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TECHNICAL PROPOSAL 6972-87

(U) CORN. '73/'74

SUBMITTED:
11 SEPTEMBER 1972

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6972-87

TECHNICAL PROPOSAL

(U) CORN '73/'74

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DATA CORPORATION
3481 DAYTON-XENIA ROAD
DAYTON, OHIO 45432

SUBMITTED:
11 SEPTEMBER 1972

72-DC-0215

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SECTION I

INTRODUCTION

A. REQUIREMENT

(C) A vital requirement for the preservation of national security, both during peacetime and during periods of active conflict, is the ability of a nation to perform a reconnaissance/surveillance mission for the collection and production of timely, accurate intelligence data regarding the military activities of a potentially hostile nation. Since complete intelligence obviously cannot be attained by ground inspection, it is necessary to utilize aerial surveillance methods employing remote sensing techniques. The "take" from these aerial sensors must be studied in great detail by experienced photo-interpreters, for the detection and location of potential targets of interest and, more importantly, for the accurate measurement of these targets. Since the non-detection of important targets, or small errors in measurement of these targets, could lead to a serious under- or overestimate of a potential hostile nation's military capability, it becomes highly important that these sensor systems be as advanced as the state-of-the-art permits. Therefore, we constantly strive for advance in optics, photosensitive emulsions, photochemistry, stabilized mounts, and all other components of the total surveillance system. As new or improved systems evolve, through the various categories of test and evaluation and into an operational system, it becomes essential that we be able to measure system performance accurately and objectively so that we know its capabilities and limitations and are able to express, mathematically, its inherent error characteristics.

(U) In order to assess system performance objectively and measure inherent error characteristics accurately, a series of ground target arrays have been designed to provide a specified stimulus to the collection systems to provide an image signature which can then be machine read and subjected to mathematical, computerized analysis. In this proposal it is, then, our intent to discuss the technical, operational, and managerial requirements necessary to the provision of services to the U. S. Air Force in support of ground targets for systems performance assessment.

B. GENERAL PROGRAM DESCRIPTION

(U) In order to satisfy the aforementioned requirements, the Controlled Range Network Program was initiated in 1963 by the U. S. Air Force through a prime contract with Data Corporation. Data Corporation for the past nine years has been responsible for the implementation, operation, and management of the CORN Program.

(U) The basic nature of the CORN Program dictates a hard requirement for a "quick reaction" capability to provide support services on an "on-call" basis at any point within the continental United States. In an oversimplified statement, the goal is to display the right target, at the right place, at the right time. Nine years of operational experience, coupled with our efforts in systems test and evaluation and image analysis,

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have proved that the program is considerably more sophisticated than the above statement would indicate.

(U) First, a considerable effort has been expended in the development of the "right target". Data Corporation has constantly sought new designs for target stimuli which would improve signal-to-noise problems, provide a highly repeatable machine-readable target, permit more advanced mathematical computerized analysis, and provide a more accurate measurement of systems performance. In addition, we have performed research in materials, coatings, and fabrication technology to increase durability, improve spectral reflectance, and improve dimensional stability. We have also been concerned with developing smaller, lighter weight, more easily handled targets to provide increased field operational efficiency. Considerable effort has been placed on investigation, test, and analysis of various instrumentation which could be used in the field to collect the necessary "ground truth" measurements to support the analysis techniques.

~~(C)~~ The "right place" and the "right time" are not factors to be taken lightly, nor are they as simple as might be envisioned by the inexperienced. Being at the "right place" at the "right time" is all important. Failure to do so not only results in a loss of money but, more importantly, results in the loss of essential information. Data Corporation has maintained accurate records of display locations throughout the history of the CORN Program. Data pertaining to locations and frequency of display requests are plotted and analyzed to determine operational requirement patterns. Subcontractors have then been selected and geographically positioned in the heart of high-density display areas to provide maximum efficiency of operation, and to ensure quick response in achieving deployment on short notice. Since a typical operation is generally more than one day in duration, but at varying geographic locations, it is necessary for these target units to move over a considerable distance to be at the "right place" at the "right time" on the following day. During a multiple-display, multiple-day operation, considerable operational experience and managerial expertise are necessary to stage a nationwide operation, involving 6 to 9 mobile units, successfully.

(U) A considerable amount of "behind the scene" support activity is also required to ensure the successful, smooth operation of field activities. Periodic inspection and maintenance of vehicles, targets, and equipment are necessary to ensure that all units are maintained in a state of maximum operational usability and readiness. Field operations are monitored to ensure maximum operational efficiency and "best effort" production from the subcontractors. Not the least problem is the maintenance of morale and stimulation of interest and pride on the part of field crew personnel not only to do the job well, but to improve proficiency. Finally, there is the task of maintaining a smooth, efficient communications network for display alerts and final instructions and for the processing, preparation, validation, and timely forwarding of the site deployment reports.

C. SCOPE

~~(C)~~ (U) This technical proposal, in response to RFQ No. outlines Data Corporation's proposed plan for the continued successful operation of the CORN Program

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for FY-73-74. Data Corporation proposes to provide the managerial, technical, and operational personnel and experience necessary to the operation of the CORN Program for a period of 24 months. This shall include the accomplishment of the following tasks:

- Operational management and control
- Maintenance of all equipment
- Operation of a quality control program
- Maintenance of communications network
- Location and preparation of special multiple display sites
- Development of validated deployment reports
- Maintenance of CORN handbooks
- Periodic inspection of all mobile targets, and fixed targets as directed
- Replacement of equipment as necessary and upon direction
- Display of new targets for test and evaluation purposes
- Submission of required reports

Since Data Corporation has been regularly accomplishing the above tasks over the past nine-year period, we have developed the management controls, operational experience, personnel and equipment, and standard operating procedures necessary to ensure the smooth, successful continuation of the CORN Program in providing the required services to the U. S. Air Force.

D. SUMMARY

Data Corporation believes that we are uniquely qualified to continue the management and operation of the CORN Program for FY-73-74. Our nine-year history and experience have provided the knowledge and skills necessary to the successful continuation of the program. It is our intent, in the following sections of this proposal, to demonstrate our understanding of the problem and to set forth our best proposed solutions for program improvement — technically, operationally, and fiscally. Our past experience has enabled us to respond in considerable detail and to reexamine various facets of the program, considering various alternatives for possible areas of improvement.

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SECTION II

UNDERSTANDING THE PROBLEM

A. INTRODUCTION AND PURPOSE

The primary purpose of the Controlled Range Network is to provide for the deployment of specific target arrays and reference standards for the evaluation and verification of the operational capabilities of various types of aerial reconnaissance systems. To meet this objective, an extensive network of special-purpose targets has been created in both fixed and mobile configurations. In addition to the primary requirement for target deployment, critical support services such as target calibration, maintenance, and ground truth data collection are needed to ensure accurate and repeatable measurement of system performance.

From an analysis of a vast amount of data available to Data Corporation from our past experience with the CORN program, it quickly became evident that there are two types of actions which are required in the performance of the CORN program SOW. These actions are strategic, which determine the basic method of operation and would be difficult to change once Data Corporation has initiated a specific course of action, and tactical, which are more readily changed in response to specific requirements in the Statement of Work.

