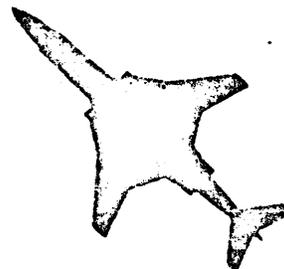
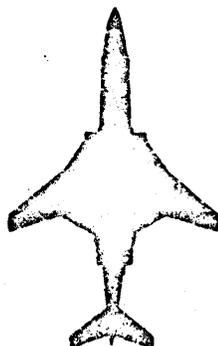
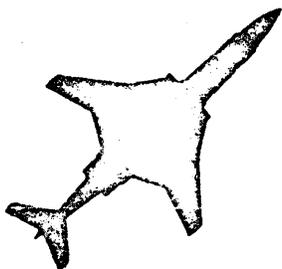




# SAGE PROGRAMMING AGENCY

- ▣ HISTORICAL BACKGROUND
  - ▣ FUNCTIONS
    - ▣ DUTIES



## PREFACE

This manual is designed to familiarize Air Force personnel with the unique mission of 26 NORAD Region's SAGE Programming Agency. Non-technical language will be used so that both programmers and operations, command and staff personnel will have a common reference concerning the scope of computer program design, documentation, maintenance, and testing responsibilities. Lack of clear communications between operations personnel (the users) and computer technicians has probably been the single greatest impediment to effective use of any computer system. This is an effort to minimize this difficulty.

20 August 1970

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### MISSION OF SAGE PROGRAMMING AGENCY

Provide technical programming support of SAGE computer programs to insure that, at all echelons of command within Aerospace Defense Command, Commanders can:

1. Exercise timely command and control over weapons and weapons support systems.
2. Conduct the air battle on a real-time basis.
3. Coordinate operational actions with and give support to operational echelons above, below, and adjacent to them.
4. Facilitate implementation of orders and instructions from NORAD to NORAD Region Combat Centers.
5. Provide timely air battle information to the NORAD Combat Operations Center.
6. Maintain a high level of combat readiness through the use of simulation, evaluation, and recording functions of the SAGE program system.

## THE COMPUTER PROGRAM

The computer cannot accomplish its functions unless responding to a set of instructions. These instructions are known collectively as a computer program. Discrete areas within this set of instructions are called subprograms.

Each operation carried on within a Direction Center during the processing of an air defense problem is controlled by a separate subprogram. All subprograms together constitute the SAGE program system called the SAGE Operational Program.

The air defense program may be divided up into major functional blocks such as the air surveillance or weapons direction area. The air surveillance area consists of a group of subprograms which compile and process information on air movements while the weapons direction portion uses surveillance data to direct the defense of a given area with missiles or manned aircraft. Some other major functional areas are displays, simulation, data reduction, and recording. In each area, subprograms perform a complex function automatically or semi-automatically as determined by operations personnel through a system of switch actions capable of modifying the automatic features of the program system.

The SAGE Operational Program together with the facility and utility program systems which support it is still the most complex computer program system in operation today.

## HISTORY OF THE SAGE PROGRAMMING AGENCY

Since 1965, Air Force personnel at Luke AFB have been developing the capability to accomplish computer programming tasks required to support the Aerospace Defense Mission.

In 1966, the SAGE programming contractor, System Development Corporation, was tasked to train Air Force officers and NCO's to handle program maintenance functions. The results of this initial effort were highly successful. Air Force personnel rapidly acquired the technical knowledge necessary to handle routine site maintenance tasks. Following this initial "Blue Suit" transition at all SAGE Direction Centers and Combat Centers, 26 Air Division (then 27 Air Div) continued training to handle test and acceptance as well as SAGE system maintenance functions.

On 3 June 1968, 27 Test and Acceptance Agency was officially assigned the responsibility for verification of contractor-designed computer programs and for system maintenance of these programs. By June 1969, the success of Air Force personnel in handling their technical responsibilities indicated that "Blue Suit" training should be further expanded to include the more sophisticated programming functions of design and version production.

In November 1969, Commander, ADC, ordered that plans be drawn up and implemented to increase the capability of 26 Test and Acceptance Agency to handle all SAGE computer programming functions performed by contractor personnel. As a result, field site manning was reduced from nine to five programmers and 26 Test and Acceptance Agency manning was increased by twenty-one systems analysts and computer programmers. System Development Corporation was contracted to provide training in those areas which Air Force personnel required upgrading.

On 1 July 1970, 26 Test and Acceptance Agency was redesignated 26 SAGE Programming Agency (26DOSPA) to more accurately identify the increased scope of technical responsibilities.

Upon completing formal training (15 July 1970) Air Force systems analysts and computer programmers began on-the-job training to develop and refine procedures to design changes to the SAGE program system.

On 30 June 1971, 26 NORAD Region will accept full responsibility for total technical support of the SAGE computer program system, thereby saving ADC more than \$3.5 million per year without reducing Air Defense capability.

## THE NATURE OF THE JOB AND THE PEOPLE

The most common question asked of systems analyst/computer programmer personnel is--what do you do and why is it necessary? Too often the answer given is loaded with technical terms and abbreviations which confuse the asker, establish a communications block, and ultimately result in minimizing the effectiveness of programming support.

Changes to SAGE computer programs are a continuing requirement. Most operational decisions affecting air defense strategy, tactics, weapons design, weapons capabilities, and organizational configurations have a major impact upon computer programs used within the system. In many cases, these decisions can be implemented rapidly in current programs. This responsiveness is directly related to the well documented SAGE program system in existence. However, some operational changes may require major changes within the program system. The impact of these major changes may act as restraints to implementing changes or result in technical analysis to find alternate or interim measures of satisfying operational requirements.

THE MAJOR TASK OF 26 SAGE PROGRAMMING AGENCY IS TO CONVERT OPERATIONAL REQUIREMENTS INTO CHANGES TO COMPUTER PROGRAMS. The translation of requirements from prose to computer language is a technical task which requires the use of many skills. Within 26 SAGE Programming Agency, analysts and programmers have many different educational backgrounds which are needed to handle technical tasks: Mathematics, engineering, and computer science degrees are balanced by English, history, and general science education, all of which provide a necessary supplement to Air Force training in computer programming. In addition, the requirement for operational knowledge of air defense functions is met by officers and NCO's who have been assigned to SAGE Direction Centers as weapons controllers and aircraft control and warning technicians for several years prior to training as computer programmers. This mix of technical and operational skills insures that realistic responsiveness to operational requirements is obtained.

## SAGE PROGRAMMING AGENCY WORK FUNCTIONS

Operational Design - Consists of designing and documenting changes to the SAGE system as directed by ADC. Design Change Suggestions are analyzed to determine feasibility, validity, and operational impact; a document is produced which states how the Design Change will be accomplished.

Design Implementation - Consists of flow charting and otherwise documenting the program code required to implement the modifications specified by operational design changes. The implementation process includes coding, testing, and submitting necessary changes to all technical documents for publication.

Version Assembly - Consists of those technical tasks required to incorporate all approved changes onto a new SAGE Master Tape.

Version Testing - A series of realistic simulated environment tests and live environment tests used to verify that the SAGE computer program system operates according to system specifications.

Program Maintenance - Analysis and response to suspected computer program problems reported by users and test personnel. The result of maintenance tasks will be timely repair of verified problems or clarification of technical and operational documents which were referenced in the reports.

26 Air Division Support - To provide 26 Air Division operations with a SAGE Master Tape configured to reflect the current Air Division environment. This tape is regularly updated to reflect changes to local geography, telling capabilities, input sources such as long range radars, and other characteristics unique to 26 Air Division.

## SAGE PROGRAMMING AGENCY TECHNICAL TASKS

1. Requirements Analysis - to insure correct interpretation of requirements for a program change, identify intra/inter system impact, and identify a design for consideration.
2. Design Development and Evaluation - to select and specify the design that will be implemented to meet Command requirements.
3. Documentation - to record and disseminate information necessary for program design, testing, and updating operational specifications and user documents.
4. Program Design - to develop program change specifications to satisfy operational design requirements.
5. Program Coding - to add, change, or delete program instruction sequences and encoded parameters so that changed programs satisfy program change specifications.
6. Communications Pool Generation (COMPOOL, dictionary) - incorporate new or revised compool requirements.
7. Master Tape Production - reassemble all systems using the new compool and load all programs on the newly assembled tape.
8. System Change and Correction Monitoring - the analysis of present and future changes affecting the programs, equipment, and operational procedures.
9. Operational Program Monitoring - providing quality control of the operational computer program by monitoring program change documents and implementing changes to maintain a high quality program system.
10. System Adaptation - insuring that the local operational program system reflects the current environment. This includes data collection, calculation, coding, verification, and the writing and publication of required documentation.
11. Local Change Activity - the design, coding, and testing of approved emergency changes, test changes, and other site-unique features loaded (or to be loaded) on the local program tapes.
12. Tape Load - the mechanics of readying the computer program for local use to include accumulating and preparing the load inputs, key-punching, computer operation, and tape comparison/duplication.
13. Test Preparation - the development of test inputs, checklists or event lists; the establishment of analysis methods and procedures; the planning and coordination of test activities with other agencies.

14. Test Conduct - the performance of functions which verify or check out the operational program systems, including manning of consoles, monitoring test progress, generation of outputs, and the collection of pre-planned data.
15. Test Analysis - the reduction of test output data, verification of program quality, and documentation of test results.
16. Version Turnover Documentation - the preparation and publication of information pertinent to the content and use of the new computer program version.
17. Error Detection and Resolution - the recognition and categorizing of program problems including investigation, reporting, and problem resolution. This activity requires familiarization with the relationship of the program to associated equipment and related operational procedures.
18. Technical Communications - the activities required for the interchange of technical information including the production of formal documents, the planning and participation in meetings and workshops.
19. Utility and Support Program Application - in depth knowledge and use of those programs necessary for performing program maintenance.
20. Special Project Support - the application of programming skills to the development and implementation of special projects designed to improve air defense systems.

## ORGANIZATIONAL DESCRIPTION

The SAGE Programming Agency is organized under 26 DCS/Operations at Directorate level and is managed by a senior computer systems staff officer who directs and coordinates the varied work functions involved.

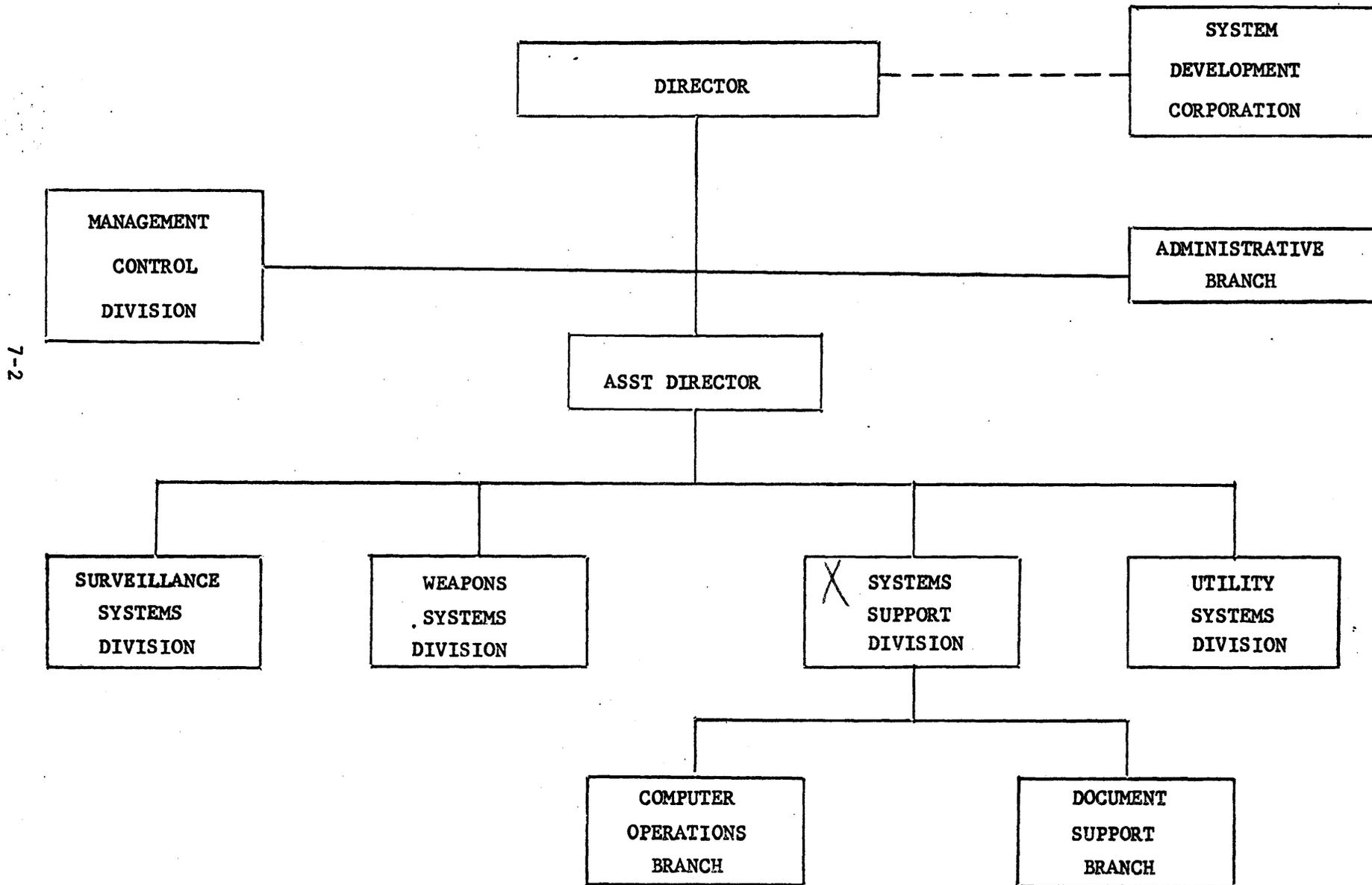
Each systems analyst and programmer is assigned to one of the Divisions within the Directorate which has responsibility for a segment of the SAGE program system. Aircraft Control & Warning Technicians and computer operators are assigned to those functional areas which best use their combined operational and technical skills.

Analysts and programmers are responsible for acquiring and maintaining current technical knowledge of operational specifications and program logic within their assigned functional area as well as a working understanding of operational problems and procedures.

Interlaced with the formal functional organization and crossing established organizational channels, a product oriented sub-organization exists. Each product (SAGE Program Change) authorized by ADC is assigned to a Product Coordinator in one of the functional Divisions. This analyst chairs an analysis team and manages the design and implementation of the assigned product throughout the production cycle of the change. The technical work involved in operational design and design implementation is accomplished primarily through this sub-organization of Product Coordinators. Quality control of over-all production is accomplished by the Management Control Division which monitors the status of all products and verifies quality and reliability.

Effective support of the SAGE system is provided through a coordinated team effort within the SAGE Programming Agency as well as active liaison with operations and hardware maintenance personnel. Daily contact with programmers at all SAGE field sites insures that program problems are rapidly identified and resolved; timely preventative actions provide maximum program reliability.

