDURES			
12. DRAWINGS AND SPECIFICATIONS			
13. TEST RESULTS			
14. SOFTWARE DOCUMENTATION			
15. SKILL AND TASK ANALYSIS			
16. FACILITIES UTILIZATION			
17. PACKAGING PROCEDURES AND MATERIELS			
18. DEPOT MAINTENANCE WORK REQUIREMENTS			
19. LOGISTIC SUPPORT ANALYSIS RECORD			
20. VERIFICATION AND VALIDATION			
21. ILS PLANNING DOCUMENTATION AND ASSOCIATED CONTRACTOR DELIVERABLES			
22. DEMILITARIZATION AND EXPLOSIVE ORDNANCE DISPOSAL PROCEDURES			
23. MANPRINT DATABASE			

TABLE 302.2.5.3A2-9 - COMPUTER RESOURCES SUPPORT

ALT SYSTEM/EQUIPMENT _____

ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. SYSTEM OPERATIONAL SOFTWARE 2. ATE OPERATIONAL SOFTWARE 3. COMPUTER RESOURCES MNGMNT PLAN 4. PDSS 5. PDSS PRODUCT IMPROVEMENT 6. PDSS TEST VERIFICATION PROCESS 7. SOFTWARE STORAGE, SECURITY REQUIREMENTS			

TABLE 302.2.5.3A2-10 - TRANSPORTATION AND TRANSPORTABILITY

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. RAIL, HIGHWAY, WATER, AIR-WEIGHT AND DIMENSIONAL LIMITS			
2. WIDTH AND HEIGHT CONSTRAINTS			
3. CUSTOMS REQUIREMENTS			
4. AIRDROP AND HELICOPTER REQUIREMENTS			
5. TRANSPORTATION CONFIGURATION PREPARATION/LOADING REQMNTS			
6. SPECIAL PRECAUTIONS			
7. TRANSPORTABILITY REPORT/ APPROVAL			
8. UNIT MOBILITY IMPACTS			
9. CONTAINER COMPATIBILITY			
10. LIFTING/TIE-DOWN PROVISIONS			
11. MOBILE MAINTENANCE AND SUPPLY VAN CONFIGURATION			
12. TMDE AND SPECIAL TOOLS TRANSPORT REQUIREMENTS			
13. SUPPORT EQUIPMENT TRANS-PORT REQUIREMENTS			
14. TESTING			

TABLE 302.2.5.3A2-11 - FACILITIES

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. TRAINING FACILITIES REQMNTS			
2. DEPOT MAINTENANCE FACILITIES REQMNTS			
3. MOBILE MAINTENANCE FACILITIES			
4. FIXED IM/TDA MAINTENANCE FACILITIES			
5. FIXED AND MOBILE STORAGE FACILITIES, INCLUDING AMMUNITION AND SPECIAL WEAPONS STORAGE			
6. TESTING AND OPERATIONAL FACILITIES			
7. FACILITY PHYSICAL SECURITY REQUIREMENTS			
8. FACILITY UTILITIES (SUCH AS COMMON OR UNIQUE ORGANIC/COMMERCIAL POWER)			
9. SPECIAL FACILITY REQMNTS			
10. FACILITY DESIGN REQUIREMENTS LEADTIME, DESCRIPTION, COSTS, HOUSING AND DINING FACILITIES			
11. TRAINING RANGES, TARGETS, SCORING EQUIPMENT, SAFETY FANS, ETC.			

TABLE 302.2.5.3A2-12 - STANDARDIZATION AND INTEROPERABILITY

ALT SYSTEM/EQUIPMENT _____ ALT SUPPORT CONCEPT _____			
ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. SYSTEM FAMILY APPROACH 2. INTEROPERABLE SYSTEMS 3. PROVEN COMPONENTS AND SUB-SYSTEMS 4. OTHER SERVICE, NATO ALLIES INTERFACE (AR 12-16) 5. STANDARDIZED COMPONENTS, SUBSYSTEMS, FREQUENCIES, ETC. 6. USE OF METRIC MEASUREMENTS			

TABLE 302.2.5.3A2-13 - RAM

ALT SYSTEM/EQUIPMENT _____ ALT SUPPORT CONCEPT _____			
ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. RELIABILITY GROWTH PLAN 2. SYSTEM READINESS OBJECTIVES 3. TEST PLANNING 4. DURABILITY 5. TEST RESULTS			

TABLE 302.2.5.3A2-14 - SUPPORT MANAGEMENT AND ANALYSIS

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. ILS PLAN			
2. SAMPLE DATA COLLECTION			
3. TEST DATA/EVALUATION			
4. COORDINATION OF TESTING REQUIREMENTS/LOCATION			
5. LSA			
6. LSA STRATEGY AND RESULTS			
7. LSAR			
8. REQUIREMENTS DOCUMENT			
9. CONFIGURATION MANAGEMENT			
10. SOLICITATION DOCUMENT			
11. LSA DOCUMENTATION			
12. TEST AND EVALUATION PLANS/DATA INTEGRATION			
13. LOGISTIC DEMONSTRATION PLAN			
14. SUPPORT TRANSITION PLAN			
15. POST-FIELDING ASSESSMENT			
16. ISP			
17. WARRANTY CONSIDERATION OR UTILIZATION			
18. POST-PRODUCTION SUPPORT PLANNING			
19. LOGISTICS EVALUATION			
20. ILS/MANPRINT INTEGRATION			

TABLE 302.2.5.3A2-15 - COST ANALYSIS AND FUNDING

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. O&S COST (DA Pam 11-4)			
2. INITIAL PROVISIONING COSTS			
3. ACQUISITION TMDE/CALIBRATION			
4. TOOLS AND SUPPORT EQUIPMENT COSTS			
5. PUBLICATIONS PREPARATION			
6. PRINTING COSTS			
7. FIRST AND SECOND DESTINATION TRANSPORTATION COSTS			
8. SPECIAL SUPPORT SERVICES (WARRANTY)			
9. DEPOT AND CONTRACT MAINTENANCE COST			
10. TECHNICAL ASSISTANCE (CONTRACT/MILITARY/ CIVILIAN)			
11. TEST TRAINING, TRAINING EQUIPMENT/MATERIELS/ DEVICES			
12. LOGISTIC SUPPORT ANALYSIS (CONTRACTOR)			
13. SECONDARY/STOCK FUND PARTS SUPPORT COST			
14. EXPENDABLE SUPPLIES SPT COST			
15. MAINTENANCE EXPENDITURE LIMITS			
16. FACILITY COSTS			
17. TEST PROGRAM SET DEVELOPMENT AND ACQUISITION COSTS			
18. PDSS COSTS			
19. RESOURCES			
20. ILS COST ELEMENTS			
21. ILS MANAGEMENT RESOURCES			
22. ADEQUACY, AVAILABILITY, AND TIMELINESS			
23. COEA			
24. BASELINE COST ESTIMATE			
25. TOTAL PACKAGE FIELDING			
26. WORK BREAKDOWN STRUCTURE			

TABLE 302.2.5.3A2-16 - MATERIEL FIELDING PLANNING

ALT SYSTEM/EQUIPMENT _____
ALT SUPPORT CONCEPT _____

ILS SUBELEMENT	POTENTIAL IMPACT		
	NO IMPACT	MINOR	MAJOR
1. TIMING SCHEDULE			
2. LETTER OF NOTIFICATION			
3. MATERIEL FIELDING PLAN			
4. JOINT INTEGRATED LOGISTIC SUPPORT PLAN (FOR MULTI-SERVICE SYSTEMS)			
5. MATERIEL RELEASE REVIEW			
6. MATERIEL FIELDING UNDER TOTAL PACKAGE/FIELDING CONCEPT			
7. MATERIEL FIELDING AGREEMENT			
8. MISSION SUPPORT PLAN			
9. SUPPORTABILITY ASSESSMENT			
10. COORDINATION OF PERSONNEL REQUIREMENTS			
11. MATERIEL TRANSFER PLAN			
12. MATERIEL TRANSFER AGREEMENT			
13. MEMORANDUM OF AGREEMENT			
14. REQUEST FOR CALL FORWARD			
15. DISPLACED SYSTEMS			
16. AMIM INPUT			

PROCESS 302.2.5.3A3 - Support Concept Applicability to Selected System/Equipment

PURPOSE:

This process must identify the applicability of the alternative support concepts to the multiple new system/equipment and operational alternatives, as well as to the current system/ equipment. The results of this process are used to qualify or quantify the ILS impact on the selected system/equipment in Process 302.2.5.3A4 and for direct application to the final risk analysis to be performed in Process 302.2.5.4.

