

COMMANDER NAVAL AIR FORCE
UNITED STATES PACIFIC FLEET
BOX 357051
SAN DIEGO, CALIFORNIA 92135-7051

COMMANDER NAVAL AIR FORCE
UNITED STATES ATLANTIC FLEET
1279 FRANKLIN STREET
NORFOLK, VIRGINIA 23511-2494

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C
NAVAIRPAC N73
NAVAIRLANT N81A

AUG 10 1999

COMNAVAIRPAC/COMNAVAIRLANT INSTRUCTION 3100.4C

Subj: PROMULGATION OF AIR DEPARTMENT STANDARD OPERATING PROCEDURES (SOP)

Encl: (1) Optimum MD-3A/B Vehicle Positioning for Aircraft Start
(2) JP-5 Filter Sample/Pressure Drop Log
(3) Quality Assurance Fuel Sample Log
(4) Equipment Running Log

1. Purpose. To revise standardized procedures for the conduct of operations under Air Department cognizance. Aircraft Carrier Naval Air Training and Operating Procedures Standardization (CV NATOPS) provides basic standard operating procedures for the conduct of CV(N) flight operations. Where conflicts exist between this instruction and CV NATOPS, the latter will have precedence. Due to extensive revision this instruction should be reviewed in its entirety.

2. Cancellation. COMNAVAIRLANTINST/COMNAVAIRPACINST 3100.4B

3. Background. The conduct of air operations requires significant coordination between ship and air wing personnel. This instruction is published to clarify responsibilities and procedures for personnel concerned.

4. Action. Commanding officers shall ensure ship and air wing personnel participating in the conduct of flight operations are properly indoctrinated in and thoroughly familiar with the contents of this instruction.


R. J. O'HANLON
Chief of Staff
COMNAVAIRLANT


R. A. DEAL
Chief of Staff
COMNAVAIRPAC

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

Distribution: (SNDL Parts 1 and 2)

29B Aircraft Carrier (5 copies)

Copy to:

21A Fleet Commanders in Chief
22A Fleet Commanders
24J Fleet Marine Force Command
26H Fleet Training Group (Guantanamo Bay, San Diego only)
28A Carrier Group
42A Fleet Air Commands
42B Functional Wing Commander
42E Type Wing Commander
42J Carrier Air Wing
42K Attack Squadron
42L Fighter Squadron and Weapons School
42N Air Anti-Submarine Squadron
42Q Fleet Logistics Support Squadron
42U Helicopter Combat Support Squadron
42W Helicopter Mine Countermeasures Squadron
42X Fleet Air Reconnaissance Squadron
42Z Tactical Electronic Warfare Squadron
42BB Helicopter Anti-Submarine Squadron
42CC Helicopter Anti-Submarine Squadron, Light
42DD Carrier Airborne Early Warning Squadron
42GG Strike Fighter Squadron
42RR1 Naval Air Reserve Force
46C Marine Aircraft Group (MAG 14, 26, 29, 31, 32 only)
46D Marine Attack Squadron (VMA 223, 331, 542, VMA AW 224, 231, 332, 533 only)
46D3 Marine Fighter-Attack Squadron (115, 122, 251, 312, 333, 451 only)
46VA Marine Tactical Electronic Warfare Squadron (VMAQ 2 only)
C58D CNET Shore Based Detachments
FF5 NAVSAFECEN
FKA1E COMNAVAIRSYSCOM
FKA1G COMNAVSEASYSKOM
FKR3C NAVAIRTESTCEN
FT1 CNET
FT2 CNATRA
FT13 Naval Air Technical Training Center (5 copies)

Stocked:

COMNAVAIRPAC (N004)
COMNAVAIRLANT (N02A12)

AUG 10 1999

TABLE OF CONTENTS

CHAPTER 1

GENERAL

- 100 Mission
- 101 Duties and Responsibilities
- 102 Pri-Fly Observers
- 103 Landing Signal Officer (LSO)
- 104 Wind-Over-Deck (WOD)
- 105 Out-of-Commission Equipment
- 106 Plane Guard Helo/Destroyer
- 107 Floodlights/Hangar Deck Lights
- 108 Hazards of Electromagnetic Radiation to Ordnance (HERO)
- 109 Air Transportation Officer (ATO)

CHAPTER 2

PREPARATIONS FOR FLIGHT OPERATIONS

- 201 General
- 202 Initiation of Flight Quarters
- 203 Type of Flight Quarters
- 204 Manning Flight Quarters Stations
- 205 Alert Conditions

Appendix A Flight Quarters Check List

CHAPTER 3

FLIGHT QUARTERS CLOTHING

- 301 Wearing of Flight Quarters Clothing
- 302 Clothing Identification
- 303 Special Cold Weather Clothing

CHAPTER 4

AIRCRAFT HANDLING

- 401 General
- 402 Aircraft Directors
- 403 Aircraft Handling Crewmen
- 404 Plane Captain
- 405 Aircraft Handling Movement and Safety Precautions
- 406 Aircraft Elevators
- 407 Aircraft Handling Accessories
- 408 Flight Deck Safety
- 409 Flight Deck Communications System (FDCS)
- 410 Special Aircraft Handling Characteristics

AUG 10 1999

CHAPTER 5

LAUNCHING PROCEDURES

- 501 Catapult Procedures
- 502 Catapult Launching Procedures

CHAPTER 6

RECOVERY PROCEDURES

- 601 General Recovery Procedures
- 602 Deck Signals
- 603 Foul Deck Procedures
- 604 Recovery Procedures
- 605 Lost Communications Procedures
- 606 Visual Landing Aids (VLA)

CHAPTER 7

SECURITY OF AIRCRAFT AND EQUIPMENT

- 701 General
- 702 Aircraft Security
- 703 Tiedown Requirements
- 704 Equipment Security
- 705 Aircraft Elevators
- 706 Aircraft Jacking Tiedown Security
- 707 Responsibility for Security
- 708 Heavy Weather Conditions
- 709 Heavy Weather Aircraft Spotting
- 710 Replenishment at Sea Aircraft Spotting

CHAPTER 8

AVIATION FUELS SYSTEM

- 801 General
- 802 Description of the Aviation Fuels System
- 803 Safety Precautions
- 804 Operation of the JP-5 System
- 805 Catapult Lube Oil System
- 806 Aircraft Fueling Procedures
- 807 Aviation Fuels Quality Control and Sampling Procedures
- 808 Administrative Procedures for the Safe Handling of Aviation Fuels
- 809 Replenishment, Disposition and Accountability of Aviation Fuels
- 810 Aviation Fuels Security Watch
- 811 Electrical Continuity
- 812 Mogas Procedures

CHAPTER 9

AIRCRAFT CRASH AND SALVAGE

- 901 General

AUG 10 1999

- 902 Training
- 903 Equipment
- 904 Crew Stations
- 905 Fire Fighting Procedures
- 906 AFFF Hose Stations Flight and Hangar Deck
- 907 Helicopter Salvage at Sea

CHAPTER 10

HELICOPTER OPERATIONS

- 1001 Flight Quarters for Helicopter Operations
- 1002 Launch
- 1003 Recovery
- 1004 Transfers
- 1005 Safety Precautions for Helicopter Operations

CHAPTER 11

HANGAR DECK

- 1101 General
- 1102 Aircraft Handling
- 1103 Safety Precautions
- 1104 Conflagration Station
- 1105 Fire Fighting Procedures
- 1106 Major Ordnance Handling Evolutions
- 1107 Petroleum Replenishment Evolutions

CHAPTER 12

CLEANLINESS OF DECKS/FOREIGN OBJECT DAMAGE (FOD) PREVENTION

- 1201 General
- 1202 Responsibilities
- 1203 FOD Prevention Methods
- 1204 Cleanliness Enhancement
- 1205 Non-Skid Application/Clean-Up Following Replacement

CHAPTER 13

AIR DEPARTMENT INTEGRITY WATCH

- 1301 General
- 1302 Basic Function
- 1303 Composition
- 1304 Equipment
- 1305 Training
- 1306 Guidelines
- 1307 Integrity Watch Officer
- 1308 Integrity Watch Petty Officer
- 1309 Flight and Hangar Deck Security Patrols
- 1310 Integrity Watch Messenger
- 1311 Aviation Fuels Security Watch
- 1312 Catapult Security Watch
- 1313 Conflagration Station Watch
- 1314 Pri-Fly Security Watch

AUG 10 1999

- 1315 Other Responsibilities
- 1316 Setting the Watch
- 1317 Mustering the Watch

CHAPTER 14

AIRCRAFT HANDLING MISHAPS

- 1401 General
- 1402 Definitions
- 1403 Safety Awareness
- 1404 Crunch Report Format

Appendix A Crunch Report Format Sample

CHAPTER 15

AIRCRAFT SERVICE FACILITIES

- 1501 General
- 1502 Power Outlets
- 1503 Low Pressure Air
- 1504 High Pressure Air
- 1505 Liquid Oxygen (LOX)
- 1506 Mobile Support Equipment
- 1507 MD-3 Tow/Starting Units
- 1508 NC-2A Mobile Electric Power Plant (MEPP)
- 1509 SD-1 Aircraft Spotting Dolly
- 1510 CVCC-70
- 1511 SB-TAU-2
- 1512 Forklift Trucks
- 1513 P-16 Mobile Fire Fighting Unit
- 1514 Safety Precautions

CHAPTER 16

AIR WING MAINTENANCE SUPPORT

- 1601 General
- 1602 The Aircraft Handling Officer and Aircraft Maintenance
- 1603 Aircraft Turn-Ups
- 1604 Reporting Discrepancies in Aircraft Support Equipment
- 1605 Immobilization of Aircraft
- 1606 Aircraft Jacking
- 1607 Mobile Equipment
- 1608 Equipment Accountability
- 1609 Work on Aircraft Which Are Being Moved
- 1610 Normal Procedures

Appendix (A) CV/CVW Maintenance Spot Request Sheet

Appendix (B) Daily Secure Checklist

Enclosure (1) Vehicle Positioning for A/C Start

Enclosure (2) Filter Sample Pressure Drop Log

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999
Enclosure (3) Quality Assurance Fuel Sample Log

Enclosure (4) Equipment Running Log

AUG 10 1999

CHAPTER 1

GENERAL

100. MISSION. The mission of the Air Department is to conduct aircraft handling, launch and recovery operations, including Visual Flight Rules (VFR) control of airborne aircraft, and to provide services and facilities for the maintenance and fueling of aircraft, so that embarked squadrons and detachments can most effectively conduct air operations in the application of their military potential. Of equal importance is the damage control role of aircraft crash/fire fighting on the hangar and flight decks.

101. DUTIES AND RESPONSIBILITIES

a. Air Officer. The Air Officer is responsible, under the Commanding Officer, for the supervision and direction of the launching, recovering, Visual landing aids (VLA) and shipboard handling of aircraft, and servicing per current instructions.

b. Assistant Air Officer. The Assistant Air Officer aids the Air Officer in ensuring that the plans, orders, and instructions of the Air Officer are carried out. He acts as Assistant Department Head. He also functions as the Air Department Training Coordinator.

c. Air Department Administrative Assistant. The Air Department Administrative Assistant (when assigned) functions as an aide to the Assistant Air Officer in the details of departmental administration. He serves as the Officer in Charge of personnel assigned to Primary Flight Control and Air Department office duties. He also functions as Departmental 3M Assistant. An officer/departmental Leading Chief Petty Officer (LCPO) shall be assigned as the departmental 3M Coordinator.

d. Aircraft Handling Officer. The Aircraft Handling Officer exercises overall supervision of the handling of embarked aircraft and assists the Air Officer in the conduct of flight operations.

e. Flight Deck Officer. The Flight Deck Officer is responsible for operations on the flight deck, to include the supervision of aircraft movement in preparation for launch, recovery and respot evolutions, the supervision in clearing flight deck crashes and extinguishment of flight deck fires. He is the V-1 Division Officer.

f. Assistant Flight Deck Officer. The Assistant Flight Deck Officer is responsible to the Flight Deck Officer for the cleanliness and material condition of the flight deck, as well as the training of flight deck personnel in aircraft handling procedures and fire fighting.

g. Aircraft Crash and Salvage Officer (Air Bos'n). The Aircraft Crash and Salvage Officer (Air Boatswain) is responsible for supervising crash crews and fire parties in the handling of aircraft emergencies during flight and general quarters, and for ensuring the readiness of assigned personnel, fire fighting, and salvage equipment.

h. Catapult and Arresting Gear Officer. The Catapult and Arresting Gear Officer is responsible for the operation of the ship's Aircraft Launch and Recovery Equipment (ALRE) and Visual Landing Aids (VLA) equipment. He is the V-2 Division Officer.

AUG 10 1999

i. V-2 Maintenance Officer. The Maintenance Officer is responsible to the Catapult and Arresting Gear Officer for the maintenance and upkeep of the ship's catapults, arresting gear, ILARTS and Fresnel lens equipment.

j. Hangar Deck Officer. The Hangar Deck Officer is responsible for the planning and supervision of handling, movement, and security of aircraft, maintenance and operation of all assigned fire fighting and associated damage control equipment on the hangar deck. He is the V-3 Division Officer.

k. Aviation Fuels Officer. The Aviation Fuels Officer is responsible for the fueling and defueling of embarked aircraft and the operation of the ship's aviation fuels, and catapult lubricating oil system. He is the V-4 Division Officer.

l. Aviation Fuels Maintenance Officer. The V-4 Maintenance Officer is responsible for the maintenance and upkeep of the Aviation Fuel (AVFUELS) systems, catapult lubricating oil system, and the Automotive Gas (MOGAS) stowage system. He is the assistant V-4 Division Officer.

102. PRI-FLY OBSERVERS. Squadrons shall provide qualified Pri-Fly observers for all Case I and II launches and recoveries. Observers shall be fully familiar with all aspects of aircraft emergencies and shall be authorized to recommend appropriate corrective action in the event of aircraft emergencies. Observers shall be present in Primary prior to commencement of the scheduled launch/recovery sequence, and have current NATOPS manuals for type aircraft immediately available.

103. LANDING SIGNAL OFFICER (LSO)

a. The senior air wing LSO will control the number, qualifications, and scheduling of air wing LSO's. The duty LSO(s) shall keep Pri-Fly informed of their location and phone number at all times during their period of duty. Pri-Fly in turn will locate and inform the duty LSO when he is needed on the platform for other than scheduled/prescribed recoveries.

b. The LSO controls the brilliance of the optical landing system lights, with Pri-Fly as back up control. The LSO will monitor wind-over-deck, deck lighting, including flood lights and other items affecting recovery of aircraft, and advise Pri-Fly of any discrepancies or recommendations. Number of personnel on LSO platform should be limited to six, with additional personnel as designated by the Senior LSO during carrier qualification evolutions. All personnel on the LSO platform shall be in the appropriate flight deck uniform as per CV NATOPS Manual.

104. WIND-OVER-DECK (WOD)

a. WOD requirements for launch and recovery are determined from Aircraft Launch and Recovery Bulletins. The Air Officer will advise the bridge 30 minutes prior to launch time of minimum WOD to provide 15 knots excess for the most critical aircraft.

b. Wind required for helicopter operations shall be per individual helicopter NATOPS manuals.

105. OUT-OF-COMMISSION EQUIPMENT. No launch or recovery equipment shall be placed out of service without the Commanding Officer's permission, normally obtained through the Air Officer, who coordinates and keeps the bridge informed. When equipment becomes inoperable, the Air Officer shall be immediately informed and furnished an Estimated Time of Repair (ETR).

AUG 10 1999

106. PLANE GUARD HELO/DESTROYER

- a. Plane guard helo/destroyer will be provided per existing directives.
- b. Plane guard helo/destroyer will monitor land/launch frequency; radio contact (if Emission Control (EMCON) condition permits) will be established prior to launch/recovery to ensure that vital information can be passed to the helo/destroyer immediately, if required.

107. FLOODLIGHTS/HANGAR DECK LIGHTS

a. During night launches and recoveries, the flight deck will be lighted with floodlights controlled from Pri-Fly. Settings to be used will be determined jointly by the Air Officer and the LSO. Sodium vapor lights have no rheostat controls.

b. At other times during darkness, the sodium vapor lights shall be "on" during maintenance, respot, and on deck emergencies/training evaluations. Hangar deck lights will normally be on sodium vapor lights and set to maximum intensity.

108. HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO). HERO conditions will be set as required by the flight deck ordnance crew. The Officer of the Deck (OOD) will have the word passed over all LMC circuits when HERO is set or relaxed, hero beacon will be illuminated when applicable.

109. AIR TRANSPORTATION OFFICER (ATO)

a. The ATO is a member of the Operations Department. The Air Operations (Air OPS) Officer will endeavor to keep the ATO informed of unscheduled departures/arrivals of helicopters and logistics airplanes.

b. ATO personnel shall receive a thorough flight deck indoctrination by the Flight Deck Officer which will cover flight deck clothing, safety, and parking areas for cargo aircraft. ATO duties and responsibilities are as specified in CV NATOPS.

c. The ATO will meet all logistic flights to arrange for timely off/onloads.

AUG 10 1999

CHAPTER 2

PREPARATIONS FOR FLIGHT OPERATIONS

201. GENERAL

a. Flight Quarters entails the manning of stations required for the efficient and safe conduct of flight operations. The ship will be prepared to launch, recover, arm, fuel and service aircraft, and at the same time be prepared to handle aircraft crashes, fight aircraft or fuel fires, and render aid and assistance to injured personnel.

WARNING

All flight deck personnel shall not consume intoxicating beverages within 12 hours of flight deck evolutions/operations.

b. Flight Quarters is a condition of readiness in which Air Department, Air Wing, and certain Weapons Department, Operations Department, Engineering Department, and Medical Department personnel man specific equipment and stations in support of flight operations. Flight Quarters stations for Air Department and Air Wing personnel are the same as the General Quarters stations as prescribed in the ship's "Battle Bill", except that battle circuit phone talkers and hangar deck and fuels repair parties will not be fully manned during flight quarters unless specifically ordered by the Air Officer. Flight Quarters may be treated as a separate evolution; however, when General Quarters is sounded, all Flight Quarters stations shall be manned.

c. Flight Quarters is sounded in sufficient time to afford a safe, orderly respot and a thorough functional check of all deck machinery prior to the first scheduled launch of the day.

202. INITIATION OF FLIGHT QUARTERS. Flight Quarters stations shall be manned when directed and is normally initiated over all circuits of the ILC. An officer in the Air Department (usually the Aircraft Handling Officer (ACHO)) will request the Officer of the Deck (OOD) to sound one of the Flight Quarters conditions. The same procedures will be utilized to secure from flight quarters as are used for manning.

203. TYPE OF FLIGHT QUARTERS. For efficiency of operations and to free personnel for other duties, Flight Quarters conditions may be modified:

a. Flight Quarters is the condition in which normal fixed wing and helicopter flight operations are conducted.

b. Flight Quarters for Respot is a condition set for the movement of aircraft about the ship.

c. Helicopter Flight Quarters is a condition set to operate helicopters.

204. MANNING FLIGHT QUARTERS STATIONS. When any form of Flight Quarters is called away, required personnel shall man their stations immediately. They will expeditiously perform functional tests and/or complete check-off lists on equipment, and report via the appropriate chain of command when the station is manned and ready, indicating the current status of existing equipment discrepancies. A check list will be completed by the Aircraft Handling Officer and Maintenance Requirement Cards (MRC) shall be completed by the arresting gear, catapult, Visual landing aids (VLA), fuels, flight deck and

AUG 10 1999

hangar deck personnel. When completed, flight quarters check-off lists (where appropriate) will be delivered to flight deck control for consolidation into the ACHO's flight quarters check list. A sample check list is included as appendix (A) to this chapter and, as a minimum, shall be submitted to the Commanding Officer and the Air Officer daily, prior to the commencement of routine flight operations.

a. The following flight quarters stations will be manned and equipment checked out as required for the condition of Flight Quarters called away.

(1) Primary Flight Control

(a) Station Manned

Air Officer/Assistant Air Officer

Primary Fly supervisor

Status board keeper

Sound-powered phone talkers

Recovery equipment controller

Fresnel Lens Optical Landing System (FLOLS) Controller

(b) Equipment Checked

Sound-powered phone circuits

Radios and associated speakers

Rotating beacons

Lens and Wave-off lights

Intercommunications systems

Flight Warning (yodel) and Crash (siren) alarms

3MC/5MC

AFFF control panel

Elevator and stanchion position

Anemometer, clock, gyro repeater, pit log

Catapult suspend switches

Arresting gear synchro/ Dixon meter indicators

Flight deck SRC-47/hydra communications system

Flight deck and overhead flood lights (night)

Runway/deck edge lights (night)

ILARTS system

Whip antenna position

AUG 10 1999

Bow, angle and ramp safety lines removed

Flag staff and jack staff removed

Aldis lamp

Aircraft elevator suspend switches, (if installed)

(2) Flight Deck/Flight Deck Control

(a) Stations Manned

Aircraft Handling Officer/Flight Deck Officer

Air Boatswain/Assistant Flight Deck Officer

Aviation Fuels representative

Sound-powered phone talkers

Elevator and pump room operators

Aircraft Handling Crews

Flight Deck Crash/Salvage personnel

Hospital Corpsmen (Flight Deck BDS)

CAG Maintenance representative

GSE trouble shooters

Weapons personnel (as required)

(b) Equipment Checked

All communications equipment

Aircraft handling equipment (fueled and operating)

Fire fighting and Crash and Salvage equipment

Whip antennas lowered and pinned (as required)

FOD Walkdown

Aircraft, weapons, equipment and fuel status boards

Aircraft starting equipment

Deck edge/flight deck power/SINS

Elevator and stanchion position/status

B&A crane stowed

Elevator and missile net position

Support equipment

AUG 10 1999

Tow bars/chocks available

Flag staff and jack staff removed

Flight deck and adjacent areas checked for security of aircraft and flight deck equipment and for removal of loose gear.

Bomb jettison ramp rigged (as applicable)

Light water generators aligned for remote activation

(3) Catapults

(a) Stations Manned

Launching Officer(s)

Flight Deck:

Topside Safety Petty Officer

Holdback Operator/Bridle Hook-up

Bow/Angle Safety Observer

Weight Board Operator

Safety Observer

Centerdeck Operator (as required)

Deck Edge Operator (catapult) (as required)

Below Deck:

Console/Central Charging Operator

Console Recorder

Catapult Control Station (ICCS) Monitor

Retraction Engine Operator

Chronograph Operator

Water Brake Operator

Maintenance Trouble Shooter (as required)

(b) Equipment Checked

Sound-powered circuits

SRC-47/hydra radio

Catapult pre-op checks completed

Jet blast deflector panels pre-op checks completed

FOD walkdown of catapult areas

AUG 10 1999

Bridle, and holdbacks readily available

Daily check of catapult steam supervisory circuit (prevents overpowered demand on reactors) CVN's only

(4) Arresting Gear/Visual Landing Aids

(a) Stations Manned

Arresting Gear Officer

Topside PO

Deck edge operator

Hook runner

Engine room operators

Sheave damper operators

Topside crewmen

Lens control room monitor

ILARTS Console Monitor

ILARTS Camera Operator (Island structure)

Wire retract safety (pole) man (as required)

(b) Equipment Checked

Arresting gear engines pre-ops complete

Sheave dampers pre-ops complete

Topside check-off list complete

Barricade power pack

Air power tools

Emergency Paddles on hand

Signal lights

Deck status light

Pickle (deadman's) switch

Sound-powered phone circuits

Visual Landing Aids

FLOLS check-off list complete

Lens pole-checked pre-ops complete

Manually Operated Visual Landing Aids System (MOVLAS)
pre-ops complete

AUG 10 1999

ILARTS pre-ops complete

(5) Aviation Fuels

(a) Stations Manned

Aviation Fuels Officer/CPO/LPO in Fuels Control

AvFuels Repair

AvFuels Below Deck Repair/Maintenance Office

AvFuels Flight Deck Fueling Crews (crew shelter)

JP-5 pump room/console operator/filter rooms

Quality Assurance laboratory

4JG Talker - Flight Deck Repair Office

4JG Talker - JP-5 pump room/console room/filter room

4JG Talker - Crew shelter

4JG Talker - Flight Deck Control

4JG Talker - Quality Assurance Laboratory

4JG Talker - Below Deck Repair/Maintenance Office

(b) Equipment Checked

System integrity checked per AFOSS/PMS

Fire fighting equipment in all aviation fuel spaces

Aviation Fuel Stations (AFS) status - noted in Flight Deck Control

Communications: 4JG and ship service telephone

Filters operational and liquid tight

Flight schedule verified to ensure correct fuel load

Fuel samples obtained at all installed fuel nozzles IAW AFOSS

Fuel samples obtained at filters IAW AFOSS

Fuel samples obtained at purifiers IAW AFOSS

Fuel samples obtained at service tanks IAW AFOSS

JP-5 system charged and liquid tight IAW AFOSS

AFOSS Manuals issued to station operators

Portable de-fuel equipment available for flight/hangar deck

(6) Hangar Deck Control/Hangar Deck

AUG 10 1999

(a) Stations Manned

Hangar Deck Officer Deck CPO/LPO

Conflagration Stations

Elevator Operators

Plane Handling crews

(b) Equipment Checked

Aircraft handling equipment (fueled and operating)

All communications systems

Tow bars and chocks available

Fire fighting equipment

Elevator door tracks clear

Ballistic doors clear

All loose gear secured

Aircraft electrical power

Elevator/stanchion position/status

Equipment status boards

(7) Landing Signal Officer (LSO) Platform

(a) Stations Manned

LSO (as directed by Air Officer)

Assistant LSO (as directed)

LSO/HUD Platform Operator (V-2)

LSO Platform Spotter (V-5)

Hook spotter

(b) Equipment checked

UHF Radios (2)

Sound-powered phones

FLOLS - on/adjusted (when cleared by Primary)

Wave-off and cut lights

1JG, 2JG, 19MC, 11JG (as installed)

Deck status light

AUG 10 1999

Aldis lamp and power supply or High intensity spotlight

Smoke lights

Dye marker

Life rings with battery-powered floating marker (minimum 2)

Binoculars (7X50)

HUD

Wands (Red/Green)

Emergency Paddles (Red/Green)

ILARTS - on/adjusted

(8) Weapons Department. Man weapons elevators, ordnance handling stations, ordnance control and flight/hangar decks as required/directed.

(9) CVW Maintenance. Man flight deck control, maintenance spaces, line shacks and aircraft (plane captains available for movement) as required/directed.

(10) Engineering Department. Man elevator pumphooms, steam supply/distribution spaces, O₂N₂ plants, electrical distribution spaces and other support spaces as required/directed.

(11) Medical Department. Man first aid stations, including the flight deck, as required/directed.

(12) AIMD Department. Man support/trouble shooting stations as required/directed.

(13) Operations Department. Man Air Operations, Carrier Air Traffic Control Center (CATCC), and other stations as required/directed.

(14) Air Wing. Man ready rooms, spaces, and aircraft as required/directed.

(15) Other Departments. Man stations as required/directed.

205. ALERT CONDITIONS. Alert conditions will be set as called for by the Battle Group Commander or as published in the Air Plan. Aircraft shall be assigned by the Aircraft Handling Officer commensurate with aircraft capabilities, weapons load, and any other requirements. Flight crews for alert condition aircraft shall be called away early enough to permit a normal pre-flight inspection, start, warm-up and completion of take-off checks to become effected. After the pilot declares the aircraft ready for flight, it shall be placed in the appropriate alert condition. Personnel required shall be the minimum to safely man required stations. All normal Flight Quarters procedures up to actual starting of aircraft shall be completed prior to setting appropriate alert conditions. Conditions of readiness and the requirements for each condition will be as specified in CV NATOPS and appropriate amplifying instructions.

AUG 10 1999

COMNAVAIRLANT/COMNAVAIRPAC
 FLIGHT QUARTERS CHECK LIST

TIME _____ DATE _____

1. EMBARKED AIRCRAFT

AIRCRAFT ON BOARD _____ HELOS UP _____
 MULTIPLE _____ DENSITY _____

2. LAUNCH AND RECOVERY EQUIPMENT

CATAPULTS	ONE	TWO	THREE	FOUR
JBD's	ONE	TWO	THREE	FOUR
A-GEAR	ONE	TWO	THREE	FOUR
BARRICADE	PLAT	LENS	MOVLAS	

DECK STATUS LIGHTS _____

REMARKS: _____

3. AVIATION FUELS

FLIGHT DECK STATIONS DOWN/ETR _____

HANGAR DECK STATIONS DOWN/ETR _____

FILTERS/PURIFIERS/PUMPS DOWN/ETR _____

REMARKS: _____

4. FLIGHT DECK

WHIP ANTENNA	UP/DOWN	STERN RAILS	UP/DOWN
BOW RAILS	UP/DOWN	JACK STAFF	UP/DOWN
AIRCRAFT ELEVATORS	ONE TWO THREE FOUR		
ELEVATOR STANCHIONS	ONE TWO THREE FOUR		

DECK EDGE POWER STATIONS DOWN _____

COMBAT POWER STATIONS DOWN _____

ROTARY BEACONS _____ FWD MID AFT

REMARKS: _____

5. HANGAR DECK

DIVISIONAL DOORS UP/DOWN _____

ELEVATOR DOORS ONE TWO THREE FOUR _____

ELEVATOR STANCHIONS ONE TWO THREE FOUR _____

AIRCRAFT ELECTRICAL POWER STATIONS DOWN _____

CONFLAG STATIONS DOWN _____

REMARKS: _____

6. MOBILE EQUIPMENT (Numbers)

ASSIGNED			ASSIGNED		
MD-3	UP	DOWN	NC-2	UP	DOWN
MD-3A/B	UP	DOWN	SD-1	UP	DOWN
TAU-II	UP	DOWN	SCRUBBER	UP	DOWN
P-16	UP	DOWN		UP	DOWN
TILLY	UP	DOWN	15K FORKLIFT	UP	DOWN
20K FORKLIFT	UP	DOWN			

REMARKS: _____

COMNAVIAIRPACINST 3100.4C
COMNAVIAIRLANTINST 3100.4C

AUG 10 1999

7. COMMUNICATIONS

SRC-47/hydra Headsets Assigned _____ UP _____ DOWN _____
19 MC 21 MC 51 MC 58 MC
1 JG 2 JG 4 JG 6 JG 8 JG

REMARKS: _____

8. FIRE FIGHTING EQUIPMENT

Steam smothering stations up/down _____
Fire stations flight deck up/down _____
Fire stations hangar deck up/down _____
FOD walkdown complete time _____
LSO platform inventory complete YES/NO REMARKS: _____
Combat air start (if installed) up/down _____

Submitted by:

ACHO or representative

AUG 10 1999

CHAPTER 3

FLIGHT QUARTERS CLOTHING

301. WEARING OF FLIGHT QUARTERS CLOTHING

a. All personnel whose duties require them to work on the flight deck during the start, launch, and recovery of aircraft shall wear a complete flight deck uniform.

b. Control and issue of flight quarters clothing shall be prescribed by the Air Officer for Air Department personnel and current Naval Supply Systems Command (NAVSUP) directives for all flight deck personnel.

302. CLOTHING IDENTIFICATION. Proper colors of clothing and symbols to be worn during flight operations are specified in CV NATOPS Manual and shall be adhered to without exception.

303. SPECIAL COLD WEATHER CLOTHING

a. The Supply Officer will procure, store, and issue special clothing per current allowances and standard accounting procedures.

b. Special clothing will be drawn from the Supply Officer for the Air Department and Air Wing personnel, as prescribed by ship's instructions. It will be reissued to individuals on an allowance/need basis via the Division Officer, who accounts to the Air Officer and Carrier Air Wing Commander by sub-custody receipts.

c. Special clothing will be worn only when prescribed by proper authority.

AUG 10 1999

CHAPTER 4

AIRCRAFT HANDLING

401. GENERAL. Aircraft handling is a general term that describes any movement of aircraft or associated equipment aboard an aircraft carrier. All aircraft handling on the flight or hangar deck shall be controlled by the ACHO. He shall plan aircraft moves to ensure accomplishment of flight operations as scheduled in the air plan and to facilitate aircraft maintenance requirements. The ACHO will brief the flight deck and hangar deck supervisory personnel (CPO, LPO, Fly/Bay PO) prior to each evolution of planned aircraft movements. They, in turn, shall brief their crews and shall be responsible, through their designated supervisors, for the safe and efficient accomplishment of each evolution. The authority for moving aircraft may be delegated by the ACHO, as follows:

a. At Flight Quarters. The Flight Deck Officer and Hangar Deck Officer may authorize the movement of aircraft. Normally, after the final maintenance respot is in and the integrity watch has been set, there will be no further movement of aircraft. Specific approval to move aircraft must come from the ACHO or the handling officer who completed the respot.

b. When not at Flight Quarters. At sea, personnel designated by the ACHO, or, inport, the Air Department Duty Officer, may authorize the movement of aircraft.

402. AIRCRAFT DIRECTORS

a. General. The direction of aircraft movement on the flight and hangar decks of an aircraft carrier is a hazardous job requiring physical stamina, experience, attention to duty, skill and judgment. Pride in his work and confidence in his ability are prime attributes of the effective director. He must be thoroughly trained in all procedures involving aircraft movement and security. He must know the proper signals, when to give them, how to allow for delayed reaction on the part of pilots, plane captains and tractor drivers, and he must be a good judge of distance. An annual critical flight deck physical is required. Good eyesight and depth perception are required. He must have a good sense of timing. The director must understand that once qualified as a director, he is relied upon by his seniors to safely and efficiently direct the movement of aircraft. Also at stake may be the lives of his shipmates. The director cannot afford to gamble or take chances.

b. Qualification. Prior to being designated, the prospective director must pass a written examination administered by the V-1 or V-3 Division Officer. This examination will cover, as a minimum, applicable sections of the CV NATOPS Manual. Aviation Boatswain's Mate (Aircraft Handling) (ABH) Personnel Qualification Standards (PQS) shall be used in conjunction with the above, aboard CV/CVN's. The directors shall be designated in writing by the Air Officer.