Based on our understanding of the problem, we consider the key strategic actions, which had to be taken to establish a sound approach capable of successfully achieving the objectives of the CORN program SOW to be the following:

- Single central base operations deployment.
- Ground type of transportation to be used for target deployment and crew transport.
- Location selection of multiple deployment bases.
- Field crews manned by full-time crew chiefs and part-time employees.
- Establishment of a proficient Data Corporation management team and organization.
- A strategy to be employed for effectively deploying and matching field crews against display requirements.
- Determination of the size and personnel qualifications of a cost-effective field crew.

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From a tactical point of view, there are two series of requirements that must be satisfied and incorporated into a program operations plan. For convenience the broad headings of Operational Readiness and Operational Requirements were chosen. Our specific response to fulfilling these requirements is spelled out in Section III, Soundness of Approach. These factors are listed here in an attempt to show the range of requirements that must be considered if a satisfactory overall program is to be achieved.

OPERATIONAL READINESS

- Calibrate mobile and fixed target displays on a scheduled basis.
- Clean the fixed target sites as required.
- Clean the mobile targets on an "as-needed" basis and perform preventive maintenance on transportation vehicles.
- Calibrate and maintain operational readiness of mobile photometric instrumentation.
- Calibrate and maintain the spectrophotometric and portable spectroradiometric equipment monthly.
- Prepare, evaluate, and submit Target Deployment Reports, Monthly Progress Reports, Standard Operating Procedures, and CORN Manual additions.

OPERATIONAL REQUIREMENTS

- Analyze CORN operations forecast.
- Adopt a tentative deployment strategy and define a QC plan for the operation.
- Alert and brief field crews for operation.
- Determine operational readiness of field units.
- Analyze operation confirmations and commit crews to travel.
- Report progress and position every 2 hours.
- Stand by for site change messages and/or next day's confirmation.
- Receive and reformat "ReCap" messages and forward to CORN customer.
- Analyze operational performance for potential procedure improvement in subsequent planning activities.

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B. FACTORS TO BE CONSIDERED

In order to establish a framework for our proposed approach to CORN '73-'74, this section contains a description of the factors which we believe to be critical to the success of the CORN program. Since enumeration of factors and elements can be somewhat confusing when presented in quantity, we have divided the discussion into three logical areas:

- The resources (materials, equipment, labor) which are required for an efficient program.
- The organization which must exist if the resources are to be employed to solve the problem.
- The operation which must take place to meet the objectives and goals of the Air Force.

Factors which must be considered to achieve program success are identified and discussed below. Many of the factors listed are critical or imperative to CORN; they MUST be considered in any approach to the problem. Others are less absolute, but remain highly desirable; we WANT to consider these wherever possible. Each factor has been reduced to a number of significant "elements" which have varying degrees of impact on the importance of that factor.

The financial resources available to fund the CORN program are an inseparable consideration in each factor discussed in this section. In the course of preparing this proposal, we have evaluated the cost/benefit ratio of each factor and alternative solution, on the assumption that the goal of the Air Force is to achieve "the maximum number of absolute, successful displays in the most cost-effective manner". We believe that this position is consistent with the cost of overall national reconnaissance programs and the value of accurate, reliable displays on a continuing basis. Further, we believe that, while the program can be operated under minimum-cost ground rules, the consequences of blind adherence to this philosophy would, in the final analysis, be overwhelmingly more costly not only in terms of dollars, but also in terms of irretrievable intelligence.

1. Resources

a. Transportation: CORN is essentially a time-critical deployment problem, in which the movement of payload targets and labor is a MUST requirement. If the success or failure of an approach is measured (as we believe it must be) by the percentage of successful displays, transportation is one of only two or three factors which will make or break CORN. First, a transportation system is required which has the necessary capacity, reliability, efficiency, flexibility, and physical characteristics to permit meeting the requirements of the Statement of Work. The proposed system must meet the applicable Federal and state licensing requirements, be insurable at reasonable cost, and comply with Federal, state, and local regulations.

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b. Mobile targets: CORN mobile targets have been designed to provide a set of reference standards for evaluating reconnaissance systems. Inherently, they have much greater flexibility than fixed targets since their use is not restricted by geographic location. The fact that they are portable, however, lends a degree of vulnerability to the nylon and canvas substrates and to the pigmented emulsions with which they are coated. The characteristics of the panels which comprise a mobile display affect other factors: The capacity of the transport, the nature of the display site, the size of the field crew, and the time and skill required to make a display.

c. Display sites: A critical factor in a successful display, the display site is at times one of the most difficult things to find. Generally speaking, a crew has less than an hour in which to secure an appropriate site and, hopefully, the permission of the owner to display the targets. While this is seldom a problem in the southwest, displays have been required in areas such as the metropolitan center of Memphis where both space and permission are at a premium. Few midwestern farmers enjoy being awakened at 0400 by a stranger with a request for permission to display several hundred square yards of canvas in a back field for a few hours. Frequently, the resourcefulness and imagination of the field crew are crucial factors in finding a suitable site within the time available.

d. Field crews: The crews deployed from field locations become of major importance during an operation. Badly selected crews or incompetent crew chiefs can break a successful operation more rapidly than any other single factor. Transportation problems, target, and communications problems can all be overcome provided a given crew chief is a resourceful and imaginative individual with a proven "track record" for selecting and motivating crews to work under almost impossible conditions.

e. Communication: Communication between the customer, the contractor, and the field crew is an absolute MUST requirement for successful operational control of a mission. Initial program forecasts, confirmations, and change notices are received via TWX or telephone on a 24-hour a day basis at the contractor's facility. Rapid notification of field crews (particularly of changes in target locations) must take place immediately.

f. Calibration instrumentation (mobile targets): The selection, maintenance, and use of spectrophotometric instrumentation for target calibration will determine the accuracy with which the images of the targets may be evaluated. Since the reflectance of almost any coating changes with age, targets must be monitored on at least a bi-monthly basis.

g. Calibration instrumentation (fixed targets): In order to provide annual fixed target calibration services, portable spectrophotometric or spectroradiometric instrumentation must be available as CFE.

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b. Mobile photometric instrumentation: The brightness meters, deployed with each CORN mobile unit, have been used with considerably less frequency in the past three years. Special operations, and infrequently CORN operations, still require their use to obtain either target brightness values or target reflectance data for a specific display. There is little question of availability since the equipment is GFE, but the contractor is obligated to maintain the equipment in operable, calibrated condition.

c. Fixed targets: Frequently, mobile target displays are augmented by the use of fixed targets, which are owned and maintained by the Government in support of this and other testing programs. Generally, the fixed target inventory in the United States varies in physical condition from the totally useless to the good and recently rehabilitated. Those which are good enough for use as a part of this program must be periodically cleaned to assure that drifting sand and dirt do not significantly change the contrast characteristics on the ground. Vegetation has a tendency to grow around and through the target, and this must be cut and removed. Generally, it is a good idea to treat the soil chemically in areas where sage and other vegetation grow through the target. This sometimes reduces the frequency of cleaning and helps increase the life of the target. Annually, each target in the inventory must be inspected to determine its present condition; and, if useable, it must be calibrated to determine the spectral reflectance of bars and background in a number of locations on each target.