PROCEDURES:

1. Review the results of each major ILS subset assessment for each selected alternative support concept relative to the selected new system/equipment. For each alternative support concept, group together the ILS Elements and Subelements by impact category (either major or minor).

TABLE 302.2.5.3A3-1 SUPPORT SYSTEM APPLICABILITY

ALT SYSTEM/EQUIPMENT _____ ALT SUPPORT CONCEPT _____		
	ILS ELEMENT	ILS SUBELEMENT
MAJOR IMPACT		
MINOR IMPACT		

2. For each alternative system/equipment, review the consolidated impact of each alternative support concept. The experienced logistician will know which alternative support concepts have excessive "major impacts" rendering the concept unacceptable for the selected system/equipment.

3. For those alternative support concepts which have "major" or "minor" impacts, determine what changes must be made in the selected support concept to adequately support the new system/ equipment within known program thresholds. Alternatively, identify the new requirements imposed on the ILS elements for the new system/equipment. Compare these to the currently available ILS resources in Process 302.2.5.4 below.

PROCESS 302.2.5.3A4 - Qualify/Quantify Effect on ILS Element

PURPOSE:

Qualify and/or quantify the effect of the selected alternative support system concept on the selected new system/equipment, or on currently available logistic resources.

PROCEDURES:

1. In this process, management decision data will be developed on the ability of the selected support system concept to maintain threshold requirements for performance, cost and schedule under all conditions to which Army system/equipment materiel may be exposed.

2. For those ILS elements which may ultimately require critical resources, determine the parameters and/or factors which should be addressed in the following process on Risk Analysis. This information is used in Process 302.2.5.4 to determine the risk (probability of failure to reduce O&S costs, or to improve system readiness due to the lack of skills) of introducing this alternative support concept. Applicable ILS elements and subelements are to be addressed in this manner as the major input to the risk analysis in Process 302.2.5.5.

NOTE: The results of Process 302.2.5.3A3 will be reviewed to determine those ILS elements which may become critical with the application of the selected alternative support system concept. For example, the support system concept applied to the new system/equipment may require a number of special skills. These may represent most of the critical skills available and required in a more critical application (i.e., 50% of all integrated circuit (IC) repairmen for fourth generation computers).

3. The outputs of this process will address the qualification/ quantification of the ILS elements relative to: (1) functional requirements of the new system/equipment, and (2) the current support system and available logistic resources. The major ILS elements addressed in this process are provided to the risk analysis to assess how they are impacted by the proposed support concepts.

TABLE 302.2.5.3A4-1 QUALIFICATION/QUANTIFICATION OF ILS IMPACT

SELECTED NEW SYSTEM/EQUIPMENT _____ ALTERNATIVE SUPPORT CONCEPT _____	
MAJOR ILS IMPACT AREA	CRITICAL FACTORS

PROCESS 302.2.5.4 - Risk Analysis on Selected Alternative Support System Concept

PURPOSE:

To perform a standard risk analysis on each alternative support concept as it applies to the selected new system/equipment alternative. This risk analysis addresses the probability that the selected support concept for the new system/equipment does not satisfy all performance, cost, and schedule requirements under all environmental conditions in which the new system/equipment can be expected to operate.

PROCESS 302.2.5.4A1 Identify Potential ILS Risk Parameters

PURPOSE:

Provide a first level consolidation and/or quantification of the potential critical ILS risk parameters or factors associated with the application of the support system concept to the new system/equipment or currently available logistic resources.

PROCEDURE:

1. For each applicable major ILS impact area selected in Process 302.2.5.3A4 categorize those risk areas which may have a major impact on the supportability of the new system equipment as critical risks. Additionally, if any of the ILS element reviews indicate no major impact, but many related subelements with minor impacts, add that ILS element potential critical risk area for further consideration (many minor impacts may add up to major impact).

2. List potential critical ILS areas related to the alternative support system concept which may present a risk to meeting the threshold performance, cost and schedule requirements for the selected system/equipment or require excessive amounts of critical logistic resources. Summarize these on Table 302.2.5.4A1-1.

TABLE 302.2.5.4A1-1 POTENTIAL CRITICAL ILS RISK AREAS

SELECTED NEW SYSTEM/EQUIPMENT _____ ALTERNATIVE SUPPORT SYSTEM CONCEPT _____
CONSOLIDATED POTENTIAL CRITICAL ILS RISK AREAS
1. 2. 3. 4.

PROCESS 302.2.5.4A2 - Establish Changes Required to Apply Alternative Support Concept

PURPOSE:

Determine the changes required in military or Army procedures, posture, resources, goals, environment, for application of the alternative support concept to the selected new system/ equipment.

PROCEDURE:

1. Process 302.2.5.4A1 above developed a list of potential ILS elements and subelements causing critical logistic risks for the selected new system/equipment due to the selected support system concept. Assume that it would be highly desirable to apply the selected support system concept to the new system/equipment. Determine those changes required in military or Army procedures, posture, resources, goals, or environment to remove/reduce the criticality associated with the alternative support system concept.

2. Using Table 302.2.5.4A2-1, detail the changes required in military or Army procedures (regulations, directives, MIL-STDs, etc.), posture, resources (men, money, materiel), goals (SRO, COEA, etc.), and/or environment in which the system is to operate. Relate the changes to each major ILS element and/or ILS subelement listed in Table 302.2.5.4A1-1. Thus, for example, if the critical ILS subelement relates to the shortage of a critical MOS, the changes may include:

   a. Redesign of the new system/equipment to eliminate the characteristics or functions which require the availability of the critical MOS.

   b. Increase the availability of personnel in the critical MOS by cross training or increasing number of students in the MOS training program.

   c. Drawdown the critical MOS from other Army units.

3. Note that initial iteration of the "required" changes in Table 302.2.5.4A2-1 represents the logistician's resolution of the potential program, regardless of their potential consequences. These results are then coordinated with the PM or ILSMT (302.2.5.4A3) for credibility in the Army environment and returned to the logistician for further processing.

4. Provide the results of this process to the next process to establish the risk factor or the probability of not achieving the required changes.

TABLE 302.2.5.4A2-1 CHANGES REQUIRED TO APPLY ALTERNATIVE SUPPORT SYSTEM CONCEPT

SELECTED NEW SYSTEM/EQUIPMENT _____ ALTERNATIVE SUPPORT CONCEPT _____	
CRITICAL ILS ELEMENT OR SUBELEMENT	REQUIRED CHANGES TO ARMY PROCEDURES, GOALS, POSTURE, ETC

PROCESS 302.2.5.4A3 - Probability of not Achieving Required Changes

PURPOSE:

Determine the probability of not achieving (or alternatively achieving) the required changes in the military and/or Army procedures, posture, sources, goals, or environment for each critical ILS element and/or subelements developed in Table 302.2.5.4A2-1.

PROCEDURE:

1. For each critical ILS element/subelement, assess the feasibility and/or probability of achieving the required changes to the military and/or Army procedures, posture, resources, goals, or environments listed in Table 302.2.5.4A2-1, in order to apply the alternative support system concept to the new system/equipment. The probability of failure should be based on the required changes developed in Process 302.2.5.4A2 and the physical, economic, and environmental conditions prevalent in the military, and in particular to the Department of the Army, at the proposed time of implementation of the alternative support concept.

2. Sources of baseline conditions for the risk analysis will be developed from the Program Manager, ILSMT, and existing Army and DOD publications (regulations, procedures, directives, circulares, standards, etc.)

TABLE 302.2.5.4A3-1 PROBABILITY OF NOT ACHIEVING REQUIRED CHANGES

SELECTED NEW SYSTEM/EQUIPMENT _____ ALTERNATIVE SUPPORT CONCEPT _____	
REQUIRED CHANGE TO ARMY PROCEDURES, GOALS, POSTURE	PROBABILITY OF NOT ACHIEVING RQD CHANGES

PROCESS 302.2.5.5 - Risk Analysis Related to Cost, Performance and Schedule Requirements

PURPOSE:

Using results of the ILS element risk analysis, establish the probability that a given alternative support concepts may not be able to satisfy the cost, performance, and schedule requirements of several new system/equipment alternatives or meet the limitations imposed by shortages of critical resources.

This probability is then directly related to the risk factors associated with the application of the selected support system concept to several of the alternative the new system/equipments.

PROCESS 302.2.5.5A1 - Consolidate ILS Risk Factors for each Alternative Support Concept

PURPOSE:

Based on the risk potentials for the individual ILS elements and subelements, consolidate the risk areas and levels by the selected alternative support system concepts as they may affect cost, performance and schedule of the selected new system/ equipment.