403. AIRCRAFT HANDLING CREWMEN. Personnel other than aircraft directors from the V-1/V-3 Divisions are assigned to handling crews responsible for handling of aircraft on the flight and hangar decks. Handling crews (blue shirts) must pass a written examination administered by the V-1/V-3 Division Officer. This examination shall cover, as a minimum, applicable sections of CV NATOPS Manual. ABH PQS shall be used in conjunction with the above, aboard CV/CVN's.

AUG 10 1999
404. PLANE CAPTAIN

a. A plane captain's paramount duty is to be with his aircraft at all times during Flight Quarters and other times as may be ordered. A qualified plane captain/brake rider shall be in the cockpit manning the brakes any time the aircraft is moved without a pilot. He shall ensure that the brakes are functioning properly and that he positions himself so that he can properly apply the brakes. He shall ensure that the cockpit is open, weather permitting, so that he can hear whistle signals. He shall know all signals, visual and oral, used in aircraft handling and be alert to respond to them instantly. The wearing of proper flight deck gear by the plane captain shall be per CV NATOPS.

b. When pilots man their planes, plane captains will assist them in strapping into the cockpit and when completed, the plane captain will stand by the nose of the aircraft ready to start engines. This command shall be given by the Air Officer and at that time, and not before, the plane captain will signal the tractor driver, and pilot to start engines. Engines will not be started unless personnel are clear of intakes, tailpipes, propellers, etc.

c. Plane captains and chockmen will be responsible for removing tiedowns upon signal from the director. Removal of chocks is a chockman responsibility. After his plane is ready to taxi out of its spot, the plane captain will proceed with all his tiedowns, jury struts, etc., to a designated area and remain there until his aircraft has been launched. He will be prepared to return immediately to his aircraft should it not launch for any reason.

d. When his aircraft lands and is spotted forward, the plane captain shall meet his aircraft immediately and insert down locks/gear pins and/or jury struts as required. He shall ensure that the aircraft has initial tiedowns installed before the pilot(s) exit(s) the aircraft.

e. Plane captains will assist fueling crews during all fueling operations of their aircraft. Plane captains shall check primary and secondary shutoff valves. Aircraft shall be fueled per the flight plan. Any change must have approval of the Air Operations Officer. Fuel spilled on the deck due to fuel venting or failure to close dump valves is the cleaning responsibility of the plane captain.

NOTE

Fuel spills or leakage must be reported to the ACHO immediately and every effort must be made to eliminate the hazard of free fuel as quickly as possible. All spills must be swabbed up IMMEDIATELY. The squadron concerned must make the initial effort to prevent and clean up fuel spills caused by aircraft. Aviation fuels personnel will augment and supervise the clean up of spills and ensure that no hazardous condition exists as a result of the spill. In the event of a major fuel spill, crash and salvage personnel, with the assistance of designated V-4 personnel, will respond to the containment and clean up of the spill IAW 80R-14.

NOTE

Aircraft fuel gauges must be used for fueling to loads other than full as when conducting Carrier Qualifications (CARQUALS). Plane captains will be present and stationed in the cockpit to direct the fueling and defueling of aircraft. Final responsibility for correct fuel loading is vested in the plane captain, excluding CARQUALS, when the pilot shall be responsible for the correct fuel load.

AUG 10 1999

NOTE

No fuel or oil-soaked rags or containers of fuel or oil are to be left adrift at any time. Plane captains will hook up and apply external power or aircraft power as required for fueling or defueling operations and make sure all engine switches are in the off position and all electronic gear is turned off. TURN SHIP'S POWER ON AFTER PLUGGING CABLE IN. Restow cable when fueling is completed. Huffer hoses will not be connected during fueling of aircraft.

f. Plane captains are responsible for ensuring that the aircraft to which they are assigned is properly secured at all times. The degree of security will be per the provisions of Chapter 7 of this instruction.

NOTE

Plane captains will not secure during Flight Quarters unless a qualified relief has been provided.

g. Plane captains are responsible for ensuring that chocks remain securely under the wheels of their aircraft when parked. Chocks will not be removed for any reason without the permission of a flight/hangar deck aircraft director.

h. Plane captains will be responsible for stowing power cables, check stands, and any other support equipment used for maintenance of their aircraft in the event that squadron maintenance personnel fail to do so. TURN SHIP'S POWER OFF BEFORE UNPLUGGING POWER CABLE FROM AIRCRAFT.

i. Deck power cables will be restowed after use. Plane captains and/or maintenance personnel will connect/disconnect huffer hoses/power cables to aircraft and restow same.

j. In manning the cockpit of an aircraft to be moved, the plane captain shall:

(1) Ensure that ejection seat safety pins are installed, and safety pins are in place in the landing gear/auxiliary tanks/weapons racks, as appropriate.

(2) Ensure the windshield and side panels are clear of grease, cleaning compound or any other film which might limit visibility.

(3) Wear the flight helmet but adjust sound attenuator to hear directors commands.

(4) Advise the director of any unusual condition or aircraft discrepancy which might make movement hazardous, such as limited braking capability, etc.

405. AIRCRAFT HANDLING MOVEMENT AND SAFETY PRECAUTIONS

a. General. All personnel responsible for moving aircraft shall exercise the utmost care to avoid aircraft handling mishaps. Personnel assisting in the movement of aircraft will be alert to advise the responsible aircraft director of a situation which may cause a handling accident.

AUG 10 1999

NOTE

Aircraft with fuel other than JP-5 shall not be spotted on the hangar deck without taking steps outlined in Chapter 8 Section 803.

b. Aircraft Movement. In preparing to move an aircraft, the director shall ensure that:

(1) The cockpit is manned by a qualified brake rider and he has checked the aircraft braking system to ensure adequate pressure for safe movement, the Aircraft Director will also visually verify aircraft brake pressure when applicable.

(2) Before having the chocks and tiedowns removed, the director shall call for "brakes" and receive visual or verbal confirmation from the person in the cockpit that the brakes are being held.

NOTE

When an aircraft with inoperative brakes must be respotted, the cockpit will not be manned and chockmen will remain in position to chock the main wheels instantly if ordered. Movement of no-brake aircraft must be with the approval of the ACHO.

(3) All personnel except those necessary for the move are well clear of the aircraft, and those personnel necessary for the move are properly positioned.

(4) Adequate clearance exists to permit safe movement.

(5) All chocks, tiedowns, power cables and other servicing/securing devices are removed prior to moving the aircraft. Tiedowns shall not be "hung" from the aircraft.

(6) If weapons loading/downloading is in progress, assurance is received from the ordnance crew leader that the aircraft is safe to move insofar as weapons are concerned.

(7) Directors and aircraft handling team shall be equipped with whistles which they will hold in their mouths while controlling aircraft movement. The whistles and hand signals will be used to signal for brakes and chocks.

(8) The controlling director shall ensure that he or another director is, at all times, plainly visible to the brake rider.

(9) Safety observers shall be stationed as necessary to ensure safe clearance any time an aircraft will pass in close proximity (five feet or less) to another aircraft, bulkhead or other obstruction. Anyone properly equipped with a whistle and familiar with deck signals and procedures may act as a safety observer. The safety observer and the director in control of the aircraft must either have each other in sight at all times or have a second safety observer stationed in position to relay signals. At least one safety observer is required for each aircraft movement on the hangar deck.

(10) Item (9) above shall not be construed to require any individual to place his personal safety in jeopardy. This is particularly applicable at night or during periods of heavy weather.

(11) During periods of high winds or when the deck is unsteady, chockmen shall closely tend each main wheel. Brake riders shall apply partial

AUG 10 1999

brakes as necessary to prevent excess speed from building up. Caution should be exercised to ensure brake pressure remains built up during the move. When these conditions prevail, aircraft shall not be moved by hand except in cases of extreme urgency.

(12) When the word is passed to stand by for a turn, exercise extreme caution in moving aircraft.

(13) Tractor drivers shall not move an aircraft except under the positive control of a director. If a director's signal is not completely understood, the driver shall stop and await further instructions.

(14) Sudden stops by tractors towing aircraft must be avoided except in an emergency.

(15) Personnel shall not ride on tractors except in the driver's seat.

(16) Movement shall be slow enough to permit a safe stop to be made within the clear space available, and in no case faster than the chockmen can walk.

(17) An aircraft's tailwheel shall be unlocked only on a signal from the director.

(18) When an aircraft towbar has to be repositioned to permit a better path of movement prior to aircraft reaching interim or final spot, the aircraft shall be chocked and initial tiedowns installed prior to disconnecting the towbar.

(19) As an aircraft nears its parking spot, it should be slowed to a speed which will permit an immediate stop. Directors and safety observers are responsible for maintaining safe clearance for the tractor when maneuvering in close quarters, since the tractor driver must watch the director and is often unable to check the clearance for himself.

(20) Prior to backing aircraft to deck edge spots, chockmen shall be positioned so as to enable them to chock the main wheels instantly.

WARNING

Proper position to walk chocks is abreast the main wheel with adjustable block towards the aft end of the aircraft. At no time will the chock walker place himself in the direction of the aircraft wheel's travel, either forward or aft of the mainmount. The chock shall be walked on the opposite side of the brake/strut assembly. It shall be installed on the side opposite the brake/strut assembly to avoid the chock becoming jammed under the aircraft during fueling or in case of a flat tire. At no time will chockman carry tiedown chains with him while walking chocks.

(21) When the signal for brakes is given, the pilot/brakerider in the cockpit shall immediately apply full brakes. Care must be exercised to apply brakes simultaneously, particularly when the aircraft is being moved by hand. The brake signal is a sharp blast on the whistle, accompanied by the standard visual signal.

(22) The main wheels will be chocked as soon as the aircraft stops, and the director will remain with the aircraft until the handling crew has completed the initial tiedowns. The tractor will then be unhitched and the brake rider notified by the director that he may leave the cockpit. The plane

AUG 10 1999

captain will thereupon inspect attached tiedowns for proper installation and ensure intermediate tiedown security.

(23) During aircraft turn-ups and other maintenance evolutions on the hangar deck, which require the tails or other parts of aircraft to protrude through or otherwise foul aircraft elevator door openings, a fully PQS-qualified elevator door operator shall be assigned and remain in the immediate vicinity of the elevator door control panel until the aircraft maintenance has been completed and the aircraft has been respotted clear of the elevator doors' path of travel. Aircraft maintenance conducted in these areas shall never be such that it will preclude movement to clear elevator doors in an emergency.

(24) In parking aircraft on the hangar deck, allow clearance for access to, and operation of, lightwater, salt water stations, as well as for the operation of hangar bay doors.

(25) Reverse tow of properly configured aircraft is authorized when using locally established procedures.

CAUTION

Special precautions are required when aircraft are parked over elevator/barricade stanchions, JBD's, elevators, catapult tracks, or with tail skag outboard of the deck edge. When aircraft are spotted adjacent to an elevator, tiedowns shall not be attached to the elevator. Tiedowns shall never be attached to catapult tracks, holdback fitting cleats, or bridle arrestor tracks.

c. Handling Precautions (Launch). During launch sequence, no unnecessary personnel shall be on the flight deck or in the catwalks.

(1) Aircraft Handling Signals. Standard taxi signals as set forth in aircraft signal NATOPS NAVAIR 00-80T-113. These signals will be given in a positive, clear and precise manner.

(2) Engine Start

(a) Engines shall be started only on signal and under the positive control of Primary Fly. Prior to the starting evolution, the aircraft handling crew shall remove the towbar. The plane captain shall assist the pilot as necessary with pre-flight checks.

(b) The plane directors shall monitor the aircraft start sequence throughout the warm up and check out period. Control is assumed by the plane captain for pre-flight checks only. The plane captain shall not cause any tiedown chains to be removed or wings to spread without specific clearance from a flight deck director.

WARNING

Prior to engine start, ensure all nonessential gear has been removed from the flight deck, and essential aircraft and flight deck equipment is properly secured. Unsecured equipment present a FOD and missile hazard to aircraft and personnel.

AUG 10 1999

NOTE

The mechanical latching of weapons on aircraft racks/launchers shall be completed before the engine(s) on the aircraft is/are started for launch.

(c) All personnel shall follow the prescribed procedures when operating aircraft and aircraft starting units. All unsafe starting conditions shall immediately be called to the attention of cognizant personnel. Supervisors shall immediately cease any aircraft starting evolution or reposition starting units as necessary to ensure exhaust is not directed on aircraft, ordnance, weapons equipment, GSE equipment or personnel.

WARNING

Hot exhaust from aircraft starting units is a serious hazard when operating in close proximity to other aircraft, aircraft components, fuels, weapons, equipment and personnel.

(d) Aircraft engine power shall not be advanced past 10 percent RPM above idle for Turbojet engines without specific clearance from a flight deck director. The pilot shall request clearance to turn up by giving his director the "one-finger turn up" signal. The director, after checking chocks and tiedowns and ensuring that the area behind the aircraft is clear, shall return the signal, thereby clearing the pilot for turn-up.

WARNING

Clearance for turn-up shall not be given by anyone other than a flight deck director.

(e) While an engine is turning up at high power, the director shall continuously check the area behind the aircraft. The pilot shall frequently look at the director to ensure that the "all clear" signal is still being given. After completing all post-start checks, the pilot shall signal the director, indicating the status of the aircraft. The director will relay the signal to the officer or petty officer in charge of the area of the flight deck.

(3) Taxi for Launch

(a) Before ordering removal of chocks and/or tiedowns, the director shall signal for the pilot to hold brakes and the pilot shall acknowledge this signal by an affirmative nod of the head in the daytime, and by a flashlight at night. When a nose wheel tiller bar is to be used in taxiing an aircraft, the director shall signal the pilot that a tiller bar is being connected or disconnected. The flight deck supervisor will control the rate at which aircraft are moved toward the catapult(s) or deck launch spot, ensuring a steady flow of traffic while avoiding unnecessary crowding. All taxi signals shall be answered promptly and accurately unless the pilot considers there is a dangerous situation existing or developing, in which case he shall STOP.

WARNING

A director shall not leave an aircraft unattended after chocks and tiedowns have been removed. All movement of aircraft shall be under the positive control of a plane director. Aircraft shall not be taxied until pre-taxi checks and required procedures prescribed in the

AUG 10 1999

appropriate NAVAIRSYSCOM Weapons/Stores Loading Checklists/Stores Reliability Cards (SRC's) have been completed.

(b) If a pilot loses sight of his director, he shall STOP immediately. The director must stay in view of the pilot at all times and strive to remain stationary while controlling aircraft. If it is necessary to change his position while controlling an aircraft at night, the director shall signal the pilot to hold brakes. He will continue giving the hold brakes signal while moving expeditiously to the new position, then resume movement of the aircraft.

(c) Control of a taxiing aircraft shall not be passed from one director to another until the receiving director signals, by extending one arm vertically that he is ready to accept control. A director shall not give signals to a pilot who is already under the control of another director except to avert an accident.

CAUTION

The controlling plane director shall ensure that aircraft with wings folded or canopy open are not spotted, towed or taxied immediately behind a jet blast deflector when another aircraft is at high power setting on the catapult.

(4) Catapult Spotting

WARNING

In positioning an aircraft on or off the catapult, the director must be acutely aware of the activities of the catapult and adjacent catapult crewmen and aircraft inspectors to ensure control of the aircraft's exhaust and movement is such that personnel safety will not be jeopardized. Pilots must guard against the tendency to use excessive power which invariably results in roughness and poor control and jeopardizes launching accessories.

WARNING

Personnel shall not transit under or otherwise be beneath a moving aircraft, except as absolutely necessary to ensure timely launching.

(a) As an aircraft approaches the catapult, the director shall signal the pilot to place the aircraft in the launch configuration as aircraft type and procedures dictate.

WARNING

Jet Blast Deflectors (JBD's) shall be raised or lowered only after it has been positively determined that there are no obstructions in the raising or lowering arc of the JBD.

(b) For aircraft using the nose gear launch system, the holdback bar is installed with the aircraft stopped prior to taxiing into the nose tow deck ramp. Steering must be disengaged at the entrance to the NGL guide Tracks (Wye Plate). Before taxiing past the shuttle, the pilot shall verify the aircraft's gross weight. Procedures involving changes to the aircraft's gross weight are provided in Chapter 5 of this instruction.

(c) When an aircraft carrying ordnance requires arming, the aircraft will be taxied into the arming area. Nose tow aircraft shall be stopped prior to positioning nose tow bar over the shuttle spreader; and

AUG 10 1999

properly configured for flight. The director shall ensure that all personnel are clear and then direct the aircrew's attention to the ordnance safety petty officer for arming. When arming has been completed and the arming crew is clear, the ordnance safety petty officer will signal the pilot with a "thumbs-up" and direct the pilot's attention back to the director. The director will then taxi the aircraft into position for launch.

WARNING

Aircraft shall not have nose tow launch bar over shuttle spreader until the aircraft is armed and properly configured for flight.

(d) After receiving the tension signal from the topside petty officer, the director shall check the catapult area forward, ensure that the appropriate jet blast deflectors are raised, and that all personnel are clear of jet blast or prop wash. He will then signal the deck edge operator/Catapult Officer (ICCS equipped) to take tension while signaling the pilot to release brakes; the pilot in turn will apply power as specified in the type aircraft NATOPS Manual. After the aircraft is tensioned on the catapult, the director will signal the pilot, as required, to raise the aircraft launch bar and pass control of the aircraft to the Catapult Officer/Catapult Safety Observer.

WARNING

Personnel shall not work or transit immediately behind JBD's with aircraft at launch power on the catapult.

(e) Any person who observes any unusual condition during the launch, such as objects falling from or striking the aircraft, shall immediately make the facts known to the launching officer, director or catapult safety observer by giving the suspend signal.

(5) Re-spot Forward. The pace of the re-spot forward depends upon how soon the ensuing recovery is expected to begin. All preparations must be made for an immediate re-spot forward in the event of emergency. Tow bars shall be attached to all aircraft in the landing area. Pre-launch briefing should cover the re-spot forward procedures to include tow and taxi aircraft in detail so that it can be performed expeditiously, safely and with a minimum of confusion in the event of an emergency.

(6) Recovery

(a) While aircraft are being recovered, no unnecessary personnel shall be in the catwalks or on the flight deck.

(b) When the aircraft completes its roll out, it shall be allowed to roll back a few feet to permit the deck pendant to fall free of the hook. Pullbacks will be utilized as required by aircraft and arresting gear type.

(c) The director will then give the pilot the signal to raise the hook. If the aircraft is hung in the arresting gear, the hook runner's signal for tail hook down and pull back will be repeated by the director.

(d) In directing aircraft clear of the landing area, the director will give the fold wings and close flaps signal when required and pass control to the next director.

(e) The speed at which an aircraft may be taxied out of the landing area is determined by the deck surface condition and stability. The

AUG 10 1999

rapidity with which directors give the "come ahead" signal indicates to the pilot the relative speed he is requested to taxi with safe speed determination to be made by the pilot. Generally, pilots shall clear the arresting gear as expeditiously as safety permits. Once the desired taxi speed has been attained, power should be reduced. Pilots must guard against the tendency to use too much power and to control the aircraft's speed with brakes alone.

(f) During daylight hours, pilots experiencing a brake failure while on deck will inform Primary via radio and drop their tailhook to indicate to flight deck personnel the nature of the emergency. At night, the navigation lights will also be turned on to signify a brake failure. Appropriate emergency procedures shall be executed by the handling crews as directed by the controlling aircraft director and the flight deck supervisor.

NOTE

A "hot chocks" crew should be located on deck along with a ready tractor.

WARNING

The towing of aircraft with the engines running is hazardous and should be avoided whenever possible.

(g) Aircraft handling crews shall stand by in designated areas during recoveries and act as chockmen while aircraft are being taxied and parked. They shall put on the initial tiedowns, assisted by the plane captain where possible. The plane captain shall add sufficient tiedowns to bring the total number to the intermediate requirement.

(h) Landing aircraft may experience hydraulic system failures which often results in loss of nose gear steering, inability to fold wings, raise tailhook and loss of brakes. Loss of these systems presents the possibility of the aircraft rolling overboard if it is disengaged from the cross-deck pendant. In order to expedite clearing the landing area and prevent loss of the aircraft, the following procedures are recommended:

1. When aircraft lands, keep engines turning and cross-deck pendant engaged to tailhook in order to keep nose wheel in fore and aft position and to ensure the aircraft does not roll free and become uncontrollable.
2. Insert chocks on both main mounts.
3. Install aircraft pins or down locks.
4. De-arm aircraft as required.
5. Attach towbar to aircraft and to tractor. When towbar is attached to the aircraft and tractor and downlocks are installed, secure engine(s).
6. Remove chocks and push aircraft aft.
7. Disengage cross-deck pendant from aircraft arresting hook.
8. Tow aircraft to an area clear of the landing area.

(7) Parking

AUG 10 1999

(a) Aircraft are often parked in close proximity to the deck edge, other aircraft, or a part of the ship's structure. It is, therefore, imperative that both directors and pilots exercise extreme care in giving and answering signals. Although the pilot is responsible for the control of his aircraft, it is the director's responsibility to ensure that an intended parking spot is clear and offers sufficient space. In many cases, the pilot is forced to rely entirely upon the judgment of the director in maneuvering an aircraft in close quarters.

WARNING

When parking aircraft, an access route must be maintained to allow MFFV the ability to respond to any emergency. When deck multiple, operational tasking, alert posture, etc., preclude establishing an access route to the scene of an emergency, a 1 1/2 inch AFFF hose will be manned and positioned upwind of any aircraft refueling or conducting of a maintenance turn.

(b) A director controlling aircraft movement into final spot shall ensure he is strategically located to view the area of least clearance to other aircraft or structures. In addition, when the moving aircraft has other aircraft or structures in close proximity (five feet or less) on the opposing side or tail, a safety or safety(s) shall be positioned in order to relay safe clearance to the controlling director.

(c) Pilots shall not shutdown engine(s) and must remain in the aircraft until chocks are in place, the initial tiedowns have been attached and downlocks have been installed.

(d) To reduce the hazard to personnel, in final spot, both engines of twin-engine propeller aircraft may be shut down when the aircraft is chocked and tiedowns are readily available. The attachment of tiedowns to the mainmount and side of the nose, adjacent to the secured engine, shall be delayed until the prop is stopped.

(e) Except in an emergency, pilots shall not secure their engines until receiving clearance from the director. After leaving their aircraft, flight crews shall immediately clear the flight deck via the most expeditious route.

(8) Downed Aircraft. Downed aircraft shall be handled per the pre-launch briefing. Except in case of emergency they shall be shut down only on a signal from a director. Pilots shall remain in downed aircraft until the plane captain is on hand and ready to man the cockpit.

(9) Standby Aircraft (Spares). All spare aircraft shall be manned by a full flight crew unless specific provision to the contrary is included in the Air Plan. Standby aircraft, if not launched, will normally be kept turning until it becomes apparent that they are no longer needed or until other operational considerations require that they be shut down. In any event, pilots shall not secure engines until directed on signal from a director. If practicable, spare aircraft shall be spotted for the launch out of the landing area.

406. AIRCRAFT ELEVATORS

a. General. Operation of the aircraft elevators shall be under the cognizance of the Aircraft Handling Officer. The Flight Deck Officer/Hangar Deck Officer shall be responsible in their respective areas for ensuring all operators and safety men are qualified in the operation of aircraft elevators as prescribed in the appropriate NAVSHIPS Technical Manual and procedures in

AUG 10 1999

the CV NATOPS Manual. Initial qualification and recertification of elevator operators shall be documented. Elevator PQS shall be used aboard CV's and CVN's for qualification of flight/hangar deck elevator operators.

b. Manning Requirements

(1) Aircraft elevators will be manned as designated by the ACHO during the following evolutions:

- (a) General Quarters
- (b) Flight Quarters
- (c) Special Sea and Anchor Detail
- (d) Underway Replenishment (VERTREP, rearming, stores or refueling)

NOTE

When computing elevator load weight, ensure the addition of ordnance and GSE equipment.

(2) Directors must ensure that equipment on the elevator is properly secured. All rolling stock (air conditioners, nitrogen carts, etc.) shall be parked fore and aft with a minimum of one chock and hand brake set and adequate tiedowns tending in a fore and aft position so as to prevent movement. Mobile equipment (MD-3A/B, forklifts, etc.) shall be parked fore and aft with one rear wheel chocked and parking brake set. The security of CVCC-70 shall be in compliance with Chapter 7, Section 704, Equipment Security. Aircraft shall be secured with intermediate tiedowns, chocked, and aircraft brakes set (if applicable). Aircraft lowered on an elevator with engines running and pilots in the cockpit will be secured with initial tiedowns and chocks.

c. Elevator Limitations

(1) Aircraft elevator platform load capacities shall not exceed the allowable capacity tested and approved for each ship.

(2) The following support equipment basic weights are listed and must be added to total weight on platform when transported (this list is not all inclusive; specific weights of all equipment aboard the elevator must be known and total weight calculated):

<u>ITEM</u>	<u>WEIGHT</u>	<u>ITEM</u>	<u>WEIGHT</u>
MD-3	12,000	TMU-70/M LOX Cart	700 (empty)
MD-3A (GTC-100)	13,920		1,175 (full)
MD-3B (GTC-85)	12,850	AERO-21 Skid	209
MD-3 (TAU installed)	12,500	MK-25 Mine	2,258
NC-2A	3,700	MK-52 Mine	1,480
SD-1	7,500	MK-53 Mine	547 (with cart)
SD-2 (Spotting Dolly)	11,200	MK-55 Mine	2,410
P-16	12,500	MK-56 Mine	2,428
Forklift, 15,000 cap.	19,500	AERO-53 Skid	1,593 (loaded sonobuoys)
Forklift, 20,000 cap.	25,000	Torpedo MK-44, Mod 0	408
Forklift, 6,000 cap.	12,000	Torpedo MK-44, Mod 1	414
Crash Crane (CVCC)	130,000	Torpedo MK-46	826
ROCKEYE II (on skid)	738	WALLEYE I (on skid)	1,367
ROCKEYE II (2 on skid)	1,257	WALLEYE II (on skid)	2,605

AUG 10 1999

ROCKEYE II (3 on skid)	1,734	HARPOON AGM-84	1,147
PHOENIX AIM-54	983	SHRIKE AGM-45	402
SIDEWINDER AIM-9	197	SPARROW III AIM-7E	441
STANDARD ARM AGM-78	78	HARM AGM-88	780

d. Operational Procedures. Standard operational procedures for aircraft elevators shall be as follows:

(1) Each day prior to elevator operations, qualified operators shall:

(a) Visually inspect the elevator platform and safety nets and report any discrepancies to the ACHO.

(b) Establish communications between control stations, pump room and flight/hangar deck control (as applicable).

(c) Status of the elevator and elevator stanchions for V-1/V-3 shall be reported to the ACHO.

(d) Hangar deck elevator operators shall functionally check the elevator doors.

(2) Elevator Operating Limitations

(a) Elevators shall not be operated while the ship is in a turn heeling toward the side on which the elevator is located.

(b) Elevators shall not be lowered during heavy weather, except as directed by the ACHO or higher authority.

WARNING

Extreme caution shall be exercised when operating deck edge aircraft elevators during periods of high winds and/or heavy seas.

(c) Elevators shall not be operated during launches or recoveries except as authorized by flight deck control.

(d) Directors shall visually determine position of elevator locks after signaling the operator to withdraw or insert them.

(e) When sending aircraft to the hangar deck, flight deck directors should position the aircraft on the elevator so it can be towed directly into the hangar bay without repositioning and ensure that brake pressure level is pumped up as applicable. Directors must ensure that all personnel riding the elevator wear approved flight deck life preserver and stand on the inboard half of the elevator. Riders shall not be permitted on the elevators at night.

(f) Before signaling the elevator to be raised or lowered, the director shall check stanchion/cable clearance and ensure no tiedown chains are attached to the platform from aircraft or equipment parked adjacent to the elevator. The elevator operator will then sound the warning horn, check to ensure all personnel are clear and raise the stanchion/cable. As soon as the stanchion/cable is up, the director will signal for the elevator platform to be raised or lowered. The warning horn shall be sounded three times prior to elevator movement and continuously throughout the elevator cycle.

(g) If the stanchions are "inoperative," personnel shall be stationed near the elevator to warn approaching personnel and a temporary

AUG 10 1999

safety line shall be rigged as quickly as possible, prior to lowering/raising the elevator.

WARNING

Extreme caution shall be exercised when operating aircraft elevators when stanchions are inoperative.

(h) After the stanchions have been raised or the warning given, no person shall attempt to board or leave the elevator platform.

(i) A 5MC announcement should be made prior to operating elevators.

(3) Procedures When Not at Flight Quarters. The following additional procedures are applicable for aircraft elevator movement when not at Flight Quarters:

(a) Designate duty elevator and director/elevator safety petty officer.

(b) When the ship is at sea, the operation of aircraft elevators must be requested by the ACHO or his designated representative in flight deck control and coordinated with the OOD.

(c) When inport, elevator use must be coordinated through the electrical load dispatcher to prevent overload and possible loss of power. The Air Department Duty Officer shall grant permission for aircraft elevator movement only after ascertaining power is available and the OOD has been notified of the movement request. Pier area must be checked to ensure adequate clearance.

407. AIRCRAFT HANDLING ACCESSORIES

a. General. In addition to self-powered equipment, there are several important handling accessories that are required for the safe and efficient handling of equipment.

b. Aircraft Wheel Chock

(1) The Universal Wheel Chock is used aboard aircraft carriers. It is adjustable to fit main landing gear wheels up to 45 inches in diameter.

(2) The chock should be inserted with the adjustable block toward the after end of the aircraft.

c. Tiedown Assemblies

(1) The TD-1A and TD-1B tiedown assemblies are composed of a chain assembly and a lock mechanism, each having a hook at one end. The two separate assemblies are joined to form an integral unit by inserting any one of the chain lengths into the locking device.

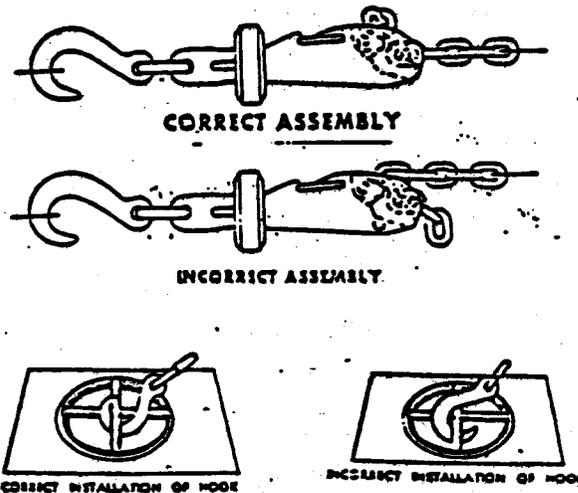
(2) The tiedown assembly, when properly assembled, has a 10,000-pound working load capacity. It is possible to install the chain so that the load is off center. In this position, the working load is reduced to approximately 6,000 pounds.

(3) The assembly must be re-tensioned periodically.

AUG 10 1999

(4) If the required number of tiedown points cannot be established due to unavailability of padeyes, tiedown assemblies may be doubled, utilizing hook to oversized chain link of second tiedown assembly. Use of both tensioning devices is not acceptable when doubling tiedown assemblies.

(5) Figures below show the incorrect and correct installation of the TD-1A/TD-1B tiedown assembly.



d. Aircraft Towbars

(1) The Adjustable Length Towbar (ALBAR), Model NT-4, is used aboard aircraft carriers and is designed to provide for the nose tow of aircraft employing four different sizes of nose wheel axle tow holes. Additionally, it is designed for towing aircraft provided with fuselage and landing gear tow rings.

(2) The ALBAR is made of aluminum alloy and can handle aircraft with a maximum gross weight of 90,000 pounds.

408. FLIGHT DECK SAFETY

a. General. The entire flight deck is an extremely dangerous area during flight operations. High wind, high noise level, and the hazards of fire, whirling propellers, and jet blasts make it imperative that all personnel take all possible precautions to enhance safety.

WARNING

RESTRICTED AREA. The flight deck is a restricted area during flight operations. NO ONE, unless absolutely necessary, shall be on the flight deck, in the gallery walkways, or on ladders leading to the flight deck during flight operations.

b. General Precautions

(1) Pilots and crews returning from flights will remain in full flight gear with visors down and clear the flight deck immediately. Flight crews should not congregate on the deck to watch further operations.

(2) All officers and petty officers must continuously impress upon all flight deck personnel the necessity for exercising the utmost diligence in keeping clear of propellers, jet intakes and tailpipes, helicopter rotor blades and tail rotors. Personnel required to move among planes shall:

AUG 10 1999

- (a) Keep a sharp lookout for propellers.
 - (b) Avoid tailpipes and jet intakes.
 - (c) Avoid the plane of rotation of the propeller of any aircraft turning up.
 - (d) Not walk between the tail of one plane and the propeller or intake of another plane while engines are turning up.
 - (e) NEVER pass directly in front of a propeller which is turning up.
 - (f) NEVER walk under rotor blades or tail rotors of helicopters while engaging or disengaging.
- (3) The powder which forms in jet tailpipes (resembles sulfur) is harmful. Any person coming into contact with it should wash the powder off immediately.
- (4) Keep clear of the barricade and adjacent danger area during landings. Keep clear of arresting gear wires. NEVER STEP IN THE BIGHT OF A CABLE.
- (5) All personnel on the flight deck will wear the proper uniform for the particular operation taking place as required by the CV NATOPS Manual. Between the hours of sunset and sunrise, all personnel on the flight deck shall wear an approved life vest.
- (6) Chockmen will use extreme caution in reaching their stations when engines are turning. They will approach planes from the sides, and while alongside the wheels will crouch on the deck in such a manner as to maintain secure footing against sudden blasts.
- (7) Loose gear will be kept to a minimum on the flight deck and hangar deck by all personnel.
- (8) Flight deck personnel shall not carry rags, papers, magazines, key chains or other loose gear in their pockets or about their person while on the flight deck.
- (9) Smoking. No smoking or chewing tobacco shall be permitted at any time on the flight deck, hangar deck or catwalks.
- (10) Extra caution must be exercised when training new and inexperienced personnel to work on the flight deck. Newly assigned, inexperienced flight deck personnel shall observe a minimum of three days and three nights of flight deck operations from a location other than the flight deck prior to participating in any on deck watch station. A person experienced in flight deck operations and safety shall be personally assigned to each new arrival to escort and monitor him while on the flight deck. A minimum of three days and three nights of flight deck operations escorted must be completed prior to working the flight deck unescorted.
- (11) All personnel working on top of aircraft shall wear cranial with chin strap secure.
- (12) The Air Officer shall ensure all air department personnel who work on the flight and hangar decks be annually screened for flight deck physicals by medical department. Also ensure an effective system is

AUG 10 1999

implemented for monitoring and reporting the physical qualification status of flight and hangar deck personnel by the medical officer. Any personnel failing their eye acuity test shall not be assigned to work at a critical flight deck billet or hangar deck billet.