2. Organization and Operation: To employ the resources provided by the Government and contractor, a strong, flexible organization must be established which is capable of operating the program in accordance with the Statement of Work. While the number of factors to be considered is less than in the previous discussion, their importance is at least equal and perhaps greater.

a. Program organization and staffing: In order to coordinate and effectively utilize resources available to the program, people and things must be organized in a manner which assures the control necessary to a successful program, yet which permits the flexibility required by a quick-response program where contingency situations are the norm rather than the exception.

b. Operational control provisions (facility): To provide an environment for the management and operational control of CORN, a single location of command and control must be identified from which customer communication and field crew direction will take place.

c. Crew location: One of the most critical factors in projecting the overall success probability of any approach is the distribution of base locations from which field crews are deployed during an operation. The ability of a crew to respond to an alert within 12 to 24 hours and, subsequently, to make a successful display 350 miles away is directly dependent on the distribution of crew locations. With the time constraints imposed by the CORN program and with the number of crews limited to nine, it is a physical impossibility to reach a location "anywhere" in the continental United States within a 12-hour period. Recognizing this fact, we feel it is then necessary to

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apply maximum amount of experience in the selection of optimum locations so that the probability of making a display is maximized.

d. Clearances: Security clearances required for project personnel must be considered in the selection of facilities and personnel.

e. Reporting: The CORN program requires reporting many types of information to the customer. This information includes text, data lists, graphs, maps, and charts.

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SECTION III

SOUNDNESS OF APPROACH

A. PRELIMINARY CONSIDERATIONS

Our objective has been to formulate a program which retains the present ability to make at least 98% of the requested displays successfully, yet which does so in a cost-effective manner, taking maximum advantage of available experience.

Successful CORN operations, with high probabilities of successful displays, hinge on the selection of program resources which will be employed by a project organization under certain operational conditions to achieve an end result: a display which is technically correct, in the right place, on time.

In order to present Data Corporation's proposed approach to the CORN operation in an orderly fashion, this section first presents the strategic aspects of a nationwide, time-critical deployment program. Following this section, the tactical considerations of resource selection, organization formulation, and operational scheme development are presented. A final operational summary presents a scenario of a "CORN Op" as a means of emphasizing the complex gaming required to coordinate a successful series of displays in accordance with customer requirements.

B. VEHICLE SELECTION

The selection of vehicles to support the CORN program as detailed above is both important and difficult. The particular selection is important in that vehicles which do not perform adequately will reduce the quality of CORN operations. This reduction in quality will generally manifest itself through untimeliness of target laydowns. Moreover, the decision of vehicle type must be a good choice at the outset since the large capital expenditure or long-term leasing agreement made by the contractor precludes reversing the decision after field experience.

The difficulty in selecting a vehicle lies in the magnitude and diversity of vehicle types and the types of functions they have to perform in fulfilling the requirements of different programs under the CORN Statement of Work. Historical data can and should be used in the choice of a vehicle type, as well as the changing requirements of the overall CORN program. The continued choice of Data Corporation is the 5-ton truck because:

- The 5-ton truck offers the highest performance.
- The 5-ton truck offers the most favorable benefit/cost ratio.
- The 5-ton truck poses the least threat to the successful operation of the CORN program.

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This vehicle has been augmented by a second, light-weight, four-wheel-drive, radio-equipped vehicle for site location and inspection, target deployment and inspection, and crew transport during the "D" programs currently in progress.

C. DEPLOYMENT OF RESOURCES

The prime contractor of the CORN program performs primarily a management service for the Air Force. The Air Force CORN program manager defines the target display requirements for an operation. In response to these requirements, the prime contractor deploys and directs field crews to display the targets, using a planning strategy to deploy the resources available in a geographical area which will insure satisfactory accomplishment of an operation. Determining how best to perform this management service poses the need for decisions concerning which alternatives, of several, should be chosen to accomplish the display requirements. In particular, decisions are made concerning how many field crews and/or target complements are enough to do the job while still maintaining a high degree of reliability; where should the crews be located to be most effective; what deployment strategy should be used to have maximum utility of available resources; how far should a field crew operate from its home base; how many personnel will constitute an efficient crew. Serious consideration and review of these questions are required in order to form an operational deployment plan which will guarantee a continuing, successful, and highly reliable CORN operation.

Field services are provided by nine field crews distributed across the continental United States. This overall capability can respond successfully to the required 375 mobile displays. Since the field crew home stations have been carefully chosen, this approach can be applied anywhere in the continental United States, against up to six displays daily, and can respond to 1000-mile separations between subsequent-day display locations. Each field crew has an effective operational radius of approximately 300 miles in a 24-hour period. Operational control and management of the field crews are exercised by the Dayton CORN Program Office.

Data Corporation proposes to supply the required services through a program combining central operational management and support and subcontracted field crew capabilities. Field crew home base locations shall be:

Lancaster, California	Lubbock, Texas
Tucson, Arizona	Wichita, Kansas
Albuquerque, New Mexico	Springfield, Missouri
Denver, Colorado	Shreveport, Louisiana
Dallas, Texas	

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The location of field crews is significant in that it is a factor in the response capability of the program. Home bases have been selected in areas of high activity. Both the number and location of field crews serve to decrease the time and cost required to commit each crew against display requests, provide flexibility in making crew assignments, facilitate satisfying fixed-site requirements (cleaning and inspection), make optimum use of the existing GFE mobile target inventory, provide a capability to accomplish displays separated by as much as 1000 miles on successive days of operation, and can satisfy multiple display requirements (up to a maximum of six mobile displays on a single day).

The selection of the nine field crew locations has been accomplished on the basis of the pattern of activity previously experienced, the requirements of the currently supported programs, and the previously experienced effective operational radius. Specific field crews are selected at each location through a competitive subcontracting process. (The Appendix contains the Statement of Work to which prospective subcontractors must respond.) Initial training (if required) is provided to field crew personnel and deals with the display of each target, preparation of forms and reports, communications procedures with the Operations Supervisor, maintenance requirements and procedures, etc. Vehicles are provided to each field crew for the transportation of crew and mobile targets to and from display sites. A basic complement of mobile targets is allocated to each field crew. The remaining vehicles and targets are maintained in Dayton as reserve inventory and for the support of local-area operations.

Inherent in the analysis and thought processes used to evaluate the alternatives of subcontractor locations is a concept and certain ground rules for deploying the field crews against operational display requirements. Upon receipt of the operations forecast, an analysis is performed to determine the best balance of subcontractor deployments that can be achieved to meet the display requirements on daily sequential operations. The analysis consists of a series of gaming operations, in response to the following basic questions:

- Where are the display sites with respect to field crew home bases?
- Under the known terrain, road, weather, and vehicle conditions, how long will it take the crew to travel to each site over a proposed display sequence?
- Are all field crews available and in nearly equal operational readiness?
- What are the probabilities these display forecasts will change?
- If they are changed, what alternate sites can still be covered by field crews available?
- What impact do sequential displays have upon the use of various field crews with overlapping territories?

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These gaming questions provide the framework within which the forecast and assignments can be analyzed in order that the display requirements will be completed satisfactorily.

D. CORN OPERATIONAL PROCEDURES

Once the strategic selection of equipment, staff, and program organization has been carried out, a set of procedures must be established and implemented to assure efficient day-to-day operation.