PROCEDURE:

1. In Process 302.2.5.4, the support concept risks for each major ILS element and related subelements were developed and coordinated with the PM and/or ILSMT for a specific new system/equipment. From each risk analysis performed for an individual system/equipment, consolidate all the risks that relate to a specific support concept. (This corresponds to analyzing a single support concept that applies to several system/equipment alternatives and compiling a complete set of risks).

2. Table 302.2.5.5A1-1 summarizes all the risk factors by ILS elements for each support system concept analyzed during this task. Once complete, this table allows the logistician and/or the PM/ILSMT to assess the viability of the support concept relative to the complete family of alternative new systems/equipment in Process 302.2.5.5A2 below.

TABLE 302.2.5.5A1-1 CONSOLIDATED RISK POTENTIALS FOR ALTERNATIVE SUPPORT CONCEPT NO. _____

ILS ELEMENT	SYSTEM/EQUIPMENT	RISK POTENTIAL

PROCESS 302.2.5.5A2 - Potential Impact of Risks on Support Concept Assessment

PURPOSE:

Determine the potential impact on cost, performance, schedule and limited logistic resources for all ILS risks and risk factors identified for the selected alternative support system concept.

PROCEDURE:

1. Based on data from Table 302.2.5.5A1-1, decide if any alternative support concept has the potential to satisfy the requirements of the new system/equipment. The results should be a recommendation to the PM/ILMST as to which alternative support concepts are viable under the conditions set forth by the SOR and the COEA. For the new system/equipment, summarize the risks associated with each alternative support concept.

The information should then be prepared for forwarding to the PM/ILSMT for their ultimate decision on:

1. Acceptable - meets threshold requirements
2. Accept w/recognized penalties of deficiencies
3. Reject as unsatisfactory - (does not meet threshold requirements)
4. Institute changes in support concepts based on the risk factor analysis

ANNEX D

LSA SUBTASK 302.2.5
VERT APPLICATION METHODOLOGY

VERT APPLICATION METHODOLOGY

BACKGROUND:

Venture Evaluation and Review Technique (VERT) was developed as a network analysis technique to facilitate management decision making. It allows a systematic planning and control of programs and enables managers to find solutions to real life managerial problems.

The terms of the APJ contract require the provision of batch files for each of the VERT networks associated with the various Data Flow Diagrams in the APJ 966 projects.

APJ has been successful in adopting a method for the creation of these networks using the existing EXCELERATOR software package and establishing a naming convention compatible with that used in the Data Flow Diagrams. To do this APJ has made use of the PC model of VERT. A Structured Analysis project was used for this purpose. The prototype VERT network structure was made for one top level and one lower level data flow diagram.

The PC model of VERT has certain limitations built into it. To overcome some of these limitations, certain conventions were used to create the input files. To maintain full generality a set of "dummy" default values were established. The model allows the user to alter the default values of time, cost, and performance to satisfy their specific requirements.

METHODOLOGY:

The basic symbols used to structure the network are:

(i) **SQUARES** - to indicate NODES. These are decision points in the project, or points beyond which the project cannot proceed unless certain criteria are met. There are two type of nodes, one which supports input operations and, the second type which supports output operations.

(ii) **LINES** - to indicate ARCS which are activities that have time, cost, and performance criteria associated with them.

In practice, however, both the arcs and nodes are similar, in that both have time, cost, and performance criteria associated with them. The arcs have a primary and a cumulative set of time, cost, and performance criteria whereas the nodes have only a single cumulative set.

(iii) **NAMING CONVENTIONS** - Efforts have been made to keep the naming convention as compatible as possible to the Data Flow Diagrams. The naming convention used is displayed below.

NODES - All nodes are prefixed with the letter **N**. The individual Nodes are identified by a number and a letter. The number refers to the number of the node within the diagram and the letter refers to the diagram number in the project. In the event that a node has been referenced in an earlier diagram they also carry the number of the node in the earlier diagram as a prefix to the individual node number.

N2.4A

N - All nodes are prefixed with the letter **N**
2 - Gives the number of the node it relates to in a higher level diagram or an earlier data flow diagram within the project. In this case it refers to node **N2** of the top level diagram.
4 - Gives the number of the node it relates to in a higher level diagram or an earlier data flow diagram within the project. In this case it refers to node **N2** of the top level diagram.
A - The nodes in each subsequent explosion are allotted an alphabetical suffix indication the number of the explosion diagram in the particular project. In this case it is the first lower level diagram within the project.

ARCS - All arcs are prefixed with either the letter **C** or **E**. The individual Arcs are identified by two numbers. The first number refers to the number of the arc within the diagram and the second number refers to the number of the diagram within the project. In the event that an arc has been referenced in an earlier diagram they also carry the number of the arc in the earlier diagram as a prefix to the individual arc number. The arcs which are identified by the letter **E** have direct reference to a process in the corresponding data flow diagram and as such are named the same as the process itself.

C3.3.8.4 **E12.1A2**

C - All arcs are prefixed with the letter C. In some cases, however, arcs carry a prefix of **E**. These particular arcs correspond to a process within the data flow diagram and are thus named the same as the process itself.

3.3- Gives the number of the arc it relates to in a higher level diagram or an earlier data flow diagram within the project. In this case it refers to arc number 3 in lower level diagram #3 within the project.

8.4- Indicates that this particular arc is the #8 arc in the #4 lower level diagram of the project.

BATCH FILES

INPUT FILES - The input file names are given the extension *.IN.
OUTPUT FILES - The simulation output files are given the extension *OU.
PRINT FILES - The print files have been given the extension *.PR.

(This would allow subsequent updates of the input files to be numbered as **IN1...**, **OU1...**, **PR1...** etc.)

DEFAULT SETTINGS:

Control Record:

(i) The output option selected is "O" which provides a detailed listing, and high level of summary information.

(ii) The input record listing option selected is "O" which prints all input records.

(iii) The composite terminal node output option selected is "16" which assumes family mode and intrafamily transfer of histogram data.

(iv) The number of interactions used are "10" in the demonstration model to facilitate operation in the debug mode if required.

(v) The composite node name and the network name are left as blanks.

(vi) In the run identification the name of the corresponding Data Flow Diagram is used as identification for the network description.

Arc Records:

(i) For each of the arcs the following records are provided:

(a) Master Arc Record
(b) Time Distribution Satellite
(c) Cost Distribution Satellite
(d) Performance Distribution Satellite

(ii) The Distribution Satellite Records are created to provide a uniform statistical distribution.

(iii) The default values used for the minimum and maximum in each criteria are:

TIME	10.0	10.0
COST	10.0	100.0
PERFORMANCE	10.0	50.0

Node Records:

(i) Input Logic - The input logic for the nodes are either "**INITIAL**" or "**AND**".

(ii) Output Logic - The output logic has been defaulted to "**AND**" or "**TERMINAL**".

(iii) The output option indicator and the storage option indicator are defaulted to read "0".

