ORGANIZATIONAL ISSUANCE

EXPERIMENTAL FLUID DYNAMICS GROUP

TD74

NOZZLE TEST FACILITY PRE-HEAT SYSTEM OPERATING PROCEDURE

Revision A

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CHECK THE MASTER LIST-https://masterlist.msfc.nasa.gov/td/
VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline	BASELINE	09/12/00	**Nozzle Test Facility PRE-HEAT SYSTEM** OPERATIONAL INSTRUCTIONS **Baseline AS IS.**
Revision	A	11/02/ 04	Updated due to CAITS 04-DA01-0387. Updated title.

1.0 PURPOSE

1.1 Purpose. This standard operating procedure contains instructions for model/facility pre-heat operations at the Nozzle Test Facility (NTF).

2.0 APPLICABILITY

1.2 Applicability. This work instruction applies to the Test and Evaluation Department personnel and its contractors involved in operations at the NTF.

3.0 APPLICABLE DOCUMENTS

TD1410	CONTROL OF ORGANIZATIONAL ISSUANCES AND RECORDS
TD70-001	TEST AND EVALUATION DEPARTMENT
TD74-100	EXPERIMENTAL FLUID DYNAMICS GROUP
NPR 1441.1	NASA RECORDS RETENTION SCHEDULES
MPR 8715.1	MSFC SAFETY, HEALTH AND ENVIRONMENTAL PROGRAM

4.0 DEFINITIONS

4.1 Affected Personnel: All Experimental Fluid Dynamic Group personnel.

4.2 Calibration Contact: The person responsible for one or more pieces of calibrated equipment. Responsibilities include tracking the usage of the equipment and scheduling calibration of the equipment with the calibration facility, in-house, or outside vendor.

4.3 Calibration Coordinator: Person who coordinates the activities of the calibration contacts and who is the custodian of the inventory of calibrated equipment.

4.4 Customer Agreement: Agreement for MSFC to supply products or services to an external customer. Refer to MSP MSFC-P03.1 for details.

4.5 Customer Supplied Product: Products supplied by a customer for the purpose of fabrication, testing, storage, analysis, and/or refurbishment.

4.6 CWI: Centerwide Work Instruction

4.7 Data: Electronic or written information (obtained during test programs or analytic efforts) stored in any of several media (magnetic tapes, computer files, photographs, reports, etc.).

4.8 Data Acquisition Engineer: Individual responsible for a facility data acquisition system including transducers, data acquisition hardware and software, and on-site displays, printers, and data storage medium.

4.9 Data Manager: Custodian of controlled electronic data

4.10 Facility: A group of mechanical, electrical, and control subsystems designed to prepare for, conduct, and acquire data for a test run of a test article.

4.11 Facility Engineer: Lead and point-of-contact for a specified facility. Responsible for the operation, maintenance, and development of that facility.

4.12 Facility Operator: Person authorized by the Group Lead to operate a specified facility.

4.13 IRDP: Independent Research & Development Program

4.14 MPR: Marshall Procedural Requirements

4.15 NTF: Nozzle Test Facility

4.16 Onsite: Physically taking place on the grounds of the Marshall Space Flight Center or performed by Civil Service personnel whose permanent duty station is the Marshall Space Flight Center.

4.17 OI: Organizational Issuance such as Standard Qperating Procedure, Facility Operating Procedure or Work Instruction.

4.18 Protoflight Unit: A test unit which remains operational for inclusion in a flight program.

4.19 Qualification Unit: A representative test unit used in the process of acceptance of flight hardware, flight software, protoflight units, and associated flight support equipment.

4.20 Records Custodian: Individual who is responsible for controlling, storing, retrieving, and dispositioning records.

4.21 Servicing: A particular type of activity that focuses on post-delivery maintenance and support. The system to be serviced may be developed by MSFC or by a third party.

4.22 Task Agreement: For the purposes of the OWI, a Task Agreement is the directive for an affected person to perform a body of work. This directive is the approval from management to perform the work and can be in various forms (memoranda, e-mail, verbal) and is evidenced by Group or Department Lead's certification of time card.

4.23 Test Engineer: Person(s) responsible for the planning, conduction, and reporting for a specified test.

4.24 ULO: Using Line Organization -- the users of calibrated equipment.

4.25 Wavier: A written authorization to depart from specific requirements in a controlled document such as in an organizational issuance. (see TD-1410)

5.0 INSTRUCTIONS

5.0 START-UP

To start-up the NTF, the Facility Operator shall do the following:

5.1 PREREQUISITES

5.1.1 Close hand-operated valves HOV-109, HOV-501, HOV-502 if not already closed

5.1.2 Using the area paging system (dial 162-1), make the following announcement, "Verification testing in building 4777, bays A & B. Please disregard the bells in these areas until further notice."

