18th Flight Test Squadron

Sharpening the Spear Worldwide!

Test Director's Handbook

The 18th Flight Test Squadron's Mission

As AFSOC's independent field test agency, we determine the operational effectiveness and suitability of aircraft, equipment, and tactics. Using that information, we provide accurate and timely recommendations to the AFSOC commander for acquisition and implementation decisions. Ultimately, our work improves the survivability and combat capability of special operations forces worldwide.

Our Vision

Building a world-class center for test and evaluation dedicated to enhancing special operations combat capability.

BY ORDER OF THE
SECRETARY OF THE AIR FORCE

18 FLTS HANDBOOK 99-1
1 January 2004

Operational Test and Evaluation

THE TEST DIRECTOR'S HANDBOOK

The purpose of this handbook is to outline our test and evaluation process, describe how the 18th conducts day-to-day operations, and to provide an encyclopedia of relevant, useful information for our test directors.

SUMMARY OF REVISIONS

This revision was accomplished using Microsoft Publisher 2002 desktop publishing system. It incorporates all improvements made to the 18 FLTS testing process. Significant changes include:

- Adds reference to Detachment 2 at Marine Corps Air Station, New River, NC
- Add reference to Detachment 3 at Nellis AFB, NV
- Updates the 18 FLTS Style Guide and Test Plan/Reporting formats in the separate Style Guide
- Updates the DoD acquisition process
- Updates the reorganization of the 18 FLTS at Hurlburt Field, FL

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Commander

Supersedes 18 FLTSH 99-1, 1 Jul 02
OPR: 18 FLTS/ADO (Lt Col Michael Leffler)

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Welcome to the Test Director's Handbook

The 18th Flight Test Squadron is AFSOC's independent field test agency. As such, we determine the operational effectiveness and suitability of aircraft, equipment, and tactics. In order to keep pace with the rapidly changing environment around us, we must continually analyze and improve the way we conduct operations.

The purpose of this handbook is to outline our test and evaluation process, describe how the 18 FLTS conducts day-to-day operations, and provide an encyclopedia of relevant, useful information for our test directors. The test team execution checklist (TTEC) in attachment A institutionalizes the way AFSOC conducts test and evaluation. Compliance with the applicable items in the TTEC is a must! The information in the body of the handbook and the remaining attachments was compiled by experienced test personnel and represents corporate knowledge gained from years of testing. Used in conjunction with other instructions and regulations, or as a stand-alone publication, this handbook enables an 18 FLTS test director to plan and execute a test.

Our mission is to support the command's weapon systems modernization program and to ensure the best possible tactics for employing that equipment are developed and verified. Hopefully, this handbook will enable our test directors to accomplish that mission.

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Master Acronyms List

18 FLTS ..... 18th Flight Test Squadron
18 FLTS/ADO ..... Assistant Director of Operations
18 FLTS/CC ..... Commander
18 FLTS/CCS ..... Commander's Secretary
18 FLTS/CSS ..... Command Support Section
18 FLTS/DO ..... Director of Operations
18 FLTS/DOA ..... Operations Analysis Flight
18 FLTS/DOAA ..... Analysis Branch
18 FLTS/DOAI ..... Instrumentation Branch
18 FLTS/DOC ..... Combat Applications Flight
18 FLTS/DOCE ..... Electronic Combat Branch
18 FLTS/DOCI ..... Information Warfare Branch
18 FLTS/DOCM ..... Modeling and Simulation Branch
18 FLTS/DOCP ..... Mission Planning Branch
18 FLTS/DOCT ..... Special Tactics Branch
18 FLTS/DOF ..... Fixed Wing Flight
18 FLTS/DOFA ..... Gunship Branch
18 FLTS/DOFL ..... Fixed Wing Logistics Branch
18 FLTS/DOFM ..... Talon Branch
18 FLTS/DOFP ..... Shadow Branch
18 FLTS/DOI ..... Information Operations Flight
18 FLTS/DOM ..... Mission Support Flight
18 FLTS/DOML ..... Library Element
18 FLTS/DOMM ..... Media Section
18 FLTS/DOMN ..... LAN Support
18 FLTS/DOMS ..... Supply Element
18 FLTS/DOMT ..... Training and Education Element
18 FLTS/DOO ..... Current Operations & Scheduling
18 FLTS/DOV ..... Vertical Lift Flight
18 FLTS/DOVJ ..... Pave Low Branch
18 FLTS/DOVL ..... Vertical Lift Logistics Branch
18 FLTS/DOVV ..... Osprey Branch
18 FLTS/FM ..... Financial Management

A

AAA ..... antiaircraft artillery
AAM ..... air-to-air missile
AATC ..... Air National Guard, Air Force Reserve Test Center
AC ..... assessment criteria
ACAT ..... acquisition category
ACC ..... Air Combat Command

Master Acronyms List

ACS.....automatic communications system
ADAS.....air data acquisition system
ADF.....automatic direction finder
ADI.....attitude direction indicator
ADM.....Acquisition Decision Memorandum
AERPS.....Aircrew Eye Respiratory Protection System
AETC.....Air Education & Training Command
AF.....Air Force
AFB.....Air Force Base
AFDTC.....Air Force Developmental Test Center
AFECO.....Air Force Electronic Combat Office
AFFTC.....Air Force Flight Test Center
AFH.....Air Force Handbook
AFHOI.....Air Force Headquarters Operating Instruction
AFI.....Air Force Instruction
AFMAN.....Air Force Manual
AFMC.....Air Force Materiel Command
AFMD.....Air Force Mission Directive
AFMSS.....Air Force Mission Support System
AFOSH.....Air Force Occupational Safety and Health
AFOTEC.....Air Force Operational Test and Evaluation Center
AFPD.....Air Force Policy Directive
AFSC.....Air Force Systems Command
AFSOC.....Air Force Special Operations Command
AFSOCI.....Air Force Special Operations Command Instruction
AFSOF.....Air Force special operations forces
AFTO.....Air Force Technical Order
AFVA.....Air Force Visual Aid
A/G.....air-to-ground
AGL.....above ground level
AHHS.....altitude hover and hold stabilization
AI.....airborne interceptor
AIE.....alternate infiltration/exfiltration
ALLTV.....All Light Level Television
ALZ.....assault landing zone
AM.....amplitude modulation
AMC.....Air Mobility Command
AMU.....audio management unit/aircraft maintenance unit
AMXS.....Aircraft Maintenance Squadron
ANG.....Air National Guard
ANGRC.....Air National Guard Readiness Center
ANSI.....American National Standard Institute
ANVIS.....aircrew night vision

Master Acronyms List

AOA ..... angle of attack
AoA ..... analysis of alternatives
APB ..... acquisition program baseline
APU ..... auxiliary power unit
ASC ..... Aeronautical Systems Center
ASCII ..... American Standard Code for Information Interchange
ASHS ..... Ammo Storage and Handling System
ASL ..... above sea level
ASM ..... air-to-surface missile
ATAM ..... acquisition training assessment manager
ATC ..... air traffic control
Atch ..... attachment
ATD ..... assistant test director
ATE ..... automatic test equipment
ATP ..... acceptance test procedure
AVTR ..... airborne video tape recorder
AWACS ..... Airborne Warning and Control System
AWADS ..... Adverse Weather Aerial Delivery System
AWC ..... Air Warfare Center
AWIS ..... aircraft wireless interphone system
AXES ..... Advanced X-Ray Equipment for Aircraft
AZ ..... azimuth

B

BARO ..... barometric
BATH ..... best available true heading
BDA ..... battle damage assessment
BDHI ..... bearing distance heading indicator
BIT ..... built-in test
BLM ..... Bureau of Land Management
BMC ..... Battle Management Center
BMFD ..... BM Multifunction Display
BMIC ..... Battle Management Integration Center
BMNT ..... beginning morning nautical twilight
BTU ..... British thermal units

C

CAC ..... conventional approach control/Combat Air Command
CADS ..... Combat Aerial Delivery School
CAMS ..... Consolidated Aircraft Maintenance System/Core Automated Maintenance System

Master Acronyms List

CARA ..... combined altitude radar altimeter
CAS ..... calibrated air speed/close air support
CAT ..... category
CCA ..... circuit card assembly
CCB ..... chemring chaff block/configuration control board
CCD ..... charged-coupled device
CD-ROM ..... compact disk read-only memory
CCTW ..... Combat Crew Training Wing
CCU ..... cockpit control unit
CCW ..... counter clockwise
CDS ..... Container Delivery System
CDU ..... control display unit
CDUOFP ..... control display unit operational flight program
CEOI ..... Communications Electronic Operating Instruction
CEP ..... circular error probable
CEPV ..... CMD Environmental Manager
CCF ..... central control facility
CFF ..... calls for fire
CG ..... center of gravity
CINC ..... commander-in-chief
CIS ..... Combat Intelligence System
CJCSI ..... Chairman of the Joint Chiefs of Staff Instruction
CMDS ..... Countermeasures Dispensing System
CMFD ..... cockpit multifunction display
CMS ..... Component Maintenance Squadron
COI ..... critical operational issue
COMPUSEC ..... computer security
COMSEC ..... communications security
CRB ..... configuration review board
CRRC ..... combat rubber raiding craft
CRD ..... capstone requirements document
CRS ..... Container Release System
CSAF ..... Chief of Staff of the Air Force
CSU ..... communications switching unit
CT ..... contractor test/Combat Talon
CTAPS ..... Contingency Theater Air Planning System
CTC ..... communication traffic control
CTF ..... combined test force
C3 ..... continuous wave
C3 CM ..... command, control, and communications countermeasures

Master Acronyms List

D

DAD ..... Defense Acquisition Desk
DART ..... deficiency analysis ranking technique
dB ..... decibels
DC ..... direct current
DDMD ..... digital data message device
DEG ..... degree
deg F ..... degrees Fahrenheit
DF ..... direction finding
DEU ..... display electronics unit
DGU ..... display generator unit
DGUOFP ..... display generator unit operational flight program
DMDG ..... digital message device group
DNS ..... Doppler Navigation System
DoD ..... Department of Defense
DoDD ..... Department of Defense Directive
DOT&E ..... developmental operational test & evaluation
DPP ..... data processing plan
DR ..... deficiency report
DSC ..... digital scan converter
DSM ..... digital systems models
DTD ..... digital transfer device
DT&E ..... developmental test and evaluation
DTIC ..... Defense Technical Information Center
DTM ..... data transfer module
DTS ..... data transfer system
DZ ..... drop zone

E

EA ..... evolutionary acquisition
EC ..... evaluation criteria
ECDS ..... Enhanced Container Delivery System
ECCM ..... electronic counter-countermeasure
ECM ..... electronic countermeasure
ECS ..... Environmental Cooling System
ECP ..... engineering change proposal
EEFI ..... essential elements of friendly information
EL ..... electro-luminescent lighting
EMC ..... electro-magnetic compatibility
EMD ..... engineering and manufacturing development
EMI ..... electro-magnetic interference
EMTE ..... electro-magnetic test environment

Master Acronyms List

EOA ..... early operational assessment
EOD ..... explosive ordnance disposal
EPROM ..... erasable programmable read-only memory
ESP ..... Emergency and Special Program
ESSS ..... External Stores Support System
EW ..... electronic warfare
EWO ..... electronic warfare officer
EWS ..... electronic warfare support

F

FAD ..... force activity designator
FARP ..... forward area refueling point
FAS ..... Functional Address System
FCA ..... functional configuration audit
FCO ..... fire control officer
FCT ..... foreign comparative test
FDA ..... Food and Drug Administration
FDE ..... force development evaluation
FH ..... flying hours
FLD ..... field
FLIR ..... forward looking infrared
FLTS ..... Flight Test Squadron
FMC ..... fully mission capable
FMS ..... flight path stabilization
FOA ..... field operating agency
FOM ..... figure of merit
FOT&E ..... follow-on operational test and evaluation
FOV ..... field-of-view
FPM ..... feet per minute
FPS ..... feet per second
FSE ..... fire support element
FT ..... feet
FU ..... fire unit
FW ..... fixed wing

G

G-SOLL ..... gunship special operations, low-level
GA ..... go around
GFF ..... government furnished equipment
GHz ..... gigahertz
GLINT ..... gated laser illuminator for night television

Master Acronyms List

GPS ..... Global Positioning System
GS ..... ground speed
GSOFP ..... gunship operational flight program
GTC ..... gas turbine compressor

H

HAWK ..... homing all the way killer
HB ..... high band
HDD ..... heads-down display
HE ..... high explosive
HF ..... high frequency
HOV R/A ..... hover radar altimeter
HQ ..... headquarters
HQ AFSOC ..... Headquarters, Air Force Special Operations Command
HQ AFSOC/CEPV ..... HQ AFSOC CMD Environmental Manager
HQ AFSOC/DOT ..... HQ AFSOC Operations Training
HQ AFSOC/DOO ..... HQ AFSOC Operations Readiness
HQ AFSOC/DOV ..... HQ AFSOC Aircrew Stan/Eval
HQ AFSOC/DOX ..... HQ AFSOC Operations Plans and Tactics
HQ AFSOC/LGMX ..... HQ AFSOC Logistics Group Deployment Manager
HQ AFSOC/SE ..... HQ AFSOC Safety Director
HQ AFSOC/SES ..... HQ AFSOC Systems Safety
HQ AFSOC/XPQ ..... HQ AFSOC Plans and Programs Acquisition Management
HQ AFSOC/XPT ..... HQ AFSOC Requirements Test and Evaluation
HRB ..... hazard review board
HRI ..... hazard risk index
HSCDS ..... High-Speed Container Delivery System
HSLLADS ..... High-Speed Low-Level Delivery System
HUD ..... heads-up display
Hz ..... hertz

I

IAW ..... in accordance with
IBH ..... integrated ballistics helmet
ICD ..... initial capabilities document/interface control documents
ICDU ..... integrated computer display unit
ICS ..... interim contractor support/intercom system/intercommunication system
ID ..... identification
IDAS ..... Interactive Defensive Avionics System
IDS ..... Infrared Detection System
IFF ..... identify friend or foe
IFPS ..... Information Positioning System

Master Acronyms List

IFR ..... instrument flight rules
ILL ..... illumination
ILS ..... Instrument Landing System
IMC ..... instrument meteorological conditions
INFOSEC ..... information security
INS ..... Inertial Navigation System
INU ..... inertial navigation unit
IOC ..... initial operational capability
IOT&E ..... initial operational test and evaluation
IPS ..... integrated program summary
IPT ..... integrated product team
IR ..... infrared
IRCCM ..... infrared counter-countermeasures
IFCM ..... infrared countermeasures
IRIG-B ..... Inter-range Instrumentation Group B
IRWR ..... infrared warning receiver
IR&D ..... independent research and development
ISR ..... instrumentation support request
ITT ..... integrated test team/International Telephone and Telegraph
IW ..... information warfare

J

JA/ATT ..... Joint Airborne/Air Transportability Training
JMEM ..... Joint Munitions Effectiveness Manual
JSOC ..... Joint Special Operations Command
JSOTF ..... Joint Special Operations Task Force
JT&E ..... joint test and evaluation

K

KCAS ..... knots calibrated air speed
KIAS ..... knots indicated airspeed
KM ..... kilometer
KT ..... knot
KTAS ..... knots true air speed
KVA ..... kilovolt ampere
KW ..... kilowatt

L

LAN ..... local area network
Lat/Long ..... latitude/longitude

Master Acronyms List

LB ..... low band
LCD ..... liquid crystal display
LED ..... light emitting diode
LEP ..... laser eye protection
LF ..... low frequency
LFT&E ..... live-fire test and evaluation
LGST ..... logistics service test
LIA ..... laser illuminator assembly
LLL ..... low light level
LLLTV ..... low-level light television
LMF ..... live missile fire
LMSB ..... life and mission support bins
LOA ..... letter of agreement
LOB ..... line-of-bearing
LOS ..... line-of-sight
LOU ..... letter of understanding
LPI ..... low-probability-of-intercept
LRIP ..... low-rate initial production
LRU ..... line replacement unit
LT&E ..... logistics test and evaluation
LTS ..... Logistics Test Squadron
LVHF ..... low VHF
LZ ..... landing zone

M

M ..... meters
M&S ..... modeling and simulation
MAA ..... mission area assessment
MADS ..... Maritime Aerial Delivery System
MAIS ..... Major Automated Information Systems
MAJCOM ..... major command
MAP ..... mission area plans
MATT ..... multi-mission advanced tactical terminal
MC ..... mission capable
MCOFP ..... mission computer operational flight program
MDA ..... milestone decision authority
MDAP ..... najor defense acquisition program
MDGT ..... mission data ground terminal
MDR ..... materiel deficiency report
MDT ..... mean downtime
MEGP ..... mission essential ground personnel
MFCU ..... multifunction control unit

Master Acronyms List

MFD ..... multifunction display unit
mil ..... millirating
MIL-HDBK ..... military handbook
MIL-STD ..... military standard
MIP ..... mission information package
MIPS ..... million instructions per second
Mini-CAMPS ..... Miniaturized Computer-Aided Mission Planning System
mm ..... millimeter
MMH ..... maintenance man-hours
MMH/FH ..... maintenance man-hours per flying hour
MMD ..... missile miss distance
MNA ..... mission needs analysis
MNS ..... mission need statement
MOCC ..... Maintenance Operations Control Center
MOE ..... measures of effectiveness/method of evaluation
MOP ..... measures of performance
MOS ..... measures of suitability
MOT&E ..... multiservice operational test and evaluation
MOU ..... memorandum of understanding
MPP ..... modernization planning process
MPS ..... Mission Planning System
mr ..... milliradian
MRE ..... mean radial error
MRT ..... mean repair time
MRTFB ..... major range test facility base
MSA ..... mission solution analysis
MSL ..... mean sea level
MSP ..... mission support plans
MSIC ..... Missile and Space Intelligence Center
MSS-2 ..... Mission Support System
MTACS ..... multi-object tracking and control systems
MTBCF ..... mean time between critical failure
MTBF ..... mean time between failure
MTBM ..... mean time between maintenance
MTBMi ..... mean time between maintenance, inherent type I failures
MTBMtc ..... mean time between maintenance, total corrective
MTP ..... maintenance test program
MTR ..... missile tracking radar
MUX ..... multiplexer
MXG ..... Maintenance Group

Master Acronyms List

N

NASA ..... National Aeronautics and Space Administration
NATO ..... North Atlantic Treaty Organization
NAV ..... navigator
NBC ..... nuclear, biological, chemical
NDI ..... nondevelopmental item
NFOV ..... narrow field-of-view
nm ..... nautical miles/nanometer
NMCM ..... not mission capable for maintenance
NMCS ..... not mission capable for supply
NOWS ..... night vision goggles operations weather software
NSWC ..... Naval Surface Warfare Center
NVD ..... night vision device
NVG ..... night vision goggles
NVIS ..... Night Vision Imaging System

O

OA ..... operational assessment
OAT ..... outside air temperature
OBE ..... overboard exhaust
OEM ..... original equipment manufacturer
OFP ..... operation flight program
OG ..... Operations Group
OGE ..... out-of-ground effect
O&M ..... operations and maintenance
OPFOR ..... opposition forces
OPR ..... office of primary responsibility
OPSEC ..... operations security
ORD ..... operational requirements document
OSD ..... Office of the Secretary of Defense
OSS ..... Operations Support Squadron
OTA ..... operational test agency
OTD ..... office of the test director
OT&E ..... operational test and evaluation
OTH ..... over-the-horizon
OUE ..... operational utility evaluation
OUSD ..... Office of the Under Secretary of Defense
OW ..... obstacle warning

Master Acronyms List

P

PAVE ..... precision angle vectoring equipment
PCA ..... physical configuration audit
PCR ..... publications change request
PD ..... pulse Doppler/passive detection/probability of damage
PDM ..... programmed depot maintenance
PDR ..... pulsed Doppler radar
PDU ..... panel display unit
PFPS ..... Portable Flight Planning Software
PHA ..... preliminary hazard analysis
PH&T ..... packaging, handling, and transportation
PLS ..... Personnel Locator System
PLV ..... program loader verifier
PMD ..... program management directive/projectile miss distance
PMR ..... portable microwave receiver
PNVG ..... panoramic night vision goggles
POC ..... point of contact
POM ..... program objective memorandum
PQDR ..... product quality deficiency report
PR ..... pulsed radar
PRI ..... pulsed repetition interval
PRIMES ..... Preflight Integration of Munitions and Electronic Systems
PSI ..... pounds per square inch
PSIG ..... pounds per square inch gauge
PSU ..... primary support unit
PTO ..... participating test organization
PW ..... pulse width

Q

QOT&E ..... qualification operational test and evaluation
QT&E ..... qualification test and evaluation

R

R&D ..... research and development
R&M ..... reliability and maintainability
R/A ..... radar/altimeter
RAJPO ..... Range Application Joint Program Office
RAA ..... required assets availability
RAM ..... risk assessment matrix
RCM ..... requirements correlation matrix

Master Acronyms List

RCS ..... radar cross section
RDE ..... requirements correlation matrix
RE ..... reduction in threat effectiveness
RER ..... radial error rate
RF ..... radio frequency
RLG ..... ring laser gyro
RM&A ..... reliability, maintainability, and availability
RMI ..... radio magnetic indicator
ROM ..... rough order of magnitude
RS ..... ringslot
RTO ..... responsible test organization
RWR ..... radar warning receiver

S

SAAM ..... special assignment airlift mission
SADS ..... Simulated Air Defense Systems
SAE ..... service acquisition executive
SAF ..... Secretary of the Air Force
SAM ..... surface-to-air missile
SAMP ..... single acquisition management plan
SANTA ..... spiral antenna assemblies
SAS ..... Stabilization Augmentation System
SATCOM ..... satellite communications
SCA ..... self-contained approach
SCG ..... security classification guide
SCNS ..... Self-Contained Navigation System
SCP ..... set clearance plane
SDC ..... signal data converter
SDR ..... software deficiency report
SE ..... support equipment
SECDEF ..... Secretary of Defense
SEDS ..... System Effectiveness Data System
SEU ..... system electronics unit
SF ..... supporting forces
SFTC ..... single-face-to-customer
SFP ..... system function processor
SGL ..... single
SIU ..... system interface unit
SL ..... sea level
SM ..... single manager
SME ..... subject matter expert
SMM ..... system maturity matrix

Master Acronyms List

SOF ..... special operations forces
SOFI ..... special operations forces improvement
SOFPARS ..... SOF Planning and Rehearsal System
SOG ..... Special Operations Group
SOLG ..... Special Operations Logistics Group
SOLL ..... special operations low level
SOMS ..... Special Operations Maintenance Squadron
SORD ..... special operational requirements document
SOS ..... Special Operations Squadron
SOSS ..... Special Operations Support Squadron
SOW ..... statement of work/Special Operations Wing
SPIRITS ..... spectral & in-band radiometric imaging of targets & scenes
SPO ..... system program office
SRB ..... safety review board
SRD ..... system requirements document
SRU ..... shop replaceable unit
STAR ..... surface-to-air-recovery
STD ..... standard
STEP ..... simulation, test and evaluation process
STEM ..... simulated test environment for munitions
STG ..... Special Tactics Group
STINFO ..... scientific and technical information
STV ..... seeker test van
SVHS ..... super video high speed
SWMCM ..... shallow water mine countermeasures

T

TA ..... terrain avoidance
TACAN ..... tactical air navigation
TADS ..... Tactical Air Defense System
TAR ..... target acquisition radar
TAS ..... true airspeed
TCTO ..... time compliance technical order
TD&E ..... tactics development and evaluation
TDES ..... Training Development and Evaluation Squadron
T&E ..... test and evaluation
TCTO ..... time compliance technical order
TD ..... test director
TDY ..... temporary duty
TEAM ..... threat evaluation and analysis model
TEMP ..... test and evaluation master plan
TES ..... Test and Evaluation Squadron

Master Acronyms List

TF ..... terrain following
TFU ..... turret/FLIR unit
TIDAMS ..... Transportable Integrated Data Analysis & Management Support
TIDAS ..... Test Instrumentation and Data Acquisition System
TIC ..... troop in contact
TIP ..... tactics improvement proposal
TIT ..... turbine inlet temperature
TM ..... test manager
TO ..... test order
T.O. ..... technical order
TOAG ..... total overall aircraft gross
TOT ..... time-over-target
TP ..... test plan
TPWG ..... test plan working group
TRB ..... technical review board
TRR ..... test readiness review
TSPI ..... time-space-position information
TTA ..... target track acquisition
TTB ..... tactical training bundle
TTEC ..... test team execution checklist
TTIP ..... test team initial planning
TTR ..... target tracking radar
TV ..... television
TW ..... Test Wing
TWA ..... trailing wire antenna

U

UDF ..... user data file
UHF ..... ultra high frequency
ULF ..... ultra low frequency
URL ..... uniform resource locators
USAF ..... United States Air Force
USAFAWC ..... USAF Air Warfare Center
USAFMC ..... USAF Mobility Center
USSOCOM ..... United States Special Operations Command
UV ..... ultraviolet

V

VAWS ..... Voice Altitude Warning System
VDC ..... volt direct current
VDT ..... video display terminal

Master Acronyms List

VHF.....very high frequency
VHS.....very high speed/video home system
VLF.....very low frequency
VMC.....visual meteorological conditions
VORTAC.....VHF Omni-directional Range/Tactical Air Navigation
VSDS.....Visual Symbology Display System
VSI.....vertical situation indicator
VSU.....video switching unit
VTOL.....vertical takeoff and landing
VV&A.....verification, validation, and accreditation

W

WCCS.....Wing Command and Control System
WR-ALC.....Warner Robins Air Logistics Center

CHAPTER 1 – OVERVIEW

PURPOSE . . . .

This document provides 18 FLTS test team members a working level guide for conducting AFSOC Operational Test and Evaluation (OT&E). The Test Director Handbook supplements applicable directives and test director training with information regarding the AFSOC OT&E process. Other 18 FLTS directives include the Test Team Execution Checklist (TTEC), AFI 99-103, and its associated AFSOC instruction.

The 18 FLTS Director of Operations (DO) is the office of primary responsibility (OPR) for this handbook and will conduct semiannual reviews for inclusion of changes.

MISSION – ORGANIZATION . . . .

DoD Directive 5000.1,
***The Defense Acquisition System*.**

This document stipulates, "each military department shall establish an independent operational test agency, reporting directly to the service chief, to plan and conduct operational tests, report results, and provide evaluations of effectiveness and suitability." The 18 FLTS is AFSOC's OT&E agency.

Mission

The 18 FLTS is the command focal point for tactics development and evaluation of new and modified weapon systems to increase overall combat effectiveness. In this capacity, the 18 FLTS determines combat capability for over 130 aircraft of 8 types and 12 models. HQ AFSOC/XPT is responsible for overall test management.

Though a program may be managed by an agency other than AFSOC, XPT is the 18th's sole tasking authority.

Organization

As illustrated in figure 1-1, the 18 FLTS is organized with a commander and director of operations. The operations directorate has six flights to fully support its mission. Detachment 1, located at Edwards AFB, is involved with the CV-22. Detachment 2, located at Marine Corps Air Station, New River, is involved with the MV-22, the USMC version of the CV-22. Detachment 3, located at Nellis AFB, is involved with HH-60 and combat search and rescue testing. Within the 18 FLTS, specific responsibilities relating to T&E are as follows:

Commander (CC). The 18 FLTS commander provides command-level direction and approves all test plans and reports.

Command Support Section (CSS). The CSS is the focal point for all personnel issues relating to unit operations.

Financial Management (FM). The Financial Management office budgets for test funding. The test director projects test costs (such as range, instrumentation, temporary duty travel expenses, and related items) for budgeting through FM.

Director of Operations (DO). The DO is responsible for test operations; addresses T&E policy issues; and facilitates coordination between internal offices and external agencies. Responsibilities include convening review boards and issuing test appointment letters. Flight commanders are administratively responsible to the commander and operationally responsible to the DO.

Current Operations & Scheduling (DOO). Current Operations and Scheduling is the squadron's central point of contact for coordinating flight test operations, to include aircraft and range scheduling. Scheduling through a single office allows test teams to work other issues, deconflict test missions and requirements, and provides a single face to our customers.

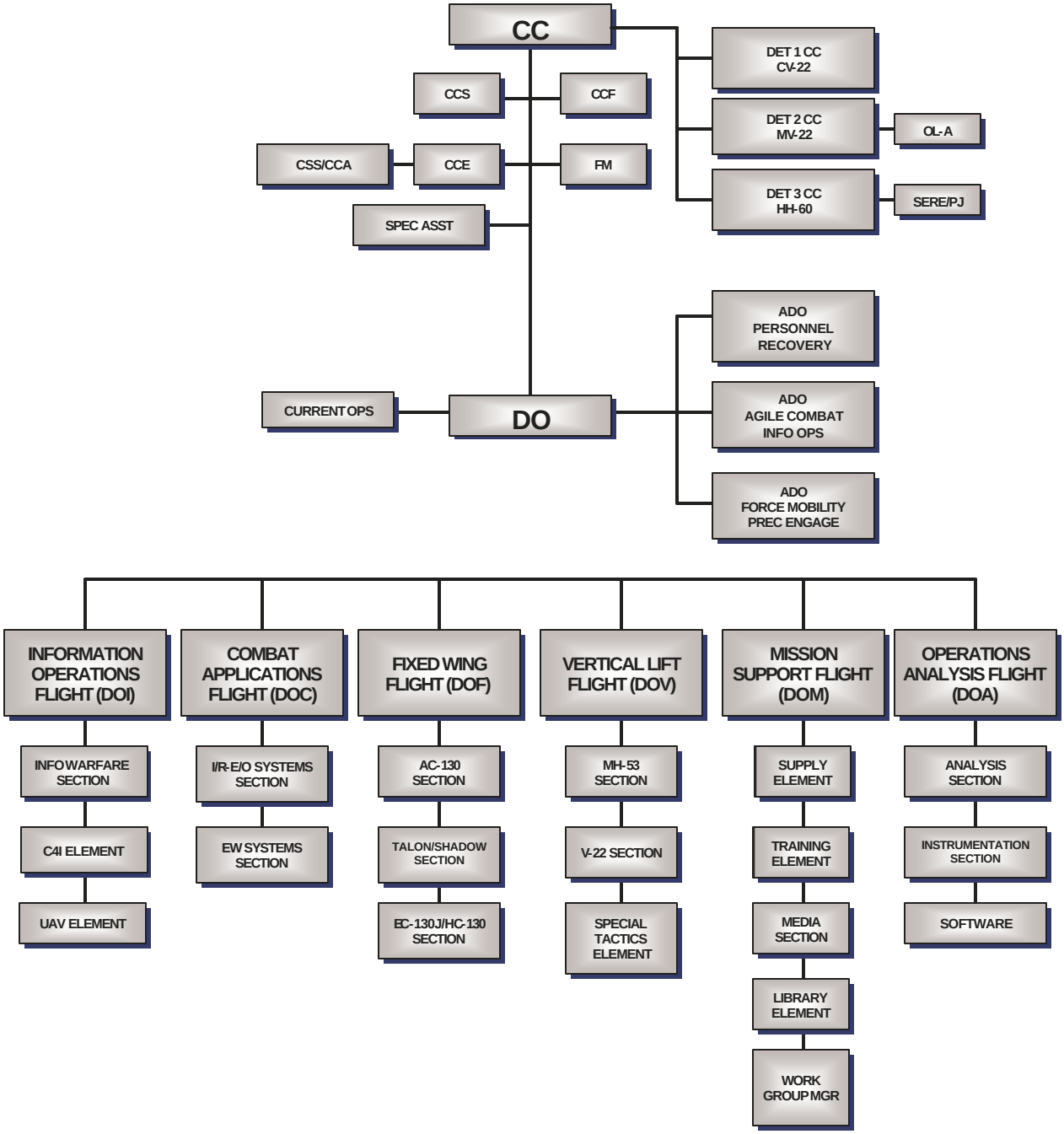
Special Missions (DOS). The Special Missions Branch is responsible for planning, managing, and implementing Air Force and joint flight tests for AFSOC special access programs. DOS personnel work directly with AFSOC staff, Joint Special Operations Command (JSOC), United States Special Operations Command (USSOCOM), industry, and the National Aeronautics and Space Administration (NASA).

Fixed Wing Flight (DOF). The Fixed Wing Flight is responsible for determining the operational effectiveness and suitability of AFSOC's fixed wing aircraft, equipment, and tactics. Weapon systems include AC-130H Spectre, AC-130U Spooky, MC-130P Combat Shadow, MC-130E Combat Talon, and the MC-130H Combat Talon II.

Vertical Lift Flight (DOV). The Vertical Lift Flight is responsible for determining the operational effectiveness and suitability of AFSOC's rotary wing aircraft, equipment, tactics, and special tactics teams. Weapon systems include the MH-53J/M Pave Low and the CV-22 Osprey.

Combat Applications Flight (DOC). The Combat Applications Flight is responsible for determining the operational effectiveness and suitability of AFSOC's fixed and rotary wing aircraft, equipment, and tactics. DOC identifies innovative test operations and tactics concepts and rapidly measures their potential for advancing the AFSOC warfighting capabilities using new technologies in electronic combat and exploiting the infrared spectrum.

Figure 1-1. The 18th Flight Test Squadron



Information Operations Flight (DOI). The Information Operations Flight is responsible for determining the operational effectiveness and suitability of AFSOC's fixed and rotary wing weapon systems, equipment and tactics. DOI determines the operational effectiveness and suitability of emerging technologies in the areas of information warfare to include command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR), mission planning, unmanned aerial vehicles, and modeling and simulation.

Operations Analysis Flight (DOA). The Operations Analysis Flight is responsible for providing data collection, data reduction, and data analysis for 18 FLTS projects. DOA also works with other test agencies to assist in their collection needs. This flight obtains any instrumentation that may be required to support a project and is the OPR for instrumentation modification packages.

Mission Support Flight (DOM). The Mission Support Flight is responsible for increasing the performance of all squadron personnel through performance enhancement technology-training, multimedia, graphics, Worldwide Web, local area network, and supply.

Once assigned to a test flight, training begins with the duties and responsibilities of a test director. Flight commanders and branch chiefs are responsible for ensuring each assigned test director completes the 18 FLTS certification process. The test director training process has been streamlined to only six weeks. New test directors undergo six weeks of classroom instruction in conjunction with hands-on training. They receive instruction in every facet of conducting a successful test. Additionally, they are required to complete basic level acquisition and test courses offered by the Defense Acquisition University. At the conclusion of their training course, the newly qualified test directors will be fully capable of successfully coordinating an operational test. The resources available to a test director vary depending upon the scope of the test. Chapter 4 highlights some essential resources available within the squadron and the Hurlburt/ Eglin complex.

The test director will become familiar with the

THE TEST DIRECTOR . . . .

acquisition process, the 18 FLTS, and each flight's respective role. The test director will also learn the mechanics of testing at Hurlburt Field, Eglin AFB, and other off-site test facilities.

Once training is complete, the test director will know how to plan, conduct, and report on a test program. Specific information includes budgeting, writing test plans, requesting aircraft support, instrumentation and analysis planning, range resource planning, and coordinating aircraft modifications. Test directors will lead a test team made up of an assistant test director, test engineers, and a test manager.

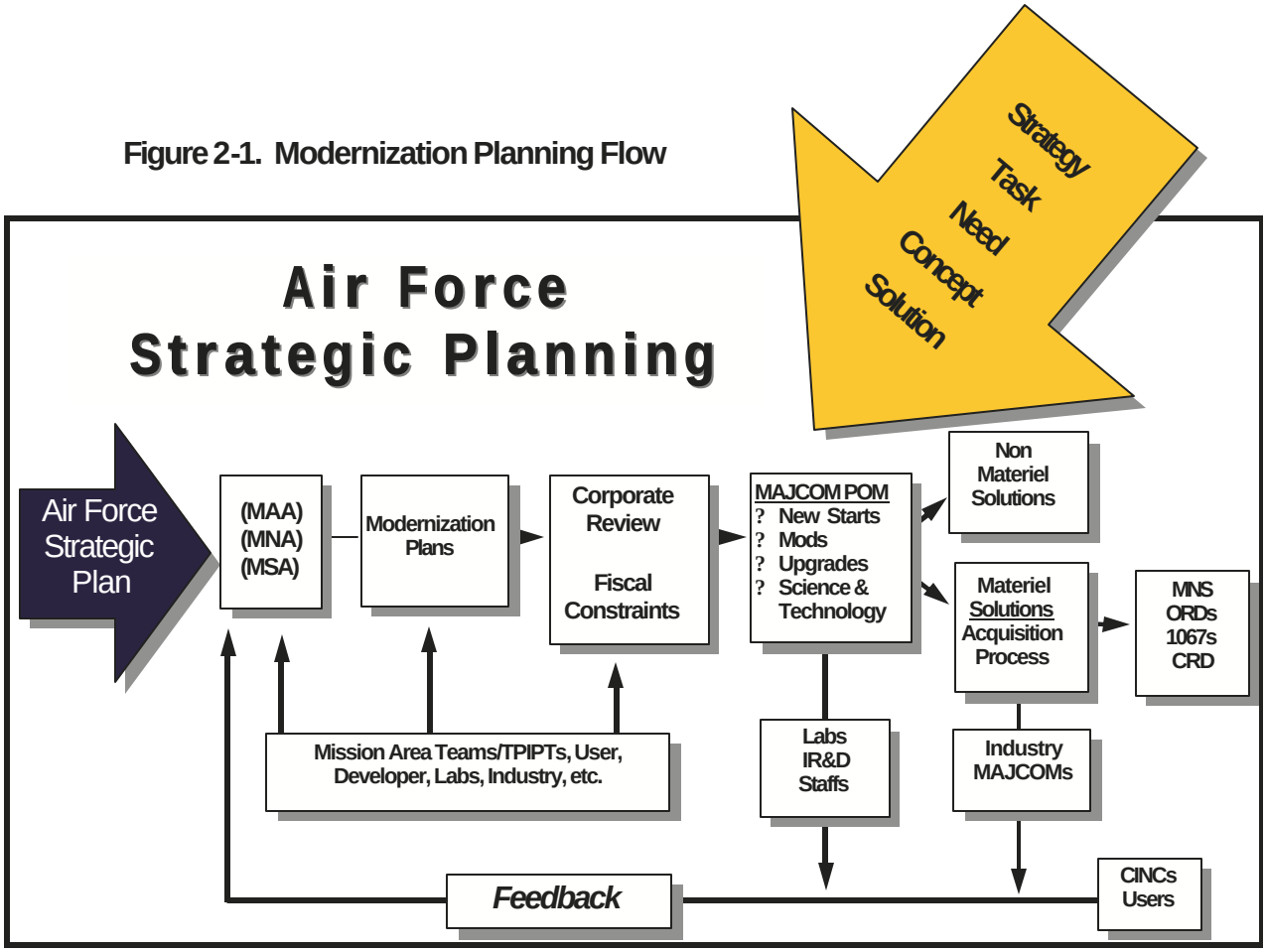
CHAPTER 2 – THE ACQUISITION PROCESS

REQUIREMENTS GENERATION . . . . .