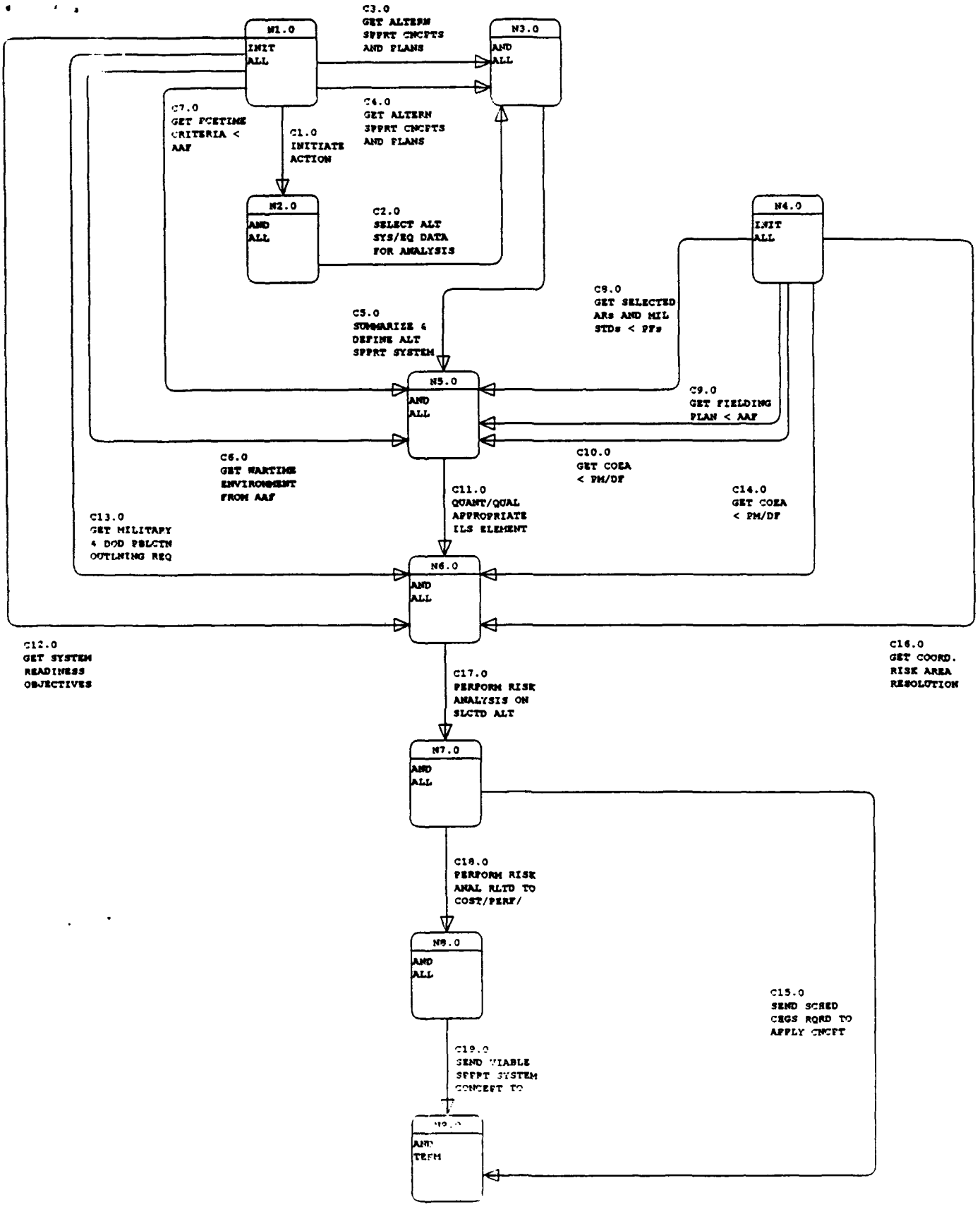
(iv) The node description has also been left blank.

(It is again noted that the user can change the default values to desired values as identified by the particular requirement and applications.)

DOCUMENTATION:

With every project report APJ will be providing the following documents relating to the VERT:

(i) A VERt network diagram corresponding to a particular data flow diagram.
(ii) A print out of the VERT network inputs for the particular data flow diagrams.
(iii) A floppy disc containing the sample input, print and the simulation output files for the default VERT network.



