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TASK ANALYSIS OF PILOT, COPILOT, AND
FLIGHT ENGINEER POSITIONS FOR THE P-3
AIRCRAFT

Robert F. Browning, et al

Naval Training Equipment Center
Orlando, Florida

July 1973

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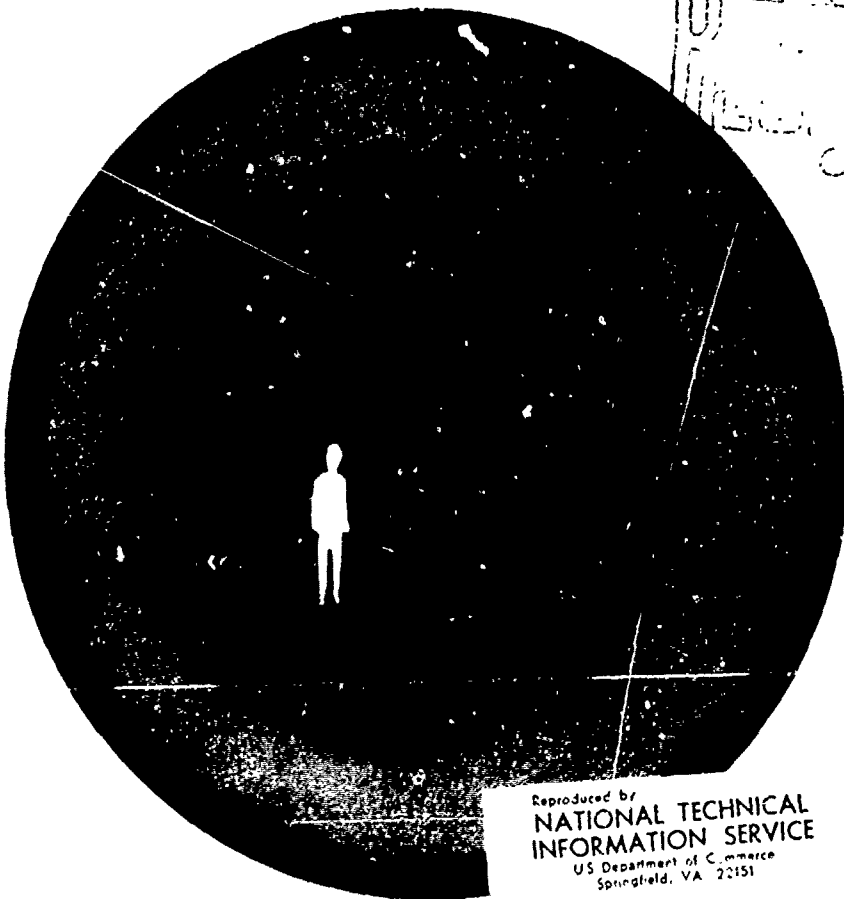
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TAEAG REPORT
NO. 7

TASK ANALYSIS OF PILOT, COPILOT, AND
FLIGHT ENGINEER POSITIONS FOR THE P-3 AIRCRAFT

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Technical Report: TAEG REPORT NO. 7

TASK ANALYSIS OF PILOT, COPILOT, AND
FLIGHT ENGINEER POSITIONS FOR THE P-3 AIRCRAFT

ABSTRACT

This report provides a task analysis of the pilot, copilot, and flight engineer positions in the P-3 aircraft and delineates the method employed in translating task analysis data into an improved training system.

Appendix A, Task Analysis, identifies the behavioral activities of the pilot, copilot, and flight engineer during normal, abnormal, and emergency operation of the P-3 aircraft in accordance with NATOPS procedures.

Appendix B, Training Analysis Application, contains the method for translation of task analytic data into syllabi, lesson guides, and lesson plans. Both the Task Analysis and the Training Analysis are essential ingredients of a systems approach to training.

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Security Classification

DOCUMENT CONTROL DATA - R & D		
<i>(Security classification of title, body of abstract and indexing annotation must be entered when the overall report is classified)</i>		
1. ORIGINATING ACTIVITY (Corporate author) Naval Training Equipment Center Orlando, Florida 32813		2a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED
		2b. GROUP
3. REPORT TITLE Task Analysis of Pilot, Copilot, and Flight Engineer Positions for the P-3 Aircraft		
4. DESCRIPTIVE NOTES (Type of report and inclusive dates) Final Report		
5. AUTHOR(S) (First name, middle initial, last name) Robert F. Browning, Dr. John K. Lauber, and Paul G. Scott		
6. REPORT DATE JULY 1973	7a. TOTAL NO. OF PAGES 284	7b. NO. OF REFS 13
8a. CONTRACT OR GRANT NO.	9a. ORIGINATOR'S REPORT NUMBER(S) TAEG Report No. 7	
b. PROJECT NO		
c. NTEC Work Assignment No. 1022	9b. OTHER REPORT NO(S) (Any other numbers that may be assigned this report)	
d.		
10. DISTRIBUTION STATEMENT Approved for public release; distribution unlimited		
11. SUPPLEMENTARY NOTES	12. SPONSORING MILITARY ACTIVITY	
13. ABSTRACT <p>This report provides a task analysis of the pilot, copilot, and flight engineer positions in the P-3 aircraft and delineates the method employed in translating task analysis data into an improved training system.</p> <p>Appendix A, Task Analysis, identifies the behavioral activities of the pilot, copilot, and flight engineer during normal, abnormal, and emergency operation of the P-3 aircraft in accordance with NATOPS procedures.</p> <p>Appendix B, Training Analysis Application, contains the method for translation of task analytic data into syllabi, lesson guides, and lesson plans. Both the Task Analysis and the Training Analysis are essential ingredients of a systems approach to training.</p>		

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KEY WORDS

LINK A		LINK B		LINK C	
ROLE	WT	ROLE	WT	ROLE	WT

Behavioral Objectives
Curriculum Development
Task Analysis
Training Analysis
Program of Instruction

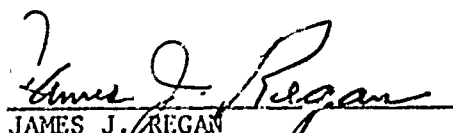
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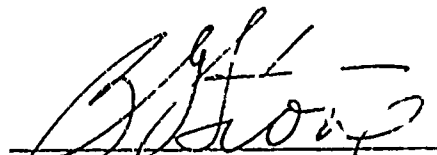
Security Classification

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NAVTRAEQUIPCEN TAEG REPORT 7
 TASK ANALYSIS OF PILOT, COPILOT, AND
 FLIGHT ENGINEER POSITIONS FOR THE P-3 AIRCRAFT
 JULY 1973


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FOREWORD

This report is the second in a series of three planned reports concerned with improving P-3 aircraft pilot and flight engineer training at the Replacement Squadron level. The substance of the report is a detailed job task analysis of the P-3 flight crew positions. An objective of this study was to make this information available to the P-3 Replacement Squadrons for use in the current training program.

The detailed task analysis provided here serves several purposes: it is a primary source of information for the development or modification of current P-3 training programs, it may be employed directly by squadron personnel in structuring and controlling training, and it provides a "handbook" of information to the students undergoing transition training to the P-3 aircraft.

The report was prepared by Mr. R. F. Browning, Education Specialist; Dr. J. K. Lauber, Psychologist; and Mr. P. G. Scott, Engineering Technician, of the Training Analysis and Evaluation Group, Naval Training Equipment Center.

Patrol Squadrons 30 and 31 provided the subject matter expertise essential to the successful outcome of the task analysis. Particular appreciation is expressed to LCDR R. S. Hopewell and ADJCS R. L. Quarton of VF-30 and AEL R. Dorrheim of VP-31.

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SECTION I

INTRODUCTION

A program for improving ongoing training of P-3 pilots and flight engineers was initiated in February 1972. A three-phase study effort was undertaken to achieve the objectives of this program.

Phase I of the study involved a comprehensive analysis of P-3 pilot training at the Replacement Patrol Squadron (RVP) level. This work was completed in June 1972, and published as TAEG REPORT No. 5, Training Analysis of P-3 Replacement Pilot Training, dated 1972. The report presented an assessment of the current P-3 curriculum, the instructional media, and the devices utilized in support of pilot training.

The Phase II effort, which is the subject of this report, developed a job task analysis of the pilot, copilot, and flight engineer positions. Appendix A of this report contains the complete task analysis. In addition, a training analysis based on the P-3 task data was conducted and the existing synthetic and in-flight training syllabi were modified for subsequent school tryout during Phase III of the program. The method employed in translating the task data into a program of instruction is summarized in Section III of this report. Appendix B describes the application of the training analysis methodology and includes examples and appropriate forms.

The Phase III effort, which is currently underway, is concerned with an indepth evaluation to determine what effects the employment of the revised syllabi (Cockpit Familiarization Trainer (CFT),

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Operational Flight Trainer (OFT), and flight portions) developed during Phase II will have on training outcomes. Emphasis will be placed on measuring the effects of training resulting from more efficient use of Devices 2F69D and 2C23 in conjunction with in-the-air training. Concurrently, an evaluation of the present flight engineer training curriculum will be conducted, utilizing the task analysis developed during Phase II as a baseline. At the conclusion of the third phase, an economic analysis will be made to determine the optimum methods-media mix (academic, CFT, OFT, aircraft) as a function of the resources expended and benefits to be gained. This will provide a cost-effective training model.

SECTION II

TASK ANALYSIS

A task analysis was accomplished describing the activities performed in the pilot and flight engineer positions for the P-3 aircraft. The analysis identified and organized in a systematic way the sequential and the interactive activities performed by the flight crew in the phases of flight. It is a critical step in training system design, for it serves as a basis for making decisions about those characteristics desired in a training system. The task analysis serves as a major data source for the subsequent analytic operations described in this report.

Considerable effort was expended on the development of the task analytic methodology employed in this study. Much of this initial work was concerned with an appraisal of existing task analysis techniques and with identifying those techniques which seemed to be of potential benefit to the P-3 pilot, copilot, and flight engineer task analysis. The analytic procedure finally selected incorporates basic elements of several previously used approaches, although it is difficult (and probably useless) to identify specific sources for specific elements. Certainly, much credit should go to the USAF C-130 task/training analysis program being conducted at Little Rock Air Force Base, Arkansas, and also to the work done by several of the major air carriers and aircraft manufacturers. The bibliography contains references to papers and articles consulted during the course of this study, and the reader interested in the broader aspects of task and training analyses should consult these references.

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The resulting analytic procedure adopted for use is, from a theoretic point of view, inelegant. No esoteric behavior taxonomies were used, nor was any attempt made to develop a generalized task analytic method which could be applied to a variety of training situations. In essence, the technique used here is a "brute force" method, requiring large amounts of manpower and time, but one which is likely to produce a useful product. An examination of appendix A of this report indicates quickly the amount of work involved in such an undertaking.

The basic organizational scheme employed in the P-3 task analysis is that of "Phase of Flight." Eleven major phases, ranging from 1.0 (Mission Preparation) to 11.0 (Post-Mission) cover all normal P-3 mission profiles; two additional phases are used to organize Abnormal and Special Procedures (12.0) and Emergency Procedures (13.0). Thus, every segment of P-3 operations, whether normal or emergency, is covered in these 13 mission phases. It should be noted here that Tactical Operations (Section 6.0) was not within the scope of the present study. The analysis of tactical crew positions and tactical operations should be the subject of future study.

Further refinement of the overall organization of the task analysis is imposed by the use of subdivisions of each of the major Phases of Flight. Typically, each Phase of Flight is divided into three subphases, although some phases (5.0 and 7.0) are, from a behavioral point of view, so simple that further breakdown into subphases is not required. On the other hand, each identifiable Abnormal/Special and Emergency Procedure is treated as a subphase, thus resulting in many more than three subphases for these sections.

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Detailed descriptions of each of the mission phases can be found in the introductory section of appendix A to this report.

The third-level breakdowns of the P-3 mission profile were at the "Perform Checklist" level, i.e., functional groupings of related activities with some identifiable goal. Examples of this third-level breakdown include: "Start Engines," which occurs during the Systems Activation subphase of the Pre-Takeoff mission phase (and is numbered 2.2.1); and "Perform Takeoff Checklist," which is performed during the Taxi subphase of the Pre-Takeoff mission phase (and is numbered 2.3.1). It should be noted that these schematics serve only to impose structure on the task analysis, thus helping to organize the collection, treatment, and presentation of the data. Some other organizational scheme could have been used with equal success.

The task statements were constructed at a functional level. That is, the statements described specific, identifiable behaviors of a crewmember with reference to a specific control or indicator in the aircraft itself. Thus, the task analysis is basically a chronologically organized, functional description of the man-machine interface as viewed from the "man" side of that interface. The format of the task analysis is straightforward. Some crewmember (pilot, copilot, or flight engineer) does something (verifies, selects, observes, etc.) to something in the aircraft (power levers, synch servo switch, turbine inlet temperature indicator, etc.). The sequence in which these behaviors are performed determines the sequence of the task statements, except for contingent (or branched) behavior which is described in the form: "if some condition is true, then perform A, otherwise perform B." Allowable deviations

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from the sequence as it appears in the task description are indicated by appropriate notes or remarks, which are also used to discuss other relevant information which does not appear in a task descriptive statement (for example, operating limits, etc.). The task analysis provided in appendix A, is a compilation of this kind of information; it contains a complete description of the behaviors required of each crewmember throughout a P-3 mission, including normal and emergency procedures. In a sense, it contains the specifications for the product of any crewmember training program in that this is what the graduate of such a program must be able to do if he is to successfully perform his role in the P-3 mission.

Task data collection was accomplished as follows. Typically, one or two TAEK team members would meet with a P-3 instructor pilot and a P-3 flight engineer instructor. Following the outline provided by Phase of Flight organization, and using various combinations of the NATOPS manual, Device 2023 (the cockpit familiarization trainer), and the P-3 aircraft itself, all of the procedures were "talked through," one task at a time. The function of the TAEK team was to elicit the appropriate kind of information from the pilots and flight engineers who served as subject matter experts, and to ensure that the level of the task analysis became neither too detailed (thus making the information trivial), nor too global (precluding the utilization of the resulting data in the subsequent training analysis).

Following the initial data collection sessions, the task descriptions were edited and formatted. Then began a review and revision period, as appropriate, which served to correct mistakes and also to identify

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practices which were squadron-specific (so-called "technique" items). Finally, the results of the task analysis were reviewed by personnel from both P-3 RVP squadrons to insure that the statements accurately reflected current operating practices and procedures.

SECTION III

TRAINING ANALYSIS

This section outlines the method employed in translating the job task statements into the requisite components of a training system. This involves the identification and the organization of all relevant training events, the media, and the evaluation sequences appropriate to the P-3 replacement flight crew training program.

In essence the fundamental reasoning which guided the development of our approach to this study is as follows: before the "how" of training can be determined, the "what" of training must be known. In order to specify what must be trained, it is necessary to obtain a detailed, comprehensive description of the behaviors required of the human operators of the selected man-machine system.

Task analysis provides the means for identifying the "need-to-know" and separates it from the "nice-to-know" skill and knowledge requirements. It also provides a means for identifying the simulation capabilities required in flight simulators and serves as a basis for developing effective procedures for simulation utilization. Based on the job task data, the analysis continues with a definition of the tasks to be trained, where trained (ground school, simulator, and in the air), and in what sequences; and the development of performance evaluation procedures. In essence, this involves deriving the skills and knowledge requirements including "need-to-know" information not explicitly identified in the task statements, e.g., normal operating limitations of the aircraft, instrument markings, and general knowledge items, such as knowledge of Federal Aviation Regulations and OPNAV instructions pertaining to the operation of Naval aircraft.

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On the media decisions, the intent was to specify the least expensive device or method for achieving the behavioral objective. For example, general knowledge items may be economically taught in the classroom or individual study carrel, while manual control skills relating to aircraft control must be taught in the OFT (or in the aircraft in the event of insufficient simulation capabilities). Procedural items can be taught more efficiently in the CFT or OFT. Certainly the CFT is the most effective means for teaching the location of cockpit controls and indicators.

In the TAEG P-3 approach, consideration of media allocation is given to introductory, consolidation, and proficiency stages of learning. Typically, the initial exposure to any subject area can be most effectively provided using the "traditional" pedagogical techniques of lecture, motion pictures, sound/slide programs, and textbooks or other written material. Effective consolidation of the information gathered during the introductory sessions is achieved using training devices, including CFT(s), OFT(s), and part-task trainers of various types. Final skill consolidation is best accomplished in "mission" simulators which replicate closely the real world situation. Finally, the maintenance of a high level of proficiency imposes certain demands regarding training devices and methods. For example, maintenance of manual control skills requires a blending of both aircraft and OFT training while general knowledge "refresher" packages utilizing sound/slide programs have proven very effective for the maintenance of non-motor (or cognitive) skills.

Considerable attention was given to the methods and standards required for performance evaluation. Conventionally, the recommended trainee evaluation procedures involve performance tests in which

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the trainee is required to perform some task or series of tasks either in the aircraft or in a training device. In this initial TAEG effort, much use has been made of the traditional "instructor looking over the shoulder" method. This technique, although lacking precision, is a compromise between ease of implementation and efficacy as a measurement technique. Currently, considerable research is devoted to performance measurement and evaluation, especially to automated measurement systems in OFT(s). However, a number of problems must be solved before a viable objective measurement capability can be implemented.

Training Requirements Summary. The training analysis outlined above is iterative in nature, successively breaking the job to be trained into more detailed task components and into skills and knowledges required in performing these activities. The behavioral objectives determined in the earlier stages of the training analysis are included in broader "subject areas" - groups of behavioral objectives related along some dimension and further organized according to whether best taught in classroom/carrel, CFT, OFT, or aircraft and according to whether the trainee will be a First- or Second-Tour P-3 pilot. These "clusters" of behavioral objectives can be used directly by the lesson plan writer to develop lesson plans and to organize training courses.

Program of Instruction. In the development of the training analysis each task statement was analyzed to determine the training requirements and the appropriate media for instruction. Experimental syllabi were then developed, in conjunction with VP-30 personnel, for CFT, OFT, and in-flight training. On-site validation of these syllabi will be accomplished during Phase III of the program.

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The development of syllabi for the academic phases of pilot and flight engineer training was not undertaken since this requires manpower in excess of that allocated to 2-3 training analysis studies and is beyond the scope of the task approved by the Chief of Naval Training.

SECTION IV

CONCLUSIONS AND RECOMMENDATIONS

The following is a summary of the conclusions and recommendations developed during this phase of the P-3 Replacement Pilot Training Analysis. A brief discussion and rationale accompanies each finding. The results reaffirm the conclusions reported in the Phase I report of this program (NAVTRAEQUIPCEN, 1972). Continued liaison has been maintained with the RVP(s) and pertinent data from the task analysis have been furnished both squadrons.

CONCLUSIONS

Based on the task analysis data and on-site observations, the following conclusions were derived:

1. The training provided is inconsistent with the skills and knowledge required of P-3 pilots upon assignment to an operational squadron, particularly first-tour pilots. Examination of the curriculum and observation of various academic sessions and in-flight training, indicates that a "shotgun" approach is being used. The material being presented and the skills being trained encompass most of the need-to-know skills and knowledge, but also include an abundance of nice-to-know information. This information may be of value to an instructor or to maintenance personnel as background material, but it is not needed by the pilot to recognize normal and abnormal situations or to take appropriate action using the controls and indicators engineered into the system.

2. The stated objective of first-tour pilot training-to provide trained copilots-is not being met. The duties of the copilot as

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identified by task analysis are perhaps the least demanding of the three cockpit crew positions. However, the copilot is not being trained to acquire the skills and knowledge required of the copilot position, but instead is being trained in those required of the plane commander position.

3. Accepting the traditional concept of training the copilot in the duties of the plane commander, the depth of training is inconsistent with the responsibilities of the first-tour pilot when he arrives in an operational squadron.

4. The practice of providing the P-3 experienced second-tour pilot the same training as that received by the first-tour pilot is not cost effective. The second-tour pilot receives the same academic, synthetic, and flight training as the first-tour pilot. Provisions are not made for identifying entering skills and knowledge and then prescribing a course of instruction that will provide for deficiencies.

5. The number of memory items for procedures not involving imminent danger appears to be excessive and might well be handled with properly indexed flight manuals (job aids) based on the task analysis. (This approach is used by the commercial airlines.) In all probability there would be less likelihood of omission of steps in a given check.

RECOMMENDATIONS

The recommendations which follow are based upon the observations and data obtained to date in the TAEG P-3 program. They are primarily within the framework of the present organization and training assets, and are not expected to change with succeeding reports but possibly may be increased in scope upon completion of the Phase III studies. It is recommended that the squadrons do the following:

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1. Screen the task analysis document for currency and give consideration to issuing a copy to each trainee and instructor. The document identifies what the trainee will be required to know and perform at the completion of the familiarization/instrument phase of training at VP-30 or VP-31. It identifies who does what, when, where, and why. The P-3 team, in modifying the present training syllabus, used the document with facsimiles of all cockpit panels to test the procedures and to time the exercises.

2. Develop a program of instruction for use in the classroom or carrel, based on the identified need-to-know material derived from the task analysis.

3. Develop, at the earliest practical time, an individualized instructional program for second-tour pilots utilizing current audio-visual assets supplemented by locally developed sound/slide programs.

4. Request professional assistance in development of individualized instructional programs based on the task analysis.

5. Institute proficiency based individualized instruction programs for first-tour pilots as professionally prepared programs are developed.

6. Use the behavioral objectives derived from the training analysis and interviews to establish entering skill and knowledge levels for second-tour pilots. The curriculum for each pilot should be tailored to meet his individual requirements. The present lock step method is inefficient and delays the trainee in rejoining his operational squadron.

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APPENDIX A

JOB TASK ANALYSIS OF THE
PILOT, COPILOT, AND FLIGHT ENGINEER POSITIONS
FOR THE P-3 AIRCRAFT

P-3 TASK ANALYSIS

INTRODUCTION

The following task analysis is designed to provide a concise but comprehensive description of the behavioral activities of the pilot, copilot, and flight engineer of P-3A/B and P-3C aircraft. The purpose is twofold: (1) The task analysis forms the foundation of the training analysis which will be used to design a modern and efficient P-3 pilot and flight engineer training program, and (2) The task analysis will serve a direct training role in that it provides a systematic picture of the duties and responsibilities of each crew member during a P-3 mission and thus serves as a reference document for instructors and students alike. The task analysis identifies the who, what, why, when, and where of the crewmember's job. The task analysis provides the vehicle for doing a training analysis. It will be used to determine: (a) the tasks for which training is required, (b) the crewmember's required knowledge of other crewmember tasks, e.g., knowledge needed by the pilot or flight engineer tasks, (c) the most effective media to be used for training, and (d) the most effective trainee performance evaluation methods.

The present task analysis is limited in two ways: (1) The listing below deals only with the pilot, copilot, and flight engineer - no attempt has been made to include other P-3 crewmembers, and (2) the present analysis does not include a behavioral description of the pilot, copilot, and flight engineer during any tactical operations of the P-3 weapon system.

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The task listing below is organized according to "Phase of Flight" structure as shown on the MISSION PHASES INDEX and on the TASK ANALYSIS INDEX. Definitions and description of each Mission Phase and Segment appear below. It should be noted that these Phases and Segments are arbitrarily defined. However, because they serve only to impose structure to the analysis, their arbitrary nature does not detract from their usefulness.

LIST OF ABBREVIATIONS USED IN APPENDIX A

A/C	AIRCRAFT
A/S	AIR SPEED
ACK	ACKNOWLEDGE
ADJ	ADJUST
ADV	ADVANTAGE
AHRS	ATTITUDE HEADING REFERENCE SYSTEM
ALPHA	FLIGHT RANGE OPERATION
ALT	ALTITUDE
AOA	ANGLE OF ATTACK
APP	APPROACH
APU	AUXILIARY POWER UNIT
ARM	ARMAMENT
ATIS	AUTOMATIC TERMINAL INFORMATION SERVICE
AUX	AUXILIARY
BAMAP	BLEED AIR MANIFOLD AIR PRESSURE
BCN	BEACON
BETA	GROUND RANGE OPERATION

LIST OF ABBREVIATIONS USED IN APPENDIX A (CONT)

CB	CIRCUIT BREAKER
CG	CENTER OF GRAVITY
CK	CHECK
CKLST	CHECKLIST
COND	CONDITION
DIRC	DIRECTIONAL
DH	DECISION HEIGHT
DVARS	DOPPLER VELOCITY ALTIMETER RADAR SET
E HANDLE	EMERGENCY SHUTDOWN HANDLE
EGC	ENGINE DRIVEN COMPRESSOR
EGT	EXHAUST GAS TEMPERATURE
EMER	EMERGENCY
EMP	EMPENNAGE
ESS	ESSENTIAL
FCS	FLIGHT CONTROL SYSTEM
FDS	FLIGHT DIRECTOR SYSTEM
FL	FLIGHT LEVEL
FLT	FLIGHT

LIST OF ABBREVIATIONS USED IN APPENDIX A (CONT)

G	FORCE OF GRAVITY
GCA	GROUND CONTROLLED APPROACH
GEN	GENERATOR
GND	GROUND
H ₂ O	WATER
HP	HORSEPOWER
HRD	HIGH RATE OF DISCHARGE FIRE EXTINGUISHER
HSI	HORIZONTAL SITUATION INDICATOR
HWD	HORIZONTAL WEATHER DEPICTION
ICAO	INTERNATIONAL CIVIL AVIATION ORGANIZATION
ICS	INTERCOMMUNICATIONS SYSTEM
I-D	INERTIAL NAVIGATOR MODE SWITCH POSITION
IFF	IDENTIFICATION FRIEND OR FOE
IGN	IGNITION
IN HG	INCHES OF MERCURY
INJ	INJECTION
INOP	INOPERATIVE
KTS	KNOTS

LIST OF ABBREVIATIONS USED IN APPENDIX A (CONT)

LOC	LOCATED
MAC	MEAN AERODYNAMIC CHORD
MAD	MAGNETIC ANOMALY DETECTION
MDA	MINIMUM DESCENT ALTITUDE
MON	MONITOR
MRC	MAINTENANCE REQUIREMENTS CARDS
MM4	ATTITUDE INDICATOR
NOR	NORMAL
NTS	NEGATIVE TORQUE SENSING
C_2	OXYGEN
OAT	OUTSIDE AIR TEMPERATURE
OPS	OPERATIONS
PSI	POUNDS PER SQUARE INCH
PWR	POWER
PWR LVR	POWER LEVER
R/C	RATE OF CLIMB
REC	RECEIVED
REQ	REQUIRED

LIST OF ABBREVIATIONS USED IN APPENDIX A (CONT)

ROT	ROTATE
RFM	REVOLUTION PER MINUTE
RY	RUNWAY
SAR	SEARCH AND RESCUE
SHP	SHAFT HORSEPOWER
SID	STANDARD INSTRUMENT DEPARTURE
SOP	STANDARD OPERATING PROCEDURE
SPL WPN	SPECIAL WEAPON
SW	SWITCH
SYS	SYSTEM
TACCO	TACTICAL COORDINATOR
TACH	TACHOMETER
TD	TEMPERATURE DATUM
TIT	TURBINE INLET TEMPERATURE
TO	TAKEOFF
TR	TRANSFORMER RECTIFIER
V	SPEED
VER	VERIFY
VHF	VERY HIGH FREQUENCY

LIST OF ABBREVIATIONS USED IN APPENDIX A (CONT)

VIDS	VISUAL INTEGRATED DISPLAY SYSTEM (MAINTENANCE)
	WRITEUP FORM OPNAV 4790/1)
VMC AIR	MINIMUM CONTROL SPEED IN AIR
VMC GD	MINIMUM CONTROL SPEED ON GROUND
VOR	VHF OMNI RANGE
VRO	ROTATION SPEED
VS	STALL SPEED
WH	WHEEL
WT	WEIGHT
YELLOW SHEET	OPNAV FORM 3760/2 NAVAL AIRCRAFT FLIGHT RECORD
>	GREATER THAN
<	LESS THAN
≥	GREATER THAN OR EQUAL TO
≤	LESS THAN OR EQUAL TO

- 1.0 MISSION PREPARATION - Phase 1 of the P-3 mission begins when the aircraft commander receives word that a mission has been ordered (typically, when the flight schedule is posted), and ends when all crew members have boarded the aircraft for that mission. All tactical planning, flight planning, and pre-flight inspections and readiness checks are accomplished during this mission phase.
- 2.0 PRE-TAKEOFF - After all crewmembers are aboard the aircraft, the PRE-TAKEOFF phase of flight begins. This phase ends when the aircraft receives takeoff clearance from the control tower (or any other appropriate local traffic control authority). Thus, engine starting and other systems activation procedures occur during this phase, as well as taxiing the aircraft from the parking ramp to the active runway.
- 3.0 TAKEOFF - All activities which take place between the time the aircraft has received clearance to take-off and the time that the aircraft is "safely airborne" (in the NATOPS sense), are considered to occur during the TAKEOFF mission phase.
- 4.0 CLIMB-DEPARTURE - When the pilot calls "Gear up", the climb-departure phase is considered to have begun. This particular phase of flight ends when the aircraft is established on course, at cruise altitude. Included here, as in some of the earlier mission phases, are navigation and communication tasks in addition to basic aircraft control tasks.
- 5.0 CRUISE-OUT - This phase of flight covers all aircraft operations which occur between the time the aircraft has been established on course in cruise configuration, and the time when tactical operations

are begun. Autopilot operation is included here, even though it is recognized that pilots may use the autopilot during Climb-Departure operations.

6.0 TACTICAL OPERATIONS - All aircraft operations relating to the tactical mission of the P-3 weapons system are to be covered during this phase of flight. As noted earlier, however, the present task description does not treat this phase.

7.0 CRUISE BACK - Once the tactical mission of the P-3 has been accomplished, and the aircraft is established on the homeward bound course, we have entered the Cruise-Back phase of flight. Most of the procedures here, of course, are identical to the earlier Cruise-Out mission phase and are not repeated.

8.0 DESCENT/APPROACH - When the aircraft has received an appropriate descent clearance from ATC (or other appropriate authority), the Descent/Approach phase begins. All procedures and operations which occur from the time the clearance is received until the aircraft reaches MDA/DH on the final approach are covered in this section of the task description.

9.0 FINAL APPROACH/LANDING/MISSED APPROACH - Once DH or the Missed Approach point has been reached, the aircraft will either transition to a visual landing or will execute a missed approach. In the event that the landing can be made, all activities which occur until the aircraft rolls clear of the duty runway are covered under this heading. If a missed approach is required, then all activities which occur between the point where the missed approach is begun and the time when clearance to proceed to the alternate airport is received will be listed in this section. (At this point, of course, we would enter Climb/Departure again.)

10.0 POST-LANDING - All procedures and operations which occur between the time the aircraft leaves the duty runway and the time the Secure Checklist has been completed are described in this section of the task listing.

11.0 POST-MISSION - Included under this heading are post-flight inspections and logging procedures. Any debriefings which may be required will also be described here.

12.0 ABNORMAL AND SPECIAL PROCEDURES - The previous, Post-Flight, phase of course terminates the chronologically organized description of the P-3 crew duties and responsibilities. All other procedures, except emergencies, are covered in Section 12.0. This includes operations such as a Three Engine Ferry Takeoff, and some training maneuvers, e.g., the Ram Effect Demonstration and Approaches to Stall.

13.0 EMERGENCIES - A complete description of the activities of the pilot, copilot, and flight engineer during emergency operations (per NATOFS) can be found in this section.

NOTES: FORMAT OF THE TASK DESCRIPTION

1. Crewmember positions always appear first in each task descriptive statement. These are abbreviated as P, CP and FE for pilot, copilot and flight engineer respectively.
2. A verbal response or command of any crewmember is always placed within quotation marks.
3. Selected control positions and/or indicator readings are always underlined.
4. Checklist items are not numbered, but are lettered instead.
5. If several (but not all) crewmembers are to perform a given item, then the letters indicating which are separated by a comma, as:

01 P,CP CHECK HSI

If one or the other (but not necessarily both) are to perform a given item, then:

01 P/CP CHECK EXTERIOR LIGHTS

P-3 TASK DESCRIPTION - INDEX

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1.1 MISSION PLANNING (TACTICAL)

TO BE COVERED IN POST PHASE II STUDY

1.1
MISSION PLANNING

REF

1.2 FLIGHT PLANNING

01	P/CP	DETERMINE AIRCRAFT MODEL AND TAIL NUMBER FROM FLIGHT SCHEDULE	SQUADRON INSTRUCTION (APP A-1)
02	P/CP	EXAMINE VIDC BOOK FOR REVIEW OF AIRCRAFT MALFUNCTION/FIX HISTORY	INSTRUMENT MANUAL (APP A-2) INSTR. MANUAL (APP A-3)
03	CP	PREPARE FLIGHT PLAN (DD-175 OR ICAO)	SQUADRON 3710-7F (APP A-4)
04	P	VERIFY AND SIGN FLIGHT PLAN	
05	ANY	RECEIVE WEATHER BRIEF NOT MORE THAN 2 HRS PRIOR TO MISSION. HWD PACKAGE IS OPTIONAL.*	
06	CP	BRIEF NAVIGATOR ON WEATHER, FLIGHT PLAN, ETC.*	SQUADRON
07	CP	PICK UP ENVIRONMENTAL PACKAGE AND DELIVER TO TACCO* ASWEPS (ASW ENVIRONMENTAL PREDICTION SERVICE)	SQUADRON
08	CP	FILE FLIGHT PLAN AT BASE OPS	

(NOTE: IF AIRCRAFT COMMANDER HOLDS SPECIAL INSTRUMENT
CARD, THE "APPROVING AUTHORITY" SIGNATURE BY BASE OPS
IS NOT REQUIRED)

END OF 1.2 FLIGHT PLANNING

* ALL ITEMS SO MARKED ARE REPRESENTATIVE ONLY. NORMALLY, THE WEATHER BRIEF, ENVIRONMENTAL PACKAGE,
ETC. ARE RECEIVED BY ALL CREWMEMBERS DURING THE TACTICAL BRIEF.

