

NASA
Intercenter Aircraft Operators Panel
(IAOP)
Review Checklist

Office of Strategic Infrastructure
Aircraft Division
300 E. St. SW
Washington, DC
www.nasa.gov

Table of Contents

A.	MANAGEMENT	4
B.	OPERATIONS	12
C.	PASSENGER TRANSPORTATION FLIGHT OPERATIONS	28
D.	AIRWORTHINESS AND FLIGHT READINESS	31
E.	AVIATION SAFETY	36
F.	HAZARD ANALYSIS.....	41
G.	AIRFIELD FACILITIES.....	42
H.	MAINTENANCE FACILITIES.....	46
I.	AIRCRAFT MAINTENANCE	48
J.	MAINTENANCE TRAINING.....	60
K.	AVIONICS, INSTRUMENTATION, ELECTRONICS, AND ELECTRICAL	63
L.	QUALITY ASSURANCE (QA) AND INSPECTION.....	66
M.	AVIATION LIFE SUPPORT SYSTEMS	72
N.	SECURITY	75
O.	UNMANNED AIRCRAFT SYSTEM	80
P.	REFERENCES	88

A. MANAGEMENT

1. Organization
(IS-BAO 4.0, FMR 102-33.155)
 - a. Is the flight operations organization at a sufficient level to function with strength and authority? Is staffing adequate?
(NPR 7900.3D 1.1.5.2 App C 7, IS-BAO 4.1.1)
 - b. Does the organization follow the direction in OMB Circular A-123 Management Accountability and Control?
(FMR 102-33.135)
 - c. Center Director
 - 1) Are they responsible for the airworthiness and flight safety of assigned aircraft and UAS, including commercial aircraft services (CAS)?
(NPR 7900.3D 1.2.3.a App C 16)
 - 2) Are they responsible for coordination with the Office of Strategic Infrastructure in establishing program or project plans involving the requirement, assignment, and operation of aircraft/UASs?
(NPR 7900.3D 1.2.3.b App C 17)
 - 3) Are they responsible for annually reviewing aircraft mission and program requirements (for those programs controlled/funded by their respective Center), use, and associated costs, and projecting those requirements and costs over 5 years in an annual report to the AMD not later than March 31 of each year?
(NPR 7900.3D 1.2.3.c App C 18)
 - 4) Are they responsible for ensuring compliance with OCFO NPRs in the appropriate use and application of order codes that are used to account for, track, and report aircraft costs?
(NPR 7900.3D 1.2.3.d App C 19)
 - 5) Are they responsible for quarterly reporting of aircraft operations and costs to AMD?
(NPR 7900.3D 1.2.3.e App C 20)
 - (a) Do Centers use the Aviation Inventory Report worksheet in Appendix H to report the number and type of aircraft operated?
(NPR 7900.3D 11.3.1.1 App C 759)
 - (b) Do Centers ensure all aircraft operational information is accurately recorded in NAMIS?
(NPR 7900.3D 11.3.1.2 App C 760)

- (c) Are CAS hours and sorties flown but not reported in NAMIS provided to the AMD via other electronic means?
(NPR 7900.3D 11.3.1.2.a App C 761)
- (d) Does the Center use the Aircraft Cost and Performance worksheet in Appendix H-5 of NPR 7900.3D to report aircraft costs, including contracted CAS?
(NPR 7900.3D 11.3.1.4 App C 763)
 - (i) Are accrued costs reported for each aircraft type operated during the fiscal year?
(NPR 7900.3D 11.3.1.4.a App C 764)
 - (ii) Is one worksheet used for each aircraft type and primary utilization category?
(NPR 7900.3D 11.3.1.4.b)
 - (iii) Are costs reported to the nearest dollar?
(NPR 7900.3D 11.3.1.4.c App C 765)
 - (iv) Are any data errors observed in the Business Warehouse and any data adjustments necessary to formulate and report accurate aircraft costs documented?
(NPR 7900.3D 11.3.1.4.c(a) App C 766)
- 6) Are they responsible for ensuring compliance with 41 CFR Part 102-33, Management of Government Aircraft; 41 CFR Chapter 300, Federal Travel Regulation System-General; 41 CFR Chapter 301, Temporary Duty (TDY) Travel Allowance; and OMB Circular A-126, Improving the Management and Use of Government Aircraft?
(NPR 7900.3D 1.2.3.f App C 21, FMR 102-33.125)
- 7) Are they responsible for the budget for personnel and travel in support of the Inter-Center Aircraft Operations Panel (IAOP) semiannual meetings and the IAOP Review Program?
(NPR 7900.3D 1.2.3.g App C 22)
- 8) Are they responsible for approving aircraft charters or leases for periods aggregating 30 days or less per year with 7 days' prior notice to the AMD?
(NPR 7900.3D 1.2.3.h App C 23)
- 9) Are they responsible for the technical assessment, cost evaluation, acquisition, use, and disposition of all aircraft/UASs under their control? This includes disposal of aircraft/UASs used solely in wind tunnels or other nonflyable test models.
(NPR 7900.3D 1.2.3.i App C 24)

- 10) Are they responsible for coordinating and submitting all aircraft acquisition and disposition proposals to the Director, AMD for approval?
(NPR 7900.3D 1.2.3.j App C 25)
- 11) Are they responsible for reporting all acquisition and disposal actions to the AMD to comply with Federal aircraft data reporting requirements?
(NPR 7900.3D 1.2.3.k App C 26)
- 12) Are they ensuring that Center managers who acquire aircraft/UAS or commercial aviation services coordinate those acquisitions with the Center's Chief of Flight Operations Office to ensure compliance with the NASA's Aviation Safety Program and aircraft management policies?
(NPR 7900.3D 1.2.3.l App C 27)
- 13) Are they responsible for the safe and efficient operation of Passenger Transportation flights conducted by their assigned aircraft?
(NPR 7900.3D 4.5.2 App C 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404)
- 14) Are they ensuring strict compliance with the following reporting requirements?
(NPR 7900.3D 4.6.2 App C 418, 419, 420, 421, 422, 423)
 - (a) Monthly submission of Passenger Transportation flight data to the HQ AMD, as required in NPR 7900.3D section 4.5.2.7.
 - (b) Annually reviewing and documenting the Center's continuing need for aircraft, whose primary purpose is the transport of passengers, and the cost-effectiveness of such aircraft operations, as required by OMB Circular A-126 and reflected in the guidance from the HQ AMD. Content of this review is to include, in narrative format, a comparison of the past years' use with future requirements. Upon completion of the annual review, a copy will be forwarded to the HQ AMD, not later than October 31 of each year.
 - (c) Establishing variable cost rates for each fiscal year for aircraft under their control that are, or may be, used for Passenger Transportation. This rate is to be used to determine cost justification for Passenger Transportation flight requests and shall be reported to the HQ AMD, not later than September 15 of each year.

(d) The variable rate will be developed per OMB Circular A-126, Attachments A and B, using the most recent 12 months of historical cost data available. The Center variable rate shall be approved by HQ AMD prior to being applied at the beginning of each FY. If, during the fiscal year, a Center needs to adjust the variable rate, substantiation shall be submitted and approved prior to being applied.

15) Are they responsible for responding to the Assistant Administrator for the Office of Strategic Infrastructure concerning corrective actions?
(NPR 7900.3D 9.3.6 App C 731)

16) Do aircrew members eligible to be assigned to flight status meet all applicable requirements of chapters 3 and 4 of NPR 7900.3, any additional Center requirements, and are they assigned as either a: GS-2181, Aircraft Operations Series, OR b: GS-0861, Aerospace Engineering Series? Do pilots and aircrew meet the applicable series and grade requirements of the applicable OPM standard? Are waivers within this OPM qualification standard approved only by the Assistant Administrator for the Office of Strategic Infrastructure?
(NPR 7900.3D 12.2.1, 12.2.1.1, 12.2.1.2 App C 768, 769)

d. Chief/Director of Flight Operations
(IS-BAO 4.1.1.a)

1) To whom does the Director of Flight Operations report?
2) Are they responsible for all Center-assigned, newly acquired or contracted aircraft and are they responsible for aviation activities at the Center?
(NPR 7900.3D 1.1.5.1 App C 06)

3) Is the Center's Chief of Flight Operations is the senior line manager with authority over flight activities operated or controlled by the Center, including CAS operations, and is directly responsible to the Center Director for the safe and effective conduct of those activities? Does the Center's Chief of Flight Operations hold the qualifications for assignment to this position contained in NPR 7900.3D 1.2.5?
(NPR 7900.3D 1.2.5 App C 31, 32, 33, 34, 35, 36, 37)

4) Does the Center's Chief of Flight Operations designate in writing the crewmembers for aircraft that are under the Center's purview?
(NPR 7900.3D 3.8.2.4 App C 271)

- 5) Does the Center's Chief of Flight Operations review pilot annual flight evaluations as part of a comprehensive review of all flight-related aspects of the assigned pilot under review? Do the aspects of the review include, at a minimum, mishap and close call reports, observed behavior reflecting CRM principles, and management counseling necessitated by concerning in-flight and work behaviors?
(NPR 7900.3D 3.10.6 App C 306)
- 6) Does the Center's Chief of Flight Operations deliver a flight status recommendation to the Center Director should a Flight Performance Board be convened?
(NPR 7900.3D 12.3.4.2 App C 778)

e. Chief Pilot

- 1) To whom does the Chief Pilot report?
(IS-BAO 4.1.1.b)
- 2) Does the Chief Pilot hold the qualifications for assignment to this position contained in NPR 7900.3D 1.2.7?
(NPR 7900.3D 1.2.7 App C 41)

f. Pilot in Command (PIC)

- 1) Does the Pilot in Command of NASA Aircraft hold the qualifications for assignment to this position contained in NPR 7900.3D 3.7.5?
(NPR 7900.3D 3.7.5 App C 257, 258, 259, 260, 261, 262, 263, 264, 265)

g. Chief of Maintenance

- 1) Does the Chief of Maintenance hold the qualifications for assignment to this position contained in NPR 7900.3D?
(NPR 7900.3D 1.2.8 App C 42, 43)

h. Chief of Quality Assurance

- 1) Does the Chief of Quality Assurance hold the qualifications for assignment to this position contained in NPR 7900.3D?
(NPR 7900.3D 1.2.9 App C 44, 45)

- i. Where does the Flight Operations Office fit into the organization? Is the office involved in planning, organizing, directing, and controlling the operations, maintenance, modification, safety, and support of all Center-assigned or –contracted aircraft?
(NPR 7900.3D 1.1.5 App C 05, IS-BAO 4.1.1)

2. Management
(AS9100D 5.0, FMR 102-33.160)
 - a. Does higher management communicate with and support the aircraft operations organization?
(AS9100D 5.1.1.f)
 - b. Is there an internal review program in place? Does the organization look at itself periodically?
(AS9100D 9.3)
 - c. How are flight operations funded? Is funding adequate to meet flight operations (including training and maintenance)?
(AS9100D 5.1.1.e)
 - d. Is the airfield and facilities adequate to support flight operations? Is funding adequate to maintain and upgrade facilities as needed?
(AS9100D 5.1.1.e)
 - e. Are there Airworthiness and Flight Safety Reviews (AFSR) for every aircraft modification? Are Flight Readiness Reviews/Operational Readiness Reviews (FRR/ORR), and/or Mission Readiness Reviews (MRR) conducted before flights? How are the AFSR, FRR/ORR, and/or MRR managed?
(NPR 7900.3D 2.2, 3.12 App C 69, 70, 71, 72, 314-328, AS9100D 5.1.1.e)
 - f. Is the aircraft maintenance organization at an appropriate level to function with strength and authority? Is there a civil servant Chief of Maintenance assigned to the Flight Operations Office to function as a single management point of contact for all maintenance activities?
(NPR 7900.3D 1.2.8, 2.8.1 App C 42, IS-BAO 4.1.1.c)
 - g. To whom does maintenance report? Does the organization receive adequate management support?
(NPR 7900.3D 2.8.1, IS-BAO 4.1.1.c)
 - h. Is there a separate Quality Assurance/Inspection organization independent of Maintenance?
(FMR 102-33.180)
 - i. What is the relationship between flight operations and the science programs? Is there adequate communication between these organizations? How are science/program requirements met?
(NPR 7900.3D 1.2.4, 3.12 App C 28, 29, 30, 314-328)
 - j. Does the Center have a long term Aircraft Management Plan?
(NPR 7900.3D 1.2.4, 1.3.1, 4.5.1.c, 4.5.1.d, 4.5.2.a, 4.5.2.f and 8.3.1 App C 28, 29, 30, 387, 388, 391, 397-400, 678-685)
3. Aircraft Financial Management

- a. Is aircraft cost data accurately captured in accordance with OMB Circular A-126?
(NPR 7900.3D 4.8.4 App C 431)
 - b. Are Object Codes appropriately used and applied as outlined in the FMM?
(NASA Financial Management Manual)
 - c. Are all aircraft costs accurately captured in the IFMP Business Warehouse module?
(NPR 7900.3D 11.3.1.4 App C 763-767)
 - d. Is the Center using the NASA Aircraft Cost and Performance worksheets in NPR 7900.3D Appendix H to report aircraft data to HQ AMD within 45 days after the end of each quarter?
(NPR 7900.3D 11.3.1, 11.3.1.4 App C 754 and 763)
4. Contract Management
(NPR 7900.3D 1.1.5.3, 1.1.5.4 App C 8 and 9)
- a. Are aircraft service contracts adequate in scope and do they incorporate the appropriate FAR and NASA FAR Supplement Clauses?
(NPD 8730.5B.1.b(5))
 - b. Is there a robust aircraft service contract surveillance program in place to oversee aircraft service contractor compliance to all aspects of the contract especially those dealing with safety?
(NPR 7900.3D 2.8.4.1 App C 122, NPR 8735.2B, FMR 102-33.130, FMR 102-33.140 thru .185)
 - c. Are all manned NASA aircraft, including those contracted through commercial vendors, configured with FAA-approved TCAS and TAWS systems for the specific type of model aircraft? If the NASA manned aircraft is not available with TCAS/TAWS, has a TCAS/TAWS Risk Management Plan been developed in accordance with NPR 8000.4? How often are such Risk Management Plans being updated?
(NPR 7900.3D 3.3.1, 3.3.2, 3.3.4 App C 239, 240 and 241)
5. Aircraft Acquisition and Disposition
(NPR 7900.3D, Chapter 8)
- a. Were annual physical inventories of Center-owned aircraft, including display aircraft, parts aircraft, and aircraft in flyable or non-flyable storage conducted? (NPR 7900.3D, 8.2.2)
 - b. Were center aircraft acquired and disposed of in accordance with NASA policy? (NPR 7900.3D, 8.3 and 8.5.)
 - c. For UAS below NASA's capitalization threshold, were UAS acquisitions authorized by Center Director? (NPR 7900.3D, 8.3.1.4)
 - d. Were inactive aircraft, including UAS below NASA's capitalization threshold, disposed of within 5 years? (NPR 7900.3D, 8.5.1.1)

6. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
 - a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

B. OPERATIONS

1. Aircrew/Operations
(FMR 102-33.155, 160)
 - a. How are persons authorized to be aircrew members?
(NPR 7900.3D 12.2.3, 12.2.3.1, 12.2.3.2 App C 770, 771)
 - b. How are aircrew checked out on an aircraft? Who authorizes it? What documentation?
(NPR 7900.3D 12.2.3.1, 12.2.3.2, 12.2.4 App C 771, 772)
 - c. What physical examination requirements exist? Do they meet the requirements of NPR 7900.3?
(NPR 7900.3D 7.3.1, 7.3.2, 7.3.3 App C 673)
 - d. What physiological training requirements exist? Do they meet the requirements of NPR 7900.3?
(NPR 7900.3D 4.13.2 App C 451, 452)
 - e. What proficiency requirements exist? Is private pilot time recorded in NAMIS or utilized to meet proficiency requirements?
(NPR 7900.3D 3.8.4.1, 3.8.4.2 App C 278, 279, FMR 102-33.180)
 - f. What are the flight time requirements? Is only manned aircraft time applied to the qualification for a NASA pilot of manned aircraft?
(NPR 7900.3D 3.8.4.1, 3.8.4.2, 12.2.3, 12.2.3.2 App C 278, 279, 770, 771)
 - g. Are there limitations placed on the less experienced pilots? What limits? Who monitors? Are they written?
(FMR 102-33.165)
 - h. What are the aircraft currency requirements?
(FMR 102-33.160, FMR 102-33.165)
 - i. How is currency reestablished? Is it documented?
(NPR 7900.3D 4.18 App C 471-478)
 - j. Is all flightcrew currency documentation recorded in NAMIS? Are there any other related files such as a pilot information file (PIF)?
(NPR 7900.3D 4.16.1 App C 465)
 - k. Are only authorized persons flying on board research flights? Who authorizes them to fly? What training is required of them? How are they authorized to fly? By letter?
(NPR 7900.3D 3.8 App C 267-287)
 - l. When are floatation devices required aboard the aircraft?
(IS-BAO 8.3.1)