302.2.5 VERT RISK ANALYSIS
Created by: jack
Revised by: chau
Date changed: 14-FEB-91

```
                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
    1. 0016  10               RISK ANALYSIS
                +         +         +         +         +         +         +         +
    2. C1.0     N1.0    N2.0     1.0 INITIATE ACTION FOR SELECTED SYS/EQUIP ALTERNATIVE
    3. C1.0     DTIME 1          2      10.0      20.0
    4. C1.0     DCOST 1          2      10.0     100.0
    5. C1.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
    6. C2.0     N2.0    N3.0     1.0 SELECT ALTERNATIVE SYS/EQUIP DATA FOR ANALYSIS
    7. C2.0     DTIME 1          2      10.0      20.0
    8. C2.0     DCOST 1          2      10.0     100.0
    9. C2.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   10. C3.0     N1.0    N3.0     1.0 GET ALTERNATIVE SUPPORT CONCEPTS AND PLANS
   11. C3.0     DTIME 1          2      10.0      20.0
   12. C3.0     DCOST 1          2      10.0     100.0
   13. C3.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   14. C4.0     N1.0    N3.0     1.0 GET ALTERNATIVE SUPPORT CONCEPTS & PLANS<302.2.1/3
   15. C4.0     DTIME 1          2      10.0      20.0
   16. C4.0     DCOST 1          2      10.0     100.0
   17. C4.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   18. C5.0     N3.0    N5.0     1.0 SUMMARIZE & DEFINE ALTERNATIVE SUPPORT SYSTEM
   19. C5.0     DTIME 1          2      10.0      20.0
   20. C5.0     DCOST 1          2      10.0     100.0
   21. C5.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   22. C6.0     N1.0    N5.0     1.0 GET WARTIME ENVIRONMENT FROM AAF
   23. C6.0     DTIME 1          2      10.0      20.0
   24. C6.0     DCOST 1          2      10.0     100.0
   25. C6.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   26. C7.0     N1.0    N5.0     1.0 GET PEACETIME CRITERIA FROM AAF
   27. C7.0     DTIME 1          2      10.0      20.0
   28. C7.0     DCOST 1          2      10.0     100.0
   29. C7.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   30. C8.0     N4.0    N5.0     1.0 GET SELECTED ARs & MIL-STDs FROM P/Fs
   31. C8.0     DTIME 1          2      10.0      20.0
   32. C8.0     DCOST 1          2      10.0     100.0
   33. C8.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   34. C9.0     N4.0    N5.0     1.0 GET FIELDING PLAN FROM AAF
   35. C9.0     DTIME 1          2      10.0      20.0
   36. C9.0     DCOST 1          2      10.0     100.0
   37. C9.0     DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   38. C10.0    N4.0    N5.0     1.0 GET COEA FROM PM/DF
   39. C10.0    DTIME 1          2      10.0      20.0
   40. C10.0    DCOST 1          2      10.0     100.0
   41. C10.0    DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
   42. C11.0    N5.0    N6.0     1.0 QUANTIFY & QUALIFY APPROPRIATE ILS ELEMENTS
   43. C11.0    DTIME 1          2      10.0      20.0
   44. C11.0    DCOST 1          2      10.0     100.0
   45. C11.0    DPERF 1          2      10.0      50.0
                +         +         +         +         +         +         +         +
```

```
                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
1        N E W   N E T W O R K              PAGE  2
                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
   46. C12.0   N1.0    N6.0     1.0 GET SYSTEM READINESS OBJECTIVES
   47. C12.0   DTIME 1         2      10.0      20.0
   48. C12.0   DCOST 1         2      10.0     100.0
   49. C12.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   50. C13.0   N1.0    N6.0     1.0 GET MILITARY & DOD PUBLICATIONS OUTLINING REQRMNTS
   51. C13.0   DTIME 1         2      10.0      20.0
   52. C13.0   DCOST 1         2      10.0     100.0
   53. C13.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   54. C14.0   N4.0    N6.0     1.0 GET COEA FROM PM/DF
   55. C14.0   DTIME 1         2      10.0      20.0
   56. C14.0   DCOST 1         2      10.0     100.0
   57. C14.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   58. C15.0   N7.0    N9.0     1.0 SEND SCHEDULED CHANGES REQUIRED TO APPLY CONCEPTS
   59. C15.0   DTIME 1         2      10.0      20.0
   60. C15.0   DCOST 1         2      10.0     100.0
   61. C15.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   62. C16.0   N4.0    N6.0     1.0 GET COORDINATED RISK AREA RESOLUTION
   63. C16.0   DTIME 1         2      10.0      20.0
   64. C16.0   DCOST 1         2      10.0     100.0
   65. C16.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   66. C17.0   N6.0    N7.0     1.0 PERFORM RISK ANALYSIS ON SLCTD ALT SPPRT SYS CNCPT
   67. C17.0   DTIME 1         2      10.0      20.0
   68. C17.0   DCOST 1         2      10.0     100.0
   69. C17.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   70. C18.0   N7.0    N8.0     1.0 PERFORM RISK ANALYSIS RLTD TO COST/PERF/SCHED REQS
   71. C18.0   DTIME 1         2      10.0      20.0
   72. C18.0   DCOST 1         2      10.0     100.0
   73. C18.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   74. C19.0   N8.0    N9.0     1.0 SEND VIABLE SUPPORT SYSTEM CONCEPT TO PM/ILSMT
   75. C19.0   DTIME 1         2      10.0      20.0
   76. C19.0   DCOST 1         2      10.0     100.0
   77. C19.0   DPERF 1         2      10.0      50.0
                +         +         +         +         +         +         +         +
   78. ENDARC
                +         +         +         +         +         +         +         +
   79. N1.0    1  2 0 0
                +         +         +         +         +         +         +         +
   80. N2.0    2  2 0 0
                +         +         +         +         +         +         +         +
   81. N3.0    2  2 0 0
                +         +         +         +         +         +         +         +
   82. N5.0    2  2 0 0
                +         +         +         +         +         +         +         +
   83. N4.0    1  2 0 0
                +         +         +         +         +         +         +         +
   84. N6.0    2  2 0 0
                +         +         +         +         +         +         +         +
   85. N7.0    2  2 0 0
```

```
                +       +       +       +       +       +       +       +
                1       2       3       4       5       6       7       8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
1        N E W   N E T W O R K              PAGE  3
                1       2       3       4       5       6       7       8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
   86. N8.0    2  2 0 0
                +       +       +       +       +       +       +       +
   87. N9.0    2  1 0 0
                +       +       +       +       +       +       +       +
   88. ENDNODE
                1       2       3       4       5       6       7       8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
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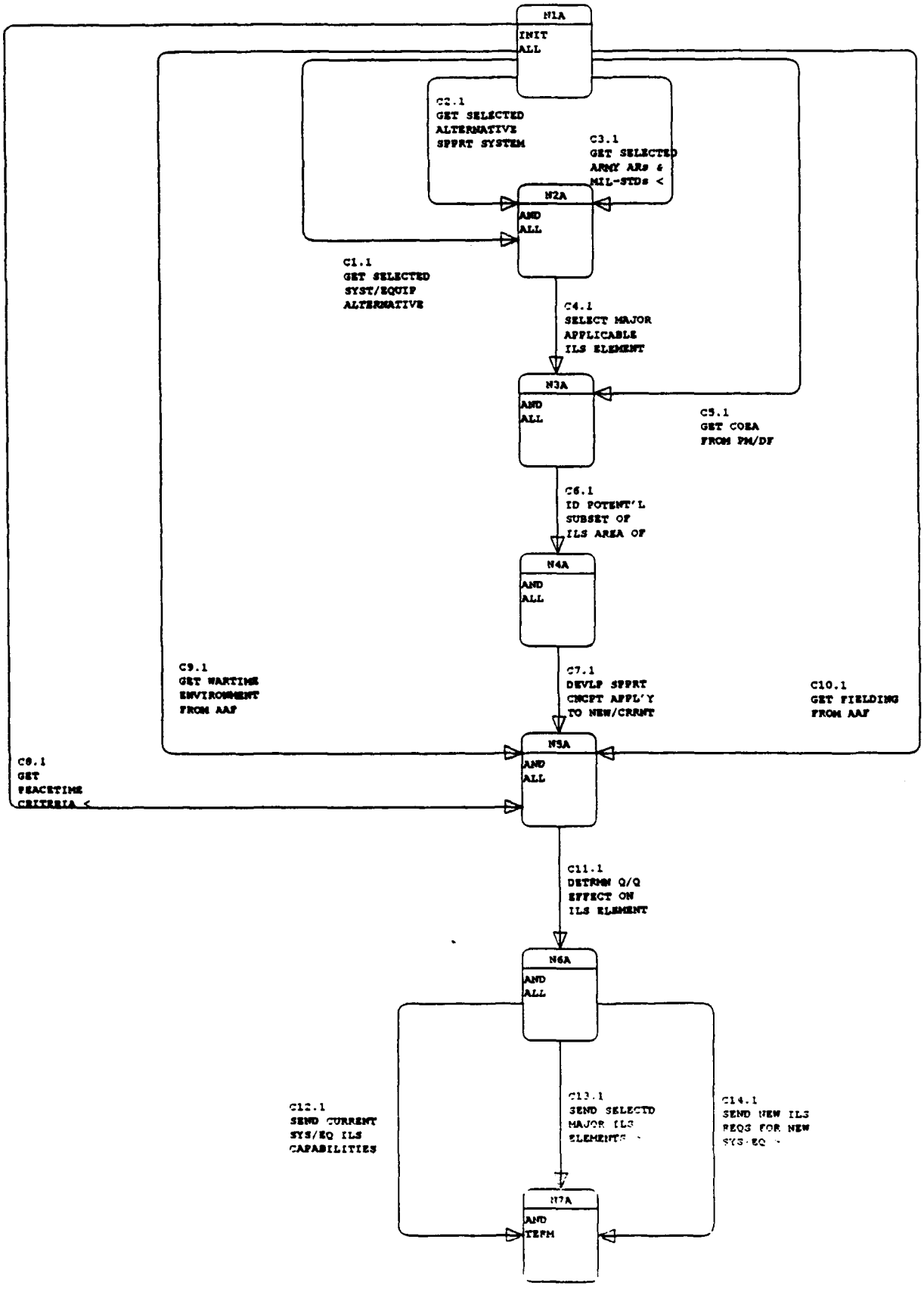

302.2.5.3A VERT Q/Q FOR ILS LEMT
Created by: jack
Revised by: jack
Date changed: 31-JAN-91

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          1       2       3       4       5       6       7       8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
1. 0016  10                QUANTIFY & QUALIFY APPROPRIATE ILS ELEMENTS
           +       +       +       +       +       +       +       +
2. C1.1   N1A     N2A      1.0 GET SELECTED SYSTEM EQUIPMENT ALTERNATIVE
3. C1.1   DTIME 1         2      10.0     20.0
4. C1.1   DCOST 1         2      10.0    100.0
5. C1.1   DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
6. C2.1   N1A     N2A      1.0 GET SELECTED ALTERNATIVE SUPPORT CONCEPTS & PLANS
7. C2.1   DTIME 1         2      10.0     20.0
8. C2.1   DCOST 1         2      10.0    100.0
9. C2.1   DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
10. C3.1  N1A     N2A      1.0 GET SELECTED ARMY ARs AND MIL-STDs FROM P/Fs
11. C3.1  DTIME 1         2      10.0     20.0
12. C3.1  DCOST 1         2      10.0    100.0
13. C3.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
14. C4.1  N2A     N3A      1.0 SELECT MAJOR APPLICABLE ILS ELEMENTS
15. C4.1  DTIME 1         2      10.0     20.0
16. C4.1  DCOST 1         2      10.0    100.0
17. C4.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
18. C5.1  N1A     N3A      1.0 GET COEA FROM PF/DF
19. C5.1  DTIME 1         2      10.0     20.0
20. C5.1  DCOST 1         2      10.0    100.0
21. C5.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
22. C6.1  N3A     N4A      1.0 IDENTIFY POTENTIAL SUBSET OF ILS AREA OF IMPACT
23. C6.1  DTIME 1         2      10.0     20.0
24. C6.1  DCOST 1         2      10.0    100.0
25. C6.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
26. C7.1  N4A     N5A      1.0 DEVELOP SUPPORT CONCEPTS APPL. TO NEW SYS/EQ ALT.
27. C7.1  DTIME 1         2      10.0     20.0
28. C7.1  DCOST 1         2      10.0    100.0
29. C7.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
30. C8.1  N1A     N5A      1.0 GET PEACETIME CRITERIA FROM AAF
31. C8.1  DTIME 1         2      10.0     20.0
32. C8.1  DCOST 1         2      10.0    100.0
33. C8.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
34. C9.1  N1A     N5A      1.0 GET WARTIME ENVIRONMENT FROM AAF
35. C9.1  DTIME 1         2      10.0     20.0
36. C9.1  DCOST 1         2      10.0    100.0
37. C9.1  DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
38. C10.1 N1A     N5A      1.0 GET FIELDING PLAN FROM AAF
39. C10.1 DTIME 1         2      10.0     20.0
40. C10.1 DCOST 1         2      10.0    100.0
41. C10.1 DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
42. C11.1 N5A     N6A      1.0 DETERMINE QUANTITY & QUALITY EFFECT ON ILS ELEMENT
43. C11.1 DTIME 1         2      10.0     20.0
44. C11.1 DCOST 1         2      10.0    100.0
45. C11.1 DPERF 1         2      10.0     50.0
           +       +       +       +       +       +       +       +