ORGANIZATION SAGE PROGRAMMING AGENCY



7-2

SAGE PROGRAMMING AGENCY FUNCTIONS

Management  
Control  
Division

Quality Control Monitoring  
Training Coordination  
Proficiency Evaluation  
Design Monitoring  
Management Analysis  
Systems Testing  
Canadian Forces Coordination

Weapons  
System  
Division

Interceptor Guidance  
BOMARC Guidance  
Air Defense Artillery  
Weapons Simulation  
Data Link  
Displays  
Switches  
Northern Tier Project (NOTIP)

Utility  
Systems  
Division

Site Production & Reduction System  
Data Reduction  
Reduction Unlimited (RUN)  
General Item & Table Proc (GIANT)  
Normative Operations  
Recording Method (NORM)  
SCORE  
Universal Simulator (UNISIM)

Surveillance  
Systems  
Division

Telling  
Height  
Real Time Quality Control (RTQC)  
Radar Inputs  
Tracking  
Manual Inputs  
Identification

Systems  
Support  
Division X

Computer  
Operation  
Branch

Master Tape Assembly  
Geography  
COMPOOL  
Facility Programs  
Startover/Switchover  
Program Control  
Reduction Systems Operation  
Tape Load

Document  
Support  
Branch

Honeywell Programming  
Technical Library  
Document Production

## OPERATIONAL DESIGN PROCESS

### SYSTEMS REQUIREMENTS ANALYSIS

1. Define task: Feasibility, validity, operational advisability.
2. Analysis Team Meeting or consultation with other designers/programmers.
3. Document all coordination and require Analysis Team Members to sign off report.

### SYSTEMS OPERATIONAL ANALYSIS

1. Detailed examination of design requirements in terms of:
  - a. Operational Requirements.
  - b. Impact on Ops Specs.
  - c. Impact on Program Systems Specs.
2. During production of first draft of Analysis Documents, checklists/detailed document formats are used to insure that full coordination has occurred.

### DOCUMENT PRODUCTION

1. Analysis Reports.
2. Analysis Team Study Reports.
3. Design Change Suggestions.
4. Program Change Request.
5. Program Design Change.
6. Changes to official documents as a result of above.

## PROGRAM DESIGN PROCESS

### PROGRAM DESIGN

1. Program Design Specifications:
  - a. Flow Charts.
  - b. Prose Description.
  - c. Identify System/Program Interface, Document/Compool/Initial Data Changes.
2. Review of Design Specifications by Product Coordinators, Division Chief, and Designers in other affected areas:
  - a. Are requirements being met?
  - b. Are Design Specifications detailed enough to permit coding by any other programmer?
  - c. Is design rational cost effective?  
Programming effort - Space - Program Operating Time.

### PROGRAM CODING AND SUBPROGRAM TESTING

1. Code from Design Specifications.
2. Produce a Test Plan:
  - a. Inputs/Outputs required to test each subprogram.
  - b. Test Tool available--are new tools required?
  - c. Define Initial Conditions.
  - d. Recording requirements.
  - e. Specify required environment and test methods.

### PRODUCT TESTING

1. Subprogram Testing by Programmer.
2. Assembly Testing by Product Coordinator.
3. System Testing by Version Coordinator.

VERSION PRODUCTION PROCESS



1. Allocation of new compool.
2. Reassemble all systems using new compool.
3. Re-load Facility Programs, Symbolic Correctors, and Compool.
4. Overload base modifications of operations programs.
5. Load Symbolic Corrector History.
6. Load Initial Data.
7. Verify Base Maintenance Master.
8. Load Initial Data for Test Environment.
9. Cycle check Base Maintenance Master.

1. Receipt and initial check of each new product.
2. Prepare Product Test Plan.
3. Load Products weekly.
4. Perform Product Tests until Product Acceptance:
  - a. On-Line Printout/Desk Check.
  - b. Blue Room Tests IAW Test Plan.
  - c. Open Problem Reports.

Integrated Systems Test Procedures:

1. Update ISTP Documents.
2. Develop Special Tests.
3. Prepare Test Tools:
  - a. UNISIM Tapes.
  - b. Duplex Sets of SIM Tapes and Duplex Telling Tools.
  - c. SIM Tapes to generate MORT Recording req's to analyze and test Utility and Support programs.
  - d. ROSE: Replay for Over-all System Eval.; enables repetition of Identical Test Conditions for problem analysis.
4. Prepare Test Scripts.
5. Run Tests.

## COMPUTER SYSTEMS ANALYST

A. Job Description. Designs, develops, tests and/or maintains computer programs and/or program systems to satisfy specific operational requirements.

B. Major Duties:

1. Designs computer programs and/or program systems to meet operational requirements by performing such duties as meeting with ADC representatives and in-house users to establish and clarify program specifications, determining and recommending appropriate problem-solving methods and means to accomplish desired objectives.

2. Develops computer programs from approved design specifications by preparing detailed flow diagrams, writing computer language instructions, devising appropriate tests for debugging and verifying programs, and ensuring that the generated output conforms to design criteria and specifications.

3. Maintains assigned programs by analyzing generated output and/or error reports to detect program deficiencies, determining and developing appropriate error corrections, testing corrections to verify their accuracy, and incorporating subsequent modifications into original programs to produce updated versions.

4. Designs, implements, analyzes, and supervises large-scale system tests to verify that the computer program system operates under a wide variety of conditions.

5. Responsible for preparing such documentation as design specifications, program descriptions, operating guides, and users' manuals to assure that the objectives, instructions, and unique features of assigned programs are communicated clearly and effectively to intended audiences.

6. Performs evaluations in the development, implementation, and maintenance of assigned programs including assessing existing software of potential application, reviewing completed programs for possible refinements, investigating the appropriateness of design change suggestions, verifying that required modifications have been tested and integrated, and ensuring that revisions have been made to affected documentation.

7. Maintains and applies a working knowledge of all equipment and program interfaces to facilitate the testing and integration of assigned programs.

8. Determines and establishes realistic schedules to meet established completion dates. Monitors and evaluates the progress of assigned projects, and coordinates with external and internal users/operational representatives to ensure an effective, reliable end product.

## COMPUTER SYSTEMS PROGRAMMING OFFICER

A. Job Description. Performs beginning professional programming assignments under the supervision and/or guidance of higher level programming personnel.

B. Major Duties:

1. Designs computer programs under the general direction of supervisors or more senior programming personnel to establish and clarify program specifications, determine and recommend appropriate problem-solving methods and means to accomplish desired objectives.

2. Develops computer programs from approved design specifications by preparing detailed flow diagrams, writing computer language instructions, defining test requirements, and ensuring that the generated output conforms to design criteria and specifications.

3. Maintains assigned programs by analyzing generated output and/or error reports to detect program deficiencies, determining and developing appropriate error corrections, testing corrections to verify their accuracy, and incorporating subsequent modifications into original programs to produce updated versions.

4. Designs, implements, and analyzes tests for computer programs to ensure that new programs or modifications to existing programs conform to design specifications.

5. Produces and maintains documentation pertaining to specifically assigned programs to assure that their objectives, instructions, and unique features are communicated clearly and effectively to intended audiences.

6. Consults with supervisors and similar level programmers concerning problems related to assigned areas, changes which affect areas beyond immediate assignments, and various programming tasks as required to affect timely completion of assignments.

Operations

CODING CONVENTIONS & RESTRICTIONS

To standardize the assignment and control of final letter identifiers for program correctors.

1. Responsibility. 26DOS personnel will comply with the following coding conventions and restrictions in the generation of programs and/or program coding for the SUOP system. The responsible division chief may authorize deviation, after coordination with DOSM. Programs or coding which are now in violation of the procedure specified in this OI are to be corrected as the programs are upmoded, and/or a new com-pool generated.

2. References:

- a. TM 3010, FAST Complex User Manual.
- b. TM 3233, COSEAL Utility System Manual.

3. Coding Conventions:

a. Programs. All programs will be identified by a three (3) letter symbolic name; i.e., TRK, WOM.

b. Program Mod Designators. The program mod designators will be as follows:

(1) SUOP Operational Programs. The mod designators for these programs will consist of two (2) letters. The first letter will denote the type of program; i.e., DC = D, FAST = F, etc. The second letter denotes the mod update identification; i.e., SIS DE, FCP FC.

(2) SUOP Pseudo Programs (Adaptations). The mod designator procedures are:

(a) Operations Tapes (Future and Current). The mod designator will consist of a digit and a letter. The digit indicates the version applicability and the letter denotes the sequence alphabetical order of the modifications. The alphabetical designator will be changed each time there is a corrector deck submitted; i.e., CXS IC = program CXS, Version 51 applicability, the third change.

This OI supersedes 26DOS OI 55-3, 19 Jan 71  
OPR: DOSM

(b) TNR, 25 and 75 Air Div Tapes. The mod designator for these tapes will consist of two characters. The first being a unique designator; T = TNR, X = 25 Air Div, and F = 75 Air Div; the second will identify the modification using the letters A through Z and returning to A.

Note: DOSC will maintain a log of all pseudo programs and their mod designators. This log will be made available on request and it will contain listings for both the current and future versions of all four (4) types of configurations; Ops, TNR, 25, and 75 Air Div.

c. Tables. All tables will be identified by a three (3) letter symbolic name and a digit; i.e., ARM0, TTY0.

d. Items. Items will be identified by a four (4) letter symbolic name; i.e., TIDY, ARDI, etc.

e. Location Identifiers:

(1) Within main body of program, locations will be identified by two (2) digits and a letter; i.e., 10A, 35N, etc.

(2) Final address or corrector pool locations will be identified by two (2) digits and two (2) letters; i.e., 10AB, 35NC, etc.

4. Coding Restrictions are as follows:

a. Tags will be maintained in an alpha-numeric sequence in order to facilitate troubleshooting and program correction.

b. The number of registers between program tags will be limited to less than one hundred (100) to facilitate program modification.

c. Program constants will normally be located in the 60 region of the programs.

d. Regions within a program will be referenced to by the two (2) digit identifier; i.e., 21 region, 35 region.

e. Areas of a program are defined as two (2) digits and a letter; i.e., 15B area, 42A area.

f. Whenever possible, program adaptation will be contained in a pseudo program. All references should be made to compool-defined items and table tags.

g. Macro and Command instructions may not be utilized for operational programming.

h. CPO Tags. - Compool overrides (CPOs) are not to be used in program assemblies.

i. Reference to Compool. Reference to compool-defined items is to be in symbolic form only; e.g., POS31 TIDY; not FCL 12.

j. I/O Interrupt. An "add class" instruction must not be followed by "STA" or "STAA" instructions because the "A" register may not be cleared due to the I/O Interrupt feature.

k. The pseudo instruction "PGM" will appear in the second register of all programs.

l. An extraneous exit from a TTB instruction should exit to an address as if a legal value had been found.

m. SYC coding over deleted areas should be avoided because it severely decreases the effectiveness of automatic updating tools.

5. Symbolic Corrector Card and Deck Conventions. The following procedures will be adhered to by SPA personnel when generating corrector decks for load to the SUOP and RUN systems.

a. Card column information for program data on SYC correctors is contained in paragraph 1.2.1, Chapter 2, FAST User Manual.

b. Card column information for program data on COMPOOL corrector cards is contained in paragraph 1.2.2, Chapter 2, FAST User Manual.

c. Card column information for program data on ETS corrector cards is contained in paragraph 2.3, Chapter 2, FAST User Manual.

d. Card column information for program data on MORØ card is contained in Volume 2, Chapter 4, COSEAL Manual.

e. In order to assist in tape load and card handling procedures, the corrector decks will contain the following additional information:

(1) SYC Card Columns:

0	0	0	1	5	5	6	77	7	8
1	5	8	7	8	9	3	01	2	0
AAA	BB	CCCC	-----	DDD	EEEEEEFG	-----			

AAA = Three (3) character program ident.

BB = Two (2) character program mod designator for correctors to operational programs only. Pseudo adaptation program corrector need not have these designators punched.

CCCC = Four (4) letter SUOP file ident. Applicable to IDT cards only.  
17,58,72,80 = FAST Manual Content.

DDD = Three (3) digit sequence number, starting at 000 on the IDT card and numbered consecutively through and including the END card.

EEEEEEE = Seven (7) character corrector ident.



AAAAAA = MORØ Identifier; i.e., MORØ 51.  
BBB = Sequence number.  
CCCCC = Compool and mod identifier.  
\*17/44 = Programmer supplied values per COSEAL, Volume 2, Chapter 4.  
DDD = Unique entry identifier (octal value).  
EEEE = Indexing value (optional decimal value).  
FFFF = Number of registers to be recorded (optional decimal value).

\*These will be the only values supplied by the programmer. All other card columns will be assigned by DOSU.



HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DCS/Operations

11 November 1971

Operations

ADAPTATIONS AND INITIAL DATA CHANGE PROCEDURES  
(66/69 MCs)

Establishes the procedures for updating the adaptation geography, and initial conditions for the 26 NORAD Region and/or the Test NORAD Region (TNR) environments.

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1. References:

- a. TM 3255/XXX - Analytical Compendium, Volumes 1, 2, and 3.
- b. 26DOS OI 55-3, Coding Conventions and Restrictions.
- c. 26DOS OI 55-8, Program Errors.
- d. 26DOS OI 55-10, SUOP Master Tapes.

2. Responsibility. 26DOS personnel will comply with the following procedures when generating changes to either the Active Air or Test environments.

3. Terms Explained:

a. Test NORAD Region (TNR). A SUOP tape containing the mythical/live environment required by the SAGE Programming Agency (SPA) in order to develop, test, and evaluate the new SAGE products/versions.

b. 66MC - A document produced in TPR format issued in support of changes to the Region's Active Air Defense (AAD) adaptation, geography, and initial conditions and when completely compatible, card for card, with the TNR data base will be authorized for load to the TNR tape.

c. 69MC - A document produced in TPR format issued in support of changes in the TNR environment, adaptation, geography and initial conditions or to load AAD changes which cannot be loaded on a card-for-card basis because of an effect on the mythical environment.

4. Procedures. When a requirement exists to change either the AAD or TNR environments, the following procedures apply:

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Supersedes 26OPM OI 55-6, 21 Oct 69

OPR: 26DOSM

a. The programmer will review the requirement, determine the type of change required (a 66MC, 69MC, or possibly both), and obtain the appropriate number(s) from DOSM.

b. If a PIR was the basis for the change, the programmer will close it by indicating that the problem was due to an adaptation error, giving the 66/69 number, per reference "c."

c. The programmer will develop, test, and evaluate the correctors. The provisions of references "a" and "b" will be adhered to in the production of the card decks.

d. When the programmer is satisfied that the correctors operate as required, he will produce and submit a final draft of the MC, through his division chief, to DOS for typing. The MCs will be in TPR format and contain the following:

- "1. Subject/Title:
2. System/Version/Program:
3. Reference:
4. Descriptive Data:
5. Document Changes (to include, in exact format and content, changes to the TM-820 series documents):
6. Miscellaneous Comments:
7. Program Data:"

e. When 66/69 MCs are to be loaded to both the current and the future versions, the programmer will submit two corrector decks and two load requests to DOSM.

f. When the required change is common to both the current and future versions and the corrector deck is not completely compatible with the future version, due to NMs or PDCs, a dash one (-1) change will be generated and submitted by the programmer.

g. The programmer will have DOSC produce the necessary tape load request(s) and five (5) copies of a multi listing. He will complete the tape load request(s), have it signed by his division chief, and submit it together with the corrector deck(s) to DOSM, where they will be handled as outlined in reference "d." He will deliver the five copies of the multi listing to DOS, where they will be attached to the main body of the MC.

h. When unclassified, DOS will produce five copies of the MC, attaching the multi listing. When completed, DOS will notify the programmer that the MC is ready for proofreading.

i. When classified, DOS will produce three copies of the MC, attaching the multi listing. When completed, DOS will notify the programmer that the MC is available for proofreading.

j. When the programmer is satisfied that the MC is correct, he will forward the MC to DOSM for coordination and distribution. If classified, he will forward a Document Coordination Sheet (26AD Form 70) to DOS and DOSM for coordination, to DOSC in order for them to extract the classified TM-820 changes, and to the other division chiefs for their information.

5. Distribution:

a. When unclassified, five copies will be distributed as follows:

(1) The original to the issuing programmer for the Area Notebook.

(2) One copy to DOSM for inclusion into the appropriate Version Description (VD) and then for file.

(3) One copy to DOS for his information and then for the DOS read file.