- m. How are flights monitored in real-time? What in-flight controls exist? Are there flight-following procedures to notify management and initiate search and rescue operations for lost or downed aircraft?
(FMR 102-33.165)
- n. Are hazardous flight activities conducted?
(NPR 7900.3D 2.2.1, 2.2.2 App C 69, 70)
 - 1) How are they defined? i.e., spins, flutter, high angle of attack.
 - 2) What special procedures are used?
 - (a) Multiple crews?
 - (b) Radar monitoring?
 - (c) Chase aircraft?
 - 3) What preparatory training has the aircrew had?
 - 4) Who reviews the procedures and pilot techniques to be used?
- o. Are flight activities conducted off-site?
 - 1) How are they approved?
 - 2) Who reviews deviations from normal operations?
 - 3) What contact is maintained with the home facility?
- p. Is tenant activity conducted at the home base?
(NPR 7900.3D 13.1.6.b App C 786)
 - 1) What agreements exist?
 - 2) Who is responsible for what?
 - 3) Is the Center briefed on daily tenant activity?
 - 4) Does the Center have the authority to stop the tenant operations? On what basis?
- q. Is each NASA aircraft operated in accordance with an aircraft manual providing standard operating procedures? Are these manuals accessible electronically or carried onboard all manned NASA aircraft? Are the manuals immediately accessible to the pilots of unmanned aircraft?
(NPR 7900.3D 1.5.1 App C 58, 59, 60)

- r. Are there policies and procedures to record and track flight time, duty time, and training of crewmembers?
(NPR 7900.3D 4.21, FMR 102-33.165)
- s. Are there policies and procedures on the limitations on duty time and flight time for pilots and other crewmembers?
(NPR 7900.3D 4.21.2 App C 484, FMR 102-33.165)
- t. Compliance with owning-agency or military safety of flight notices and operational bulletins.
(FMR 102-33.165)
- u. Are there appropriate emergency procedures and equipment for specific missions?
(NPR 7900.3D 4.29.3, 4.29.4 App C 538, 539, FMR 102-33.165)
- v. Does the Center have a requirement and procedures for the PIC to be familiar with the available information appropriate for flight and to ensure that the facilities and services are adequate for the safe operation of the aircraft? To include:
(NPR 7900.3D 4.27.7.4 App C 512, 513, 514)
 - 1) Familiarity with all available meteorological information
 - 2) Planning for an alternative course of action for the eventuality that the flight cannot be completed because of weather conditions?
- w. Are there procedures for VFR flight operations?
(IS-BAO 6.2.2)
- x. Are there requirements and procedures for IFR operations with and without destination alternates?
(IS-BAO 6.2.3)
- y. Are there requirements and procedures for determination of fuel, oil and oxygen supply requirements?
(IS-BAO 6.2.5A, 6.2.6)
- z. Are there procedures for extended range or Polar operations?
(IS-BAO 6.2.7A)
- aa. If the reason for removing the individual from flight status is an event that is properly classifiable as a Close Call, pursuant to NPR 8621.1C, is the process for investigation described therein followed?
(NPR 7900.3D 12.1)

2. International Aircraft Operations

- a. Are all international aircraft operations done in accordance with NPR 7900.3D?
(NPR 7900.3D 1.4)

3. Waivers

- a. When deviations from NPR 7900.3D are necessary, does the Center Director or Associate Administrators submit requests for waivers to the Assistant Administrator for the Office of Strategic Infrastructure via HQ AMD?
(NPR 7900.3D 1.6.1, 4.10 App C 64 and 437)
- b. Is prior written approval obtained from the Assistant Administrator for the Office of Strategic Infrastructure before implementing procedures that are less restrictive than those contained in NPR 7900.3D?
(NPR 7900.3D 1.6.1.1 App C 65)
- c. Does the waiver approval authority approve waivers only for a specific event, period, or duration and do they specify the boundaries of the requirements being waived?
(NPR 7900.3D 1.6.4 App C 66)
- d. Does the waiver approval authority review all who have current waivers against this NPR when this NPR is updated and request verification of continued validity?
(NPR 7900.3D 1.6.5 App C 67)
- e. Is a description of any alternative or mitigating action that will be taken to ensure adequate safety and health and protection of the public, the workers, and the environment for the effective period of the waiver contained within the justification for the waiver?
(NPR 7900.3D 1.6.6.c(7) App C 68)

4. Flight Planning Requirements

a. Flight Authorization

- 1) Do NASA pilots secure diplomatic clearance approval prior to entry into the airspace of a foreign country, except for brief use of foreign airspace adjoining the United States, as directed by air traffic control?
(NPR 7900.3D 3.2.3.3 App C 224)
- 2) Has the Center's Chief of Flight Operations established procedures to ensure that all flights of NASA aircraft are properly approved and documented, allowing for all contingencies such as deployed aircraft and aircraft ferry approvals?
(NPR 7900.3D 3.1.1.1 App C 209)
- 3) If emergency lifesaving, humanitarian operations, and Homeland Security missions, as pre-approved by the Center Director, are carried

out in any NASA aircraft designated, are the circumstances documented and reported to the Assistant Administrator for the Office of Strategic Infrastructure via the Director of AMD within 30 days of action?
(NPR 7900.3D 3.1.1.2 App C 210)

b. Operational Control

- 1) Does the Center operations manual contain an operational control system that consists of a pilot self dispatch system that:
(IS-BAO 6.3.1)
 - (a) identifies the person responsible for release of the flight
 - (b) specifies flight planning requirements
 - (c) specifies when the pilot must advise the Center's flight operations office of the aircraft's departure and arrival and the associated procedures

- 2) Does the operational control system include procedures for ensuring that:
(IS-BAO 6.3.2)
 - (a) all operating requirements specified in the Center Operations Manual have been met
 - (b) the aircraft is operated within weight/mass and balance limits
 - (c) the names of persons on board the aircraft are recorded or otherwise know by the center flight operations department
 - (d) the pilot-in-command has available on board the aircraft all the essential information concerning the search and rescue services in the area over which the aircraft will be flown
 - (e) SAR authorities are notified on a timely basis should an aircraft be overdue

- 3) Does the Center have procedures defining the weather minima used for IFR departures and approaches
 - (a) Does the center have procedures in their operations manual for the determination of takeoff minima from runways where no takeoff minima is specified and does it include a risk analysis
(IS-BAO 6.4.2)

- (b) Does the center have a policy not to use operating minima lower than those which may be established for that airport, except with the specific approval of the Regulator of the airport
(IS-BAO 6.4.3)
 - (c) Does the center have a policy not to continue towards the airport of intended landing unless the latest available meteorological information indicates that conditions at that aerodrome, or at least one destination alternate, will, at the estimated time of arrival, be at or above the specified aerodrome operating minima
(IS-BAO 6.4.4)
 - (d) Does the center have a policy not to continue its approach-to-land beyond a point at which the limits of the airport operating minima would be infringed
(IS-BAO 6.4.5)
 - (e) Does the center have a policy and procedures for operating in known or expected icing conditions? Are they appropriate to the aircraft's certification and equipment
(IS-BAO 6.4.7)
- 4) Is the Center authorized to conduct CAT II & III ops
(IS-BAO 6.5.2)
- (a) Is there an approved Category II or III operating procedure in the Center's operations manual
 - (b) Are the flight crew trained and certified to conduct Category II or III instrument approaches
 - (c) Are aircraft equipped and approved for Category II or III operations
- 5) Operational Information available on the flight deck
(IS-BAO 8.2.1)
- (a) pertinent aeronautical charts
 - (b) pertinent enroute, terminal area, and instrument approach procedure charts
 - (c) aircraft performance data
 - (d) aircraft checklists
 - (e) the operator's operations manual

- (f) SOP manual (where established)
- (g) the aircraft flight manual
- (h) the aircraft minimum equipment list (MEL) if aircraft is being operated in accordance with a MEL
- (i) aircraft C of A or other flight authority and C of R
- (j) aircraft radio license
- (k) insurance certificate
- (l) Documentation required for the area of operation
- (m) Interception procedures
- (n) For international commercial air transport operations, a certified true copy of the air operator certificate including the authorizations, conditions and limitations relevant to the aircraft type.

5. Training

a. Does the Center training program include the following:

1) For flight crew members:

(NPR 7900.3D 3.8.2 App C 267)

- (a) Initial and annual aircraft type and systems training
(NPR 7900.3D 3.10.3, 4.13.4, 4.13.5 App C 303, 455, 456, IS-BAO 5.1.3.a.i)
- (b) Initial and every two years thereafter:
(IS-BAO 5.1.3.a.ii)
 - (i) Emergency procedures training
(IS-BAO 5.3.1)
 - (1) fire in the air and on the ground;
 - (2) use of fire extinguishers;
 - (3) operation and use of emergency exits;
 - (4) passenger preparation for an emergency landing/ditching;
 - (5) emergency evacuation procedures;
 - (6) donning and inflation of life preservers (when equipped);
 - (7) removal from stowage, deployment, inflation and boarding of life rafts (when equipped);

- (8) pilot incapacitation;
 - (9) unlawful interference, bomb threat and other security procedures;
 - (10) special emergency procedures should the aircraft have to be used for MEDEVAC operations including transportation of ill or injured passengers in emergency situations; and
 - (11) passenger health emergencies.
- (ii) Aircraft surface contamination training; and
 - (iii) Dangerous goods training
- (c) Upgrading training
(IS-BAO 5.1.3.a.iii)
 - (d) First aid training for flight crew members
(NPR 7900.3D 4.11.3 App C 441, 442, IS-BAO 5.1.3.a.iv)
 - (e) Does the Center have a program to maintain a level of proficiency that will ensure their ability to safely operate an aircraft within governing regulations to include abnormal and emergency situation? Does the Center establish and maintain a training program using check flights to assess its adequacy and ensure that personnel are competent to perform their assigned duties?
(NPR 7900.3D 1.5.3, 1.5.4 App C 62 and 63)
 - (f) Does the Center have a comprehensive pilot proficiency program specific to the assigned missions and reflects an in-depth evaluation of pilot proficiency and capability? Does one element of that pilot proficiency program include a written flightcrew training plan? Does that training plan incorporate pilot competency, emergency procedures, abnormal procedures, high altitude training, and the upgrade process which, at a minimum, meets the following requirements:
(NPR 7900.3D 3.8.4, 3.8.4.3 App C 280)
 - (i) Annual night flying requirements.
 - (ii) Landings in category (fixed-wing/rotorcraft).
 - (iii) Six instrument approaches under actual or simulated conditions within 6 calendar months.
 - (iv) Completing 100 hours of flight time, per year (fiscal or calendar year to be determined by Center policy), in any NASA manned aircraft or flight simulator approved by the Center's Chief of Flight Operations, or 80 hours

of flight time and 100 sorties if all are flown in the same model, design, and series of aircraft or flight simulator.

- (g) Has the Center established separate aircrew qualification and currency requirements for unique aircraft (e.g., project, military, experimental) in which the aircrew cannot meet the requirements of NPR 7900.3D section 3.8?
(NPR 7900.3D 3.8.1 App C 266)
 - (h) Are lapses in proficiency/qualification handled in accordance with NPR 7900.3D 3.8.4.4?
(NPR 7900.3D 3.8.4.4 App C 281, 282, 283)
 - (i) Is flight proficiency evaluated at least annually by a NASA or NASA-designated pilot, who is an instructor or examiner pilot, in the aircraft used for the evaluation?
(NPR 7900.3D 3.10.3 App C 303)
 - (j) Is instrument flying proficiency evaluated at least annually using professional aeronautical standards such as FAA Instrument Practical Test Standards?
(NPR 7900.3D 3.10.4 App C 304)
 - (k) Are written tests administered and reviewed annually by a check pilot to ensure current pilot knowledge of air traffic control procedures, aircraft systems, and normal and emergency operating procedures, Agency and local instructions, and other pertinent regulations and procedures?
(NPR 7900.3D 3.10.5 App C 305)
- 2) Training for schedulers or dispatchers
(IS-BAO 5.1.3.d)
 - 3) Training for other qualified non-crewmembers who are assigned to perform duties onboard an aircraft during flight time which includes, at a minimum, cabin emergency egress procedures and medical clearances
(NPR 7900.3D 3.8.3, 13.1.7 App C 275, 276, 277, and 789, IS-BAO 4.2.5)
 - 4) Does the Center have a policy for qualifying media representatives for flight?
(NPR 7900.3D 3.8.3.3 App C 277)
 - 5) Do Flight Engineers possess an FAA Flight Engineer Certificate appropriate for the aircraft category or equivalent military certification?
(NPR 7900.3D 3.8.2.6 App C 272, 273, 274)

- 6) Has the Center developed alternate training programs to satisfy requirements for Flight Engineers should commercial training sources or personnel not be available for the requisite training? Does the Center have any one-of-a-kind NASA aircraft and, if so, have they developed a documented local certification equivalent for Flight Engineers of those aircraft?
(NPR 7900.3D 3.8.2.6 App C 273, 274)

b. Training Files
(NPR 7900.3D 4.11.2 App C 439)

- 1) Who manages aircraft operations training records?
(NPR 7900.3D 1.2.1.1 App C 11)
 - (a) Are the training records current?
(NPR 7900.3D 3.8.2.2 App C 269)
 - (b) How often are training records reviewed with the aircrew member? Are they reviewed prior to flight assignment?
(NPR 7900.3D 3.8.2.3 App C 270)
- 2) Is there an established training program that includes; type, source, documentation, and recurrency for:
 - (a) Survival Training.
(NPR 7900.3D 4.13.1 App C 447, 448, 449, 450)
 - (b) Physiological.
(NPR 7900.3D 4.13.2 App C 451, 452)
 - (c) Egress.
(NPR 7900.3D 4.13.3 App C 453, 454)
 - (d) Aircraft Initial Training.
(NPR 7900.3D 4.13.4 App C 455)
 - (e) Emergency Procedures.
(NPR 7900.3D 4.13.5 App C 456)
 - (f) Other, Passenger Transportation special requirements.
(NPR 7900.3D 4.12)
 - (g) Safety.
(IS-BAO 5.1.6.c and 5.3)
 - (h) Autorotation (helicopter only).
(IS-BAO 5.1.3)

6. Documentation, Guidance, and Records
(NPR 7900.3D 1.2.1.1 App C 11, NPR 1441.1E)
- a. What publications exist to guide normal and test operations?
 - b. Are aircraft handbooks (Dash 1) available to each aircrew member?
 - c. How are daily flights scheduled, approved, and recorded?
 - d. Does a supervisor sign the flight clearance?
 - e. Are minimums, restrictions, and local rules in writing?
 - f. Is there a well-equipped flight planning facility available?
 - g. Is there a manual that gives general operating instructions for Center aircraft; i.e., a flight operations manual? Does it cover all areas of flight; i.e., research, proficiency, and administrative aircraft?
 - h. Is there an operations plan which provided procedures for operating aircraft; i.e., a basic operations plan? Does it include: a flight readiness review, a technical brief, a crew brief, a post-flight debrief?
 - i. Does flight operations at the origin of each flight, preparation of a complete weight and balance computation and a cargo-loading manifest, and retention of this computation and manifest for 30 days from the time of flight?
(FMR 102-33.165)
 - j. Are the following publications part of the Flight Planning Library:
(NPR 7900.3D 1.5.2 App C 61)
 - 1) Area Planning (AP)
 - 2) Area Planning-Special Use Airspace (AP-SUAS)
 - 3) Enroute Charts
 - 4) Flight Information Handbook (FIH)
 - 5) General Planning (GP)
 - 6) Military Training Routes (MTR)
 - 7) Enroute Supplements
 - 8) Terminal Instrument Procedures
 - k. Do records pertaining to NASA's flight activities include, at a minimum, the following:
(NPR 7900.3D 3.11.5.1 App C 313)

- 1) Approval of Mission?
- 2) Name and functions of all on board?
- 3) Purpose of the flight?
- 4) Routing (route of flight) or flight events and takeoff/landing times?

l. Does the Center disseminate, as appropriate, a disclosure statement to all crewmembers and qualified non-crewmembers who fly aboard Government aircraft IAW FMR 102-33.165?
(FMR 102-33.165)

7. General

a. Are ground support facilities adequate?
(NPR 7900.3D 6.3.1.9 App C 656, AS9100D 7.1.3, 7.1.4)

- 1) Hangar?
- 2) Flight line and ramp?
- 3) GSE?
- 4) Taxiways?
- 5) Refueling?
- 6) Corrosion control, service life extension?

b. Are aircraft properly serviced?

- 1) Fuel?
(NPR 7900.3D 2.8.6.4.m App C 156, AS9100D 8.5.1.p)
- 2) Oxygen?
(A6-332AO-GYD-000)

c. Who has the responsibility for the following tasks?
(NPR 7900.3D 2.6.1)

- 1) Aircraft modification approval?
- 2) Configuration control?
- 3) Approval of new procedures for test aircraft or systems?
- 4) Technical direction for maintenance, modification, and ground operations concerning the aircraft or its system?