REF

1.3 INSPECTIONS AND READINESS CHECKS

- 01 FE COMPLETE WEIGHT AND BALANCE FORM (DD365F)
A-1-157 & 3-2
C-1-164/165 & 3-2
(APP A-5)
- 02 FE COMPLETE AIRCRAFT PERFORMANCE COMPUTATIONS
A. 80 KIAS PREDICTED SHAFT HP
B. V DECISION
C. V REFUSAL
D. V ROTATE
E. V LIFT-OFF
F. LIFT-OFF DISTANCE
G. V 50³
H. V 50⁴
A9-128
C3-30
- 03 FE COMPLETE PREFLIGHT INSPECTION IAW (IN ACCORDANCE WITH) NAVAIR 75-PAA-6-1
NAVAIR 75-PAA-6-1
- 04 FE COMPLETE "YELLOW SHEET" OPNAV FORM 3760/2 (NAVAL AIRCRAFT FLIGHT RECORDS)
(APP A-6)
- 05 FE COMPLETE "PREFLIGHT/DAILY/IN-FLIGHT MAINT RECORD" OPNAV FORM 4790/38
APP A-7
- 06 FE PREPARE FUEL LOG (IF REQUIRED)
A-FIGURE 9-61
C-FIGURE 3-9
- 07 P COMPLETE PILOT'S "WALKAROUND" OF THE AIRCRAFT

1.3 INSPECTIONS AND READINESS CHECKS

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2.3.2	PERFORM OPTIONAL CHECKS	
2.3.3	NAVIGATION/COMMUNICATION	
2.3.4	PREPARE FOR TAKEOFF	

REFERENCES

2.1.1.1	VERIFY SYSTEMS READINESS		
01	P	VERIFY PREFLIGHT INSPECTION COMPLETED BY FE	A3-3; C3-13
02	P	VERIFY AND SIGN WEIGHT AND BALANCE FORM (DD 365F)	A3-2; C3-2
03	P	VERIFY AND SIGN "YELLOW SHEET", PART A (OPNAV FORM 3760/2; NAVAL AIRCRAFT FLIGHT RECORD)	
04	ANY	DELIVER FORMS COMPLETED IN 02, 03, & 04 to LINEMAN	
05	ALL	CHECK PERSONAL SURVIVAL GEAR	OPNAV 3710.7/700
06	FE	BRIEF CREW AND ANY PASSENGERS ON DITCHING STATIONS (AS ASSIGNED DURING PREFLIGHT AND POSTED)	A5-24/5-36 C5-16/5-25
07	P	BRIEF CREW AND ANY PASSENGERS ON MISSION, WEATHER, AND GROUND EMERGENCIES	A3-1; C3-1
08	ALL	VERIFY MISCELLANEOUS EQUIPMENT STOWED	A, C SECT 9
09	ALL	TAKE SEATS, ADJUST SEATS, RUDDERS, AND HARNESS	
10	P,CP	PERFORM SMOKE MASK CHECK (OPTIONAL)	A1-121/122, C1-52/54
01		<u>OXYGEN SUPPLY REGULATOR ON</u>	
02		VERIFY TANK GAUGE MINIMUM PRESSURE OF 1500 PSI	
03		VERIFY REGULATOR PRESSURE MINIMUM OF 64 PSI	

2.1.1 VERIFY
SYSTEMS READINESS

REFERENCES

2.1.1.1 VERIFY SYSTEMS READINESS (CONTINUED)

- 04 SELECT OXYGEN DILUTOR 100%
- 05 SELECT OPERATE/TEST SWITCH TO TEST
- 06 VERIFY CONTINUOUS OXYGEN FLOW
- 07 SELECT OPERATE/TEST SWITCH TO OPERATE
- 08 PLACE MASK ON FACE, CHECK FIT BY PINCHING HOSE
OR BY TURNING REGULATOR OFF
- 09 VERIFY BLINKER OPERATION WHILE BREATHING
- 10 SELECT ICS SWITCH TO SMOKE MASK
- 11 DEPRESS YOKE MIKE SWITCH TO CHECK ICS OPERATION
- 12 SELECT ICS SWITCH TO NORMAL
- 13 SELECT OXYGEN REGULATOR SWITCH TO OFF
- 14 STOW MASKS
- 11 ALL DON HEADSETS AND TEST ICS OPERATION
- 12 P INITIATE "BEFORE START CHECKLIST"

A1-105/109;
C1-66/78

END OF SECTION 2.1.1.1

REFERENCES

AI-89;
CI-118/120

AI-90/92;CI-122

TAEG REPORT NO. 7

2.1.2 PERFORM BEFORE START CHECKLIST

NOTE: AFU STARTED DURING PREFLIGHT (FE)

A. LANDING GEAR

- 01 P VERIFY HANDLE IN DOWN DETENT
- 02 P VERIFY DOWN POSITION INDICATOR
- 03 P VERIFY HANDLE LIGHTS OUT
- 04 P RESPOND "DOWN"

B. PARKING BRAKES

- 01 P VERIFY BRAKE HANDLE OUT AND HORIZONTAL
 - 02 P VERIFY PRESSURE APPLIED TO SINGLE PEDAL
- DOES NOT RELEASE BRAKES

- 03 P RESPOND "SET"

C. CHOCKS

- 01 P RECEIVE VERIFICATION FROM LINEMAN THAT CHOCKS ARE REMOVED

- 02 P RESPOND "REMOVED"

D. CIRCUIT BREAKERS

- 01 FE RESPOND "SET" (NOTE: ALL BREAKERS ARE CHECKED DURING PREFLIGHT)

CI-25/37;
AI-38/68

2.1.2 BEFORE START
CHECKLIST

2.1.2 PERFORM BEFORE START CHECKLIST (CONTINUED)

E. LIGHTS (INTERIOR AND INSTRUMENT PANEL)

01 P,CP,FE SET LIGHTS AS DESIRED. P AND CPAOA INDEXER INTENSITY
CHECKED BEFORE EACH FLIGHT

02 P,CP,FE RESPOND "CHECKED AND SET"

*F. BLEED AIR/ICE CONTROL PANEL

01 FE SELECT OPEN ON BLEED AIR VALVE SWITCHES AND FUSELAGE
BLEED AIR SHUTOFF VALVE SWITCHES.

02 FE VERIFY OPEN INDICATOR LIGHTS ON

03 FE VERIFY WING DE-ICE, BOMB BAY HEAT, ENGINE ANTI-ICE,
PROP DE-ICE, EMPENNAGE DE-ICE SWITCHES ALL OFF

04 FE RESPOND "SET"

G. WINDSHIELD, PITOT AND AOA HEAT

01 FE SELECT LOW ON P,CP, AND CENTER WINDSHIELD HEAT SWITCHES

02 FE SELECT ON ON SIDE WINDSHIELD HEATER SWITCHES
(IF APPLICABLE)

03 FE SELECT ON ON PITOT HEAT SWITCH

04 FE VERIFY LEFT AND RIGHT PITOT HEATER OUT LIGHTS ARE OFF

REFERENCES

AI-70/71;
CI-103/105

AI-112/114;
CI-136/137

AI-119/120A;
CI-142/143

REFERENCES

2.1.1.2 PERFORM BEFORE START CHECKLIST (CONTINUED)

- 05 FE SELECT ON ON AOA HEAT SWITCH
- 06 FE RESPOND "LOW AND ON"

*H. FUEL AND IGNITION

- 01 FE VERIFY RESIDUAL TIT LESS THAN 2000° C
- 02 FE VERIFY NO ENGINE ROTATION (0% RPM)
- 03 FE SELECT ON FOR ALL FUEL AND IGNITION SWITCHES
- 04 FE RESPOND "ON"

*I. RPM SWITCHES

- 01 FE VERIFY ENGINE RPM SWITCHES SET AS FOLLOWS:

NO. 2 ENG: NOR
 NO. 1,3,4 ENG: LOW

NOTE: 2,1,3,4 IS THE NORMAL ENGINE STARTING SEQUENCE, BUT THIS CAN VARY AS DESIRED. FIRST ENGINE SHOULD BE STARTED IN NOR RPM, AND THE REST IN LOW RPM

- 02 FE RESPOND "SET"

J. FIRE DETECTORS

- 01 FE RESPOND "CHECKED"

*NOTE: THESE ARE CHECKED DURING PREFLIGHT INSPECTION.

A1-12/CI-89

A1-12/CI-89

2.1.2 BEFORE START
CHECKLIST

REFERENCES

A1-6/7/CL-89;
CL-82; CL-86

2.1.2 PERFORM BEFORE START CHECKLIST (CONTINUED)

- K. TD SWITCHES
 - 01 FE VERIFY TEMP DATUM SWITCHES IN NULL
 - 02 FE SELECT NOR ON TD SWITCHES (COMPLETES CYCLE)
 - 03 FE RESPOND "CYCLED"
- L. AHRS, INERTIAL AND HSI (P3A/B ONLY)
 - 01 P VERIFY AHRS MODE SWITCH IN SLAVE
 - 02 P CHECK/SET LATITUDE
 - 03 P CHECK/SET HEMISPHERE (N OR S)
 - 04 P VERIFY SYNCH INDICATOR NEEDLE CENTERED
 - 04a P DEPRESS PUSH-TO-SYNCH SWITCH AND HOLD UNTIL
NEEDLE CENTERED
 - 05 CP VERIFY I-D ON INCP MODE SWITCH
 - 06 CP VERIFY ALIGN LIGHT OUT
ALIGN LIGHT NOT OUT
- IF
 - 06a CP CONTACT NAVIGATOR TO ACCEPT SYSTEM ALIGNMENT
 - NAVIGATOR UNABLE TO ACCEPT SYSTEM ALIGNMENT
- OTHERWISE
 - 07 CP MOMENTARILY SELECT CAGE ON INERTIAL NAVIGATOR PANEL (INCP)

2.1.2 BEFORE START
CHECKLIST

REFERENCES

2.1.1.2 PERFORM BEFORE START CHECKLIST (CONTINUED)

- | | | |
|-----|------|--|
| 08 | CP | SELECT <u>FAST ERECT</u> ON INCP MODE SWITCH |
| 08a | CP | VERIFY ALIGN LIGHT OUT WITHIN THREE MINUTES |
| 08b | CP | MAY PUSH SYNC BUTTON DURING 08a |
| 09 | CP | SELECT <u>SLAVE</u> ON INCP MODE SWITCH |
| 10 | CP | CHECK AND SETS LATITUDE |
| 11 | CP | VERIFY <u>SYNC INDICATOR CENTERED</u> |
| 11a | CP | DEPRESS AND HOLDS SYNC BUTTON UNTIL NEEDLE <u>CENTERED</u> |
| 12 | CP | SELECT <u>STANDBY GYRO</u> ON HSI ATTITUDE CONTROL SWITCH |
| 13 | P,CP | MONITOR MM4 INDICATORS FOR PROPER OPERATION |
| 14 | P | SELECT <u>AHRS</u> ON HSI ATTITUDE CONTROL SWITCH |
| 15 | P | MONITOR MM4 FOR PROPER OPERATION |
| 16 | CP | SELECT <u>INERTIAL</u> ON HSI ATTITUDE CONTROL SWITCH |
| 17 | CP | MONITOR MM4 FOR PROPER OPERATION |
| 18 | P,CP | OBSERVE INDICATED HEADING ON HSI USING PRIMARY INPUT |
| 18a | P | SELECT <u>AHRS</u> ON HEADING SWITCH |
| 18b | CP | SELECT <u>INERTIAL</u> ON HEADING SWITCH |
| 18c | P,CP | OBSERVE HEADING INDICATION |

REFERENCES

2.1.2 PERFORM BEFORE START CHECKLIST (CONTINUED)

- 19 P,CP OBSERVE INDICATED HEADING ON HSI USING SECONDARY INPUT
- 19a P SELECT INERTIAL ON HEADING SWITCH
- 19b CP SELECT AHRS ON HEADING SWITCH
- 19c P,CP COMPARE HEADING INDICATIONS FOR PRIMARY AND SECONDARY INPUTS
- 20 P,CP SELECT PRIMARY SOURCE FOR HSI HEADING INPUT
- 21 P CHECK STANDBY COMPASS FOR ACCURACY
- 22 P,CP REPLY "CHECKED"

P-3C ONLY
 INERTIAL #1 & #2, HSI
 C8-26/28; C8-29/41

- 01 P VERIFY INERTIAL NO. 1 MODE SW IN INERTIAL POSITION
- 02 P VERIFY LOCAL LATITUDE SET IN LAT BACKUP WINDOW
- 03 P VERIFY NO. 1 ON LIGHT ON
- 04 CP VERIFY INERTIAL NO. 2 MODE SW IN INERTIAL POSITION
- 05 CP VERIFY LOCAL LATITUDE SET IN LAT BACKUP WINDOW
- 06 CP VERIFY NO. 2 ON LIGHT ON
- 07 P SELECT INERTIAL NO. 2 FOR HEADING INPUTS
- 08 P VERIFY HSI HEADING
- 09 P SELECT INERTIAL NO. 1 FOR HEADING INPUTS
- 10 P VERIFY HSI HEADING
- 11 P SELECT STANDBY GYRO FOR ATTITUDE INPUTS
- 12 P MONITOR FDS DISPLAY FOR PROPER INDICATION
- 13 P SELECT INERTIAL NO. 1 FOR ATTITUDE INPUTS
- 14 P MONITOR FDS DISPLAY FOR PROPER INDICATION
- 15 P VERIFY AN/ASA66 (PILOT'S TACTICAL DISPLAY) POWER SW OFF
- 16 P CHECK STANDBY COMPASS READING WITH HSI READING

2.1.2
 BEFORE START
 CHECKLIST

- 17 CP SELECT INERTIAL NO. 1 FOR HEADING INPUTS
 - 18 CP VERIFY HSI HEADING
 - 19 CP SELECT INERTIAL NO. 2 FOR HEADING INPUTS
 - 20 CP VERIFY HSI HEADING
 - 21 CP SELECT STANDBY GYRO FOR ATTITUDE INPUTS
 - 22 CP MONITOR FDS DISPLAY FOR PROPER OPERATION
 - 23 CP SELECT INERTIAL NO. 2 FOR ATTITUDE INPUTS
 - 24 CP MONITOR FDS DISPLAY FOR PROPER OPERATION
 - 25 P/CP RESPOND "CHECK"
- RADAR ALTIMETERS
- 01 P & CP SELECT ON
 - 02 P & CP RESPOND "ON"
- FUEL QUANTITY
- 01 FE RESPOND "XXX POUNDS"
- FUEL PANEL
- 01 FE ENSURE CROSSFEED VALVES CLOSED
 - 02 FE ENSURE MAIN TANK VALVES OPEN

A9-20/21; C8-42

A1-33/35; A1-31/33; C1-83/84

A-F012/F019; C8-58/67, C8-207/208

- 03 FE SELECT ON FUEL BOOST PUMP SWITCHES
- 04 FE VERIFY ASSOCIATED INDICATOR LIGHTS OUT
- 05 FE VERIFY TANK 5 TRANSFER PUMPS OFF AND TRANSFER VALVES CLOSED
- 06 FE RESPOND "SET"

P ARM PANEL AND BOMB BAY DOORS

P3A/B:

- 01 P VERIFY ALL SWITCHES OFF OR AFT ON ARMAMENT PANEL
- 02 F VERIFY DOORS AND OPEN LIGHTS OUT
- 03 P RESPOND "OFF AND CLOSED"

P3C:

- 01 P VERIFY MASTER ARM OFF
- 02 P VERIFY BOMB BAY DOORS SW CLOSED
- 03 P VERIFY SRCH PWR SW OFF
- 04 P VERIFY SEL WPN SEL OFF
- 05 P VERIFY DROP-HOLD SW HOLD
- 06 P RESPOND "OFF AND CLOSED"

2.1.2
BEFORE START
CHECKLIST

AI-86/87; CI-117/118

Q FLAPS
 01 CP SELECT FLAPS AS DESIRED (NORMALLY SET TO TAKEOFF/APPROACH)
 NOTE: VERIFY FLAP HANDLE CORRESPONDS WITH FLAP INDICATOR
 02 CP RECEIVE CLEARANCE FROM LINEMAN PRIOR TO CHANGING FLAP POSITION

R AUTOPILOT
 03 CP RESPOND "SET T/O APPROACH" (OR OTHERWISE IF APPROPRIATE)
 AI-98/102; CI-125/136

S GROSS WEIGHT & CG
 01 P VERIFY GND POWER SWITCH OFF
 02 P RESPOND "GROUND POWER OFF"
 01 FE RESPOND WITH "GROSS WEIGHT & CG LIMITS" (ON DD 365 F)
 AI-PART IV; CI-PART IV

T TACTICAL CREW CHECKLIST
 01 CP RECEIVE VERIFICATION FROM TACCO THAT TACTICAL CREW CHECKLIST "COMPLETE"
 02 CP RESPOND "COMPLETE"

U ROT. BCN
 01 FE SELECT MASTER AND ROTATING BCN LIGHT SWITCHES ON
 02 FE RESPOND "ON"
 END OF BEFORE START CHECKLIST

A3-1; C3-20

2.1.3 PREPARE TO START ENGINES

- 01 P BRIEF CP TO MONITOR OUTSIDE OBSERVER FOR NO. 3 AND
NO. 4 ENGINE STARTS
- 02 P BRIEF CP TO BACK UP FE FOR NO. 1 AND NO. 2 ENGINES
- 03 P BRIEF CP THAT PILOT WILL MONITOR OUTSIDE OBS FOR
NO. 1 AND NO. 2 ENGINE STARTS
- 04 P BRIEF CP THAT PILOT WILL BACK UP FE FOR NO. 3 AND
NO. 4 ENGINES
- 05 P BRIEF CP THAT P/CP WILL ANNOUNCE PROP ROTATION FOR
ENGINES BEING STARTED
- 06 CP RADIO CHECK WITH GROUND CONTROL
- 07 P ASSIGN RESPONSIBILITY FOR TIMING ALL ENGINE STARTS
- 08 P/CP OBTAIN VISUAL CLEARANCE FROM OUTSIDE OBS FOR FIRST
ENGINE START (NORMALLY NO. 2)
- 09 P/CP VISUALLY CHECK ENGINE CLEAR

2.1.3
PREPARE TO START
ENGINES

A3-6/7, A-1-11; C3-20/22,
C1-83/1-86

2.2.1 START ENGINES - NOR APU START

- 01 P CALL "START NO. 2"
- 02 FE SELECT 2 ON ENGINE START SELECTOR
- 03 FE VERIFY (SUFFICIENT) AIR PRESS ON AIR MANIFOLD PRESS GAGE
- 1 NORMALLY APPROX 50# BEFORE ENGINE START
- 04 FE DEPRESS START BUTTON
- 05 FE MONITOR FUEL & IGN SW (STANDBY TO SECURE)
- 06 FE OBSERVE AIR PRESS DROP ON AIR MANIFOLD PRESS GAGE
- 07 P CALL PROP ROTATION
- 08 P/CP START CLOCK
- 09 FE VERIFY ROTATION ON ENG TACH
- 10 FE VERIFY FUEL FLOW AT 16% ON FUEL FLOW GAGE
- 11 FE VERIFY MIN. 25 PSI AT 16% ON AIR MANIFOLD PRESS GAGE
- 12 FE VERIFY ENGINE LIGHT-OFF ON TIT GAGE BETWEEN 16 & 33% RPM (ESSENTIAL BY 33%)
- 13 FE OBSERVE RISING OIL PRESS IN GEAR CASE AND POWER SECTION GAGES. (ESSENTIAL BY 35%)

2.2.1
START ENGINES
NOR APU START

2.2.1 START ENGINES - NOR APU START (CONTINUED)

- 14 FE VERIFY EDC LIGHT OUT BY 65% (ENG 2 & 3 ONLY)
- 15 FE VERIFY FUEL PUMP PARALLEL LIGHT ON BY 65% (NORMALLY 16%-65%)
- 16 FE VERIFY START BUTTON OUT BY 64% (NORMALLY OUT BY 57-64%)
- 17 FE VERIFY AIR PRESSURE RISE ON AIR PRESSURE MANIFOLD GAGE WHEN

STARTER BUTTON POPS. WILL RISE TO ORIGINAL VALUE, THEN
CONTINUE TO RISE

- 18 FE MONITOR TIT FOR 850° C. MAX
(NOTE: IF TIT $> 830^{\circ}$ < 850° RECORD OVER TEMP ON VIDS)
- 19 FE MONITOR TACH FOR STABLE RPM

ENG RPM SWITCH IN NOR, RPM 96.3-99.1%

ENG RPM SWITCH: IN LOW, 71.0-73.8%

- 20 FE VERIFY OIL PRESSURE; VALUES SHOWN BY RPM.

GEAR CASE 130-250 PSI HI RPM

50-250 PSI LO RPM

POWER SECTION 50-60 PSI HI RPM

ANY PRESSURE LO RPM

PRESSURES MAY EXCEED HI PSI LIMITS DURING OIL TEMP WARM-UP

- 21 FE RECHECK EDC PRESSURE. LOW LIGHT OUT (ENG NO. 2 ONLY)

2.2.1
START ENGINES
NOR APU START

2.2.1 START ENGINES - NOR APU START(CONTINUED)

22 FE VERIFY FUEL PUMP PARALLEL LIGHT OUT WHEN RPM > 65%

23 FE VERIFY GEN OFF LIGHT OUT NO. 2 ENG ONLY
 (NOTE: NO. 3 AND NO. 4 OFF LIGHTS WILL BE ON WHEN IN LOW RPM)

24 FE VERIFY FUEL PRESS LOW LIGHT AND FUEL FILTER LIGHT OUT

25 FE VERIFY PROP PUMP LIGHTS OUT (#1 and #2)

26 FE VERIFY OIL PRESS LIGHT OUT
 (NOTE: ENGINES 1, 3, 4; OIL PRESS LIGHT MOST LIKELY WILL BE ON)

27 FE ANNOUNCE "NORMAL START ON NUMBER 2"

28 P CALL "START NO. 1"

29 FE SELECT NO. 1 ON ENG START SELECTOR SWITCH
 30-54 SAME AS 03-26 EXCEPT AS NOTED

55 FE ANNOUNCE "NORMAL START ON NO. 1"

56 P CALL "START NO. 3"

57 FE SELECT NO. 3 ON ENG START SELECTOR SWITCH
 58-82 SAME AS 03-26 EXCEPT AS NOTED

83 FE ANNOUNCE "NORMAL START ON NO. 3"

2.2.1
 START ENGINES -
 NOR APU START

2.2.1 START ENGINES - NOR APU START (CONTINUED)

- 84 P CALL "START NO. 4"
- 85 FE SELECT 4 ON ENGINE START SELECTOR SWITCH
- 86-110 SAME AS 03-26 EXCEPT AS NOTED
- 111 FE ANNOUNCE "NORMAL START ON NO. 4"
- 112 P CALL "AFTER START CHECK LIST"
- 113 FE SELECT OFF ENGINE START SELECTOR SWITCH
- 114 FE SELECT CLOSE ON BLEED AIR VALVE SWITCHES AND FUSELAGE BLEED AIR SHUTOFF SWITCHES
- 115 FE SELECT OFF ON APU ON/OFF/START SWITCH
 (NOTE: APU MAY BE LEFT ON DURING RUN AROUND FEEDER CHECK AS LONG AS APU GEN SW OFF. THIS WAY IF CHECK IS UNSAT, THEN MAINT WOULD BE CALLED AND APU WOULD NOT NEED BE RESTARTED)
- 116 FE MONITOR APU TACH & EGT FOR NORMAL SHUTDOWN
- 117 FE SELECT ON GND AIR CONDITIONING SWITCH

REMARKS:

NORMAL ENGINE START SEQUENCE IS 2, 1, 3, 4; HOWEVER, THIS IS COMPLETELY FLEXIBLE, IF USING APU.
 IF USING EXT. PWR, NO. 2 SHOULD ALWAYS BE STARTED FIRST.

2.2.1
 START ENGINES -
 NOR APU START

A3-8, C3-22

2.2.2 PERFORM AFTER START CHECKLIST

- A ENGINE START SELECTOR SW
 - 01 FE VERIFY SW OFF
 - 02 FE RESPOND "OFF"
- B BLEED AIR VALVES/FUSELAGE BLEED AIR SHUTOFF
 - 01 FE VERIFY VALVE OPEN LIGHTS OUT
 - 02 FE VERIFY BLEED AIR MANIFOLD PRESSURE IS DECREASING
 - 03 FE RESPOND "OFF"
- C DOORS AND HATCHES
 - 01 FE VERIFY DOOR OPEN LIGHTS OUT
 - 02 FE RESPOND "CLOSED"
- D RUNAROUND RELAY CHECK (AIRCRAFT W/O AFC 202) A3-8, C3-22
 - 01 FE FLACE NO. 3 RPM SW TO NORM
 - 02 FE VERIFY NO. 3 RPM AT 96.3-99.1%
 - 03 FE VERIFY NO. 3 TIT 445-645°
 - 04 FE VERIFY NO. 3 PWR SECT OIL PRESS 50-60 PSI

2.2.2
PERFORM AFTER START
CHECKLIST

2.2.2 PERFORM AFTER START CHECKLIST (CONTINUED)

- 05 FE VERIFY NO. 3 GEARCASE OIL PRES. 130-250 PSI
- 06 FE VERIFY NO. 3 GENERATOR OFF LIGHT OUT
- 07 FE VERIFY APU OFF OR APU GEN OFF
- 08 P SELECT WHITE ON DOME LTS SW - NOT A PART OF THE CHECK
BUT AIDS FE
- 09 FE PROCEED TO MAIN ELECTRICAL LOAD CENTER
- 10 FE PULL ESS (ESSENTIAL) BUS CRKT BKR (ON MAIN AC BUS A)
- 11 FE PULL NO. 3 RUNAROUND FEEDER CRKT BKR
- 12 P/CP OBSERVE LEFT PITOT HEATER OUT LT OFF AND TIT OFF
FLAGS NOT DISPLAYED
- 13 FE RESET NO. 3 RUNAROUND FEEDER CRKT BKR AND PULL NO. 2
RUNAROUND FEEDER CRKT BKR
- 14 P/CP OBSERVE AS PER NO. 12
- 15 FE RESET NO. 2 RUNAROUND FEEDER CRKT BKR AND ESS BUS CRKT BKR
- 16 FE RETURN TO FLIGHT STATION & FASTEN HARNESS
- 17 P MOVE DOME LT SW TO OFF
- 18 P/E ANNOUNCE "RUNAROUND CHECK COMPLETE"
- 19 FE SECURE APU IF NOT OFF.
TURN SWITCH OFF - VERIFY RPM AND EGT INDICATORS DECREASING

2.2.2
PERFORM AFTER START
CHECKLIST

2.2.2 PERFORM AFTER START CHECKLIST (CONTINUED)

- | | | | |
|-----|-------|--|----------------------------|
| E | | HYDRAULIC PANEL | A1-82/84; CI-113/114 |
| | 01 FE | PLACE #1 AND #2 HYD PUMP SW'S ON (GENERALLY SPACES THESE A FEW SECONDS APART) (5 secs approx.) | |
| | 02 FE | OBSERVE #2 HYD PRESS AT 2960-3200 PSI | |
| | 03 FE | OBSERVE HYDRAULIC PRESSURE SYSTEM ANNUNCIATOR LTS <u>OUT</u> and rudder power light out | |
| | 04 FE | RESPOND "SET" | |
| F | | P3A/B ONLY MAD AND DOPPLER POWER | A9-143 |
| | 01 P | RECEIVE VERIFICATION FROM TACTICAL CREW THAT MAD POWER <u>ON</u> AND DOPPLER PWR SW <u>STANDBY</u> | |
| | 02 P | RESPOND "ON, STANDBY" | |
| F-A | | P3C ONLY MAD AND DVAR (DOPPLER VELOCITY ALTIMETER RADAR SET AN/APN-187) | |
| | 01 P | RECEIVE VERIFICATION FROM TAC CREW THAT MAD PWR IS <u>ON</u> AND DVAR PWR IS <u>TEST</u> | |
| | 02 P | RESPOND "ON, TEST" | |
| G | | IFF | A9-21/9-24; C8-45/47; C8-4 |
| | 01 CP | MOVE IFF MASTER SW TO <u>STANDBY</u> | |
| | 02 CP | RESPOND "STANDBY" | |

2.2.2
PERFORM AFTER START
CHECKLIST

2.2.2 PERFORM AFTER START CHECKLIST (CONTINUED)

A1-32; C1-20/24

H FUEL TRANSFER

01 FE IF FUSELAGE FUEL AVAILABLE (TANK 5) PLACE FWD AND
AFT TRANSFER PUMP SW'S ON

02 FE OBSERVE FWD AND AFT TRANSFER PUMP PRESSURE LOW
LIGHTS OUT

03 FE PLACE TRANSFER VALVE SW'S FOR TANKS 1, 2, 3 & 4
TO OPEN

04 FE RESPOND "SET"

I CP ANNOUNCE "AFTER START CKLST COMPLETE"

2.2.2
PERFORM AFTER START
CHECKLIST

- 2.2.3 PREPARE FOR TAXI
- 01 CP COPY ATIS INFO (IF AVAILABLE) OR COPY INFORMATION FROM CONTROL TOWER
 - 01A CP CONTACT GND FOR TAXI CLEARANCE
 - 02 P/CP VISUALLY CHECK CLEAR SIDES
 - 03 P RECEIVE TAXI SIGNAL FROM LINEMAN
 - 04 P RELEASE BRAKE - START ROLL
 - 05 P VERIFY EVEN OPERATION OF BRAKES
 - 06 P FOLLOW LINEMAN SIGNALS UNTIL CLEAR OF CONGESTED AREA
 - 07 FE INFORM P ENGINE ANTI-ICE/WING DE-ICE CHECKS IN PROGRESS
 - 01 FE RPM SW'S AS DESIRED
 - 02 FE VERIFY TIT STABILIZED
 - 03 FE PLACE ENGINE ANTI-ICE SW'S TO ON
 - 04 FE VERIFY TIT INCREASE FOR EACH ENGINE
 - 05 FE VERIFY ANTI-ICING LIGHTS ON
 - 06 FE PLACE ENGINE ANTI-ICE SW'S OFF
 - 07 FE VERIFY DECREASE IN TIT
 - 08 FE VERIFY ANTI-ICING LIGHT OUT
- A3-8/9; C3-23/24

- 08 FE PERFORM WING DE-ICE CHECK
- 01 FE VERIFY BLEED AIR SHUTOFF VALVES CLOSED
- 02 FE VERIFY NO. 2 ENGINE RPM IN NORMAL AND STABLE TIT
- 03 FE SELECT OPEN ON NO. 2 ENGINE BLEED AIR VALVE SW
VERIFY NO. 2 BLEED AIR LIGHT ON
- 04 FE CHECK TIT FOR LITTLE OR NO RISE NOTE: TIT VALVE
- 05 FE SELECT IN SEQUENCE LEFT INBOARD CENTER AND OUTBOARD ON SELECTOR SW AND MONITOR
TEMPERATURE GAGE FOR NO RISE
- 06 FE SELECT ON WITH OUTBOARD WING DE-ICE SW
- 07 FE MONITORS NO. 2 TIT FOR MIN 10° RISE
- 08 FE SELECT OFF ON OUTBOARD WING DE-ICE SW
- 09 FE VERIFY RISING TEMPERATURE ON LEADING EDGE TEMPERATURE GAGE
- 10 FE VERIFY TIT NEAR ORIGINAL VALVE
- 11 FE SELECT CENTER ON TEMPERATURE SELECT SW
- 12 FE SELECT ON ON CENTER WING DE-ICE SW
- 13 FE MON TIT FOR 10° RISE
- 14 FE SELECT OFF ON CENTER WING DE-ICE SW
- 15 FE VERIFY RISE IN LEADING EDGE TEMPERATURE GAGE
- 16 FE VERIFY TIT NEAR ORIGINAL VALVE
- 17 FE SELECT INBOARD ON TEMPERATURE SELECT SW
- 18 FE SELECT ON WITH INBOARD DE-ICE SW
- 19 FE MON TIT FOR 10° RISE

- 20 FE SELECT OFF WITH INBOARD DE-ICE SW
- 21 FE VERIFY RISE IN LEADING EDGE TEMPERATURE GAGE
- 22 FE VERIFY TIT NEAR ORIGINAL VALVE
- 23 FE CLOSE NO. 2 BLEED AIR VALVE AND VERIFY NO. 2 BLEED AIR VALVE LIGHT OUT
- 24 FE RECHECK TIT NEAR ORIGINAL VALVE
- 25 FE REPEAT STEPS O2 THRU 24 WITH NO. 3 ENGINE FOR R. IT WING

2.3 TAXI

1 PERFORM TAKE-OFF CHECKLIST

- 01 P CALL FOR "T.O. CK LIST" A9-1/C9-2
- 01 CP ANNOUNCE "SET COND 5" ON ICS-PA

A BRAKES

- 01 P VERIFY PROPER BRAKE OPERATION A1-90/92/C1-121/122
- 02 P RESPOND "CHECKED"

B TURN IND, COMPASSES & ALT.