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                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
1        N E W   N E T W O R K                    PAGE  2
                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
   46. C12.1   N6A     N7A      1.0 SEND CURRENT SYS/EQUIP ILS CAPABILITIES > 302.2.5.4
   47. C12.1   DTIME 1         2      10.0      20.0
   48. C12.1   DCOST 1         2      10.0     100.0
   49. C12.1   DPERF 1         2      10.0      50.0
               +         +         +         +         +         +         +         +
   50. C13.1   N6A     N7A      1.0 SEND SELECTED MAJOR ILS ELEMENTS > 302.2.5.4
   51. C13.1   DTIME 1         2      10.0      20.0
   52. C13.1   DCOST 1         2      10.0     100.0
   53. C13.1   DPERF 1         2      10.0      50.0
               +         +         +         +         +         +         +         +
   54. C14.1   N6A     N7A      1.0 SEND NEW ILS REQRMNTS FOR NEW SYS/EQUIP > 302.2.5.4
   55. C14.1   DTIME 1         2      10.0      20.0
   56. C14.1   DCOST 1         2      10.0     100.0
   57. C14.1   DPERF 1         2      10.0      50.0
               +         +         +         +         +         +         +         +
   58. ENDARC
               +         +         +         +         +         +         +         +
   59. N1A     1  2 0 0
               +         +         +         +         +         +         +         +
   60. N2A     2  2 0 0
               +         +         +         +         +         +         +         +
   61. N3A     2  2 0 0
               +         +         +         +         +         +         +         +
   62. N4A     2  2 0 0
               +         +         +         +         +         +         +         +
   63. N5A     2  2 0 0
               +         +         +         +         +         +         +         +
   64. N6A     2  2 0 0
               +         +         +         +         +         +         +         +
   65. N7A     2  1 0 0
               +         +         +         +         +         +         +         +
   66. ENDNODE
                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
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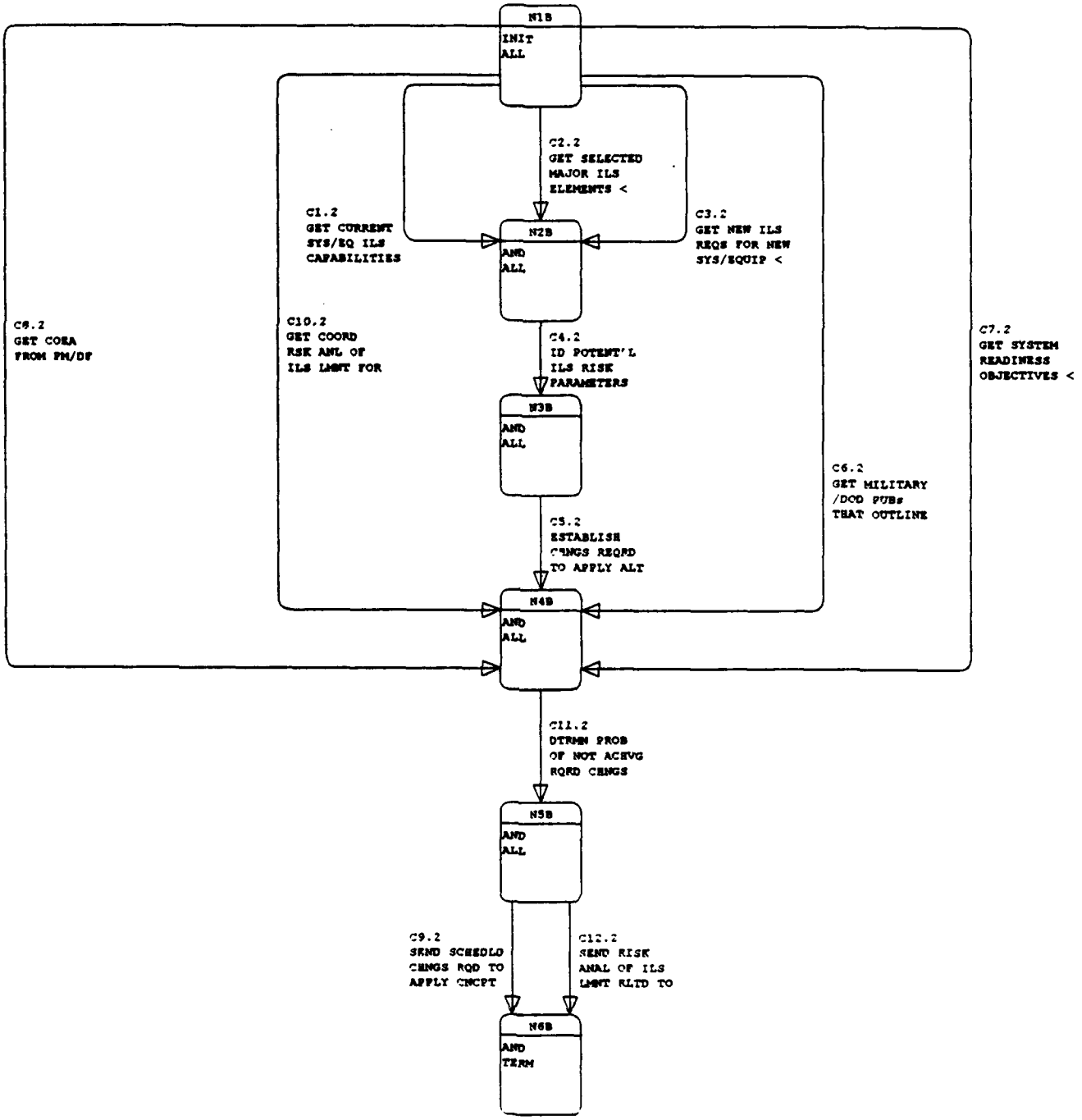

302.2.5.4A VERT CNCPT RSK ANAL
Created by: jack
Revised by: chau
Date changed: 14-FEB-91

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                1         2         3         4         5         6         7         8
       12345678901234567890123456789012345678901234567890123456789012345678901234567890
    1. 0016 - 10                RISK ANALYSIS ON SLCTD ALTRNATV SUPPORT SYSTEM CONCEPT
                +         +         +         +         +         +         +         +
    2. C1.2     N1B     N2B      1.0 GET CURRENT SYS/EQUIP ILS CAPABILITIES
    3. C1.2     DTIME 1         2       10.0      20.0
    4. C1.2     DCOST 1         2       10.0     100.0
    5. C1.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
    6. C2.2     N1B     N2B      1.0 GET SELECTED MAJOR ILS ELEMENTS
    7. C2.2     DTIME 1         2       10.0      20.0
    8. C2.2     DCOST 1         2       10.0     100.0
    9. C2.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   10. C3.2     N1B     N2B      1.0 GET NEW ILS REQUIREMENTS FOR NEW SYSTEM/EQUIPMENT
   11. C3.2     DTIME 1         2       10.0      20.0
   12. C3.2     DCOST 1         2       10.0     100.0
   13. C3.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   14. C4.2     N2B     N3B      1.0 IDENTIFY POTENTIAL ILS RISK FACTORS
   15. C4.2     DTIME 1         2       10.0      20.0
   16. C4.2     DCOST 1         2       10.0     100.0
   17. C4.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   18. C5.2     N3B     N4B      1.0 ESTABLISH CHANGES REQUIRED TO APPLY ALT SPPRT CNCPT
   19. C5.2     DTIME 1         2       10.0      20.0
   20. C5.2     DCOST 1         2       10.0     100.0
   21. C5.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   22. C6.2     N1B     N4B      1.0 GET MILITARY/DOD PUBLICATIONS OUTLINING REQUIREMNTS
   23. C6.2     DTIME 1         2       10.0      20.0
   24. C6.2     DCOST 1         2       10.0     100.0
   25. C6.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   26. C7.2     N1B     N4B      1.0 GET SYSTEM READINESS OBJECTIVES FROM AAF
   27. C7.2     DTIME 1         2       10.0      20.0
   28. C7.2     DCOST 1         2       10.0     100.0
   29. C7.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   30. C8.2     N1B     N4B      1.0 GET COEA FROM PM/DF
   31. C8.2     DTIME 1         2       10.0      20.0
   32. C8.2     DCOST 1         2       10.0     100.0
   33. C8.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   34. C9.2     N5B     N6B      1.0 SEND SCHEDULE CHANGES REQUIRED TO APPLY CONCEPTS
   35. C9.2     DTIME 1         2       10.0      20.0
   36. C9.2     DCOST 1         2       10.0     100.0
   37. C9.2     DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   38. C10.2    N1B     N4B      1.0 GET COORDINATED RISK ANALYSIS OF ILS LMNT<PM/ILSMT
   39. C10.2    DTIME 1         2       10.0      20.0
   40. C10.2    DCOST 1         2       10.0     100.0
   41. C10.2    DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
   42. C11.2    N4B     M5B      1.0 DETERMINE PROBABILITY OF NOT ACHIEVING RQRD CHNGS
   43. C11.2    DTIME 1         2       10.0      20.0
   44. C11.2    DCOST 1         2       10.0     100.0
   45. C11.2    DPERF 1         2       10.0      50.0
                +         +         +         +         +         +         +         +
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        1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
1      N E W   N E T W O R K          PAGE  2
        1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
46. C12.2   N5B    N6B    1.0 SEND RISK ANAL OF ILS LMNTS RLTD TO ALT SPPRT SYSTM
47. C12.2   DTIME 1       2      10.0     20.0
48. C12.2   DCOST 1       2      10.0    100.0
49. C12.2   DPERF 1       2      10.0     50.0
            +         +         +         +         +         +         +         +
50. ENDARC
            +         +         +         +         +         +         +         +
51. N1B     1  2 0 0
            +         +         +         +         +         +         +         +
52. N2B     2  2 0 0
            +         +         +         +         +         +         +         +
53. N3B     2  2 0 0
            +         +         +         +         +         +         +         +
54. N4B     2  2 0 0
            +         +         +         +         +         +         +         +
55. M5B     2  2 0 0
            +         +         +         +         +         +         +         +
56. N6B     2  1 0 0
            +         +         +         +         +         +         +         +
57. ENDNODE
        1         2         3         4         5         6         7         8
12345678901234567890123456789012345678901234567890123456789012345678901234567890
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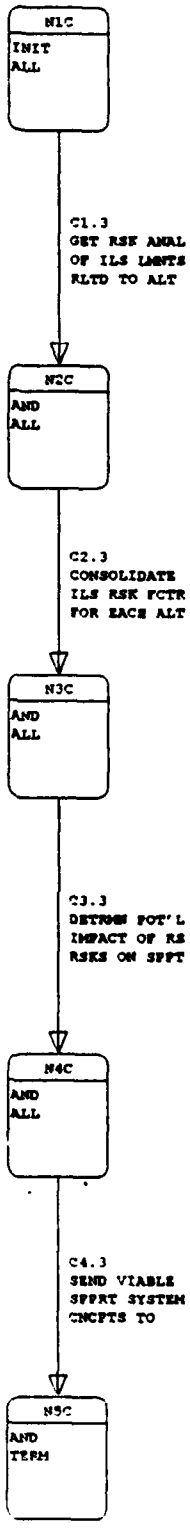

302.2.5.5A "/COS"/PERF/SCHED RA
Created by: jack
Revised by: jack
Date changed: 31-JAN-91

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1         NEW   NETWORK              PAGE  1
                   1         2         3         4         5         6         7         8
          12345678901234567890123456789012345678901234567890123456789012345678901234567890
   1. 0016  10                RISK ANALYSIS RELATED TO COST/PERF/SCHED REQUIREMENTS
                   +         +         +         +         +         +         +         +
   2. C1.3    N1C     N2C      1.0 GET RISK ANALYSIS OF ILS LMNTS RLTD TO ALT SPPT SYS
   3. C1.3    DTIME 1         2     10.0      20.0
   4. C1.3    DCOST 1         2     10.0     100.0
   5. C1.3    DPERF 1         2     10.0      50.0
                   +         +         +         +         +         +         +         +
   6. C2.3    N2C     N3C      1.0 CONSOLIDATE RISK FACTORS FOR EACH ALT SPPRT CONCEPT
   7. C2.3    DTIME 1         2     10.0      20.0
   8. C2.3    DCOST 1         2     10.0     100.0
   9. C2.3    DPERF 1         2     10.0      50.0
                   +         +         +         +         +         +         +         +
  10. C3.3    N3C     N4C      1.0 DETERMINE POTNTL IMPCT OF RSKS ON SPPRT CNCPT ASSMN
  11. C3.3    DTIME 1         2     10.0      20.0
  12. C3.3    DCOST 1         2     10.0     100.0
  13. C3.3    DPERF 1         2     10.0      50.0
                   +         +         +         +         +         +         +         +
  14. C4.3    N4C     N5C      1.0 SEND VIABLE SUPPORT SYSTEM CONCEPTS TO PM/ILSMT
  15. C4.3    DTIME 1         2     10.0      20.0
  16. C4.3    DCOST 1         2     10.0     100.0
  17. C4.3    DPERF 1         2     10.0      50.0
                   +         +         +         +         +         +         +         +
  18. ENDARC
                   +         +         +         +         +         +         +         +
  19. N1C     1  2 0 0
                   +         +         +         +         +         +         +         +
  20. N2C     2  2 0 0
                   +         +         +         +         +         +         +         +
  21. N3C     2  2 0 0
                   +         +         +         +         +         +         +         +
  22. N4C     2  2 0 0
                   +         +         +         +         +         +         +         +
  23. N5C     2  1 0 0
                   +         +         +         +         +         +         +         +
  24. ENDNODE
                   1         2         3         4         5         6         7         8
          12345678901234567890123456789012345678901234567890123456789012345678901234567890
```