- 5) Systems interface and integration?
8. Test Plans
(NPR 7900.3D 2.6.1)
 - a. Do test plans contain:
 - 1) Test conditions?
 - 2) Limits?
 - 3) Mission rules (mandatory conditions)?
 - 4) Abort rules, ground and air?
 - 5) Ground track?
 - 6) Support requirements?
 9. Medical Program and Examination Records
 - a. Do Pilots hold an FAA First Class medical certificate, military pilot flight physical, or a NASA flight medical certification, renewed annually or more frequently, if specified by the Center Director or a competent medical authority?
(NPR 7900.3D 7.2.1 App C 666)
 - b. Does the flightcrew of high performance jet aircraft or ejection-seat configured aircraft hold a military pilot flight physical or NASA flight medical certification?
(NPR 7900.3D 7.2.1.1 App C 667)
 - c. Are pilots 55 years of age and older medically certified every six months?
(NPR 7900.3D 7.2.1.2 App C 668)
 - d. Do flight engineers hold either an FAA Second-Class medical certificate, military flight physical, or NASA flight medical certification, which must be renewed annually or earlier if specified by a competent medical authority?
(NPR 7900.3D 7.2.2 App C 669)
 - e. Does other primary aircrew hold either an FAA Third-Class medical certificate, military flight physical, or NASA flight medical certification, which must be renewed annually or earlier if specified by a competent medical authority?
(NPR 7900.3D 7.2.3 App C 670)
 - f. Do qualified non-crewmembers hold medical clearances as required by Center procedures?
(NPR 7900.3D 7.2.4 App C 671)

- g. Are copies of current medical certification at the primary aircrew and qualified non-crewmembers' operating site?
(NPR 7900.3D 7.3.1 App C 673)
 - h. Do flightcrews report Special Issuances (FAA Waivers) and FAA Statements of Demonstrated Ability (SODA) to the Chief of Flight Operations for review and acceptance by a NASA Aeromedical Physician?
(NPR 7900.3D 7.5.1 App C 674)
 - i. Visit medical examination facility and ensure there is a medical program that includes preventive health and risk assessment for aircraft operations personnel.
(NPR 1800.1D 3.1, 3.2)
 - j. Are there adequate aircrew exercise facilities?
(NPR 1800.1D 3.3)
10. Pilot Release from Flight Status.
- a. Procedures should be established in coordination with the personnel office to ensure that pilots will be assigned other commensurate duties not involving flying if they become medically disqualified or are unable to satisfactorily demonstrate flying performance.
(NPR 7900.3D 7.2.5 App C 672)
 - b. Does the Center establish procedures for temporary removal of aircrew personnel from flight status for situations other than medical disqualification?
(NPR 7900.3D 12.3.1 App C 774)
 - c. Does the Center Director, in accordance with Human Resources procedures, review and approve any non-medical-related proposal for removal from flight status in excess of 30 days?
(NPR 7900.3D 12.3.1.1, 12.3.1.2 App C 775)
11. Are there established procedures concerning stabilized approach criteria?
(NPR 7900.3D 3.2.4.a App C 232)
- a. Are procedures for establishing stabilized approach criteria based on Energy Management Gates appropriate for the aircraft being flown?
 - b. Are there procedures in the event that a crewmember flying establishes an unstabilized approach?
12. Are aircraft equipped in accordance with the requirements set out in ICAO Annex 6, Part II, or the applicable section of Annex 6 Part III, or any additional or more stringent requirements that may be imposed by the FAA or NASA AFSRB or that may be specified by airspace rules?
(IS-BAO 8.1.1)

13. Are all aircraft equipped with GPWS shall ensure data base is current?
(IS-BAO 8.4)
14. Are all aircraft operating in radar controlled Reduced Vertical Separation Minima (RVSM) airspace equipped with the following:
(IS-BAO 7.5.2)
 - a. Two independent height measuring systems?
 - b. An automatic altitude control system?
 - c. An altitude alerter?
 - d. One SSR altitude reporting transponder?
15. Does the center have a process to ensure that all aircraft are equipped with the items required for national and local occupational health and safety laws and requirements (e.g., first aid kit, crash axe, fire extinguishers, etc.)?
(IS-BAO 13.1 DOI ALSE Handbook Chapter 3, 4)
16. Aircraft Acquisitions and Dispositions
 - a. Does the Center's Aircraft Flight Operations organization coordinate all aircraft acquisition and disposition actions with the cognizant Center Supply and Equipment Management Officer(s) in accordance with NPR 4200.1?
(NPR 7900.3D 8.1 App C 675)
 - b. Is the transfer of aircraft between Federal agencies and disposal of aircraft, including exchange/sales by Federal agencies, completed by GSA?
(NPR 7900.3D 8.1.3 App C 676, FMR 102-33.125)
 - c. Prior to operational use, is an aircraft acquisition done in accordance with NPR 7900.3D?
(NPR 7900.3D 8.3 App C 678-690)
 - d. Is aircraft material acquisition or "Parts Aircraft" acquisition done in accordance with NPR 7900.3D?
(NPR 7900.3D 8.4 App C 691-699)
 - e. Is the disposition of NASA owned aircraft done in accordance with NPR 7900.3D?
(NPR 7900.3D 8.5 App C 700-708)
 - f. Is the Center performing annual physical inventories of Center-owned aircraft, including display aircraft, parts aircraft, and aircraft in flyable or non-flyable storage, to determine the accuracy of the records and the PPES control system?
(NPR 7900.3D 8.2 App C 677)

17. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
 - a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

C. PASSENGER TRANSPORTATION FLIGHT OPERATIONS

1. Passenger Transportation Operations
(NPR 7900.3D Section 4)
 - a. Review aircrew records and assess crew designation, proficiency, flight check, training, and crew duty compliance.
(NPR 7900.3D 4.1, 4.5.6, 4.5.6.1, 4.5.6.2, 4.5.7, 4.5.7.1, 4.11, 4.13 App C 411, 412, 438-456)
 - b. Review ground crew records and assess designation, training, and qualifications compliance.
(NPR 7900.3D 4.1, 4.11.7, 4.13.6 App C 446, 457)
 - c. Are directives and manuals current?
(NPR 7900.3D 1.1.5.2, 2.8.10, 4.5.5.2 App C 7, 206, 207, 208, 410)
 - d. Is the aircraft interior in good condition? Are passenger briefing cards onboard and being used?
(NPR 7900.3D 4.27.2)
 - e. Is there appropriate management of the operation?
(NPR 7900.3D 4.1)
 - f. Is a contractor involved? Is NASA-contractor interface appropriate? Who is the contract monitor?
(FMR 102-33.130)
 - g. Is the data provided for NASA Form 1653 submission adequate and accurate?
(NPR 7900.3D 4.3.7, 4.4.3.3.c, 4.4.3.3.d App C 354, 376, 377)

2. Passenger Transportation Operations Requirements

Passenger Transportation operations must comply with OMB Circular A-126 and NASA procedures. Ensure that procedures have been established to comply with information outlined below.
(NPR 7900.3D 4.2.1, 4.8 App C 428, 429, 430, 431)

 - a. Look for annual review and documentation of Passenger Transportation capability requirements.
(NPR 7900.3D 4.6.2.b App C 419)
 - b. Check local implementing instructions for compliance with OMB Circular A-126, 41 CFR section 101-37, and NPR 7900.3D Chapter 4. Look for local guidelines and procedural documents on processing flight requests.
(NPR 7900.3D 4.2.1.4 App C 335)

- 1) Review procedures to ensure that these requirements are being appropriately addressed.
3. Passenger Transportation Flight Documentation Review
- a. Collect Passenger Transportation flight requests, manifests, and aircraft logs for a sample period (2-3 months).
(NPR 7900.3D 4.3.7, 4.4.3.3, 4.5.2.g.(2) App C 354, 376, 403)
 - 1) Check and cross-check each document for proper completion.
 - b. Passenger Transportation Flight Request Front Page
 - 1) Names, proper codes (as indicated on back) (i.e. Senior Federal Traveler, Non-Federal Traveler, etc.)
(NPR 7900.3D 4.4.2.3.d App C 370)
 - 2) Each person assigned to legs planned to be flown
(NPR 7900.3D 4.6.1.5 App C 417, FMR 102-33.165)
 - 3) Requesting organization, proper written justification, approval signature by proper authority
(NPR 7900.3D 4.9.1.4 App C 435)
 - 4) All blanks filled out
(NPR 7900.3D 4.4.3.3.c App C 376)
 - c. Passenger Transportation Flight Request Back Page.
 - 1) Cost comparison algorithm: math correct; use of 1.3285 multiplier; use of current variable cost/hour; check comparison with commercial fares for the correct numbers of people; check that the government cost and the commercial cost actually justify the flight; ask when the Center gets its commercial fares, and from whom; ask what is the basis for government salary rate used in the algorithm, etc.
(NPR 7900.3D 4.3.5.a, 4.3.5.b, 4.3.5.1, 4.3.6, 4.3.7, 4.4.5.a App C 351, 352, 353, 354)
 - 2) Check basis for variable rate in financial statistics
(NPR 7900.3D 4.5.1.c App C 387)
 - 3) Check for back up documentation, e.g. reimbursements, as appropriate.
(NPR 7900.3D 4.5.2.1, 4.7 App C 404, 424, 425, 426, 427)
 - d. Manifests: The ‘as flown’ manifests kept by the pilots at Centers for the corresponding flight requests.
(NPR 7900.3D 4.2.6, 4.2.6.1, 4.4.3.3.c, 4.4.4, 4.5.2.g App C 344, 345, 376, 378, 401, 402, 403, FMR 102-33.165)

- 1) Check the manifests to see that the actual number of passengers flown was justified by the cost comparison on the NASA manifest.
 - 2) Check for retention of manifests for two year from the time of flight
- e. Aircraft Log or local equivalent.
(NPR 7900.3D 4.5.2.g, 4.27.10, 4.27.10.1, 4.31.3 App C 401, 402, 403, 520, 521, 558)
- 1) Check to ensure all passenger flight requests that were flown have corresponding aircraft log entries.
 - 2) Check individual aircraft log entry flight hours and flights add up to the resulting monthly totals.

4. Use of NASA Aircraft for Passenger Transportation Purposes

General policy is that NASA aircraft whose primary purpose is to meet other mission requirements of research or program support will not be used for Passenger Transportation purposes. This will be deviated from on an exception basis once the following requirements have been addressed:

- a. Shall not conflict with regular program support or research operations.
(NPR 7900.3D 4.2.2, 4.9.1, 4.9.1.2 App C 336, 432, 433)
- b. Only when Passenger Transportation flights are not readily available or impractical, e.g., would lead to excessive deadheading, or would exceed crew duty restrictions.
(NPR 7900.3D 4.9.1.3.2)
- c. Subject to the same cost comparisons as Passenger Transportation flights required by NPR 7900.3D sections 4.1 through 4.4, unless an "add on."
(NPR 7900.3D 4.9.1.3.3)
- d. Use only with the approval of the Assistant Administrator for the Office of Strategic Infrastructure and the Center Director (Check for waivers from I&A as appropriate).
(NPR 7900.3D 4.9.1.3.4)
- e. Review sample documentation to ensure that the same Passenger Transportation requirements are being appropriately applied.
(NPR 7900.3D 4.9.1.4 App C 435, 436)

D. AIRWORTHINESS AND FLIGHT READINESS

1. Airworthiness and Flight Safety Reviews (AFSR), Flight Readiness Reviews/Operational Readiness Reviews (FRR/ORR), and Mission Readiness Reviews (MRR) procedures.
(NPR 7900.3D 1.1.4.c, 2.1, 2.2, 2.3, 3.12 App C 4, 69-78, 314-328)
 - a. Is there an AFSR for every aircraft modification? Are FRR/ORR and/or MRR conducted before flights as required? How are the AFSR, FRR/ORR, and/or MRR established?
 - b. By whom? Who is on the board?
 - c. Is the board independent?
 - d. Does it cover every modification, however small? Every aircraft?
 - e. Are hazards identified? How are they resolved?
 - f. Is there a risk analysis? A risk assessment?
 - g. Is the AFSR, FRR/ORR, and/or MRR documented: procedures and results?
 - h. Does the AFSR, FRR/ORR, and/or MRR consider safety? Program success?
 - i. Is the mission justified in terms of the program goal?
 - j. Are individual flight test plans evaluated?
 - k. Are the program requirements established? By whom?
 - l. Are the qualifications of the personnel evaluated?
 - (1) Engineers.
 - (2) Technicians.
 - (3) Ground crew.
 - (4) Aircrew.
 - m. Is every discipline represented?
 - n. Is a systems type approach used?
 - o. What airworthiness standard is used to compare to the findings of the Board?
 - (1) Does the Center clearly identify the appropriate airworthiness review process for experimental, research, and operational configurations and nonstandard ground or flight operations for all aircraft contracted or

operated by the Center?
(NPR 7900.3D 2.2.2 App C 70)

- (2) Does the Center establish airworthiness and configuration control review processes and procedures for overall engineering oversight to identify and review engineering analysis and limitations, to manage hazards and risks associated with flight programs, to ensure safe flight operations, to manage and thoroughly document aircraft configurations, and to ensure that flight objectives satisfy programmatic requirements?
(NPR 7900.3D 2.4.3, 3.3.2 App C 87 and 240, FMR 102-33.125, 140, 145, 155)
- (3) Does the Center ensure that these review processes and procedures are incorporated into the contracts of those who operate, maintain, and provide support for NASA aircraft as well as contracted aircraft used for NASA missions, with the exception of scheduled airline passenger transportation?
(NPR 7900.3D 2.4.3.1 App C 88)
- (4) Does the Center establish procedures to ensure that airworthiness and safety reviews are conducted for flight operations or missions?
(NPR 7900.3D 2.4.3 App C 87)
- (5) Does the Center Review hazards associated with aircraft experimental modifications, research, or unique internal or external payloads and nonstandard operations are identified and that risks are adequately managed to enhance the likelihood of mission and program success for all aircraft missions or operations and to minimize the risks to persons or property?
(NPR 7900.3D 2.6.1.1, 2.6.1.2 App C 98)
- (6) Do Program managers review flight programs early in the development cycle to identify the need and schedule for additional safety-related resources, procedures, or reviews?
(NPR 7900.3D 2.4.4 App C 92, FMR 102-33.140, 145)
- (7) Do managers ensure that aircraft modifications are accomplished with sufficient time for engineers and technicians to safely complete required tasks?
(NPR 7900.3D 2.4.3, 2.4.3.1, 2.4.3.2 App C 87, 88, 89)
- (8) Does the Center establish configuration control procedures to ensure that the configuration of each NASA aircraft is fully documented and reviewed?
(NPR 7900.3D 2.4.3.2 App C 89)
- (9) Is there a minimum equipment list (MEL) established for all non-test-related equipment for all aircraft operations?
(NPR 7900.3D 2.4.3.3 App C 90)

- (10) Are Test-related equipment handled through the flight test planning process? If test equipment remains on the aircraft for non-test-related missions, then is such equipment addressed in the aircraft documentation?
(NPR 7900.3D 2.6.1.1 App C 98)
- (11) Does the Center ensure that the Airworthiness Review Board (ARB) is staffed with the appropriate personnel?
(NPR 7900.3D 2.5, 2.7.1.b App C 93, 94, 95, 96, 109)
- (a) Has the Center Director established a list of senior managers and/or senior engineers who are responsible for conducting airworthiness review and approving projects or missions for flight, including appointing personnel responsible for managing and executing the Center airworthiness function and maintaining records of airworthiness approvals?
 - (b) Is the ARB Chair independent of flight operations and project management? Is the Chair's assignment documented in writing?
 - (c) Do all reviews include, at a minimum, representatives from safety, flight operations, and engineering? Do all reviews include documentation on what constitutes a quorum for the ARB?
 - (d) Is the flight operations representative on the ARB a pilot who is either a qualified ASO or Test Pilot who is a graduate of a formal Test Pilot School?
 - (e) Is the ARB broken down into subpanels to facilitate the overall review process? Do subpanels provide a detailed review of specific aspects of project or mission by discipline experts who then advise the overarching Center ARB?
- (12) Are any cockpit or cabin modifications that might interfere with aircrew egress reviewed by a subpanel including aircrew and life support personnel?
(NPR 7900.3D 2.5.2 App C 96)
- (13) Are airworthiness request and approval requirements documented in Center-level procedures?
(NPR 7900.3D 2.7.1 App C 108)
- (14) Does the final approval contain a description of the configuration of the aircraft, operating instructions and procedures, operating limitations and restrictions, and specific maneuvers or operations for which the aircraft is cleared?
(NPR 7900.3D 2.7.5 App C 115)

- p. Are quality assurance standards and procedures identified and followed?
(NPR 7900.3D 2.8.9.5 App C 188, AS9100D 7.5, IS-BAO 3.2.3a)
 - q. Are personnel training needs for the project identified and met?
(NPR 7900.3D 2.8.9.8.a, 2.8.9.8.b App C 192, 193, 194, AS9100D 7.2, 7.3, IS-BAO 5.0)
2. Flight Envelope Determination
- a. How is a flight envelope defined? How initially established?
(NPR 7900.3D 2.6.1.3)
 - b. Is it documented?
(NPR 7900.3D 2.7.1.a, IS-BAO 6.1.1)
 - c. How is approval gained to expand it?
(NPR 7900.3D 2.6.1.4)
 - d. Are pilot procedures discussed before the flight?
(NPR 7900.3D 3.12.5 App C 322)
 - e. How are critical flight parameters monitored? What communication with the pilot?
(NPR 7900.3D 3.11.5, 3.11.5.1, 4.32 App C 312, 313, 559, 560, 561, 562)
3. What procedures exist to control critical software?
(AS9100D 7.1.3.b, 8.3.5.e, 8.4.3.g-j, 8.5.1, 8.5.5, NASA-STD-8719.13C 5 and 6.1)
4. Aircraft Modification
(NPR 7900.3D 2.2.1, App C 69)
- a. How is the modification process accomplished?
 - (1) Initial idea.
(NPR 7900.3D 2.6.4 App C 100)
 - (2) Approval.
(NPR 7900.3D 2.5.1)
 - (3) Design.
(NPR 7900.3D 2.7.1 App C 108)
 - (4) Construction guides.
(NPR 7900.3D 2.7.1 App C 108)
 - (5) Installation guides.
(NPR 7900.3D 2.7.1 App C 108)

- (6) End-to-end checks done and documented.
(NPR 7900.3D 2.7.1 App C 108)
- (7) Flight test maneuvers and procedures.
(NPR 7900.3D 2.7.1.c App C 110)
- b. What documents are generated? Are they adequate to tell the story?
(NPR 7900.3D 2.7 App C 108-116)
- 5. When an aircraft is transferred between Centers, is a new NASA Certificate of Airworthiness, approved by the receiving Center Director, obtained prior to commencing flight?
(NPR 7900.3D 2.3.1.5 App C 81)
- 6. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
 - a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