- 01 P/CP VERIFY NEEDLE, BALL, & COMPASS TRACKING DURING GROUND TURNS (NEEDLE WITH TURN, BALL OPPOSITE TURNS)

- 02 P/CP SET BARO PRESSURE ON ALTIMETER

- 03 P/CP VERIFY INDICATED ALTITUDE - + 75' OF FIELD ELEVATION

- 04 P/CP RESPOND "CHECKED"

C SYNCH SERVOS

- 01 FE VERIFY SYNCH MASTER & SYNCH SERVO SWITCHES OFF

- 02 FE RESPOND "OFF"

D FUEL GOVERNOR CHECK SWITCHES

- 01 FE VERIFY SWITCHES IN NOR

- 02 FE RESPOND "NORMAL"

A1-28/29; C1-98/1-99, 1-101

A1-31; A3-9/10; C1-99

2.3.1
PERFORM TAKEOFF
CHECKLIST

2.3.1 PERFORM TAKE-OFF CHECKLIST (CONTINUED)

AI-30/CI-101/102

AUTO FEATHERING

01 FE ARM AUTO-FEATHER SWITCHES IF P DESIRES, VERIFY
4 LIGHTS ON

02 FE RESPOND "ARMED"

F TRIM

AI-86, A3-12; CI-117/118, C3-26

01 CP SET 10° UP ELEVATOR TRIM

3-4° RIGHT RUDDER TRIM

0° AILERON

02 P VERIFY ABOVE SETTINGS, RESPOND "SET"

G WING FLAPS

01 CP SET FLAP LEVER TO T.O./APP IF NOT ALREADY AT TO/APP POSITION

02 CP VERIFY FLAP SETTING ON INDICATOR

03 P/CP RESPOND "T.O."

H FLIGHT CONTROLS

A3-12;AI-84/86;CI-114/117,C3-26

01 P VERIFY ALL 3 AXES OF FCS FREE

02 P MOVE CONTROL SURFACES ONE AT A TIME

03 P RESPOND "CHECKED"

2.3.1 PERFORM TAKEOFF CHECKLIST (CONTINUED)

- | | | |
|---|-----|---|
| I | REM | |
| | | 01 P CALL FOR "NOR RPM" |
| | | 02 FE VERIFY OIL COOLER FLAPS LESS THAN 100% |
| | | 03 FE SELECT <u>NOR RPM</u> (ONE ENGINE AT A TIME) |
| | | 04 FE VERIFY TIT & RPM STABILIZED WITHIN LIMITS |
| | | 05 FE VERIFY GEAR CASE & POWER SECTION OIL PRESSURE WITHIN LIMITS |
| | | 06 FE VERIFY #3, #4 GEN OFF LIGHTS <u>OUT</u> |
| | | 07 FE RESPOND "NOR" ELECTRICAL PANEL |
| J | | 01 FE VERIFY ALL GEN OFF LIGHTS <u>OUT</u> |
| | | 02 FE VERIFY ALL TR OVERHEAT LIGHTS <u>OUT</u> |
| | | 03 FE RESPOND "CHECKED" APU, DOORS LIGHT |
| K | | 01 FE DEPRESS LIGHT TEST SWITCH |
| | | 02 FE VERIFY OPERATION OF APU DOORS LIGHT |
| | | 03 FE VERIFY APU OFF BY CHECKING RPM AND EGT INDICATORS |
| | | 04 FE RESPOND "OFF AND OUT" |

2.3.1
PERFORM TAKEOFF
CHECKLIST

2.3.1 PERFORM TAKEOFF CHECKLIST (CONTINUED)

- L RADIO AND HSI
- 01 P,CP SET INITIAL OUTBOUND COURSE ON THE HSI COURSE WINDOW
- IF VOR IS PRIMARY DEPARTURE NAVAID
- 02 P SELECT VOR 1 (TUNED AND IDENTIFIED) FOR HSI BEARING AND COURSE
- 03 CP SELECT VOR 2 (TUNED AND IDENTIFIED) FOR HSI BEARING AND COURSE
- 04 CP VERIFY TACAN (TUNED AND IDENTIFIED) IS AVAILABLE FOR DME AND
BACKUP TO VORS
- 05 P,CP SELECT UHF NO. 1 PRIMARY RADIO
(NOTE: UHF NO. 2 AVAILABLE AS BACKUP)
- 06 CP SETUP INTERSECTIONS USING VOR NO. 2
- OTHERWISE VOR IS NOT PRIMARY DEPARTURE NAVAID
- 02 P,CP SELECT AS REQUIRED INPUTS FOR HSI BEARING AND COURSE
- 03 P,CP SET COMM FREQ IN ACCORD WITH SID OR ASSIGNED DEP FREQS

2.3.1 PERFORM TAKEOFF CHECKLIST (CONTINUED)

- M
- 01 P WATER INJ (P3A ONLY)
 (IF WATER INJ DESIRED) VERIFY "FULL LIGHT" ON
 (NOTE: H₂O INJ NOT RECOMMENDED WHEN OAT LESS THAN
 100 C, AND ELEVATION LESS THAN 1000 FT. IF FULL
 LIGHT OUT, NO H₂O INJ)
- 02 P SELECT ON WATER INJ
- 03 P VERIFY PUMP LOW PRESS OUT
- 04 P RESPOND APPROPRIATELY
- N
- 01 P/CP/FE NORMALLY LOCKED.
 (NOTE: IF UNABLE TO REACH ALL CONTROLS, THE INERTIAL
 REEL, NEED NOT BE LOCKED)
- 02 P/CP/FE RESPOND "SET"
- O
- ICE CONTROL PANEL
- 01 FE IF NO ICING CONDITIONS EXIST, VERIFY PROP, EMP, WING
 AND ENG ANTI/DE-ICE SW OFF
- 02 FE IF ICING CONDITIONS EXIST, TURN ON ENG AND PROP ANTI/
 DE-ICE SW (EMP & WING OFF)

2.3.1
 PERFORM TAKEOFF
 CHECKLIST

- 2.3.1 PERFORM TAKEOFF CHECKLIST (CONTINUED)
- 01 FE SELECT ON ENG ANTI-ICE
 - 02 FE VERIFY RISE IN TIT CORRESPONDING
 - 03 FE VERIFY ASSOCIATED LIGHT ON - DO SEQUENTIALLY FOR EACH ENGINE
 - 04 FE SELECT ON ON PROP DE-ICE
 - 05 FE VERIFY PROP DE-ICE NOT WORKING
- 03 FE RESPOND "SET"
- P REPORT CONDITION 5
- 01 CP RECEIVE VERIFICATION OF COND 5 FROM CABIN (USUALLY GIVEN BY TACCO) AND RADIO OPERATOR
- 02 INFORM PILOT THAT COND 5 HAS BEEN REPORTED
- Q IFF
- 01 CP SELECT ASSIGNED CODE, MODE, AND NOR/LOW
- 02 CP RESPOND "SET"
- R OIL COOLERS
- 01 FE VERIFY OIL COOLER FLAPS LESS THAN 100%
- (NOTE: ACTUAL OIL TEMP DETERMINED BY OIL COOLER FLAP SETTING. OIL TEMP MUST BE $\geq 40^\circ$ AND RISING IN ORDER TO USE MAX PWR - with no gear box fluctuations
- A1-26; C1-97

2.3.1
PERFORM TAKEOFF
CHECKLIST

2.3.1 PERFORM TAKEOFF CHECKLIST (CONTINUED)

02 FE RESPOND "SET"

S CP ANNOUNCE "T.O. CHECKLIST COMPLETE"

2.3.1 PERFORM
TAKEOFF CHECKLIST

- 3.0 TAKE-OFF
- 3.1 TAKE-OFF (VISUAL) A-3-12/14, C-3-26, C-1-120
- 01 P STEER A/C VIA NOSEWHEEL STEERING. LINE UP A/C WITH CENTERLINE OF RUNWAY
- 02 P VERIFY NOSEWHEEL STEERING CENTERED
- IF "POSITION AND HOLD" T.O. THEN
- 03A P SET PARKING BRAKE
- OTHERWISE
- 03 P SET PWR LEVERS TO APPROXIMATELY 2000 SHP
- 04 FE MONITOR FUEL FLOW (INCREASE) AND RPM (STABILIZATION)
- 05 P CALL "MAX POWER"
- 06 FE CONTINUE TO SET CP POWER LEVERS TO MAX POWER
- 07 FE VERIFY "MAX POWER" ON HP AND/OR TIT
- 08 FE SCAN HP/TIT/RPM/FF INDICATORS FOR NORMAL INDICATIONS
- 09 P BACK UP FE ON POWER LEVERS AND MAINTAIN CENTERLINE
- 10 CP BACK UP FE ON ENG GAUGES AND HOLD YOKE (SEE NOTE 1)
- 1 NOTE CP MAY MAKE CORRECTIVE INPUTS TO YOKE DURING STRONG CROSSWIND CONDITIONS

3.0 TAKE-OFF
(VISUAL)

3.0 TAKE-OFF

3.1 TAKE-OFF (VISUAL)(CONTINUED)

IF POSITION AND HOLD I.O., THEN

11A P RELEASE BRAKES

OTHERWISE

11 P STEER VIA NOSEWHEEL STEERING

12 P RELEASE NOSEWHEEL STEERING AT 50 TO 60 KTS

13 P TAKE YOKE WITH LEFT HAND

14 P STEER VIA RUDDER

15 CP CALL "80 KTS"

16 FE VERIFY PREDICTED 'P AT 80 KTS

17 CP CALL "REFUSAL" (SEE NOTE 2)

18 P RELEASE POWER LEVERS

19 P MOVE RIGHT HAND TO YOKE

20 CP CALL "ROTATE" (SEE NOTE 3)

21 P ROTATE A/C TO 5° NOSE UP

22 P VERIFY SAFELY AIRBORNE

2 NOTE: REFUSAL A/S CALCULATED DURING PREFLIGHT

3 NOTE: UNDER CONDITIONS OF LIGHT LOAD, LONG RY, ETC., V ROTATE AND V REFUSAL MAY BE IDENTICAL
3.0 TAKE-OFF
(VISUAL)

C-3-28

4.0. CLIMB-DEPARTURE

4.1 CLIMB CONFIGURATION MGMT.

- 01 P CALL "GEAR UP"
- 02 CP SELECT UP ON GEAR HANDLE
- 03 CP VERIFY BARBER POLE AND GEAR HANDLE LIGHTS ON
- 04 CP CALL "GEAR COMING UP"
- 05 CP VERIFY GEAR UP INDICATIONS AND HANDLE LIGHTS
EXTINGUISHED
- 06 CP CALL "GEAR UP"
- 07 P VERIFY 140 KTS AND POSITIVE RATE OF CLIMB
- 08 P CALL "FLAPS UP"
- 09 CP SELECT FLAPS UP
- 10 CP CALL "FLAPS COMING UP"
- 11 CP VERIFY FLAPS UP
- 12 CP CALL "FLAPS UP"
- 13 P MAINTAIN 5° NOSE-UP UNTIL REACHING 220 KTS A/S
(CLIMB SCHEDULE A/S - 220 KTS HELD UNTIL 10,000;
THEN DECREASE 2KTS/1000)

4.1 CLIMB CONFIGURATION MGMT (CONTINUED)

14	P	CALL FOR "NORMAL RATED POWER"
15	P/FE	SET <u>NOR RATED POWER</u>

4.1 CLIMB
CONFIGURATION MGMT

4.2 DEPARTURE NAV/COMM (VISUAL)

- 01 P RECEIVE TAKEOFF CLEARANCE (PRIOR TO POSITION AND HOLD)
- 02 P/CP SET DEPARTURE COM FREQUENCY
- 03 CP NOTIFY DEP CONTROL WHEN AIRBORNE
- 04 CP RECEIVE INSTRUCTIONS FROM DEPARTURE CONTROL
- 05 P MANEUVER AC IAW DEPARTURE CLEARANCE (SID, RADAR, VISUAL)
- 06 P/CP RECEIVE ASSIGNED CONTROL AGENCY FREQ FROM DEP CONT
- 07 CP CONTACT CONTROL AGENCY
- 08 CP RECEIVE, COPY AND RECORD CLEARANCE INSTRUCTIONS. INSURE PILOT UNDERSTANDS CLEARANCES
- 09 CP SET NAV/COMM FREQS
- 10 CP SET IFF/SIF AS REQUIRED, TRANSMIT AS REQUIRED
- 11 P SET HSI COURSE SELECT AS REQUIRED
- 12 P MANEUVER AC AS REQUIRED TO ADHERE TO CLEARANCE
- 13 P/CP/FE AT 18K ALT RESET BARO SETTING ON ALTIMETER TO 29.92

TAEF REPORT NO. 7

4.2 DEPARTURE
NAV/COMM (VISUAL)

C-3-28

4.3 CLIMB

01 P CALL "CLIMB CKLST" AND "SET COND 4"

A LANDING GEAR

01 CP VERIFY GEAR UP

02 CP RESPOND "UP"

B FLAPS

01 CP VER FLAPS

02 CP RES "UP"

C LANDING, TAXI LIGHTS

01 FE VER LANDING LIGHTS RETRACTED AND OFF, TAXI LTS OFF

02 FE RES "RETRACTED & OFF"

D AUTO FEATHERING

01 FE TURN OFF

02 FE RES "OFF"

D-1 A ONLY - WATER INJ.

E PRESSURIZATION

01 FE INSURE EDC'S OPERATING PROPERLY (LTS & INDICATORS)

VER CABIN IS BEING PRESSURIZED. FE RES "SET"

4.3 CLIMB

4.3 CLIMB (CONTINUED)

F GOVERNOR INDEXING

(NOTE: CKLST MAY BE STOPPED PRIOR TO GOVERNOR INDEX ITEM TO PERFORM NTS CHECK. NTS CHECK MUST BE PERFORMED BELOW 8000' ALT AND AT 170 KTS INDICATED. P SLOWS A/C BY PITCH CONTROL

C-3-29

- 01 FE CHECK ALL SYNCH SERVO SW'S OFF
- 02 FE SELECT #2 OR #3 AS MASTER
(NOTE: PICKS ENG WITH RPM CLOSEST TO 100 PERCENT)
- 03 FE HOLD RE-SYNCH SW AND SEL SYNCH SERVO SW'S TO NORMAL FOR 3 SLAVED ENGS.
- 04 MAINTAIN RE-SYNCH SW AT RE-SYNCH POS FOR APPROX 4 SECONDS, THEN RELEASE TO NORMAL
- 05 FE CONTINUOUSLY MON ENG'S RPM INDICATORS DURING SYNCH PROCEDURE
- 06 FE HLD RE-SYNCH SW TO RE-SYNCH POS
- 07 FE SEL OTHER ENG (#2 OR #3) ON SYNCH MASTER SW
- 08 FE PLACE SYNCH SERVO SW OF INBOARD SLAVE TO "NORMAL"

4.3 CLIMB

4.3 CLIMB (CONTINUED)

09	FE	CONTINUOUSLY MON ENG'S RPM INDICATORS DURING SYNCH PROCEDURE	
10	FE	HOLD RE-SYNCH SW TO RE-SYNCH FOR APPROX 4 SECONDS	
11	FE	RELEASE RE-SYNCH SW TO NORMAL	
12	FE	RES "SET"	
	CP	ANNOUNCE "CKLST COMPLETE"	
C3	CP	SET COND 4 - ANNOUNCE ON ICS OR PA	C-9-1/2
04	CP	VERIFY TO P COND 4 SET	
05	P	CALL "SET COND 3"	C-9-1/2
06	CP	SET COND 3, ANNOUNCE ON ICS OR PA	
07	CP	VERIFY TO P COND 3 SET	
07A	FE	RECORD TAKEOFF TIME ON FUEL LOG	C-3-29
08	P/CP	NAVIGATE IN ACCORDANCE WITH DEPARTURE CONTROL. CP SET ALL NAV EQUIP/COMM. CP MAKE ALL TRANSMISSIONS	
09	FE	MONITOR ENG INST/FUEL PANEL. SET PRESSURIZATION FC CRUISE ALT	

4.3 CLIMB

4.3 CLIMB (CONTINUED)

- 10 P LEVEL AC AT CRUISE ALT. AC ACCELERATES TO 5-10 KTS
ABOVE SELECTED CRUISE AS
- 11 FE DETERMINE MAX RANGE PERFORMANCE DATA FROM NATOPS
OR TABLES (SECT XI OR XII)
- 12 F CALL "CRUISE PWR"
- 13 FE SET CRUISE PWR USING FUEL FLOW
- 14 FE READ OUTSIDE AIR TEMP. DETERMINE HP SETTING FOR
MAX RANGE
- 15 FE SET CRUISE PWR USING HP GAUGES
- 16 FE RECORD TOP OF CLIMB FUEL GAUGE READING ON FUEL LOG
(NOTE: FE WILL RECORD HOURLY OR IN 5,000 POUND
INCREMENTS, WHICHEVER IS MORE SUITABLE)

C-3-29

5.0 CRUISE OUT

- 01 P/CP MANUEVER AC AS NECESSARY TO CONFORM TO FLIGHT PLAN
- 02 CP CHANGE COMMUNICATION FREQUENCIES AS DIRECTED
- 03 CP CHANGE NAV FREQ AS NECESSARY
- 04 CP CHANGE IFF CODES AS DIRECTED
- 05 CP ASSIST P AS DIRECTED
- 06 FE MONITOR ALL AIRCRAFT SYSTEMS FOR NORMAL OPERATION

C-3-29

5.1 AUTOPILOT OPERATION

- 01 P MANUALLY TRIMS AIRCRAFT
- 02 P OBSERVES ALIGNMENT ON 3 AXIS TRIM INDICATOR
(CP INST PANEL)
- 03 P GUARD DISENGAGE BUTTON
- 04 P PLACE ENGAGE/OFF SW TO ENGAGE
- 05 P SELECTS BARO ALT HOLD POSITION
- 06 P IF DESIRED SELECTS PRE-SELECT HEADING
- 07 P VERIFY AUTOPILOT LIGHT AND AUTO TRIM LIGHT OUT
- 08 P CHECK ALIGNMENT OF 3 AXIS TRIM INDICATOR FOR PROPER
ALIGNMENT

5.0 CRUISE OUT

C-3-35

8.0 DESCENT/APPROACH

8.1

DESCENT

(NOTE: IF CABIN ALT IS GREATER THAN 5000 FEET AT NIGHT 100% OXY SHOULD BE USED BY P/CP/FE FOR 15 MIN OUT OF THE LAST 45 MIN. PRIOR TO COMMENCING AN APPROACH. THIS SHOULD BE DONE ONE CREW MEMBER AT A TIME. GENERAL PRACTICE IS FOR P TO ANNOUNCE SMOKING LAMP "OUT" DURING OXY USE)

- 01 CP RECEIVE CLEARANCE, RECORD ALL CLEARANCES AND INSTRUCTIONS
 - 02 CP INSURE PILOT UNDERSTANDS ALL CLEARANC'S AND INSTRUCTIONS
- (NOTE: IF NO DESCENT CLEARANCE RECEIVED PRIOR TO REACHING A DISTANCE EQUAL TO 2.5 NM PER 1000 FEET ALT P/CP SHOULD REQUEST DESCENT CLEARANCE)

- 03 P CALL "DESCENT CHECKLIST"

A CREW ALERTED

- 01 CP ALERT CREW ON ICS/PA
- 02 CP RECEIVE VERIFICATION CREW ALERTED
- 03 CP RES "CREW ALERTED"

8.0 DESCENT/
APPROACH

8.0 DESCENT/APPROACH (CONTINUED)

B ALTIMETERS

01 P/CP/FE SET ALTIMETERS PASSING THRU 18,000 TO PROPER SETTING

02 P/CP/FE RES "SET"

C FUEL PANEL

01 FE VERIFY FUEL PANEL SET AS REQUIRED

02 FE RES "SET"

D PRESSURIZATION

01 FE VERIFY PRESSURIZATION PANEL SET AS REQUIRED

02 FE RES "SET"

E RANS A/C CB

(NOTE: NORMALLY HELD AT THIS ITEM. SEE PAGE 63 FOR CONTINUATION OF CHECKLIST.)

04 P POSITION 4 PWR LEVERS TO FLT IDLE

(NOTE: IF DESIRED CP CANCELS WHEELS WARNING LIGHT BY DEPRESSING WH WARN LIGHT OVERRIDE BUTTON)

8.0 DESCENT/
APPROACH

8.0 DESCENT/APPROACH (CONTINUED)

- 05 FE DURING DESCENT MONITOR ALL AIRCRAFT SYSTEMS AND INSURE THAT ENGINE HORSEPOWER DOES NOT GO NEGATIVE.
- 06 P MANEUVER A/C FOR APPROX 2000'/MIN RATE OF DESCENT WITH A/S 250-260 KTS.

(NOTE: 4 ENGINE OPERATIONAL DESCENT FROM NATOPS CAN BE USED. IN CONUS 250 KTS BELOW 10K ALT IS MAX.)

07 P CALL CONTINUE DESCENT CHECKLIST

- E RAWS A/C CB
- 01 FE VER RAWS A/C CB AS REQUIRED
- 02 FE RES "AS REQUIRED"
- 03 CP RES "DESCENT CKLST COMPLETE"

8.0 DESCENT/
APPROACH

8.2 APPROACH NAV/CONN

- 01 P MANEUVER AC TO LEVEL FLIGHT. MAX A/S LESS THAN 250 KTS
BELOW 10K ALT. PWR CHANGES AS REQ. (FE BACKS UP PILOT)
- 02 CP RECEIVE CLEARANCE/FREQ FROM CONTROL CTR TO CONTACT
APPROACH CONTROL
- 03 CP SELECT APPROACH FREQ AND GET RADIO CONTACT WITH APPROACH CONTROL
(NOTE: CP REQUESTS WEATHER, ALTINETER SETTING, LANDING RUNWAY
AND CLEARANCE FOR APPROACH)
- 04 CP RECEIVE, RECORD CLEARANCE; INSURE P UNDERSTANDS CLEARANCE
(NOTE: DURING DESCENT P/CP FAM WITH APP PLATE)
- 05 P CONFIG. CONTROL, PWR AS REQ AT INITIAL APP. FIX, HI STATION
OR DOWNWING LEG ON GCA FOR A/S 140-170 KTS, FLAPS AT
TAKEOFF/APPROACH
- 01 CP MAKE FLAP SETTINGS, AS INSTRUCTED BY PILOT, INFORM PILOT OF
IN-TRANSIT AND WHEN FLAPS AT SETTING
(NOTE: DOWNWIND/OUTBOUND A/S DETERMINED USING GROSS WT/AIRSPEED
CHART LOCATED ON OVERHEAD PANEL ON P3A/B)
- 06 P BRIEF CP TO ALLOUT ANYTIME A/S < SPECIFIED ON FINAL APP SEGMENT

8.2 APPROACH NAV/COM (CONTINUED)

- 01 CP TO CALL OUT "CONTACT" AND RUNWAY LOCATION (LEFT - RIGHT, ETC.)
WHEN VISUAL CONTACT EST.
- 02 CP TO CALL NDA OR DH
- 07 P MANEUVER AC AS REQ TO CONFORM TO CLEARANCE (CONTINUOUS CONTROL)
- 08 P CALL "LANDING CHECKLIST"
- A CREW REPORT .
 - 01 CP SET COND 5 ON ICS/PA
 - 02 CP REC VER COND 5 SET FROM CREW
 - 03 CP RES "COND 5 SET"
- B MASTER ARM/SEARCH PWR
 - 01 P VER MASTER ARM/SEARCH PWR OFF
 - 02 P RES "OFF"
- C LANDING WEIGHT/SPEEDS
 - 01 FE COMPUTE LANDING WT USING FUEL WT FROM LOG OR TOTALIZER,
ADDED TO BASIC AC WT
 - 02 FE OBTAIN 2 SPEEDS FROM CHART
 - 03 FE RESPOND WITH LANDING WT IN LBS AND 1.35 VS & 1.3 VS
(NOTE: DOWNWIND A/S IS 160 KTS)

8.2 APPROACH NAV/COMM

D SYNC SERVOS

01 FE TURN OFF MASTER, THEN IND SYNC SERVO SW'S

02 FE RES "OFF"

E FLAPS

01 CP VERIFY FLAP POS

02 CP RESPOND "FLAPS AT APPROACH" (NOTE OTHER SET AT P DISC)

F LANDING GEAR

01 CP CALL "LANDING GEAR"

(NOTE: NORMALLY CHECKLIST HELD AT THIS ITEM; SEE PAGE 68 FOR CONTINUANCE OF LANDING CHECKLIST)

09 P MAINTAIN PWR AS NEC & MANEUVER AC

(NOTE: ALL TURNS ON APPROACH UNTIL FINAL ARE STANDARD RATE

TURNS, ANGLE OF BANK 30° OR LESS.

GCA APPROACH (DOWNWIND LEG 140-170 KTS IND))

10 CP RECORD AND READ BACK TO P ALL HEADINGS/ALTS WHILE UNDER RADAR CTR EXCEPT ON GCA FINAL.

01 CP DET MIN'S FROM ENROUTE SUPPLEMENT

02 CP DETERMINE GLIDE SLOPE DEGREES FROM ENROUTE SUPP. APPLY

PUBLISHED GS/EST GS ON FINAL APPROACH TO DET R/D. (FOUND IN APP. PLATES BOOKLET)

8.2 APPROACH NAV/COMM (CONTINUED)

- 03 CP REC/ACKNOWLEDGE, RECORD LOST COMM. PROC.
- 04 CP INSURE P UNDERSTANDS
- 05 P/CP PLACE HAT ON RAD ALT.

(NOTE: IT IS SUGGESTED WHILE EXEC GCA THAT P/CP HAVE ALL
 NAVAIDS TUNED/SET TO LANDING POINT FAC. AN APPROACH PLATE
 FOR LANDING RUNWAY SHOULD BE DISP BY P/CP

- 06 P/CP SELECT INBOUND COURSE PUB ON APP PLATE COURSE SELECT
 WINDOW

(NOTE: IF NO PUB APP PLATE, RUNWAY HEADING MAY BE SELECTED
 HSI COURSE SEL WINDOW)

- 11 P REC HEADING CHANGES FROM GCA
- (NOTE: HE MAY CHANGE PRESELECT HEADING AS AN AID IN
 REMEMBERING HEADING CHANGES)

- 12 P REC INST TO TURN ON "BASE LEG" FROM GCA
- 13 CP RECEIVE/ACK/RECORD MISSED APPROACH PROC FROM GCA
 & INSURE P UNDERSTANDS

- 14 P REC INST TO FINAL APPROACH COURSE GCA
- 01 P MANEUVER AC WITH HALF STANDARD RATE TURNS ON FINAL APPROACH

8.2 APPROACH NAV/CONTI (CONTINUED)

15 P CALL FOR "GEAR DOWN" AND "LANDING CHECKLIST"

F LANDING GEAR

- 01 CP MOVE GEAR HANDLE TO DOWN
- 02 CP CALL "GEAR COMING DOWN"
- 03 P/CP CHECK WHEEL INDICATORS FOR DOWN & LT OUT IN GEAR HANDLE
- 04 CP CHECK GEAR HANDLE IN DETENT
- 05 FE VERIFY HYD QTY SYS #1 AND SYS #2 NORMAL
- 06 F/CP RESPONDS "GEAR DOWN & LOCKED"

(NOTE: ALTHOUGH NOT REQUIRED, SUGGEST THAT FE VERIFY GEAR DOWN AND LOCKED)

G BRAKES

- 01 P DEP BRAKE PEDALS
- 02 P/CP/FE VER FLUCT BRAKE ACCUM PRESS
- 03 P/CP RES "CHECKED"

H HARNES

- 01 P/CP/FE "SET"

(NOTE: IF ALL CONTROLS CAN BE REACHED INERTIAL RFFL MAY BE LOCKED)

- 02 CP RESPOND "LANDING CHECKLIST COMPLETE"

8.2 APPROACH NAV/COM(CONTINUED)

- 16 P SLOW AC TO 1.35 VS + 5 KTS (NOT LESS THAN 130 KTS)
- 17 P NOTIFIED BY GCA THAT GLIDE PATH IS BEING INTERCEPTED
- 01 P ADJUST POWER TO EST PRE-DETERMINED RATE OF DESCENT
(~ 700' MIN R/D)
- 02 FE BACK UP P (MAY BE DIRECTED TO SET PWR)
- 03 FE MONITOR AC SYS
- 04 CP MONITOR AIRSPEEDS/ALT/HEADING. SCAN VOR VISUAL CONTACT
- 05 P MAINTAIN CONSTANT A/S AND AOA THROUGHOUT APPROACH BY
ADJUSTING AC PITCH ANGLE. (WHEN THE DESIRED A/S, GLIDE
PATH AND R/D ARE BEING MAINTAINED NOTE THE PWR, ALTITUDE
& VERT SPEED AS A GUIDE FOR THE REMAINDER OF THE APPROACH)
- 18 CP CALL VISUAL CONTACT AT OR PRIOR TO REACHING DECISION HEIGHT.
TRANSITION TO FINAL APP/LANDING

9.0 FINAL APPROACH AND LANDING

C-3-36

1 A/C CONFIGURATION

01 P TRANSITION TO VISUAL

02 P CALL LANDING FLAPS (IF DESIRED)

03 CP RESPOND "FLAPS COMING TO LANDING"

01 CP WHEN AT LANDING POS, CALL "FLAPS AT LANDING"

04 P ADJUST ELEV TRIM AS REQ (RUNS IN BACK TRIM)

05 P POINT NOSE OF AC AT POINT OF INTENDED LANDING

(NORMALLY FIRST THIRD OF RUNWAY). A/S SHOULD BE TAPERED

TO REACH 1.3 VS DURING FLARE TRANSITION

(NOTE: GENERALLY A PWR REDUCTION IS NOT REQUIRED TO

REACH 1.3 VS)

2 NAV/COMM

TAEG REPORT NO. 7

9.0
FINAL APPROACH
AND LANDING

9.3 VISUAL TOUCHDOWN

- 1 P AT ENTRY OF FLARE SHIFTS SCAN TO END OF RUNWAY TO INCREASE DEPTH PERCEPTION. (ADJ. PWR AS NECESSARY DURING FLARE TRANSITION)
 - 2 P WHEN MAIN MOUNTS ON DECK, RETARD PWR LEVERS TO FLT IDLE AND FLY NOSE GEAR TO DECK
 - 3 P BRING ALL PWR LEVERS OVER RAMP INTO REVERSE (BETA) RANGE
 - 4 FE OBSERVE TO INSURE THAT BETA LIGHTS ARE ON
 - 5 P WHEN A/S LESS THAN 135 KTS (NOTE: WHEN A/S LESS THAN 125 RETARD PWR LEVERS TO REVERSE WITHOUT ELECTRICAL POWER) (NORMALLY TO GROUND IDLE) = 90% OF MAX REV.
 - 6 FE MONITOR RPM/HP/TIT FOR NORMAL OPERATION
 - 7 P STEER AC USING RUDDER, AND ASYMMETRIC PWR
 - 8 P TRANSITION STEERING NGS AT 50-60 KTS
 - 9 CP ASSIST P AS REQ.
- WHEN SAFE TAXI SPEED REACHED AND CLEARANCE REC, AC WILL TAXI CLEAR OF THE ACTIVE RUNWAY

C-3-40

9.4 MISSED APPROACH

IF VISUAL CONTACT HAS NOT BEEN ESTABLISHED AT THE SPECIFIED DISTANCE (APPROACH MINIMUMS) FROM THE FACILITY, A MISSED APPROACH WILL BE EXECUTED

1 CP CALL APPROACHING MINIMUMS AND AT MINIMUMS

(MINIMUMS ARE DETERMINED BY TYPE OF APPROACH

2A PRECISION APPROACH: AT 24 MISSED APPROACH WILL BE EXECUTED/IF NO VISUAL

2B NON-PRECISION: AT MISSED APPROACH FIX POINT MISSED APPROACH WILL BE EXECUTED/IF NO VISUAL CONTACT. MDA (MIN DESCENT ALT)

3 P APPLY SUFFICIENT PWR FOR POS R/C

4 FE MAY BE DIRECTED TO SET PWR

5 FE MONITOR HP, TIT AND RPM, AND FF INDICATORS

6 P ASSURE APPROACH FLAPS SET

01 CP SET OR VERIFY FLAPS SET)

7 P INSTRUCT CP TO RAISE GEAR

8 CP RAISE GEAR HANDLE, CALL "GEAR UP" WHEN INDICATORS UP AND LIGHT IN HANDLE OUT

9.4 MISSED APPROACH

9.4 MISSED APPROACH (CONTINUED)

- 9 P MANEUVER AC TO ADHERE TO PUBLISHED MISSED APPROACH
- 10 P/CP MAKE NAV AID FREQ/HSI CHANNEL CHANGES AS REQ
- 11 CP ADVISE APPROACH CONTROL BY TRANSMISSION ON COMM
(NOTE: AT 140 KTS OR ABOVE FLAPS CAN BE RETRACTED
AT P DISCRETION
- 12 P DECIDE FURTHER COURSE OF ACTION. (WEATHER TREND
IMPORTANT. FUEL AVAIL IMPORTANT)

AT PILOT'S DISCRETION

- 01 MAKE ANOTHER APPROACH
- 02 GO TO ALTERNATE
- 03 ENTER HOLDING
- 13 P REQUEST CLEARANCE DEPENDING ON #12 ACTION

- 01 CF CONTACT GROUND CONTROL ON PUBLISHED FREQ FOR TAXI INST AND CLOSE OUT FLIGHT PLAN
- 02 P/CP REC TAXI INST
- 03 P TAXI A/C PER INST
- 01 P CONTROL A/C USING NGS AND REV THRUST
(NOTE: P/CP SET P. BRAKE ANYTIME A/C IS STOPPED)
- 04 P CALL "AFTER LANDING" CHECKLIST
- 05 CP READ CHECKLIST
- A CREW RELEASED FROM DITCH STATIONS
- 01 P RESPOND "RELEASED" IFF
- B IFF
- 01 CP RESPOND "OFF"
- C OIL COOLERS
- 01 FE SET FOR DESIRED OIL TEMP (60°-90°)
- 02 FE RESPOND "SET"

10.0 POST-LAND (CONTINUED)

- D FLAPS
 - 01 P CALL FOR DESIRED FLAP SETTING
(NOTE: NORMALLY AT TAKEOFF/APPROACH EXCEPT FOR WASH RACK THEN FULL DOWN)
 - 02 CP SET FLAPS AND RES "AS DESIRED"
ICE CONTROL PANEL SW'S
- E
 - 01 FE TURN OFF ALL SW'S NOT REQ FOR CRJND OPERATION.
 - 02 FE RESPOND "OFF"
- F NTS/FEATHER VALVE SW
 - 01 FE VERIFY SW IN NTS POS.
 - 02 FE RESPOND "NTS"
- G FUEL BOOST PUMPS
 - 01 FE NORMALLY TURNS OFF 1, 3, 4. NO. 2 PUMPS ON FOR APU
 - 02 FE RESPOND "OFF"
(NOTE: ANY 3 MAY BE TURNED OFF WITH CROSSFEED SET FOR APU OPERATION)

10.0 POST-LAND (CONTINUED)

- H APU START
- 01 FE START APU (SEE PRESTART CKLST FOR DETAILS)
 (NOTE: APU MAY BE STARTED ANY TIME DURING TAXI BUT REC
 THAT APU BE STARTED CLOSE TO PARKING SPOT TO EXTEND LIFE)
- 02 FE RESPOND "START"
- 03 CR CALL "AFTER LANDING CHECKLIST COMPLETE"
- 06 P (AT HIS DISCRETION) CALL FOR #1, 3 AND 4 ENG'S SHIFT TO
 LOW RPM. (IF APU STARTED #2 CAN ALSO BE SHIFTED TO LOW RPM)
- 01 FE VERIFY OIL COOLER DOORS LESS THAN 100 PERCENT
- 02 P ASSURE PWR LEVERS FOR ENG'S BEING SHIFTED ARE AT START POS
- 03 FE POS RPM PADDLE SW'S (ONE AT A TIME) TO LOW RPM GUARDING
 FUEL AND IGN SW'S DURING SHIFT
- 04 FE MONITOR RPM DEC (71.0 - 73.8) MON TIT FOR LESS THAN 8500 C.
 DUR SHIFT
- 07 P AT HIS DISCRETION CAN INSTRUCT FE TO SHUT DOWN #1 AND #4
 AFTER LOW RPM PROC COMP (ONE AT A TIME IN ANY SEQUENCE)
- 01 FE VERIFY OIL COOLER DOORS LESS THAN 100 PERCENT & PWR LEVER
 AT START POS

10.0 POST-LAND

10.0 POST-LAND (CONTINUED)

- H APU START
- 01 FE START APU (SEE PRESTART CKLST FOR DETAILS)
(NOTE: APU MAY BE STARTED ANY TIME DURING TAXI BUT REC THAT APU BE STARTED CLOSE TO PARKING SPOT TO EXTEND LIFE)
 - 02 FE RESPOND "START"
 - 03 CP CALL "AFTER LANDING CHECKLIST COMPLETE"
 - 06 P (AT HIS DISCRETION) CALL FOR #1, 3 AND 4 ENG'S SHIFT TO LOW RPM. (IF APU STARTED #2 CAN ALSO BE SHIFTED TO LOW RPM)
 - 01 FE VERIFY OIL COOLER DOORS LESS THAN 100 PERCENT
 - 02 P ASSURE PWR LEVERS FOR ENG'S BEING SHIFTED ARE AT START POS
 - 03 FE POS RPM PADDLE SW'S (ONE AT A TIME) TO LOW RPM GUARDING FUEL AND IGN SW'S DURING SHIFT
 - 04 FE MONITOR RPM DEC (71.0 - 73.8) MON TIT FOR LESS THAN 8500 C. DUR SHIFT
 - 07 P AT HLS DISCRETION CAN INSTRUCT FE TO SHUT DOWN #1 AND #4 AFTER LOW RPM PROC COMP (ONE AT A TIME IN ANY SEQUENCE)
 - 01 FE VERIFY OIL COOLER DOORS LESS THAN 100 PERCENT & PWR LEVER AT START POS

10.0 POST-LAND

10.0 POST-LAND (CONTINUED)

- 02 FE PLACE FUEL AND IGNITION SW TO OFF
- 03 FE MONITOR RPM AND TIT DURING COASTDOWN.
- 04 FE VERIFY NTS LIGHT ON WHEN FUEL/IGN SW IS POS OFF
(NOTE: IF LIGHT DOES NOT COME ON, RESTART ENG AND SHUTDOWN FROM NOR RPM, IF NO LIGHT)
- 08 P DURING TAXI IN LINE AREA NO LONGER USES REV THRUST FOR SPEED CONTROL, USES BRAKES!
- 09 P REC INST FROM LINEMAN FOR PARKING
- 01 CP VISUAL CHK FOR CLEARANCE ON RT
- 02 P CK FOR CLEAR ON LEFT
- 10 P REC INST TO STOP IN ASSIGNED PARKING SPOT
- 11 P SET PARKING BRAKE
(NOTE: DO NOT TWIST HANDLE)

C-3-41

10.3 SHUTDOWN

01 P CALL FOR "SECURE CHECKLIST"

02 CP READ SECURE CHECKLIST

A PARK BRAKE SET

01 P RESPOND "SET"

B WINDSHIELD/PITOT/AOA HEAT

01 FE TURN OFF ALL WS HEAT, PITOT, AOA HEAT SW'S

02 FE RESPOND "OFF"

C HYD PUMP 1 AND 2

01 FE TURN OFF 1 AND 2

02 FE RESPOND "OFF"

D OIL COOLERS

01 FE RESPOND "LESS THAN 100 PERCENT"

E ASW EQUIP

01 CP CAL TACCO TO SECURE ASW EQUIP

02 P/TACCO RESPOND "SECURED"

F ENGINES

01 P DIRECT FE TO SECURE 2 AND 3

02 FE ASSURE #2 AND #3 IN LOW RPM AND POS FUEL/IGN TO OFF

10.3 SHUTDOWN

10.3

SHUTDOWN

03 FE MON REM/TIT DURING COASTDOWN

04 FE RESPOND "SHUTDOWN" WHEN FUEL IGN SW OFF

05 FE MONITOR NTS LIGHTS DURING SHUTDOWN

(NOTE: NTS LIGHT COMES ON WHEN FUEL/IGN SW TURNED OFF)