ANNEX E

STRUCTURED SYSTEMS ANALYSIS FUNDAMENTALS

NOTE: This presentation of Structured Analysis Fundamentals is reproduced verbatim in each report

ANNEX E
STRUCTURED SYSTEMS ANALYSIS

Fundamentals

Structured Systems Analysis (SSA) has recently become an industry standard for generating Data Flow Diagrams (replacing "logic diagrams" or "flow charts") to aid in coordinating the functions to be performed by a computer program and its associated Inputs/Outputs (I/O). During the SSA, each set of "flow charts" can be checked by the potential user to assure that there is complete agreement on what is to be done by the program, and how it is to be accomplished. It also provides considerable flexibility for updating or changing the program.

Six basic elements (see figure 1) are used in SSA:

1. Process (PRC)
2. Data Flow (DAF)
3. Data Store (DAS)
4. External Entity (EXT)
5. Data Flow Diagram (DFD)
6. Data Dictionary (DCT)

PROCESS (Represented by a Circle):

A function or operation to be performed which can be explained by a set of instructions representing a single task, e.g., "calculate interest on a loan", "prepare a draft report". If the Process description is too complex to describe in a few steps, it may be necessary to develop a lower level description (see below).

DATA FLOW (Lines interconnecting Processes or I/Os):

Each function or Process cannot be a stand-alone in a complex network. To have any meaning in a program, each process must be initiated by a previous action and/or provided information on which to act. Furthermore, a Process must result in an output which is the input to the next logical Process. These inputs, outputs, or initiating actions are identified as Data Flows, and are represented by the Data Flow lines indicating its point of origin and the process to which it provides data.

DATA STORE (Represented by two parallel lines):

Although some Processes generate data used as input to a succeeding Process, there is often a need to "gather or collect" information from files in which it is stored. This information may come from an external source (such as a MIL-STD, Army regulation, historical experience files, etc.), or an internal source or file in which data is temporarily stored for use by succeeding processes. These Data Stores can be visualized as a "file cabinet", in which the data are stored for later retrieval).

EXTERNAL ENTITY (Represented by a Rectangle):

Each program or logical process must have an initiating action, a "point" of disposition of the results, and possible input guidance or instructions. Each of these have authorities, functions, or applications which are independent of the program Process (although required by the program Process). Thus, these activities, agencies, or facilities are considered "External Entities" to the program.

DATA FLOW DIAGRAM:

The general arrangement of the above can be readily seen. First, the circle or Process describes what has to be done; the interconnecting lines represent the Data Flows, together with the specific description of all I/Os. The Data Stores identify the source and/or file designation of a data base, and the External Entities represent those activities remote from the Process, which are the source of guidance or the recipients of the program. This combination of Processes, Data Flows, Data Stores, and External Entities constitutes a "Data Flow Diagram". The unique feature of the Data Flow Diagram (DFD) is that each process can be considered independently, permitting a change to be made in one Process without a major change in the overall program.

DATA DICTIONARY:

The Data Dictionary consists of a complete description of each of the basic elements. For the Process, it contains a step-by-step description of what has to be performed. The description of the Data Flow identifies the nomenclature of the data, a detailed description of its content, and its source. The Data Stores and External Entities are described, including possible location.

The Data Dictionary (a living document) begins with a description of the first Process and is continually built-up as the Data Flow Diagrams are expanded, detailed, and eventually completed.

APPROACH TO PERFORMING STRUCTURED SYSTEM ANALYSIS:

The best approach to Structured Systems Analysis is to assume that the program consists of a series of processes, each of which are to be assigned to an inexperienced analyst. Each analyst is to be walked through the assigned process of the Program, explaining step-by-step what functions have to be performed or what actions have to be taken to accomplish the process. The analyst is also informed where the information is coming from (input Data Flow), what is to be generated by each process (output Data Flow), where the data base may to be found (Data Stores), and who to contact for guidance (External Entities).

The best way to initiate a SSA is to set down the point of origin of a program, its final goal(s), and the intermediate functions or actions needed to get from beginning to goal. Each step should be considered as a Process - some may be sequential and others parallel. Then, the steps needed to accomplish the Process should be described. If the description is complex and needs intermediate steps, the Process is then a candidate for an "explosion". That is, the top (or upper) level Process is considered as a "project" and its own Data Flow Diagram is prepared.