(4) One copy each to the 26NR BUIC sites.

b. When classified, three copies will be distributed as follows:

(1) The original filed in the DOS safe. A document coordination will be circulated through DOS, DOSM, and the other division chiefs for their information.

(2) One copy each to the 26NR BUIC sites.

6. Attachments:

a. Attachment 1 contains a listing of all the SUOP adaptation programs and the responsible divisions.

b. Attachment 2 contains a listing of all the SUOP initial conditions, table blocks, and the responsible divisions. Reference "a" will be used to determine whether an item is site unique, production release, optional, and the authorized values.

  
 HERBERT J. SUSKIN, Lt Colonel, USAF  
 Director of SAGE Programming Agency  
 DCS/Operations

- 2 Atch  
 1. Adaptation Programs  
 2. Initial Conditions Assignments

ADAPTATION PROGRAMS AND RESPONSIBLE DIVISION

<u>Program</u>	<u>DOS Division</u>
AAA	DOSW
APP	DOSS
BAP	DOSW
BUG (50 Region)	DOSW
BUK	DOSS
GAP	DOSS
CXA	DOSS
CXS	DOSS
DAD	DOSW
FLO (50 Region)	DOSS
GFR	DOSS
GUM	DOSW
GUV	DOSS
LUV	DOSS
MAG	DOSW
MHA	DOSS
MIA	DOSS
MOM	DOSS
RCP	DOSW
SAD	DOSW
SMB (50 Region)	DOSW
SSS	DOSW
TEE (50 Region)	DOSS
TOT	DOSS
TRN (50 Region)	DOSS
TRU	DOSS
WAM	DOSW
YAK	DOSW
YXN	DOSS

Attachment 1

ADAPTATION PROGRAMS AND RESPONSIBLE DIVISION

<u>Program</u>	<u>DOS Division</u>
AAA	DOSW
APP	DOSC
BAP	DOSW
BUG (50 Region)	DOSW
BUK	DOSS
GAP	DOSC
CXA	DOSS
CXS	DOSS
DAD	DOSW
FLO (50 Region)	DOSS
GFR	DOSS
GUM	DOSW
GUV	DOSS
LUV	DOSS
MAG	DOSW
MHA	DOSS
MIA	DOSS
MOM	DOSS
RCP	DOSW
SAD	DOSW
SMB (50 Region)	DOSW
SSS	DOSW
TEE (50 Region)	DOSS
TOT	DOSS
TRN (50 Region)	DOSS
TRU	DOSS
WAM	DOSW
YAK	DOSW
YXN	DOSS

Attachment 1

h. When unclassified, DOS will produce five copies of the MC, attaching the multi listing. When completed, DOS will notify the programmer that the MC is ready for proofreading.

i. When classified, DOS will produce three copies of the MC, attaching the multi listing. When completed, DOS will notify the programmer that the MC is available for proofreading.

j. When the programmer is satisfied that the MC is correct, he will forward the MC to DOSM for coordination and distribution. If classified, he will forward a Document Coordination Sheet (26AD Form 70) to DOS and DOSM for coordination, to DOSC in order for them to extract the classified TM-820 changes, and to the other division chiefs for their information.

5. Distribution:

a. When unclassified, five copies will be distributed as follows:

(1) The original to the issuing programmer for the Area Notebook.

(2) One copy to DOSM for inclusion into the appropriate Version Description (VD) and then for file.

(3) One copy to DOS for his information and then for the DOS read file.

(4) One copy each to the 26NR BUIC sites.

b. When classified, three copies will be distributed as follows:

(1) The original filed in the DOS safe. A document coordination will be circulated through DOS, DOSM, and the other division chiefs for their information.

(2) One copy each to the 26NR BUIC sites.

6. Attachments:

a. Attachment 1 contains a listing of all the SUOP adaptation programs and the responsible divisions.

b. Attachment 2 contains a listing of all the SUOP initial conditions, table blocks, and the responsible divisions. Reference "a" will be used to determine whether an item is site unique, production release, optional, and the authorized values.

  
HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DCS/Operations

2 Atch  
1. Adaptation Programs  
2. Initial Conditions Assignments

DEPARTMENT OF THE AIR FORCE  
Headquarters 26 Air Division (ADC)  
Luke Air Force Base, Arizona 85301

26DOS OI 55-7

7 December 1971

Operations

CODING SHEETS AND KEYPUNCH PROCEDURES

Establishes the procedures for DOS programmers to have cards (AF Form 1500) keypunched and standardize the numbers, letters, and special characters to be used.

1. General. LGK-MR has indicated that they will assist in keypunching cards for DOS programmers on a work load-permitting basis.

2. Responsibility. DOS personnel will comply with the following procedures when requiring assistance in keypunching cards.

3. Procedures:

a. Individual programmers will:

(1) Fill out the programming coding sheet (ADC Form 298), insuring that all numbers, letters, and special characters adhere to Attachment 1.

(2) Turn in the coding sheet to NCOIC, DOS.

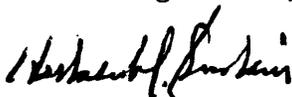
b. NCOIC will:

(1) Have the coding sheet delivered to NCOIC, LGK-MR, in Building 241 on base.

(2) When notified that the cards are completed, have them picked up and deliver both the coding sheet and cards to the H-200 operator.

c. H-200 operator will:

Produce an 80/80 of the card deck and notify the programmer that his coding sheets, cards, and 80/80 are available for pick up.



HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DCS/Operations

1 Atch  
Coding Symbols

This OI supersedes 26OPM OI 55-7 dated 20 October 1969  
OPR: DOSM



EXAMPLE CODING SHEET MARKINGS

Letters

A B C D E F G H I J K L

M N O P Q R S T U V W X

Y Z

Numbers

1 2 3 4 5 6 7 8 9 0

Symbols

. , # & - + @ / % \$ \* ☒



Operations

PROGRAM ERRORS

Establishes procedures for reporting, statusing, and correcting any suspected program errors.

1. Responsibility. DOS personnel charged with program development, testing, and maintenance are responsible to insure they comply with the procedures contained in this OI when handling Program Incident Reports (PIRs), Program Problem Reports (PRs), Program Error Corrections (PCs).

2. Procedures:

a. PIRs. This type of report may be initiated by anyone within the 26 Air Division who suspects there might be or has knowledge of a program error. The error will be opened by completing one copy of the PIR Form (ADC Form 119) and forwarding it to DOSM. It is emphasized that the more information supplied the programmer the easier it becomes to locate, identify, and correct the problem. The PIR, when complete, should include as much of the following information as possible:

Designator of tape version; i.e., P50G.

A statement of the problem including all unusual incidents leading up to it.

Both the frame number and zulu time/date.

The computer in use at the time (A side or B side).

Whether Live, SIM Over Live, SSTM, Duplex, etc.

Call signs/track numbers and whether or not the "Record Track Action" was taken.

(1) Actions:

(a) DOSM will, on receipt, assign a PIR number. If the PIR is reported against the current official operations tape, a "C" PIR number will be assigned. If reported against a version undergoing pre-release testing (Future Version), an "F" PIR number will be assigned.

Supersedes 26DOS OI 55-8, 10 Dec 70  
OPR: DOS

1. C-PIRs will be closed only by one of the following:

a. PIR withdrawn due to a misinterpretation of the Operational Specifications or unable to duplicate. Possible operator error.

b. PIR closed, equipment malfunction, Equipment Status Report (ESR) number xxxx opened.

c. PIR closed, program error, 07PRXXX, 66MCXXX, or 69MCXXX opened.

2. F-PIRs will be closed only by one of the following:

a. PIR withdrawn due to a misinterpretation of the Operational Specifications or unable to duplicate. Possible operator error.

b. PIR closed, equipment malfunction, Equipment Status Report (ESR) number xxxx opened.

c. PIR closed, program error. One of the following will be issued: 06PC, 66MC, or 69MC. When the 06PC is not available prior to the version release date, an 06PR will be produced and will be distributed as part of the release package.

d. PIR closed, program error, but because the product has not yet been physically loaded onto the tape and the program specification has not yet been published, the Product Coordinator can correct the error and reissue the deck for load. In addition, the program specifications will be changed to reflect the correct coding.

(b) DOSM will type the report in four (4) copies, and distribute as follows:

1. Two copies to the responsible division chief.

2. One copy retained by DOSM.

3. One copy for the Senior Director's Status Log.

(c) DOSM will determine the division chief responsible for the area in which the error is located and forward the PIR to him.

(d) Division chiefs will have three (3) working days to evaluate the report in order to determine whether the PIR is:

1. Valid program problem - He will have an official 06/07 PR, 66 MC, or 69 MC opened.

2. Equipment malfunction - He will notify the Maintenance Control Section (751) and obtain an ESR number.

3. Due to a misinterpretation of the Operational Specifications; so state and status it closed.

4. If additional time is required to close a PIR because of its complexities, or because we are unable to duplicate, or because other higher priority projects prevent us from working the suspected problem, division chief will so indicate on the PIR with the type of action to be taken and forward to DOSM.

(e) After the evaluation, division chiefs will return one copy of the PIR to DOSM indicating the actions and findings.

(f) When a completed C-PIR form is returned to DOSM, the comments will be typed onto the originator's copy and the file copy. The originator's copy will then be returned to him. The copy received from the division chief will be filed in the DOSM file, with the other copy being forwarded for the Senior Director's Status Log.

(g) When a completed F-PIR form is received, the procedures in paragraph 2a(1)(f), above, will apply except an additional copy will be made and forwarded to Director, DOS, for informational purposes.

(h) F-PIRs which are resolved prior to release date will be overloaded on the release tape and the 06-PC will be part of the release package. (See paragraph 2c(2).)

(i) F-PIRs which are unresolved on release of a new version will be prepared in 06-PR format and distributed to the field as part of Version Release Letter. They will be closed by issuing 06-PCs using the same procedure in paragraph 2c(1), below.

b. PRs. Reports of this type may originate from field units and as a result of internal PIR action. The procedures outlined herein will be employed when processing PRs.

(1) PRs originating from the field. - The procedures to be used by the field sites are covered in the appropriate ADC Manuals.

(a) On receipt, DOS will insure that the PR is in sufficient quantities (4 copies) and distribute as follows:

1. One (1) copy to the responsible programmer through his division chief.

2. One (1) copy to DOSM.

3. One (1) copy to Director, DOS, and then for division chiefs' read file.

4. One (1) copy for Senior Director's Status Log.

(b) DOSM will maintain a Master PR Status Board and will generate the Weekly Problem Summary Report. The report will list all open problems, problems closed and transmitted to the field, problems closed and not transmitted to the field. The report will also show any changes in status of previously reported problems.

(c) The responsible division chief will status the problem and forward the PR to the programmer(s) responsible for the system/program.

(d) Complying with the priority scheme contained in the appropriate ADC Manuals, division chiefs in conjunction with their programmers will decide how the PR is to be processed.

(e) Division chiefs will display the PR on their Weekly Status Slides, noting any change in status and/or progress in the closing of the PR.

(f) The responsible programmer will resolve the PR as soon as possible by issuing a PC. Requests for assistance for corrector testing will be made through their division chief to DOSM.

(2) PRs resulting from internal "C-PIR" status:

(a) When the problem is a result of a program error, the responsible programmer will get a PR number from DOSM and generate a PR in final draft form. Submit the draft to DOS for typing.

(b) DOS will prepare the PR in five (5) copies for distribution as follows:

1. Two (2) copies to Communications Center; one (1) will be returned with date/time group stamped on the form.

2. One (1) copy to DOSM.

3. One (1) copy to Director of DOS for informational purposes and then to division chiefs' read file.

4. One (1) copy to the Senior Director's Status Log.

(c) The responsible programmer will proofread the completed PR, insuring accuracy and completeness. Division chiefs will sign as releasers. The PR will then be carried to DOSM for coordination.

(d) DOSM will pull the last three (3) copies and make distribution as outlined in paragraph 2b(2)(b), above.

(e) The responsible programmer will then handcarry the original and one (1) copy to the Communications Center where they will be stamped with the date and time of receipt. The original will be retained by the Communications Center and the programmer will file his copy in his Area Notebook.

(f) DOSM will maintain a Master Version Problem Status Board and will insure the PR is included in the Weekly Status Report.

(g) Division chiefs will display the PR on their Weekly Status Slides, noting any change in status and/or progress in the closing of the PR.

(h) The responsible programmer will resolve the PR as soon as possible by issuing a PC. Requests for assistance for corrector testing will be made through division chiefs to DOSM.

c. PCs. Program Correctors will be generated to close 07-PRs, field-generated PRs, and F-PIRs. These correctors will be issued by complying with the following procedures:

(1) 07-PCs and Correctors for field-generated PRs:

(a) The responsible programmer will prepare the main body of TPR-PC in final draft form and submit to DOS for typing through his division chief.

(b) To produce the listing of the coding, the programmer will deliver the card deck to DOSC and make a request for tape load and four (4) copies of a multi. He will deliver the multi listing to DOS, where they will be attached to the main body of the PC. The tape load request and card deck will be turned over to DOSM.

(c) DOS will prepare the PC in five (5) copies and notify the programmer that the PC is ready for proofreading.

(d) After proofreading, the responsible programmer will have his division chief sign as releaser and bring all copies of the PC to DOSM for coordination.

(e) Distribution for PCs is as follows:

1. The original with attachment for Communications Center.

2. One (1) copy including attachment for the programmer.

3. One (1) copy including attachment for DOSM.

4. One (1) copy for the Senior Director's Status Log -  
no attachment.

5. One (1) copy with attachment for Director of DOS,  
and then for the division chiefs' read file.

(f) DOSM will initial the coordination copy and pull the  
last two (2) copies for distribution as outlined in paragraph 2c(1)(e),  
above.

(g) The programmer will then handcarry the original and  
two (2) copies including attachment to the Communications Center where  
they will be stamped with date and time of receipt. The original will  
be retained by the Communications Center and the programmer will keep  
one for his Area Notebook and forward the other to DOSM for the Master  
File.

(h) The Communications Center will produce punched tape  
and a hard copy of the PC and notify the programmer that the PC message  
is ready for proofreading.

(i) The programmer will insure that the PC message is  
correct and authorize its transmission.

(j) When a problem is common to both the current and future  
versions and it is determined by the issuing programmer that the 07-PC is  
completely compatible with the future version; i.e., the exact card con-  
tent can be loaded on the future tape, a duplicate card deck and load  
request will be produced and delivered to DOSM by the programmer. DOSM  
will verify the corrector for version compatibility and then release the  
future version load request to DOSC.

(k) When a problem is common to both the current and future  
versions and the corrector deck is not completely compatible with the  
future version a -1 change will be issued (see paragraph 2e below).

(l) Card format for the correctors is contained in 26DOS  
OI 55-3.

(m) Procedures for handling changes to these PCs are speci-  
fied in paragraph 2f below.

(2) 06-PCs Issued Prior to Version Release Date:

(a) The responsible programmer will prepare the main body  
TPR-PC in final draft form, and submit to DOS for typing through his  
division chief.

(b) To produce the corrector listing, the programmer will deliver the corrector deck to DOSC and make a request for a tape load request and nine (9) copies of a multi. The load request and the card deck will be submitted to DOSM for testing. All card decks will be in the format outlined in Attachment 1. The multi listings will be turned over to DOS, where they will be attached to the main body of the PC.

(c) DOS will produce the PC in ten (10) copies, staple the attachment to each, and notify the programmer that the PC is available for proofreading.

(d) When the programmer is satisfied that the PC is correct, he will distribute as follows:

1. One (1) to Director of DOS and then for file in the Master File.
2. One (1) for Senior Director's Status Log (no attachment).
3. One (1) for the programmer's file.
4. One (1) for DOSM.
5. Six (6) copies for DOSC file; these will be made part of the Release Package.

(e) DOSM will authorize the overload of PC by submitting the load request to DOSC. This will be accomplished after the PC is merged into the version testing schedule and verified.