E. AVIATION SAFETY

1. Aviation Safety Officer (ASO)
(NPR 7900.3D 1.2.6.1 App C 38)
 - a. Is the ASO a civil servant assigned to the Flight Operations Office and do they serve as the Center's focal point for aviation safety and act on behalf of the Center Director when discharging this responsibility?
(NPR 7900.3D 1.2.6.2, 6.2.7.1 App C 39)
 - b. Is there a formally appointed ASO? Does the Center's Chief of Flight Operations recommend assignment of the Center ASO, with the concurrence of the Center SMA Director, to the Center Director for approval?
(NPR 7900.3D 6.2.7 App C 628, FMR 102-33.180)
 - c. Are ASO duties well defined in writing?
(NPR 7900.3D 6.2.7.2, 6.2.7.3)
 - d. Does the ASO have formal and direct access to the Center senior management when safety issues cannot be resolved at a lower level in the flight organization?
(NPR 7900.3D 6.2.2.2 App C 625)
 - e. Does any cockpit or cabin modification that might interfere with aircrew egress get reviewed by a subpanel as part of the airworthiness review process? And does that subpanel include aircrew and life support personnel?
(NPR 7900.3D 2.5.2 App C 96)
 - f. Does the ASO hold qualification as a NASA PIC in primary research aircraft type used at the Center?
(NPR 7900.3D 6.2.7.4.a App C 630)
 - g. Within one year of appointment, has the ASO completed a course in Aviation Safety Program management and NASA STEP 1 for Aviation Safety?
(NPR 7900.3D 6.2.7.4.b App C 631, FMR 102-33.180)
 - h. Within two years of appointment, has the ASO graduated from a recognized Military Aviation Safety Officer Course or an Academic Aviation Safety Certificate Program (of at least six weeks' duration)?
(NPR 7900.3D 6.2.7.4.c(1) App C 632, FMR 102-33.180)
 - i. Has the Center established a continuing education program to ensure that each ASO maintains adequate knowledge to discharge the duties of the office?
(NPR 7900.3D 6.2.7.5 App C 634)
 - j. To maintain familiarity with the latest aviation safety principles as a NASA ASO, is the ASO actively engaged in the Center's aviation operations program and do they complete 40 hours of continuing education in ASO

course elements within 24 calendar months?
(NPR 7900.3D 6.2.7.5.a App C 635)

2. Aviation Safety Program

- a. Is a program established in a single manual? Is it published? Is it current? Does it provide a clear assignment of roles and responsibilities of the center's Safety Management System and implementation of requirements and policies outlined in NPR 7900.3, NPR 8621.1, NPR 8715.3, and NPD 7900.4?
(NPR 7900.3D 6.3.1 App C 642, FMR 102-33.155, FMR 102-33.180)
- b. Does the program include these elements:
 - (1) Does the ASO ensure that risk assessment and hazard analysis procedures are established? Do these procedures address risks, hazards, and mitigation methods associated with aircraft modifications and research flights in accordance with chapter 2 of NPR 8715.3, NASA General Safety Program Requirements?
(NPR 7900.3D 2.7.2, 6.3.1.7 App C 111, 653, FMR 102-33.180)
 - (2) Mishap and near mid-air collision reporting and investigation.
(NPR 7900.3D 6.3.1.3, 6.4, FMR 102-33.180, FMR 102-33.185)
 - (3) Does the ASO ensure that project and program safety plans are subject to a review process? Once approved, does the ASO ensure the plans are disseminated to all involved personnel?
(NPR 7900.3D 6.3.1.8 App C 654, 655, FMR 102-33.180)
 - (4) Design reviews, aircraft configuration management, flight and test readiness reviews.
(NPR 7900.3D 2.4, 2.5.1.2, 3.12.1, 5.5.1 App C 86-92, 94, 314, 315, 316, 596)
 - (5) Do the ASOs conduct safety training for operations and maintenance personnel? Do the ASOs establish a process to ensure that topics covered are disseminated to those who could not attend?
(NPR 7900.3D 6.3.1.5 App C 651)
 - (6) Does the Center flight operations perform an independent flight operations review during the alternate year when an IAOP review is not scheduled? Is this review conducted by the Center Safety Office or an external aviation inspection organization and does it provide an objective evaluation of selected aircraft operations, maintenance, crew procedures, and facilities to ensure safe and efficient operation?
(NPR 7900.3D 6.3.1.2.b App C 645, 646)
 - (7) Does the Center Aviation Safety Program establish a procedure for collecting hazards/anomalies/Close Calls data from personnel?
(NPR 7900.3D 6.3.1.3 App C 648)

(8) Does the Chief of Flight Operations ensure that aviation facilities, both at home and deployed locations, are maintained and inspected in accordance with applicable OSHA and NASA safety standards?
(NPR 7900.3D 6.3.1.9 App C 656)

(9) Does the ASO or AGSO ensure that safety oversight is provided during the handling and stowage of cargo, including hazardous materials, aboard NASA aircraft?
(NPR 7900.3D 6.3.1.10.a App C 657)

c. Does the Center's Aviation Safety Working Group, chaired by the ASO, meet at least semiannually, and report to the Chief of Flight Operations?
(NPR 7900.3D 6.3.1.1 App C 643)

3. Publications

What safety publications are received? Are they distributed throughout aircraft operations and maintenance? Is safety information that would be of interest Agency-wide distributed to the Office of Safety and Mission Assurance?
(NPR 7900.3D 6.3.1.11 App C 659)

4. Mishap Reporting Procedures

a. Is there an existing mishap reporting plan or procedure established? Does the Center follow the Mishap and Close Call reporting requirements contained in NPR 8621.1C?
(NPR 7900.3D 6.3.1.3 App C 648)

b. Is there a post-aviation-accident kit and checklist available? Are the contents of the kit adequate? Is there a published and maintained Aircraft/Airfield Pre-Mishap Plan in accordance with the procedures established in NPR 8621.1C? Does the Center plan ensure local fire/crash-rescue personnel are briefed annually and prior to operation of newly acquired aircraft on rescue and emergency procedures peculiar to the aircraft regularly operated at that facility?
(NPR 7900.3D 6.4.1, 6.4.1.a, 6.4.1.b App C 660, 661, 662, NPR 8621.1C 1.2, 2.3)

c. Does the Center plan ensure that mock mishap drills are held and that the ASO evaluates the results to ensure optimal coordination with stakeholders for the Mishap Preparedness and Contingency Plan?
(NPR 7900.3D 6.4.1.c App C 663)

d. Does the Center plan address procedures for aircraft mishaps away from home field?
(NPR 7900.3D 3.12.6.1.m, 6.4.1 App C 324, 660)

e. How are incidents reported?
(NPR 7900.3D 6.3.1.3, NPR 8621.1C, FMR 102-33.180, 185)

- f. Who investigates incidents?
(NPR 7900.3D 6.3.1.3 App C 648, NPR 8621.1C, FMR 102-33.185)
 - 1) What qualifications does the investigator have?
- g. Does the Center have procedures for notifying and working with the FAA for aircraft accidents reportable under Federal regulations?
(NPR 7900.3D 6.4.1.d App C 664, FMR 102-33.185)
- h. Does the Center have an accident/incident response plan and periodic disaster response exercises to test their plan?
(FMR 102-33.185)
- i. Does the Center have procedures for participation as a party in NTSB's investigations of accidents or incidents involving aircraft that your agency owns or hires and for conducting parallel investigations, as appropriate?
(FMR 102-33.185)
- j. Does the Center have procedures for disseminating, in the event of an aviation disaster that involves one of your Government aircraft, information about eligibility for benefits that is contained in the disclosure statement to anyone injured, to injured or deceased persons' points of contact (listed on the manifest), and to the families of injured or deceased crewmembers and qualified non-crewmembers?
(FMR 102-33.185)

5. Safety Committees
(FMR 102-33.180)

- a. Are there any safety committees in existence chaired by the ASO that meet at least semiannually, and report to the Chief of Flight Operations?
 - 1) What is its composition and purpose?
 - 2) Meetings? Minutes? Attendance?

6. Airborne Emergencies
(IS-BAO App B 5.1.3.6.h)

- a. How are airborne emergencies managed?
- b. Do written emergency procedures exist? Are they followed?

7. Crash/Fire/Rescue (CFR)
(NPR 7900.3D 6.3.1.9 App C 656)

Ensure that the CFR capabilities at the Field Installation operating site (and off-site) are adequate to cover normal and after duty hours flight operations. Visit CFR facilities.

8. Air Traffic Control
(NPR 7900.3D 13.2.2)

Ensure that air traffic control, approach control and monitoring, weather reporting, approach and runway lighting, navigational aids, and published approaches are adequate for assigned mission. Visit facilities.
9. Flight Data Recorders (FDR)
(NPR 7900.3D 4.28.2, 4.28.2.1 App C 524, 525)
 - a. How many FDRs? On what aircraft? Any plans to acquire more?
10. Does the Chief of Flight Operations with the assistance of the ASO shall conduct a Government/industry-recognized cultural survey, assessment, or workshop within aircraft operations every two years?
(NPR 7900.3D 6.3.1.4 App C 649)
11. Do aircrew, at least once per calendar year, attend a crew resource management course of at least four hours in duration?
(NPR 7900.3D 3.9.7 App C 298)
12. Is there a Center Aviation Safety Award program?
(NPR 7900.3D 6.3.1.6 App C 652, FMR 102-33.180)
13. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
 - a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

F. HAZARD ANALYSIS

(NPR 8715.3D, FMR 102-33.180, IS-BAO 3.2.2.a)

1. Is there a documented hazard identification program?
(NPR 7900.3D 2.7.4, 2.7.4.1 and 6.3.1.7 App C 113, 653)
2. How is a hazard identified?
 - a. Actual.
 - b. Hypothetical.
3. Who keeps the log of the identified hazards?
4. How is the hazard analyzed?
5. How is the probability of occurrence determined?
6. How is the risk assessed?
7. Who decides whether to accept the risk?

G. AIRFIELD FACILITIES
(AS9100D 7.1.3 and 7.1.4)

Visit all the facilities on-site to ensure that they are sufficient for the organization to effectively perform their assigned mission. The question to ask: Do the facilities enhance or hinder the operation?
(14 C.F.R. 139)

1. Natural Hazards
(AS9100D 7.1.3, 7.1.4)
 - a. Topographical: hills, cliffs, water.
 - b. Birds, animals.
 - c. Forests, trees.
2. Other Hazards
(AS9100D 7.1.3, 7.1.4)
 - a. Airfields in close proximity.
 - b. Man-made: roads and taxiways, structures.
 - c. Conflicting traffic.
3. Base Facilities
(AS9100D 7.1.3, 7.1.4)
 - a. Aircraft parking area.
 - b. Refueling area.
 - c. Hangars, shops.
 - d. Engine run-up area.
 - e. Taxiway.
 - f. Last chance inspection.
 - g. Runway.
 - h. Remote site operation.
 - i. Practice runways at home field and elsewhere.
 - j. Warning or ~~restricted~~ controlled area use.
 - k. Support vehicles: cars, vans.

1. Tracking devices: telemetry, radio.
- m. Offices: briefing rooms, pilot and passenger lounges.
4. Construction and Renovation
(AS9100D 7.1.3, 7.1.4)
 - a. Ensure that proposed renovations or new construction plans for aircraft operations related facilities are reviewed.
 - b. Ensure that they are afforded appropriate priority in the report with regard to the Center's CoF budget.
5. Has the Center operating an airfield (or helicopter landing area) adopted and complied with an Airfield Operations Manual in accordance with Section 13.2 of NPR 7900.3?
(NPR 7900.3D 13.1.2 App C 781)
6. Has the Center operating an airfield ensured that the FAA Regional Airports Division Manager has been provided a complete copy of the Center's most current Airfield Operations Manual?
(NPR 7900.3D 13.1.4 App C 783)
7. If the Center provides access to their airfield to the general public for aircraft operations conducted under civil regulations, have they identified all deviations and non-compliances from 14 C.F.R. Part 139 and provided this information to the Aircraft Management Division, OSI for approval?
(NPR 7900.3D 13.1.5 App C 784)
8. Has the Center developed and maintained an airfield emergency plan designed to minimize the possibility and extent of personal injury and property damage on the airfield in an emergency?
(NPR 7900.3D 13.1.6.a App C 785)
9. Has the Center coordinated the plan with law enforcement agencies, rescue and firefighting agencies, medical personnel and organizations, the principal tenants at the airfield, and all other persons who have responsibilities under the plan?
(NPR 7900.3D 13.1.6.b App C 786)
10. At least once every 12 consecutive calendar months, does the Center review the plan with all the parties with whom the plan is coordinated, as specified in NPR 7900.3, to ensure that all parties know their responsibilities and to ensure that all information in the plan is current?
(NPR 7900.3D 13.1.6.1 App C 788)
11. Has the Center held a full-scale airfield emergency plan exercise at least once every 24 consecutive calendar months?
(NPR 7900.3D 13.1.4.c App C 787)

12. At least once every 12 consecutive calendar months, does the Center conduct training needed to meet the following requirements: a.) providing sufficient and qualified personnel to comply with the requirements of NPR 7900.2; b.) training all personnel who access movement areas and safety areas and perform duties in compliance with the requirements of the Airfield Operations Manual and the requirements of NPR 7900.3?
(NPR 7900.3D 13.1.7 App C 789)
13. Has the Center operating airfields or aircraft ramp areas conducted a Pavement Condition Index survey at least once every five years?
(NPR 7900.3D 13.1.8 App C 790)
14. Is the Airfield condition reporting conducted in a manner authorized by the Center Director and meets the requirements in NPR 7900.3?
(NPR 7900.3D 13.1.9, 13.1.9.1, 13.1.9.2 App C 791)
15. Does the Center maintain an Airfield Operations Manual that includes descriptions of operating procedures, facilities and equipment, responsibility assignments, and any other information needed by personnel concerned with operating the airfield?
(NPR 7900.3D 13.2.1 App C 792)
16. Does the Center include in the Airfield Operations Manual the elements required by NPR 7900.3D?
(NPR 7900.3D 13.2.2 App C 793)
17. Does the Center provide, during aircraft operations at the airfield, at least the rescue and firefighting capability specified for the level of operations?
(NPR 7900.3D 13.3.1.1 App C 795)
18. Has the Center established procedures to restrict the use of the airfield and notify aircraft operators of the temporary suspension of airfield operations in the event that fire protection is temporarily not available due to lack of personnel, equipment, or other emergencies?
(NPR 7900.3D 13.3.1.2 App C 796)
19. Do all rescue and firefighting personnel participate in at least one live-fire drill prior to initial performance of rescue and firefighting duties and every 12 consecutive calendar months thereafter?
(NPR 7900.3D 13.3.1.3 App C 797, FMR 102-33.180)
20. Does the Center have a process to take immediate action to eliminate wildlife hazards whenever they are detected?
(NPR 7900.3D 13.4.1 App C 798)
21. Has the Center conducted a wildlife hazard assessment by a wildlife damage management biologist who has professional training and/or experience in wildlife hazard management at airfields or an individual working under direct supervision

of such an individual?
(NPR 7900.3D 13.4.2 App C 799)

22. Does the Center conduct a training program by a qualified wildlife damage management biologist to provide airfield personnel with the knowledge and skills needed to successfully carry out the required wildlife hazard management plan?
(NPR 7900.3D 13.4.3 App C 800)
23. Does the Center track and report all bird strikes and other wildlife strikes either in NMIS or the NASA Aircraft Anomaly Reporting System (NAARS) in accordance with NPR 8621.1C?
(NPR 7900.3D 13.4.4 App C 801)
24. Does the Center conduct a periodic review of the bird hazard using a team similar to the U.S. Air Force Bird/Wildlife Aircraft Strike Hazard (BASH) team?
(NPR 7900.3D 13.4.5 App C 802)
25. Has the Center developed a wildlife hazard management plan using the wildlife hazard assessment as a basis?
(NPR 7900.3D 13.4.6 App C 803)
26. Whenever the requirements of NPR 7900.3 cannot be met to the extent that uncorrected, unsafe conditions exist on the airfield, does the Center limit aircraft operations to those portions of the airfield no rendered unsafe by those conditions?
(NPR 7900.3D 13.5.1 App C 804)
27. Is there a notification procedure for when there is an emergency that necessitates a deviation from a requirement under NPR 7900.3 or the Airfield Operations Manual, that within 14 days after the emergency, HQ AMD and OSMA are notified of the nature, extent, and duration of the deviation?
(NPR 7900.3D 13.6 App C 805)

H. MAINTENANCE FACILITIES

(AS9100D 7.1.3)

Check with facility manager or safety representative

1. Do the maintenances work area have sufficient space to perform the assigned work?
(NPR 7900.3D 6.3.1.9, AS9100D 7.1.3, 7.1.4)
2. Is the condition of work areas hazard-free and clean?
(NPR 7900.3D 6.3.1.9, AS9100D 7.1.3, 7.1.4)
3. Are work areas climate and environmentally controlled?
(NPR 7900.3D 6.3.1.9, AS9100D 7.1.3, 7.1.4)
4. Are work areas equipped with central fire protection systems?
(NPR 7900.3D 6.3.1.9, AS9100D 7.1.3, 7.1.4)
5. Is work area periodically inspected to assure compliance with safety regulations (i.e. fire bottle inspections, aircraft power outlets properly grounded, work benches grounded, etc.)?
(NPR 7900.3D 6.3.1.9, AS9100D 7.1.3, 7.1.4)
6. Is an internal facility and/or off-site security program in effect?
(NPR 7900.3D 4.31.2 App C 556, AS9100D 7.1.3, 7.1.4)
7. Is this a certified FAA repair station? If so, is the repair station manual current?
(14 CFR 145.207.b)
8. Are maintenance personnel assigned to perform a general inspection of hangar and ramp areas for FOD on a weekly basis at a minimum?
(NPR 7900.3D 2.8.6.4.g(2) App C 144)
9. Is there direction for all flight operations personnel constantly on lookout for material that could be ingested into engines, struck by propeller blades, and/or blown by the exhaust of engines or propellers, causing injury to personnel or damage to aircraft?
(NPR 7900.3D 2.8.6.4.g(1) App C 143)
10. Does the Center maintenance manual include a documented foreign object damage (FOD) control program that addresses periodicity and inspection criteria and effectively reduces the risk of FOD both during maintenance and during flight operations?
(NPR 7900.3D 2.8.6.4.g App C 142)
11. Are explosives-laden aircraft parked in designated aircraft parking areas that meet airfield criteria and afford appropriate quantity distance criteria to eliminate hazards to personnel and resources per NASA-STD-8719.12A, Section 5.32.5.1.c,

5.32.19.3 and 5.32.19?