G CHOCKS

01 P/CP GIVE SIGNAL TO POSITION CHOCK

02 LINEMAN PLACES CHOCKS

03 P RESPOND "IN PLACE"

H HYD PUMP 1A

01 FE TURN OFF PUMP

02 FE RESPOND "OFF"

I UTILITY LIGHTS

01 P/CP CHECK INDIVIDUAL LIGHTS OFF

02 P/CP RESPOND "OFF"

J START SELECTOR

01 FE VERIFY START SEL OFF

(NOTE: DURING SHUTDOWN WITH EXT PWR OR BATT, SELECT ANY

ENGINE ON START SEL SW TO PROVIDE START AC AND DC PWR DURING

COASTDOWN IN THE EVENT OF EXTERNAL PWR FAILURE)

10.3

SHUTDOWN (CONTINUED)

02 FE RESPOND "OFF"

K ROTATING BEACON

01 FE TURN OFF MASTER SW AND ROT BCN SW

02 FE RESPOND "OFF"

L RADIOS/RADAR ALT

01 E/CP TURN OFF RAD ALT'S AND SECURE ALL RADIO/NAV AIDS

02 P/CP RESPOND "OFF"

(NOTE: UHF #1 MAY BE LEFT ON FOR COMM WITH TOWER DURING
REFUELING OR WITH SQDN MAINT PERSONNEL)

N APU

01 FE MAY SECURE, OR LEAVE IT ON FOR REFUELING MAINTENANCE IF
DESIRED. (REFER TO TAKEOFF CHECKLIST FOR SECURING PROCEDURE)

N START ESS AC CRKT BRKR/APN 141 CRKT BRKR

01 FE PULL START AC CRKT BRKR OUT (LOC ON MON ESS AC BUS PANEL)

02 FE PULL APN 141 CRKT BRKR. (FLT ESS AC BUS)

03 FE RESPOND "OUT"

O CP ANNOUNCE "SECURE CHECKLIST COMPLETE"

10.3 SHUTDOWN

11 POST MISSION

- 01 P FILL OUT YELLOW SHEET (TIMES, MALFUNCTIONS, DISCREPANCIES
- 01 P SIGN YELLOW SHEET, TURN IT OVER TO MAINT
- 02 P/CP/ASW CREW DEBRIEF WITH APPROPRIATE CONTROL AGENCY (OPCON,
WING, ETC.)
- 03 CREW RETURN NECESSARY EQUIP (CLASSIFIED MATERIAL, NAV BAG,
SEXTANT, ETC.)
- 04 FE/2ND MECH POST FLIGHT AC PER MRC CARDS

(NOTE: LOCAL S/P'S WILL DETERMINE DETAILS OF DEBRIEF)

12.0 ABNORMAL AND SPECIAL PROCEDURES

12.1 SAR DROP

01 P REC DIRECTIVE FOR AIR-DROP SAR MISSION

02 P MANEUVERS A/C TO LOCATION OF SURVIVORS. DET WIND DIR AND VEL

(NOTE: ATTEMPT TO DETERMINE CONDITION OF SURVIVORS TO RETRIEVE SAR KIT AND TO BOARD RAFTS)

03 P/CREW DETERMINE IF FUEL OR OIL ON WATER SURFACE IN VICINITY OF SURVIVORS

(NOTE: IF FLAMMABLE FUELS ARE PRESENT OR SUSPECTED DO NOT USE SMOKE LIGHTS OR MARKERS WHICH COULD IGNITE FUELS)

04 P EST. ORBIT AROUND SURVIVORS

05 DM (DROPMASTER) SIG. F HF IS READY TO OPEN MAIN CABIN DOOR

06 P ORDER DOOR REMOVED AND STOWED

07 DM REPORT "READY TO DROP" NOTE (ABOUT 5 MIN TIME REQ.)

08 P MANEUVER A/C TO 300 FT ALT, 130 KTS (DEF ON WT AND CONDITIONS)

(NOTE: APPROACH FLAPS ARE RECOMMENDED)

12.0 ABNORMAL AND
SPECIAL PROCEDURES
12.1 SAR DROP

12.0 ABNORMAL AND SPECIAL PROCEDURES (CONTINUED)

- 09 P ORDER CREW MEMBERS (EXCEPT DROPMASTER) TO SUSPEND ICS
COMM UNTIL AFTER SAR DROP
- 10 P MAN A/C DIRECTLY OVER SURVIVORS ON A CROSSWIND APPROACH
- 11 P ORDER DROPMASTER TO LAUNCH A SMOKE LIGHT OR OTHER MARKER
APPROX 1-2 SEC AFTER PASSING OVER SURVIVORS
- 12 P MANEUVER A/C INTO A 90°-270° PROCEDURE TURN TO ALIGN FLIGHT
PATH TO PASS 50'-150' UPWIND OF SURVIVORS
- 13 P ORDER SAR DROP WHEN ABEAM THE SMOKE CHARGE OR MARKER

12.2 THREE ENGINE FERRY T.O.

- 01 P REC CONSENT FROM CO FOR 3 ENG F.T.O.
 - 02 P VER VFR COND AT TAKEOFF, LANDING POINT NOTE (ALTERNATE LANDING AREAS BEING REPORTED AS VFR ARE ACCEPTABLE)
 - 03 P VER OPERATING WT AT A MIN FOR THE MISSION
(NOTE: MAX REC TAKEOFF WT IS 100K LBS UNLESS FURTHER RESTRICTED BY PERFORMANCE DATA, SEE SECT XI OF NATOPS)
 - 04 P DET ALJ. NECESSARY PERFORMANCE DATA FROM NATOPS SEC XI OR SEC XII
 - 05 P VER THAT ONLY ESS CREW FOR SAFE FLT ARE TO BE ABOARD
 - 06 P/CP/FE COMPLETE NORMAL SYS ACT CHECKS (SEC 2.2), THEN START THREE ENG FERRY T.O. CKLST
 - 01 P CALL FOR CKLST
 - 02 CP READ CKLST
 - 01 P PROPELLER ON INCP. ENG
 - 01 FE RESPOND "FEATHERED" OR "REMOVED"
- (NOTE: IF PROP IS REMOVED THEN FE VER THAT ENGINE INTAKE PLUGGED AND PLATE INSTALLED TO PREVENT DAMAGE TO ENGINE COWLING)

12.2 THREE ENGINE
FERRY T.O.

12.2 THREE ENGINE FERRY T.O. (CONTINUED)

- 02 PROPELLER BRAKE
 - 01 FE RESPOND "LOCKED"
- (NOTE: IF BRAVE INOP PROP MUST BE REMOVED)
- 03 EMERGENCY SHUTDOWN HANDLE
 - 01 FE RESPOND "IN"
- 04 POWER LEVER
 - 01 FE RESPOND "FULL FORWARD POSITION"
- 05 FUEL BOOST PUMP OPERATION AND SWITCH
 - 01 FE RESPOND "CHECKED, OFF"
- 06 FUEL CROSSFEED VALVE SW'S
 - 01 FE RESPOND "OFF"
- 07 GENERATOR SW (AFFECTED ENG)
 - 01 FE RESPOND "OFF"
- 08 OIL COOLER FLAP (AFFECTED ENG)
 - 01 FE RESPOND "FAIRED"
- 09 FUEL AND IGNITION SW (AFFECTED ENG)
 - 01 FE RESPOND "OFF"

12.2 THREE ENGINE
FERRY T.O.

12.2 THREE ENGINE FERRY T.O. (CONTINUED)

- 10 OIL QUANTITY ALL TANKS
 - 01 FE RESPOND "NORMAL"
 - 11 FUEL QUANTITY
 - 01 FE RESPOND "SYMMETRICAL" IF PROP FEATHERED
- (NOTE: IF PROP HAS BEEN REMOVED MAINTAIN APPROX. 1000 LB UNBALANCE TO ACCOUNT FOR PROP WT)
- 12 TRIM TABS
 - 01 P SET ELEV & AIL NORMAL, RUDDER AT P DISCRETION
- 07 TAKEOFF PROCEDURE
- 01 P/CP INSURE THAT SEAT AND RUDDER PEDAL ADJ. FOR FULL RUDDER TRAVEL WITHOUT INADVERTENTLY APPLYING BRAKES
 - 02 P LINE UP WITH RUNWAY AND HOLD BRAKES, APPLY MAX PWR ON SYMMETRICAL ENG'S
 - 03 P REQ. FE TO MAINTAIN MAX PWR ON SYMMETRICAL ENGS USING CP PWR LEVERS
 - 04 P PLACE PWR LEVER OF ASYMMETRIC OPER. ENG TO FLT IDLE AND RELEASE BRAKES

12.2 THREE ENGINE FERRY T.O.

12.2 THREE ENGINE FERRY T.O. (CONTINUED)

- 05 P APPLY FULL RUDDER TOWARD THE INOP ENG
- 06 CP HOLD YOKE FWD AND DEFLECT AILERON TOWARD THE SIDE WITH TWO OPER ENGS
- 07 P STEER USING MILD NGS UNTIL RUDDER BECOMES EFFECTIVE AT OR NEAR 50 KTS.
- 01 P ADVANCE PWR LEVER ON ASY ENG FROM FLT IDLE SMOOTHLY DURING ACCEL.
- 08 P STEER USING RUDDER AND CONTINUE TO ADV PWR LEVER ON ASY ENG
 (NOTE: APP OF PWR SHOULD BE SUCH THAT A RESERVE OF RUDDER MOVEMENT IS ALWAYS AVAILABLE FOR HEADING CORRECTIONS. PWR APPLIED SHOULD BE SUCH THAT DIR. CONTROL CAN BE MAINTAINED WITH APPROX 25% LESS THAN FULL RUD TRAVEL)
 (NOTE: NO ATTEMPT SHOULD BE MADE TO APPLY MAX PWR ON ASYMMETRIC ENG PRIOR TO VMC GR)
- 09 P/CP KEEP NOSEWHEEL ON GND UNTIL ROTATION SPEED REACHED
- 10 FE WHEN MAX PWR APP ON ASY ENG ASSIST P IN MAINTAINING PWR AS DIRECTED

12.2 THREE ENGINE
FERRY T.O.

12.2 THREE ENGINE FERRY T.O. (CONTINUED)

- 11 P AT VRO RELEASE PWR LEVERS AND EST SMOOTH POSITIVE LIFT-OFF
- 12 P BANK A/C APPROX 5° TOWARD OPERATING ENGINES TO REDUCE AMT
OF RUDDER REQ FOR DIRECTIONAL CONTROL
- 13 P CLIMB A/C AT TAKEOFF A/S AND EST POSITIVE R/C
- 14 P CALL FOR GEAR UP WHEN POS R/C EST
- 15 P RETRACT GEAR AND CALL "GEAR UP" WHEN INDICATORS SHOW UP
AND LT IN GEAR HANDLE OUT

12.2 THREE ENGINE
FERRY T.O.

12.3 WINDMILL START PROCEDURES

1

GROUND RUN PROCEDURE

- 01 P SELECT APP RUNWAY CONSIDERING LENGTH, WIND (USE CROSSWIND TO ADVANTAGE IF AVAIL) AND SURFACE
(NOTE: LIMIT TO DRY SURFACES)
- 02 P/FE REDUCE FUEL LOAD TO MIN FOR INTENDED FLT
- 03 P/CP COMPUTE REALISTIC REFUSAL DISTANCE (REFER TO NATOPS SECT XI OR SECT XII)
- 04 P/CP/FE COMPLETE TAKEOFF CKLST (SEC 2.2 SYSTEMS ACTIVATION)

EXCEPT

- 01 LEAVE FLAPS UP
- 02 FE FUEL/IGNITION SW ON
- 03 P/FE PWR LVR AT "FLIGHT START"
(NOTE: INSURE PWR LVR NOT AT GROUND START)
- 05 P BRIEF CP/FE
- 01 CP TO CALL AIRSPEED AT 50 KTS, 70 KTS AND 90 KTS
- 02 CP MONITOR TIT/HP ON OPERATIVE ENGINES
- 03 FE START UNFEATHER AT 50 KTS, INSURE NORMAL START SEQUENCE,
LIGHTOFF SHOULD OCCUR APPROX 24% RPM (USE PRIME FOR EARLIER START), ENSURE NO HUNG START (IF HUNG PULL E HANDLE AND INFORM PILOT), ANNOUNCE LIGHTOFF, 40% AND 70%

12.3
WINDMILL START
PROCEDURES

12.3 WINDMILL START PROCEDURES (CONTINUED)

- 06 P LINE UP A/C ON END OF RUNWAY USING CROSSWIND TO BEST ADV
- 07 P HOLD BRAKES AND APPLY MAX PWR ON TWO SYMMETRIC ENG'S
- 08 P RELEASE BRAKES, APPLY PWR ON ASYMMETRIC OPER ENG
(NOTE: TAKE CARE NOT TO MOVE INOP PWR LEVER OUT OF
FLT START)
- 09 P MAINTAIN DIRC CONTROL USING NGS UNTIL 50 KTS THEN RUDDER
- 10 CP CALL 50 KTS
- 11 FE PULL FEATHER BUTON OUT TO INITIATE START
- 12 CP CALL 70 KTS
- 13 FE OBSERVE ROTATION (10-15 PERCENT) ON RPM INDICATOR
- 14 CP CALL 90 KTS
- 15 FE OBSERVE LIGHTOFF AND RELEASE FEATHER BUTTON (MAY HAVE
OCCURRED EARLIER)
- 16 P AT 90 KTS OR LIGHTOFF PULLS PWR LEVERS OF OPERATING ENGS
TO FLT IDLE
(NOTE: LEAVE PWR LVR OF ENG BEING STARTED AT FLT START)
- 17 P COASTS A/C UNTIL 40% RPM IS REACHED

12.3
WINDMILL START
PROCEDURES

12.3 WINDMILL START PROCEDURES

- 18 FE MAY PRESS CUTOFF OVERRIDE, IF USED NTS INOP LIGHT WILL FLASH ONCE IF RELEASED PRIOR TO RELEASING FEATHER BUTTON.
IF NOT USED NTS INOP LT MAY FLASH SEVERAL TIMES WITH FEATHER BUTTON OUT WHEN PROP BLADE CYCLES AT 45°.
- 19 P AT 40% RPM ON STARTING ENG PULL PWR LEVERS OF OPER ENGS TO GND START POS
(NOTE: SOME REV THRUST MAY BE USED ON SYMMETRIC ENGS)
- 20 P/FE AT 70% RPM ON STARTING ENGINE MAY MOVE PWR LVR TO THE FLIGHT IDLE POS
- 21 P COMMENCES BRAKING AND REVERSING ON NORMALLY OPERATING ENGS
- 22 P/FE MAY MOVE PWR LVR OF STARTING ENG TO GND START AFTER 70% ANNOUNCED
(NOTE: SPEED SHOULD NOT BE IN EXCESS OF 50 KTS, AVOID MAX REV ON STARTING ENG UNLESS ENG OIL IS HOT AND OIL TEMP AND OIL PRESSURE ARE NORMAL)
TAXI CLEAR OF ACTIVE RUNWAY
- 23

12.3

2 STATIC START PROCEDURE

(NOTE: STATIC START PROCEDURE IS BASED ON A P-3 AIRCRAFT (OR EQUIVALENT) PROVIDING THE AIR BLAST; HOWEVER, PISTON TYPE TRICYCLE LANDING GEAR A/C WITH SUITABLE CHANGES TO THE PROCEDURE CAN BE USED)

- 01 QO (QUALIFIED OPERATOR (P/FE/*MP)) POSITION P-3 A/C (OR SUITABLE A/C) ON STARTING AREA FACING INTO WIND
- 02 QO USING APPLICABLE START AND RUN PROCEDURES, RUN ALL ENGS TO BLAST AREA CLEAR
- 03 QO SHUT DOWN ALL ENGS
- 04 QO DIRECT VISUAL SEARCH OF STARTING AREA IN FRONT AND BEHIND P-3 TO INSURE AREA IS FREE OF FOREIGN OBJECTS AND MATERIAL
- 05 QO DIRECT POSITIONING OF A/C TO BE STARTED.
(NOTE: A/C TO BE POS FOR MAX AIR BLAST TO ENGINE TO BE STARTED AND CLEARANCE BETWEEN TAIL BOOM AND NOSE OF STARTING A/C)

*MAINTENANCE PERSONNEL

12.3.2
STATIC START
PROCEDURE

12.3.2 STATIC START PROCEDURE (CONTINUED)

- 06 QO OF BOTH A/C EST COMMUNICATION
- 07 QO PERFORM NORMAL BEFORE STARTING ENGINE PROCEDURES
(SEE SECT 2.2.01) EXCEPT AS FOLLOWS
- 01 QO FEATHER PROP
- 02 QO PWR LVR FLT START POS
- 03 QO VERIFY TIT < 1000 C.
- 08 QO REQUEST FWD P-3 (OR OTHER A/C) TO START REQUIRED ENGINES
(NOTE: ON P-3 A/C SET PWR 3000-3500 SHP)
- 09 QO PULL FEATHER BUTTON TO UNFEATHER, HOLD UNTIL RPM REACHES
10% THEN RELEASE TO NEUTRAL
(NOTE: FL PULL E HANDLE IF ENG FAILS TO IGNITE OR RPM
STAGNATES)
- 10 QO MONITOR TIT AND RPM FOR NORMAL IND.
(NOTE: IF ABNORMAL PULL E HANDLE)
- 11 QO AT STAB. RPM MOVE PWR LVR TO GND START POS
- 12 QO ADVISE FWD A/C OF COMPLETED ENG START AND TO TAXI OR TOW
A/C FROM AREA

12.3.2
STATIC START
PROCEDURE

12.4 APPROACH TO STALL

- 01 P VERIFY A/C CLEAN CONFIG, 10K ALT
- 02 P PERFORM CLEARING TURNS TWO 90° OR 180°
- 03 P NOTIFY CREW ON ICS/PA, ETC
- 04 P/GP/FE ESTIMATE BUFFET SPEED FROM NATOPS PAGE 4-2 FOR 0° BANK ANGLE
- 05 P/FE RETARD PWR LEVER TO FLT IDLE, MAINTAIN ALT AND HEADING
- 06 P TRIM A/C TO MAINTAIN HEAD, ALT UNTIL 20 KTS ABOVE STALL
BUFFET A/S
- 07 P DECELERATES A/C TO EST BUFFET SPEED. NO TRIM CHANGES
- 08 P LOWER NOSE AND APPLY PWR SMOOTHLY APPLY AIL AND RUD TO
MAINTAIN WINGS LEVEL. MOVE CONTROLS SMOOTHLY AND AVOID
ABRUPT CONTROL MOVEMENTS
- 09 P REPEAT 01-08 FOR
01 MANEUVER FLAPS
02 APPROACH FLAPS/GEAR DOWN
03 LANDING FLAPS/GEAR DOWN
- 10 P INSTRUCT CREW TO INSPECT A/C FOR LOOSE EQUIP AFTER STALL
PRACTICE

12.5 160 KNOT MANEUVER

- 01 P ASSURE A/C ON ASSIGNED HEADING, ALTITUDE, CLEAN CONFIG,
TRIMMED FOR HANDS OFF 160 KTS A/S
- 02 P CALL FOR "MANEUVER" FLAPS CF SETS AND RES.
- 03 P MAINTAIN 160 KTS, ALT, HEAD, NOTE TRIM CHANGE AND PWR
CHANGE REQUIRED
- 04 P CALL FOR APPROACH FLAPS
- 01 P SAME AS 03 ABOVE
- 05 P CALL FOR GEAR DOWN. MAINTAIN 160 KTS, ALT AND HEAD
(NOTE: TRIM CHANGE AND PWR CHANGE REQ)
- 06 P CALL "RAISE GEAR"
- 01 CP SET, RESPOND
- 07 P CALL "LAND" FLAPS
(NOTE: P TO NOTE DRAG OF FLAPS MORE THAN GEAR, LARGE
PWR AND TRIM CHANGE REQUIRED)
- 08 P CALL FOR FLAPS TO UP
- 01 CP SET, RESPOND
- 09 P MANEUVER A/C, ACCELERATE TO CRUISE SPEED, SET PWR AS REQUIRED

- 12.6 RAN EFFECT
- 01 P TRIM A/C FOR LEVEL FLIGHT AT 160 KTS, CLEAN CONFIG
- 02 P/P/E SET HP ALL ENGS TO 3000 SHP
- 03 P MANEUVER A/C, RETRIM TO MAINTAIN ALTITUDE, PWR LEVERS NOT MOVED
- 04 P NOTE TRIM CHANGES REQUIRED FOR ALT CONTROL, NOTE INCREASE IN SHP AS A/S INCREASES.
(NOTE: AS LIMITED TO 250 KTS BELOW 10,000 FT ALT)
- 05 P WHEN A/C A/S STABILIZED, RETARD PWR LEVERS TO FLT IDLE
- 06 P NOTE HP DROP AS A/S DECREASES. (150 KTS LOWEST AIRSPEED) NORMALLY)
- 07 P SET PWR AS REQUIRED FOR DESIRED CRUISE A/S

- 12.7 FUEL DUMP
- 01 P MAINTAIN 140-220 KTS
 - 02 P VER FLAPS NOT AT LANDING, RECOMMENDED POS AT UP
 - 03 P/CP/RO VHF & HF RADIOS OFF
 - 04 P/RAD OP RADAR STANDBY OR OFF
 - 05 FE CLOSE FUEL TRANSFER VALVES
 - 06 FE FUEL DUMP SW ON
 - 07 FE MONITOR TANK 5 FUEL GAUGE - APPROX 1000 # MIN
 - 08 FE TURN OFF FUEL DUMP SW WHEN DUMP IS COMPLETE OR PRIOR TO LANDING
 - 09 FE TURN TANK 5 TRANSFER PUMP SW'S OFF
 - 10 P/CP/RO/RAD OP - RADIOS & RADAR AS REQUIRED

A-5-39, C-5-35

12.8 AIR START APU (WITH AFC 165)

- 1 P/CP VERIFY ALTITUDE \leq 20,000 FT
- 2 P/CP VERIFY A/S \leq 225 KTS
- IF
 - 3 MAIN DC BUS FAILURE AND ESSENTIAL BUS MONITOR SW ON
FE PULL CONTROL BOOST HANDLES
 - 4 FE PULL 3 PHASE POWER CB FOR TR #3 (MON BUS CB PANEL)
- OTHERWISE
 - 3 FE PLACE APU INFLIGHT ARM SW TO ARM
 - 4 FE VERIFY APU GENERATOR SW OFF
 - 5 FE PLACE APU START SW TO START
 - 6 FE MONITOR APU FOR STABILIZED REM/EGT
 - 7 FE PLACE APU GEN SW TO ON

12.8
AIR START APU
(WITH AFC 165)

12.9 ENGINE AIR RESTART

- 1 ENGINE AIR RESTART, NO FAILURES
- A P INSURE A/S ≥ 170 \leq 210 KIAS
 - B FE VERIFY FUEL AND IGN SW OFF
 - C FE VERIFY SYNCH SERVO OFF
 - D FE VERIFY FUEL BOOST PUMP ON
 - E FE PUSH E HANDLE IN (IF OUT)
 - F FE VERIFY OIL TANK SHUTOFF CIRCUIT BREAKER SET
 - G FE VERIFY POWER LEVER TO FLT START
 - H FE VERIFY NTS/FEATHER VALVE SWITCH IN FEATHER VALVE POSITION
 - I FE VERIFY TEMP DATUM CONTROL IN NORMAL
 - J FE VISUALLY VERIFY FEATHER BUTTON IN
 - K FE TEST TIT INDICATOR (ON CENTER PANEL)
 - FE GIVE AIRSTART BRIEF
 - FE PRESS PRESSURE CUTOFF OVERRIDE SWITCH FOR 10 SEC.
- 2
- 01 FE VERIFY LIGHT IN FEATHER BUTTON ON
 - 02 FE VERIFY PROP PUMP LIGHT #1 OFF
 - 03 FE RELEASE OVERRIDE SWITCH
 - 04 FE VERIFY FEATHER BUTTON LIGHT OUT
 - 05 P/CP VISUALLY VERIFY NO ROTATION

12.9
ENGINE AIR RESTART

12.9 ENGINE AIR RESTART (CONTINUED)

- N FE PULL FEATHER BUTTON TO UNFEATHER
- 01 P,CP VERIFY UNFEATHER BLADE-ANGLE/ROTATION
- 02 FE VERIFY NTS LIGHT BLINKING
- 03 FE CHECK FOR RPM INDICATION
- 04 FE CHECK FOR NO FUEL FLOW AT 16% (IF FUEL FLOW RELEASE FEATHER BUTTON AT LIGHT OFF AND GUARD APPROPRIATE E HANDLE VERIFY RISE OIL PRESSURE IN POWER SECTION AND GEAR BOX
- N FE SELECT ON FUEL AND IGN SW. AFTER STABLE RPM
- P FE RELEASE FEATHER BUTTON AT LIGHT OFF
- 01 FE GUARD APPROPRIATE E HANDLE
- Q FE VERIFY NORMAL OIL PRESSURE
- R FE VERIFY OIL COOLER SET APPROPRIATELY
- S FE CHECK ELECTRICAL PANEL (VERIFY APPROPRIATE OPERATION)
- T FE SELECT NORMAL ON SYNCH SERVO SWITCH
 (NOTE: BEFORE SELECTING NORMAL, FE DEPRESS RESYNCH SWITCH TO RESYNCH, THEN SELECT NOR ON SYNCH SERVO, THEN RELEASE RESYNCH)
- U FE SELECTS NTS POSITION ON NTS FEATHER VALVE SWITCH

12.9 ENGINE AIR RESTART (CONTINUED)

3 MALFUNCTIONS DURING AIR RESTART

01 FEATHER BUTTON LIGHT REMAINS ON AFTER PRESSURE CUTOFF
OVERRIDE SWITCH RELEASE

01 FE CYCLE APPROPRIATE E HANDLE

02 FE IF LIGHT GOES OUT, CONTINUE NORMAL START

OTHERWISE 03 FE PULL APPROPRIATE PROP FEATHER CB. DO NOT ATTEMPT RESTART

4 FEATHER VALVE LIGHT CEASE

NO ACTION REQUIRED

5 NTS INOP LIGHT ILLUMINATED

01 FE CONTINUE HOLDING OUT ON FEATHER BUTTON

02 FE PULL APPROPRIATE E HANDLE. NO RESTART

12.9 ENGINE AIR RESTART(CONTINUED)

6 NO LIGHT-OFF WITHIN 10 SEC

01 FE PUSH FEATHER BUTTON

02 FE MAY ATTEMPT RESTART IF DESIRED, OTHERWISE, SECURE

7 EITHER PROP PUMP LIGHT REMAINS ON @ RPM > 55%

01 FE PULL E HANDLE

8 NO OIL PRESSURE IND. BY 35%

IF LIGHT-OFF HAS OCCURRED

01 FE PULL E HANDLE

OTHERWISE

01 FE PUSH FEATHER BUTTON

9 TIT > 850°

01 FE PULL E HANDLE

10 STAGNATED START

01 FE PULL E HANDLE

11 RPM REMAINS OFF SPEED (103.5%)

01 FE PULL E HANDLE

12.9 ENGINE AIR RESTART (CONTINUED)

- 12 IF NO ROTATION
- 01 FE PUSH FEATHER BUTTON IN. USE STARTER FOR ROT.
 - 02 FE SELECT OPEN ON APPROPRIATE ENG BLEED AIR VALVES
 - 03 FE OPEN APPROPRIATE FUSELAGE BLEED AIR VALVE
 - 04 FE VERIFY PRESSURE IN BAMAP
 - 05 FE SELECT APPROPRIATE ENG ON START SELECTOR
 - 06 FE DEPRESS START BUTTON
 - 07 P,CP,E (DEPENDING UPON SIDE) VERIFY DROP
 - 08 P,CP CALL "ROTATION"
 - 09 FE PULL FEATHER BUTTON OUT
 - 10 FE PULL START BUTTON
 - 11 P,CP,FE VERIFY BAMAP RISE
 - 12 FE MONITOR RPM FOR STAB
 - 13 FE SECURE BLEED AIR VALVES
 - 01 FE SELECT OFF ON ENGINE START SELECTOR
 - 14 PROCEED NORMAL AIR START

A-3-17, C-3-33

12.10 LOITER SHUTDOWN

IF NTS CHECK NOT PERFORMED ON CLIMB

C-3-29

1 ALL PERFORM NTS CHECK A-3

01 P MAINTAIN ALTITUDE \leq 8000' AND IAS AT 170 KTS

02 FE SET ENGINE SHP AT MINIMUM OF 800

03 FE PLACE NTS-FEATHER VALVE SW TO FEATHER VALVE

04 FE PLACE SYNC MASTER SW OFF

05 FE PLACE SYNC SERVO SW'S OFF

06 FE PLACE L&R WING DE-ICE SW'S ON

07 FE PLACE APPROPRIATE ENGINE ANTI-ICE SW ON

08 FE PLACE APPROPRIATE ENGINE BLEED AIR SW OPEN

09 FE RETARD PWR LEVER SLOWLY OBSERVING HORSEPOWER INDICATOR
FOR NTS ACTION.

(NOTE: NTS ACTION SHOULD OCCUR BETWEEN MINUS (150-500) FOR ENGS 1 & 4
(100-500) FOR ENGS 2 & 3. DO NOT EXCEED MINUS 500.)

10 FE MONITOR FEATHER VALVE LIGHT FOR INTERMITTENT FLASHING

(NOTE: IF NO NTS ACTION BY 500 HP, ADVANCE PWR LEVER AND

RECORD. DO NOT SHUT DOWN IF NO NTS)

12.10 LOITER
SHUTDOWN

12.10 LOITER SHUTDOWN (CONTINUED)

- 11 FE PLACE ENGINE BLEED AIR VALVE SW TO CLOSE
- 12 FE PLACE ENGINE ANTI-ICE SW OFF
- 13 FE PERFORM NTS CHECK FOR OTHER ENGINE TO BE SHUT DOWN
- 14 FE PLACE WING DE-ICE SW'S TO OFF
- 15 FE PLACE NTS/FEATHER VALVE SW TO NTS

OTHERWISE

- 1 FE PLACE APPROPRIATE SYNC SERVO SW OFF
(NOTE: NORMALLY #1 & #4 FOR LOITER)
- 2 FE PLACE NTS/FEATHER VALVE SW TO FEATHER VALVE
- 3 FE SET PWR LEVER TO FLIGHT START
- 4 FE PUSH FEATHER BUTTON
- 5 ALL MONITOR ENGINE INSTRUMENTS AND PROPELLER FOR
COMPLETE SHUTDOWN

(NOTE: IF PROPELLER FAILS TO FEATHER, REFER TO 13.2.03)

- 6 FE VERIFY THAT FEATHER BUTTON LIGHT OUT
- 7 FE PLACE FUEL AND IGNITION SW OFF
- 8 FE PLACE FUEL BOOST PUMP SW ON

12.10 LOITER
SHUTDOWN

12.11

1 RECOVERY FROM UNUSUAL ATTITUDE

- 01 P INSURE A/C ON CONSTANT HEADING, ALTITUDE, CLEAN CONFIG.
TRINNED FOR HANDS OFF
- 02 P TRANSFER A/C CONTROL TO CHECK PILOT OR INSTRUCTOR
- 03 *IP ALERT CREW FOR STOWING ALL LOOSE GEAR. SET CONDITION 5
- 04 P PLACE HEAD TOWARD KNEES, EYES CLOSED
- 05 IP MANEUVER A/C THRU SERIES OF ATTITUDE CHANGES TO ESTABLISH
PROPRIOCEPTIVE CUES
- 06 IP DIRECT P TO ASSUME A/C CONTROL AND RECOVER FROM UNUSUAL
ATTITUDE TO STRAIGHT AND LEVEL FLIGHT
- 07 P ASSUME A/C CONTROL. RECOVER USING A/C INSTRUMENTS
DISREGARDING THE FALSE PROPRIOCEPTIVE CUES

*INSTRUCTOR PILOT

12.11.1
RECOVERY FROM
UNUSUAL ATTITUDE

12.12

1. FUEL GOVERNOR PITCH LOCK AND REVERSE HORSEPOWER CHECK

- 01 P POSITION AIRCRAFT INTO WIND
- 02 P SET PARKING BRAKE

NOTE: A PROPELLER GOVERNING INDEXING CHECK AT 1500 SHP SHOULD BE CONDUCTED PRIOR TO COMMENCING THIS CHECK

- 03 FE PLACE RPM SWITCHES - NORMAL
- 04 FE VERIFY TEMPERATURE DATUM CONTROL SWITCHES - NORMAL
- 05 FE VERIFY PROPELLER SERVO SWITCHES - NORMAL
- 06 FE VERIFY PROPELLER SYNC MASTER SWITCH - OFF

NOTE: PERFORM STEPS 07 THROUGH 14 ON TWO ENGINES AT A TIME (1 AND 4 OR 2 AND 3)

- 07 FE PLACE POWER LEVERS - FLIGHT IDLE
- 08 FE PLACE FUEL GOVERNOR CHECK SWITCHES FOR ENGINES BEING CHECKED - TEST
- 09 FE ADVANCE TWO POWER LEVERS TO MAXIMUM POWER POSITION AND OBSERVE FUEL GOVERNOR RPM (103.8 to 106.0 PERCENT)

NOTE: IF RPM IS BETWEEN 105.5 AND 106 PERCENT INVESTIGATE TO DETERMINE THAT PROPELLER GOVERNOR IS NOT CONTROLLING RPM

- 10 FE RETARD POWER LEVERS TO 100 PERCENT RPM: HORSEPOWER SHOULD BE 1500 MINIMUM

CAUTION: DO NOT PERMIT THE RPM TO DROP BELOW 95 PERCENT OR THE ENGINE BLEED VALVES MAY OPEN AND AN OVERTEMPERATURE OCCUR

- 11 FE PLACE FUEL GOVERNOR CHECK SWITCHES - NORMAL

12 FE ADVANCE POWER LEVERS TO A MINIMUM OF 900° C. AS POWER LEVER IS ADVANCED, TORQUE SHOULD INCREASE AND RPM SHOULD REMAIN FAIRLY CONSTANT.