(f) Procedures for handling changes to these PCs are specified in paragraph 2f below.

(3) 06-PCs issued after release date. - The procedures for 07-PCs apply. (See paragraph 2c(1), above.)

e. -ls, Cards Issued to Update Correctors to Insure Version Compatibility. When correctors issued for a current version are not completely compatible with the future version, due to differences in program mods between the two tapes, a modified corrector deck will be produced for the future version. The procedures are:

(1) The programmer will produce the modified corrector deck. The card columns 63 through 69 will contain the same abbreviated product designator as the original deck, but the card column 70 will contain the digit 1.

(2) The basic document will contain a statement in the comment section, indicating that a -1 is required.

(3) A load request, corrector deck, and three copies of a multi listing will be produced and delivered to DOSM by the programmer.

(4) After the deck has been verified for version compatibility, the load request will be submitted to DOSC, and the three (3) copies of the multi listing distributed, as outlined below, and attached to the basic document.

(a) One copy to DOS for the Master File.

(b) One copy to the programmer.

(c) One copy to DOSM.

f. Errors. Errors or oversight in any of the products of this OI will be closed by the programmer issuing changes to the basic document. These changes will be identified by the corrector deck containing a letter in card column 70. The first change issued will be identified as the "A" change and each succeeding change will be identified by the next alphabetical letter. The same type of TPR document issued in the base document will be produced for this type of change. The corrector listing need only to consist of the required cards; the unaffected cards of the base product need not be modified to reflect the change identifier.



HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DCS/Operations

9 November 1971

Operations

SUOP MASTER TAPES

This Operating Instruction establishes the procedures and practices for the maintenance of the SUOP Master Tapes, tape designators, tape content, tapeloads, and tape slot assignments.

1. References:

- a. 26DOS OI 55-3, Coding Conventions and Restrictions.
- b. 26DOS OI 55-8, Program Errors.
- c. 26DOS OI 55-12, Computer Program Testing.
- d. Appropriate ADC Manuals 55-XX.

2. Responsibility. SAGE Programming Agency personnel will comply with the provisions of this Operating Instruction when producing SUOP Masters, submitting items for load, slotting tapes, generating version descriptions and submitting request for equipment changes.

3. Terms Explained:

- a. "Product," for this OI, is defined as any SPC, AR, NM, and PDC which is being produced by the SPA.
- b. "Correctors," for this OI, is defined as any PC or MC which will be or has been issued by the SPA.
- c. "Items," for this OI, is defined as the combined form of both "a" and "b" above.
- d. Job Sheet - a work sheet sent to the computer operator, by DOSC, indicating type of load, tapes to be used, tape drive setup, etc.
- e. Tape Generation Request - a work sheet submitted to DOSC, by DOSM, listing the items to be loaded to a given version/subversion.

4. Tape Designators and Content: DOSC is responsible for maintaining the SUOP tape as outlined below:

- a. "M" Tape - The version base tape in maintenance master format. Contains all the approved items for that version. In addition, in order to support testing, the tape will contain the non-standard MORØ and the Test

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This OI supersedes 26DOS OI 55-10, 17 Apr 69, and OI 55-11, 18 Apr 69.  
OPR: 26DOSM

NORAD Region (TNR) data base items: Geography, Adaptation and Initial Conditions. Local Unique Changes (UCs) will not be loaded to this tape; when needed, they will be brought in from PRESTORE. Whenever a version is to be released to the field, both the standard MORØ and the production release values will be reloaded to that version. The item level of an "M" tape will always be the same as the corresponding "P" or "T" tape.

b. "P" Tape - The current official operational master which contains all the approved version items, UCs, geography, adaptation, and initial conditions. Normally, produced for cycling only when the official operational date is reached. The prefix for the supporting adaptation and geography tapes will be "PA" and "PG," respectively.

c. "T" Tape - This tape is a test tape and;

(1) Prior to the operational date of any given version, it is the official SPA test tape. The content is the same as the "M" tape except it's in operational format and includes the local unique changes (UCs). The tape is authorized to be cycled in support of Active Air Defense (AAD), whenever sufficient confidence has been gained in the version compool. Items will only be added after they have been tested and approved by DOSM. Version Descriptions (VDs) will be produced and distributed for this type of "T" load. The prefix for the supporting adaptation and geography tapes is "TA" and "TG," respectively.

(2) Post operational date of any given version, the "T" tape will be used primarily to evaluate future version New Mods (NMs) and Program Design Changes (PDCs). Other than these products, the content will be the same as the corresponding "P" tape. Version Descriptions (VDs) will not be required because the VD written for the corresponding "P" will describe the operational changes to both tapes. When correctors issued for a "P" tape are not completely compatible with the "T" tape, a dash 1 deck will be generated (per 26DOS OI 55-8).

d. "X" Tape - An operational master containing all the approved items, the 25 Air Division's geography, adaptation, and initial conditions. This tape is produced, maintained, and cycled in support of testing only. The prefix letters for the supporting adaptation and geography tapes will be "XA" and "XG," respectively.

e. "F" Tape - An operational master containing all the approved items, the mythical 75 Air Division's environment, geography, adaptation, and initial conditions. Until released by Hq ADC, this tape will only be cycled, by the SPA, to verify the environment. The prefix letters for the supporting adaptation and geography tapes will be "FA" and "FG," respectively.

5. SUOP Master Tape Numbering System: The tape designators described below will be adhered to by DOSC when they generate SUOP tapes

a. Prior to Operational Date - Letter and three digits (T203).

(1) First Letter - Identifies type of tape (see 3a through 3d, above).

(2) First Digit - Indicates version, using the last digit of the version number.

(3) Last Two Digits - Tape designator - sequentially numbered (01 through 99).

b. Post Operational Date - Letter, two digits, letter (P51B).

(1) First Letter - Identifies type of tape.

(2) Two Digits - Indicates version.

(3) Last Letter - Sub-version tape designator alphabetically ordered (A through Z).

6. Tape Slot Assignments: Tapes will be slotted in the cabinets, located in front of the tape drive units, as follows:

Future Version

Current Version

F1 - "M" Tape

C1 - "M" Tape

F2 - "M" Tape PRESTORE  
(includes UCs)

C2 - "M" Tape PRESTORE  
(includes UCs)

F3 - COSEAL

C3 - COSEAL

F4 - RUN

C4 - RUN

F5 - GIANT

C5 - GIANT

F6 - UNISIM

C6 - UNISIM

F7 - SPARS

C7 - SPARS

F8 - "X" Tape

C8 - "X" Tape

F9 - "T" Tape

C9 - "T" Tape

F10 - "T" Tape PRESTORE

F11 - MST N/M BOT

7. Procedures for Submitting Items for Load:

a. The individual programmers will cycle and test all items prior to releasing them, to DOSM, for evaluation and load. The load requests and decks will be submitted through the respective division chief.

b. Division chief will review the requests and authorize the load of the item by signing the load requests.

c. During the phase when both the current and future versions are being maintained, a separate load request and card deck will be submitted for each version to which a product is to be loaded. For NMs and PDCs, the load request will contain the combine tape, DOS tape numbers.

d. An operationally oriented description, Attachment #1, will be attached to the load request of items submitted for load. This description is not required for NMs and PDCs.

e. Items submitted for load to a future version will be merged into the testing schedule and verified prior to releasing them for load.

f. DOSM will maintain slides (one each for the future/current version) depicting the items submitted for load, testing status and the tentative tape load schedule. These slides will be displayed at the DOS weekly staff meeting. In addition, DOSM will maintain the load notices on the DOS bulletin board whenever loads are scheduled.

8. Tapeload Procedures:

a. The availability of items for load will dictate the tape schedule. All "PCs" issued will be loaded within 30 days of their release. Normally, loads will not be accomplished more often than once every two weeks for any given version, although a Category I type "PC" could cause an earlier load.

b. The necessary card decks, load requests, and tape generation request (attachment #2) will be submitted to DOSC, by DOSM, by 1300L, two duty days prior to any scheduled load (load freeze date).

c. DOSC will produce and distribute to DOSM, DOSS, and DOSW a tentative tapeload listing (80/80) or the PRESTORE content listing by 0800L, the following morning.

d. The tapeload listing will be reviewed by all concerned and any errors, omissions, or necessary revisions will be brought to the attention of Chief, DOSM, not later than 1200L.

e. After the necessary modifications have been noted, the division chiefs will approve the tentative load listing by signing the DOSM copy. This copy will be forwarded to DOSC immediately after the Division Chiefs have signed it, where it will be used to update the load deck, if required, and filed as part of the version load file.

f. The actual tapeload will be accomplished the following morning before normal duty hours. A full systems verification test will be scheduled for the day of the tapeload, normally at about 1100L. If the load proves unsuccessful, the other division chiefs will be notified, the full systems cancelled, and the load will be rescheduled for the next day or as soon thereafter as the problem/condition is eliminated.

g. Immediately after each tapeload DOSC will conduct a detailed examination of the load DLO. This inspection will check for load errors, omissions, corrector locations, and sequential order errors. The DLO will include the:

- (1) SYC corrector output.
- (2) Tape compare of the new and old tapes.
- (3) Log of the new tape.

As soon as possible, but before the Full System Verification Test (shakedown), DOSM will be notified of the results of the DLO's examination. When no errors are found, the individuals who conducted the check will sign the DLO listing. It will then be filed as part of the load's history file. If any discrepancies are found, DOSM, coordinating with the other Division Chiefs, will determine the magnitude of the error and if necessary cancel the shakedown. The load will then be rescheduled per paragraph "e" above.

h. When the shakedown proves the loads acceptable, DOSM will notify DOSC who will slot the tape as follows:

(1) "M" tapes generated prior to release date will be slotted at the time and date indicated in the corresponding "T" tape's Version Description. The shakedown conducted on the associated "T" tape will suffice for both tapes. The procedures outlined in paragraph 7 above apply.

(2) "M" tapes generated subsequent to release date will normally be loaded every 30 days to the level of the most current "P" tape. Shakedowns will be required and the tape will not be slotted until a successful one has been accomplished. The above tape-load procedures apply.

(3) "T" Tapes:

(a) Produced in support of future version testing will be generated by using the corresponding "M" tapes as a base, changing the format and adding the UCs. The shakedown performed on the "T" tape will satisfy the requirement for both the "M" and "T" tapes. The tapes will be slotted when indicated in the Version Description.

(b) Tape produced in support of NM or PDC checkout will be produced by using the corresponding "P" tape as base and adding the NMs, PDCs, and the necessary dash ones. Whenever a dash one has been added, a shakedown will be required. The tape will be slotted when indicated in the corresponding "P" tape VD.

(4) The initial "P" tape will be produced by using the version release tape as a base, subsequent sub-versions will be generated by using the preceding "P" as a base. After a successful shakedown, the tape will be duplicated in four copies and turned over to computer maintenance and will cycle in support of A.A.D. as indicated in the daily Operational Order.

(5) "X" tape will be produced initially for each version and updated with all released items, only when a product or corrector has been issued which might affect the tapes capability to support testing. Shakedowns will not be required and the tape may be slotted after the load's DLO has been examined and indicates a good load.

1. DOSC will maintain a history file of all tapeloads. This file will be retained for the life of that version and one additional version. Each load file will consist of:

- (1) Copy of the Tape Generation Request (Attachment #2).
- (2) Copy of the individual item load request.
- (3) The signed copy of the load's 80/80 or the listing of the prestore content.
- (4) A copy of the on-line Q-7 printout.
- (5) The job sheet (Attachment #3).
- (6) The signed copy of the load's DLO listing.

9. Version Description Procedures: A Version Description describing the content of a load, written in operational language, will be published and distributed for every "P" and for every "T" tape produced prior to the version's operational date. The format and content will be as outlined in the appropriate ADC Manual. Items described in one Version Description

will not need to be redescribed when loaded to another version. Version Descriptions will be prepared by DOSM using the Operational Description (Attachment #1) which was submitted with the load request. The following procedures apply:

a. DOSM will review the Operational Description (Attachment #1) for content when received. If any clarification is needed, it will be returned to the programmer for reaccomplishment.

b. The content of a load will be frozen at 1200L, two days prior to the scheduled load. At that time, the draft of the Version Description will be forwarded to DOS for typing and reproduction. This document will be submitted for reproduction as a priority, in order to have it available for operational personnel at least three days prior to the version/sub-version cycling.

c. Distribution of the Version Descriptions will be accomplished as specified in the appropriate ADCM.

10. Load Policies for Early Released Products:

a. Products authorized for early release may be loaded to the current "M" tape only when they are within ten (10) days of the operational date.

b. When all of the following are accomplished, products may be loaded to the "P" tape:

(1) Been assigned a "Dated Priority" or authorized for early release by Hq ADC.

(2) The product has been stasured as closed.

(3) All required testing has been successfully completed.

11. Equipment Changes: Equipment modification will be identified by DOSM and forwarded to DMKD in sufficient time, load freeze date, to allow for the required changes to be implemented prior to the operational date. The method of notification will be letter which will contain the specific equipment change required, and the time and date by which the modification is to be accomplished. When consoles are involved, the letter will contain:

a. Position Name.

b. Console Number.

c. Module.

26DOS OI 55-10

- d. Button affected.
- e. New label/CAT\* Switch Change.

Permanent label changes will not be made in support of products undergoing SPA testing.



HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DSC/Operations

OPERATIONAL DESCRIPTION

1. Product Number and Title:
2. System Affected:
3. References:

Description: (Give complete and full details operationally.)

Actions: (Describe fully all new or changed actions) (switch/lightgun.)

Displays: (Describe fully all new display/s resulting from this product.)

Product Coordinator: \_\_\_\_\_ Phone: \_\_\_\_\_



JOB NUMBER \_\_\_\_\_

PROGRAMMER \_\_\_\_\_

DATE \_\_\_\_\_

EST TIME \_\_\_\_\_

SET UP  
NO.