(NPR 7900.3D 2.8.6.5 App C 177, OPNAVINST 8020.14/MCO P8020.11)

12. Does the Center maintenance manual include general housekeeping to ensure aviation facilities are maintained to NASA standards for hangars, shops, and ramps? Do the housekeeping procedures meet the specific requirements of NPR 7900.3?
(NPR 7900.3D 2.8.6.4.s App C 166)

I. AIRCRAFT MAINTENANCE

1. Organization
 - a. Review organizational charts, NASA and contractor as appropriate.
 - (1) Is the aircraft maintenance organization at an appropriate level to function with strength and authority?
(NPR 7900.3D 2.8.1, IS-BAO 4.1.1.c)
 - (2) To whom does maintenance report? Does the organization receive adequate management support?
(NPR 7900.3D 2.8.1, IS-BAO 4.1.1.c)
 - (3) Where does Quality Assurance/Inspection fit into the organization?
(FMR 102-33.180)
 - b. Is the organization appropriately manned to perform its function?
(NPR 7900.3D 1.1.5.2 App C 7, IS-BAO 4.1.1)
2. Aircraft Modifications
(NPR 7900.3D 2.8.3, 2.8.3.1, 2.8.3.2)
 - a. What procedures are used to modify aircraft? Are modifications documented and tracked?
 - b. What standards are used?
 - c. Are the established policies, standards, and procedures followed?
3. Maintenance - Hangar and Flightline (NASA/Contractor)
(IS-BAO 4.5, FMR 102-33.155, 170)
 - a. Staffing
 - (1) Are personnel responsibilities spelled out?
 - (2) Is authorized and on-hand staffing adequate?
 - b. Maintenance and Inspection Program
 - 1) Are NASA aircraft maintained in accordance with an established and documented maintenance and inspection program, using standards of quality in workmanship, materials, and support equipment that will ensure airworthiness of aircraft for safety of flight which comply with either?
(NPR 7900.3D 2.8.3, 2.8.3.1 App C 119, 120, FMR 102-33.170)
 - (a) Programs for ex-military aircraft

- (b) Manufacturer's programs;
 - (c) FAA-approved programs (i.e., following the Federal Aviation Regulations);
 - (d) FAA-accepted programs (i.e., those following ICAP guides that have been accepted by the FAA)
 - (e) Your agency's self-prescribed programs
- 2) Are all NASA aircraft maintained in a condition for safe operation and meet their respective type designs or properly altered condition? (NPR 7900.3D 2.8.3.1 App C 120)
 - 3) Does the Center have an up-to-date maintenance plan? Is there written guidance for maintenance practices and procedures that include aircraft-specific (manufacturer, NASA, or DoD) maintenance programs and ensure that information and technical data appropriate to the work performed are used? (NPR 7900.3D 2.8.6)
 - 4) Is there compliance with owning-agency or military safety of flight notices, FAA airworthiness directives, or mandatory manufacturers' bulletins applicable to the types of aircraft, engines, propellers, and appliances you operate? (NPR 7900.3D 2.6.1.5, 2.8.6.4.q, FMR 102-33.165, 170)
 - 5) Are there policies and procedures for operating aircraft with inoperable equipment? (i.e., Minimum Equipment Lists and Configuration Deviation Lists) (FMR 102-33.170)
 - 6) Is there technical support, including appropriate engineering documentation and testing, for aircraft, powerplant, propeller, or appliance repairs, modifications, or equipment installations? (FMR 102-33.170)
 - 7) Are personnel familiar with the maintenance plan?
 - 8) Has the Center developed written maintenance procedures and practices in a Center's maintenance manual that supports the aircraft-specific maintenance programs? If completed by contractor maintenance, is the contractor required to follow the Center maintenance manual whose accuracy and currency is the responsibility of the Chief of Maintenance? (NPR 7900.3D 2.8.6, 2.8.6.1 App C 129, 130, FMR 102-33.130)
 - 9) Aircraft log books and associated records?

(a) Does the Center maintenance manual include a description of how aircraft log records and associated documentation for assigned aircraft and components are maintained?

(NPR 7900.3D 2.8.6.4.a App C 133)

(b) Are persons signing entries in the aircraft logbook, and/or entries on Serviceable Parts Tags authorized in accordance with the NASA requirements and applicable FARs and have satisfactorily completed maintenance training or possess the equivalent current experience on the applicable type appliance, aircraft, engine, or propeller? Is the equivalent experience documented in the individual's training record?

(NPR 7900.3D 2.8.6.4.b(1) App C 136)

(c) Does personnel signing entries in the aircraft logbook, and/or entries on Serviceable Parts Tags, understand and have knowledge of FARs, and the applicable types of maintenance or overhaul manuals, and follow the applicable procedures set forth therein?

(NPR 7900.3D 2.8.6.4.b(2) App C 136)

(d) Do persons signing entries in the aircraft logbook, and/or entries on Serviceable Parts Tags, meet Center-defined certification processes?

(NPR 7900.3D 2.8.6.4.b(3) App C 136)

10) Are there written ground-handling procedures that may be accomplished only by qualified ground handling personnel to perform fire guard, application of external electrical power, towing, engine run, and taxi operations that documents aircraft-specific training and designates those qualified in writing?

(NPR 7900.3D 2.8.6.4.e App C 140)

11) Is there a documented Metrology and Calibration (METCAL) Program that establishes policy, responsibilities, and requirements to ensure that calibrated and tested tools/special equipment performance is compared to reference calibration standards (CALSTDs) of known and sufficiently greater accuracy?

(NPR 7900.3D 2.8.6.4.f App C 141)

12) Is there a documented foreign object damage (FOD) control program that addresses periodicity and inspection criteria and effectively reduces the risk of FOD both during maintenance and during flight operations?

(NPR 7900.3D 2.8.6.4.g App C 142)

- 13) Are maintenance personnel assigned to perform a general inspection of hangar and ramp areas for FOD on a weekly basis at a minimum?
(NPR 7900.3D 2.8.6.4.g(2) App C 144)
- 14) Is there a documented tool control program (TCP) that ensures tool inventories are accurate at specific intervals, contains a lost tool process, and prohibits aircraft from flying until all tools used on an aircraft have been accounted for? Does the TCP provide an instant inventory capability?
(NPR 7900.3D 2.8.6.4.h App C 145, 146, 147)
- 15) Is there a documented process to ensure all GSE used on aircraft are safe and operable? Is all GSE maintained per written requirements that document how to identify and remove equipment that is unserviceable?
(NPR 7900.3D 2.8.6.4.i App C 148, 149)
- 16) Is GSE maintained and documented under an aviation maintenance system or other NASA-approved system?
(NPR 7900.3D 2.8.6.4.i App C 150)
- 17) If the Center maintains explosive devices (propellant actuated devices (PADs)/cartridge actuated devices (CADs)), does the Center maintenance manual document the program for personnel training and qualifications?
(NPR 7900.3D 2.8.6.4.j(1) App C 152, NASA-STD-8719.12A, OPANAVINST 8020.14/MCO P8020.11)
- 18) Are all tools accounted for after the repack and inspection of each item, for example, parachutes and flotation equipment, since these items cannot be functionally checked prior to use?
(NPR 7900.3D 2.8.6.4.j(2) App C 153)
- 19) Does the maintenance plan detailed in the Center maintenance manual include a documented Confined Space Program that defines all aircraft confined spaces and ensures safety in these spaces prior to entry per NPR 8715.3, NASA General Safety Program Requirements?
(NPR 7900.3D 2.8.6.4.k App C 154)
- 20) Is there a documented program that ensures aircraft maintenance complies with Center Electromagnetic Interference (EMI)/Electrostatic Discharge (ESD) programs?
(NPR 7900.3D 2.8.6.4.l App C 155)
- 21) Is there a Fuel Surveillance Program that ensures fuel is free of contaminants prior to fuel entering any Center aircraft?
(NPR 7900.3D 2.8.6.4.m App C 156)

- 22) Does the Center maintenance manual include a documented program that ensures aircraft maintenance is conducted in compliance with the Center Hazardous Material Program and the Protection of the Environment Act, 40 C.F.R. Parts 260 to 265, which shall include use, disposal, and both long-term and worksite storage of hazardous materials?
(NPR 7900.3D 2.8.6.4.n App C 157, 158, 159)
- 23) Does the Center maintenance manual include an oil analysis program per original equipment manufacturer (OEM) and/or DoD maintenance instructions to identify mechanical breakdown precursors that exist prior to catastrophic failure? Is the program specific to the type of engine installed and provide trend analysis, immediate feedback, and recommended actions to the Center's Chief of Maintenance?
(NPR 7900.3D 2.8.6.4.o App C 160, 161)
- 24) Does the Center maintenance manual include a documented Weight and Balance (W&B) Program for each aircraft in compliance with any existing Center program, including the procedure used to ensure that the weight and balance of an aircraft is maintained, current and properly documented?
(NPR 7900.3D 2.8.6.4.p App C 162)
- 25) Does the Center maintenance manual include a configuration control process (CCP) established to determine applicability and ensure compliance with Product Improvement Publications (PIP), which are defined as airworthiness directives, technical orders, service and safety bulletins, or other pertinent requirements including those from FAA, DoD, or OEMs? Does the CCP provide a complete audit trail of decisions and design modifications? Does the CCP include three basic elements: configuration identification, configuration control, and configuration status accounting?
(NPR 7900.3D 2.8.6.4.q App C 163, 164)
- 26) Does the Center maintenance manual include an Aviation Material Management process to ensure that aircraft and aircraft parts are qualified for flight and properly documented per Center procedures?
(NPR 7900.3D 2.8.6.4.r App C 165, FMR 102-33.125)
- 27) Does the maintenance plan detailed in the Center maintenance manual include general housekeeping to ensure aviation facilities are maintained to NASA standards for hangars, shops, and ramps? Do the housekeeping procedures meet the specific requirements of NPR 7900.3?
(NPR 7900.3D 2.8.6.4.s App C 166)

- 28) Does the Center maintenance manual include a documented aircraft component inspection program to determine the serviceability, authenticity, traceability, and airworthiness of parts, components, accessories, and assemblies by subjecting them to inspections, tests, or operational checks?
(NPR 7900.3D 2.8.6.4.t App C 171)
- 29) Do organizations providing maintenance support to the Center have a procurement program to prevent purchasing unapproved parts and material in type certificated products?
(NPR 7900.3D 2.8.6.4.t(1) App C 172)
- 30) Is there a Center-approved parts program that includes, at a minimum, methods to establish qualified suppliers who are authorized to manufacture or distribute parts they supply and criteria to identify and screen potential unapproved parts suppliers?
(NPR 7900.3D 2.8.6.4.t(2) App C 173)

c. Flight Release Procedures

- 1) In the Center maintenance manual is there an established policy documenting aircraft release procedure that ensures all maintenance release authorities are designated in writing and that ensures a maintenance release authorization has been completed following a maintenance?
(NPR 7900.3D 2.8.6.4.c App C 137)
 - (a) Is the policy adequate?
 - (b) Are policy procedures followed?
- 2) Does the Center maintenance manual include a documented aircraft release process for aircraft that are deployed from the Center?
(NPR 7900.3D 2.8.6.4.c(1) App C 138)
- 3) Do all individuals with maintenance release authority have at least six months experience in the preceding 24 months in the inspection, servicing, or maintenance of an aircraft or system or maintenance control duty in accordance with Center maintenance procedures?
(NPR 7900.3D 2.8.6.4.d App C 139)

d. Equipment

What kind of condition (i.e., age, calibration, storage)?
(NPR 7900.3D 2.8.6.4.f-j, 2.8.6.4.n, 2.8.6.4.r-t, 2.8.6.5 App C 141-153, 165-173, 177, AS9100D 7.1.3, 7.1.4, 7.1.5)

e. Certification.

What is the policy for certifying aircraft mechanics, electronics, electricians, sheet metal, instrumentation, research technicians, and flight crewmembers?

(NPR 7900.3D 2.8.6.4.a-e, 2.8.7 App C 133-140)

f. Safety Meetings/Equipment

What is the overall organizational policy for safety meetings and safety equipment? Is the policy followed?

(NPR 7900.3D 6.2 App C 624-641)

g. Is there a Corrosion Control program and what policies and guidelines are used and are they followed?

(AFI 21-101)

h. What problems, if any, exist in getting supplies/aircraft parts/contracts?

(NPR 7900.3D 2.8.6.4.t App C 171, 172, 173, AS9100D 8.4)

i. Are there policies and procedures for recording and tracking maintenance actions; inspections; and the flight hours, cycles, and calendar times of life-limited parts and FSCAP?

(FMR 102-33.170)

4. Passenger Transportation Aircraft Maintenance

a. Are all NASA and contractor Passenger Transportation supervisors, project personnel, etc., FAA certified?

(NPR 7900.3D 4.2.1.1, 4.2.1.3, 4.2.1.4, 4.3.7.1 App C 331, 332, 334, 335, 355)

b. Are all Passenger Transportation personnel aware of the requirements of NPR 7900.3?

(AS9100D 7.2, 7.3)

c. A maintenance program shall meet FAA regulations for any passenger seating capacity for an aircraft that is used for passenger transportation.

(NPR 7900.3D 4.2.1.1 App C 331, 332)

5. Does Center Flight Operations maintain continuous onsite oversight of vendors and facilities performing aircraft depot-level maintenance or major aircraft modifications to ensure quality of workmanship, adherence to NASA standards, and schedule and cost control?

(NPR 7900.3D 2.8.4.1 App C 122)

a. Do individuals assigned onsite responsibilities have expertise and experience in aircraft maintenance and airworthiness standards and requirements?

(NPR 7900.3D 2.8.4.3 App C 124)

- b. For maintenance performed external to NASA facilities, does the Chief of Maintenance ensure that the person(s) performing the maintenance, preventive maintenance, or alteration is properly certificated and qualified to perform the assigned function?
(NPR 7900.3D 2.8.4.4.a App C 125)
 - c. For maintenance performed external to NASA facilities, does the Chief of Maintenance ensure that the work performed is done in accordance with the NASA-approved continuous airworthiness maintenance program and/or FARs?
(NPR 7900.3D 2.8.4.4.b App C 126)
 - d. For maintenance performed external to NASA facilities, does the Chief of Maintenance ensure that a record is made in NAMIS or the aircraft log book, where applicable, of the description of work performed, the date, certificate number, and type of certificate held by the person performing the work? Do maintenance and inspection records contain, at a minimum, a complete description of the maintenance/repair/inspection accomplished and do they include technical manual and paragraph information references?
(NPR 7900.3D 2.8.4.4.c App C 127)
- 6. Are there policies and procedures to record and track duty time of maintenance personnel?
(FMR 102-33.170)
- 7. Gulfstream II/III Special Maintenance Procedures
(IRIS Report and CAP No. S-2007-144-00004 dated 03/25/2010)
 - a. Maintenance and inspection technical data for precoolers accurately depict the configuration of the system to include precooler retaining rings.
 - b. Procedures to ensure the proper installation and configuration of precooler retaining rings.
 - c. Procedures to ensure that simulator and local training address the Auxiliary Master Warning Circuit Breaker procedure.
- 8. General Aircraft Special Maintenance Procedures
(IRIS Report and CAP No. S-2007-144-00004 dated 03/25/2010)
 - a. Procedures for all Agency aircraft that use the precooler high pressure exhaust coupling that ensure the female portion of the high-pressure exhaust coupling is inspected for a functional retaining ring just prior to the installation of a pneumatic precooler in an engine pylon area.
- 9. NASA Aircraft Management Information System (NAMIS).

- a. Is NAMIS utilized to track servicing, inspections, and METCAL compliance?
(NPR 7900.3D 2.8.8.2 App C 184)
- b. Are NAMIS modules used to track demands (i.e., requisitions), receipts, and issues regardless of how or who requisitioned the item?
(NPR 7900.3D 2.8.8.3 App C 185)
- c. Documentation
 - 1) Is flightcrew currency documentation being recorded in NAMIS?
(NPR 7900.3D 3.11.3 and 2.8.8.3 App C 310)
 - 2) Is NASA UAS flight time kept separate from NASA manned aircraft flight time, by type, in NAMIS?
(NPR 7900.3D 3.11.4 App C 311)
 - 3) Ensure that private pilot time is not recorded in NAMIS or utilized to meet any proficiency requirements.
(NPR 7900.3D 3.8.4.2 App C 379)
- d. Permissions
(AS9100D 7.5.2, 7.5.3, 7.2, 7.3, 7.1.3)
 - 1) Who Manages Permissions?
 - 2) Is there a Back-up?
 - 3) Are policy procedures followed?
 - 4) Do local NAMIS Administrators understand NAMIS/Aircraft well enough to perform this function is there an established policy?
 - 5) Do users have the correct permission for their job (Tech, DI, Mgt, etc.) Is the policy adequate?
- e. Business Processes
(AS9100D 8.1.2)
 - 1) Are processes standardized? If not, are differences causing problems with data?
 - 2) Who is reviewing the data and looking at/correcting review items (exceptions)?
 - (a) Are queries/reports completed and reviewed for data accuracy
 - (b) Is servicing data entered and validated?

