

APPENDIX A

FAA COOPERATING AGENCY STATUS

FAA Cooperating Agency Status

A Memorandum of Understanding (MOU) between the Federal Aviation Administration (FAA) and Department of Defense (DoD) was signed on October 4, 2004 to provide for the issuance of environmental documents for the development, designation, modification, and use of Special Use Airspace (SUA). The MOU describes the role of the DoD and the FAA, as cooperating agencies, on SUA proposals, such as the Proposed Action addressed in the Meridian MOA.

The FAA is responsible for managing navigable airspace for public safety and ensuring efficient use for commercial air traffic, general aviation, and national defense, including SUA utilized by the DoD. The FAA established several policies including: Order 1050.1E, *Environmental Impacts: Policies and Procedures*; and Order 7400.2, *Procedures for Handling Airspace Matters*. FAA Order 1050.1E provides the FAA with policies and procedures to ensure agency compliance with NEPA and implementing regulations issued by the Council on Environmental Quality (CEQ) (40 CFR parts 1500-1508). Appendix A in FAA Order 1050.1E identifies 18 impact categories that should be considered during the National Environmental Policy Act (NEPA) process. These sections should be incorporated into the DoD environmental document as needed to satisfy the FAA's NEPA requirements. FAA Order 7400.2, specifically Chapter 32, provides guidance to air traffic personnel to assist in applying the requirements in Order 1050.1E to air traffic actions.

The appropriate FAA Service Area, as identified in response to a request to participate, will act as the point of contact for Cooperating Agency status during the evaluation of the proposal's environmental study. FAA may use documents prepared by the proponent in its environmental process, provided the FAA has independently reviewed the scope and content of the documentation and assumes responsibility.

The FAA may adopt an EA or EIS prepared by DOD if the FAA independently evaluates the information in the document and takes full responsibility for the scope and content that addresses FAA actions. Where the proponent's NEPA documentation is insufficient, additional NEPA documentation will be required before the FAA can make a final decision. The FAA may ask the applicant to correct any deficiencies and re-submit the assessment if the FAA is not satisfied. The FAA must issue its own FONSI and/or ROD. See FAAO 1050.1E, paragraphs 404d and 518h.

SUA proposals are subject to both NEPA and aeronautical processing requirements. These processes are separate but closely related. Since the FAA is the approval authority for SUA actions, the agency cannot make a final decision on any particular SUA proposal prior to the completion of the NEPA and aeronautical processing phases. Any actions by a proponent to mitigate environmental impacts, and/or changes to the proposal to address valid aeronautical objections, may alter the type and extent of environmental analysis required.

FAA shall:

1. Provide to DOD information and technical expertise within the special expertise and jurisdiction of the FAA as it relates to the proposed action.
2. Resolve or respond to environmental issues raised during the NEPA process relating to aeronautical issues.
3. If an EA or EIS is required, identify and evaluate the environmental impacts relating to the proposal.
4. Furnish to DOD the names of organizations, agencies, or other parties the FAA believes may be interested in the DOD proposal.
5. Notify and coordinate FAA proposed airspace actions with DOD components that may be affected.

FAA cannot render a final determination on the environmental effects of the SUA proposal until after completion of the proponent's environmental process, the FAA's aeronautical process, the FAA's independent review of the proponent's environmental documentation, and any additional environmental analyses conducted by the FAA.

AJR-34 Tina Gatenloe
Copy



U.S. Department
of Transportation
Federal Aviation
Administration

AUG 19 2009

Mr. D.F. Baucom
Assistant Deputy Chief of Staff
U.S. Fleet Forces Command
1562 Mitscher Avenue, Suite 250
Norfolk, VA 23551-2487

Dear Mr. Baucom:

Thank you for your letter of July 31 requesting the Federal Aviation Administration participate as a cooperating agency in the environmental assessment (EA) for the proposed establishment of a military operations area (MOA) to the NAS Meridian military training airspace.

The FAA is pleased to participate in the EA process in accordance with the National Environmental Policy Act of 1969 as amended, and its implementing regulations. Since the proposal contemplates special use airspace (SUA), the FAA will cooperate following the guidelines described in the Memorandum of Understanding between the FAA and the Department of Defense Concerning SUA Environmental Actions, dated October 4, 2005.

Modification of the SUA resides under the jurisdiction of the Eastern Service Center, Operations Support Group, Atlanta, Georgia. The Eastern Service Center will be the primary focal point for matters related to both airspace and environmental matters. Mr. Mark Ward is the Manager of the Operations Support Group. FAA Order 7400.2, Chapter 32 indicates the airspace and environmental processes should be conducted in tandem as much as possible; however, they are separate processes. Approval of either the aeronautical process or the environmental process does not automatically indicate approval of the entire proposal.

A copy of the incoming correspondence and this response is being forwarded to Mr. Ward and Mr. Timothy D. Smith of the Eastern Service Center, Operations Support Group. Mr. Smith can be contacted at (404) 305-5579 for further processing of your proposal.

Sincerely,

A handwritten signature in black ink, appearing to read "Elizabeth L. Ray".

Elizabeth L. Ray
Director of System Operations Airspace & Aeronautical Information Management
Air Traffic Organization

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APPENDIX B

**FAA CIRCULAR: PROPOSAL TO ESTABLISH THE MERIDIAN 2 EAST AND MERIDIAN
2 WEST MILITARY OPERATIONS AREAS (MOAs)
AND
PUBLIC RESPONSES TO FAA CIRCULAR**



U.S. Department
of Transportation

Federal Aviation
Administration

Southern Region

P. O. Box 20636
Atlanta, Georgia 30320

**PROPOSAL TO ESTABLISH THE MERIDIAN 2 EAST AND
MERIDIAN 2 WEST MILITARY OPERATIONS AREAS (MOAs)
08-ASO-015-NR
BAY SPRINGS, MS**

TO ALL CONCERNED:

This is a circularization of the proposed establishment of the Meridian 2 East and West Military Operations Areas (MOAs) near Bay Springs, MS. The Federal Aviation Administration (FAA) is providing a comment period to solicit comments regarding the aeronautical impacts of the proposal prior to reaching a final decision. This circularization includes data regarding the specific types of operations/activities planned for the MOA and the expected frequency of use of the proposed airspace.

The Training Air Wing One (TW-1), stationed at Naval Air Station (NAS) Meridian, MS, requires additional special use airspace (SUA) in close proximity to NAS Meridian to properly train student pilots in the T-45C Goshawk jet trainer. Due to recent changes in the Navy's training syllabus, the number of training sorties for TW-1 will increase from 32,000 to more than 37,000 per year. This increase in training sorties will saturate the existing Meridian 1 MOAs and risks TW-1's ability to accomplish the training mission.

In addition to basic training sorties which include Air Combat Maneuvering (ACM), Familiarization Training, Formation Flight, and Instrument Training, a change to the Navy's Strategic Vision will add the requirement for Ground Control Intercepts (GCI), night vision goggle (NVG) training, and an increase in the number of ACM sorties. These additional missions are a result of the Navy's initiative to transfer more of its training syllabus sorties from the more expensive F/A-18 Hornet to the more cost effective T-45C.

Of the two MOAs, the Meridian 2 East MOA will be considered the primary training area due to the proximity to NAS Meridian. While all the missions listed above can take place in the East MOA, the focus will be on ACM training. A suitable and effective ACM training area must meet certain criteria in order to be viable. The airspace must have sufficient lateral and vertical boundaries to contain two or more jet aircraft conducting acrobatic maneuvers. The ideal area would be 35 NM by 25 NM of lateral and 17,000 feet of vertical airspace. Due to several vector and jet routes in the area, the

lateral boundary of the proposed East MOA was reduced to a 30 NM by 25 NM area, and the vertical airspace was reduced to 15,000 feet (with the associated Air Traffic Controlled Assigned Airspace) to accommodate overhead civil traffic.

The proposed Meridian 2 West MOA will be used in conjunction with the East MOA for GCI and NVG training. The GCI mission requires the aircraft to be 40 NM apart at the beginning of the engagement. Once the GCI intercept is complete, the participants will transition to an air-to-air ACM engagement. The combined East/West MOAs, if approved, will provide the 40-NM separation needed to begin the intercept. Additionally, the East/West MOAs will provide additional airspace for NVG training events that include Night Formation, Night Tactical Formation, and Night GCI. The vision is that the West MOA will not be used nearly as much as the East MOA leaving the airspace available for civil use.

The T-45C assigned to TW-1 will be the primary users of the proposed Meridian 2 MOA airspace. Normally, the T-45C aircraft employ in one or two flights of 2-ship and 4-ship formations. However, there may be as many as 16 aircraft in a given mission depending on training sortie type. Typical usage for the East MOA will be an average of nine hours per day (in 30-45 minute periods) on approximately 270 days per year, totaling approximately 2,400 hours per year. For the West MOA, the typical usage will be an average of three hours per day (30-45 minute periods) on approximately 180 days per year, totaling 540 hours per year.

The specifics of these two proposed MOAs are as follows:

Meridian 2 East MOA, MS [NEW]

Boundaries. Beginning at lat. 32°18'00"N., long. 088°58'00"W.;
to lat. 31°42'00"N., long. 089°15'00"W.;
to lat. 32°09'10"N., long. 089°45'14"W.;
to lat. 32°20'30"N., long. 089°25'30"W.;
to the point of beginning.

Altitudes. 8,000 feet MSL to, but not including, FL 180.

Time of Use. 0700-2200, Monday-Friday; other times by NOTAM.

Controlling Agency. FAA, Memphis ARTCC.

Using Agency. Commander, Training Wing One, Naval Air Station, Meridian, MS

Meridian 2 West MOA, MS [NEW]

Boundaries. Beginning at lat. 32°09'10"N., long. 089°45'14"W.;

to lat. 31°42'00"N., long. 089°15'00"W.;
to lat. 31°45'00"N., long. 090°05'30"W.;
to lat. 31°58'00"N., long. 090°04'30"W.;
to the point of beginning.

Altitudes. 8,000 feet MSL to, but not including, FL 180.

Time of Use. 0700-2200, Monday-Friday; other times by NOTAM.

Controlling Agency. FAA, Memphis ARTCC.

Using Agency. Commander, Training Wing One, Naval Air Station, Meridian, MS

Graphic Description

See attachment.

This circularization is intended to provide the public with the opportunity to review and comment to the effect this proposal may have on aeronautical activity prior to making a final determination. Comments regarding the environmental aspects of this proposal are to be addressed to:

NAS Public Works
Environmental Engineer
Attn: Mr. Steve Wade
229 Allen Road
Meridian, MS 39309

Comments or recommendations regarding the effect that this proposal may have on aeronautical activity should be submitted to:

Federal Aviation Administration
Eastern Service Center
Operations Support Group (AJV-E23.2)
P.O. Box 20636
Atlanta, Georgia 30320

All communications received prior to April 27, 2009, will be considered before final action is taken on this proposal.

Michael D. Ward
for
Mark D. Ward

Manager, Operations Support Group
Eastern Service Area

Issued in College Park, GA.
on March 6, 2009

PUBLIC RESPONSES TO FAA CIRCULAR



Sanderson Farms, Inc.

GENERAL OFFICES

Post Office Box 988 • Laurel, Mississippi 39441-0988
Telephone (601) 649-4030 • Facsimile (601) 426-1461

Federal Aviation Administration
Eastern Service Center
Operations Support Group (AJV-E23.2)
P.O. Box 20636
Atlanta, Georgia 30320

Dear Sir/Madam,

This letter is in comment to the proposed establishment of the Meridian 2 East and West Military Operations Areas (MOAs) near Bay Springs, MS.

Sanderson Farms, Inc. is a company based in Laurel, MS, which is just outside the southeast corner of the proposed special use airspace. We operate corporate jet aircraft out of the Laurel Hesler-Noble airport (LUL). We are not in favor of the establishment of this type airspace in this area for the following reasons:

1. A large part of east central Mississippi is already taken up by the Meridian and Columbus MOAs currently in place, basically from Interstate 20 north to the Tennessee state line. Aircraft traveling north or south through this part of the state, at mid-level altitudes, must now go well east or west of their intended course to stay clear. The addition of the proposed airspace would effectively extend this area at least 50 miles further south.
2. Sanderson Farms had well over 1,500 departures and arrivals at the Laurel Hesler-Noble airport last year. Most departures were to the northwest, in high-performance jet aircraft, which would be quickly approaching the lateral and vertical limits of the proposed special use airspace. This would require long delays at 7,000' or below, and/or significant reroutes to the west. This would also have a measurable impact on the safety and economics of our flight operations.
3. Sanderson Farms certainly believes in a strong military and understands the need for this type airspace for pilot training. However, we also think that Mississippi is currently providing ample support in this area, for both the Navy and Air Force, through the level of special use airspace already in place over the state.

Thank you for your consideration in this matter,

Zane Lambert
Manager of Aircraft Operations
Sanderson Farms, Inc.

April 16, 2009

Mr. Mark Ward
Manager, Operations Support Group
FAA Eastern Service Area
1701 Columbia Ave
College Park, GA 30337

Reference: Proposal to Establish the Meridian 2 East and Meridian 2 West MOA, 08-ASO-015-NR, March 6, 2009

Dear Mr. Ward,

NBAA objects to the proposal to establish the Meridian 2 West MOA per 08-ASO-015-NR dated March 6, 2009. Meridian 2 West is located in a main area of transition from the state capital, Jackson, to the South and East to Hattiesburg, Gulfport, Mobile and the various southeastern US destinations. It would mean a major reroute of departing aircraft to avoid the MOA or require them to stay at 7000' burning fuel and time. It would appear that V11 also goes through the west side of Meridian 2 East.

With these two MOA's and the existing MOA's in place, it will cause transitioning IFR and most of the VFR traffic to be congested into the V-18 and V-417 airspace east of Jackson which is already stacked up due to separation practices at Jackson approach. As well, the ILS 34L with its DME arc approach, which is the primary northerly approach especially in the winter, looks like it might be impacted, especially for arrivals from the east.

Considering, the FAA's comment in your notice that "The vision is that the West MOA will not be used nearly as much as the East MOA leaving the airspace available for civil use.", NBAA recommends that the West MOA be eliminated. Jackson is a major metropolitan area and the center of activity for Mississippi. Confining the airspace around it would not be planning for the future needs of civil aviation there.



Robert G. Lamond, Jr.
Director, Air Traffic Services & Infrastructure



421 Aviation Way
Frederick, Maryland 21701

T. 301-695-2000
F. 301-695-2375

www.aopa.org

May 11, 2008

Mr. Mark D. Ward
Manager, Operations Support Group
Federal Aviation Administration
Eastern Service Center
Operations Support Group (AJV-E23.2)
P.O. Box 20636
Atlanta, GA 30320

Dear Mr. Ward:

RE: Proposal to Establish the Meridian 2 East and Meridian 2 West Military Operations Areas (MOAs) 08-ASO-015-NR

The Aircraft Owners and Pilots Association (AOPA), representing over 416,000 pilots nationwide, is concerned about the impact of the proposed establishment of the Meridian 2 East and Meridian 2 West Military Operations Areas (MOAs) near Bay Springs, Mississippi. The proposal imposes a barrier to both VFR aircraft and IFR traffic transiting the airspace.

MOA Design Should Be Adjusted To Minimize Effect on V11

The FAA does not clear IFR traffic through active MOAs. While viable alternatives exist for the other airways impacted by this proposal, as proposed V11 is located approximately in the middle of the two MOAs and no alternative routes are available that will allow efficient IFR transit. Routing around the MOAs on other airways will add approximately 30 additional minutes for average GA aircraft. As proposed V11 passes through the Meridian 2 East MOA. According to the proposal, the West MOA will not be used as often as the East MOA. AOPA proposes that the MOA boundaries be redefined so that V11 lies entirely within the Meridian 2 West MOA area to minimize the time during which V11 is unavailable. Alternatively, AOPA suggests that a T-route that parallels V11, but is located within the West MOA, be established. Without these changes the proposed MOAs will greatly reduce the efficiency and effectiveness of IFR travel in the region.

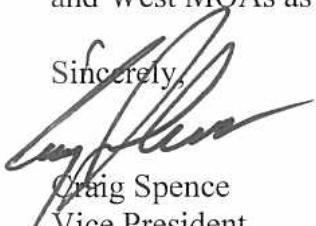
Proposed Charted Times of Use Do Not Align with Estimated Use

In the proposal it is estimated that the West MOA will be used 540 hours per year and the East MOA 3900 hours, yet the proposed charted hours for both are 0700-2200 (L) Monday through Friday. AOPA believes the proposed charted hours of use for the West MOA are inflated and will create a huge and unnecessary discrepancy between the charted hours of use and the actual hours of use. A recent AOPA survey showed that 47 percent of AOPA members rely on the charted hours of MOA use for flight planning. A MOA's actual hours of use vary significantly from the charted hours it can cause VFR pilots to unnecessarily fly less direct routes or to fly through the active MOA. The FAA should significantly reduce the charted times for the West MOA to reflect the total amount of time this airspace is actually needed. If operational needs

Mr. Mark D. Ward
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May 11, 2009

develop that justify additional use; NOTAMs can effectively be utilized to notify pilots of the changes.

AOPA recognizes the importance of providing the military sufficient SUA to maintain a high level of military preparedness. However, our nation's airspace resources are finite, and the questions of civil aviation safety and access must be mitigated. Modifying the Meridian 2 East and West MOAs as discussed above would mitigate the impacts to civilian traffic in the area.


Sincerely,

Craig Spence
Vice President
Regulatory Affairs

APPENDIX C

AGENCY OUTREACH

INVITATION LIST FOR THE AGENCY OUTREACH MEETING ON AUGUST 20, 2009

Agencies

Mid-Mississippi Development District
Rusty McMillan, Executive Director
P.O. Box 119
Newton, MS 39345
Phone: 601-683-2091
E-mail: rusty@mmd.org

Mississippi Department of Environmental Quality, Office of Pollution Control
Mr. Jerry Cain, Director
P.O. Box 2261
Jackson, MS 39225
Phone: 601-961-5100
E-mail: jerry_cain@deq.state.ms.us

Mississippi Department of Transportation, Aeronautics Division
Mr. Thomas M. Booth, Jr.
P.O. Box 1850
Jackson, MS 39215-1850
Phone: 601-359-7850

State Historic Preservation Office, Mississippi Department of Archives and History
Mr. H.T. Holmes, SHPO
P.O. Box 571
Jackson, MS 39205-0571
Phone: 601-359-6850
E-mail: jwood@mdah.state.ms.us

U.S. Environmental Protection Agency, Region 4
Mr. A. Stan Meiburg, Acting Regional Administrator
Sam Nunn Atlanta Federal Center
61 Forsyth Street, SW
Atlanta, GA 30303-8960
Phone: 404-562-9900
E-mail: meiburg.stan@epa.gov

U.S. Fish and Wildlife Service – Southeast Region
Mr. Sam Hamilton, Regional Director
1875 Century Boulevard
Atlanta, GA 30345
Phone: 404-679-4000
E-mail: tauline_davis@fws.gov

U.S. Forest Service
Ms. Gretta Boley, Supervisor
Supervisor's Office
100 W. Capitol Street, Suite 1141
Jackson, MS 39269-1199
Phone: 601-965-1600
E-mail: mboleyn@fs.fed.us

U.S. Forest Service
Bienville National Forest
3473 Highway 35 South
South Forest, MS 39074
Phone: 601-469-3811
E-mail: nkittrell@fs.fed.us

Airports

Brookhaven-Lincoln County Airport
Mr. Alan Morrow
1216 Heucks Retreat Road
Brookhaven, MS 39601
Phone: 601-833-0999

Bruce Campbell Field Airport
Mr. Rheese Lincecum
7450 Old Canton Road
Madison, MS 39110
Phone: 601-853-1960
E-mail: madair@madisonaircenter.net

Clarke County Airport
Airport Board
429 County Road NR 153
Quitman, MS 39355
Phone: 601-776-6312
E-mail: clarkecoairport@aol.com

Columbia-Marion County Airport
Mr. Joe Wilson
151 Airport Road
Columbia, MS 39429
Phone: 601-736-9295

Copiah County Airport
Mr. Steve See
1001 Airport Lane
Hazlehurst, MS 39083
Phone: 601-892-0794

G.V. Montgomery Airport
Mr. Randall George
City of Forest
P.O. Box 298
Forest, MS 39074
Phone: 601-469-2921

Hattiesburg Bobby L. Chain Municipal Airport
Mr. Bennie Sellers
P.O. Box 1898
Hattiesburg, MS 39401
Phone: 601-545-4540
E-mail: info@hattiesburgairport.com

Hattiesburg-Laurel Regional Airport
Mr. Thomas Heanue
1002 Terminal Drive
Moselle, MS 39459
Phone: 601-545-3111
E-mail: hlra@c-gate.net

Hawkins Field Airport
Mr. Alvin Beamon
P.O. Box 98109
Jackson, MS 39298-8109
Phone: 601-354-4983
E-mail: JMAA.info@jmaa.com

Hesler-Noble Field Airport
Mr. Daryl Cooper
P.O. Box 2335
Laurel, MS 39442
Phone: 601-425-5121

Jackson-Evers International Airport
Mr. Dirk B. Vanderleest, Chief Executive Officer
P.O. Box 98109
Jackson, MS 39298-8109
Phone: 601-939-5631
E-mail: JMAA.info@jmaa.com

James H. Easom Field Airport
Mr. Ron Davis
P.O. Box 300
Newton, MS 39345
Phone: 601-683-2870
E-mail: amapp@ci.newton.ms.us

John Bell Williams Airport
Ms. Michele Jackson
Hinds Community College
P.O. Box 1100
Raymond, MS 39154
Phone: 601-857-3884
E-mail: mmjackson@hindsc.edu

Key Field Airport
Mr. Tom Williams
P.O. Box 4351
Meridian, MS 39304
Phone: 601-482-0364

Magee Municipal Airport
Mr. Ashley Steele
111 Prine Drive
Magee, MS 39111
Phone: 601-849-3571

Prentiss-Jefferson Davis County Airport
ARPT Board
199 Airport Road
Prentiss, MS 39474
Phone: 601-792-4467

Richton-Perry County Airport
Mr. Joe Blackman
P.O. Box 1500
Richton, MS 39476
Phone: 601-788-6210

Thigpen Field Airport
Mr. Kendrick Blakeney
P.O. Box 307
Bay Springs, MS 39422
Phone: 601-764-4112
E-mail: cityhall@baysprings.net

Waynesboro Municipal Airport
Ms. Janice Wolff
P.O. Box 872
Waynesboro, MS 39367
Phone: 601-735-9682

Counties

Covington County
P.O. Box 1679
Collins, MS 39428
Phone: 601-765-8605
Fax: 601-765-5016

Jasper County
P.O. Box 1047
Bay Springs, MS 39422
Phone: 601-764-3368
E-mail: bravenhorst@co.jasper.ms.us

Jefferson Davis County
Jon Davies
P.O. Box 1137
Prentiss, MS 39474
Phone: 601-792-4204
E-mail: jwdavies53@hotmail.com