	TD 1	TD 2	TD 3	TD 4	TD 5	TD 6
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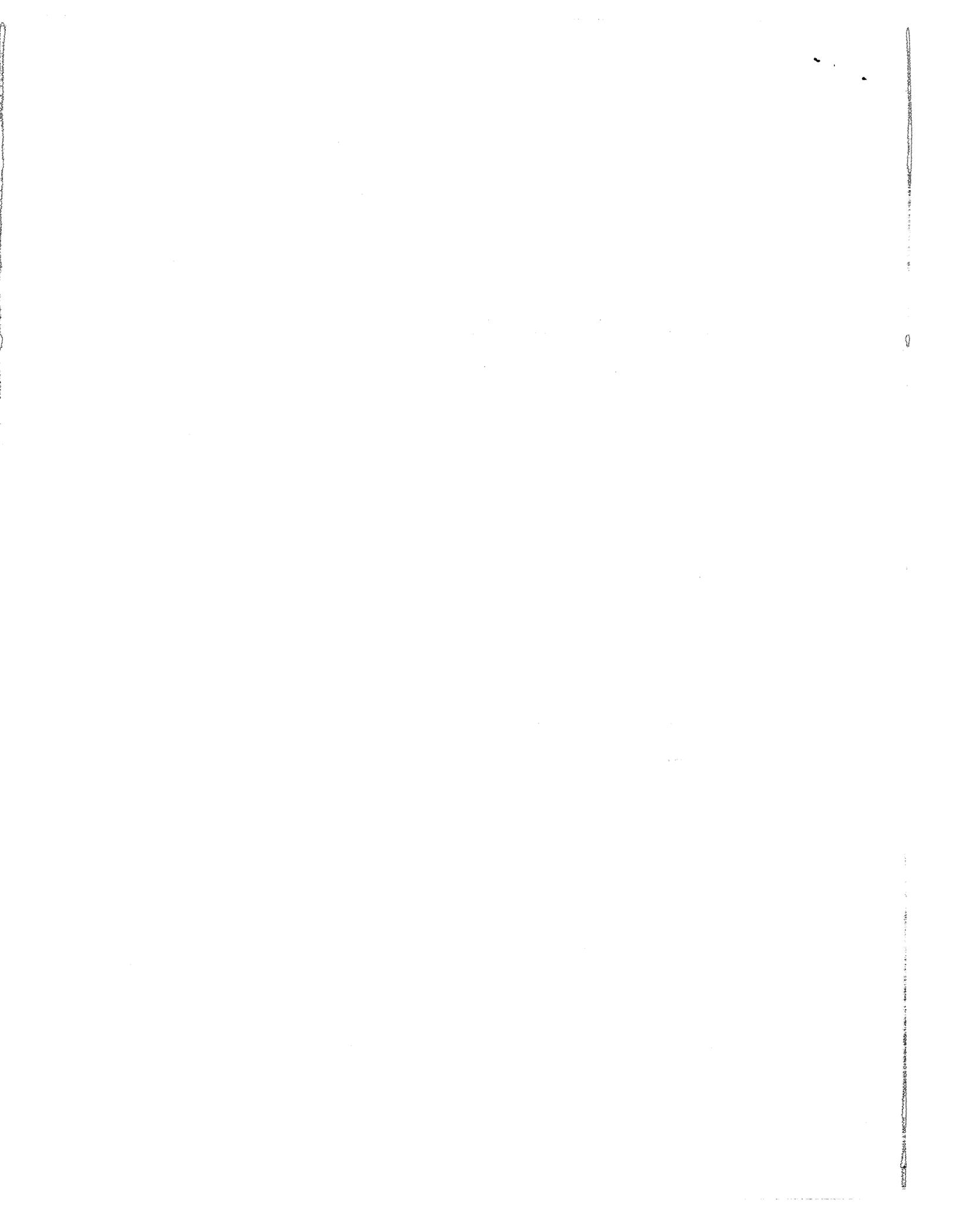
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REFERENCES \_\_\_\_\_

COS \_\_\_\_\_ TIME \_\_\_\_\_



23 August 1971

Operations

PREPARATION AND MAINTENANCE OF AREA NOTEBOOKS

Provides a standardized format for the assembly of Area Notebooks per the appropriate ADC manuals. This Operating Instruction is applicable to all personnel assigned to the SAGE Programming Agency.

1. Responsibility. Individual programmers are responsible for the preparation and continual updating of Area Notebooks for their assigned program areas. Division chiefs will periodically review notebooks insuring completeness.
2. Procedures. The individual programmer or programmers for an area will prepare and/or secure the items listed below which are applicable to his area and available for his use. This information will be functionally broken down into the following order:
  - a. Index.
  - b. Area Description (see paragraph 3f).
  - c. Program Descriptions (hard copy when available).
  - d. Program Design Information and Flow Charts (if available).
  - e. Program Specifications.
  - f. Current Version Listings.
  - g. Current Version TAREFs.
  - h. Current Adaptation.
  - i. Current Version Analytical Compendium (3255 Documentation - If sufficient copies are not available, then applicable page numbers of the Analytical Compendium should be referenced.).
  - j. Miscellaneous (table formats, items, table included in the Standard MORØ, current tape identification for DOSU-assigned systems, etc.).
  - k. TPR File:

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This DOS OI supersedes 26OPM OI 55-13, 16 Apr 69, and 26OPM OI 55-14, 18 Apr 69.  
OPR: DOSU

(1) DCS/SPC (Design Specifications, Program Specifications, Analysis Team Study Reports).

(2) CR/AR (both the Part I and Part II).

(3) DR/DC.

(4) PDC/New Mods.

Note: Feasibility Studies, Test Plans, etc., that pertain to a particular product will be filed with that product. Items (1) thru (4) above will be kept on file for current and future versions only.

(5) PR/PC (PIRs will be attached if available). PRs/PCs will be maintained together and filed as follows:

(a) Version.

(b) Numerically by Air Division, and

(c) Latest date first.

PRs/PCs will be kept on file until such time as the program(s) is/are remoded and the PC is incorporated into the new mod.

(6) EPCs - Copies will be maintained until they are incorporated or become obsolete.

(7) UCs - Copies of the current field-wide authorized UCs.

1. All other information pertaining to future version production.

3. Maintenance:

a. The information to be contained in an Area Notebook will be assembled into one or more looseleaf binders. Each binder will be labelled a "Book" and will be numbered consecutively. If an area requires only one binder, Book 1 will contain all information for that area. If an area requires more than one binder, then each binder (book) will be numbered, beginning with 1 and continuing consecutively.

b. Each binder will be clearly labelled as to area, book number, and the title of the information contained therein:

**EXAMPLE**

TELLING  
BOOK 1  
CURRENT LISTINGS/TAREFS/ADAPTATION

c. An index will be placed in the front of Book 1 specifying the location within the book(s) of each of the major topics listed previously, and any appropriate sub topics. If cross-reference can be made between books, then this information will be so stated on the index.

d. Each book will be carefully prepared with maximum use of reference tabs for easy access of information by any programmer. As many binders as necessary may be used.

e. For areas which do not have notebook size listings, the available listings will be maintained as a group in a location convenient to the responsible programmer. All programmers are responsible for updating their assigned area listings upon issuance of TPR-PCs.

f. An area description will be written and will contain, but not be limited to, the following:

- (1) Title. - The commonly used phrase to describe the area.
- (2) References. - List all references used specifically in the area.
- (3) Programs Involved. - List all programs in the area.
- (4) Program Overviews. - Give a brief description of what each program does.



HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DCS/Operations



DEPARTMENT OF THE AIR FORCE  
Headquarters, 26 Air Division (ADC)  
Luke Air Force Base, Arizona 85301

26DOS OI 55-18

3 February 1971

Operations

PRODUCT PRODUCTION

This operational instruction establishes the procedures, practices, and formats to be adhered to by the SAGE Programming Agency (SPA) in order to evaluate proposed programming changes to the SAGE system, design and produce approved programming change suggestions, and develop and publish the necessary documentation modifications resulting from the installation of changes to SAGE computer program systems.

1. References:

- a. ADCM 55-32.
- b. ADCM 55-33.
- c. ADCM 55-34.
- d. 26DOS OI 55-8.
- e. 26AD HOI 55-18.
- f. 26DOS OI 55-3.

2. Responsibility: SAGE Programming Agency personnel will comply with the procedures contained in this OI when tasked with design, development and production of the following products:

- a. Design Change Suggestion (DCS).
- b. SAGE Program Change (SPC).
- c. Clarification Request (CR)/Analysis Report (AR).
- d. Analysis Team Study Report (AT).
- e. Documentation Change Request (DR)/Documentation Correction (DC).
- f. Feasibility Study (FS).
- g. Program Design Change (PDC).
- h. New Program Modification (NM).

This document supersedes 26DOS OI 55-18, 17 December 1970.  
OPR: 26DOS

3. Terms: The following is an explanation of the terms used in this OI:

a. ADC System Review Committee (SRC): A group convening at Hq ADC, which evaluates, approves, and disapproves recommended SAGE and BUIC computer program changes and the related equipment modifications.

b. SAGE Programming Agency (SPA): The military unit assigned to the 26 Air Division responsible for the design, development, testing, acceptance and maintenance of SAGE Versions and associated support and utility systems.

c. Design Change Suggestion (DCS): A request for change or an addition to any of the computer programs or equipment controlled by ADCM 55-32, dated 1 Sep 70.

d. SAGE Program Change (SPC): A design change suggestion approved for implementation by the SRC.

e. Technical Programming Report (TPR): A document used by military programmers to record and disseminate technical information related to the SAGE computer program systems.

f. Clarification Request (CR): A technical programming report requesting interpretation or analysis of system documentation.

g. Analysis Report (AR): Documentation produced to close CRs or to implement Hq ADC directed program parameter changes. Its primary purpose is to clarify design intent of the operational specifications for the SAGE system and when required will include changes to the SAGE computer programs.

h. Document Change Request (DR)/Document Correction (DC): TPR documents used to identify and correct specific documentation errors.

i. Program Design Change (PDC): An improvement to the SAGE computer program that may be incorporated provided no change occurs to the operational specifications. Documents generated in support of these products will use the letters "PD" as the TPR two letter designators.

j. Feasibility Study Report (FS): A document produced in response to an SRC request to evaluate a DCS or any other proposed program changes prior to final SRC action.

k. New Program Mod (NM): The method of updating SAGE computer programs in order to generate spare registers or to retag and recomment the programs. With the concurrence of both the SPA committee and the responsible Division Chief, NMs may be PDCs.

l. Product Case File: A file on a product which contains a copy of all correspondence and documentation pertaining to or generated during the production of a product.

m. DCS Review Committee: A group formed to evaluate DCSs received from Hq ADC and other field units, prior to SRC action. The evaluation will include design, programming, operation and equipment implications. The committee will normally convene within the first three working days of each month but can be assembled at any time to respond to a Hq ADC Quick Response requirement.

n. SPA Monthly Status Report: A report produced by the SPA indicating the status of all approved products assigned for study or approved for incorporation into the SAGE system. The report will be published monthly as of the last Monday of the month.

o. Product Coordinator: An individual fixed with the responsibility for the design, development and production of a designated product. He is responsible for managing and coordinating the efforts of the product team and for the administrative effort required to produce the product.

p. O6 Program Error Correction (O6PCs): A program correction generated by the SPA after the product program specification has been published but before the product has been released to the field. The PC will be part of the version release package when available. When the correctors are not available on release date, the normal program corrector procedures will apply (see 26DOS OI 55-8).

q. Preliminary Review Meeting: An assembly of personnel representing all functional areas of the SAGE computer program system whose function it is to determine the members of the product team, assign tasks, fix tentative milestones and identify major problem areas.

r. Analysis Team Study Report (AT): Documentation written in support of products except when the responsible division chief excuses the requirement due to its straight forward design effort or when the change is such a minor nature that he feels the AT effort is not warranted. ATs will be generated:

(1) To keep Hq ADC advised of significant changes in the operational concept due to an approved program change.

(2) When information or guidance is required from Hq ADC.

(3) To make Hq ADC aware of significant changes in product design and development.

(4) Whenever products are of such complexity as to require a record of a rationale used to arrive at the accepted solution.

s. Design Specifications (DS): A document in TPR format which describes the authorized program change in operational language and contains all the technical detail, both mathematical and logical, required to produce the program change. In addition, it identifies all equipment and official documentation changes required to incorporate the product into the SAGE system.

t. Program Specifications (PS): Documentation, programmer oriented in TPR format, which describes in detail all the program changes necessary to implement the design specification. The document will also contain changes to programmer oriented documentation, i.e., COMDOC/COMPOOL, etc.

u. Product Coding: The computer program coding generated to implement the authorized change as outlined in the design and program specifications.

v. Product Test Plan: A document produced by the product coordinator specifying the method which will be used to test products for adherence to the design specifications.

w. Version Release Package: The magnetic tapes containing the updated SAGE programs and the supporting documentation which describes in detail all the differences between the current version and the version being released.

x. Product Team: A group of SPA program area/system specialists whose programs are affected by a given product. They are responsible to the product coordinator for accomplishing all assigned tasks.

y. Product Status Board: The master status board located in the DOS office which displays the current status of all products being produced by the SPA.

z. Document Change Notice: A document generated by the SPA providing in detail the specific changes required to the Operational Specifications, Positional Handbooks, Common Appendix, VDE specifications, Users Manuals and Message Formats document.

#### 4. Procedures:

a. Procedures for the production of individual products are contained in the annexes as indicated:

(1) Design Change Suggestions (DCS) - Annex 1.

(2) SAGE Program Change (SPC) - Annex 2.

(a) Design Specifications (DS) - Annex 2.

(b) Program Specifications (PS) - Annex 2.

(3) Clarification Request (CR)/Analysis Report (AR) - Annex 3.

(4) Documentation Change Request (DR)/Documentation Correction (DC) - Annex 4.

(5) Program Design Change (PDC) - Annex 5.

(6) New Program Modification (NM) - Annex 6.

- (7) Feasibility Study (FS) - Annex 7.
- (8) Analysis Team Study Report (AT) - Annex 8.
- (9) Test Plan - Annex 9.

b. In the TPR format, the digits "99" will be used in lieu of the version number when the product is an experimental SPC or when the product has not been assigned to a version.

c. The TPR documentation generated in support of SPCs will use the last three digits of the SPC number in the TPR number.

d. SPA published documents will be modified by issuing an "A" change (B, C, etc.) or -1's. The A (B, C) changes are written to correct an error or oversight in the original document. The -1 changes will be produced when the product requires modification because it does not wholly apply due to a new mod in one or more of the programs involved. The -1 changes will be issued as an errata sheet modifying the basic document, unless the changes are of such magnitude as to require a document reissue. Cards produced for -1 changes will contain the digit "1" in column 71. Unaffected programs/cards need not be modified to reflect this update (see 26DOS OI 55-3).

e. The Reference section of documents generated by the SPA will list only those documents which are referenced in the body of the product or used as an authoritative source document. Documents that are simply being modified by the product will appear only in the document change section.

f. The Document Change section will list the official document number and will include the latest modification letter.

5. Forms: The following forms are internal working forms used by the SPA and when coupled with the other documentation present a complete history of the design, development, production, testing, and the documentation changes which were necessary to incorporate the product into the SAGE system.

a. Preliminary Review Meeting Notice (Form 73): Used to notify and record the members of the preliminary review team. The form identifies the document, its classification, title, and location and indicates the time, date, and location of the meeting. Produced in two copies by DOSM, one copy for the Product Coordinator and one copy to be posted on the DOS Bulletin Board.

b. Minutes of Preliminary Review Meeting (Form 71): Produced by the Product Coordinator and used to record the makeup of the final product team. Lists the tentative milestones, identifies obvious problem areas, other system interface dependencies, events which might affect the product production, interbranch and interagency liaison requirements, and provides a general description of the product design and program implications.

c. Document Coordination Form (Form 70): Initiated by the Product Coordinator, to insure that documents produced in support of products are concurred with, by personnel concerned, prior to publication. All documents produced will be coordinated through all Division Chiefs, with the exception of the Test Plans which will be submitted to DOSM through the responsible Division Chief. On receipt each reviewer will note suggested changes on an attached sheet, check the appropriate box, sign, date and forward to the next reviewing official. When the review is complete, the document will be returned to the Product Coordinator, modified as required, and returned to DOSM prior to publication.

d. Weekly Status Reports (Form 69): Produced by the Product Coordinator and submitted to DOSM NLT 1600 each Monday covering the previous week's activity of the product team. The report contains changes to the established milestones, problems encountered, requirement of additional interbranch or inter-agency liaison, report of progress on design or program specifications, testing activity, and, if applicable, reason for inactivity.

e. SAGE COMPOOL Request (Form 48): Submitted by the Product Coordinator identifying in specific detail changes to the COMPOOL and COMDOC documents resulting from the design and development of the product.

f. Analytical Compendium Change Request (Form 51): Drafted by the Product Coordinator stating in the exact format and content, the necessary changes to the Analytical Compendium which are required by the product.

6. Product Milestones: The following is a list of items which may constitute product milestones. These items will be considered at the preliminary review meeting and the applicable milestones and dates will be recorded on the preliminary review meeting Form 71. Once established changes will be submitted on the product's Weekly Status Report.

- a. Draft ATSR available for coordination.
- b. ATSR published.
- c. Draft Design Specifications available for coordination.
- d. Design Specifications published.
- e. Test Plan available for coordination.
- f. Tests completed.
- g. Draft Program Specification available for coordination.
- h. Program Specification published.
- i. COMPOOL/COMDOC Changes submitted.

- j. Analytical Compendium Changes submitted.
- k. MORØ Changes submitted.
- l. Product submitted for testing.