- 3) Are roles being accomplished by appropriate personnel with requisite independence?
 - 4) Are certain NAMIS capabilities not used? If not, why?
 - 5) Are maintenance records impoundment procedures clearly defined and roles assigned in NAMIS?
 - 6) Who enters NAMIS data (designated data transcriber/one or many)
 - 7) Are adjustments made to asset records when discrepancies are discovered with the data
- f. Problem Resolution/ Knowledge Sharing
(AS9100D 7.2, 7.3, 9.1.3, 10.2)
- 1) Do users know where to report data or system problems
 - 2) How are data and/or system problems fixed locally
 - 3) Are problems just “fixed” or is the solution shared with the users
 - 4) Are the reported problems captured and logged for further analysis (trending)
 - 5) How is NAMIS information shared with all users
 - 6) Is there any local recurring training (e.g., weekly tag-ups with individuals or over-the-shoulder)
 - 7) Process/plan for training new employees
- g. Life Limited Components/Scheduled Inspections
(NPR 7900.3D 8.4.2, 8.4.3 App C 696-699)
- 1) Who manages life sensitive records? Is the associated documentation maintained and kept updated?
 - 2) Are life sensitive activities tracked using NAMIS templates?
 - 3) Are life limited components managed in NAMIS (i.e., using the remove/install function)?
 - 4) Are scheduled inspections tracked per approved maintenance program requirements?
 - 5) Is there an approved life sensitive extension process and how is it managed in NAMIS?

- 6) Are there periodic reviews (formal/informal) to ensure life sensitive events are managed prior to their expiration?

- h. Parallel Operations (Legacy Systems)
(AS9100D 7.5.2, 7.5.3)
 - 1) Do you still employ a legacy maintenance information system
 - 2) Do you perform a periodic cross reference activity to ensure records remain in sync
 - 3) How do you correct incongruities
 - 4) Do you manage all of the data into both systems

- i. Contingency Operations (Off-line Activities)
(AS9100D 7.5.2, 7.5.3)
 - 1) Do you have a NAMIS contingency operations plan
 - 2) Does this plan include both loss of connection and TDY activities

- j. Engineering Work Orders (Research Activities)
 - 1) Do your research activities interface with NAMIS?
 - 2) Do research engineers enter their EWO dispositions into the NAMIS Technical Directive Template?
 - 3) How are payloads tracked in NAMIS while they are installed on/in the aircraft?
 - 4) Are payload discrepancies tracked in NAMIS while they are installed on/in the aircraft?

- k. Pilot Discrepancies
 - 1) Are pilots entering time/discrepancies before next day inspections are performed by maintenance?
(NPR 7900.3D 2.8.8.3, AS9100D 8.7)

- l. Calibrated Equipment
(NPR 7900.3D 28.6.4.f, 2.8.8.2 App C 141, 184, AS9100D 9.1, 9.1.1)
 - 1) How do you manage use of calibrated equipment on aircraft, aircraft systems, and aerospace ground equipment?
 - 2) How is the use of calibrated equipment on aircraft, aircraft systems, and aerospace ground equipment captured in NAMIS?

- 3) How do you identify affected assets if notified of a calibration anomaly?
- m. Logistics/Maintenance Interface
(NPR 7900.3D 2.8.8.3)
 - 1) How do you process receiving, issuing, and inventory your parts?
 - 2) Are parts requisitioned through NAMIS maintenance (Bill of Materials)?
 - 3) Who receives new parts in NAMIS?
 - 4) How are removed parts entered into NAMIS?
- 10. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
 - a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

J. MAINTENANCE TRAINING

1. Is there an established maintenance training program that includes; type, source, documentation, and recurrency? Is the Training Program documented and defined in the Center maintenance manual that ensures that maintenance personnel, Maintenance Inspectors (MI), and Quality Assurance (QA) personnel are trained and qualified prior to being assigned?
(NPR 7900.3D 2.8.7.1 App C 178, FMR 102-33.160, 170)
 - a. Technicians
 - 1) Avionics
 - 2) Mechanical
 - 3) Instrumentation
 - 4) Electronics
 - 5) Electrical
 - 6) Sheet metal
 - 7) Soldering
 - b. Aircrew members
 - c. Quality Assurance, Collateral Duty and Designated Inspectors
2. Training Files
 - a. Have all maintenance personnel that are qualified to perform servicing, inspections, and functional tests completed the required training program, which shall be documented in their individual training records?
(NPR 7900.3D 2.8.7.3 App C 180)
 - 1) Who manages maintenance training records?
 - 2) Are qualification records kept up to date by the Chief of Maintenance or Center Training Officer to reflect both resident and onsite training?
(NPR 7900.3D 2.8.7.6 App C 183)
 - b. How often are training records reviewed with the maintenance technician?
3. Does the training program ensure that the Center maintenance personnel have the knowledge and skills appropriate to the level of maintenance performed? Does the Training Program document the Center-defined recurrent and proficiency training requirements to ensure maintenance personnel, MI, and QA personnel attend refresher training that addresses changes to aircraft systems, test equipment, or critical troubleshooting and repair techniques at least every 24 months?

(NPR 7900.3D 2.8.7.1, 2.8.7.2, 4.13.6 App C 178, 179, 457, AS9100D 7.2, 7.3, IS-BAO 5.1.6.a)

- a. Is the syllabus of the training program referenced in the Center operations manual
(IS-BAO 5.1.6.b)
- b. Does the training program include both initial and recurrent training appropriate to the aircraft group, type or system and the related procedures for which a maintenance release is to be signed?
(NPR 7900.3D 4.14.3 App C 460)
- c. Does the training program include:
(IS-BAO 5.1.6.c)
 - 1) Flight departmental policies and procedures
 - 2) Computer skills and software applications used by the organization
 - 3) Interpersonal skills
 - 4) Human factors and crew resource management
 - 5) Leadership and teamwork
 - 6) Metal
 - 7) HAZMAT
(NPR 7900.3D 2.8.7.4 App C 181)
 - 8) MEL procedures
 - 9) Safety training
(FMR 102-33.180)
 - 10) Fire Protection Equipment
(NPR 7900.3D 2.8.7.4 App C 181)
 - 11) Medical Stations
(NPR 7900.3D 2.8.7.4 App C 181)
 - 12) Computer Training
(NPR 7900.3D 2.8.7.5 App C 182)
 - 13) Logistics Training
(NPR 7900.3D 2.8.7.5 App C 182)
 - 14) Operator training for facilities and ground support equipment such as:
(NPR 7900.3D 2.8.7.5 App C 182)

- (a) Hoists
 - (b) Tow tractors
 - (c) Lifts
 - (d) Power Carts
 - (e) Air Conditioning Carts
- d. Do persons who hold maintenance release authority undertake recurrent training at least every 2 years on aircraft for which they exercise that authority?
(NPR 7900.3D 2.8.7.1, 2.8.7.2, IS-BAO 5.1.6.d)

K. AVIONICS, INSTRUMENTATION, ELECTRONICS, AND ELECTRICAL

1. Organization and Personnel
 - a. How is the Avionic Shop organized?
(AS9100D 5.3)
 - b. Are there sufficient technicians to perform the assigned work?
(NPR 7900.3D 1.1.5.2, AS9100D 7.1.1, 7.1.2)
 - c. What training do personnel receive? Is the training adequate?
(AS9100D 7.2, 7.3)
 - d. Have personnel met the requirements of NHB 5300.4?
(NHB 5300.4)
2. Areas of Responsibility
 - a. Determine the areas and levels of work the shop is responsible for; such as avionic, electrical, and instrumentation. Do personnel performing work possess the required competence, training and awareness to meet requirements (e.g., Electrostatic Discharge (ESD) certifications, etc.)?
(AS9100D 5.3, 7.2, 7.3)
 - b. If involved in research equipment installations, to what extent and depth do avionic shop personnel participate?
(NPR 7900.3D 2.7.1.c App C 110)
 - c. What approvals are required on experimental equipment and installations?
(NPR 7900.3D Chapter 2, 2.2.2, 2.6.1.2, 2.8.9.9)
3. Equipment
 - a. What system is used to calibrate equipment?
(AS9100D 7.1.5, 7.1.5.1, 7.1.5.2, 7.1.5.2.a)
 - 1) How is frequency established?
 - 2) Is a "recall" method used?
 - 3) Are calibrations traceable to National Bureau of Standards?
 - 4) Who is responsible for documentation?
(AS9100D 7.5.2, 7.5.3)
 - b. Is the shop equipped with calibrated test equipment and tools? Are the tools and equipment properly tagged?
(AS9100D 8.5.1.1, 7.1.5, 7.1.5.1, 7.1.5.2)
4. Technical Data

Is a current file of technical orders, manufacturer service manuals, instructions, service bulletins, etc., for equipment being maintained and is it accessible for personnel usage?

(NPR 7900.3D 2.8.10.2 App C 208, IS-BAO 9.1.4.b)

5. Inspection
(NPR 7900.3D 2.8.5.a, 2.8.5.f, ANSI ESD S20.20)

What is the inspection system?
6. Documentation
(NPR 7900.3D 1.2.1.1 App C 11)
 - a. Who is the responsible person?
 - b. Is an adequate file of calibration and maintenance records maintained?
 - c. Can a time history of failures be established from information provided on maintenance records?
 - d. Is documentation maintained to reflect modifications incorporated on avionics equipment?
7. Battery Maintenance Program for Nickel Cadmium Batteries and for applicable Lead-Acid Batteries
(NPR 1800.1D, 29 CFR 1910.1027, 29 CFR 1926.1127, 29 CFR 1910.1025, 29 CFR 1926.62)
 - a. Is work area clean and orderly?
 - b. Is work area provided with proper lighting and ventilation?
 - c. Is documentation maintained to reflect when inspections are due for each aircraft battery installation?
 - d. Is safety protection equipment provided for personnel?
 - 1) Eye shield.
 - 2) Rubber apron.
 - 3) Eye wash and eye solution available.
 - 4) Rubber gloves.
 - e. Are battery chargers maintained in good operational condition and meters calibrated at an established frequency?
 - f. Is battery charger manual available for reference to operational procedures and problems?

- g. Are all batteries properly tagged as to condition?
- h. Are Nickel-Cadmium batteries strapped out when not stored in a charged condition?
- i. Are inspection procedures utilized when performing capacity checks and teardown of aircraft batteries?
- j. Is adequate storage area provided for replacement cells, segregated by part number?
- k. Do all NASA-owned aircraft have a battery temperature monitoring system installed and an established policy?
- l. What is the voltage regulator check frequency?

L. QUALITY ASSURANCE (QA) AND INSPECTION

1. Organization
 - a. Are quality program requirements integrated into the Center's comprehensive aircraft maintenance program? Does the Center (if responsible for the maintenance of NASA aircraft) ensure that quality program requirements are planned, implemented, maintained, and integrated into every aspect of aircraft maintenance and that only fully qualified personnel are assigned quality program responsibilities? (NPR 7900.3D 2.8.9.1.a App C 186)
 - 1) How is inspection/QA organized?
 - 2) Who does the QAO report to?
 - 3) How are inspectors/QA personnel selected? (NPR 7900.3D 2.8.4.3 App C 124)
 - 4) What authority does the QAO have?
 - 5) Are they independent from the Maintenance organization? (FMR 102-33.180)
 - 6) Are quality assurance inspectors and maintenance personnel trained, qualified, and assigned to implement a comprehensive maintenance and quality assurance program for Center Flight Operations? (NPR 7900.3D 2.8.9.4)
 - b. Does the Center operate a program to provide for analysis and surveillance of its continuous airworthiness maintenance program, including work performed according to Center requirements by a non-NASA entity? (NPR 7900.3D 2.8.9.1.c App C 187)
 - 1) Does QA have a quality control system for acquiring replacement parts, ensuring that the parts you acquire have the documentation needed to determine that they are safe for flight and are inspected and tested, as applicable? (NPR 7900.3D 2.8.9.6, 2.8.9.8.e App C 189, 197, FMR 102-33.170)
 - 2) What are their guidelines? Are there published standards? Are they used?
 - 3) How often does QA perform unannounced "spot" checks? (NPR 7900.3D 2.8.9.8.c App C 195)
 - 4) Do they perform or validate end-to-end checks of modified systems? (NPR 7900.3D 2.8.9.8.f App C 198)

- c. Is there a documented quality program that covers all aspects of maintenance, material acceptance, documentation review, maintenance instruction applicability, and currency?
(NPR 7900.3D 2.8.9.5 App C 188)
 - 1) Is there a deficiency reporting system and remedial action follow-up on substandard situations?
(AS9100D 8.7, 10.2, NPR 8735.2B 2.6.5.5)

2. Inspection

- a. Does QA ensure aircraft configuration and aircraft components have been properly maintained and that all requirements have been properly documented?
(NPR 7900.3D 2.8.9.6 App C 189)
- b. Does QA ensure an inspection is conducted on all equipment, parts, and materials received for use, returned for repair, or held awaiting repair to verify satisfactory material condition, identification, packaging, preservation, and configuration; and when applicable, that shelf-life limits are not exceeded?
(NPR 7900.3D 2.8.9.8.e App C 197)
- c. Are there established qualification requirements for QA personnel and collateral duty personnel? Does the Center maintain a list of all personnel qualified and authorized to conduct inspections?
(NPR 7900.3D 2.8.9.8.a, 2.8.9.8.a(1) App C 192, 193)
 - 1) Does the Center have QA and designated inspectors?
 - 2) Is the Designated Inspector program working satisfactorily?
- d. Is there a continuous training program in techniques and procedures pertaining to aircraft maintenance quality program, per NPR 7900.3D Section 2.6.4, and the conduct of inspections?
(NPR 7900.3D 2.8.9.8.b App C 194)
 - 1) How are inspectors/QA personnel trained?
- e. Check documentation for inspector signatures/stamps records for accuracy.
(NPR 7900.3D 2.8.9.9)
 - 1) Does the Center utilize the “stamp” system?

3. Tasks

- a. Are there established standard procedures for conducting scheduled and unscheduled inspections, ground tests, and bench check of components,

including engines? Are inspections performed as scheduled? On time?
(NPR 7900.3D 2.8.9.8.c App C 195)

- b. Does QA provide trend analysis and investigation of recurring discrepancies, high-failure-rate components, and high-usage materials to identify underlying causes for poor quality? Is the oil analysis/fuel sampling programs monitored for trends?
(NPR 7900.3D 2.8.9.6.a)
- c. Are procedures established for managing aircraft configuration and aircraft components have been properly maintained and that all requirements have been properly documented? Are the personnel certified as qualified to do these tasks?
(NPR 7900.3D 2.8.9.6 App C 189)
- d. Is equipment calibrated as required? Is test equipment available and well maintained?
(NPR 7900.3D 2.8.6.4.f App C 141)
- e. Does QA ensure the configuration of aircraft and components is correct and all essential modifications have been incorporated?
(NPR 7900.3D 2.8.9.8.d App C 196)
- f. Does QA ensure that check pilots and aircrew are briefed before post-maintenance functional check flights (FCFs) so that the purpose and objectives of the flight are clearly understood? After completion of the FCF, does QA debrief the check pilots, aircrew, maintenance control representative, and applicable work Center representatives to determine compliance with objectives outlined on the FCF checklist and clarify discrepancies noted?
(NPR 7900.3D 2.8.9.8.f App C 198)
- g. Does QA review all incoming technical publications and directives to determine their applicability to Center-maintained aircraft?
(NPR 7900.3D 2.8.9.8.g App C 199)
- h. Does QA conduct Parts and Hardware Certification of all items procured? All incoming serviceable aircraft material, parts, or components will be placed in a secured area and inspected by a QA inspector or designee, who will ensure the part or material is in good condition and conforms to specifications and standards and that certification paperwork or data is correct for applicability and acceptance requirements.
(NPR 7900.3D 2.8.9.8.h App C 200)
- i. Does QA ensure personnel are trained in Government-Industry Data Exchange Program (GIDEP) and FAA Suspected Unapproved Parts (SUP) Program and coordinate all actions with Center GIDEP office, HQ AMD, and the Inspector General (IG) as appropriate?
(NPR 7900.3D 2.8.9.8.i App C 201)

- j. Does QA monitor weight and balance of all Center aircraft in accordance with Center guidelines?
(NPR 7900.3D 2.8.9.8.j App C 202)
 - k. Does QA validate all work orders (excluding minor aircraft write-ups/gripes) and oversee the installation of all work orders on aircraft?
(NPR 7900.3D 2.8.9.8.k App C 203)
 - l. Does QA assist the ASO in the impounding of Center aircraft involved in a mishap or when directed by ASO?
(NPR 7900.3D 2.8.9.8.l App C 204)
 - m. Does QA monitor maintenance using a program to develop trend analysis of processes? Does this program analyze all reports of findings and/or actions taken during aircraft and component maintenance?
(NPR 7900.3D 2.8.9.8m App C 205)
 - n. Are results of NASA IAOP reviews used to update NASA-wide or local requirements in order to enhance standardization and improve productivity?
(NPR 7900.3D 9.1.1 App C 709)
 - o. Does QA review surveillance or monitoring programs use product or process surveillance based on an effective audit program and an objective statistical history? Is sampling and surveillance verifications used independently or in combination to accomplish the verification function of the quality program processes?
(NPR 7900.3D 2.8.9.7.d App C 191)
4. Technical Data/Technical Publications Library
(AS9100D 7.5.2, 7.5.3)
- a. Are the QA/inspection records properly stored?
(NPR 7900.3D 1.2.1.1 App C 11, AS9100D 7.5.2, 7.5.3)
 - b. Is the Technical Publications Library, including technical orders, service manuals, service bulletins, instructions, and directives current? Is it applicable to on-hand equipment? And is it readily available to the technicians?
(NPR 7900.3D 2.8.10.1, 2.8.10.2 App C 206, 207, 208)
 - 1) Does the Technical Publications Library provide a central source of up-to-date information for use by all personnel in performing their work and is the source of reference information to facilitate personnel training and individual improvement?
(NPR 7900.3D 2.8.10.1)
 - 2) Does the Technical Publications Library's function include:
(NPR 7900.3D 2.8.10.2 App C 206, 207, 208)