Jones County
P.O. Box 1468
Laurel, MS 394441
Phone: 601-428-3139

Lawrence County
P.O. Box 1160
Monticello, MS 39654
Phone: 601-587-7162

Newton County
P.O. Box 68
County Courthouse
Decatur, MS 39327
Phone: 601-635-2367
E-mail: jbridges@ci.newton.ms.us

Rankin County
Board of Supervisors
211 East Government Street, Suite A
Brandon, MS 39042
Phone: 601-825-1475
E-mail: creed@rankincounty.org

Scott County
P.O. Box 630
County Courthouse
Forest, MS 39074
Phone: 601-469-1926
E-mail: kim@scottcountyms.gov

Simpson County
P.O. Box 367
Mendenhall, MS 39114
Phone: 601-847-1418
E-mail: rnvei@co.simpson.ms.us

Smith County
P.O. Box 160
Raleigh, MS 39153
Phone: 601-782-4000
E-mail: ctanner@co.smith.ms.us

Cities and Towns

City of Bay Springs
City Hall
39 South 6th Street
Bay Springs, MS 39422
Phone: 601-764-4112
E-mail: cityhall@baysprings.net

Town of Braxton
City Hall
101 N Oak Avenue
Braxton, MS 39044-9717
Phone: 601-847-1879

Town of D'Lo
P.O. Box 100
D'Lo, MS 39062
Phone: 601-847-7121

Louin Town Hall
P.O. Box 3
Louin, MS 39338
Phone: 601-739-3630

City of Magee
301 Main Avenue N.
Magee, MS 39111
Phone 601-849-3344

City of Mendenhall
City Hall
172 West Maud Avenue
P.O. Box 487
Mendenhall, MS 39114
Phone: 601-847-1212
E-mail: info@ci.mendenhall.ms.us

Town of Mize
P.O. Box 245
208 Highway 28
Mize, MS 39116
Phone: 601 733-2221
E-mail: mize2221@bellsouth.net

City of Montrose
145 CR 1553
Montrose, MS 39338
Phone: 601-739-3205

Town of Mount Olive
P.O. Box 510
Mount Olive, MS 39119
Phone: 601-797-3496
E-mail: mountolivecityhall@bellsouth.net

Town of Polkville
6606 Highway 13 Polkville
Morton, MS 39117
Phone: 601-537-3115

Town of Puckett
P.O. Box 130
Puckett, MS 39151
Phone: 601-825-3298

City of Raleigh
212 Sylvarena Avenue
Raleigh, MS 39153

City of Soso
P.O. Box 99
Soso, MS 39480
Phone: 601-729-2958

City of Sylvarena
SCR 41299
Sylvarena, MS 39422
Phone: 601-789-5134

Town of Taylorsville
P.O. Box 358
Taylorsville, MS 39168
Phone: 601 785-6531
E-mail: tvilleclerk@bellsouth.net

SAMPLE AGENCY OUTREACH MEETING INVITATION

Dubin, Elaine H

From: Elaine H. Dubin
Sent: Tuesday, August 04, 2009 4:13 PM
To: 'jwood@mdah.state.ms.us'
Cc: Tanya A. Perry; 'Lang, Susan M CIV NAVFAC Atlantic'; 'ffc.record@navy.mil'
Subject: Invitation to Upcoming Meeting to Introduce EA for Meridian 2 MOA, Meridian, MS
Attachments: SHPO Invitation Letter.pdf; Enclosures 1-3.pdf

State Historic Preservation Office, Mississippi Department of Archives and History
Mr. H.T. Holmes, SHPO
PO Box 571
Jackson, MS 39205-0571
Phone: 601-359-6850
E-mail: jwood@mdah.state.ms.us

SUBJECT: UPCOMING MEETING TO INTRODUCE AN ENVIRONMENTAL ASSESSMENT (EA) TO ANALYZE IMPACTS OF MERIDIAN 2 MILITARY OPERATING AREA (MOA), MERIDIAN, MS

The purpose of this letter is to inform you that U.S. Fleet Forces (USFF) will be holding an information meeting for state and federal agencies to introduce an EA to analyze impacts of Meridian 2 MOA, Meridian, MS. The meeting will be held on Thursday, August 20, 2009, 9:00 p.m., at the Eagle Ridge Conference Center at the Raymond Campus of Hinds Community College. A proposed agenda (Enclosure (1)) and directions to the Conference Center (Enclosure (2)) are provided. The purpose of this meeting is to familiarize participants with the proposed action and alternatives in this EA. Enclosure (3) is a Federal Aviation Administration (FAA) circularization outlining the establishment of Meridian 2. This circularization includes data regarding the specific types of operations and activities planned for the MOA and the expected frequency of use in the proposed airspace.

Agency representatives can help focus discussions on the appropriate resources that could be impacted by the context and scope of the proposed action. We look forward to the opportunity to get input early in the EA development process. Accordingly, we request that each agency provide a representative for the August 20th meeting, and forward their reply to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, (757) 322-8498; E-mail: susan.m.lang@navy.mil.

USFF POC is Mr. John Van Name, (757) 836-2943, or E-mail: john.vanname@navy.mil

Sincerely,

G. L. EDWARDS
Environmental Readiness Division
By direction

Enclosures: 1. Proposed Agenda
2. Directions to Conference Center
3. FAA Circularization



DEPARTMENT OF THE NAVY

COMMANDER
U.S. FLEET FORCES COMMAND
1562 MITSCHER AVENUE SUITE 250
NORFOLK, VA 23551-2487

5090
Ser N45/1253
July 31, 2009

Mr. Elbert Hilliard
State Historic Preservation Office
MS Department of Archives & History
P.O. Box 571
Jackson, MS 39205-0571

Dear Mr. Hilliard:

SUBJECT: UPCOMING MEETING TO INTRODUCE AN ENVIRONMENTAL ASSESSMENT
(EA) TO ANALYZE IMPACTS OF MERIDIAN 2 MILITARY OPERATING
AREA (MOA), MERIDIAN, MS

The purpose of this letter is to inform you that U.S. Fleet Forces (USFF) will be holding an information meeting for state and federal agencies to introduce an EA to analyze impacts of Meridian 2 MOA, Meridian, MS. The meeting will be held on Thursday, August 20, 2009, 9:00 p.m., at the Eagle Ridge Conference Center at the Raymond Campus of Hinds Community College. A proposed agenda (Enclosure (1)) and directions to the Conference Center (Enclosure (2)) are provided.

The purpose of this meeting is to familiarize participants with the proposed action and alternatives in this EA. Currently, the U.S. Navy is training pilots in the T-45C Goshawk jet training the Meridian 1 MOA, which is northeast of Jackson, MS. Due to changes in the U.S. Navy's syllabus, the number of training sorties will increase from 32,000 to 37,000 and saturate the existing Meridian 1 MOA. Consequently, an additional MOA is being proposed in close proximity to the Naval Air Station Meridian and the existing Meridian 1 MOA. Enclosure (3) is a Federal Aviation Administration (FAA) circularization outlining the establishment of Meridian 2. This circularization includes data regarding the specific types of operations and activities planned for the MOA and the expected frequency of use in the proposed airspace.

Agency representatives can help focus discussions on the appropriate resources that could be impacted by the context and scope of the proposed action. We look forward to the opportunity to get input early in the EA development process. Accordingly, we request that each agency provide a representative for the August 20th meeting, and forward their reply to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, (757) 322-8498; E-mail: susan.m.lang@navy.mil.

USFF POC is Mr. John Van Name, (757) 836-2943, or E-mail: john.vanname@navy.mil.

Sincerely,

G. L. Edwards

G. L. EDWARDS
Environmental Readiness Division
By direction

- Enclosures: 1. Proposed Agenda
2. Directions to Conference Center
3. FAA Circularization

**AGENCY OUTREACH MEETING MINUTES AND
CONCURRENCE WITH THE MINUTES FROM THE AGENCIES THAT ATTENDED**

September 21, 2009

Naval Facilities Engineering Command, Atlantic
Attn: Ms. Susan Lang, Code EV22
6506 Hampton Blvd.
LRA Building A
Norfolk, VA 23508-1278
Email: Susan.m.lang@navy.mil

Reference: Contract No.: N62470-09-D-2003, TO 0004
Requisition No.: ACQR1117914
e²M Project No.: 4394-005

Subject: Agency Outreach Meeting (August 20, 2009)

Dear Ms. Lang:

We are pleased to provide Meeting Minutes from the Agency Outreach Meeting for the Environmental Assessment (EA) to Analyze Impacts of Meridian 2 Military Operating Area (MOA).

| Attendees | | | |
|---------------------|--|------------------------------|-------------------------------|
| Name | Organization | Phone # | Email |
| CDR Stephen Hartung | NAVREP ATL | 404-305-6906 404-931-2151 | Stephen.hartung@faa.gov |
| Tommy Booth | MDOT – Aeronautics | 601-359-7850 | Tbooth@mdot.state.ms.us |
| Daryl Cooper | Laurel Airport | 601-425-5121 | (Hesler-Noble Field) |
| Annette Pugh | FAA – Air Traffic Representative | 850-255-5146 | Annette.pugh@faa.gov |
| B.J. Hailey | MS DEQ | 601-961-5783 | B.J.hailey@deq.state.ms.us |
| Kathy Lunceford | USFWS | 601-321-1132 | Kathy_lunceford@fws.gov |
| CAPT Charles Gibson | NAS Meridian | 601-679-2111 | Charles.m.gibson@navy.mil |
| Tom Williams | Meridian Airport Authority (Key Field) | 601-917-4944 | twilliams@meridianairport.com |
| Tanya Perry | e ² M | 703-752-7755 (ext. 116) | Tanya.perry@hdrinc.net |
| Gustin Hare | e ² M | 830-980-4702 (ext. 104) | Gustin.hare@hdrinc.net |
| Brad Bernardy | U.S. Forest Service | 601-469-3811 | Bbernardy@fs.fed.us |
| Mike Dueitt | U.S. Forest Service | 601-963-1668 | Mdueitt@fs.fed.us |
| Susan Lang | NAVFAC LANT | 757-322-8498 | Susan.m.lang@navy.mil |
| Ryan Winz | NAVFAC LANT | 757-322-4391 | Ryan.winz@navy.mil |
| Lt. Alan Greer | TW-1 | 601-679-3367 | Alan.greer@navy.mil |
| CDR Jon Still | TW-1 | 601-697-2875 | Jonathan.still@navy.mil |
| Michelle Jackson | Hinds Community College John Bell Williams Airport | 601-857-3884 | Mmjackson@hinds.cc.edu |

The Agency Outreach Meeting Agenda

- A. Introductions
- B. Mission of Training Wing One (e.g., training syllabus) – Captain Charles M. Gibson, Commanding Officer NAS Meridian, or Commander Jonathan Still, Operations Officer of TW-1
- C. Evolution of the Meridian 2 MOA – Power Point by Lieutenant Alan Greer, TW-1
- D. Federal Aviation Administration (FAA) as a Cooperating Agency and NEPA Process /Project Timeline – FAA Eastern Regional Office Representative and Susan Lang, NAVFAC Atlantic
- E. Agency Input
 - MS SHPO – Cultural Resources perspective for area under proposed MOA
 - MS DEQ – Air Quality
 - MS DOT – Aeronautics Division
 - Localities underlying proposed MOA
 - USFS (Bienville National Forest)
 - USFWS
 - Other State, Federal, and Local agencies
- F. The results of interagency coordination will be addressed as appropriate through the affected environment discussion and the environmental consequences comparisons in the Environmental Assessment. The FAA is a cooperating agency.
- G. Questions

Summary of Meeting Discussions

The meeting began with brief introductions. Captain Gibson, Commander Jonathan Still, Lieutenant Alan Greer, and Ms. Susan Lang gave presentations as listed in the agenda. Ms. Pugh from the FAA was introduced. Once the presentations were finished, input from the agency representatives was requested. The following paragraphs outline the input from the agencies and the discussions that followed.

Mr. Cooper, from Laurel Hesler-Noble Airport, commented that Sanderson Farms operates quite a few aircraft out of Laurel Airport seven days a week. The aircraft consist mainly of Lear 31s and Citations and probably fly Instrument Flight Rules (IFR) most of the time. Mr. Cooper expressed concern that the proposed MOA could adversely affect their flights in and out of the airport. CDR Still informed Mr. Cooper that civilian pilots would be able to communicate with Memphis Center (ATC) to transition below or around the MOA, or through a portion of the MOA that isn't being used during times when the MOA is active. Mr. Cooper indicated that this would be a reasonable method of transiting civilian aircraft through the area when the MOA was active. It is not anticipated that civilian air traffic would be significantly impacted if the proposed MOA was established.

U.S. Forest Service representatives indicated that between January and May, there may be prescribed burns in the national forest underneath the proposed MOA. There were 30 total burn days in 2008. About 1,500 to 3,500 acres can be proposed for a prescribed burn. The mixing layer in the air is about 2,000 to 5,000 feet high (the smoke will be thickest below the mixing layer). However, particulates can be present 6,000 to 12,000 feet high. For aircraft operations, this would mainly impact helicopters. Since the U.S. Forest Service needs to get a permit before the prescribed burn can be started, a temporary flight restriction could be put in place. However, military training operations in the proposed MOA would not impact (or be impacted adversely by) prescribed burns.

USFS helicopters are unlikely to fly within the MOA except for brief periods near the floor of the MOA, during which both the U.S Forest Service and TW-1 will operate under positive clearance from Memphis Center. No other resources within the U.S. Forest Service were identified for potential impacts. Consequently, it is not anticipated that the establishment of the proposed MOA would impact the resources within the U.S. Forest Service.

Ms. Lunceford, from the U.S. Fish and Wildlife Service, indicated that there were no species of concern at the MOA's elevation (above 8,000 feet above mean sea level [MSL]), although there are some eagle nests in the region near the ground underneath the MOA. Ms. Lunceford brought up the issue of bird/wildlife aircraft strike hazard (BASH) at the airfield if there are additional operations (take-offs and landings) at NAS Meridian. She indicated that NAS Meridian should address these issues; they have a BASH plan and the issue can be managed through the plan. No other resources within the U.S. Fish and Wildlife Service were identified; therefore, it is not anticipated that the establishment of the proposed MOA would impact the resources within the U.S. Fish and Wildlife Service.

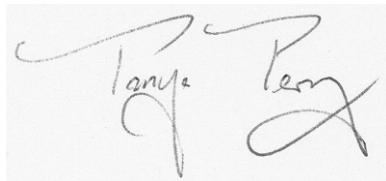
Since the proposed project does not involve construction or development, Mr. Hailey, from the Mississippi Department of Environmental Quality (MS DEQ), indicated that he did not see any issues directly relating to the project. Mr. Hailey did discuss potential air quality issues at NAS Meridian and wanted to ensure that NAS Meridian would still fall under the MS Synthetic Minor Source permit. CDR Hartung pointed out that downloading training in F-18 aircraft to T45 aircraft would also reduce Navy's carbon footprint nationwide. {Follow-up note: Jamie Brown the AQ Manager at NAS Meridian has just completed a renewal of the Synthetic Minor permit and NAS Meridian will be conducting the next air emission inventory during 2010-11.} It is not anticipated that the establishment of the proposed MOA would increase emissions above those authorized in the existing MS Synthetic Minor permit.

The meeting was adjourned after the discussions with the agency representatives.

If you have any questions concerning this deliverable, please contact Tanya Perry at 703-752-7755, extension 116.

Sincerely,

engineering-environmental Management, Inc.

A photograph of a handwritten signature in black ink. The signature reads "Tanya Perry". The "T" is a large, stylized initial, followed by "anya" and "Perry" in a cursive script.

Tanya Perry
Project Manager

cc: Don Beckham, e²M, Program Manager
Gustin Hare, e²M
Elaine Dubin, e²M
Project File, 4394-005

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Dubin, Elaine H

From: B_Hailey@deq.state.ms.us
Sent: Tuesday, November 10, 2009 9:14 AM
To: Dubin, Elaine H
Subject: Re: FOLLOW-UP: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes
Attachments: Enclosure 1 - Agency Outreach Meeting Minutes.pdf

I apologize for not responding....I thought the previous email indicated that if nothing was received from us then you would assume that we concur with them as written. After reading the minutes I didn't see anything to comment on; therefore, I didn't respond. I apologize for the oversight.

"Dubin, Elaine H" <Elaine.Dubin@hdrinc.com>

11/09/2009 11:14 AM

To "B.J.hailey@deq.state.ms.us" <B.J.hailey@deq.state.ms.us>
cc "Perry, Tanya A" <Tanya.Perry@hdrinc.com>, "Lang, Susan M CIV NAVFAC Atlantic"
<susan.m.lang@navy.mil>, ffc.record FLTFORCOM ADMINISTRATIVE RECORD
REPOSITORY <ffc.record@navy.mil>
Subject FOLLOW-UP: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting
Minutes

Mr. B.J. Hailey
Mississippi Department of Environmental Quality
Phone: 601-961-5783

SUBJECT: FOLLOW-UP: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). The meeting minutes were sent previously via e-mail on Wednesday, October 21, at that time the USFF requested concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. To date, USFF has not received concurrence or comments on the Agency Outreach Meeting minutes from the Mississippi Department of Environmental Quality.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Enclosure: 1. Agency Outreach Meeting Minutes

MERIDIAN 2 MOA EA PROJECT FILE
##CODE.MERIDIAN 2 MOA EA.PF##

Dubin, Elaine H

From: Annette.Pugh@faa.gov
Sent: Thursday, October 22, 2009 12:22 PM
To: Dubin, Elaine H
Cc: ffc.record FLTFORCOM ADMINISTRATIVE RECORD REPOSITORY; Lang, Susan M CIV NAVFAC Atlantic; Perry, Tanya A
Subject: Re: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes
Attachments: Enclosure 1 - Agency Outreach Meeting Minutes.pdf

Thank you! I concur with the minutes of the meeting.

Annette Pugh

Annette Pugh
FAA Air Traffic Representative (ATREP)
Cell - (850) 255-5146

"Dubin, Elaine H" <Elaine.Dubin@hdrinc.com>
10/21/2009 02:03 PM
To Annette Pugh/ASO/FAA@FAA
cc "Perry, Tanya A" <Tanya.Perry@hdrinc.com>, "Lang, Susan M CIV NAVFAC Atlantic" <susan.m.lang@navy.mil>, ffc.record FLTFORCOM ADMINISTRATIVE RECORD REPOSITORY <ffc.record@navy.mil>
Subject Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Ms. Annette Pugh
Federal Aviation Administration - Air Traffic Representative
Phone: 850-255-5146

SUBJECT: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). USFF requests concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. If a response is not received by that date, USFF will assume that you concur with the Agency Outreach Meeting minutes as written.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Enclosure: 1. Agency Outreach Meeting Minutes

MERIDIAN 2 MOA EA ADMINISTRATIVE RECORD
##CODE.MERIDIAN 2 MOA EA.AR##

Dubin, Elaine H

From: Michael Dueitt [mdueitt@fs.fed.us]
Sent: Tuesday, October 27, 2009 3:51 PM
To: Dubin, Elaine H
Subject: Re: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes
Attachments: Enclosure 1 - Agency Outreach Meeting Minutes.pdf

I concur with the meeting minutes as attached below. Thanks for correctly capturing the meeting proceedings and including us in the process.

Mike Dueitt
Forest FMO
National Forests in Mississippi
Office 601-965-1668
Cell 601-497-0608
mdueitt@fs.fed.us

"Dubin, Elaine H" <Elaine.Dubin@hdrinc.com>
10/21/2009 01:04 PM
To "Bbernardy@fs.fed.us" <Bbernardy@fs.fed.us>, "Mdueitt@fs.fed.us" <Mdueitt@fs.fed.us>
cc "mboley@fs.fed.us" <mboley@fs.fed.us>, "nkittrell@fs.fed.us" <nkittrell@fs.fed.us>, "Perry,
Tanya A" <Tanya.Perry@hdrinc.com>, "Lang, Susan M CIV NAVFAC Atlantic"
<susan.m.lang@navy.mil>, ffc.record FLTFORCOM ADMINISTRATIVE RECORD
REPOSITORY <ffc.record@navy.mil>
Subject Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Mr. Brad Bernardy and Mr. Mike Dueitt
U.S. Forest Service
Phone: 601-469-3811 and 601-963-1668

SUBJECT: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). USFF requests concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. If a response is not received by that date, USFF will assume that you concur with the Agency Outreach Meeting minutes as written.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Enclosure: 1. Agency Outreach Meeting Minutes

MERIDIAN 2 MOA EA ADMINISTRATIVE RECORD
##CODE.MERIDIAN 2 MOA EA.AR##

Dubin, Elaine H

From: Jackson, Michelle M. [MMJackson@hindscce.edu]
Sent: Thursday, October 22, 2009 9:13 AM
To: Dubin, Elaine H
Subject: RE: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Ms. Elaine Dubin,

I concur with the minutes sent to me regarding the Meridian 2 MOAE meeting held at Eagle Ridge Conference Center on August 20, 2009.

Sincerely,

Michelle Jackson
Hinds Community College
John Bell Williams Airport (M16)
phone 601 857 3884
fax 601 857 3896

-----Original Message-----

From: Dubin, Elaine H [mailto:Elaine.Dubin@hdrinc.com]
Sent: Wednesday, October 21, 2009 1:10 PM
To: Jackson, Michelle M.
Cc: Perry, Tanya A; Lang, Susan M CIV NAVFAC Atlantic; ffc.record FLTFORCOM ADMINISTRATIVE RECORD REPOSITORY
Subject: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Ms. Michelle Jackson
Hinds Community College John Bell Williams Airport
Phone: 601-857-3884

SUBJECT: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). USFF requests concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. If a response is not received by that date, USFF will assume that you concur with the Agency Outreach Meeting minutes as written.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Dubin, Elaine H

From: Booth, Tommy [tbooth@mdot.state.ms.us]
Sent: Monday, November 09, 2009 12:34 PM
To: Dubin, Elaine H
Subject: RE: FOLLOW-UP: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

I apologize for the delay in responding... I concur with the minutes as presented...

Have a great day,
Tommy

Thomas M. Booth, Jr., PE
MDOT - Aeronautics Division

-----Original Message-----

From: Dubin, Elaine H [mailto:Elaine.Dubin@hdrinc.com]
Sent: Monday, November 09, 2009 11:15 AM
To: Booth, Tommy
Cc: Perry, Tanya A; Lang, Susan M CIV NAVFAC Atlantic; ffc.record FLTFORCOM ADMINISTRATIVE RECORD REPOSITORY
Subject: FOLLOW-UP: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Mr. Tommy Booth
Mississippi Department of Transportation - Aeronautics
Phone: 601-359-7850

SUBJECT: FOLLOW-UP: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). The meeting minutes were sent previously via e-mail on Wednesday, October 21, at that time the USFF requested concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. To date, USFF has not received concurrence or comments on the Agency Outreach Meeting minutes from the Mississippi Department of Transportation.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Enclosure: 1. Agency Outreach Meeting Minutes

MERIDIAN 2 MOA EA PROJECT FILE
##CODE.MERIDIAN 2 MOA EA.PF##

CONFIDENTIALITY NOTICE This e-mail and any files or attachments may contain confidential and privileged information. If you have received this message in error, please notify the sender at the above e-mail address and delete it and all copies from your system.