409. FLIGHT DECK COMMUNICATIONS SYSTEM (FDCS)

a. The FDCS provides communication between fixed stations and as many mobile headsets and handsets as available.

b. Headsets are used by the following key flight deck personnel (others as assigned):

Flight Deck Officer/Asst/CPO/LPO
Air Boatswain/Crash Salvage CPO/LPO/MFFV Drivers
Fly Petty Officers/Asst
Launching Officers/Arresting Gear Officers/Catapult Safety Observer
AV/Fuels CPO/LPO
Arresting Gear Topside Safety Petty Officer
Air Gunner/CAG Gunner/EOD
LSE
ATO
Safety Officer
CAT Spotters
Tractor King

410. SPECIAL AIRCRAFT HANDLING CHARACTERISTICS

a. A-4 Aircraft

(1) General

(a) Tiller bars may be used for taxiing aircraft out of the gear and when taxiing A-4's forward for deck edge spots. The aircraft should not be turned more than 30 degrees out of the wind without ensuring wing flaps are completely up. Tiller bars will normally be used for spotting on the catapult.

(b) Sudden starts and stops should be avoided. Damage to the nose gear assembly can occur which necessitates shear pin inspection.

(c) Brake system is a separate hydraulic reservoir, completely independent of the aircrafts hydraulic system.

(2) Maintenance/Servicing. Hot refueling will never be accomplished through the "hell hole." Refueling probe adapters must be used. Tow tractors shall not be used as a maintenance platform during any refueling operation.

b. H-60 Helo Aircraft

(1) General

(a) Wheelbrakes are located at both sets of controls. They may be locked by depressing the toe pedals and setting the handle located at the right set of controls.

(b) When locking/unlocking the tail wheel locking pin, the towbar attached should not be moved more than two feet to either side of centerline as any more than that will snap the locking pin.

AUG 10 1999

(c) Care should be exercised while handling the tail wheel and related components. A weak design point, it is not stressed for excessive sideward or downward pressure and cannot withstand repeated abrupt stops/rapid starts.

(d) When spotting/landing an H-60, it should be positioned far enough from the deck edge to allow blade-walkers to remain outboard of the blades during the folding or spreading cycle.

(e) The Auxiliary Power Unit (APU) is referred to as the number three engine. The noise level is hazardous within five feet of the exhaust port when the unit is operating. The APU must be started prior to shutting down as this allows the pilot to monitor engine instruments when the final engine is shut down.

(f) The aircraft is self-starting; however, if the APU is down the aircraft can be started with a "huffer." The H-60 has a cross-bleed capability for starting the second engine.

(g) Electrical/Battery Power must be maintained on the H-60 when folding the tail pylon. Failure to do so can result in uncontrolled tail rotor windmilling.

(h) An "ALBAR" towbar (longer than a standard towbar) must be used when towing the aircraft on the flight deck.

(i) The tailwheel strut must be extended prior to sending aircraft to hangar deck to allow enough clearance to attach spotting dolly.

NOTE

Blade spread for all helo's on the hangar deck shall be performed only with a hydraulic cart.

c. A-6 Aircraft

(1) General

(a) Hydraulic pressure for brakes is supplied by a small accumulator, rechargeable by a pump operated by the brake rider from the cockpit. The brake rider has the option of using rudder pedal action for braking or he can select the emergency mode which locks the brakes.

(b) Launch aircraft should be spotted near a 115-volt, three-phase 400-cycle electrical outlet and should also be accessible to a SINS outlet (except for KA-6).

(c) The A-6 is equipped with nose wheel steering, but a tog lock disengages the steering when the nose wheel is turned past 56 degrees from the center position. Large applications of power and differential braking are then required to re-center the nose wheel and re-engage the tog lock. When high power settings are prohibited, a towbar should be attached to manually center nose wheel.

(d) The A-6 aircraft is susceptible to wing damage when jury struts are off and the wings are folded. When spotted directly aft of JBD's, with aircraft on the catapult turning up, the wings shall be spread.

(e) Jury struts must be installed when the wings are full of fuel and when the aircraft is raised or lowered on an elevator. This is to prevent damage to the wing fold mechanism.

AUG 10 1999

NOTE

A-6 Aircraft that have composite wings do not require Jury Struts, however there use is strongly advised.

(f) The extendable equipment platform ("bird cage") and boarding ladder must be stowed before towing due to minimum deck clearance and possible contact with mobile handling equipment.

(2) Maintenance/Serviceing

(a) The wings shall be spread for hot refueling due to the close proximity of wing dump lines to hot engine exhaust when wings are folded. The only exception is during CQ evolutions, at CQ fuel weight, if the wings are folded for hot refueling then the wing tanks shall remain empty.

(b) The A-6 can be hot refueled, utilizing aircraft internal electrical power.

NOTE

Ensure the nose tow launch bar is clear of the shuttle before allowing the buffer aft sequence to commence. However, the launch bar must not be locked in the "up" position. Buffering with the launch bar locked may shear the nose gear assembly.

(c) In order to accomplish electronics maintenance in the "bird cage" area, the aircraft must be spotted in such a manner that the hatch will swing over the deck when opened.

(d) A minimum of 14 inches forward clearance is required to raise the radome.

d. EA-6B Aircraft

(1) General

(a) The EA-6B aircraft has many of the handling characteristics of the A-6; however, the slightly longer fuselage and the special antennas require additional care in spotting. The arc of swing of the horizontal stabilizer is deceiving and requires extremely slow left and right movements of the nose to prevent rapid opposite movement of the tail.

(b) Hydraulic brake system is the same as a regular A-6 aircraft.

(c) Launch aircraft must be spotted near a 115-volt, three-phase, 400-cycle electrical power source.

(d) Cross-over bleed starts require additional caution due to the high engine RPM (75 percent) required on the running engine in order to provide the necessary air for engine start.

(e) The canopy is of the clamshell design and shall not be operated with winds in excess of 60 knots.

(f) The landing gear of an EA-6B will not be pinned until one of the two engines is shut down. This is due to the unique over-center locking mechanism on the landing gear.

(g) Jury strut requirements are the same as a regular A-6 aircraft.

AUG 10 1999

(2) Maintenance/Servicing.

(a) The wings shall be spread for hot refueling due to the close proximity of wing dump lines to hot engine exhaust when wings are folded. The only exception is during CQ evolutions, at CQ fuel weight, if the wings are folded for hot refueling then the wing tanks shall remain empty.

e. F-14 Aircraft

(1) General

(a) The F-14 horizontal tail, which, when level, is 4-1/2 feet from the deck, has an unusually large throw. The quick movement presents the possibility of personnel injury. In addition, when the leading edge goes down, there is sufficient room for a man to walk between the fuselage and inner edge of the slot and be scissored when the tail returns to neutral. Extreme caution must be exercised when operating in proximity to the tail.

(b) At low power, the intake suction danger reaches almost to the nose wheel.

(c) When running, the port engine scavenges a 55-gallon overflow (vent) tank in the tail. During refueling, as each fuel tank fills, small amounts of fuel may flow into the vent tank. In the event of hardware failure, large quantities of fuel could drain into the vent tank and overflow from the vent drain forward of the tail hook. If this is observed, refueling shall cease immediately to minimize the fuel spill.

(d) A maximum power steering range of 70 degrees either side of center is available. Do not exceed 90 degrees (maximum available nose wheel swivel angle) during parking or towing, as damage to steering damper unit will result.

(e) The F-14 can be towed from either the nose wheel or aircraft tow fittings incorporated in the lower structure of each engine nacelle near the rear of the aircraft.

(f) Extreme care shall be exercised when taxiing or towing the F-14 while the ship is rolling or turning. As much as possible, the F-14 will be kept fore and aft until the ship is out of the turn.

NOTE

During heavy weather, it is recommended that two tractors, one in front, one in rear, be used at the same time. If a spotting dolly is to be used, it is recommended that the F-14 be partially defueled.

(g) Approximately six to eight full brake applications are available in the auxiliary mode with fully charged accumulators of 3000 PSI. Accumulators may be recharged by hand pump in the cockpit. The aircraft is equipped with a parking brake. When the auxiliary mode braking action is no longer available by depression of the rudder pedals, sufficient accumulator fluid pressure remains for a minimum of one parking brake application.

(h) Do not use the SD-1 or SD-2 spotting dolly when the aircraft nose landing gear strut is in the kneel position (distance between ALQ-100 antenna and deck is reduced to 24 inches).

AUG 10 1999

(i) Aircraft kneels for launch. Launch bar is lowered by pilot, nose wheel steering is limited left or right 10 degrees; however, the manual (external) method is preferred. Catapult spotters will signal the pilot for the nose wheel turn after the aircraft is properly positioned for tow link accessibility to the nose gear launch guide tracks.

(j) Wings will not sweep if flaps are down or any other interlocks are present. There is a slight delay (15 seconds) before the wings will go into over sweep angle (68 to 75 degrees). Aircraft hydraulic power is required to sweep/unsweep the wings. Both aircraft hydraulic and electrical power are required to enter/exit the over sweep position.

WARNING

Flight deck personnel must ensure adequate clearance exists prior to unsweeping the wings.

(k) The aircraft may be taxied or towed in the strut kneeled position except for the nuisance trip of the launch bar at greater than 10 degrees steering angle.

(l) The F-14 has a cross bleed capability for starting at idle, however caution is necessary due to intake suction hazards present even at idle RPM settings.

(2) Maintenance/Servicing

(a) Canopy open/close system requires nitrogen charging for operation and particular aircraft system tightness dictates frequency of charging.

(b) Aircraft is immobile with engine bay doors open or ventral fins removed.

(c) Maximum allowable wind on the nose of the aircraft when conducting engine trim settings (afterburner) is 15 knots.

(d) Aircraft may not be fueled with starboard engine turning.

f. F/A-18 Aircraft

(1) General

(a) Internal electrical power (DC) is provided by two 28-volt, lead acid batteries. These batteries provide power for canopy operation and APU starting. The batteries are located behind doors 10L and 10R (10L&R).

(b) External power can be applied through door 9. The F/A-18 A/B/C/D, will accept Three-Phase, 400-cycle A/C power.

(2) Hydraulic Systems

(a) Internal hydraulic power is provided by two airframe mounted accessory drive (AMAD) hydraulic pumps. Both are located under doors 53L&R. Reservoirs are located under doors 55L&R.

(b) External hydraulic power is applied through doors 53L&R. Aircraft uses hydraulic fluid MIL-H-83282.

(3) Brake System. Parking brakes are controlled by the emergency/park brake handle, located on the L/H vertical console. Make sure

AUG 10 1999

emergency brake accumulator pressure gauge indicates a minimum of 2250 PSI before towing.

(4) Starting Requirements

(a) Electrical power is provided by the on-board batteries. External power can also be applied.

(b) Air can be used from any standard unit which provides 5:1 or 3.6:1 air pressure. The external air connector on the aircraft is located in R/H wheel well.

(c) Crossbleed start can be done by advancing the operating engine to 80 percent and select to start the opposite engine. Caution must be given to High Velocity Jet Blast and FOD injection potential.

(5) Peculiarities. Minimum structural access door requirements. Various external access doors give strength and rigidity to the aircraft structure. Some of the doors must be installed during ground handling operations, because of loads on the airframe.

(6) Handling Idiosyncrasies

(a) When external fuel stores are installed, the SD-1/SD-2 spotting dolly's rotation is restricted.

(b) When external fuel stores are removed, the SD-1 and SD-2 is allowed the normal 360-degree rotation.

(c) In the event that emergency forward towing is required, i.e., locked brakes, etc., the towbar must be supplemented with chains or cables attached from the tractor to tiedown rings on the main landing gear to avoid exceeding design limitations of the nose wheel strut.

(d) Rearward towing can be accomplished, utilizing the NT-4 towbar. Make sure the tow pins are in the normal tow position, spread the towbar tubes apart and attach to the tiedown fittings on the rear of the main landing gear. Use caution when towing rearward with the aircraft in a tail heavy condition (gun and/or radar removed and low fuel state) as sudden stops may cause aircraft to rock backward.

(e) FA-18's with wing station drop tanks provide a hazardous situation for chockwalkers. Chockwalkers should be positioned outboard of the drop tanks during A/C movement.

(f) While hot re-fueling, extreme caution should be exercised to avoid the STBD intake.

(g) Due to the downward exhaust route and APU location extreme caution must be utilized at all times.

g. E-2/C-2 Aircraft

(1) General

(a) Extreme caution must be used while working in the area near E-2/C-2 props due to the small amount of thrust from the props while in ground idle.

(b) There is not enough room between prop and fuselage for personnel to pass.

AUG 10 1999

(c) Brake system. The brakes must be pumped up prior to moving the E-2/C-2 aircraft. When pumped to the "full" position, 12 applications are available through the rudder pedals and three through the emergency brake handle. The system is recharged by a handle in the cockpit.

(d) Launch E-2 aircraft must be spotted near two 115-Volt, Three-Phase 400 cycle electrical power outlets and must also be accessible to a SINS outlet.

(e) Due to the large sail area with the wings folded, the E-2/C-2 may slide sideways when taxied 90 degrees to a wind of 30 knots or more. Caution must, therefore, be used when pulling E-2's from spot or when taxiing them crosswind upon clearing the arresting gear. E-2/ C-2 A/C shall not be towed with props turning. Commanding Officers approval is required for E-2/C-2 movements with winds in excess of 40 knots.

(f) E-2/C-2 aircraft shall not be parked behind operating jet/turboprop aircraft as exhaust ingestion will cause the turbo-prop engine to flame out. This restriction also applies to launching and landing; no jet/turboprop aircraft exhaust can be positioned in such a way that the E-2/C-2 can ingest it.

(g) When towing or backing the C-2, ensure the rear of the tail ramp is in the up position.

(h) The E-2/C-2 may be backed into a final spot under its own power. Limited "backing" is permitted on clear decks also. Emergency stops must be avoided when backing since propeller thrust must be used to stop aircraft; use of brakes will cause aircraft to swerve or rock back on its tail. The same can occur when backing E-2's by tractor. Due caution shall be observed.

(i) A maximum power steering range of 63 degrees either side of center is available.

(j) In case of a flat tire in the landing area, it is desirable that the E-2/C-2 be towed clear vice taxied. Flat nose or main gear tires restrict maneuverability.

(k) E-2/C-2 A/C may not be fueled with STBD engine turning.

(l) When starting the C-2 with a ground turbine cart, ensure the cart, personnel and support equipment are positioned clear of both prop arcs. Either the port or starboard engine may be started with ground turbine cart attached to either engine Nacelle.

(m) C-2 aircraft should be spotted for ease of loading/unloading in case of need for emergency egress.

(n) With crew and/or passengers on board the A/C, the C-2 shall not be spotted on the flight deck with the tail over the side.

(o) When securing E-2/C-2 aircraft install four TD-1A/B chain to the mainmounts, secure both engines, then install two nose TD-1A chains or appropriate chain to achieve required tiedown condition.

(2) Maintenance/Serviceing. High power turn-up requires 18 point tiedown and a high power hold back chain.

i. S-3 Aircraft

AUG 10 1999

(1) General

(a) Aircraft is equipped with a parking brake. Brake accumulator gauge must be in green area to ensure eight brake applications (gauge is in cockpit). Below pilots MPD to left of parking brake handle, 22 brake applications are available if both the brake/APU accumulators are fully charged.

(b) Nose wheel steering limits are 70 degrees either side of center; however, the system allows a free swivel range of 110 degrees either side of center. If the 110 degrees is exceeded, the shear pin inside the steering actuator breaks and will require several hours to repair.

(c) The windscreen is coated and it is difficult for the director to see the brake rider, especially in bright sunlight.

(d) The plane director must remain in view of the left windscreen to give signals. Brake rider can hear whistle signal for stop if it is loud. Main entrance hatch shall be cracked opened and the handle stowed for all moves.

(e) The APU is referred to as the number three engine. The noise level is hazardous within five feet of the exhaust port when the unit is operating. The APU must be started prior to shutting down as this allows the pilot to monitor engine instruments when the final engine is shut down.

(f) The aircraft is self starting; however, if the APU is down the aircraft can be started with a "huffer." The S-3 has a cross bleed capability for starting the second engine.

(2) Maintenance/Serviceing

(a) It is recommended that the vertical stabilizer be folded prior to securing the port engine. This will permit movement of the aircraft to the hangar deck if needed. Unfortunately, this practice also presents problems for squadron corrosion control programs and definitive guidelines must be agreed upon.

(b) Skid pads are required for the main landing gear when setting the aircraft on deck after hoisting.

(c) A torque wrench is required when attaching the aircraft hoisting sling. Torque to 150 to 190 ft. pounds.

j. SH-3 Helo Aircraft

(1) General

(a) Wheel brakes are located at the right seat controls only. They may be locked by depressing the toe pedals and setting the handle.

(b) When locking/unlocking the tail wheel locking pin, the towbar attached should not be moved more than two feet to either side of centerline as any more than that will snap the locking pin.

(c) Care should be exercised while handling the tail wheel and its related components. A weak design point, it is not stressed for excessive sideward or downward pressures and cannot withstand repeated abrupt stops/rapid starts. The low operating pressure of the tail wheel tire is such.

AUG 10 1999

that the seal at the rim could break in a turn and the tire would deflate and subsequently roll off the rim.

(d) With tail pylon folded, flight deck winds could cause tail rotor system to rotate rapidly if lockpin should disengage. Flight deck personnel shall not attempt to stop rotation but shall remain clear of tail rotor and contact squadron line personnel immediately.

(e) When spotting/landing an H-3, it should be positioned far enough from the deck edge to allow blade walkers to remain outboard of the blades during the folding or spreading cycle.

(2) Maintenance/Servicing. Passengers shall not be permitted to embark/disembark aircraft during hot refueling.

k. H-46 Helo Aircraft

(1) General

(a) The brake system is an independent hydraulic system much like an automobile. There is no means of "pumping the system up" other than mechanically bleeding the system. There is no limit to the number of times the system may be used.

(b) Prior to towing, ensure that the nose wheel locking pin is fully withdrawn. The pin can be visually checked clear on the strut.

(c) While the nose strut is stressed for normal towing, rough treatment, including abrupt starts and stops, rapidly destroys the seal and results in nose strut change.

(d) For engagement/disengagement or while the rotors are turning, the high points tiedowns (on the stubwing) shall not be used. Use of these fittings can result in destruction of the aircraft. Also, the nose gear tiedown, if utilized, shall be slack.

(2) Maintenance/Servicing. A qualified squadron crewman shall assist in refueling to ensure that the high level shutoffs are checked properly.

1. RH-53 Helo Aircraft

(1) General

(a) Each main landing gear is equipped with a hydraulic assist power brake system. Aircraft is also equipped with a parking brake.

(b) APU should be operating to provide hydraulic power for brakes. Ear protection should be worn if APU is operating.

(c) If the aircraft must be moved to respot, ensure all cowling is latched shut and the tail rotor blades are secured. Aircraft cowling is made of fiberglass and may rip off if exposed to high or gusty winds or jet blast.

(d) After landing, chock and chain runners should remain clear until aircrew have inserted pins in main landing gear and/or fuel drop tanks.

(2) Maintenance/Servicing. If it is necessary to engage the rotors while the helicopter is tied down, it is mandatory that the tiedown chains be loose.

AUG 10 1999

411. DECK MULTIPLE AND DENSITY

(1) General. NAEC-ENG-7604 contains data for aircraft carrier multiple and density computations. Maximum density figures from Table (3) of the publication are used as the base line and may only be modified by the TYCOM. The FA-18 aircraft is normally used as the "unity" aircraft with an equivalent value of one (1).

(2) Calculation of CV/CVW Multiple - CV/CVW multiple is the sum total of the following:

(a) CV - Non-aircraft equipage (boats/Ground Support Equipment (GSE)/engines/Hazmat and Hazwaste facilities/trash and waste stowage/ect.) multiple shall be calculated based on current allowance list/quantities on board. Values shall be obtained from Table 8, NAEC 7604; if not listed therein, an estimate based upon the square footage area shall be used. Boat values to be utilized shall be that of the largest boat mounted on a skid (i.e., 50 footer on skid with 40 footer atop); skids must be modified to carry the barge and gig atop utility boats. Reasonable types/quantities of equipage must be considered so as not to interfere with routine aircraft movement. For planning purposes the GSE figure is 10 units, and the supply mountain is 2.5 units; more than that requires written justification. Ships shall not obtain "special" equipment which will use deck space without TYCOM approval.

(b) CVW - Total number of unity aircraft equivalents for all aircraft aboard (F-14's use the 75 degree value) plus any wing spread equivalents. A wingspread equivalent is the difference in the wingspread value found in table (7) and the wing folded value found in table (5). TYCOM will define the number of wingspreads allowed depending on number and type of aircraft comprising the airwing.

(3) Density. Density refers to the total number of CV/CVW equivalents onboard compared with the maximum density figure (table (3)), and is expressed as a percentage of maximum density. The density for CV/CVN's shall not exceed the 80% value. When requirements exist to exceed the 80% density value, prior coordination between Fleet Commanders and TYCOM's is required.

(4) Action

(a) At the direction of the TYCOM, milestone schedules will be promulgated to the CV/CVN, Air Wing, and embarked Battle Group Commander for submission, review, and validation of Air Wing composition and deployed deck loading (density).

(b) Ship alterations and modifications which alter deck space available and are not reflected in NAEC-7604 must be submitted by the ship to NAEC with a copy to the TYCOM.

AUG 10 1999

(1) Computation of gross weight. The gross weight of an aircraft scheduled for a catapult launch is computed by adding to the basic operating weight of the aircraft, the weight of the fuel, and ordnance load.

(2) Basic weight. The basic weight of the aircraft includes the weight of the airframe plus the weight of the crew, oil, racks, pylons, and other items, such that when the weight of the fuel load and the weight of the ordnance are added, the sum will be the aircraft gross weight. Squadrons shall provide and keep on file with the Catapult Officer current information of the basic weights of assigned aircraft.

(3) Fuel states shall be obtained from the aviation fuels status board in flight deck control. The entries on this board shall be kept current and accurate. It is the responsibility of the Aviation Fuels Officer to ensure the correctness of these entries.

(4) Ordnance loading shall be obtained from the ordnance status board in flight deck control. This board shall be kept current and accurate. It is the responsibility of the G Division Officer to ensure its accuracy.

c. Procedures for providing gross weight to the Launching Officer shall be per CV NATOPS, with specific emphasis placed on the following:

(1) Gross weight cards shall be turned into flight deck control by a designated squadron representative 45 minutes prior to scheduled launch with correct fuel and ordnance load information. This card shall give the basic weight, weight of fuel and ordnance, and the gross weight of aircraft for that particular launch.

(2) The pilot shall be the final authority as to the gross weight of the aircraft. He shall obtain his fuel and ordnance loading from the plane captain and ordnance crews, as appropriate, and add this to the basic weight of his aircraft to obtain the launching gross weight.

(3) The Launching Officer shall independently obtain the gross weight of each aircraft to be launched by proceeding to flight deck control before each launch to check the gross weight cards turned in to flight deck control. Any late gross weight changes should be relayed to the Launching Officer by the Air Officer.

(4) During CARQUAL operations, the pilot shall transmit aircraft side number, fuel weight, and gross weight during a two-way radio check. This report is required prior to initial launch, after hot refueling, or when pilot switch occurs. The Air Officer shall ensure that aircraft side number and gross weight are passed to and confirmed by the Launching Officer.

WARNING

During CARQUAL operations, a close monitoring of aircraft gross weight is mandatory by the Air Officer, Launching Officer, pilots, and squadron representatives.

d. Final Gross Weight Check

(1) Before the aircraft is taxied onto the catapult, the catapult weight confirmation operator will display his weight board to the pilot. During daytime, a thumbs up from the pilot indicates the weight displayed is correct. If the pilot disagrees, he will use a palm up vertical signal to direct the weight confirmation operator to raise the weight displayed, and a palm down horizontal motion to lower the weight. At night, a circular motion of the pilots red flashlight to indicate correct weight, vertical motion means

AUG 10 1999

CHAPTER 5

LAUNCHING PROCEDURES

501. CATAPULT PROCEDURES. For individual ship's equipment: Catapults, bridle arrester, nose gear launch, and jet blast deflector. Contact parent TYCOM, COMNAVAIRPAC (Code 435)/COMNAVAIRLANT (Code N433).

502. CATAPULT LAUNCHING PROCEDURES

NOTE

Launch and recovery sections outlined within this manual are general in nature, for detailed instructions, procedures, emergency action for conventional/ICCS operations refer to procedures outlined in CV NATOPS and COMNAVAIRLANT/COMNAVAIRPAC ALRE operations manual, COMNAVAIRLANT 13800.3/COMNAVAIRPAC 13800.9.

a. Preparation for Launching. The Launching Officer shall:

(1) Ensure that all stations are manned and that the daily PMS has been completed per prescribed maintenance requirement cards.

(2) Slot button accountability is paramount. The Catapult Officer/Safety Observer and Topside Petty Officer shall insure removal of slot buttons on catapult three prior to moving the shuttle. Accountability shall be shown in the shot log by logging the number of buttons removed. Console/CCP operator shall verify that the number logged and the number used are the same.

(3) Walk the length of the catapult track to ensure that it is free of loose gear and clear of all obstacles such as guard rails, whip antennas, and all catapult slot buttons removed.

(4) Ensure the bridle arrester is properly rigged. (If applicable).

(5) Inspect bridles, pendants, holdbacks, tension bars/rings, and release elements for proper rigging and safe operating condition. (If applicable).

(6) Obtain aircraft gross weights per section b. below.

(7) Set proper Command Selector Valve (CSV) setting for prevailing conditions per the applicable launching bulletins.

(8) Clear the area of all unnecessary personnel and ensure that personnel remaining know their duties and perform them safely and efficiently.

(9) Thoroughly brief the catapult crew as to the nature of the operation, launch times, unusual conditions, and any other information deemed necessary prior to the launch.

(10) At least two no-load test launches shall be fired two hours prior to the first scheduled launching of each day's operation. No-loads shall not be fired between any of the landing gear of any single aircraft, under drop tanks or ordnance. Extreme care shall be taken if no-loads are fired in the vicinity of any aircraft (including helicopters on the waist). The catapult track and surrounding area shall be reconfirmed clear of obstructions and non-catapult crew personnel prior to each no-load.

AUG 10 1999

WARNING

When aircraft are in close proximity to the catapult track during the shooting of no-loads the catapult crew and launching officer must assume that unbriefed personnel may seek access to those aircraft and possibly be moving equipment, power cords, tie down chains, etc. on or near the aircraft. The following additional safety precautions shall be taken:

- a. In addition to the safety line on deck, additional personnel shall be posted at each access to the flight deck from the catwalk adjacent to the catapult.
- b. Shuttle spreader must be removed prior to the firing of no-loads inport or at anchorage.
- c. Immediately prior to the firing of each no load the catapult officer shall sight down the catapult track and ensure the track is clear of all obstructions.

(11) Prior to each launch the launching officer shall verify the anemometer reading with Pri-fly.

WARNING

When a catapult malfunction is discovered, the console/central charging panel operator, catapult captain, and the catapult officer shall be notified and the catapult placed in a non-operational status. The following steps shall be followed:

- (a) The catapult is immediately "downed" by the catapult officer or ALRE Maintenance Officer.
- (b) The suspend switch is activated.
- (c) Aircraft are held short or taxied clear of the shuttle.
- (d) The shuttle is sent forward.
- (e) Appropriate troubleshooting and corrective action is performed.
- (f) Corrective action MAF is completed.
- (g) A verbal report is given to the catapult officer/Air Boss by the ALRE Maintenance Officer/Maintenance Chief that corrective maintenance has been performed.
- (h) Two no-load test launches shall be fired after any repairs on the catapult control systems have been completed.
- (i) The catapult officer resumes operations as appropriate.

NOTE

The ALRE Maintenance Officer shall be notified of any and all malfunctions as soon as possible. Once a catapult is downed, the only individual who can certify the catapult is up and ready to launch aircraft is the ALRE Maintenance Officer or ALRE Maintenance Chief.

- b. Aircraft Gross Weight Computation Procedures

AUG 10 1999

"raise", horizontal motion means "lower." The weight board will be changed in 500 or 1000-pound increments per applicable launch bulletins.

(2) Variations may be expected between the pilot's computed gross weight and the actual gross weight when ready for launch due to fuel consumed in starting, warm-up, and taxiing. When more than two correction steps are required on the weight board, or any difficulty is experienced in confirming the gross weight, the aircraft will not be launched. Either the pilot or the Launching Officer will contact primary flight control. The difference will be resolved by radio (EMCON permitting) with the pilot and when resolved the agreed weight will be confirmed by the Launching Officer who then will make the necessary correction to the CSV setting. In no case will the aircraft be launched unless there is agreement between the pilot and the Launching Officer on the gross weight.

e. Catapult CSV Setting Procedures

(1) Prior to each launching cycle, the Launching Officer will compute the CSV setting required for each aircraft, using aircraft gross weights, ambient air temperature, and the applicable aircraft launching bulletins. The minimum wind over the deck is calculated in the same way. The minimum wind over the deck launch required will be reported to primary flight control approximately 30 minutes prior to launch. Launch requirement and minimum wind over the deck are computed to give the aircraft 10-15 knots excess above minimum flying speed. The commanding officer's approval shall be required to conduct a launch with excess end speeds less than 10 knots. The Air Officer will advise the bridge of wind requirements.

(2) During launch operations, the catapult console/central charging panel operator will monitor the steam pressure/CSV setting for each aircraft against standard launching data obtained from the launching bulletins. At any time the console/central charging panel operator is in doubt as to steam pressure/CSV used, he will suspend operations until the question is resolved with the Launching Officer.

(3) Just prior to each launch, the Launching Officer will determine the final CSV setting and set it on his command CSV. The console/central charging panel operator will repeat the order on his sound powered phone to signify understanding. The Launching Officer will verify the CSV setting at the Catapult Officer's control station.

f. Preparation for Launching. The pilot shall:

- (1) Be acquainted with all standard signals and obey them promptly.
- (2) Secure or remove all loose gear in aircraft and apply launch power as directed.
- (3) Set trim tabs and flaps as specified by launching bulletin, pilots handbook.
- (4) Adjust headrest and seat, and secure against movement during the launch.
- (5) For night launches, keep a red-lensed flashlight available for use in the cockpit.
- (6) For jets only, advance throttle to military power on "tension" signal from plane director. Pilots of propeller aircraft shall advance throttle only upon signal from Launching Officer.

AUG 10 1999

(7) Signal "ready for launch" by an exaggerated military hand salute during daylight and by turning navigation lights on Bright and steady at night.

WARNING

Once the aircraft is tensioned on the catapult and turned up to take-off power, the pilot shall not adjust his visor nor make any other movement which might be mistaken for a salute.

g. Spotting Plane on Catapult

(1) It is imperative that the taxi signals be thoroughly understood and promptly obeyed in order to position the plane on the catapult. Standard taxi signals shown in Aircraft Signal NATOPS NAVAIR 00-80T-113.

(2) The Launching Officer shall ensure that deck accessories are used as specified in the applicable launching bulletin and that aircraft are spotted within allowable tolerances. Use deck markings as required to ensure expeditious and accurate spotting.

(3) Jet blast deflectors shall be raised or lowered only after it has been positively determined that there are no obstructions in the raising or lowering arc of the JBD's.

CAUTION

In the event of a suspend or an abort, the JBD operator shall await instructions for possible lowering of panels.

CAUTION

Bow catapults with JBD deckedge boxes installed are required to use one JBD safety per catapult. Catapult three shall have a safety at all times.

WARNING

Upon completion of a catapult launch, the JBD operator shall lower the JBD panels and secure the main hydraulics to the JBD's to prevent JBD's from raising during recoveries and on taxiing aircraft that may pass over JBD's.

WARNING

Under no circumstances shall a Catapult Officer and deck edge operator who are both under training man the same catapult.

(4) If aircraft is taxied hard into the holdback assembly, inspect for damage. A weakened tension bar may permit premature release.

h. The Launch (Daylight)

(1) When the catapult is ready for operations, the launching officer will signal the deck edge operator for "first ready/cat ready". Deck edge operator will then request "first ready" from the console operator.

(2) When the deck edge operator notes the white "first ready light", he will check that the track is clear of personnel and then hold one finger overhead.

AUG 10 1999

(3) The Topside Safety Petty Officer will signal the director to take tension on signal from the Launching Officer, provided that the deck edge operator is signaling "first ready."

(4) The plane director will hold the "tension" signal until all personnel are clear of the aircraft and the Launching Officer is ready to take control.

(5) Before taking control, the Launching Officer will make a final check of steam pressure/CSV setting, ensure the aircraft is spotted within allowable limits, nose wheel castered properly and within bulletin limits, bridle properly seated in catapult hooks, shuttle throat and launch bar (NGL), bridle properly tensioned, flaps down to the desired setting, wing incidence and trim tabs properly set, and wings locked.

(6) Squadron aircraft inspectors are used to determine the aircraft's readiness for launch. If the aircraft to be launched utilizes an afterburner, ascertain that it is in full operation prior to giving a "thumbs up" signal. He is, in addition, checking the aircraft for fuel leaks, open access panels, etc. His thumb signal to the Launching Officer communicates that the aircraft is ready to launch. The squadron aircraft inspector will hold thumbs up until aircraft has been launched. If the checker notices a malfunction or any discrepancy he will signal a suspend of the launch by crossing both arms over his head. The Launching Officer retains sole responsibility for aircraft readiness prior to launch.