- (a) Determining which technical manuals are required to support maintenance of aircraft, their major components, and ground support equipment in the NASA inventory?
 - (b) Receipt and distribution control of these manuals and responsibility for ensuring manual updating throughout the maintenance organization?
 - (c) Are manuals maintained in accordance with the original manufacturers' updates or revisions (or DoD updates or revisions for DoD aircraft) as modified with NASA- or FAA-approved data?
 - (d) Does the Center maintain documentation to confirm that periodic revision status audits of the technical library have been conducted?
 - (e) Are exceptions to this policy, including additional changes to documents, approved by the Chief of Flight Operations?
- 3) For remote sites, is the Technical Publications Librarian responsible for the distribution of manuals and inspections of remote libraries?
(NPR 7900.3D 2.8.10.3)
- c. What technical manual or general guideline is used to conduct everyday work practices and standards?
(AS9100D 7.5.1)
 - d. Is documentation maintained to reflect modifications incorporated on each aircraft?
(NPR 7900.3D 2.8.6.4.q(2) App C 164)
 - e. Are the weight and balance procedures correct?
(NPR 7900.3D 2.8.6.4.p App C 162)
5. Foreign Object Damage (FOD) Control Program
- a. Is an FOD program established? Is it being followed?
(NPR 7900.3D 2.8.6.4.g App C 142)
 - b. Is there an established tool control program? Is it being followed?
(NPR 7900.3D 2.8.6.4.h App C 145)
6. NASA Aircraft Maintenance Information System (NAMIS)
- a. Is NAMIS utilized to track servicing, inspections, and METCAL compliance?
(NPR 7900.3D 2.8.8.2 App C 184)

- b. What are QA's responsibilities with respect to NAMIS data validation?
(NPR 7900.3D 2.8.9.5, 2.8.9.6 App C 188, 189)
 - c. How often do they look at the data and what do they look for?
(NPR 7900.3D 2.8.9.5, 2.8.9.6 App C 188, 189)
 - d. Is QA inspecting the data for correctness/completeness as well as verifying work on the asset?
(NPR 7900.3D 2.8.9.6 App C 189)
 - e. Is QA conducting periodic trend analysis reviews for both NAMIS process problems and erroneous data input?
(NPR 7900.3D 2.8.9.6.a, 2.8.9.6.b, AS9100D 9.1.3)
7. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
- a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

M. AVIATION LIFE SUPPORT SYSTEMS

The checklist items contained in this section may or may not be applicable to the particular Center based upon applicable flight operations, aircraft type and Aviation Life Support Equipment (ALSE).

(NPR 7900.3D 2.8.6.4.j App C 151, 152, 153, COMNAVAIRFORINST 4790.2C 6.1.9, NAVAIR 13-1-6 series manuals, and in addition refer to aircraft specific manuals)

1. Aviation Life Support Equipment (ALSE)
 - a. Is there adequate and proper survival gear (e.g. vests, survival kits, etc.)? (NAVAIR 13-1-6.5)
 - b. Is there adequate over-water survival equipment (e.g. life preservers, life rafts, etc.) available for crew members and passengers participating in over-water flights? (NAVAIR 13-1-6.1-1, NAVAIR 13-1-6.1-2)
 - c. Are survival vests complete and serviceable? (IS-BAO 6.11.1.b.viii, NAVAIR 13-1-6.1-2)
 - d. Is there adequate survival equipment for the area being flown (e.g. desert, arctic, jungle, over-water, etc.) available to the crew members and passengers? (NAVAIR 13-1-6.5)
 - e. Are appropriate and adequate lights available for applicable operations? (AS9100D 7.1.4, NAVAIR 13-1-6.5 Chapter 12)
 - f. Are survival radios available and serviceable and carried by each air crew member during flights involving flying over water, desert, or Arctic? (NAVAIR 13-1-6.5 Chapter 13)
 - g. Are the types of personal protective equipment on hand adequate and maintained in a useable fashion? (NAVAIR 13-1-6.7-2)
 - h. Do crew members wear individual survival equipment appropriate for the flight? (NAVAIR 13-1-6.7-2)
2. ALSE Maintenance
 - a. Does the Center maintenance manual include maintenance procedures and technical standards for ALSE, including life support and ejection seats, for the equipment being flown, which are an integrated function of aircraft maintenance? (COMNAVAIRFORINST 4790.2C 6.1.9, TC 3-04.72 Chapter 2 section IV)

- b. Are procedures established to conduct required preventive maintenance checks of ALSE?
(COMNAVAIRFORINST 4790.2C 6.1.9, TC 3-04.72 Chapter 2 section IV, FMR 102-33.165)
 - c. Are there policies and procedures to ensure that required ALSE is inspected and serviceable?
(COMNAVAIRFORINST 4790.2C 6.1.9 and 6.4.9, TC 3-04.72 Chapter 2 section IV, FMR 102-33.165)
 - d. Are ALSE periodic inspections completed according to applicable manuals?
(COMNAVAIRFORINST 4790.2C 6.1.9, TC 3-04.72 Chapter 2 section IV)
 - e. Is ejection seat maintenance fully controlled and done in accordance with the associated technical data?
(NPR 7900.3D 2.8.6.4.j App C 151)
 - f. Is the storage and handling of uninstalled egress systems and explosive devices accomplished appropriately?
(COMNAVAIRFORINST 4790.2C 6.1.9.3 and 6.4.8)
 - g. Are parachute repacking policies adequate?
(AS9100D 8.5.1, 8.5.5, NAVAIR 13-1-6.2)
 - h. Is applicable oxygen equipment maintained appropriately?
(NAVAIR 13-1-6.4, A6-332AO-GYD-000)
 - i. Is there spare ALSS assemblies inventoried, maintained and stored at the facility as applicable?
(COMNAVAIRFORINST 4790.2C 6.1.9.1)
 - j. Are all tools accounted for after the repack and inspection of each item?
(NPR 7900.3D 2.8.6.4.j App C 151, COMNAVAIRFORINST 4790.2C 6.1.9.6)
 - k. Are records, including quality assurance inspection documentation, available?
(NPR 7900.3D 1.2.1.1 App C 11, TC 3-04.72 Chapter 2 section IV, COMNAVAIRFORINST 4790.2C 6.1.9.7)
 - l. Are service life items replaced when due?
(NAVAIR 13-1-6.5)
 - m. Is helmet and mask maintenance performed?
(NAVAIR 13-1-6.7-3, TC 3-04.72 Chapter 2 section IV)
3. ALSE Personnel Training and Qualifications

- a. Are only qualified and certified personnel permitted to pack, repair, or inspect personnel parachutes, drogue chutes, SSKs, and inflatable survival equipment?
(COMNAVAIRFORINST 4790.2C 6.1.9.2)
- b. Is a program established to educate facility personnel concerning the proper use and maintenance of ALSE?
(COMNAVAIRFORINST 4790.2C 6.1.9.2, TC 3-04.72 Chapter 2 section IV)
- c. Is required use of oxygen during flights stressed?
(AS9100D 7.2, 7.3, NAVAIR 13-1-6.4)
- d. Is guidance disseminated concerning personnel use of hearing protection?
Is hearing protection made available?
(AS9100D 7.2, 7.3)
- e. Visit the altitude chamber, if applicable, and assess.
(NPR 7900.3D 4.13.2 App C 451, 452)

N. SECURITY (NPR 1620.3A, NPR 1600.1A)

1. Has the operator designated a physical security representative to plan, formulate, and coordinate physical security matters?
(NPR 1620.3A 1.1.2)
2. Is there a formal physical security plan?
(NPR 1620.3A 1.1.7.a, 3.3.1.d, Chapter 7 Table M)
 - a. Is the plan written and available to all necessary employees?
(NPR 1620.3A 1.1.7.a, AS9100D 7.5.3.1.a)
 - b. Is the plan reviewed periodically for applicability and accuracy?
(NPR 1620.3A 1.1.7.a)
 - c. Are security surveys being routinely conducted?
(NPR 1620.3A 1.1.3.a)
 - d. Is there a “security” information bulletin board and is it up to date?
(NPR 1620.3A Chapter 7, Table D)
 - e. Is there a “security” training or orientation program for employees?
(NPR 1600.1A 2.16.2)
3. Is a closed circuit television (CCTV) system used to monitor the facility?
(NPR 1620.3 3.1.8)
 - a. Is the CCTV part of a 48-72 hour real time VCR (including on screen date/time, battery backup, etc)?
4. Is access to aircraft and aircraft components controlled at all times?
(NPR 1620.3A 3.3.1.a)
5. Has a physical security plan been coordinated with the appropriate host authority (airport manager, fire department, police department, etc.)?
(NPR 1620.3A 3.3.1.e)
6. Do pilots/crew/aircraft checklists include items for security?
7. Is the aviation facility designated a ~~restricted~~ controlled area?
(NPR 1620.3A 3.3.1.i, 3.3.1.j)
8. Are badges required for unescorted access to flight facilities or aircraft?
(NPR 1620.3A 3.3.1.k)
9. Are background checks conducted prior to hiring pilots/crew, mechanics, security personnel, etc.?
(NPR 1620.3A 3.3.1.k)

10. Is there a system to ensure baggage control and security?
(NPR 1620.3A 3.3.1.n, 3.3.1.o)
11. Is there a system in place to secure aircraft and equipment at transient locations such as locking devices, prop locks, parking in secure hangers, etc.?
(NPR 1620.3A 3.4)
12. Are aircraft secured with manufacturer installed ignition or door locking security devices when not in use?
(NPR 1620.3A 3.5.4.a)
13. Are general precautions for mail handling established?
(NPR 1620.3A 4.3)
 - a. Are all envelopes/packages examined prior to opening when required?
(NPR 1620.3A Chapter 7, Table G)
 - b. Are latex gloves required for personnel who handle mail distribution?
 - c. Is access to the mailroom controlled?
(NPR 1620.3A 4.3.2.1)
 - d. Is there a system in place to report suspicious envelopes/packages received?
(NPR 1620.3A 4.3.2.9)
 - e. Is there a system in place if an envelope/package is opened which contains suspicious material?
(NPR 1620.3A 4.3.2.5)
14. Are keys to locking devices, doors, vehicles, and aircraft controlled?
(NPR 1620.3A 5.1)
15. Is access to the parking lot and parking spaces controlled?
(NPR 1620.3A 6.4.3.7)
 - a. Are cars parked at least 300 feet from the hanger/office/building used by employees? If not, are there adequate checks (controlled access, security guards, vehicle checks, etc.) in place to allow parking closer than 300 feet?
16. Are warning signs (i.e. NASA Controlled Area, NASA Limited Area or NASA Exclusion Area) posted around facility boundaries?
(NPR 1620.3A 6.14.4)
17. Are the building's perimeter walls solid (brick, concrete)?
(NPR 1620.3A 6.8.1, 6.8.3, 6.8.4.3)
 - a. Do the perimeter walls extend to the roof (is it possible to get access to the suspended/false ceiling)?

- b. If access is possible above a suspended ceiling, is there an alarm system?
 - c. Does the building have a lighting system (continuous, glare, controlled, standby, intermittent, on-demand, or direct)?
18. Can the windows be forced open from the outside?
(NPR 1620.3A 6.9)
- a. Do the windows have locks (or permanently closed/fixed)?
(NPR 1620.3A 6.9.1, Chapter 7, Table C)
 - b. Do the windows have security glazing to achieve ballistic and forced entry resistance (laminated, acrylic, or polycarbonate material)?
(NPR 1620.3A Chapter 7, Table C)
 - c. If the expanse of glass is greater than 96 inches per pane does it contain glass break detectors connected to an alarm system?
(NPR 1620.3A 6.9.2.d)
19. Are the exterior door(s) of substantial material (1 3/4" hollow metal or solid wood)?
(NPR 1620.3A 6.9)
- a. Is the exterior door(s) frame substantial strength?
 - b. If the door(s) hinges are exposed are they peened, pinned or welded?
(NPR 1620.3A 6.9.1)
 - c. Does the exterior door(s) have a dead bolt?
(NPR 1620.3A 6.9.1)
 - d. Does the exterior door(s) have an astragal (metal plate to prevent tampering with the dead bolt)?
 - e. If the key(s) to the exterior door(s) are from a master key, is the master key kept in a secure location?
(NPR 1620.3A 5.2)
 - f. Are the exterior door(s) alarmed?
(NPR 1620.3A 6.9.1.d)
20. Is there a central alarm system (optional for low security risk building)?
(NPR 1620.3A Chapter 7, Table F, Table L)
- a. Does the alarm system have central monitoring?
(NPR 1620.3A 6.4.2)
 - b. Does the alarm system have "line supervision" in case the telephone lines are deliberately cut or is interrupted?

- c. Is the alarm system tested periodically?
 - d. Is the control unit for the alarm system located in a protected area of the facility?
 - e. Is the response time of the police/duty officer/responsible person reasonable?
 - f. Does the alarm system have a “panic/emergency” button?
21. Does the facility have a “security room” for equipment, firearms, etc?
(NPR 1620.3A 3.17, 6.9)
- a. Are the room’s perimeter walls solid (brick, concrete)?
 - b. Do the room’s perimeter walls extend to the roof (is it possible to get access to the suspended/false ceiling)?
 - c. If access is possible above the suspended ceiling, is there an alarm system?
 - d. Is the door to the “security room” of substantial material (1 3/4” hollow metal or solid wood)?
 - e. Is the doorframe substantial strength?
 - f. If the door hinges are exposed are they peened, pinned or welded?
 - g. Does the door have a dead bolt?
 - h. Does the door have an astragal (metal plate to prevent tampering with the dead bolt)?
 - i. Does the “security room” have a separate Intrusion Detection System (alarm)?
22. Is the facility (building) categorized by the agency as a low or high security risk?
(NPR 1620.3A Chapter 7)
23. Is the building/grounds maintained by contractor?
(FMR 102-33.130)
- a. Does the contractor require background checks of employees?
24. Is the building/grounds provided security by contract guards?
(FMR 102-33.130)
- a. Does the contractor require background checks of employees?

25. Is there a system to detect, respond and challenge unauthorized movement (people, aircraft)?
 - a. Are aircraft on the flight line routinely checked for security by a responsible individual?
(NPR 1620.3A 3.3.3.e, 3.3.3.f, 3.3.3.g)
 - b. Are vehicles controlled when entering the vicinity of the flight line or aircraft parking areas?
26. Is there a system to conduct security checks of passengers?
27. Prior to a mission, are security surveys conducted concerning airspace restriction, waivers required, call signs needed, flight plan required, etc?