When writing the step-by-step procedures in the Process, certain elements of data (or information) must be made available for the procedure. Each element of data is considered as an input Data Flow, which is identified and described. The product (or result) of a Process is an output Data Flow element.

Each Data Flow to the Process must originate from:

1. an earlier Process
2. a Data Store (or file)
3. an External Entity.

These sources are also identified, described and put into the Data Dictionary. As soon as the last portion of the Data Flow Diagram has been described, the SSA is complete.

The structured Analysis phase is followed by Structured Design, then by programming and finally software test and validation. The organization of Structured Analysis and its relationship to Structured System Design is shown on Figure 2.

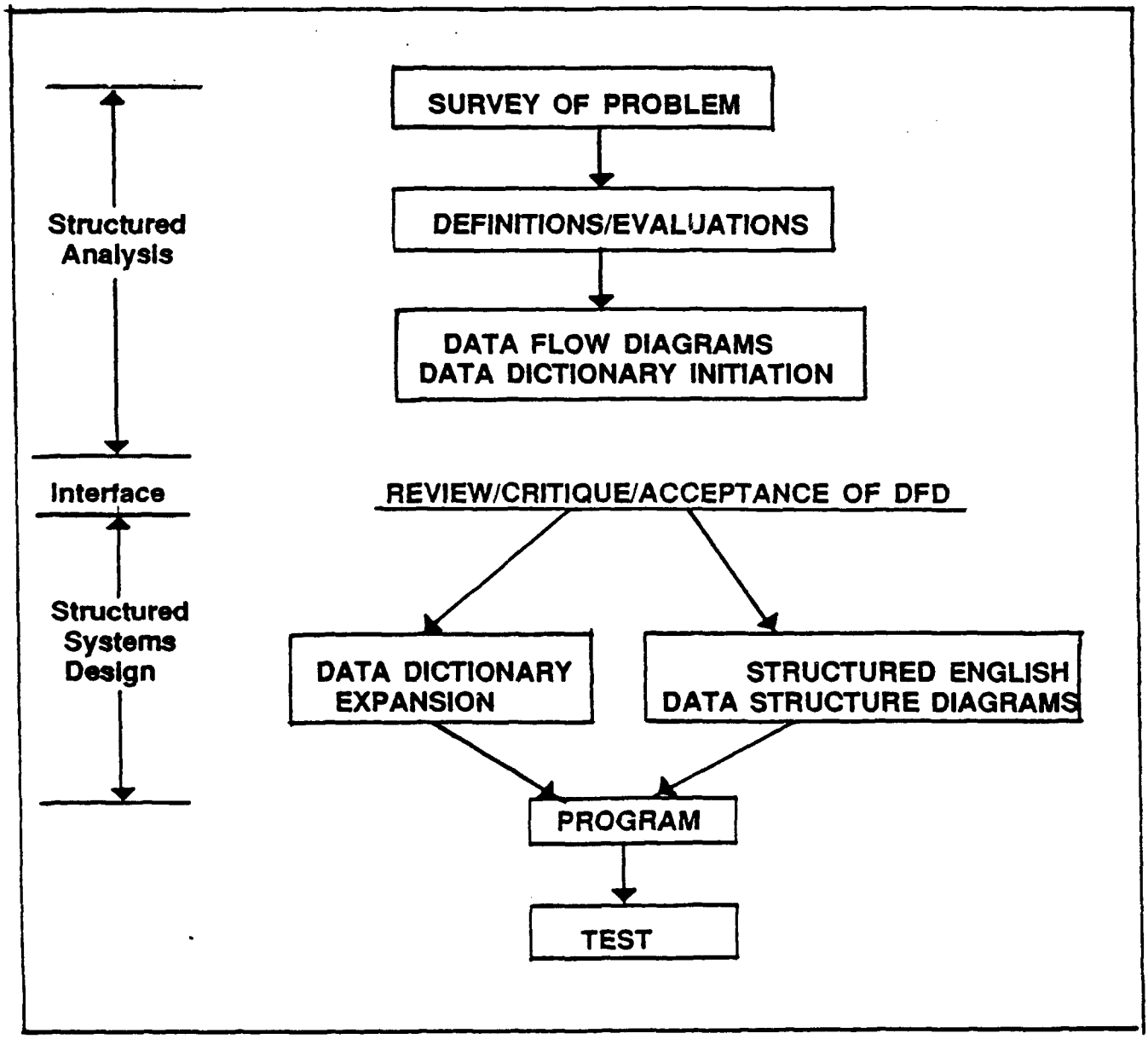

Figure 1. Structured Analysis & Structured Systems Design Organization

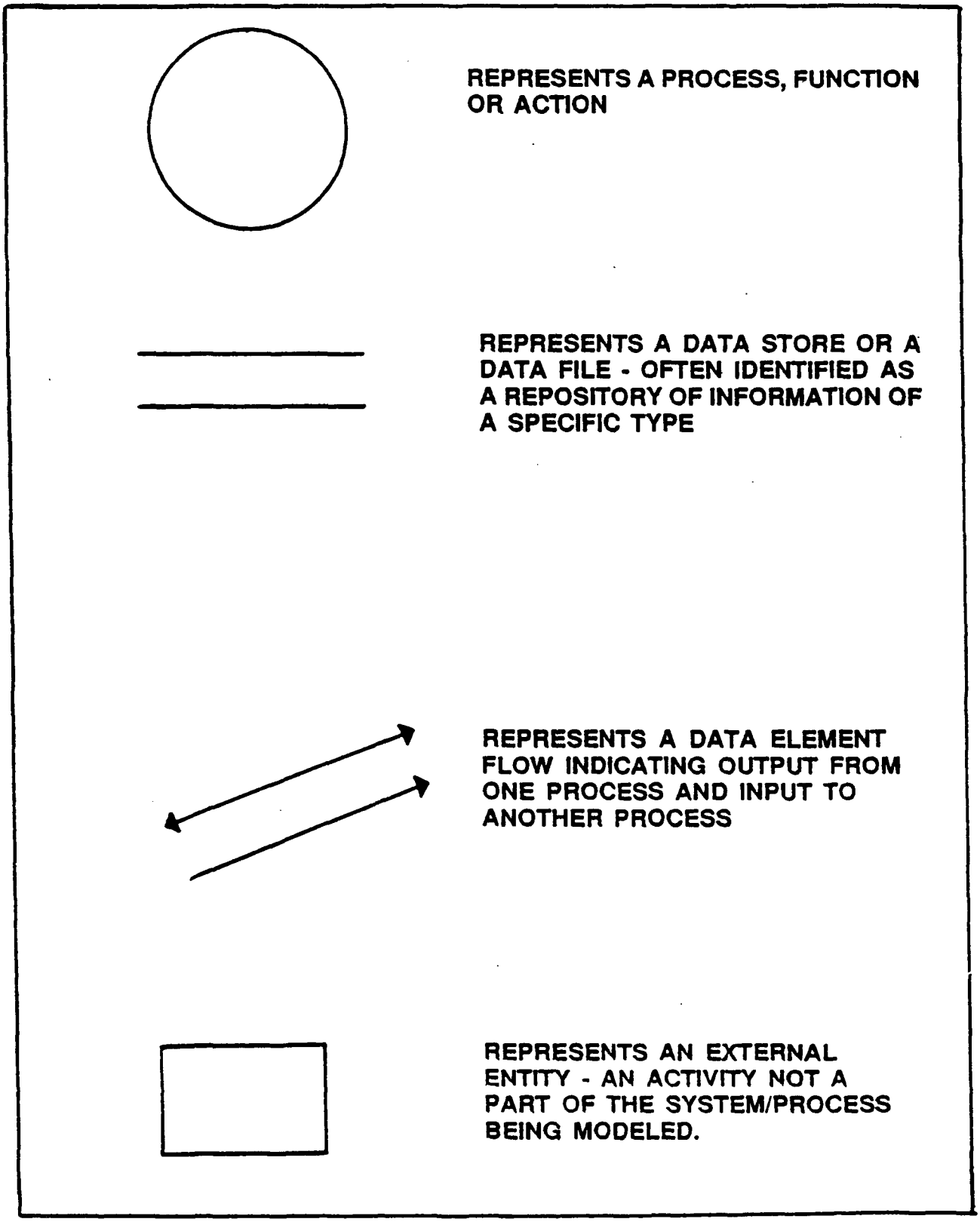

Figure 2. Standard DFD Symbol Definitions