CAUTION: IN THE EVENT OF A SERIOUS MALFUNCTION, SECURE THE RESPECTIVE ENGINE WITH THE FUEL/IGNITION SWITCH

13 FE RETARD POWER LEVERS TO MAX REVERSE (CHECK HORSEPOWER)

NOTE: THESE FOLLOWING NOMINAL VALUES ARE FOR SEA LEVEL, STANDARD DAY 15° C (59° F) CONDITIONS

a. ENGINES 2 AND 3 SHOULD BE 1250 (+ - 150) HP

b. ENGINES 1 AND 4 SHOULD BE 1150 (+ - 150) HP

INCREASE NOMINAL VALUES 5 HP FOR EACH 1° C DECREASE IN TEMPERATURES FROM 15° C

DECREASE NOMINAL VALUES 4 HP FOR EACH 1° C INCREASE IN TEMPERATURE FROM 15° C

DECREASE NOMINAL VALUES 40HP FOR EACH 100 FEET INCREASE IN PRESSURE ALTITUDE FROM SEA LEVEL

14 FE ADVANCE POWER LEVERS TO - START

15 FE REPEAT STEPS 07 THROUGH 14 WITH THE REMAINING TWO ENGINES

NOTE: IF ABNORMAL INDICATIONS ARE OBTAINED DURING THIS CHECK, THE POSSIBILITY EXISTS THAT THE PROPELLERS HAVE BEEN MISINDEXED. IN THIS CASE, ADVANCE THE POWER LEVERS TO 800° C TIT, REINDEX THE PROPELLERS AND ATTEMPT THE CHECK A SECOND TIME

13.1 ENGINE FAILURES

1 STARTING

- 01 LOW BLEED AIR MANIFOLD AIR PRESSURE @ 16% RPM
- 02 ACCELERATION TIME > 60 SEC TO LOW RPM
- 03 OVERTEMPERATURE
- 04 RPM STAGNATION/DECAY
- 05 NO LIGHT OFF
- 06 NO OIL PRESSURE
- 07 FUEL FRCH NACELLE DRAIN
- 08 TORCHING
- 09 ABNORMAL VIBRATION
- 10 FIRE
- 11 NO BLEED AIR RISE ON STARTER BUTTON POP OUT
- 12 STARTER BUTTON DOES NOT POP (57-64%)
- 13 NO INDICATION OF BLEED AIR PRESSURE
- 14 STARTER BUTTON WILL NOT ENGAGE
- 15 STARTER BUTTON POP AND NO ROTATION
- 16 PREMATURE START BUTTON POP (RPM 57% - 64%)
- 17 NO PARALLELING LIGHT
- 18 EDC LIGHT REMAINS ON

13.1
ENGINE FAILURES

13.1.1

(A-3-7) (C-3-20)

01 LOW BLEED AIR MANIFOLD AIR PRESSURE (BAMAP)

01 FE VERIFY BAMAP < 25 P.S.I.G. @ 16% RPM

02 FE PLACE FUEL AND IGNITION SW. TO OFF

03 FE PULL STARTER BUTTON OUT

IF 01 FE VERIFY NO RISE/SLOW RISE IN BAMAP, THEN

02 FE PULL E HANDLE

OTHERWISE

04 FE INFORM P OF DISCONTINUED START

05 FE SELECT OFF ON ENGINE START SELECTOR SW.

06 ALL COMPLETE NORMAL SHUTDOWN

07 P/FE NOTIFY MAINTENANCE

08 P/FE ENTER DISCREPANCY ON VIDS
(CONNAVAIR PAC GEN-4790/i(2-70) OR OPNAV FORM 4790/1 (REV 10-71))

13.1.1.1

(A-3-7) (C-3-21)

- 02 ENGINE ACCELERATION TIME > 60 SEC. TO LOW RPM
- 01 P/CP OBSERVE 60 SEC ELAPSED TIME AND RPM NOT AT
LOW RPM (71-73.8%)
- 02 P/CP INFORM FE
- 03 FE SELECT OFF ON APPROPRIATE FUEL & IGN SW
- IF ENGINE LIGHT OFF HAS OCCURRED
- 04 FE VERIFY START BUTTON OUT AFTER TIT < 200° C
- OTHERWISE NO LIGHT OFF
- 04 FE PULL START BUTTON OUT
- 05 FE VERIFY BMAP RISE
- 06 FE SELECT OFF ON ENG START SELECTOR
- 07 ALL NORMAL SHUTDOWN
- 08 P/FE NOTIFY MAINTENANCE
- 09 P/FE ENTER DISCREPANCY ON VIDS

13.1.1.1

(A-1-146) (A-3-7) (C-1-159)
(C-3-21)

03 OVERTEMPERATURE

01 FE OBSERVE TIT - IF $> 830^{\circ}$ $< 850^{\circ}$, LOGGED AS
HOT START ON VIDS (NO SHUTDOWN)

02 FE OBSERVE TIT $> 850^{\circ}$ $< 965^{\circ}$

01 FE PLACE FUEL IGNITION SWITCH OFF

IF STARTER STILL ENGAGED

02 FE LEAVE STARTER ENGAGED UNTIL TIT $< 200^{\circ}$

03 FE MANUALLY PULLS STARTER BUTTON OUT WHEN TIT $< 200^{\circ}$

04 FE INSURE BLEED AIR MANIFOLD AIR PRESSURE (BAMAP)
RISE TO ORIGINAL VALUE

01 FE PULL E HANDLE IF NO RISE
(STARTER NOT ENGAGED)

OTHERWISE

02 FE VERIFY STARTER BUTTON OUT

03 FE INSURE BAMAP RISE TO ORIGINAL VALUE

01 FE PULL E HANDLE IF NO RISE
TIT $> 200^{\circ}$

IF

04 FE ENGAGE STARTER (AFTER 0% RPM) UNTIL TIT $< 200^{\circ}$

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13.1.1.03
OVERTEMP

13.1.1

OTHERWISE
 05 P/FE ENTER HOT START ON VIDS

 06 ALL PERFORM ABBREVIATED BEFORE START CKLST
 07 FE RESTART ENGINE

 IF
 TIT > 850° < 965° ON SECOND START
 FE COMPLETE STEPS 13.1.01.03.02.01 thru .05
 AS REQUIRED

 OTHERWISE
 NO SHUTDOWN - CONTINUE MISSION
 03 FE OBSERVE TIT > 965° ON START
 01 FE COMPLETE STEPS 13.1.01.03.02.01 THRU .05
 AS REQUIRED
 02 P/FE NOTIFY MAINTENANCE THAT OVERTEMP INSPECTION
 IS REQUIRED
 03 ALL PERFORM NORMAL SHUTDOWN CKLST
 04 P/FE ENTER DISCREPANCY ON VIDS

13.1.1

(A-3-7) (C-3-21-22)

04	REP	STAGNATION/DECAY	
01	FE	OBSERVE	NO RPM INCREASE
02	FE	PLACE	FUEL IGNITION SW <u>OFF</u>
03	FE	OBSERVE	ENGINE MOTOR OVER UNTIL TIT < 200°
04	FE	<u>PULL</u>	START BUTTON
05	FE	OBSERVE	BAMAP RISE TO ORIGINAL VALUE
	01	<u>PULL</u>	E HANDLE IF NO RISE
06	ALL	PERFORM	ABBREVIATED BEFORE START CKLST
07	FE	RESTART	ENGINE
IF		SECOND	START STAGNATED
	01	PERFORM	STEPS 1 THRU 5 THEN 8 THRU
OTHERWISE		NO	SHUTDOWN. CONTINUE MISSION
08	P/FE	NOTIFY	MAINTENANCE
09	ALL	PERFORM	NORMAL SHUTDOWN
10	P/FE	ENTER	DISCREPANCY ON VIDS

13.1.1.1

(A-3-7) (C-3-21)

NO LIGHT OFF

05

01 FE OBSERVE NO TIT INCREASE PRIOR TO 33% RPM OR
MAXIMUM STARTER MOTORING RPM

02 FE SECURE FUEL IGNITION SWITCH OFF

03 FE PULL START BUTTON OUT

04 FE OBSERVE BLEED AIR RISE TO ORIGINAL VALVE

01 FE PULL E HANDLE IF NO BLEED AIR RISE

05 FE SECURE START SELECTOR OFF

06 P/FE CALL MAINTENANCE

07 ALL PERFORM NORMAL SECURE CHECKLIST

08 P/FE ENTER DISCREPANCY ON VIDS

13.1.1.1

(A-3-7) (C-3-21)

NO OIL PRESSURE

- 01 FE NOTE NO RISE IN OIL PRESSURE BY 35% RPM
(POWER SECTION & GEAR BOX)
- 02 FE PLACE FUEL IGNITION SWITCH OFF
- 03 FE INSURE STARTER BUTTON OUT
- 04 FE INSURE BLEED AIR RISE
- 05 FE TURN START SELECTOR OFF
- 06 P/FE NOTIFY MAINTENANCE
- 07 ALL PERFORM NORMAL SHUTDOWN CHECKLIST
- 08 P/FE ENTER DISCREPANCY ON VIDS

13.1.1.06
NO OIL PRESSURE

13.1.1.1

(A-3-7) (C-3-21)

07 FUEL FROM NACELLE DRAIN

01 P/CP RECEIVE INDICATION FROM LINEMAN OR
AFT OBSERVER

02 P/CP NOTIFY FE

03 FE PULL APPROPRIATE E HANDLE

IF FIRE REFER TO 13.1.01.10 FIRE (ON GROUND)

OTHERWISE

04 P/FE NOTIFY MAINTENANCE

05 ALL PERFORM NORMAL SHUTDOWN CHECKLIST

06 F/FE LOG DISCREPANCY ON VIDS

13.1.1.07
FUEL FROM
NACELLE DRAIN

13.1.1

(A-3-7) (C-3-21)

08 TORCHING

- 01 P/CP RECEIVE VERBAL INDICATION FROM AFT OBSERVER
- 02 P/CP NOTIFY FE
- 03 FE SECURE ENGINE
- 01A VF-30 FE PLACE FUEL IGNITION SW OFF
- 01B VP-31 FE PULL E HANDLE
- 04 FE INSURE STARTER BUTTON OUT
- 05 FE INSURE BLEED AIR RISE
- 06 FE TURN START SELECTOR OFF
- 07 P/FE NOTIFY MAINTENANCE
- 08 ALL PERFORM NORMAL SHUTDOWN CHECKLIST
- 09 P/FE LOG DISCREPANCY ON VIDS

13.1.1.08
TORCHING

13.1.1.1

09 ABNORMAL VIBRATION (NO V SWAL INDICATION) (A-3-7) (C-3-21)

- 01 P/CP/FE NOTE ABNORMAL VIBRATION
- 02 FE PLACE FUEL IGNITION SWITCH OFF
- 03 FE INSURE STARTER BUTTON OUT
- 04 FE INSURE BLEED AIR RISE
- 05 FE TURN START SELECTOR SWITCH OFF
- 06 P/FE NOTIFY MAINTENANCE
- 07 ALL PERFORM NORMAL SECURE CHECKLIST
- 08 P/FE LOG DISCREPANCY ON VIDS

13.1.1.1

(A-3-38) (C-5-28)

- 10 FIRE (ON-GROUND)
 - 01 P/CP/FE RECEIVE/NOTE COCKPIT FIRE WARNING LIGHT AND HORN
 NOTE (P/CP CAN RECEIVE VERBAL/VISUAL NOTIFICATION FROM LINEMAN OR AFT OBSERVER)
 - 02 PERFORM ENGINE FIRE ON GROUND CHECKLIST
 - A FE PULL APPROPRIATE E HANDLE
 - B FE HRD BUTION PUSH TO DISCHARGE
 - C FE PULL STARTER BUTTON OUT
 - D P/CP NOTIFY CONTROL TOWER
 - E CP VERIFY FLAPS AT TAKEOFF OR APPROACH
 - IF FIRE NOT OUT IN 10 SECONDS
 - F P/FE HRD TRANSFER SW TO ALTERNATE
 - G P/FE HRD BUTION PUSH TO DISCHARGE
 - H E PULL E HANDLES
 - I ALL SECURE APU, EVACUATE AIRCRAFT AT DISCRETION OF PILOT
- OTHERWISE
 - 03 P/FE NOTIFY MAINTENANCE
 - 04 ALL PERFORM NORMAL SECURE CKLST
 - 05 P/FE LOG DISCREPANCY ON VIDS

13.1.1.10
FIRE (ON GROUND)

13.1.1

(A-3-7) (C-3-21)

11 NO BLEED AIR RISE ON START BUTTON POP OUT

- 01 FE NOTE NO VISUAL INDICATION OF BLEED
AIR RISE ON MANIFOLD PRESSURE GAUGE
AT 57% - 64% RPM
- 02 FE PULLS APPROPRIATE E HANDLE
- 03 FE VERIFY STARTER BUTTON OUT
- 04 P/FE NOTIFY MAINTENANCE
- 05 ALL PERFORM NORMAL SECURE CKLST
- 06 P/FE LOG DISCREPANCY ON VIDS

13.1.1.11
NO BLEED AIR RISE
AT 57-64% RPM

13.1.1

(A-3-6) (C-3-21)

12 START BUTTON DOES NOT POP (57-64%)

01 FE NOTE ABSENCE OF STARTER BUTTON POP BY 64%

02 FE MANUALLY PULLS START BUTTON OUT

03 FE INSURE BLEED AIR RISE

IF NO BLEED AIR RISE

01 FE PULL E HANDLE

02 P/FE NOTIFY MAINTENANCE

03 ALL PERFORM NORMAL SECURE CKLST

OTHERWISE

04 P/FE LOG DISCREPANCY ON VIDS

05 ALL CONTINUE MISSION

13.1.1.12
STARTER BUTTON
DOES NOT POP

13.1.1

- 13 NO INDICATION OF BLEED AIR MANIFOLD AIR PRESSURE
 - 01 FE RECEIVE NO INDICATION ON MANIFOLD PRESSURE GAUGE
 - 02 FE CHECK APPROPRIATE CIRCUIT BREAKERS
 - 01 FE VERIFY START CONTROL C.B. IN
 - 02 FE VERIFY ESSENTIAL FEEDER C.B. IN
 - 03 FE CHECK INFLIGHT ARMING SWITCH OFF APU CONTROL PANEL
 - IF NO INDICATION OF BAMEP
 - 04 ALL PERFORM NORMAL SECURE CHECKLIST
 - 05 P/FE NOTIFY MAINTENANCE
 - 06 P/FE LOG DISCREPANCY ON VIDS
- OTHERWISE
 - 04 ALL CONTINUE NORMAL ENGINE START CKLST

13.1.1.13
NO INDICATION
BLEED AIR

13.1.1

14 STARTER BUTTON WILL NOT ENGAGE

01 FE NOTE STARTER BUTTON WILL NOT ENGAGE

02 FE CHECK APPROPRIATE CIRCUIT BREAKERS

01 FE VERIFY START CONTROL C.B. IN

02 FE VERIFY ESSENTIAL FEEDER C.B. IN

IF CIRCUIT BREAKERS SET

03 ALL PERFORM NORMAL SECURE CHECKLIST

04 P/FE NOTIFY MAINTENANCE

05 P/FE LOG DISCREPANCY ON VIDS

OTHERWISE

03 ALL CONTINUE NORMAL ENGINE START CKLST

13.1.1.14
 STARTER BUTTON
 WILL NOT ENGAGE

13.1.1

- 15 STARTER BUTTON POP AND NO ROTATION
 - 01 FE NOTE STARTER BUTTON POP OUT AND NO ROTATION
 - IF BMAP DROP AND THEN RISE
 - 02 ALL PERFORM NORMAL SECURE CHECKLIST
 - 03 P/FE NOTIFY MAINTENANCE
 - 04 P/FE LOG DISCREPANCY ON VIDS
- OTHERWISE REFER TO 13.1.01.14

13.1.1

(A-3-6) (C-3-21)

16 PREMATURE STARTER BUTTON POP (0 TO 57%)

01 FE NOTE (AUDIBLE INDICATION) PREMATURE
BUTTON POP

02 FE INSURE BLEED AIR RISE

IF NO BLEED AIR RISE

01 FE PULLS E HANDLE

OTHERWISE

03 FE VERIFY ENGINE ACCELERATION, ETC. NORMAL

04 FE CONTINUES START PROCEDURES

05 P/FE LOG DISCREPANCY ON VIDS

IF ABNORMAL INDICATIONS (STAGNATED START)

03 FE PLACES FUEL IGNITION OFF

04 ALL PERFORM NORMAL SECURE CHECKLIST

05 P/FE NOTIFY MAINTENANCE

06 P/FE LOG DISCREPANCY ON VIDS

13.1.1.16
PREMATURE STARTER
BUTTON POP (0-57%)

13.1.1

(A-3-7) (C-3-21)

17 PARALLELING LIGHT

01

NO PARALLELING LIGHT

01 FE

DOES NOT "VERBALLY" INDICATE PARALLELING LIGHT ON BY 65% (SHOULD BE ON BETWEEN 16 and 65%)

02 FE

PLACES FUEL IGNITION SWITCH OFF

03 FE

INSURE START BUTTON OUT WHEN TIT < 200°

04 FE

INSURE BLEED AIR RISE

01

PULL E HANDLE IF NO RISE

05 FE

TURN START SELECTOR SWITCH OFF

06 ALL

PERFORM NORMAL SECURE CHECKLIST

07 P/FE

LOG DISCREPANCY ON VIDS

02

PARALLELING LIGHT REMAINS ON WHEN RPM > 65%

01 FE

PULL FUEL SHUTOFF C.B.

IF 02 FE

VERIFY LIGHT OUT

01 FE

LEAVE C.B. OUT

OTHERWISE

02 FE

VERIFY LIGHT ON

01 FE

RESET C.B.

03 ALL

COMPLETE 17.1 STEPS 2 THRU 8

13.1.1

(A-3-6) (C-3-21)

18 EDC PRESSURE LOW LIGHT REMAINS ON

01 FE VERIFY EDC LIGHT NOT OUT PRIOR TO 65% RPM
02 FE VERIFY EDC DUMP SW IN NORMAL
VP-30 ONLY 01 ALL CONTINUE START

IF

VP-30 ONLY 02 FE VERIFY EDC LIGHT ON AT NORMAL STABILIZED RPM

03 FE PLACE FUEL IGNITION SW OFF

04 ALL PERFORM NORMAL SECURE CHECKLIST

05 P/FE NOTIFY MAINTENANCE

06 P/FE LOG DISCREPANCY ON VIDS

OTHERWISE FE VERIFY EDC LIGHT OUT AT NORMAL STABILIZED RPM

VP-30 ONLY

03 ALL CONTINUE MISSION

04 P/FE LOG DISCREPANCY ON VIDS

TAEG REPORT NO. 7

13.1.18
EDC PRESSURE
LOW LIGHT

- 13.1 ENGINE FAILURES
- 2 TAXI
- 01 FUEL PRESSURE LOW LIGHT
- 02 FILTER LIGHT ON
- 03 LOW OIL PRESSURE
- 04 TIT INDICATOR FAILURE
- 05 RPM FAILURE
- 06 ENGINE FIRE
- 07 OIL PRESSURE LIGHT
- 08 CHIPS LIGHT ON
- 09 GENERATOR MECHANICAL WARNING LIGHT
- 10 MASTER PRESSURE SYSTEM LIGHT ON
- 11 ENGINE ANTI-ICING LIGHT ON (SWITCH OFF)
- 12 OIL HOT LIGHT ON

13.1.1.2
AI-78;CI-109

01	FUEL PRESSURE LOW LIGHT
01	ANY NOTE FUEL PRESSURE LIGHT <u>ON</u>
IF	ENGINE IN LOW RPM
01	FE SHIFT RPM SWITCH TO <u>NORMAL</u>
02	FE VERIFY FUEL PRESSURE LIGHT <u>OUT</u>
02	ALL CONTINUE MISSION
	OTHERWISE
02	ALL RETURN TO LINE
03	ALL PERFORM NORMAL SHUTDOWN
04	CP NOTIFY MAINTENANCE
05	P/FE LOG DISCREPANCY ON VIDS

13.1.2.1
FUEL PRESSURE
LOW LIGHT ON

13.1.1.2

A-1-79; C-1-109

- 02 FILTER LIGHT ON
- 01 ANY NOTE FILTER LIGHT ON
 - 02 ALL RETURN TO LINE
 - 03 ALL PERFORM NORMAL SHUTDOWN CHECKLIST
 - 04 CP NOTIFY MAINTENANCE
 - 05 P/FE LOG DISCREPANCY ON VIDS

13.1.2.2
FILTER LIGHT ON

13.1.1.2

- 03 LOW OIL PRESSURE INDICATION (LOW RPM)
- 01 FE NOTE OIL PRESSURE BELOW LIMITS (POWER SECTION
50 psi, GEAR BOX < 50 psi)
- IF POWER SECTION < 50 psi
 - 01 FE SHIFT RPM SWITCH TO NORMAL RPM AND RPM STAB AT 100%
 - 02 FE VERIFY POWER SECTION OIL PRESSURE 50 psi
 - 03 ALL CONTINUE MISSION
- OTHERWISE
 - POWER SECTION < 50 psi AT NORMAL OR GEAR BOX
50 psi AT LOW RPM OR 130 psi AT NORMAL
 - 02 FE PLACE FUEL AND IGNITION SW OFF
 - 03 ALL RETURN TO LINE
 - 04 ALL PERFORM NORMAL SECURE CHECKLIST
 - 05 CP NOTIFY MAINTENANCE
 - 06 P/FE LOG DISCREPANCY ON VIDS

13.1.2.04
TIT INDICATOR
FAILURE

13.1.2

04	TIT INDICATOR FAILURE
01	FE NOTE TIT INDICATOR FAILURE (OFF FLAG)
02	FE VERIFY START ESSENTIAL AC BUS CB IN
01	FE RESET CB IF OUT
IF	TIT FLAG VISIBLE
03	FE <u>PULL</u> E HANDLE
04	ALL RETURN TO LINE
05	ALL PERFORM NORMAL SECURE CKLST
06	CP NOTIFY MAINTENANCE
07	P/FE LOG DISCREPANCY ON VIDS
	OTHERWISE CONTINUE MISSION

13.1.2

05	RPM INDICATOR FAILURE
01	FE NOTE DECREASE IN TACHOMETER INDICATION
02	FE PLACE FUEL & IGNITION SW <u>OFF</u>
03	ALL RETURN TO LINE
04	ALL PERFORM NORMAL SECURE CKLST
05	CP NOTIFY MAINTENANCE
06	F/FE LOG DISCREPANCY ON VIDS

13.1.2.05
RPM INDICATOR
FAILURE

A-1-5-10,
C-1-5-28

13.1.1.2

- ENGINE FIRE
- 06
- 01 ALL NOTE FIRE WARNING LIGHT ON AND HORN
- 02 ALL PERFORM ENGINE FIRE ON THE GROUND CKLST
- A FE PULL E HANDLE
- B P/FE DISCHARGE HRD
- C FE VERIFY STARTER BUTTON OUT
- D CP NOTIFY CONTROL TOWER
- E CP INSURE FLAPS AT TAKEOFF OR APPROACH
- NOTE P STOP AIRCRAFT DURING CKLST PROCEDURE AND SET PARKING BRAKE
- IF FIRE NOT OUT AFTER 10 SECONDS
- F P/FE PLACE HRD TRANSFER SW TO ALTERNATE
- G P/FE DISCHARGE HRD
- H FE PULL REMAINING E HANDLES
- I ALL SECURE APU, EVACUATE AIRCRAFT AT DISCRETION OF PILOT

13.1.2

06 ENGINE FIRE (CONTINUED)

OTHERWISE

03	ALL	RETURN TO LINE
04	ALL	PERFORM NORMAL SECURE CKLST
05	CP	NOTIFY MAINTENANCE
06	P/FE	LOG DISCREPANCY ON VIDS

13.1.2.06
ENGINE FIRE

13.1.2

07 OIL PRESSURE LIGHT (NORMAL RPM) A-1-79;C-1-110

NOTE: PERMISSIBLE TO HAVE LIGHT ON IN LOW RPM

- 01 ANY NOTE OIL PRESSURE LIGHT ON
- 02 FE CHECK POWER SECTION AND GEAR BOX OIL PRESSURE
GAUGES TO FIND WHICH ONE IS LOW
(POWER SECTION < 40 psi; GEAR BOX < 130 psi)
- 03 FE SECURE APPROPRIATE FUEL IGNITION SWITCH
- 04 ALL RETURN TO LINE
- 05 ALL PERFORM NORMAL SHUTDOWN CHECKLIST
- 06 CP NOTIFY MAINTENANCE
- 07 P/FE LOG DISCREPANCY ON VIDS

TAEG REPORT NO. 7

13.1.2.07
OIL PRESSURE LIGHT

13.1.1.2

08

CHIPS LIGHT ON

A-1-79, C-1-110

01

ANY

NOTE CHIPS LIGHT ON

VP-30 02

FE

SECURE APPROPRIATE FUEL IGNITION SWITCH

VP-31 02

FE

PULL APPROPRIATE E HANDLE

03

ALL

RETURN TO LINE

04

ALL

PERFORM NORMAL SHUTDOWN CHECKLIST

05

CP

NOTIFY MAINTENANCE

06

P/FE

LOG DISCREPANCY ON VIDS

TAEK REPORT NO. 7

13.1.2.08
CHIPS LIGHT ON

13.1.1.2

A-1-79; A-5-38;
C-1-109; C-5-33

GENERATOR MECHANICAL WARNING LIGHT ON

09

NOTE GENERATOR WARNING LIGHT ON
AYC 314 NOT INSTALLED
PULL APPROPRIATE HANDLE

ANY

01

IF

FE

02

RETURN TO LINE

ALL

03

NOTIFY MAINTENANCE

CP

04

PERFORM NORMAL SHUTDOWN CHECKLIST

ALL

05

RECORD DISCREPANCY ON VIDS

P/FE

06

OTHERWISE

AYC 314 IS INSTALLED

ALL

02

CONTINUE MISSION IF REQUIRED

(NOTE: GENERATOR MAY BE OPERATED AS LONG AS 10 HOURS IF REQUIRED)

13.1.2

A-1-80;A-1-123 thru 129;
C-1-110;C-1-54 thru 61

10		MASTER PRESSURE SYSTEM LIGHT ON
	01	ANY NOTE PRESSURIZATION SYSTEM LIGHT <u>ON</u>
	02	FE CHECK OVERHEAD PANEL FOR POSSIBLE CAUSES (EDC PRESSURE LOW (2)); OIL TEMP HIGH (2); CABIN EXHAUST FAN LIGHT OUT; REFER OVERHEAT LIGHT (2))
	01	FE VERIFY EDC PRESSURE LOW LIGHT <u>ON</u>
	01	FE PLACES APPROPRIATE EDC DISCONNECT/NORMAL SW TO <u>DISCONNECT</u>
IF	02	FE VERIFY LOSS OF SPREAD ON INLET/DISCHARGE PRESSURE GAGE
	03	FE PLACE EDC NORMAL/DUMP SW TO <u>DUMP</u>
OTHERWISE	02	FE VERIFY NO LOSS OF SPREAD ON INLET/ DISCHARGE PRESSURE GAGE
	03	FE <u>PULL</u> E HANDLE
	02	FE VERIFY OIL TEMP LIGHT <u>ON</u>
	01	FE CHECK ENGINE OIL TEMP GAGE
	02	FE VERIFY OIL TEMP HIGH

13.1.2.10
MASTER PRESSURE
SYSTEM LIGHT ON

13.1.2

10 MASTER PRESSURE SYSTEM LIGHT ON (CONTINUED)

- 01 FE PLACE OIL COOLER FLAPS SW TO OPEN
- 02 FE VERIFY OIL TEMP LIGHT OFF
- 03 FE VERIFY MASTER PRESSURE LIGHT OFF
- 04 ALL CONTINUE MISSION

OTHERWISE

REFER TO 13.1.2.12 C3 thru 08

A-1-123

03

- FE VERIFY REFR OVERHEAD LIGHT ON
- 01 FE VERIFY EDC DELIVERING CONDITIONED AIR

01 FE PLACE EDC NORMAL/DUMP SW TO DUMP

02 FE VERIFY REFR OVERHEAT LIGHT OFF

03 FE VERIFY MASTER PRESSURE LIGHT OFF

04 FE SELECT MANUAL TWO DOT POSITION

(OR WARMER) ON TEMP CONTROL

05 FE PLACE EDC NORMAL/DUMP SW TO NORMAL

06 ALL CONTINUE MISSION

OTHERWISE

REFER TO 13.1.02.10 STEP 3-6

02 FE VERIFY APU DELIVERING CONDITIONED AIR

13.1.2.10 MASTER PRESSURE SYSTEM LIGHT ON (CONTINUED)

01	FE	PLACE GND AIR CONDITIONING SW <u>OFF</u>
02	FE	VERIFY REFR OVHT LIGHT <u>OFF</u>
03	FE	VERIFY MASTER PRESS LIGHT <u>OFF</u>
04	FE	SELECT <u>MANUAL TWO DOT</u> (OR WARNER) ON TEMP CONTROL
05	FE	PLACE GND AIR COND SW <u>ON</u>
06	ALL	CONTINUE MISSION
OTHERWISE		REFER TO 13.1.02.10 STEPS 03 THRU 06
04	FE	VERIFY CABIN EXH'UST FAN OUT LIGHT <u>ON</u>
01	FE	CHECKS CABIN EXHAUST FAN CB(S) (MAIN AC BUS B OR MAIN DC EXTENSION <u>IN</u>)
02	FE	VERIFY CABIN EXHAUST LIGHT <u>OUT</u>
03	FE	VERIFY MASTER PRESS LIGHT <u>OUT</u>
04	ALL	CONTINUE MISSION
OTHERWISE		REFER TO 13.1.02.10 STEP 03 THRU 06
03	ALL	RETURN TO LINE
04	CP	NOTIFY MAINTENANCE

13.1.2.10
MASTER PRESSURE
SYSTEM LIGHT ON

MASTER PRESSURE SYSTEM LIGHT ON (CONTINUED)

13.1.2.10

ALL PERFORM NORMAL SECURE CKLST

05

P/FE ENTER DISCREPANCY ON VIDS

06

13.1.2.10
MASTER PRESSURE
SYSTEM LIGHT ON

13.1.1.2

11		ENGINE ANTI-ICING LIGHT ON (CONTROL SW OFF) A-1-77;C-1-108
01	ANY	<u>NOTE ANTI-ICING LIGHT ON</u>
02	FE	VERIFY ENGINE AIR SCOOP AND INLET VANES <u>SW OFF</u>
03	FE	<u>PULL APPROPRIATE E HANDLE</u>
04	ALL	RETURN TO LINE
05	CP	NOTIFY MAINTENANCE
06	ALL	COMPLETE NORMAL SECURE CKLST
07	P/FE	ENTER DISCREPANCY ON VIDS

13.1.2.11
ENGINE ANTI-ICE
LIGHT ON

13.1.1.2

12		OIL HOT LIGHT ON (1000)
01	ANY	NOTE OIL HOT LIGHT <u>ON</u>
02	FE	PLACE OIL COOLER DOOR SW TO <u>OPEN</u>
IF 03	FE	VERIFY OIL HOT LIGHT <u>OUT</u> (WITHIN 30 MINUTES)
04	FE	VERIFY ENGINE OIL TEMP GAGE <100° C.
05	ALL	CONTINUE MISSION
		OTHERWISE
03	FE	VERIFY OIL HOT LIGHT <u>ON</u> AFTER 30 MINUTES
04	FE	PLACE FUEL AND IGNITION SW <u>OFF</u>
05	ALL	RETURN TO LINE
06	CP	NOTIFY MAINTENANCE
07	ALL	PERFORM NORMAL SECURE CKLST
08	P/FE	LOG DISCREPANCY ON VIDS

13.1.2.12
OIL HOT LIGHT ON

13.1 ENGINE FAILURES

- 3 TAKEOFF PRIOR TO V REFUSAL
 - 01 ENGINE FIRE
 - 02 HORSEPOWER INDICATOR FAILURE
 - 03 TIT INDICATOR FAILURE
 - 04 RPM FAILURE
 - 05 FUEL FLOW INDICATOR FAILURE
 - 06 OIL PRESSURE LIGHT
 - 07 CHIPS LIGHT
 - 08 RED GENERATOR MECHANICAL WARNING LIGHT
 - 09 AUTO FEATHER
 - 10 MASTER ELECTRICAL LIGHT
 - 11 MASTER PRESSURE SYSTEM
 - 12 INDICATION OF LOW POWER @ 80KTS IAS
 - 13 OIL HOT LIGHT

13.1.3
TAKEOFF PRIOR
TO V REFUSAL

13.1.3

01	ENGINE FIRE	
01	ANY	NOTE FIRE LIGHT ON, HORN ON
02	FE	CALL OUT "FIRE ON NUMBER ____"
03	P	CALL "FEATHER AND ABORT"
04	FE	<u>PULL</u> APPROPRIATE E HANDLE TO FEATHER ENGINE AND HRD DISCHARGE
05	P	RETARD POWER LEVERS TO <u>REVERSE</u>
06	CP	NOTIFY TOWER OF ABORT AND REASON
07	ALL	PERFORM ENGINE FIRE ON GROUND CHECKLIST (REF 13.1.1.10)
IF		FIRE OUT
08	CP	CALL FOR TAXI CLEARANCE TO LINE
09	ALL	RETURN TO LINE
10	CP	NOTIFY MAINTENANCE
11	ALL	PERFORM SHUTDOWN CHECKLIST
12	P/FE	LOG DISCREPANCY ON VIDS
OTHERWISE		FIRE NOT OUT
08	P	STOP AIRCRAFT
09	FE	SECURE ENGINES, APU
10	ALL	EVACUATE AIRCRAFT AT PILOT'S DISCRETION

13.1.3.01
ENGINE FIRE

13.1.3

A-3-14, C-3-28

02 HORSEPOWER INDICATOR FAILURE

- 01 FE NOTE HP INDICATOR FAILURE
- 02 FE REPORT FAILURE TO PILOT
- 03 P CALL "ABORT"
- 04 P RETARD POWER LEVERS TO REVERSE
- 05 CP NOTIFY TOWER OF ABORT AND REASON
- 06 CP CALL FOR TAXI CLEARANCE
- 07 ALL RETURN TO LINE
- 08 CP NOTIFY MAINTENANCE
- 09 ALL PERFORM NORMAL SECURE CHECKLIST
- 10 P/FE LOG DISCREPANCY ON VIDS

TAEG REPORT NO. 7

13.1.3.02
HORSEPOWER
INDICATOR FAILURE

13.1.3

A-3-14, C-3-28

- 03
- 01 FE TIT INDICATOR FAILURE
 - 02 FE NOTE INDICATOR FAILURE
 - 03 P REPORT INDICATOR FAILURE TO P
 - 04 P CALL "ABORT"
 - 05 P RETARD POWER LEVERS TO REVERSE
 - 06 CP NOTIFY TOWER OF ABORT AND REASON
 - 07 CP CALL FOR TAXI CLEARANCE
 - 08 ALL RETURN TO LINE
 - 09 CP NOTIFY MAINTENANCE
 - 10 ALL PERFORM NORMAL SECURE SHUTDOWN CHECKLIST
 - 10 P/FE LOG DISCREPANCY ON VIDS

13.1.3.03
TIT INDICATOR
FAILURE

13.1.3

A 3-14, C-3-28

04	RM FAILURE
01	FE NOTE RM FAILURE
02	FE REPORT FAILURE TO PILOT
03	P CALL "ABORT"
04	P RETARD POWER LEVER TO <u>REVERSE</u>
05	CP NOTIFY TOWER OF ABORT
06	CP CALL FOR TAXI CLEARANCE TO LINE
07	ALL RETURN TO LINE
08	CP NOTIFY MAINTENANCE
09	ALL PERFORM NORMAL SECURE CHECKLIST
10	P/FE LOG DISCREPANCY ON VIDS

13.1.3.04
RM FAILURE

13.1.3

A-3-14, C-3-28

- 05 FUEL FLOW FAILURE
- 01 FE NOTE FUEL FLOW INDICATOR FAILURE
- 02 FE NOTIFY PILOT OF FAILURE
- 03 P CALL "ABORT"
- 04 P RETARD POWER LEVERS TO REVERSE
- 05 CP NOTIFY TOWER OF ABORT
- 06 CP CALL FOR TAXI CLEARANCE TO LINE
- 07 ALL RETURN TO LINE
- 08 CP NOTIFY MAINTENANCE
- 09 ALL PERFORM NORMAL SECURE CHECKLIST