O. UNMANNED AIRCRAFT SYSTEM

1. Operations
 - a. Does the Center Director ensure that UAS flightcrews and operations receive direct oversight by the Center Flight Operations Office or through another Center with a Flight Operations Department?
(NPR 7900.3D 5.1.2.1 App C 565)
 - 1) Are UASs operated to meet the requirements of NPR 7900.3D (Section 5.7 of that NPR defines the appropriate level of operational control for each category of UAS)?
(NPR 7900.3D 5.1.2 App C 564)
 - b. Do all UAS Mission Commanders (MC) hold a private pilot certificate or greater, Military pilot rating, or have successfully completed a formal military UAS training course where the UAS pilot has demonstrated and understanding of 14 CFR Subpart E 61.105 and 61.107? How are persons authorized to be MCs?
(NPR 7900.3D 5.1.4.5 App C 569, 570)
 - c. Are UAS flightcrew qualified in accordance with written Center standards?
(NPR 7900.3D 5.6.1 App C 602)
 - 1) How is the aircrew checked out in a UAS?
(NPR 7900.3D 5.6.2.3, 5.6.2.5, 5.6.2.8 App C 611, 614)
 - 2) Who authorizes it?
(NPR 7900.3D 5.6.2.3, 5.6.2.5 App C 607, 608, 611)
 - 3) What documentation?
(NPR 7900.3D 5.6.2, 5.6.2.10, 5.6.2.11 App C 605, 616, 617)
 - 4) Do Center Chiefs of Flight Operations, with the concurrence of the Center Director, designate UAS pilots for the specific type of UAS they operate?
(NPR 7900.3D 5.6.1.1 App C 603)
 - 5) Do UAS pilots meet the minimum qualifications for a NASA UAS pilot based on NPR 7900.3 and Center-established processes and procedures?
(NPR 7900.3D 5.6.2 App C 605-620)
 - 6) Are fully qualified NASA pilots assigned as UAS pilots, and if so, are they still being qualified for the UAS? If UAS pilots fly manned NASA aircraft, do they meet NASA pilot qualification minimums?
(NPR 7900.3D 5.6.2.8, 12.2.4.1 App C 614, 773)

- 7) Are reviews of UAS pilot and crew qualifications made prior to flight assignment to ensure that prerequisites for the intended mission are met?
(NPR 7900.3D 5.6.2.11 App C 617)
- 8) Does the Center Director and Chief of Flight Operations, in coordination with Human Resources, establish a process to designate pilots and aircrew?
(NPR 7900.3D 12.2.3 App C 770)
- d. What physical examination requirements exist?
(NPR 7900.3D 7.2)
- e. Did the Center Director establish procedures in accordance with NPR 7900.3D section 5 to ensure that all UAS flights are properly approved, documented, and operated?
(NPR 7900.3D 5.1.2 App C 564)
- f. What proficiency requirements exist?
(NPR 7900.3D 5.6.2.3.e App C 607, 608)
- g. What are the flight time requirements?
(NPR 7900.3D 5.6.2.10 App C 616)
 - 1) Are NASA UAS flight time kept separate from NASA manned aircraft flight time by type in NAMIS.
- h. Are there limitations placed on the less experienced UAS pilots? What limits? Who monitors? Are they written?
(FMR 102-33.165)
- i. What are the UAS currency requirements?
(NPR 7900.3D 5.6.2.10, 5.6.2.11 App C 616, 617)
 - 1) How is currency reestablished? Is it documented?
- j. Is there a UAS pilot information file (UPIF)?
- k. Is there a letter of agreement with local air facilities completed to ensure that proper coordination of support requirements is understood and agreed to?
(NPR 7900.3D 5.2.1.4 App C 575)
- l. For international operations, do UAS planners work via the Office of International and Interagency Relations (OIIR) to gain diplomatic clearances prior to any UAS operations within their represented country?
(NPR 7900.3D 5.2.2.3 App C 578)

- m. How are flights monitored in real-time? What in-flight controls exist? Are there flight-following procedures to notify management and initiate search and reclamation operations for lost or downed UAS?
(FMR 102-33.165)
- n. Are hazardous flight activities conducted?
(NPR 7900.3D 2.6.1.2, 2.7.2, 2.7.4, 2.7.4.1, 5.5.1, 5.5.2, 5.5.3 App C 111, 113, 596, 597, 600)
 - 1) How are they defined? i.e., spins, flutter, high angle of attack.
 - 2) What special procedures are used?
 - (a) Multiple crews/observers?
 - (b) Radar monitoring?
 - (c) Chase aircraft?
 - 3) What preparatory training has the pilot had?
 - 4) Who reviews the procedures and pilot techniques to be used?
- o. Are flight activities conducted off-site?
(NPR 7900.3D 2.6.1.2, 2.7.2, 2.7.4, 2.7.4.1, 5.5.1, 5.5.2, 5.5.3 App C 111, 113, 596, 597, 600)
 - 1) How are they approved?
 - 2) Who reviews deviations from normal operations?
 - 3) What contact is maintained with the home facility?
 - 4) Is there a letter of agreement with local air facilities shall be completed to ensure that proper coordination of support requirements is understood and agreed to?
- p. Is tenant UAS activity conducted at the home base?
(NPR 7900.3D 13.1.6.b App C 786)
 - 1) What agreements exist?
 - 2) Who is responsible for what?
 - 3) Is the Center briefed on daily tenant activity?
 - 4) Does the Center have the authority to stop the tenant operations?
On what basis?

- q. Are manuals immediately accessible to the pilots?
(NPR 7900.3D 1.5.1.b App C 60)
 - r. Are there policies and procedures to record and track flight time, duty time, and training of pilots and observers?
(NPR 7900.3D 5.6.1 App C 602)
 - s. Are there policies and procedures on the limitations on duty time and flight time for pilots and observers?
(FMR 102-33.165)
 - t. Is there compliance with owning-agency or military safety of flight notices and operational bulletins?
(NPR 7900.3D 2.8.6.4.q App C 163)
 - u. Are there appropriate emergency procedures and equipment for specific missions?
(NPR 7900.3D 5.3.6, 5.3.6.1, 5.3.6.2, 5.3.6.3, 5.3.6.4, 5.4.1 App C 587, 588, 589, 590, 591)
 - v. Does the Center have a requirement and procedures for the UAS PIC to be familiar with the available information appropriate for flight and to ensure that the facilities and services are adequate for the safe operation of the UAS? To include:
(NPR 7900.3D 5.4.1 App C 591)
 - 1) Familiarity with all available meteorological information
 - 2) Planning for an alternative course of action for the eventuality that the flight cannot be completed because of weather conditions?
 - w. Are there procedures for VFR flight operations?
(IS-BAO 6.2.2)
 - x. Are there requirements and procedures for IFR operations with and without destination alternates?
(IS-BAO 6.2.3)
 - y. Are there requirements and procedures for determination of fuel, oil and other consumable supply requirements?
(NPR 7900.3D 4.32.4 App C 562, IS-BAO 4.2.3.f)
 - z. Are there procedures for extended range or Polar operations?
(IS-BAO 6.2.7A)
2. Flight Planning Requirements
(NPR 7900.3D 5.3.4 App C 583, 584, 585)
- a. Operational Control

- 1) Does the Center operations manual contain an operational control system that consists of a pilot self dispatch system that:
 - (a) identifies the person responsible for release of the flight (NPR 7900.3D 1.2.5.3.c App C 34)
 - (b) specifies flight planning requirements
 - (c) specifies when the pilot must advise the Center's flight operations office of the UAS's departure and arrival and the associated procedures

- 2) Does the operational control system include procedures for ensuring that
 - (a) all operating requirements specified in the Center Operations Manual have been met
 - (b) the UAS is operated within weight/mass and balance limits (NPR 7900.3D 2.8.6.4.p App C 162)
 - (c) the names of persons operating the UAS are recorded or otherwise know by the center flight operations department
 - (d) the pilot-in-command has available all the essential information concerning the search and reclamation services in the area over which the UAS will be flown
 - (e) ATC authorities are notified on a timely basis should an UAS be overdue (NPR 7900.3D 5.3.6.4 App C 590)
 - (f) Does flight planning for routes that afford little or no time to avert the response to an erroneous data entry that could lead to a significant mishap (Class C or higher) have independent reviews both before loading in the mission computer and after upload on the UAS is complete? (NPR 7900.3D 5.3.5 App C 586)
 - (g) Upon notification of an in-flight emergency, are emergency procedures performed by the UAS pilot in accordance with Center procedures, flight authorizations, and the UAS operations manual? (NPR 7900.3D 5.3.6.4 App C 590)
 - (h) Is a flight brief that includes the flightcrew, a program representative, and a maintenance representative conducted prior to all flights? Briefs provide specific information in accordance with UAS SOPs. Briefs will include the

following: a.) weather update; b.) program brief; c.) system update; d.) emergency divert airfields; e.) emergency procedures and terminology; f.) mission profile?
(NPR 7900.3D 5.4.1 App C 591)

- (i) Do systems checks include an independent means to verify waypoints entered into a navigational system prior to takeoff?
(NPR 7900.3D 5.4.2, 5.4.2.1 App C 592)
 - (j) If a suitable runway is available, the UAS operator may perform a conventional rolling takeoff. The length of runway required depends on the UAS. If a suitable runway is not available, then an alternate launch method shall be used.
(NPR 7900.3D 5.4.2.2, 5.4.2.3 App C 593)
 - (k) Is the UAS recovery checklist adhered to in accordance with the operations manual?
(NPR 7900.3D 5.4.3, 5.4.3.1, 5.4.3.2 App C 594, 595)
 - (l) If a UAS is going to be flown outside the boundaries of special-use airspace of the National Airspace System (NAS), is sufficient time allowed to process a Certificate of Authorization (COA) request to the FAA to conduct UAS operations? Does the center ensure that no UAS will fly beyond the boundaries of special-use airspace without specific authorization of the FAA?
(NPR 7900.3D 5.2.1.2)
- 3) Does the Center have procedures defining the weather minima used for IFR departures and approaches?
(NPR 7900.3D 13.2 App C 792, 793, IS-BAO 6.4)
- (a) Does the center have procedures in their operations manual for the determination of takeoff minima from runways where no takeoff minima is specified and does it include a risk analysis
(IS-BAO 6.4.2)
 - (b) Does the center have a policy not to use operating minima lower than those which may be established for that airport, except with the specific approval of the Regulator of the airport
(IS-BAO 6.4.3)
 - (c) Does the center have a policy not to continue towards the airport of intended landing unless the latest available meteorological information indicates that conditions at that aerodrome, or at least one destination alternate, will, a the

estimated time of arrival, be at or above the specified aerodrome operating minima (IS-BAO 6.2.3)

- (d) Does the center have a policy not to continue its approach-to-land beyond a point at which the limits of the airport operating minima would be infringed (IS-BAO 6.4.5)
- (e) Does the center have a policy and procedures for operating in known or expected icing conditions? Are they appropriate to the aircraft is certification and equipment (IS-BAO 6.4.7)

4) Operational Information available to the pilot flying (NPR 7900.3D 1.5.1 App C 58, 59, IS-BAO 8.2.1)

- (a) pertinent aeronautical charts
- (b) pertinent enroute, terminal area, and instrument approach procedure charts
- (c) UAS performance data
- (d) UAS checklists
- (e) the operator's operations manual
- (f) SOP manual (where established)
- (g) the UAS flight manual
- (h) the UAS minimum equipment list (MEL) if UAS is being operated in accordance with a MEL
- (i) UAS C of A or other flight authority and C of R
- (j) aircraft radio license
- (k) Documentation required for the area of operation
- (l) Interception procedures

3. Training

a. Does the Center training program include the following: (IS-BAO 5.1.3)

- 1) For flight crew members:

- (a) Is initial UAS training documented by each Center in accordance with NPR 7900.3D Section 5 with the approval of the Chief of Flight Operations?
(NPR 7900.3D 5.6.2 App C 605)
 - (b) initial and annual UAS type and systems training,
 - (c) initial and every two years thereafter:
 - (i) emergency procedures training, and
 - (ii) aircraft surface contamination training; and
 - (iii) dangerous goods training
 - (d) upgrading training
 - (e) In the case of prototype, experimental, or research UAS aircraft for which no formal schools are available, are the services of the designers and the manufacturer's best qualified personnel utilized to brief and familiarize the UAS pilots with the aircraft, UAS aircraft systems, and ground control stations? In addition, are existing UAS simulators and UAS aircraft of a similar nature used to train pilots prior to flying a UAS research vehicle?
(NPR 7900.3D 5.6.2.3.e App C 607, 608)
- 2) Training for schedulers or dispatchers
- b. Training Files
(NPR 7900.3D 3.8.5.1, 5.6.2.10, App C 284, 616)
- 1) Who manages UAS operations training records?
 - 2) Are the training records current?
 - 3) How often are training records reviewed with the aircrew member?
 - 4) Is there a training program to that each UAS pilot and observer possesses an adequate level of training and experience to perform the duties of the designated positions as laid out in NPR 7900.3? Is there an established training program that includes; type, source, documentation, and recurrency for:
(NPR 7900.3D 5.6.1.2, 5.6.2 App C 604-620, AS9100D 7.2, 7.3)
 - (a) Safety
 - (b) UAS specific
 - (c) Emergency Procedures

- (d) Training for all members of the UAS flightcrew shall include crew resource management training.
(NPR 7900.3D 5.6.2.9 App C 615)

4. Documentation, Guidance and Records
(NPR 7900.3D 1.2.1.1, 1.5.2 App C 11, 61)

- a. What publications exist to guide normal and test operations?
- b. Are UAS handbooks (Dash 1) available to each aircrew member?
- c. How are daily flights scheduled, approved, and recorded?
- d. Does a supervisor sign the flight clearance?
- e. Are minimums, restrictions, and local rules in writing?
- f. Is there a well-equipped flight planning facility available?
- g. Is there a manual that gives general operating instructions for Center UAS; i.e., a flight operations manual? Does it cover all areas of flight; i.e., research and proficiency?
- h. Is there an operations plan which provides procedures for operating UAS; i.e., a basic operations plan? Does it include: a flight readiness review, a technical brief, a crew brief, a post-flight debrief?
- i. Are the following publications part of the UAS Flight Planning Library:
(NPR 7900.3D 2.8.10.1, 2.8.10.2 App C 206, 207, 208)
 - 1) Area Planning (AP)
 - 2) Area Planning-Special Use Airspace (AP-SUAS)
 - 3) Enroute Charts
 - 4) Flight Information Handbook (FIH)
 - 5) General Planning (GP)
 - 6) Military Training Routes (MTR)
 - 7) Enroute Supplements
 - 8) Terminal Instrument Procedures

5. General

- a. Are ground support facilities adequate?
(NPR 7900.3D 6.3.1.9 App C 656, AS9100D 7.1.3, 7.1.4)

- 1) Hangar?
 - 2) Flight line and ramp?
 - 3) GSE?
 - 4) Taxiways?
 - 5) Refueling?
 - b. Are UAS properly serviced?
(NPR 7900.3D 2.8.6.4.m, 2.8.6.4.o App C 156, 160)
 - 1) Fuel?
 - 2) Oil?
 - c. Who has the responsibility for the following tasks?
 - 1) UAS modification approval?
(NPR 7900.3D 2.4, 5.5 App C 86-92, 596-601)
 - 2) Configuration control?
(NPR 7900.3D 2.4.3.2 App C 89)
 - 3) Approval of new procedures for test UAS or systems?
 - 4) Technical direction for maintenance, modification, and ground operations concerning the UAS or its system?
 - 5) Systems interface and integration?
6. Test Plans
- Do test plans contain:
- a. Test conditions?
 - b. Limits?
 - c. Mission rules (mandatory conditions)?
 - d. Abort rules, ground and air?
 - e. Ground track?
 - f. Support requirements?
7. Medical Program and Examination Records
(NPR 7900.3D 7.2)

- a. Ensure that there is a record documenting a current medical examination for each UAS pilot in his/her aircraft operations records.
 - b. Visit medical examination facility and ensure there is a medical program that include preventive health and risk assessment for aircraft operations personnel.
8. Airworthiness
- a. Does the Center conduct reviews to establish the airworthiness and evaluate the safety of flight operations?
(NPR 7900.3D 5.5.1, 2.4.5 App C 596)
 - b. Does the personnel participating in the review include, at a minimum, representatives from safety, flight operations, engineering, and Range Safety personnel? Is the flight operations representative a pilot who is either a qualified ASO or Test Pilot who is a graduate of a formal Test Pilot School?
(NPR 7900.3D 5.5.1, 2.5.1.2, 2.5.1.3 App C 94, 95, 596)
 - c. Are the following topics addressed by a NASA AFSRB to assess the risks associated with a UAS flight program: a.) general outline of major UASs; b.) communication links and frequency management plan; c.) flight control system and configuration control procedures; d.) backup systems and procedures; e.) flight terminations systems including ground abort?
(NPR 7900.3D 5.5.2 App C 597)
 - d. Does the program/project manager limit the assessed collective risk associated with aerospace vehicle operation and ensure that the probability of doing harm to a member of the general public is not greater than the criteria established by NPR 8715.5, Range Safety Program?
(NPR 7900.3D 5.5.3 App C 600)
9. NASA Safety Reporting System (NSRS)
(NPR 7900.3D 6.3.1 App C 642, NPR 8715.3D 1.4.3.1, FMR 102-33.180, 185)
- a. Does management support use of the NSRS?
 - b. Are employees aware of the NSRS and how to use it?

P. References

1. NPR 7900.3D *Aircraft Operations Management Manual*
2. IS-BAO 2017 *International Standard for Business Aircraft Operations*
3. AS9100D *Quality Management Systems - Requirements for Aviation, Space and Defense Organizations*
4. NPD 8730.5B, Change 7 *NASA Quality Assurance Program Policy*
5. NPR 1441.1E *NASA Records Management Program Requirements*
6. NPR 1600.1A *NASA Security Program Procedural Requirements*
7. NPR 1620.3A *Physical Security Requirements for NASA Facilities and Property*
8. NPR 1800.1D *NASA Occupational Health Program Procedures*
9. NPR 4100.1F *NASA Materials Inventory Management Manual*
10. NPR 8621.1C *NASA Procedural Requirements for Mishap and Close Call Reporting, Investigating, and Recordkeeping*
11. NPR 8715.3D *NASA General Safety Program Requirements*
12. NPR 8715.5B *Range Flight Safety Program*
13. NPR 8735.2B *Management of Government Quality Assurance Functions for NASA Contracts*
14. NASA-STD-8719.12A *Safety Standards for Explosives, Propellants, and Pyrotechnics*
15. 29 CFR 1910 *Occupational Safety and Health Standards*
16. 29 CFR 1926 *Safety and Health Regulations for Construction*
17. Federal Management Regulation 102-33 *Management of Government Aircraft*
18. COMNAVAIRFORINST 4790.2C *The Naval Aviation Maintenance Program*
19. NAVAIR 13-1-6.1-1 *Inflatable Survival Equipment (Liferafts)*
20. NAVAIR 13-1-6.1-2 *Inflatable Survival Equipment (Life Preservers)*
21. NAVAIR 13-1-6.2 *Parachutes*
22. NAVAIR 13-1-6.4 *Oxygen Equipment*
23. NAVAIR 13-1-6.5 *Rescue and Survival Equipment*

24. *NAVAIR 13-1-6.7-1 Aircrew Personal Protective Equipment (Aircrew/Passenger Equipment)*
25. *NAVAIR 13-1-6.7-2 Aircrew Personal Protective Equipment (Clothing)*
26. *NAVAIR 13-1-6.7-3 Aircrew Personal Protective Equipment (Helmets and Masks)*
27. *TC 3-04.72 Aviation Life Support System Management Program*
28. *A6-332AO-GYD-000 Aviators Breathing Oxygen (ABO) Surveillance Program Laboratory and Field Guide*