Requirements, while occasionally "top-down" directed, primarily originate during the Air Force Modernization Planning Process (MPP). A brief description of the MPP is below. For further information on policy, procedures, and functional responsibilities, refer to AFPD 90-11, *Planning System,* and AFI 10-1401, *Modernization Planning Documentation.*

The MPP, guided by the Air Force Strategic Plan, is the foundation for generating requirements and the acquisition process. See figure 2-1.

Figure 2-1. Modernization Planning Flow



Major Commands (MAJCOMS) conduct the MPP using the Mission Area Assessment (MAA), Mission Needs Analysis (MNA), and the Mission Solution Analysis (MSA) to establish the Mission Area Plans (MAP), Mission Support Plans (MSP) and fiscally constrained investment plans. Many of these studies require extensive analysis of plans and requirements to develop a list of deficiencies and the most economic method to overcome them. The MAPs and MSPs identify and prioritize operational deficiencies and identify potential materiel and non-materiel solutions to these deficiencies. The MPP provides investment strategies for Air Force Program Objective Memorandum (POM) development. For a more detailed description of the MPP, refer to AFI 10-601.

MAJCOMs should use a team approach to help streamline requirements generation, develop better requirements documents, and reduce staffing time. Ultimately, this approach should lead to better written requirements documents as well as reduced staffing cycle time. It will result in the appropriate offices becoming involved in creating the requirements documents, an early "buy in" to the content, and an increased understanding of the issues within the document itself. Teams should include representatives from the testing, logistics, environmental, safety, health, and acquisition communities and, if possible, representatives from other MAJCOMs, supporting commands, HQ USAF, or any other agency that has a role in defining the mission deficiency or operational requirement.

SYSTEM ACQUISITION . . . .

The acquisition process is a repetitive series of activities and events performed by the DoD, Secretary of the Air Force (SAF), HQ USAF, and many commands, agencies, and program offices. Although recent changes to the Acquisition Process have occurred, the pre-2002 process is still widely referenced and therefore is discussed here (see figure 2-2). The new process (see figure 2-3) was designed to deliver advanced technology to warfighters faster, reduce total ownership costs, and provide a more flexible process focused on interoperability, supportability, and affordability. Details of this new process can be found in DoDD 5000.1, DoDI 5000.2, and AFI 99-103.

For identified materiel deficiencies, developing a initial capabilities document (ICD) is the first step and must be successfully achieved before a program enters the next phase of program development.

As the user, or user's representative, the operating command's participation is essential in each acquisition phase and in the development and refinement of the Operational Requirements Document (ORD). When writing the ORD during the formative stages of program development, the user, tester, and logistician participation is fundamental to the process. During these early phases, important projections, assumptions, and decisions are made impacting the success or failure of an emergence system program.

Figure 2-2. Pre-2002 Acquisition Process

(The latest model integrates requirements, acquisition, and the T&E process. It takes advantage of spiral development and incremental development.)

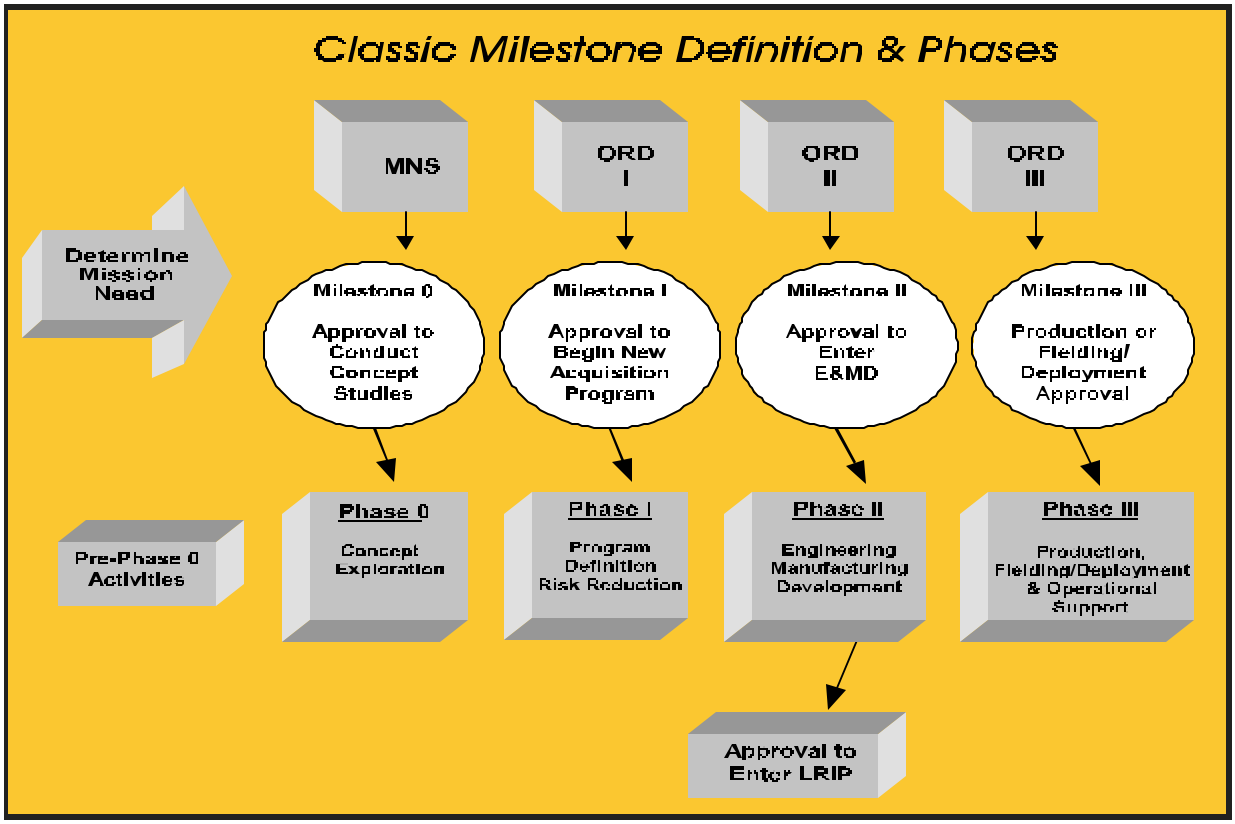
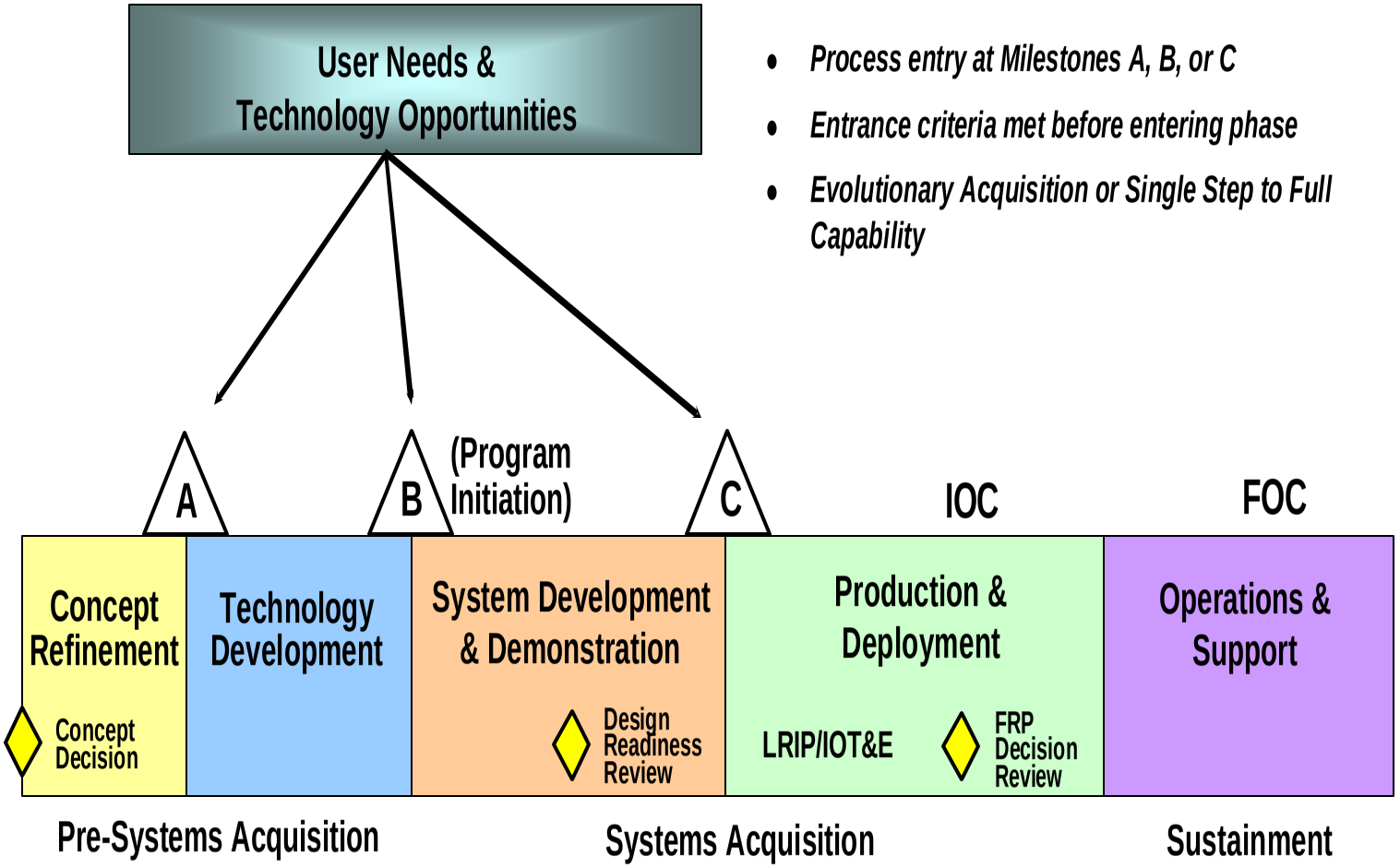


Figure 2-3. The New Acquisition Process



Spiral Development and Incremental Development, Determining Mission Needs

In the spiral development process, a desired capability is identified, but the end-state requirements are not known at program initiation. Those requirements are refined through demonstration and risk management; there is continuous user feedback; and, each increment provides the user the best possible capability. The requirements for future increments depend on feedback from users and technology maturation. In the incremental development process, a desired capability is identified, an end-state requirement is known, and that requirement is met over time by developing several increments, each dependent on available mature technology.

User Needs and Technology Opportunities

The capability needs and acquisition management systems shall use Joint Concepts, integrated architectures, and an analysis of doctrine, organization, training, materiel, leadership, personnel, and facilities in an integrated, collaborative process to define desired capabilities to guide the development of affordable systems. The examination shall include robust analyses that consider affordability, technology maturity, and responsiveness. Technologists and industry shall identify and protect promising technologies in laboratories and research centers, academia, and foreign and domestic commercial sources; reduce the risks of introducing these technologies into the acquisition process; and promote coordination, cooperation, and mutual understanding of technology issues.

Concept Refinement

The purpose of this phase is to refine the initial concept and develop a technology development strategy. Entrance into this phase depends upon an approved ICD resulting from the analysis of potential concepts across the DoD components, international systems from allies, and cooperative

"As the user, or user's representative, the operating command's participation is essential in each acquisition phase and in the development and refinement of the Operational Requirements Document (ORD)."

opportunities; and, an approved plan for conducting an analysis of alternatives (AoA) for the selected concept, documented in the approved ICD. Concept Refinement begins with the concept decision. The milestone decision authority (MDA) designates the lead DoD component(s) to refine the initial concept selected, approves the AoA plan, and establishes a date for a Milestone A review. The MDA decisions shall be documented in an Acquisition Decision Memorandum (ADM). The AoA shall assess the critical technologies associated with these concepts, including technology maturity, technical risk, and, if necessary, technology maturation and demonstration needs. To achieve the best possible system solution, emphasis shall be placed on innovation and competition. Existing commercial-off-the-shelf (COTS) functionality and solutions drawn from a diversified range of

large and small businesses shall be considered. The technology development strategy should document a test plan to ensure the goals and exit criteria for the first technology spiral demonstration are met.

Technology Development

The purpose of this phase is to reduce technology risk and to determine the appropriate set of technologies to be integrated into a full system. It is an iterative process designed to assess the viability of technologies while simultaneously refining user requirements. Multiple technology development demonstrations may be necessary before the user and developer agree that a proposed technology solution is affordable, militarily useful, and based on mature technology. The project shall exit the technology development phase when an affordable increment of militarily-useful capability has been identified, the technology for that increment has been demonstrated in a relevant environment, and a system can be developed for production within a short timeframe, or when the MDA decides to terminate the effort.

System Development and Demonstration

The purpose of the system development and demonstration phase is to develop a system or an increment of capability; reduce integration and manufacturing risk; ensure operational supportability with particular attention to reducing the logistics footprint; implement human systems integration; design for producibility; ensure affordability and the protection of critical program information by implementing appropriate techniques such as anti-tamper; and demonstrate system integration, interoperability, safety, and utility. Development and demonstration are aided by the use of simulation-based acquisition and test and evaluation integrated into an efficient continuum and guided by a system acquisition strategy and test and evaluation master plan. The independent planning of dedicated initial operational test and evaluation, as required by law, and follow-on operational test and evaluation, if required, shall be the responsibility of the appropriate operational test agency. A director, operational test & evaluation-approved live-fire test and evaluation strategy shall guide live-fire test and evaluation activity. The system development and demonstration phase has two major efforts: system integration and system demonstration. Entrance into this phase depends on technology maturity, approved requirements, and funding. The management and mitigation of technology risk, which allows less costly and less time-consuming systems development, is a crucial part of overall program management and is especially relevant to meeting cost and schedule goals. Prior to beginning system

development and demonstration, users shall identify and the requirements authority shall approve a minimum set of key performance parameters, included in the capability development document , that shall guide the efforts of this phase. These key performance parameters may be refined, with the approval of the requirements authority, as conditions warrant. Each program or increment shall also have an acquisition program baseline establishing program goals—thresholds and objectives—for the minimum number of cost, schedule, and performance parameters that describe the program over its life cycle. Successful development test and evaluation to assess technical progress against critical technical parameters, early operational assessments, and, where proven capabilities exist, the use of modeling and simulation to demonstrate system integration are critical during this effort.

Production and Deployment

The purpose of the production and deployment phase is to achieve an operational capability that satisfies mission needs. Operational test and evaluation shall determine the effectiveness and suitability of the system. The MDA shall make the decision to commit the Department of Defense to production at Milestone C. Milestone C authorizes entry into LRIP into production or procurement (for non-major systems that do not require LRIP) or into limited deployment in support of operational testing for MAIS programs or software-intensive systems with no production components. Entrance into this phase depends on the following criteria: acceptable performance in development, test and evaluation and operational assessment; mature software capability; no significant manufacturing risks; manufacturing processes under control; an approved ICD; an approved capability production document; acceptable interoperability; acceptable operational supportability; compliance with the DoD Strategic Plan; and demonstration that the system is affordable throughout the life cycle, optimally funded, and properly phased for rapid acquisition.

Operations and Support

The objective of this activity is the execution of a support program that meets operational support performance requirements and sustains the system in the most cost-effective manner over its total life cycle. When the system has reached the end of its useful life, it shall be disposed of in an appropriate manner. The operations and support phase has two major efforts: sustainment and disposal. Sustainment includes supply, maintenance, transportation, sustaining engineering, data management, configuration management, manpower, personnel, training, habitability, survivability, environment, safety, occupational health, protection of critical program information, anti-tamper provisions, and information technology, including national security systems, supportability and interoperability functions. Effective sustainment of weapon systems begins with the design and development of reliable and maintainable systems through the continuous application of a robust systems engineering methodology. The military services shall document sustainment procedures that ensure integrated combat support. Sustainment strategies shall evolve and be refined throughout the life cycle, particularly during development of

subsequent increments of an evolutionary strategy, modifications, upgrades, and reprocurement. At the end of its useful life, a system shall be demilitarized and disposed in accordance with all legal and regulatory requirements and policy relating to safety, security, and the environment.

SYSTEM AND PROGRAM DOCUMENTATION . . . .

"The Initial Capabilities Document identifies and describes why non-materiel changes are not adequate to correct a deficiency."

The ICD is a brief statement, written by DoD components in broad operational terms, which succinctly define a mission deficiency or technological opportunity. Along with the mission deficiency, an ICD identifies and describes, based on the results of mission need analysis, why non-materiel changes (i.e., doctrine, tactics) are not adequate to correct the deficiency. It identifies potential materiel alternatives and describes key boundary conditions and operational environments that may preclude satisfying the need/deficiency. It describes required operational capabilities and constraints to be studied during the concept exploration. The ICD must be non-system specific to allow for the broadest consideration and selection of the most cost effective solution; however, the operating MAJCOM may identify potential solutions and indicate a tentative preference. The ICD is prepared in accordance with CJCSI 3170.01C*, Joint Capabilities Integration and Development System.*

The Analysis of Alternatives

An AoA is an analysis of the operational effectiveness and estimated life cycle costs of alternative materiel systems to meet a mission need. The AoA documents the analytical and operational rationale for choosing the preferred alternative materiel

systems to meet a mission need. The AoA also provides the means to establish the Critical Operational Issues (COIs), Measures of Effectiveness (MOEs), and Measures of Suitability (MOSs) for the materiel system, as well as the operational requirements (thresholds and objectives) that support the MOEs/MOSs. Additionally, the AoA also includes modeling and simulation inputs to the Single Acquisition Management Plan (SAMP) and the Test and Evaluation Master Plan (TEMP). The AoA will identify models, simulations, and other analysis tools needed to complete the study. As these tools mature, they will become part of the suite of digital systems models (DSMs) required over the life of the program. In addition, the AoA provides key information to support ORD development.

Operational Requirements Document

The ORD is a *critical* document in the requirements definition process. The using MAJCOM prepares the initial ORD. The first ORD is the statement of the user's requirements. The ORD is solution-oriented and will be based on the most promising alternative determined during the concept studies or AoA. It documents operationally-oriented parameters with thresholds and objectives in terms of system-specific capabilities, characteristics, and other related operational variables. The testing community develops the MOEs/MOSs and measures of performance (MOPs) required for successful testing of the resulting system based on the ORD thresholds and objectives. The TEMP and the system contract's performance-based requirements will be written to satisfy ORD requirements. Air Force ORDs will contain a mandatory attachment called the Requirements Correlation Matrix (RCM). The RCM is an attachment to the ORD and provides a system audit trail of the capabilities and characteristics identified in the ORD. It provides the basis for user needs and requirements in the ORD to be included in the Integrated Program Summary (IPS), TEMP, APB, and serves as the foundation for developing the System Maturity Matrix (SMM).

Acquisition Program Baseline

The APB documents only the most important cost, schedule, and performance parameters identified in the ORD. The most important parameters are those whereby, if the thresholds are not met, the MDA would require a re-evaluation of alternative concepts or design approaches.

Program Management Directive (PMD)

The PMD is the official Air Force document used to direct acquisition or modification responsibilities to the appropriate Air Force MAJCOM for the development, acquisition, modification, or sustainment of a specific weapon system, subsystem, or piece of equipment. It is used throughout the acquisition cycle to terminate, initiate, or direct research for development, for production, or for modifications for which sufficient resources have been identified. The PMD states program unique requirements, goals, and objectives, especially those to be met at each acquisition milestone or program review.

Acquisition Decision Memorandum

The ADM documents the decisions made and exit criteria established at milestone decision reviews. It specifies what must be done in the next acquisition phase.

Test Order

The test order is the 18 FLTS authority to conduct a test. It outlines the purpose of a test, all COIs, and agency responsibilities. The 18 FLTS/DO will appoint a flight commander to assign a test director to a test upon issue of the test order. HQ AFSOC/XPT is the OPR for the test order.

The Test and Evaluation Master Plan

The TEMP (required for acquisition category I [ACAT I] programs) correlates and integrates test and evaluation (T&E) with the overall acquisition program strategy, schedule, other program documentation, and defines the critical path for completing T&E. The TEMP outlines the overall testing plan for an entire acquisition cycle, to include DT&E and OT&E. Fielded systems may have several TEMPs actively supporting multiple modification programs. The integrated test team (ITT) [members from various interested agencies who may be tasked in the PMD] prepares the TEMP and delineates program schedule, test management strategy and structure, and required resources. See DoD 5000.2-R for more information on the proper TEMP format and procedures.

When the 18 FLTS is the operational test agency (OTA) of programs requiring a TEMP, we participate as a member of the ITT to assist in developing the TEMP. During subsequent ITT meetings, the TEMP is updated to reflect completed phases and changes in the test program. The AFMC Single Manager (SM) for the system procurement is the OPR for the TEMP.

TEST AND EVALUATION . . . .

The purpose of T&E is to determine if systems are effective and suitable, and to identify and resolve deficiencies as early as possible.

The 18 FLTS conducts T&E to support acquisition, modification, fielding, upgrade, and weapon systems sustainment.

The major types of DT&E and OT&E are described below. See AFI 99-103 and its related AFSOCI for more information regarding DT&E and OT&E policy and procedures.

Developmental Test & Evaluation

DT&E is conducted during the acquisition phases as well as during system sustainment. During the acquisition cycle, DT&E provides complete and reliable data for estimating the military utility of new systems or items, and forms the basis for making decisions to continue the acquisition process. DT&E is conducted on new systems, or on product improvements to fielded systems, to expand their current performance envelopes or

Two Major Types of T&E are:

- **Developmental Test & Evaluation (DT&E)**
- **Operational Test & Evaluation (OT&E)**

capabilities. DT&E supports the decision to certify a system ready for dedicated OT&E. Qualification Test and Evaluation (QT&E) is a modified form of DT&E conducted on commercial and non-developmental items. Candidate systems for QT&E require little or no government-funded research and development (R&D).

Operational Test & Evaluation

Various types of OT&E are conducted during a system's life cycle to ensure the Air Force acquires and maintains operationally effective and suitable systems that meet the warfighter's needs. OT&E is conducted in as realistic an environment as possible to identify and help resolve deficiencies early. It tests and evaluates systems against user requirements in operational settings. Understanding this distinction is critical since the 18 FLTS performs OT&E rather than specification testing (DT&E), which can easily detract from effectively evaluating operational objectives and unnecessarily expending resources designated for OT&E.

In other words, just because a system meets the contractual specifications, it does not necessarily mean it will meet users' needs. Similarly, during combined T&E, the test team must ensure DT&E changes do not jeopardize the validity and timeliness of OT&E results.

The major types of OT&E are: IOT&E, QOT&E, Combined DT&E and OT&E, OT&E, MOT&E, OA, OUE, and FDE.

Initial Operational Test and Evaluation (IOT&E)

Testing is conducted to determine the operational effectiveness and suitability of systems undergoing R&D. IOT&E is conducted by the Air Force Operational Test and Evaluation Center (AFOTEC). IOT&E supports production and fielding decisions as well as the declaration of initial operational capability (IOC). IOT&E begins as early as practical in the system's engineering development program.

Qualification Operational Test and Evaluation (QOT&E)

QOT&E is conducted on systems that have not undergone significant government funded R&D. QOT&E is conducted by AFOTEC with the same rigors and policies as IOT&E.

Combined DT&E and OT&E

Use this approach to the maximum extent possible. Since the resources, test events, and data for DT&E and OT&E are often similar, developmental and operational testers are able to integrate their testing efforts to improve overall test efficiency.

However, the test approach must not compromise the data for both DT&E and OT&E. A dedicated phase of OT&E is required for production and fielding decisions.

Follow-on Test and Evaluation (FOT&E)

Testing continues IOT&E or QOT&E activities past the milestone C production or fielding decision. FOT&E answers specific questions about unresolved COIs and test issues, or completes areas not finished during the I/QOT&E. FOT&E ensures the system acquisition process is complete. FOT&E is conducted by AFOTEC.

Multiservice Operational Test and Evaluation (MOT&E)

MOT&E is conducted with another service's OTA for multiservice acquisitions. Conduct MOT&E according to the lead service T&E directives, or as agreed in a memorandum of agreement between the participants.

Operational Assessment (OA)

OAs are a management tool used to assess and report on a system's potential to meet user requirements on the acquisition program's progress toward OT&E, or on the system's readiness for low-rate initial production. They are progress reports, not test and evaluation. OAs will not be conducted as substitutes for IOT&E or QOT&E. AFOTEC or the MAJCOM OTA usually conducts OAs. The 18 FLTS is frequently tasked to accomplish OAs.

Operational Utility Evaluation (OUE)

OUEs are a highly streamlined, tailored OT&E activity designed to obtain a quick-look assessment of military capabilities and limitations. OUEs are specifically limited in time and scope and will not afford the same rigor as an IOT&E. OUEs will only be used when an IOT&E, QOT&E, or FOT&E cannot be tailored to meet unusual test program needs. OUEs cannot be used to replace IOT&E, QOT&E, or FOT&E. AFOTEC or the MAJCOM OTA conducts OUEs. The 18 FLTS is frequently tasked to accomplish OUEs.

Force Development Evaluation (FDE)

FDEs focus on the MAJCOM's requirement for the operational employment and sustainment of systems after the initial acquisition process, I/QOT&E, and/or FOT&E are complete. It is the evaluation, demonstration, exercise, or analysis of fielded operational systems throughout the system life cycle. MAJCOMs conduct FDEs to ensure their systems continue meeting operational needs by examining doctrine, operational concepts, system performance, procedures, tactics, training, organization, personnel, the logistics elements, and materiel issues, among other things. The 18 FLTS routinely conducts FDEs. A major area of FDE testing is evaluating operational systems against foreign military equipment and new threat systems.

Tactics Development and Evaluation (TD&E)

TD&E is a subset of FDE specifically designed to further exploit system capabilities and tactics during the sustainment of the system's life cycle.

It includes the research, demonstration, exercise, analysis, and evaluation of specific employment tactics against anticipated threats.

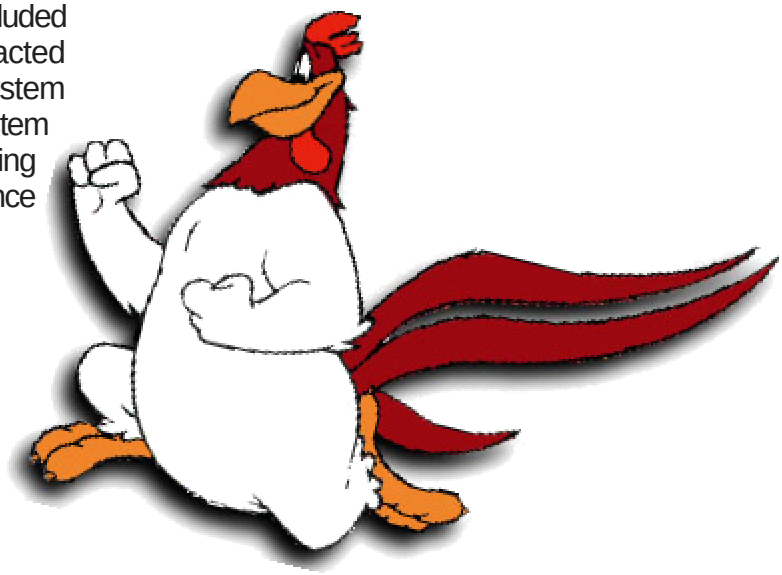
System Contractors in OT&E

During the test planning phase, system contractor participation is allowed and may be valuable. Occasionally a test requires their help since they built the test item. If OT&E cannot be accomplished without system contractor participation, every effort must be taken to ensure data integrity. The system contractor cannot be a test team member.

The system contractor cannot establish criteria for data collection, performance assessment, or evaluation activities. Public law dictates system contractor personnel may participate in an IOT&E only to the extent they will participate in the operation, maintenance, and system support when it is deployed in combat.

Support Contractors in OT&E

Support contractors, on the other hand, may be used freely by the test team. If their support is contracted, they can assist in conducting the test, scheduling, data gathering, data analysis, and report writing. Contractors must be hired from independent corporations where a conflict of interest will not be questioned in the outcome of test results. Support contractors can be included as test team members. Contracted personnel who participated in system development, system production, or system testing **cannot** be involved in establishing criteria for data collection, performance assessment, or system evaluation.



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CHAPTER 3 – AFSOC'S OT&E PROCESS

Test requests come from a variety of sources including HQ AFSOC, the operational squadrons, or a particular System Program Office (SPO). All requests for test must go through HQ AFSOC/XPT for staffing. AFSOC Form 99, *Tactics Improvement Proposal* (TIP), and AFSOC Form 93, *Test Request Form* are used to initiate the tests requests. Once AFSOC/XPT has the request, it can follow one of two tracks:

- It can be executed immediately per direction from AFSOC/CC.
- It can be implemented using the normal AFSOC test staffing process.

Agencies who attempt to by-pass AFSOC/XPT are in direct violation of AFI 99-103 and its associated AFSOCI, and jeopardize the safety review and staff coordination which normally occurs. Additionally, if ANYTHING of a safety nature happens on the non-sanctioned test, the individuals involved can be held responsible for all damages.

At regular intervals, HQ AFSOC convenes a test prioritization board to review the newly submitted test requests. Most, if not all, of the two digit offices are represented at the prioritization board and are voting members. Depending on the results of the board, a request for test can be immediately released to 18 FLTS as a test order for execution or held until such time that the XP community recommends its release.

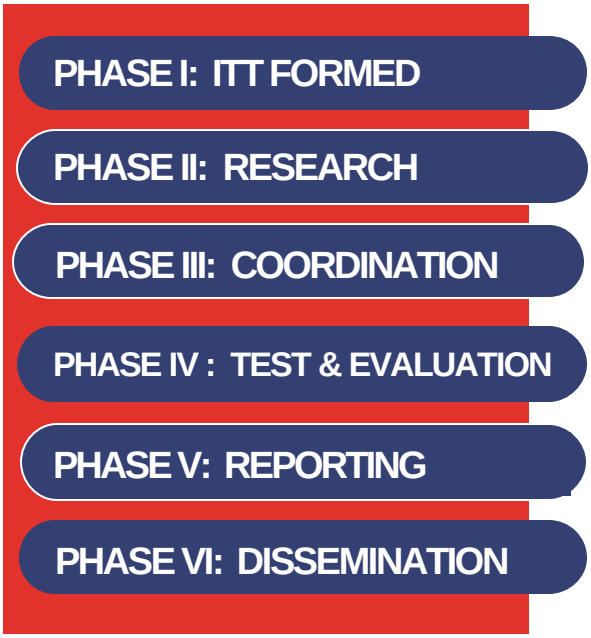
A test order from HQ AFSOC is the 18 FLTS formal tasking to conduct a test. The test order is coordinated, at a minimum, through AFSOC/DO, AFSOC/LG, and AFSOC/XP prior to receipt by the 18 FLTS. All AFSOC test orders are characterized by a two digit year and a three digit sequence number.

For example, Test Order 03-003 would be the third test order issued in Fiscal Year 2003. The 18 FLTS does NOT execute a test without an approved AFSOC test order.

Sometimes the 18 FLTS may be tasked to support testing done by other agencies (i.e., Det 1, 46 OG, AFOTEC, etc.). Each test support request is unique and often does not require the fully executed AFSOC OT&E process. However, use LegHorn and the TTEC as normal when accomplishing the test support request, but again realize not all steps may apply. If a test plan or test report is not required, consider drafting memos to be placed in the case file. Bottom line, each test support request must be reviewed with the flight commander, ADO, and DO to ensure adequate information and records are maintained.

The 18 FLTS performs OT&E in six phases. See figure 3-1.

Figure 3-1. Six Phases of OT&E



Each phase is characterized by key tasks necessary to complete the test effort. This chapter describes those tasks and the objective associated with each phase: Integrated Test Team; Research; Coordination; Test and Evaluation; Reporting; and Dissemination. All exit criteria must be completed before moving to the next phase of testing.

The critical actions and exit criteria for each phase are documented in the Test Team Execution Checklist (TTEC, attachment A), and LegHorn, the 18 FLTS database (see attachment F). The TTEC is a working document used to facilitate test completion. The test director will review checklist completeness with the applicable branch chief, and both will initial and date a completed hard copy for inclusion in the case file. The electronic copy will be annotated with the branch chief's name and date. As a courtesy, email DOMM with notification of each phase completed in order to facilitate Phase VI completion (archiving).

Remember, refer to the checklist as necessary during the remainder of this chapter. The TTEC is not all inclusive, nor does everything in it apply to all tests. Notify the flight commander and DO of any deviations from the general procedures.

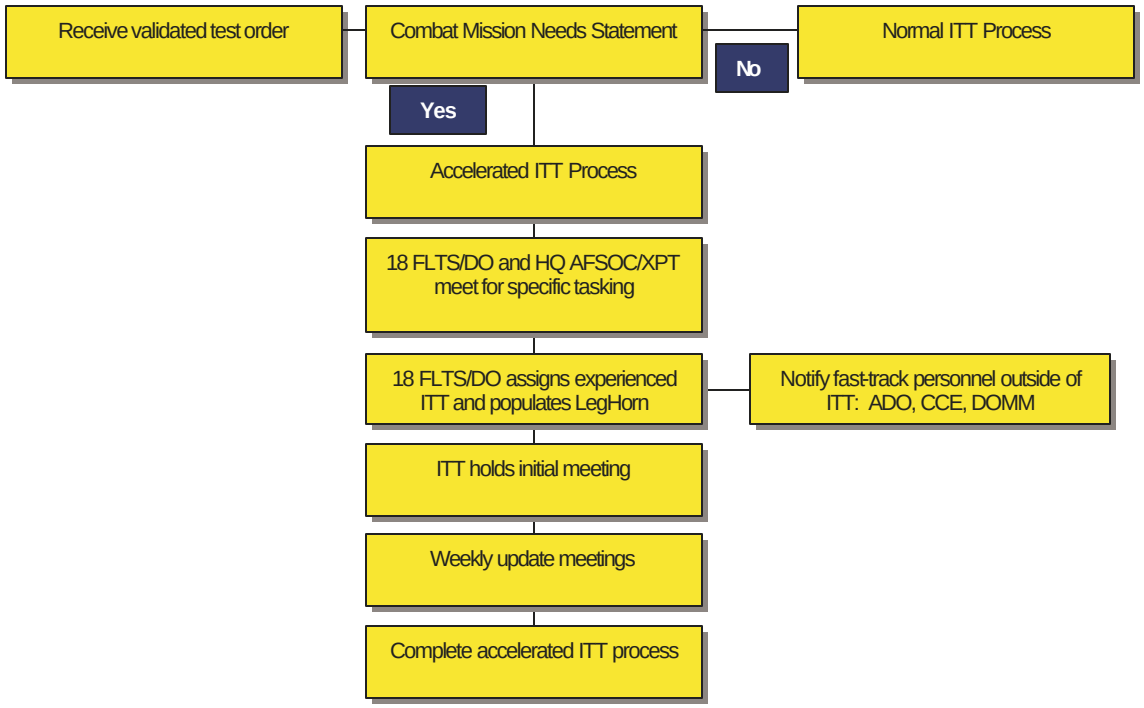
The AFSOC OT&E process is designed to accommodate all forms of operational testing conducted by the 18 FLTS. The timelines presented are generic. Team membership and responsibilities may vary from one project to the next. Though OPRs are suggested for some activities, the test director should use every available resource to ensure task completion. Successful test programs incorporate three key elements – people, paperwork, and participation.

Functional area experts make up the Integrated Test Team (ITT) who, under the direction of the test director, divide the workload associated with planning and conducting a test effort. Formulating the "core" team membership begins the OT&E process.

As the first of the six-phase process, ITT formation emphasizes the team building aspects of a test. It begins with delivery of the test order and ends with an established team.

In some cases, tests are so important they warrant a faster process than the normal ITT process offers. If HQ AFSOC/XPT and the 18 FLTS/DO realize a test is in direct support of combat operations, they can expedite the test using the 18 FLTS fast-track process. The fast-track process combines an experienced ITT with personnel in the squadron who are trained to expedite testing (see figure 3-2). The fast track process has different timelines than the normal ITT process, and those timelines are highlighted in RED in the attachment A checklists. Squadron personnel go to extremes to ensure the war fighter receives the correct answers to tests in an expedited fashion in the fast-track process.

Figure 3-2. Fast-Track ITT Process Flow Chart



PHASE I: ITT FORMED

Build the Test Team

The 18 FLTS/DO generates an appointment letter in coordination with the appropriate flight commander. The letter also identifies the test team assigned to the project based on test content and scope. The letter is passed electronically to the test team members, Media Branch, and Current Operations. A sample appointment letter is shown in figure 3-3.