13.1.3

06

A-1-79, C-1-110

OIL PRESSURE LIGHT ON

01	FE	NOTE OIL PRESSURE LIGHT ON
02	FE	NOTIFY P "OIL PRESSURE LIGHT ON"
03	P	CALL "ABORT"
04	CP	NOTIFY TOWER OF ABORT AND REASON
05	P	RETARD POWER LEVERS TO <u>REVERSE</u>
06	FE	CHECK POWER SECTION & GEARBOX PRESSURE INDICATORS TO SEE WHICH IS LOW. (POWER SECTION < 40 psi; GEAR BOX < 130 psi)
07	P	CALL "SECURE ENGINE"
08	FE	SECURE APPROPRIATE FUEL IGNITION SWITCH
09	CP	CALL FOR TAXI CLEARANCE TO LINE
10	ALL	RETURN TO LINE
11	CP	NOTIFY MAINTENANCE
12	ALL	PERFORM NORMAL SHUTDOWN CHECKLIST
13	P/FE	LOG DISCREPANCY ON VIDS

13.1.3.06
OIL PRESSURE
LIGHT ON

13.1.3 07 CHIPS LIGHT ON A-1-79, C-1-110

- 01 FE NOTE CHIPS LIGHT ON
- 02 FE NOTIFY PILOT "CHIPS LIGHT ON"
- 03 P CALL "ABORT"
- 04 CP NOTIFY TOWER OF ABORT AND REASON
- 05 P RETARD POWER LEVERS TO REVERSE
- 06 P CALL FOR ENGINE TO BE SECURED
- 07 FE PULL APPROPRIATE HANDLE
- 08 CP CALL FOR TAXI CLEARANCE TO LINE
- 09 ALL RETURN TO LINE
- 10 CP NOTIFY MAINTENANCE
- 11 ALL PERFORM NORMAL SECURE CHECKLIST
- 12 P LOG DISCREPANCY ON VIDS

13.1.3

A-1-79, A-5-28
C-1-109, C-5-33

RED GENERATOR MEACHNICAL WARNING LIGHT ON

08

NOTE RED GENERATOR LIGHT ON

01 FE

NOTIFY PILOT GENERATOR LIGHT ON

02 FE

AYC 314 NOT INSTALLED
CALL "FEATHER AND ABORT"

IF

03 P

PULL RESPECTIVE E HANDLE

04 FE

RETARD POWER LEVER TO REVERSE

05 P

NOTIFY TOWER OF ABORT AND REASON

06 CP

CALL FOR TAXI CLEARANCE TO LINE

07 CP

RETURN TO LINE

08 ALL

NOTIFY MAINTENANCE

09 CP

PERFORM NORMAL SECURE CHECKLIST

10 ALL

LOG DISCREPANCY ON VIDS

11 P/FE

OTHERWISE

AYC 314 IS INSTALLED

ALL CONTINUE MISSION IF REQUIRED
(NOTE: GENERATOR CAN BE OPERATED UP TO 10 HOURS)

03

13.1.3.08
RED GENERATOR
MECHANICAL WARNING
LIGHT ON

13.1.3

09

AUTO FEATHER

01 FE NOTE APPROPRIATE ENGINE INSTRUMENTS

STOP FUNCTIONING

02 FE NOTIFY P OF ENGINE POWER LOSS

03 P CALL "FEATHER AND ABORT"

04 FE PULL RESPECTIVE E HANDLE

05 CP NOTIFY TOWER OF ABORT AND REASON

06 P RETARD POWER LEVERS TO REVERSE

07 CP CALL FOR TAXI CLEARANCE TO LINE

08 ALL RETURN TO LINE

09 CP NOTIFY MAINTENANCE

10 ALL PERFORM NORMAL SECURE CHECKLIST

11 P/FE LOG DISCREPANCY ON VIDS

13.1.3

10		MASTER ELECTRICAL LIGHT	A-1-80, C-1-110	
01	FE	NOTE MASTER ELECTRICAL LIGHT <u>ON</u>		
02	FE	REPORT LIGHT ON TO PILOT		
03	P	CALLS "ABORT"		
04	CP	NOTIFY TOWER OF ABORT AND REASON		
05	P	RETARD POWER LEVERS TO <u>REVERSE</u>		
06	CP	CALL FOR TAXI CLEARANCE TO LINE		
07	ALL	RETURN TO LINE		
08	FE	CHECK OVERHEAD PANEL FOR POSSIBLE CAUSES (GENERATOR LIGHTS (3); TR OVERHEAT LITES (3))	A-1-74, C-1-106, A-5-40, C-5-34	
IF	01	FE	VERIFY TR OVERHEAT LIGHT <u>ON</u>	
		01	FE	PULLS RESPECTIVE CB
		02	ALL	PROCEED TO 13.1.03.10.9 (NOTIFY MAINTENANCE)
OTHERWISE	02	FE	VERIFIES GENERATOR LIGHT ON	
		01	FE	PERFORMS OVERVOLTAGE RESET

13.1.3.10
MASTER ELECTRICAL
LIGHT

13.1.3.10 MASTER ELECTRICAL LIGHT (CONTINUED)

IF

01 FE PLACE GENERATOR SW TO RESET

02 FE MONITOR GENERATOR LIGHT

03 FE VERIFY LIGHT OUT

04 ALL PROCEED TO 13.1.03.10.9 (NOTIFY MAINT)

OTHERWISE

03 FE VERIFY LIGHT ON STEADY

04 FE PROCEED TO 13.1.03.10.08.02.02 (UNDERVOLTAGE RESET)

IF

03 FE VERIFY LIGHT OUT MOMENTARILY AND COMES
BACK ON

01 FE TURN GENERATOR SW OFF

04 ALL PROCEED TO 13.1.03.10.9 (NOTIFY MAINT)

02 FE PERFORM UNDERVOLTAGE RESET

01 FE PLACE GENERATOR SW OFF

02 FE FULL AND RESET RESPECTIVE GENERATOR

CONTROL CIRCUIT BREAKER (ESS DC BUS)

03 FE PLACE GENERATOR SW ON

IF

04 FE VERIFY LIGHT OUT

05 ALL PROCEED TO 13.1.03.10.9

13.1.3.10
MASTER ELECTRICAL
LIGHT

13.1.3.1C MASTER ELECTRICAL LIGHT (CONTINUED)

OTHERWISE

04 FE VERIFY LIGHT OUT MOMENTARILY
AND COMES BACK ON

05 FE PLACES GENERATOR SW OFF

06 ALL PROCEED TO 13.1.03.10.9

04 FE VERIFY GENERATOR LIGHT ON STEADY

05 FE TURN GENERATOR S' OFF

(NOTE: LIGHT ON STEADY INDICATES FEEDER FAULT
OR POSSIBLE GENERATOR MECHANICAL FAILURE)

(NOTE: IF AYC 314 INSTALLED PERMISSIBLE TO LEAVE ENGINE
OPERATING FOR UP TO 10 HOURS)

01 FE PULL E HANDLE AT PILOT'S DISCRETION

06 ALL PROCEED TO 13.1.03.10.9

09 CP NOTIFY MAINTENANCE

10 ALL PERFORM NORMAL SECURE CHECKLIST

11 P/FE LOG DISCREPANCY ON VIDS

IF

13.1.3.10
MASTER ELECTRICAL
LIGHT

13.1.3

11 MASTER PRESSURE SYSTEM LIGHT ON A-1-80, C-1-110

- 01 FE NOTE MASTER PRESSURE SYSTEM LIGHT ON
- 02 FE NOTIFY PILOT LIGHT ON
- 03 P CALL "ABORT"
- 04 CP NOTIFY TOWER OF ABORT AND REASON
- 05 P RETARD POWER LEVERS TO REVERSE
- 06 P TAXI OFF RUNWAY
- 07 FE PERFORM TROUBLE SHOOTING TO DETERMINE CAUSE. REFER TO 13.1.2.10 STEPS 01 THRU 04
- 08 CP CALL FOR TAXI CLEARANCE TO LINE
- 09 ALL RETURN TO LINE
- 10 CP NOTIFY MAINTENANCE
- 11 ALL PERFORM SHUTDOWN CHECKLIST
- 12 P/FE LOG DISCREPANCY ON VIDS

13.1.3.11
 MASTER PRESSURE
 LIGHT ON

13.1.3

12 INDICATION OF LOW POWER \pm 80 KTS IAS A-3-14, C-3-28

01 FE NOTICE LOW HP ON SHP INDICATOR

(NOTE: FORECAST POWER IS DETERMINED FROM

FIG 11-19 AND 11-20 FOR -10 ENG AND FIG

12-19 AND 12-20 FOR -14 ENG)

02 FE ADVISE PILOT OF LOW HP READING

03 P CALL "ABORT" AT PILOT'S DISCRETION

04 CP NOTIFY TOWER OF ABORT AND REASON

05 P RETARD POWER LEVERS TO REVERSE

06 P TAXI OFF RUNWAY

VP-30 07 FE SECURE APPROPRIATE FUEL IGNITION SWITCH
AT P DISCRETION

VP-31 07 FE PULL E HANDLE - AT P DISCRETION

08 CP CALL FOR TAXI CLEARANCE TO LINE

09 ALL RETURN TO LINE

10 CP NOTIFY MAINTENANCE

11 ALL PERFORM SHUTDOWN CHECKLIST

12 P/FE LOG DISCREPANCY ON VIDS

TAEG REPORT NO. 7

13.1.3.12
INDICATION OF LOW
POWER AT 80 KTS IAS

A-1-79, C-1-110

13.1.3

- 13 OIL HOT LIGHT
- 01 FE NOTE OIL HOT LIGHT ON
 - 02 FE ADVISE P OF OIL HOT LIGHT ON
 - 03 P CALL "ABORT"
 - 04 P RETARD POWER LEVERS TO REVERSE
 - 05 P TAXI OFF RUNWAY
 - 06 FE ACTIVATE OIL COOLER DOOR SWITCH TO OPEN
- (NOTE: PERMITTED 30 MINUTES TO COOL BEFORE HAVE TO SECURE)
- IF OIL HOT LIGHT GOES OUT
- 07 ALL CONTINUE MISSION
- IF OIL HOT LIGHT DOES NOT GO OUT
- 07 FE PULL E HANDLE
 - 08 CP CALL GROUND CONTROL FOR CLEARANCE BACK TO LINE
 - 09 ALL TAXI TO LINE
 - 10 CP NOTIFY MAINTENANCE
 - 11 ALL PERFORM NORMAL SECURE CHECKLIST
 - 12 P/FE LOG DISCREPANCY ON VIDS

13.1.3.13
OIL HOT LIGHT

- 13.1 ENGINE FAILURES
- 4 AIRBORNE EMERGENCIES
 - 01 ENGINE FIRE
 - 02 SHP INDICATOR FAILURE
 - 03 TIT INDICATOR FAILURE
 - 04 REN INDICATOR FAILURE
 - 05 FUEL FLOW INDICATOR FAILURE
 - 06 OIL PRESSURE LIGHT
 - 07 CHIPS LIGHT
 - 08 GENERATOR MECHANICAL WARNING LIGHT
 - 09 AUTO FEATHER
 - 10 MASTER ELECTRICAL LIGHT
 - 11 MASTER PRESSURE SYSTEM
 - 12 OIL POT LIGHT
 - 13 TD (TEMP DATUM) SYSTEM MALFUNCTION

13.1.4
AIRBORNE EMERGENCIES

13.1.4 A-5-2, C-5-35

- 01 ENGINE FIRE
- 01 ANY NOTE FIRE LIGHT ON HORN ON
- 02 ANY NOTIFY PILOT, "FIRE ON NUMBER ____"
- 03 P CALL "FEATHER ENGINE NO. ____" AND "DISCHARGE HRD"
- 04 FE PULL APPROPRIATE E HANDLE TO FEATHER ENGINE AND DISCHARGE HRD
- IF FIRE NOT OUT AFTER 10 SECONDS
- 01 FE HRD TRANSFER SW TO ALTERNATE
- 02 P/FE HRD BUTTON TO DISCHARGE AT P DISCRETION
- OTHERWISE FIRE OUT
- 05 FE CHECK ENGINE INSTRUMENTS TO INSURE ENGINE FEATHERED
- 06 P/CP AS APPROPRIATE VISUALLY CONFIRM FEATHER
- 07 FE INSURE FEATHER BUTTON LIGHT IS OUT
- IF 01 FE VERIFY FEATHER BUTTON LIGHT IS ON
- 02 FE PULL APPROPRIATE CONTROL CB
- OTHERWISE 03 CP NOTIFY TOWER OR APPROPRIATE CONTROL AGENCY OF ENGINE FIRE AND REQUEST PERMISSION TO RETURN TO BASE
- 09 P CALL FOR EMERGENCY SHUTDOWN CHECKLIST (IF TIME PERMITS)
- 10 P CALL FOR LANDING CHECKLIST

13.1.4.01 (CONTINUED)

- 11 ALL PERFORM LANDING CHECKLIST
- 12 ALL LAND, TAXI TO LINE & PERFORM NORMAL SHUTDOWN
- 13 CP NOTIFY MAINTENANCE
- 14 P/FE LOG DISCREPANCY ON VIDS

13.1.4.3.
ENGINE FIRE

13.1.4

02	SHP INDICATOR FAILURE
01	FE NOTE SHP INDICATOR FAILURE
02	FE REPORT FAILURE TO P
03	FE CHECK APPROPRIATE CIRCUIT BREAKERS
IF	PILOT'S DISCRETION
04	ALL CONTINUE MISSION
04	ALL RETURN TO BASE
OTHERWISE	04

13.1.4

03 TIT INDICATOR FAILURE

01 FE NOTE INDICATOR FAILURE

02 FE REPORT FAILURE TO P

03 FE CHECK APPROPRIATE CIRCUIT BREAKER
IF AT PILOT'S DISCRETION

04 ALL CONTINUE MISSION

OTHERWISE

04 ALL RETURN TO BASE

13.1.4.03
TIT INDICATOR
FAILURE

A5-7, C5-41

13.1.4

- 04 RPM INDICATOR FAILURE
 - 01 FE NOTE RPM FAILURE
 - 02 FE REPORT FAILURE TO PILOT
 - 03 FE TURN OFF APPROPRIATE SYNCH SERVO SWITCH
- IF ALL OTHER ENGINE INSTRUMENTS ARE NORMAL.
- 04 ALL CONTINUE MISSION AT PILOT'S DISCRETION
- OTHERWISE
- 04 FE NOTE ABNORMAL RPM FLUCTUATIONS OR ENGINE INSTRUMENT READINGS ABNORMAL
 - 01 FE VERIFY SYNC SERVO SW. OFF
 - 02 FE MOVE TEMP DATUM CONTROL TO NULL CONDITION. STILL EXISTS
 - 03 FE PULL E HANDLE IF PROP PUMP LIGHT OUT
 - 03 FE VERIFY EITHER PROP PUMP LIGHT ON. DO NOT FEATHER.
 - 04 CP NOTIFY TOWER OR APPROPRIATE CONTROL AGENCY FOR RETURN TO BASE CLEARANCE
 - 05 ALL RETURN TO BASE

13.1.4

05 FUEL FLOW INDICATOR FAILURE

01 FE NOTE FUEL FLOW FAILURE

02 FE NOTIFY P OF FAILURE

IF ON TAKEOFF AFTER VR

01 ALL CONTINUE TAKEOFF TO SAFELY AIRBORNE

03 FE CHECK APPROPRIATE CIRCUIT BREAKER

IF PILOT DISCRETION

04 ALL CONTINUE MISSION

OTHERWISE

04 ALL RETURN TO BASE

13.1.4.05
FUEL FLOW
INDICATOR FAILURE

13.1.4

A-5-40, C-5-40

- 06 OIL PRESSURE LIGHT
- 01 FE NOTES LIGHT ON
 - 02 FE NOTIFY PILOT OIL PRESSURE LIGHT ON
ON TAKEOFF AFTER VR
 - 03 ALL CONTINUE TAKEOFF TILL SAFELY AIRBORNE
 - 04 FE CHECK POWER SECTION GAUGES > 40 psi
 - 05 FE CHECK GEAR BOX GAUGES > 130 psi
 - 06 P CALL "FEATHER ENGINE NO. _____"
 - 07 FE PULL APPROPRIATE E HANDLE
 - 08 P CALL FOR EMERGENCY SHUTDOWN CHECKLIST
 - 09 ALL PERFORM EMERGENCY SHUTDOWN CHECKLIST
 - 10 CP CALL TOWER OR APPROPRIATE CONTROL AGENCY
FOR CLEARANCE
 - 11 ALL RETURN TO BASE

A 5-3, C-5-37

13.1.4.06
OIL PRESSURE
LIGHT ON

13.1.4

07 CHIPS LIGHT

C-1-110, C-5-35

- 01 FE NOTE CHIPS LIGHT ON
- 02 FE NOTIFY PILOT

IF ON TAKEOFF AFTER VR

01 ALL CONTINUE TAKEOFF UNTIL SAFELY AIRBORNE

IF NO EMERGENCY REQUIRING POWER EXISTS

03 P CALL "FEATHER ENGINE NO."

04 FE FULL APPROPRIATE E HANDLE

05 P CALL FOR EMERGENCY SHUTDOWN CHECKLIST

06 CP/FE PERFORM EMERGENCY SHUTDOWN CHECKLIST

07 CP NOTIFY TOWER OR APPROPRIATE CONTROL AGENCY
FOR RETURN TO BASE CLEARANCE

13.1.4

03 GENERATOR MECHANICAL WARNING LIGHT

01 FE NOTE GENERATOR LIGHT ON

02 FE NOTIFY P LIGHT ON

IF ON TAKEOFF AFTER VR

01 ALL CONTINUE TAKEOFF TILL SAFELY AIRBORNE
IF AYC 314 NOT INSTALLED

03 P CALL "FEATHER ENGINE NO ____"

04 FE PULL APPROPRIATE E HANDLE

05 P CALL FOR "EMERGENCY SHUTDOWN CHECKLIST"

A-5-3, C-5-37

06 CP/FE PERFORM EMERGENCY SHUTDOWN CHECKLIST

07 CP CALL TOWER OR APPROPRIATE CONTROL AGENCY

FOR RETURN TO BASE CLEARANCE

OTHERWISE AYC 314 IS INSTALLED

03 ALL CONTINUE MISSION IF REQUIRED

(NOTE: GENERATOR MAY BE OPERATED UP TO 10 HOURS)

13.1.4

09 AUTO FEATHER

01 FE NOTE APPROPRIATE ENGINE INSTRUMENTS STOP FUNCTIONING

02 FE NOTIFY P OF ENGINE POWER LOSS

IF ON TAKEOFF AFTER VR

01 P CONTINUE TAKEOFF TILL SAFELY AIRBORNE

03 P CALL "FEATHER ENGINE NO. _____"

04 FE PULL APPROPRIATE E HANDLE

05 P CALL FOR EMERGENCY SHUTDOWN CHECKLIST

06 CP/FE PERFORM EMERGENCY SHUTDOWN CHECKLIST

07 CP NOTIFY TOWER OR APPROPRIATE CONTROL AGENCY

FOR RETURN TO BASE CLEARANCE

A-5-3, C-5-37

13.1.4.09
AUTO FEATHER

13.1.4

A-1-80, C-1-110

10 MASTER ELECTRICAL LIGHT

01 FE NOTE MASTER ELECTRICAL LIGHT ON

02 FE REPORT LIGHT ON TO PILOT

IF ON TAKEOFF AFTER VR

01 P CONTINUE TAKEOFF TILL SAFELY AIRBORNE

03 FE CHECK OVERHEAD ELECTRICAL PANEL FOR CAUSES:

GENERATOR LIGHTS (3); TR OVERHEAT LIGHTS (3)

(NOTE: REFER TO 13.1.03.10.08 FOR TROUBLESHOOTING
PROCEDURE)

04 CP CALL TOWER OR APPROPRIATE AGENCY FOR RETURN

TO BASE CLEARANCE AT PILOTS DISCRETION

05 ALL RETURN TO BASE

13.1.4

A-1-80, C-1-110

- 11 MASTER PRESSURE SYSTEM
 - 01 FE NOTE MASTER PRESSURE SYSTEM LIGHT ON
 - 02 FE NOTIFY PILOT LIGHT ON
 - IF ON TAKEOFF AFTER VR
 - 01 ALL CONTINUE TAKEOFF TILL SAFELY AIRBORNE
 - 03 FE CHECK OVERHEAD PANEL FOR POSSIBLE CAUSE
- (NOTE: REFER TO 13.1.02.10.2 FOR TROUBLESHOOTING PROCEDURE)
- IF PILOT'S DISCRETION
 - 04 ALL CONTINUE MISSION
 - 04 CP CALL TOWER OR APPROPRIATE CONTROL AGENCY FOR RETURN TO BASE CLEARANCE

OTHERWISE

A-1-79 C-1-110
 A-1-148/149 C-1-160
 A-5-40 C-5-40

- 13.1.4
- 12 OIL HOT LIGHT
- 01 FE NOTE OIL HOT LIGHT ON
- 02 FE ADVISE P HOT LIGHT ON
- IF ON TAKEOFF AFTER VR
- 03 ALL CONTINUE TAKEOFF TILL SAFELY AIRBORNE
- 04 FE CHECK APPROPRIATE OIL TEMP GAUGE FOR TEMP
- 05 FE ACTIVATE OIL COOLER FLAP SWITCH TO OPEN
- IF 06 FE VERIFY OIL HOT LIGHT GOES OUT AND TEMP \leq 100°C.
- IN FIVE MINUTES
- 07 ALL CONTINUE MISSION
- OTHERWISE 06 FE VERIFY HOT LIGHT ON OR TEMP $>$ 100°C.
- AFTER FIVE MINUTES
- 07 P CALL FOR EMERGENCY SHUTDOWN CHECKLIST A-5-3, C-5-37
- 08 CP/FE PERFORM EMERGENCY SHUTDOWN
- 09 CP NOTIFY TOWER OR APPROPRIATE CONTROL AGENCY
- AND REQUEST RETURN TO BASE CLEARANCE
- 10 ALL RETURN TO BASE

13.1.4.12
 OIL HOT LIGHT

13.1.4

- 13 TD (TEMP DATUM) SYSTEM MALFUNCTION A-5-2, C-5-37
- 01 ANY NOTE TIT, SHP, FUEL FLOW INDICATORS FLUCTUATING
- 02 FE PUT TD CONTROL SWITCH FOR AFFECTED ENGINE IN NULL
IF FLUCTUATIONS CEASE
- 03 ALL CONTINUE MISSION
- OTHERWISE
- 03 FE VERIFY ENGINE INSTRUMENTS FLUCTUATIONS
- 04 P CALL FOR EMERGENCY SHUTDOWN CHECKLIST
- 05 CP/FE PERFORM EMERGENCY SHUTDOWN CHECKLIST
- 06 CP NOTIFY TOWER OR APPROPRIATE CONTROL AGENCY
OF SITUATION AND REQUEST RETURN TO BASE CLEARANCE
- 07 ALL RETURN TO BASE

13.2 PROPELLER MALFUNCTION

- 1 TAXI
 - 01 PROPELLER PUMP NO. 1 LIGHT ON
 - 02 PROPELLER PUMP NO. 2 LIGHT ON
- 2 TAKEOFF PRIOR TO REFUSAL
 - 01 PROPELLER MALFUNCTION
- 3 TAKEOFF AFTER REFUSAL
 - 01 PROPELLER MALFUNCTION
- 4 IN-FLIGHT
 - 01 PROPELLER FAILS TO FEATHER
 - 02 PROPELLER OVERSPEED
 - 03 PITCHLOCKED PROPELLER

13.2
PROPELLER
MALFUNCTION

13.2.1 TAXI A-3-9, C-3-23

01 PROP PUMP NO. 1 LIGHT ON
FE NOISE PROP PUMP NO. 1 LIGHT ON

IF ENGINE IN LOW RPM

02 FF PLACE LOW/NORMAL SW TO NORMAL

03 FE VERIFY LIGHT O/T

04 ALL CONTINUE MISSION

OTHERWISE ENGINE IN NORMAL RPM

02 FE PLACE FUEL AL. IGNITION SW OFF

03 CP NOTIFY MAINTENANCE

04 ALL RETURN TO LINE

05 ALL PERFORM NORMAL SECURE CHECKLIST

06 P/FE LOG DISCREPANCY ON VIDS

13.2.1.01
PROP PUMP NO. 1
LIGHT ON

13.2.1

- 02 PROP PUMP NO. 2 LIGHT ON
 - 01 FE NOTE PROP PUMP NO. 2 LIGHT ON
 - 02 FE NOTIFY PILOT
 - 03 FE PLACE FUEL/IGNITION SW TO OFF
 - 04 CP NOTIFY MAINTENANCE
 - 05 ALL RETURN TO LINE
 - 06 ALL PERFORM NORMAL SECURE CHECKLIST
 - 07 P/FE LOG DISCREPANCY ON VIDS

13.2.2

A-5-7, C-5-30

01 PROPELLER MALFUNCTIONS PRIOR TO REFUSAL

- 01 FE VERIFY PROP PUMP NO. 1 OR NO. 2 ON OR
RPN STABILIZES OVER 103.5%
- 02 FE NOTIFY PILOT OF MALFUNCTION
- 03 P CALL "FEATHER AND ABORT"
- 04 FE PULL E HANDLE
- 05 P RETARD POWER LEVERS
- 06 P MAINTAIN DIRLCTIONAL CONTROL WITH POWER AND
BRAKES/NOSE GEAR STEERING
- 07 CP NOTIFY TOWER OF ABORT AND REQUEST TAXI CLEARANCE
- 08 P TAXI CLEAR OF ACTIVE
- 09 CP NOTIFY MAINTENANCE:
- 10 ALL RETURN TO LINE
- 11 ALL PERFORM NORMAL SECURE CHECKLIST
- 12 P/FE LOG DISCREPANCY ON VIDS

TABG REPORT NO. 7

13.2.2.01
PROPELLER MALFUNCTION
PRIOR TO REFUSAL

13.2.3 TAKEOFF AFTER REFUSAL
A-5-7, C-5-30

01 PROPELLER MALFUNCTIONS
01 FE NOTE EITHER PROPELLER PUMP LIGHT ON OR
RPM STABILIZED OVER 103.5%

02 FE NOTIFY PILOT

03 P CONTINUE TAKEOFF, MANEUVER AIRCRAFT NOT TO
EXCEED 150 KTS IAS

04 P AT SAFE ALTITUDE DIRECTS ACTION AS PRESCRIBED
in 13.2.04 PROCEDURES

13.2.3.01
TAKEOFF AFTER
REFUSAL

01 PROPELLER FAILS TO FEATHER COMPLETELY A-5-9, C-5-41

01 FE PUL, E HANDLE

01 ALL VERIFY THAT PROPELLER CONTINUES TO ROTATE

02 P DECREASE AIRSPEED

03 FE VERIFY FEATHER BUTTON IN

04 FE PUSH E HANDLE IN

(NOTE: IF ENGINE HAS BEEN SECURED BECAUSE OF ENGINE FIRE OR FUEL LEAK, CAREFUL CONSIDERATION SHOULD BE GIVEN BEFORE PUSHING EMERGENCY SHUTDOWN HANDLE BACK IN. TEMPERATURES MAY BE SUFFICIENTLY HIGH TO CAUSE REIGNITION)

05 FE PULL OIL TANK SHUTOFF VALVE CIRCUIT BREAKER

06 FE PULL EMERGENCY SHUTDOWN HANDLE OUT

07 FE PUSH FEATHER PUMP PRESSURE CUTOFF OVERRIDE

08 FE IF THE LIGHT IN THE FEATHER BUTTON IS OUT, SELECT

ALTERNATE BUS FOR PROPELLERS NO. 1 AND NO. 4

09 FE CHECK PROP FEATHER CIRCUIT BREAKERS IN

13.2.4.01
PROPELLER FAILS
TO FEATHER

13.2.4.

02	FE	<u>PUSH FEATHER BUTTON IN</u>
	01	ALL VERIFY THAT PROPELLER CONTINUES TO ROTATE
	02	P DECREASE AIRSPEED
	03	FE <u>VERIFY FEATHER BUTTON IN</u>
IF		<u>LIGHT IN BUTTON ON</u>
	04	FE PERFORM PROP FAILS TO FEATHER PROCEDURE (SEE 13.2.4.01.01)
OTHERWISE		<u>LIGHT IN BUTTON OFF</u>
	04	FE ATTEMPT RESTART
IF		RESTART SUCCESSFUL
	05	ALL CONTINUE MISSION
OTHERWISE		RESTART NOT SUCCESSFUL
	05	FE PERFORM PROP FAILS TO FEATHER PROCEDURE (SEE 13.2.4.01.01)

13.2.4.01
PROPELLER FAILS
TO FEATHER

13.2.4

02 PROPPELLER OVERSPEED A-5-8, C-5-40-41

- 01 FE NOTE RPM INDICATOR $> 103.5\%$
- 02 FE VERIFY PROP PUMP 1 AND PROP PUMP 2 LIGHTS OUT
- 03 FE PLACE APPROPRIATE SYNC SERVO SW OFF
- IF 04 FE VERIFY RPM INDICATION RETURNS TO NORMAL IN
MECHANICAL GOVERNING
- 05 ALL CONTINUE MISSION
- OTHERWISE 04 FE VERIFY RPM INDICATION REMAINS $> 103.5\%$
- 05 FE NOTIFY PILOT
- 06 P CALL "FEATHER ENGINE NO. ___"
- 07 FE PULL E HANDLE

(NOTE: IF EITHER PROP PUMP LIGHT IS ON, DO NOT
FEATHER, REFER TO OPERATION WITH PITCHLOCKED PROP

13.2.04.3)

13.2.4

A-5-8/9, C-5-41/42

03 PITCHLOCKED PROPELLER

01 FE NOTE SYMPTOMS OF PITCHLOCKED PROPELLER (RPM STABILIZED AT FUEL GOVERNING RPM, RPM VARIES WITH POWER MOVEMENT, DECREASE IN ALTITUDE OR AIRSPEED CAUSES RPM TO DECREASE AND HORSEPOWER TO INCREASE)

IF 02 FE VERIFY RPM < 103.5%

03 P AT HIS DISCRETION CALLS FOR FEATHERING

04 FE PUSH APPROPRIATE FEATHER BUTTON OR PULL E HANDLE

OTHERWISE 02 FE VERIFY OVERSPEED RPM > 103.5%

03 FE ADVISE PILOT

04 FE PLACE PWR LEVER FULL FORWARD

05 FE VERIFY RPM > 103.5%

06 FE SELECT NORMAL ON PROP SYNC SERVO SW.

07 FE SELECT TEST ON FUEL GOVERNOR & PROP PITCH LOCK SW

13.2.4

- 03 PITCHLOCKED PROPELLER (CONTINUED)
- 08 FE MONITOR SHP INDICATOR TO INSURE SHP DOES NOT GO OK REMAIN NEGATIVE.
 (NOTE: FE ADVISES P TO DECREASE TAS TO INCREASE SHP)
- 09 FE MINIMIZE USE OF BLEED AIR FROM AFFECTED ENGINE
- 10 CP CONTACT APPROPRIATE CONTROL AGENCY FOR CLEARANCE TO NEAREST SUITABLE AIRPORT
- IF RANGE CRITICAL
- 11 P AT HIS DISCRETION MAY ELECT TO SHUT DOWN AN OPERATING ENGINE TO INCREASE RANGE
- OTHERWISE 12 P MANEUVER AIRCRAFT TO SUITABLE AIRPORT
- 13 FE RETARD POWER LEVER AS REQUIRED SO AS NOT TO EXCEED SHP LIMITS
- 14 ALL PERFORM NORMAL DESCENT AND LANDING CHECKLISTS
- 15 FE PLACE FUEL AND IGNITION SW OFF WHEN AIRSPEED AND POWER LIMITS REDUCE RPM TO 95% BUT NOT LESS THAN 130 KTS
- 16 P MANEUVER AIRCRAFT TO COMPLETE LANDING

13.2.4.03
 PITCHLOCKED
 PROPELLER

13.3

A-5-6/7, C-5-37

1 DECOUPLING IN FLIGHT

01 FE VERIFY ABNORMAL ENGINE INSTRUMENT READINGS
 IF DECOUPLE DUE TO FUEL CUTOFF OR ENGINE FAILURE

01 FE VERIFY FUEL FLOW AND SHP INDICATORS READ ZERO
 AND TIT DECREASING

02 FE NOTIFY PILOT

03 P CALL "FEATHER ENGINE NO. ___"

04 FE PULL E HANDLE

IF DECOUPLE DUE TO DECOUPLER FAILURE

01 FE VERIFY SHP READS ZERO, FUEL FLOW ABOUT 600 LBS/HR
 AND TIT ABOUT 550° C, AND RPM APPROX 100%

02 FE NOTIFY PILOT

03 P CALL "FEATHER ENGINE NO. ___"

04 FE PULL E HANDLE

IF DECOUPLE DUE TO PROPELLER FAILURE

01 FE VERIFY SHP ZERO, TIT ABOUT 550°, FUEL FLOW ABOUT
 600 LB/HR, RPM > 100%

02 FE NOTIFY PILOT

13.3.1
 DECOUPLING

13.3.1 DECOUPLING IN FLIGHT (CONTINUED)

03 P CALL "FEATHER ENGINE NO. ____"
 IF 04 FE VERIFY PROP PUMP LIGHTS OFF
 05 FE PULL E HANDLE

OTHERWISE

04 FE VERIFY PROP PUMP LIGHT ON
 05 FE PLACE FUEL & IGNITION SW OFF
 06 CP CALL APPROPRIATE CONTROL AGENCY OF EMERGENCY AND FO..
 CLEARANCE TO NEAREST SUITABLE AIRPORT
 07 P ALERT CREW AND DIRECT EMERGENCY PROCEDURES AS REQUIRED
 08 P MANEUVER AIRCRAFT TO AIRPORT
 09 ALL COMPLETE DESCENT & LANDING CHECKLISTS
 10 P LAND AIRCRAFT

13.4

1 FUSELAGE FIRE OR FIRE OF UNKNOWN ORIGIN

A-5-11, C-5-52

- 01 ANY DISCOVER SMOKE OR FIRE
- 02 ANY NOTIFY P
- 03 P CALL FOR FUS/ELECT FIRE OF UNK ORIG CKLST

A CP/TACCO ALERT CREW, ACTIVE FIRE BILL AND RESPOND "ALERTEED"

(NAVAIR 01-75PAA-1 page 5-11 Fig 5-3 OR

NAVAIR 01-75 PAC-1 page 5-2 and 5-3 FOR FIRE BILL)

01 ALL START SEARCH FOR ORIGIN

B FE TURN CABIN EXHAUST FAN OFF AND RESPOND "OFF"

(NOTE: RUNNER REPORTS IN PERSON OR ICS AFTER EACH

STEP AS TO ANY DISCOVERIES)

IF . FIRE SOURCE IS NOT DETERMINED

C FE TURN BUS A SW OFF

D FE PULL BOOST LEVERS

E FE TURN BUS B SW OFF

F FE TURN GEN 2 & GEN 3 SW'S OFF

G P/CP/FE DON SMOKE MASKS IF REQUIRED

H FE PLACE EITHER LEFT OR RIGHT EDC DUMP SW TO DUMP

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13.4.1 FUSELAGE FIRE
OR FIRE OF UNKNOWN
ORIGIN

13.4.1 FUSELAGE FIRE OR FIRE OF UNKNOWN ORIGIN (CONTINUED)

I P INITIATE EMERG DESCENT IF REQUIRED
<FLT IDLE, MIN DIFF ON CABIN PRESS, DUMP REMAINING EDC)
(NOTE: P MAY ELECT TO REMAIN AT ALT IF OXY IS PROVIDED
FOR ENTIRE CREW TO HELD IN COMBATING FIRE)