1. Operational Readiness: A portion of the overall CORN effort must be devoted to maintaining the state of readiness required for quick response. Targets and instruments must be inspected, repaired, and calibrated; vehicles inspected and maintained; handbooks and manuals updated. Field crew performance must be reviewed and training schedules established. Outlined below are some of the procedures which have been implemented to standardize these activities.

a. Mobile target inspection and inventory control: This procedure will be conducted by field crew chiefs on a regular basis, under the direction and control of the Subcontractor Supervisor. A physical inspection of each target will be carried out at the end of each operation or at the end of each month, whichever comes first. Each crew chief will complete a target condition report after inspecting each panel for missing grommets, coating abrasions, scratches, peeling, seam condition, tears, or holes. Completed reports will be forwarded to Data Corporation where permanent records are to be maintained on each target of the complement assigned to each crew. (An example of the Target Condition report form appears on page III-5.)

Discrepancies noted in target condition must be repaired immediately, and all targets washed, dried, refolded, and stored in condition to travel on immediate notice. Procedures for carrying out these operations are included in the CORN SOP and will remain unchanged. In the event that patching is required, crews will use actual target material supplied for this purpose. The crew chief will complete the Field Maintenance Log and submit it along with his monthly financial statement to the Subcontractor Supervisor. This information will be consolidated and reported as a normal portion of the monthly progress report submitted to the customer. (An example of the Field Maintenance Log appears on page III-6.)

b. Mobile target calibration: Target emulsion degradation will be monitored every 60 days by laboratory evaluation of the spectrophotometric reflectance. Field crew chiefs will cut samples from strips affixed to each target (the strips are provided for this purpose so that the integrity of the target is not damaged by sample cutting), attach them to a Target Material Sample Patches form, and forward them to Data Corporation for evaluation. (An example of the Target Material Sample Patches form appears on page III-7.) In the laboratory, the instrumentation to be used for target evaluation is a Beckman Model DK-2A Recording Spectrophotometer.

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(Data)

Target Condition

Subcontractor _____

Date _____

— 5T —
TARGET: _____

CONDITION: _____

— RET —
TARGET: _____

CONDITION: _____

— 2GS —
TARGET: _____

CONDITION: _____

TARGET: _____

CONDITION: _____

TARGET: _____

CONDITION: _____

REMARKS: _____

SIGNED _____

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Date _____ 19____
 Location _____
 Crew chief _____

SUBCONTRACTOR _____

FIELD MAINTENANCE LOG

PANEL NO.	repair	wash									
51/1	horz.		51/2	vert.		L-PANEL					
51/1A	"		51/2A	"		"			RED		
51/1B	"		51/2B	"		"			GREEN		
51/2	"		51/3	"		"			BLUE		
51/2A	"		51/3A	"		G-					
51/2B	"		51/3B	"		"			No. 17		
51/3	"		51/4	"		"					
51/3A	"		51/4A	"		"			- PANEL		
51/3B	"		51/4B	"		"			"		
51/4	"		51/5	"		"			"		
51/4A	"		51/6	"		"			"		
51/4B	"		51/7	"		"			"		
51/5	"		51/8	"		"			"		
51/6	"		51/9	"		"			"		
51/7	"					B-PANEL			W-PANEL		
51/8	"		C-PANEL			"					
51/9	"					"			5 GS/A		
			L-PANEL			"			5 GS/B		
5P/1	vert.		"			"					
51/1A			"			"					
51/1B			"			"					

REMARKS											
RLT / 1			2 GS/5								
RLT / 2			2 GS/6								
RLT / 3											
RLT / 4											

MISCELLANEOUS EQUIPMENT



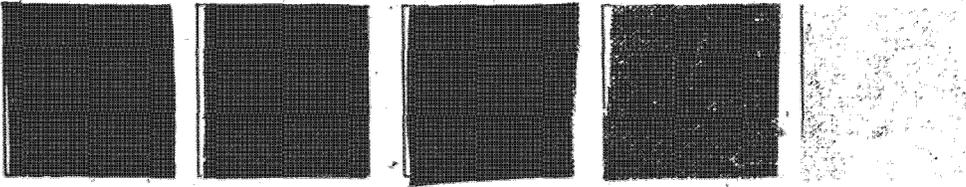
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TARGET MATERIAL SAMPLE PATCHES

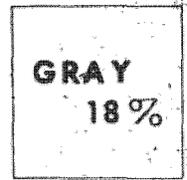
SUBCONTRACTOR: ALBUQUERQUE, NEW MEXICO

DATE 30 SEPTEMBER 1970

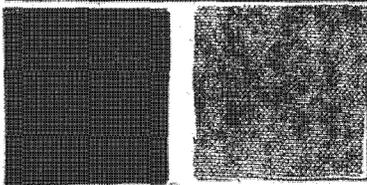
FIVE STEP GRAY SCALE



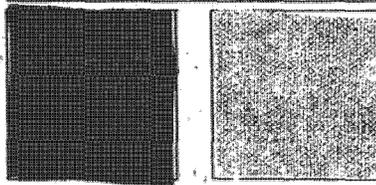
NEUTRAL DENSITY TEST CARD



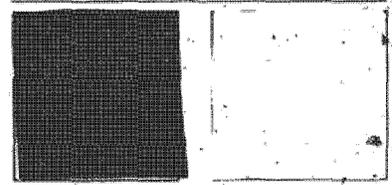
51/51 T



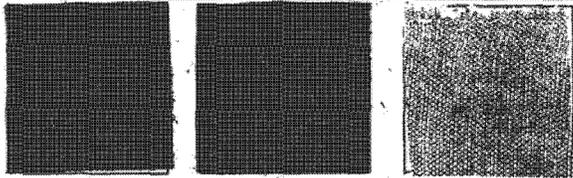
EDGE TARGET



MIL. STANDARD

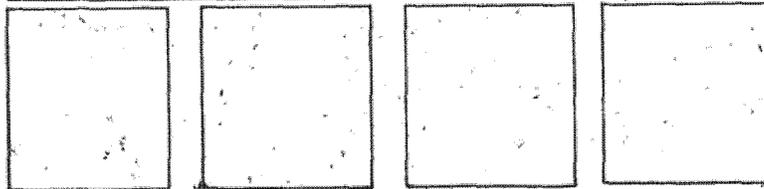


TRI-COLOR



**ALL TARGETS MUST
BE IDENTIFIED ON
REVERSE SIDE**

OTHER (SPECIFY)



Cut size 1 1/4" square

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Once data have been collected, the past calibration history of each target will be reviewed to determine whether a significant change has occurred. Spectral data and a target condition report will be submitted to the customer within two weeks of the time samples were cut.

c. Fixed target calibration: Fixed target reflectance will be evaluated on two occasions during the proposed program. A mobile team of two men will travel from site to site, inspecting each target listed, determining the number of measurements required to adequately describe each target and making the necessary spectroradiometric readings. Each data set will be referenced to a target map which, together with pictures of the target site, will enable the customer to assess the suitability of the target for use. The instrumentation to be used in making the above measurements will be a Cintra Model 101 Quantum Radiometer with a Model 1394 Spectroradiometer Probe mounted on a Bausch and Lomb Model 33-86-25-02 Visible High-Intensity Grating Monochromator. This system provides great flexibility and can easily be converted for use in other spectral regions down to 200 nm and up to 1.2 micrometers in wavelength.