(7) During night operations, the squadron inspector will inspect the aircraft and hold up a blue stubby wand until the aircraft is launched. If the aircraft inspector notices a malfunction or any discrepancy, he will wave a blue stubby wand horizontally. (For detailed launching signals refer to aircraft signal NATOPS (00-80T-113) and COMNAVAIRLANT 13800.3/COMNAVAIRPAC 13800.9 instruction.)

(8) Squadron ordnance inspectors are used to arm forward firing guns/weapons and direct ordnance arming team. Catapult spotter directs aircraft to the arming area and passes control to ordnance team leader. Team leader directs arming team using aircraft arming and safing signals and after arming passes control back to catapult spotter. Ordnance team leader will then give the Catapult Officer a thumbs up (day), red wand with two 3/4-inch black bands spaced equal distances on the cone held vertically (night). After the team leader's signal is acknowledged at night he should extinguish his wand. Team leader will signal a suspend of the launch by crossing both arms overhead (day), waving wand horizontally (night).

(9) If the aircraft appears to be ready, the Launching Officer takes control with appropriate signal. The pilot continues full power. After pressing the standby/military power push button, the deck edge operator will hold two fingers overhead.

(10) When the green "standby" light comes on at the console panel and if the catapult is still ready in all respects, the console panel operator will put the catapult in the final ready position.

(11) As the red "final ready" light comes on at the deck edge panel, the deck edge operator extends both hands high overhead. Absolute silence will be maintained on catapult sound powered phone circuit until aircraft is launched.

(12) For ICCS equipped ships, after the Catapult Officer salutes the pilot, the Deckedge Operator shall depress the final ready push button after

AUG 10 1999

observing the final ready light. The Deckedge Operator shall give the final ready signal.

NOTE

"Taking Tension" will be the last verbal communication on the sound powered phones. Any break in silence after "Taking Tension" shall result in suspension of the catapult.

(13) The pilot signals "ready-for-launch" by hand salute.

NOTE

Pilots must ascertain that the Launching Officer acknowledges his salute; the Launching Officer will allow pilot sufficient time for the pilot to position his head after the salute. If for any reason the pilot desires to abort the launch, he shall so indicate by transmitting "suspend, suspend" with catapult number and shaking his head negatively.

(14) After checking for a green beacon from Pri-Fly, the Launch Officer will make a final scan of the aircraft, check deck edge for final ready, squadron aircraft inspector, ordnance team leader and Top Side Safety Petty Officer for any discrepancies, scan the deck forward and aft to see that all is clear, and give the launch signal. Extend arm overhead. Ensure the pilot and crew are properly positioned for launch and deck is clear forward. Sweep up-raised hand downward in the direction of launch, touching the deck and returning hand to the horizontal in the direction of launch.

WARNING

The Launching Officer shall remain in the crouched position with his hand held horizontally in the direction of launch until the aircraft has passed his position or a suspend/hangfire situation is indicated.

(15) On receiving the launch signal from the Launching Officer, the deck edge operator shall check aircraft and catwalk (fore and aft) noting the safety's (bow/angle) signal, green light/thumb up (day) or green wand/light (night), then lower his hand and depress the fire push-button.

NOTE

The deck edge operator shall use the same hand for signals to the Launching Officer as he uses to push actuator buttons on the control panel. Both of his hands shall be in full view of the Launching Officer except when pushing the buttons on signal.

(16) When the deck is pitching, the Launching Officer will give the launch signal when the bow is down to ensure launch in bow up condition and prevent bow down launches.

(17) The catapult may be suspended at any time before the fire button is depressed. The signal may be given by anyone on deck.

(18) Upon receiving the "suspend" signal from the Launching Officer, the deck edge operator will immediately throw the suspend switch and hold arms crossed overhead. On signal from the Catapult Officer the deck edge operator will depress the "shuttle aft" push button to release tension on the bridle/launch bar.

(19) If a light comes on indicating a "suspend" from any station, the deck edge operator will actuate the suspend switch. He will signal the

AUG 10 1999

Launching Officer of the "suspend" condition by holding his arms crossed overhead. He will shuttle aft on signal from the Catapult Officer.

NOTE

If suspend originates from the waterbrakes on C-13 catapults, the deck edge operator shall place deck edge in a suspend position and have the water-brakes remove their suspend. With waterbrakes suspend on, deck edge/retract engine cannot be maneuvered aft.

(20) The "shuttle aft" movement will release tension from the bridle and allow it to drop free of the aircraft; or on nose tow aircraft, will allow the launch bar to raise. On nose tow aircraft, the shuttle will be maneuvered forward of the launch bar after the launch bar has been raised. At this time the Launching Officer shall step in front of the aircraft in full view of the pilot and signal him to throttle back. The Launching Officer shall not signal the pilot to throttle back until he has positively determined that the bridle is off the aircraft or the shuttle is forward of the launch bar, except for the following emergency condition: if the bridle cannot be removed or the launch bar cannot be raised without sending personnel under the turned up aircraft (A-6, EA-6, E-2/C-2 type aircraft), the Launching Officer shall positively determine that the catapult is in a safe condition (suspend switch thrown), then throttle the aircraft back to permit safe removal of the aircraft. (Refer to detailed instructions in ALRE Manual.)

(21) When the catapult is suspended, the console/central charging panel operator shall maintain the safe condition until the Launching Officer has been assured that the condition which required the "suspend" has been corrected.

(22) The Launching Officer will not continue the launch sequence until he is assured that conditions which required the "suspend" have been corrected.

(23) When launching aircraft ICCS mode use COMNAVAIRLANT 13800.3/COMNAVAIRPAC 13800.9 for detailed launching instructions.

i. Hangfire General

(1) If the catapult does not fire within 10 seconds after pushing the fire button, a hangfire condition exists. The Launching Officer shall first give the suspend signal. The deck edge operator will then throw his suspend switch and return the suspend signal. Upon receiving the suspend signal from deck edge, the Launching Officer shall signal hangfire by pointing the index finger of one hand at the upraised palm of the other hand. The deck edge operator shall then tell the console/central charging panel operator over the sound-powered phones to "rotate the emergency cutout valve, rotate the emergency cutout valve," once the valve has been reported rotated and the grab reported "manuever aft" for 15 seconds, the deck edge operator will then return the hangfire signal to the catapult officer.

(2) The console/central charging panel operator, catapult officer, deckedge operator/ICCS monitor operator, etc., shall carry out the hangfire procedure as detailed in the Handbook of Operating Instructions for Catapults, COMNAVAIRLANT 13800.3/COMNAVAIRPAC ALRE Operations Manual 13800.9 Series.

(3) The Launching Officer will not continue the launch sequence until the reason for the hangfire has been determined and corrected, and two no load shots shall be fired prior to resuming normal launching operations.

j. The Launch (Night)

AUG 10 1999

(1) The launch procedure at night is essentially the same as that during daylight except for necessary change to night signals.

(2) For night launching, the Launching Officer shall be equipped with a red and a green wand. The deck edge operator shall have a red standard wand and all pilots will carry a red lensed light in the cockpit. NO PERSON IN THE LAUNCHING AREA SHALL HAVE A GREEN FLASHLIGHT OR WAND EXCEPT THE LAUNCHING OFFICER.

(3) The director will give the "tension" signal and will pass control to the Launching Officer after tension is taken utilizing standard wand signals.

(4) The Launching Officer shall take control of the aircraft by holding his red and green wands vertically in front of his chest.

(5) He continues the turn-up of the aircraft by rotating a green wand in front of his chest in a horizontal circle and placing the red wand behind his back in view of the deck edge operator of the opposite catapult.

(6) When he sees the green wand, the deck edge operator will push "standby/military power" and receive a green "standby/military power" light. The console operator will put the catapult in "final ready position" if the catapult is ready in all respects.

(7) Catapult readiness condition is indicated by lights on the deck edge auxiliary panel.

(8) The pilot signals "ready-for-launch" by turning on his navigation lights bright and steady. Dim lights are not desired since they provide less visibility off the catapult. Anti collision lights are optional.

(9) For ships equipped with ICCS, the Catapult Officer shall extend a green wand over head. The Deck Edge Operator shall depress the final ready push button and give final ready signal.

(10) If for any reason the pilot desires to abort the launch, he shall so indicate by transmitting "suspend, suspend" with catapult number and by not turning on the aircraft lights.

(11) When the pilot has signaled "ready for launch" the Launching Officer will raise a green wand vertically overhead and wait two or three seconds, then sweep wand in wide arc downward in the direction of launch, touching the deck and returning wand to the horizontal position, pointing in direction of the launch while remaining kneeled until the aircraft has passed.

(12) A "suspend" signal is given by the Launching Officer by extinguishing his green wand and holding the red wand vertically overhead.

(13) A "suspend" from the deck edge, console, or other stations will be signified by the blanking out of the lights on the auxiliary panel and deck edge will hold red wand vertically overhead.

(14) The Launching Officer will signal "hangfire" by holding the red wand horizontally overhead.

(15) The deck edge operator will acknowledge "hangfire" by following day procedures and, at night, holding red wand vertically overhead, until the emergency cut-out valve has been rotated and the grab maneuvered aft for 15 seconds. He shall then signal by holding red wand horizontally overhead.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

(16) The Launching Officer's signal for pilot to throttle back is made by holding his red wand horizontally and moving it up and down in full view of the pilot.

k. Post Launch. Post launch catapult crew debriefs conducted by the Catapult Officer should be held with enough frequency to enhance safety and general information exchange. Corrective action can be immediately taken for noted discrepancies and commendatory comments passed. Recommended items for discussion may include topside procedure, aircraft weights, pilot signals, sound-power procedures and general discussion of the launch.

AUG 10 1999

CHAPTER 6

RECOVERY PROCEDURES

601. GENERAL RECOVERY PROCEDURES. The authority to arrest aircraft within certain weight limitations and engaging velocities for specific type and model of aircraft is contained in aircraft recovery bulletins promulgated by the Naval Air Systems Command and in aircraft NATOPS flight manuals. Arrestments are governed by the aircraft recovery bulletins for MK-7 MOD-2, and MK-7 MOD-3. Deviation from these bulletins is prohibited.

602. DECK SIGNALS

a. The following visual signals are used to indicate open/closed deck or clear/foul deck, as appropriate. A portion of the deck may be open for operations but temporarily "foul" for a variety of reasons:

<u>Signal</u>	<u>Given By</u>	<u>Meaning</u>
Red Rotary Beacon	Primary Fly	Closed Deck (Day & Night)
Green Rotary Beacon	Primary Fly	Open Deck (Day & Night)
Red Deck Status Light	Recovery Officer	Foul Deck (Day & Night)
Green Deck Status Light	Recovery Officer	Clear Deck (Day & Night)
Arms Waved in 180 Degree arc	Gear Puller	Clear Deck (Day)
Amber Wand Waved in 180 Degree arc	Gear Puller	Clear Deck (Night)
Crossed Amber Wands Held Overhead	Gear Puller	Foul Deck (Night)
Crossed Arms Overhead Fists Clenched	Gear Puller	Foul Deck (Day)
Blue Rotary Beacon	Primary Fly	Hero (Day & Night)

b. In case of electrical failure, deck status light malfunction, or pickle switch inoperative:

(1) Day Signals. The Recovery Officer will signal clear deck with a green flag/paddle or foul deck with a red flag/paddle to LSO spotter. The LSO spotter will have red and green flags as well. When the LSO spotter receives clear or foul deck signal from the Recovery Officer, he will relay the deck status to LSO by both verbal and visual means.

(2) Night Signals. The Recovery Officer and LSO spotter will have red and green standard wands. The Recovery Officer will display vertical green wand for clear deck or vertical red wand for foul deck to LSO spotter. The LSO spotter will receive clear or foul deck signal from the Recovery Officer and will relay the deck status to the LSO by both verbal and visual means.

WARNING

The deck will be foul following each recovery or bolter until the arresting gear/lens have been reset (rechecked) and a clear deck signal has been given by the Recovery Officer.

WARNING

Foul deck waveoff responsibility rests equally the controlling and backup LSOs. Additionally, when in the opinion of the air officer, the deck will remain foul throughout an aircrafts approach (i.e., arresting gear malfunctions, personnel or equipment in the landing area, ect.), he should advise the LSO via the 5MC, "No chance, foul/closed deck." The LSO

AUG 10 1999

shall immediately initiate the waveoff using the FLOLS/MOVLAS waveoff lights and a UHF radio transmission(EMCON permitting).

603. FOUL DECK PROCEDURES

a. A foul deck signal indicates a known or suspected malfunction of recovery equipment, landing aids discrepancy or an unsafe condition in the landing area. During CARQUALS or exclusive refresher landing operations, there shall be no turning A/C for extended periods immediately forward of the LSO platform on the port side of the ship. This would include maintenance turns and routine man ups, but not limit routine taxi and shut down procedures.

b. When a foul deck is called for any reason, an immediate report will be transmitted to Pri Fly stating "foul deck" followed by the reason. The Recovery Officer will actuate the red deck status light located at the LSO platform. The Air Officer will transmit "foul deck" over the 5MC and flight deck communications system. The Pri-Fly arresting gear controller will transmit "foul deck" over the sound-powered phone circuit to the arresting gear deck edge operator, engine operator, and (LSO) platform spotter/talker. The deck edge operator will transmit "foul deck" to the Recovery Officer, who will acknowledge by ensuring the red deck status light located at the LSO platform is activated. The station or person initiating the foul deck reports to Pri-Fly when conditions again permit recovery operations. Pri-Fly is the only authority who may initiate "ready deck" for recovery.

WARNING

During recovery operations, if it becomes necessary for the arresting gear crew to enter the landing area, a safety man shall be stationed forward of the crew looking aft and displaying the proper foul deck signal to ensure personnel safety from approaching aircraft.

604. RECOVERY PROCEDURES

a. The Air Officer recovery checklist which follows lists minimum requirements prior to the recovery of any aircraft, but does not preclude the addition of other checklist items based on individual ship's equipment configuration and/or SOP's.

(1) Determine "case" recovery and time (confirm first ramp time with CATCC and bridge).

(2) Obtain expected Base Recovery Course (BRC), altimeter setting, and weather.

(3) Radio checks with LSO on recovery channels (EMCON permitting).

(4) Fifteen-minute notice (5MC) "Man all recovery stations."

(5) Red rotating beacon "on" aft.

(6) AN/SPN 42 (ACLS) "Deck Closed" light on.

(7) Aircraft recovery status: Type, fuel, hung or unexpended ordnance, and other pertinent information on status board for accuracy.

(8) Pri-Fly arresting gear controller reports all recovery stations manned:

(a) Arresting Gear

AUG 10 1999

(b) ILARTS/Lens

(9) Recovery Officer (AGO) reports deck is "manned and ready:"

(a) Recovery area clear of personnel, loose gear, aircraft and mobile equipment.

(b) Deck hatches, deck edge antennas, JBD's and waist catapult ICCS lowered (if applicable).

(c) Catapult shuttles positioned, a minimum of 12 slot buttons and shuttle covers installed. CV-67 requires a minimum of 18 catapult slot buttons.

(d) Retractable sheaves raised and CDP's in battery.

(e) Deck status light ready and operational.

(f) Tractor available at the barricade hatch.

(10) LSO reports "manned and ready."

(11) Clearance from Bridge to land aircraft.

(12) Lens and deck lighting "on" for recovery (notify LSO "paddles/tower, lens on, you have control").

(13) Check wind (crosswind/headwind) for each type aircraft.

(14) Green rotating beacon "on" aft.

(15) AN/SPN 42 (ACLS) "Deck Closed" light off.

(16) 5MC announcement "Stand clear of the port catwalk and the foul line, while recovering aircraft."

NOTE

To receive a clear deck light on the LSO platform, the green rotary beacon from Primary and the Recovery Officer pickle switch (dead man switch) must be actuated and retractable sheaves raised or in bypass mode to complete the circuit.

b. The type of aircraft to be arrested is identified visually, and by radio transmission from the aircraft. Upon identification of the aircraft, the Pri-Fly arresting gear controller will transmit over the SPP circuit the desired control valve weight setting and type of aircraft. The Pri-Fly controller will confirm the setting by checking the synchro repeaters/dixson meter. When all engines are set, the Pri-Fly arresting gear controller will report to the Air Officer the number of engines set. The Air Officer shall verbally acknowledge weight setting calls. The challenge and reply procedures shall be used for each aircraft to land. The arresting gear controller also will push the appropriate aircraft button on the arresting gear and FLOLS cross check system. Simultaneously, the Pri-Fly lens controller will set the required lens roll angle and the hook eye value. The lens controller also will push the appropriate aircraft button on the arresting gear and FLOLS cross check system. Actuation of both buttons will light the appropriate aircraft light on the Air Officer's aircraft indicator panel.

AUG 10 1999

(1) On ships where Recovery Officer control station synchro repeaters/dixson meters are located near deck edge control station, within audio range of deck edge operator, the deck edge operator receives the gear set report and relays it to the Recovery Officer, all engines set stating the control valve setting and type of aircraft. The Recovery Officer checks his synchro repeaters/dixson meter for correct weight setting and repeats the setting and type aircraft verbatim to the deck edge operator.

c. The Recovery Officer then checks for a clear deck signal from the gear puller, a green beacon from Primary and makes a visual check of the type of aircraft to be arrested, as well as ensuring no person, aircraft, tractor or other equipment is on the landing area side of the foul deck line. He will then change status lights on the LSO platform from red to green. The arresting gear talker or deck edge operator reports on the SPP circuit the type of aircraft in the groove, and at the ramp. Upon arrestment, bolter, or wave-off, the Recovery Officer changes the deck status light to red. Upon arrestment the engine room operator for the engine on which the arrestment occurred will report to the Pri-Fly arresting gear controller the ram travel in inches and when the engine has been retracted and is in the battery position. The cycle again commences for the next aircraft approaching the ship for landing.

d. Night. The night procedures for recovery are basically the same with the following exceptions. In identifying the type of aircraft to land, the Pri-Fly lens controller receives range and identification for the aircraft approaching the ship for landing from Carrier Controlled Approach (CCA) on the SPP. Identification for the aircraft is determined by radio transmission from the aircraft, as well as identification report over the SPP circuit from CCA. Air Officer/LSO/Recovery Officer shall visually check lights of approaching aircraft for identification. The Pri-Fly lens controller reports to CCA when the aircraft traps, bolters, or waves off. Upon arrestment of the aircraft, the engine room operator reports to the Pri-Fly arresting gear controller the ram travel inches and when the engine has been retracted and is "in battery."

WARNING

The following precautions apply to both day and night operations:

(1) The lens (and at night, the landing area lights) shall never be turned on without the express permission of Air Officer.

(2) Except for the purpose of conducting tests, neither the lens nor the landing area lights will be turned on until the LSO is on the platform and has reported "manned and ready" to Pri-Fly.

(3) The wave-off lights shall be continuously activated any time the lens or landing area lights are turned on and the LSO is not on the platform.

(4) During instrument recoveries, Pri-Fly will keep CATCC advised as to the status of the deck and provide the estimated time the deck will be clear. CATCC will keep Pri-fly advised as to the position of the nearest aircraft.

(5) During night operations when the deck is open, but momentarily foul, the landing deck lights will remain on and foul deck wave-off will be controlled by the LSO.

e. Emergency Recovery by Barricade. If a barricade recovery becomes imminent, the words "stand by to rig barricade" are given by the Air Officer. Crash and Salvage shall position all mobile crash equipment forward and report

AUG 10 1999

to the Air Officer "crash is manned and ready". When the words "rig the barricade" are passed, all hands involved will commence rigging under direction of the Arresting Gear Flight Deck Petty Officer, with the Recovery Officer in overall charge of the evolution. After the barricade has been satisfactorily rigged, and the engine set, the Recovery Officer will report "barricade rigged" to Pri-Fly. Procedures for reporting control valve weight setting for pendant engines and lens setting remain as previously established for recovery operations. Barricade control valve weight setting and deck configuration (crossdeck pendants) to be used for specific model of aircraft and situation is contained in the aircraft recovery bulletin for each aircraft. Lens settings are different for barricade engagement; lower hook to ramp values are designed to ensure aircraft is on deck prior to barricade engagement.

f. Off Center Engagement. The crossdeck pendant shall be replaced after any single arrestment in which the landing exceeds 20 feet off center, regardless of speed, and requires a purchase cable and socket inspection per current PMS.

605. LOST COMMUNICATIONS PROCEDURES

a. If communications are lost over the SPP circuit between Pri-Fly and the arresting gear control station, the pri-fly controller will initiate a foul deck. Emergency communication procedures established by the ship regarding equipment will be used.

b. In the event of the loss of all sound-powered communications, the control valve weight settings will be accomplished by the Pri-Fly arresting gear controller transmitting from Pri-Fly to the Recovery Officer over the FDCS or 5MC.

c. Extreme caution is to be used during degraded communication operations. Upon completion of recovery, communications should be re-established prior to further operations.

606. VISUAL LANDING AIDS (VLA)

a. FLOLS and MOVLAS

(1) The Fresnel Lens Optical Landing System (FLOLS) is the visual landing aid normally used by the pilot to bring his aircraft down a glide slope to the deck within the arresting gear crossdeck pendant pattern with a safe clearance between the tail hook and the stern of the ship. Its primary control station is in primary flight control with secondary control capability from the fresnel lens control room. Remote indicators are located in Pri-Fly control and on the LSO platform.

(2) The duties of the fresnel lens operator during air operations will be as follows:

(a) Monitor 115V/60HZ power, 115V/400HZ power, and 115V/400HZ reference from meters.

(b) Monitor hook to eye and hook to ramp settings, paying special attention that hook to ramp readings are in the desired range.

(c) Ensure that the basic angle is set per ship's operations procedures.

(d) Ensure that roll angle settings are correct for the type of aircraft making the approach.

AUG 10 1999

(e) Monitor system conditional lights at remote control panel for possible failures in the system.

(f) Monitor lights on the power panels to ensure that proper light is "ON" at all times.

(g) Be able to be reached by means of sound-powered phone communication with Pri-Fly.

(h) Monitor gyro alarm and source light failure indicator panel.

(i) Take pole checks as required.

(3) The Manually Operated Visual Landing Aids System (MOVLAS) is used as a back-up should the FLOLS system be inoperative or ineffective due to excessive pitch or roll of the ship, or for LSO/pilot training. It consists of a light box, LSO controller, a power control box and mounting facilities:

(a) Station One (SOLS). Light box installed alone in front of the FLOLS.

(b) Station Two (Port MOVLAS). Entire unit consisting of light box, datum, wave-off, cut lights and mounting brackets located on the deck edge aft of the Fresnel lens.

(c) Station Three (Starboard). Entire unit consisting of light box, datum, wave-off, cut lights and mounting brackets located on the starboard side aft of or abeam the island and outboard of the safe parking line.

(4) The LSO lens controller is mounted on the LSO platform in all cases. Upon orders from the Air Officer to "rig the MOVLAS", designated personnel shall proceed to install all required equipment as rapidly as possible in the place designated by the Air Officer.

b. ILARTS (as applicable)

(1) ILARTS is a completely integrated system of the electronic pictures and sound recording designed to monitor and simultaneously record aircraft launching and landing operations under day and night conditions and to play back the recording for post flight analysis and evaluation.

(2) The system consists of television cameras with associated power supplies, monitoring, control synchronization and distribution equipment, and three video cassette recorders. Two unmanned Intensified Isocon Low Light Level Television Cameras, connected to relay lens assembly, are installed in a modified light well on the flight deck centerline. One camera is used for normal operations while the other provides a back up capability. Crosshairs are electronically added to the televised screen and stabilized in both pitch and roll by the Fresnel Lens Optical Landing System. The horizontal crosshair, boresighted along the glide slope, identifies the on course glide path. The vertical crosshairs are aligned to coincide with the centerline of the angled deck. Thus, an aircraft which is boresighted between the crosshairs can be said to be on glide slope and on centerline.

(3) A data generator electronically superimposes data, time, wind velocity, aircraft speed, and the wave-off signal if given. This information is displayed on the monitor simultaneously with the output of either the centerline or island camera.

AUG 10 1999

(4) A manned intensified Isocon Low Light Level Television Camera located on the island structure picks up the aircraft as the aircraft passes over the centerline camera, zooms in for close-up of the aircraft and then follows the arresting wire back to indicate which pendant was engaged. In the event of an accident or bolter, the island camera continues to record significant information.

(5) The video cassette recorder records on video signal and two audio signals on a VHS video tape. This tape requires no processing and can be played back immediately. An integrated system of picture monitors provides line and replay coverage to all Ready Rooms, the LSO Platform, the Primary Flight Control, Flight Deck Control, Flag Bridge, Captains's Bridge, Air Operations, and PLAT Control Room.

(6) The ILARTS will be manned and pre-operational checks commenced when flight quarters are sounded. The primary objective of the ILARTS is to monitor recovery operations. When they do not interfere with recovery operations, other flight deck evolutions will be recorded as follows:

(a) The island mounted camera shall be manned and used for day and night launches and recoveries.

(b) The designated centerline camera shall be utilized on all day and night recoveries.

(c) All significant flight deck events (fire, salvage, etc.) shall be recorded in entirety.

(7) No tapes shall be cycled through the ILARTS, except those acquired as a result of the intended use of the ILARTS.

(8) All cameras shall be capped electrically or mechanically between launches and recoveries in order to conserve orthicon picture tube.

(9) In the event of an accident, the entire tape shall be forwarded to COMNAVAIRLANT (Code 84) or COMNAVAIRPAC (Code 435), as appropriate, when released by the accident board, by the fastest, traceable means.

(10) When the ILARTS system is inoperative for any reason, the ILARTS operator will notify the ALRE Maintenance Officer and the Air Officer immediately. The maintenance Officer shall contact the Operations Department to provide motion picture coverage of operations.

c. Recent Additions to ILARTS Coverage and Capabilities (As applicable)

(1) Bow and waist catapult surveillance cameras have been added to the ILARTS system. These cameras are equipped with infrared flood lights for night recording and the system is served by a separate Video Tape Recorder (VTR).

(2) The primary purpose of the surveillance cameras is to record the catapult hook-up and launch. The waist camera can also be used to record landings in the event of a dual centerline camera failure.

(3) The International Video Corporation (IVC) VTR has a stop action capability. Any video input from the ILARTS system can be patched to the IVC VTR and viewed in the stop action mode.

AUG 10 1999

WARNING

All flight deck personnel should be cautioned not to look directly into the infrared radiation as this can cause eye damage out to a distance of 10 feet.

(4) Specific operator instructions for the infrared surveillance system are posted at the control console located in the FLOLS shop.

d. Heads up Display

(1) The LSO HUD Console System is designed for use on the LSO Platform. Its purpose is to provide the LSO with a consolidated display of important aircraft and recovery deck status and trend information enabling identification of poor recovery conditions that can be corrected before they lead to marginally safe recovery or wave-off.

(2) The system consists of two subsystems. The display subsystem and the hydraulic lift subsystem. The display subsystem electrically interfaces with various other shipboard systems for input signals to drive the LSO HUD console display. The hydraulic lift system provides a means for raising the console to a viewing height and lowering it into a weather enclosure for stowage. It also provides the means for hydraulically lifting the windscreen and base console form a central control on the LSO platform.

AUG 10 1999

CHAPTER 7

SECURITY OF AIRCRAFT AND EQUIPMENT

701. GENERAL. Conditions of heavy weather or ship maneuvers which may cause deck pitch or roll, high winds, or heavy seas may be encountered at any time. It is, therefore, imperative that adequate security precautions be taken prior to leaving port and at all times while at sea, with due regard to force and direction of wind and the roll and pitch of the ship. Failure to properly secure all aircraft, gear, and equipment may result in damage to aircraft or equipment, or injury to personnel.

702. AIRCRAFT SECURITY

a. Aircraft shall be tied down as directed by the ACHO or his representative. Chain tiedowns shall be used exclusively. Chains must be maintained in good condition securing the turnbuckle and chain together with approved method. Damaged or incomplete chain assemblies shall not be utilized.

b. Tiedowns shall be arranged to provide an even restraint in all directions and against twisting movements. If the required number of tiedown points cannot be established due to the availability of padeyes, then the existing tiedowns may be doubled to give the required total if adequate directional distribution can be maintained. Doubling may be accomplished by utilizing the first hook to oversize chain link of the second tiedown assembly. Use of two tensioning devices is not acceptable.

c. Tiedowns will be installed only on approved padeyes and approved aircraft attachment points. Tiedowns must not chafe against oleos, hydraulic, electrical lines, or against the aircraft skin. They will not be attached to scuppers, coaming, elevators, holdback cleats, catapult or bridle arrester tracks. The proper way to install the tiedown is with the chain running up the release pawl with the bitter end out over the upper portion. If an aircraft cannot be tied down as required, a director must be informed and the aircraft moved to a new location.

d. Caution should be exercised so as not to reach the end of the thread travel when tightening the thread collar. During flight quarters, re-tightening will be done by individual squadron plane captains, backed up by Air Department personnel. After flight quarters, this will be performed by Air Integrity Watch Security Patrols.

e. When extra chains are not installed or are removed from the aircraft in preparation for aircraft movement, they can be stowed in chain bags. They shall not be hung from the aircraft but may be placed on the tractor/spotting dolly. They must not interfere with the performance of any member of the moving crews duties.

CAUTION

Care should be taken not to "split" the aircraft and its tiedown point. Aircraft parked adjacent to elevator platforms shall not be tied down to the platform; likewise, deck edge coamings, catapult hold back cleats, and catapult tracks shall not be utilized as tiedown points.

f. Tiedown requirements are divided into four categories as defined by the following:

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

(1) Initial Tiedown. This condition of aircraft security exists immediately prior to aircraft movement from spot and immediately after aircraft is parked. "Initial tiedown" installation after recovery or respot is the responsibility of the plane handling crew. Prior to launch, intermediate tiedown requirement may be reduced to initial tiedown condition by the plane captain upon direction of a qualified aircraft director. As a minimum, initial tiedowns are required for all refueling operations.

(2) Intermediate Tiedown. This condition of aircraft security shall exist during flight quarters when aircraft may be expected to be moved, is in an anticipated launch spot, or is unattended. Intermediate tiedown installation is the responsibility of the plane captain.

(3) Permanent Tiedown. This condition of aircraft security is required when not at flight quarters or when the aircraft is not expected to be respotted.

(4) Heavy Weather Tiedown. This condition of aircraft security will be achieved by the plane captain when directed. Determination of heavy weather tiedown security rests with the Aircraft handling Officer.

703. TIEDOWN REQUIREMENTS. The following tiedown conditions are provided as a minimum guide for safe handling operations of shipboard aircraft and may be increased as conditions necessitate. Tiedown procedures for specific type aircraft are given in the applicable NATOPS, HMI or MIM.

SECURITY CONDITIONS

<u>AIRCRAFT TYPE</u>	<u>INITIAL</u>	<u>INTERMEDIATE</u>	<u>PERMANENT</u>	<u>HEAVY WEATHER</u>
E-2*, C-2*, F-14*, EA-6, F-18, S-3	6	9	12/14*	18/20*

A-4, A-6, AV-8, H-3, H-46, H-53 H-60	4	6	12	16

704. EQUIPMENT SECURITY

a. Mobile equipment shall be parked fore and aft with a minimum of two tiedowns (one forward/one aft), rear wheel chocked and parking brake set (as applicable). Crash vehicle(s) shall be parked as prescribed by the flight deck bos'n and have a minimum of two tiedowns (one forward/one aft) with rear wheel chocked. Mobile crash cranes shall be parked as prescribed by the flight deck bos'n and shall be secured with a minimum of (13) tiedowns. All rolling stock (air conditioners, nitrogen carts, etc.) shall have parking brake set (as applicable) and a minimum of two tiedowns tending fore/aft or athwartship position so as to prevent movement.

b. When not at flight quarters, mobile equipment will be "packed" fore and aft with the vehicles at each end secured with two tiedowns. All vehicles will have one rear wheel chocked and parking brake set (as applicable).

c. During heavy weather these requirements will increase as directed by the Aircraft Handling Officer.

705. AIRCRAFT ELEVATORS

a. Aircraft requiring movement from the flight or hangar deck shall be secured with intermediate tiedowns, chocked and the aircraft brake set (as applicable).

AUG 10 1999

b. Aircraft being raised or lowered on aircraft elevators with engines running shall be secured with initial tiedowns and chocks.

c. All rolling stock raised or lowered on aircraft elevators shall be parked fore and aft with a minimum of two tiedowns, one chock and the hand brake set.

706. AIRCRAFT JACKING TIEDOWN SECURITY. The following procedures are required for shipboard aircraft jacking:

a. Refer to HMI or MIM for applicable tiedown pattern and for special instructions during jacking operations. Each ship is to determine/establish jack spot locations, and define ship movement limits for safe jacking of aircraft.

b. Install tiedowns prior to jacking and loosen tiedowns maintaining a strain as aircraft is raised. Tighten all tiedowns when the aircraft is at the desired height.

c. When lowering an aircraft, continue to tighten tiedowns, maintaining a strain, as the aircraft is lowered to the deck. This will likely require several "steps" to take out slack and rerig the tiedowns as the aircraft is lowered. Caution must be taken to ensure not all chains are slack at the same time.

707. RESPONSIBILITY FOR SECURITY

a. Responsibility for the security of embarked aircraft and equipment rests primarily with the Air Officer; in discharging this responsibility, he is aided by the Flight Deck and Hangar Deck Officers, under the direct supervision of the Aircraft Handling Officer. It is the responsibility of these officers with the cooperation of the embarked Air Wing and other departments, to ensure that embarked aircraft and equipment are properly secured at all times.

b. When not at flight quarters, the Integrity Watch Officer or the designated flight/hangar deck supervisor is responsible for maintaining an alert watch to detect any condition which may jeopardize the security of aircraft or equipment and for taking prompt, effective, corrective action including notifying the Air Department Duty Officer (in port) or the Aircraft Handling Officer (at sea). Duties and responsibilities of the Integrity Watch Officer are set forth in the appropriate chapter of this instruction.

c. The Meteorology Officer is responsible for giving timely notice of unexpected or unusual heavy weather conditions. He shall notify the OOD, Integrity Watch Officer (IWO), Air Officer, Aircraft Handling Officer and/or Air Department Duty Officer of any weather conditions affecting aircraft security.

d. The Air Wing Commander shall ensure that the squadron/detachments comply with the provisions of this chapter.

e. Other department heads are responsible for the security of their respective equipment located on the hangar and flight decks.

f. The Aircraft Handling Officer is responsible for the following:

(1) General supervision and direction of spotting and securing of all aircraft, tractors, crane and other mobile equipment on the flight and hangar decks.