The TD, ATD, test engineer, and test manager form the core of every test team. They provide specific functional expertise necessary to complete a test project.

Figure 3-4 depicts the appointment process. DOMM will build the test folder structure. Standard templates are acquired through LegHorn.

Core members (the minimum team in every test) act as managers, coordinators, and experts at any given moment. Since membership remains constant throughout a test, they are conversant in all aspects of the project. They communicate regularly to provide updates of individual progress, address problem areas, or identify potential issues. If a crisis develops during test planning or execution, the core develops a course of action to resolve the problem.

The test director is responsible for accurate and timely test completion. To this end, the test director manages the expertise of the ITT. Though the 18 FLTS/CC is ultimately

Figure 3-3. Sample Appointment Letter

DEPARTMENT OF THE AIR FORCE
18 FLIGHT TEST SQUADRON (AFSOC)
320 Tully Street
Hurlburt Field, Florida 32544-5446

Date

MEMORANDUM FOR DISTRIBUTION

FROM: 18 FLTS/DO

SUBJECT: Letter of Appointment, HQ AFSOC Project YY-XXX

1. The following individuals have been assigned to subject test project:
   A. Test Director: (Name)
   B. Assistant Test Director: (Name)
   C. Test Engineer: (Name)

2. In coordination with HQ AFSOC/XPTT, Name, Test Manager, Name, x-xxxx, comply with all requirements of the Test Order (TO), dated dd mmmyy.

3. An electronic case file has been created and can be accessed via LegHorn .

//**Signed Original**//
NAME, Lt Col, USAF
Director of Operations

E-cc:
DOF
DOA
DOO
DOM
HQ AFSOC/XPT

Figure 3-4. Test Appointment Process

responsible for ensuring project success, daily project management lies with the test director who uses a team of experts to facilitate sound decisions.

The assistant test director works closely with the test director throughout a project, augmenting coordination and planning efforts while facilitating test progress during the test director's absence. The assistant test director's responsibilities parallel the test director's, and their efforts should focus on complementing test director activities. The assistant test director position facilitates test director training or allows inclusion on the core team of a subject matter expert. From a training perspective, the position is ideal for educating new test directors in all aspects of the OT&E process by pairing them with a seasoned test director. The position also provides the flexibility of adding a test director with expertise relevant to the test project.

The test engineer is a technical expert for test and evaluation. DOA members are proficient in data collection methods, data analysis techniques, and data presentation. The test engineer is the test team's conduit to instrumentation and system experts.

The test manager is an integral part of the ITT as AFSOC's full time representative. The test manager conducts preliminary research to prepare for, and execute a test. The test manager is the team's source for system or employment documentation that supports the OT&E (acquisition or tactics development). An extremely important part of this job is ensuring the adequacy of critical operational issues (COIs). This includes ensuring COIs articulate desirable timelines and clarify command guidance. Since the test manager is also responsible for coordinating resources (external to the squadron), this individual works extensively with current operations (both HQ AFSOC/DOO and 18 FLTS/DOO) in generating support and scheduling requests. See AFSOCI 99-102 for more information on the function of XPT.

Once core membership is identified, the test director will schedule an initial core meeting. A briefing template in the project directory is available to the test director for meeting preparation. This briefing will introduce the test to the core team and serve as the basis for other presentations in the test process.

Project Directory

The squadron dedicates a folder on the local area network (LAN) for all test projects. After receipt of the original test order (initialed off by CC/DO/Flt Cdr) and appointment letter, an electronic case file is established in the LegHorn database and a hard copy case file for storage in DOMM. The project directory contains six sub-directories corresponding to the six phases of the test process. Case files annotated with a "c" suffix (i.e., yy-xxxc) are classified tests and those with an "s" suffix are support tests. Once completed, the test director will initiate appropriate folder documents by using LegHorn. This is accomplished by clicking on the "notepad," and going to the phase checklist. All the templates are available in their respective checklist and can be activated by clicking on an icon. LegHorn will recognize the first time a template is used and ask if a document should be created. Follow on-screen prompts. Figure 3-5 illustrates the directory structure.

Each subdirectory contains generic formats for documents, briefings, and various test team products associated with that phase of the OT&E process. Examples of available products include meeting invitation memos, message formats, and briefing formats.

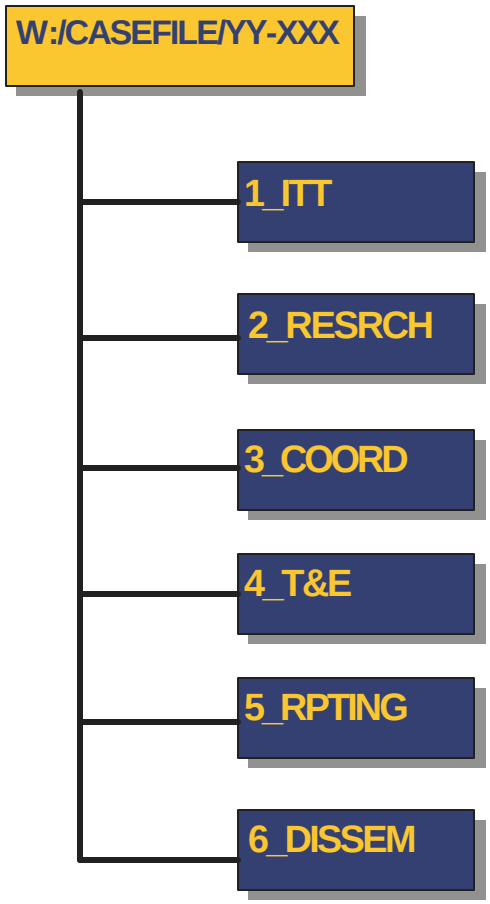
The Test Case File

Paperwork is the second element of the testing process. The test director maintains test records, completes periodic reports, logs test activities (telephone and electronic communications, etc.), and documents test results in the test case file.

Like the project directory, the hard copy case file is a repository for test information maintained by the core.

LegHorn, the information database for all 18 FLTS tests, is broken into three major

Figure 3-5. Project Directory Structure



sections: data collection, management analysis, and research.

Test director focus is mainly on data collection. This is where the test director enters pertinent information on the test performed along with periodic updates. Test directors must keep LegHorn up-to-date for accurate tracking.

Squadron leadership uses the management analysis section of LegHorn to track the test process. Be sure to update LegHorn weekly. It is the information source primarily used by the CC, DO, and flight commanders.

While DOMM manages the electronic case files found on our "W" drive, test directors should periodically review their project

folders. By using LegHorn to activate document templates, test directors will not create unnecessary documents in folders. Test directors are also prevented from over-writing master documents or incorrectly copying processed documents into master document folders. Finally, using LegHorn ensures consistent filename structures are maintained and allows easy retrieval. Test directors should forward or email DOMM with hard copies of all documents for archiving in case file folders.

Initial Core Meeting

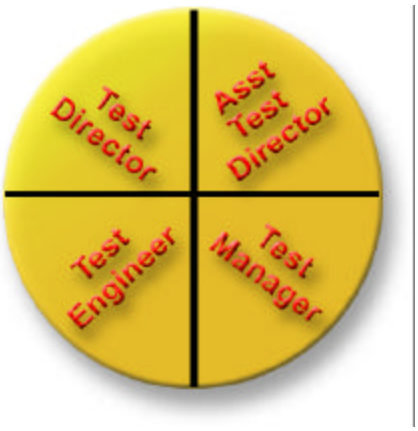
The last element of the test process is participation. Individuals become a team when their efforts are unified with a mutually understood direction. The ITT initial core meeting defines this direction. The purpose of the meeting, chaired by the test director, is to reach a consensus on the type of project requested by the test order, identify the scope of work required, and clearly establish individual roles. As the core sets the tone for the test team, it is imperative core members understand the task before bringing an entire team together. The meeting should be informal in structure, but must be accomplished within the first few days of core assignment.

The test engineer and test director will begin formulating instrumentation support requirements. Figure 3-6 illustrates the core team composition.

Test Manager Responsibility

First, the test manager will clarify and elaborate on COIs in the test order. For larger acquisition programs, the COIs are taken from the TEMP/AoA. However, the 18 FLTS is frequently tasked with operational testing for small acquisition programs or tactics development of existing systems where no

Figure 3-6. Core Test Team



TEMP/AoA is available. In these instances, the originator of the test request is the OPR for COIs. The core must then determine if COIs adequately capture the entire scope of the project as described in the test request. If not, the test manager must engage the originator to identify new COIs. Though the core may make recommendations, COIs must come from the originator, the AoA, or the TEMP. XPT will convene a test order meeting (TOM) including testers, operators, HQ staff, and program managers to examine and draft the COIs for the project.

Identifying Measures of Effectiveness (MOEs)/Measures of Suitability (MOSs) and Test Scope

The test scope is a statement of operational capabilities, definitions, and conditions which focus the test issue and guide its evaluation. The core team formulates draft MOEs/MOSs once the COIs are clearly defined. An MOE is a measure which expresses how well a combat system successfully performs a mission under specified conditions. An MOS is a measure which expresses maintainability, supportability, and reliability under specified conditions. MOEs/MOSs are discussed in greater detail later in this handbook.

The ability to obtain information to meet MOEs/MOSs and answer COIs depends on available resources. The test team begins to formulate a general test concept with a dynamic scope as determined by known resource availability. In most cases, lead-time and funding directly influence resource availability. Therefore, preliminary test planning is a matter of continuously balancing desired test information with the ability to acquire it.

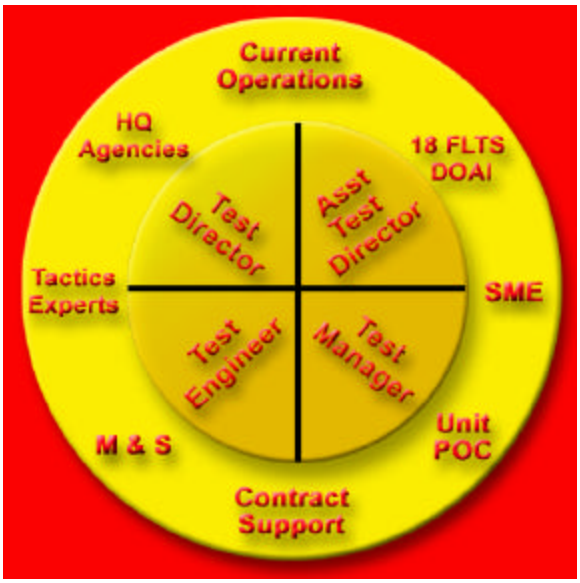
Peripheral Subject Matter Experts

The core supplements their team with peripheral subject matter experts in fields such as logistics, system development, tacticians, and operators (depending on the OT&E type) to facilitate test planning and execution. A representative from the Modeling and Simulation (M&S) Branch can also prove beneficial as it is an effective, risk-free way of assessing systems or tactics at a reduced cost. M&S should be invited to the test team's initial planning (TTIP) meeting. Early M&S involvement is necessary to facilitate model development and availability. Additionally, consider inviting a DT&E representative (normally Det 1, 46 OG) if previous developmental testing was accomplished. They may provide critical information from their testing which could make or break a successful test for you. Whatever its makeup, the ITT must be capable of completely assessing the operational *effectiveness* and *suitability* of a tactic or system. Figure 3-7 illustrates the ITT.

Peripheral team members are identified during an initial core meeting. Core members schedule the TTIP meeting when the entire ITT is assembled. Though not represented in the core, an 18 FLTS/DOO representative is a peripheral team member because of their extensive participation during the Research, Coordination, and Test and Evaluation Phases. Any questions concerning an organization's participation will be resolved at the TTIP.

An invitation memorandum for the ITT initial planning meeting is available by going to

Figure 3-7. Integrated Test Team



LegHorn, clicking on the notepad, accessing the ITT checklist, and clicking on the icon. Follow the on-screen prompts. E-mail is also an effective invitation method for short lead times. Since extensive project research may not have been accomplished by the initial planning meeting, the project originator's attendance is highly desirable, though permanent test team membership may not be required. A briefing template for TTIP preparation is available in the project directory.

TTIP Meeting

The ITT phase is finalized with the TTIP meeting. The objective of this meeting is to capture the scope of your project. At the TTIP you will confirm the originator's intent, finalize ITT membership, discuss draft MOEs/MOSs, and draft specific measurements to apply to

those MOEs/MOSs. Any background documentation you can bring to the TTIP will facilitate thoughtful discussion, and will produce MOEs/MOSs more easily developed in the next phase of the process. Remember, the TTIP's objective is to determine the scope of a project and the resources required to plan and execute it. MOE/MOSs and measurement developments are the focus of the next phase in the OT&E process - research. Without definitive COIs, research cannot begin. If there was no previous coordination on the COIs, take some time during the TTIP to critically examine the issues, even recommend revisions to the test order based upon team discussions.

Prepare Commander's Brief

Test teams are required to brief the Squadron Commander, or DO in his absence, to ensure the scope of the project and any issues associated with it are known up front. This briefing shall consist of overall scope, outline of COIs/MOEs/MOSs/MOPs, and basic methodology of test. This brief will ensure your draft test plan meets the commander's intent. The briefing format is found in the LegHorn project, ITT checklist, as [coms.brf.ppt]. Be prepared to brief as you begin to close out Phase I. Remember, a thorough and informative briefing is an excellent medium for presenting issues requiring DO and/or CC involvement.

The objective of the Research Phase is to develop a test plan for the team's project. The test plan is a comprehensive document that clearly defines how the COIs will be answered. It provides information about the test article or tactic to be developed and the method for ensuring it meets user requirements. This phase focuses the team's efforts on understanding the test article or tactic, and determining the best evaluation method. With the volume of research required, dividing labor is imperative for timely test planning. Further, some individuals on the team will have immediate access to the required information. Use them!

Obtain System Documentation

When the 18 FLTS receives a test order, the test director will ensure a thorough search for existing system documentation and determine the extent of previous related testing to avoid duplication and provide test guidance. Test plans and reports from other projects can also provide insight into the best testing method. In addition to the ICD, ORD, PMD, and TEMP, there are other sources of information that may be necessary or beneficial when building a test plan. Don't overload one team member with producing all research material; spread the wealth. Other sources for the research are AFOTEC's OT&E data bank, the 18 FLTS case files, the 18 FLTS research library, and other operational testing agencies. See Chapter 4 and the 18 FLTS Style Guide for additional information.

The 18 FLTS Library

The 18 FLTS library provides a significant resource center for test directors during the research phase of testing. The library archives all test project case files electronically by calendar year the test project closed out. Searching for old case files is accomplished by either: 1) searching the 18 FLTS intranet library pages located under the research drop-down menu and viewing the actual archived

information (sorted by weapon system, calendar year closed, and project number); or 2) using the search engine found in LegHorn.

Additionally, the library can provide other items such as Jane's Defense resource books, periodicals, videos, CD-ROMs, and other test agency reports (i.e., AMC, etc.). A current listing of these can be found at w:\casefile\library\other\references.xls. The library also has access to the Defense Technical Information Center (DTIC) in Ft Belvoir, VA by using the Scientific and Technical Information Network (STINET). Items are generally ordered through the Eglin AFB AFRL Munitions Directorate Technical Library. Seven to 10 working days are normally required to obtain DTIC information.

System Descriptions and Technical Orders (TOs)

Acquisition systems always provide some level of technical documentation. At this point in test planning, TOs may not be complete. TOs should provide enough information to help the team understand a system's function and operation. Although TO adequacy is an important part of OT&E and arrangements should be made to procure final versions for assessment, TOs used in test planning should not be subject to evaluation. The system developer may also have technical documentation not intended for operator use.

These are typically in "white paper" form and serve as an operations handbook while a system is in development. The system contractor program office or developmental test agency can provide technical documentation. Obtain step-by-step procedures for operating the equipment, maintaining the equipment, or performing the tactic.

Interface Control Documents (ICD)

If the test requires instrumentation, it also requires ICDs. These documents are constructed by the system developer for the System Program Office (SPO) and can be aircraft or system specific. The ICD contains information about the 1553 data bus structure and how each 1553 message is built. From the ICD, DOA software engineers can find specific flight parameters that require recording. They also use the ICD to build data collection software to be used in flight. Some tests may require a comparison between aircraft data (position information, airspeed, altitude, and attitude) and system data (radar warning receiver information on threat identification, angle of signal arrival and jammer setting).

In this case, both ICDs are required. Since documents may already be in place at DOA, check with an test engineer before requesting them from the SPO.

DT&E/OT&E Reports

This step requires researching old system tests. This serves several purposes. Old tests provide useful ideas on test methodology and may highlight previous mistakes. Previous tests also provide baseline data for comparison. Reports are located in the squadron case file database, the 18 FLTS research library, the squadron intranet, the Defense Technical Information Center (DTIC), the Eglin technical library, the AFSPC history office, or the single manager at the SPO..

Security Classification Guides

Security classification guides provide official guidance on classification levels for various components of aircraft systems or their capabilities. Based on scope and data, a test's classification level and security measures can be determined from the appropriate classification.

Interview Experts

Interviewing experts can be very beneficial. The idea is to obtain information from individuals who may not be directly involved with the test, but who possess knowledge and experience that can be used by the team. These experts may be aircrew, system contractors, former test personnel, program office personnel, or experts in related fields. Once system documentation is obtained and experts are interviewed, the team has the necessary data to begin planning a test. The remaining actions in the Research Phase are inextricably linked, and therefore must all be completed.

The completion order varies from one project to the next. However, the test plan develops throughout the phase as other actions are completed. As a result, the Draft Test Plan is among the last actions completed in this phase.

Logistics Study

The test team should consider all required resources and the necessary logistics support to conduct a test. The test support requirements list evolves as the test plan develops. Aircraft, aircrew, maintenance, aircraft support equipment, test ranges, and special instrumentation are types of support often required for mission success. From the first test team meeting, the test manager documents these requirements to facilitate their coordination later in the process. Along with identifying what is required, determining responsibility for ensuring it will be in place must also be accomplished. Established management systems already exist to identify common support requirements. However, test unique items (i.e., specialized support equipment, or the test article itself) may require special shipping or handling instructions and receipts. Test teams must identify these requirements to properly address them later.

Ground Support Requirements

Remember, tests require important coordination for ground personnel, not just for the aircraft and the range. The test director is responsible for coordinating ground support. These requirements are included as part of a test support request submitted during the Test Coordination Phase (Phase III). Ground support assets vary by test. Examples include transportation, support facilities, flight line lighting, additional generators, and personnel arrangements for odd mission times. Simple things like tables and chairs for ground personnel can cause test delays or lost range time.

Range Issues

Test ranges vary in size and sophistication. They could be part of the major range test facility bases (MRTFB), to backyard ranges more suited to training. A project's data and environmental requirements drive selecting a range. Chapter 4 highlights ranges and types of testing they support (see table 4-3). After identifying the test's data requirements and operating environment, the 18 FLTS/DOO and a test engineer identify suitable ranges. The test engineer investigates data capabilities of candidate ranges, while DOO researches their respective costs, scheduling requirements, and availability. The TD will fill out a statement of capabilities (SOC) [see figure 3-8] to facilitate range selection and provide a rough order of magnitude (ROM) for approximate test cost.

Ranges vary in cost depending on time of year or even time of day. Consider test objectives carefully to minimize testing costs by using advantageous scheduling.

Figure 3-8. Sample Request for Statement of Capabilities (SOC) Letter

DEPARTMENT OF THE AIR FORCE
18TH FLIGHT TEST SQUADRON (AFSOC)
320 Tully Street
Hurlburt Field, Florida 32544-5446

Date

MEMORANDUM FOR 46 OG/OGP
505 North Barrancas Ave
Eglin AFB, FL 32542

FROM: 18 FLTS/DOO
320 Tully Street
Hurlburt Field FL 32544-5446

SUBJECT: Request for Statement of Capabilities (SOC) for AN/ALQ-172 with Engineering Change Proposal 93 (ECP-93) Block Cycle 1 (BC1) Operational Flight Program (OFP), AFSOC Project 02-072

1. 18 FLTS/DOC will be conducting a Force Development Evaluation (FDE) of the BC1 software update and techniques against various threats.

2. The AN/ALQ-172(V)1 is the electronic countermeasures jammer used on the AC-130U and MC-130E/H. ECP-93 is the system modification that allows for use of common OFP and technique software with the AN/ALQ-172(V)3, used on the AC-130H. BC1 is the first Block Cycle update to the ECP-93 software.

3. Flight test profile:

a. Aircraft: AC-130U

b. JON: 921AZFF4

c: Range Profiles:
ECM.L04
ECM.L05
ECM.L06
W-151S5
W-151S6
W-151A1

d. Emitters:
SADS VIM - 24 hours total use
Record data
HPISS - 24 Hours total use
Record data
SADS VIIIR - 24 hours total use
Record data
WEST XI - 24 hours total use
Record data

e. Altitudes:
Altitude range 2000 – 6000 AGL
Mission data will be collected at 3500 AGL straight and level

f. Frequencies:
Two UHF frequencies required, one for normal mission and another for test use.

g. Munitions:
No munitions, chaff or flares will be used during this test.

h. RFAs:
Use the RFAs assigned to this JON

i. Number of Missions: 12
9 Primary missions
3 Back up mission

j. Dates:
Primary Missions: 18 Nov – 13 Dec 02
Back up Missions: 18 Nov – 13 Dec 02

k. Times:
Can be AM or PM range times with 4 consecutive hours of range time for each mission, primary and back up.

3. Additional support:

a. A test team representative at CCF. He will be there for all 12 missions, a maximum of 48 hours.

b. Two FPS-16 radars (A20 & C10) with TDOP for GPS/TSPI (back-up) tracking, a maximum of 48 hours.

c. A-6 for parameter collection; pre, post, and during mission, a maximum of 48 hours.

d. Eglin Math Lab support for TTR Tracking errors, MTR Tracking errors, and MDSS.

4. The 18 FLTS test director is name, phone #; the assistant test director is name, phone #. An alternate POC is 18 FLTS/DOO, 884-7726.

NAME, rank, USAF
Title

Deployment Requirements

A deployment may be required if the test is to occur in an operational environment or range not easily accessible from home station. If a sufficient requirement exists for off-site testing, the DO will appoint a deployment commander for deployment planning. Deployment requirements should be investigated as soon as a test order is received. Start preparing even though the actual deployment location may be unknown at this point. Data instrumentation and reduction equipment, maintenance personnel and equipment, and facility requirements are the types of things to consider and document for future coordination. Consider combining efforts with other squadron projects requiring deployment to save coordination time and monetary resources. Use attachment B to help prepare for deployment planning.

Munitions Requirements

Many tests require gunfire operations and expending flares and/or chaff. To ensure the necessary munitions are available, the 18 FLTS maintains its own munitions account. Identify the types and quantity needed for the entire test effort as early as possible. All munitions requirements must be coordinated through 18 FLTS/DOO and the munitions account custodian. Complete the appropriate paperwork provided by the munitions account custodian. A minimum of 2 weeks are required to coordinate any munitions requirements.

Test Support Request

The support request letter is a key piece of documentation. It requests (through AFSOC), the test aircraft, aircrew, and maintenance support (see figure 3-9).

The test manager, in conjunction with 18 FLTS/DOO, drafts this letter and submits it to HQ AFSOC/DOO for coordination with the appropriate agencies. Although the letter is one of the exit criteria for the Research Phase, AFSOC must receive it **no later than** 45 days before the assets are required. This means 45 days from the beginning of installation - not ground or flight testing.

Once aircraft support is determined, forward the request through HQ AFSOC/XPT. Be sure to coordinate with 18 FLTS/DOO to formulate a "window" for testing. Coordinating with the corresponding aircraft maintenance unit (AMU) will also help.

Once a letter is submitted, 18 FLTS/DOO will take over coordination responsibilities and ensure the requested support is available. The 18 FLTS/DOO is also responsible for coordinating resources outside AFSOC. These include ranges and instrumentation facilities. Coordination may require up to 60 days; therefore, it should begin as soon as the team verifies the need. With all their coordination responsibility, it is clear why DOO must be a member of every test team through the Test and Evaluation Phase. Once all support requirements are identified, rough cost estimates can be assessed by filling in a SOC request.

Figure 3-9. Test Support Request

DEPARTMENT OF THE AIR FORCE
18 FLIGHT TEST SQUADRON (AFSOC)
320 Tully Street
Hurlburt Field, Florida 32544-5446

Date

MEMORANDUM FOR HQ AFSOC/XPT

FROM: 18 FLTS/DOO

SUBJECT: Request for Support (*Title of Project*), AFSOC Project Number (*if applicable*)

1. *This paragraph is a maximum of five sentences. Start with:* The (*your unit*) will be conducting (*type of test*) on the (*title of project*) on the (*MDS, system, facility*). We request an (*MDS, system facility*) be made available during the period of (*when, include time periods for instrumentation, ground test, and flight test*). This test will be conducted (*where and how, include location such as Hurlburt, deployment required to NTR, must be dedicated flights, can be piggy-backed on unit training, any information that lets the supporting unit know how the test will be accomplished in one or two short, concise sentences*). *Last sentence is:* If this schedule cannot be supported, please advise us when it can.

2. Support for this test is requested from the (*list the Groups so that the Wing will know who to send it to, i.e., 16 OG and 16 LG*). *The Group subparagraphs will list the individual units needed.*

3. General information:

a. Purpose: *To determine whether or not it works. Be specific for the test, but don't make it too technical or complex.*

b. Background: *Keep this short and relevant. Limit it to what Wing, Group, and Squadron leadership (both OPS and MX) needs in order to understand the program.*

c. Assets: *Specify what you need to conduct the test, i.e., any AC-130H, the DIRCM modified MC-130H, serial number XX-XXXX, access to the XX-XX simulator.*

d. Schedule: *Get specific here. List the number of ground events (hours if needed) and number of flights. Include a chart or reference an attached calendar if the project is large. Tests piggy-backed on local flights should be requested on a minimal interference basis during local unit training lines in order to reduce impact. ALWAYS include sufficient back-up events to account for WX, MX, and other delays.*

4. *XX* OG Support Requested: *List the operations support requested in subparagraphs. Get specific for the unit needed, i.e., 16 SOS. If the subparagraph areas are not applicable, either list them as N/A or NONE. Add any additional subparagraphs as needed.*

a. Aircrew qualifications: *Any special qualifications, i.e., instructor NAV, previously trained sensor operator, any available tactical crew.*

b. Specialized briefings/training: *List all times and dates for test briefings, test card reviews, mission profiles, pretest training. Can it be done at normal mission prebrief or do you have to train the month before? Break down as required.*

c. Number of personnel flying on the test: *List all and ensure you describe the position or function of the individuals. Test Director, Test Engineer, test pallet operator, contractor, etc. Last sentence:* These individuals will be on valid aeronautical orders or an approved AFSOC support forces letter.

d. Facility Requirements: *List any OPS-owned facilities needed for briefings, training, etc.*

5. *XX* LG Support Request: *List any additional requirements in these subparagraphs that are beyond normal home station support for local flying. If you have no additional requirements, then state, "Normal home station support for local flying operations" or "None." Add any additional subparagraphs as needed.*

a. Aircraft Configuration: *List special configurations you need, i.e., the DIRCM modified MC-130H, serial number XX-XXXX. If you don't require anything specific, state so, i.e., "Any available MH-53M."*

b. Maintenance Personnel Support: *List any specialists required for both ground and flight test events. Get as specific as possible, i.e., 15 AMU engine run crew for ground testing, or 16 CRS seven-level electronic warfare technicians for ground checks prior to flight.*

c. Support Equipment: *List what you need, i.e., light-alls, air conditioning, B-1 stands.*

d. Facility Requirements: *List any hangar space, parking locations.*

e. Special Tool Requirements: *List anything unusual.*

f. Munitions Requirements: *Break this down by flight and specific type of munitions.*

g. Fuel Requirements: *Any specific loads needed.*

h. Access to Special Areas: *Flightline access, any MX facilities, escorts required.*

6. *Any other agency support you need, with specific subparagraphs as required.*

7. *(Your unit)* POCs are *(rank, name, number, e-mail). List a primary and back-up*.

//Signed Original//
NAME, Lt Col, USAF
Director of Operations

DO NOT COPY ANY WING AGENCIES, AS THEY WILL INTERPRET ANY ADDITIONAL CORRESPONDENCE AS DUAL TASKINGS.

Rough Order of Magnitude (ROM)

After identifying support requirements, preliminary cost estimates, or a ROM, must be developed. This rough cost estimate, based on preliminary requirements, establishes costs for items such as test facilities, aircraft and contractor support, aircraft fuel, deployment costs, TDY costs, printing costs, and other related test support assets.

Once the team develops a ROM, the 18 FLTS/FM reviews it to ensure necessary funds are available for project completion. As an important part of the research and planning phase, a ROM will be included in the test plan submitted to HQ AFSOC/XPT for staffing. In addition to the ROM worksheet and with assistance from FM, the test director can access LegHorn for information. As such, LegHorn should be continually updated during the research phase with ROM information. Figure 3-10 provides a sample worksheet.

Figure 3-10. Rough Order of Magnitude Worksheet

SAMPLE ROUGH ORDER OF MAGNITUDE

"Project Name and Number"

1. **TYPE OF TEST:** Per test order. (**Example:** Force Development Evaluation)

2. **DOES TEST SUPPORT A PRODUCTION OR FIELDING DECISION (specify):** Yes/No.

3. **ANTICIPATED RESULTS:** With sufficient discussion provided. (**Example:** The XYZ simulation is simulation of threats to the Widget. This simulation includes a fly-out model to simulate miss distance between the XYZ missile and the target aircraft. It is essential the Widget system be optimized against the XYZ simulation for programmed defensive technique effectiveness determination. Widget operations may transit potential XYZ areas, vulnerabilities need be identified. Previous Widget T&Es were not performed against either validated simulation or actual XYZ. Quick-look tests during XYZ exploitation failed to provide sufficient data regarding Widget defensive technique effectiveness. Widget evaluation against XYZ simulation offers a cost effective alternative to flight testing. For the cost of one sortie, two weeks of XYZ simulator time can be used to optimize Widget MD. Anticipated result: ECM technique program enabling the Widget to operate in proximity to the XYZ with a low risk of interception.)

4. **IS TEST UNDER CONGRESSIONAL OR OSD OVERSIGHT:** Yes/No

5. **ORGANIZATION RESPONSIBLE FOR FUNDING TEST AND PROGRAM ELEMENT CODE:** HQ AFSOC/XXX, AFOTEC, USSOCOM, WR-ALC, ASC, OSD, ASD, AATC, etc. N#####

6. **APPROXIMATE COST OF TEST:** Total: $$

- Range - See 18 FLTS/DOO scheduler for SOC. Based on (test time required) of optimization at Base X, Range Y or as determined by the test.
- Transportation Costs - Will you be using SAAM airlift or ground transportation? If using ground transportation, will it be roundtrip or one way. See Deployment CC or 18 FLTS/DOAI.
- TDY - (Total personnel x Airfare) + (Total days x Per Diem rate of TDY location) + (Rental Vehicles) See 18 FLTS/FM for rates if needed. If deployment is required, total personnel for deployment and specify if using military air if possible.
- Printing – ($.24/single-sided page for color, $.11/single-sided page for black & white) x (total copies based on distribution list) Use $.24 if there is ANY color on the page at all—one word or the whole page. Gray is not considered a color.
- Contractor support - Provide information on a specific contractor and any cost known at this time. Contact 18 FLTS/FM for funding criteria.
- Supplies - Cost of special batteries, video tapes, CD-ROMs, zip disks.
- Flying Hours.
- Other Costs—Anything else not covered above.

7. **NUMBER OF SORTIES REQUIRED (direct, support, spin-up):** As required.

8. **AIRCRAFT MODIFICATION REQUIREMENTS:** As required.

9. **DATE TEST BEGINS, DATE TEST ENDS:** Begin - Month/Year; End - Month/Year.

10. **POC:** Unit, Name, DSN ###-####.

Training Requirements

The team estimates what training aircrew and maintenance personnel should receive to properly execute the test. Ensure test participants and team members receive required training on tactics or system employment before beginning a test.

Frequently, the system developer is under contract to provide this training. Check with the SPO on available user training. This will reinforce the test team's system knowledge and provide useful feedback on the adequacy of the user's training program.

It is very important to avoid situations where precious test time is spent on training rather than answering COIs. Realize, however, some training during the test is unavoidable. In short, do everything possible to ensure adequate training is provided.

Since contractors are not usually directly involved in tests, OT&E for tactics development requires additional efforts by team members to ensure operators are trained. Ensuring test participants are highly knowledgeable and skilled will reduce ground training time. Weapon systems instructors or squadron tacticians are prudent choices to participate in tactics development.

Draft the Test Plan

The test plan, a working document prepared primarily by the test team for test execution, describes and defines the testing to be accomplished and the test environment. It contains detailed information about procedures to use on a mission-by-mission, event-by-event basis. The 18 FLTS Style Guide contains the test plan format.

AFI 99-103 provides the guidance to prepare and conduct OT&E. The AFI uses MOEs/MOSs to describe a primary area of test emphasis that indicates the degree to which it performs the task or meets a requirement under specified conditions. Measures of Performance (MOP) are a quantitative measure of the lowest level of physical performance (e.g., range velocity, payload). MOPs aggregate up to address MOEs/MOSs. Though the test plan format in the project directory is used for 18 FLTS projects, the body of AFI 99-103 still provides excellent guidance to conduct OT&E .

The importance of established COIs becomes apparent during test plan development. A sound plan is developed when:

- 1) The MOEs/MOSs/MOPs support answers to the COIs.
- 2) MOEs/MOSs/MOPs address effectiveness and suitability.

Clearly, the test plan is the "hub" of an OT&E process. Total test team participation is critical when developing the test plan. The test director is responsible for soliciting any outside help to expeditiously accomplish its development. Squadron reviews and review boards are inappropriate places to write the test plan since their purpose is to ensure the test plan is ready to be published.

To be effective, a test must respond to operational requirements. A system's ORD contains system requirement information (to include threshold and objectives) and is the foundation of any OT&E. It should be the focus of MOE/MOS and MOP development. Additional questions, issues, and information requirements may evolve during a system's development. The test team will extract MOEs/MOSs and MOPs from various program documents and begin to formulate the users' needs from an operational viewpoint.

In cases where program documents are unavailable, the source of MOEs/MOSs and MOPs, may be:

- Working group minutes (Tiger Teams, etc.).
- Documented deficiencies (Deficiency Reports) that generate system improvements.
- Test team judgement (which is documented for the first time in the plan).

MOE/MOS/MOP Development

With the test defined by the assigned tasks and their basic scenarios, the next step is developing MOEs/MOSs and MOPs for the OT&E. They are used to quantify the results of an OT&E. These measures drive test design, data sample size requirements, test resource requirements, and how the test results will be analyzed, reported, and interpreted and are, therefore, very important elements in testing. They must be developed carefully and thoroughly. Check with your flight commander or an ADO throughout this process to ensure your MOE/MOS/MOP development is on track.

- Be sure MOEs, MOSs, and MOPs are complete and accurate!
- Remember, they must combine to answer the COIs.

Many appropriate MOEs/MOSs and MOPs will be evident with well defined tasks. Table 3-1 contains general test subjects and categories that are often addressed during OT&E. Test MOEs/MOSs reflect the desired information and provide a basis for identifying and acquiring resources in the Test Coordination Phase (Phase III). MOEs/MOSs may be redefined as the test plan evolves. Along with MOEs/MOSs, resource requirements are subject to change, because of resource non-availability.

Measure Classification

MOEs/MOSs and MOPs roughly fall into one of two separate measurement distinctions. The first distinction is quantitative-qualitative. Quantitative measures refer to indices which can be specified on a numerical (interval or ratio) measurement scale. Qualitative measures are categorical variables that do not imply any numerical value and more often refer to the presence or absence of some characteristic or event. The second distinction is objective-subjective. Measuring some parameter, e.g., gunfire accuracy, collects objective data. Subjective data comes from personal opinion and aircrew surveys.

Measure Selection

In selecting OT&E measures, consider the relative importance of the system characteristic to be measured, the cost and availability of the data collection methods, and the degree to which you will need to defend or justify the results.

Quantitative measures typically cost more to collect than qualitative measures. Simply demonstrating the system is capable or possesses a certain attribute can be accomplished by collecting qualitative measures.

Table 3-1. Test Subjects and Categories

TEST SUBJECT	TEST CATEGORIES		
	Effectiveness	Suitability	Both
Mission Capability	X		
Susceptibility to Countermeasures	X		
Tactics	X		
Survivability	X		
Procedures			X
Compatibility			X
Interoperability			X
Deceptive Characteristics and Capabilities	X		
Reliability			X
Maintainability		X	
Availability			X
Technical Data			X
Support Equipment		X	
Supplies		X	
Facilities			X
Contractor Support		X	
Transportation and Handling			X
Manpower			X
Training			X
Mobility			X
Software			X
Safety			X

Quantitative measures capture the degree to which the system can perform (how far, how fast, how high, etc.). They require repeated data collection events and a large enough sample size to capture the performance relative to variability.

Test designs involving repeated events cost more than one-shot demonstrations. Subjective measures are cheaper, sometimes involving only a human data collector with pencil and paper. Sometimes subjective measures are the only way to collect data.

Generally, quantitative measures are preferable to qualitative, and objective measures are preferable to subjective, particularly when they are key parameters or when answering COIs.

Measures of Effectiveness/Measure of Suitability

An MOE measures how well an operational task is accomplished or how well an operational task element accomplishes an assigned tasking. An MOS is a measure which expresses how well a combat system can be maintained and/or is reliable under specified conditions.

Write the MOEs/MOSs in objective/quantifiable terms while considering the effectiveness and suitability issues which support accomplishing operational and assigned tasks.