The report package, which we plan to use for each target, will consist of:

- Target description and condition report.
- Spectral reflectance data.
- Target map, showing location of measured points.
- Pictures, illustrating target condition.

d. Fixed target cleaning: To provide for the cleaning of fixed targets, when required by the CORN customer, each subcontractor in the vicinity of fixed target sites will be briefed to anticipate periodic requests for such activities. Cleaning operations will consist only of sweeping the target and removing vegetation which may have grown through cracks or along the edges. A permanent oil-base vegicide will be used to treat cracks to avoid future problems with vegetation in the target area. A report of action taken shall be forwarded to the Air Force as soon as each such activity is completed. A total of 40 such target cleaning activities is anticipated during the contract period.

e. Photometric instrument operation: The instrumentation requirements for measurement of fixed and mobile targets entail: (1) Exact operational procedures; (2) accurate instrument calibration; (3) reporting of the data in a usable and meaningful form.

Photometric target measurements are accomplished with the Spectra Brightness Spot Meter Model 5B (SFE). This instrument is used to provide both target reflectance and target brightness data, measured in terms of percent reflectance and foot-lamberts, respectively. The instruments are field-portable with their own power supply and are well suited for measurement of mobile targets.

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Under operational field conditions a typical instrumented target deployment would provide for readings of all the targets every 15 minutes. Readings will be obtained from a height of five feet in a vertical position. (A sample of the form used to record these data appears on page III-10.)

I. Photometric instrumentation maintenance: Maintenance of calibrated Brightness Spot Meters at the field locations is essential to rapid, accurate, on-site data acquisition. Monthly, semiannual, and annual calibration checks are a basic part of this program.

On a monthly basis, regardless of the frequency of use, each field location will check the Brightness Spot Meter calibration against the calibrated 100-foot-lambert Spectra Regulated Brightness Source. The values will be recorded on the Calibration and Inspection forms and will become part of the meter's history record. When the meter indicator departs from a 100 foot-lambert reading by more than 5% (± 2.5 foot-lamberts) and fresh batteries are not indicated, the meter and its source will be returned to Data Corporation and a calibrated replacement meter/source set will be immediately sent to the field location.

On a semiannual basis, each instrument set will be returned to Data Corporation for recalibration, a battery check, and a source recalibration. At least one instrument will always be in stock and calibrated at Data Corporation for rotation with field location instruments due for the semiannual calibration. Factory maintenance, if required, will be accomplished at this time.

On an annual basis, each instrument will be completely overhauled. This will include factory rebuilding (if necessary), battery replacement, recalibration, and a scale-linearity calibration. In addition, the calibrated sources will be rebuilt with new lamps and cleaned optical components, and the electronic regulation circuit will be checked for proper functioning. (Samples of the Calibration and Inspection Record and the Maintenance Record forms appear on pages III-11 and III-12.)

Assurance of accurate photometric brightness data is necessary to establish base data for target reflectance and absolute target luminance. Calibration of the Spectra Brightness Spot Meters (photometers) will assure the necessary accuracy and precision for subsequent data reduction.

g. Vehicle preventive maintenance: In order to assure operational readiness of all vehicles, all field crew chiefs will be required to submit monthly maintenance checklists showing that proper preventive maintenance procedures have been followed. (A sample of this checklist appears on page III-13.)

h. Contract reporting procedures: A variety of reports and manuals will be generated as a normal part of the CORN program. What follows is a summary of each type of report anticipated, together with typical format and frequency information.

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Sheet ___ of ___

Date _____

CALIBRATION AND INSPECTION RECORD

Instrument _____

Property No. _____

Model No. _____

Calibration Frequency _____

Manufacturer _____

Inspection Frequency _____

Serial No. _____

Calibration & Maintenance Instructions _____

Standard Source No. _____

Property No. _____

	Location	Date	Brightness Value (ft-L)	Remarks
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

Return this instrument and source to Data Corporation for recalibration on _____ date

III-11

These record sheets (3) must accompany the instrument.

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TRUCK MAINTENANCE CHECKLIST

Subcontractor _____

Date _____

Truck Number _____

Mileage _____

MONTHLY:

- Lights (headlights, parking lights, tail & brakelights, turn signals, box lights)
- Battery water level and battery cables
- Tires (amount of wear)
- Brakes
- Oil level
- Check four-wheel drive

EVERY 2000 MILES:

- Change oil and filter
- Complete lubrication
- Check for any abnormal oil leakage
- Wash

EVERY 5000 MILES:

- Check and adjust points - replace condenser
- Replace air & fuel line filter
- Adjust brakes
- Check front & rear differential
- Rotate tires

EVERY 10,000 MILES:

- Change points & plugs
- Replace brakeshoes
- Adjust & clean carburetor
- Check wheel cylinders
- Adjust front end

NOTICE:

To the Subcontractor or Crew Chief:

Your CORN-subcontract requires that you perform the maintenance activities listed above as indicated and submit this form on a monthly basis. Attach receipts itemizing each maintenance function performed.

I certify that the functions checked above have been performed as required.

Subcontractor

III-13

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Monthly Status Reports will be prepared by program management personnel for delivery on a schedule to be established by the Air Force. We plan to continue using the same basic report outline which was employed during the 1972 CORN Program. Briefly, the following information will be provided:

- Program summary
- Operations summary for the current month
 - Special operations
 - Program C operations
 - Program D operations
 - Target inventory and location summary
 - Target repair cost report
 - Financial report
 - Non-operational program activities
 - Display data report

The basis for the operational summary, included in the Monthly Status Report, will be individual monthly summary reports submitted by each field crew, a sample of which appears on pages III-15 and III-16.

CORN Recap Reports will be received by Data Corporation Operations Control Center (OCC) by telephone from the field crew chief immediately following each display. This information, supplied in a standard format, will be telephoned and/or TWX'd to the Air Force within 24 hours of the display, or on the request of the Air Force operations contact.

Target Deployment Reports consisting of:

- Site sketch,
- Map (1:250,000 TOPOCOM) overlay,
- Site Manning Report (only if site instrumentation is used),
- Crew Chief's Pre-Departure Checklist

will be compiled for an entire operation and forwarded to the Air Force within five days of the end of a given operation. Pages III-17-20 show examples of these elements of a Target Deployment Report. (For Site Manning Report example, refer back to page III-10).

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★ **STATEMENT OF EXPENDITURES**

(Data)

CONTRACT _____ CONTRACTOR _____

DATE SUBMITTED _____, COMPILED AND CERTIFIED BY _____

THIS IS A REPORT OF COSTS INCURRED IN PROVIDING SERVICES BY THIS CONTRACT

DURING THE MONTH OF _____

COST SUMMARY

	MAN HOURS	HOURLY RATE	COST
A. OPERATIONS	_____	_____	_____
B. MAINTENANCE	_____	_____	_____
C. TARGET REPAIR	_____	_____	_____
D. MATERIALS (ATTACH MAINTENANCE LOG & EACH RECEIPT FOR REPAIRS & MATERIALS)	_____	_____	_____
E. SECOND VEHICLE, if any _____ MILES AT \$0.10 per mile	_____	_____	_____
F. OTHER COSTS, Attach receipts	_____	_____	_____
TOTAL COST			_____
ODOMETER READING _____	HUBOMETER READING _____		

OPERATIONS

ACTIVITY	DATE	LOCAL TIME		ODOMETER READINGS	NO. MEN	TOTAL MAN HOURS
		START	FINISH			
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						

III-15

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OPERATIONS						
ACTIVITY	DATE	LOCAL TIME		ODOMETER READINGS	NO. MEN	TOTAL MANHOURS
		START	FINISH			
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
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LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						
SITE LOCATION						
LAYOUT, OPERATION & PICK UP						
DEPART						
ARRIVE						

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TARGET DEPLOYMENT REPORT		TARGETS DISPLAYED BY (Z)	OPERATING PERIOD	LOCATION	CORN NO.
(Data)		5T - 1600	1600-1800 Z	Dayton, Ohio	1
SUBCONTRACTOR CREWCHIEF		8E - 1600	CLOUD COVER %	COORDINATES	DATE
Dayton/		SGS - 1600	40%	36°15'15"N/110°20'00"W	1/1/71
PP - 1600					

SKETCH

Note: When laying Targets on an airport or any distance from a main hwy. or road, give measurements of the distance from Taxiways, Hwy., etc. Always have North to the top of the sketch and show both the North Arrow and the direction the Azimuth is going from north.

