TO: NASA Headquarters  
Attn: RI/Director for Institutions

FROM: 103A/Deputy Director

SUBJECT: Summary Preliminary Langley Research Center FY'89 Major CoF Submittal

Enclosed are advance copies of the standardized formats of LaRC's FY'89 Preliminary Major CoF Submittal, as requested in your September 12, 1986, letter. LaRC is proposing that five Major CoF Projects be funded in FY'89:

1. Construction of Supersonic Low-Disturbance Tunnel (1247D) $ 5.2M
2. Modifications to Upgrade Hypersonic Aerothermal Complex (1247, 1251, 1275) $ 9.4M
3. Modifications for Electromagnetics Scattering Laboratory (1299) $ 16.2M
4. Modifications to 4-By 7-Meter Low-Speed Tunnel for Aeroacoustic Research (1212C) $ 10.5M
5. Modifications for Space Flight Experiment Development Facility (1250) $ 6.0M

$47.3M

The first project is a high-priority carry over from FY'88. The second project complies with your September 12, 1986, emphasis on improving the reliability and productivity of those existing facilities which are of great programmatic interest. The third project, "Modifications to Upgrade Electromagnetics Scattering Laboratory (1299)" provides an exciting new opportunity for NASA. The remaining two projects provide new capability to allow LaRC to meet major Agency and National research objectives.
Copies of the package for the fifth project are also being sent to OSS and OSSA since this project also supports missions for these codes.

Paul F. Holloway

5 Enclosures

cc:
NASA - NX/B. J. McGarvey
NASA - NXF/F. X. Durso
NASA - NXF/A. L. Farrow
NASA - E/B. I. Edelson
NASA - S/A. J. Stofan
NASA - EPI/H. H. Ellis, Jr.
LeRC - 3-8/J. W. Gregory
ARC - 213/C. R. Castellano
101/General Files
106/Director
103/Director Assistant
117/W. D. Mace
118/C. R. Blankenship
116/R. V. Harris
107/R. R. Nunamaker
111/J. F. Stokes
113/J. F. Creedon
112/R. L. Swain
112/R. T. Wingate
112/J. R. Dinkins
436/J. E. Knemeyer
104/A. C. Massey
104/A. C. Fitzgerald
104/T. E. Caldwell
446/FPDO Files

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446/CRS KRC F CRS
MD
112/RLS
MODIFICATIONS FOR ELECTROMAGNETICS SCATTERING LABORATORY (1299)
FY 1989 - LARC

REQUIREMENT:

0 NEW FACILITY FOR WIDE-FREQUENCY, BI-STATIC, ELECTROMAGNETICS RESEARCH

WHY NOW:

0 LARC HAS PACED INDOOR SCATTERING MEASUREMENTS TECHNOLOGY FOR THE NATION, FACILITY NEEDED FOR CURRENT AND FUTURE REQUIREMENTS TO CAPTURE UNIQUE OPPORTUNITIES PROVIDED BY SIGNIFICANT LARC ACHIEVEMENTS FOR ADVANCED AIRCRAFT PROGRAM
0 TECHNICAL NEEDS OF RESEARCHERS ARE EXCEEDING THE TECHNICAL LIMITS OF THE PILOT FACILITY
0 ELECTROMAGNETICS ISSUES HAVE BECOME PRIME DRIVERS IN AIRCRAFT/SPACECRAFT DESIGN AND NASA NEEDS AN EXPERIMENTAL CAPABILITY TO ENSURE THAT ITS MULTIDISCIPLINARY RESEARCH IS PROPERLY FOCUSED
0 ENABLE VITAL IMPROVEMENTS IN ELECTROMAGNETICS RESEARCH FOR FUTURE AEROSPACE DESIGN

DESCRIPTION:

0 AN ADDITION OF 125'W X 128'L X 71'H TO EXISTING VEHICLE ANTENNA TEST FACILITY (1299)
0 DUAL RANGES: BI-STATIC, MONO-STATIC
0 15' X 20' X 25' QUIET ZONE IN LARGE RANGE
0 BROAD FREQUENCY RANGE
0 SMALLER REFLECTOR ON TRACKS FOR BI-STATIC TESTS
0 INNOVATIVE MODEL INJECTION AND POSITIONING SYSTEM

CONCEPTUAL STATUS:

0 PILOT FACILITY BUILT, DEMONSTRATED AND CERTIFIED AS ACCURATE
0 ESL SYSTEMS DESIGN INTEGRATED IN R&T BASE PROGRAM FOR 4 YEARS
0 $324K PRELIMINARY ENGINEERING REPORT (PER NEEDED)

ESTIMATED COST: $16.2M

R&D FUNDING: NONE
O&M REQUIREMENTS: CIVIL SERVICE FTE 2
SUPPORT CONT. MYE 5
UTILITY COSTS $20K/YR
MAINT. COSTS $20K/YR

OCTOBER 10, 1986
BACK-UP INFORMATION

MODIFICATION FOR ELECTROMAGNETICS SCATTERING LABORATORY (1299) $16.2M

PRIOR BUDGET STATUS: NONE

SCHEDULES: BEGIN END DESIGN: BEGIN END CONSTRUCTION: BEGIN END
PER 2Q FY’87 4Q FY’87 1Q FY’88 4Q FY’88 2Q FY’89 4Q FY’90

CRITICAL PROGRAMMATIC MILESTONES:
0 PILOT FACILITY DEMONSTRATED AND VALIDATED CONCEPT
0 MODIFIED COMPACT REFLECTOR DESIGNED
0 SUBREFLECTOR CONCEPT IDENTIFIED
0 INNOVATIVE SYSTEMS INTEGRATION CONCEPT DEVELOPED

ALTERNATIVES:
0 DELAY ADVANCED AIRCRAFT RESEARCH AS PILOT FACILITY IS UNABLE TO ACHIEVE MEASUREMENT SENSITIVITY NEEDED BY NASA RESEARCHERS
0 STOP DEVELOPMENT OF INDOOR MEASUREMENT TECHNIQUE AS TECHNICAL LIMIT OF FACILITY HAS BEEN NEARLY ACHIEVED

FUTURE REQUIREMENTS/FOLLOW-ON ACTIONS: NONE ANTICIPATED

CoF PROJECT MANAGER: R. K. FAISON, JR.
ADVOCATES/STATUS CENTER:
HQs:
OTHER:

OCTOBER 10, 1986
ESL Baseline Configuration—Elevation View
ESL Baseline Configuration—Plan View
ELECTROMAGNETICS SCATTERING LAB

PROJECTED INDOOR EM MEASUREMENT

TECHNOLOGY EVOLUTION

EM MEASUREMENT SENSITIVITY

TIME

MEASUREMENT REQUIREMENTS

LaRC PILOT FACILITY

TODAY

ESL