Mr. Daryl Cooper
Laurel Airport
Phone: 601-425-5121
Fax: 601-428-2047

SUBJECT: FOLLOW-UP: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes were sent previously via fax on Wednesday, October 21. During a follow-up phone call on Monday, November 09, you concurred with the meeting minutes as written. Please sign this correspondence below for our records.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

MERIDIAN 2 MOA EA PROJECT FILE
##CODE.MERIDIAN 2 MOA EA.PF##

I concur with the minutes from the Agency Outreach Meeting hosted by USFF on Thursday, August 20, 2009 regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA.


Mr. Daryl Cooper
Laurel Airport

Dubin, Elaine H

From: Tom Williams [TWilliams@meridianairport.com]
Sent: Monday, November 09, 2009 5:18 PM
To: Dubin, Elaine H
Subject: RE: FOLLOW-UP: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Tom Williams concurs with the meeting minutes attached! Thank you for your patience.

Tom

-----Original Message-----

From: Dubin, Elaine H [mailto:Elaine.Dubin@hdrinc.com]
Sent: Monday, November 09, 2009 11:16 AM
To: Tom Williams
Cc: Perry, Tanya A; Lang, Susan M CIV NAVFAC Atlantic; ffc.record FLTFORCOM ADMINISTRATIVE RECORD REPOSITORY
Subject: FOLLOW-UP: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes

Mr. Tom Williams
Meridian Airport Authority (Key Field)
Phone: 601-917-4944

SUBJECT: FOLLOW-UP: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August 20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). The meeting minutes were sent previously via e-mail on Wednesday, October 21, at that time the USFF requested concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. To date, USFF has not received concurrence or comments on the Agency Outreach Meeting minutes from the Meridian Airport Authority.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Enclosure: 1. Agency Outreach Meeting Minutes

MERIDIAN 2 MOA EA PROJECT FILE
##CODE.MERIDIAN 2 MOA EA.PF##

Dubin, Elaine H

From: Kathy_Lunceford@fws.gov
Sent: Wednesday, October 21, 2009 1:36 PM
To: Dubin, Elaine H
Cc: Stephen_Ricks@fws.gov
Subject: Re: Request Concurrence with Meridian 2 MOA EA Agency Outreach Meeting Minutes
Attachments: pic21132.gif

Ms Dubin:

The Fish and Wildlife Service has no comments on the Meeting Minutes from the Agency Outreach Meeting for the EA to analyze Impacts of the Meridian 2 Military Operations Area, Meridian, MS.

We will, however, provide comments on the draft EIS when it is available.

Thank you for the opportunity to review this project.

Kathy Lunceford

Kathy W. Lunceford
Fish and Wildlife Biologist
USFWS
Mississippi Field Office
Jackson, MS

▼ "Dubin, Elaine H" <Elaine.Dubin@hdrinc.com>

"**Dubin, Elaine H"**
<Elaine.Dubin@hdrinc.com>

10/21/2009 12:29 PM

To "Kathy.lunceford@fws.gov" <Kathy.lunceford@fws.gov>

cc "tauline_davis@fws.gov" <tauline_davis@fws.gov>, "Perry,
Tanya A" <Tanya.Perry@hdrinc.com>, "Lang, Susan M CIV
NAVFAC Atlantic" <susan.m.lang@navy.mil>, ffc.record
FLTFORCOM ADMINISTRATIVE RECORD REPOSITORY
<ffc.record@navy.mil>

Subject Request Concurrence with Meridian 2 MOA EA Agency
Outreach Meeting Minutes

Ms. Kathy Lunceford
U.S. Fish and Wildlife Service
Phone: 601-321-1132

SUBJECT: Request Concurrence with Meeting Minutes from the August 20, 2009 Agency Outreach
Meeting for the Environmental Assessment to Analyze Impacts of the Meridian 2 Military
Operations Area (MOA), Meridian, MS.

The purpose of this letter is to inform you that meeting minutes have been prepared from the
Agency Outreach Meeting, hosted by U.S. Fleet Forces (USFF), that was held on Thursday, August

20, 2009. This meeting was regarding the Environmental Assessment to analyze impacts of the Meridian 2 MOA. The meeting minutes are provided as enclosure (1). USFF requests concurrence or comments on the Agency Outreach Meeting minutes by November 5, 2009. If a response is not received by that date, USFF will assume that you concur with the Agency Outreach Meeting minutes as written.

You will also have the opportunity to review and comment on the Draft Final EA once it has been published. It is expected that the Draft Final EA will be ready for review in early December 2009. Please send any comments or questions regarding the agency outreach meeting minutes or the EA to Ms. Susan Lang, Naval Facilities Engineering Command, Atlantic, E-mail: susan.m.lang@navy.mil.

Sincerely,

Susan Lang

Environmental Planning
NAVFAC Atlantic
6506 Hampton Blvd
Norfolk, VA 23508-1278
757-322-8498

Enclosure: 1. Agency Outreach Meeting Minutes

MERIDIAN 2 MOA EA ADMINISTRATIVE RECORD
##CODE.MERIDIAN 2 MOA EA.AR##

[attachment "Enclosure 1 - Agency Outreach Meeting Minutes.pdf" deleted by Kathy Lunceford/R4/FWS/DOI]

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CONSULTATION LETTER WITH THE MISSISSIPPI BAND OF CHOCTAW INDIANS



DEPARTMENT OF THE NAVY
COMMANDER NAVY REGION SOUTHEAST
BOX 102, NAVAL AIR STATION
JACKSONVILLE, FLORIDA 32212-0102

5090
Ser N45/111
MAR 10 2011

Tribal Miko Beasley Denson
Mississippi Band of Choctaw Indians
101 Industrial Road
Choctaw, MS 39350

Dear Tribal Miko Denson:

SUBJECT: CULTURAL RESOURCES CONSIDERATIONS ASSOCIATED WITH A PROPOSED MILITARY OPERATING AREA (MOA) AT NAS MERIDIAN

The United States Navy invites the Mississippi Band of Choctaw Indians to consult in the matter of proposing the establishment of an additional aircraft Military Operations Area (MOA) southwest of Naval Air Station (NAS) Meridian. In accordance with Section 106 requirements of the National Historic Preservation Act of 1966 (NHPA) and applicable Executive Orders, this letter initiates consultation with the Choctaw tribe to discuss any potential effects on cultural resources considered significant by your tribe. This consultation is designed to ensure that the Proposed Action would incur no adverse effects on cultural properties that may be considered significant by your tribe.

The purpose of the Proposed Action is to establish a new MOA within which naval aviators at NAS Meridian can complete their required training operations and ensure that mission capabilities are sustained. The need for the Proposed Action is to support an increase in aircraft training sorties, from 32,000 to 37,000, that would be required as a result of changes in the Navy's pilot training syllabus. Enclosed is NAS Meridian's primary training area, the Meridian 1 MOA, which are currently being used at close to full capacity. These additional sorties would result in saturation in the Meridian 1 MOA, which would have a negative effect on safety, quality of training, and overall combat readiness.

In an effort to ensure safety and maintain critical mission training requirements, the Navy is proposing to establish a new MOA, Meridian 2 MOA. The proposed MOA, which commences approximately 20 miles south of the existing Meridian 1 MOA, would similarly range in altitude from 8,000 to 17,999 feet above mean sea level (MSL). Air operations within the limits of

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this MOA would not significantly differ from current training that is conducted within the existing Meridian 1 MOA. No bombing or gunnery exercises would be conducted in the proposed MOA. In addition, no significant acoustic impacts within the proposed Meridian 2 MOA would occur.

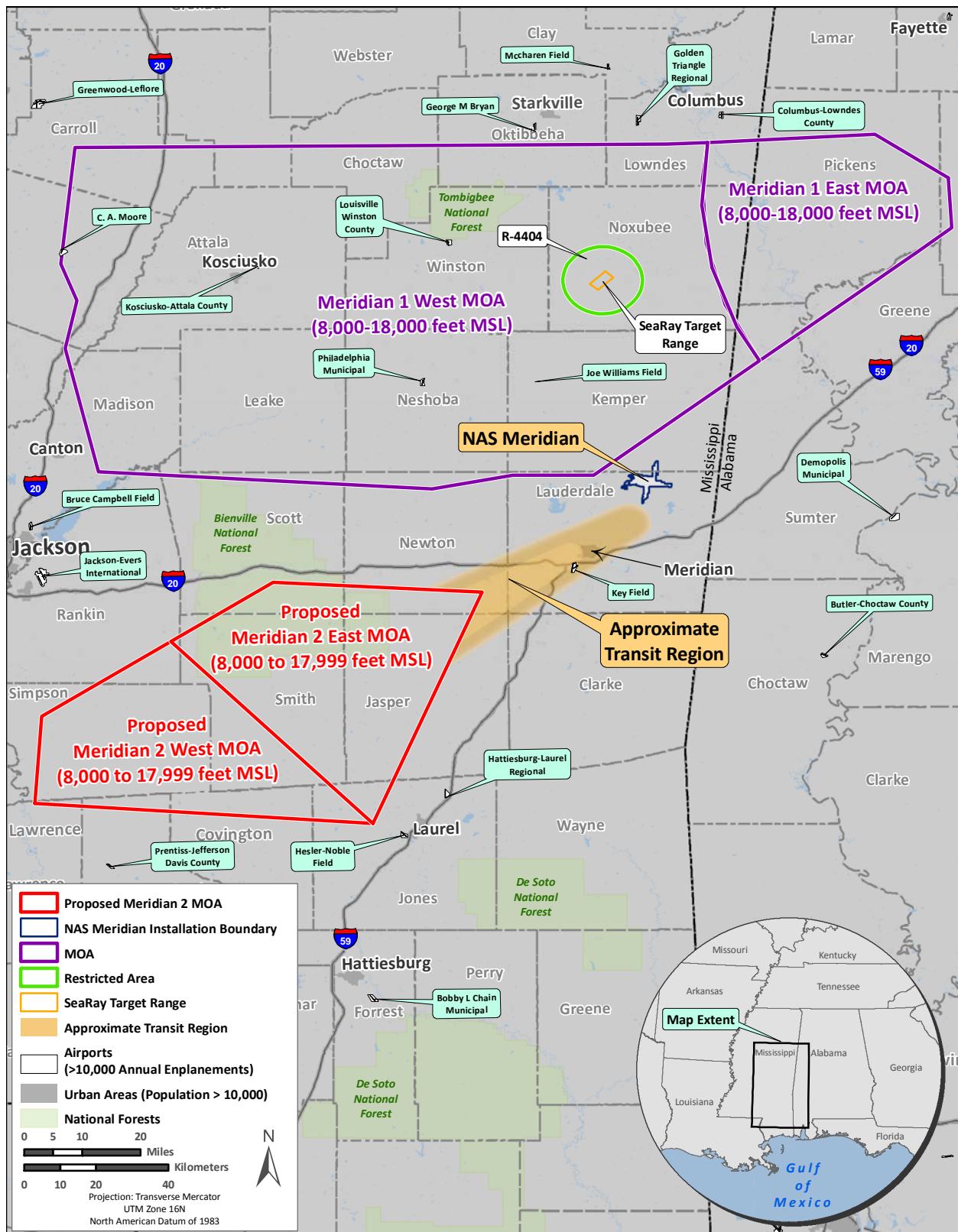
A review of cultural resources findings indicates that there are no traditional cultural properties, sacred sites, or sites of religious or cultural importance located within the bounds of the proposed MOA. As a result, the Navy has concluded that the Proposed Action would incur no adverse effects on cultural resources.

We will send you a copy of the draft Environmental Assessment (EA) in mid-April 2011 which will fully describe the Proposed Action. We are confident that you will concur that the proposed MOA will incur no effects of cultural resources. In the event that the Choctaw possess contrary information regarding the location of important sites within the proposed MOA, or if you need additional information, please contact the Historic Preservation Officer (HPO), Mr. Len Winter at: (904) 542-6861 or email: len.winter@navy.mil. Thank you for your consideration in this matter.


C. R. DESTAFNEY, PE
Regional Environmental Director
By direction of the Commander

Enclosure: 1. NAS Meridian, Transit Region, and Proposed Meridian MOA Vicinity Map

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Naval Facilities Engineering Command, Atlantic (EV2)



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APPENDIX D

PUBLIC INVOLVEMENT (RESERVED)

APPENDIX E

CALCULATIONS TO SUPPORT THE AIR QUALITY EMISSIONS ANALYSIS

NAS Meridian 2 MOA Air Emissions Increases from T-45 Flight Operations and In-Frame Maintenance (Mobile Source Emissions)
NAS Meridian 2 MOA Internal Environmental Assessment Report

| Flight Operation or Maintenance Operation | Meridian 2 MOA Emissions (tons/yr) | | | | | | |
|---|------------------------------------|--------------|--------------|-----------------|------------------|-------------------|-----------------|
| | NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
| Regular Departures | 2.76 | 10.24 | 50.86 | 0.25 | 4.17 | 4.17 | 1,863.52 |
| Straight-In Arrivals | 0.56 | 7.33 | 39.29 | 0.18 | 3.86 | 3.86 | 1,321.16 |
| In-Frame Engine Maintenance Run-Ups | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTALS | 3.32 | 17.57 | 90.15 | 0.43 | 8.03 | 8.03 | 3,184.68 |

CO = Carbon Monoxide; NOx = Nitrogen Oxides; VOC = Volatile Organic Compounds; SO₂ = Sulfur Dioxide; PM₁₀ = Particulate Matter less than 10 microns.

Note: NAS Meridian personnel indicated their would be no appreciable increase in the in-frame engine maintenance schedule due to the 5,000 sortie increase.

NAS Meridian 2 MOA Air Emissions Increases from T-45 Engine Test Cell (Stationary Source Emissions)
NAS Meridian 2 MOA Internal Environmental Assessment Report

| Meridian 2 MOA Emissions (tons/yr) | | | | | | |
|------------------------------------|------|-----|-----------------|------------------|-------------------|-----------------|
| NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
| 0.08 | 0.04 | 0.2 | 4.34E-03 | 0.06 | 0.06 | 33.86 |

Note: Emissions are based on increase of 6 engine tests per year.

County and AQCR 2002 Air Emissions Inventories

| County or Region | NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
|---|-----------------|---------|-----------|-----------------|------------------|-------------------|-----------------|
| | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) |
| Kemper County | 723 | 840 | 4,448 | 104 | 1,857 | 245 | Not Available |
| Northeast Mississippi AQCR | 67,682 | 92,039 | 330,513 | 13,938 | 119,209 | 20,007 | Not Available |
| Lauderdale County | 5,035 | 7,727 | 33,551 | 354 | 5,834 | 1,064 | Not Available |
| Alabama-Florida-Southern Mississippi AQCR | 338,587 | 339,121 | 1,478,543 | 277,876 | 270,386 | 78,256 | Not Available |

Note: County and AQCR 2002 Emissions Inventory data obtained from a USEPA website: <http://www.epa.gov/air/data/geosel.html>

NAS Meridian Total 2 MOA Air Emissions from Aircraft Related Operations and Percent of Regional/State Emissions

| | NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
|---|-----------------|-------|-------|-----------------|------------------|-------------------|-----------------|
| Total 2 MOA Aircraft Related Emissions (tpy) | 3.40 | 17.61 | 90.35 | 0.43 | 8.09 | 8.09 | 3,218.54 |
| Percent of Northeast Mississippi AQCR Emissions | 0.005% | 0.02% | 0.03% | 0.003% | 0.01% | 0.04% | Not Available |
| Percent of Alabama-Florida-Southern Mississippi AQCR Emissions | 0.001% | 0.01% | 0.01% | 0.0002% | 0.003% | 0.01% | Not Available |
| Percent of CO ₂ Emissions in State of Mississippi, based on 2007 CO ₂ data. | ---- | ---- | ---- | ---- | ---- | ---- | 0.004% |

Note: The Mississippi 2007 CO₂ emissions data was obtained from a USEPA website: http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html

Meridian 2 MOA T-45 Flight Operations

| Number of T-45 Aircraft | Total Number of Flight Operations | Regular Departures¹ | Straight-In Arrivals¹ |
|--------------------------------|--|---------------------------------------|---|
| 84 | 10,000 | 5,000 | 5,000 |

Note:

1. It was assumed that all of the 5,000 new sorties for the Meridian 2 MOA operations consist of Regular Departures and Straight-In Arrivals.

Emissions from one F405-RR-401 test cell run at NAS Meridian

| Engine & Test | Time (mins) | Fuel (gals) | Fuel (lbs) | Emissions (lbs) | | | | | |
|---------------------|----------------|----------------|---------------|-----------------|-----------------|-----------------|-------|-----------------|------------------|
| | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Engine: F405-RR-401 | | | | | | | | | |
| Performance Test | 108.3 | 531.81 | 3,616.33 | 67.49 | 11,286.14 | 25.01 | 12.12 | 1.45 | 20.36 |

Annual Emissions Increases from F405-RR-401 test cell runs at NAS Meridian due to Meridian 2 MOA Operations

| Engine & Test | Time (mins) | Fuel (gals) | Fuel (lbs) | Emissions (lbs) | | | | | |
|---------------------|----------------|----------------|---------------|-----------------|-----------------|-----------------|------|-----------------|------------------|
| | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Engine: F405-RR-401 | | | | | | | | | |
| Performance Test | 649.5 | 3,190.9 | 21,698.0 | 404.9 | 67,716.8 | 150.1 | 72.7 | 8.7 | 122.1 |

Note:

- NAS Meridian personnel indicated an increase of up to 6 F405-RR-401 test cell runs due to 5,000 sortie increase.

**NAS Meridian Baseline Air Emissions from T-45 Flight Operations and In-Frame Maintenance (Mobile Source Emissions)
Environmental Baseline Report**

| Flight Operation or Maintenance Operation | Baseline Emissions (tons/yr) | | | | | | |
|---|------------------------------|---------------|---------------|-----------------|------------------|-------------------|-------------------|
| | NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
| Regular Departures | 13.03 | 48.42 | 240.40 | 1.19 | 19.69 | 19.69 | 8,807.35 |
| Straight-In Arrivals | 0.53 | 6.93 | 37.14 | 0.17 | 3.65 | 3.65 | 1,248.76 |
| Overhead Break Arrivals | 0.32 | 1.73 | 9.26 | 0.05 | 1.11 | 1.11 | 408.67 |
| Carrier Break Arrivals | 4.80 | 26.01 | 138.98 | 0.82 | 16.63 | 16.63 | 6,133.44 |
| Touch and Go's | 150.99 | 10.90 | 145.61 | 8.55 | 118.17 | 118.17 | 67,480.11 |
| FCLPs | 31.02 | 2.24 | 29.91 | 1.76 | 24.28 | 24.28 | 13,863.89 |
| GCA's | 7.51 | 1.66 | 20.53 | 0.53 | 8.39 | 8.39 | 4,178.71 |
| Interfacilities | 7.10 | 37.55 | 192.60 | 0.92 | 17.14 | 17.14 | 6,803.12 |
| In-Frame Engine Maintenance Run-Ups | 5.49 | 5.02 | 24.65 | 0.27 | 3.12 | 3.12 | 2,092.19 |
| TOTALS | 220.79 | 140.46 | 839.08 | 14.26 | 212.18 | 212.18 | 111,016.24 |

CO = Carbon Monoxide; NO_x = Nitrogen Oxides; VOC = Volatile Organic Compounds; SO₂ = Sulfur Dioxide; PM₁₀ = Particulate Matter less than 10 microns.

FCLP = Field Carrier Landing Practice; GCA = Ground Controlled Approach; AGL = Above Ground Level

Note: Emissions are based on actual CY2009 operational data. In addition, PM_{2.5} emission are conservatively assumed to be equivalent to PM₁₀ emissions.

**NAS Meridian Baseline Air Emissions from T-45 Engine Test Cell (Stationary Source Emissions)
Environmental Baseline Report**

| Baseline Emissions (tons/yr) | | | | | | |
|------------------------------|------|------|-----------------|------------------|-------------------|-----------------|
| NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
| 1.20 | 0.58 | 3.24 | 0.07 | 0.98 | 0.98 | 541.73 |

Note: Emissions are based on actual FY2010 operational data: Sept. 2009 to Sept. 2010.