MOEs/MOSs can come from various sources. If a program has an AoA, it will be an important source of MOE/MOS related data. Another source of MOEs/MOSs is the ORD. The Mission Needs Statement (MNS), Mission Area Assessment (MAA), and MAPs accomplished by AFSOC have relevant information to developing MOEs/MOSs. Develop MOEs/MOSs that are testable and linked to the AoA, ORD, and the Test and Evaluation Master Plan (TEMP).

For example, in the case of the operational task "destroy the runway at air base A," success or failure is measured from the perspective of the customer - the CINC or Air Component Commander and staff.

MOEs/MOSs measure the degree of job accomplishment and can be expressed in a variety of forms: the number of sorties required to destroy the runway, the percentage of times the runway was destroyed, etc. There can be more than one MOE/MOS associated with any given task. Again, the test director must ensure test and evaluation concept MOEs/MOSs quantitatively link to AoA MOEs/MOSs (if there is an AoA).

Evaluation criteria are the minimum acceptable standards to which the task must be accomplished. The user establishes evaluation criteria and is normally documented in the ORD. The operational tester may comment on the criteria's usefulness with respect to OT&E and may even assist the user in developing useful OT&E criteria. If the operational tester solely develops criteria, it must be endorsed/adopted by the user.

MOEs/MOSs are sequentially numbered. The first number corresponds to the COI that it supports. The second number simply sequences the supporting MOEs/MOSs. For example, the first MOE/MOS to support COI-1 would be MOE 1-1/MOS 1-1; the second would be MOE 1-2/MOS 1-2.

Measures of Performance

A measure of performance is a parameter that addresses a system's technical characteristic or capability. It expresses how well a system accomplishes a specific performance function. MOPs can be aggregated to evaluate an MOE/MOS that is not directly measurable. MOPs, such as weight and speed, must relate to the MOE/MOS such that the effect of a change in the MOP relates to a change in the MOE/MOS. Aircraft turn-around time or maintenance man-hours per flying hour are two examples of MOPs which can be aggregated to address sortie generation capability.

In identifying MOPs, first review the MOEs/MOSs associated with the operational and assigned tasks to determine if they are directly measurable. If they are not, MOPs need to be developed so they may be aggregated to address the task level MOE/MOS.

For an MOE/MOS not directly testable, MOPs are testable parameters that relate to changes in the MOE/MOS. MOPs measure performance elements internal to the system under test and they are derived from either the MOEs/MOSs or the functions and characteristics in the ORD. In the "destroy the runway" example, the pilot must acquire the target, identify it, perhaps lock on to the target, arm and select his weapons, and release them within parameters. Each of those elements can have associated measurements that quantify the performance time, accuracy, frequency of success, etc. MOPs are numbered in the same manner as MOEs/MOSs. That is to say, if a MOP supports MOE 1-1/MOS 1-1, it would be numbered MOP 1-1-1. See figure 3-11 for examples of MOEs and MOPs. Use the following questions to test the adequacy of MOEs/MOSs.

- Do MOEs/MOSs/MOPs address identified test information requirements?
- Are MOEs/MOSs/MOPs consistent with the ORD?
- Are MOEs/MOSs stated in operational terms (effective, suitable)?
- Do MOEs/MOSs/MOPs reflect inputs for operating/support considerations (e.g., minimum operating altitudes)?
- Have MOEs/MOSs/MOPs been coordinated with representative users (operators, maintainers)?

Method

The most important tasks in constructing test plans are devising and documenting a sound test method.

The test team develops general methods within the confines of formulated test concept and scope. These methods identify types and numbers of required missions, the testing environment, and resources needed to accomplish the test. As preliminary planning proceeds, the general methods are expanded and finally included in the test plan.

Coordinate Draft Test Plan with the Core Team

Make every effort to develop a test plan with the core team. However, once the draft is complete, coordinate it with the core before the test plan working group (TPWG), discussed in later paragraphs. Do not be concerned with format at this time; ensure the plan has rough MOEs/MOSs/MOPs, evaluation criteria, and methodology. This internal coordination will ensure everyone is on the same "wavelength" with respect to the project's scope.

Figure 3-12 illustrates some of the various sources of input throughout test plan development. The ovals depict ITT membership or results of literature research. The boxes represent stages of test plan development leading to data and support requirement identification in the Test Coordination Phase.

Draft Test Schedule

The last aspect of test planning is establishing a timeline. It serves as a baseline for assessing progress and will help the team prioritize efforts. The timeline in the project directory reflects a nominal timetable outlined in the TTEC. Tailor it to the project based on the test's scope and any unique preparation requirements (i.e., approval time for waivers, scheduling lead-time for assets, etc.). Once established, designate a team member to periodically update the timeline to provide members and management another means of assessing test progress. Figure 3-13 is a sample test schedule.

Figure 3-11. MOE and MOP Examples

60K Aircraft Cargo Loader

- MOE: Ability of the 60K loader availability to support aerial port operations.
- MOP: 60K loader reconfiguration time for air transport. Criteria: 60K loader can be reconfigured in four hours or less for each aircraft.

Advanced X-ray Equipment for Aircraft (AXES)

- MOE: Ability of AXES to produce x-rays of better quality than current NDI x-ray equipment..
- MOPs:
  - X-ray resolution. Criteria: Resolution is 20% better than current NDI x-ray equipment.
  - Laser pointing accuracy. Criteria: Laser pointer accuracy is 20% better than current NDI x-ray equipment.

MC-130H

- MOE: Ability to use system to accomplish landing approaches. Criteria: 80% of aircrew responses rate reconfigured compass headings as "3—improved" or better on the questionnaire rating scale.
- MOP: Reconfigured compass headings.

Sensor Fuzed Weapon

- MOE: Number of targets killed per pass.

Training Systems

- MOE: Number (or percentage) of critical tasks that were trainable.

Figure 3-12. Input Sources

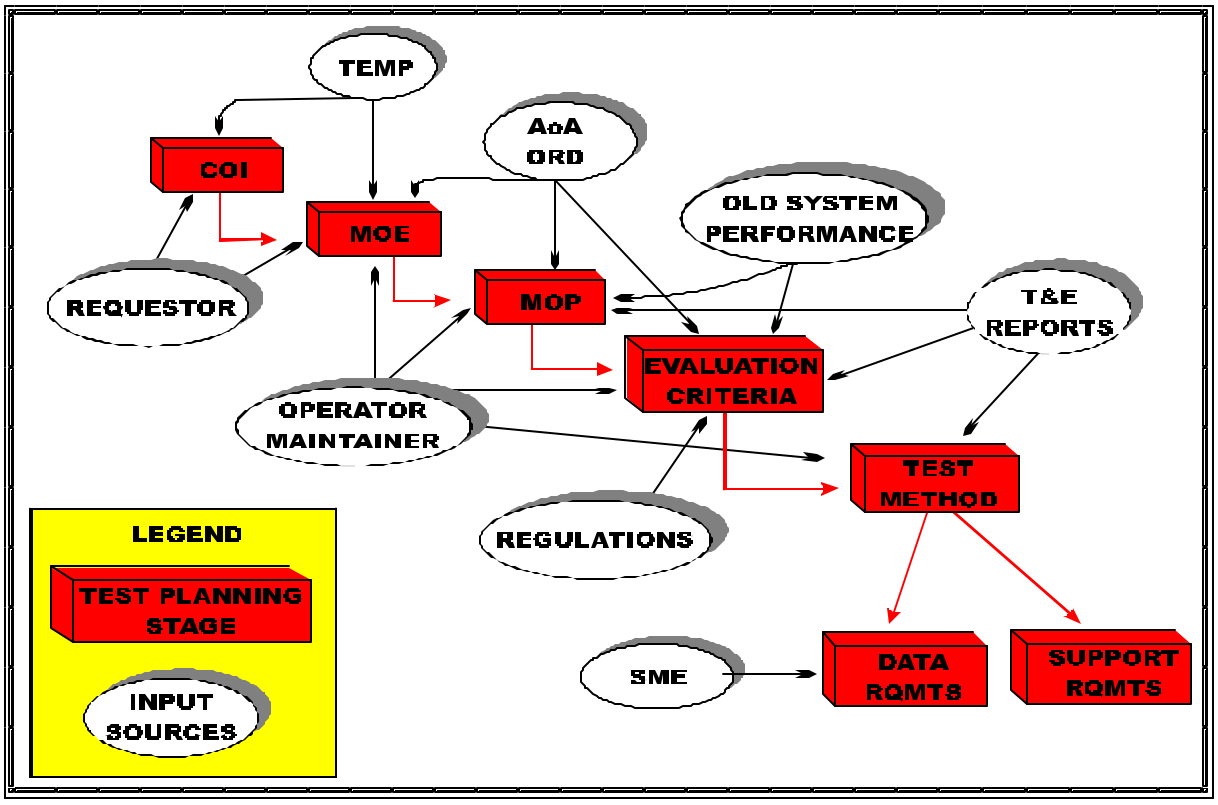
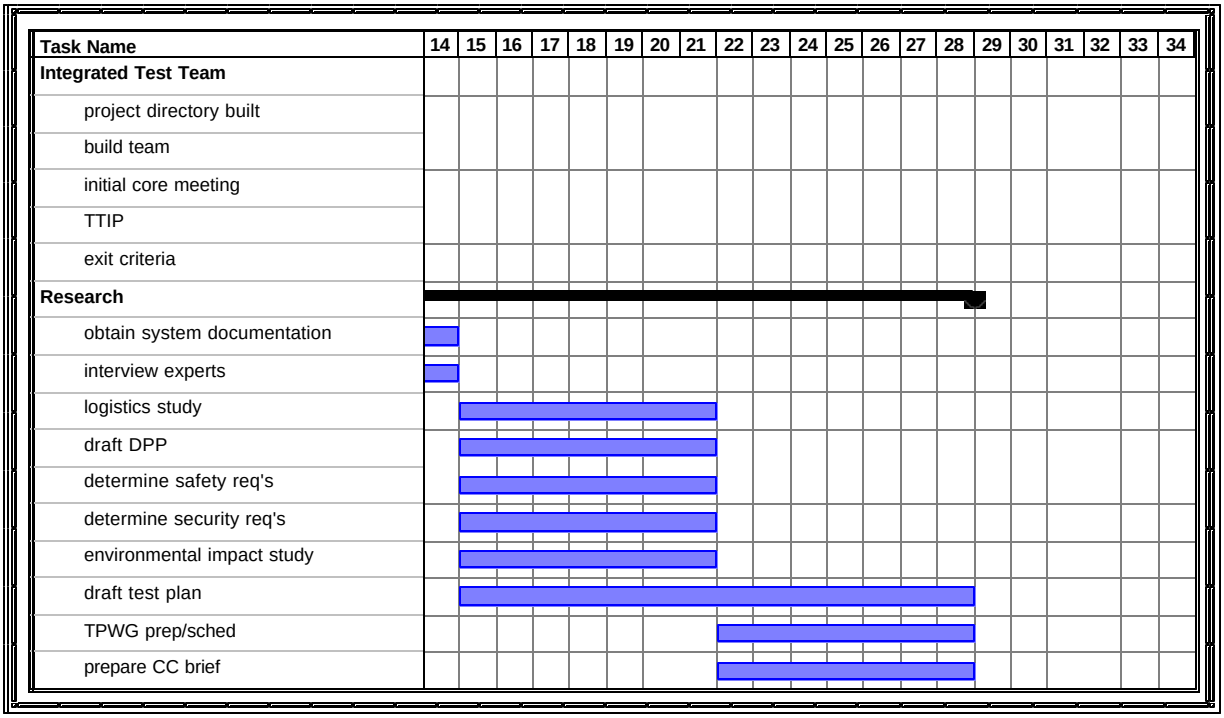


Figure 3-13. Draft Test Schedule



Draft the Data Processing Plan

Identifying data collection requirements consists of a series of steps beginning with identifying the general test objectives. During test method development, the test director and test engineer will determine basic data elements necessary to conduct an analysis. Data intended for collection must directly relate to the criteria of the test. This correlation ensures only the right data is collected for analysis. Remember, the team's test engineer is the data expert, and the success of the test effort relies heavily on engineering expertise. It is not too soon to start thinking about how to present information in the report. If there are requirements for presenting events using videotape, digital data, quad video, etc., it needs to be in the data collection plan.

Data Collection and Analysis

After identifying the required data, determine the best method of capturing it. Some data collection methods are manual, such as questionnaires and mission logs. More sophisticated methods include data collected from threat, aircraft systems, and range time-space-position information (TSPI) instrumentation. Always ensure there is a means of correlating the event with the time it occurred; otherwise, post-flight reconstruction is difficult. Certain elements, like data internal to the test aircraft, may require organic support from the 18 FLTS/DOAI.

Data sources can be:

- Onboard the aircraft (1553 data bus, video tape, crew survey, etc.).
- Ground based (threat simulators, weather facilities, telemetry, etc.).
- A combination of both (aircraft radar beacon and ground tracking facility or aircraft and ground-based GPS receivers).

Videotape is a media for recording and reporting test events. A 5-to-10 minute executive level videotape is an excellent way of communicating test article, tactics descriptions, and test results. Consider gathering data elements suitable for project reporting when constructing a data strategy. (18 FLTS/DOM can assist in building a video report).

Onboard instrumentation is also an excellent way of acquiring data since it can be tailored to obtain required information. Often, anomalies or specific events happen so fast they go undetected by direct observation.

Data instrumentation can be programmed to sample desired information at tremendous rates. This significantly improves the chance of detection, facilitates reconstruction of the event, and avoids situations like "…did you see that?" or "did anyone catch that annunciation?"

If the test team determines organic instrumentation is required, the test director and test engineer will complete an Instrumentation Support Request (ISR) form and submit it to the chief, operations analysis. The ISR form can be accessed by opening the LegHorn project data. Click on the notepad, go to the research checklist, click on [ISR.doc] and follow the on-screen prompts.

The engineer then solicits the expertise of the chief of instrumentation to determine data collection equipment availability.

The instrumentation branch is limited in the number of separate pallet configurations they can support simultaneously. The test director and test engineer must communicate the ISR as soon as possible to facilitate scheduling instrumentation resources and deconflict with other test projects. If instrumentation resources are exhausted, the test may need to be scheduled or "piggybacked" on another test mission.

Data reduction is the process of putting "raw" information into a form suitable for analysis. This can be anything from tabulating survey results to rigorous computer algorithms. Some reduction can be done by DOA, while some may require external support (ranges or contractors). The test engineer will help determine required data output formats and analysis products. Regardless of the data to be acquired, now is the time to develop a plan for reducing it.

DOAI develops and uses collection software that "pulls" data from aircraft sources during test missions. For post-mission, DOAI develops and uses reduction software to translate data into a suitable format for analysis. If existing test data collection and reduction software inventories are adequate, no software development is required unless it must be specifically tailored.

The ICDs and TOs obtained earlier are critical to software development. Along with developing software, DOAI must design and build a suitable instrumentation pallet. Approved designs frequently exist; therefore, building the pallet is only required. If this is not the case, an original design must be developed, documented, and approved as described in **Aircraft Modifications**.

Keep in mind, new designs can require significant lead time to procure parts and fabricate components.

Another data reduction consideration is data compatibility. If the plan is to merge data from different sources (e.g., aircraft and ground-based GPS data) the data obtained must be in a format conducive to reduction. Data reduction programs can be created to suit a particular requirement; however, they require development and trial time.

Organic instrumentation is an excellent method of acquiring data. Ensure there is enough time, however, to have all instrumentation, data acquisition, and data reduction software in place **before** beginning the test phase. The test engineer and DOAI will indicate appropriate lead times.

Data Storage

All collected data must be stored and retained for one year after publishing the final report. If the test is classified, be sure there is enough safe storage available and collect only what is needed to answer test objectives. Bulky media, such as videotapes, also cause storage problems.

Range Communications

Test team members must be able to communicate during a test. Plan to use standard ultra high frequency/very high frequency (UHF/VHF) radios to communicate between members in the air and on the ground.

Aircraft Modifications

To modify an aircraft with instrumentation or a test article, team members must obtain an approved modification package. Three classes of modifications can be made to an aircraft:

- Temporary-1 (T-1).
- Temporary-2 (T-2).
- Permanent (P).

T-1 modifications are usually made for special needs and/or operational reasons, and cannot be maintained on the aircraft for longer than one year without a waiver from the single manager (SM).

Testing can be accomplished under a T-1 modification. T-2 modifications are done to specifically support testing. T-2 modifications require removal of the modification upon completion of the test. Both T-1 and T-2 modifications can be installed on up to five aircraft.

To accomplish permanent modification proposals, the SM issues a Time Compliance Technical Order (TCTO) to document all permanent modifications to existing equipment. For instrumentation, the team may be able to use an existing, approved design. However, new instrumentation modifications will require eight weeks or more to complete approval coordination, so modification package preparations should begin as soon as possible.

AF Form 1067, *Modification Proposal*, is used to obtain modification approval. Modification packages include supporting technical documentation to facilitate the process. DOAI is the OPR for instrumentation-related 1067s, and the team's engineer can facilitate instrumentation package construction through DOAI.

For test article 1067 packages, the test requesting agency and/or the SM is the primary OPR. The test article may already be approved for installation, so adequate research can prevent unnecessary activity. However, the test team may be required to develop modification flight manuals for the package and to supplement maintenance and aircrew technical orders, depending on the complexity of the system.

Send AFSOC-originated modification packages to HQ AFSOC/LGMX in order to meet the HQ AFSOC Configuration Review Board (CRB), usually held on a monthly basis. Initial AFSOC approval of modification proposals ***does not*** constitute authorization for implementation.

HQ AFSOC/LGMX will forward the AF Form 1067 with attachments to the appropriate SM for engineering approval. The SM will prepare and submit an AFMC Form 518, *Configuration Control Board Directive*, and an AFMC Form 243, *Temporary Release for Flight Certificate,* for submission to the SM CCB for review.

HQ AFSOC/LGMX will receive the results and forward the SM engineering approval/ disapproval documentation to the originator. An SM approval letter can contain additional conditions or limitations required to implement a temporary modification.

For modifications done to 16 SOW aircraft by outside agencies, the 16 SOW/LG OI must be referenced. This OI provides a process for the 16 SOW/LG to maintain and monitor aircraft configurations. It also provides a timeline for the 16 SOW/QA to ensure proper briefings/ inspections occur. Typically DT&E has already initiated this process during combined and/or follow-on test.

Complete guidance for aircraft modifications can be found in AFI 21-101, *Aerospace Equipment Maintenance Management.*

SAFETY . . .

Testing new systems, equipment, or tactics presents risks beyond those encountered in normal operations. Test teams must recognize these risks exist, and either eliminate them in the planning stages, or apply appropriate controls during testing. The operations analysis and preliminary hazard analysis (PHA) assist the test team in identifying potential risks. The risk assessment matrix (RAM) then highlights which risks must be eliminated or controlled.

Operations Analysis

The operations analysis breaks the test down into a time-phased sequence of events (example: equipment installation, aircraft preflight, take-off, weapons delivery or tactics employment, landing) or by events, which have interrelated tasks and activities (maintenance, logistics, operations). The output of an operations analysis is a list of the major events/ elements within the project and is used when conducting a PHA.

Preliminary Hazard Analysis

The purpose of the PHA is to briefly consider risk in every aspect of the test. It builds on the operations analysis and uses a systematic approach to hazard identification.

Each major section of the test is analyzed to identify any and all hazards present. This prevents focusing on elements of a test which are seen as intuitively risky, while overlooking other elements of risk not immediately apparent.

It provides an overview of the hazards associated with a test which is broad, but usually not deep. While output of a PHA may serve as the complete hazard identification process in low risk or routine operations, it may also assist in identifying hazards requiring more in-depth analysis. The end result is a list of hazards to consider before executing a test. Involving subject matter experts and operators is critical to conducting a successful PHA. Figure 3-14 illustrates the mechanism for assessing a project's risks and planning for their reduction or elimination. After accomplishing minimizing procedures to improve probability of occurrence and/or severity category, your *lowest* revised HRI defines the overall HRI (as listed in figure 3-14) for the test.

Risk Assessment Matrix

Using the list developed during the PHA, the RAM determines the level of risk associated with each hazard. It weighs the likelihood of an event against the negative outcome should the event occur. The level of risk assigned to a particular hazard is commensurate with its probability, severity, and the amount of people or resources exposed. The end result is a prioritized list of hazards, which guide the test team in selecting the hazards it must eliminate or control. It highlights the hazards, which require in-depth consideration and identifies those hazards, which comprise accepted risk. Use the risk assessment matrix found in figure 3-15 to categorize the hazards and risk reduction actions.

Control Measures

Good control measures are effective, practical, and address the root cause of the hazard. Test teams should involve experts in identifying controls and evaluating their effect on the risk associated with the hazard. Select controls based on their ability to eliminate or reduce the risk to an acceptable level, as well as the feasibility and difficulty implementing them.

Consulting with squadron and headquarters safety representatives on control options goes a long way towards ensuring a problem-free Safety Review Board (SRB).

Waiver Requirements

If test plan development results in a test method or procedure deviating from established directives or technical orders, use established channels to investigate proper waiver authority and begin preparing to staff the waiver coordination. Some test items, such as weapons and laser safety, merit additional precautions.

Figure 3-14. Preliminary Hazard Analysis

Overall Hazard Risk Index (HRI) **Overall Risk:**

HAZARD				RECOMMENDED ACTION			
Description	Prob	Cat	HRI	Minimizing Procedures	Prob	Cat	HRI

Figure 3-15. Risk Assessment Matrix

HAZARD PROBABILITY OF OCCURRENCE	HAZARD SEVERITY CATEGORY			
	I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
	Death or System Loss	Severe Injury, Occupational Illness, or Major System Damage	Minor Injury, Minor Occupational Illness, or Minor System Damage	Less than Minor Injury, Occupational Illness, or System Damage
(A) FREQUENT * Likely to occur frequently ** Continuously experienced	1	3	7	13
(B) PROBABLE * Will occur several times in the life of an item ** Will occur frequently	2	5	9	16
(C) OCCASIONAL * Likely to occur sometime in the life of an item ** Will occur several times	4	6	11	18
(D) REMOTE * Unlikely, but possible to occur in the life of an item ** Unlikely, but can occur	8	10	14	19
(E) IMPROBABLE * So unlikely, assume it will not occur ** Unlikely, but possible	12	15	17	20
* SPECIFIC INDIVIDUAL ITEM ** FLEET OR INVENTORY	HAZARD RISK INDEX: 01 - 05 HIGH RISK 06 - 11 MEDIUM RISK 12 – 20 LOW RISK			

There are some directives which stipulate what must be accomplished before testing these items. Start with the chain of command to investigate proper waiver authority and begin preparations for waiver coordination.

Determine Test Security Requirements

To ensure adequate and proper protection is given to classified aspects of the test, test directors must ensure all test participants are indoctrinated in security classification guidance applicable to the test.

They must also ensure all transmissions, whether oral or written, comply with the test's security classification guidance. Include this guidance in the test plan and brief participants to ensure compliance with security requirements. All personnel associated with the test should also be advised that mission requests and associated documents, though not classified, can reveal sensitive test information.

Environmental Study

Consider the environment and local population while planning and conducting a test. Failure to do this may jeopardize the entire project. Most OT&E is covered by previous studies; however, this aspect of research must be accomplished for every project. HQ AFSOC/CEPV is a source for environmental research. Previous similar projects containing the source document for environmental impact, AFI 32-7061, *The Environmental Impact Analysis Process*, also provides supporting documentation.

AF Form 813, *Request for Environmental Impact Analysis*, is used to document the study. HQ AFSOC/CEPV prepared a guide on proponent responsibilities in the environmental impact analysis process. A copy is in the 18 FLTS reference library. The AF Form 813 can take up to 60 days to accomplish and coordinate through Eglin AFB. The guide suggests using block 5 and the back side of the form to address (as a minimum) these areas:

- Need for action (mission deficiency that needs to be fulfilled, could come from MNS).
- Mission/project objectives (from test plan).
- Decisions that must be made (essentially the COIs).
- Key decision points (the testing start/stop schedule, expected final report date, any projected program decision dates).
- Proposed project for meeting the objectives (the test project itself, i.e., HQ AFSOC Project YY-XXX, Title). Reasonable alternatives to the proposed project (if no alternatives, state it).

Prepare for the Test Plan Working Group (TPWG)

The TPWG, a major effort of the ITT, focuses on resolving questions and refining the test plan. Normally, the TPWG meets 30 days after receiving the test order, unless the test scope requires a longer research phase. Core ITT and peripheral members should receive an invitation once a date is established. (Remember the timeline!) Provide a copy of the draft test plan for review prior to the meeting date. TPWGs can last anywhere from two hours to two days - the more informed everyone is up front, the less time is required to educate them.

Use the invitation memo found in the LegHorn project. Click on the notepad, go to the research checklist, click on [tpwg-inv.doc], and follow the on-screen prompts. E-mail is also an

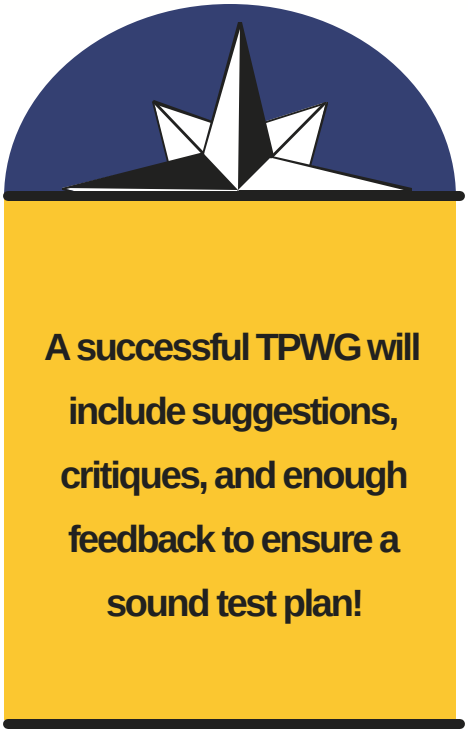
excellent backup along with calling the attendees, especially for a short-notice meeting. Whatever the medium used, ensure everyone who has a role in the test is invited to the group.

After researching information, other individuals or agencies may require participation. Add them to the ITT as they are identified and be sure to keep them in the loop.

Lastly, create a briefing for the TPWG that identifies actions or questions to be resolved before the test plan is published. The suggested briefing format can also be found in the LegHorn project, research checklist, [tpwg.ppt].

Research Exit Criteria

The Research Phase ends when all research is complete, a draft test plan is distributed to ITT members, a timeline is established for test and coordination activity, and HQ AFSOC/XPT receives the test support request. The focus of efforts up to this point has been accumulating necessary information for coordination. Concluding the Research Phase means the core team members are sufficiently prepared to begin coordination with external agencies.



The TPWG

A TPWG is led by the test director to develop the operational test plan and should not be confused with the TPWG held by the SM to develop a TEMP. A successful TPWG will include suggestions, critiques, and enough feedback to ensure a sound test plan. Seldom will the test plan emerge unscathed. Be prepared for this, and welcome it as a means of producing a good plan. Begin the TPWG by reviewing the project's background and all planning activity.

Next, review the test plan in its current form, addressing associated MOEs/MOSs, MOPs, evaluation criteria, and methods. Generally, TPWG actions will change the test methods or add measurements or criteria. Be sure someone on the team records recommended changes and tracks action items as the meeting progresses.

Don't dwell too long on contentious issues, but schedule a separate meeting to resolve them and move on. If the test plan requires significant revision or activity, consider conducting another TPWG before staffing the plan through AFSOC. This may delay the test start date, but it's better to delay after the TPWG than wait until after the TRB or SRB.

The TPWG is also a good place to review the ROM, waiver requirements, and training plans. Team members can provide relevant information or be in a position to facilitate resolution. Identifying a more effective procedure or clarifying directives may save the team unnecessary effort or delay down the road. Again, the ITT is a pool of expertise - use it!

The TPWG's last activity is identifying participants for review boards prior to test plan staffing. Operators, maintainers, and headquarters personnel are ideal members of the ITT, but may not always be available during test plan development. The review boards later in this phase are excellent opportunities to get individuals "read in" to the project before the test plan is coordinated.

The process for inviting board participants is discussed later in this section. Be sure to generate meeting minutes for ITT members and to include them in the case files. The LegHorn project, under coordination checklist contains the meeting minutes format as [tpwg-min.doc].

Coordinate Test Support

Since the 18 FLTS and AFSOC do not possess dedicated test aircraft, using operational assets conscientiously is essential. DOO is the central office for test resource coordination. They play an essential role in the coordination and T&E phases.

Though informal coordination with external agencies is highly encouraged, team members should keep DOO informed of any such activity to avoid conflict with their official coordination.

An active test requires personal contact with DOO several times a week. Failing to follow-up on requirements typically assures a schedule slip. See chapter 4 for additional information concerning DOO resources.

HQ AFSOC/DOO requires 45 days advance notice for test missions. Submit the support request (generated in the Research Phase) with enough lead time to ensure it reaches them 45 days prior. Informal coordination with the affected squadrons (16 OSS/DOO and HQ AFSOC/DOO) is encouraged, but does not replace the official 45-day notification.

If the test is a Precedence I or II, HQ AFSOC/DOO will work inside the "45-day window" if needed to meet the test suspense. This should not be a common occurrence. They still require as much notice as possible. If the test slips beyond the dates stated in the HQ AFSOC/DOO support request letter, notify them of the new dates after coordinating with the affected squadrons and OSS. (E-mail, fax, and phone are acceptable media for this coordination.) A new request for support is **not** required.

Other activities associated with coordinating test support are:

- Ensure support requirements are clear and understood by supporting agencies.
- Confirm availability of requested instrumentation.
- Check status of instrumentation and reduction software development.
- Ensure working space to perform checkout and maintenance of the test item was provided for the test item supplier in accordance with the support request. This can include office equipment and space, telephones, vehicles, civil engineering support, and area passes.
- Confirm billeting, messing, and transportation are available for TDY personnel.

- Schedule a functional check for 18 FLTS instrumentation.

- Initiate action to obtain flight clearances, certifications, and waivers. Ensure in-flight test participants are on aeronautical orders or supporting forces status. This includes instrumentation pallet operators and contractor personnel.

If necessary, complete a Flight Line Photo Support Request for authorization to take photographs (still and/or video) on the flight line. Any requirement for combat camera is requested by using an AF Form 833, *Multimedia Work Order*. Coordinate both requests through 18 FLTS/DOO.

Complete Data Strategy

Finish Data Processing Plan. Data requirements may have changed as a result of the TRB. In addition to finalizing the data analysis format, ensure the team is ready to accommodate changes to data requirements. While much of this activity falls on the test engineer, assistance from other team members may be required to finalize the data processing plan. The test engineer and test director will correlate data elements with their respective MOEs/MOSs/MOPs to ensure **every** measurement in the test plan is accounted for. If final report data format cannot be visualized, there is still more work to accomplish. Once the data processing plan is complete, prepare an instrumentation support request, again found in LegHorn project, research checklist, under [ISR.doc].

Coordinate Modification Packages. In the previous phase, modification packages were constructed to support the test. Submit test modification packages for approval when completed, but no later than the Coordination Phase (Phase III). The test engineer will facilitate internal (squadron) coordination. Configuration Control Board (CCB) modification approval is required prior to test execution. The board ensures all supporting technical data is available and modifications are safely integrated into the airframe. See table 3-2 for the modification approval process.

AFSOC Approval. The voting members of the AFSOC CCB are HQ AFSOC/DOT/DOX/DOV/SES/XPQ. The test team core should attend the AFSOC CCB to field questions during the approval process. Additional ITT members may also be required to attend.

Program Office Coordination/Approval. The appropriate engineering agency (Aeronautical Logistics Center, Aeronautical Systems Center) convenes a CCB to determine the *engineering* soundness of the design.

An engineering staff often evaluates the design as input to, or result of their CCB. Depending on the design's complexity and workload, the program office can take up to 90 days to complete their coordination and modification approval process. A return message certifies engineering approval and will include any applicable engineering instructions. After aircraft modification, ensure a copy of the applicable MOD package(s) is/are posted in the aircraft forms.

Editorial/Technical Review

The ed/tech review is the first step in getting a test plan staffed. It is an objective review to check grammar, punctuation, format, writing style, as well as ensuring the plan's technical soundness. Members include the flight commander, test director, test engineer, test manager, ADO, and a representative from DOMM. Test directors notify DOMM when a plan is ready for this review. DOMM "cleans up" the plan as much as possible before the test director coordinates for the review's place and time.

Table 3-2. Modification Approval Process

Activity	Responsibility	Time Frame
Develop/document engineering design	Instrumentation or TM	1-8 Weeks
Prepare and coordinate 1067 within 18	DOA, DOFL, DOVL, and TD	1 Week
Forward to HQ AFSOC/LGMX	TM	1-2 Weeks prior to CCB
Attend CCB for concept approval	TD, DOA, others as required	½ Day
Forward for engineering approval	HQ AFSOC/LGMX	1-7 Days
Depot engineering approval letter	WR-ALC, SPO, etc.	Up to 90 days
Forward for engineering approval	HQ AFSOC/LGMX	1-7 Days
Depot engineering approval letter	WR-ALC, SPO, etc.	Up to 90 days

The test director allows at least four working days before convening the review. All members should have already reviewed and reached a consensus on the plan prior to notifying DOMM. The next two pages give detailed steps for test plan staffing. Figure 3-16 highlights the process from the ed/tech review to HQ AFSOC staffing, and finally to obtaining the 18 FLTS/CC signature and publishing the plan.

Technical Review Board (TRB) & Safety Review Board (SRB)

TRBs and SRBs are mandatory for all tests. They are a "sanity check" of the team's test preparation efforts and, therefore, reduce risk. TRBs reduce technical risk by ensuring test MOEs/MOSs/MOPs answer the COIs. SRBs reduce physical risk by ensuring adequate safety measures are incorporated into the test method. To save time, the TRB and SRB are usually combined. If the TTEC is followed properly to this point, review boards should be a mere formality.

TRB Organization

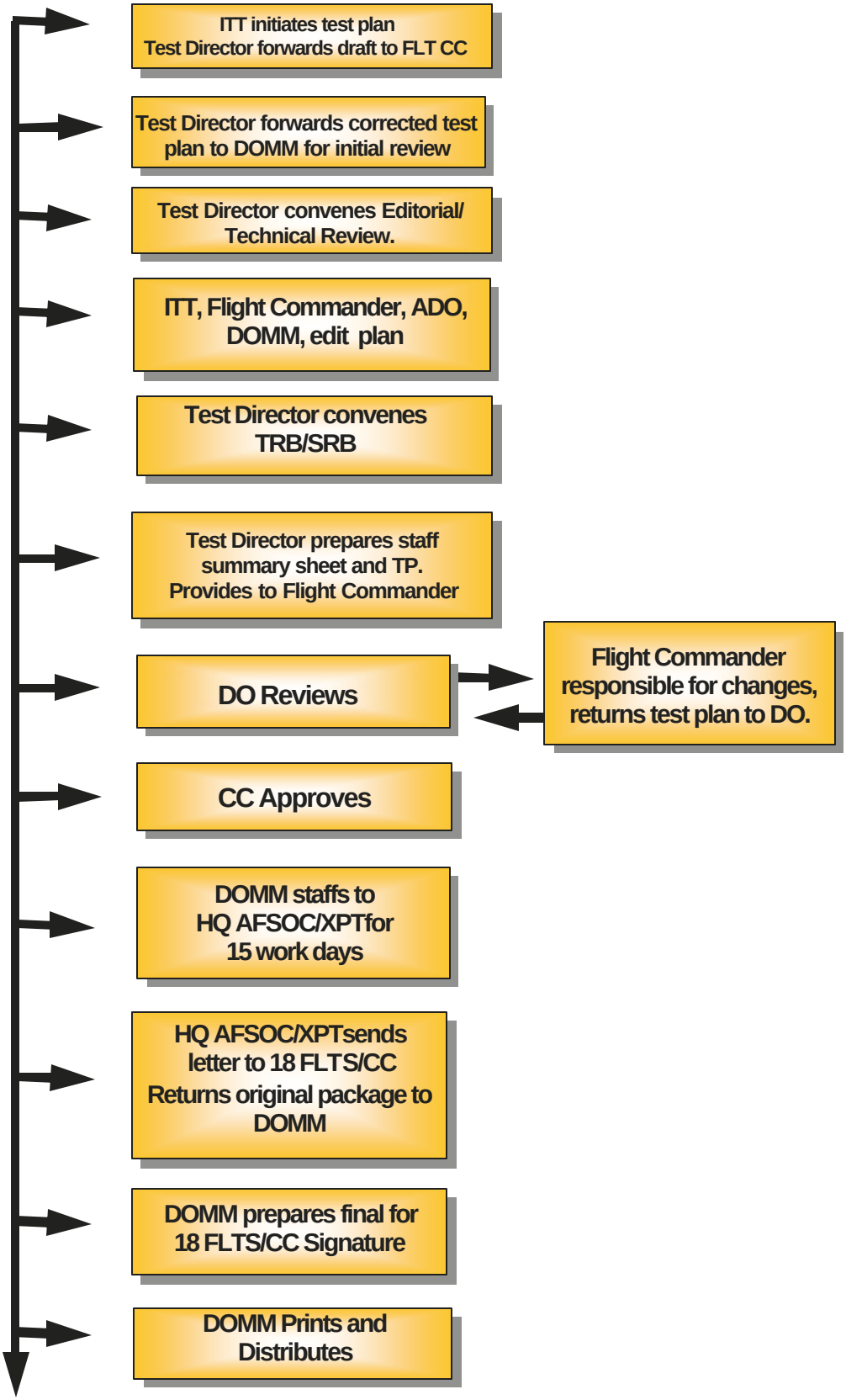
TRBs are committees established within the 18 FLTS to critically and objectively examine test plans for compliance and ensure quality standards are met. It is chaired by the DO or a designated representative. The core team members and the flight commander. The remaining board membership is at the DO's discretion, but the chief of DOA and an impartial test director are highly desirable. Additionally, operators and HQ AFSOC personnel, not members of the ITT, will enhance the board's objectivity and facilitate coordination with AFSOC.

