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NRO APPROVED FOR  
RELEASE 17 September 2011

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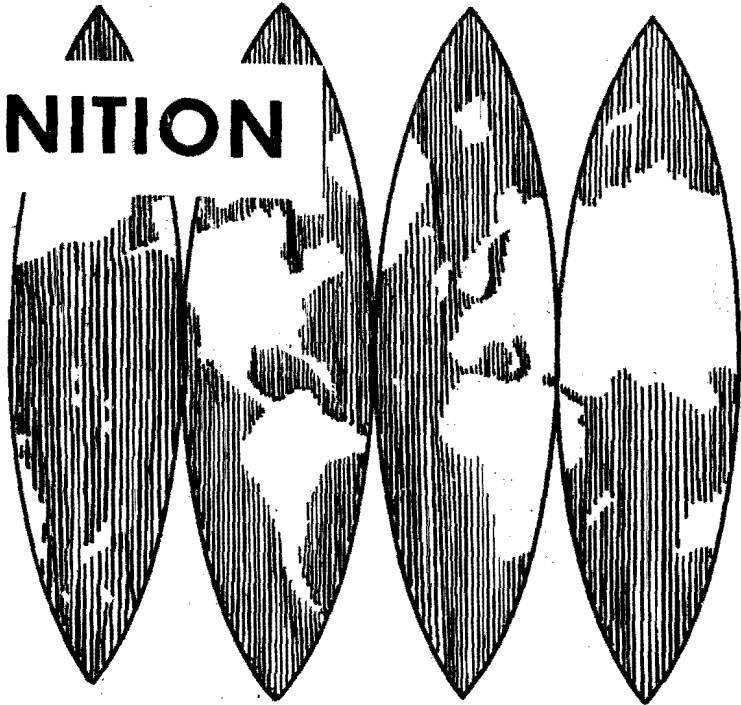
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VOLUME I (PART I)

DESIGN DEFINITION  
sensor subsystem



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THE PERKIN-ELMER CORPORATION

NORWALK, CONNECTICUT, U.S.A.

CHESTER W. NIMITZ, JR. PRESIDENT

21 July 1966

Gentlemen:

We are pleased to make this submission in response to requirements defined in your 23 May 1966 Request for Proposal for the sensor subsystem on the Hexagon Program. The proposal is responsive in all aspects to that request.

The Perkin-Elmer Corporation considers itself uniquely qualified to accomplish the objectives of the Program. The Corporation has a record of significant accomplishment in the design, development, and production of advanced scientific instrumentation with emphasis in the technical disciplines particular to Hexagon. We are prepared to commit the personnel, facilities, and financial resources necessary to assure satisfaction of that Program's performance, delivery, and cost goals.

As evidence of our confidence in satisfying such goals, we have undertaken a series of actions aimed at timely implementation of a full program on date of award. These include -

Preparations for the establishment of a separate Optical Technology Division specifically charged with management and technical performance responsibilities for the Hexagon Program.

Purchase of a facility committed solely to this program with A & E studies (partially funded at company risk) now in progress to provide for expansion as is necessary.

Commitments of funds at company risk to procure critical long lead-time materials and services.

Evaluation of a series of potential major subcontractors in order that vendor commitments can be triggered coincident with contract award.

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Initiation, months ago, of a program for recruitment of professional personnel which has produced tangible results to date, and which continues.

As noted above, to better assure a successful Program, it is our plan to establish a separate Optical Technology Division. Personnel presently assigned to the Program will be augmented according to plan by identifiable personnel presently within the Corporation, and by recruitment as required. This combination of identifiable people will represent a cross-section of the technical excellence, and management and administrative capability drawn from all facets of the Corporation.

A conscientious effort has been made as a part of this Program to anticipate the principal technical problems to be encountered, and specific conclusions in regard to such problems are documented in the proposal. Our extensive analysis, design, and experimentation have led us to full confidence that the technical approach which we propose will meet or exceed the requirements of the Hexagon mission for the following reasons:

The ability of our design to resolve 2.7 feet from a perigee altitude of 95 nautical miles, thereby achieving operational flexibility between the increased coverage capability at this altitude and an even better resolution of 2.2 feet at the minimum altitude of 80 nautical miles.

A passive thermal design that yields a favorable environment for the optics, and which is both significantly lighter and more reliable than an active thermal system.

An optical design that provides for a generous focus tolerance ( $14\mu$ ,  $2\sigma$ ), yields high resolution, is enclosed in a single structure for maintaining alignment integrity during launch as well as uncoupling from vehicle distortions in orbit, and provides an additional measure of thermal protection.

The use of proven components and techniques in the film transport system including: air bars, edge-guidance sensors and steerers, focal-plane

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defining rollers, tension sensors and controls, a twister mechanism, phase-lock synchronization to the scanners, and adaptive loop control of all drives.

Additional operational flexibility in the ability to operate in the surveillance mode with efficient use of film by mixed scan, short scan, and patch mode operation.

The successful implementation of an advanced optical fabrication technique which utilizes machine processing to produce precision optical parts on a reliable and repeatable basis in a much shorter time than can be accomplished by conventional techniques.

In consonance with our past record, we advocate a balanced and thorough approach in evaluating technical solutions. Conclusions are the responsibility of cognizant engineering managers, and such conclusions have been, and will continue to be, reviewed and approved by the Corporate Technical Advisory Board made up of Perkin-Elmer's most experienced scientific and engineering personnel.

We recognize that our acceptance of technical direction from the Procuring Agency is an essential element in accomplishing this program. We believe that our record on previous procurements with this Agency and other Government Agencies is the best endorsement that can be made to support this statement.

Of critical importance in meeting Program goals is our ability to add personnel consistent with the proposed plan. Our plan calls for the sensible coordination of transfers from within the company, recruitment of new personnel, assignment of consultants, judicious sub-contracting, and selective use of purchased technical services. The plan, as detailed in the proposal, will permit accomplishment of Program goals.

Perkin-Elmer submits this proposal on the basis that it possesses the management, scientific, technical, fabrication, and administrative skills necessary to the accomplishment of the Hexagon Program. The Corporate managerial record for stability, integrity, performance, and service underwrites this conviction,

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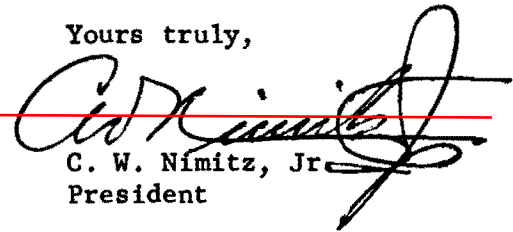
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as does our specific history in serving the Procuring Agency on previous programs whose accomplishments lend credit to both contracting parties.

This undertaking has the enthusiastic support of Corporate management and its employees. On behalf of the Corporation, I commit the technical, administrative, and financial resources of Perkin-Elmer to the success of the Hexagon Program.

Yours truly,



C. W. Nimitz, Jr.  
President

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Attachments:

- Volume I, Design Definition
- Volume II, Program Plan
- Volume III, Cost Proposal

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