County and AQCR 2002 Air Emissions Inventories

| County or Region | NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
|---|-----------------|---------|-----------|-----------------|------------------|-------------------|-----------------|
| | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) | (tpy) |
| Kemper County | 723 | 840 | 4,448 | 104 | 1,857 | 245 | Not Available |
| Northeast Mississippi AQCR | 67,682 | 92,039 | 330,513 | 13,938 | 119,209 | 20,007 | Not Available |
| Lauderdale County | 5,035 | 7,727 | 33,551 | 354 | 5,834 | 1,064 | Not Available |
| Alabama-Florida-Southern Mississippi AQCR | 338,587 | 339,121 | 1,478,543 | 277,876 | 270,386 | 78,256 | Not Available |

Note: County and AQCR 2002 Emissions Inventory data obtained from a USEPA website: <http://www.epa.gov/air/data/geosel.html>

NAS Meridian Total Baseline Air Emissions from Aircraft Related Operations and Percent of Regional/State Emissions

| | NO _x | VOC | CO | SO ₂ | PM ₁₀ | PM _{2.5} | CO ₂ |
|---|-----------------|--------|--------|-----------------|------------------|-------------------|-----------------|
| Total Baseline Aircraft Related Emissions (tpy) | 221.99 | 141.04 | 842.32 | 14.33 | 213.16 | 213.16 | 111,557.97 |
| Percent of Northeast Mississippi AQCR Emissions | 0.33% | 0.15% | 0.25% | 0.10% | 0.18% | 1.07% | Not Available |
| Percent of Alabama-Florida-Southern Mississippi AQCR Emissions | 0.07% | 0.04% | 0.06% | 0.01% | 0.08% | 0.27% | Not Available |
| Percent of CO ₂ Emissions in State of Mississippi, based on 2007 CO ₂ data. | --- | --- | --- | --- | --- | --- | 0.15% |

Note: The Mississippi 2007 CO₂ emissions data was obtained from a USEPA website: http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html

CY2005 T-45 Flight Operations

| Total Number of Flight Operations | Regular Departures | Hold Down Departures | Straight-In Arrivals | Overhead Break Arrivals | Carrier Break Arrivals | Touch and Go | FCLP | GCA | SFO | Interfacility |
|-----------------------------------|--------------------|----------------------|----------------------|-------------------------|------------------------|--------------|--------|-------|-----|---------------|
| 132,603 | 15,851 | 831 | 3,336 | 834 | 12,513 | 72,612 | 15,048 | 3,408 | 630 | 7,540 |

CY2009 T-45 Flight Operations¹

| Number of T-45 Aircraft | Total Number of Flight Operations ² | Regular Departures | Hold Down Departures ³ | Straight-In Arrivals | Overhead Break Arrivals | Carrier Break Arrivals | Touch and Go | FCLP | GCA | SFO ⁴ | Interfacility ⁵ |
|-------------------------|--|--------------------|-----------------------------------|----------------------|-------------------------|------------------------|--------------|--------|-------|------------------|----------------------------|
| 84 | 187,841 | 23,631 | 0 | 4,726 | 1,181 | 17,725 | 103,752 | 21,316 | 4,828 | 0 | 10,681 |

Notes:

1. CY2009 breakdown of individual Flight Operations was assumed to occur in the same proportion as CY2005 Flight Operations.
2. Total CY2009 Flight Operations assume the 165 operations conducted by Other Military and Civilian aircraft are T-45 operations due to the lack of operational data regarding these other aircraft.
3. Hold Down Departures did not occur in 2009; however, the fraction of their occurrence in 2005 was applied to Regular Departures for 2009.
4. Simulated Flame-Outs did not occur in 2009; however, the fraction of their occurrence in 2005 was applied to Touch and Go for 2009.
5. An Interfacility operation is assumed to be equivalent to a Straight-in Arrival and Regular Departure combined.

| Flight Operations | Emissions in Pounds (lbs) | | | | | |
|------------------------|---------------------------|-----------------|-----------------|-------|-----------------|------------------|
| | CO | CO ₂ | NO _X | HC | SO ₂ | PM ₁₀ |
| Departure | 20.346 | 745.407 | 1.103 | 4.098 | 0.101 | 1.667 |
| Overhead Break Arrival | 15.682 | 692.067 | 0.542 | 2.935 | 0.092 | 1.877 |
| Straight In Arrival | 15.717 | 528.466 | 0.225 | 2.934 | 0.072 | 1.544 |
| Touch and Go | 2.807 | 1300.796 | 2.911 | 0.210 | 0.165 | 2.278 |
| FCLP | 2.807 | 1300.796 | 2.911 | 0.210 | 0.165 | 2.278 |
| GCA Box | 8.506 | 1731.033 | 3.111 | 0.690 | 0.221 | 3.476 |

| In-Frame Engine Maintenance Run-Ups | Emissions in Pounds per Aircraft per Year (lbs/AC-yr) | | | | | |
|---|---|-----------------|-----------------|--------|-----------------|------------------|
| | CO | CO ₂ | NO _X | HC | SO ₂ | PM ₁₀ |
| Test Emissions from a Single T-45 Aircraft per Year | 586.80 | 49,814.02 | 130.82 | 119.47 | 6.49 | 74.17 |

T-45A/C Goshawk with an F405-RR-401/-402 Engine

| Flight Operations and Mode | Engine Power Setting | minutes | seconds | Time in Mode (minutes) | Fuel Flow (lbs/hr) | Fuel Used (lbs) | EI CO | EI CO ₂ | EI NO _x | EI HC | EI SO ₂ | EI PM ₁₀ | LBS CO | LBS CO ₂ | LBS NO _x | LBS HC | LBS SO ₂ | LBS PM ₁₀ | |
|------------------------------------|----------------------|---------|---------|------------------------|--------------------|-----------------|---------|--------------------|--------------------|--------|--------------------|---------------------|--------|---------------------|---------------------|--------------|---------------------|----------------------|--------------|
| Departure | | | | | | | | | | | | | | | | | | | |
| APU (GTS) Use | On | 1 | | 1.00 | 197.0 | 3,283 | 2,000 | 3,170,000 | 6,250 | 0.250 | 0.400 | 0.220 | 0.007 | 10,408 | 0.021 | 0.001 | 0.001 | 0.001 | |
| Start engine | 55% N2 | 1 | | 1.00 | 498.1 | 8,302 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 1,255 | 22,808 | 0.002 | 0.282 | 0.003 | 0.074 | |
| Close Bleed Valve | 70% N2 | | 30 | 0.50 | 697.2 | 5,810 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 0.513 | 17,271 | 0.004 | 0.072 | 0.002 | 0.051 | |
| System Checks | 55% N2 | 10 | | 10.00 | 498.1 | 83,017 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 12,553 | 228,077 | 0.022 | 2.824 | 0.033 | 0.742 | |
| Unstick | 80% N2 | | 6 | 0.10 | 1,154.6 | 1,924 | 34,249 | 3,106,689 | 1,859 | 2,847 | 0.400 | 8,443 | 0.066 | 5,978 | 0.004 | 0.005 | 0.001 | 0.016 | |
| Taxi Out | 70% N2 | 4 | | 4.00 | 697.2 | 46,482 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 4,104 | 138,170 | 0.035 | 0.575 | 0.019 | 0.410 | |
| Hold Short | 55% N2 | 1 | | 1.00 | 498.1 | 8,302 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 1,255 | 22,808 | 0.002 | 0.282 | 0.003 | 0.074 | |
| Unstick | 80% N2 | | 6 | 0.10 | 1,154.6 | 1,924 | 34,249 | 3,106,689 | 1,859 | 2,847 | 0.400 | 8,443 | 0.066 | 5,978 | 0.004 | 0.005 | 0.001 | 0.016 | |
| Taxi Onto Runway | 70% N2 | | 15 | 0.25 | 697.2 | 2,905 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 0.256 | 8,636 | 0.002 | 0.036 | 0.001 | 0.026 | |
| Engine Check | 101.8% N2 | | 5 | 0.08 | 4,997.0 | 6,940 | 3,003 | 3,161,841 | 11,161 | 0.154 | 0.400 | 2,840 | 0.021 | 21,944 | 0.077 | 0.001 | 0.003 | 0.020 | |
| Takeoff (brake release to gear up) | 101.8% N2 | | 30 | 0.50 | 4,997.0 | 41,642 | 3,003 | 3,161,841 | 11,161 | 0.154 | 0.400 | 2,840 | 0.125 | 131,664 | 0.465 | 0.006 | 0.017 | 0.118 | |
| Climb out (200 to 3,000 feet AGL) | 101.8% N2 | | 30 | 0.50 | 4,997.0 | 41,642 | 3,003 | 3,161,841 | 11,161 | 0.154 | 0.400 | 2,840 | 0.125 | 131,664 | 0.465 | 0.006 | 0.017 | 0.118 | |
| | | | | 19.03 | | 252,172 | | | | | | | | 20,346 | 745,407 | 1,103 | 4,098 | 0.101 | 1,667 |
| Overhead Break Arrival | | | | | | | | | | | | | | | | | | | |
| Initial (3,000 feet AGL to Break) | 90% N2 | 2 | | 2.00 | 2,307.7 | 76,922 | 7,358 | 3,154,060 | 4,651 | 0.604 | 0.400 | 7,165 | 0.566 | 242,616 | 0.358 | 0.046 | 0.031 | 0.551 | |
| Break (Speed Brakes, Flaps, Gear) | 85% N2 | | 10 | 0.17 | 1,601.9 | 4,450 | 16,700 | 3,138,722 | 2,942 | 1,279 | 0.400 | 7,999 | 0.074 | 13,967 | 0.013 | 0.006 | 0.002 | 0.036 | |
| Abeam/180 Degree Position | 90% N2 | | 20 | 0.33 | 2,307.7 | 12,820 | 7,358 | 3,154,060 | 4,651 | 0.604 | 0.400 | 7,165 | 0.094 | 40,436 | 0.060 | 0.008 | 0.005 | 0.092 | |
| 90 Degree Position | 90% N2 | | 10 | 0.17 | 2,307.7 | 6,410 | 7,358 | 3,154,060 | 4,651 | 0.604 | 0.400 | 7,165 | 0.047 | 20,218 | 0.030 | 0.004 | 0.003 | 0.046 | |
| 45 Degree Position | 85% N2 | | 10 | 0.17 | 1,601.9 | 4,450 | 16,700 | 3,138,722 | 2,942 | 1,279 | 0.400 | 7,999 | 0.074 | 13,967 | 0.013 | 0.006 | 0.002 | 0.036 | |
| Final | 75% N2 | | 15 | 0.25 | 874.1 | 3,642 | 59,125 | 3,051,718 | 1,180 | 6,277 | 0.400 | 8,682 | 0.215 | 11,115 | 0.004 | 0.023 | 0.001 | 0.032 | |
| Touchdown/Rollout | 55% N2 | | 30 | 0.50 | 498.1 | 4,151 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 0.628 | 11,404 | 0.001 | 0.141 | 0.002 | 0.037 | |
| Taxi to Hot Refuel | 70% N2 | 2 | 30 | 2.50 | 697.2 | 29,051 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 2,565 | 86,356 | 0.022 | 0.360 | 0.012 | 0.256 | |
| Hot Refuel | 55% N2 | 5 | | 5.00 | 498.1 | 41,508 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 6,276 | 114,039 | 0.011 | 1,412 | 0.017 | 0.371 | |
| Unstick | 80% N2 | | 6 | 0.10 | 1,154.6 | 1,924 | 34,249 | 3,106,689 | 1,859 | 2,847 | 0.400 | 8,443 | 0.066 | 5,978 | 0.004 | 0.005 | 0.001 | 0.016 | |
| Taxi in | 70% N2 | 2 | 30 | 2.50 | 697.2 | 29,051 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 2,565 | 86,356 | 0.022 | 0.360 | 0.012 | 0.256 | |
| Shut/Cool Down | 55% N2 | 2 | | 2.00 | 498.1 | 16,603 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 2,511 | 45,615 | 0.004 | 0.565 | 0.007 | 0.148 | |
| | | | | 15.68 | | 230,983 | | | | | | | | 15,682 | 692,067 | 0.542 | 2,935 | 0.092 | 1,877 |
| Straight In Arrival | | | | | | | | | | | | | | | | | | | |
| Initial (3,000 feet AGL to Final) | 85% N2 | 2 | | 2.00 | 1,601.9 | 53,398 | 16,700 | 3,138,722 | 2,942 | 1,279 | 0.400 | 7,999 | 0.892 | 167,602 | 0.157 | 0.068 | 0.021 | 0.427 | |
| Final | 75% N2 | | 15 | 0.25 | 874.1 | 3,642 | 59,125 | 3,051,718 | 1,180 | 6,277 | 0.400 | 8,682 | 0.215 | 11,115 | 0.004 | 0.023 | 0.001 | 0.032 | |
| Touchdown/Rollout | 55% N2 | | 30 | 0.50 | 498.1 | 4,151 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 0.628 | 11,404 | 0.001 | 0.141 | 0.002 | 0.037 | |
| Taxi to Hot Refuel | 70% N2 | 2 | 30 | 2.50 | 697.2 | 29,051 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 2,565 | 86,356 | 0.022 | 0.360 | 0.012 | 0.256 | |
| Hot Refuel | 55% N2 | 5 | | 5.00 | 498.1 | 41,508 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 6,276 | 114,039 | 0.011 | 1,412 | 0.017 | 0.371 | |
| Unstick | 80% N2 | | 6 | 0.10 | 1,154.6 | 1,924 | 34,249 | 3,106,689 | 1,859 | 2,847 | 0.400 | 8,443 | 0.066 | 5,978 | 0.004 | 0.005 | 0.001 | 0.016 | |
| Taxi in | 70% N2 | 2 | 30 | 2.50 | 697.2 | 29,051 | 88,286 | 2,972,581 | 0.752 | 12,375 | 0.400 | 8,814 | 2,565 | 86,356 | 0.022 | 0.360 | 0.012 | 0.256 | |
| Shut/Cool Down | 55% N2 | 2 | | 2.00 | 498.1 | 16,603 | 151,210 | 2,747,370 | 0.270 | 34,020 | 0.400 | 8,940 | 2,511 | 45,615 | 0.004 | 0.565 | 0.007 | 0.148 | |
| | | | | 14.85 | | 179,329 | | | | | | | | 15,717 | 528,466 | 0.225 | 2,934 | 0.072 | 1,544 |
| Touch and Go | | | | | | | | | | | | | | | | | | | |
| Approach | 85% N2 | 2 | | 2.00 | 1,601.9 | 53,398 | 16,700 | 3,138,722 | 2,942 | 1,279 | 0.400 | 7,999 | 0.892 | 167,602 | 0.157 | 0.068 | 0.021 | 0.427 | |
| Climb out | 101.8% N2 | 2 | | 2.00 | 4,997.0 | 166,566 | 3,003 | 3,161,841 | 11,161 | 0.154 | 0.400 | 2,840 | 0.500 | 526,655 | 1,859 | 0.026 | 0.067 | 0.473 | |
| Level Flight (<3,000 ft. AGL) | 90% N2 | 5 | | 5.00 | 2,307.7 | 192,304 | 7,358 | 3,154,060 | 4,651 | 0.604 | 0.400 | 7,165 | 1,415 | 606,539 | 0.894 | 0.116 | 0.077 | 1,378 | |
| | | | | 9.00 | | 412,268 | | | | | | | | 2,807 | 1,300,796 | 2,911 | 0.210 | 0.165 | 2,278 |
| FCLP | | | | | | | | | | | | | | | | | | | |
| Approach | 85% N2 | 2 | | 2.00 | 1,601.9 | 53,398 | 16,700 | 3,138,722 | 2,942 | 1,279 | 0.400 | 7,999 | 0.892 | 167,602 | 0.157 | 0.068 | 0.021 | 0.427 | |
| Climb out | 101.8% N2 | 2 | | 2.00 | 4,997.0 | 166,566 | 3,003 | 3,161,841 | 11,161 | 0.154 | 0.400 | 2,840 | 0.500 | 526,655 | 1,859 | 0.026 | 0.067 | 0.473 | |
| Level Flight (<3,000 ft. AGL) | 90% N2 | 5 | | 5.00 | 2,307.7 | 192,304 | 7,358 | 3,154,060 | 4,651 | 0.604 | 0.400 | 7,165 | 1,415 | 606,539 | 0.894 | 0.116 | 0.077 | 1,378 | |
| | | | | 9.00 | | 412,268 | | | | | | | | 2,807 | 1,300,796 | 2,911 | 0.210 | 0.165 | 2,278 |
| GCA Box | | | | | | | | | | | | | | | | | | | |
| Approach | 90% N2 | 5 | | 5.00 | 2,307.7 | 192,304 | 7,358 | 3,154,060 | 4,651 | 0.604 | 0.400 | 7,165 | 1,415 | 606,539 | 0.894 | 0.116 | 0.077 | 1,378 | |
| Climb out | 101.8% N2 | 2 | | 2.00 | 4,997.0 | 166,566 | 3,003 | 3,161,841 | 11,161 | 0.154 | 0.400 | 2,840 | 0.500 | 526,655 | 1,859 | 0.026 | 0.067 | 0.473 | |
| Level Flight (<3,000 ft. AGL) | 80% N2 | 10 | | 10.00 | 1,154.6 | 192,436 | 34,249 | 3,106,689 | 1,859 | 2,847 | 0.400 | 8,443 | 6,591 | 597,839 | 0.358 | 0.548 | 0.077 | 1,625 | |
| | | | | 17.00 | | 551,306 | | | | | | | | 8,506 | 1,731,033 | 3,111 | 0.690 | 0.221 | 3,476 |

Note:

1. CO = Carbon Monoxide; NO_x = Nitrogen Oxides; HC = Hydrocarbons (also called Volatile Organic Compounds, VOCs); SO₂ = Sulfur Dioxide; PM10 = Particulate Matter less than 10 microns.

All PM from turbine engines is smaller than 2.5 microns, therefore the values for PM10 are the same as the values for PM2.5.

2. FCLP = Field Carrier Landing Practice; GCA = Ground Controlled Approach; AGL = Above Ground Level

3. A carrier break begins at an altitude 300' lower than a regular break, but is essentially the same as a regular break approach. Therefore emissions are assumed to be the same.

4. Hold down departures are not done at NAS Meridian.

5. The SO₂ emission index of 0.40 lbs/1,000 lbs JP-5 is from AESO Report 6-90. The EPA uses a SO₂ emission index of 0.54 lbs/1000 lbs.

6. Emission indexes and fuel flow for the Gas Turbine Starter (GTS or APU) are not available. Data for the GTC36-200 from AESO Memo Report 2003-09 are substituted.