AUG 10 1999

(2) Frequent inspections of the flight and hangar decks during heavy weather.

g. The Flight Deck Officer is responsible for the following:

(1) Ensuring that Air Wing personnel secure all aircraft per procedures established in this instruction and in compliance with the ACHO's instructions.

(2) Supervising the security of all equipment on the flight deck.

(3) Conducting inspection of catwalk and gallery deck spaces for security of gear (i.e., fire bottles, power cables, security of power outlet hatches, etc.).

(4) Conducting frequent inspections of aircraft and equipment on the flight deck during heavy weather and reporting results thereof to the Aircraft Handling Officer.

h. The Catapult and Arresting Gear Officer is responsible for securing all catapult and arresting gear associated equipment in his assigned spaces and on the flight deck, and for conducting frequent inspections thereof during heavy weather, reporting results to the Aircraft Handling Officer.

i. The Hangar Deck Officer is responsible for the following:

(1) Ensuring that the Air Wing and other departments properly secure all aircraft, maintenance support equipment, and other gear stowed on hangar deck.

(2) Ensuring proper stowage of electrical power cables by squadrons.

(3) Providing access to fire stations.

(4) Making frequent inspections of the hangar deck during heavy weather, reporting the results, thereof to the Aircraft Handling Officer.

j. The Aviation Fuels Officer is responsible for the following:

(1) Fueling and defueling aircraft as directed.

(2) Securing the aviation fuel and catapult lube oil systems per AFOSS/CLOSS so as to prevent any leakage.

(3) Making frequent inspections of the aviation fuel system during heavy weather, reporting results thereof to the Aircraft handling Officer.

(4) Securing the MOGAS station to prevent leakage or fire.

(5) Securing the emergency defuel, spill, and aircraft to aircraft transfer carts.

708. HEAVY WEATHER CONDITIONS. A precise definition of each heavy weather condition is listed in the individual ship's SCRM, instructions, or in various chain of command instructions, and they must be referred to for specific guidelines. Operational commitments may necessitate flight operations during heavy weather conditions, and such operations will be under the direction of the commanding officer.

AUG 10 1999

709. HEAVY WEATHER AIRCRAFT SPOTTING. When a heavy weather spot requirement has been determined by the commanding officer the following procedures are recommended.

a. A maximum number of aircraft shall be spotted on the hangar deck in such a manner to permit access to fire stations at all times.

b. Space and time permitting, remaining aircraft should be spotted fore and aft on the flight deck, as far from deck edge and the fantail as possible and no further forward of the bow catapult JBD's than absolutely necessary. Consideration for desired trim of the ship must govern actual spotting location.

c. The bow catapult JBD's should be raised to assist in decreasing wind over deck (deck space permitting).

d. Chocks shall be secured to wheels with 21 thread (or greater) manila line to prevent them from working free.

e. Maximum tiedowns shall be applied and parking brakes (if applicable) shall be set.

f. Wing spreads may be desirable on some types of aircraft as space and other factors permit.

g. Deflating of struts and/or tires will be accomplished as directed.

h. Fuel load adjustments will be made as directed.

i. Security watches shall be doubled to function as 2-man teams (buddy system). Safety lines to join man-to-man and man-to-structure will be utilized as necessary. The watches shall be especially vigilant to detect loose tiedowns or chocks and for any contact between aircraft and/or equipment.

710. REPLENISHMENT AT SEA AIRCRAFT SPOTTING

a. During alongside replenishment at sea operations, aircraft positioned on protruding portions of the starboard side (forward "point" to aftermost break in the deck) shall be spotted a minimum of tail over deck plus ten feet (TOD plus 10').

b. When operational commitments dictate a high state of readiness be maintained during alongside evolutions, the battle group commander, upon request from the carriers commanding officer, may grant a waiver in the case of the TOD plus 10' requirement to a minimum of TOD.

AUG 10 1999

CHAPTER 8

AVIATION FUELS SYSTEM

801. GENERAL. The Aviation Fuels Division shall be organized to provide aviation fuels to all aircraft. Services shall also be provided for defueling aircraft and fueling ships, boats, ground support equipment, emergency boiler, jet test cell and emergency diesel generators. Aviation lubricating oil shall be provided for ships catapults. Automotive Gas (MOGAS) shall be provided for gasoline operating equipment IAW NSTM 674.

802. DESCRIPTION OF THE AVIATION FUELS SYSTEM. While all aviation fuels systems contain basically the same components, there are differences in size, capacities, number of pumps, physical layout, etc. Therefore, the following description will be brief. For more detailed descriptions consult the current ships Aviation Fuels Operational Sequencing System (AFOSS) prints, and technical manuals (Ships Information Books) for ships individual systems.

a. JP-5 System. While used primarily for fueling and defueling jet aircraft, this system also provides for fueling of ships, boats, ground support equipment, emergency boilers, emergency generators, and the jet test cell. It consists of storage tanks (forward and aft) interconnected by transfer mains, service tanks (forward and aft), pump rooms, filter rooms, fill connections, piping, and aircraft service stations. Most systems also contain independent defuel mains.

b. Catapult Lubricating Oil System. Consists of tank(s), pump(s), fill piping, and distribution piping. This system is used to supply lubrication oil to the ships catapults.

c. Aviation Fuels Operational Sequencing System (AFOSS). Shall be used by all fuel system operators to operate the aviation fuels system.

(1) AFOSS shall be utilized as a training aid.

(2) The Aviation Fuels Officer will be responsible for keeping AFOSS Manuals correct and current. Feedback reports will be sent to NAVSSES(copy to TYCOM) to request changes or corrections as required.

d. Catapult Lubricating Oil Operational Sequence System (CLOSS) shall be used by all system operators to operate the Catapult lubricating oil system (when installed).

(1) When installed, CLOSS shall be utilized as a training aid.

(2) The Aviation Fuels Officer will be responsible for keeping CLOSS manuals correct and current. Feed-back reports will be sent to NAVSSES(copy to TYCOM) to request changes or corrections as required.

803. SAFETY PRECAUTIONS. Personnel involved in any operation using aviation fuels must observe the following rules:

a. Aviation fuels must not be handled in open containers; standard approved safety cans will be utilized.

b. Waste or rags soaked in aviation fuels must not be left about the decks.

c. Smoking is prohibited in any compartment where aviation fuels are present.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

d. No open flames, or lights may be introduced into any compartment or space where fumes from aviation fuels are present.

e. Matches or cigarette lighters shall not be introduced into any compartment containing aviation fuels.

f. Transferring of JP-5 which will result in change to the ships trim will not be made without notifying Damage Control Central.

g. JP-5 must not be discharged overboard without permission of the Commanding Officer.

h. Every precaution against accidental overboard discharge of JP-5 shall be taken when receiving JP-5. Overboard discharge watches shall be stationed to observe all overboard discharge ports per AFOSS.

i. Any JP-5 spilled on deck must be immediately cleaned up.

j. When removing sounding tube caps from the sounding tubes, care shall be taken to prevent injury in case there is excessive pressure in the tube. Prior to reinstallation, check cap gasket.

k. When fueling or defueling aircraft a PQS qualified member of the Aviation Fuels Division shall be present to ensure all operations are conducted per applicable instructions.

l. When the JP-5 system is to be operated the Aviation Fuels Officer or the Aviation Fuels CPO shall be present and in direct charge. He is responsible to see that all personnel comply with all existing instructions and directives and that all necessary safety precautions are strictly adhered to and that all communications are established and operable prior to operation of the system.

m. No operation of the JP-5 system involving the possibility of overboard discharge shall be started without the permission of the Commanding Officer or his designated representative (OOD, Command Duty Officer (CDO), and the Air Officer/Air Department Duty Officer).

n. No tank or void shall be entered until it has been certified gas free and safe to enter by the commanding officer or his designated representative. A second person shall remain outside for safety and contact must be maintained at all times. When removing manhole cover a new gasket must be installed each time. Keep all covers to manholes on JP5/lube oil tanks fastened securely.

o. JP-5 vapors are toxic. Extreme care must be exercised to avoid spilling JP-5 on the body. Any spills should be washed off immediately with soap and water and if spilled on clothing the clothing should be immediately removed and thoroughly washed before wearing again. Ensure all personnel subjected to fuel vapors are rotated out of the space frequently to prevent injury.

p. If JP-5 is spilled or escapes in an enclosed space ventilate the area immediately by approved methods using an air driven explosion proof type blower. If there is considerable vapor present, empty the space of all personnel and ventilate the area thoroughly. Only trained qualified personnel wearing proper breathing apparatus may enter a space filled with JP-5 vapors. Refer to NSTM 074 for authorized breathing apparatus.

q. All fuel system valves shall be kept closed when not in use and be classified IAW NSTM 079 volume two. All valves with the potential for fuel being sent overboard shall be locked closed when not in use. Additionally a

warning placard OPNAVINST 5090.1 (Environmental Protection Program) shall be posted next to valves having overboard discharge capability. **AUG 10 1999**

r. No JP-5 can be issued for any purpose other than fueling aircraft or ships equipment without the permission of the Aviation Fuels Officer or higher authority.

s. Normally, no aircraft shall be fueled while work is being performed on it. Exceptions can be made as operational requirements dictate and as approved only by the Commanding Officer as specified in CV NATOPS/NAVAIR Refueling NATOPS Manual 00-80T-109.

t. When handling JP-5 at a fuel dock all available sources of ignition on the ship and pier will be removed such as, open flames, all vehicles and boats, steam and air jets, spray painting, sand blasting, grinding, electrical equipment in the vicinity must be shut off, and the smoking lamp controlled as specified in AFOSS.

u. Before attempting to fuel aircraft attach grounding wire connection to discharge static electricity. Use the following sequence: attach ground wire to deck and other end to aircraft; remove filling connection dust cover, connect nozzle. Filler caps are to be replaced prior to removing ground wires.

NOTE

Single point pressure fueling shall be used for all aircraft.

v. Portable fire extinguisher will be manned when refueling/defueling on the hangar deck.

w. In order to prevent electrical arcing, light bulbs in fuel spaces shall not be replaced with the electrical current on.

x. No aircraft shall be fueled while on jacks.

y. Emergency Escape Breathing Devices (EEBD's) shall be provided for each manned space (number of EEBD's required is subject to maximum manning level per space, i.e., one per man) and an approved eye wash station shall also be provided in each fuel handling space.

z. Simultaneous fueling, loading/downloading of weapons is authorized only as specified in CV NATOPS.

aa. JP-5 becomes highly flammable under conditions of spraying or wicking. Particular care should always be exercised when a fine spray might develop from leaks in JP-5 pressure lines and where rags or clothing may become fuel soaked and thereby act as a wick.

bb. No GSE equipment or boats shall be refueled while engines are running.

cc. A minimum of two personnel, one of which must be Pump Room Supervisor Qualified are required in the duty pumproom during any fuel handling evolution.

WARNING

Oxygen servicing other than converter replacement at the aircraft and fueling shall be conducted as separate evolutions.

AUG 10 1999

dd. Aircraft containing fuel other than JP-5 shall not be parked on the hangar deck without the Commanding Officer's approval which may be given only when operational necessity dictates such a decision. As little as a 2.5 percent mixture of JP-4, JP-8, or commercial equivalents in JP-5 greatly reduce the flashpoint below 140 F. Every effort, such as draining, flushing, and refueling multiple times if necessary should be made in order to raise the flash point to 140 F.

(1) When operational necessity dictates placing an aircraft on the hangar deck containing fuel with a flash point above 120 F, operational procedures shall be per aircraft refueling NATOPS 00-80T-109.

(a) In order to reduce the extremely dangerous vapor hazard, aircraft should be refueled with JP-5 prior to being placed on the hangar deck.

(b) All hangar bay sprinkling groups located in the hangar bay in which the aircraft are parked will be operable.

(c) An operable MFFV/TAU shall be positioned at a location which will provide coverage of the affected aircraft.

(d) All CONFLAG stations located in the hangar bay with the affected aircraft shall be manned.

(e) Hot work shall not be conducted in the hangar bay or in close proximity to the hangar bay containing the affected aircraft.

804. OPERATION OF THE JP-5 SYSTEM. All operations involving the JP-5 system shall be conducted by operators qualified per The AVFUELS (Afloat) PQS. Trainees may operate the system but only under the direct supervision of a qualified operator. All operations of the Aviation Fuel (AVFUEL) system shall be done in strict accordance with AFOSS.

a. Filling the JP-5 Tanks

(1) The filling sequence of the JP-5 stowage tanks shall be consistent with the ships trim.

CAUTION

Prior to receiving JP-5, check all transfer main valves to ensure valves are in the desired position (open/closed) per AFOSS. Current Ships Aviation Fuels Operational Sequencing System Manuals will be utilized for all JP-5 operations. A check of the sound- powered phone circuit (4JG) will be made prior to receiving fuel.

(2) JP-5 will normally be received from two or three starboard side filling connections when underway. Port-side connections are normally provided and are generally used in port when refueling from a barge.

(3) Per AFOSS, all tanks shall be stripped of to low suction prior to replenishment and service tanks topped off prior to taking on fuel. Contaminated settling tanks (Reclamation tanks) should be empty prior to receiving fuel.

(4) When ready to receive, order the tanker to start pumping minimum pressure. Have men stationed at liquid level gauges and sounders on the overflow tanks of the tank groups receiving fuel. As tanks fill, open

AUG 10 1999

additional tanks and continue with gauge readings and soundings until replenishment is complete.

(5) Overflow tanks shall be filled last per AFOSS.

(6) Securing. Upon completion of the refueling operation, accurate soundings of all tanks shall be taken.

WARNING

Do not secure last tank to be filled until tanker has ceased pumping.

b. Filtering, Settling, Sounding, Stripping, and use of Service Tanks

(1) Filtering. Foreign matter and water are difficult to remove from JP-5. Therefore, all fuel entering the service tanks shall be filtered using the centrifugal purifiers. All fuel being delivered to aircraft shall be filtered with the service filters.

(2) Settling. Every effort must be made to allow maximum settling time. Ships equipped with reclamation system will direct all strippings into reclaim tanks.

(3) Soundings. Tank soundings will be taken frequently to determine the quantity of fuel in each tank per AFOSS.

(4) Stripping. Stripping of tanks shall be accomplished per AFOSS/PMS.

(5) Use of Service Tanks. Aircraft shall be fueled from service tanks only. In anticipation of fueling aircraft from a service tank, fuel from a storage tank should be purified and transferred to the service tank in advance to allow a maximum settling time prior to stripping the service tank. Fuel shall never be transferred into a service tank in use, since transferring will cause agitation of the settled fuel.

c. Fueling and Defueling

(1) Fueling Aircraft. After settling and stripping requirements have been met, the desired service tank shall be lined up for fueling aircraft, suction is taken on the tank, and fuel is pumped up through the filter to the service stations by the JP-5 pumps. When pressure reaches the desired service station, the station cut-off valve is opened and the fueling operation can begin. Cla-Valve system defueling pump must be running during fueling operations to provide electricity to the continuity system.

(2) Hose Evacuation. Upon completion of fueling operation, the station control valve shall be put in defuel mode and the hose evacuated.

WARNING

Under no circumstances shall an aircraft containing JP-4 or JP-8 be defueled into the ships fuel system. Fuel from aircraft shall not be defueled into ships tanks unless samples from all low point drains test 140 degree (Fahrenheit) flash point (or above) and meet all other requirements for acceptance.

CAUTION

Recirculating valves must be opened prior to starting service pump. A caution sign will be posted next to each pump controller stating

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

"Ensure recirculating valves are opened prior to starting this pump."
Recirculating valves may be closed when off-loading JP-5 per AFOSS.

(3) Defueling Aircraft (CLA-VAL System). Defueling of aircraft is accomplished by utilizing the fixed defueling pump at each service station, placing the station in the defuel position and transferring the fuel from the aircraft to the defueling main and back to the designated storage tank.

(4) Secure. Upon completion of fueling operation secure the JP-5 pump discharge valve and then secure the JP-5 pump allowing the fuel to remain in the distribution lines.

805. CATAPULT LUBE OIL SYSTEM. The Catapult Lube oil system is a separate independent system composed of pump(s), valves and piping arranged to supply ready service tanks in catapult spaces.

a. A flush deck type fill connection is provided on the hangar deck, suitable for attaching a funnel of the type used when filling from barrels. The storage tank can be provided with steam heating coils, overflow, sampling connections, a tank level indicating system and thermometers.

b. Operation. Operating the Catapult System shall be per Catapult Lubricating Oil Operational Sequence System (CLOSS) or Ship's Information Book (SIB).

806. AIRCRAFT FUELING PROCEDURES

a. Fuel Loads. Requirements are published in the Air Plan. Any changes in published fuel loads must be authorized by the Air Operations Officer.

(1) Fuels Control Petty Officer, under the supervision of the Fuels Officer, relays fuel requirements to fueling crew leaders and fuel checkers on the 4JG sound-powered circuit.

(2) Aircraft fuel loads are maintained on the AVFUELS status board by the AVFUELS Petty Officer. The status board includes the type of aircraft, side numbers, and fuel load. The fueling crew leaders report to the AVFUELS Petty Officer when fuel requirements have been met. The fuel load is then written on the Fuel status board.

(3) A fueling crew shall consist of a crew leader manning the 4JG at the fueling station, and a minimum of one nozzleman per hose in use. Fuels Petty Officers, PQS qualified as flight deck supervisor, shall be available "on deck" to coordinate fueling operations and act as Safety Petty Officer. A fuels safety petty officer shall supply/man a Purple K Powder (PKP) extinguisher near the fueling site when mobile fire fighting equipment is not available or while in the hangar bay.

(4) Aircraft are refueled per the Air Plan. The fuels checker/Fuels Control Talker maintains accountability for fuel billing by recording the amount of fuel on board prior to fueling, after fueling, and the amount issued on the fuel checker card.

b. Fueling Stations

(1) After the service pumps are started and piping is pressurized, turn on defuel pump. Open all fueling station supply valves. Connect ground wire from ship to aircraft. Remove tank filling cap, connect nozzle to aircraft, place the toggle switch to the "on" position and commence the fueling operation.

AUG 10 1999

CAUTION

Only single point pressure refueling is authorized. Do not overwing drop tanks, except when operational necessity dictates.

(2) Upon completion of fueling and defueling aircraft, close all fueling station supply valves, shut down defueling and service pumps.

(3) JP-5 refueling/defueling in port may be accomplished with the approval of the commanding officer or his designated representative.

c. Hot Refueling

(1) Only aircraft with single point pressure refueling capabilities may be "hot" refueled (with engines running). Procedures set forth in the CV NATOPS for each model aircraft and NAVAIR refueling NATOPS manual shall be followed.

(2) While "hot" refueling, qualified squadron personnel must watch his fuel quantity gauge and control the amount of fuel loaded aboard by signaling to the fueling crew when to stop the refueling.

(3) Qualified squadron personnel are responsible for the proper alignment of fuel system switches in the cockpit, and thereby controls the refueling process.

d. Fuel Spills

(1) V-4 Division is responsible for cleaning up fuel spilled from faulty nozzles, ruptured hoses.

(2) Squadrons are responsible for cleaning up fuel spills resulting from overflowing aircraft tank vents, dumps, overflows, leaky fuel tanks, or mismanaged switches per NATOPS 00-80T-109.

(3) Spilled fuel will be swabbed up immediately. In the event of a major fuel spill on the flight deck, crash and salvage personnel with the assistance of designated V-4 personnel will respond to the containment and clean-up of the spill IAW NAVIAR 00-80R-14.

(4) All fuel spills must be reported to AVFUELS Control and the Aircraft Handling Officer.

807. AVIATION FUELS QUALITY CONTROL AND SAMPLING PROCEDURES

a. Introduction. Modern aircraft require fuel of such chemical and physical properties and state of cleanliness that extraordinary measures must be taken to protect these properties and achieve the required cleanliness. The portable fuel testing equipment has contributed considerably to this end. However, in order to ensure the high standards of aviation fuels delivered to aircraft and in order to verify the findings of the portable equipment, the facilities of the Petroleum Testing Laboratories listed in NATOPS 00-80T-109 shall be periodically used.

b. Sampling Procedures. Samples shall be taken and tested per Refueling NATOPS Manual (NAVAIR 00-80T-109), AFSS, and current PMS requirements.

c. Shipping Samples. It is important that the minimum possible amount of time elapse between sampling and receipt of the report of laboratory analysis so that the ship can use the test results to ensure clean fuel. Routine sampling and emergency sampling must be planned for optimum utilization of

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

available transportation to fuel laboratory locations. Samples should be taken immediately prior to entering port while the ship's aviation fuel system is in normal operating condition. Aviation fuel sampling and shipping containers conforming to MIL-K-23714 shall be used and dispatched by the most expeditious method. When feasible samples shall be delivered directly to the lab by special courier.

d. Test result action. If lab results or sampling at aircraft fueling point does not meet deterioration use limits as set forth in NATOPS 00-80T-109, stop delivery of fuel to aircraft from suspected segment until the problem is corrected.

(1) Re-sample suspected fueling nozzles and filter outlets. Deliver these samples to the nearest laboratory for immediate analysis. Re-samples of reported contamination shall include the marking: Resample, Request immediate analysis and Message report.

(2) Refueling may continue while awaiting lab resample results if on board resamples meet deterioration use limits.

(3) If resampling confirms the existence of unacceptable fuel, isolate contaminated section until problem is corrected.

e. Record of Test Results. A fuel sample log shall be maintained which will include a sequential listing of samples submitted for test, the results of the tests as reported by the testing laboratory and shipboard test results. Log the serial number of the equipment used to run the test.

f. Routine Sampling

(1) Spot checks for sediment, using the portable contaminated fuel detector shall be made at various points throughout the fuel system while the system is in operation. In no case shall a refueling station go unsampled for longer than 24 hours.

(2) During replenishment operations, take frequent samples of JP-5 in a clear sample bottle at the filling connection. Any contamination above the allowable limit can only be accepted by the Commanding Officer.

(3) During stripping operations, take fuel samples and, continue stripping until water free fuel is being stripped from the service or stowage tank. All samples will be clean, clear and bright (CCB).

(4) Do not fuel aircraft with anything but clean and clear fuel. Visual service filter discharge samples should be taken every 15 minutes from the filter being used.

(5) Spot checks for FSII, using the refractometer (B-2) shall be made daily per NAVAIR Refueling Manual 00-80T-109.

(6) A visibly posted daily fueling station sampling chart shall be maintained by the quality assurance supervisor in the Q.A. Laboratory, which readily identifies all service stations sampled during the previous 24 hour period, in no case shall a refueling station go unsampled for longer than 24 hours.

g. All above functions shall be supervised by a designated PQS Qualified Quality Surveillance Supervisor. The Quality Surveillance Supervisor shall be a responsible individual trained in the detection of contaminants in aviation fuels. His specific duties include, but are not limited to, the following:

AUG 10 1999

- (1) Inspect and test all fuel being received on board.
- (2) Inspect and test fuel during delivery to aircraft.
- (3) Inspect and test fuel prior to aircraft defueling.
- (4) Train fuel handling personnel in quality control procedures.
- (5) Perform maintenance on associated equipment.
- (6) Maintain records of lab samples and daily checks.

h. Log Books

(1) V-4 Division JP-5 Filter sample/pressure drop log, equipment running logs and Quality assurance fuel sample log shall be in the formats as per enclosures (3) and (5). The filter sample/pressure drop log and the equipment running log shall utilize individual sheets reference enclosures (3), (4), and (5). Each log sheet shall be reviewed by the supervisor, CPO and Maintenance Officer at the end of each shift change and kept in V-4 division files for six months.

808. ADMINISTRATIVE PROCEDURES FOR THE SAFE HANDLING OF AVIATION FUELS

a. Administrative Practices

(1) Frequent instruction shall be held in firefighting with particular emphasis on aviation fuel and pumproom fires.

(2) Personnel shall be instructed in the characteristics of aviation fuels and in the precautions required to prevent personnel injury by exposure to aviation fuels and fuel vapors.

(3) Prior to and during fuel replenishment, fuel transfer, or aircraft fueling operations, planning and supervision of the operation for the purpose of coordinating safe procedures shall include the following per AFOSS.

(a) Approximate time the operation will commence and its probable duration.

(b) Sentries, control, and communication personnel, their stations and orders.

(c) Firefighting teams consisting of the following minimum equipment: 2 (manned) AFFF hoses and 3 CO2/PKP bottles per sponson or 1 (manned) TAU in the adjacent hangar bay.

(d) A Quality Surveillance Petty Officer will be posted, whose duties shall be to inspect for contamination of fuel being taken aboard.

(e) Station special personnel and equipment with emphasis on:

- 1 Safety.
- 2 Firefighting.
- 3 Putting out the smoking lamp.
- 4 Securing machinery (particularly if at the pier).
- 5 Closing of proper hatches.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

6 AFOSS Station Manuals issued.

(4) Attention is particularly directed to the danger of excessive pressure in the ship's aviation fuels system that could result in damage to tanks. This is emphasized to point out that:

(a) It is entirely possible to obtain pressures in the aviation fuel tanks sufficiently high to cause deformation even though all valves are properly set.

(b) Damage to aviation fuel systems due to higher than the designed pressures cannot be tolerated, and precautions for avoiding it must be established. A log shall be set up to record the following information:

(c) When the integrity of the JP-5 system is open, ensure red tag procedures are strictly adhered too and double valve protection is met.

NOTE

The fill and transfer main maximum design pressure is 40 PSI at the filling connection. Maximum filling rate shall not exceed 500 gallons per minute, for each open tank to be filled. (Example: ten tanks open at any one time, would permit a flow rate of 5,000 gallons per minute).

1. Pumping rate and pressure obtained from the delivering agency prior to the start of fueling and continuing thereafter at frequent intervals until fueling is completed.

2. Liquid level and meter reading along with fuel receiving station pressure, taken concurrently with a continuous computation maintained for total gallons taken aboard, based on rates of pumping in gallons per minute and duration in minutes.

(5) Impress upon personnel the necessity for strict compliance with existing safety precautions. Immediate and positive action shall be taken in any case resulting from improper handling of aviation fuels. Instruction in casualty procedures is a necessary part of safety and personnel shall be thoroughly indoctrinated in all phases of casualty control.

(6) A program for the indoctrination and introduction of personnel in all phases of aviation fuel handling will be conducted per PQS.

(a) Review of safety precautions, firefighting principles, and equipment.

(b) Review of the particular ship's aviation fuels system, piping, valves, gauges, limiting pressure, tank capacity, etc.

(c) AFFF/HALON Flooding systems for JP-5 spaces, steam smothering valves for catapults, ventilation alarms and indicators, flame arresters, etc.

(d) Entry into enclosed JP-5 tanks.

1 Obtaining proper authorization prior to entering a closed space.

2 Equipment needed and proper use.

a. Emergency apparatus. (IAW NSTM Chapter 074)

AUG 10 1999

b. Safety lines and harness.

3 Proper methods for ventilation of space.

4 Personnel protection equipment.

5 Rescue and lifesaving methods needed to assist personnel suffering from asphyxia.

809. REPLENISHMENT, DISPOSITION, AND ACCOUNTABILITY OF AVIATION FUELS

a. General. Aviation fuels replenishment, disposition and accountability require that close attention to established procedures be followed during every evolution. The Navy's goal is the complete elimination of discharges of oil and oily wastes into streams, harbors, and oceans by shore activities and vessels. Therefore, the following guidance is provided to accomplish this goal.

b. Fueling, Defueling, and Internal Fuel Transfers. These evolutions should be accomplished to meet operational requirements with due consideration for economy of efforts and resources and not for opportunities of convenience.

Such evolutions in port should be accomplished during daylight, normal working hours, by PQS qualified fuels personnel.

(1) Fueling bills should make provisions for:

(a) Topside watches at all locations of possible fuel spills with direct communications to fuel transfer stations.

(b) Establishment of check-off lists and procedures for fueling system line-up and operation. Double checking of all fueling system valves is absolutely essential.

(c) Assurance that each member of the fueling detail is qualified in fueling procedures.

(d) Continuous sounding of tanks being filled, or gauge reading, if installed.

(e) Precautionary measures to minimize the danger of fuel spills should one occur, including blocked scuppers, adequate manpower, and sufficient material.

(f) Certification to the Commanding Officer, Command Duty Officer, or Officer of the Deck and the fuel supplier that the ship is ready in all respects to commence refueling operations.

(g) Prior to receiving fuel, the receiving ship shall receive notification from the fuel supplier that fueling equipment, fittings, and hoses have been tested and are in proper working condition per appropriate NAVSEA, NAVSUP, and/or Marine Terminal regulations and instructions.

(h) Permission for aviation fuel handling evolutions after the hours of darkness in port must be approved by the Senior Officer Present Afloat (SOPA). An information copy of such requests shall be directed to the Commander of the Naval Base concerned.

c. Disposition

(1) JP-5 shall not be discharged from shipboard systems into national/international water except in emergency conditions.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

(2) JP-5 strippings will be discharged to designated reclamation or contaminated tanks for consolidation and reclamation as JP-5 storage for future purification.

(3) Preparation for JP-5 tank cleaning requires the maximum of advance planning and fuel consolidation to ensure conservation of fuel and environmental protection.

(4) JP-5 stock depletion in preparation for shipyard availabilities requires consideration for readiness requirements and tank cleaning requirements prior to entering the shipyard. JP-5 should be consolidated in the minimum number of tanks. Tanks not emptied will be filled to operating capacity. In the event hot work is to be performed on JP-5 tanks, all JP-5 from the affected section must be off-loaded and tanks shall be certified gas free prior to entry.

(5) Instructions for disposition of aviation fuels which fail to meet the deterioration use limits specified by Naval Air Systems Command Headquarters (NAVAIRSYSCOMHQ) shall be requested of the Navy Fuels Supply Office, Cameron Station, Alexandria, Virginia 22314.

d. Accountability

(1) Receipt. Cognizant custodians of subject materials shall submit a written memorandum to the Supply Officer immediately after each delivery stating the quantity received at a specific temperature. Receipts of petroleum products shall be governed by the following general regulations:

(a) Receipts from Naval Activities. In as much as the quantity of fuel received from other Naval activities ashore and afloat will be determined on the basis of the gauges of the issuing activity, the officer having cognizance of the fuel to be received shall examine the tanks of the receiving activity both before and after fueling to ensure that the ship has obtained the full amount ordered. In cases where it is impractical to check the gauges of the issuing activity such as during replenishment at sea, the quantity invoiced will be accepted as correct, unless known discrepancies are resolved with the issuing ship. Receipt of fuel from Naval sources will be accepted as conforming to Navy specifications for the invoiced product. An analysis will be furnished to the ship for all bulk fuels received. Samples will be taken continuously during receipt.

(b) Receipts from Commercial Sources. Receipt of fuels from contractor's shore tankage, tank cars, or harbor barges shall be covered by duplicating copies of a test report made by the contractor. This report shall indicate, in the case of the heavy fuel oils and diesel fuel oil, the flash point, water segment, and viscosity of the product being transferred. In the case of gasoline and other light fuels, the report shall indicate that the product being delivered conforms to the Navy specifications for the product. In all cases where contractor's certification as to conformance to Navy specifications are acceptable, one copy of the test report will be sent to the Naval Sea Systems Command (for fuel oil, diesel fuel oils, motor gasoline, and other light petroleum fuels) or to the Naval Air Systems Command (for aviation fuels). Receipts of fuel from commercial installations shall be checked by representatives from the company and the cognizant officer by gauging of the shore installation tanks both before and after delivery. The inspection made prior to delivery shall include inspection of the pipelines to determine whether they are full or empty, and checking for any valves which may be open to by-pass fuel. Any irregularity such as leaks or open valves will be brought to the attention of a representative of the commercial installation and delivery shall not be commenced until the condition is corrected to the satisfaction of the cognizant officer.

AUG 10 1999

(2) Issues. The Aviation Fuels Officer shall submit fuel reports to each squadron and the Aviation Supply Officer at least bimonthly for the amount of aviation fuels issued to each organization.

(3) Surveys. The Air Officer shall ensure that surveys are prepared after each replenishment of aviation fuel, if required, to account for shortages between invoiced quantities received. Survey or losses resulting from issue, stripping, or contamination will be made monthly, as required, per TYCOM instructions.

(a) Surveys resulting from differences in delivering activities soundings shall be made as follows:

1 Re-verify gallons required prior to Underway Replenishment (UNREP).

2 Resound all tanks and compare with soundings taken immediately after UNREP.

3 Where questionable difference exists contact issuing ship, explain nature of difference, and request corrected figure.

4 In cases where UNREP differences exceed three percent of transfer quantity and if action paragraphs 1 and 3 above do not reconcile differences, report following data (as a minimum) to TYCOM via Naval message with TYCOM and issuing ship as info addressee.

a Subj: JP-5 UNREP difference.

b Date of UNREP.

c UNREP ship.

d Gallons received.

e Percentages of quantity difference in relation to total JP-5 on board after UNREP.

f Dollar value of difference and document number of associated survey.

g Extenuating circumstances if applicable.

(b) Surveys resulting from normal stripping, tank cleaning, or casualties to the aviation fuels systems will be submitted per current directives. All surveys submitted shall include a condensed statement under the cause section as to how the fuel loss occurred. In addition to normal distribution, forward one-copy of all completed surveys to COMNAVAIRPAC (Code 45), Navy Petroleum Office, and Fleet Aviation Disbursing Office Center Pacific. (For AIRLANT ships forward one copy of all completed surveys to COMNAVAIRLANT (Code 84).