Figure 3-16. Test Plan Staffing

The purpose of an editorial/technical review is to check a plan (or report) for formatting, grammar, punctuation, and content before staffing to the DO. This is accomplished by a group (consisting of the ITT, ADO, flight commander, and a DOMM representative.) reviewing and making on-screen changes.

The Test Director	The test team comes to a consensus, drafts a test plan and forwards it to the flight commander for review. The flight commander recommends changes and returns the draft plan to the test team. The test director then notifies DOMM a plan is ready for review. After DOMM performs an initial review, board members are notified via email to attend and prepare for the ed/tech. Contact the appropriate ADO to schedule the ed/tech.
The Media Branch	Performs on-screen editing after the test director coordinates with DOMM for availability, time, and place to conduct an editorial/technical review. Once complete, the test director is responsible for corrections. The test director or DOMM prepares a staffing copy.
The Test Director	Convenes the Technical Review Board/Safety Review Board which consists of the core team and the DO to review COIs, MOEs, and technical data. The test director is responsible for corrections. After the TRB/SRB, the test director builds a staff summary sheet package for the flight commander's signature. The complete package is routed through the flight commander.
The Flight Commander	Reviews/approves the test plan by signing the staff summary sheet. The package is sent to the DO.
The DO	Coordinates and initials the SSS with the completed test plan or sends it back to the flight commander with any necessary changes. The flight commander is responsible for changes.
The Commander	Reviews and approves the test plan. The commander's secretary staffs the test plan to HQ AFSOC/XPT and notifies DOMM this was accomplished.
The Media Branch	DOMM coordinates and tracks XPT 's suspense of 15 work days.
HQ AFSOC/XPT	Staffs the test plan through HQ AFSOC. HQ AFSOC/XPT forwards an approval letter to 18 FLTS/CC. They provide DOMM with a copy of this letter and the original package.
The Media Branch	Reviews the plan once more to be sure any requested changes from HQ AFSOC/XPT are incorporated. Once complete, forwards the test plan to the 18 FLTS/CC.
Commander	Signs the final, staffed test plan.
Media Branch	Prepares and distributes the test plan according to an enclosed distribution list.

Figure 3-16. Test Plan Staffing



The Invitation

Coordinate a request with the flight commander to have the DO convene a TRB. Prepare the TRB invitation for the DO's signature (format found in LegHorn coordination checklist as [TSRB-INV.doc]) and include a copy of the test plan. Upon receipt, the test director arranges the board's meeting place and notifies applicable personnel of the time, date, and place of the review. Ensure HQ AFSOC/DOV is invited for their input on aircrew procedures/checklists. Backing-up the hardcopy paper invitation with an electronic mail invitation is prudent.

Team Members Function

Team members review the test plan to ensure the MOEs/MOSs/MOPs adequately address all COIs. They also ensure test methodology is complete and incorporate any recommended changes. Test team members and the DO will discuss major areas of concern before the TRB. DOMM edits and prepares the document in final format. Keep the final edited draft, as it will serve as a baseline for any additional changes.

The TRB

During the review board, the chairperson directs activities and the test team records recommended changes. Board members identify deficiencies in the document and when possible, present recommended corrections for discussion. Record deficiencies on a working copy of the test plan. Record whether a specific member or the entire board will review additional work. When a difference of opinion exists on proposed changes, the DO will make the final call.

TRB Recommendations

Discuss the board's recommendations with appropriate personnel and incorporate required corrections. Do not make substantive changes without the chairperson's approval. Unresolved issues will be brought to the attention of the DO or commander for resolution.

Reconvening the TRB

When the TRB determines a document is unacceptable, the board reconvenes after all identified deficiencies are corrected. The chairperson and test director determine whether to reconvene for major changes subsequent to TRB approval, such as those resulting from AFSOC coordination.

One copy of the updated document and the recommended (or directed) changes are attached to the request. When received, the 18 FLTS/DO reconvenes the board with as many of the original members as possible. Do not substitute original members.

The reconvened board works the same as other boards, but focuses on the proposed changes.

Safety Review Boards

Test orders include an 18 FLTS tasking to conduct a detailed and formal safety review before testing is initiated. The safety review certification becomes part of the project case file. HQ AFSOC/SE oversees and approves the SRB. Supplemental SRBs may be needed by other involved organizations (i.e., test ranges, MAJCOMs, joint commands). SRBs are usually conducted at the same time as TRBs. The procedures for convening SRBs are identical to TRBs.

Membership consists of a chairperson, program manager, test manager, HQ AFSOC/ SE (16 SOW/SE should be an alternate if HQ AFSOC/SE is not represented), 18 FLTS/SE, the test director and applicable core members and squadrons (aircrew representatives). The chairperson is the 18 FLTS DO/ADO.

The SRB's purpose is to ensure all safety aspects are considered and documented in the test plan. The board has the authority to disapprove a test mission if airworthiness, safe separation distances, speed, G-limits, or any other safety factors are considered unsatisfactory. Minutes are generated to document the review and placed in the case file.

Since initial reviews may not always expose all potential testing hazards, safety review milestones should be established during preliminary test planning and if required, are included in the test plan.

The purpose of milestone reviews is to determine if additional safety review board action is warranted during testing. For example, tests involving different flight profiles may have established milestones whenever a more difficult or potentially more hazardous phase of testing is to take place.

The test director initiates the necessary action to convene the board if additional safety review action is required. The SRB will assess the hazards associated with the test and assign a RAM score as necessary. The Air Armament Center (AAC) retains overall approving authority for tests conducted on the Eglin reservation and Gulf ranges. They may require their own hazard review board (HRB). Contact AAC/SEU (Range Safety) to schedule a range HRB if required. Representatives from Det 1, 46 OG and HQ AFSOC/SE can assist with this coordination.

Staff and Coordinate the Test Plan

The test director coordinates the test plan following implementation of TRB/SRB actions and submits it to DOMM for finalizing. See figure 3-16 for test plan staffing and coordination procedures.

Final Test Preparation

Build Test Cards. Test cards are tools used during an actual test to organize notes, events, data, and requirements. See figure 3-17. Organize test cards according to how the data will be presented in the final report or sequentially as the test progresses. Consider human factors when preparing the cards. Place the most critical piece of the entire test as the first item. Don't overload one aircrew member with all the data collection for the sortie. Test cards should be uncluttered, include critical mission setup information, and permit smooth detailed data collection. Cards typically contain:

- Headers: aircraft type, tail number, flight date, test program, mission number, run number, classification of data.
- Aircrew composition: names and positions.
- Aircraft conditions: flight parameters, heading, altitude, airspeed, flap settings,

configuration (i.e., airdrop, air refuel, firing orbit).

- Test item conditions: switch settings, mode of operation, software version number.
- Procedures: line-by-line or checklist of sequence of required events.
- Go/No Go criteria for each run.
- Data Collection: parameters to collect, start/ stop times, criteria to observe, recording equipment (i.e., video/audio/1553 bus).
- Room for notes on each card.

The Det 1, 46 OG is an excellent source of test card knowledge. Their test pilot school graduates are trained in the art of making a good test card. Additionally, other 18 FLTS personnel can provide examples. As long as the information is there, the style is up to the user.

Figure 3-17. Sample Test Card

Card 1 Flight #____	DATE dd mm yy	Project Name AFSOC Project YY-XXX	TEST DIRECTOR Rank/Name
AIRCRAFT:		**RANGE:**	**AIRCRAFT COMMANDER:**
PREDICATED TEST CONDITIONS:		ACTUAL TEST CONDITIONS:	NAV:_____ FCO:_____ TV:_____ IR:_____ LG:_____
TEST PROCEDURES: 1. 2. 3. 4. 5.			RESULTS:
NOTE:			

Mission Information Package (MIP)

The key to successful coordination is getting the MIP to the 18 FLTS/DOO promptly and close follow-up coordination. Build a comprehensive package with essential mission information for **all** personnel involved with the test event. This document facilitates coordination between 18 FLTS/DOO/DOA, supporting units, briefing test participants, and final test preparation. Figure 3-18 illustrates the MIP coordination process. This can be added to the MIP. However, the package format should not change.

The MIP is not a substitute for the support request letter that is directive in nature. The signed support request letter should accompany the MIP with an HQ AFSOC/DOO tasker number assigned. This number authorizes the 18 FLTS to task support from other AFSOC units.

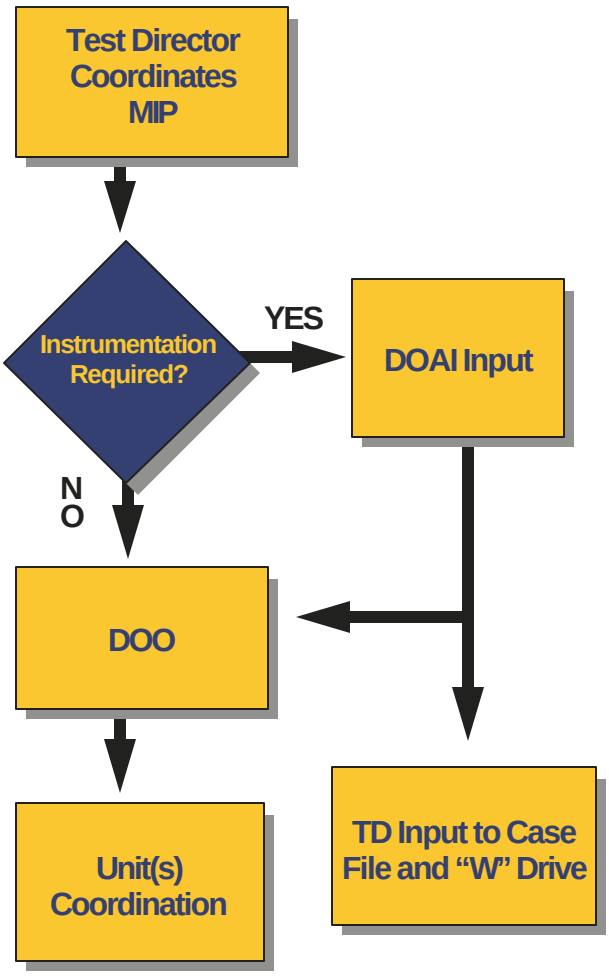
The test support request during the Research Phase was a broad-brush look at support requirements. The MIP details and tailors that request to individual test events.

These can be anything from ground test facilities to flight tests. The MIP (found in the project directory) is 18 FLTS/DOO's method for coordinating these events. Submit it to them at least four weeks prior to the test event. To ease scheduling, name each MIP with the test event's date (i.e., 02_23_7.doc for a test event to take place on 23 February 1997).

Use the remarks section to continue information from other blocks or to specify special requirements. For example: a requirement to have an instructor pilot in the seat or to have six supporting forces (SFs) on the aircraft.

The rest of the form is a tool for the test director and 18 FLTS/DOO. If the project requires data instrumentation, coordinate the

Figure 3-18. The MIP Coordination Process



MIP with DOAI. E-mail it to the test engineer to ensure instrumentation needs are included. The test engineer, in turn, will forward the MIP to 18 FLTS/DOO for action and notify the test director when the request is coordinated or if there is a conflict requiring resolution. Ensure copies of the coordinated MIP are faxed to the Ops Squadron, the AMU, 16 SOW/XP, and the Maintenance Operations Control Center (MOCC). Remember to keep the test manager in the loop since they are ultimately responsible for securing the needed resources.

Test Readiness Review (TRR)

The TRR is a last minute sanity check that everything needed is, or will be, in place. Just like the preflight checklist, if test plan development and coordination are done efficiently there should be no surprises and the review should take minutes to complete.

The test team will coordinate a meeting with the DO (or designated representative) to review TTEC completion, documentation approval, and support requirements. The DO must approve, on a case-by-case basis, advancing to the Test and Evaluation Phase when TTEC items are incomplete. The DO will decide if a formal TRR (slide presentation and attendees from outside the unit) will be required or if an informal tabletop discussion in the DO's office is more appropriate.

Test missions requiring a deployment will almost always need a formal TRR. As a minimum, attendees should include the DO, the core test team, a representative from DOO, and cognizant supervisor or flight commander. Along with exit criteria for the Test Coordination Phase, the following require review during TRR:

- Identify primary and secondary test events (including go/no go criteria).
- Ensure requested aircraft will be available and configured to support the test.
- Confirm installation of test article and requested instrumentation.
- Confirm schedule: T/O, land, briefs, ranges, call signs, and frequencies.
- Ensure provisions for briefing participants on test safety are in place.
- Ensure target layout, instrumentation, and range support facilities are as requested.
- Ensure technical documentation supporting modifications are approved and available.

Test directors may want to prepare an individual T&E checklist and mission briefing guide for each test sortie. The T&E checklist will remind the test team of critical events to be accomplished each day and the briefing guide will ensure no important aircrew procedures are overlooked.

Coordinating Exit Criteria

Perform the following when coordinating exit criteria:

- Confirm authorization documents are approved (SF, AF 1067, waivers, etc.).
- Obtain necessary endorsements following completion of TRB/SRB action items.
- Obtain HQ AFSOC test plan approval. Tests may be conducted without a signed test plan provided XPT verifies HQ AFSOC approval.
- Obtain letter from the SPO certifying the item is ready for OT.

PHASE IV: TEST & EVALUATION

The Test and Evaluation Phase of a project includes: scheduling resources; scheduling and flying missions; collecting, processing, reducing, and analyzing data; assessing adequacy of test methods; and reporting project status.

Execute the Test and Evaluation Checklist

Additional checklist items may be needed to ensure subsequent sorties run smoother. Use it to continuously improve test processing and coordination during this phase.

Execute the Test Event

It is not easy to orchestrate the efforts of a large, diverse group of individuals. The key to successfully completing a test is communication. Since the majority of efforts are spent during test event coordination rather than the actual event itself, the activity in this phase requires good communication skills.

Mission Briefing

Brief test participants before each mission. Test participants can be aircrew, range support personnel, mission controller, test operations, in-flight test director, operations test engineer, pallet operators, or anyone else who might require information to help execute the event. Use the MIP and the briefing guide found in figure 3-19. If a complex mission will be conducted or a mission change is initiated, several agencies may be briefed separately.

Also, ensure all in-flight test participants attend required preflight briefings (e.g., mission briefing, aircraft commander briefing). Cover test unique equipment operating procedures with the affected crewmembers.

Test Conduct and Control

Use the appropriate management aids for the type of test being conducted and report progress toward test completion. Consider a variety of management functions during test execution that will aid the event. Some basic guidelines during test are:

- Safety takes precedence over data gathering or mission completion.
- Keep test participants advised of their responsibilities and the mission schedule.
- Monitor the progress of agencies and personnel who are involved in conducting the mission and collecting/analyzing data to preclude unnecessary delays.
- Ensure all results, working drafts, completed rough drafts, and finished products are organized and maintained in the proper folders in the test case file. Include timelines, mission cancellations, e-mails, etc. Remember - **document everything**!
- Regularly apprise supervisors of the test status, problems encountered, and action taken or required to overcome problems.
- Update management aids and evaluate progress toward test completion and, based on trends, take appropriate action.
- Attend DOO scheduling meetings to ensure resources are coordinated.

Figure 3-19. Sample Briefing Guide

1. **Description and Purpose:**
   a. Description of the test item.
   b. Overall purpose of the test (to include test type; FDE, TDE, etc.)
   c. Specific purpose of the mission.

2. **Mission Goals:**
   a. Specific goals to be accomplished by the mission.
   b. Method to accomplish the goals.
   c. Data to collect to fulfill requirements.
      1) Type of data required.
      2) Collection method – forms, debriefings, photos.
      3) Personnel responsible for providing data.
      4) Personnel responsible for collecting data.
      5) Overall duties of Test Team members.

3. **Mission Data:**
   a. Mission number.
   b. Mission frequencies.
   c. Controlling agency/site.
   d. Radar beacon requirements.
   e. Ranges (block times, altitudes/profiles).
   f. Weather requirements.
   g. TD location during mission.
   h. Flight clearances/certifications/limits/waivers.

4. **Aircraft Configuration:**
   a. Munitions/test loads.
   b. Pods.
   c. Camera requirements.

5. **Ground Procedures:**
   a. Visual inspection.
   b. Ground operation/test/data collection.
   c. Special checklists.
   d. Safety requirements.

Figure 3-19. Sample Briefing Guide

6. **Flight Procedures:**
   - a. Mission specifics.
     - 1) Targets/aim points/number of data passes/ profiles.
     - 2) Aircrew data (collection forms).
     - 3) Flight parameters (airspeeds/altitudes/G-limitations).
     - 4) Frag envelope.
     - 5) Fusing requirements.
     - 6) ECM requirements.
   - b. Test item switchology.
   - c. Pallet operations and event markers.
   - d. Chase requirements – positions/safe separation.
   - e. Radio procedures (required calls).
   - f. Criteria for mission short-alternative test missions.
   - g. Safety requirements
     - 1) Hung/unexpended ordnance (category 1,2,3).
     - 2) Jettison procedure.
     - 3) Aircraft/weapon impoundment procedure.
     - 4) AFTO Form 781a, *Maintenance Discrepancy and Work Document,* write up (deviation from planned delivery, duds, etc.

7. **Postmission Procedure:**
   - a. Test item shutdown.
   - b. De-arm requirements.
   - c. Parking area.
   - d. Debriefing.
     - 1) Time.
     - 2) Location.
     - 3) Topics. (Suggestions, corrective actions, data collection effectiveness, etc.)
   - e. Report sortie results to DOO immediately after test event.

Mission Debriefing

Allow sufficient time for aircraft turnaround and crew rest following a mission, but accomplish debriefing as soon as possible afterwards. Include only those personnel who were physically involved in the mission or who can make significant contributions to the debriefing. The mission debriefing for many tests is an important step in collecting mission results and is a source of test data. Aircrew debriefing forms, test questionnaires, and data forms, are examples of data items collected at the debriefing. Include some discussion of test execution to help assess your efficiency.

Mission Reporting

A test mission is reported as a successful data-producing mission if it reduces the number of missions remaining to satisfy a test MOE/MOS. A successful mission does not imply the item under test performed successfully, only that useful data, applicable to one or more of the test MOEs/MOSs/MOPs, were obtained. If a mission has multiple MOEs/MOSs/MOPs and less than the total number of MOEs/MOSs/MOPs are satisfied, consider it fractionally successful.

Test Personnel

Typically, test team members do not occupy primary crew positions during test events. These missions involve complex test items or techniques that must be closely controlled and monitored to assure safety and valid test results. Non-crewmembers are subject to crew rest policies that apply to crewmembers. Non-rated test team and test support personnel (e.g., analysts, instrumentation pallet operators) are often required to support flight tests. If they have a recurring need to fly, the aeronautical order provides flight authorization for these personnel.

The 18 FLTS/CC grants supporting forces status on a case-by-case basis. However, *this authorization is for test missions only*.

Test personnel must remain objective throughout the test. Refrain from assuming advocacy or adversarial positions regarding the test item. Do not make premature conclusions based upon partial data or incomplete analysis. Be careful issuing preliminary test results to parties outside the test organization - **avoid disseminating erroneous information.**

Event Completion Notification

Always notify DOO when completing an event. (If it's after duty hours, leave a message on their answering machine.) Report a mission effectiveness update (i.e., 80 percent complete, etc.), intentions to recoup lost events, and any scheduling problems encountered. Additionally, make sure to fill out XPT's test activity report (TAR) NLT 1000 the following morning. See figure 3-20.

Scheduling Issues

Make every effort to get back on schedule when testing is behind. When revising the timeline, ensure sufficient time between missions is allotted for items such as test facilities and range turn around, data reduction, quality control of previous mission data, and crew rest. "Piggybacking" (running different tests during flights dedicated to another test) with other tests having similar aircraft configurations and mission profiles is highly encouraged, and can greatly reduce range time and overall test costs. If the project is postponed for a significant period, consider writing an interim report.

Figure 3-20. Mission Reporting Test Activity Report (TAR)

AFSOC TEST ACTIVITY REPORT						
TEST PROJECT TITLE:						
AFSOC/XPT PROJECT NUMBER:						
AFSOC/DOO SCHEDULING NUMBER:						
TEST AGENCY:		TYPE OF TEST:		EVENT DATE:		
TEST DIRECTOR/ENGINEER:						
MDS	TAIL #	SORTIE #	RANGE TIME	FLIGHT HRS	TEST HRS	TRNG HRS
TEST EVENT/SERIES NUMBER *(Specific Event # of Total Required):*						
RESULTS OF TEST EVENT *(Check One):*		COMPLETE		INCOMPLETE		
REASON FOR INCOMPLETE:						
SUMMARY OF TEST EVENT:						
IMPACT TO SCHEDULE *(Project Complete, Project Slip, Project Suspension, Additional Events Required, etc...):*						
Upon completion Email to:		*Email problems, Fax TAR to:*				
18FLTS.DOO.DL@hurlburt.af.mil		*18 FLTS/DOO*		*DSN 579-5538*		
18FLTS.AFSOC.XPT.DL@hurlburt.af.mil		*AFSOC/XPT*		*DSN 579-5538*		

Interim Test Report

Depending on several factors such as scope, duration, or depth of the test, interim test reports may or may not be needed. Typically, the 18 FLTS does not send out interim reports. An interim test report documents a test's preliminary accomplishments, results, conclusions, and recommendations. Word the report to ensure results, conclusions, and recommendations presented are subject to change when test completion, analysis, and evaluations are complete. Interim test reports are distributed as directed by the test order or the DO.

Table 3-3. Assessment Outcome

ASSESSMENT OUTCOME	RESULTING ACTION
No Changes	Proceed with testing.
Minor Changes	Proceed with testing. Change what is required.
Major Changes	Postpone testing. Coordinate and make changes through 18 FLTS/DO. Issue interim test report as required.
Rewrite Test Plan	Postpone or cancel test. Perform rewrite and coordinate through 18 FLTS/DO. Issue interim test report.

Aircraft Mishaps

The test director must be thoroughly familiar with applicable safety regulations and directives before the first mission. In the event of an aircraft mishap, the test director will notify the local commander, AFSOC Chief of Safety, the affected squadron's safety officer, and the 18 FLTS safety officer. The mission controller should be contacted to determine time, position, altitude, and any other information needed at the time of event to update the required agencies. In the event TSPI information and other data, such as photo coverage being recorded during the mission is documented, the test director will request this data be impounded for future use by the mishap investigation board.

Funds Management

The test director is responsible for funding accountability during the test. As such, ensure expenditures are managed close to the estimates (target) established. Ensure test charges are accurate and keep the test manager and FM apprised of fund status. In addition, ensure coordination with and update the squadron munitions account custodian on any munitions expended during the test. Enter all munitions requirements into LegHorn.

Test Assessment

Post mission data reduction assesses its accuracy and gives a preliminary indication of how the mission satisfied MOEs/MOSs/

MOPs. Data reduction, processing, and analysis will not only expedite completing the final report, but also ensure the test is on the right track in fulfilling MOEs/MOSs/MOPs.

A fly/analyze/fly policy ensures data quality. Ask these questions in the Test Assessment section of the TTEC after each test event:.

- Does the data product appear as envisioned?
- Does the data satisfy the MOE/MOS/MOP?
- Is the data complete, or intermittent?

The test schedule (as outlined during test planning) will be continually adjusted as missions are accomplished and the data reduced and analyzed. Test planning and mission schedules should allow for non-productive missions. Plan additional back up sorties to account for this.

Revise Methodology

After every test event, the test team should debrief and discuss any significant happenings or findings that require changes in the way the test is accomplished.

Most importantly, assess whether testing should continue as planned, be delayed, or even canceled. Changes may be needed in the test methodology, data collection, or the test plan itself. The review items under the "test assessment" block of the checklist are a few of the general issues that require review. Table 3-3 identifies four possible outcomes and actions which may result from this assignment

Use good judgement when it comes to implementing changes, but keep the chain of command informed since their experience can identify something requiring higher coordination.

Data Review

This activity is the last assessment activity before the next test event. However, the point here is to determine if enough data was acquired rather than assessing the data itself. The project will reach a point where enough data was acquired to address all the measurements. When enough data is obtained, the project is complete.

Data Analysis

Data analysis is the evaluation portion of T&E. It is an intensive activity and actually begins while data gathering continues. The process entails retrieving stored or documented data into a form suitable for analysis. Depending on the intricacy of the data reduction methods, this alone could take weeks or months.

To this point, the team relies on the test engineer. Once the data is analyzed, however, interpreting the results is a team effort. Everyone on the ITT has something to contribute in assessing effectiveness or suitability.

Work with the test engineer to break results down into something meaningful.

Test and Evaluation Exit Criteria

Data analysis is complete when there is enough information to adequately address results for each MOE/MOS/MOP. Writing the final report is the next phase.

PHASE V: REPORTING

The Final Report

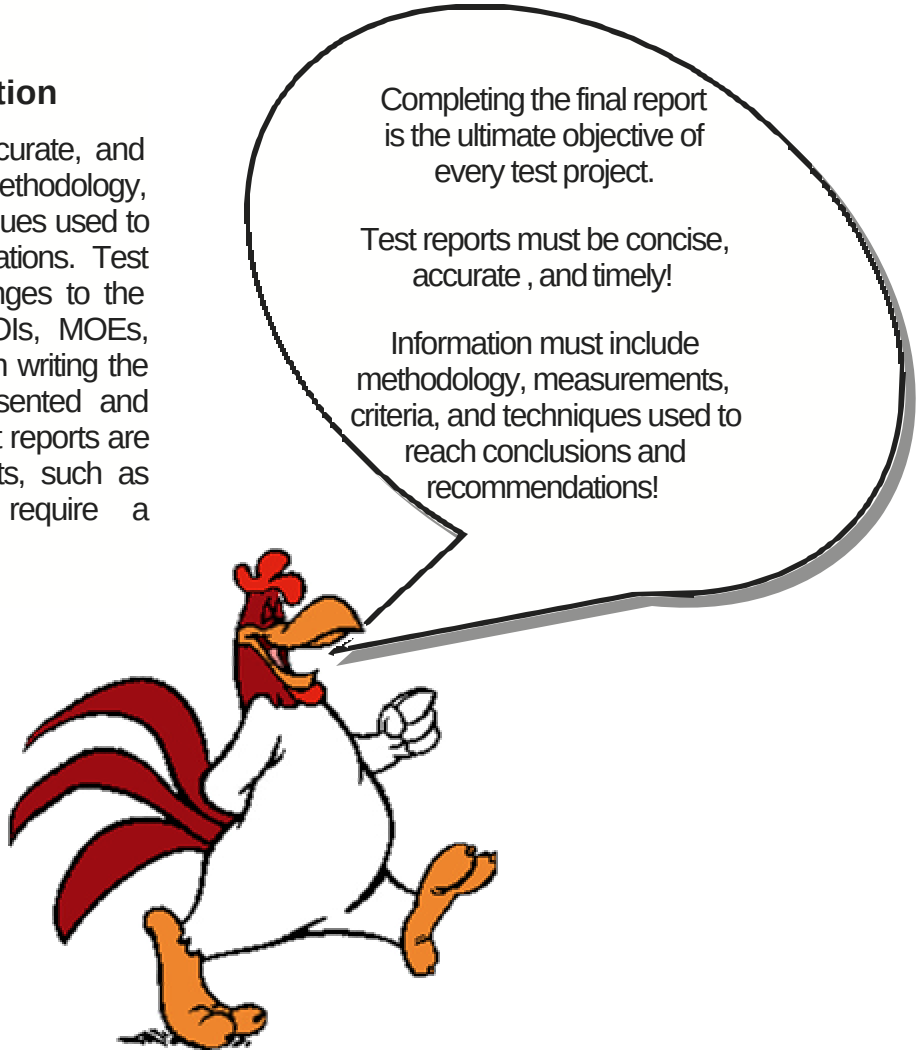
Do not wait until the end of a test to write a final report! Many areas of information for this report are already available in the test plan for a particular test. The final report is written for those who make informed decisions based on the test results, historical documentation, as well as the aircrew members who will implement any changes in tactics or procedures. Keep both of these customers in mind as you prepare the final report .

Test Report Construction

Test reports must be concise, accurate, and timely. Information must include methodology, measurements, criteria, and techniques used to reach conclusions and recommendations. Test directors may not make any changes to the AFSOC approved test plans, COIs, MOEs, MOSs, and evaluation criteria when writing the final report. It must also be presented and understood by everyone. Final test reports are limited to 100 pages. Some tests, such as quick-look testing, may only require a memorandum style report.

See the requirements for writing a memo style format report in AFSOCI 99-102. Don't include voluminous data or other material in the report. The information should represent the entire data set for the applicable MOE/ MOS/MOP.

Retain the remaining data in the test case file. The schedule for the report preparation is an integral part of the overall test schedule and will be included in the test plan. The 18 FLTS Style Guide contains all the necessary information on test plan and report formatting and writing.



Deficiency and Specific Recommendation Reporting

A major function of OT&E is to identify and report deficiencies and propose enhancements (in our case, make specific recommendations) to systems undergoing testing. Operational testers must be prepared to identify and help track these system deficiencies. For our purposes, a specific recommendation is a suggestion, an improvement, or issue for action the test team identified as a result of testing. Consequently, a deficiency is an area of concern or interest which prevents successful mission accomplishment, or degrades a system's operational effectiveness or suitability when noted during testing. If this happens, a deficiency report (DR) is generated to formally identify, report, and resolve the deficiency IAW T.O. 00-35D-54. Any deficiency which requires immediate corrective action because it may cause death, severe injury, major system damage, or unacceptable delays in accomplishing testing is a Category I deficiency. All others are Category II. Test directors will immediately notify the flight commander and the CC or DO of any Category I or Category II DRs. Further action on a Category I DR requires CC or DO approval.

The 18 FLTS DR monitor assists the TD with the proper way to report and track a DR. The DR monitor responsibilities include recording the identified DRs into a unique database and to coordinate follow-up of the DR with HQ AFSOC LG and XP directorates.

The DR monitor may be tasked to provide periodic updates on the status of all DRs and specific recommendations.

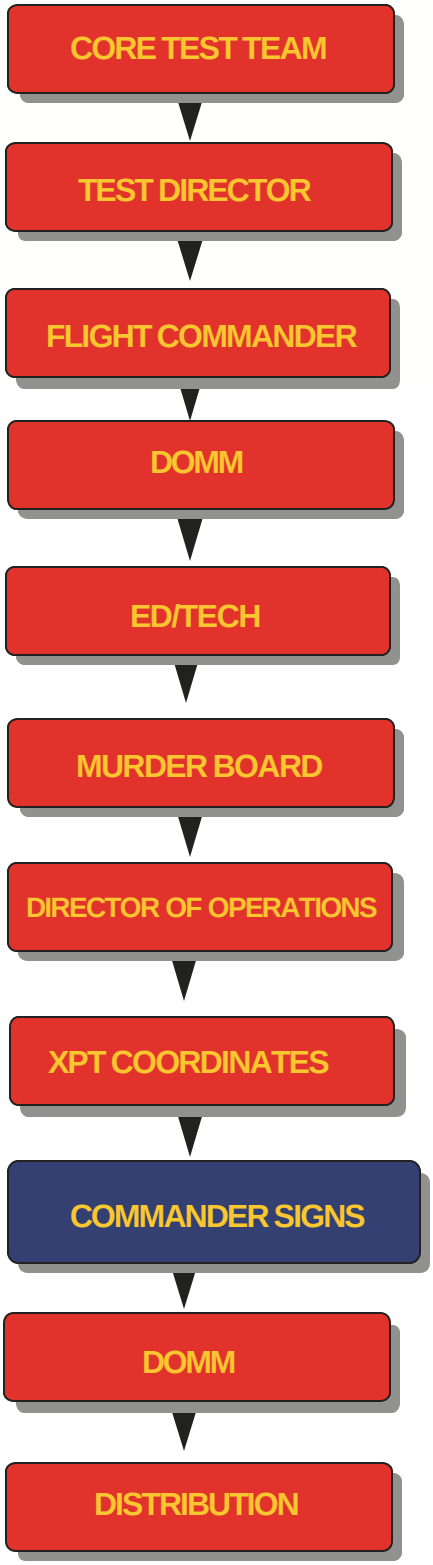
Test directors are responsible for entering all DRs and specific recommendations into LegHorn in coordination with the 18 FLTS DR monitor. It is imperative the verbatim DRs be entered into DREAMS and LegHorn. LegHorn is automatically linked to another database (internal to the 18th) which was created to assist HQ AFSOC with tracking DRs and recommendations (currently known as XPT Tracker). Printouts of DREAMS generated DRs should be included as attachments to the TD's final report. Test directors should consult their flight commander, ADO/DO, or the 18 FLTS DR monitor for further guidance.

Sequential Reports

As soon as the draft test plan is submitted to AFSOC, prepare an outline for the final report. Parts of these reports are independent of test results and can be completed before the test plan is through coordination. Also, notify test team members of their responsibilities in preparing test reports. Developing and adhering to reporting schedules is necessary to ensure users are provided timely results.

Final reports are signed by the 18 FLTS/CC not later than 60 calendar days (90 calendar days for multiservice tests) after the last test event. Occasionally, problems arise adversely impacting the reporting schedule. If it becomes apparent the 60-day suspense cannot be met, advise AFSOC in writing. Include reasons for the delay and a revised estimated completion date. Figure 3-21 depicts the complete test report staffing process.

Figure 3-21. Test Report Staffing



The "Murder Board"

There will be a "murder board" for each report prior to staffing. The purpose of the board is much like that of the TRB: to assess the document's soundness (i.e., MOEs/ MOSs/MOPs answer COIs). The DO will verify the Section 3 testing recommendations. Test directors will conduct an editorial/technical review to ensure the document is grammatically/technically correct and in proper format before the murder board convenes.

Murder board membership should consist of the DO, core team, and an impartial test director. Before the murder board, the test manager, as part of the core and ITT, will review the final report and will be responsible for coordination with the HQ AFSOC staff.

PHASE VI: DISSEMINATION

Now that all the hard work of planning, executing, and reporting on the test is completed, the dissemination process becomes the key to providing the warfighter and decision-makers with important results. Completing and distributing the final report and delivering project summary briefings and feedback to the users is the ultimate objective of every test project. Accomplishing these activities is the emphasis of the Dissemination Phase. It requires activities by both DOMM and the test team.

Hard Copy Distribution

Once a final report is signed by the Commander, DOMM is responsible for dissemination to all applicable addressees. If the reports are marked classified, DOMM prepares for their distribution and provides them to the Administration Section (18 FLTS/ CCA) who creates the AF Form 310s and packages for mailing according to established security guides.

Web Page

Another dissemination tool is the Secure Internet or SIPRNET. The site provides links to our completed projects. DOMM will ensure project results are accessible using this media.

Case Files

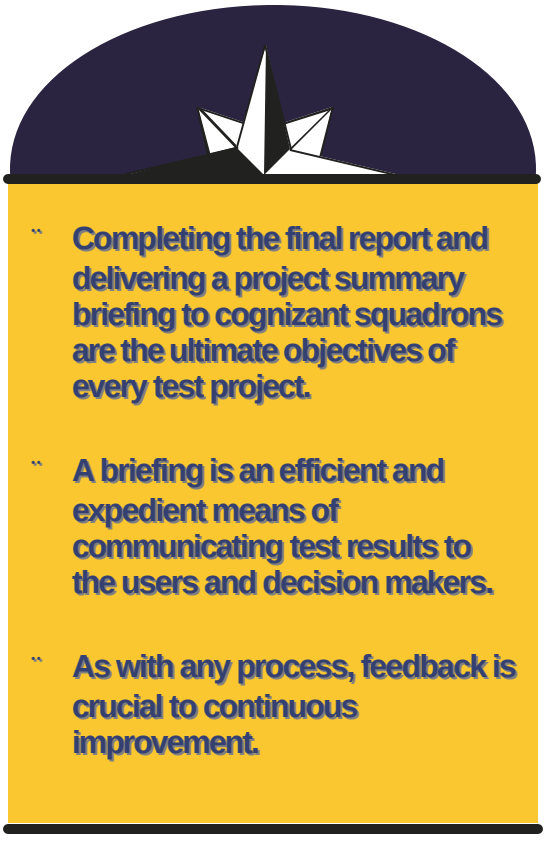
The test director should consolidate notes, data, and documentation relevant to the project in the hard-copy case file. This will preserve a permanent record for future reference. Ensure everything included is in an "official" format. Post-it notes and hand-written notes are inappropriate for test case files. When DOMM receives the Phase VI checklist, the electronic case file, and all other electronic annotations, the project will be properly archived (LegHorn).

All electronic case files will be archived on the "w" drive (W:\Casefile|Library|Products) and CD ROM. The CD ROMs contain a complete calendar year's worth of test projects and are found in the squadron's technical/research library.

Test Director Briefing

A briefing is an efficient and expedient means of communicating test results to the users and decision makers. Its purpose is to summarize test results in a direct and concise format, in addition to providing some basic education on T&E.

The test director is responsible for constructing, scheduling, and presenting the project summary briefing to the squadrons/users whose assets the 18 FLTS team members used during the test. At a minimum, test directors will brief squadron commanders or DOs, or their representatives. If a briefing is not applicable or unusual circumstances preclude it, obtain a waiver from the 18 FLTS/ DO.



- **Completing the final report and delivering a project summary briefing to cognizant squadrons are the ultimate objectives of every test project.**
- **A briefing is an efficient and expedient means of communicating test results to the users and decision makers.**
- **As with any process, feedback is crucial to continuous improvement.**

Construct the briefing as soon as enough data is analyzed to support conclusions. A power point file is located in the LegHorn Phase VI checklist for use [projsum-brf.ppt] by the test director to construct the briefing. Ensure the briefing is a core team effort. Include video and photography to help convey the message.

