

ID 1560, T-GROUP/DIRECTOR, D87757.1



**NSA PROPOSAL  
FOR A  
NATIONAL SECURITY  
SUPERCOMPUTING  
RESEARCH LABORATORY**

ID1560, T-GROUP/DIRECTOR, D87757.2-5

26 OCT 83



## PURPOSE OF BRIEFING

- TO PRESENT NSA's CONCERNS REGARDING SUPERCOMPUTING INITIATIVES
- TO PRESENT A SPECIFIC PROPOSAL FOR A NATIONAL SECURITY SUPERCOMPUTING RESEARCH LABORATORY

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**NSA PROPOSAL**

- PROPOSAL FOR NATIONAL SECURITY SUPERCOMPUTING RESEARCH LABORATORY
  - NSA NEEDS
  - MISSION
  - ACTIONS
  - COSTS

**SUMMARY**

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## BACKGROUND: PROBLEMS

- THE JAPANESE THREATEN TO TAKE THE LEAD IN DESIGN, MANUFACTURE AND SALE OF SUPERCOMPUTERS.
- THE PRESENT CAPABILITIES OF SUPERCOMPUTERS CANNOT SATISFY PRESENT NEEDS.
- U.S. UNIVERSITIES, LABORATORIES, INDUSTRY AND GOVERNMENT DO NOT HAVE SUFFICIENT ACCESS TO SUPERCOMPUTERS.
- MANY POTENTIAL USERS ARE UNAWARE OF SUPERCOMPUTER CAPABILITIES.
- PHYSICAL LIMITATIONS ON DEVICE CAPABILITIES THREATEN TO SLOW DEVELOPMENT OF FASTER SUPERCOMPUTERS.

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## BACKGROUND: ACTIVITIES

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- LAX COMMITTEE (DEC 82)
- FEDERAL COORDINATING COUNCIL ON SCIENCE, ENGINEERING AND TECHNOLOGY (SUPERCOMPUTER PANEL) (SEP 83)
- FRONTIERS OF SUPERCOMPUTING (AUG 83)
- HOUSE SCIENCE & TECHNOLOGY COMMITTEE HEARINGS
- DARPA STRATEGIC COMPUTING PROGRAM (OCT 83)

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**NSA REACTION**



**CONCERN FOR NATIONAL SECURITY**

- OTHER PROPOSALS ARE GOOD AS FAR AS THEY GO.
- LACK OF A COORDINATED NATIONAL RESEARCH EFFORT.
- NO NATIONAL SECURITY EMPHASIS, EXCEPT  
DARPA.
- OTHER PROPOSALS DO NOT DIRECTLY ADDRESS  
NSA PROBLEMS.

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## **NSA REACTION**



## **SPECIAL INTERESTS**

- **SUPERCOMPUTERS ARE VITAL TO OUR CURRENT CRYPTANALYTIC EFFORTS. WE MUST HAVE THE LARGEST, MOST POWERFUL COMPUTERS AVAILABLE.**
- **ADVANCED SUPERCOMPUTERS MUST BE DEVELOPED TO PROTECT OUR EDGE IN CRYPTANALYSIS AND COMMUNICATIONS SECURITY.**
- **SUPERCOMPUTERS ARE BECOMING NECESSARY TO INTELLIGENTLY COLLECT AND PROCESS NEW, HIGH DATA RATE SIGNALS.**
- **NSA MUST NOT BECOME DEPENDENT ON FOREIGN SUPPLIERS OF SUPERCOMPUTING EQUIPMENT.**

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**NSA REACTION**



**COMMENTS ON FEDERAL SUPERCOMPUTING PROGRAM**

**FEDERAL SUPERCOMPUTING PROGRAM**

- **GENERAL PROGRAM IN SUPERCOMPUTING WITH EMPHASIS ON:**
  - (1) **PROVIDING WIDE ACCESS TO SUPERCOMPUTING RESOURCES, AND**
  - (2) **CONDUCTING BROAD RESEARCH IN SUPERCOMPUTING**
- \* **AMPLIFY DESCRIBED ELSEWHERE**
- \* **WE SUGGEST THE ADDITION OF A FEDERAL SUPERCOMPUTER RESEARCH CENTER, ONE GOAL OF WHICH SHOULD BE:**
  - "TO DEVELOP SYSTEM SOFTWARE, COMPILERS AND ALGORITHMS TO DELIVER THE FULL POWER OF THE HARDWARE TO THE USER."**
- \* **NSA VOLUNTEERS TO SERVE ON INTERAGENCY "BOARD OF DIRECTORS"**