810. AVIATION FUELS SECURITY WATCH

a. Basic Function. The Aviation Fuels Security Watch shall be stood by the V-4 Division personnel under the supervision of the Duty AVFUELS Petty Officer (AVFUELS POOW). The AVFUELS watch shall be stood per paragraph 810.b. All watch standers shall PQS qualified under the AVFUELS (Afloat) PQS. This one-person watch shall be posted as prescribed below and maintain communication with AVFUELS POOW using a two-way radio. AVFUELS watch stander

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

under instruction (UI) shall be assigned under the supervision of a PQS qualified watch stander. The watch shall be posted and properly relieved by the Duty AVFUELS POOW. The Aviation fuels Officer/Maintenance Officer is responsible for setting the aviation fuels watch.

b. FUELS WATCH

1. In port, during normal working hours, system not under pressure. Duty Section Supervisor makes one round and reports condition to the LCPO.
2. In port, during non-working hours, system not under pressure. AVFUELS Watch Roving patrols inspects pump and filter rooms and MOGAS stowage area (when carried onboard) making 1 round every 2 hours and reports to the AVFUELS POOW. If filter(s) have been drained, eliminate them from the watch.
3. At anchor, with system pressurized. AVFUELS Watch roving patrols inspects flight and hangar deck fueling stations, pump and filter rooms and MOGAS stowage area (when carried onboard); 1 round every 2 hours and reports to the AVFUELS POOW. If systems are drained back, refer to paragraphs 810.b.1 and 2.
4. Underway, at flight quarters. Below Deck supervisor or his Assistant, inspect hangar bay fueling stations and unmanned below deck spaces twice per day/night shift and report conditions to LCPO/AVFUELS Maintenance Chief.
5. Underway, not at flight quarters. Flight Deck AVFUELS Supervisor or assistant inspects flight and hangar deck fueling stations and MOGAS stowage area (when carried onboard) twice per day/night shift. Below Decks Supervisor or assistant inspects unmanned below deck spaces twice per day/night shift. Both supervisors shall report conditions to LCPO/AVFUELS Maintenance CPO.

c. Duties, Responsibilities, and Authority. The Roving Aviation Fuels Security Watches shall:

- (1) Inspect each space or station on his post for the following:
 - (a) Security of valves.
 - (b) Leaks
 - (c) Gear adrift.
 - (d) Unauthorized personnel.
 - (e) Proper ventilation.
 - (f) Lighting.
 - (g) Excessive liquid in the bilges.
 - (h) Unauthorized smoking, open flames, or unauthorized welding in or around the aviation fuels system without proper authority and fire fighting equipment.
- (2) Report the conditions of the AVFUELS system at the completion of each round to:

AUG 10 1999

- (a) The OOD, if the ship is in port with no air wing embarked.
- (b) The Air Department Integrity Watch Officer, in Flight Deck Control, when the air wing is embarked. Refer to Chapter 13, Section 1311.
- (3) Report all fires to the OOD immediately, giving class of fire, compartment number, and name of space, frame number, your name and number you are calling from.

NOTE

In the event of a fire the AVFUELS petty officer shall ensure that the aviation fuels system is secured, inform the on-scene leader of the affected areas and system components in the fire area.

- (4) Report to the Duty AVFUELS Petty Officer if any discrepancy is noted.
- (5) Perform such other duties as may be assigned.

811. ELECTRICAL CONTINUITY. This system is designed into all aircraft refueling stations to allow for the shutting off of fuel flow at the nozzle.

a. Equipment

(1) Maintenance of the electrical continuity system shall be shared by V-4 and E Divisions and be accomplished strictly per PMS and NAVSEA tech manuals.

WARNING

No aircraft shall be refueled/defueled without continuity without Commanding Officer's permission. If continuity can not be restored, the Type Commander shall be notified.

812. MOGAS PROCEDURES

a. Hazards. MOGAS is highly volatile even at low temperatures. The vapors are a fire hazard at all times. The flashpoint for the vapors is approximately -45 degrees F.

b. Stowage. MOGAS containers shall be stowed on the weather deck and located so that they may be readily jettisoned overboard. The only acceptable MOGAS stowage method to be employed on aircraft carriers is 55-GAL drums on jettisonable stowage racks. This includes bulk MOGAS, residual mixed MOGAS, and bladders that have contained MOGAS. Each aircraft carrier shall be equipped with two MOGAS jettison racks. One for bulk stowage of MOGAS in 55-GAL drums, the other jettison rack shall have one 55-GAL drum for contaminated oil or residual mixed MOGAS and two 55-GAL HAZMAT drums for bladders or safety cans that have contained MOGAS.

WARNING

Deck stowage of safety cans and bladders that contained MOGAS are not authorized at any time.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

WARNING

All bladders and safety cans shall be inspected for leaks prior to placement into HAZMAT drums or lockers. Leaking or unsafe containers shall not be placed into HAZMAT drums or lockers.

c. Handling. The following precautions shall be adhered to in handling MOGAS:

(1) No open flames, smoking or hot work shall be permitted when handling gasoline or in gasoline hazard areas.

(2) A warning plate shall be installed in a conspicuous place or placed near the access to possible gasoline hazard areas, inscribed in red letters 1-inch high: "WARNING: GASOLINE HAZARD AREA". Smoking, use of naked lights, matches or lighters, use of tools that may produce sparks, wearing of clothing or shoes with exposed metal attachments and any other actions which could lead to ignition of gasoline vapors are not permitted".

(3) Ventilation shall be sufficient to prevent accumulation of fumes.

(4) Systems shall be grounded to prevent sparks from build-up of electric charges.

(5) Only personnel trained in gasoline handling procedures shall be assigned to the issuing and handling of gasoline.

(6) All residual MOGAS in bladders or safety cans to be stowed shall be emptied into the 55-GAL drum for contaminated oil and the bladders or safety cans placed into the 55-GAL HAZMAT drum for stowage on the jettison rack.

AUG 10 1999

CHAPTER 9

AIRCRAFT CRASH AND SALVAGE

901. GENERAL. The Aircraft Crash and Salvage Officer is responsible to the Flight Deck Officer for the proper positioning of firefighting equipment IAW Aircraft Firefighting and Rescue NATOPS (NAVAIR 00-80R-14). He shall keep the Air Officer, Aircraft Handling Officer, and Flight Deck Officer informed of status changes in crash and salvage equipment as they occur.

902. TRAINING. All crash and salvage crewmembers shall attend formal aircraft firefighting school. The Crash and Salvage Officer shall ensure that all flight deck personnel are trained in firefighting procedures and that crash and salvage crew members are in a high state of training in the following areas:

- a. General firefighting.
- b. The handling of aircraft crashes and fires.
- c. Personnel rescue procedures.
- d. Aircraft entry (normal, manual, emergency).
- e. Crew member release from seat (normal, manual, emergency).
- f. First aid/self aid.
- g. Use of positive pressure self-contained breathing apparatus.
- h. Use of aircraft hoisting equipment; to include aircraft slings and nylon (belly bands) straps.
- i. Operation of mobile crash crane, crash forklift, SB-TAU-2 units, MFFV.
- j. Use of crash dollies.
- k. Aircraft salvage, to include collapsed landing gear, catwalk crash, overside suspensions, and water recovery of helicopters.
- l. Jettisoning of aircraft.
- m. Emergency repairs of the flight/hangar deck.
- n. Upkeep and maintenance of assigned crash and firefighting equipment.
- o. Installed firefighting equipment, to include AFFF injection stations.
- p. Boat/aircraft crane (if applicable).
- q. Hazardous material containment and cleanup procedures.

NOTE

Each member of the team should be trained and qualified to perform the functions of every other member within the unit.

903. EQUIPMENT. The Crash and Salvage Officer will ensure crash and salvage equipment is available per applicable ship allowance list and Aircraft Firefighting and Rescue NATOPS, properly serviced, and maintained in an operating condition for immediate use by properly trained personnel. The

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

emergency crash kit, fixed/portable firefighting systems and equipment, and all mobile equipment shall be inspected daily prior to commencement of flight operations, utilizing appropriate PMS/NAVAIR check list to ensure readiness for use.

904. CREW STATIONS

a. Mobile firefighting and salvage equipment shall be manned and positioned per the Aircraft Firefighting and Rescue NATOPS Manual.

b. Rescuemen. During all launches and recoveries, two rescuemen shall be on alert and stationed in such a manner so as to respond anywhere on deck. They should be fully clothed in the aluminized protective gear and steel-toed fireman's boots. The aluminized helmet may be carried and donned as required. (Ensure protective headgear is worn in lieu of helmet.) Rescuemen shall carry a rescue knife for cutting seat restraint and parachute harnesses.

c. A ready crew to consist of a crash and salvage supervisor and two crew members stationed at a predesignated area for immediate response assistance and to provide equipment at the scene of a crashed or disabled aircraft during all launch/recovery evolutions.

d. Crew members not assigned stations during actual launch/recovery evolutions shall be assigned responsibilities to provide designated equipment in the event of an on-deck emergency.

905. FIREFIGHTING PROCEDURES

a. Firefighting procedures are outlined in Chapter VII of the Aircraft Firefighting and Rescue NATOPS (NAVAIR 00-80R-14).

b. Notification. In the event of a pending emergency, the air officer shall notify flight and hangar deck personnel by use of the 3 and 5 MC announcing systems and flight warning alarm. The accident alarm shall be sounded to notify flight deck personnel of an actual on-deck aircraft mishap.

NOTE

The flight warning and accident alarms shall only be used for the Purposes described above.

c. It is imperative that clearing disabled aircraft from the landing area be effected as expeditiously as possible, making every reasonable effort to prevent any further damage. When time or location of the disabled aircraft permits, aircraft crash crane and hoisting sling should be utilized to prevent additional damage to the aircraft. A squadron maintenance representative shall be available at the scene to provide technical assistance to the crash and salvage supervisor upon request.

906. AFFF HOSE STATIONS FLIGHT AND HANGAR DECK. In addition to existing requirements, the following shall be accomplished.

a. AFFF hose stations that fail to operate properly by the automatic electrical mode will be considered inoperative unless the station is continuously manned from the second deck injector station with communications established to flight and hangar deck for manual operation during flight quarters.

b. The Damage Control Assistant shall keep the Air Officer/Flight Deck Control informed as to the status of all AFFF stations by sending them a daily

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

status report. Should the status report change any time during the day, the Air Officer shall be notified.

c. Perform PMS per current MRC'S.

907. HELICOPTER SALVAGE AT SEA

a. The Crash and Salvage Officer has direct charge of the recovery operation and is tasked with maintaining the salvage equipment for use when the occasion arises.

b. Instructions for open sea helicopter salvage are contained in Aircraft Crash and Salvage Operations Manual (NAVAIR 00-80R-19) Section 4.

AUG 10 1999

CHAPTER 10

HELICOPTER OPERATIONS

1001. FLIGHT QUARTERS FOR HELICOPTER OPERATIONS

a. The following are minimum requirements for the conduct of helicopter operations.

(1) Pri-fly manned by qualified helo control officer.

(2) Flight deck firefighting and rescue equipment manned IAW NAVAIR 00-80R-14.

(3) Helicopter crew at aircraft (or in location specified by the existing alert condition).

NOTE

Helicopter flight quarters, when not at regular flight quarters, will be called away over all MC circuits.

b. Helicopter turn-ups (not engaged) may be made only with a qualified pilot or properly qualified maintenance personnel at the controls. Permission for turns without rotor engagement may be obtained from flight deck control. Engagement of rotors shall be made only with a qualified helicopter pilot at the controls and with clearance from Pri-fly.

c. After ensuring that required conditions are met, the Air Officer will pass clearance to start over the 5MC (or FDCS) and turn on the red rotating beacon. When ready to engage, the pilot will request clearance by UHF or through the LSE (Landing Signal Enlisted) by flight deck radio. Clearance for engagement must be received from Pri-fly and will be indicated by actuation of the rotating amber beacon. The Air Officer is responsible for warning flight deck personnel over the 5MC to stand well clear of helicopters while being engaged.

d. The Landing Signal Enlisted (LSE), under the supervision of the Air Officer, shall ensure that the helicopter, on signal, is safely started, engaged, launched, recovered and shut down. The helicopter should be recovered on appropriate deck spots per Visual Landing Aids Service Bulletin or as designated by the Air Officer. He is responsible for knowing and properly reacting to light signals given from Pri-fly. He shall ensure that all tiedowns are removed at the proper time prior to launching and are promptly replaced after recovery.

1002. LAUNCH

a. When the helicopter is ready to launch, Pri-fly is notified by the pilot on UHF (land/launch) or by the LSE on the flight deck radio. A green rotating beacon is then given by Pri-fly. It is the dual responsibility of the helicopter aircraft commander and Air Officer to be aware of the wind over the deck (velocity/direction) and determine if they are within NATOPS limitations prior to lifting.

b. Except during conditions of radio silence the helicopter pilot will notify Pri-fly by radio of fuel state (hours and minutes) and souls on board. During EMCON conditions the pilot, prior to leaving the ready room, will inform Pri-fly of this information. In all cases, fuel will be reported in "time to red light."

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

NOTE

Permission to engage/disengage the rotors will be obtained from Primary and passed over the 5MC (FOCS) system.

1003. RECOVERY. Helicopter recovery is governed by wing requirements for recovery, time-into wind considerations, deck spotting considerations and helicopter requirements. General procedures, both normal and emergency, shall be as specified in CV NATOPS and current ships operating procedures.

1004. TRANSFERS. When transfer of PAX/cargo/mail is required, the helicopter shall be loaded and launched with enough time to complete the mission and return to plane guard position prior to fixed wing launch. Except in cases of extreme emergency or when operating with other carriers, transfer should not be effected at night.

1005. SAFETY PRECAUTIONS FOR HELICOPTER OPERATIONS

a. All unnecessary personnel shall stand clear of the helicopter and its intended flight path. Personnel required to be in the area of helicopters engaging or disengaging rotors shall stand next to the fuselage or well outside the rotor arc. Ground crews shall wear proper flight deck clothing, including safety shoes, flotation gear and cranial helmets complete with safety goggles.

b. Specific safety criteria for launch and recovery of helicopters contained in the CV NATOPS manual shall be strictly observed during helicopter operations.

c. No personnel shall approach the helicopter with the rotors engaged until clearance from the LSE is given. For hot refueling, chocks and chains are required unless specified otherwise in the helicopter type NATOPS manual.

AUG 10 1999

CHAPTER 11

HANGAR DECK

1101. GENERAL. The hangar deck is widely used by different divisions and organizations aboard an aircraft carrier. This large area must be closely monitored and managed by the V-3 division. They are responsible for the movement and security of aircraft on the hangar deck, aircraft firefighting and rescue, operation of aircraft elevators, elevator and divisional ballistic doors, and maintenance of assigned firefighting equipment. The entire V-3 division must be prepared in the event of an emergency on the hangar deck or to assist flight deck personnel in the event of mass conflagration.

1102. AIRCRAFT HANDLING. All aircraft movement on the hangar deck shall be conducted per applicable sections of Chapter 4 of this instruction.

1103. SAFETY PRECAUTIONS

a. Care must be taken in spotting aircraft so that overlapping wing and tail surfaces are not forced together during fueling/defueling operations.

b. Extreme care must be taken when moving aircraft, weapons and supply support equipment on the hangar deck to prevent aircraft damage.

1104. CONFLAGRATION STATIONS

a. As a minimum, one conflagration station per bay containing aircraft, with capability for activating firefighting equipment, will be manned during normal operations. All stations will be manned during General and Fire Quarters. (See Chapter 8 Section 803.

b. Qualifications. Watchstanders shall be qualified per Conflagration Personnel Qualification Standard (PQS). Initial qualification and recertification of conflag watchstanders shall be documented.

c. Reports. Hourly reports are made to Hangar Deck Control at flight quarters and to the Integrity Watch Officer when not at flight quarters.

d. Firefighting Procedures (Conflagration Station). In the event of an actual fire in the hangar bay, the Conflagration Watch is responsible for the following:

(1) Notification. Reporting of a fire or mishap should be accomplished by the most expeditious method per ships operating instructions.

(2) Actuate the high temperature alarm, thereby alerting damage control central.

(3) The closing of elevator and divisional ballistic doors when necessary.

(4) Activation of fixed firefighting systems should be immediate when:

(a) The fire is detected and an inadequate number of personnel are available for immediate fire containment.

(b) Ordnance is in the immediate area of the fire.

(c) Directed by competent authority.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

(d) Multi-aircraft are involved and the catastrophe is of such proportion that it likely cannot be rapidly brought under control.

(5) Establish communications to light water stations in use.

(6) Hangar deck officer shall man appropriate conflagration station.

1105. FIRE FIGHTING PROCEDURES. Hangar deck firefighting teams shall be organized and trained per procedures outlined in the Aircraft Firefighting and Rescue NATOPS (NAVAIR 00-80R-14).

1106. MAJOR ORDNANCE HANDLING EVOLUTIONS. During major ordnance handling evolutions the Hangar deck Officer shall ensure:

- a. All conflagration stations are manned.
- b. Appropriate positioning of TAU units as directed.
- c. Fixed firefighting hoses pre-positioned as required.

1107. PETROLEUM REPLENISHMENT EVOLUTIONS. During petroleum replenishment evolutions the Hangar deck Officer shall ensure:

- a. All conflagration stations are manned.
- b. Appropriate positioning of TAU units, fixed firefighting hoses are pre-positioned as directed.

CHAPTER 12

AUG 10 1999

CLEANLINESS OF DECKS/FOD PREVENTION

1201. GENERAL. The cleanliness of the flight deck, catwalks, and hangar deck and the prevention of foreign object damage (FOD) to aircraft engines are necessarily closely related. FOD is a principle cause of aircraft engine failure or damage which necessitates costly and time consuming repairs and reduces operational readiness and combat effectiveness. A flight or hangar deck that is saturated or slippery as the result of a POL spill can result in an aircraft sliding out of control and being damaged. In extreme cases, FOD and fluid spills can lead to the destruction of an aircraft and result in injury or death to personnel. A successful program to combat FOD and fluid spills requires active all hands participation in their prevention, timely reporting and a thorough clean-up.

1202. RESPONSIBILITIES. Cleanliness and FOD prevention shall be a joint responsibility of the Air Department, the embarked Air Wing, and all other departments/units which utilize any portion of the flight and/or hangar deck. Specific duties are as delineated below.

a. Aircraft Handling Officer ACHO shall be assigned collateral duty as FOD Prevention Officer. His duties include:

(1) Implementation of a vigorous FOD prevention and cleanliness program through all hands education and involvement, enforcing high standards of flight and hangar deck cleanliness and ensuring that all possible measures for FOD prevention are taken prior to aircraft engine start/ turning.

(2) Making recommendations to proper authority as to means of improving this program.

(3) In collaboration with the Air Wing maintenance officer, flight deck and hangar deck officers, and flight and hangar deck CPO'S, supervising the conduct of a daily FOD walkdown prior to the first launch of the day. It is not to be construed that only one walkdown is required; additional walkdowns will occur whenever the ACHO or proper authority deem them necessary. Engines shall not be started until the walkdown is satisfactorily completed.

(4) Schedule a daily FOD walkdown while in port. Upon leaving port, two FOD walkdowns will be completed prior to the first launch.

(5) Establish a FOD team composed of personnel from the Air Wing and the Air Department for policing of flight and hangar decks.

b. The Flight Deck Officer (FDO) shall assist the ACHO in the performance of his duties. Additionally, he shall be tasked with overall flight deck cleanliness. His duties shall include the following:

(1) Ensuring that padeyes and all other FOD retaining areas of the flight deck are cleaned regularly.

(2) Ensuring that the flight deck scrubber is operated only by qualified personnel, and that every effort is made to retain it in a fully operational status.

(3) Developing an aggressive program of scrubbing the flight deck.

(4) Advise the ACHO that an aircraft is not ready to be respotted due to FOD/fluid spills in the immediate vicinity of the aircraft.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

(5) Monitor the condition of the flight deck non-skid and effect required repair.

(6) Make recommendations to the ACHO as to means for improving the program.

c. The Hangar Deck Officer (HDO) shall assist the ACHO in the performance of his duties. Additionally, he shall be tasked with overall hangar deck cleanliness. His duties shall include the following:

(1) Develop an aggressive program of scrubbing the hangar deck when required.

(2) Ensure that padeyes and all other FOD retaining areas of the hangar deck are cleaned regularly.

(3) Advise the ACHO that an aircraft is not ready to be respotted due to FOD/fluid spills in immediate vicinity of the aircraft.

(4) Monitor the condition of the hangar deck non-skid and effect required repair.

(5) Make recommendations to the ACHO as to means for improving the program.

d. The Aviation Fuels Officer's duties shall include the following:

(1) Provide CAG spill team with two (2) fuel spill carts.

e. The Catapult and Arresting Gear Officer shall, prior to the first launch of the day, ensure that the jet blast deflectors, catapult tracks and barricade stanchions are free of FOD. If the first launch of the day is prior to first light, the above shall be repeated at the earliest opportunity during daylight.

f. The Air Wing Commander, through squadron commanding officers, officers in charge, and Air Wing Maintenance Officer, shall:

(1) Implement and supervise FOD and spill prevention training programs for Air Wing personnel stressing such points as:

(a) Active participation of all hands, including supervisory personnel for all FOD walkdowns.

(b) Wearing proper flight deck uniform during flight operations and ensuring proper marking, stowage and security of hand tools and large gear.

(c) Policing the area around all aircraft to ensure that rags, safety wire, tools and loose parts are accounted for and removed following maintenance or prior to any engine turn-up.

(d) The necessity of preventing spills of petroleum based fluids and grease on the flight or hangar decks.

(2) Ensure that drip pans are utilized whenever maintenance requires a hydraulic jenny and/or could result in fluid spillage.

(3) Provide an Air Wing Spill Tiger Team to immediately respond to clean up large spills.

AUG 10 1999

(4) Prior to embarkation, assign individual squadrons/detachments specific areas of responsibility for policing the flight deck, hangar deck and catwalk areas.

(5) Publish a monthly FOD walkdown list of the squadron responsible for supervising the daily FOD walkdowns.

(6) Ensure that prior to an aircraft reported as up and ready for movement, the area around the aircraft is clean and free of any FOD or fluid spills.

(7) Ensure adequate numbers of personnel, particularly supervisory personnel, participate in FOD walkdowns.

(8) Ensure that petroleum based fluids are not dumped into the flight deck scuppers.

g. All Hands

(1) Eating, drinking, chewing tobacco and smoking are prohibited at all times on the flight deck, catwalks, hangar deck and exposed areas in the island structure.

(2) The wearing of hats or other loose articles of clothing is prohibited in the vicinity of operating aircraft engines. This particularly applies during aircraft engine turnups inport and to personnel viewing flight operations from exposed areas on the island structure.

(3) No individual will carry rags, papers, magazines, or other loose gear on his person on the flight deck during flight operations. Special security pouches will be worn to accommodate keys, pens, pencils or other loose gear that may be susceptible to falling on the flight deck.

h. All Departments

(1) Ensure that areas assigned to or utilized by them on either the flight or hangar decks are maintained in a clean, "FOD free" condition as discussed herein. Specific areas of concern are fasteners, safety wire, tools and loose parts adrift on ground support equipment or boats, and trash or debris left on the deck and elevators after UNREP's, CONREP's or VERTREP'S.

(2) Provide participants for FOD walkdowns.

(3) Ensure that any large item received or transferred is plainly marked with the name of the recipient/sender.

(4) Ensure that items requiring hangar deck stowage are coordinated with the Hangar Deck Officer.

1203. FOD PREVENTION METHODS. Many methods of FOD prevention exist which combine to greatly reduce FOD potential. Among these required methods are:

- a. FOD walkdowns
- b. Clean maintenance
- c. FOD bags/containers/pouches
- d. Flight deck scrubber/sweepers

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

- e. Air/electric driven vacuum cleaners/magnetic brooms.
- f. Tool control
- g. Intake and exhaust covers
- h. Taping/covering aircraft accesses during long-term maintenance/long down time
- i. All hands education
- j. Command emphasis
- k. Incentive programs
- l. Enforcement methods

1204. CLEANLINESS ENHANCEMENT. The decks and associated areas must be kept as neat and clean as possible to provide an impressive appearance, to promote general health and attractiveness, and most importantly, to provide an acceptable level of a safety and operational effectiveness, particularly when the criticality of aircraft movement and maintenance is considered. Likewise, equipment, tools and maintenance related items must be properly stowed and secured to reduce FOD hazard, to maintain material condition, to prevent loss and associated replacement expense, and to provide the desired level of safety and operational effectiveness. It is essential that users of the areas participate and cooperate in the overall effort to maintain a optimum state of cleanliness and security. Many methods exist, which when combined, greatly reduce deck slickness and POL buildup. Required methods are:

- a. Clean maintenance practices.
- b. Use of drip pans. Fuel buckets during engine SHUTDOWN, etc.
- c. Immediate clean up of all fluid spills.
- d. FOD walkdowns.
- e. Scrubbers, sweepers, vacuums, etc.
- f. Command emphasis and all hands education.
- g. Stowage of power cables, hoses, support equipment, etc.
- h. Assignment of specific areas of responsibility on the flight and hangar decks to embarked squadrons and ships divisions/departments. Examples of this responsibility assignment are:
 - (1) Fly One port, CVW (VS)
 - (2) Fly One starboard, CVW (VFA)
 - (3) Fly Two port, CVW (HS)
 - (4) Hangar FR 20-80 port. CVW (VF)
 - (5) Hangar FR 80-110 starboard, Deck Department (3rd Division)
- i. Formalized procedures for daily sign-offs of policing/cleaning assigned areas. This sign-off should include reference to specific tiedown requirements as well as general security and cleanliness. It is recommended

AUG 10 1999

that flight deck/hangar deck control, as appropriate, monitor and coordinate this procedure.

1205. NON-SKID APPLICATION/CLEAN UP FOLLOWING REPLACEMENT

a. General. After extended periods of flight operations, the slip resistant quality of nonskid is reduced such that replacement is necessary. To enhance safety of aircraft operations, to ensure an acceptable non-skid surface, and to ensure adequate post-application clean up, the procedures discussed herein shall be utilized.

b. Non-Skid Removal and Preparation. The two primary methods of removing non-skid from deck surfaces are vacublasting and Tennant (type) machines. Prior to the use of either method, certain precautions must be taken to prevent damage potential to equipment and aircraft. The following steps shall be accomplished:

(1) Divisions with equipment which may be damaged by, or become repositories for steel shot and non-skid debris, shall thoroughly seal off those areas using any, or combination of, the following materials:

- (a) Metal blanks
- (b) Ordnance tape
- (c) Plywood
- (d) Foam rubber blanks
- (e) Mylar material
- (f) Flexible caulking

(2) Examples of items to be sealed include arresting gear sheaves, fairlead accesses, flight deck countermeasure washdown nozzles, barricade stanchions, jet blast deflectors, catapult troughs, holdback tracks, all internal wrenching bolt heads, high power turn-up tiedowns, combat hatches, scupper drains, weapons elevator/safety chain stanchion receptacles and aircraft elevator stanchions.

c. Surface Preparation. Anti-corrosive epoxy primer is required on metal surfaces. Only NAVSEASYSCOM approved epoxy primers may be used and they must be applied as soon as practical after the metal is cleaned to reduce the possibility of rust bloom. The components of the primer (resin and hardener) are to be mixed per the manufacturers instructions and applied by roller, brush or spray to achieve a minimum thickness of 2 mils (maximum 4 mils). For overcoat applications, a thin coat of primer is required.

d. Non-Skid Application. After the primer has cured (time specified by manufacturer), nonskid may be mixed and applied by roller. Spray-on application is not authorized. Mixing procedure and induction time must be per manufacturers instructions. Thoroughly mixed non-skid may be poured in an 18-inch diameter puddle and "rolled" out in a slow, straight motion pulling the material toward the operator. Roll in one direction only to develop the proper ridge formation. Pressure should be moderate and the thickness of properly rolled nonskid should be a minimum of 1/32 to a maximum of 1/16 inch thickness. During application, care must be taken when working around obstructions, such as weld beads and padeyes, to ensure nonskid material does not build up resulting in heavy deposits. Type of non-skid (abrasive or non-abrasive) must be applied to the proper area as defined in the VLA General Service Bulletin Number 3.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

e. Overcoating. If the existing coating is worn, but otherwise sound (intact), it may be overcoated. This condition is evidenced by loss of profile (grit worn flush with coating film), relatively few bare areas (metal only with no significant rusting), and no corrosion undercutting as revealed by easily removable non-skid flakes or sheets. Worn non-skid, with good adhesion characteristics, as demonstrated by difficulty in removal of a test patch by chipping or scraping, may also be overcoated. If the test area indicates overcoating is possible, ensure the area is thoroughly cleaned and degreased utilizing a general purpose detergent. The deck must be thoroughly wire-brushed utilizing Tennant machine wire or nylon brushes with constant debris removal. Bare steel areas must be abraded using number 16 or 18 abrasive disc. Areas adjacent to the work area must be sealed per paragraphs b(1) and (2) above to prevent nonskid contamination. The only "paint" authorized for use on non-skid surfaces is NAVSEASYSOM approved color topping for VLA markings. The color toppings are approved for use only on nonskid made by the same manufacturer.

NOTE

IAW NSTM 634 No more than three coats of color topping shall be used; however, if the loss of slip resistance is noticed with less than three coats applied, no additional coats shall be applied. Painting an entire deck or a section of a deck for cosmetic purpose is strictly prohibited. Additionally, the application of color topping to a flight deck for reasons other than VLA or safety markings is not permitted.

f. Clean-up. It is essential that all residue from vacublasting or chipping be removed prior to priming and rolling non-skid. It is equally important that all areas of the flight deck be meticulously inspected and cleaned after completion of the non-skid effort. Every effort must be made to ensure complete removal of all remaining sand blast and non-skid prior to commencement of air operations. Steel pellets and non-skid debris are known to accumulate in areas noted in paragraph b(2) above; therefore, these areas may require hand chipping/cleaning with thin instruments and sweeping/vacuuming to dislodge the material. Proper adherence to the procedures set forth herein, as well as an ongoing clean up process during vacublasting/chipping, will minimize the final clean up effort. It is extremely important that pellets be cleaned up without delay in order to obviate rusting in crevices which jet blast can later dislodge causing FOD. Methods of clean up include, but should not be limited to, the following:

- (1) Low pressure air
- (2) Corn/street brooms
- (3) Portable commercial vacuums
- (4) Flight deck scrubbers
- (5) Pressurized water streams
- (6) Hand chipping and sweeping

The commanding officer is responsible for satisfactory clean up and, therefore, khaki supervision of the above methods, or combination thereof, to effect cleanup will contribute significantly to ensuring removal of pellets and non-skid residue.

AUG 10 1999

g. Quality Assurance. Due to the high cost in terms of time, money and material of both contractor and ship's force applied non-skid, and the disastrous results of inadequately cleaned flight decks following non-skid efforts, it is essential that ship's force Quality Assurance (QA) be vigorously applied throughout the entire non-skid effort. Minimum QA guidelines shall be utilized:

(1) Quality Assurance Officer/Assistant QAO. The Air Officer shall appoint a Quality Assurance Officer to be in charge of the overall QA effort. He shall be assisted by a chief petty officer, from V-1 or V-3 Division, as appropriate.

(2) Duties. The Quality Assurance Officer is charged with ensuring the non-skid effort is completed per this instruction, NAVSHIPS Tech Manual CH-634 and VLA General Service bulletin Number 8. Additionally:

(a) If the non-skid effort is undertaken by a contractor, the individual assigned QA responsibility will ensure compliance with requisites of the contract by both ship's force and contractor personnel.

(b) If the non-skid is undertaken by a repair activity, the individual assigned QA responsibility will ensure that the provisions of OPNAVINST 4700.7 (enclosure (2). Item 4b(9)) are met.

h. Records. Naval Ships Technical Manual Chapter 634 has sample quality assurance checklists to be completed before, during, and after application of the non-skid coating system. The completed record shall be retained in the ships file for at least three years or until the non-skid is replaced.

AUG 10 1999

CHAPTER 13

AIR DEPARTMENT INTEGRITY WATCH

1301. GENERAL. At all times when aircraft are embarked (except when the ship is at flight quarters or general quarters) the Air Department Integrity Watch shall be posted and conducted per this instruction and current directives. When the ship is in an alert posture or conducting a special evolution (VERTREP, CONREP, helo operations, etc.), the Integrity Watch may be set as conditions dictate at the discretion of the Air Officer or his representative.

1302. BASIC FUNCTION. The Air Department Integrity Watch shall be responsible to the Command Duty Officer/Officer of the Deck for the security of all aircraft and equipment of the flight and hangar decks, the catapults, arresting gear, the aviation fuels system, and for the observance of all safety precautions. In the absence of all Air Department Handling Officers, the Integrity Watch assumes responsibility for the entire deck evolution which is Air Department responsibility during flight quarters. The Integrity Watch shall also be responsible for maintaining red light conditions on all exposed decks and equipments when "darken ship" is prescribed. Additionally, the Integrity Watch shall implement all "heavy weather" conditions prescribed per existing ship's instructions. The watch shall be a four hour continuous watch.

1303. COMPOSITION. The Air Department Integrity Watch will normally be composed of qualified personnel from the air wing and the Air Department as follows (these requirements may be modified by the Air Officer/Aircraft Handling Officer as required):

<u>WATCH or DUTY</u>	<u>PERS REQ.</u>	<u>PROVIDED BY</u>
Integrity Watch Officer (IWO)	1	Air Wing
Integrity Watch Petty Officer (IWPO)	1	Air Wing
Flight Deck Security Patrol	3	Air Wing
Hangar Deck Security Patrol	2/3 *	Air Wing
Integrity Watch Messenger	1	V-1 Division
Catapult Security Watch	2	V-2 Division
Conflagration Watches	2/3 *	V-3 Division
Aviation Fuels Security Watch	1	V-4 Division
Pri-fly Security Watch	1	Air Office
Aviation Fuels Petty Officer of the Watch	1	V-4 Division

* One Watch Per Bay

1304. EQUIPMENT

a. While on watch, each roving security patrol shall wear a properly configured white flotation (life) vest. It shall be stenciled front and rear with large black letters "IW". Survival equipment (flotation vest, cranial, etc.) shall be provided for the IWO and IWPO to don in the course of their routine flight deck inspections. No member of the IW team shall routinely venture onto the flight deck without proper survival equipment.

b. The flight and hangar deck integrity watch, aviation fuels security patrols and catapult security watches shall be equipped with a flashlight. Four weather gear shall be provided for watches exposed to the elements during inclement weather.

c. An Integrity Watch Officer's Logbook, Pass Down (PDL) book, night order log, equipment accountability log, and instruction/reference binder and publications will be provided by the ACHO.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

d. Integrity Watch gear will be provided and maintained as directed by the Aircraft Handling Officer. IWO's shall be responsible for ensuring the accountability of this gear with any discrepancies noted in the integrity watch equipment accountability log.