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|---|---------------|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Desalination Compressor Washing (water wash) | | | | | | | | | | | | | | | | | | |
| APU Use | On | 1.90 | 1 | 1.00 | 197.0 | 6.3 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.013 | 19.825 | 0.039 | 0.002 | 0.003 | 0.001 |
| Main eng start | 55% N2 | 1.90 | 1 | 2.00 | 498.1 | 31.6 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 4.782 | 86.888 | 0.009 | 1.076 | 0.013 | 0.283 |
| Close bleed valve | 65% N2 | 1.90 | 1 | 0.50 | 568.8 | 9.0 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 1.059 | 25.987 | 0.004 | 0.188 | 0.004 | 0.080 |
| Water wash | 55% N2 | 1.90 | 1 | 5.00 | 498.1 | 79.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 11.955 | 217.221 | 0.021 | 2.690 | 0.032 | 0.707 |
| Speed increase | 70% N2 | 1.90 | 1 | 5.00 | 697.2 | 110.7 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 9.771 | 328.972 | 0.083 | 1.369 | 0.044 | 0.975 |
| Cool down, stabilize | 55% N2 | 1.90 | 1 | 1.00 | 498.1 | 15.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.391 | 43.444 | 0.004 | 0.538 | 0.006 | 0.141 |
| Desalination Compressor Washing Totals | | | | 252.46 | | | | | | | | | 29.971 | 722.338 | 0.161 | 5.862 | 0.101 | 2.188 |
| Performance Recovery Wash | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.24 | 1 | 1.00 | 197.0 | 0.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.002 | 2.478 | 0.005 | 0.000 | 0.000 | 0.000 |
| Main eng start | 55% N2 | 0.24 | 1 | 2.00 | 498.1 | 4.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.598 | 10.861 | 0.001 | 0.134 | 0.002 | 0.035 |
| Close bleed valve | 65% N2 | 0.24 | 1 | 0.50 | 568.8 | 1.1 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.132 | 3.248 | 0.001 | 0.024 | 0.000 | 0.010 |
| Solution wash | 55% N2 | 0.24 | 1 | 4.66 | 498.1 | 9.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.393 | 25.306 | 0.002 | 0.313 | 0.004 | 0.082 |
| Shut down/10 mins soak | Off | 0.24 | 0 | 10.00 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| APU Use | On | 0.24 | 1 | 1.00 | 197.0 | 0.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.002 | 2.478 | 0.005 | 0.000 | 0.000 | 0.000 |
| Main eng start | 55% N2 | 0.24 | 1 | 2.00 | 498.1 | 4.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.598 | 10.861 | 0.001 | 0.134 | 0.002 | 0.035 |
| Close bleed valve | 65% N2 | 0.24 | 1 | 0.50 | 568.8 | 1.1 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.132 | 3.248 | 0.001 | 0.024 | 0.000 | 0.010 |
| Water wash | 55% N2 | 0.24 | 1 | 7.00 | 498.1 | 13.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.092 | 38.014 | 0.004 | 0.471 | 0.006 | 0.124 |
| Speed increase | 70% N2 | 0.24 | 1 | 5.00 | 697.2 | 13.8 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 1.221 | 41.122 | 0.010 | 0.171 | 0.006 | 0.122 |
| Cool down, stabilize | 55% N2 | 0.24 | 1 | 1.00 | 498.1 | 2.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.299 | 5.431 | 0.001 | 0.067 | 0.001 | 0.018 |
| Performance Recovery Wash Totals | | | | 50.58 | | | | | | | | | 6.469 | 143.047 | 0.030 | 1.339 | 0.020 | 0.437 |
| Engine Control Amplifier Test Set (ECATS) Run | | | | | | | | | | | | | | | | | | |
| <u>Engine prestart tests</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| APU (Dry Motor) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| Main eng start/scan | 55% N2 | 1.86 | 1 | 4.00 | 498.1 | 61.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 9.325 | 169.425 | 0.017 | 2.098 | 0.025 | 0.551 |
| Close bleed valve/scan | 65% N2 | 1.86 | 1 | 4.00 | 568.8 | 70.4 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 8.256 | 202.689 | 0.034 | 1.467 | 0.028 | 0.626 |
| <u>Vibration test</u> | | | | | | | | | | | | | | | | | | |
| Record vibes | 65% N2 | 1.86 | 1 | 0.50 | 568.8 | 8.8 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 1.032 | 25.336 | 0.004 | 0.183 | 0.004 | 0.078 |
| Record vibes | 70% N2 | 1.86 | 1 | 0.50 | 697.2 | 10.8 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.953 | 32.073 | 0.008 | 0.133 | 0.004 | 0.095 |
| Record vibes | 80% N2 | 1.86 | 1 | 0.50 | 1,154.6 | 17.9 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.612 | 55.512 | 0.033 | 0.051 | 0.007 | 0.151 |
| Stabilize & Scan | 95% N2 | 1.86 | 1 | 4.00 | 3,340.5 | 413.6 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 1.724 | 1,306.797 | 2.957 | 0.112 | 0.165 | 2.356 |
| <u>Maximum operating condition test</u> | | | | | | | | | | | | | | | | | | |
| MRT & Scan & Stabilize | 102% N2 | 1.86 | 1 | 5.00 | 4,997.0 | 773.3 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 2.322 | 2,445.129 | 8.631 | 0.119 | 0.309 | 2.196 |
| Ground Idle | 55% N2 | 1.86 | 1 | 2.00 | 498.1 | 30.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 4.662 | 84.713 | 0.008 | 1.049 | 0.012 | 0.276 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|-------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| <u>Engine installed performance check</u> | | | | | | | | | | | | | | | | | | |
| Install different ECATS | 55% N2 | 1.86 | 1 | 4.00 | 498.1 | 61.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 9.325 | 169.425 | 0.017 | 2.098 | 0.025 | 0.551 |
| 95% N1, stabilize, scan | 98% N2 | 1.86 | 1 | 4.00 | 4,074.4 | 504.4 | 3.56 | 3,160.98 | 8.93 | 0.18 | 0.40 | 4.50 | 1.797 | 1,594.513 | 4.503 | 0.089 | 0.202 | 2.271 |
| Ground Idle | 55% N2 | 1.86 | 1 | 2.00 | 498.1 | 30.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 4.662 | 84.713 | 0.008 | 1.049 | 0.012 | 0.276 |
| <u>Idle rpm test</u> | | | | | | | | | | | | | | | | | | |
| Warm up | 80% N2 | 1.86 | 1 | 2.00 | 1,154.6 | 71.5 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 2.448 | 222.049 | 0.133 | 0.203 | 0.029 | 0.603 |
| Stabilize & Scan | 55% N2 | 1.86 | 1 | 4.00 | 498.1 | 61.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 9.325 | 169.425 | 0.017 | 2.098 | 0.025 | 0.551 |
| <u>Acceleration and decel tests</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 |
| MRT | 102% N2 | 1.86 | 1 | 0.50 | 4,997.0 | 77.3 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.232 | 244.513 | 0.863 | 0.012 | 0.031 | 0.220 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.00 | 498.1 | 46.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 6.994 | 127.069 | 0.012 | 1.573 | 0.019 | 0.413 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 0.50 | 4,997.0 | 77.3 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.232 | 244.513 | 0.863 | 0.012 | 0.031 | 0.220 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.00 | 498.1 | 46.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 6.994 | 127.069 | 0.012 | 1.573 | 0.019 | 0.413 |
| Slam to MRT & scan | 102% N2 | 1.86 | 1 | 2.00 | 4,997.0 | 309.3 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.929 | 978.052 | 3.452 | 0.048 | 0.124 | 0.879 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.50 | 498.1 | 54.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.159 | 148.247 | 0.015 | 1.836 | 0.022 | 0.482 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 1.00 | 4,997.0 | 154.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.464 | 489.026 | 1.726 | 0.024 | 0.062 | 0.439 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.50 | 498.1 | 54.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.159 | 148.247 | 0.015 | 1.836 | 0.022 | 0.482 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 1.50 | 4,997.0 | 232.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.697 | 733.539 | 2.589 | 0.036 | 0.093 | 0.659 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.50 | 498.1 | 54.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.159 | 148.247 | 0.015 | 1.836 | 0.022 | 0.482 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 1.00 | 4,997.0 | 154.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.464 | 489.026 | 1.726 | 0.024 | 0.062 | 0.439 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.50 | 498.1 | 54.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.159 | 148.247 | 0.015 | 1.836 | 0.022 | 0.482 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 1.50 | 4,997.0 | 232.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.697 | 733.539 | 2.589 | 0.036 | 0.093 | 0.659 |
| Ground Idle | 55% N2 | 1.86 | 1 | 3.50 | 498.1 | 54.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.159 | 148.247 | 0.015 | 1.836 | 0.022 | 0.482 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 0.50 | 4,997.0 | 77.3 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.232 | 244.513 | 0.863 | 0.012 | 0.031 | 0.220 |
| Slam to Ground Idle | 55% N2 | 1.86 | 1 | 0.25 | 498.1 | 3.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.583 | 10.589 | 0.001 | 0.131 | 0.002 | 0.034 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 0.25 | 4,997.0 | 38.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.116 | 122.256 | 0.432 | 0.006 | 0.015 | 0.110 |
| Throttle back | 70% N2 | 1.86 | 1 | 1.00 | 697.2 | 21.6 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 1.905 | 64.147 | 0.016 | 0.267 | 0.009 | 0.190 |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 1.86 | 1 | 1.00 | 697.2 | 21.6 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 1.905 | 64.147 | 0.016 | 0.267 | 0.009 | 0.190 |
| Switch to Manual FC | 64% N2 | 1.86 | 1 | 0.50 | 570.7 | 8.8 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 1.082 | 25.254 | 0.004 | 0.200 | 0.004 | 0.079 |
| Throttle up | 92% N2 | 1.86 | 1 | 0.25 | 2,681.8 | 20.8 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 | 0.115 | 65.516 | 0.115 | 0.009 | 0.008 | 0.138 |
| Throttle back | 55% N2 | 1.86 | 1 | 0.25 | 498.1 | 3.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.583 | 10.589 | 0.001 | 0.131 | 0.002 | 0.034 |
| Throttle up | 65% N2 | 1.86 | 1 | 0.25 | 586.8 | 4.5 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.532 | 13.069 | 0.002 | 0.095 | 0.002 | 0.040 |
| Switch to Normal FC | 65% N3 | 1.86 | 1 | 0.25 | 586.8 | 4.5 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.532 | 13.069 | 0.002 | 0.095 | 0.002 | 0.040 |
| Ground Idle | 55% N2 | 1.86 | 1 | 2.00 | 498.1 | 30.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 4.662 | 84.713 | 0.008 | 1.049 | 0.012 | 0.276 |
| <u>Approach idle - set throttle position</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 85% N2 | 1.86 | 1 | 0.08 | 1,601.9 | 4.1 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.069 | 12.969 | 0.012 | 0.005 | 0.002 | 0.033 |
| Throttle back - Approach | 75% N2 | 1.86 | 1 | 0.25 | 874.1 | 6.8 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.400 | 20.641 | 0.008 | 0.042 | 0.003 | 0.059 |
| Ground Idle | 55% N2 | 1.86 | 1 | 0.25 | 498.1 | 3.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.583 | 10.589 | 0.001 | 0.131 | 0.002 | 0.034 |
| <u>Hot engine reslam acceleration tests</u> | | | | | | | | | | | | | | | | | | |
| MRT | 102% N2 | 1.86 | 1 | 0.25 | 4,997.0 | 38.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.116 | 122.256 | 0.432 | 0.006 | 0.015 | 0.110 |
| Slam to Approach Idle | 75% N2 | 1.86 | 1 | 0.08 | 874.1 | 2.3 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.133 | 6.880 | 0.003 | 0.014 | 0.001 | 0.020 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Slam to MRT | 102% N2 | 1.86 | 1 | 3.00 | 4,997.0 | 464.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 1.393 | 1,467.077 | 5.179 | 0.071 | 0.186 | 1.318 |
| Slam to Approach Idle | 75% N2 | 1.86 | 1 | 0.08 | 874.1 | 2.3 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.133 | 6.880 | 0.003 | 0.014 | 0.001 | 0.020 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 3.00 | 4,997.0 | 464.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 1.393 | 1,467.077 | 5.179 | 0.071 | 0.186 | 1.318 |
| Slam to Approach Idle | 75% N2 | 1.86 | 1 | 0.08 | 874.1 | 2.3 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.133 | 6.880 | 0.003 | 0.014 | 0.001 | 0.020 |
| Slam to MRT | 102% N2 | 1.86 | 1 | 0.25 | 4,997.0 | 38.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.116 | 122.256 | 0.432 | 0.006 | 0.015 | 0.110 |
| Throttle back - Approach | 75% N2 | 1.86 | 1 | 0.25 | 874.1 | 6.8 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.400 | 20.641 | 0.008 | 0.042 | 0.003 | 0.059 |
| Ground Idle - Cool down | 55% N2 | 1.86 | 1 | 3.00 | 498.1 | 46.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 6.994 | 127.069 | 0.012 | 1.573 | 0.019 | 0.413 |
| <u>Second engine run</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| APU (Dry Motor) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| APU Use | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| Main eng start | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 |
| Close bleed valve | 65% N2 | 1.86 | 1 | 1.00 | 568.8 | 17.6 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 2.064 | 50.672 | 0.008 | 0.367 | 0.007 | 0.157 |
| Ground Idle | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 |
| <u>Hydraulic and flying controls test</u> | | | | | | | | | | | | | | | | | | |
| GI, verify RAT | 55% N2 | 1.86 | 1 | 2.00 | 498.1 | 30.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 4.662 | 84.713 | 0.008 | 1.049 | 0.012 | 0.276 |
| <u>Cabin air conditioning test</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 1.86 | 1 | 0.25 | 498.1 | 3.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.583 | 10.589 | 0.001 | 0.131 | 0.002 | 0.034 |
| <u>Fuel suction feed/electrical tests</u> | | | | | | | | | | | | | | | | | | |
| WOW targets, GEN off | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 |
| Throttle up | 90% N2 | 1.86 | 1 | 0.25 | 2,307.7 | 17.9 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.131 | 56.320 | 0.083 | 0.011 | 0.007 | 0.128 |
| GI, GEN reset | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 |
| <u>Approach idle setting test</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 85% N2 | 1.86 | 1 | 0.25 | 1,601.9 | 12.4 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.207 | 38.907 | 0.036 | 0.016 | 0.005 | 0.099 |
| Verify approach idle stop | 75% N2 | 1.86 | 1 | 0.50 | 874.1 | 13.5 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.800 | 41.282 | 0.016 | 0.085 | 0.005 | 0.117 |
| GI, verify finger lift | 55% N2 | 1.86 | 1 | 0.25 | 498.1 | 3.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.583 | 10.589 | 0.001 | 0.131 | 0.002 | 0.034 |
| <u>Engine stopping</u> | | | | | | | | | | | | | | | | | | |
| Cool/shtdown | 55% N2 | 1.86 | 1 | 3.00 | 498.1 | 46.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 6.994 | 127.069 | 0.012 | 1.573 | 0.019 | 0.413 |
| <u>Engine final run</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| APU (Dry Motor) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 |
| GI, leak checks | 55% N2 | 1.86 | 1 | 3.00 | 498.1 | 46.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 6.994 | 127.069 | 0.012 | 1.573 | 0.019 | 0.413 |
| Full ECATS Test - Totals | | | | | | 5065.5 | | | | | | | 164.97 | 15610.30 | 40.91 | 33.22 | 2.03 | 23.43 |
| Adour engine control amplifier (ECA) and vibration test set (UNICATS) Run | | | | | | | | | | | | | | | | | | |
| <u>Engine prestart tests</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| <u>Starting and operation at idle condition</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.89 | 1 | | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|-------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Main eng start | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Close bleed valve | 65% N2 | 0.89 | 1 | 5.00 | 568.8 | 42.3 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 4.962 | 121.817 | 0.020 | 0.882 | 0.017 | 0.376 |
| <u>Vibration test</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle, record vibes | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Throttle up, record vibes | 65% N2 | 0.89 | 1 | 0.50 | 568.8 | 4.2 | 117.24 | 2878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.496 | 12.182 | 0.002 | 0.088 | 0.002 | 0.038 |
| Throttle up, record vibes | 70% N2 | 0.89 | 1 | 0.50 | 697.2 | 5.2 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.458 | 15.421 | 0.004 | 0.064 | 0.002 | 0.046 |
| Throttle up, record vibes | 80% N2 | 0.89 | 1 | 0.50 | 1,154.6 | 8.6 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.294 | 26.691 | 0.016 | 0.024 | 0.003 | 0.073 |
| Throttle up, record vibes | 95% N2 | 0.89 | 1 | 1.00 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Maximum operating condition test</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 0.89 | 1 | 4.00 | 4,997.0 | 297.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.893 | 940.501 | 3.320 | 0.046 | 0.119 | 0.845 |
| <u>ECA dynamic safety tests</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 |
| <u>Engine installed performance check</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| 95% N1 (NL) | 98% N2 | 0.89 | 1 | 4.00 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| <u>Idle rpm test</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 5.00 | 498.1 | 37.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.604 | 101.825 | 0.010 | 1.261 | 0.015 | 0.331 |
| <u>Acceleration and deceleration tests</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 2.00 | 4,997.0 | 148.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.447 | 470.251 | 1.660 | 0.023 | 0.059 | 0.422 |
| Ground Idle | 55% N2 | 0.89 | 1 | 5.00 | 498.1 | 37.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.604 | 101.825 | 0.010 | 1.261 | 0.015 | 0.331 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 2.00 | 4,997.0 | 148.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.447 | 470.251 | 1.660 | 0.023 | 0.059 | 0.422 |
| Slam to Idle | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.25 | 4,997.0 | 18.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.056 | 58.781 | 0.207 | 0.003 | 0.007 | 0.053 |
| Throttle down | 70% N2 | 0.89 | 1 | 0.50 | 697.2 | 5.2 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.458 | 15.421 | 0.004 | 0.064 | 0.002 | 0.046 |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 0.89 | 1 | 1.00 | 697.2 | 10.4 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.916 | 30.842 | 0.008 | 0.128 | 0.004 | 0.091 |
| Switch to Manual FC | 64% N2 | 0.89 | 1 | 0.50 | 570.7 | 4.2 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 0.520 | 12.142 | 0.002 | 0.096 | 0.002 | 0.038 |
| Throttle up | 92% N2 | 0.89 | 1 | 0.25 | 2,681.8 | 10.0 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 | 0.055 | 31.500 | 0.055 | 0.004 | 0.004 | 0.066 |
| Ground Idle | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|-------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Throttle up | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 |
| Switch to Normal FC | 65% N3 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 |
| Ground Idle | 55% N2 | 0.89 | 1 | 2.00 | 498.1 | 14.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.242 | 40.730 | 0.004 | 0.504 | 0.006 | 0.133 |
| <u>Approach idle - throttle position</u> | | | | | | | | | | | | | | | | | | |
| Install WOW targets | 55% N2 | 0.89 | 1 | 2.00 | 498.1 | 14.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.242 | 40.730 | 0.004 | 0.504 | 0.006 | 0.133 |
| Throttle up | 85% N2 | 0.89 | 1 | 0.25 | 1,601.9 | 6.0 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.100 | 18.706 | 0.018 | 0.008 | 0.002 | 0.048 |
| Throttle down | 75% N2 | 0.89 | 1 | 0.50 | 874.1 | 6.5 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.385 | 19.849 | 0.008 | 0.041 | 0.003 | 0.056 |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| <u>Hot engine reslam acceleration tests</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 0.25 | 4,997.0 | 18.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.056 | 58.781 | 0.207 | 0.003 | 0.007 | 0.053 |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 |
| Approach & remove targets | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 |
| <u>Engine shutdown</u> | | | | | | | | | | | | | | | | | | |
| Cool down, verify RAT | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| <u>Engine second run</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU Use | On | 0.89 | 1 | | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | | | | | | |
| Main eng start | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Close bleed valve | 65% N2 | 0.89 | 1 | 5.00 | 586.8 | 43.7 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 5.119 | 125.672 | 0.021 | 0.910 | 0.017 | 0.388 |
| <u>Hydraulic and flying controls test</u> | | | | | | | | | | | | | | | | | | |
| GI, verify RAT | 55% N2 | 0.89 | 1 | 2.00 | 498.1 | 14.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.242 | 40.730 | 0.004 | 0.504 | 0.006 | 0.133 |
| <u>Cabin air conditioning test</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 |
| <u>Fuel suction feed/electrical tests</u> | | | | | | | | | | | | | | | | | | |
| WOW targets, GEN off | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Throttle up | 90% N2 | 0.89 | 1 | 0.25 | 2,307.7 | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| GI, GEN reset | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| <u>Approach idle setting test</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 85% N2 | 0.89 | 1 | 0.25 | 1,601.9 | 6.0 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.100 | 18.706 | 0.018 | 0.008 | 0.002 | 0.048 |
| Verify approach idle stop | 75% N2 | 0.89 | 1 | 0.50 | 874.1 | 6.5 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.385 | 19.849 | 0.008 | 0.041 | 0.003 | 0.056 |
| GI, finger lift, rem targets | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 |
| <u>Engine stopping</u> | | | | | | | | | | | | | | | | | | |
| Cool/shtdown | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|---|---------------|-----------------|-----------------|---------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| <u>Engine final run</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| GI, leak checks | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Full UNICATS Test - Totals | | | | | 2225.8 | | | | | | | | 80.074 | 6838.851 | 18.680 | 16.173 | 0.890 | 9.713 |
| Ground Running Tests Using FADEC (Full Authority Digital Engine [or Electronics] Control) Test Set - F405-RR-402 Engine | | | | | | | | | | | | | | | | | | |
| <u>Engine prestart tests</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 2.38 | 1 | 1.00 | 197.0 | 7.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.016 | 24.782 | 0.049 | 0.002 | 0.003 | 0.002 |
| APU (Dry Motor) | On | 2.38 | 1 | 1.00 | 197.0 | 7.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.016 | 24.782 | 0.049 | 0.002 | 0.003 | 0.002 |
| GI, record data, leak checks | 55% N2 | 2.38 | 1 | 5.00 | 498.1 | 98.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 14.944 | 271.526 | 0.027 | 3.362 | 0.040 | 0.884 |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 2.38 | 1 | 2.00 | 498.1 | 39.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.978 | 108.611 | 0.011 | 1.345 | 0.016 | 0.353 |
| Throttle up | 60% N2 | 2.38 | 1 | 2.00 | 523.0 | 41.5 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 5.827 | 115.864 | 0.014 | 1.221 | 0.017 | 0.371 |
| Throttle up | 65% N2 | 2.38 | 1 | 2.00 | 586.8 | 46.6 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 5.460 | 134.046 | 0.023 | 0.970 | 0.019 | 0.414 |
| Throttle up | 70% N2 | 2.38 | 1 | 2.00 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 80% N2 | 2.38 | 1 | 2.00 | 1,154.6 | 91.6 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 3.138 | 284.691 | 0.170 | 0.261 | 0.037 | 0.774 |
| Throttle up | 95% N2 | 2.38 | 1 | 2.00 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 102% N2 | 2.38 | 1 | 3.00 | 4,997.0 | 594.9 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 1.786 | 1,880.949 | 6.640 | 0.092 | 0.238 | 1.690 |
| GI | 55% N2 | 2.38 | 1 | 3.00 | 498.1 | 59.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.967 | 162.916 | 0.016 | 2.017 | 0.024 | 0.530 |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 2.38 | 1 | 0.50 | 498.1 | 9.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.494 | 27.153 | 0.003 | 0.336 | 0.004 | 0.088 |
| Slam to MRT | 102% N2 | 2.38 | 1 | 0.25 | 4,997.0 | 49.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.149 | 156.746 | 0.553 | 0.008 | 0.020 | 0.141 |
| Slam to GI | 55% N2 | 2.38 | 1 | 0.25 | 498.1 | 4.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.747 | 13.576 | 0.001 | 0.168 | 0.002 | 0.044 |
| <u>Manual fuel control (MFC)</u> | | | | | | | | | | | | | | | | | | |
| Throttle up, FC to M | 70% N2 | 2.38 | 1 | 0.25 | 697.2 | 6.9 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.611 | 20.561 | 0.005 | 0.086 | 0.003 | 0.061 |
| Throttle down, scan | 55% N2 | 2.38 | 1 | 1.00 | 498.1 | 19.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.989 | 54.305 | 0.005 | 0.672 | 0.008 | 0.177 |
| Manual throttle up, scan | 96% N2 | 2.38 | 1 | 1.00 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle down, FC to NORM | 70% N2 | 2.38 | 1 | 0.25 | 697.2 | 6.9 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.611 | 20.561 | 0.005 | 0.086 | 0.003 | 0.061 |
| GI | 55% N2 | 2.38 | 1 | 1.00 | 498.1 | 19.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.989 | 54.305 | 0.005 | 0.672 | 0.008 | 0.177 |
| <u>Approach idle - throttle position</u> | | | | | | | | | | | | | | | | | | |
| Install WOW targets | 55% N2 | 2.38 | 1 | 2.00 | 498.1 | 39.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.978 | 108.611 | 0.011 | 1.345 | 0.016 | 0.353 |
| Throttle up | 85% N2 | 2.38 | 1 | 0.08 | 1,601.9 | 5.3 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.088 | 16.628 | 0.016 | 0.007 | 0.002 | 0.042 |
| Throttle down, mark tape | 75% N2 | 2.38 | 1 | 1.00 | 874.1 | 34.7 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 2.051 | 105.857 | 0.041 | 0.218 | 0.014 | 0.301 |
| <u>Engine slam/reslam tests</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 2.38 | 1 | 0.25 | 4,997.0 | 49.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.149 | 156.746 | 0.553 | 0.008 | 0.020 | 0.141 |
| Slam to idle | 55% N2 | 2.38 | 1 | 0.08 | 498.1 | 1.6 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.249 | 4.525 | 0.000 | 0.056 | 0.001 | 0.015 |
| Slam to MRT | 102% N2 | 2.38 | 1 | 0.25 | 4,997.0 | 49.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.149 | 156.746 | 0.553 | 0.008 | 0.020 | 0.141 |
| Slam to idle | 55% N2 | 2.38 | 1 | 0.17 | 498.1 | 3.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.498 | 9.051 | 0.001 | 0.112 | 0.001 | 0.029 |
| Slam to MRT | 102% N2 | 2.38 | 1 | 0.08 | 4,997.0 | 16.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.050 | 52.249 | 0.184 | 0.003 | 0.007 | 0.047 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|---------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | |
| Slam to idle | 55% N2 | 2.38 | 1 | 1.00 | 498.1 | 19.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.989 | 54.305 | 0.005 | 0.672 | 0.008 | 0.177 | |
| <u>Engine shutdown</u> | | | | | | | | | | | | | | | | | | | |
| GI, leak check, rundown | 55% N2 | 2.38 | 1 | 3.00 | 498.1 | 59.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.967 | 162.916 | 0.016 | 2.017 | 0.024 | 0.530 | |
| <u>Engine second run</u> | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 2.38 | 1 | 1.00 | 197.0 | 7.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.016 | 24.782 | 0.049 | 0.002 | 0.003 | 0.002 | |
| APU (Dry Motor) | On | 2.38 | 1 | 1.00 | 197.0 | 7.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.016 | 24.782 | 0.049 | 0.002 | 0.003 | 0.002 | |
| GI, record data, leak checks | 55% N2 | 2.38 | 1 | 5.00 | 498.1 | 98.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 14.944 | 271.526 | 0.027 | 3.362 | 0.040 | 0.884 | |
| Close bleed valve | 65% N2 | 2.38 | 1 | 0.25 | 586.8 | 5.8 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.683 | 16.756 | 0.003 | 0.121 | 0.002 | 0.052 | |
| <u>Hydraulic and flying controls test</u> | | | | | | | | | | | | | | | | | | | |
| GI, verify RAT | 55% N2 | 2.38 | 1 | 2.00 | 498.1 | 39.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.978 | 108.611 | 0.011 | 1.345 | 0.016 | 0.353 | |
| <u>Engine air supplies: cabin air conditioning flow</u> | | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 2.38 | 1 | 0.25 | 498.1 | 4.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.747 | 13.576 | 0.001 | 0.168 | 0.002 | 0.044 | |
| <u>Fuel suction feed/electrical tests</u> | | | | | | | | | | | | | | | | | | | |
| WOW targets, GEN off | 55% N2 | 2.38 | 1 | 1.00 | 498.1 | 19.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.989 | 54.305 | 0.005 | 0.672 | 0.008 | 0.177 | |
| Throttle up | 90% N2 | 2.38 | 1 | 0.25 | 2,307.7 | 22.9 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.168 | 72.208 | 0.106 | 0.014 | 0.009 | 0.164 | |
| GI, GEN reset | 55% N2 | 2.38 | 1 | 1.00 | 498.1 | 19.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.989 | 54.305 | 0.005 | 0.672 | 0.008 | 0.177 | |
| <u>Approach idle setting test</u> | | | | | | | | | | | | | | | | | | | |
| Throttle up | 85% N2 | 2.38 | 1 | 0.25 | 1,601.9 | 15.9 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.265 | 49.883 | 0.047 | 0.020 | 0.006 | 0.127 | |
| Verify approach idle stop | 75% N2 | 2.38 | 1 | 0.50 | 874.1 | 17.3 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 1.025 | 52.929 | 0.020 | 0.109 | 0.007 | 0.151 | |
| GI, finger lift, rem targets | 55% N2 | 2.38 | 1 | 0.25 | 498.1 | 4.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.747 | 13.576 | 0.001 | 0.168 | 0.002 | 0.044 | |
| <u>Engine stopping</u> | | | | | | | | | | | | | | | | | | | |
| Cool/shutdown, RAT | 55% N2 | 2.38 | 1 | 3.00 | 498.1 | 59.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.967 | 162.916 | 0.016 | 2.017 | 0.024 | 0.530 | |
| <u>Engine final run</u> | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 2.38 | 1 | 1.00 | 197.0 | 7.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.016 | 24.782 | 0.049 | 0.002 | 0.003 | 0.002 | |
| APU (Dry Motor) | On | 2.38 | 1 | 1.00 | 197.0 | 7.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.016 | 24.782 | 0.049 | 0.002 | 0.003 | 0.002 | |
| GI, leak checks | 55% N2 | 2.38 | 1 | 3.00 | 498.1 | 59.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 8.967 | 162.916 | 0.016 | 2.017 | 0.024 | 0.530 | |
| Full FADEC Test - Totals | | | | | | 1784.5 | | | | | | | | 125.420 | 5315.640 | 9.411 | 26.441 | 0.714 | 10.783 |
| Engine Performance Adjustments (SIFCU and FCU) - F405-RR-401 Engine | | | | | | | | | | | | | | | | | | | |
| <u>Ground idle speed setting</u> | | | | | | | | | | | | | | | | | | | |
| Ground Idle, warm up | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Close bleed valve | 80% N2 | 0.89 | 1 | 0.25 | 1,154.6 | 4.3 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.147 | 13.345 | 0.008 | 0.012 | 0.002 | 0.036 | |
| Ground Idle, stabilize | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Adj SIFCU/FCU, shut down | 55% N2 | 0.89 | 1 | 10.00 | 498.1 | 74.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 11.209 | 203.650 | 0.020 | 2.522 | 0.030 | 0.663 | |
| Dry motor (GTS) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | | | | | | | |
| Start engine (GTS) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | |
| Start engine | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | |
| Throttle up, close bleed | 80% N2 | 0.89 | 1 | 0.25 | 1,154.6 | 4.3 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.147 | 13.345 | 0.008 | 0.012 | 0.002 | 0.036 | |
| GI, stabilize, shut down | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| SIFCU/FCU (Idle) Adjustments - Totals | | | | | | 162.7 | | | | | | | | 22.717 | 443.285 | 0.074 | 5.069 | 0.064 | 1.399 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|--------------|--|--|--|--|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | | | | | |
| Oil Consumption Test Run | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Engine prerun test</u> | | | | | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | | | | | |
| APU (Dry Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | | | | | |
| Engine start (GTS) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | | | | | |
| Engine start | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 | | | | | |
| Throttle up | 90% N2 | 0.12 | 1 | 2.00 | 2,307.7 | 9.2 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.067 | 28.871 | 0.043 | 0.006 | 0.004 | 0.066 | | | | | |
| GI, shutdown, fill oil | 55% N2 | 0.12 | 1 | 4.00 | 498.1 | 4.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.598 | 10.856 | 0.001 | 0.134 | 0.002 | 0.035 | | | | | |
| <u>Oil consumption run</u> | | | | | | | | | | | | | | | | | | | | | | | |
| Engine start (GTS) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | | | | | |
| Engine start | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 | | | | | |
| Throttle up | 65% N2 | 0.12 | 1 | 10.00 | 586.8 | 11.6 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 1.364 | 33.497 | 0.006 | 0.242 | 0.005 | 0.103 | | | | | |
| Throttle up | 75% N2 | 0.12 | 1 | 10.00 | 874.1 | 17.3 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 1.025 | 52.906 | 0.020 | 0.109 | 0.007 | 0.151 | | | | | |
| Throttle up | 85% N2 | 0.12 | 1 | 10.00 | 1,601.9 | 31.8 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.531 | 99.723 | 0.093 | 0.041 | 0.013 | 0.254 | | | | | |
| Throttle up | 95% N2 | 0.12 | 1 | 10.00 | 3,340.5 | 66.3 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.276 | 209.344 | 0.474 | 0.018 | 0.027 | 0.378 | | | | | |
| Throttle up | 90% N2 | 0.12 | 1 | 10.00 | 2,307.7 | 45.8 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.337 | 144.356 | 0.213 | 0.028 | 0.018 | 0.328 | | | | | |
| Throttle up | 102% N2 | 0.12 | 1 | 10.00 | 4,997.0 | 99.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.298 | 313.360 | 1.106 | 0.015 | 0.040 | 0.281 | | | | | |
| Throttle down | 80% N2 | 0.12 | 1 | 4.00 | 1,154.6 | 9.2 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.314 | 28.457 | 0.017 | 0.026 | 0.004 | 0.077 | | | | | |
| Cool/shut down, check oil | 55% N2 | 0.12 | 1 | 4.00 | 498.1 | 4.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.598 | 10.856 | 0.001 | 0.134 | 0.002 | 0.035 | | | | | |
| Oil Consumption Test Run - Totals | | | | | | | 301.6 | | | | | | | 5.709 | 942.611 | 1.984 | 0.821 | 0.121 | 1.727 | | | | |
| Test After Component Change - Air System | | | | | | | | | | | | | | | | | | | | | | | |
| Engine start (GTS) | On | 0.60 | 1 | 1.00 | 197.0 | 2.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.004 | 6.195 | 0.012 | 0.000 | 0.001 | 0.000 | | | | | |
| Engine start | 55% N2 | 0.60 | 1 | 0.50 | 498.1 | 2.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.374 | 6.788 | 0.001 | 0.084 | 0.001 | 0.022 | | | | | |
| Throttle up, close bleed | 65% N2 | 0.60 | 1 | 0.25 | 586.8 | 1.5 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.171 | 4.189 | 0.001 | 0.030 | 0.001 | 0.013 | | | | | |
| GI, leak check, shutdown | 55% N2 | 0.60 | 1 | 5.00 | 498.1 | 24.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.736 | 67.876 | 0.007 | 0.840 | 0.010 | 0.221 | | | | | |
| Component Change - Air System Test Run - Totals | | | | | | | 30.6 | | | | | | | 4.284 | 85.047 | 0.020 | 0.955 | 0.012 | 0.256 | | | | |
| Test After Component Change - Engine Control Amplifier Test -401 Engine | | | | | | | | | | | | | | | | | | | | | | | |
| Engine start (GTS) | On | 1.86 | 1 | 1.00 | 197.0 | 6.1 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.012 | 19.329 | 0.038 | 0.002 | 0.002 | 0.001 | | | | | |
| Engine start | 55% N2 | 1.86 | 1 | 0.50 | 498.1 | 7.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.166 | 21.178 | 0.002 | 0.262 | 0.003 | 0.069 | | | | | |
| Throttle up, close bleed | 65% N2 | 1.86 | 1 | 0.25 | 586.8 | 4.5 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.532 | 13.069 | 0.002 | 0.095 | 0.002 | 0.040 | | | | | |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|---------------|-----------------|------------------|--------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | |
| <u>Engine operation at idle condition</u> | | | | | | | | | | | | | | | | | | | |
| Check ground idle | 55% N2 | 1.86 | 1 | 4.00 | 498.1 | 61.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 9.325 | 169.425 | 0.017 | 2.098 | 0.025 | 0.551 | |
| <u>Maximum operating condition test</u> | | | | | | | | | | | | | | | | | | | |
| MRT | 102% N2 | 1.86 | 1 | 4.00 | 4,997.0 | 618.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 1.858 | 1,956.103 | 6.905 | 0.095 | 0.247 | 1.757 | |
| <u>ECA (engine control amplifier) lane failure tests</u> | | | | | | | | | | | | | | | | | | | |
| Ground idle | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 | |
| MRT - scan & record | 102% N2 | 1.86 | 1 | 3.00 | 4,997.0 | 464.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 1.393 | 1,467.077 | 5.179 | 0.071 | 0.186 | 1.318 | |
| MRT - lane 1 fail | 102% N2 | 1.86 | 1 | 1.00 | 4,997.0 | 154.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.464 | 489.026 | 1.726 | 0.024 | 0.062 | 0.439 | |
| MRT - lane 2 fail | 102% N2 | 1.86 | 1 | 1.00 | 4,997.0 | 154.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.464 | 489.026 | 1.726 | 0.024 | 0.062 | 0.439 | |
| MRT - lane 1 fail | 102% N2 | 1.86 | 1 | 1.00 | 4,997.0 | 154.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.464 | 489.026 | 1.726 | 0.024 | 0.062 | 0.439 | |
| Ground idle | 55% N2 | 1.86 | 1 | 1.00 | 498.1 | 15.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.331 | 42.356 | 0.004 | 0.524 | 0.006 | 0.138 | |
| <u>Verify ground idle speed</u> | | | | | | | | | | | | | | | | | | | |
| Stabilize & Scan | 55% N2 | 1.86 | 1 | 4.00 | 498.1 | 61.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 9.325 | 169.425 | 0.017 | 2.098 | 0.025 | 0.551 | |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 1.86 | 1 | 0.50 | 498.1 | 7.7 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.166 | 21.178 | 0.002 | 0.262 | 0.003 | 0.069 | |
| Slam to MRT | 102% N2 | 1.86 | 1 | 0.25 | 4,997.0 | 38.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.116 | 122.256 | 0.432 | 0.006 | 0.015 | 0.110 | |
| Slam to GI, cool down | 55% N2 | 1.86 | 1 | 3.00 | 498.1 | 46.3 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 6.994 | 127.069 | 0.012 | 1.573 | 0.019 | 0.413 | |
| Component Change - Air System Test Run - Totals | | | | | | | 1811.8 | | | | | | | 37.942 | 5637.900 | 17.792 | 7.683 | 0.725 | 6.474 |
| Test After Component Change - Fuel Metering Unit (FMU) Test -402 Engine | | | | | | | | | | | | | | | | | | | |