Debrief Training

As with any process, feedback is crucial to continuous improvement. Provide feedback to the Training Branch in terms of process adequacy, test director training, and lessons learned. These inputs will prove valuable in training future 18th testers.

Other Considerations

In addition to the above, there are innumerable means of spreading the word. The dissemination phase is the time to initiate and employ these efforts developing a video report, or briefing a project at the command's annual tactics conference.

Regardless of the initiatives, there is no substitute for direct interface with crewmembers and maintainers. Take time with line personnel to inform them of test results. Also, don't overlook the project's impact on applicable publications and regulations: the report's results may necessitate formal changes.

A cautionary note. Ensure the test team concurs with test results before disseminating *anything*. It is imperative the 18 FLTS present a unified front to line personnel regarding the effectiveness and suitability of equipment or tactics tested. Anything less risks damaging squadron credibility and/or the command's. It will affect working relationships, or impede future efforts. In short, anything less is contrary to the basic military tenets of discipline and fellowship.

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CHAPTER 4 – TEST DIRECTOR SUPPORT AND RESOURCES

Coordinating and managing resources is one of the most important tasks for a test director. This chapter addresses some of the internal and external resources available for that purpose. While this chapter does not discuss all possible support available, it is an excellent starting point.

The first section gives an overview of some of the 18 FLTS support resources available to the test director. It is followed by a list and short description of some of the primary ranges used by the 18 FLTS to accomplish its tests.

A table of important regulations, manuals, and instructions is located in the final section. Internet web-sites and uniform resource locators (URLs) pertaining to test and evaluation are compiled in attachment D.

INTERNAL RESOURCES . . . .

Four key areas within the squadron providing test directors with important resources are:

- Current Operations
- Mission Support
- Combat Applications
- Operations Analysis

Current Operations

Current Operations (DOO) handles coordination and scheduling with outside agencies. This branch is a repository for much of the information that can help test directors manage and execute successful tests. Notes, schedules, range and aircraft requests, etc. can be found under S:\DOO. Contact DOO for ex-act data concerning 6-week schedule and HQ AFSOC/DO briefing information.l

A test director scheduling meeting is normally conducted once a week to review all required assets for test execution. As discussed in previous chapters, DOO is involved with every phase of the OT&E process. Table 4-1 highlights the major inputs needed by DOO and the outputs they provide by phase.

Mission Support

The Mission Support Flight (DOM) offers the following resources:

- Media
- Library
- LAN Support
- Inter/Intra Net
- Supply Branch
- Training and Education Branch

Inter/Intra Net (DOMI)

Internet, Secure Internet (SIPRNET), and Intranet providing worldwide and squadron online information.

Technical Resource Library (DOML)

Room 209 is dedicated to testing research. Test directors can access previous plans and reports using the internet (Secure Stinet through the Defense Technical Information Center), electronically archived test information using the Leghorn data base, CD ROM, and paper copy. The library also contains various publications relative to testing.

Table 4-1. Current Operations (DOO) Activities

Requests/Inputs Required by DOO	DOO Outputs
Phase I - ITT	
Test Order without supporting documents (electronic copy)	Used to start internal files.
Appointment Letter without supporting documents (electronic copy)	Used to complete/update LegHorn.
ITT minutes (electronic copy)	Used to begin internal scheduling routines, i.e., aircraft, missions, profiles, approximate numbers, dates, etc.
Phase II - Research	
AFSOC/DOO Request for Support Letter (electronic copy)	Used to draft the MIPS, used to update LegHorn, date submitted critical to coordination efforts with DO and LG complexes.
Current Ops must review the AFSOC/DOO letter before it is submitted to XPT.	The TD will fill in the SOC for DOO review and the SOC will be submitted to Eglin for funding estimates. Depending on the timing and nature of a test, there can be periods where the test start date will have to wait until a new quarter or fiscal year. This can have a major impact on test execution timing.
Request for SOC. (electronic copy)	Used to estimate the costs of the test effort. Can be submitted without a "hard" date, normally first warning to Eglin of our proposed test.
DOO participates in drafting the initial test plan to help pinpoint scheduling issues. TDs ensure DOO is informed of any scheduling issues.	Information from SOC and RFS used to request ranges and aircraft.
Phase III - Coordination	
DOO attends Test Plan Working Group.	Finalize the scheduling issues and catch any changes, which will affect scheduling process.
DOO works with the core test team.	Finalize MIPS required for total test effort. A master MIP for each test mission being flown; a significant change in take-off time (going from day-to-night) will generate a new MIP.
DOO works with the core test team to develop the supporting forces list for the test.	Based on the nature of the test effort, DOO will identify any special requirements for the supporting forces personnel, which must be accomplished before test effort participation.
DOO works with the core test team on other coordination issues.	Ensure smooth test process.

Table 4-1. Current Operations (DOO) Activities

Requests/Inputs Required by DOO	DOO Outputs
Phase IV - Testing and Evaluation	
From DOO standpoint, test starts between four and six weeks out and the Thursday before each/any of the following events: aircraft modification/instrumentation, range setup, first flight mission of the test effort (spin-up or actual test mission)	Coordination and monitoring of these activities.
As the test progresses, either the test director or assistant test director must attend the weekly meetings.	Ensures DOO kept in the loop.
During the test effort, DOO requires regular feedback from the test team after each mission.	Update changes to the MIPS. Cancel remaining missions. Keep DOO apprised of changes via phone, email, or attendance at DOO meeting.
Phase V - Reporting	
If the test made use of Eglin's ground support facilities and reduced data from any of Eglin's offices.	DOO can monitor the production of the information and ensure it gets to the test director in a timely manner.
Phase VI - Dissemination	
Clearance to make distribution. (electronic copy)	Use the date to update LegHorn. DOO key to move electronic files from the "S" drive for future use. DOO key to make certain all support/coordination efforts is terminated.

Media (DOMM)

As the squadron's information center, this branch impacts public relations efforts. After the actual test is completed, this branch ensures all affected organizations receive timely information to aid in acquisition decision-making and tactics development. This branch is responsible for producing media to perform public relations activities. Various media forms include:

- **Test Plans** – required to accomplish testing.
- **Test Reports** – required for acquisition recommendations to HQ AFSOC as well as tactics development.
- **Style Guide** – service to squadron members developing test plans and reports.
- **Road Show Briefings** – compilation of end-of-test briefings presented by the DO to various customers.
- **Graphic Support** – developing graphics for multi-media use, conference room/ auditorium setup, and the foundation for public relations activities.
- **Miscellaneous** – produces various training material for HQ AFSOC.

Graphics Work Center

Graphics included in test plans, test reports, and semiannual reports play an important part of the process.

The old saying, "a picture is worth a thousand words," is particularly true when describing technical issues. DOMM can provide various software programs. It was established for squadron members who preferred to develop their own graphics. .

The media workstation is available to create or edit video to include into a test report. DOMM is knowledgeable in the above software and equipment and can provide any necessary training.

The types of graphics support provided include:

- Scanning and photograph touch-up.
- DVD/CD Recording/Duplication: the capability to record test information on to a DVD or CD.
- Graphic design.

LAN Support (DOMN)

Support for computer operations is divided into two areas: Normal desktop/laptop operations and LAN administration.

Each flight has an operations computer manager (OCM) to assist squadron personnel with their computer equipment. This includes upgrading or replacing hardware and installing and using software. Personnel in the 18 FLTS/CCA serve as a work group manager (WGM) and should be contacted if the flight OCM is not available, or cannot resolve any problem encountered.

HQ AFSOC LAN administrators located in building 1, are responsible for installing, supporting, and maintaining all 18 FLTS network user accounts.

- **"S" Drive** is the COMMON drive. It contains directories for each office symbol in addition to other pertinent information applicable to the entire squadron. To keep it organized, please save information under your office symbol. Keep in mind, all information in "S" can be viewed, modified, and deleted by ALL users. Recommend

the "S" drive be used ONLY to share information with other users. NO PRIVACY ACT information is allowed on the "S" drive.

- **"W" Drive** is the Casefile drive. It contains the intranet directory, the case file directory, and many other installation and application files.

Supply Branch (DOMS)

The Supply Branch is responsible for providing squadron members with all the necessary tools and equipment required for performing specific duties and functions. This includes everything from pens and paper to highly technical equipment required for specific tests. Allow ample time to supply personnel to work a request. Some supplies may take several weeks to arrive at the squadron. Frequently, squadron personnel are required to borrow portable/laptop computers for TDYs, off-site testing, or long term off-site training. The laptops available include IBM ThinkPads and Microns. They are configured with the latest software found on the PCs. Check out a laptop by filling out a hand receipt, which will be returned to you when the equipment is checked back into the squadron.

Training and Education Branch (DOMT)

Our Training and Education Branch oversees all training and professional development requirements for 18 FLTS personnel.

Every squadron position requires a particular skill to perform assigned duties and responsibilities. The Training Branch maintains a database that identifies these skills and the types of training required for increased productivity. DOMT also organizes training classes and schedules facilities to support education and training requirements .

Information Operations

The Information Operations Flight (DOI) offers the following resources:

- Modeling and Simulation
- Mission Planning
- Information Warfare
- Battle Management Integration Support

Modeling and Simulation (M&S)

DOI can assist test directors in obtaining modeling and simulation (M&S) support for a test. The key is early notification to research what M&S support is available within DoD and the commercial industry and to determine if any software modifications are required or a test.

M&S substantially reduces the time, resources, and risk associated with the acquisition and test process and to increase the quality, utilization, and supportability of systems developed and fielded. Actual field test data must be acquired to compare with the M&S predicted results.

DOI can currently support the following models:

- Enhanced surface-to-air missile simulation (ESAMS) for a single airborne target vs. a SAM air defense system.
- Radar-directed gun system simulation (RADGUNS) for AAA against an airborne target.
- Threat engagement analysis model (TEAM) for EO/IR missile countermeasures effectiveness.
- Other models from other agencies on a case-by-case basis, however, allow for early coordination.

Mission Planning

The SOF Planning and Rehearsal System (SOFPARS)/Air Force Mission Support System (AFMSS) Mission Planning System (MPS) and the Portable Flight Planning Software (PFPS) are available through DOI. Using the word SOFPARS or AFMSS refers to both the MPS and PFPS.

The main difference between SOFPARS and AFMSS is the hardware configuration to meet SOF mission planning requirements. The software for both the MPS and PFPS are identical to their Air Force counterparts. SOFPARS/AFMSS provides many features that will permit mission planners and testers to accomplish their role more efficiently.

DOI tests all USSOCOM mission planning software, including data transfer functions for SOF air, sea, and ground vehicles. All SOF vehicles have some sort of data transfer device (DTD) which serves as the media to transport mission routes, threats, waypoints, etc. from the mission planning computer to the vehicle computer. Any OFP testing must include data transfer functionality testing. If a test includes an OFP upgrade, contact DOI early in the Coordination Phase to plan for DTD testing with the new OFP.

Information Warfare (IW)

The Information Operations Flight is also a vehicle for IW, education, and research. DOI conducts as-needed briefings on IW-related topics, and established a database of IW reference material to enhance IW cognizance for every member in the 18 FLTS. In addition, DOI leads the squadron's efforts for information assurance by managing the COMPUSEC, COMSEC, OPSEC, and INFOSEC programs for the squadron.

DOI can assist test directors in obtaining IW support for test. While they may be performing dedicated IW tests, there are other OT&E events that may lend themselves to IW exploitation. As with M&S, the key is early notification to research what IW support is available within DoD and the commercial industry and to determine what is required for test. IW encompasses both offensive and defensive aspects of psychological operations, military deception, information assurance, information attack, electronic warfare, and physical destruction. With representation in the ITT, DOI can assess the test project for IW concerns (defending against adversarial threats and exploiting friendly capabilities), providing valuable input to the overall determination of product effectiveness and suitability.

Battle Management Integration Center (BMIC)

The 18 FLTS has the capability to replicate the Air Force and USSOCOM theater battle management architecture for test purposes. In addition to the SOFPARS/AFMSS and M&S equipment, the BMIC also contains:

- The Combat Intelligence System (CIS)
- The Wing Command and Control System (WCCS)
- The Contingency Theater Air Planning System (CTAPS)
- Near real-time intelligence broadcasts
- Space Warfare Center assets

All systems are connected and interoperable to replicate a Joint Special Operations Task Force (JSOTF) environment. Connectivity to the Air Force C^4I Battle Lab is also available.

Operations Analysis

The Operations Analysis Flight (DOA) provides the following resources:

- **Test Data Analysis**. DOAA analyzes all 18 FLTS test data. A test engineer will be assigned as a member of the test team. The analyst provides test methodologies to collect and analyze the test data. Depending on the complexity of the data, it will either be analyzed in-house or be coordinated with another research facility, such as Eglin AFB's Math Lab.

- **Test Instrumentation**. DOAI is responsible for installing and operating any test instrumentation required to collect and evaluate the test data. In general, test instrumentation requirements call for a combination of equipment items from the following five categories:

  - Equipment racks and mounting hardware.
  - Power conditioning and distribution.
  - Audio/video recording and support.
  - Computer-based data collection.
  - Specialized items of test equipment, such as modified crew hatches, signal generators, etc.

Computer-Based Data Collection

Computers are used to collect a wide variety of data including the aircraft 1553B bus, isolated 1553B outputs from specified system line replacement units (LRUs), independent global positioning system (GPS) position and time, discrete voltages, and sensor outputs (such as thermocouple, accelerometer, and barometer).

Typically, computers are rack mounted, but units such as the L-TIDAS and Firefly are able to operate without support from other instrumentation. These units can operate, with consideration to crew safety and access, from any location on the aircraft. Electromagnetic interface/electromagnetic capability (EMI/EMC) checks are conducted during installation and prior to flight to determine if problems exist. To date, no significant EMI/EMC problems have been identified.

Figure 41 provides examples of pallet rack installations. They are representative of one configuration which may be used by 18 FLTS and Det 1, 46 OG on the MC-130H. However, specific installations can vary significantly because of test requirements. The number and type of video recorders, computers, power supplies, and support equipment needed on a pallet, will not only change from test program to test program, but often from mission to mission.

Test instrumentation is necessary to support the vital test programs that verify the effectiveness of equipment and techniques used by AFSOC.

Figure 4-1. Pallet Rack Installations

RANGES . . . .

The 18 FLTS conducts flight tests at numerous ranges throughout the US. This section describes the primary sites and some of the types of testing that can be done at each.

Eglin Military Complex

The Eglin military complex occupies much of the Northwest Florida panhandle, east of Pensacola. The complex has an unsurpassed arrangement of more than 50 specific test areas and sites embedded in a single contiguous land area adjacent to the Gulf of Mexico.

These test areas are located beneath special use airspace that permits relatively unconstrained operations and makes the Eglin Range an ideal setting in which to operate. The Eglin Military Complex is comprised of a variety of areas:

- Eglin Range (land, airspace, gulf)
- Eglin Main
- Hurlburt Field
- Duke Field
- Site C-6
- Camp Rudder
- Choctaw Field
- US Coast Guard Station, Destin

Eglin's unique setting and overwater airspace combine to provide a sea-to-land transition area – a vital resource for modern weapons system research, development, testing, and evaluation.

Air Force Armament Center (AFAC) Test Support

Land Range Test Areas

The AFAC Land Range Test Areas encompass the land and water test areas located within the 463,000 acres comprising the Eglin Reservation. Each test area operates through the Range Operations Control Center located in Building 104 on Eglin Main. Integrating one or more of the land test areas is accomplished by land line and radio communications. The test complex is unique because of the concentration of many individual test areas encompassing a variety of environments (i.e., jungle, rolling hills, cleared flat areas, water areas, etc.) used for a variety of tests.

The major land range test areas consist of:

- TAs C-3.
- C-7.
- A-22.
- A-24.
- C-52 Complex.
- C-64 Complex.
- B-70.
- B-71.
- C-72 Complex.
- C-74 Complex.
- B-75.
- C-80 Complex.

Lesser Test Areas

The lesser test areas are a group of land range test areas and locations within the Eglin Reservation which provide specialized mission support and absorb overflow from the main land test areas. These test areas are designed to provide special environments such as trees and grass, hillsides, and paved surfaces, and are not necessarily used continuously throughout the year. In addition to special or unique tests, the Lesser Test Areas also provide project support which would normally be accomplished on other large test areas if range time were available.

This represents an overflow capability for peak mission workload times on the larger test areas/ranges. The Lesser Test Areas are primarily composed of:

- TAs C-2/2A
- B-5
- B-7
- B-12
- D-51
- C-53
- C-61 Complex
- C-62
- A-73
- A-77
- A-78
- A-79
- B-82
- Assault Landing Strips
- Basin Creek Area
- Match Point Area
- Pocosin Pond Area
- Turtle Creek Area

Other Test Facilities

Table 4-2 lists the areas and types of testing that can be accomplished within the AFAC and Eglin complex test areas.

Table 4-3 lists other major testing facilities available to the 18 FLTS. A majority of the electronic combat testing will be conducted out in the Western Test Ranges. Capabilities and resources available at the Western Test Ranges are classified and can be reviewed in 18 FLTS/DOCI on a need-to-know basis. Eglin ranges can be reviewed using the Air Force Developmental Test Center technical facilities land test area manual CD located in DOO.

Resource Documents

Table 4-4 is a compilation of key DoD and Air Force documents available to the test director.

The Defense Acquisition Deskbook (DAD) is an electronic knowledge presentation system providing the most current acquisition policy for all DoD services and agencies. It is available by visiting the Defense Acquisition University web page at http://dau.gov. This deskbook is an invaluable resource for test directors. Virtually every important publication associated with test and evaluation can be found here. It is imperative for test directors to become familiar

with its location and use. The 18 FLTS library contains additional documentation governing specific types of testing, i.e., live-fire testing, electronic warfare.

Table 4-2. Areas and Types of Testing

TESTING TYPE	TESTING AREA
Airborne optical resolution testing	C-52C and B-81
Airborne reconnaissance equipment evaluation tests	B-12
Airborne scoring system static ground testing	C-74 and C-64
Aircraft mounted gun testing (ground)	A-22
Aircraft dispensed submunitions testing	C-52, B-70, B-71, and B-82
Aircraft shelter Testing	B-12
Air gun launching of submunitions	A-22 (inert), B-75, B-71, C-72
Air-to-ground munitions testing (bombs, rockets, napalm, and gunnery	B-5, B-12, B-70, B-75, C-7, C-7A, C-52C/N, and C-72
Air-to-ground tactical training (gunnery, rocketry, and bombing)	B-7, C-52N, C-62, C-72, A-73, A-77, A-78, and A-79
Arena testing	C-80/A/B/C, C-74 (track), C-2
Assault landings, takeoffs, and cargo extraction	B-5, C-52N, C-53, C-62, C-72, Landing Zone East, and Rockhill Landing Zone
Base and Installation Security System	C-3
Blast Pressure Measurement/Test	C-80 Complex, C-74, C-2, B-70, B-75
Drop zone for paratroops and equipment test	C-61A, B-82, B-70
Electro-optical evaluation testing (laser and infrared)	B-12, A-22, C-52A, B-70, and C-72
Environmental testing of fuzes and submunitions	A-24
Environmental testing of small equipment items (Electronic or mechanical)	A-24
Experiments with warheads and new weapon concepts	C-64A/C and C-80A/B/C
Flare Testing	C-52C/N, B-70, B-75
Fuel arena munitions testing	B-71 and C-80
Fuse testing	A-24

Table 4-2. Areas and Types of Testing

TESTING TYPES	TESTING AREA
Ground functional fuse testing	C-52C, C-74, B-70, B-75, C-72
Gun performance and ammunition testing	A-22, C-64, C-74, C-74L
Gun firing demonstrations	A-22
Heat soak testing (live explosives)	A-24, and B-71, C-80A/B/C, C-74, C-7, C-64, C-74L,
Incendiary and flame weapons testing	C-52C, C-52N, B-70M, B-71, and B-75
Interior, exterior, and terminal ballistic studies	A-22, C-64, C-74L, C-74
Jungle environment ballistic testing	Basin Creek, Turtle Creek, Pocosin Pond, and Underbrush
Laser system weapons testing	B-12, A-22, B-75, C-52A, B-70,
Lethality and vulnerability of conventional munitions	C-80A/B/C, C-74, B-75
Mine field evaluation testing	B-70, B-82, and C-2
Missile flight tests	B-70, C-7, C-7A, and C-72
Multi-Object Tracking and Control Systems (MTACS) and GPS/MTACS D1A,	B-70, B-75, C-52, C-72, Field 1, and A-15
Munitions analysis	A-24 and C-74A
Munitions container testing	A-28
Munitions fragment analysis	C-80W
Munitions impact tests (ground)	C-74, C-52, C-72, B-75
Nondestructive testing	A-22
Shallow Water Mine Countermeasures (SWMCM) test pond	B-70
Side firing weapon systems testing	B-7, A-77, A-78, and A-79
Simulated Test Environment for Munitions (STEM)	TA-24
Static ejection of stores and store suspension systems	TA A-24
Static munitions testing	B-12, C-64, B-70, and C-80A/B/C
Sympathetic detonation testing	B-71, B-75, C-64, C-64A, C-80A/B/C
Terminal effects and experimental testing (bullet impact, sympathetic detonation, booster, and heating testing of live high-explosive munitions)	B-71, B-75, C-64, C-64A, C-80A/B/C
Transducer calibration/evaluation	C-80W
Warhead characterization testing	C-80A/B/C
Weapons-fuse combination testing	C-72, C-74

Table 4-3. Testing Types and Facilities

Testing	Testing Facilities
Unmanned Acft	
Tgt	Eglin AFB[2], Pt Mugu[7], China Lake[8], Tyndall AFB[12], UT&TR[13]
Drone	Ft Huachua[6]
EW	Eglin AFB[2], China Lake[8], Nellis AFB[11]
IR	Eglin AFB[2], Holloman[3], Ft Huachua[6], China Lake[8], Nellis AFB[11]
C3	Eglin AFB[2], Ft Huachua[6], Rome NY[10], Nellis AFB[11], Yuma Proving Ground[14]
Sensors	
RF	Eglin AFB[2], Holloman[3], China Lake[8], Rome NY[10], Nellis AFB[11], Tyndall AFB[12]
Vis	Ft Huachua[6], Rome NY[10]
IR	Eglin AFB[2], Holloman[3], Ft Huachua[6], China Lake[8], Patuxent River[9]
Laser	Eglin AFB[2], Holloman[3], China Lake[8], Patuxent River[9]
Acoustic	Eglin AFB[2], Rome NY[10]
Munitions	
A/A	Eglin AFB[2], Holloman[3], Pt Mugu[7], China Lake[8], Rome NY[10], Tyndall AFB[12]
A/G	Edwards AFB[1], Eglin AFB[2], Holloman[3], China Lake[8], Rome NY[10], Nellis AFB[11], UT&TR[13], Yuma Proving Ground[14]
G/A	Holloman[3], China Lake[8]
Avionics	Edwards AFB[1], Holloman[3], Patuxent River[9], Rome NY[10], Nellis AFB[11], Tyndall AFB[12]
Airframes	Edwards AFB[1], Patuxent River[9], Nellis AFB[11], Tyndall AFB[12], Yuma Proving Ground[14]

Notes:

1. Artificial Icing
2. Blue Flag, TAWAC, Setta
3. Sled Track, CIGT/F, RATSCAT
4. NA
5. NA
6. Radar Calibration MTI
7. NA
8. EW Link with Nellis AFB
9. NAS, Patuxent River, MD
10. Recon System, Intel Handling
11. Red Flag, Link with UT&TR
12. Radar Test Facility
13. Utah Test & Training Range linked with Nellis and Edwards AFB
14. Yuma Proving Ground – helicopter testing

Table 4-4. Important Policy and Regulatory Documents

Identifier	Title	Synopsis
Title 10, U.S.C. Section 2399	Operational Test and Evaluation of Defense Acquisition Programs	Establishes the requirement to operationally test and evaluate DoD purchased equipment. It is the congressional authority that directs OT&E.
DoDD 5000.1	The Defense Acquisition System	Establishes guiding principles for all defensive acquisition—advanced fighter aircraft to combat helmet.
DoDI 5000.2	Operation of the Defense Acquisition System	Specifies mandatory policies and procedures for Major Defense Acquisition Programs (MDAPs) and Manor Automated Information system (MAIS) acquisition programs.
AFPD 99-1	Test and Evaluation Process	Establishes policies for T&E process and infrastructure.
AFI 99-103	Capabilities Based Test and Evaluation	Provides guidance and procedures for DT&E of AF systems. Describes how to plan, conduct, and report cost-effective DT&E programs throughout a systems life cycle. Provides guidance and procedures for OT&E in the Air Force. Describes how to prepare, plan for, and report an operational test.
AFI 99-105	Live Fire Test and Evaluation	Provides guidance and procedures for live-fire test and evaluation (LFT&E) of Air Force systems. It applies to all Air Force acquisition programs requiring LFT&E. It implements AFPD 99-1.
AFI 99-106	Joint Test and Evaluation Program	Provides guidelines and procedures for Air Force participation or support of Joint Test and Evaluation (JT&E) programs directed by OSD.

Table 4-4. Important Policy and Regulatory Documents

Identifier	Title	Synopsis
AFI 99-109	Test Resource Planning	Directs the Air Force to manage T&E facilities, including the major range and test facility bases (MRTFB). This instruction defines test resources, the test resource planning process, test resource usage, and responsibilities associated with test resources.
AFI 99-112	Electronic Warfare Test and Evaluation Process—Direction and Methodology for EW Testing	Covers electronic warfare test and evaluation. It provides a methodology for program manager, test managers, test engineers, test organization personnel, major command headquarters staffs, and others regardless of command level, involved in electronic warfare test and evaluation
AFSOCI 99-102	Operational Test and Evaluation	Provides policies and responsibilities for AFSOC management, conduct, and support of OT&E.
DAD	Defense Acquisition Deskbook	This is a good source for official acquisition documents, including AFSOC and 18 FLTS test and evaluation documents. It is available on the 18th's local area network or through the 18 FLTS/DOMT as a CD-ROM.

Table 4-5. AFSOC Units

Table 4-5 is a compilation of key AFSOC units and respective aircraft. This list is not all inclusive, but should give the test director a good starting reference. Refer to other MAJCOM and/or service directories for respective assigned aircraft.

PARENT UNIT: 16 SOW—Hurlburt Field, FL

UNIT	LOCATION	AIRCRAFT
4 SOS	Hurlburt Field, FL	AC-130U, Spooky Gunship
6 SOS	Hurlburt Field, FL	UH-1N, Huey
8 SOS/919 SOS (reserve)	Duke Field, FL	MC-130E, Combat Talon I
9 SOS	Eglin AFB, FL	MC-130P, Combat Shadow
15 SOS	Hurlburt Field, FL	MC-130H, Combat Talon II
16 SOS	Hurlburt Field, FL	AC-130H, Spectre Gunship
19 SOS	Hurlburt Field, FL	
20 SOS	Hurlburt Field, FL	MH-53J/M
720 STG	Hurlburt Field, FL	N/A
23 STS	Hurlburt Field, FL	N/A
24 STS	Pope AFB, NC	N/A

PARENT UNIT: 352 SOG—RAF Mildenhall, UK

UNIT	LOCATION	AIRCRAFT
7 SOS	RAF Mildenhall, UK	MC-130H, Combat Talon II
21 SOS	RAF Mildenhall, UK	MH-53J/M
67 SOS	RAF Mildenhall, UK	MC-130P, Combat Shadow
321 STS	RAF Mildenhall, UK	N/A

PARENT UNIT: 353 SOG—Kadena AB, Japan

UNIT	LOCATION	AIRCRAFT
1 SOS	Kadena AB, Japan	MC-130H, Combat Talon II
17 SOS	Kadena AB, Japan	MC-130P, Combat Shadow
320 STS	Kadena AB, Japan	N/A

PARENT UNIT: 919 SOW (AFRES) - Duke Field, FL

UNIT	LOCATION	AIRCRAFT
5 SOS	Eglin AFB, FL	MC-130P, Combat Shadow
711 SOS	Duke Field, FL	MC-130E, Combat Talon I

PARENT UNIT: 193 SOW (ANG) - Harrisburg, PA

UNIT	LOCATION	AIRCRAFT
193 SOS	Harrisburg, PA	EC-130E, Commando Solo

Test Team Execution Checklist

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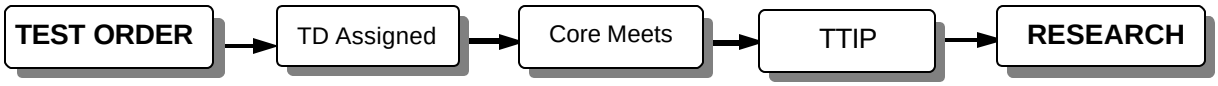
Phase I – ITT (Integrated Test Team)	
Project Title:	Project Number:

This phase is designed to emphasize the team building aspects of a test. It begins with XPT delivering the test order to the 18 FLTS, and ends with fulfilling the exit criteria. The test director (TD) has ultimate responsibility for completing all items; however, all team members must do their part to ensure test success. Other team members can be OPRs for activities they can or should complete. **Timeline: 7 days (1 day for fast-track process)**



	T+0	T+2	T+5	T+7
FAST-TRACK	T+0	T+0	T+0	T+1

Critical Events

☐ **DIRECTORY ESTABLISHED ON "T" DRIVE (OPR: DOMM and DO)**

☐ **BUILD TEAM.**

- θ Team Core Selected. (OPR: DO) (OCR: Flight Cdr), [appt_ltr.doc]
- θ Schedule core initial planning meeting [core_ip.ppt]

TD:	ATD:
TM:	OA:
Other:	Other:

☐ **INITIAL CORE MEETING.** Bring the core together to discuss the test order, COIs, possible MOEs/MOSs, and an overview of the test's scope and concept.

Meeting Date:

- ☐ ID other organizations involved.
- ☐ Schedule test team initial planning (TTIP) meeting.
- ☐ Request attendance from agencies applicable to TTIP (can do by email)
- ☐ Prepare TTIP presentation. [TTIP.ppt]

☐ **TTIP MEETING.** All personnel involved meet for the first time.

Meeting Date:

- ☐ Command/user discuss and verify COIs.
- ☐ Draft MOEs/MOSs to support COIs.
- ☐ Prepare minutes from TTIP. [ttip_min.doc]

☐ **PREPARE COMMANDER'S BRIEF.** [coms_brf.ppt]

Exit Criteria

☐	**ITT identified (Fill in ITT table)**	**Date:**
☐	**COIs verified.**	**Date:**
☐	**Draft MOEs/MOSs.**	**Date:**

CHECKLIST COMPLETE

TD Initials:	Section Chief Initials:	Date Completed:

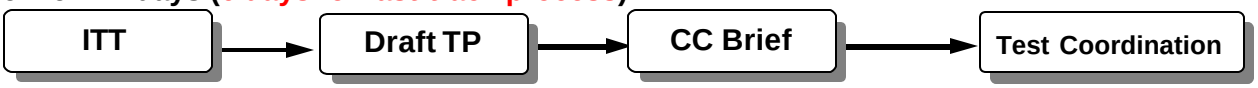
Test Team Composition: The test team should be relatively complete by the end of the TTIP. This table can help keep a centralized list of points of contact for the test.

Name	Organization	Phone/Email	Comments
TD:			Core
ATD:			Core
TM:			Core
OA:			Core

Phase II - RESEARCH	
Project Title:	Project Number:

This phase is designed to provide guidelines for initial information gathering. Thorough research must be accomplished before proceeding to more detailed test plans. Proper documentation, historical information, and applicable regulations are all essential elements of test planning. The TD is encouraged to use the core team members to divide the research workload.

Timeline: 21 days (6 days for fast-track process)



	T+7	T+21	T+25	T+28
FAST-TRACK	T+1	T+7	T+7	T+7

Critical Events

☐ **OBTAIN SYSTEM DOCUMENTATION.**

- ☐ Test Manager research documents. TEMP/ORD/MNS/PMD (OPR: TM)
- ☐ System Description/T.O.s
- ☐ Interface Control Documents
- ☐ DT&E/IOT&E Reports
- ☐ User's Handbook
- ☐ Related Projects
- ☐ System Security Classification Guides
- ☐ Other:

☐ **INTERVIEW EXPERTS.** Identify and interview subject matter experts who may have necessary information.

☐ **LOGISTICS STUDY.**

- ☐ Determine ground support requirements.
- ☐ Range Issues: Cost, scheduling, availability, data capabilities.
- ☐ If necessary, identify deployment requirements.
- ☐ Send total project ammunition (bullets, chaff, flare, etc.) expenditure to the munitions account custodian.
- ☐ Draft Test Support Request with TM [sup_req.doc]
- ☐ Rough Order of Magnitude (ROM) for other test support.
- ☐ Identify training requirements for aircrew or maintenance personnel.
- ☐ Completed Instrumentation Support Request form.[isr_req.doc]

☐ **DRAFT DATA PROCESSING PLAN.** OA will put together a comprehensive package outlining the data collection and analysis methods to be used. (OPR: OA)

☐ **Draft AF 1067s, *Modification Proposal*,** if necessary

- For test article coordinate through XPT.
- For instrumentation coordinate through OA.

Phase II – RESEARCH - Continued	
Project Title:	Project Number:

☐ **DETERMINE TEST SAFETY REQUIREMENTS.**
- ☐ Conduct PHA using Risk Assessment Matrix.
- ☐ Determine if special safety provisions/waivers will be needed.
- ☐ Review safety issues with HQ AFSOC/SE.

☐ **DETERMINE TEST SECURITY REQUIREMENTS.**
- ☐ Determine security levels of all documents.
- ☐ Determine security requirements for system.
- ☐ Determine security requirements for data.
- ☐ Research any unique security issues for "Special Access" programs.
- ☐ Determine classified storage requirements (test articles or data).

☐ **ENVIRONMENTAL STUDY.**
- ☐ If applicable, complete AF Form 813, *Request for Environmental Impact Analysis.* [af0813.frl] Coordinate through 46 OG/OGP Eglin Scheduling.
- ☐ Review studies from similar tests.
- ☐ Contact environment expert if necessary (start with HQ AFSOC/CEPV)

☐ **PREPARE FOR TEST PLAN WORKING GROUP (TPWG).**
- ☐ Disseminate draft test plan.
- ☐ Invite TPWG members. [tpwg_inv.doc]
- ☐ Create briefing for TPWG. [tpwg.ppt]

Exit Criteria

☐	**Research and studies complete.**	**Date:**
☐	**Draft test plan disseminated.**	**Date:**
☐	**Timeline for test established.**	**Date:**
☐	**Test support request letter sent to XPT.**	**Date:**

CHECKLIST COMPLETE

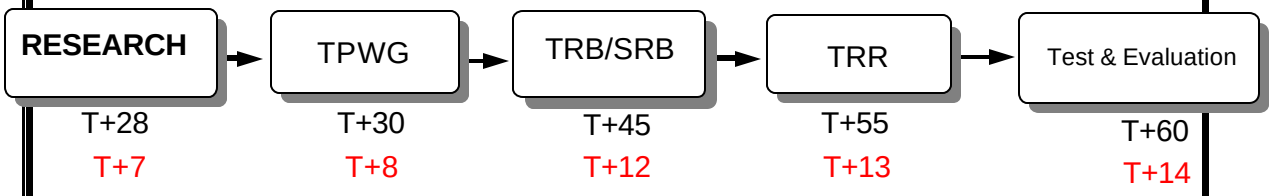
TD Initials:	Section Chief Initials:	Date Completed:

Phase III – TEST COORDINATION

Project Title:	Project Number:

This phase is the most work intensive of all phases. Coordinating test planning and execution must be completed at both squadron and external agency level. The TPWG is the last opportunity for all players to make their inputs to the test plan, the most critical document which must be approved prior to flying. The TRB/SRB reviews the test's technical accuracy and ensures all safety requirements are met. The 18 FLTS/DOO will coordinate assets, ranges, and personnel. Coordinate with DOO as early as possible.

Timeline: 32 Days (7 days for fast-track process)



Critical Events

☐ **TEST PLAN WORKING GROUP.** Date:

- ☐ Collect and implement changes to the test plan.
- ☐ Determine if any operator training will be required and make arrangements.
- ☐ Identify if contractor provided training is required and make arrangements.
- ☐ Invite agencies required for TRB/SRB. [tsrb_invite.doc]
- ☐ Notify agencies via e-mail with receipt and hardcopy via BITS.
- ☐ Create memo minutes from TPWG. [tpwg_min.doc]
- ☐ Determine if succeeding TPWGs are needed –meet as required.

☐ **COORDINATE TEST SUPPORT.**

- ☐ Follow-up on support request letter to HQ AFSOC/XPT.
- ☐ Coordinate aircraft and range support through 18 FLTS/DOO.
- ☐ Mission Information Packages [mi_dmmyy.doc]
  - Completed, coordinated with OA
  - Faxed to pertinent organization
- ☐ Coordinate ground support with appropriate agencies to include the AMU.
- ☐ Submit finalized test dollar requirements (including range costs) to 18 FLTS/FM
- ☐ Establish and coordinate test aircrew requirements with unit POC.
  - Special test crews (instructors or experienced operators),
  - Pallet operators,
  - In-flight test director
  - Contractors onboard,
  - Other supporting forces.
- ☐ If necessary, complete Flight Line Photo Support Request. [Flphoto.doc]

☐ **COMPLETE DATA STRATEGY.**

- ☐ Finish Data Processing Plan. (OPR: OA)
- ☐ Submit AF Forms 1067 to XPT for CCB. [AF 1067.fil]
- ☐ Submit advanced copies of 1067 to SPO representative.