Legend

- AS - Asphalt
- CO - Concrete
- BLDG. - Building
- HWY - Highway
- R.R. - Railroad
- ARPT. - Airport
- ST - 51 51 "T" Bar
- BE - 80 Ft. Photo Edge
- SGS - 3-Step Gray Scale
- 3C - Tri-Color
- PP - Point Source

FAIRBORN - 2 MILES

ALTIMETER 100

TOPO - 14 MILES

REMARKS:

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III-17

UNCLASSIFIED

(b)(3)

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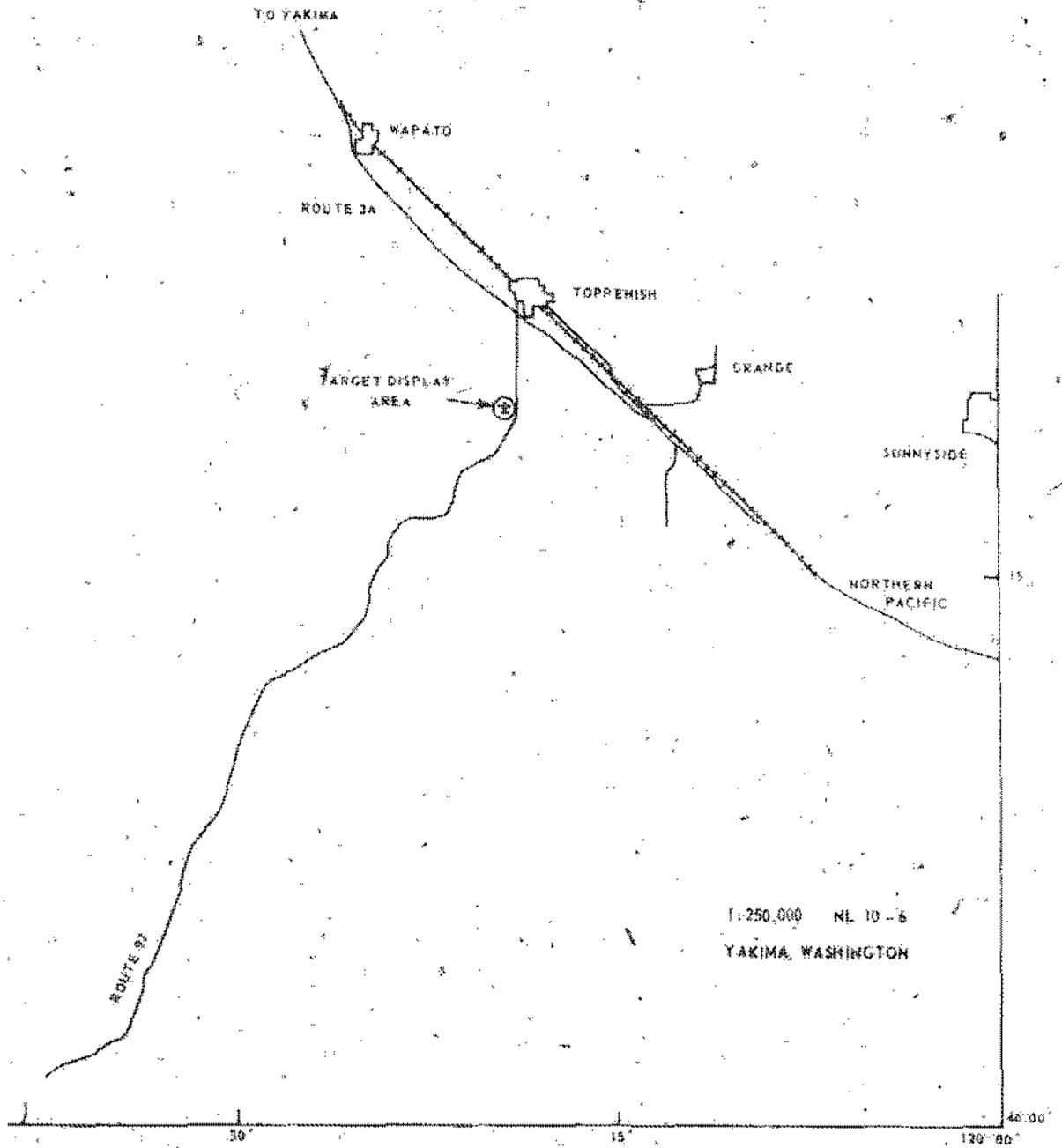
BORN RECAP FORMAT

1. LOCATION (NEAREST TOWN OR CITY AND STATE):
2. DATE AND INCLUSIVE TIMES OF DISPLAY - LOCAL AND GMT (Z) TIMES:
3. MAP NOMENCLATURE:
4. COORDINATES:
5. DESCRIPTION OF TARGETS DISPLAY:
6. REASON WHY DISPLAY NOT ACCOMPLISHED:
7. DESCRIPTION OF TARGET LOCATION:
8. GENERAL WEATHER CONDITIONS DURING DISPLAY:
9. INSTRUMENTATION USED:

(Data)
corporation

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III-19

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UNCLASSIFIED**PRE-DEPARTURE CHECKLIST**

1. Are all requested targets (and panels) on board?

- | | |
|--|--|
| <input type="checkbox"/> 51/51 "T" Bar Target - Canvas | <input type="checkbox"/> 36 panels |
| <input type="checkbox"/> 51/51 "T" Bar Target - Nylon | <input type="checkbox"/> 20 panels |
| <input type="checkbox"/> Edge Analysis Target - Canvas | <input type="checkbox"/> 19 panels |
| <input type="checkbox"/> Edge Analysis Target - Nylon | <input type="checkbox"/> 9 panels |
| <input type="checkbox"/> Gray Scale | <input type="checkbox"/> 5 panels |
| <input type="checkbox"/> Tri-Color | <input type="checkbox"/> 3 panels |
| <input type="checkbox"/> Mil. Standard 150A | <input type="checkbox"/> 20 panels |
| <input type="checkbox"/> Point Source | <input type="checkbox"/> 1 Spherical Reflector |
| <input type="checkbox"/> Panel No. 17 of Mil. Std. | <input type="checkbox"/> 1 panel |

SPECIAL TARGET(S)

- | | |
|-------------------------------|---------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/> panels |
| <input type="checkbox"/> | <input type="checkbox"/> panels |
| <input type="checkbox"/> Pags | |

2. Are the following components in the foot locker?

- Compass
- String
- Log forms (Target Deployment, CORN Recap, Location Report, Cast Logs, etc.)