O1 CP MAKE EMERG TRANSMISSION AS REQUIRED AND IF REQUIRED
JETTISON IS PERFORMED

J FE PLACE ESS BUS SW OFF (ICS NOW INOP, RADIOS INOP)

K FE PLACE START SEL SW TO ANY ENGINE (FOR START ESS AC/DC
PWR TO TIT GAUGE)

(NOTE: THIS STEP MAY NOT BE PERFORMED IF DISTANCE FROM
LANDING WOULD TAKE TIME SUFFICIENT TO DEplete BATTERY)

(FLT INSTRUMENTS AVAILABLE: PILOTS TURN & SLIP, A/S, ALT,
WET COMPASS, VSI)

IF FIRE PERSISTS

L FE TURN #4 GEN SW OFF
(NOTE: AT ANY TIME DURING KLST IF ORIGIN OF FIRE IS
DETERMINED CREW NOTIFIES P AS TO LOCATION/CAUSE. CHECKLIST
WOULD BE STOPPED WHEN CAUSE IS DETERMINED FOR APPROPRIATE ACTION)

13.4.1 FUSELAGE FIRE
OR FIRE OF UNKNOWN
ORIGIN

13.4.1 FUSELAGE FIRE OR FIRE OF UNKNOWN ORIGIN (CONTINUED)

- 04 P AT HIS DISCRETION WILL RETURN TO BASE OR OTHER LANDING SITE
(NOTE: IF SOURCE OF FIRE DETERMINED/CAUSE OF FIRE CORRECTED:)
- 05 P CALL FOR "RESTORING ELECT PWR CKLST" OR SMOKE REMOVAL.
P CALL APPROPRIATE CKLST
- 06 CP READ RESTORING ELECT PWR CKLST
- A ALL PLACE OXY SEL OFF, RESPOND "OFF"
- B FE INSURE ALL AFFECTED EQUIP DISCONNECTED (IF POSSIBLE)
- C ALL REDUCE ELECT LOAD TO MIN (RADIO, NAV AIDS, SYSTEMS OFF)
- D FE TURN SYNCH SERVO SW'S OFF
- E FE TURN GEN SW'S ON - ONE AT A TIME
(NOTE: ALL OBSERVERS IN POSITION PER FIRE BILL TO VERIFY NO REOCCURRENCE OF FIRE)
- F FE BUS MONITOR SW'S ON, ONE AT A TIME
(NOTE: ALL OBSERVERS IN POSITION PER FIRE BILL TO VERIFY NO REOCCURRENCE OF FIRE)
- G ALL RESTORE ELECT LOAD AS REQUIRED (RADIOS, NAV AIDS, SYSTEMS)
- H FE VERIFY ENG START SEL OFF
- I FE TURN CABIN EX SW ON
- J FE PERFORM GOVERNOR INDEXING CHECK
- K CP CALL "CKLST COMPLETE"

13.4.1 FUSELAGE FIRE
OR FIRE OF UNKNOWN
ORIGIN

13.4

2 APU FIRE

01 ANY NOTE APU WARNING LIGHTS GLOW AND APU WARNING HORN SOUND
(NOTE: APU SHUTDOWN AND FIRE EXTINGUISHING SEQUENCE IS
AUTOMATIC)

IF REQUIRED

02 FE OPERATE MANUAL RELEASE SW
03 FE VERIFY APU SHUT DCWN
04 FE VERIFY APU INTAKE & EXHAUST DOORS LIGHT OUT
(NOTE: 20 SECONDS AFTER OPERATING MANUAL RELEASE SW THE
HRD WILL DISCHARGE IF EXHAUST DOOR DOES NOT CLOSE)

13.4

3 WING FIRE C-5-42, C-5-5

- 01 ANY NOTE SMOKE OR FIRE FROM WING SECTION
- 02 FE VERIFY ENGINE FIRE WARNING LIGHTS OUT
- 03 P COMMAND SHUTDOWN OF ENGINES ON AFFECTED WING
- 04 FE/CP PERFORM ENGINE SHUTDOWN PROCEDURE A-5-3 , C-5-37
- 05 ALL MONITOR AFFECTED WING FOR EVIDENCE OF FIRE
- 06 CP NOTIFY APPROPRIATE CONTROL AGENCY OF EMERGENCY
- 07 CP SET IFF CONTROL FOR TRANSMITTING EMERGENCY
- 08 P ASSESS SITUATION - DECISION TO LAND, DITCH OR
BAIL OUT AS SITUATION DICTATES

13.4

4 BRAKE FIRE A-5-13, C-5-28

- 01 ANY DISCOVER EVIDENCE OF BRAKE FIRE
- 02 ANY NOTIFY FLIGHT STATION
- 03 CP REQUEST FIRE FIGHTING EQUIPMENT
- 04 P STOP AIRCRAFT USING REVERSE THRUST IF POSSIBLE
WITHOUT BRAKES
- 05 P HOLD NOSE WHEEL STRAIGHT AHEAD
- 06 P RELEASE BRAKE ON BURNING WHEEL, OPPOSITE BRAKE
ON, SET PARKING BRAKE
- 07 FE SET RPM SW FOR ENGINE OVER BRAKE FIRE TO NORMAL.
- 08 P SET POWER ON ENGINE OVER BRAKE FIRE TO
APPROXIMATELY 1000 SHP
- 09 CP SET WING FLAPS TO TAKEOFF OR APPROACH
- 10 FE PULL E HANDLES FOR ENGINES NOT BEING USED
- 11 ALL UNNECESSARY CREW MEMBERS EVACUATE A/C ON SIDE
OPPOSITE FIRE AND PROCEED AFT OF A/C

UPON ARRIVAL OF FIRE FIGHTING EQUIPMENT

12 P/FE PULL REMAINING E HANDLES

13.4.4
BRAKE FIRE

13.4.4 BRAKE FIRE (CONTINUED)

- 13 FE SECURE APU
- 14 ALL EVACUATE AIRCRAFT

13.4.4
BRAKE FIRE

13.4
 5 SMOKE & FUME ELIMINATION A-5-12, C-5-3/4

- 01 ANY DETECT SMOKE OR FUMES
- 02 P CALL FOR FUS/ELECT FIRE UNK ORIGIN CKLST
- 03 ALL PERFORM FUSELAGE FIRE OR ELECTRICAL FIRE UNKNOWN

ORIGIN CHECKLISTS (SEE 13.4.1)

IF FIRE EXISTS

WITH NON ESS BUS AVAIL

- 04 P,CP,FE SMOKE MASK ON
- 05 P/CP NOTIFY CREW TO USE WALKAROUND OXYGEN BOTTLES
 SET TO 100% OXYGEN
- 06 P DESCENT TO SAFE ALTITUDE (DEPENDS UPON TERRAIN, ETC.)
- 07 FE SELECT OFF CABIN EXHAUST FAN SWITCH
- 08 FE OPEN AUX VENT SW. SELECT OPEN OUTFLOW VALVE SWITCH
 (NOTE: IF AT A SAFE ALTITUDE)
- 09 FE SELECT DUMP EDC DUMP SWITCHES
- 10 FE CLOSE AUX VENT AT 1" CABIN PRESS DIFFERENTIAL
- 11 P REDUCE A/S TO ≤ 170 KTS

13.4.5
 SMOKE & FUME
 ELIMINATION

13.4.5 SMOKE & FUME ELIMINATION(CONTINUED)

12 FE OPEN RIGHT HAND OVER-WING EMERG. EXIT

(NOTE: A/S MUST BE MAINTAINED BELOW 170 KTS)

13 FE OPEN OVERHEAD SMOKE REMOVAL DOOR

(NOTE: NEVER OPEN FLIGHT STATION EMERGENCY EXIT

UNTIL RIGHT HAND CABIN EMERGENCY EXIT IS OPEN)

13.5

1 EXPLOSIVE DECOMPRESSION

C-5-4

- 01 ALL DON EMERG. O₂
- 02 P ASCERTAIN CAUSE

IF CAUSE CANNOT BE REPAIRED IN FLIGHT

- 03 P DECIDE TO CONTINUE MISSION OR DESCEND TO A SAFE ALTITUDE

(SEE 13.7 FOR EMERGENCY DESCENT)

13.5.1
EXPLOSIVE
DECOMPRESSION

13.6

A-5-13

1 EMERGENCY DEPRESSURIZATION

01 ELECTRICAL POWER AVAIL - (MON ESS BUS ON)

01 FE PLACE AUX VENT SW OPEN

02 FE ELACE OUTFLOW VALVE SW OPEN

03 FE PLACE EDC DUMP SW'S TO DUMP

04 FE CLOSE AUX VENT SW AT 1 INCH DIFFERENTIAL

02 WITHOUT ELECTRICAL POWER AVAILABLE

01 P MANEUVER A/C TO 12,000 FT OR BELOW

02 E SET CABIN ALTITUDE CONTROL TO 10,000 FT

03 FE SET BAR CORR KNOB TO 28 IN HG

04 FE SET RATE KNOB TO MAX

IF NECESSARY TO OPEN OVERWING HATCH

05 FE PULL E HANDLE FOR #2 OR #3 AS APPROPRIATE

TAEG REPORT NO. 7

13.6.1
EMERGENCY
DECOMPRESSION

13.7

A-5-13/15

1 EMERGENCY DESCENT

- 01 P/CP EXTEND LAND GEAR
- 02 P DISENGAGE AUTO PILOT
- 03 P PWR LEVERS TO FLIGHT IDLE

- 04 P DESCEND AT SPEEDS UP TO 300 KTS IAS > FL 245. BELOW FL 245
MACH LIMITED BELOW FL 10 MAX A/S IS 250 KTS IAS
- 05 FE BEGIN RAPID DEPRESSURIZATION (SEE 13.6)
- 06 FE WINDSHIELD HEAT SWITCHES TO HIGH - (AFTER VERIFYING
CYCLING LIGHTS ARE ON)
- 07 CP NOTIFY APPROPRIATE CONTROL AGENCY OF EMERGENCY AND INFORM OF
EMERGENCY DESCENT

TAEG REPORT NO. 7

13.7.1
EMERGENCY DESCENT

- 13.8 APPROACH AND LANDING EMERGENCIES
- 1 ONE ENGINE INOPERATIVE LANDING
 - 2 TWO ENGINES INOPERATIVE LANDING
 - 3 TWO ENGINE INOPERATIVE WAVEOFF
 - 4 BOOST OFF LANDING
 - 5 EMERGENCY BRAKE OPERATION
 - 6 UNSAFE LANDING GEAR INDICATION LANDING
 - 7 UNLOCKED GEAR INDICATION LANDING
 - 8 FLAT TIRE LANDING
 - 9 LANDING WITHOUT ALL GEAR EXTENDED
 - 10 SOFT GROUND OR UNPREPARED SURFACE LANDING
 - 11 NO FLAP LANDING
 - 12 NO BETA LIGHT AFTER LANDING

13.8

A-5-9, C-5-43, C-5-45

1 ONE ENGINE INOPERATIVE LANDING

(NOTE: FOLLOW NORMAL PROCEDURES (SEE 8.2, 9.0, 9.3) WITH

ADDITIONAL PROCEDURES AS FOLLOWS.)

01 P BRIEF CP/FE TO ASSIST DURING APPROACH AND LANDING AS REQUESTED

02 P FLY NORMAL TRAFFIC PATTERN

IF CROSSWIND CONDITIONS

01 P PLAN LANDING TO POSITION INOP ENG UPWIND

03 P ADJUST POWER TO MAINTAIN DESIRED PATTERN AIRSPEED

04 P ADJUST RUDDER TRIM AS NECESSARY

05 P COMPLETE NORMAL LANDING

06 P WHEN NOSEWHEEL ON RUNWAY USE REVERSE AS DESIRED

07 P MAINTAIN DIRECTIONAL CONTROL WITH RUDDER & AILERON

08 CP HOLD CONTROL COLUMN FORWARD

09 P AS RUDDER EFFECTIVENESS DECREASES USE ASYMETRIC POWER AND

NOSE GEAR STEERING TO MAINTAIN DIRECTIONAL CONTROL

TAEG REPORT NO. 7

13.8.1
ONE ENGINE
INOPERATIVE LANDING

13.8

2

TWO ENGINE INOPERATIVE LANDING

A-5-6, C-5-43

- 01 P/CP CONTACT APPROPRIATE CONTROL AGENCY FOR WEATHER AT INTENDED LANDING SITE AND NOTIFY OF EMERGENCY
- 02 P CLOSELY CHECK WEATHER
- 03 CP REQUEST LANDING CLEARANCE ON LONGEST AVAILABLE RUNWAY
- 04 P BRIEF CP/FE FOR REQUIRED ASSISTANCE DURING APPROACH AND LANDING
- 05 P FLY NORMAL PATTERN USING POWER AS REQUIRED TO MAINTAIN 1.52 Vs (12 UNITS AOA) OR 160 KTS (WHICHEVER IS HIGHER) IN CLEAN CONFIGURATION
- 06 P CALL FOR TAKEOFF OR APPROACH FLAPS
- 07 CP SET FLAPS AND RESPOND
- 08 P ADJUST POWER AS REQUIRED TO MAINTAIN 145 KTS INDICATED (MINIMUM)
- 09 P TRIM RUDDER AS REQUIRED
- 10 P CALL FOR LANDING GEAR WHEN LANDING IS ASSURED
- 11 CP PLACE GEAR HANDLE IN DOWN POSITION AND CALL "GEAR DOWN"

13.8.2
TWO ENGINE
INOPERATIVE LANDING

13.8.2 TWO ENGINE INOPERATIVE LANDING (CONTINUED)

- 12 P ADJUST POWER TO MAINTAIN 145 KTS (MINIMUM)
- 13 P RETRIM RUDDER AS REQUIRED
- 14 P MAINTAIN 145 KTS ON FINAL APPROACH, CALL FOR LANDING FLAPS
IF DESIRED
- 15 CP SET DESIRED FLAPS
- 16 P DECREASE SPEED TO 1.3 Vs WITH LANDING FLAPS OR 1.35 Vs WITH
APPROACH FLAPS (12 UNITS AOA). SEE NATOPS FIG 5-2 OR FIG 5-9
- 17 P LAND A/C, LOWER NOSEGEAR, APPLY REVERSE THRUST TO OPERATIVE
ENGINES, MAINTAIN DIRECTIONAL CONTROL WITH RUDDER UNTIL NO
LONGER EFFECTIVE, THEN NOSE GEAR STEERING.
- 18 P TAXI IN NORMAL RPM

13.8.2
TWO ENGINE
INOPERATIVE LANDING

13.8

3 TWO ENGINE INOPERATIVE WAVEOFF

A-5-9, C-5-43

01 P MAINTAIN AIRSPEED--145 KNOTS MINIMUM

02 P/FE ADVANCE POWER LEVERS TO MAXIMUM POWER AS SOON AS

DIRECTIONAL CONTROL IS GAINED

03 P MAINTAIN OPTIMUM CONTROL BY HOLDING FAILED ENGINES

5 DEGREES HIGH

04 CP SET WING FLAP LEVER--TAKEOFF OR APPROACH AT PILOT'S COMMAND

05 CP RETRACT LANDING GEAR LEVER--UP

06 CP SET WING FLAP LEVER UP (150 KNOTS MINIMUM) AT PILOT'S
COMMAND

TAEG REPORT NO. 7

13.8.3
TWO ENGINE
INOPERATIVE WAVEOFF

13.8

4 BOOST OFF LANDING

- 01 P FLY TRAFFIC PATTERN SLIGHTLY WIDER THAN NORMAL
IF P DECIDES TO USE TAKEOFF OR APPROACH FLAPS
02 FE VERIFY CG NO FURTHER FORWARD THAN 25% MAC
03 CP SET FLAPS AT TAKEOFF OR APPROACH
04 P FLY A/C ON FINAL SLIGHTLY FLATTER THAN NORMAL
05 P LAND A/C NOSE HIGH WITH POWER ON
06 P AT TOUCHDOWN LOWER NOSEGEAR
07 P WHEN NOSEGEAR ON GROUND, APPLY REVERSE AS REQUIRED
WHEN A/S < 135 KTS, < 125 IF NO ELECTRICAL POWER
08 CP STEADY CONTROL COLUMN IN FORWARD POSITION
09 ALL COMPLETE NORMAL AFTER LANDING PROCEDURES

A-5-40, A-5-19-20,
C-5-44
A-3- FIG
C-3-37 FIG 3-10

TAEG REPORT NO. 7

13.8.4
BOOST OFF LANDING

13.8

A-1-91-92 C-1-121-122
A-5-42 C-5-44

5 EMERGENCY BRAKE OPERATION

IF HYDRAULIC BRAKE PRESSURE IS AVAILABLE

01 FE PLACE 1B HYDRAULIC PUMP ON

(NOTE: ALLOW 3 MINUTES FOR 1B PUMP TO CHARGE ACCUMULATOR)

02 P/CP APPLY BRAKES AS REQUIRED

(NOTE: A MINIMUM OF 8 FULL BRAKE APPLICATIONS IS AVAILABLE)

OTHERWISE

NO HYDRAULIC BRAKE PRESSURE IS AVAILABLE

01 P/CP PULL EMERGENCY HANDLE TO APPLY BRAKES

(NOTE: PULL HANDLE SLOWLY, DIFFERENTIAL BRAKING IS NOT AVAILABLE)

TAEK REPORT NO. 7

13.8.5
EMERGENCY BRAKE
OPERATION

13.8

6 LANDING WITH UNSAFE LANDING GEAR INDICATION

A-5-15, C-5-44

- 01 ANY NOTE UNSAFE INDICATION WHEN GEAR IS EXTENDED (RED LIGHT
IN GEAR HANDLE, UNLOCKED INDICATION OF LANDING GEAR
INDICATORS OR FLASHING RED LIGHTS ON INSTRUMENT PANEL)
- 02 P/CP OPERATE GEAR THRU UP/DOWN CYCLE THRU SEVERAL CYCLES
SAFE GEAR INDICATION IS RECEIVED
- 03 P MAKE NORMAL LANDING

OTHERWISE UNSAFE INDICATION PERSISTS

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TAEG REPORT NO. 7

- 03 P NOTIFY CREW, MAKE ALTERNATE PULLUPS AND PUSHOVERS TO
INCREASE G FORCES ON THE LANDING GEAR

IF SAFE INDICATION IS RECEIVED

- 04 P MAKE NORMAL LANDING

OTHERWISE UNSAFE INDICATION PERSISTS

- 04 FE PLACE HYD PUMP NO. 1 AND 1A SWITCHES TO OFF

- 05 P INCREASE AIRSPEED TO 300 KTS FOR MAXIMUM AIRLOAD ON
EXTENDED GEAR

13.8.6
LANDING WITH UNSAFE
LANDING GEAR
INDICATION

13.8.6 LANDING WITH UNSAFE LANDING GEAR INDICATION (CONTINUED)

IF SAFE INDICATION IS RECEIVED

06 FE PLACE HYD PUMP NO. 1 AND 1A SWITCHES TO ON

07 P MAKE NORMAL LANDING

OTHERWISE UNSAFE INDICATION PERSISTS

06 FE PLACE HYDRAULIC PUMP NO. 1 AND 1A SWITCHES TO ON

07 P FLY AIRCRAFT BY THE TOWER OR REQUEST VISUAL INSPECTION BY AN AIRCRAFT

IF LANDING GEAR APPEARS TO BE DOWN BUT UNSAFE INDICATION PERSISTS, PROCEED TO LANDING WITH UNLOCKED GEAR PROCEDURE

SECTION 13.8.7

13.8.6
LANDING WITH UNSAFE
LANDING GEAR
INDICATION

13.8

7 UNLOCKED GEAR INDICATION LANDING

A-5-15, C-5-46

01 P MAKE NORMAL LANDING

IF NOSE GEAR INDICATES UNLOCKED

02 P LOWER NOSE GEAR NORMALLY

03 P/CP HOLD YOKE FORWARD

04 P STOP A/C USING BRAKES AND POWER LEVERS AT FLT IDLE

05 ALL MAINTAIN POSITIVE THRUST AND HOLD POSITION WITH THE BRAKES

06 FE MAINTAIN HYDRAULIC PRESSURE

07 P/CP NOTIFY MAINTENANCE FOR INSERTION OF GEAR SAFETY PINS

08 P MAINTAIN POSITION UNTIL SAFETY PINS ARE INSERTED

09 ALL RETURN TO LINE

TAEG REPORT NO. 7

13.8.7
UNLOCKED GEAR
INDICATION LANDING

A-5-18-19, C-5-46

13.8

8 FLAT TIRE LANDING

IF NOSE GEAR TIRE FLAT

- 01 P/FE VERIFY AFT CG FOR LANDING
- 02 P MAKE NORMAL LANDING
- 03 P KEEP NOSEGEAR OFF RUNWAY AS LONG AS POSSIBLE
- 04 P USE MINIMUM BRAKING

IF ONE MAIN GEAR TIRE FLAT

- 01 P MAKE NORMAL LANDING
- 02 P LOWER NOSE GEAR AS SOON AS POSSIBLE
- 03 P STOP A/C USING REVERSE THRUST
- 04 P TAXI A/C SLOWLY

OTHERWISE BOTH TIRES ON ONE MAIN GEAR FLAT

- 01 P/FE VERIFY FWG CG FOR LANDING
- 02 P SELECT WIDEST AVAILABLE RUNWAY CONSISTENT WITH WIND CONDITIONS
- 03 P LAND A/C WITH APPROACH FLAPS IF POSSIBLE
- 04 P LAND A/C ON SIDE OF RUNWAY AWAY FROM FLAT TIRES
- 05 P LOWER NOSEGEAR AS SOON AS POSSIBLE

13.8.8
FLAT TIRE
LANDING

13.8.8 FLAT TIRE LANDING (CONTINUED)

06 P/CP DEFLECT ALLERON AWAY FROM FLAT TIRE SIDE
07 P MAINTAIN DIRECTIONAL CONTROL WITH ASYMETRIC POWER AND NOSE

GEAR STEERING

(NOTE: AVOID REVERSE THRUST PAST THE GROUND IDLE POSITION
ON SIDE WITH FLAT TIRES)

08 P STOP A/C

(NOTE: DO NOT USE BRAKES ON SIDE WITH FLAT TIRES)

09 P MAINTAIN POSITION ON RUNWAY

10 P/CP NOTIFY MAINTENANCE

IF EVIDENCE OF FIRE, SEE SECTION 13.4.4 BRAKE FIRE

13.8.8
FLAT TIRE
LANDING

13.8

9 LANDING WITHOUT ALL GEAR EXTENDED

A-5-18, C-5-47

IF THE NOSE GEAR IS DOWN AND LOCKED, AND ONE OR BOTH MAIN GEARS FAIL TO EXTEND, RETRACT ALL GEAR AS FAR AS POSSIBLE AND MAKE A WHEELS-UP LANDING.

- 01 ALL SECURE OR STOW LOOSE EQUIPMENT
- 02 P ORDER CREW TO FASTEN SEAT BELTS
- 03 FE DEPRESSURIZE CABIN
- 04 P ASSIGN A CREW MEMBER TO OPEN EMERGENCY EXITS AFTER A/C STOPS.
(NOTE: DO NOT OPEN AN EXIT IF FIRE EXISTS IN VICINITY)
(NOTE: FLIGHT CREW MAY ELECT TO REMOVE CERTAIN EMERGENCY EXITS PRIOR TO LANDING IF SPECIAL CIRCUMSTANCES INDICATE THIS IS CLEARLY ADVISABLE. IN THIS EVENT, REDUCE AIRSPEED TO 170 KNOTS PRIOR TO OPENING AN EXIT; DO NOT EXCEED THIS SPEED WHILE AN EXIT IS OPEN OVER THE WING)
- 05 FE TURN ALL FUEL BOOST PUMPS OFF
- 06 FE TURN FUEL AND IGNITION SWITCH ON ENGINES 2 AND 3 OFF
(NOTE: STEP 6 IS AN OPTIONAL BUT RECOMMENDED PROCEDURE WHICH WILL REDUCE ROTATIONAL ENERGY OF THE INBOARD PROPELLERS AND

TAEG REPORT NO. 7

13.8.9
LANDING WITHOUT
ALL GEAR EXTENDED

13.8.9 LANDING WITHOUT ALL GEAR EXTENDED (CONTINUED)

DECREASE EXPOSURE TO DAMAGE FROM PROPELLER FRAGMENTS. THIS SHOULD BE DONE SUFFICIENTLY EARLY DURING FINAL APPROACH TO ALLOW INBOARD PROPELLERS TO REACH A STABILIZED NTS WINDMILLING CONDITION AND TO PERMIT PILOT TO REESTABLISH A SMOOTH APPROACH USING POWER AS REQUIRED FROM ENGINE'S 1 AND 4.

07 CP EXTEND WING FLAPS TO LANDING POSITION AS SOON AS IT IS CERTAIN THAT LANDING AREA CAN BE REACHED

08 P HOLD AIRCRAFT OFF AS IN NORMAL LANDING. MAKE CONTACT AT A SPEED SLIGHTLY ABOVE STALL SPEED

(NOTE: STEP 9 SHOULD BE ACCOMPLISHED IMMEDIATELY ON CONTACT WITH GROUND.)

09 FE PULL EMERGENCY SHUTDOWN HANDLES (ALL FOUR ENGINES)

10 P REMOVE HAND FROM POWER LEVERS AS RANDOM MOTION OF POWER LEVERS AFTER GROUND CONTACT MAY CAUSE INJURY TO HAND

11 ALL EVACUATE AIRCRAFT IMMEDIATELY, USING ALL AVAILABLE EXITS.

13.8.9
LANDING WITHOUT
ALL GEAR EXTENDED

13.8 LANDING ON SOFT GROUND OR UNPREPARED SURFACE A-5-18, C-5-49

- IF LANDING GEAR EXTENDED
- 01 P MAKE NORMAL LANDING
- 02 P RETARD POWER LEVERS TO FLT IDLE AS SOON AS POSSIBLE
- 03 P WHEN POWER NO LONGER REQUIRED FOR DIRECTIONAL CONTROL OR STOPPING, COMMANDS FUEL CHOP FOR 4 ENGINES
- 04 FL PLACE FOUR FUEL AND IGNITION SWITCHES TO OFF
- 05 FE VERIFY HYDRAULIC PUMP NO. 1B ON

OTHERWISE LANDING GEAR RETRACTED, SEE SECTION 13.8.9 FOR PROCEDURE

13.8.10
LANDING ON SOFT
GROUND OR UNPREPARED
SURFACE

A-5-19-20, C-5-49

13.8

11 NO FLAP LANDING

- 01 P VERIFY A/C GROSS WT. NO FLAP - MANEUVER FLAP LANDINGS ARE NOT RECOMMENDED AT GROSS WEIGHTS EXCEEDING 91,320 LBS FOR STANDARD A/C OR 103,880 LBS FOR HEAVY WEIGHT A/C.
- 02 P/CP DETERMINE GROUND ROLL DISTANCE USING SECT XI OR XII PART 4 AND

FIGURE A-5-6 OR C-5-10

- 03 P SELECT APPROPRIATE RUNWAY FOR LANDING BASED ON STEP 2 AND WIND CONDITIONS

- 04 P MAINTAIN 1.52 Vs OR 160 KTS, WHICHEVER IS HIGHER ON DOWNWIND
(NOTE: SEE A-11-17, A-12-17 or C-11-17 FOR STALL SPEEDS)

- 05 P CALL FOR LANDING CHECKLIST

- 06 ALL COMPLETE CHECKLIST

- 07 P SLOW A/C TO 1.2 Vs (MINIMUM OF 135 KTS)

- 08 P LAND A/C

- 09 P VERIFY A/S \leq 135 KTS

- 10 P SLOWLY RETARD POWER LEVERS INTO REVERSE RANGE

- 11 P USE REVERSE THRUST AND BRAKING TO STOP A/C

13.8.11
NO FLAP LANDING

13.8.12
NO BETA LIGHT
DURING LANDING

13.8

12 NO BETA LIGHT DURING LANDING

A-5- C-5-49

01 P RETARD POWER LEVERS INTO GROUND OPERATING RANGE

02 FE NOTE BETA LIGHT OR LIGHTS FAIL TO ILLUMINATE

03 FE ANNOUNCE NO BETA LIGHT ENG. NO. _____

04 P IF SWERVE OCCURS, COMMAND FEATHER ENGINE NO. _____

05 FE PULL E HANDLE

06 P MAINTAIN DIRECTIONAL CONTROL AND STOP A/C USING REVERSE

THRUST AND BRAKES

13.9

1 EMERGENCY EVACUATION

A-5-

C-5-5-6-7

- 01 P COMMAND CREW TO EVACUATE A/C
- 02 CP LOWER FLAPS TO TAKEOFF - APPROACH
- 03 FE PULL ALL E HANDLES
- 04 ALL EVACUATE A/C USING OVERWING ESCAPE HATCHES
(NOTE: DO NOT USE HATCH ON SIDE WHERE FIRE EXISTS)
- 05 ALL PROCEED WELL TO THE REAR OF A/C

13.9.1
EMERGENCY
EVACUATION

A-5-20/27, C-5-5/11
C-5-16/17

13.10

1 DITCHING

01 P ANNOUNCE INTENTION TO DITCH AND TIME UNTIL IMPACT OVER PA

SYSTEM OR BY WORD OF MOUTH TO CREW

02 CP SET IFF TO EMERGENCY (MODE 3, CODE 77)

03 CP ESTABLISH VOICE COMMUNICATIONS

04 P/FE REDUCE FUEL LOAD TO MINIMUM

05 FE DEPRESSURIZE

06 P JETTISON ALL EXTERNAL AND BOMB BAY STORES. LEAVE SW
IN JETTISON

07 ALL ADJUST SEAT BELT AND SHOULDER HARNESS

08 P DETERMINE SWELL AND WIND CONDITIONS

IF CROSSWIND < 25 KTS

09 P PLAN APPROACH TO DITCH PARALLEL TO AND NEAR CREST OF SWELL

OTHERWISE CROSSWIND > 25 KTS

09 P PLAN APPROACH TO DITCH INTO WIND ON UPSLOPE OF SWELL NEAR THE TOP

10 P/CP VERIFY LANDING GEAR UP

11 P/CP SET FLAPS AT LANDING

13.10.1
DITCHING

13.10.1 DITCHING (CONTINUED)

- 12 P FLY A/C ADJUSTING POWER AT APPROXIMATELY 300 FEET TO ESTABLISH
VS + 10 KTS WITH R/D OF 100 FT/MIN TO CONTACT WATER IF FLAPS AT LANDING
(NOTE: REMOVE HAND FROM POWER LEVERS PRIOR TO IMPACT)
IF FLAPS AT TAKEOFF/APPROACH A/S = VS + 10 + 5
IF FLAPS AT < TAKEOFF/APPROACH A/S = VS + 10 + 20
13 CREW AS DIRECTED BY P, REMOVE OVERWING EMERGENCY ESCAPE HATCHES
14 ALL EVACUATE AIRCRAFT

13.10.1
DITCHING

A-5-27,36 C-5-14,25

13.11

1 BAILOUT

- 01 P COMMANDS "PREPARE TO BAILOUT" VERBALLY OR BY FOUR (4) SHORT RINGS ON THE COMMAND BELL
- 02 ALL DON LIFE VESTS AND PARACHUTES
- 03 ALL CARRY OUT ABANDON AIRCRAFT STATION PROCEDURES FOR THE STATION THEY OCCUPY
- 04 FE DEPRESSURIZE
- 01 FE PLACE AUX VENT SW TO OPEN
- 02 FE PLACE OUTFLOW VALVE SW TO OPEN
- 03 FE PLACE LEFT AND RIGHT EDC DUMP/NORMAL SW'S TO DUMP
- 04 FE PLACE AUX VENT SW TO CLOSE WHEN CABIN DIFF PRESSURE AT ONE INCH DIFFERENTIAL
- 05 P REDUCE A/S IF POSSIBLE
- 06 P TRIM A/C SLIGHTLY NOSE DOWN
- IF OVER WATER OR UNINHABITED AREA
- 07 P PLACE A/C IN PORT TURN AND ENGAGE AUTOPILOT
- OTHERWISE

07 P HEAD A/C TOWARD UNINHABITED AREA AND ENGAGE AUTOPILOT

13.11.1
BAILOUT

13.11.1 BAILOUT (CONTINUED)

08	CP	SET LFF TO EMERGENCY
09	CP	ANNOUNCE ALTITUDE OVER PA AND OVERRIDE
10	CP	ESTABLISH VOICE COMMUNICATIONS
11	CP	ASSIST PILOT AS DIRECTED
12	P	COMMAND "EXECUTE BAILOUT" VERBALLY OR BY ONE (1) LONG RING OF COMMAND BELL
13	ALL	BAILOUT THROUGH MAIN CABIN DOOR

13.11.1
BAILOUT

A-5-36, C-5-38-40

13.12

- 1 FUEL BOOST PUMP FAILURE IN CLIMB
 - 01 FE VERIFY "BOOST" PUMP INDICATOR ON
 - 02 FE INFORM P OF FAILURE
 - 03 P CONTINUE CLIMB
 - 04 FE MONITOR HORSEPOWER, TIT, FUEL FLOW FOR POWER LOSS
 - 05 FE VERIFY GRADUAL POWER LOSS
 - 06 FE CROSSFEED ENGINE FROM ANOTHER TANK
 - 07 P CONTINUE CLIMB TO MISSION-ASSIGNED ALTITUDE, SET CRUISE
CONDITION
 - 08 P MAINTAIN CRUISE CONDITION FOR SEVERAL MINUTES
 - 09 FE MONITOR FUEL FLOW, TIT, HP AND SWITCH ENGINE BACK TO TANK
WITH INOP BOOST PUMP
- IF
 - 10 ALL CONTINUE MISSION
- ENGINE OPERATES SATISFACTORILY
- OTHERWISE
 - ENGINE FAILS TO OPERATE SATISFACTORILY
 - 10 FE SWITCH BACK TO CROSSFEED, WAIT A FEW MINUTES AND THEN
SWITCH BACK TO TANK WITH INOP BOOST PUMP

13.12.1
FUEL BOOST PUMP
FAILURE IN CLIMB

13.12.1 FUEL BOOST PUMP FAILURE IN CLIMB (CONTINUED)

IF ENGINE OPERATES SATISFACTORILY

10 ALL CONTINUE MISSION

OTHERWISE ENGINE FAILS TO OPERATE SATISFACTORILY

11 FE SWITCH BACK TO CROSSFEED

12 P MAKE DECISION TO DESCEND TO LOWER ALTITUDE FOR ENGINE
OPERATION OR ABORT MISSION

13.12.1
FUEL BOOST PUMP
FAILURE IN CLIMB

A-5-37, C-5-39

13.12

2 TRANSFER PUMP FAILURE, TANK 5

- 1 FE NOTE TANK NO. 5 PRESS LOW INDICATOR ON
- 2 FE REDUCE TANK 5 FUEL TO 3000 LB LEVEL WITH OPERATING PUMP
- 3 FE CLOSE TRANSFER VALVES AND ALLOW FUEL QUANTITY IN EACH WING TANK TO DROP 250 LBS.
- 4 FE OPEN ALL TRANSFER VALVES AND ALLOW TANK 5 TO DROP 1000 LBS
- 5 FE REPEAT STEPS 3 AND 4 UNTIL TANK 5 FUEL IS DEPLETED

(NOTE: MANEUVERING A/C IN NOSE DOWN ATTITUDE WILL AID IN RECOVERING FUEL FROM TANK 5)