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## NSA PROPOSAL

- ESTABLISH A NATIONAL SECURITY SUPERCOMPUTING RESEARCH LABORATORY TO CONDUCT A FOCUSED PROGRAM OF RESEARCH IN SUPERCOMPUTING WITH EMPHASIS ON REAL NATIONAL SECURITY PROBLEMS

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**NSA NEEDS**

- **MAINTAIN AND INCREASE THE COLLECTION AND PROCESSING OF FOREIGN ELECTRONIC SIGNALS.**
- **MAINTAIN AND INCREASE READABILITY OF FOREIGN CRYPTOGRAPHIC SYSTEMS.**
- **SECURE U.S. COMMUNICATIONS FROM INCREASING FOREIGN THREAT.**
- **APPLY RESULTS OF SUPERCOMPUTER RESEARCH TO SPECIFIC DEFENSE PROJECTS.**
- **DO SUPERCOMPUTER RESEARCH ON PROBLEMS PECULIAR TO SIGNALS INTELLIGENCE.**
- **PERFORM CLASSIFIED RESEARCH.**

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**NATIONAL SECURITY SUPERCOMPUTING  
RESEARCH LABORATORY**



**MISSION**

- **PERFORM R&D ON MASSIVELY PARALLEL PROCESSING SYSTEMS**
- **DEVELOP AND EVALUATE SOFTWARE AND ARCHITECTURE**
- **DEVELOP PROTOTYPES FOR EVALUATION OF MPP SYSTEMS  
USING REAL PROBLEMS**
- **SUPPORT R&D OF HIGH PERFORMANCE PERIPHERALS  
FOR SUPERCOMPUTERS**
- **SUPPORT R&D IN HARDWARE TECHNOLOGY AS NEEDED**
- **COLLABORATE WITH GOVERNMENT, INDUSTRY AND  
ACADEMIA**
- **ESTABLISH AND MAINTAIN A SECURE RESEARCH  
FACILITY**

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## WHAT IS UNIQUE ABOUT THIS PROPOSAL

- SECURE FACILITY TO EVALUATE MPP's USING CRITICAL DEFENSE APPLICATIONS
- EMPHASIS ON AN APPLICATIONS LEAD RATHER THAN EXPORT CONTROL
- INCLUDES MPP's FOR NUMERIC, CHARACTER AND BINARY PROCESSING
- EMULATION OF SPECIAL PURPOSE OR HYBRID SYSTEMS FOR CLASSIFIED APPLICATIONS
- INCLUDES FOCUS ON INTELLIGENCE AND SIGINT APPLICATIONS

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**NATIONAL SECURITY SUPERCOMPUTING  
RESEARCH LABORATORY**



**ACTIONS**

- OBTAIN APPROVAL FOR NATIONAL SECURITY SUPERCOMPUTING RESEARCH LABORATORY
- ESTABLISH A NEW DIVISION OF IDA AS A NATIONAL SECURITY SUPERCOMPUTING RESEARCH LABORATORY (NSSRL)
- APPOINT NSA AS THE EXECUTIVE AGENT FOR NSSRL
- ESTABLISH AN ADVISORY COMMITTEE
- PROVIDE A SECURE FACILITY FOR NATIONAL SECURITY APPLICATIONS
- SUPPLEMENT STAFF WITH PERSONNEL FROM GOVERNMENT, INDUSTRY AND ACADEMIA