Phase III – TEST COORDINATION Continued	
Project Title:	Project Number:

☐ **Editorial/Technical Review.** Date:
- ☐ Convene ed/tech with ADO, DOMM, and ITT.
- ☐ Finalize and review the test plan.

☐ **TRB/SRB** Date:
- ☐ Using test cards or other written means, develop step-by-step procedures for equipment operations/performing the test. Coordinate with HQ AFSOC/DOV/LGM.
- ☐ Final review – ensure all MOEs/MOSs and COIs are technically sound.
- ☐ HQ AFSOC/SE has approved the test plan.
- ☐ Hold additional hazard review boards as required by other agencies.
- ☐ Notify agencies via e-mail with receipt and hardcopy via BITS.
- ☐ Complete TRB/SRB minutes [tsrb_min.doc]

☐ **STAFF AND COORDINATE TEST PLAN.**
- ☐ Coordinate final changes with DOMM.
- ☐ Prepare staff summary sheet/route through FC, DO, CC, XPT, DOMM, CC.
- ☐ Plan signed by 18 FLTS/CC. Date:

☐ **FINAL TEST PREPARATIONS.**
- ☐ Build Test Cards. [tst_crd.doc]
- ☐ Update MIP.

☐ **TEST READINESS REVIEW.** Test team meets with 18 FLTS/DO (or ADO) to ensure assets are in place, coordination is complete, and all documentation is approved. The DO will be briefed on any checklist items or exit criteria not completed before granting approval to proceed.

Exit Criteria

☐	**HQ AFSOC approved test plan.**	**Date:**
☐	**CCB approved AF Form 1067s.**	**Date:**
☐	**Approved support request letter received from XPT.**	**Date:**
☐	**Missions are on the 18 FLTS/DOO schedule.**	**Date:**
☐	**OT readiness certification.**	**Date:**

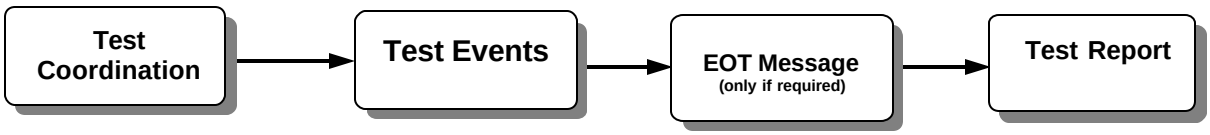
CHECKLIST COMPLETE

TD Initials:	Section Chief Initials:	Date Completed:

Phase IV – TEST and EVALUATION	
Project Title:	Project Number:

This phase consists of flight test and data analysis. Checklist items focus on last minute coordination, assessing each flight, and coordinating subsequent flights. Most important, however, is to **DOCUMENT EVERYTHING!** Take notes on everything that went right or wrong with the test to help with writing the final report later on.

Timeline: Varied (1st flight to finish of last test event, usually data reduction; same for fast-track process)



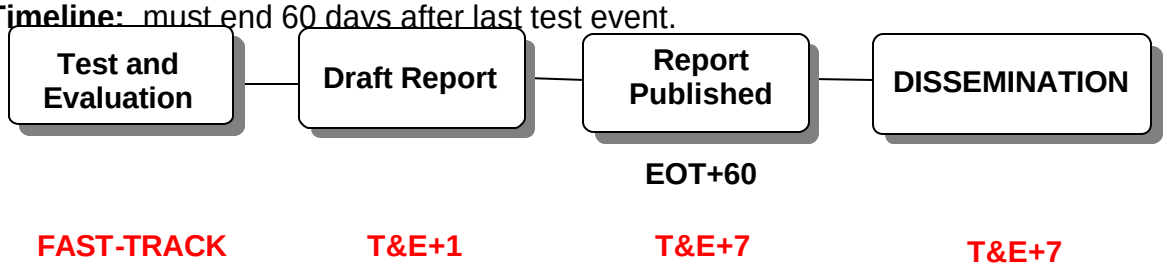
Critical Events	
☐	**EXECUTE TEST EVENT.** (flight, ground, test, etc.)
☐	**NOTIFY 18 FLTS/DOO and XPT OF TEST EVENT COMPLETION**
☐	**TEST ASSESSMENT** ☐ Data assessment (if data is readily available). • Does the data make sense? Why or why not. • Will the data answer the MOEs/MOSs? ☐ Test method assessment. • Change test cards? • Change flight profiles? • Rewrite Go/No-Go criteria? • Rewrite mission info package for crews? ☐ Ammunition expended for this test mission reported to DOO and account custodian. ☐ TAR completed and submitted.
☐	**REVISE METHODOLOGY AS NEEDED.**
☐	**DATA REVIEW.** • Data answers all MOEs/MOSs? • More flights/events required?
☐	**RETURN SPECIAL/GROUND SUPPORT EQUIPMENT AS APPROPRIATE**
☐	**DATA ANALYSIS.** (OPR: OA)
Exit Criteria	
☐	**Data analysis completed. Date:**
CHECKLIST COMPLETE	

TD Initials:	Section Chief Initials:	Date Completed:

Phase V – TEST REPORTING	
Project Title:	Project Number:

This phase addresses the importance of producing a well-written, technically accurate, and properly coordinated test report. A final test report needs to be properly coordinated through the test team (at least the core) and through the squadron staff.

Timeline: must end 60 days after last test event.



Critical Events

☐ **WRITE FINAL REPORT.**
- ☐ Draft final report. [yyxxxfr.doc]
- ☐ Test team editorial/technical review.
- ☐ Hold "Murder Board" with DO.

☐ **COORDINATE FINAL REPORT.**
- ☐ Give final draft to branch chief/flight commander for formal coordination and staffing.
- ☐ Implement changes from coordination.
- ☐ Enter DRs and specific recommendations into LegHorn in coordination with the 18 FLTS DR monitor (DOF).

Exit Criteria

☐ **DRs and specific recommendations are entered into LegHorn. Date:**

☐ **Final report is approved and signed by 18 FLTS/CC. Date:**

CHECKLIST COMPLETE

TD Initials:	Section Chief Initials:	Date Completed:

Phase VI - DISSEMINATION	
Project Title:	Project Number:

After approval of the test report, 18 FLTS/DOMM and test directors will provide the information to the users as quickly and effectively as possible.

Timeline: None, some dissemination may happen prior to publishing report.

Critical Events
☐ **DISTRIBUTION & PROJECT COMPLETION.** ☐ Hard copy distributed. (OPR: DOMM) ☐ Update squadron SIPRNET web page as appropriate. (OPR: DOMM) ☐ Consolidate and archive case files. (OPR: DOMM)
☐ **TEST DIRECTOR BRIEFS.** ☐ Brief appropriate users/squadron(s) on test report findings, conclusions, and recommendations. [projsum_brf.ppt] **OR** ☐ Briefing waiver obtained from 18 FLTS/DO. ☐ Debrief 18 FLTS Training Office.

Exit Criteria	
☐ **Final report distributed.**	**Date:**
☐ **Briefings accomplished:**	**Date:**
☐ **Phase VI checklist delivered to DOMM:**	**Date:**

CHECKLIST COMPLETE		
TD Initials:	Section Chief Initials:	Date Completed:

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18 FLTS DEPLOYMENT CHECKLIST

D - 58 **Initial Core Meeting**

- Determine if the test requires an off-site deployment YES/NO
- If off-site deployment is required, range selection/availability and personnel/ equipment requirements should be addressed

Note: The TPWG issues at D-30 need to be addressed as early as possible. TDs should consider having additional meetings and review these issues every two weeks. By bringing in people from the wing early to discuss the big picture, the TD can get smarter on the logistical requirements, can construct a better tasking letter, and give the wing an idea of what to expect.

D - 55 **Test Team Initial Planning Meeting**

- Identify the number and duration of sorties required to complete the test
- Determine if extra lines for unit training will be offered to the aircrew
  - Plan for cancellation of 50 percent scheduled missions due to weather, equipment, data, and maintenance problems
  - Plan for one full day between flights
  - Avoid Monday flights due to lack of weekend range support
  - Identify training events which can be offered to the supporting mission flying squadron
  - Draft tasking letter for HQ AFSOC/XPT release (as info only) to supporting unit maintenance, ops squadron, and 18 FLTS/DOA requesting personnel/equipment requirements
  - Allow a 10-day suspense for tasking turnaround
  - Courtesy copy of tasking letter is forwarded to 16 LRS/LGRR and 16 OSS/DOO

D - 45 Formal response due from maintenance, ops squadron, and 18 FLTS/DOA

D - 43 Draft tasking support letter to 16 LRS/LGRR with consolidated personnel/ equipment requirements of supporting units

- Allow a 7-day suspense for tasking turnaround

D - 36 Formal response due from 16 LRS/LGRR. This response should provide the following information:

- Load plan requirements that will drive airlift requirements
- Determine if SAAM, Wing C-130, or organic airlift is required
- SAAM airlift may require longer lead times
- 16 LSS/LGLX will work SAAM airlift if required

Note: SAAM is an important and separate issue. SAAM airlift must be POMed each year. In the past, problems with aircraft availability (C-141, C-5, etc), lead times, and unfunded requirements have caused major delays in testing. TDs can not always count on the wing for airlift. By D - 32, all SAAM airlift issues must be addressed in the tasking letter to AMC.

D - 32 **Airlift requirements included with DOO coordination letter to HQ AFSOC/DOO**.

- Attach 16 LRS/LGRR letter to HQ AFSOC/DOO letter

- Refueling requirements support letter to HQ AFSOC/AMC-LO
- Funding requirements to 18 FLTS/FM

Exit Criteria: Test coordination with 16 LRS/LGRR formalized

D - 30 **Test Plan Working Group (TPWG)**

Note: TDs should plan to hold TPWG meetings every two weeks until the deployment begins

Note: Submit formal security letter site containing the most current personnel list to the deployment site. Range restrictions/clearance for computers must also be requested and obtained. This needs to be done at least 30 days out. Depending on deployment location, this is a real problem. The WTR requires a final list of name and clearances 30 prior to the first body showing up. If this is not done, the test team will sit in MANCAMP until the appropriate clearance arrives.

TPWG (Morning)

- Test and ops working group
  - Update latest test schedule
  - Request all required information for deployed location
  - Task participating units to provide names of deploying personnel
    - Allow a 10-day suspense for tasking turnaround

TPWG (Afternoon)

- Update and confirm logistics requirements
- Request all required information for deployed location
- Task participating units to provide names of deploying personnel
  - Allow a 10-day suspense for tasking turnaround

Note: The TPWG must address the following issues:

- Important to know what the “host” can provide so maintenance/ops squadron can pare and tailor specific needs
- Need to address requirements at the deployed location
  - Billeting
  - Transportation
  - Hangar, ramp space, office space
  - AGE
  - Fuel
  - How to pay for it (MIPR?)
  - Airfield restrictions. Communications (faxes, STU-III, Email, phones)
  - Communication issues (test frequencies, SATCOM, hand radios, etc.)
  - Resupply
  - Munitions
  - Photographic support
  - Computer requirements/limitations (recording media restrictions)
  - Security for classified equipment/data (classified storage)
  - Data processing/collection needs
    - Airborne vs. Ground
    - Data formats

- Data analysis
- Data selection/accuracy
- Range capabilities

D - 5 **Predeployment Brief**

- Include all participants
- Brief entire deployment schedule and individual equipment needs (shot records, ID tags, ear plugs, flight line badges, protective equipment (reflective belt, etc.))
- Personnel needs (mailing address, phone numbers, transportation, food, billeting, base security, etc.)
- Unit POCs
- Range restrictions
- Range security issues

D - 4 **Brief the 18 FLTS/CC/CD/DO on deployment status**.

D - 3 **ADVON (Beddown issues)**

- Assistant Test Director
- Maintenance Representative
- Administrative Troop

D day **Depart**

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The Scientific & Technical Information Program (STINFO)

What is it?

STINFO is communicable knowledge or information resulting from or about the conduct and management of scientific and engineering efforts. Scientific and technical information (STI) is used by administrators, managers, scientists, and engineers engaged in scientific and technological efforts and is the basic intellectual resource for and the result of such efforts. STINFO may be represented in many forms and media, including paper, electronic data, audio, photographs, video, drawings, numeric data, textual documents, etc.

This information can be used, or adapted for use, to design, engineer, produce, manufacture, operate, repair, overhaul, or reproduce military or space equipment and related technology.

For the 18 FLTS, STI includes, at a minimum:

- Test Plans and Reports (AFI 99-103)
- Test Item Descriptions
- Methods of Test
- Test Data (to include audio, video, etc.)
- Results
- Conclusions
- Recommendations

How can we avoid problems in the 18th Flight Test Squadron?

All STI disseminated outside the 18 FLTS must be reviewed and assigned the appropriate markings in accordance with AFI 61-204, 30 Aug 02, *Disseminating Scientific and Technical Information*. The markings must be authorized, reasonable, and consistent. The markings must be placed in certain locations on documents or other data. STI must not be distributed without these markings.

Please explain the markings!

All technical publications/reports will include a distribution statement, destruction notice, and export-control warning statement.

- Place the distribution statement on the front cover, title, page, and SF 298, Report Documentation Page.

- Include distribution statements and export-control notices on newly created documents.

- Documents created before the AFI 61-204 was implemented, 27 Jul 94, do not need them unless requested.

Tell me more about distribution statements!

Distribution statements provide options ranging from unlimited distribution to no secondary distribution without specific approval of the originator. Review the categories before assigning a statement. Fill in the reason, date of determination, and controlling DOD office. There are seven authorized statements, but in the 18 FLTS the most commonly used distribution statement is E. See your STINFO Officer for a list of the other distribution statements.

DISTRIBUTION E. Distribution authorized to DoD agencies only, Test and Evaluation: MM YY. Other requests for this document must be referred to HQ AFSOC/ XPT, 320 Tully Street, Hurlburt Field, Florida 32544-5446.

What does the Destruction Notice say?

DESTRUCTION NOTICE. For classified documents, follow the procedures in DOD 5220.22, *Industrial Security Program.* For unclassified, limited documents, destroy by any method that will prevent disclosure of contents or reconstruction of the documents.

The Export-Control Warning states…

"WARNING. This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C., Section 2751, et seq.) or the Export Administration Act of 1979, as amended Title 50, U.S.C. App 2401 et seq. Violation of these export-control laws is subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

…But what does that mean?

The penalty for unlawful export of items or information controlled under the Internal Traffic in Arms Regulation (ITAR) is up to two years imprisonment, or a fine of $100,000, or both.

LAWFUL export requires:

- Compliance with the International Traffic in Arms Regulations (ITAR).
- Compliance with Export Administration Regulations (EAR).

UNLAWFUL export includes:

- Release to foreign governments or agencies.
- Release to foreign and foreign-owned companies.
- Release to foreign nationals. (This includes non-US citizens employed by "certified" US Government contractors.)
- Release to any foreign person inside or outside the CONUS.

What about putting test reports on the internet?

In accordance with AFI 33-129, *Transmission of Information via the Internet,* the following information cannot be released to the public:

- Classified information
- Privacy act information
- For Official Use Only information
- DOD contractor proprietary information
- Scientific and technical information
- Unclassified information requiring special handling
- Critical information (i.e., OPSEC)
- Freedom of Information Act (FOIA) exempt information

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Air Force and DoD Acquisition Education Agencies

Air Force Institute of Technology	http://www.afit.edu/
Army Logistics Management College	http://www.almc.army.mil/
Acquisition Community Connection	http://pmcop.dau.mil/simplify/
Defense Acquisition University	http://www.dau.mil/
Defense Acquisition Deskbook	http://deskbook.dau.mil/jsp/default.jsp
Defense Systems Management College	http://www.belvoir.army.mil/maps/DSMC_info.htm
Defense Test & Evaluation Professional Institute	http://www.dtepi.mil/ie/index.htm
U.S. Air Force Academy	http://www.usafa.af.mil/
Federal Acquisition Institute	http://www.faionline.com/kc/login/login.asp?kc_ident=kc0001
US Air Force Acquisition Center of Excellence	http://www.safaq.hq.af.mil/ACE/
Joint Interoperability and Systems Technology for Test & Training	http://jcs.mil/

Test and Evaluation Information

Developmental Test and Evaluation	http://www.acq.osd.mil/te/index.html
Defense Technical Information Center	http://www.dtic.mil/
Defense Information Analysis Center	http://iac.dtic.mil
Advanced Concept Technology Demonstrations	http://www.acq.osd.mil/actd/
Defense Procurement and Acquisition Policy	http://www.acq.osd.mil/dpap/

Laws, Regulations, Doctrines, and Standards

Library of Congress (recent Legislation)	http://thomas.loc.gov
Acquisition and Training	http://www.acq.osd.mil/dpap/general/nav-workforce.htm
Code of Federal Regulations (CFR)	http://www.access.gpo.gov/nara/cfr/
Commercial Standards Organizations	http://www.aimglobal.org/standards/stndrdorgs.htm
Defense Federal Acquisition Regulations (DFAR)	http://www.acq.osd.mil/dp/dars/dfars.html
Defense Acquisition Regulations Directorate	http://www.acq.osd.mil/dp/dars/transf.htm
Federal Acquisition Reform Act of 1996 (FARA)	http://www.gsa.gov/staff/v/mvi/fara.htm
Federal Acquisition Regulation (FAR)	http://www.gsa.gov/far
Government Printing Office Database of Documents	http://www.gpoaccess.gov/index.html
International Standards Organization (ISO)	http://www.iso.ch
United States Codes via Government Printing Office	http://www.gpoaccess.gov/uscode/index.html
United States Codes via US House of Representatives	http://www.gpoaccess.gov/legislative.html
Joint Vision 2020 of the Joint Chiefs of Staff	http://www.dtic.mil/jointvision/jvpub2.htm
National Military Strategy - Joint Chiefs of Staff	http://www.dtic.mil/jcs/core/nms.html
FedWorld	http://www.fedworld.gov/
US House of Rep: Internet Law Library	http://www.access.gpo.gov/nara/cfr/cfr-table-search.html
DoD Single Stock Point for Military Specifications, Standards, and Related Publications	http://www.dodssp.daps.mil/

Acquisition Reform Information

Federal Acquisition Reform Net (ARNET)	http://www.arnet.gov
Army Acquisition Reform	http://dasapp.saalt.army.mil/acqref/Tools.htm
Cost Analysis Research, Tools & Models	http://www.saffm.hq.af.mil/
DoD Under Secretary of Acquisition & Technology	http://www.acq.osd.mil
Acquisition Management	http://www.acq.osd.mil/ara/am/index.html
Federal Acquisition Reform Act of 1996 (FARA)	http://www.fas.org/man/crs/96-022.htm
Federal/DoD/Air Force Federal Acquisition Regs	http://farsite.hill.af.mil/
Navy Acquisition Reform	http://www.acq-ref.navy.mil

Download Government Documents

General Accounting Office (GAO) Documents	http://www.virtualref.com/govagency/171.htm
Download Adobe Acrobat Reader Software	http://www.adobe.com/products/acrobat/readstep2.h tml
Congressional Budget Office (CBO) Reports	http://www.cbo.gov/#
General Services Administration (GSA) Documents	http://www.gsa.gov/staff/pa/gsadirec.htm
DTIC Products and Services	http://www.dtic.mil/dtic/prodsrvc/
Air Force Material Command Publications	http://www.afmc.wpafb.af.mil/pdl
Per Diem Rates	http://www.dtic.mil/perdiem/

Air Force Acquisition Activities

USAF SAF/AQ Acquisition Reform (Lighting Bolts)	http://www.safaq.hq.af.mil/acq_ref/bolts.html
Air Force Country Store - software products	http://www.hanscom.af.mil/CSTORE/swtool.html
Air Force Issues	http://www.issues.af.mil/
Air Force Materiel Command	http://afmc.wpafb.af.mil/
AirForceLINK - The Air Force Home Page	http://www.af.mil/

Air Force Product Centers and Logistics Centers

Aeronautical Systems Center (ASC)	https://www.ascent.wpafb.af.mil/
Electronics Systems Center (ESC)	http://www.hanscom.af.mil/
Human Systems Center (HSC)	http://www.brooks.af.mil/HSC/
Space and Missile Center (SMC)	http://fas.org/spp/military/docops/smc/
Oklahoma City Air Logistics Center (OC-ALC)	https://wwwmil.tinker.af.mil/default.asp
Ogden Air Logistics Center (OO-ALC)	http://www.hill.af.mil/
Warner Robins Air Logistics Center (WR-ALC/AE)	https://rgre9402.robins.af.mil/AE/default.asp

Air Force Laboratories

Wright Laboratory	http://www.afrl.af.mil/
Rome Laboratory	http://www.rl.af.mil/

Air Force Test and Evaluation Agencies

Air Force Development Test Center (AFDTC)	http://www.fas.org/spp/military/program/nssrm/initiatives/afdtc.htm
Air Force Operational Test and Evaluation Center (AFOTEC)	http://www.afotec.af.mil
Air Force Flight Test Center (AFFTC)	http://www.edwards.af.mil/
Arnold Engineering Development Center (AEDC)	http://www.arnold.af.mil/
Radar Target Scatter Division (RATSCAT)	http://ranger95.crosswinds.net/airforce/aerial_target_sq/Radar_Target_Scatter_Division.htm
Standard Systems Group (SSG)	https://web1.ssg.gunter.af.mil/home/
Software Technology Support Center	http://www.stsc.hill.af.mil/

DoD Acquisition and Test Organizations

Army Test and Evaluation Command (ATEC)	http://www.atec.army.mil/index1.htm
Current T&E Oversight List	http://www.dote.osd.mil/oversight/index.html
Defense Advanced Research Projects Agency (DARPA)	http://www.darpa.mil/
Defense Information Systems Agency (DISA)	http://www.disa.mil/
Defense Modeling and Simulation Office (DMSO)	https://www.dmso.mil/public/
Deputy Director, Live Fire Test and Evaluation (DDLFT&E)	http://www.dote.osd.mil/lfte/index.html
Director of Administration and Management	http://web7.whs.osd.mil/corres.htm
Director, Defense Research and Engineering (DDR&E)	http://www.dtic.mil/ddre/
Director, Operational Test and Evaluation (DOT&E)	http://www.dote.osd.mil/
Director, Test, Systems Engineering, and Evaluation (DTSE&E)	http://www.acq.osd.mil/te/
DISA Joint Interoperability Test Command (JITC)	http://jitc-emh.army.mil/
DoD Link to Laboratories (LABLINK)	http://www.dtic.mil/lablink/index.html
Joint Interoperability Test Command (JITC)	http://jitc-emh.army.mil/
Major Defense Acquisition Program List (MDAP)	http://www.acq.osd.mil/api/asm/mdaplist.html
Naval Air Warfare Center Weapons Division (NAWCWPNS)	http://www.nawcwpns.navy.mil/
Navy Commander Operational Test and Evaluation Force	http://www.cotf.navy.mil/
Under Secretary of Defense for Acquisition and Technology	http://www.acq.osd.mil/
Space and Missile Test and Evaluation	http://ax.laafb.af.mil/~carreiroa/axt.htm
Test and Evaluation Resources Committee (TERC)	http://www.acq.osd.mil/te/pubdocs/terc.html
Data & Analysis Center for Software (DACS)	http://www.dacs.dtic.mil/

Defense Acquisition Activities

Air Force Acquisition Category Listing	http://afmc.wpafb.af.mil/HQ-AFMC/DR/PML/
Army Acquisition Support Center	http://asc.rdaisa.army.mil/
Army Acquisition Web Site	https://webportal.saalt.army.mil/
Army Link	http://www.army.mil/
Total Ownership Cost Initiative	https://www.navair.navy.mil/toc/
DefenseLink News	http://www.defenselink.mil/news/
DoD Data Standardization	http://www-datadmn.itsi.disa.mil/
Joint Interoperability and Systems Technology for Test and Training ($JIST^3$)	http://jcs.mil/
Joint Chiefs of Staff	http://www.dtic.mil/jcs/
Navy Acquisition Reform	http://www.acq-ref.navy.mil/
Under Secretary of Defense for Acquisition & Technology	http://www.acq.osd.mil/
Deputy Under Secretary of Defense (Acquisition Reform)	http://www.acq.osd.mil/dpap/
Open Systems Joint Task Force	http://www.acq.osd.mil/osjtf/
United States Marine Corps	http://www.usmc.mil/
Various DoD Agencies	http://www.defenselink.mil/pubs/
Joint National Integration Center – Interoperability Testing	http://www.jntf.osd.mil/programs/interops/default_int.asp
Joint National Integration Center	http://www.jntf.osd.mil/default.asp
NASA/DOD/DOE/NOAA: Major Facilities Inventory	http://facility.hq.nasa.gov/

Government Agencies

Central Intelligence Agency	http://www.cia.gov/
Federal Web Locator	http://www.infoctr.edu/fwl/
Federal Aviation Administration	http://www.faa.gov/
General Accounting Office	http://www.gao.gov/
General Services Administration	http://www.gsa.gov/
Government Printing Office	http://www.gpoaccess.gov/index.html
Library of Congress	http://marvel.loc.gov/
National Archives	http://www.archives.gov/index.html
NASA	http://www.nasa.gov/
NOAA	http://www.noaa.gov/
The Smithsonian	http://www.si.edu/
Transportation	http://www.dot.gov/
Treasury	http://www.ustreas.gov/
Veterans Affairs	http://www.va.gov/

Modeling and Simulation

Air Force Warrior Preparation Center	https://wwwmil.usafe.af.mil/direct/wpc/
Air Force Studies & Analyses Agency (AFSAA)	https://www.afsaa.hq.af.mil/php/getContent.php?subject=home
Army Modeling and Simulation Office (AMSO)	http://www.amso.army.mil/
Automated Test Planning System	http://www.stsc.hill.af.mil/crosstalk/1994/11/automate.asp
Defense Advanced Research Projects Agency (DARPA)	http://www.darpa.mil/
DoD Modeling and Simulation Master Plan	https://www.dmso.mil/public/library/policy/guidance/500059p.pdf
Joint Aircraft Survivability	http://jas.jcs.mil/
Joint Modeling and Simulation System (JMASS)	http://www.redstone.army.mil/amrdec/jmass/
Joint Simulation System (JSIMS)	http://www.jsims.mil/
Modeling & Simulation Resource Repository	http://afmsrr.afams.af.mil/
National Simulation Center	http://www-leav.army.mil/nsc/
Navy Modeling and Simulation Management Office	http://navmsmo.hq.navy.mil/
Navy Test and Evaluation Modeling and Simulation	http://www.ncsc.navy.mil/Capabilities_and_Facilities/Capabilities/Test_and_Evaluation_and_Modeling_and_Simulation.htm
NPSNET Research Group	http://www.npsnet.org/~npsnet/
NAWC-Training Systems Division, Orlando, FL	http://www.ntsc.navy.mil/
Program Executive Office for Simulation, Training & Instrumentation	http://www.peostri.army.mil/

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The 18 FLTS Management and Information Database

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LegHorn is the 18 FLTS management and information database. It is physically located on the T: drive along with the test case files.

It is broken down into three major sections:

- Data collection
- Management Analysis
- Research

Management analysis in LegHorn allows supervisors to view the status of any number of tests. It provides an overview of all active and archived (closed) projects. In the overview, test records can be sorted and filtered to narrow the supervisor's focus. Additionally, LegHorn provides metrics and graphing capabilities to allow supervisors to gauge the health of any test as well as the workload of any flight, test director, or analyst. It will produce individual test reports, group test reports, overdue test reports, and Air Force point papers of individual tests.

Henerey, a smaller and faster program of LegHorn, is specifically tailored to the test director for data collection. It focuses mainly on test input and updates.

Both programs provide an automated tool to capture the day-to-day operational information pertaining to test and evaluation events. Additionally, test directors can use LegHorn to obtain general information and research.

Once HQ AFSOC/XPT provides a test order, 18 FLTS/DOMM creates a record in the database. Input items include:

- The project number
- Test title
- Aircraft platform
- Type of test
- Program Manager
- Test Manager
- Flight
- Precedence
- Test Rank
- Purpose
- Background

From this record, test directors can add numerous details to the project to include:

- Current Status
- TTEC Checklist Status
- Issues and Recommendations
- Significant Events
- Phase and Execution Completion Dates
- Cost (ROM)
- Deficiency Reports
- Munitions Data
- Flight Data

LegHorn simplifies test management and collection for the test director through:

- Simple data entry
- Easy standard document access
- Test and report template access
- Up-to-date reports
- Single location for all test status
- Snapshots of aircraft currently in test

Test directors have the same access to all active and archived test case files, as well as a personnel skills bank and research library. The personnel skills bank allows the test director to find a person in (and sometimes outside) the squadron possessing a special skill, which may be required. The research library contains web links to outside test agencies as well as a document and message reference library.

The LegHorn database also contains a complete help function. **After entering the system, press the F1 key.** This will provide a menu, which includes:

- Introduction to Leghorn
- Test Project (Overview)
- Test Project (Update)
- Support Projects
- Skills Bank
- Research Library
- How Do I?
- FAQ
- Troubleshooting Problems
- Our Acronym List

The 18th Flight Test Squadron's Guide to Writing Technical Plans and Reports

This Style Guide was reviewed, updated, and approved for publication: Jan 2004.

Reviewed by: MICHAEL T. LEFFLER, Lt Col, USAF
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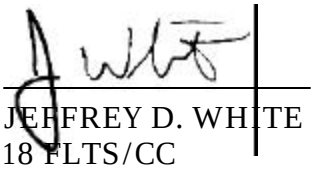

Approved by: JEFFREY D. WHITE
18 FLTS/CC
Commander

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BODY	**Section I - Introduction** ∗ Purpose ∗ Authorizing Directives ∗ Background ∗ Concept of Test ∗ Classification Statement ∗ System Contractor Involvement ∗ Environmental Impacts ∗ Training Involved ∗ ESP Code ∗ Resources **Section II - Discussion** ∗ Description ∗ COI 1 ∗ COI 2 (If there are more than 1) ∗ Tactics Considerations **Section III - Administration** ∗ Test Management ∗ Responsibilities ∗ Safety **Section IV - Release of Information** ∗ HQ AFSOC/XPT ∗ HQ AFSOC/PA ∗ SAF/IADD	**Section I - Introduction** ∗ Purpose ∗ Authorizing Directives ∗ Background ∗ Concept of Test ∗ Classification Statement ∗ System Contractor Involvement ∗ Environmental Impacts ∗ Training Involved ∗ ESP Code ∗ Resources **Section II - Discussion** ∗ Description ∗ COI 1 ∗ COI 2 (If there are more than 1) ∗ Additional Findings ∗ Tactics Considerations **Section III - Conclusions, Enhancements, Deficiencies, and Recommendations** ∗ General Conclusions and Recommendations ∗ Specific Enhancing Characteristics ∗ Specific Deficiencies ∗ Specific Recommendations **Section IV - Release of Information** ∗ HQ AFSOC/XPT ∗ HQ AFSOC/PA ∗ SAF/IADD
END	Attachments Distribution List Customer Survey Back Cover	Attachments Distribution List Customer Survey Back Cover

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TEST PLAN FORMAT

SECTION I – INTRODUCTION

1.0. PURPOSE. Provide a concise statement for the purpose of testing. "The purpose of this test is to…" The purpose is verbatim from the test order. There is only one purpose for conducting a test. If your test order shows more than one purpose, query your flight commander or the Director of Operations.

1.1. AUTHORIZING DIRECTIVES. The authorizing directive is HQ AFSOC/XPT Test Order ##-###, *Title*, date. This test was assigned a Precedence Level #.

1.2. BACKGROUND.

1.2.1. **Description of the System Tested**. Describe the system to be tested. Specific frequencies, object size, number of boxes, etc. is not required. Try not to write verbatim information found in technical orders or manufacturer's descriptions. State where the reader can find additional system information.

1.2.2. **Maintenance Concept**. Briefly describe the maintenance concept for both peacetime and wartime environments as stated in the ORD. This section should answer these questions:

- How will the user maintain the system? 1-Level, 2-Level?
- Who will maintain the system? Contractors, military, or a combination of both.
- What are the mobility or deployment concepts and requirements?
- What are the system-specific support equipment requirements?
- What type of integrated diagnostics is planned for the system? Built-in test equipment, test sets, manual procedures?

1.2.3. **Operational Concept**. This section answers the question, “how will the user employ the system?” It may include primary or alternate missions describing the system's use in an operational environment. It may include system interfaces, day or night operations, sortie ratio, surge rates, accuracy, altitudes, profiles, duration, hours per day, number of operators, dormancy periods, shelf life, durability, etc.

1.2.4. **Previous Testing**. Provide a brief summary of any previous testing for this particular system. Be specific about where the reader can find additional information on previous testing. If no previous testing was conducted, so state.

1.3. CONCEPT OF TEST.

1.3.1. **Scope**. Scope explains the testing boundaries. These boundaries include resources involved, number of sorties, location, time frame, environmental conditions, and the requirements to be tested against. Scope will also include any additional limitations which will also "bound" the tests. State number of sorties, general altitudes, day, night, and whatever document (i.e., an ORD, Test Order, Temp, etc.) drives testing under those conditions. Make sure to include the location and dates of the testing. The TD should be very specific about locations, i.e., NTTR, Eglin Field 6, etc. Likewise, the TD will include the time frame of when the testing will take place. Mention if there are or are not directives or criteria to test against and where they are found. If there are no directives or criteria, state what standard you are testing to and why you are testing to that standard. Mention the confidence level you expect from the testing. An example of confidence level would be: a TD wanted 10 flights but was only allowed one due to funding limitations. In this example, the TD level of confidence would probably be low. Finally, identify planning considerations, which will shape the test design, and limiting factors, which will affect realism or results.

1.3.2. **Method**. The method section of your test plan or report will likely be the longest section overall. Method defines the process you will go through to answer the purpose of the test within the "bounds" as defined in the scope. It should be detailed to preclude any misunderstanding. For example, in the scope, the TD established there are going to be 10 flights. In the method the TD should explain there are 3 sorties to establish baseline data for the test, 4 flights for actual equipment testing, and 3 flights to test tactics. The reader should be able to reconstruct the test based on reading this method. Additionally, describe how you are going to measure data (i.e., TSPI data, surveys, etc.) This does not mean, "method for MOP 1-1 is …".since the reader hasn't even gotten to the section describing COI. If a particular method for an MOE or MOS is different than the overall method, or has a particular aspect, mention it in Section II. However, this will be the rare exception! Make sure to include a summary of your analysis method. Include statistical data showing the number of aircraft, flying hours, number of events, etc. The statistical data can be several paragraphs long and should also state why the analyst will use a particular statistical method, i.e., mode vs. median vs. mean, etc.

NOTE: Use more than one paragraph if necessary.

1.3.3. **Integrated Test Team**. List the members of the integrated test team and any other pertinent participants of the test. An example besides the immediate test team would be to list the individual aircrew members if they will fly all the sorties for an entire test. Do not use bullets, but rather a numbering system beginning with 1.3.3.1.

1.4. CLASSIFICATION STATEMENT. State the plan's classification authority and declassification procedures (if applicable). See the unit security monitor if you have questions about classification procedures.

1.5. SYSTEM CONTRACTOR INVOLVEMENT. Explain the involvement by system contractor personnel.

1.6. ENVIRONMENTAL IMPACTS. Include any adverse impact on the environment attributed to testing this system.

1.7. TRAINING INVOLVED. List any training which is required to accomplish this test. Describe who will define and develop the training given to personnel operating and maintaining the system when it becomes operational. Identify location, duration, and source of all government and contractor training.

1.8. ESP CODE. Test directors get this information from HQ AFSOC/XPT. It is the code used to track funding. Check LegHorn. The DO enters this when a test order is received and a case file is established in LegHorn.

1.9. RESOURCES.

1.9.1. **Rough Order of Magnitude**. ROM costs must be included for each and every test. If no costs are associated with a test, state the reason here (i.e., it is conducted on a local training line). Put a total ROM figure here.

1.9.1.1. Range Support. See 18 FLTS/DOO scheduler for SOC.

1.9.1.2. Transportation Costs. Will testing use SAAM airlift or ground transportation? If ground transportation, will it be roundtrip or one way? See deployment CC or 18 FLTS/DOAI.

1.9.1.3. Outside Contractor Support. Provide information on specific contractor and any cost known at this time. Contact 18 FLTS/FM for funding criteria.

1.9.1.4. TDY. (Total number of personnel) x (airfare) + (total days) x (per diem rate of TDY location) + (rental vehicles). See 18 FLTS/FM for per diem rates if needed. If a deployment is required, need total number of personnel participating. Specify if they are using military air, if possible.

1.9.1.5. Equipment Rental. Cost of special equipment needed to conduct testing, i.e., spectrum analyzers, etc.

1.9.1.6. Printing Costs. The formula is $.24/page with **any** color on it, .11/page total b&w x total number of copies found in distribution list. Count single pages.

1.9.1.7. Supplies. This includes special batteries, video tapes, CD-ROMs, zip disks.

1.9.1.8. Other Costs. Anything else not covered above

1.9.2. **Aircraft**.

1.9.3. **Flight Hours**.

1.9.4. **Support**.

1.9.5. **Munitions**.

SECTION II - DISCUSSION

This section deals with the plan to answer the critical operational issues (COIs) using measures of effectiveness (MOEs) and measures of suitability (MOSs). To answer specific MOEs/MOSs, use measures of performance (MOPs). Finally, this section includes any tactics considerations which may arise out of testing this item. Use the below format when developing this section.

2.0. DESCRIPTION. The 18 FLTS was tasked to perform an (FDE, OUE, etc.) under HQ AFSOC Project yy-xxx to answer (number) critical operational issue(s).

2.1. COI 1.

2.1.1. **MOE/MOS 1-1**. Include criteria if there are no associated MOPs.