| Engine start (GTS) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Engine start | 55% N2 | 0.00 | 1 | 0.50 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up, close bleed | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Engine operation at idle condition</u> | | | | | | | | | | | | | | | | | | | |
| Check ground idle | 55% N2 | 0.00 | 1 | 4.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 60% N2 | 0.00 | 1 | 2.00 | 523.0 | 0.0 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 65% N2 | 0.00 | 1 | 2.00 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 70% N2 | 0.00 | 1 | 2.00 | 697.2 | 0.0 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 80% N2 | 0.00 | 1 | 2.00 | 1,154.6 | 0.0 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 95% N2 | 0.00 | 1 | 2.00 | 3,340.5 | 0.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 102% N2 | 0.00 | 1 | 3.00 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| GI | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 0.50 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to GI, cool down | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|---|-------|-----------------|-----------------|--------------|-----------------|------------------|--------------|--|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | | |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 0.00 | 1 | 1.00 | 697.2 | 0.0 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Switch to Manual FC | 64% N2 | 0.00 | 1 | 0.50 | 570.7 | 0.0 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Throttle up | 92% N2 | 0.00 | 1 | 0.25 | 2,681.8 | 0.0 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Ground Idle | 55% N2 | 0.00 | 1 | 0.25 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Throttle up | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Switch to Normal FC | 65% N3 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Ground Idle | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| <u>Engine slam/reslam tests</u> | | | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.08 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.17 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.08 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Slam to idle | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| Component Change - FMU Test -402 Engine - Totals | | | | | | | | 0.0 | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | |
| <u>Test After Component Change - Tailpipe Test</u> | | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.36 | 1 | 1.00 | 197.0 | 1.2 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.002 | 3.717 | 0.007 | 0.000 | 0.000 | 0.000 | | |
| APU (Dry Motor) | On | 0.36 | 1 | 1.00 | 197.0 | 1.2 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.002 | 3.717 | 0.007 | 0.000 | 0.000 | 0.000 | | |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.36 | 1 | 1.00 | 197.0 | 1.2 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.002 | 3.717 | 0.007 | 0.000 | 0.000 | 0.000 | | |
| Main eng start/scan | 55% N2 | 0.36 | 1 | 1.00 | 498.1 | 3.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.448 | 8.145 | 0.001 | 0.101 | 0.001 | 0.027 | | |
| Close bleed valve | 65% N2 | 0.36 | 1 | 0.25 | 586.8 | 0.9 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.102 | 2.513 | 0.000 | 0.018 | 0.000 | 0.008 | | |
| GI, inspect joint for leaks | 55% N2 | 0.36 | 1 | 3.00 | 498.1 | 8.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.345 | 24.434 | 0.002 | 0.303 | 0.004 | 0.080 | | |
| Component Change - Tailpipe Test - Totals | | | | | | | | 16.2 | | | | | | 1.902 | 46.242 | 0.026 | 0.422 | 0.006 | 0.115 | |
| <u>Test After Component Change - Fuel System Component Tests</u> | | | | | | | | | | | | | | | | | | | | |
| <u>Fuel Control Unit (FCU) change -401 eng</u> | | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | | |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | | |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | | |
| Main eng start/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | | |
| Close bleed valve | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 | | |
| Ground idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | | |
| <u>Maximum operating condition test</u> | | | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 4.00 | 4,997.0 | 297.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.893 | 940.501 | 3.320 | 0.046 | 0.119 | 0.845 | | |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|---------------|-----------------|------------------|--------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | |
| <u>ECA dynamic safety tests</u> | | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 | |
| <u>Engine installed performance check</u> | | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | |
| 95% N1 (NL) | 98% N2 | 0.89 | 1 | 4.00 | 4,074.4 | 242.5 | 3.56 | 3,160.98 | 8.93 | 0.18 | 0.40 | 4.50 | 0.864 | 766.647 | 2.165 | 0.043 | 0.097 | 1.092 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | |
| <u>Idle rpm test</u> | | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 5.00 | 498.1 | 37.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.604 | 101.825 | 0.010 | 1.261 | 0.015 | 0.331 | |
| <u>Acceleration and deceleration tests</u> | | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 2.00 | 4,997.0 | 148.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.447 | 470.251 | 1.660 | 0.023 | 0.059 | 0.422 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 5.00 | 498.1 | 37.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.604 | 101.825 | 0.010 | 1.261 | 0.015 | 0.331 | |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 | |
| Slam to max | 102% N2 | 0.89 | 1 | 2.00 | 4,997.0 | 148.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.447 | 470.251 | 1.660 | 0.023 | 0.059 | 0.422 | |
| Slam to Idle | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 | |
| Slam to max | 102% N2 | 0.89 | 1 | 0.25 | 4,997.0 | 18.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.056 | 58.781 | 0.207 | 0.003 | 0.007 | 0.053 | |
| Throttle down | 70% N2 | 0.89 | 1 | 0.50 | 697.2 | 5.2 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.458 | 15.421 | 0.004 | 0.064 | 0.002 | 0.046 | |
| <u>Hot engine reslam acceleration tests</u> | | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 0.25 | 4,997.0 | 18.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.056 | 58.781 | 0.207 | 0.003 | 0.007 | 0.053 | |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 | |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 | |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 | |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 | |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 | |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 | |
| Approach & remove targets | 75% N2 | 0.89 | 1 | 1.00 | 874.1 | 13.0 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.769 | 39.698 | 0.015 | 0.082 | 0.005 | 0.113 | |
| Fuel Control Unit (FCU) change -401 eng Totals | | | | | | | 2127.8 | | | | | | | 40.254 | 6634.287 | 20.562 | 7.885 | 0.851 | 7.885 |
| Fuel LP Warning Switch Change -401 Engine | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | |
| Main eng start/leak check | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 | |
| Close bleed valve | 65% N2 | 0.12 | 1 | 0.25 | 586.8 | 0.3 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.034 | 0.837 | 0.000 | 0.006 | 0.000 | 0.003 | |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|-------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Ground idle | 55% N2 | 0.12 | 1 | 3.00 | 498.1 | 3.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.448 | 8.142 | 0.001 | 0.101 | 0.001 | 0.026 |
| Fuel LP Warning Switch Change -401 Engine Totals | | | | | | 4.6 | | | | | | | 0.632 | 12.932 | 0.004 | 0.141 | 0.002 | 0.038 |
| HP Fuel Pump Change -401 Engine | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| Main eng start/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Close bleed valve | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 |
| Ground idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| <u>Maximum operating condition test</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 101.8% N2 | 0.89 | 1 | 4.00 | 4,997.0 | 297.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.893 | 940.501 | 3.320 | 0.046 | 0.119 | 0.845 |
| <u>Engine installed performance check</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| 95% N1 (NL) | 98% N2 | 0.89 | 1 | 4.00 | 4,074.4 | 242.5 | 3.56 | 3,160.98 | 8.93 | 0.18 | 0.40 | 4.50 | 0.864 | 766.647 | 2.165 | 0.043 | 0.097 | 1.092 |
| Ground Idle | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| <u>Idle rpm test</u> | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.89 | 1 | 5.00 | 498.1 | 37.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.604 | 101.825 | 0.010 | 1.261 | 0.015 | 0.331 |
| <u>Acceleration and deceleration tests</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 2.00 | 4,997.0 | 148.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.447 | 470.251 | 1.660 | 0.023 | 0.059 | 0.422 |
| Ground Idle | 55% N2 | 0.89 | 1 | 5.00 | 498.1 | 37.1 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 5.604 | 101.825 | 0.010 | 1.261 | 0.015 | 0.331 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max & repeat test | 102% N2 | 0.89 | 1 | 1.00 | 4,997.0 | 74.4 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.223 | 235.125 | 0.830 | 0.011 | 0.030 | 0.211 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.50 | 4,997.0 | 37.2 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.112 | 117.563 | 0.415 | 0.006 | 0.015 | 0.106 |
| Ground Idle | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| Slam to max | 102% N2 | 0.89 | 1 | 2.00 | 4,997.0 | 148.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.447 | 470.251 | 1.660 | 0.023 | 0.059 | 0.422 |
| Slam to Idle | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 |
| Slam to max | 102% N2 | 0.89 | 1 | 0.25 | 4,997.0 | 18.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.056 | 58.781 | 0.207 | 0.003 | 0.007 | 0.053 |
| Throttle down | 70% N2 | 0.89 | 1 | 0.50 | 697.2 | 5.2 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.458 | 15.421 | 0.004 | 0.064 | 0.002 | 0.046 |
| <u>Hot engine reslam acceleration tests</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.89 | 1 | 0.25 | 4,997.0 | 18.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.056 | 58.781 | 0.207 | 0.003 | 0.007 | 0.053 |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 |
| Slam to approach | 75% N2 | 0.89 | 1 | 0.08 | 874.1 | 1.1 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.064 | 3.308 | 0.001 | 0.007 | 0.000 | 0.009 |
| Slam to max | 102% N2 | 0.89 | 1 | 3.00 | 4,997.0 | 223.1 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.670 | 705.376 | 2.490 | 0.034 | 0.089 | 0.634 |
| Approach & remove targets | 75% N2 | 0.89 | 1 | 1.00 | 874.1 | 13.0 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.769 | 39.698 | 0.015 | 0.082 | 0.005 | 0.113 |
| HP Fuel Pump Change -401 Engine Totals | | | | | | | 2053.4 | | | | | | 40.031 | 6399.162 | 19.732 | 7.873 | 0.821 | 7.674 |
| LP/HP Fuel Pump Change -402 Engine | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| APU (Dry Motor) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Main eng start/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground idle/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 60% N2 | 0.00 | 1 | 2.00 | 523.0 | 0.0 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 65% N2 | 0.00 | 1 | 2.00 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 70% N2 | 0.00 | 1 | 2.00 | 697.2 | 0.0 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 80% N2 | 0.00 | 1 | 2.00 | 1,154.6 | 0.0 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 95% N2 | 0.00 | 1 | 2.00 | 3,340.5 | 0.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 102% N2 | 0.00 | 1 | 3.00 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| GI | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 0.50 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to GI, cool down | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 0.00 | 1 | 1.00 | 697.2 | 0.0 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Switch to Manual FC | 64% N2 | 0.00 | 1 | 0.50 | 570.7 | 0.0 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 92% N2 | 0.00 | 1 | 0.25 | 2,681.8 | 0.0 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground Idle | 55% N2 | 0.00 | 1 | 0.25 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Switch to Normal FC | 65% N3 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground Idle | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|---|--------------|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| <u>Approach idle - throttle position</u> | | | | | | | | | | | | | | | | | | |
| Install WOW targets | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 85% N2 | 0.00 | 1 | 0.08 | 1,601.9 | 0.0 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle down, mark tape | 75% N2 | 0.00 | 1 | 1.00 | 874.1 | 0.0 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Engine slam/reslam tests</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.08 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.17 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.08 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to idle | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Engine shutdown</u> | | | | | | | | | | | | | | | | | | |
| GI, leak check, rundown | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| LP/HP Fuel Pump Change -402 Engine Totals | | | | | | | 0.0 | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| LP Fuel Pump Change -401 Engine | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| Main eng start/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Close bleed valve | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 |
| Ground idle/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| <u>Engine shutdown</u> | | | | | | | | | | | | | | | | | | |
| GI, leak check, rundown | 55% N2 | 0.89 | 1 | 3.00 | 498.1 | 22.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.363 | 61.095 | 0.006 | 0.757 | 0.009 | 0.199 |
| LP Fuel Pump Change -401 Engine Totals | | | | | | | 48.0 | | | | | | 5.878 | 135.989 | 0.066 | 1.309 | 0.019 | 0.353 |
| Sub-idling Fuel Control Unit (SIFCU) Change -401 Engine | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| Main eng start/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Close bleed valve | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 |
| Ground idle/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Stop engine/restart | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 |
| GI/note 40-49% rpm time | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 |
| Sub-idling Fuel Control Unit (SIFCU) Change -401 Engine Totals | | | | | | | 36.1 | | | | | | 3.642 | 104.553 | 0.080 | 0.805 | 0.014 | 0.221 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|-------|-----------------|------------------|-------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | |
| Backup Fuel Control Unit (BUFCU) Change -401 Engine | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | |
| APU (Dry Motor) | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.89 | 1 | 1.00 | 197.0 | 2.9 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.006 | 9.293 | 0.018 | 0.001 | 0.001 | 0.001 | |
| Main eng start/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | |
| Close bleed valve | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 | |
| Ground idle/leak check | 55% N2 | 0.89 | 1 | 1.00 | 498.1 | 7.4 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.121 | 20.365 | 0.002 | 0.252 | 0.003 | 0.066 | |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 0.89 | 1 | 1.00 | 697.2 | 10.4 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.916 | 30.842 | 0.008 | 0.128 | 0.004 | 0.091 | |
| Switch to Manual FC | 64% N2 | 0.89 | 1 | 0.50 | 570.7 | 4.2 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 0.520 | 12.142 | 0.002 | 0.096 | 0.002 | 0.038 | |
| Throttle up | 92% N2 | 0.89 | 1 | 0.25 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 0.25 | 498.1 | 1.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.280 | 5.091 | 0.001 | 0.063 | 0.001 | 0.017 | |
| Throttle up | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 | |
| Switch to Normal FC | 65% N2 | 0.89 | 1 | 0.25 | 586.8 | 2.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.256 | 6.284 | 0.001 | 0.045 | 0.001 | 0.019 | |
| Ground Idle | 55% N2 | 0.89 | 1 | 2.00 | 498.1 | 14.8 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.242 | 40.730 | 0.004 | 0.504 | 0.006 | 0.133 | |
| Backup Fuel Control Unit (BUFCU) Change -401 Engine Totals | | | | | | | | | | | | | | | | | | | |
| | | | | | | 61.5 | | | | | | | | 6.985 | 176.267 | 0.076 | 1.435 | 0.025 | 0.471 |
| Differential Fuel Pressure Switch -401 Engine | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.24 | 1 | 1.00 | 197.0 | 0.8 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.002 | 2.478 | 0.005 | 0.000 | 0.000 | 0.000 | |
| Main eng start/leak check | 55% N2 | 0.24 | 1 | 1.00 | 498.1 | 2.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.299 | 5.431 | 0.001 | 0.067 | 0.001 | 0.018 | |
| Close bleed valve | 65% N2 | 0.24 | 1 | 0.25 | 586.8 | 0.6 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.068 | 1.676 | 0.000 | 0.012 | 0.000 | 0.005 | |
| Ground idle/leak check | 55% N2 | 0.24 | 1 | 1.00 | 498.1 | 2.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.299 | 5.431 | 0.001 | 0.067 | 0.001 | 0.018 | |
| Differential Fuel Pressure Switch -401 Engine Totals | | | | | | | | | | | | | | | | | | | |
| | | | | | | 5.3 | | | | | | | | 0.668 | 15.015 | 0.006 | 0.147 | 0.002 | 0.041 |
| Engine Electronic Control (EEC) -402 Engine | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| APU (Dry Motor) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Main eng start/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Ground idle/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 60% N2 | 0.00 | 1 | 2.00 | 523.0 | 0.0 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 65% N2 | 0.00 | 1 | 2.00 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 70% N2 | 0.00 | 1 | 2.00 | 697.2 | 0.0 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 80% N2 | 0.00 | 1 | 2.00 | 1,154.6 | 0.0 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Throttle up | 95% N2 | 0.00 | 1 | 2.00 | 3,340.5 | 0.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 102% N2 | 0.00 | 1 | 3.00 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| GI | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 0.50 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to GI, cool down | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 0.00 | 1 | 1.00 | 697.2 | 0.0 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Switch to Manual FC | 64% N2 | 0.00 | 1 | 0.50 | 570.7 | 0.0 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 92% N2 | 0.00 | 1 | 0.25 | 2,681.8 | 0.0 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground Idle | 55% N2 | 0.00 | 1 | 0.25 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Switch to Normal FC | 65% N3 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground Idle | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Approach idle - throttle position</u> | | | | | | | | | | | | | | | | | | |
| Install WOW targets | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 85% N2 | 0.00 | 1 | 0.08 | 1,601.9 | 0.0 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle down, mark tape | 75% N2 | 0.00 | 1 | 1.00 | 874.1 | 0.0 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Engine slam/reslam tests</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.08 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.17 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.08 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Slam to idle | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Engine Electronic Control (EEC) -402 Engine Totals | | | | | | 0.0 | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Dedicated Generator -402 Engine | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| APU (Dry Motor) | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Main eng start/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground idle/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|---|-------|-----------------|-----------------|--------------|-----------------|------------------|--------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 60% N2 | 0.00 | 1 | 2.00 | 523.0 | 0.0 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 65% N2 | 0.00 | 1 | 2.00 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 70% N2 | 0.00 | 1 | 2.00 | 697.2 | 0.0 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 80% N2 | 0.00 | 1 | 2.00 | 1,154.6 | 0.0 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 95% N2 | 0.00 | 1 | 2.00 | 3,340.5 | 0.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 102% N2 | 0.00 | 1 | 3.00 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| GI | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 0.50 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to GI, cool down | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Back up fuel system (BUFS) test</u> | | | | | | | | | | | | | | | | | | | |
| Verify 70% NH | 70% N2 | 0.00 | 1 | 1.00 | 697.2 | 0.0 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Switch to Manual FC | 64% N2 | 0.00 | 1 | 0.50 | 570.7 | 0.0 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 92% N2 | 0.00 | 1 | 0.25 | 2,681.8 | 0.0 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Ground Idle | 55% N2 | 0.00 | 1 | 0.25 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Switch to Normal FC | 65% N3 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Ground Idle | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Approach idle - throttle position</u> | | | | | | | | | | | | | | | | | | | |
| Install WOW targets | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle up | 85% N2 | 0.00 | 1 | 0.08 | 1,601.9 | 0.0 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Throttle down, mark tape | 75% N2 | 0.00 | 1 | 1.00 | 874.1 | 0.0 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Engine slam/reslam tests</u> | | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.08 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.25 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to idle | 55% N2 | 0.00 | 1 | 0.17 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to MRT | 102% N2 | 0.00 | 1 | 0.08 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| Slam to idle | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| <u>Dedicated Generator -402 Engine Totals</u> | | | | | | | | | | | | | | | | 0.0 | 0.000 | 0.000 | 0.000 |
| | | | | | | | | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | | | |
|--|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|---|-------|-----------------|-----------------|-------|-----------------|------------------|--|--|--|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | | | |
| NH Speed Probe -402 Engine | | | | | | | | | | | | | | | | | | | | | |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| Main eng start/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| Ground idle/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| NH Speed Probe -402 Engine Totals | | | | | | | | | | | | | | | | | | | | | |
| T3 Probe -402 Engine | | | | | | | | | | | | | | | | | | | | | |
| <u>Starting and operation at idle</u> | | | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| Main eng start/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| Ground idle/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | | | |
| T3 Probe -402 Engine Totals | | | | | | | | | | | | | | | | | | | | | |
| Wet Drains Line and Check Valve | | | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.619 | 0.001 | 0.000 | 0.000 | 0.000 | | | |
| Test After Component Change - Indicating System Component Tests | | | | | | | | | | | | | | | | | | | | | |
| Fuel LP Warning Switch Change -401 Engine | | | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.619 | 0.001 | 0.000 | 0.000 | 0.000 | | | |
| Main eng start/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | | | |
| Close bleed valve | 65% N2 | 0.06 | 1 | 0.25 | 586.8 | 0.1 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.017 | 0.419 | 0.000 | 0.003 | 0.000 | 0.001 | | | |
| Ground idle/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | | | |
| Fuel LP Warning Switch Change -401 Engine Totals | | | | | | | | | | | | | | | | | | | | | |
| HP Shaft Tach Gen and rpm Indicators | | | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.619 | 0.001 | 0.000 | 0.000 | 0.000 | | | |
| Main eng start/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | | | |
| Close bleed valve | 65% N2 | 0.06 | 1 | 0.25 | 586.8 | 0.1 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.017 | 0.419 | 0.000 | 0.003 | 0.000 | 0.001 | | | |
| Ground idle/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | | | |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.06 | 1 | 2.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 | | | |
| Throttle up | 60% N2 | 0.06 | 1 | 2.00 | 523.0 | 1.0 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.146 | 2.895 | 0.000 | 0.031 | 0.000 | 0.009 | | | |
| Throttle up | 65% N2 | 0.06 | 1 | 2.00 | 586.8 | 1.2 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.136 | 3.350 | 0.001 | 0.024 | 0.000 | 0.010 | | | |
| Throttle up | 70% N2 | 0.06 | 1 | 2.00 | 697.2 | 1.4 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.122 | 4.110 | 0.001 | 0.017 | 0.001 | 0.012 | | | |
| Throttle up | 80% N2 | 0.06 | 1 | 2.00 | 1,154.6 | 2.3 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.078 | 7.114 | 0.004 | 0.007 | 0.001 | 0.019 | | | |
| Throttle up | 95% N2 | 0.06 | 1 | 2.00 | 3,340.5 | 6.6 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.028 | 20.934 | 0.047 | 0.002 | 0.003 | 0.038 | | | |
| Throttle up | 102% N2 | 0.06 | 1 | 3.00 | 4,997.0 | 14.9 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.045 | 47.004 | 0.166 | 0.002 | 0.006 | 0.042 | | | |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| GI | 55% N2 | 0.06 | 1 | 3.00 | 498.1 | 1.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.224 | 4.071 | 0.000 | 0.050 | 0.001 | 0.013 |
| HP Shaft Tach Gen and rpm Indicators Totals | | | | | | 31.2 | | | | | | | 1.095 | 95.946 | 0.222 | 0.203 | 0.012 | 0.163 |
| Oil Low Pressure Warning Switch | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 |
| Main eng start/leak check | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| Close bleed valve | 65% N2 | 0.12 | 1 | 0.25 | 586.8 | 0.3 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.034 | 0.837 | 0.000 | 0.006 | 0.000 | 0.003 |
| Ground idle/leak check | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| Oil Low Pressure Warning Switch Totals | | | | | | 2.7 | | | | | | | 0.334 | 7.504 | 0.003 | 0.073 | 0.001 | 0.020 |
| T6/T2 Thermocouple Junction Box -401 Engine | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 |
| Main eng start | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| Close bleed valve | 65% N2 | 0.12 | 1 | 0.25 | 586.8 | 0.3 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.034 | 0.837 | 0.000 | 0.006 | 0.000 | 0.003 |
| Ground idle | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| <u>Maximum operating condition test</u> | | | | | | | | | | | | | | | | | | |
| MRT (max rated thrust) | 102% N2 | 0.12 | 1 | 4.00 | 4,997.0 | 39.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.119 | 125.344 | 0.442 | 0.006 | 0.016 | 0.113 |
| T6/T2 Thermocouple Junction Box -401 Engine Totals | | | | | | 42.3 | | | | | | | 0.453 | 132.848 | 0.446 | 0.079 | 0.017 | 0.133 |
| T6 Thermocouple Junction Box -402 Engine | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Main eng start | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground idle | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.00 | 1 | 2.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 60% N2 | 0.00 | 1 | 2.00 | 523.0 | 0.0 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 65% N2 | 0.00 | 1 | 2.00 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 70% N2 | 0.00 | 1 | 2.00 | 697.2 | 0.0 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 80% N2 | 0.00 | 1 | 2.00 | 1,154.6 | 0.0 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 95% N2 | 0.00 | 1 | 2.00 | 3,340.5 | 0.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 102% N2 | 0.00 | 1 | 3.00 | 4,997.0 | 0.0 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| GI | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| T6 Thermocouple Junction Box -402 Engine Totals | | | | | | 0.0 | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| EGT Indicators | | | | | | | | | | | | | | | | | | |
| <u>Engine prestart tests</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 |
| APU (Dry Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 |
| GI, record data, leak checks | 55% N2 | 0.12 | 1 | 5.00 | 498.1 | 4.9 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.747 | 13.571 | 0.001 | 0.168 | 0.002 | 0.044 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|-------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| <u>Engine vibration and max power tests</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.12 | 1 | 2.00 | 498.1 | 2.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.299 | 5.428 | 0.001 | 0.067 | 0.001 | 0.018 |
| Throttle up | 60% N2 | 0.12 | 1 | 2.00 | 523.0 | 2.1 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 | 0.291 | 5.791 | 0.001 | 0.061 | 0.001 | 0.019 |
| Throttle up | 65% N2 | 0.12 | 1 | 2.00 | 586.8 | 2.3 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.273 | 6.699 | 0.001 | 0.048 | 0.001 | 0.021 |
| Throttle up | 70% N2 | 0.12 | 1 | 2.00 | 697.2 | 2.8 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.244 | 8.221 | 0.002 | 0.034 | 0.001 | 0.024 |
| Throttle up | 80% N2 | 0.12 | 1 | 2.00 | 1,154.6 | 4.6 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.157 | 14.229 | 0.009 | 0.013 | 0.002 | 0.039 |
| Throttle up | 95% N2 | 0.12 | 1 | 2.00 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 102% N2 | 0.12 | 1 | 3.00 | 4,997.0 | 29.7 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.089 | 94.008 | 0.332 | 0.005 | 0.012 | 0.084 |
| GI | 55% N2 | 0.12 | 1 | 3.00 | 498.1 | 3.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.448 | 8.142 | 0.001 | 0.101 | 0.001 | 0.026 |
| <u>Acceleration and deceleration test</u> | | | | | | | | | | | | | | | | | | |
| GI | 55% N2 | 0.12 | 1 | 0.50 | 498.1 | 0.5 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 |
| Slam to MRT | 102% N2 | 0.12 | 1 | 0.25 | 4,997.0 | 2.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.007 | 7.834 | 0.028 | 0.000 | 0.001 | 0.007 |
| Slam to GI | 55% N2 | 0.12 | 1 | 0.25 | 498.1 | 0.2 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.037 | 0.679 | 0.000 | 0.008 | 0.000 | 0.002 |
| <u>Manual fuel control (MFC)</u> | | | | | | | | | | | | | | | | | | |
| Throttle up, FC to M | 70% N2 | 0.12 | 1 | 0.25 | 697.2 | 0.3 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.031 | 1.028 | 0.000 | 0.004 | 0.000 | 0.003 |
| Throttle down, scan | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| Manual throttle up, scan | 96% N2 | 0.12 | 1 | 1.00 | 3,580.5 | 7.1 | 3.92 | 3,160.26 | 7.73 | 0.23 | 0.40 | 5.32 | 0.028 | 22.442 | 0.055 | 0.002 | 0.003 | 0.038 |
| Throttle down, FC to NORM | 70% N2 | 0.12 | 1 | 0.25 | 697.2 | 0.3 | 88.29 | 2972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.031 | 1.028 | 0.000 | 0.004 | 0.000 | 0.003 |
| GI | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| <u>Approach idle - throttle position</u> | | | | | | | | | | | | | | | | | | |
| Install WOW targets | 55% N2 | 0.12 | 1 | 2.00 | 498.1 | 2.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.299 | 5.428 | 0.001 | 0.067 | 0.001 | 0.018 |
| Throttle up | 85% N2 | 0.12 | 1 | 0.08 | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle down, mark tape | 75% N2 | 0.12 | 1 | 1.00 | 874.1 | 1.7 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.103 | 5.291 | 0.002 | 0.011 | 0.001 | 0.015 |
| <u>Engine slam/reslam tests</u> | | | | | | | | | | | | | | | | | | |
| Throttle up | 102% N2 | 0.12 | 1 | 0.25 | 4,997.0 | 2.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.007 | 7.834 | 0.028 | 0.000 | 0.001 | 0.007 |
| Slam to idle | 55% N2 | 0.12 | 1 | 0.08 | 498.1 | 0.1 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.012 | 0.226 | 0.000 | 0.003 | 0.000 | 0.001 |
| Slam to MRT | 102% N2 | 0.12 | 1 | 0.25 | 4,997.0 | 2.5 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.007 | 7.834 | 0.028 | 0.000 | 0.001 | 0.007 |
| Slam to idle | 55% N2 | 0.12 | 1 | 0.17 | 498.1 | 0.2 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.025 | 0.452 | 0.000 | 0.006 | 0.000 | 0.001 |
| Slam to MRT | 102% N2 | 0.12 | 1 | 0.08 | 4,997.0 | 0.8 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.002 | 2.611 | 0.009 | 0.000 | 0.000 | 0.002 |
| Slam to idle | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 |
| <u>Engine shutdown</u> | | | | | | | | | | | | | | | | | | |
| GI, leak check, rundown | 55% N2 | 0.12 | 1 | 3.00 | 498.1 | 3.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.448 | 8.142 | 0.001 | 0.101 | 0.001 | 0.026 |
| <u>Engine second run</u> | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 |
| APU (Dry Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 |
| GI, record data, leak checks | 55% N2 | 0.12 | 1 | 5.00 | 498.1 | 4.9 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.747 | 13.571 | 0.001 | 0.168 | 0.002 | 0.044 |
| Close bleed valve | 65% N2 | 0.12 | 1 | 0.25 | 586.8 | 0.3 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.034 | 0.837 | 0.000 | 0.006 | 0.000 | 0.003 |
| <u>Hydraulic and flying controls test</u> | | | | | | | | | | | | | | | | | | |
| GI, verify RAT | 55% N2 | 0.12 | 1 | 2.00 | 498.1 | 2.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.299 | 5.428 | 0.001 | 0.067 | 0.001 | 0.018 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|--------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | |
| <u>Engine air supplies: cabin air conditioning flow</u> | | | | | | | | | | | | | | | | | | | |
| Ground Idle | 55% N2 | 0.12 | 1 | 0.25 | 498.1 | 0.2 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.037 | 0.679 | 0.000 | 0.008 | 0.000 | 0.002 | |
| <u>Fuel suction feed/electrical tests</u> | | | | | | | | | | | | | | | | | | | |
| WOW targets, GEN off | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 | |
| Throttle up | 90% N2 | 0.12 | 1 | 0.25 | 2,307.7 | 1.1 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.008 | 3.609 | 0.005 | 0.001 | 0.000 | 0.008 | |
| GI, GEN reset | 55% N2 | 0.12 | 1 | 1.00 | 498.1 | 1.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.149 | 2.714 | 0.000 | 0.034 | 0.000 | 0.009 | |
| <u>Approach idle setting test</u> | | | | | | | | | | | | | | | | | | | |
| Throttle up | 85% N2 | 0.12 | 1 | 0.25 | 1,601.9 | 0.8 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 0.013 | 2.493 | 0.002 | 0.001 | 0.000 | 0.006 | |
| Verify approach idle stop | 75% N2 | 0.12 | 1 | 0.50 | 874.1 | 0.9 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 | 0.051 | 2.645 | 0.001 | 0.005 | 0.000 | 0.008 | |
| GI, finger lift, rem targets | 55% N2 | 0.12 | 1 | 0.25 | 498.1 | 0.2 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.037 | 0.679 | 0.000 | 0.008 | 0.000 | 0.002 | |
| <u>Engine stopping</u> | | | | | | | | | | | | | | | | | | | |
| Cool/shutdown, RAT | 55% N2 | 0.12 | 1 | 3.00 | 498.1 | 3.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.448 | 8.142 | 0.001 | 0.101 | 0.001 | 0.026 | |
| <u>Engine final run</u> | | | | | | | | | | | | | | | | | | | |
| APU (Wet Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | |
| APU (Dry Motor) | On | 0.12 | 1 | 1.00 | 197.0 | 0.4 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.001 | 1.239 | 0.002 | 0.000 | 0.000 | 0.000 | |
| GI, leak checks | 55% N2 | 0.12 | 1 | 3.00 | 498.1 | 3.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.448 | 8.142 | 0.001 | 0.101 | 0.001 | 0.026 | |
| EGT Indicators Totals | | | | | | | | | | | | | | | | | | | |
| | | | | | | 98.8 | | | | | | | | 6.536 | 295.502 | 0.527 | 1.357 | 0.040 | 0.599 |
| Test After Component Change - Oil System Component Tests | | | | | | | | | | | | | | | | | | | |
| Low Oil Pressure Warning Switch | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.619 | 0.001 | 0.000 | 0.000 | 0.000 | |
| Main eng start/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | |
| Close bleed valve | 65% N2 | 0.06 | 1 | 0.25 | 586.8 | 0.1 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.017 | 0.419 | 0.000 | 0.003 | 0.000 | 0.001 | |
| Ground idle/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | |
| Oil Low Pressure Warning Switch Totals | | | | | | | | | | | | | | | | | | | |
| | | | | | | 1.3 | | | | | | | | 0.167 | 3.752 | 0.002 | 0.037 | 0.001 | 0.010 |
| Oil Tank Sight Glass | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.619 | 0.001 | 0.000 | 0.000 | 0.000 | |
| Main eng start/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | |
| Close bleed valve | 65% N2 | 0.06 | 1 | 0.25 | 586.8 | 0.1 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.017 | 0.419 | 0.000 | 0.003 | 0.000 | 0.001 | |
| Ground idle/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | |
| Oil Tank Sight Glass Totals | | | | | | | | | | | | | | | | | | | |
| | | | | | | 1.3 | | | | | | | | 0.167 | 3.752 | 0.002 | 0.037 | 0.001 | 0.010 |
| Oil Tank Filler Connection | | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.619 | 0.001 | 0.000 | 0.000 | 0.000 | |
| Main eng start/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | |
| Close bleed valve | 65% N2 | 0.06 | 1 | 0.25 | 586.8 | 0.1 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.017 | 0.419 | 0.000 | 0.003 | 0.000 | 0.001 | |
| Ground idle/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 | |
| Oil Tank Filler Connection Totals | | | | | | | | | | | | | | | | | | | |
| | | | | | | 1.3 | | | | | | | | 0.167 | 3.752 | 0.002 | 0.037 | 0.001 | 0.010 |