HERBERT J. SUSKIN, Lt Colonel, USAF  
Director of SAGE Programming Agency  
DCS/Operations



ANNEX 1

DESIGN CHANGE SUGGESTIONS (DCSs)

Procedures: The procedures for processing DCSs are as follows:

1. Action by DOSM:

a. All incoming DCSs received during each calendar month will be filed in the unapproved DCS case file.

b. The Monthly DCS Review Committee meeting will be held within the first 3 working days of each month. A notice containing time, date, and location of the meeting will be sent to each committee member in sufficient time to allow him to review the DCSs and determine its effect on his program area. The notice will, in addition, indicate the title, classification, and location of the DCSs.

c. Make the DCSs and pertinent documentation available for review by DCS Review Committee members.

d. Chair the monthly meeting and record the recommendations in the minutes. A copy of the minutes will be forwarded to Hq ADC within 3 working days following the meeting.

e. When a quick response is required, the members of the DCS Review Committee will be notified of the requirement. A meeting will be conducted as soon as all members have had time to review the DCS. The results of the meeting will be documented and forwarded to Hq ADC as soon as possible.

2. Action by DCS Review Committee Members: When notified of the time and date of the monthly meeting, he will:

a. If unable to attend, assign the most experienced available member of his division/section to represent him.

b. Review the DCSs and pertinent documentation to ascertain the impact and magnitude of the suggested changes in his area/system/program.

c. Attend the monthly meeting.

d. Assist in the development of the team's recommendations.

e. Accomplish assigned tasks which might be required in order to complete the report.

3. Action by DOS:

a. Forward all DCSs to DOSM.

b. Type minutes of Monthly Meeting and return to DOSM for proofreading.

c. Forward final report to Hq ADC.

**NOTE:** 26DOS personnel may initiate DCSs by adhering to the procedures contained in paragraph 2-2, Chapter 2, ADCM 55-32.

ANNEX 2

SAGE PROGRAM CHANGES (SPCs)

1. Procedures: The procedures for processing SPCs are as follows:

a. Action by DOSM:

(1) On receipt of an SPC (approved DCS) open a product case file. This file will contain a copy of all documents, correspondence, and forms generated in producing the product. The file will be made available to anyone having a need to review or study the material.

(2) Determine the division most affected and contact the Division Chief, obtaining the name of the individual who will be assigned as Product Coordinator.

(3) In conjunction with the Product Coordinator determine the time, date, and location of the Preliminary Review Meeting.

(4) Notify the respective Division Chiefs of the requirement for a Preliminary Review Meeting, indicating time, date, and location. Obtain the name(s) of the individual(s) that will represent his system/program.

(5) Produce the Preliminary Review Meeting Notice (Form 73) in two copies; one for the Product Coordinator and one to be posted on the DOS bulletin board.

(6) Attend the Preliminary Review Meeting, giving any assistance required.

(7) Function as contact point for assistance needed or information required from any outside agency or higher headquarters.

(8) Insure that information received from any outside source pertaining to the design, development, and production of the product is forwarded to the Product Coordinator, through his Division Chief.

(9) Monitor the production of the product insuring adherence to the scheduled milestones.

(10) Maintain Product Status Board and note all changes in status in the Monthly SPA Report.

(11) Review and approve all final drafts of documentation, correspondence, and forms generated in support of the product, insuring completeness and accuracy prior to submission to DOS for typing on mat.

(12) Proofread mat and forward to DOSD for publication and distribution.

b. Action by Division Chiefs:

(1) When notified by DOSM that a Product Coordinator is required from his division he will evaluate the workload and assign his most experienced available programmer to the task.

(2) If notified that representation is required from his division for a Preliminary Review Meeting, he will evaluate the workload and assign the most experienced available programmer(s) to the team. If determined at this meeting that the product does affect his area/system/program, he will be assigned as part of the permanent product team.

(3) Prior to submission, reviews all Weekly Status Reports generated by his division in support of the products.

(4) Coordinates and forwards drafts of all ATSRs, Design Specifications, and Program Specifications.

(5) Approves and forwards Test Plans submitted by the Product Coordinators from his division.

c. Action by Product Coordinator: When notified by his Division Chief that he has been designated Product Coordinator for a product he will:

(1) Coordinate with DOSM personnel to determine time, date, and location of the Preliminary Review Meeting.

(2) Review all pertinent documentation and correspondence pertaining to the product.

(3) Chair the Preliminary Review Meeting and document the results on the Preliminary Review Meeting Form (Form 71) and submit to DOSM. (See paragraph 5b, Basic OI for content.)

(4) Using the Weekly Status Report Form (Form 69) submit weekly report to DOSM. (See paragraph 5d, Basic OI for content.)

(5) Advise DOSM of any problems encountered which might require assistance, information, or guidance from higher headquarters or an outside agency.

(6) Conduct Analysis Team activity as required. ATs will be written and published as required by paragraph 3r, Basic OI. (Content and format is outlined in Annex 8, this OI.)

(7) Supervise the design, development, and production of the draft Design Specifications adhering to the production schedule. (The document content and format is outlined in paragraph 2 of this annex.)

(8) Produce and submit to DOSM a Test Plan indicating the methods of testing. The plan will be in letter form. (See Annex 9 of this OI for content and format.)

(9) After testing has been completed, submit the results in letter form to DOSM. The letter will also indicate the areas that could not be tested locally.

(10) Produce a Draft Program Specification, and submit for coordination. (The content and format are outlined in paragraph 2 of this annex.)

(11) When required, produce the COMPOOL/COMDOC Change Request (Form 48) and the Analytical Compendium Change Request (Form 51) and submit to DOSM.

(12) When MORØ Changes are required, a card deck will be produce and submitted to DOSU. The cards will contain only the control information in card columns 18 through 44. DOSU will complete the cards and submit for load request. The load request and deck will be turned over to DOSM for verification prior to tape load.

(13) Proofread completed mats. Have errors corrected and submit to DOSM.

(14) All documentation, correspondence, and forms in draft form will be submitted to DOSM through the Division Chief prior to final action.

d. Action by Team Member: When notified that he has been selected as a Product Preliminary Review Team Member, he will:

(1) Review all documentation and correspondence pertaining to the product.

(2) Attend the meeting as specified in the Preliminary Review Meeting Notice.

(3) If his area/system/program is affected, perform the tasks assigned by the Product Coordinator.

(4) Submit required documentation and forms to the Product Coordinator.

e. Action by DOS:

(1) Forward SPCs (approved DCSs) to DOSM.

(2) On receipt of approved draft from DOSM, reaccomplish on mat and return to the Product Coordinator for proofreading.

f. Action by DOSD:

(1) On receipt of the mats, publish and distribute per the SPA Master Distribution List.

(2) Maintain a record of all Documentation Changes.

(3) Produce and forward to Hq ADC, a Document Change Notice on an as required basis.

2. Official SPC Documentation: The following documents comprise the official SPC documentation.

a. Analysis Team Study Report (AT): As required, per paragraph 3r, Basic OI, document will be in TPR format; content as outlined in Annex 8, this OI.

b. Design Specification (DS): Document will be published in TPR format; for content see paragraph d(1) below.

c. Program Specification (PS): Published in TPR format; for content see paragraph d(2) below.

d. Program Error Correction (06 PC): Published in TPR format; for content see Annex E, Chapter 7, ADCM 55-33. These correctors will be delivered to the field as part of the Version Release Package or if not available on release date, they will be teletyped as they become available.

(1) Design Specification (DS): TPR format; content as follows:

---

DESIGN SPECIFICATION

SPC Number XXXX

1. Title:

2. References: Cite field-deliverable documents which are used in the main body of the SPC as authoritative or source type documents and not those which are just being modified.

3. Problem: A detailed description of the problem describing the impact the problem has on the different areas/systems/programs.

4. Solution: Provide a brief summary of the Design Change.

a. SUOP Computer Program System: A detailed description of the Design Specification at the level of the Operational Specification.

b. Support Computer Program:

(1) RUN: A detailed description of the changes to the RUN Users Manual and the 637.

(2) SPARS: A detailed description of the changes to the SPARS Users Manual and the 637.

c. Utility Computer Program System:

(1) COSEAL: Describe the changes to COSEAL at the level of the Users Manual.

(2) GIANT: Describe the changes to GIANT at the level of the Users Manual.

(3) UNISIM: Describe the changes to UNISIM at the level of the Users Manual.

d. Initial Data:

(1) Environmental Data: Describe the changes giving the data name, description, classification, and the agency providing the value(s).

(2) Weapons Data: Describe the changes giving the data name, description, classification, and the agency providing the value(s).

(3) Program Data Control: Describe the changes giving the data name, description, classification, and the agency providing the value(s).

e. Equipment:

(1) 047 Plugboard Wiring: Describe in detail the changes to the wiring.

(2) Variable Display Equipment: A detailed description of changes to the VDE.

(3) Other Equipment: A description of changes to specific equipment indicating how the equipment is to be modified to be compatible with the SPC.

f. System Interface:

(1) NORAD COC: Describe the necessary NORAD COC program changes required to eliminate any incompatibilities between the two systems.

(2) BUIC III: Indicate any BUIC III program change necessary to keep the two systems compatible.

(3) ARADCOM: Any changes required of the ARADCOM program to keep the two systems compatible.

(4) Other Systems: Changes required to any system not covered above.

g. Documentation Changes: Identify all documents, by number and title, which are to be modified by the product. The documents listed below should be considered when this paragraph is being written. In addition, indicate that Attachment 1 contains the exact changes to all documentation in specific detail, paragraph by paragraph, line for line.

(1) Operational Specifications (637s).

(2) SAGE Positional Handbooks.

- (3) Users Manuals (RUN, SPARS, UNISIM, and GIANT).
  - (4) VDE Specifications.
  - (5) 820 and 825 Documents.
  - (6) COSEAL Manual.
  - (7) FAST Manual.
  - (8) Message Formats Documents.
  - (9) SPARS Data Base Documents.
- 

(2) Program Specification (PS): TPR format; content as follows:

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PROGRAM SPECIFICATION

SPC NUMBER XXXX

1. Title:
2. System/Version/Programs: Indicate the system or systems affected. Give the version number the product is being produced for or the digits "99." Indicate the programs being modified by the product.
3. References: Cite field-deliverable documents which are used in the main body of the SPC as authoritative or source type documents. See paragraph 4e, Basic OI.
4. Description: Short description of the program changes.
5. SUOP Program Changes: Ordered by program and program tag. Give a detailed description of changes to each functional area.
6. COMPOOL Changes: Describe all additions, deletions, and changes to programs, tables, or items.
7. COMDOC Changes: Describe in detail COMDOC changes including scaling, bit location, etc.
8. Initial Data Changes:
  - a. Environmental Data: Describe changes to the level of Volume 1 of the Analytical Compendium.
  - b. Weapons Data: Describe changes to the level of Volume 2 of the Analytical Compendium.

c. Program Control Data: Describe changes to the level of Volume 3 of the Analytical Compendium.

9. Support Computer Program Systems:

a. RUN: Same as 5 but for the RUN programs.

b. SPARS: Same as 5 but for the SPARS programs.

NOTE: COMPOOL Change to RUN and SPARS will be indicated in this section.

10. Utility Computer Program Systems:

a. UNISIM: Same as 5 but for the UNISIM programs.

b. COSEAL: Same as 5 but for the COSEAL programs.

c. GIANT: Same as 5 but for the GIANT programs.

11. Implementing Instructions:

12. Other Pertinent Information: (When a MORØ Change is required, indicate the item or table to be added or deleted.

13. Program(s) Corrector Listing: See Attachment.

-----



## ANNEX 3

## CLARIFICATION REQUEST (CR)/ANALYSIS REPORT (AR)

1. Procedures: The procedures for processing CR/ARs and Hq ADC directed changes are as follows:

a. Action by DOSM:

(1) On receipt of a Clarification Request, open a Product Case File. This file will contain a copy of all documents, correspondence, and forms generated in the production of the product. The file will be made available to anyone having a need to review or study the material. Reference to the CR from this point on will be by AR number.

(2) On receipt of an ADC-directed Change, obtain an AR number from DOS and open an AR Product Case File.

(3) Determine the division most affected and contact the Division Chief, obtaining the name of the individual who will be assigned as Product Coordinator.

(4) In conjunction with the Product Coordinator determine the time, date, and location of the Preliminary Review Meeting.

(5) Notify the respective Division Chiefs of the requirement for a Preliminary Review Meeting, indicating time, date, and location. Obtain the names of the individuals that will represent his system/program.

(6) Produce the Preliminary Review Meeting Notice (Form 73) in two copies; one for the Product Coordinator and one to be posted on the DOS Bulletin Board.

(7) Attend the Preliminary Review Meeting giving any assistance required.

(8) Function as contact point for assistance needed or information required from any outside agency or higher headquarters.

(9) Insure that information received from any outside source pertaining to the design, development, and production of the product is forwarded to the Product Coordinator, through his Division Chief.

(10) Monitor the production of the product insuring adherence to the scheduled milestones.

(11) Maintain Product Status Board and note all changes in status on the Monthly SPA Report.

(12) Review and approve all final drafts of documentation, correspondence and forms generated in support of the product, insuring completeness and accuracy prior to submission to DOS for typing on mat.

(13) Proofread mat and forward to DOSCD for publication and distribution.

b. Action by Division Chiefs:

(1) When notified by DOSM that a Product Coordinator is required from his division, he will evaluate the workload and assign his most experienced available programmer to the task.

(2) If notified that representation is required from his division for a Preliminary Review Meeting, he will evaluate the workload and assign the most experienced available programmer(s) to the team. If determined at this meeting that the product does affect his area/system/program, he will be assigned as part of the permanent product team.

(3) Prior to submission, reviews all Weekly Status Reports generated by his division in support of the products.

(4) Coordinates and forwards drafts of ATSRs and the Analysis Report Parts I and II and all attachments.

(5) Approves and forwards Test Plans submitted by the Product Coordinators from his division.

c. Action by Product Coordinator: When notified by his Division Chief that he has been designated Product Coordinator for a product he will:

(1) Coordinate with DOSM personnel to determine time, date, and location of the Preliminary Review Meeting.

(2) Review all pertinent documentation and correspondence pertaining to the product.

(3) Chair the Preliminary Review Meeting and document the results on the Preliminary Review Meeting Form (Form 71) and submit to DOSM. (See paragraph 5b, Basic OI for content.)

(4) Using the Weekly Status Report Form (Form 69) submit weekly report to DOSM. (See paragraph 5d, Basic OI for content.)

(5) Advise DOSM of any problems encountered which might require assistance, information or guidance from higher headquarters or any outside agency.

(6) Generate an Analysis Team Study Report (AT) in support of the product, if required.

(7) Conduct Analysis Team activity as required. ATs will be written and published as required by paragraph 3r, Basic OI. Content and format is outlined in Annex 8, this OI.

(8) Supervise the design, development, and production of the Draft Design Specifications (Part I) adhering to the production schedule. The document content and format is outlined in paragraph 2 of this Annex.

(9) Produce and submit to DOSM a Test Plan indicating the methods of testing. The plan will be in letter form; see Annex 9 of this OI for content and format.

(10) After testing has been completed, submit the results in letter form to DOSM. The letter will also indicate the areas that could not be tested locally.

(11) Produce a Draft Program Specifications (Part II) and submit for coordination, content, and format outlined in paragraph 2 of this Annex.

(12) When required, produce the COMPOOL/COMDOC Change Request (Form 48) and the Analytical Compendium Change Request (Form 51).

(13) When MORØ Changes are required, a card deck will be produced and submitted to DOSU. The cards will contain only the control information in card columns 18 through 44. DOSU will complete the cards and submit for load request. The load request and deck will be turned over to DOSM for verification prior to tape load.

(14) Proofread completed mats, correcting errors. Submit to DOSM.