2.1.1.0. Method. This paragraph should be used by exception only! If the method is the same to answer all the MOEs, delete this. Only use this paragraph if some aspect of testing doesn't fall under "Method" in Section 1. This will be a very rare occurrence! If you have done a thorough job in Section 1, this paragraph should not be necessary.

2.1.1.1. MOP 1-1-1. Include criteria with the MOP.

2.1.2. **MOE/MOS 1-2**.

2.1.2.1. MOP 1-2-1. Include criteria with the MOP.

Additional COIs will follow the previous format.

2.2. COI 2.

2.2.1. **MOE/MOS 2-1**. Include criteria if there are no associated MOPs.

2.2.1.1. MOP 2-1-1. Include criteria with the MOP.

2.2.1.2. MOP 2-1-2. Include criteria with the MOP.

2.3. TACTICS CONSIDERATIONS. Will follow any COIs and be numbered accordingly. List any possible tactical considerations which may arise from testing. Highlight possible new tactical opportunities which may be realized with implementing this system. Describe how these tactical considerations will be evaluated. If tactical considerations are not going to be evaluated, state why they are not being evaluated.

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SECTION III - ADMINISTRATION

3.0. TEST MANAGEMENT. This test will be managed by HQ AFSOC/XPT and conducted by the 18 FLTS. The following key personnel have responsibilities essential to planning and implementing this test:

3.0.1. **Program Manager**. Rank/Name/Organization/DSN #

3.0.2. **Test Manager**. Rank/Name/Organization/DSN #

3.0.3. **Test Director**. Rank/Name/Organization/DSN #

3.1. RESPONSIBILITIES.

3.1.1. **HQ AFSOC/XPT will** assume overall responsibility for accomplishment of this test; coordinate and approve this test plan; coordinate test support with HQ AFSOC, other commands, and agencies upon request from the 18 FLTS; and assist the 18 FLTS when requested.

3.1.2. **18 FLTS will** prepare and forward to HQ AFSOC/XPT a test plan for staff coordination, approval, and distribution; provide funding for accomplishment of this test; conduct a safety review board prior to test execution; conduct the test; coordinate required test support with those agencies and/or units participating in the test and evaluation; publish and distribute the approved test plan.

3.1.3. **16 OG will**

3.1.4. **16 MXG will**

3.1.5. **Agency XX will:**

3.2. SAFETY. Test participants will apply operational risk management principles throughout all phases of test completion. This includes provisions for periodic safety reviews as deemed necessary by test team personnel, 18 FLTS/DO, or HQ AFSOC/SE. An SRB will convene prior to the start of the test. Prior to each test flight and/or event, the test director or his designated representative will brief participants on duties, test procedures, and safety precautions. If any participant observes an unsafe condition, testing will be suspended immediately. The test director will evaluate the specific hazard and take appropriate action before resuming the test. The test director will ensure mishaps are reported as directed in AFI 91-204, *Safety Investigations and Reports.* The test director will document safety material deficiencies IAW T.O. 00-35D-54, *USAF Deficiency Reporting and Investigating System*, and document these deficiencies in the final report.

Table 3-1. Risk Assessment Matrix

HAZARD PROBABILITY OF OCCURRENCE	HAZARD SEVERITY CATEGORY			
	I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
	Death or System Loss	Severe Injury, Occupational Illness, or Major System Damage	Minor Injury, Minor Occupational Illness, or Minor System Damage	Less than Minor Injury, Occupational Illness, or System Damage
(A) FREQUENT * Likely to occur frequently ** Continuously experienced	1	3	7	13
(B) PROBABLE * Will occur several times in the life of an item ** Will occur frequently	2	5	9	16
(C) OCCASIONAL * Likely to occur sometime in the life of an item ** Will occur several times	4	6	11	18
(D) REMOTE * Unlikely, but possible to occur in the life of an item ** Unlikely, but can occur	8	10	14	19
(E) IMPROBABLE * So unlikely, assume it will not occur ** Unlikely, but possible	12	15	17	20
* SPECIFIC INDIVIDUAL ITEM ** FLEET OR INVENTORY		HAZARD RISK INDEX: 01 - 05 HIGH RISK 06 - 11 MEDIUM RISK 12 – 20 LOW RISK		

Table 3-2. Preliminary Hazard Analysis

Overall Hazard Risk Index (HRI) **Overall Risk:**

HAZARD				RECOMMENDED ACTION			
Description	Prob	Cat	HRI	Minimizing Procedures	Prob	Cat	HRI

SECTION IV - RELEASE OF INFORMATION

4.0. HQ AFSOC/XPT. Office of primary responsibility (OPR) for the release of test information through government channels. Participants will not discuss this test with uninvolved persons or agencies. Refer any inquiries to HQ AFSOC/XPT (Test and Evaluation), 320 Tully Street, Hurlburt Field, Florida 32544-5446, DSN 579-3413, commercial (850) 884-3413.

4.1. HQ AFSOC/PA. OPR for release of unclassified information outside government channels and any Press releases. Refer any inquiries to HQ AFSOC/PA (Public Affairs), 229 Cody Avenue, Suite 104, Hurlburt Field, Florida 32544-5273, DSN 579-5515, and the test manager in accordance with AFI 35-101, *Public Affairs Policies and Procedures.*

4.2. SAF/IADD. OPR for approval and release of test and evaluation information to foreign nationals, government, or agencies. Refer any inquiries to HQ AFSOC/INF (Intelligence Force Management), 100 Bartley St, Suite 105W, Hurlburt Field, Florida 32544-5273, DSN 579-4096. They will review the request and make release recommendations to SAF/IADD.

REPORT DOCUMENTATION PAGE	*Form Approved*

PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (*DD-MM-YYYY*) SELF EXPLANATORY	2. REPORT TYPE FINAL REPORT	3. REPORT DATE (*From—To*) START TO END DATE

4. TITLE AND SUBTITLE Complete title to include the AFSOC numerical designation	5a. CONTRACT NUMBER LEAVE BLANK
	5b. GRANT NUMBER LEAVE BLANK
	5c. PROGRAM ELEMENT NUMBER LEAVE BLANK
6. AUTHOR(S) ITT to include office symbol and DSN phone number. Note: Use CTRL-Tab versus spacing over for alignment.	5d. PROJECT NUMBER LEAVE BLANK
	5e. TASK NUMBER LEAVE BLANK
	5f. WORK UNIT NUMBER LEAVE BLANK

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) SEE MASTER	8. PERFORMING ORGANIZATION REPORT NUMBER SEE MASTER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) SEE MASTER	10. SPONSOR/MONITOR'S ACRONYM(S) SEE MASTER
	11. SPONSOR/MONITOR'S REPORT NUMBER(S) SEE MASTER

12. DISTRIBUTION/AVAILABILITY STATEMENT
SEE MASTER

13. SUPPLEMENTARY NOTES
USUALLY LEFT BLANK

14. ABSTRACT
Briefly go over the background, short system description, scope, method, and conclusions/recommendations. This is obviously a condensed version of your total information, so be concise.

15. SUBJECT TERMS
Mention any term or ACRONYM that would help someone searching the internet for information concerning this test or subject area. Airplane designation, equipment, tactics, or any other term from the test that would help the searcher pinpoint this test as a possible research tool.

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON SEE MASTER
a. REPORT UNCLAS or SECRET	b. ABSTRACT UNCLAS or SECRET	C. THIS PAGE UNCLAS or SECRET			19b. TELEPHONE NUMBER *(include area code)* SEE MASTER

TEST REPORT FORMAT

Executive Summary

Purpose. Provide a specific one-sentence statement for the purpose of test. "The purpose of this test was to …" The purpose should be verbatim from the test plan, which came from the test order.

Background/Scope. State the testing time period and number of flights in general terms. Additionally, briefly describe the system and test circumstances. Make sure to answer the "what?", "why?", and "how?" of the test.

Conclusions and Recommendations. State the general conclusion of the test exactly as it is stated in paragraph 3.0. of this final report. Provide a brief discussion of why you reached this conclusion. State any enhancing characteristics or deficiencies which amplify to the reader why you came to this conclusion. Usually the strongest enhancement or deficiency will suffice to give the reader the "feel" for what you thought. Don't forget to balance the findings of the report if there are areas of the test that went well. Try not to focus only on the negative aspects of the test. State the general recommendations verbatim from paragraph 3.0. If there are additional conclusions and recommendations from Section III, state how many additional conclusions and results are not listed and where they can be found in the report.

DO NOT USE ACRONYMS!

THIS IS A STAND-ALONE DOCUMENT NOT TO EXCEED 1 PAGE
WRITE IN PARAGRAPH FORM, NOT NUMBERED BULLET STATEMENTS.

THIS IS YOUR OPPORTUNITY TO BE CREATIVE TO GIVE THE READER THE "FEELING" OF THE TEST!

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SECTION I—INTRODUCTION

1.0. PURPOSE. Provides a concise statement for the purpose of testing. "The purpose of this test was to…" The purpose is verbatim from the test order. There is only one purpose for conducting a test. If your test order shows more than one purpose, query your flight commander or the Director of Operations.

1.1. AUTHORIZING DIRECTIVES. The authorizing directive is HQ AFSOC/XPT Test Order ##-###, *Title*, date. This test was assigned a Precedence Level #.

1.2. BACKGROUND.

1.2.1. **Description of the System Tested**. Describe the system that was tested. There is no need to include specific frequencies, object size, number of boxes, etc. Try not to write verbatim information found in technical orders or manufacturer's descriptions. State where the reader may find additional information on the system.

1.2.2. **Maintenance Concept**. Briefly describe the maintenance concept for both peacetime and wartime environments as stated in the ORD. This section should answer these questions:

- How will the user maintain the system—1-level, 2-level?
- Who will maintain the system? Contractors, military, or a combination of both.
- What are the mobility or deployment concepts and requirements?
- What are the system-specific support equipment requirements?
- What type of integrated diagnostics is planned for the system? Built-in test equipment, test sets, manual procedures?

1.2.3. **Operational Concept**. This section answers the question, “how will the user employ the system?” It may include primary or alternate missions describing the system's use in the operational environment. It may include system interfaces, day or night operations, sortie ratio, surge rates, accuracy, altitudes, profiles, duration, hours per day, number of operators, dormancy periods, shelf life, durability, etc.

1.2.4. **Previous Testing**. Provide a brief summary of any previous testing of this particular system. Try and be specific about where the reader can find additional information on previous testing. If no previous testing was conducted, so state.

1.3. CONCEPT OF TEST.

1.3.1. **Scope.** Scope explains to the reader the boundaries the test operated within. These boundaries include resources involved, number of sorties, location, timeframe, environmental conditions, and the requirements that were tested against.

Scope will also include any additional limitations which also "bound" the tests. State number of sorties, general altitudes, day, night, and whatever document (i.e., an ORD, Test Order, Temp, etc.) drove testing under those conditions. Make sure to include the location and dates of the testing. The TD should be very specific about locations, i.e., NTTR, Eglin Field 6, etc. Likewise, the TD will include the timeframe of when the testing took place. Mention if there were or were not directives or criteria tested against and where they are found. Criteria could be an entire separate paragraph. If there were no directives or criteria, state what standard you tested to and why you tested to that standard. Mention the confidence level that you feel resulted from the testing. An example of confidence level would be that a TD wanted 10 flights, but was only allowed one due to funding limitations. In this example, the TD level of confidence would probably be low. Finally, identify planning considerations that shaped the test design, and limiting factors that affected realism or results.

1.3.2. **Method**. The method section of your test report will likely be the longest section overall. Method defines the process you went through to answer the purpose of the test within the "bounds" as defined in the scope. It should be detailed to preclude any misunderstanding. For example, in the scope, the TD established there were 10 flights. In the method the TD should explain were 3 sorties to establish baseline data for the test, 4 flights for actual equipment testing, and 3 flights to test tactics. The reader should be able to reconstruct the test based on reading this method. Additionally, describe how the data was measured (i.e., TSPI data, surveys, etc.) this does not mean, "method for MOP 1-1 was …".since the reader hasn't even gotten to the section describing COI. If a particular method for an MOE or MOS was different than the overall method, or had a particular aspect, mention it in Section II. However, this will be the rare exception! Make sure to include a summary of your analysis method. Include statistical data showing the number of aircraft, flying hours, number of events, etc. The statistical data can be several paragraphs long and should also state why the analyst used a particular statistical method, i.e., mode vs. median vs. mean, etc.

NOTE: Use more than one paragraph if necessary.

1.3.3. **Integrated Test Team**. List the members of the integrated test team and any other pertinent participants of the test. An example would be to list the individual aircrew members if they flew all the sorties for an entire test. Do not use bullets, but rather a numbering system beginning with 1.3.3.1.

1.4. CLASSIFICATION STATEMENT. State the report's classification authority and declassification procedures (if applicable). See the unit's security monitor if you have any questions about classification procedures.

1.5. SYSTEM CONTRACTOR INVOLVEMENT. Explain the involvement by system contractor personnel.

1.6. ENVIRONMENTAL IMPACTS. Include any adverse impact on the environment attributed to testing this system.

1.7. TRAINING INVOLVED. List any training which was required to accomplish this test. Describe who defined and developed the training given to personnel operating and maintaining the system when it becomes operational. Identify location, duration, and source of all government and contractor training.

1.8. ESP CODE. Test directors get this information from HQ AFSOC/XPT. It is the code used to track funding. Check LegHorn. The information will be inputted in LegHorn when the DO first receives a test order from XPT.

1.9. RESOURCES.

1.9.1. **Actual Testing Costs.** Actual costs must be included for each and every test. If there were no costs are associated with a test, state the reason here (i.e., it is conducted on a local training line). Put actual test costs here.

1.9.1.1. Range Support. See 18 FLTS/DOO scheduler for SOC.

1.9.1.2. Transportation Costs. Will testing use SAAM airlift or ground transportation? If ground transportation, will it be roundtrip or one way? See deployment CC or 18 FLTS/DOAI.

1.9.1.3. Outside Contractor Support. Provide information on specific contractor and any cost known at this time. Contact 18 FLTS/FM for funding criteria.

1.9.1.4. TDY. (Total number of personnel) x (airfare) + (total days) x (per diem rate of TDY location) + (rental vehicles). See 18 FLTS/FM for per diem rates if needed. If a deployment is required, need total number of personnel participating. Specify if they are using military air, if possible.

1.9.1.5. Equipment Rental. Cost of special equipment needed to conduct testing, i.e., spectrum analyzers, etc.

1.9.1.6. Printing Costs. The formula is $.24/page with **any** color on it, .11/page total b&w x total number of copies found in distribution list. Count single pages.

1.9.1.7. Supplies. This includes special batteries, video tapes, CD-ROMs, zip disks.

1.9.1.8. Other Costs. Anything else not covered above

1.9.2. **Aircraft**.

1.9.3. **Flight Hours**.

1.9.4. **Support**.

1.9.5. **Munitions**.

SECTION II—DISCUSSION

This section deals with the COIs, MOEs, MOSs, MOPs, and criteria results of testing. Number the COIs, MOEs, MOSs, and MOPs exactly the same as in the test plan. At the end of each COI, preferably answer either **YES** or **NO** (see below) to each as to whether or not it passed the user's criteria. This section also includes any tactical considerations that arose from testing.

2.0. OBJECTIVES. The 18 FLTS was tasked to perform an (FDE, OUE, etc.) under HQ AFSOC Project yy-xxx to answer number critical operational issue(s).

2.1. COI 1. State the COI. State how the COI was answered - preferably in a simple YES or NO fashion. However, sometimes the answer may be "Yes, potentially" or "Yes, marginally effective" or "Yes, with correction of the following deficiency reports" or some other answer. If this is the case, be prepared to explain it to your flight commander and the Director of Operations. Explain how the MOEs resolved the COI. For example, if there were 5 MOEs and 4 met criteria, the answer may be YES. However, if 4 did not meet criteria and 1 did, it may still be YES. The test team must weigh the importance of each MOE in reaching this decision.

2.1.1. **MOE/MOS 1-1**. State the MOE. State how the MOE was answered - MET CRITERIA/DID NOT MEET CRITERIA. Explain how the MOPs resolved the MOE. For example, if there were 5 MOPs and 4 met criteria, the answer may be MET CRITERIA. However, if 4 did not meet criteria and 1 did, it may still be MET CRITERIA. The test team must weigh the importance of each MOP in reaching this decision. If no MOPs exist, then this paragraph will use the MOP paragraph format.

2.1.1.0. Method. This paragraph should be by exception only! If the method was the same to answer all the MOEs, delete this paragraph and renumber the rest of the section. Use this paragraph if some aspect of your testing didn't fall under "Method" in Section 1. This will be a very rare occurrence! If you have done a thorough job in Section 1, this paragraph should not be necessary.

2.1.1.1. MOP 1-1-1. Include criteria (if applicable), or the standard you were testing against with the MOP. Show how the MOP was answered—MET CRITERIA/DID NOT MEET CRITERIA. The rest of the paragraph should include data, analysis of data, impact on mission, conclusion, deficiency (if required), and recommendations (if required). The reader should be able to follow your logic of why you reached a certain conclusion and the deficiency/recommendation. Note: Use a separate paragraph for each conclusion/deficiency combination. These additional paragraphs will still follow the data, analysis of data, impact on mission, conclusion, deficiency (if required), and recommendation (if required) format.

2.1.2. **MOE/MOS 1-2**. Follow the format and instructions of MOE 1-1.

2.1.2.1. MOP 1-2-1. Follow the format and instructions of MOP 1-1-1 above.

Additional COIs will follow the previous format.

2.2. COI 2.

2.2.1. **MOE 2-1**.

2.2.1.1. MOP 2-1-1.

2.3. ADDITIONAL FINDINGS. Any findings discovered during testing which were out of scope of the test, and did not fit in any other conclusion. Note: Use MOP format as a general guideline for paragraph construction.

2.4. TACTICS CONSIDERATIONS. Will follow any COIs and be numbered accordingly. List any possible tactical considerations which arose from testing. Highlight possible new tactical opportunities which may be realized with implementing this system. Describe how these tactical considerations could be evaluated. Note: Use MOP format as a general guideline for paragraph construction.

SECTION III—CONCLUSIONS, ENHANCEMENTS, DEFICIENCIES, AND RECOMMENDATIONS
(NOTE: This should act like a STAND-ALONE Document)

3.0. GENERAL CONCLUSIONS AND RECOMMENDATIONS. Within the scope of the test, state whether the system is or is not operationally effective and operationally suitable. State your overall recommendation for future use of the tested system. Examples are field, continue test, do not field, etc. TWO SENTENCES ONLY!

3.0.1. If you need to add additional information, put it in a subparagraph here. Otherwise, this paragraph is not necessary. This paragraph should be by exception only! If you are not sure if you need this paragraph, check with your flight commander.

3.1. SPECIFIC ENHANCING CHARACTERISTICS. State any specific enhancing characteristics from Section II (pull from Results and include paragraph number). Use this category only if you feel an exceptional capability of a system tested needs to be highlighted. If there are none, delete this paragraph and re-number.

3.2. SPECIFIC DEFICIENCIES. State specific deficiencies verbatim from Section 2 (include paragraph number they came from). State any deficiency reports and the appropriate reference number as directed by HQ AFSOC/XPT. Refer to T.O. 00-35D-54, chapter 2, for the definitions of status categories of deficiency reports. If you mention a deficiency, and are not conducting an ACTD or DEMO, then there should be a corresponding Deficiency Report (DR). If you mention a DR number in Section II, it must also be listed here using the table format shown below. If it is an ACTD or DEMO, these would be considered deficiencies and not require a formal DR (with formal tracking number). Make the entire deficiency report work-sheet from HQ AFSOC/LG an attachment.

Category	DR Number	Explanation	Recommendation
1 or 2	(from DR worksheet)	Should be exact from Section II, from details/summary on DR worksheet OAs—not formal DRs	Verbatim from Section II plus OPR and paragraph #

3.3. SPECIFIC RECOMMENDATIONS. State the recommendations verbatim from Section II (include paragraph number they came from), only if they are not mentioned in paragraph 3.2. State the individual or agency responsible for action, along with the tracking number. Use only a two-letter office code when assigning an OPR. If corrections of deficiencies will make system acceptable, then so state.

For example, “upon correction of the deficiencies listed in paragraph 3.2, the system has potential to be operationally effective and suitable”. Make sure to list any additional findings as bullets below specific recommendations.

3.3.1. **Yy-xxx-01**. Use active voice when starting this sentence.
(OPR: HQ AFSOC/XP)

SECTION IV - RELEASE OF INFORMATION

4.0. HQ AFSOC/XPT (Test and Evaluation). Office of primary responsibility (OPR) for the release of test information through government channels. Participants will not discuss this test with uninvolved persons or agencies. Refer any inquiries to HQ AFSOC/XPT, 320 Tully Street, Hurlburt Field, Florida 32544-5446, DSN 579-3413, commercial (850) 884-3413.

41. HQ AFSOC/PA (Public Affairs). OPR for release of unclassified information outside government channels and any Press releases. Refer any inquiries to HQ AFSOC/PA, 229 Cody Avenue, Suite 104, Hurlburt Field, Florida 32544-5273, DSN 579-5515, and the test manager in accordance with AFI 35-101, *Public Affairs Policies and Procedures.*

4.2. SAF/IADD. OPR for approval and release of test and evaluation information to foreign nationals, government, or agencies. Refer any inquiries to HQ AFSOC/INF (Intelligence Force Management), 100 Bartley Street, Suite 105W, Hurlburt Field, Florida 32544-5273, DSN 579-4096. They will review the request and make release recommendations to SAF/IADD.

NOTE: Attachments (other than distribution list, and as necessary)

1. All graphs or charts associated with analysis not included in the main part of the test report, but still important enough to be available for the reader. (NOT RAW DATA)
2. Additional information needed for report, but not included in main body of report. Examples are lengthy system descriptions, operational concepts, or maintenance concepts.
3. DR Worksheets

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A STYLE GUIDE FOR TECHNICAL PLANS AND REPORTS

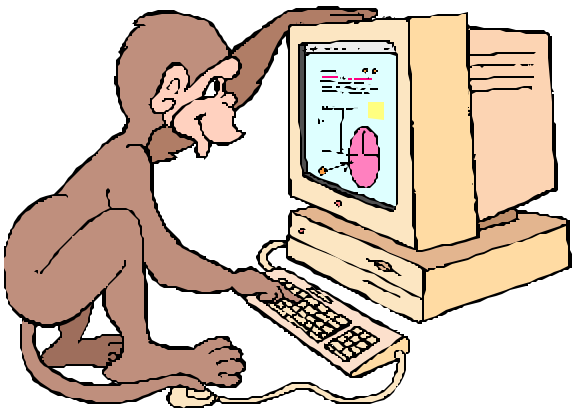
GENERAL

This style guide provides established guidelines to assist test directors with writing accurate, precise, and consistent test plans and final reports. It applies to all flights and branches involved in (or supporting) writing and proofing technical documents. It conforms to the recommended guidelines found in Air Force Instruction (AFI) 99-103, *Test and Evaluation* preferred format and contents, AFI 61-202, *USAF Technical Publications Program*, and AFFTC-TIH-88-002, *The Author's Guide to Writing AFFTC Technical Reports*. By containing specific formats for test plans and final reports, it standardizes the TTEC process. Answers to frequently asked test plan and report development questions should be found in this document.

18 FLTS MISSION

As AFSOC's independent field test agency, we determine the operational effectiveness and suitability of aircraft, equipment, and tactics. Providing accurate and timely information and recommendations to the AFSOC commander for acquisition and implementation decisions. Ultimately improving the survivability and combat capability of special operations forces worldwide.

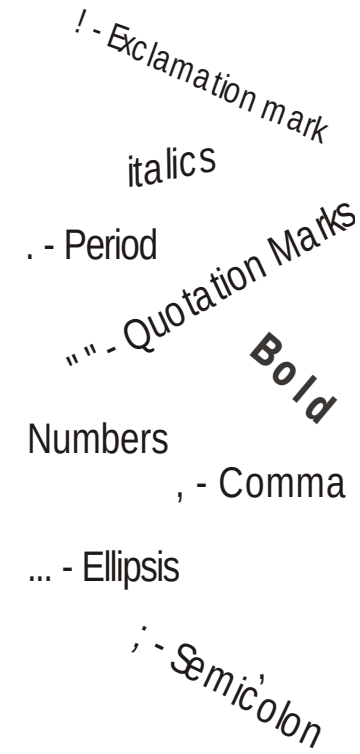
WHY WRITE REPORTS



To develop a formal historical background providing data documenting test techniques, procedures, results, and recommendations.

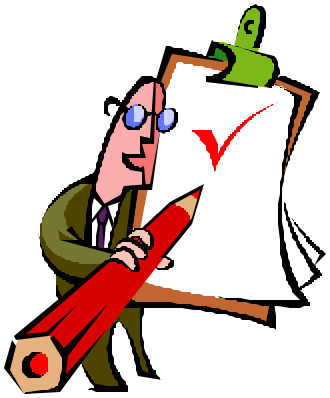
- Answers critical operational issues and operational effectiveness and suitability.
- Prioritizes deficiency reports and status to be carried forward.
- Provides test information to decision-makers, planners, and operators.

PUNCTUATION



- Numbers 9 or less, expressed in words
- Numbers 10 or more, expressed in figures unless first word of a sentence
- If two or more numbers appear in a sentence and one or more is 10 or higher - use figures for all
- Use *Italics* or **bold** for emphasizing a word or phrase
- Use % symbol for percent
- **DO NOT** begin a sentence with a number.
- Use ^{o}F (degree Fahrenheit - 212 ^{o}F) for degree
- Measurements: 15 feet or 15' (be consistent)
- Separate numbers and units (5 miles, 10 feet, 25 mm)
- Space after hyphen when using more than one number (e.g., 15- by 30-feet)
- Use comma with numbers of four or more digits (1,000 22,100 123,456)
- Hyphenate all compound numbers when expressing numbers between 21 and 99 (or 21st and 99th)
- Dates may be broken between the Day/Month Year
- Names of places may be broken between city and state or state and zip code
- Use Hyphen for tables/figures (Table 1-1. not 1.1.)
- **Do not** use a period after the **title** of a Figure or Table (Table 2-1. Title Name)
- Publication titles are **always** *italicized*
- Words should be hyphenated at syllable breaks, ideally after a vowel or between consonants
- Hyphenated compounds should be divided only at the hyphen
- Use the hyphen to connect two or more words functioning as a single adjective before a noun (up-to-date report)
- Hyphen anything with "self"
- **Two** spaces after a period or colon (military rule)
- **Do not** capitalize the following, unless using full titles: appendix, attachment, volume, chapter, figure, page, line, paragraph, table.
- Example: See table 1-1.
- Example: Table 1-1. Testing Dates
- **Capitalize** form designations, e.g., SF Form 298
- Use "$" (sign) when referring to millions of dollars, e.g., $2 million

GRAMMAR CHECK



Affect (v) to bring about a change in: INFLUENCE.
(*We are never sure how we affect (influence) others*.

Effect (n) to cause: RESULT.
(*What is the effect (result) of the video?)*

Access = entry	Excess = indicates quantity
Accept = agree/receive	Except = omit or exclude
e.g. = for example	i.e. = that is (use with etc)
can not = to be able	cannot = unable
have (plural)	has (singular)
are (plural)	is (singular)
were (plural)	was (singular)
do (plural)	does (singular)
data are **not** data is	ensure **not** insure
fuse **not** fuze	judgement **not** judgment

ACRONYMS

- Use **sparingly**, correctly, and consistently
- Spell out the first time used within text body
- Only capitalize spelled out titles or proper nouns. (United States Special Operations Command - USSOCOM).
- Abbreviations **not** generally known should be spelled out the **first** time used - night vision goggles (NVG)
- When using the first letter of each word - use all CAPS (OJT = on-the-job-training)
- When using common-noun combinations made up of more than the first letter - use lowercase (letter = ltr)
- Use same for singular/plural forms (AOR = area of operations or areas of operations)
- Use lower case "*s"* to form plural, **never** use apostrophe (NVGs = night vision goggles)
- When proofreading, read acronyms (pronounceable words formed by combining initial letter(s) of the words) as a **word**, read Brevity Codes (combinations of letters-pronounced letter by letter) as **letters**.
- **DO NOT** use acronyms on titles or main headings (Table of Contents, Signature Page, Cover)
- **DO NOT** use acronyms in the Executive Summary
- Do not begin a sentence with an abbreviation, acronym, or brevity code

PARAGRAPHS

- After last digit, place a period (1.0. - 2.0. - 2.0.1.).
- **Numbering**:

X.0. TWO DIGIT. - UPPER CASE and **bold** title/number.

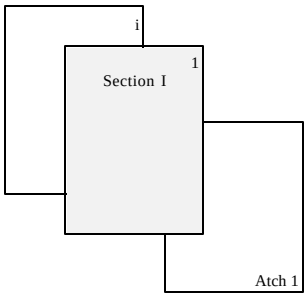
X.0.1. **Three Digit**. - Title Case and **bold title** only.

X.0.1.1. Four Digit.- Title Case and underline title only.

X.0.1.1.1. FIFTH DIGIT. - UPPER CASE TITLE.

- Begin using bullet statements thereafter
- **Never** divide a paragraph of four or less lines. When dividing with five or more lines, **never** type less then two lines on either page. (Go into FORMAT, PARAGRAPH, LINE AND PAGE BREAKS, and mark KEEP WITH NEXT, and WINDOW/ORPHAN CONTROL).

PAGE NUMBERING



- Begin every new section with the right hand (Odd) page.
  - Odd Page—number on right
  - Even Page—number on left
- If a section ends on a right page, include the following statement on the next immediate (left or even) page, centered, **bold**, and Title Cased:

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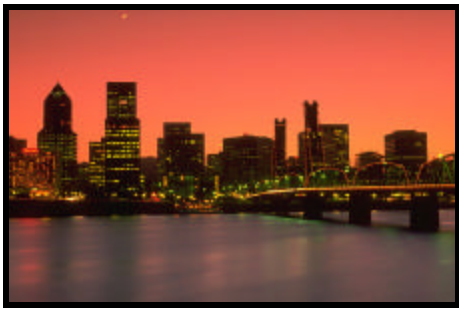
- Use **Roman** numerals (ii, iii, iv) up to Section I. Start on the even side of the Signature Page
- Use **Arabic** numerals (1,2,3,) thereafter.
- **Do not** number Front Cover, SF 298, Survey, and Back Cover.
- Page numbers are placed **Top/Outside**.
- Attachment page numbers are placed **Bottom/ Outside**.

PAGE SEQUENCE

- **Test Plan Sequence**: Cover, Signature Page, Table of Contents, Acronyms, List of Tables/Figures, Plan, Attachments, Distribution List, Survey, Back Cover.
- **Final Report Sequence**: Cover, SF 298, Signature Page, Executive Summary, Table of Contents, Acronyms, List of Tables/Figures, Report, Attachments, Distribution, Survey, Back Cover.

GRAPHICS

Figure 1-1. City Lights



To easily manipulate graphics within a plan or report:

Create/draw a **one column-two line table**. If you must add classification marking, make it a **three-row table**. The marking will go under the graphic.

Type the figure/table title in the first row. Titles should be centered and bold. They should look like

Figure/Table 1-1. This Is A Sample Title

whereby the first number represents the section the graphic is found in and the second number is sequential.

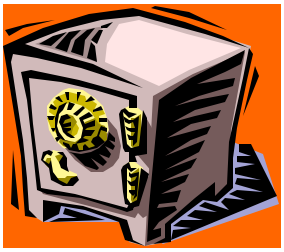
Be sure scanned, drawn, imported graphics are saved to a .bmp, .jpg, or .gif file. (Suggestion: create a graphics sub-directory in either the 2_resrch or 5_rptng folder).

Place your cursor in the second row of the table. Do
1. INSERT
2. OBJECT
3. CREATE FROM FILE, and then
4. BROWSE to find the graphic you want to insert. Then hit OK.

MISCELLANEOUS

- **Consistency** is the key!
- DoD
- Table title placed on top of table.
- Figure title placed on top of the figure.
- **Preferred font**: Arial, 12
- If listing more than five figures and/or tables, place on a separate page from the "Table of Contents."
- **Results** and **Conclusions** are written in the past tense.
- **Recommendations** deal with actions that must be taken. To give force to them, use the auxiliary word "should"
- If using "**Note,**" place flush left immediately after paragraph and bold.
- Always send two copies of final report to DTIC
- Interim Reports use the same format as final reports. Change "final" to "interim" on the cover sheet and signature page.
- Recommendations always carry an OPR using the **two digit** office symbol (HQ AFSOC/XX).
- Preferred order for distribution list is: HQ, Wing, Group, Squadron, etc.

CLASSIFIED REPORTS



- Front and back cover require the **highest** overall classification placed in the header and footer.
- Each page must carry the highest classification for that page or the overall highest classification of report.
- Title should be selected so as not to require classification and will be followed by the symbol (U).
- The cover **requires** a classification statement.
- Executive Summary and section titles are normally unclassified and will be followed by the symbol (U).
- The appropriate classification symbol--(S), (C), or (U) is placed after the figure/table number [Figure 1-1 (U)].
- Overall classification of a Figure/Table is typed in all CAPITAL letters and placed within the body of the figure.
- Portion markings **are not** required on unclassified Table of Contents, List of Tables, or List of Figures.
- Page numbers follow same format as unclassified plans reports.
- Font and size follows same format as unclassified plans and reports.
- All classified reports are wrapped, packaged, and distributed by the admin office (18 FLTS/CCA).
- SF 298 requires a hand stamped classification marking at top and bottom of form.

FREQUENTLY USED FORMS

- SF 298 – Report Documentation (used for DTIC)
- AF Form 1768 – Staff Summary Sheet
- AF Form 3535 – FAX

Commonly Used Words and Their Usage

air load
airborne
airburst
aircrew
aircrew member
airdrop(ped)
airfield
airframe
airland
airspeed
antiaircraft
antiship
autopilot
back-up (verb)
backup (noun,/unit modifier)
baseline
biennial
breakaway
built-in
burn-through
can-do
cannot
captive-carry
checklist
checkout
checks out
copilot
cost-effective
countermeasure
cover ship
coworker
crewchief
crewmember(s)
data base
day-to-day
DoD
Doppler radar
drop zone
dry-fire
en route
farsighted
feedback
field-of-view
fixed-wing
flight cards
flight line
flight test
flyover
follow-on
follow-up (adj)
followup (noun/unit mod)
glideslope
groundspeed
handbook
hand-pick (adj)
handpick (verb)
hands-off
head-on
highlighted
high-speed
in accordance
in-depth
in-flight
in-service
in-shop
judgement
Kalman filter
lifeline
line of sight
live firing
live-fire
low-level
mandays
man-hours
manpower
mission-critical
mission-oriented
multitalented
multi-command
multimedia
multimillon
multinational
multipurpose
multiservice
narrow band
night-water
no-go
noncommissioned
off-load
off-the-shelf
officer-in-charge
onboard (adj)
on board (verb)
ongoing
on-line
onload
on-site
on-the-spot
over land
overall
overnight
overwater
peacekeeping
pickup
pop-up
post-flight
post-launch
post-mission
predetermine
preflight
prelaunch
preplanned
pre-test
quick-look
re-establish
real-time
re-worked(ing)
second-to-none
self motivation
self-confidence
self-esteem
self-starter
semiannual
setup (adj)
set up (verb)
short-notice
short-range
shut down (verb)
shutdown (noun)
single-handed
standby
static-line
T.O.s
taillight
takeoff
terrain-following
tiltrotor
time line
time sensitive
time–critical
timeframe
took off
topnotch
towplate
triannual
troubleshoot
turn-in (when used as a unit modifier)
underwent
US (no periods)
videotape
warm-up
wartime
website
wide band
wingman
without
workload
work order
worksheet
worldwide
write-up

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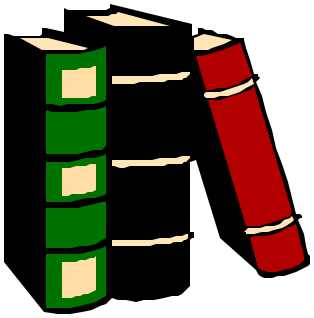
REFERENCES



* *Webster's II, New Riverside University Dictionary* (Copyright '84, '88, '94)
* *Webster's Third New International Dictionary (1986)*
* AFH 37-137, 30 June 1997, *The Tongue and Quill* (T&Q)
* AFI 61-202, 25 July 1994, *United States Air Force Technical Publications Program*
* AFI 99-103, 10 August 2003, *Test and Evaluation*
* United States Government Printing Office, *Style Manual,* March 1984
* *The Gregg Reference Manual (Eighth Edition),* (Copyright 1996)

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Proofreading/Editing Marks

Write neatly within the text where necessary and be careful to do so without jeopardizing clarity. Otherwise, circle the appropriate word or phase and indicate the desired change in the margin.

	Delete letter		Move to left
—	Delete or delete/change		Move to right
	Delete/close up	eq #	Equalize space (margin notation)
	Delete underscore		Move up
···	Retain deleted material (text symbol)		Move down
stet	Retain deleted material (margin symbol)		Move as indicated
	New paragraph		Indent 5 spaces
	No paragraph	? or ?	Insert
	Bring together	‘ or ‘	apostrophe
	Separate	* or *	asterisk
	Transpose	[ ]	brackets
	Capital (text symbol)	:	colon
caps	Capitals (margin symbol)	—	dash
v or lc	Lowercase	!	exclamation mark
ital	Italic type	-	hyphen
rom	Roman type	( )	parentheses
	Boldface (text symbol)	.	period
bf	Boldface (margin symbol)	“ or “	quotation mark
	Center vertically	; or ;	semicolon
	Center horizontally	#	space
	Align vertically	/	virgule
	Align horizontally	^	Superscript (raise above line)
	Spell out; abbreviate; change word to number, change number to word	?	Subscript

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