| Aircraft: T-45A/C Goshawk | | Engine: F405-RR-401/-402 | | APU (GTS) Type: 096 Mk II (Saphir (10)) | | | | | | | | | | | | | | |
|---|-------------------------------------|---|--|---|--|------------------------------------|---|-----------------|-----------------|-------|-----------------|------------------|---|-----------------|-----------------|--------------|-----------------|------------------|
| Maintenance Operation and Engine Mode | Engine Power Setting ^{5,6} | No. of Maint. Test per AC per yr ⁷ | No. of Engines in Use ^{5,6,7} | Time-in-mode per Eng ^{5,6,7} (min) | Fuel Flow Rate per Engine ¹ (lb/hr) | Fuel Used (lbs/AC/yr) ³ | Emission Indexes ^{1,2} (lbs/1,000 lbs fuel) | | | | | | Air Emissions ⁴ (lbs /AC /yr) | | | | | |
| | | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ |
| Oil Pump | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.06 | 1 | 1.00 | 197.0 | 0.2 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | | | | | | |
| Main eng start/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 |
| Close bleed valve | 65% N2 | 0.06 | 1 | 0.25 | 586.8 | 0.1 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.017 | 0.419 | 0.000 | 0.003 | 0.000 | 0.001 |
| Ground idle/leak check | 55% N2 | 0.06 | 1 | 1.00 | 498.1 | 0.5 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.075 | 1.357 | 0.000 | 0.017 | 0.000 | 0.004 |
| Oil Pump Totals | | | | | | 1.3 | | | | | | | 0.166 | 3.133 | 0.000 | 0.037 | 0.000 | 0.010 |
| Test After Component Change - Airborne Data Recording System Tests -401 Engine | | | | | | | | | | | | | | | | | | |
| Vibration Transducer/Charge Amplifier | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Main eng start | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground idle | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 65% N2 | 0.00 | 1 | 2.00 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 70% N2 | 0.00 | 1 | 2.00 | 697.2 | 0.0 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 80% N2 | 0.00 | 1 | 2.00 | 1,154.6 | 0.0 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Throttle up | 95% N2 | 0.00 | 1 | 2.00 | 3,340.5 | 0.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| GI | 55% N2 | 0.00 | 1 | 3.00 | 498.1 | 0.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Vibration Transducer/Charge Amplifier Totals | | | | | | 0.0 | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| P3 Pressure Transducer | | | | | | | | | | | | | | | | | | |
| APU Use | On | 0.00 | 1 | 1.00 | 197.0 | 0.0 | 2.00 | 3,170.00 | 6.25 | 0.25 | 0.40 | 0.22 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Main eng start/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Close bleed valve | 65% N2 | 0.00 | 1 | 0.25 | 586.8 | 0.0 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Ground idle/leak check | 55% N2 | 0.00 | 1 | 1.00 | 498.1 | 0.0 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| P3 Pressure Transducer Totals | | | | | | 0.0 | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

