

N 9 1 - 2 8 2 4 1

PRESENTATION 4.2.4

NASA **Space Transportation Propulsion Technology Symposium**
DEVELOPMENT, MANUFACTURING & CERTIFICATION **PSU**

NATIONAL TEST BED CONCEPT

COORDINATOR: PLEDDIE BAKER
NASA-WHITE SANDS TEST FACILITY

CONTRIBUTOR: ROGER MEYER
LESC-WHITE SANDS TEST FACILITY

CONTRIBUTOR: MELVIN McILWAIN
AEROJET-PROPULSION DIVISION

Space Transportation Propulsion Technology Symposium

NASA **ISSUES** **PSU**

- **HIGH COST OF PROPULSION TESTING**
- **ATTRITION OBSOLESCENCE AND NONEXISTENCE**
OF PROPULSION TEST FACILITIES
- **ATTRITION OF TECHNICAL SKILLS AND**
EXPERTISE OF PROPULSION TEST PERSONNEL

**HIGH COST OF PROPULSION
TESTING**

-
- COUNTER-PRODUCTIVE COMPETITION BETWEEN CENTERS
 - USE OF OTHER GOVERNMENT FACILITIES
 - VERY HIGH COST OF TESTING
 - SCHEDULE CONFLICTS
 - LIMITED TECHNICAL SKILL/KNOWLEDGE TRANSFER
 - FUNDING OF FACILITIES/EQUIPMENT IN PRIVATE SECTOR
 - BIASES COMPETITION ON NEW PROGRAMS
 - DIFFICULT FOR OTHER CONTRACTORS TO USE
 - DIFFICULT TO RELOCATE
 - HIGH COST OF TESTING AND MAINTENANCE

**ATTRITION, OBSOLESCENCE, AND
NON-EXISTENCE OF PROPULSION TEST FACILITIES**

-
- ENVIRONMENTAL RESTRICTIONS/IMPACTS
 - ENCROACHMENT BY PRIVATE SECTOR
 - AGING AND/OR OBSOLETE
 - INEFFICIENT
 - LIMITED OR NONEXISTENT CAPABILITIES



Space Transportation Propulsion Technology Symposium

**ATTRITION OF TECHNICAL SKILLS AND EXPERTISE
OF PROPULSION TEST PERSONNEL**

PSU

-
-
- LOSS OF SKILLS AND EXPERTISE DURING LONG-LIFE PROGRAMS
 - LITTLE EXPERIENCE GAINED/TRANSFERRED WHEN TESTING AT OTHER GOVERNMENT FACILITIES
 - INADEQUATE TRANSFER OF PRACTICAL KNOWLEDGE AND OPPORTUNITY FOR HANDS-ON EXPERIENCE
 - DECLINING NUMBER OF TECHNICAL PERSONNEL AVAILABLE

Space Transportation Propulsion Technology Symposium



OBJECTIVES

PSU

-
-
- DEVELOP WITHIN NASA A NATIONAL TEST BED FOR PROPULSION SYSTEM TESTING
 - EFFICIENTLY UTILIZE NASA'S LIMITED FUNDING FOR FUTURE PROPULSION SYSTEM DEVELOPMENT AND SUSTAINED FLIGHT SUPPORT
 - ENSURE ADEQUATE TEST FACILITIES ARE AVAILABLE WITHIN NASA TO SUPPORT FUTURE PROPULSION SYSTEMS
 - DEVELOP AND MAINTAIN WITHIN NASA AND THE PRIVATE SECTOR THE TECHNICAL SKILLS AND EXPERTISE FOR FUTURE PROPULSION SYSTEM DEVELOPMENT

-
-
- ESTABLISH WITHIN NASA HQ ONE ORGANIZATION RESPONSIBLE FOR ADMINISTERING ALL NASA PROPULSION TESTING

 - ESTABLISH AN INDEPENDENT REVIEW ORGANIZATION TO:
 - INVENTORY EXISTING NASA TEST FACILITIES AND THEIR CAPABILITIES
 - DETERMINE THEIR FUTURE USABILITY
 - COMPARE THEIR CAPABILITIES/USABILITY TO THE NEED FOR FUTURE PROPULSION SYSTEM TESTING
 - RECOMMEND TYPE/SIZE PROPULSION SYSTEM BEST TESTED AT EACH FACILITY
 - RECOMMEND MODIFICATIONS/ADDITIONS TO BE MADE TO EACH FACILITY

(CONTINUED)

- ESTABLISH A NATIONAL TEST BED FOR PROPULSION SYSTEM TESTING
 - FACILITIES WHICH WILL BE INCLUDED
 - TYPE/SIZE OF PROPULSION SYSTEMS WHICH WILL BE TESTED AT EACH
 - MODIFICATIONS/ADDITIONS WHICH WILL BE MADE TO EACH AND WHEN

- ESTABLISH A "JANNAF LIKE" FORUM OF REPRESENTATIVES FROM THESE TEST FACILITIES TO ENHANCE THE TRANSFER OF PROPULSION TEST TECHNOLOGY AND INFORMATION

- ESTABLISH AND FUND A PROGRAM TO STIMULATE INTEREST AT ALL LEVELS OF EDUCATION IN MATH, SCIENCE, AND SPACE

-
- NASA HQ COMMITMENT TO A NATIONAL TEST BED FOR PROPULSION TESTING - LATE FY 90
 - NASA HQ COMMITMENT/FUNDING TO AN EDUCATIONAL PROGRAM TO STIMULATE INTEREST AT ALL LEVELS IN MATH, SCIENCE, AND SPACE - LATE FY 90
 - REVIEW COMPLETED, NATIONAL TEST BED ESTABLISHED, RESPONSIBILITIES ASSIGNED - LATE FY 91
 - JOINT NASA "JANNAF LIKE" WORKING GROUPS FORMED AND FUNCTIONING - EARLY FY 92
 - MODIFICATIONS AND ADDITIONS TO EXISTING TEST FACILITIES - FY 92-96