ON-SITE CHECKLIST

- Have you verified with the home office, exact coordinates for today's operation - prior to laying your first target?
- Have you obtained permission to use the site?
- Have you checked and double checked site coordinates?
- Have you allowed for the local magnetic declination of coordinates?
- Have you listed the exact times (both standard and GMT) that the targets were displayed?
- Have you completely filled in all necessary spaces on the appropriate forms?
- Have you contacted your home office to determine your next destination?
- Check all targets for any needed repairs (use Field Maintenance Log).

RETURN TO HOME FACILITY

- All equipment must be cleaned and stored in the instrument kit (footlocker).
- All targets must be cleaned, if necessary, and thoroughly dried (to prevent mildew).
- If targets are not rolled correctly, they should be correctly rolled and placed in their storage cell.
- Report all torn target panels and get them repaired, upon Data Corporation's authorization.
- Check your vehicle and clean the interior (both cab and trailer) after every trip.
- Be absolutely certain that every aspect of your targets/support equipment is in operational readiness!

REMARKS: _____

Certified by: _____

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The CORN Manual, maintained in a standard format since its inception, will be updated as often as required, but not less than twice during the twenty-four month period of the contract. The occasion for these two updates will follow the calibration of fixed targets; a format for reporting these data will be adopted by mutual agreement with the customer. Other update information will follow the formats prescribed by the existing manual. If requested, Data Corporation will remove those portions of the manual which deal with the mobile multisensor capability.

Data Corporation will continue to supply the CORN Standard Operating Procedures (SOP) to each of its subcontractors as a means of assuring range uniformity from display to display. We will update the SOP to include display procedures for new targets, such as the 2GS and RLT, and will incorporate other modifications as they become advisable. We see no reason to alter the format adopted for the present manual, which has been the cornerstone of our efforts to improve our field performance.

2. Operational Procedures: The receipt of a CORN alert message initiates a chain of events which, before the operation concludes, will require the concentrated, coordinated efforts of the entire Prime Management and Subcontractor team. The operational procedures, which Data Corporation has developed over the past 8 years, will continue to be employed for one fundamental reason: They have a past record of working. To assure continued compatibility, however, changes will be made when mission profiles or customer procedural changes dictate.

Mission operations will be coordinated by an Operations Chief (OC), assigned for the duration of each mission. The Program staff, proposed by Data Corporation, provides for two fully trained OC personnel who will alternate as prime and backup on a mission-by-mission basis. This approach will assure that both men retain complete currency and familiarity with the procedures involved. In order to maintain continuity throughout an operation, the OC assigned at the time of the CORN alert will be responsible for the duration of the operation. His backup will be considered to be on "standby" should contingency situations develop.

For a given operation, the OC has the responsibility and authority to commit program resources, as necessary, to see that the mission is a success. His goal is a 100% success percentage, which is defined as the percentage of requested (but not canceled) displays made successfully on location, within corridor, and on time. Displays lost to inclement weather (high winds or precipitation) are considered as though they were canceled.

OC personnel will carry out mission coordination from Data Corporation's Operations Control Center (OCC), located in our main facility in Dayton, Ohio. The OCC, equipped with TWX and telephone communications equipment, a complete set of 1:250,000 TOPOCOM maps, a 1:2,000,000 wall map of CONUS, and an Alert Status Summary board, has been specially equipped and organized to facilitate the task of directing the nine mobile field units. The facility is available on a 24-hour basis when necessary, but is usually manned only during normal duty hours (0800-1645 EST/EDST).

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Upon receipt of a CORN alert message, an OC is identified as "contact" for Air Force Operations personnel. Business and home telephone numbers are transmitted to the Air Force if they are not already on file. The task begins in earnest when the initial forecast message is received. This TWX, received from the Air Force approximately 8-10 days prior to the beginning of the operation, projects the display requirements for the first 7-10 days of operation. The amount of detail provided and the probability of its remaining unchanged vary from one program to another, but usually the first 2-3 days of displays are described by coordinates and times, while the remaining forecasted days are described by grid location only. Displays are plotted on the 1:2,000,000 map, which also identifies field crew base locations with fixed reference dots.

A tentative deployment strategy is adopted, based on:

- Distance from displays to field units.
- Type of terrain and average rate of travel.
- Likelihood of display changing, and probable direction of change.

At this point, alert messages are sent to all field crews, requiring that they confirm their operational readiness to the OCC within 48 hours. Four days prior to "day 1", the crews selected for display are notified and briefed. Exact coordinates, being still subject to change, are not given at this time.

The Field QC Supervisor and the OC define a tentative QC plan for the operation. Based on crew performance records and the anticipated display difficulty, the Field QC Supervisor will decide whether it is advisable to spot-check field crews and, if so, which displays will receive QC attention. If QC inspections are to be conducted, travel plans are made and the inspector will be provided with updated forecast information to allow him to meet the field crew at the display site. Crews shall not be advised when they have been selected for QC since the purpose is to evaluate their overall performance at the display site. Once he has departed the OCC, the inspector will maintain regular telephone contact with the OC to receive updated display coordinates. He will meet the crew at the display site and monitor their performance throughout the display, instrumentation (if required), and pickup. The crew will be evaluated against a checklist, and the results discussed with the crew chief in person. If training is needed, or if deficiencies are noted, the inspector will carry out on-the-spot training to correct the fault. The inspector may then proceed to spot-check other crews or return home, depending on the plan for the operation. Each field crew is to be monitored and re-evaluated a minimum of four times yearly. The results of the inspection will be discussed with the OC during the operation debriefing following the end of the operation, and a written report will be formulated and transmitted to the subcontractor. The required corrective action will be detailed, and suspense dates defined by which time such action must be taken.

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Upon receipt of the Ops Schedule from the Air Force (usually received 24-48 hours before day 1), crews will be given geographic coordinates and released to travel. They are now required to maintain 2-hour telephone contact with their base, which has designated a 24-hour point-of-contact for the OC. The coordinates specified by the schedule are generally the same as those in the forecast.

Between 2300 and 0100 of day 1, confirmation is received for day 1 displays, updated forecast coordinates for day 2, and grid locations for days 3 and 4. Seldom are the confirmed coordinates the same as the schedule, especially on day 1. The OC must plot and analyze the new coordinates and reevaluate his deployment strategy in terms of new day 1 locations, present crew positions, and forecast day 2 displays. Crews are immediately revectorored by contacting the crew base, which relays the message when the crew chief (CC) makes his next 2-hour contact. The OC immediately determines the crew assignments for day 2 and alerts the respective crew base contacts, giving them geographic coordinates and releasing the crew chief to put his crew on the road the following day.

Early in the afternoon of day 1, recap messages are called to the OCC by each crew chief. The recap, according to a standard format, is edited and prepared for transmission to HQ. Recaps are generally accumulated until the customer requests a recap summary, at which time all collected recap reports are transmitted.