13.12.2
TRANSFER PUMP
FAILURE, TANK 5

13.12.3
BOTH TANK 5
TRANSFER PUMP
FAILURE

13.12

A-5-37, C-5-39

3 BOTH TANK 5 TRANSFER PUMP FAILURE

01 FE NOTE BOTH TANK 5 PRESS LOW LIGHTS ON

02 FE COMPUTE NEW ZERO FUEL WEIGHT

03 P AT HIS DISCRETION COMMAND DUMP FUEL

04 FE PLACE FUEL DUMP SW TO ON AND JETTISON FUEL AS NECESSARY

TO REDUCE WEIGHT (SEE SEC 12.7 FOR FUEL DUMP PROCEDURE)

IF MAXIMUM ZERO FUEL WEIGHT IS STILL OVER MAXIMUM, DO NOT EXCEED

2.1 G, AVOID TURBULENT AIR PENETRATION, ABORT THE MISSION,
AND LAND

OTHERWISE IF ZERO FUEL WEIGHT IS NOT EXCEEDED, ADJUST THE MISSION AS
NECESSARY

13.13

A-5-38, C-5-33

1 OPERATION WITH ONE A/C GENERATOR

- 01 FE MONITOR ELECTRICAL LOAD CAREFULLY
- 02 ALL SECURE ALL NON-ESSENTIAL ELECTRICAL/ELECTRONIC EQUIPMENT
- 03 ALL SECURE ALL NON-ESSENTIAL CABIN LIGHTS AFT OF FLIGHT STATION
- 04 FE MONITOR DEICE OPERATION, USE ONLY AS DEICE

(NOTE: UNLESS ABSOLUTELY ESSENTIAL DO NOT USE PROP AND
EMPENNAGE SYSTEMS AT SAME TIME)

- 05 FE UNCOVER BOOST HANDLES
- 06 P/CP POSITION UTILITY LIGHTS AND TURN ON
- 07 P BRIEF CP TO TURN ESS BUS SW OFF IF GENERATOR FAILS
- 08 P/CP PLACE FLASHLIGHTS IN **EAST** GRASP
- 09 P CONTINUE FLIGHT IN VFR CONDITIONS IF POSSIBLE
- 10 P CHECK WEATHER AT DESTINATION

IF IFR

- 11 P CONSIDER SELECTING ALTERNATE LANDING SITE

13.13

A-5-39-40, C-5-34

2 OPERATION WITH FAILURE OF ALL GENERATORS

- 01 FE PULL BOOST HANDLES
 - 02 CP PLACE ESS BUS MONITORING SW TO OFF
POWER CHANGES REQUIRED
 - 03 FE PLACE ENG START SEL SW TO ANY ENGINE OR PLACE INVERTER
AND BATTERY TEST SW TO TEST
(NOTE: PROVIDES POWER TO TIT GAGES)
- OTHERWISE
- 04 P SELECT NEAREST SUITABLE LANDING SITE
 - 05 ALL PERFORM EMERGENCY EXTENSION OF LANDING GEAR
 - 06 P APPROACH LANDING SITE CAUTIOUSLY, FLY PAST TOWER AND SIGNAL
EMERGENCY WITH VERY PISTOL
 - 07 P FLY BOOST OFF, FLAPS IN POSITION AT LOSS OF GENERATORS AND
EMERGENCY BRAKE APPROACH AND LANDING
 - 08 P WHEN A/S \leq 125 KTS RETARD PWR LEVERS TO REVERSE

13.13.2
OPERATION WITH
FAILURE OF ALL
GENERATORS

13.14 FAILURE OF THE NO. 1 AND NO. 2 HYDRAULIC SYSTEMS A-5-40, C-5-44

- 1 FE VERIFY SYSTEM NO. 1 AND SYSTEM NO. 2 HYDRAULIC PRESSURE
DECREASING TOWARD ZERO
- 2 FE NOTIFY P
- 3 FE PLACE HYDRAULIC PUMP SW'S 1, 1A AND 2 OFF
- 4 FE PULL BOOST HANDLES FOR ELEVATOR, AILERON AND RUDDER
- 5 P FLY BOOST OFF APPROACH AND LANDING

(NOTE: SEE SECTION 13.8.4 FOR PROCEDURE)

13.14
FAILURE OF NO. 1
AND NO. 2 HYDRAULIC
SYSTEMS

13.15

A-5-40-41, C-5-38

- 1 SHIFTING TO BOOST OFF
- 1 P TURN AUTOMATIC PILOT OFF
- 2 P CHECK TRIM TABS FOR NORMAL SETTING, RETRIM IF REQUIRED
- 3 FE PULL BOOSTER SHIFT HANDLES TO OFF
- (NOTE: DO NOT APPLY ANY FORCE TO CONTROLS DURING SHIFT)
- IF UNABLE TO SHIFT FOR ANY REASON
- 4 FE SHIFT OTHER TWO CONTROLS TO BOOST OFF
- 5 FE SHUT OFF ALL A/C HYDRAULIC PUMPS
- 6 FE PULL SHIFT CONTROL FOR MALFUNCTIONING SYSTEM
- IF SHIFT NOT COMPLETED
- 7 FE LEAVE HYDRAULIC PRESSURE OFF FOR REMAINDER OF FLIGHT
- OTHERWISE SHIFT COMPLETED
- 7 FE PLACE HYDRAULIC PUMPS ON
- 8 FE RETURN OTHER TWO SYSTEMS TO BOOST ON

13.15.1
SHIFTING TO
BOOST OFF

13.15

2 LOSS OF CONTROL SURFACE CONTROL

A-5-41, C-5-38

- 1 P/CP VERIFY FLIGHT STATION CONTROL MOVEMENT HAS NO EFFECT
ON A/C ATTITUDE
- 2 P PLACE AUTOMATIC PILOT ON
- 3 FE VERIFY FLIGHT CONTROL BOOSTERS ON
- 4 P LAND A/C USING AUTOPILOT AND TRIM TABS

13.15.2
LOSS OF CONTROL
SURFACE CONTROL

13.16

A-5-41, C-5-46

1 LANDING GEAR EXTENSION WITHOUT HYDRAULIC PRESSURE

- 1 CP PLACE LANDING GEAR LEVER DOWN
- 2 FE PULL LANDING GEAR CONTROL CB
- 3 FE PULL MAIN LANDING GEAR EMER RELEASE HANDLE (HYDRAULIC SERVICE CENTER)
- 4 CP VERIFY MAIN GEAR INDICATIONS DOWN AND LOCKED
- 5 FE PULL NOSEGEAR EMER RELEASE HANDLE
- 6 CP VERIFY ALL GEAR DOWN AND LOCKED

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13.16.1
LANDING GEAR
EXTENSION WITHOUT
HYDRAULIC PRESSURE

13.16

2 LANDING GEAR EXTENSION OR RETRACTION (LOSS OF POWER IN ELECTRICAL A-5-42, C-5-46

CONTROL CIRCUIT)

- 1 NE PULL LANDING GEAR CONTROL CB
- 2 P LANDING GEAR HANDLE AS DESIRED
- 3 FE OPERATE LANDING GEAR SELECTOR VALVE

IF RAISING GEAR

4 FE HOLD SELECTOR VALVE IN UNTIL GEAR IS REPORTED UP AND LOCKED

IF EXTENDING GEAR WITH LOSS OF ELECTRICAL (MAIN DC FAILURE)

4 P RETARD ONE POWER LEVER TO FLT IDLE PRIOR TO OPERATING
SELECTOR VALVE

5 P VERIFY WHEELS FLASHING LIGHT OPERATION

6 FE OPERATE SELECTOR VALVE

7 P VERIFY GEAR DOWN AND LOCKED WHEN FLASHING WHEELS LIGHT STOPS

TAEG REPORT NO. 7

13.16.2
LANDING GEAR
EXTENSION OR
RETRACTION (LOSS OF
POWER IN ELECTRICAL
CONTROL CIRCUIT)

A-5-33, C-5-33

13.17 AUTOMATIC PILOT DISCONNECT FOR MALFUNCTION

- 1 P/CP NOTE MALFUNCTIONING AUTOPILOT
- 2 P/CP PRESS EITHER PILOT'S OR COPILOT'S DISCONNECT BUTTON
ON CONTROL WHEEL (PB-20N) OR TO SECOND DETENT ON ASW-31
- 3 FE PULL AUTOPILOT EMERGENCY DISCONNECT HANDLE
- 4 FE STOW HANDLE IN HORIZONTAL POSITION

(NOTE: STOWING IN VERTICAL POSITION WILL PREVENT
PULLING BOOST SHIFT LEVERS)

13.17
AUTOMATIC PILOT
DISCONNECT FOR
MALFUNCTION

13.18

1 BOMB BAY DOOR OPERATION WITHOUT ELECTRICAL POWER

A-5-14, C-5-14

IF

DOORS ARE CLOSED

- 1 FE OPEN ACCESS DOOR NEAR TACCO SEAT FOR P3C
RADIO SEAT FOR P3A/B
- 2 FE PLACE LOCAL REMOTE SW TO LOCAL
- 3 FE PULL UP ON CONTROL VALVE HANDLE

OTHERWISE

DOORS ARE OPEN

- 1 FE OPEN ACCESS DOOR NEAR TACCO SEAT FOR P3C
RADIO SEAT FOR P3A/B
- 2 FE PLACE LOCAL REMOTE SW TO LOCAL
- 3 FE PUSH DOWN ON CONTROL HANDLE AND HOLD UNTIL DOORS
ARE CLOSED

13.18.1
 BOMB BAY DOOR
 OPERATION WITHOUT
 ELECTRICAL POWER

13.18

A-5-14, C-5-14-15

2 BOMB BAY DOOR OPERATION WITHOUT HYDRAULIC POWER

IF DOORS ARE CLOSED

(NOTE: TWO CREWMEMBERS ARE REQUIRED FOR THE FOLLOWING PROCEDURES)

- 1 FE OPEN ACCESS DOOR NEAR TACCO SEAT FOR P3C RADIO SEAT FOR P3A/B
- 2 CREW OPEN FUSELAGE FLOOR DOOR FOR ACCESS TO HAND PUMP AND SHUTOFF VALVE
- 3 CREW OPEN SHUTOFF VALVE
- 4 FE PLACE LOCAL REMOTE SW TO LOCAL
- 5 FE PULL UP CONTROL VALVE HANDLE
- 6 CREW REMOVE PUMP HANDLE, INSERT IN PUMP SOCKET
- 7 CREW OPERATE HAND PUMP UNTIL DOORS ARE OPEN AND CONTINUE

PUMPING TO HOLD DOORS OPEN

OTHERWISE DOORS ARE OPEN

- 1 REPEAT STEPS 1 THRU 4 ABOVE
- 2 FE PUSH DOWN AND HOLD CONTROL VALVE HANDLE
- 3 CREW OPERATE HAND PUMP UNTIL DOORS ARE CLOSED

13.18.2
BOMB BAY DOOR
OPERATION WITHOUT
HYDRAULIC PRESSURE

13.18.2 BOMB BAY DOOR OPERATION WITHOUT HYDRAULIC POWER (CONTINUED)

4. FE RELEASE CONTROL VALVE HANDLE
- 5 FE PLACE LOCAL REMOTE SW TO REMOTE

13.18.2
BOMB BAY DOOR
OPERATION WITHOUT
HYDRAULIC PRESSURE

13.19

A-5-42, C-5-42

1 FLIGHT WITH CRACKED WINDSHIELD

- 1 FE TURN OFF HEAT OF AFFECTED PANELS
- 2 ALL HELMETS ON, VISORS DOWN
- 3 ALL IF POSSIBLE, DETERMINE WHICH OF THE GLASS LAYERS IS CRACKED (REFER TO FIGURE 1-75). DEPENDING UPON WHICH LAYER IS DAMAGED, DO THE FOLLOWING:

IF OUTER LAYER OF GLASS CRACKED

- 4 ALL CONTINUE FLIGHT
- 5 P INSURE A/S DOES NOT EXCEED 240 KTS BELOW 10,000 FT ALT.

OTHERWISE MIDDLE (STRUCTURAL) LAYER OF GLASS CRACKED

- 4 ? REDUCE A/S TO 240 KTS
- 5 FE DEPRESSURIZE AS REQUIRED TO OBTAIN CABIN DIFFERENTIAL TO 2.0 IN HG

- 6 P DESCENT TO 10,000 FT OR LOWER

- 7 ALL CONTINUE FLIGHT

IF INNER LAYER OF GLASS CRACKED

- 1 P INSURE THAT IAS SHALL NOT EXCEED 240 KTS BELOW 10,000 FT WITH WINDSHIELD HEAT OFF

- 2 FE TURN WINDSHIELD HEAT ON AT PILOT'S DISCRETION

13.19.1
FLIGHT WITH
CRACKED WINDSHIELD

13.19.2
FLIGHT WITH CRACKED
SIDE WINDSHIELD

A-5-42, C-5-42

13.19

2 FLIGHT WITH CRACKED SIDE WINDSHIELD

1 FE TURN OFF DEFOGGING ON AFFECTED PANELS

IF ONE PANE IS CRACKED

2 ALL CONTINUE FLIGHT

IF UNABLE TO DETERMINE IF BOTH CRACKED OR BOTH ARE CRACKED

1 FE DEPRESSURIZE AS REQUIRED TO OBTAIN CABIN DIFFERENTIAL

TO 2.0 IN. HG

2 P MAKE NORMAL DESCENT TO 10,000 FT OR LOWER

3 ALL CONTINUE FLIGHT

13.19

A-5-42, C-5-42

3 FLIGHT WITH CRACKED CABIN WINDOWS

1 CREW DETERMINE IF CRACK IS IN OUTER PANE OR INNER PANE

IF INNER PANE

2 ALL CONTINUE FLIGHT

OTHERWISE OUTER PANE IS CRACKED

2 CREW EVACUATE FROM IMMEDIATE AREA IF OUTER PANE IS CRACKED

OR UNDETERMINED

3 FE DEPRESSURIZE AS NECESSARY TO OBTAIN CABIN DIFFERENTIAL OF 2.0 IN HG

4 F MAKE NORMAL DESCENT TO 10,000 FT OR LOWER

5 ALL CONTINUE FLIGHT

13.19.3
FLIGHT WITH CRACKED
CABIN WINDOWS

APPENDIX B

SECTION I

TRAINING ANALYSIS APPLICATION

This appendix provides an application of the training analysis method described in Section III of this report. A four-step procedure is employed in the analysis. The sequence is as follows:

- Analysis of training tasks
- Compilation of tasks to be trained
- Grouping of tasks for instructional planning
- Development of program of instruction

The steps in the procedure, with examples of the appropriate forms completed, are described below.

Analysis of Training Tasks: Each statement in the job task description is analyzed and the skills and knowledge requirements, behavioral objectives, media requirements, and evaluation/methods/media are derived. This is the crucial analytic step in the preparations leading to the development of an instructional program. The training analysis work sheet, shown in figure 1, is used to organize this information. The mission phase selected from the task analysis is the "Before Start Checklist" (item 2.1.2). Twenty-two specific task items are identified. An example of one of these tasks (item 2.1.2.L) is provided in figure 1 to illustrate the procedure.

Compilation of Tasks to be Trained: Summaries of the data obtained from the training analysis work sheets are now compiled. These identify what must be taught for each system and phase of flight. A general summary for mission phase, "Before Start Checklist" (items 2.1.2 A through U), is shown in figure 2 to illustrate the content and format.

TAEG REPORT NO. 7

2.1.2

CHALLENGE - "AHRS, INERTIAL AND HSI"

L. P

REPLY - "CHECKED"

SKILLS:

KNOWLEDGES:

Cockpit Operation of Attitude Heading Reference
System, Inertial Navigation System, and Horizontal
Situation Indicator, Source of Power, Checks,
Alternate Systems.

BEHAVIORAL
OBJECTIVES:

PILOT SHALL: Insure copilot selects slave position and
enters Lat. on inertial. Verifies sync indicator
centered, standby gyro selected on HSI. P & CP
monitor MM4 indicators for proper operation. P
selects AHRS on HSI attitude control switch, C selects
Inertial on Heading Switch, P & CP observe heading.
P & CP observe heading secondary input. P selects
Inertial on heading switch, C selects AHRS on heading
switch, P & CP compare heading indications for primary
and secondary inputs. P & CP select primary for HSI
heading input. Check Standby Compass for accuracy.
P & CP reply "Checked."

INSTRUCTIONAL
MEDIA:

1. INTRODUCTORY: Sound/slide, Video, Cine, Lecture,
CFT
2. CONSOLIDATION: CFT, OFT
3. MAINTENANCE: OFT

EVALUATION
METHODS/MEDIA:

OFT

BASIC
REFERENCES:

ALTERNATIVES:

REMARKS:

P-3 second-tour pilot should only require short
classroom or carrel period followed by OFT to refresh
this function.

Figure 1. Sample of a Training Analysis Worksheet

2.1.2 BEFORE START CHECKLIST

A-U

KNOWLEDGE REQUIREMENTS

CLASSROOM OR STUDENT CARREL

- | | |
|---------------------------------------|--|
| Landing Gear | - Location of gear handle, handle light.
Warning lights on instrument panel and
Annunciator light extinguisher button.
Gear status indicator and barber pole.
Pre-start check. |
| Parking Brakes | - Location.
Procedure for setting or releasing.
Pre-start check. |
| Circuit Breakers | - Location.
Visual check.
FE responsibility. |
| Lights | - Location of controls, lights.
Limitations of operations.
Pre-start check procedures. |
| Bleed Air and Icing
Control Panels | - <u>Foul weather systems</u> - overview.
<u>Ice detection system</u> - purpose, location
of probe. Static source to pilot and
copilot instruments. Pitot tube inputs
to pilot and copilot instruments.
Heat switch, status light.

- <u>Engine Anti-Ice System</u> - purpose.
Source of power.
Location of switches and lights.
Pre-start check.

- <u>Wing De-ice/Anti-ice System</u> - heat source.
Wing sections heated.
Location of switches and lights.
Pre-start check.

- Bleed Air - purpose.
Source
Pre-start check |

Figure 2. General Summary (Part 1 of 4)

TAEG REPORT NO. 7

- Propeller Ice Control System-Location of heating elements, cycling sequence. Source of power. Location of switches, indicators, and circuit breakers. Pre-start check and ground operation limitations.
- Empennage Anti-Icing System-Location of strips. Source of heat. Cycle arrangement. Switch locations, positions, gage, color-code interpretation. Signal light and purpose. Override switch. Pre-start check.
- Windshield and Side Window Heat System-Panels heated. Location of switches. Pre-start check.
- Pitot and Angle of Attack System. Location of probes. Heat source. Location of switches, indicators. Pre-start check.
- Bomb Bay Heating System-Location of switch. Pre-start switch position.

Fuel and Ignition

- TIT max temperature for starting. RPM rotation verification/limitation for start. Location of instruments. Fuel Panel-location switches, and starting position.

RPM Switches

- Location and starting position.

TD (Temperature Datum) Switches

- Location. Pre-start cycle.

AHRS, Inertial, and HSI

- Attitude, Heading, Reference, System-Power source, modes, limitations. Pre-start latitude and hemisphere inputs and checks.

Figure 2. General Summary (Part 2 of 4)

TAEG REPORT NO. 7

- Inertial Navigation Systems-controls,
lights.
System alignment.
Pre-start checks, switch positions and
latitude inputs.
- Horizontal Situation Indicator-
location of controls and switches.
Modes, primary and secondary inputs.
Pre-start check.
- MMI, Attitude Indicator System-Primary
and secondary systems.
Pre-start monitor procedures.
- Standby Compass-Accuracy check.
- Radar Altimeter

 - Location of instruments, source of power
(bus).
Procedure for test.
Procedure for test mode.
Limit lights-ground sensing relay; flap
handle switch.
Restriction on use of copilot indicator.
- Fuel Quantity and Fuel Panel

 - Location of fuel control panel and
total fuel gauge.
Pre-start position of crossfeed valves,
main tank valves, boost pump switches
and indicator lights. Tank 5 transfer
pumps and transfer valves.
- Armament Panel and Bomb Bay

 - Location of Pilot's armament panel
Switch positions for takeoff.
Bomb bay switch position and light.
- Flaps

 - Location of flap handle, flap indicators
Procedure for activation and takeoff
setting.
- Autopilot

 - Location of autopilot control panel and
AFCS ground test panel.
Pre-start procedure/switch settings.
- Weight and Balance

 - Allowable gross weight for takeoff.
Computation of CG/MAC.
Use of previously computed data.
Pre-start procedure.

Figure 2. General Summary (Part 3 of 4)

TAEG REPORT NO. 7

- Tactical Crew Checklist - Teaching of tactical crew checklist should be deferred to ASW/tactical phase of training.
- Rotating Beacon - Location of Master switch, rotating beacon switch.
Pre-start position.

Suggested Media

Video tape and or sound/slide programs for overview, nomenclature, and "need to know" system information essential for pre-start checks. Cockpit Familiarization Trainer integration of classroom or carrel information, checklists, and procedures. Device 4B28/11 Introduction to P-3B Aircraft (Pilot).

COCKPIT FAMILIARIZATION TRAINER

- Pre-Start Check - Identification and location of panels, switches, lights, controls, and gauges. Familiarization with Pre-start checklists, procedures and checks. Pilot demonstrates, by activating switches, touching controls and or instruments, and verbalizes the procedures and checks required to complete the Pre-start checklist without significant error prior to entering the OFT for further training.

OPERATIONAL FLIGHT TRAINER

- Pre-Start Check - Dynamic display of controls, switches, and instruments enabling completion of Pre-Start Checklist. Pilot demonstrates ability to perform Pre-start checks without error prior to first aircraft training flight.

AIRCRAFT

- Pre-Start Check - No aircraft training requirement.

End of Course Objective

Pilot demonstrates knowledge of pre-start check procedures, system checks, and switch/control positions. He performs pre-start check without error.

Figure 2. General Summary (Part 4 of 4)

Grouping of Tasks for Instructional Planning: Based on the previous two steps, an initial organization of the curriculum is undertaken, in terms of the general subject matter areas, the media requirements and the desired student proficiency levels. A summary of these training requirements is shown in figure 3. The example selected depicts the normal procedures involved in the first 12 phases of flight identified in the job task analysis. For each phase of flight, the media requirements are identified together with the appropriate level of proficiency required in each phase per media class. It should be noted that this summary serves as an aid to the understanding of our method; the content has not yet been validated. The proficiency levels recommended are more descriptive than those published in NATOPS, however, the NATOPS levels may be used if desired.

Program of Instruction: The final step in the procedure is the organization of the training material into a program of instruction. Section II of this appendix provides an example of a lesson plan developed using the four-step procedure described above. The training segment selected concern "Propeller Operation" which is a subsystem of Power Plants.

Subject to manpower availability and authorization, the academic portion of the program of instruction for both pilots and flight engineers will be developed by TAEG.

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NORMAL PROCEDURES	CLASS/CARREL		CFT		OFT		AIRCRAFT	
	#K	S	#K	S	#K	S	#K	S
Mission Preparation	IV	-	*		*		*	
Pre-Takeoff Readiness Check	IV		*		II	A	*	
Before Start Checklist	IV		II	B	II	A	*	
Prepare to Start Engines	IV		II	A	*		*	
Start Engines	IV		II	B	II	A	*	
After Start Checklist	V		II	B	II	A	*	
Prepare for Taxi	V		*		II	A	*	
Takeoff Checklist	V		II	B	II	A	*	
Takeoff	II		II	C	II	B	II	A
Climb	III		II	B	II	A	*	
Cruise Out/Back	III		II	B	II	A	*	
Descent/Approach	IV		II	C	II	B	II	A
Final Approach/Landing/ Missed Approach	IV		II	C	II	B	II	A
Post Landing/Shutdown	V		II	C	II	B	II	A

#Knowledge and skill levels are based upon the proficiency levels shown in figure 4.

*There is no training requirement for these procedures using this medium.

Figure 3. Training Requirement Summary
(P-3 Second Tour Pilot)

T A E G R E P O R T N O . 7

<u>LEVEL</u>	<u>KNOWLEDGE</u>
I	Recall without omission or error using normal cockpit cues. (Emergency Checklist Mandatory Items.)
II	Recall with use of cockpit cues and checklist without omission or error. (Can explain essential functions and use checklist in accordance with prescribed NATOPS standard.)
III	Recall with use of cockpit cues, checklists, and NATOPS manual. May require some prompting. (Can explain essential relationships and locate information in NATOPS manual.)
IV	Demonstrate a general knowledge of major items related to subject matter but not required to be able to perform task. (Level expected at completion of academic phase.)
V	Overview of subject matter. Trainee need only possess recognition (not recall) knowledge of the subject matter (e.g., pilot knowledge of flight engineer tasks).

SKILLS

A	Performance of entire task to NATOPS standard without prompting.
B	Performance of task to NATOPS standard with minor prompting. (Tasks performance limited due to lack of simulation in OFT are included in this category, e.g., lack of visual simulation.)
C	Performance of tasks with minor errors utilizing a static simulator or mockup, e.g., Cockpit Familiarization Trainer.

ABOVE ARE SUGGESTED FOR PROFICIENCY LEVELS. THE DEGREE OF QUALIFICATION CONTAINED IN NATOPS MANUAL MAY BE MORE DESIRABLE.

Figure 4. P-3 Task and Training Analysis Proficiency Levels

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APPENDIX B

SECTION II

SAMPLE LESSON PLAN

PROPELLER OPERATION

RECOGNIZE PROPELLER CONTROLS

- a. Power Levers
- b. Synch Servo Switches
- c. Synchrophaser Master Switch
- d. Synchrophaser Master Trim Knob
- e. Resync/Normal Switch
- f. Pressure Cutout Override Buttons
- g. Feather Valve/NTS Check Switch
- h. Fuel Governor and Prop Pitch Lock Test/Normal Switches
- i. Auto Feather System
- j. Emergency Shutdown Handles
- k. Ice Control System
- l. Prop Pump No. 1 and No. 2 Warning Lights
- m. Feather Switches
- n. NTS (Negative Torque Sensing) System

PROPELLER DESCRIPTION

The four-bladed Hamilton Standard Propeller converts engine shaft horsepower to thrust. It is a constant speed, full feathering, reversing propeller, having the added features of pitchlock and a combination of synchronizing and synchrophasing.

Pitchlock is incorporated to prevent engine overspeed by preventing blade angle decrease. Synchronizing is an electronic refinement of

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hydro-mechanical governing to provide a quicker, smoother, quieter governing system. Synchrophasing prevents blade tips from passing each other when parallel to the wing leading edge, reducing vibration and noise.

Propeller pitch changes are induced by hydraulic pressure from a self-contained hydraulic system within each propeller assembly. Propeller hydraulic pressure is provided by two gear driven pumps when the propeller is rotating.

FUNCTION OF PROPELLER CONTROLS

a. Power Levers

(1) In the taxi range (BETA RANGE, POWER LEVERS AFT OF FLIGHT IDLE):

(a) Controls propeller blade angle for forward or reverse thrust via mechanical linkage through the coordinator.

(b) In effect, power lever movement causes a propeller pitch change in the TAXI (BETA) RANGE.

(2) In the flight range (ALPHA RANGE, POWER LEVERS AT OR FORWARD OF FLIGHT IDLE):

(a) Power lever linkage to the coordinator in the flight range causes coordinator to schedule fuel to the engine.

(b) Advancing power levers in the flight range causes coordinator to change fuel control setting to increase fuel flow.

(c) Increased fuel flow causes a corresponding increase in turbine inlet temperature and turbine rpm, which tends to cause the propeller to overspeed.

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(d) Propeller flyweight governor senses the overspeed and increases pitch angle (bite), which holds the propeller rpm at its fixed speed.

(e) In effect, power lever adjustment changes power plant power output while the propeller governor maintains propeller rpm at 100 percent.

b. Function of Sync Servo Switches

(1) In NORMAL, electrical circuits act in conjunction with mechanical governing features to provide more stable and accurate rpm governing.

(2) In NORMAL, an electrical anticipator feature is incorporated in the system to hydraulically change blade angle to stabilize propeller rpm and prevent the propeller from underspeeding or overspeeding in case of rapid power lever movement.

(3) In OFF, electrical control of hydraulically actuated blade angle changes is deactivated and mechanical devices cause hydraulically actuated blade angle changes automatically.

c. Function of Synchrophaser Master Switch

(1) Selects either engine number 2 or number 3 as master to which other engines are slaved if their Sync servo switches are in NORMAL.

(2) Synchrophasing, electronically establishing optimum propeller blade phase angle relationships, minimizes propeller beat noise and minimizes vibrations caused when air is alternately compressed between the four rotating blade tips of two propellers on each wing and when air is compressed between the fuselage and the blade tips of

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No. 2 and No. 3 propellers at the same time.

(3) OFF position deactivates the automatic synchrophasing feature.

d. Function of Synchrophaser Master Trim Knob

(1) Adjusts mechanical devices which hydraulically control propeller blades pitch angle thus effecting increases or decreases in the rpm of the master engine by approximately ± 1 percent.

(2) In the OFF position, only engine No. 2 rpm will be affected.

e. Function of Resync/Normal

(1) Acts as a clutch to ensure proper phasing and engagement when the system is activated.

(2) Automatic resynchrophase mechanisms slightly increases or decreases the rpm of the propeller to synchronize the speed of the three slave props and synchrophase the blade angle relationship to the selected master.

(3) Depressing resynchrophase switch approximately four seconds then releasing the switch causes a propeller which is not synchrophased to either become synchrophased or to improve synchrophase relationship with master propeller.

(4) Each actuation improves propeller synchrophase relationship.

(5) Repeated actuations by depressing resynchrophase switch two seconds, releasing and waiting one minute, can result in changing the tachometer indication of a slave propeller a maximum of 2 percent each actuation.

(6) NORMAL position of the switch provides for automatic synchrophasing electronically through the synchrophaser,

f. Function of the Pressure Cutout Override Switches

(1) Depressing the pressure cutout override switch with the feather button in activates the auxiliary pump to repressurize the increase pitch side of the dome, lights the light in the feather button, the No. 1 propeller pump light goes out and energizes the feather valve solenoid which in turn positions the feather valve to the feather valve position.

(2) Depressing a switch with the emergency shutdown handle out activates the feather pump, lights the light in the feather button, and turns off the propeller pump No. 1 light.

(3) The pressure cutout override switch provides a means of overriding the propeller pressure cutout switch if the propeller does not go completely into feather using the E handle or the feather button.

g. Function of the Feather Valve/NTS Check Switch

(1) The NTS check position is the normal position of the switch except when performing NTS check or when restarting an engine airborne. If NTS occurs, the light will remain on with the switch in NTS check position.

(2) In Feather Valve check position checks linkage to the feather valve which routes hydraulic pressure to position the propeller toward the feather position. In flight with the switch in Feather Valve check, the NTS lights will blink when NTS occurs. The negative torque system drives the propeller toward feather but cannot completely feather the propeller.

(3) During ground operation, with switch in NTS check position, the NTS light must come on during engine shutdown. If shutting down

from LOW RPM and light does not come on, restart engine and shutdown from NORMAL RPM. If no light when shutting down from NORMAL RPM write discrepancy up for maintenance action.

h. Function of the Fuel Governor and Prop Pitch Lock Test/Normal Switches.

(1) These switches are provided to permit ground checking of the pitchlock and fuel topping governor functions.

(2) In the test position the propeller governor mechanism is reset to a speed of approximately 106 percent RPM to permit checking to insure that the fuel topping governor will limit engine speed if the propeller governor fails—also that the propeller pitchlock will engage to prevent blade angle decrease.

i. Auto Feather System

(1) The auto feathering system provides automatic feathering of one propeller in the alpha range. When the system is armed and the power levers are advanced for takeoff and a loss of engine power occurs which results in a large loss of propeller thrust (prop thrust drops to 500 or less pounds) auto feathering will occur for the affected engine.

j. Function of the Emergency Shutdown Handles in Relation to the Propeller

(1) Provides for electrically activating the feather pump and mechanically moves the feather valve to the feather position.

(2) Pulls in appropriate feather button and lights the feather button light.

k. Ice Control System

Propeller icing is controlled by electrically heating the spinners and blade cuffs. When the system is energized, the nose portion of each

spinner is continuously anti-iced (while the remainder is cyclically de-iced) by elements in the aft spinner (skirt), in the spinner's four blade-root fairings (islands), and in the cuff covering the skank of each blade.

The controls and indicators for the propeller Ice Control System consist of a three position control switch (ON-OFF-Ground Test), an ammeter, and a three position rotary selector for the ammeter (1 and 4 Spinners, Cuffs and Islands, 2 and 3 Spinners).

More details of system operation will be covered in this course under P-3 ICE CONTROL SYSTEMS.

1. Prop Pump No. 1 and No. 2 Warning Lights

(1) Prop Pump No. 1 light illuminates when the Main (No. 1) pump pressure drops below a set minimum pressure. Illumination of Prop Pump No. 1 light is permissible during engine starting and with engine operation at LOW RPM.

(2) Prop Pump No. 2 light illuminates when the Standby (No. 2) pump pressure drops below a set minimum pressure. Normally Prop Pump No. 2 light will be out prior to reaching low RPM (57-64 percent).

m. Feather Switches

Four guarded feathering buttons, one for each engine, are located on the pilot's overhead control panel. These buttons provide a method for feathering the propeller for loiter operation. Depressing the switch initiates the feathering cycle. Pulling out on the button initiates the unfeathering cycle for a feathered propeller.

n. NTS System

The NTS System automatically moves the propeller toward the feather position when a predetermined negative torque is sensed (propeller is driving the engine). The normal effect of the NTS is a cycling of SHP slightly below the preset negative torque limit.

PROPELLER SAFETY FEATURES

a. Function of the pitchlock assembly

- (1) Operates only in the flight range.
- (2) Prevents blade angle decrease if there is an overspeed by 103.5 percent RPM or if there is a loss of propeller oil pressure.
- (3) Allows blade angle increase but no decrease.
- (4) Pitchlock is blocked out at low blade angles ($+17^{\circ}$ to -14°) to allow for RPM surges during approach and landings and at high blade angles to permit unfeathering (57° to 86.65°).
- (5) Hazards of reversing with a malfunctioning propeller during takeoffs or landings.
 - (a) Pitchlocked propeller cannot be reversed.
 - (b) Directional control problems may be encountered when power levers are retarded to the ground idle.
 - (c) Engine with malfunctioning propeller must be shutdown prior to positioning power levers below flight idle.
 - (d) Failure of one or more propellers to reverse may result in complete loss of directional control.

b. Function of low pitch stop assembly

- (1) Mechanically limits blade angle to specific minimum settings during flight range operation.

(2) Power lever must be positioned from flight range to ground range to disengage low pitch stop and permit blade angle decrease and reversing.

c. Function of the BETA Followup System

(1) The BETA followup system programs a variable hydraulic stop as a function of power lever position to prevent excessive reduction in blade angle decrease if the NTS System fails.

d. Function of the Safety Coupling (decoupler)

The decoupler safety coupling will mechanically disconnect the gearbox and propeller from the engine turbine when the engine negative torque exceeds a set limit (approximately minus 1700 SHP). This device serves as a backup in case of NTS failure and is provided to reduce the loads imposed on the aircraft structure to an acceptable limit.

e. Function of the propeller brake

A propeller brake is provided to prevent windmilling when the aircraft is parked or when the propeller is fully feathered in flight. The brake is released by starter torque or by airloads when unfeathering in flight. The brake is held in the disengaged position by reduction gear oil pressure and engaged automatically by heavy springs.

Oil pressure is sufficient to hold the brake released when reduction gear RPM is above approximately 21 percent. Slight reverse propeller rotation locks the brake.

f. Function of the NTS INOP Light

If the blade angle decreases to the 45° position during unfeathering the "NTS INOP" warning light on the vertical annunciator panel will illuminate when the 45° blade angle switch operates and the blades will

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automatically start toward the feather position. If the "NTS INOP" light illuminates during unfeathering it is essential to pull the Emergency Shutdown handle immediately while holding out on the feather button.