(15) All documentation, correspondence, and forms in draft form will be submitted to DOSM through the Division Chief prior to final action.

d. Action by Team Member: When notified that he has been selected as a Product Preliminary Review Team Member he will:

(1) Review all documentation and correspondence pertaining to the product.

(2) Attend the meeting as specified in the Preliminary Review Meeting Notice.

(3) If his area/system/program is affected, perform the tasks assigned by the Product Coordinator.

(4) Submit required documentation and forms to the Product Coordinator.

e. Action by DOS:

(1) Forward CRs to DOSM.

(2) On receipt of approved draft from DOSM, reaccomplish on mat and return to the Product Coordinator for proofreading.

f. Action by DOSD:

(1) On receipt of the mats publish and distribute per the SPA Master Distribution List.

(2) Maintain a record of all Changes to documentation.

(3) Produce and forward to Hq ADC, a Document Change Notice on an as required basis.

2. Official AR Documentation: The following documents, content, and format as indicated, comprise the official AR documentation.

a. Analysis Team Study Report (AT): As required, per paragraph 3r, Basic OI. Document will be in TPR format; content as outlined in Annex 8, this OI.

b. Analysis Report (AR): Published in TPR format; see para e below for content. The Part II of the AR will only be produced when there is program coding required to close the CR.

c. Program Error Correction (O6 PC): Published in TPR format; for content see Annex E, Chapter 7, ADCM 55-33. These correctors will be delivered to the field as part of the Version Release Package, or if not available on release date, they will be teletyped as they become available.

Analysis Report: TPR format and content as follows:

-----

ANALYSIS REPORT

PART I

DESIGN SPECIFICATIONS

1. Title:

2. System/Version/Programs: Indicate the system or systems affected. Give the version number the product is being produced for or the digits "99." Indicate the programs being modified by the product.

3. References: Cite field-deliverable documents which are used in the main body of the AR as authoritative or source-type documents and not those which are just to be modified.

4. Problem: Statement of the problem to be corrected by this AR. This should include an exact statement of conflict between current specifications and design intent, or ambiguities in the current specifications.

5. Analysis: The analysis should clarify all aspects of the problem and give a detailed description of the solution.

**6. Action:**

a. Documentation Changes: Identify all documents, by number and title, which are to be modified by the product. The documents listed below should be considered when this paragraph is being written. In addition, indicate that Attachment 1 contains the exact changes to all documentation in specific detail, paragraph by paragraph, line for line.

- (1) Operational Specification (637s).
- (2) SAGE Positional Handbooks.
- (3) Users Manuals (RUN, SPARS, UNISIM, and GIANT).
- (4) VDE Specifications.
- (5) 820 and 825 Documents.
- (6) COSEAL Manual.
- (7) FAST Manual.
- (8) Message Formats Documents.
- (9) SPARS Data Base Documents.

b. Equipment Changes:

c. System and Programs Affected: If programs are not affected, indicate Part II will not be published or list system and programs being modified.

-----

PART II

PROGRAM SPECIFICATIONS

1. SUOP Program Changes: Ordered by program and program tag. Give a detailed description of changes to each functional area.
  2. COMPOOL Changes: Describe all additions, deletions, and changes to programs, tables, or items.
  3. Initial Data Changes:
    - a. Environmental Data: Describe changes to the level of Volume 1 of the Analytical Compendium.
    - b. Weapons Data: Describe changes to the level of Volume 2 of the Analytical Compendium.
    - c. Program Control Data: Describe changes to the level of Volume 3 of the Analytical Compendium.
  4. COMDOC Changes: Describe in detail COMDOC Changes including scaling, bit location, etc.
  5. Support Computer Program Systems:
    - a. RUN: Same as 1 but for the RUN programs.
    - b. SPARS: Same as 1 but for the SPARS programs.
- NOTE: COMPOOL Changes to RUN and SPARS will be indicated in this section.
6. Utility Computer Program Systems:
    - a. UNISIM: Same as 1 but for the UNISIM programs.
    - b. COSEAL: Same as 1 but for the COSEAL programs.
    - c. GIANT: Same as 1 but for the GIANT programs.
  7. Implementing Instructions:
  8. Other Pertinent Information: (When a MORØ Change is required, indicate the item or table to be added or deleted.)
  9. Program(s) Corrector Listing: See Attachment 2.
-

## ANNEX 4

## DOCUMENTATION CHANGE REQUEST (DR)/DOCUMENTATION CORRECTION (DC)

1. Procedures: The procedures for processing Documentation Change Requests (DRs) and Documentation Corrections (DCs) are as follows:

a. Action by DOSM:

- (1) On receipt of a DR, open a Product Case File.
- (2) Determine the division whose documentation is most affected and assign the Division Chief as the Product Coordinator.
- (3) Notify the Division Chief of his selection.
- (4) If unclassified, forward a copy of the Document Change Request to the Product Coordinator. If classified, issue to the Product Coordinator a Document Coordination Form (Form 70) indicating the location and classification of the DR.
- (5) In conjunction with the Product Coordinator establish a date for the completion of the draft DC.
- (6) Monitor the production of the product, assist the Product Coordinator whenever requested and maintain Product Status Board.
- (7) Function as contact point for any information required or assistance needed from higher headquarters or outside agencies.
- (8) Review the draft DC for completeness and accuracy and forward to DOS for typing on mat.
- (9) Proofread mat and forward to DOSD for publication and distribution.

b. Action by Division Chief: When notified that a DR has been received pertaining to documentation in his area, he will:

- (1) Review the DR and in conjunction with DOSM set a date for the completion of the draft DC. This date is dependent on the division's workload and the work effort involved in producing the DC.
- (2) Utilizing division personnel, research the documentation and generate a draft DC which is required to close the DR. See paragraph 2 for content and format.
- (3) Submit the completed draft to DOSM.
- (4) Proofread the typed mat, correcting any errors.
- (5) Forward the mat to DOSM for coordination, publication, and distribution.

c. Action by DOS:

- (1) On receipt, forward the DR to DOSM.
- (2) Type the approved draft DC on mat and return to the Product Coordinator for proofreading.

d. Action by DOSD:

- (1) Publish and distribute the DC as required by SPA Distribution List.
- (2) Maintain a record of all changes to documentation.
- (3) Produce and forward to Hq ADC a Document Change Notice on an as required basis.

2. Document Correction Content and Format: This type of document correction will be published and distributed in order to close DRs. Content and format as follows:

-----

TECHNICAL PROGRAMMING REPORT (TPR) (date) Page \_\_\_ of \_\_\_ Pages  
TPR No. \_\_\_\_\_ (Product Coordinator) - Ext \_\_\_\_\_

1. Title: Self-explanatory.
  2. Document Number/Document Name/Document Date: Self-explanatory.
  3. References: Self-explanatory.
  4. Problem: Self-explanatory.
  5. Document Corrective Action: Specific changes to the indicated document.
-

## ANNEX 5

## PROGRAM DESIGN CHANGE (PDCs)

1. General: PDCs may be produced when an improvement to the logic or design of a program can be made which does not change the system's operational specification but results in the saving of operational time or register space. PDCs do not necessarily imply a new mod.

2. Procedures: The procedures for PDC production are:

a. Action by programmer:

(1) Submit a request for PDC to his Division Chief. The request will be in letter form and will include the following:

- (a) Program and mod to be changed.
- (b) Indicate if any pseudo programs are to be created.
- (c) Indicate what other programs are affected.
- (d) Reason for change.
- (e) Indicate how areas within the program are to be changed.
- (f) Indicate if any and what assistance will be needed.
- (g) The proposed schedule of production:
  1. Coding to begin.
  2. Draft Test Plan available.
  3. Testing to begin.
  4. Cards available for live testing.
  5. Draft Program Specification available.

(2) If the PDC request is approved; design, develop, produce, and test the product.

(3) Submit to DOSM a Status Report every other Monday by 1600L. The report will be as of the previous Friday, covering the preceding two weeks' activity. The Weekly Status Report Form (69) will be used.

(4) Advise DOSM of any problems encountered which might require assistance.

(5) Produce and submit to DOSM a Test Plan indicating the methods of testing. The plan will be in letter form; see Annex 9 of this OI for the content and format.

(6) When test is completed, submit the results in letter form to DOSM. The letter will also indicate areas that could not be tested locally.

(7) Submit for coordination the Draft Program Specification; content and format outlined in paragraph 2, this annex.

(8) When required, produce and submit to DOSM the Analytical Compendium Change Request (Form 51) and the COMPOOL/COMDOC Change Request (Form 48).

(9) Proofread completed mats, correcting any errors and submit to DOSM.

(10) All documentation, correspondence, and forms will be submitted, through Division Chiefs, to DOSM prior to final action.

b. Action by DOSM:

(1) Open a Product Case File after the request for PDC has been approved.

(2) Function as contact point for any information required or assistance needed.

(3) Review and approve the final draft of the Program Specifications.

(4) Verify and forward all documents, correspondence, and forms to the appropriate action division.

(5) Monitor the production of the PDC and note all status changes.

c. Action by Division Chief:

(1) Submit the Request for PDC action to the SPA Committee, in order to ascertain the impact on other products and/or other systems.

(2) Support the effort from within his resources and if additional assistance is required, notify DOSM.

(3) Review and approve all documentation generated in support of the PDC.

d. Action by DOSD: On receipt of mats, reproduce and distribute per DOS Master Distribution List.

3. PDC Documentation: PDCs will be produced in TPR format; content as follows:

---

PROGRAM DESIGN CHANGE

1. Program: Program and mod affected.
  2. References: Cite field-deliverable documents which are used as authoritative or source-type documents.
  3. Description of Improvement: Short description of the PDC.
  4. Program Areas Description: Brief description of each functional area, including subroutines of the PDC.
  5. Areas of Other Programs Affected:
  6. Description of COMPOOL/COMDOC Changes:
  7. Description of Analytic Compendium:
  8. Pertinent Information:
  9. Products Included in the PDC:
  10. Program Correction Listing: Listing of PDC coding will be for an overload packet.
-



ANNEX 6

NEW PROGRAM MODIFICATIONS

1. General: When a requirement exists and is approved, new program mods will be generated to retrieve corrector pool spares and to recommend or retag programs. Providing the length of a new mod does not exceed the current COMPOOL program allocation, new mods may be produced and loaded at any time independent of COMPOOL generation. Program improvements may be incorporated when approved by the responsible Division Chief and coordinated through the SPA Committee.

2. Procedures: The procedures for processing new mods are as follows:

a. Action by DOSC:

(1) Monitor the corrector pools in order to determine when it will be necessary to generate additional spares.

(2) Notify DOS and other Division Chiefs that requirement exists to generate spares in specific corrector pools.

(3) Obtain the new program's projected length for COMPOOL allocation.

(4) Obtain the DOS tape number of the new Combined Tape and merge into the Systems Combined Tape.

(5) Submit to DOSD the DLOs of the PAD listing.

b. Action by Division Chief: When a requirement exists to generate spares in corrector pools that have programs in his area of responsibility, he will:

(1) Have the programmers review their programs to determine if sufficient spares would be retrieved.

(2) If the new mod effort appears to be worthwhile, have a New Mod Request generated.

(3) Evaluate any Requests for Program Improvements and approve when warranted.

(4) Submit the request to the SPA Meeting for system impact with regard to all other products under production.

(5) Review all documents and forms produced in support of the new mod.

(6) Make DOSM aware of any assistance needed which is beyond his resources.

(7) Monitor the effort for adherence to the Product Plan and assuring only approved program changes are made.

c. Action by Programmer:

(1) When required, produce a Request for New Mod in letter form and submit to his Division Chief. This request will cover the following:

(a) Base mod to be used.

(b) Estimated number of registers to be recovered.

$(L_b + I - A - D = L_N)$  where:  $L_b$  = Length of current base mod.

$L_N$  = Length of new mod.             $I$  = All Inserts.

$D$  = Number of Deletes.             $A$  = Internal Adaptation  
Registers.

(c) Reason for remodification.

(d) Functions to be employed (update, retag, etc.).

(e) Indicate if a pseudo adaptation program will be created.

(f) Indicate if other programs are affected.

(g) Indicate if any program improvements are to be incorporated;  
if so, specify:

1. Program affected.

2. Area to be changed.

3. Reason for change.

(h) Tentative version for release.

(i) Indicate what assistance will be required.

(j) The proposed schedule of production.

1. Date coding will begin.

2. Date Draft Test Plan available.

3. Date testing will begin.

4. Date BOT available for live testing.

5. Date Draft Program Specifications available.

(2) Implementing the procedures contained in the COSEAL Manual Volume 2, Chapter 4, and Volume 3, Chapter 2, develop and produce the New Mod. Internal adaptation registers will be removed and incorporated as a pseudo program.

(3) All Interim Remods will have the unique designators numerically ordered (i.e., TRC01, TRC02).

(4) The mod designators for the final Combined Tape will remain as presently practiced; that is, just modifying the second letter or digit. Reference 26DOS OI 55-3.

(5) New Mod Status Report will be submitted every other Monday by 1600L. The report will be as of the previous Friday, covering the preceding two weeks' activity. The Weekly Status Reports (Form 69) will be used.

(6) Make DOSM aware of any problems encountered which might require assistance and guidance or which might affect the generation of the New Mod.

(7) Produce and submit to DOSM a Test Plan indicating the methods of testing. The plan will be in letter form; see Annex 9 of this OI for content and format.

(8) After testing has been completed, submit the results in letter form to DOSM. The letter will also indicate the areas that could not be tested locally.

(9) Produce and submit for coordination a Draft Program Specification; content and format outlined in paragraph 2 of this annex.

(10) If required, produce the COMPOOL/COMDOC Change Request (Form 48) and the Analytical Compendium Change Request (Form 51). The COMPOOL Change will indicate the new projected program length.

d. Action by DOSM:

(1) Open a Produce Case File after the Request for New Mod has been approved.

(2) Function as point contact for any information required or assistance needed.

(3) Review and approve all final drafts of documentation, correspondence, and forms generated in support of the New Mod, insuring completeness and accuracy prior to submission for typing on mat.

e. Action by DOS: On receipt of the final draft of the Program Specification, reaccomplish on mat and return to the Product Coordinator for proof-reading.

f. Action by DOSD:

(1) Reproduce and distribute the Program Specification, using the Master Distribution Listing.

(2) Using the DLO supplied by DOSC, produce the PAD Listing.

3. New Mod Documentation: The New Mod Program Specifications will be produced in TPR format; content as follows:

-----

NEW PROGRAM MODIFICATION

1. Modification \_\_\_\_\_ for program \_\_\_\_\_.
  2. References: Self-explanatory.
  3. Description of Change: Give a short prose description of how the program was modified, including description of any approved program improvement.
  4. Program Area Descriptions: Brief description of each functional area, including subroutines of the program.
  5. Other Programs Affected:
  6. COMPOOL/COMDOC Changes: List additions, deletions, and changes to any program, table, or item. Describe COMPOOL Changes in detail; include information and bit location.
  7. Analytical Compendium:
  8. Pertinent Information:
  9. Products Included in New Mod: (SPCs, ARs, PCs)
  10. Retag Reference Dictionary: If retagging was accomplished.
-

ANNEX 7

FEASIBILITY STUDY (FS)

1. Procedures: On receipt of a document or correspondence which requires the generation of a feasibility study the following are the procedures that will be adhered to:

a. Action by DOSM:

(1) Open a Product Case File. This file will contain a copy of all documents and correspondence generated in the production of the product. The file will be made available to anyone having a need to review or study the material.

(2) Determine the division most affected and contact the Division Chief. Obtain the name of the individual who will be assigned as Product Coordinator.

(3) In conjunction with the Product Coordinator determine the time, date, and location of the Feasibility Study Preliminary Review Meeting.

(4) Notify the respective Division Chiefs of the requirement for a Preliminary Review Meeting, indicating time, date, and location. Obtain the name(s) of the individual(s) that will represent his system/program.