1305. TRAINING. The formal training of the Integrity Watchstanders will be coordinated by the Aircraft Handling Officer. All IW team members shall receive training/briefings prior to standing watches. This training shall be per current PQS directives, but is not limited to, the following items:

- a. Watch organization and responsibility.
- b. Chain of command, reports, inspections, logs, etc.
- c. Aircraft and equipment security (tiedowns, chocks, configuration, etc.).
- d. Deck cleanliness (leaks, spillage, washing, etc.).
- e. Firefighting/damage control (steam smothering, AFFF and salt water hoses, mobile equipment, fixed firefighting system, etc.).
- f. Heavy/adverse weather precautions/safeguards.
- g. Aircraft maintenance support (turn-ups, configuration changes, moves, etc.).
- h. Elevator operations.
- i. Special evolutions (visiting, picnics, sporting events, etc.).
- j. Communications equipment/methods.
- k. Safety considerations.
- l. Other (whip antennae, points of contact, etc.).

1306. GUIDELINES. The following guidelines shall govern the conduct and functioning of Integrity Watchstanders.

a. All watchstanders must be familiar with tiedown requirements, turn-up requirements, and any other specific governing factors which deal with the situation at hand. All pertinent instructions and publications should be consulted before undertaking or approving a non-standard or unfamiliar evolution.

b. The usage, purpose, and functioning of all available communications equipment must be thoroughly understood by all members of the watch team. Specifics will be covered during the mandatory ACHO briefing given prior to qualification for watchstanding.

c. Maintenance and enforcement of superb deck cleanliness, FOD free environment, security of aircraft and equipment, and safety of all hands are primary responsibilities of Integrity Watches.

d. Watches shall be stood in a professional, military manner. Complete attention to the job at hand is required; therefore, no reading materials shall be permitted at the watch station during the course of the watch. Likewise, writing shall be minimized and not permitted to detract from ones attentiveness.

AUG 10 1999

e. Reliefs will occur on station, face-to-face, under the cognizance of the IWPO or the IWO. All watch stations must remain manned throughout the duration of the period. Turnovers in flight deck control or other centralized locations are not permitted; however, watch teams should be thoroughly briefed prior to on-station relief.

f. Air Department briefings by the ACHO and/or representatives are mandatory for all IWO's/IWPO's prior to their being assigned a watch. Roving patrols will be briefed by the IWO/IWPO and squadron maintenance supervisors. Random questioning of Integrity Watchstanders will occur; failure to respond to such queries knowledgeably will be cause for immediate relief and replacement.

g. Appropriate logs shall be maintained in an accurate and traditional manner.

h. Chow reliefs, where necessary, will normally be furnished by the division/squadron concerned. For IWO'S, the off going 1200-1600 watch will return to relieve the 1600-2000 watch unless previous arrangements, satisfactory to both parties, have been made.

i. The aircraft spotting board and associated templates shall not be moved. Accuracy of deck spot is critical for many evolutions.

j. Information passed to flight deck control such as air plan changes, changes to alert status, etc., will be entered in the PDL and the ACHO immediately notified (if deemed necessary).

k. Integrity Watchstanders are a crucial link in the ship's security network. Watches shall challenge all personnel in civilian clothes who are not recognized and have no visitor badge or are unescorted.

1307. INTEGRITY WATCH OFFICER. The Integrity Watch Officer shall be a fully qualified officer from embarked squadrons and will stand a four hour watch. He will relieve the Aircraft Handling Officer (ACHO) or his representative upon secure from flight quarters. Subsequent watches will relieve in Flight Deck Control at thirty minutes prior to the hour. He will be responsible for carrying out the following basic functions:

a. Supervise the mustering, instruction and posting of the Air Department Integrity Watch. Instruct the watch in the following:

(1) Use and location of all available firefighting equipment.

(2) Methods of turning in a fire alarm.

(3) The need for constant vigilance to ensure the security of embarked aircraft, and to prevent unauthorized personnel from gaining access to aircraft and equipment.

b. Carry out the instructions of the Aircraft Handling Officer as published in the Integrity Watch Night Order Book.

c. Station himself in flight deck control (or hangar deck control if applicable) from where he will conduct frequent inspections of the flight deck, hangar deck and conflag stations, covering each watch at irregular intervals to ensure that the instructions and orders governing the watch are being carried out.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

d. Make hourly security reports on the hour to the Officer of the Deck after assembly of reports from the following:

- (1) Aviation Fuels Security Patrol (every two hours; see Section 810)
- (2) Catapult Security Watch
- (3) Flight and Hangar Deck Security Patrols
- (4) Conflagration Station Watches
- (5) Pri-Fly Security Watch

NOTE

Failure of watches to report as prescribed is cause for immediate investigation.

e. Be familiar with safety precautions that pertain to equipment and machinery on the flight and hangar decks, aviation fuels systems, and catapults, and ensure compliance with such precautions.

f. Ensure that squadrons and detachments concerned keep the area beneath their aircraft clear of trash, all combustibles and all items of FOD potential and ensure proper care and securing of power cables and air start hoses.

g. Be thoroughly familiar with all firefighting equipment on the flight and hangar decks, catapult spaces, and in the Conflagration Stations and the means of turning in a fire alarm.

h. Take immediate steps to control all fires on the flight or hangar decks and catapult spaces until relieved by proper authority.

i. Permit aircraft to be moved only as specifically authorized by the Aircraft Handling Officer or Air Department Duty Officer. **THE INTEGRITY WATCH OFFICER MAY AUTHORIZE THE MOVING OF AIRCRAFT ONLY IN EMERGENCIES.**

j. Permit an aircraft engine to be turned up only after ensuring that the following conditions are satisfied:

(1) Turn-up has been approved by the Aircraft Handling Officer and the Officer of the Deck (at sea).

(2) Permission has been obtained from the Air Department Duty Officer and Officer of the Deck (in port).

(3) Aircraft has been parked and secured to preclude damage to other aircraft, objects, or ship structure. **ENSURE THAT REQUIREMENTS FOR TIEDOWNS ARE MET, A SQUADRON SAFETY REPRESENTATIVE IS STANDING BY,** and that all other precautions specified in section 1603 are observed.

k. Unless otherwise directed, ensure that all aircraft elevators remain at the flight deck level with the locks inserted when the ship is underway. Permit the aircraft elevators to be operated only as specified below:

(1) Only after obtaining permission from the ACHO and COD when the ship is underway and not at flight quarters.

(2) Only after obtaining permission from the Air Department Duty Officer and OOD when the ship is in port.

AUG 10 1999

(3) Only when satisfied all aircraft electrical leads have been disconnected from aircraft on elevators and elevators are otherwise clear.

l. Supervise any additional Security Patrol furnished by the ship as directed in ship's instructions.

m. Keep informed on the prospective state of the weather and take the necessary precautions as conditions warrant or as may be prescribed by ship instructions, the Officer of the Deck, Aircraft Handling Officer (at sea), or the Air Department Duty Officer (in port).

n. Keep the Officer of the Deck, the Air Department Duty Officer (in port), Aircraft Handling Officer (at sea), and the air wing and squadron duty officers informed of any matters that require their action.

o. Maintain a PDL for entry of items of significance for succeeding IWO'S.

p. Enforce smoking regulations and other safety measures on the flight deck and catwalks or on the hangar deck as applicable.

q. Enforce "darken ship" regulations on the island structure, flight deck, and gallery walkways.

r. Supervise the keeping of the Integrity Watch Log and sign the log at the end of each watch.

1308. INTEGRITY WATCH PETTY OFFICER. The Integrity Watch Petty Officer shall be a fully qualified first or second class petty officer of the embarked air wing. He will be responsible for the supervision of the Aircraft Integrity Watches and for carrying out the following duties and responsibilities:

a. Act as an assistant to the Integrity Watch Officer.

b. Under the direction of the Integrity Watch Officer, muster, instruct, post and supervise the Aircraft Integrity Watches.

c. Make periodic inspections of all watches posted to ensure alertness of the sentries and familiarity and compliance with the instructions contained herein.

d. Inspect for security of aircraft and aircraft fuel systems and for the presence of fire hazards. Inspect all power cables carefully and ensure they are properly secured after use. Take appropriate action if discrepancies are noted. Report such discrepancies and action taken to the Integrity Watch Officer.

e. Assemble and make required security reports to the Integrity Watch Officer.

f. Maintain and ensure custody of the equipment required by the Integrity Watch.

g. Perform such other duties as may be required.

1309. FLIGHT AND HANGAR DECK SECURITY PATROLS. The Flight and Hangar Deck Security Patrol watches shall be stood by fully qualified personnel of the embarked air wing. These watches will be responsible for the physical security of all aircraft and equipment on the flight and hangar decks and for the following:

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

a. Ensure that all aircraft and support equipment are secured IAW current directives and instructions of the Integrity Watch Officer.

b. Inspect all aircraft in assigned area for loose tiedowns, jury struts, chocks, intake and exhaust covers installed, canopies closed, and gear/rack pins in place. Loose tiedown deficiencies shall be corrected on the spot.

c. Inspect assigned area for rags, hydraulic fluid, fuel, oil, and fire hazards. Report any discrepancies to the Integrity Watch Officer and stand by aircraft concerned with firefighting equipment.

d. Pick up all loose rags, rubbish, missile hazards and place them in proper receptacles.

e. Ensure that all external power cables have been properly secured and de-energized when not connected to an aircraft and de-energized when maintenance personnel are required to be away from the aircraft temporarily.

f. Know the location and proper use of all firefighting equipment in assigned area.

g. IMMEDIATELY REPORT ALL FIRES to the Officer of the Deck, Damage Control Central, and the Integrity Watch Officer.

h. Report any suspicious actions or occurrences to the Integrity Watch Officer.

i. Allow no unauthorized personnel in assigned areas.

j. Perform such other duties as may be required.

k. Report the security of the assigned area of the flight or hangar deck 15 minutes before every hour per existing procedures.

1310. INTEGRITY WATCH MESSENGER. The Integrity Watch Messenger shall be stood by fully qualified personnel of the V-1 Division. He will carry out the following duties and responsibilities:

a. Be available to the Integrity Watch Officer to perform such duties as the watch officer may assign.

b. In the absence of the IWO and IWPO, remain in flight deck control to handle communications.

1311. AVIATION FUELS SECURITY WATCH. The Aviation Fuels Security Watch shall be stood by 7-4 Division personnel under the supervision of the Duty AVFUELS Petty Officer. All watchstanders shall have completed the AVFUELS (Afloat) PQS qualification section for this watch. Trainees may be assigned under the supervision of a qualified watchstander. Spark producing items such as matches, cigarette lighters, and ferrous metals shall not be worn or carried.

The Aviation Fuels Security Watch shall perform the following duties:

a. Make rounds as directed in chapter 8 paragraph 810.b.

b. Inspect each space or station on his post for the following:

(1) Security of valves

(2) Leakage of any kind

AUG 10 1999

- (3) Gear adrift
 - (4) Unauthorized personnel
 - (5) Proper ventilation
 - (6) Lighting
 - (7) Liquid in the bilge
 - (8) Unauthorized smoking, open flames or welding
- c. The watch shall be a roving patrol.
- d. Report the condition of the AVFUELS system at the completion of each round to the IWO (when air wing is embarked, and to OOD (OD) when the air wing is not embarked).
- e. Report any abnormalities to the Duty AVFUELS PO, IWO, OOD, AVFUELS LCPO, AVFUELS Maintenance Chief or Damage Control Central (DCC) as appropriate.
- f. Know the location and proper use of all firefighting equipment in or adjacent to fuels spaces.
- g. Ensure that all safety precautions pertaining to AVFUELS are strictly observed.
- h. Perform such other duties as may be assigned.
1312. CATAPULT SECURITY WATCH. This watch shall be stood by qualified personnel of the V-2 Division (one man for bow and one man for waist catapults) and shall be responsible to the IWO or OOD for the security of the catapults and associated equipment. He shall be supervised by the duty V-2 catapult petty officer. This watch shall relieve on station and shall be maintained in each catapult area whenever the respective machinery is pressurized. Specific duties and responsibilities are as follows.
- a. Report completion of watch turnover or assumption of the watch to the IWO or OOD as appropriate.
 - b. Make hourly reports fifteen minutes prior to the hour to the IWO or OOD as appropriate per existing directives.
 - c. Maintain a roving patrol through all catapult machinery spaces with emphasis on security and safety.
 - d. Keep unauthorized personnel out of machinery spaces.
 - e. Be alert for fire hazards particularly in launch valve areas and cat troughs.
 - f. Immediately report all fires or abnormalities.
 - g. Know the location and proper usage of all firefighting equipment in or adjacent to catapult spaces.
 - h. Maintain logs as required of accumulator pressure, steam temperatures, cylinder elongation and any unusual incidents.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

- i. Be alert for and report air, steam or fluid leaks.
- j. Perform such other duties as may be assigned.

1313. CONFLAGRATION STATION WATCH. Each Conflagration Station Watch shall be stood by fully Conflag PQS qualified personnel of the V-3 Division who shall be responsible to the IWO or OOD, as appropriate, for the security of the hangar bay and for the proper operation of all remotely controlled firefighting apparatus on the hangar deck. It is a four hour watch requiring constant vigilance to detect and report the outbreak of fire or other hazardous conditions at the earliest possible moment. As a minimum, one conflagration station per bay (containing aircraft), will be manned during the watch period. Specific duties and responsibilities are as follows:

- a. Report completion of watch turnover or assumption of the watch to the IWO or OOD, as appropriate.
- b. Make hourly reports fifteen minutes prior to the hour to the IWO or OOD, as appropriate, per existing directives. Conflag reports should be consolidated so that only one conflag actually reports to the IWO/OOD (i.e., conflag one reports to conflag two who reports for both).
- c. Permit no unauthorized personnel in the conflag.
- d. Maintain a continuous visual watch with particular emphasis on security, safety, and fire/damage potential.
- e. Be thoroughly familiar with the operation procedures pertaining to all controls, systems and circuits located within the conflag.
- f. Be prepared to provide proper and timely use of firefighting equipment remote controls as needed.
- g. Be prepared to provide proper and timely use of elevator and hangar divisional door remote controls as needed.
- h. Operate hangar lighting and communications systems as directed.
- i. Immediately report all fires, fire potential and any abnormalities per existing directives.
- j. Perform other duties as may be prescribed.

1314. PRI-FLY SECURITY WATCH. The Pri-fly Security Watch shall be stood by fully PQS qualified personnel from the air office who shall be responsible to the IWO or OOD as appropriate.

- a. Report completion of watch turnover or assumption of the watch to the IWO or OOD, as appropriate.
- b. Make hourly reports fifteen minutes prior to the hour to the IWO or OOD as appropriate.
- c. Permit no unauthorized personnel in Pri-fly.
- d. Maintain a visual watch with particular emphasis on security, safety and fire potential.
- e. Be thoroughly familiar with the operation procedures pertaining to all controls, systems and circuits located within Pri-fly.

AUG 10 1999

f. Be prepared to provide proper and timely use of remotely controlled installed AFFF systems as needed.

g. Operate flight deck lighting and communication systems as directed.

1315. OTHER RESPONSIBILITIES

a. The Aircraft Handling Officer

(1) Is responsible to the Air Officer for the overall training and supervision of the Air Department Integrity Watch.

(2) Shall review the Integrity Watch Log daily and shall take action as required to correct any problem areas or discrepancies noted therein.

(3) Assist in the training of air wing personnel by providing qualified instructors in all areas of Integrity Watch procedures, responsibilities and equipment.

b. Air Wing Watch Coordinator

(1) Will be assigned by the air wing commander and will be directly responsible for the coordination of training and assignment of qualified Integrity Watch personnel from the air wing.

(2) Will maintain close liaison with the Aircraft Handling Officer in matters relating to the Integrity Watch.

(3) Is responsible for establishing a schedule of training lectures for all air wing watch personnel requiring indoctrination/qualification in watch procedures and responsibilities through coordination with the ACHO.

1316. SETTING THE WATCH

a. Following the final respot or at such other times as may be designated by the ACHO, the Air Department Integrity Watch shall be set. This is normally accomplished by notifying the bridge and having the word passed over the ILC.

b. The on-coming Integrity Watch Officer shall be briefed on pending evolutions by the ACHO or his authorized representative. The duty handling crew will be briefed as well. Special instructions will be published in the IW Night Order Book.

1317. MUSTERING THE WATCH. The on-coming watch will be notified by Flight Deck Control and muster in the proper uniform thirty minutes prior to assuming the watch. At this time the watch will be instructed by the Integrity Watch Officer.

AUG 10 1999

CHAPTER 14

AIRCRAFT HANDLING MISHAPS

1401. GENERAL. Any damage to an embarked naval aircraft, no matter how slight, shall be immediately reported to the ACHO and other cognizant persons in the chain of command. The circumstances surrounding the incident shall be thoroughly investigated and required reports submitted. Records of each aircraft handling mishap (crunch) shall be kept per CV NATOPS, OPNAVINST 3750.6, and other applicable directives.

1402. DEFINITIONS. To standardize and clarify Aircraft Handling Mishap (AHM) reporting, the following definitions shall apply. These definitions amplify OPNAVINST 3750.6 and in no way alter the intent or meaning of that instruction.

a. Aircraft Handling Mishap. This is a mishap which occurs when any damage to an aircraft occurs while the aircraft is embarked on or is being hoisted on/off an aircraft carrier. The damage must be associated with normal aircraft handling practices such as towing, taxiing, use or functioning of launch/recovery equipment, aviation fueling evolutions, tractor movement, crash/salvage attempts, drills or any other event which is a normal or emergency portion of a CV/CVN Air Department repertoire. Mishaps caused by non-Air Department personnel, involving non-Air Department equipment, or otherwise not directly attributable to an Air Department causal factor should not "normally" be categorized as a crunch but shall be reported per existing directives. An aircraft handling mishap is a special category of mishap in addition to those delineated in OPNAVINST 3750.6.

b. Reportable/Non-reportable. The current version of OPNAVINST 3750.6 shall be utilized in establishing damage criteria which in turn determines whether a crunch is or is not reportable. All damage, however slight, shall be reported, investigated, and recorded. Formal reports are required only when damage dollar cost/man-hours for repair/injury is equal to or greater than the specified criteria. Mishaps of lesser severity shall be informally reported on the command's crunch report form and retained for education and reference purposes--no external report is normally required.

c. Reports/Records. Reports are normally originated by the aircraft reporting custodian. Reports of aircraft handling mishaps (AHM) shall be sequentially numbered by calendar year in the same manner as naval aircraft mishaps, i.e., USS ESSEX AHM 01-80, etc. This number shall be included in the remarks section of the originators (normally aircraft reporting custodian) mishap report. No special report is required.

d. Measure of Effectiveness. Given variables in deck geometry, aircraft density, tempo of operations, environment, equipment type and age, personnel experience, aircraft type and a myriad of other factors, it is impossible to arrive at a formula which equitably measures crunch rate and permits comparison of efficiency. Nonetheless, crunch rate has historically been and will continue to be an effectiveness measure. In this regard, aircraft handling mishap frequency will be compared to total embarked flight hours (i.e., one crunch per 1,500 hours) as are other types of aircraft mishaps. An additional method of comparison is aircraft moves per crunch where a move is a launch, recovery, or movement by hand, tow or taxi. This method is somewhat less precise due to difficulty encountered in "counting" moves but is valid to a large degree. Either method is satisfactory; however, utilization of both is preferred.

1403. SAFETY AWARENESS. It is essential that a continual, on-going program of safety awareness occur to protect precious, limited aircraft assets. Education of all Air Department personnel is required in a conscious effort to operate at a near zero crunch rate. Involvement of supervisory and management personnel at all levels is mandatory. A method of placing emphasis and awareness on aircraft

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

handling mishaps is a "howgozit" board which describes the last mishap, date and frequency since the previous mishap. A sample "howgozit" is provided below:

CRUNCH STATUS BOARD

DATE _____

DESCRIPTION _____

HOURS SINCE LAST CRUNCH. _____

MOVES SINCE LAST CRUNCH. _____

Status boards similar to the above shall be prominently displayed in both Flight and Hangar Deck Control. It is recommended that additional boards be displayed in each Air Department divisional office to serve as a constant reminder to all hands.

1404. ~~CRUNCH REPORT FORMAT~~. The content of a ship's crunch report shall include the following items as a minimum:

- a. Sequential number of report
- b. Date and time of mishap
- c. Location of mishap
- d. Environmental conditions
- e. Deck/other conditions
- f. Description of mishap
- g. Aircraft/equipment involved and damage estimate
- h. Personnel involved: Director, handling crew, tractor driver, plane captain, pilot, others
- i. Training qualification of each person directly involved
- j. Witnesses other than above
- k. Causal factors with all contributing circumstances
- l. Recommended/corrective action to prevent similar occurrence
- m. Routing information for the report.

A sample crunch report is included as Appendix A to this chapter.

AUG 10 1999

USS _____
CRUNCH REPORT NO. _____
DATE _____

From: _____ Division Officer

ROUTING INSTRUCTIONS*
ORDER DATE OUT INITIAL

To: Commanding Officer

- Via: (1) Aircraft Handling Officer
(2) Air Officer _____
(3) Squadron Commanding Officer
(4) Squadron CO/Special
(5) Commander, CVW
(6) Ships Safety Officer

*EACH ADDEE MUST ROUTE WITHIN THREE DAYS.

Subj: Aircraft Handling Mishap

1. Date/time of mishap _____
2. Location of mishap _____
3. Environment/weather _____
4. Deck conditions/other _____
5. Description of mishap _____

6. Aircraft/equipment involved/damaged _____

7. Personnel involved (name, rate, service number, training qualifications):
 - a. Director _____
 - b. Plane Handlers _____
 - c. Tractor Driver/Equipment Operator _____
 - d. Plane Captain _____
 - e. Pilot _____
 - f. Other _____

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

8. Witnesses (name, rate, service number): _____

9. Causal Factors _____

10. Recommendations/Corrective Action _____

COMMENTS AND RECOMMENDATIONS

11. ACHO _____

12. Air Boss _____

13. Squadron CO _____

14. CAG _____

15. Ships Safety Officer _____

16. Commanding Officer _____

RETURN TO _____ FOR FILING

AUG 10 1999

CHAPTER 15

AIRCRAFT SERVICE FACILITIES

1501. GENERAL. Personnel involved in aircraft servicing and maintenance must be thoroughly familiar with the operating instructions and safety precautions when utilizing fixed service facilities and mobile support equipment to preclude injury and equipment damage.

1502. POWER OUTLETS

a. Location. A master status board in flight and hangar deck control shall be maintained to provide availability and location of power outlets.

b. Responsibility

(1) Maintenance and preservation of cable trunks, adequacy of cables, preservation of housing and fittings and availability of service shall be per ship procedures.

(2) Discrepancies or malfunctions of power outlets will be reported by the user to flight or hangar deck control for coordination of repair.

(3) A daily pre-operational check is recommended to ensure proper operation, initiate action for repair or replacement and report status to flight/hangar deck control as appropriate.

c. Safety Procedures

(1) Plane captains and/or maintenance personnel shall ensure that the power is off prior to connecting or disconnecting power cables.

(2) Ship's deck edge power must be energized prior to turning on aircraft battery switches to avoid the possibility of causing reverse polarity in the ships 60 cycle motor generator power supply.

(3) When inserting or removing the plug into receptacle of aircraft, avoid wrenching, twisting, or jamming movement. Such action may cause the aircraft receptacle pins to break and/or cause damage to the cable head. Do not pull on cable to remove - always grasp plug.

d. 400 Cycle AC Power/28 Volt DC Power. These installed cables are the primary service power. The following general procedures apply for use:

(1) Remove the cable from its stowage area ensuring sufficient slack to prevent tension on the plug. Ensure power is in the off position.

(2) Cockpit should be manned by a qualified individual prior to energizing power to ensure aircraft switches in proper position.

(3) At completion of use, de-energize power, remove cable and properly restore.

1503. LOW PRESSURE AIR. Low pressure air (125 PSI maximum), is available from various outlets on the flight and hangar decks. This air supply is for use, as required, for spray painting, grinding and general cleaning operations.

1504. HIGH PRESSURE AIR

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

a. High pressure air (3000 PSI) is available from various outlets on the flight and hangar decks.

CAUTION

SERIOUS INJURY MAY RESULT FROM MISUSE OF HIGH PRESSURE AIR.

b. Only qualified personnel should utilize the high pressure air system using approved hose and fittings.

c. High pressure air shall not be connected to any unit unless an approved, calibrated pressure regulator is included between the pressure source and the unit being charged/utilized.

1505. LIQUID OXYGEN (LOX)

a. General. All aircraft that operate in a high altitude environment are provided with an oxygen supply system for life support of crew members.

b. LOX is a light blue liquid which flows like water and is extremely cold.

c. LOX forms a combustible and explosive mixture when it comes in contact with flammable or combustible materials such as wood, cloth, oil, gasoline, etc.

WARNING

Only qualified, licensed personnel shall operate LOX handling equipment. Personnel shall wear the following protective clothing to prevent skin and eye injury:

- (1) Face shield
- (2) Coveralls (white)
- (3) Gloves (approved)
- (4) Safety shoes

d. Safety Precautions

(1) The work area and equipment shall be kept free of oil, grease, or any readily combustible material and marked IAW current visual landing aids bulletins.

(2) Tools and clothing must be free of oil and grease.

(3) Smoking, open flames, or sparks shall not be permitted in the LOX handling area.

(4) When transferring LOX, adequate ventilation shall be provided to avoid an oxygen rich atmosphere.

(5) LOX spillage on deck areas should be avoided. In case of accidental spillage, the area should be thoroughly ventilated. Drainage of LOX must be caught in a clean drain pan and allowed to evaporate in an open area.

(6) Extraordinary care shall be exercised to prevent storage and/or close proximity of LOX, fuel and weapons at all times.

AUG 10 1999

1506. MOBILE SUPPORT EQUIPMENT

a. General. Support equipment is important to the assigned mission of aircraft carriers. Many types of support equipment are required for handling, servicing, and maintaining aircraft. Air Department personnel are principal operators of the support equipment discussed herein and perform such servicing and pre-operational inspections as may be required.

b. Licensing Procedures

(1) All personnel required to operate and/or maintain GSE equipment shall be properly licensed per OPNAVINST 4790.2 (series).

(2) Aviation Support Equipment Operator's Identification Card, OPNAV form 4790/12, shall be required for personnel to operate a specific equipment at individual activities. If the equipment is self-propelled and driven as an automotive vehicle, the operator shall be required to possess a valid U.S. Government Motor Vehicle Operator's Identification Card (SF-46) in addition to GSE operator's license.

(3) Equipment listed on the GSE operator's license shall be specific as to model and type of equipment for which qualified. GSE license requirements should be identified in advance of deployment date to provide for necessary training and licensing for GSE which may be encountered during that deployment.

(4) Generally, personnel are to be licensed by the Commanding Officer or Officer in Charge of the activities to which they are attached for duty. Licenses shall be issued only by an authorized training activity.

(5) Service Record Entry. A page 4 entry will be made in the trainee's service record upon satisfactory completion of a GSE licensing training course.

(6) Commanding Officers of NAVAIRPAC/NAVAIRLANT ships shall:

(a) Establish and implement a GSE licensing training program within AIMD for ship/air wing personnel.

(b) Provide adequate training facilities.

c. Pre-Operational Maintenance

(1) The proper servicing of support equipment is an extremely important part of maintenance and operation.

(2) Under the Planned Maintenance System (PMS), support equipment is provided with Maintenance Requirement Cards (MRC's) which provide the minimum requirements necessary to maintain the subject equipment in a satisfactory and effective operational readiness condition.

(3) The following NAVAIR pre-operational maintenance requirement cards are applicable to the listed equipment.

(a) NC-2A	NAVAIR	19-600-58-6-1
(b) MD-3	NAVAIR	19-600-86-6-1
(c) MD-3A	NAVAIR	16-600-22-6-1
(d) MD-3B	NAVAIR	19-600-90-6-1
(e) SD-IE	NAVAIR	19-600-93-6-1
(f) NS-60	NAVAIR	19-600-131-6-1
(g) P-16	NAVAIR	19-600-168-6-1

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

(h) SD-2
(I) CVCC

NAVAIR
NAVAIR

19-600-223-6-1
19-600-277-6-1

NOTE

Mobile SB-TAU units will utilize appropriate section of NAVAIR 19-600-90-6-1 for pre-operational servicing of the tractor and A-615-8-C5 for TAU units.

d. Responsibility

(1) The movement and starting of aircraft on the flight and hangar deck shall be under the cognizance of the V-1 and V-3 Division Officers.

(2) The maintenance and repair of support equipment is performed by the Aircraft Intermediate Maintenance Department (AIMD).

(3) The flight deck tractor king shall be responsible for the direct supervision of flight deck tractor crew to include:

(a) Only qualified Air Department personnel operate towing/starting units.

(b) Coordinate pre-operational maintenance requirements and servicing.

(c) Attend pre-launch brief and coordinate the use of towing/starting units during launch/recovery, respot evolutions.

(d) Coordinate maintenance requirements with AIMD representative and ensure Aircraft Handling Officer is informed of changes in towing/starting unit status.

(e) Maintain vehicle security IAW Chapter VII of this manual.

1507. MD-3A/B TOW/STARTING UNITS. General. The MD-3 tractor is designed for use aboard aircraft carriers and is a self-contained unit capable of developing 8,500 pounds draw bar pull. A gas turbine compressor unit (GTC-85 or GTC-100) mounted at the rear of the tractor provides pneumatic power in the form of compressed air for the operation of aircraft main engine starters. The GTC-100 unit also provides AC and DC power.

1508. NC-2A MOBILE ELECTRIC POWER PLANT (MEPP)

a. General. The NC-2A is designed primarily for emergency power use aboard aircraft carriers. (Normally deck-edge power is utilized.) It is a self-propelled diesel powered service unit capable of delivering 400 volt AC power and 28 volt DC power.

b. Enclosure (2) of this instruction indicates the optimum vehicle positioning during aircraft starts and maintenance servicing. When feasible, NC-2 positioning should be parallel to aircraft fuselages with forward movement away from the aircraft.

1509. AIRCRAFT SPOTTING DOLLY

a. SD-1E AIRCRAFT SPOTTING DOLLY. General. The SD-1E aircraft spotting dolly is a self-contained diesel engine driven unit for use in spotting aircraft carrier type aircraft, providing maximum maneuverability in congested

AUG 10 1999

areas. The SD-1E has a draw bar pull of 6,000 pounds and a nose wheel lifting capacity of 16,000 pounds.

b. ~~SD-2 Aircraft Spotting Dolly. General.~~ The SD-2 has a draw bar pull of 10,000 pounds and a nose wheel lifting capacity of 12,000 pounds.

1510. CARRIER CRASH CRANE (CVCC)

a. General. CVCC is designed primarily to lift and move damaged aircraft on the flight deck of aircraft carriers. The crane is a self-propelled vehicle with rear and mid DC electric drive motors to provide power for crane travel. Each motor receives power from an AC Generator that is coupled to the diesel's engine. A DC electric motor provides power for the main hoist control or Boom Luff control.

b. Vehicle positioning shall be at the direction of the Crash and Salvage Officer.

1511. SB-TAU-2 (H)

a. General. The SB-TAU-2(H) extinguishment package consists of 400 pounds of Halon and 80 gallons of light water. The system allows for application separately or both simultaneously.

b. Hangar Deck. A SB-TAU-2(H) unit for each bay shall be mounted on a TAU Cart or equivalent to provide mobility. The unit should be so positioned as to provide an immediate response throughout the bay.

1512. FORKLIFT TRUCKS

a. General. The type of forklift used aboard aircraft carriers for aircraft salvage purposes is a 20,000 pound lift capacity. A lifting arm for attachment to the lifting forks (padded fingerboom) for insertion under wing or fuselage surfaces are used to lift damaged aircraft for salvage operations. Care should be exercised in placement of lift arm only under sections of the aircraft that will sustain the weight without damage.

b. Rescue. When the cockpit of a crashed aircraft is a considerable height from the deck, the forklift with a rescue padded rescue basket should be used to provide rescue to persons with a stable platform to facilitate crewmember removal.

c. Vehicle positioning shall be at the direction of the Crash and Salvage Officer.

NOTE

The mobile crash crane and forklift shall be started and warmed up at the commencement of each recovery phase of flight operations and remain in a ready condition throughout the recovery.

1513. P-16A MOBILE FIREFIGHTING UNIT. General. The P-16A is a self-propelled, low profile, firefighting vehicle designed for shipboard fight deck use. The main tank, containing 375 gallons of AFFF (light water) solution with 365 usable gallons, is between the truck's front and rear axles. The AFFF extinguisher outlets consist of:

- a. A driver operated turret (125 GPM).
- b. A 100 foot AFFF hose line (60 GPM).

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

- c. One 80 foot hose of the twin agent hand line (60 GPM).

The other hose of the twin agent hand line expels Halon from a 400 pound capacity tank, located alongside the driver/operator.

1514. SAFETY PRECAUTIONS

- a. Operators shall ensure the path of intended movement is free of all obstructions prior to movement.

- b. Vehicles must be operated at moderate speeds commensurate with deck conditions.

- c. Operators of tow tractors must check towed aircraft frequently to ensure tow-bar security.

- d. It is the driver's responsibility to follow the director/safety(s) directions. If in doubt, stop.

- e. Air start hose on the MD-3A/B shall be a minimum of twenty-eight feet in length and shall contain no more than one splice.

- f. When exercising arresting gear engines, at least two tow tractors and a connecting bar shall be utilized.

AUG 10 1999

CHAPTER 16

AIR WING MAINTENANCE SUPPORT

1601. GENERAL. One of the primary tasks of the Air Department is to provide needed support to the maintenance effort of the embarked air wing. In order for this to be properly, efficiently, and safely accomplished, a well coordinated effort must be evident between all levels in both the air wing and the Air Department. This chapter outlines basic guidelines which, if understood and followed, will enhance the development of a smooth running air wing/Air Department team.