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# **SUMMARY**

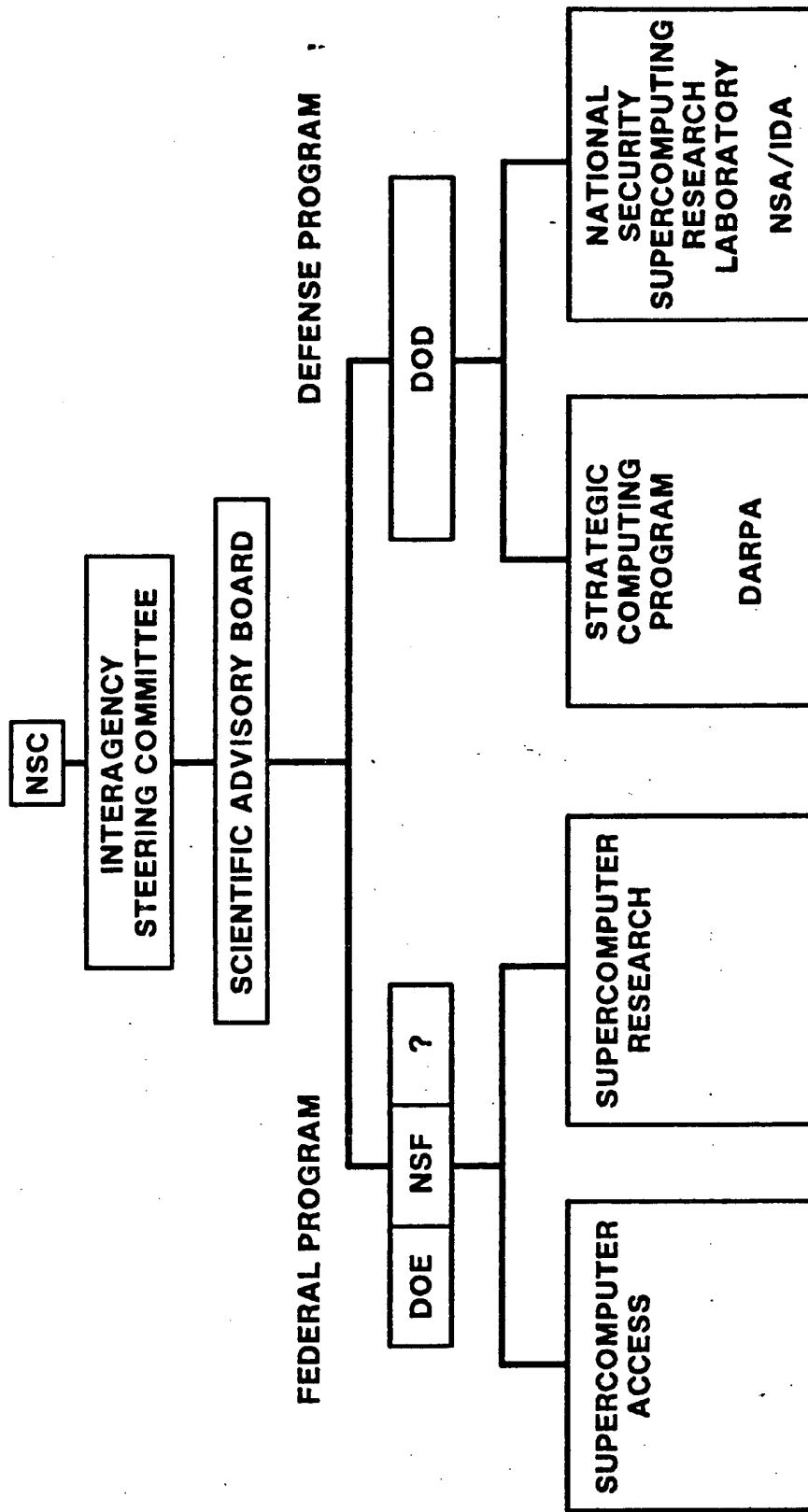
- **LOTS OF ACTION FOR A FEDERAL PROGRAM WHICH NSA CAN SUPPORT**
- **OUR NEEDS ARE NOT COMPLETELY SATISFIED; SOME ARE SIGNIFICANTLY DIFFERENT**
- **WE PROPOSE ESTABLISHING A NATIONAL SECURITY SUPERCOMPUTER RESEARCH LABORATORY**
- **NSA MUST HAVE THIS PROGRAM WHETHER OR NOT ANY OTHER PROGRAMS EXIST**
- **OTHERS MAY HAVE SIMILAR NEEDS AND CAN COLLABORATE**

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# U.S. SUPERCOMPUTING INITIATIVE





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# U.S. GOVERNMENT SUPERCOMPUTER



## INVENTORY

DOE 15

DOD 8

NASA 3

NSF (NCAR) 2

DOC (NOAA) 2

TOTAL 30



**HANDLE VIA COMINT CHANNELS ONLY**

**SECRET**

Classified By: ~~FOUO/SCSM 123-2~~  
Declassify On: Originating Agency's Determination Required