(5) Produce the Preliminary Review Meeting Notice (Form 73) in two copies: one for the Product Coordinator and one to be posted on the DOS Bulletin Board.

(6) Attend the Preliminary Review Meeting giving any assistance required.

(7) Function as contact point for assistance needed or information required from any outside agency or higher headquarters.

(8) Monitor the production of the product insuring adherence to the scheduled milestones.

(9) Maintain Product Status Board and note all changes in status in the Monthly SPA Report.

(10) Review and approve the final draft of the Feasibility Study.

(11) Forward the approved Draft Feasibility Study to DOS for typing.

(12) Proofread final product prior to release.

b. Action by Division Chiefs:

(1) When notified that a Product Coordinator for a Feasibility Study is required, he will assign his most experienced available programmer.

(2) When notified that personnel from his division are required to form a Feasibility Study Preliminary Review Team, he will assign his most experienced available programmer(s) to the team. If, at this meeting, it is determined that the product does not affect the programs in his areas, he will be released from the team.

(3) Prior to submission, reviews all Weekly Status Reports generated by his division in support of the products.

(4) Coordinates and forwards all draft documentation generated in support of the Feasibility Study.

c. Action by Product Coordinator: When notified by his Division Chief that he has been designated as Product Coordinator for a given Feasibility Study, he will:

(1) Review all documents and correspondence pertaining to the Feasibility Study as soon as possible.

(2) Coordinate with Chief, DOSM, for the following:

(a) Other system/program area representation required to form the Feasibility Study Preliminary Team.

(b) Time, date, and location of Preliminary Team Meeting.

(3) Chair the Preliminary Review Meeting and document the results on the Preliminary Review Meeting Form (Form 71) and submit to DOSM. (See paragraph 5b, Basic OI, for content.)

(4) Submit Weekly Status Reports (Form 69) every Monday by 1600L. The report will cover the previous week's activity.

(5) Make DOSM aware of any problems encountered or assistance needed.

(6) Submit all documents and correspondence in draft form to DOSM, through Division Chief.

(7) Proofread all final products and forward to DOSM.

d. Action by Team Members: When notified by the Division Chief that he has been selected to represent his system/program at a Feasibility Study Preliminary Review Meeting, he will:

(1) Review all documentation and correspondence pertaining to the Feasibility Study.

(2) Attend the meeting as specified in the Preliminary Review Meeting Notice located and posted on the Bulletin Board.

(3) If his system/program is affected, perform tasks assigned by the Product Coordinator.

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(4) Generate documents and correspondence required. Submit to Product Coordinator through Division Chief.

e. Action by DOS:

(1) Forward the Request for Feasibility Study to DOSM.

(2) Reaccomplish the approved draft and return to the Product Coordinator for proofreading.

2. Feasibility Study Documentation: The study will be published in TPR format content as follows:

-----  
FEASIBILITY STUDY

1. Title:

2. References: Cite field-deliverable documents which are used in the main body of the FS as authoritative or source-type documents.

3. Statement of Request/Problem: Give a detailed description of the request/problem describing the impact on the different systems/programs.

4. Discussion and Considerations: Summarize the discussions and considerations covering all important details, exceptions, and agreements and containing a description of all solutions which were investigated, listing the advantages and disadvantages of each.

5. Conclusions and Recommendations: Provide a concise summary of the conclusions and of the alternate and recommended solutions.  
-----



## ANNEX 8

## ANALYSIS TEAM STUDY REPORTS (AT)

Procedure: Analysis Team Study Reports will be produced in TPR format. The two-letter designator "AT" will be used. When produced in support of SPCs or in an effort to record the rationale used in complex products, the report will be retained in-house. Reports will be published and forwarded only when information and guidance is required from Hq ADC or when significant changes in operational concepts will be the result of a product. The content is as follows:

-----

## ANALYSIS TEAM STUDY REPORT

SPC/AR NUMBER \_\_\_\_\_

1. Title:
  2. References:
  3. Introduction: Statement as to the purpose of the report and list of personnel assisting in the generation of the report.
  4. Subject: Briefly describe the problem or events that resulted in the publication of the ATSR.
  5. Discussion: Summarize the discussion that occurred at the meeting, insuring that all important details, agreements, or exceptions are included. Other pertinent data, such as background discussion, may also be presented in this section.
  6. Conclusions: Provide a concise summary of the conclusions and action recommended by the team.
-



ANNEX 9

TEST PLANS

1. General: Test Plans will be produced for all Program Changes governed by this OI. The Test Plans will indicate the method and procedures to be employed by the Product Coordinator during his testing of the assigned product. Test Plans will be submitted to the responsible Division Chief for approval and then forwarded to DOSM for coordination and review. The complexities of the product involved will govern the detail and content of the Test Plans. When the testing has been completed, the Test Plans will be retained in the Product Case File.

2. Format: Test Plans will be produced in TPR format. The two-letter designator "TP" will be used to designate Test Plans and the last three digits of the product number will be used as the three-digit TPR number. The document will contain all items which are underlined below; the other items will be included when applicable.

-----  
1. Title: (Title of document being tested)

2. References:

3. Objectives and Requirements:

4. Detailed Test Procedures:

5. Computer Time and Configuration:

6. Other Equipment Required:

7. Test Tools to be Employed:

8. Manning Requirements:

9. Live and SIM Testing Requirements:

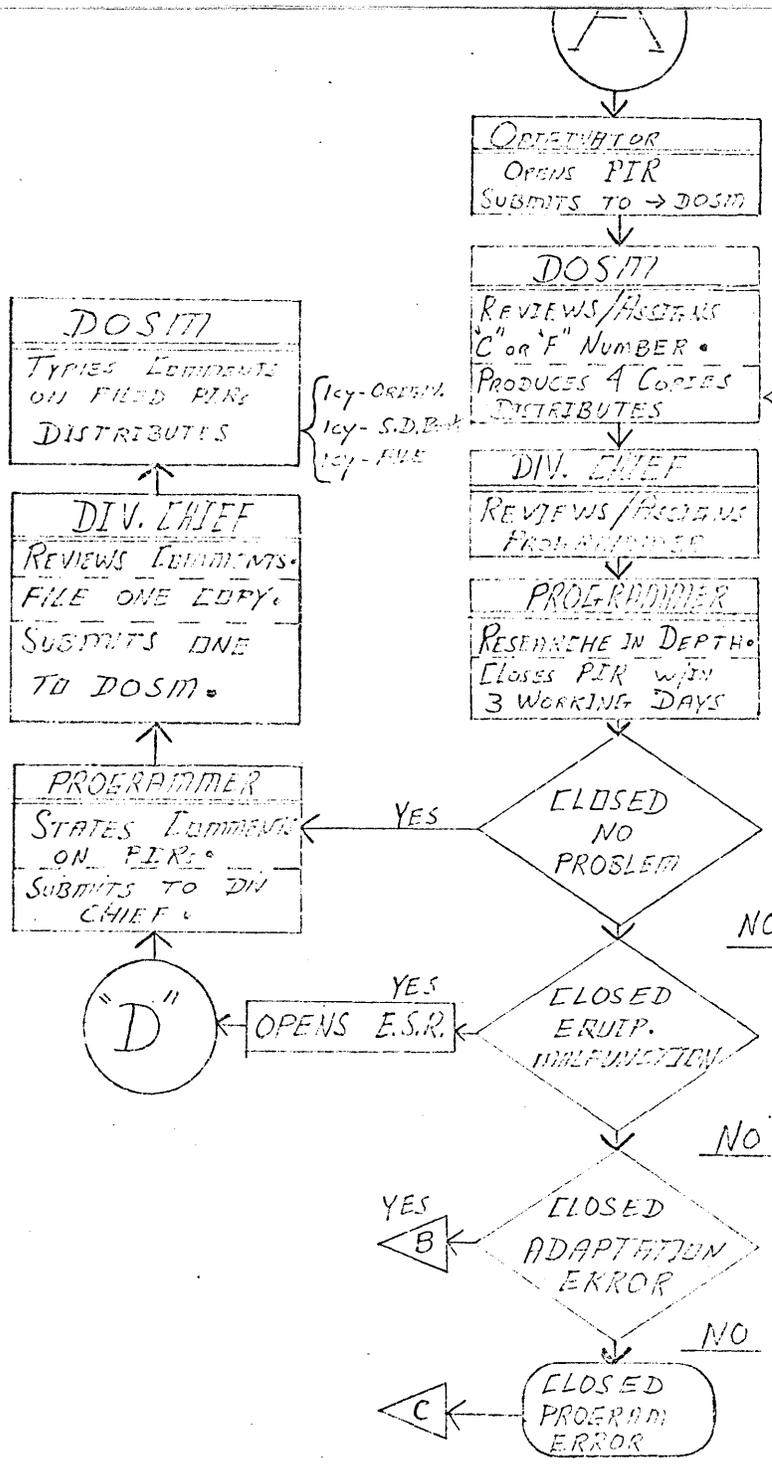
10. Switch Actions and Their Expected Results:

11. Data Reduction Requirements:

12. Other Pertinent Information:

-----





2 cys - APPLICABLE DIV. CHIEF  
 1 cy - S.D. LOG BOOK  
 1 cy - DOSM - FILED w/ ORIGINALS

GOES WITH OI 56-8



"B"

PROGRAMMER  
ANALYZES FOR ENVIRONMENT APPLICABILITY

YES  
ACTIVE AIR CHANGE BUT COMPATIBLE W/ TEST TAPE

OBTAINS 66 NUMBER

YES  
TEST TAPE CHANGE ONLY

OBTAINS 69 NUMBER

NO  
REQUIRED ON BOTH TAPES BUT CODING NOT COMPATIBLE

OBTAINS 66/69 NUMBERS

CLOSES PIR → D

"E"

ANALYZES FOR VERSION APPLICABILITY  
PRODUCES CORRECTORS  
TESTS CORRECTORS  
PRODUCES DRAFT TPR → H  
GENERATES LOAD REQUEST (C)

DECK APPLICABLE TO CURRENT TAPE ONLY  
YES → F

NO  
DECK APPLICABLE TO FUTURE TAPE ONLY  
YES → G

NO  
DECK APPLICABLE TO BOTH CURRENT → F  
FUTURE → G

"F"

DOSI  
RECEIVES CARD DECK & LOAD REQUEST  
SCHEDULES CORRECTORS FOR TAPE LOADS  
LOADS CORRECTORS TO APPLICABLE TAPES  
FILES CORRECTORS IN HISTORY DECK

"G"

DOSM  
RECEIVES DRAFT TPR - REVIEWS → H  
GETS CORRECTORS & LOAD REQUEST  
TESTS CORRECTORS

NO  
CORRECTORS ARE RECEIVED  
YES → E

SUBMITS DECK & LOAD REQUEST → F

"H"

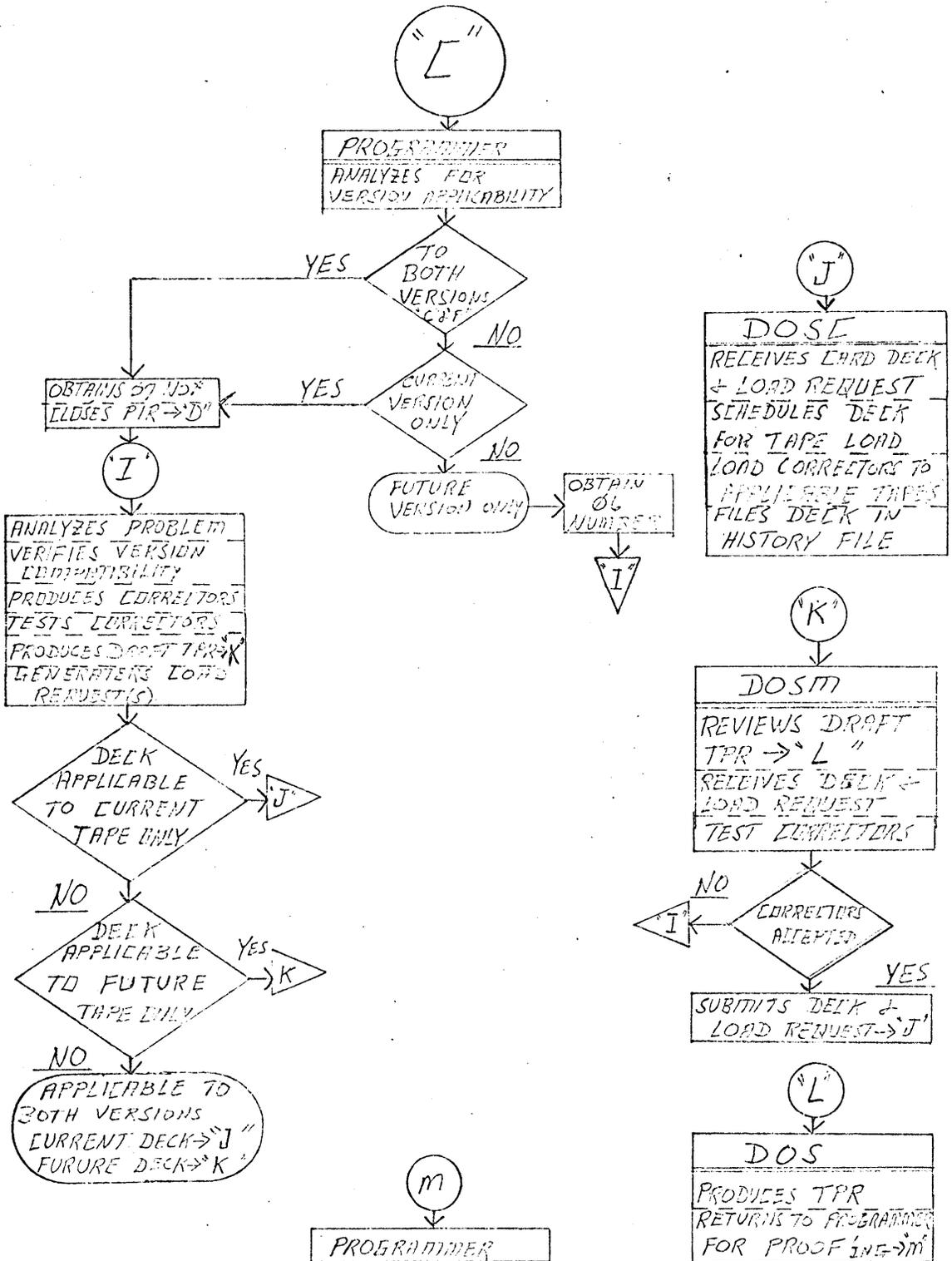
DOS  
PRODUCES TPR  
RETURNS TO PROGRAMMER FOR PROOFREADING

PROGRAMMER  
PROOFREADS  
HAS ERROR LOGS  
DISTRIBUTES - 6EY

2EY-15A-3000  
1EY-PROS  
1EY-INST FILE  
1EY-DOSM  
1EY-DOSD



# PROGRAM ERRORS

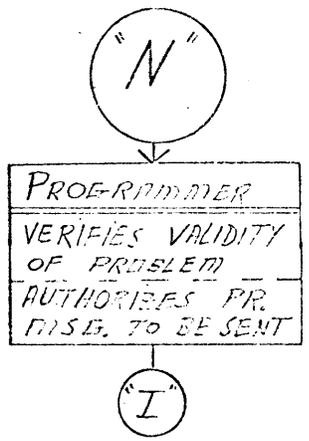


10 COPIES - HR.  
 1CY - DOS  
 1CY - PROGRAMMER  
 1CY - DOSM  
 1CY - S.D.  
 6CY - DOSD

6 COPIES - MISE FORM  
 1CY - Comd. Center  
 1CY - DOS  
 1CY - PROGRAMMER  
 1CY - DOSM  
 1CY - S.D.  
 1CY - Read FILE



FLD. GENERATED PRs



LEGEND