1602. THE AIRCRAFT HANDLING OFFICER AND AIRCRAFT MAINTENANCE. Aircraft movements for a given operating schedule must normally be planned well in advance of a flight deck evolution. Planning aircraft movements, spots, etc., is a relatively simple process in itself and can be thought out logically step-by-step. However, superimposed on this relatively simple operation is a complicated network of maintenance requirements which cannot be ignored and must be constantly fitted into the picture in order to take advantage of each available opportunity to accomplish these requirements. To expedite aircraft repairs, the Aircraft Handling Officer (ACHO) must know approximately how long it should take to repair various common discrepancies on a particular aircraft, what type of spot is required, and where and how to contact maintenance personnel when the spot request is fulfilled. All this requires a timely and constant exchange of information between the Aircraft Handling Officer, CARAIRWING Maintenance Officer, and the squadron maintenance personnel. Therefore, it is essential for the ACHO to either have an intimate knowledge of aircraft maintenance or to have a person with this qualification constantly on hand to advise him of aircraft maintenance requirements.

a. The most efficient step for the ACHO to follow is to familiarize himself with the status of all aircraft on board, keeping current by quick interchange of information from the CARAIRWING Maintenance Officer and the maintenance representatives of each unit. Having acquired this information and through the use of a maintenance spot request board, it becomes possible for the ACHO to fit the maintenance picture in simultaneously with normal operations.

b. In order to function most efficiently under all circumstances, the following is applicable:

(1) Flight Deck Control must be the nerve center for all planned/unplanned maintenance within the air wing. The squadrons shall keep Flight Deck Control (FDC) informed and aware of all maintenance associated problems, as they occur, via the CARAIRWING representative. Herein, an accurate and timely status of each aircraft must be maintained on the status board by maintenance representatives of each squadron, along with configuration and controlling discrepancies.

(2) Whenever the status of an aircraft changes, the maintenance representative of the squadron concerned shall immediately report this information to the ACHO, via the air wing maintenance representative. Representatives should be prepared to furnish such information as the ACHO may require for proper planning upon request. Failure to keep FDC informed of aircraft status changes, maintenance requirements, and so forth will have a deleterious impact on the squadrons' ability to conduct maintenance, launch alert aircraft, or perform other deck related functions. The ACHO must know as soon as a squadron maintenance representative does!

c. All maintenance requests, requests for specific aircraft sortie assignments, and aircraft status changes shall be routed from the designated

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

squadron maintenance chief through the air wing representative for consideration by the Aircraft Handling Officer.

d. All maintenance requests shall be submitted to the air wing representative in a timely manner. It is advantageous for final respot requirements to be on the status board prior to the next to last recovery for final respot planning purposes.

1603. AIRCRAFT TURN-UPS

a. General. All requests for maintenance turn-ups of aircraft shall be submitted to and approved by the Aircraft Handling Officer and coordinated through the air wing maintenance representative. Unforeseen turn-up requirements after flight quarters have been secured will be requested through the Integrity Watch Officer who will coordinate with the OOD/CDO. In these cases, the IWO shall ensure that the aircraft to be turned is properly secured and that all requirements for turn-up have been met. During the following periods, or under the following conditions, aircraft shall not turn-up unless specifically authorized by the Commanding Officer, CDO, or OOD:

- (1) When Special Sea and Anchor Detail has been set.
- (2) During special weapons loading.
- (3) While at anchor or alongside a pier (check applicable SOPA instruction for restrictions).
- (4) During underway refueling, replenishment or rearming.
- (5) At such times where a high noise level will interfere with the safe operation of the ship.
- (6) In the immediate vicinity of conventional weapons loading.

b. Aircraft Turn-up Classification

- (1) Low Power. Idle power to 85 percent: one engine at a time on multi-engine aircraft. Second engine must be at idle power if running.
- (2) High Power. High power turn-up is generally defined as above 85 percent RPM for turbojet/turbofan engines, above ground idle setting for turboprop/turboshaft engines. Initial maintenance turn-ups after work has been performed on the engine or its associated controls should be treated as high power turn-ups.
- (3) Afterburner. Any time the afterburner is lit.

c. Aircraft Security Requirements During Turn-up. The following aircraft security requirements shall be arranged to provide an even restraint in opposite directions, the parking brake (if applicable) shall be set and the main mounts shall be chocked.

- (1) Low Power. Permanent tiedowns (normally 12 points).
- (2) High Power. Permanent tiedowns plus a high thrust tiedown chain which may be secured to a normal padeye.
- (3) Afterburner. Permanent tiedowns plus a high thrust tiedown chain which must be secured to a high thrust padeye.

AUG 10 1999

(4) Special Situations. Upon occasion it may be necessary to perform a high power turnup when a high thrust tiedown is not available. This would be done in an EMERGENCY ONLY. Heavy weather tiedowns are required with as many tending aft as possible. This ABNORMAL SITUATION may only be accomplished with the express permission of the ACHO.

d. Aircraft Turn-ups in Port. Turn-ups will be required while the ship is deployed to a foreign port; however, may often be a source of irritation or complaint from foreign nationals. To avoid such undesirable reactions to U.S. carriers presence, the following restrictions will generally apply:

(1) Low power turn-ups may normally occur subject to any limitations imposed by SOPA or higher authority. An offshore breeze is required unless the anchorage is sufficiently offshore to prevent noise pollution or irritation to inhabitants ashore. Exhausts must be pointed away from the shore. Due regard must be given to ships visitors, VIP requirements and special events ashore.

(2) High power turn-ups must be kept to the absolute minimum. An offshore wind is mandatory. Exhaust must be pointed away from the shore. Due regard must be given to events specified for low power turn-ups.

e. Safety Precautions. In the interest of aviation safety and to ensure positive control over aircraft during maintenance turn-ups, the following additional precautions will be taken prior to granting permission for maintenance turn-ups:

(1) An officer, CPO, or petty officer qualified as a turn-up supervisor must be on the scene and in positive control of the turn-up evolution. Supervisors shall be designated in writing by the Commanding Officer/Officer in Charge of the squadron or unit concerned and shall be responsible for ensuring that all safety precautions are observed.

(2) Intake screens shall be installed on jet aircraft.

(3) Conduct FOD walkdown in vicinity of aircraft paying particular attention to adjacent aircraft/equipment security and potential FOD which may be on/near such equipment.

(4) Personnel in the vicinity of the turn-up shall wear proper ear/eye protection.

(5) A twin agent unit (TAU) or firefighting equipment of greater capacity must be immediately available and properly manned.

(6) Whenever possible a tow bar shall be attached to the aircraft during turn-ups and a tow vehicle shall be immediately available.

(7) Jet high power and afterburner turn-ups shall be permitted only with the tailpipe extended outboard toward the flight deck edge or elevator edge. Jet low power turn-ups shall be spotted to avoid catwalks whenever possible. Propeller aircraft may be turned up on their spot; however, the supervisor shall carefully check the area of the aircraft for security and clearance.

(8) Permission for conducting maintenance turn-ups shall not be granted when the noise level or jet blast/propwash will interfere with the safe conduct or other operations such as vertical replenishment.

COMNAVIAIRPACINST 3100.4C
COMNAVIAIRLANTINST 3100.4C

AUG 10 1999

(9) A qualified director shall ensure that the area around the aircraft is clear and that the spot is clear in all respects for the conduct of turn-ups.

(10) During flight quarters, aircraft may perform maintenance turns simultaneously with launch aircraft, providing all safety requirements deemed appropriate for the evolution in progress are met.

f. Hangar Deck Procedures. The following additional procedures shall apply when conducting aircraft maintenance turn-ups on the hangar deck.

(1) No afterburner or high power turn-ups shall be permitted. Low power turns only may be authorized if all safety requirements are met.

(2) All turn-ups shall be made with the aircraft tailpipe or exhaust pointed outboard through the elevator wells.

(3) Portside turns should be restricted during fixed wing recoveries to minimize noise in the vicinity of the LSO platform.

(4) A 3MC warning announcement shall be made prior to aircraft start.

NOTE

APU turns are not recommended on the hangar bay. Inability to direct APU exhaust overboard and as an effort to reduce noise levels in the hangar bay, makes this action unacceptable on a routine basis. Only when (1) the aircraft cannot be moved to the flight deck and (2) the commanding officer deems this action an operational necessity, utilized the following procedures:

NOTE

The FA/18 Hornet and the S-3 Viking are the only aircrafts currently equipped to afford practical application of these procedures. No other type aircraft APU turns are authorized on the hangar deck.

1. Position the aircraft so the APU exhaust is directed overboard.
2. Ensure cross-ventilation is provided.
3. Follow all precautions listed in this instruction for aircraft turns in the hangar bay.

g. During Flight Quarters. Maintenance turn-ups shall be authorized during flight quarters only by the ACHO. All conditions in paragraphs 1603E and 1603F above shall be required.

h. Secured from Flight Quarters. Requests to turn aircraft after secure from flight quarters will be made to either the Aircraft Handling Officer or the Integrity Watch Officer. He in turn will obtain permission from the OOD for either blanket turn-ups or in the case of afterburner turns, on a specific basis. The IWO shall only permit turn-up of aircraft previously approved by the ACHO.

(1) All safety precautions outlined in paragraphs 1603E and 1603F above shall be followed.

(2) Squadrons requesting turn-ups will notify the CARAIRWING Maintenance Officer throughout the day and prior to secure of flight quarters.

AUG 10 1999

of turn-up requirements, in order that aircraft can be properly spotted during the final respot.

(3) If a requirement develops after secure from flight quarters and the aircraft is not properly spotted, permission to move it must be obtained from the Aircraft Handling Officer. If no respot is involved the aircraft may be turned by going through the procedures noted above.

(4) When turn-up authorization is granted, the CARAIRWING representative will pass the clearance to the squadron concerned. It is the responsibility of the squadrons concerned to notify Flight Deck Control when the requested turn-up is completed.

1604. REPORTING DISCREPANCIES IN AIRCRAFT SUPPORT EQUIPMENT. All equipment discrepancies discovered by users shall be reported to Flight Deck Control or air wing maintenance immediately. This report should be made in person whenever possible. The CARAIRWING maintenance representative shall notify the proper maintenance work center, keeping the ACHO routinely informed of the discrepancy and progress made in correcting it.

1605. IMMOBILIZATION OF AIRCRAFT. No aircraft shall be immobilized without specific permission from the ACHO or his representative in Flight Deck Control. Flight Deck Control shall be immediately informed when the aircraft becomes mobile again.

1606. AIRCRAFT JACKING. The following procedures shall be adhered to when raising or lowering an aircraft on jacks.

a. Request permission from the Aircraft Handling Officer/Integrity Watch Officer through the air wing Maintenance Chief Petty Officer to raise or lower an aircraft on jacks. The ACHO/IWO shall not give permission to raise or lower an aircraft on jacks until he has ascertained from the Bridge that the ship will not be maneuvering during the raising or lowering evolution. The IWO shall not approve any long-term jacking evolutions which will not be completed prior to the commencement of flight quarters without the specific approval of the ACHO.

NOTE

The ACHO, during flight quarters, may give immediate permission for single point jacking to expedite respots and to clear aircraft from blocking critical flight deck space. These are minor jacking evolutions that cause the aircraft to be raised from the deck by a matter of a few inches for tire change, etc., in order to avoid strut or wheel damage should they be moved.

WARNING

Aircraft shall not be jacked in the landing area while fixed wing aircraft are airborne.

b. Once the aircraft is on jacks, it will be tied down with permanent tiedown chains specified for that type aircraft in such a manner that will preclude the aircraft from shifting.

1607. MOBILE EQUIPMENT. Maintenance personnel will not operate mobile equipment unless they possess a valid operators permit for the equipment used and first obtain clearance from AIMD to use the specific equipment. Arrangements for shipboard permits shall be made through the Aircraft Intermediate Maintenance Officer. Maintenance personnel shall not operate tow vehicles except in an emergency.

COMNAVAIRPACINST 3100.4C
COMNAVAIRLANTINST 3100.4C

AUG 10 1999

1608. EQUIPMENT ACCOUNTABILITY. Air wing personnel are strictly accountable for all equipment assigned to their custody. Appropriate action, as specified in Navy Regulations and instructions of higher authority, will be taken in the event equipment is lost or mistreated.

1609. WORK ON AIRCRAFT WHICH ARE BEING MOVED. Only those personnel necessary to ensure safe movement of an aircraft shall be permitted in the immediate vicinity of an aircraft while it is in the process of being moved on the flight or hangar deck. Maintenance and servicing personnel shall remain clear of such aircraft until the aircraft is stopped and secured.

1610. NORMAL PROCEDURES

a. No brake aircraft will be moved only in emergencies. Seat removal may cause an aircraft to be classified a "no braker" if personnel cannot reach and apply brakes.

b. Maintenance requests will be submitted throughout the flying day and will be maintained on a request board, in a logbook, or similar manner. All requests must be in to the ACHO prior to the last two recoveries. Appendix A is a sample form which may be utilized for this purpose.

c. Any aircraft condition which could interfere with aircraft handling and flight operations shall be cleared through the ACHO, i.e., jacking, seat pulls, no brakes, wing spread, etc.

d. All hands are expected to participate in all flight and hangar deck drills.

e. Aircraft hoist points must be checked and greased routinely..

f. All power cables, air start hoses, etc., will be restowed after use. Cables will not be left attached to aircraft (except alert aircraft) on which actual maintenance is not being performed.

g. Plane captains must be available and at or near their aircraft from flight quarters to flight quarters. They may relax or standdown if their aircraft is in final spot and is properly tied down.

h. Checklists shall be signed daily upon secure from flight quarters by a representative of each squadron, preferably the line PO or a senior supervisor. Appendix B is an example of a form which may be utilized for this purpose.

i. No white or yellow lights are permitted on deck with the exception of shielded lens which are required for short-term, urgent and necessary maintenance, i.e., locating hydraulic leaks. "Miner" type helmets or head lights are not permitted during flight quarters. Red or blue wands are satisfactory.

j. At time of start engines, plane captains and maintenance personnel shall ensure that power cables, SINS cables (if required) and air hoses are hooked up or immediately available. Hook-ups should not occur prior to 45 minutes before launch. Sharing and proper utilization of starting equipment must be controlled and sequenced by the air wing maintenance representative. Aircraft on or near the catapults shall start first with aircraft requiring the most time to prepare for launch to follow in a logical order.

AUG 10 1999

k. Aircraft status must be correct. An aircraft showing in a "down" status will not be permitted to launch. "Comer" status must be corrected immediately.

l. Go and alert aircraft are assigned by the ACHO. Squadron maintenance desires will receive every possible consideration but the driving factor will be the operation and coordination of the entire deck.

m. Arming/de-arming will occur per air wing/squadron/type aircraft and weapon normal procedures. Minimum time must be expended in the accomplishment of these evolutions; however, safety remains paramount.

n. Air wing personnel shall participate in flight and hangar deck "scrub-exs" as called for by the ACHO, FDO, or HDO.

o. Aircraft gross weight chits shall be properly filled out and submitted 45 minutes before launch.

p. Intake covers, exhaust covers, jury struts, etc., shall be in sufficient quantity for all assigned aircraft.

q. Only personnel whose flight quarters duties require, and whose presence is absolutely essential, shall be permitted on the flight deck or in the catwalk during launch and recovery operations. Launch period begins when the Air Boss announces "Standby to Start Engines" and ends with the announcement "Launch Complete." Recovery period commences when the Air Boss announces "The Deck is Open, Land Aircraft" and ends when the last aircraft, including rotary wing aircraft, is shut down. NUMBERS OF PERSONNEL ON DECK DURING LAUNCH AND RECOVERY MUST BE MINIMIZED. THE DECK IS INHERENTLY DANGEROUS AND IS MORE SO DURING LAUNCH AND RECOVERIES.

r. NO SMOKING shall be permitted on the flight deck, hangar deck or catwalks.

s. During launch, only members of the catapult crews are permitted in the catwalks in the vicinity of the deckedge stations. Flight deck personnel must be aware of the requirement for visual signals between cat crew members and make a conscious effort not to impede their line of sight. During recovery, no personnel are permitted to work on or occupy aircraft in the Port side parking area unless specifically authorized by the Air Officer. Only authorized personnel may be in or around aircraft parked in the safe parking areas abeam and aft of the island. All maintenance personnel shall remain clear of the Arresting Gear Officer's deck edge control station during recovery operations. Alert crews may normally man up and occupy their aircraft where it is spotted but must remain ever vigilant during launch/recovery operations. During launch or recovery, all personnel shall exit the flight deck area via the shortest and most expeditious means consistent with safety.

AUG 10 1999

Appendix A

CV/CVW MAINTENANCE SPOT REQUEST SHEET

DATE: _____

ELEVATOR TRAFFIC

BAY 1 REASON		F-14 REQUIREMENT		F-18 REQUIREMENT		SH-60 REQUIREMENT	
							E-2 REQUIREMENT
							EA-6 REQUIREMENT
	BAY 2 REASON						
							S-3 REQUIREMENT
	BAY 3 REASON						

AUG 10 1999

Appendix B

DAILY SECURE CHECKLIST
(One List Shall Be Used Each Day)

DATE _____

BAYS/FLYS: All aircraft are in final spot, chocked, and tied down with at least initial (4 or 6) chains. All chocks, towbars, and loose gear are secured and tied down. All unused power cables and air hoses have been stowed by the Air Wing (if not, inform the ACHO).

BAY/FLY #1: In addition, the following have been checked: Jack staff, bow rails, hand rails, antennas, catwalks, and bomb jet ramps. ELEVATOR 1 IS/IS NOT SPLIT.

TIME /SIGNATURE /TEL #

BAY/FLY #2: In addition, the following have been checked: Hand rails, catwalks, antennas, and bomb jet ramps. ELEVATOR 2 IS/IS NOT SPLIT.

TIME /SIGNATURE /TEL #

BAY/FLY #3: In addition, the following have been checked: Hand rails, catwalks, stern lines, antennas and bomb jet ramps. ELEVATOR 3/4 IS/IS NOT SPLIT.

TIME /SIGNATURE /TEL #

FUELS: All fuel hoses and equipment are properly stowed, fuel stations swabbed dry and fuel watch set.

TIME /SIGNATURE /TEL #

TRACTORS: All Tractors and equipment are secured and chocked in line, nose to tail, fore and aft with at least one chain on each end.

TIME /SIGNATURE /TEL #

CRASH & SALVAGE: Mobile equipment is secured, chocked and chained fore and aft (crash dollies, CVCC, forklift, P-16(s), TAU, etc.)

TIME /SIGNATURE /TEL #

SQUADRONS: All GSE equipment is tied down and chocked (jennies, jacks, work stands, screens, LOX carts, etc.). All power cables and air hoses not in use are secured. The flight deck areas assigned are clean and secure. The area under and around my aircraft is clean, neat and free of fluid spills.

TIME /SIGNATURE /TEL #

COMNAVIAIRPACINST 3100.4C
COMNAVIAIRLANTINST 3100.4C

AUG 10 1999

Appendix B

<u>NAME/TELEPHONE</u>	<u>SQUADRONS</u>	<u>TIEDOWNS</u>	
		<u>PERMANENT</u>	<u>HEAVY WEATHER</u>
/	F-14 ()	14	20
/	F-14 ()	14	20
/	F-18 ()	12	18
/	F-18 ()	12	18
/	F-18 ()	12	18
/	EA-6 ()	12	18
/	S-3 ()	12	18
/	SH-60 ()	12	16
/	E-2 ()	14	20
/	C-2 ()	14	20
/	ES-3 ()	12	18
/	OTHER ()		

AUG 10 1999

**OPERATIONAL
CHARACTERISTICS**

MD-3B (GTC-85)

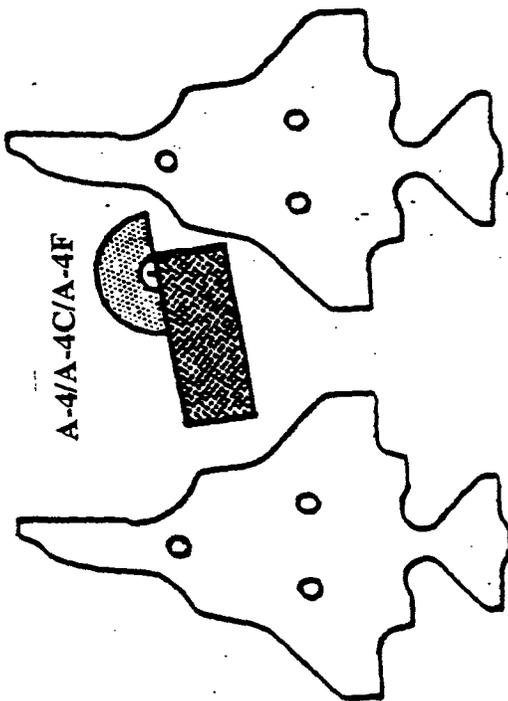
AIR
RATIO 3.6:1
PRESS 36-52 PSI
(NORMAL) 47 PSI
TEMP 240 C
(MAX) (400 F)

ELECTRICAL

NONE

REFERENCE

NAVAIR 19-600-90-6-1
NAVAIR 19-1058-47



A-4/A-4C/A-4F

**WARNING MAINTAIN A 10' SEMI-CIRCULAR
CLEAR AREA ON UNITS WITH HORIZONTAL
EXHAUSTS, AND 10' RADIUS SEMI-SPHERICAL
CLEAR AREA ABOVE THE EXHAUST PORT ON
UNITS WITH VERTICAL EXHAUSTS**

MINIMUM HOSE LENGTH WILL BE 28 FT (MD-3B)

OPTIMUM A-4 MD-3B "HUFFER" POSITIONING FOR AIRCRAFT START

AUG 10 1999

OPERATIONAL CHARACTERISTICS

MD-3B (GTC-85)

AIR
 RATIO 3.6:1
 PRESS 36-52 PSI
 (NORMAL) 47 PSI
 TEMP 240 C
 (MAX) (400 F)

ELECTRICAL

NONE

OPERATIONAL CHARACTERISTICS

MD-3A (GTC-100)

AIR
 RATIO 3.6:1
 PRESS 65-76 PSI
 (NORMAL) 71 PSI
 TEMP 232 C
 (MAX) (450 F)

ELECTRICAL

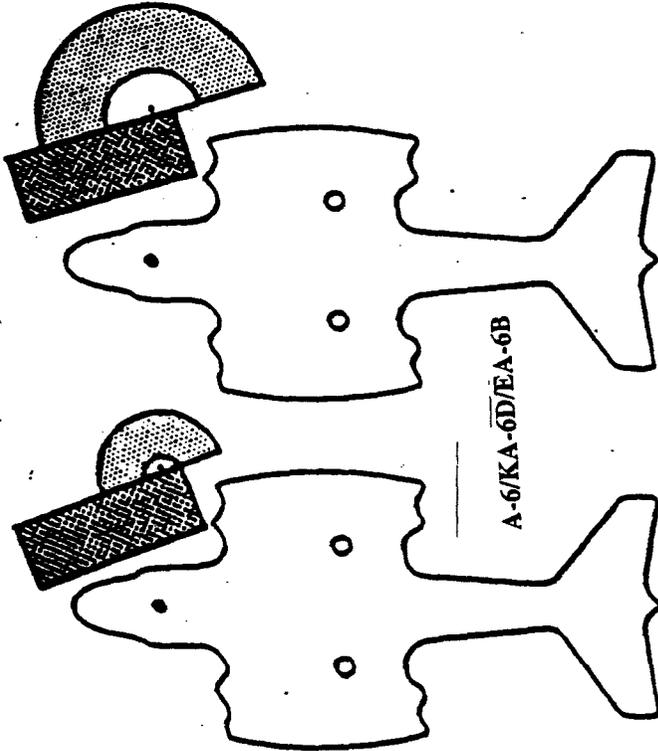
60KVA
 30/400 CYCLE
 0.75 POWER FACTOR

REFERENCE

- NAVAIR 19-600-90-6-1
- NAVAIR 19-1058-47
- NAVAIR 19-600-22-6-1
- NAVAIR 19-1050-48
- (1) MD-3B PRIMARY START UNIT
- (2) MD-3A SSECONDARY START UNIT

MD-3A (GTC-100)

MD-3B (GTC-85)



WARNING MAINTAIN A 10' SEMI-CIRCULAR CLEAR AREA ON UNITS WITH HORIZONTAL EXHAUSTS, AND 10' RADIUS SEMI-SPHERICAL CLEAR AREA ABOVE THE EXHAUST PORT ON UNITS WITH VERTICAL EXHAUSTS

MINIMUM HOSE LENGTH WILL BE 29 FT (MD-3B)

WARNING MAINTAIN A MINIMUM OF 10' SEMI-CIRCULAR AREA FROM THE EXHAUST PORT IN BOTH A NO-LOAD AND A LOADED CONDITION

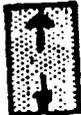
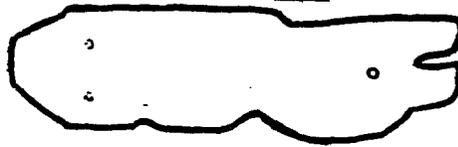
MINIMUM HOSE LENGTH WILL BE 28 FT (MD-3A)

OPTIMUM A-6 MD-3A/B "HUFFER" POSITIONING FOR AIRCRAFT START

COMNAVIAIRPAC 3100.4C
COMNAVIAIRLANT 3100.4C

AUG 10 1999

SH-60



OPTIMUM SH-60 NC-2A POSITIONING FOR AIRCRAFT START

AUG 10 1999

**OPERATIONAL
CHARACTERISTICS**

MD-3A (GTC-100)

AIR

RATIO 3.6:1
5.0:1

PRESS 65-76 PSI
(NORMAL) 71 PSI

TEMP 232 C
(MAX) (450 F)

ELECTRICAL

60 KVA

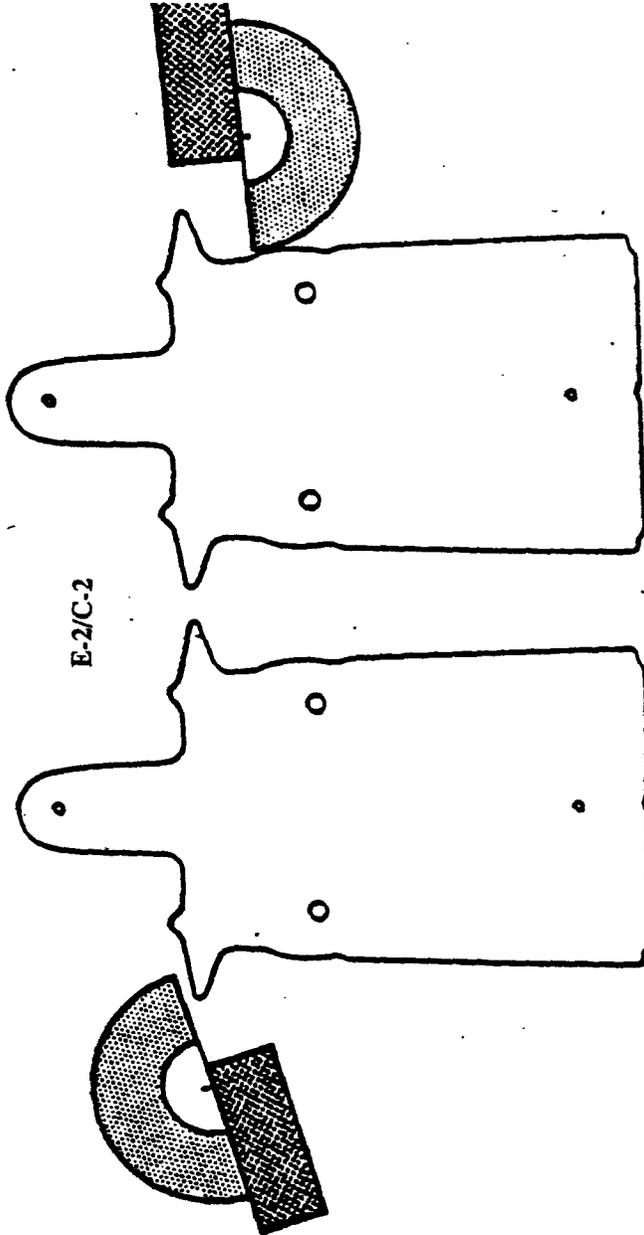
30/400 CYCLE

0.75 POWER FACTOR

REFERENCE

NAVAIR 19-600-22-6-1

NAVAIR 19-1058-48



**WARNING MAINTAIN A 10' SEMI-CIRCULAR
CLEAR AREA FROM THE EXHAUST PORT IN
BOTH A NO-LOAD AND A LOADED CONDITION**

MINIMUM HOSE LENGTH WILL BE 28 FT (MD-3A)

OPTIMUM E-2/C-2 MD-3A "HUFFER" POSITIONING FOR AIRCRAFT START

AUG 10 1999

**OPERATIONAL
CHARACTERISTICS**

MD-3B (GTC-85)

AIR

RATIO 3.6:1

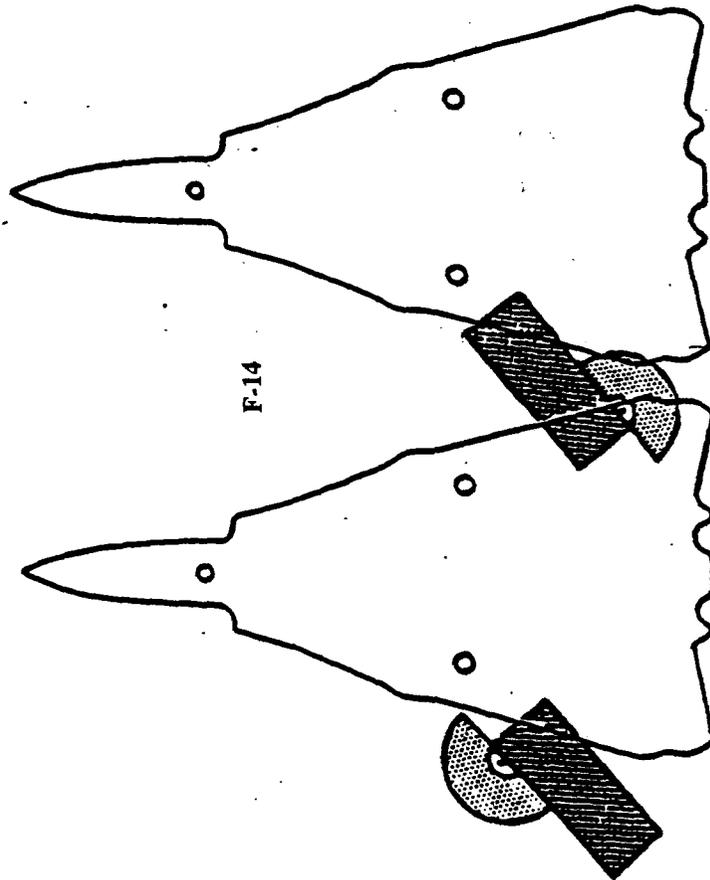
**PRESS 36-52 PSI
(NORMAL) 47 PSI
TEMP 240 C
(MAX) (400 F)**

ELECTRICAL

NONE

REFERENCE

**NAVAIR 19-600-90-6-1
NAVAIR 19-1058-47**



**WARNING MAINTAIN A 10' SEMI-CIRCULAR
CLEAR AREA ON UNITS WITH HORIZONTAL
EXHAUSTS, AND 10' RADIUS SEMI-SPHERICAL
CLEAR AREA ABOVE THE EXHAUST PORT ON
UNITS WITH VERTICAL EXHAUSTS**

MINIMUM HOSE LENGTH WILL BE 28 FT (MD-3B)

OPTIMUM F-14 MD-3B "HUFFER" POSITIONING FOR AIRCRAFT START

AUG 10 1999

**OPERATIONAL
CHARACTERISTICS**

MD-3B (GTC-85)

AIR

RATIO 3.6:1

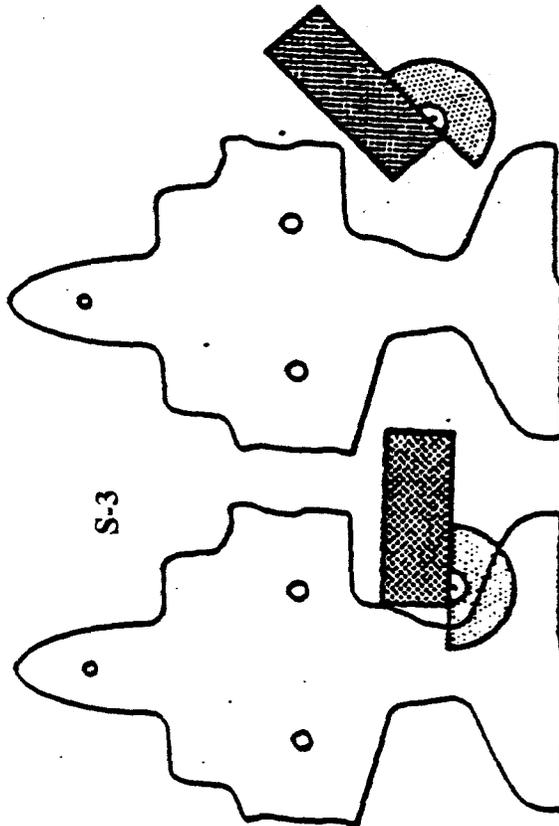
**PRESS 36-52 PSI
(NORMAL) 47 PSI
TEMP 240 C
(MAX) (400 F)**

ELECTRICAL

NONE

REFERENCE

**NAVAIR 19-600-90-6-1
NAVAIR 19-1058-47**



**WARNING MAINTAIN A 10' SEMI-CIRCULAR
CLEAR AREA ON UNITS WITH HORIZONTAL
EXHAUSTS, AND 10' RADIUS SEMI-SPHERICAL
CLEAR AREA ABOVE THE EXHAUST PORT ON
UNITS WITH VERTICAL EXHAUSTS**

MINIMUM HOSE LENGTH WILL BE 28 FT (MD-3B)

OPTIMUM S-3 MD-3B "HUFFER" POSITIONING FOR AIRCRAFT START