5.1.3 Install jumper on the Bearing Temperature No. 1 High Temperature annunciator.

5.1.4 Lift wire on Model Speed Lo annunciator, white wire on Panel F, terminal block TB1, terminal 45.

5.2 OPERATIONAL GUIDELINES

5.2.1 Locate Junction Box "NTF Jbox 3" in the NTF bay. Rotate switch labeled "EJECTOR & CORE FLOW ISOLATION VALVES" to "ENABLE" position. Return to TTE control room.

5.2.2 Locate Junction Box "NTF Jbox 1" beside the Kent Taylor controllers. Insert the control key labeled "NTF ENABLE" and enable the system. Verify actuation of the area warning bells.

5.2.3 Press "NTF CORE FLOW ISOLATION VALVE" labelled "OPEN" and verify indication change from red to green. This will open V-132, "SUPPLY AIR ISOLATION".

5.2.4 Verify ROV-127, "PRE-HEAT ISOLATION", is closed.

5.2.5 Verify PCV-115, "MODEL BACKPRESSURE VALVE", is open.

5.2.6 Verify ROV-101 A & B, "TEST AIR SUPPLY ISOLATION", are closed.

5.2.7 Verify PCV-110, "MODEL INLET (Po) PRESSURE CONTROL VALVE", is closed.

5.2.8 Verify BBV-134, "PG-136 ISOLATION", is open.

5.2.9 Verify BBV-137, "PG-135 ISOLATION", is open.

5.2.10 Adjust H-125, Chromalox Temperature Indication controller, located on Panel E, to 300 degrees F.

5.2.11 Place Heat System Control Disable/Enable switch on Panel E in the "ENABLE" position.

5.2.12 On the Heat System Control Inlet Pre-heat System, open valve ROV-127, "H-125 ISOLATION", using handswitch on Panel E.

5.2.13 When ROV-127 green open light is illuminated on Panel E, start Heat System Control Inlet Pre-heat System Heater by pressing the heater "Start" push-button on Panel E.

5.2.14 Verify temperature of 300 degrees F was attained by the pre-heat system.

5.3.0 SHUTDOWN

To shutdown the NTF, the Facility Operator shall do the following:

5.3.1 PREREQUISITES

Desired temperature was attained by the pre-heat system.

5.3.2 OPERATIONAL GUIDELINES

5.3.2.1 Stop Heat System Control Inlet Pre-heat System Heater by pressing the heater "STOP" push-button on Panel E.

5.3.2.2 On the Heat System Control Inlet Pre-heat System, close ROV-127, "H-125 ISOLATION", using handswitch on Panel E.

5.3.2.3 Close V-132, "SUPPLY AIR ISOLATION" by pressing push-button labelled "CLOSE" for the "NTF CORE FLOW ISOLATION VALVE" located on Junction Box "NTF Jbox 1"in the TTE control room.

5.3.2.4 Rotate keyswitch to the "INHIBIT" position for the control key labeled "NTF ENABLE". Verify warning bells are silenced.

5.3.2.5 On Junction Box "NTF Jbox 3" in the NTF bay, rotate the control switch labeled "EJECTOR & Core FLOW ISOLATION VALVES" to the "INHIBIT" position.

5.3.2.6 Using the area paging system, make the following announcement, "Verification testing in building 4777 is complete. Please heed all further warnings and bells.

5.3.2.7 Remove jumper on Bearing Temperature No. 1 High Temperature annunciator.

5.3.2.8 Connect wire on Model Speed Lo annunciator, white wire on Panel F, terminal block TB1, terminal 45.

6.0 NOTES

7.0 SAFETY PRECAUTIONS AND WARNING NOTES

7.1 ALL prerequisites shall be completed, if possible, prior to commencing a section of a procedure.

7.2 Any conflicts encountered during the performance of this procedure should be resolved prior to completion of the procedure.

7.3 Exercise caution in the vicinity of electrical equipment.

7.4 Exercise caution in the vicinity of rotating equipment and high temperature systems.

7.5 **EMERGENCY** telephone numbers are as follows:

Ambulance	911
Medical Center	4-2390
Fire	911
Security	4-4357
Utilities	4-3919
Communication Repair	4-1771

8.0 APPENDICES, DATA, REPORTS, AND FORMS

NONE

9.0 RECORDS

NONE

10.0 TOOLS, EQUIPMENT, AND MATERIALS

NONE

11.0 PERSONNEL TRAINING AND CERTIFICATION

NONE

12.0 FLOW DIAGRAM

NONE