Maintenance Fuel Usage and Test Emissions from a Single T-45 Aircraft per Year

16,220.3

586.8 49,814.0 130.8 119.5 6.5 74.2

Note:

1. Source for all non APU fuel flow and emission indexes: *F405-RR-401 Engine Emission Indexes Using JP-5* ;

Aircraft Environmental Support Office; San Diego, CA., September 2010; AESO Memorandum Report No. 2006-03, Revision A.

2. Fuel flow and emission indexes are not available for the Turbomecca 096 Mk II (Saphir 10) Gas Turbine Starter (GTS). GTC36-200 data was substituted.

The GTC36-200 APU fuel flow and emission index data is manufacturer information provided by the GTC36-200 Project Engineer. See AESO Report 2003-09.

3. Fuel used = fuel flow x time-in-mode / 60 x no. of engines in use x maint. test per AC per yr.

4. Emissions = fuel used / 1,000 x emission index.

5. Dry motoring, wet motoring, engine starting, engine shut down, ECATS, UNICATS, FADEC, SIFCU,

ground run and test procedures are detailed in NAVAIRSYSCOM Technical Manual A1-T45AB-270-010 Chapter 71 *Power Plant*.

6. Water Wash, and Performance Recovery Wash procedures are detailed in NAVAIRSYSCOM Technical Manual A1-T45AC-270-020 Chapter 72 *Basic Engine*, Pages 27 and 28.

7. Run-up data provided by NAS Meridian maintenance personnel was for 84 T-45C aircraft.

| F405-RR-401 Emission Indexes Using JP-5 | | | | | | | |
|---|-----------|--------|-------------------------------------|-------|-------|------|------|
| Percent Core | Fuel Flow | | Emission Index (lbs/1,000 lbs JP-5) | | | | |
| rpm (%N2) | (lbs/hr) | CO | CO2 | NOX | HC | SO2 | PM10 |
| 55% | 498.06 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 |
| 56% | 499.91 | 150.37 | 2,750.88 | 0.27 | 33.65 | 0.40 | 8.94 |
| 57% | 503.37 | 148.81 | 2,757.36 | 0.28 | 32.97 | 0.40 | 8.94 |
| 58% | 508.39 | 146.58 | 2,766.49 | 0.29 | 32.01 | 0.40 | 8.94 |
| 59% | 514.92 | 143.75 | 2,777.96 | 0.31 | 30.81 | 0.40 | 8.93 |
| 60% | 522.97 | 140.38 | 2,791.46 | 0.33 | 29.42 | 0.40 | 8.93 |
| 61% | 532.54 | 136.52 | 2,806.65 | 0.35 | 27.87 | 0.40 | 8.92 |
| 62% | 543.65 | 132.22 | 2,823.22 | 0.38 | 26.20 | 0.40 | 8.92 |
| 63% | 556.36 | 127.54 | 2,840.87 | 0.41 | 24.45 | 0.40 | 8.91 |
| 64% | 570.71 | 122.53 | 2,859.30 | 0.45 | 22.65 | 0.40 | 8.90 |
| 65% | 586.80 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 |
| 66% | 604.71 | 111.72 | 2,897.44 | 0.53 | 19.03 | 0.40 | 8.88 |
| 67% | 624.57 | 106.02 | 2,916.67 | 0.58 | 17.26 | 0.40 | 8.86 |
| 68% | 646.50 | 100.18 | 2,935.72 | 0.63 | 15.55 | 0.40 | 8.85 |
| 69% | 670.66 | 94.26 | 2,954.41 | 0.69 | 13.92 | 0.40 | 8.83 |
| 70% | 697.22 | 88.29 | 2,972.58 | 0.75 | 12.37 | 0.40 | 8.81 |
| 71% | 726.39 | 82.31 | 2,990.10 | 0.82 | 10.93 | 0.40 | 8.79 |
| 72% | 758.39 | 76.37 | 3,006.85 | 0.90 | 9.60 | 0.40 | 8.77 |
| 73% | 793.48 | 70.50 | 3,022.74 | 0.99 | 8.38 | 0.40 | 8.74 |
| 74% | 831.95 | 64.74 | 3,037.72 | 1.08 | 7.27 | 0.40 | 8.71 |
| 75% | 874.11 | 59.13 | 3,051.72 | 1.18 | 6.28 | 0.40 | 8.68 |
| 76% | 920.34 | 53.69 | 3,064.72 | 1.29 | 5.39 | 0.40 | 8.64 |
| 77% | 971.03 | 48.45 | 3,076.71 | 1.41 | 4.62 | 0.40 | 8.60 |
| 78% | 1,026.63 | 43.45 | 3,087.69 | 1.55 | 3.94 | 0.40 | 8.56 |
| 79% | 1,087.64 | 38.71 | 3,097.67 | 1.70 | 3.35 | 0.40 | 8.50 |
| 80% | 1,154.62 | 34.25 | 3,106.69 | 1.86 | 2.85 | 0.40 | 8.44 |
| 81% | 1,228.16 | 30.09 | 3,114.77 | 2.04 | 2.42 | 0.40 | 8.37 |
| 82% | 1,308.92 | 26.24 | 3,121.96 | 2.23 | 2.06 | 0.40 | 8.30 |
| 83% | 1,397.62 | 22.72 | 3,128.32 | 2.45 | 1.75 | 0.40 | 8.21 |
| 84% | 1,495.03 | 19.54 | 3,133.88 | 2.68 | 1.49 | 0.40 | 8.11 |
| 85% | 1,601.94 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 |
| 86% | 1,719.20 | 14.20 | 3,142.89 | 3.23 | 1.10 | 0.40 | 7.87 |
| 87% | 1,847.63 | 12.02 | 3,146.45 | 3.54 | 0.95 | 0.40 | 7.73 |
| 88% | 1,988.05 | 10.17 | 3,149.46 | 3.88 | 0.81 | 0.40 | 7.56 |
| 89% | 2,141.19 | 8.62 | 3,151.98 | 4.25 | 0.70 | 0.40 | 7.37 |
| 90% | 2,307.65 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 |
| 91% | 2,487.83 | 6.34 | 3,155.76 | 5.09 | 0.52 | 0.40 | 6.93 |
| 92% | 2,681.81 | 5.55 | 3,157.13 | 5.56 | 0.44 | 0.40 | 6.66 |
| 93% | 2,889.27 | 4.95 | 3,158.22 | 6.06 | 0.38 | 0.40 | 6.37 |
| 94% | 3,109.33 | 4.50 | 3,159.08 | 6.59 | 0.32 | 0.40 | 6.05 |
| 95% | 3,340.50 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 |
| 96% | 3,580.53 | 3.92 | 3,160.26 | 7.73 | 0.23 | 0.40 | 5.32 |
| 97% | 3,826.42 | 3.72 | 3,160.66 | 8.33 | 0.20 | 0.40 | 4.92 |
| 98% | 4,074.39 | 3.56 | 3,160.98 | 8.93 | 0.18 | 0.40 | 4.50 |
| 99% | 4,320.08 | 3.41 | 3,161.24 | 9.52 | 0.16 | 0.40 | 4.08 |
| 100% | 4,558.80 | 3.27 | 3,161.46 | 10.10 | 0.15 | 0.40 | 3.65 |
| 101% | 4,785.84 | 3.14 | 3,161.66 | 10.65 | 0.15 | 0.40 | 3.24 |
| 101.8% | 4,996.98 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 |

Notes:

1. Fuel Flow, rpm, CO, CO2, NOX, and HC data are derived from Reference 1 - Alpha Gamma Report F405-RR-401 Engine Emission Test dated July 1995.
2. SO2 emission index of 0.40 lbs/1000 lbs is from Reference 2 - AESO Report 6-90.
3. PM10 emission index is derived from TF30-P-414 data from Reference 2 - AESO Report 6-90.
4. N2 is also referred to as NH, it is the core (not fan, i.e. N1 or NL) rpm.
5. 55%N2 is Ground Idle as per Reference 3 - NAVAIRSYSCOM Technical Manual Chapter 71 Power Plant, Navy Model T-45A and T-45C 163599 and Up - dated 15 May 2009.
6. Flight Idle corresponds to 75% N2 as stated in Reference 4 - Janes Aero Engines, Issue 25 dated 2009, page 242.
7. 100% N2 rpm is 15,512 rpm as stated in Reference 5 - A1-T45AB-NFM-000 NATOPS Flight Manual Navy Model T45A Before AFC 279 Aircraft - with Change 6, dated 15 March 2010.
8. 101.8% N2 is Max Rated Thrust (MRT).

T-45A/C with F405-RR-401/-402 Engine, Maintenance Tests

NEED:

Number of engine run-ups per aircraft per year

(or info to allow calculation on a "per-aircraft" basis)

Example 1: A pool of 31 aircraft gets about 80 Water Wash runs in a year.

80/31 equals 2.58 Water Washes per aircraft per year.

Example 2: A pool of 31 aircraft gets about 45 Performance Recovery Wash runs in a year.

45/31 equals 1.45 Performance Recovery Washes per aircraft per year.

| INSERT [] 84 Number of T-45 aircraft in pool | Approx. Minutes Per Run | INSERT Runs Per Year | Runs/ AC-yr |
|--|-------------------------|----------------------|-------------|
| Desalination Compressor Washing (water wash) | 14 | 160 | 1.9048 |
| Performance Recovery Wash | 35 | 20 | 0.2381 |
| Engine Control Amplifier Test Set (ECATS) Run | 100 | 156 | 1.8571 |
| Adour engine control amplifier (ECA) and vibration test set (UNICATS) Run | 97 | 75 | 0.8929 |
| Ground Running Tests Using FADEC Test Set - F405-RR-402 Engine | 52 | 200 | 2.3810 |
| Engine Performance Adjustments (SIFCU and FCU) - F405-RR-401 Engine | 22 | 75 | 0.8929 |
| Oil Consumption Test Run | 78 | 10 | 0.1190 |
| Test After Component Change - Air System | 7 | 50 | 0.5952 |
| Test After Component Change - Engine Control Amplifier Test -401 Engine | 26 | 156 | 1.8571 |
| Test After Component Change - Fuel Metering Unit (FMU) Test -402 Engine | 13 | | 0.0000 |
| Test After Component Change - Tailpipe Test | 7 | 30 | 0.3571 |
| Test After Component Change - Fuel System Component Tests | | 75 | |
| Fuel Control Unit (FCU) change -401 eng | 60 | 75 | 0.8929 |
| Fuel LP Warning Switch Change -401 Engine | 5 | 10 | 0.1190 |
| HP Fuel Pump Change -401 Engine | 59 | 75 | 0.8929 |
| LP/HP Fuel Pump Change -402 Engine | 37 | | 0.0000 |
| LP Fuel Pump Change -401 Engine | 11 | 75 | 0.8929 |
| Sub-idling Fuel Control Unit (SIFCU) Change -401 Engine | 7 | 75 | 0.8929 |
| Backup Fuel Control Unit (BUFCU) Change -401 Engine | 10 | 75 | 0.8929 |
| Differential Fuel Pressure Switch -401 Engine | 3 | 20 | 0.2381 |
| Engine Electronic Control (EEC) -402 Engine | 36 | | 0.0000 |
| Dedicated Generator -402 Engine | 36 | | 0.0000 |
| NH Speed Probe -402 Engine | 3 | | 0.0000 |
| T3 Probe -402 Engine | 3 | | 0.0000 |
| Wet Drains Line and Check Valve | 1 | 5 | 0.0595 |
| Test After Component Change - Indicating System Component Tests | | | |
| Fuel LP Warning Switch Change -401 Engine | 2 | 5 | 0.0595 |
| HP Shaft Tach Gen and rpm Indicators | 21 | 5 | 0.0595 |
| Oil Low Pressure Warning Switch | 3 | 10 | 0.1190 |
| T6/T2 Thermocouple Junction Box -401 Engine | 7 | 10 | 0.1190 |
| T6 Thermocouple Junction Box -402 Engine | 21 | | 0.0000 |
| EGT Indicators | 58 | 10 | 0.1190 |
| Test After Component Change - Oil System Component Tests | | | |
| Low Oil Pressure Warning Switch | 3 | 5 | 0.0595 |
| Oil Tank Sight Glass | 3 | 5 | 0.0595 |
| Oil Tank Filler Connection | 3 | 5 | 0.0595 |
| Oil Pump | 3 | 5 | 0.0595 |
| Test After Component Change - Airborne Data Recording System Tests -401 Engine | | | |
| Vibration Transducer/Charge Amplifier | 14 | | 0.0000 |
| P3 Pressure Transducer | 3 | | 0.0000 |

Emissions from one F405-RR-401 test cell run at NAS Meridian

| Engine & Test | Time | Fuel | Fuel | | Emissions (lbs) | | | | |
|---------------------|--------|--------|----------|-------|-----------------|-----------------|-------|-----------------|------------------|
| | (mins) | (gals) | (lbs) | CO | CO ₂ | NO _X | HC | SO ₂ | PM ₁₀ |
| Engine: F405-RR-401 | | | | | | | | | |
| Performance Test | 108.3 | 531.81 | 3,616.33 | 67.49 | 11,286.14 | 25.01 | 12.12 | 1.45 | 20.36 |

Note:

- NAS Meridian performed 96 F405 test cell runs from Sept 2009 to Sept 2010.

Annual (FY2010) Emissions from F405-RR-401 test cell runs at NAS Meridian

| Engine & Test | Time | Fuel | Fuel | | Emissions (lbs) | | | | |
|---------------------|----------|----------|-----------|---------|-----------------|-----------------|---------|-----------------|------------------|
| | (mins) | (gals) | (lbs) | CO | CO ₂ | NO _X | HC | SO ₂ | PM ₁₀ |
| Engine: F405-RR-401 | | | | | | | | | |
| Performance Test | 10,392.0 | 51,054.1 | 347,167.6 | 6,478.7 | 1,083,469.0 | 2,401.0 | 1,163.9 | 138.9 | 1,954.2 |

Engine: F405-RR-401

| Test Power Setting | %N2 | Time-in-Mode (mins) | Fuel Flow Rate (lb/hr) | Fuel Used (gals) | Fuel Used (lbs) | Emission Indexes (pounds per 1,000 pounds fuel) | | | | | Emissions (lbs) | | | | | | |
|--------------------------|---------|---------------------|------------------------|------------------|-----------------|---|-----------------|-----------------|-------|-----------------|------------------|------|-----------------|-----------------|------|------|------|
| | | | | | | CO | CO ₂ | NO _x | HC | SO ₂ | PM ₁₀ | CO | CO ₂ | NO _x | HC | | |
| Performance Curve | | | | | | | | | | | | | | | | | |
| Dry Motor (Huffer) | | 2.00 | | | | | | | | | | | | | | | |
| Wet Motor (Huffer) | | 2.00 | | | | | | | | | | | | | | | |
| Dry Motor (Huffer) | | 2.00 | | | | | | | | | | | | | | | |
| ECU Start - GI | 55% N2 | 1.00 | 498.1 | 1.22 | 8.3 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.26 | 22.81 | 0.00 | 0.28 | 0.00 | 0.07 |
| Close Bleed Valve | 65% N2 | 0.25 | 586.8 | 0.36 | 2.4 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.29 | 7.04 | 0.00 | 0.05 | 0.00 | 0.02 |
| Leak Check - GI | 55% N2 | 3.00 | 498.1 | 3.66 | 24.9 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.77 | 68.42 | 0.01 | 0.85 | 0.01 | 0.22 |
| ECU Start - GI | 55% N2 | 2.00 | 498.1 | 2.44 | 16.6 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.51 | 45.62 | 0.00 | 0.56 | 0.01 | 0.15 |
| Close Bleed Valve | 65% N2 | 0.25 | 586.8 | 0.36 | 2.4 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.29 | 7.04 | 0.00 | 0.05 | 0.00 | 0.02 |
| GI | 55% N2 | 3.00 | 498.1 | 3.66 | 24.9 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.77 | 68.42 | 0.01 | 0.85 | 0.01 | 0.22 |
| Slow Accel to Max | 90% N2 | 0.25 | 2,307.7 | 1.41 | 9.6 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.07 | 30.33 | 0.04 | 0.01 | 0.00 | 0.07 |
| Slow Accel to Max | 102% N2 | 0.25 | 4,997.0 | 3.06 | 20.8 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.06 | 65.83 | 0.23 | 0.00 | 0.01 | 0.06 |
| Scan 1 - GI | 55% N2 | 3.00 | 498.1 | 3.66 | 24.9 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.77 | 68.42 | 0.01 | 0.85 | 0.01 | 0.22 |
| Scan 2 - 75%NL | 93% N2 | 3.00 | 2,889.3 | 21.24 | 144.5 | 4.95 | 3,158.22 | 6.06 | 0.38 | 0.40 | 6.37 | 0.72 | 45.62 | 0.88 | 0.05 | 0.06 | 0.92 |
| Scan 3 - 90%NL | 98% N2 | 3.00 | 4,074.4 | 29.96 | 203.7 | 3.56 | 3,160.98 | 8.93 | 0.18 | 0.40 | 4.50 | 0.73 | 643.95 | 1.82 | 0.04 | 0.08 | 0.92 |
| Scan 4 - 100%NL | 99% N2 | 3.00 | 4,320.1 | 31.77 | 216.0 | 3.41 | 3,161.24 | 9.52 | 0.16 | 0.40 | 4.08 | 0.74 | 682.84 | 2.06 | 0.03 | 0.09 | 0.88 |
| Scan 5 - MaxNL | 95% N2 | 3.00 | 3,340.5 | 24.56 | 167.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.70 | 527.76 | 1.19 | 0.05 | 0.07 | 0.95 |
| Scan 6 - 95%NL | 90% N2 | 3.00 | 2,307.7 | 16.97 | 115.4 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.85 | 363.93 | 0.54 | 0.07 | 0.05 | 0.83 |
| Scan 7 - 85%NL | 85% N2 | 3.00 | 1,601.9 | 11.78 | 80.1 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 1.34 | 251.40 | 0.24 | 0.10 | 0.03 | 0.64 |
| Cool Down - GI | 55% N2 | 2.00 | 498.1 | 2.44 | 16.6 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.51 | 45.62 | 0.00 | 0.56 | 0.01 | 0.15 |
| ECU Start - GI | 55% N2 | 1.00 | 498.1 | 1.22 | 8.3 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.26 | 22.81 | 0.00 | 0.28 | 0.00 | 0.02 |
| Close Bleed Valve | 65% N2 | 0.25 | 586.8 | 0.36 | 2.4 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.29 | 7.04 | 0.00 | 0.05 | 0.00 | 0.02 |
| GI | 55% N2 | 1.00 | 498.1 | 1.22 | 8.3 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.26 | 22.81 | 0.00 | 0.28 | 0.00 | 0.07 |
| Block 3 Data | | | | | | | | | | | | | | | | | |
| Scan 1 - GI | 55% N2 | 3.00 | 498.1 | 3.66 | 24.9 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 3.77 | 68.42 | 0.01 | 0.85 | 0.01 | 0.22 |
| Scan 2 - 75%NL | 93% N2 | 3.00 | 2,889.3 | 21.24 | 144.5 | 4.95 | 3,158.22 | 6.06 | 0.38 | 0.40 | 6.37 | 0.72 | 45.62 | 0.88 | 0.05 | 0.06 | 0.92 |
| Scan 3 - 90%NL | 98% N2 | 3.00 | 4,074.4 | 29.96 | 203.7 | 3.56 | 3,160.98 | 8.93 | 0.18 | 0.40 | 4.50 | 0.73 | 643.95 | 1.82 | 0.04 | 0.08 | 0.92 |
| Scan 4 - 100%NL | 99% N2 | 3.00 | 4,320.1 | 31.77 | 216.0 | 3.41 | 3,161.24 | 9.52 | 0.16 | 0.40 | 4.08 | 0.74 | 682.84 | 2.06 | 0.03 | 0.09 | 0.88 |
| Scan 5 - MaxNL | 95% N2 | 3.00 | 3,340.5 | 24.56 | 167.0 | 4.17 | 3,159.75 | 7.15 | 0.27 | 0.40 | 5.70 | 0.70 | 527.76 | 1.19 | 0.05 | 0.07 | 0.95 |
| Scan 6 - 95%NL | 90% N2 | 3.00 | 2,307.7 | 16.97 | 115.4 | 7.36 | 3,154.06 | 4.65 | 0.60 | 0.40 | 7.16 | 0.85 | 363.93 | 0.54 | 0.07 | 0.05 | 0.83 |
| Scan 7 - 85%NL | 85% N2 | 3.00 | 1,601.9 | 11.78 | 80.1 | 16.70 | 3,138.72 | 2.94 | 1.28 | 0.40 | 8.00 | 1.34 | 251.40 | 0.24 | 0.10 | 0.03 | 0.64 |
| Cool Down - GI | 55% N2 | 2.00 | 498.1 | 2.44 | 16.6 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.51 | 45.62 | 0.00 | 0.56 | 0.01 | 0.15 |
| ECU Start - GI | 55% N2 | 1.00 | 498.1 | 1.22 | 8.3 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 1.26 | 22.81 | 0.00 | 0.28 | 0.00 | 0.07 |
| Close Bleed Valve | 65% N2 | 0.25 | 586.8 | 0.36 | 2.4 | 117.24 | 2,878.24 | 0.48 | 20.83 | 0.40 | 8.89 | 0.29 | 7.04 | 0.00 | 0.05 | 0.00 | 0.02 |
| Stabilize at Idle | 55% N2 | 2.00 | 498.1 | 2.44 | 16.6 | 151.21 | 2,747.37 | 0.27 | 34.02 | 0.40 | 8.94 | 2.51 | 45.62 | 0.00 | 0.56 | 0.01 | 0.15 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Accel to Idle | 55% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to Idle | 55% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 1.00 | 831.9 | 2.04 | 13.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.90 | 42.12 | 0.01 | 0.10 | 0.01 | 0.12 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | 0.05 | 0.00 | 0.06 |
| Slam Accel to Max | 102% N2 | 0.50 | 4,997.0 | 6.12 | 41.6 | 3.00 | 3,161.84 | 11.16 | 0.15 | 0.40 | 2.84 | 0.12 | 131.66 | 0.46 | 0.01 | 0.02 | 0.12 |
| Slam Decel to 74% | 74% N2 | 0.50 | 831.9 | 1.02 | 6.9 | 64.74 | 3,077.72 | 1.08 | 7.27 | 0.40 | 8.71 | 0.45 | 21.06 | 0.01 | | | |

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APPENDIX F

CALCULATIONS TO SUPPORT THE NOISE ANALYSIS

Airspace Operations Data Request

Source: Still, Jonathan. 2009. Email Correspondence between Mr. Jonathan Still (Operations Officer, TW-1) and Ms. Tanya Perry (HDR(e2M)) regarding the Meridian 2 MOA Airspace Data Collection (Excel File). 17 August 2009

Notes:

1. Assumed 245 flying days (2010). Additional 22 days considered as aggregate of Sunday flying (largely ACM + instrument). Adjusted downward to 200 days of MOA usage to account for average weather cancellation and sortie availability.
 2. Standard sortie percentages for ACM, all formation, and BI events was applied. Familiarization sorties were not considered due to absence of outlying field.

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|------|---|
| Key: | ACM = Air Combat Maneuvering |
| | BASIC/DIV FORM = Basic/Division Formation |
| | BI = Battlefield Interdiction |
| | CRUISE FORM = Cruise Formation |
| | NFORM = Night Formation |
| | RPM = Revolutions Per Minute |
| | TAC FORM = Tactical Formation |

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