Late on the night of day 1 or early morning of day 2, the day 2 confirmation message will be received, along with day 3 forecast and grid locations for days 4 and 5. The OC will again determine deployment strategy and revector crews, keeping in mind the forecasted displays and grid areas and assuring that no crew is moved so far from its area of primary responsibility that it cannot respond to a display requirement in that geographic area. Throughout the remainder of the operation, this cycle is repeated until another 10-day forecast is received or the operation is over. The OC must continuously reevaluate the deployment situation, with the following factors in mind for each display/crew assignment:

- Nearest crew available.
- Probability of crew being needed elsewhere.
- Crew fatigue factor and equipment condition.
- Distance to be traveled.
- Local weather and terrain characteristics.
- Average speed possible under above conditions.
- Projected grid displays.
- Resourcefulness of crew chief.
- Desire to average the workload over all crews.

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He must make decisions rapidly, yet correctly, and must project the probability of making each display. If the likelihood is low, he will contact the customer with a summary of the situation and with recommendations for alternatives if any are available.

Once operational activities have ceased, the OC is responsible for compiling the Target Deployment Reports mailed in by crew chiefs immediately following each display. The consolidated TDR is transmitted to the Air Force not more than 5 days after the end of the operation. On that day, the Operations Supervisor conducts a debriefing of all program personnel to:

- Summarize the operation.
- Identify problem areas and assign followup activity.
- Enumerate the five best and five worst aspects of the operation.
- Reevaluate the geographical distribution of displays.
- Review field crew performance.

This concludes the outline of the procedures employed during the first two days of a typical CORN operation.

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SECTION IV

COMPLIANCE WITH REQUIREMENTS

The program proposed by Data Corporation, and described by this technical proposal, has been formulated in a manner which we believe to be fully responsive to the requirements of the Statement of Work. In order to summarize the program and to facilitate a direct comparison of the requirements with the elements of the proposal, the following chart has been prepared. On each page, the left-most column represents the requirements, as taken directly from the Statement of Work, entitled "Technical Requirements/Tasks". The paragraph number is given, and the section element under consideration is paraphrased. The center column has been constructed utilizing key elements of the approach presented in this proposal. The elements of the program which directly relate to the requirement are summarized by brief statements, which have been explained in more detail in other sections of the proposal. The column on the far right indicates the Data Corporation personnel who will be responsible for achieving each of the actions listed in the center column. These assignments are important in understanding the interactions, breadth, and depth of the overall program management team and the distribution of activities within the program office itself.

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Requirement/Tasks	Actions Taken for Achievement	Assignment of Individuals Responsible for Achievement
<p>4.1 The contractor shall</p> <ul style="list-style-type: none"> • Execute operational control and management of a series of mobile target arrays and shall provide displays of required mobile targets at locations and times specified. 	<ul style="list-style-type: none"> • Establish staff and manage 6-man program office in Dayton. • Continue services of 8 present subcontractors in Lancaster, Albuquerque, Tucson, Fort Worth, Springfield, Lubbock, Denver and Wichita. • Negotiate and establish 1 new subcontractor (already selected) in or around Shreveport, Louisiana. • Equip all 9 subcontractors with IHC 5-ton vehicles and GFE targets and instruments. • Maintain and operate the Dayton CORN Program Office and Operational Control Center. • Establish reporting routine and managerial channels. • Manage the on-going program to assure compliance with customer requirements. • Maintain customer contact and generate reports as required. 	<p>CORN Program Manager</p>

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Requirement/Tasks	Actions Taken for Achievement	Assignment of Individuals Responsible for Achievement
4.2 The contractor shall maintain in operational condition all mobile targets, equipment, (transportation) vehicles, and other equipment necessary for providing all displays when and as directed.	<ul style="list-style-type: none"> • Inspect mobile targets after each display and clean as needed. • Perform preventive maintenance monthly on trucks. • Check ground truth instrumentation before each operation and/or monthly. 	Subcontractor Supervisor Field Crew Chief
4.3 The contractor shall monitor the condition of all mobile targets in inventory and identify those in need of replacement.	<ul style="list-style-type: none"> • Employ SOP for target inspection, comparison, and monitoring. • File monthly inspection report and comparison with standard. 	Subcontractor Supervisor Field Crew Chief
4.4 The contractor shall operate a QC program to ensure standardization and accuracy of all CORN functions.	<ul style="list-style-type: none"> • Spot check each subcontractor in field during display up to 4 times per year. • Review and compare TDR and photos of deployed targets for accuracy. • Calibrate mobile and fixed targets. • Calibrate spectrophotometric, radiometric and mobile photometric instruments used to calibrate targets. • Train new subcontractors in field operations. 	CORN Program Manager Subcontractor Supervisor

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Requirement/Tasks	Actions Taken for Achievement	Assignment of Individuals Responsible for Achievement
4.5 The contractor shall ensure the proper display of the large targets by using five-man crews; however, crew size shall be reduced when display requirements are reduced.	<ul style="list-style-type: none"> • Maintain the crew reduction option in subcontractor's work statement • Analyze each display requirement for optimum cost/benefit ratio. 	CORN Program Manager Operations Supervisor
4.6 The contractor shall maintain, update and determine revisions as required for CORN Handbooks	<ul style="list-style-type: none"> • Inspect, clean, and check calibration of fixed and mobile targets, reporting significant changes. • Visit all fixed targets once each year and take spectral radiometric reading in a number of identified locations on each target. • Print additions, deletions and/or corrections to CORN Handbook and distribute to user's group. • Provide maps, locations, photographs, and specifications of new targets put into inventory. 	CORN Program Manager Operations Supervisor Subcontractor Supervisor
4.7 The contractor shall provide a target deployment report (TDR) for each assigned display.	<ul style="list-style-type: none"> • Provide recap of display to OCC and field crew home base after each display 	Operations Supervisor Operations Chief Field Crew Chief

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IV-4

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Requirement/Tasks	Actions Taken for Achievement	Assignment of Individuals Responsible for Achievement
4.8 The contractor shall conduct bi-monthly inspection of all mobile targets within the inventory and measure spectral characteristics of each target.	<ul style="list-style-type: none"> • Every 60 days patches 1 x 1 inches are sent in from each mobile target set to Data Corporation • Using Beckman DK-2A with reflectance attachment, spectral absorption traces are run from 350 to 750 nm. • Reduce data, compare with standards, validate instrument QC and data reduction, and transmit to user agency. 	Operations Supervisor Field Crew Chief
4.9 Maintain (TWX) Teletype network.	<ul style="list-style-type: none"> • Three TWX machines will be maintained; one in OCC at Data Corporation, one in ASD program office, and one at CORN customer facility. 	Operations Supervisor
4.10 The contractor shall maintain and operate certain photographic, photometric, and spectrophotometric instruments as may be required.	<ul style="list-style-type: none"> • Calibrate field instruments at Data semiannually. • Calibrate instruments for qualification of field equipment quarterly. • Follow SOP calibration and maintenance operations. • File equipment operational qualifications and standardization forms with CORN customer. 	Operations Supervisor Subcontractor Supervisor
4.11 The contractor shall inspect and clean fixed target sites located on government property when directed.	<ul style="list-style-type: none"> • Approximately 20 times in a year inspect and clean fixed targets as directed. 	Operations Supervisor Field Crew Chief

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Requirement/Tasks	Actions Taken for Achievement	Assignment of Individuals Responsible for Achievement
4.12 The contractor shall locate, lay out, inspect, and clear site for multiple line target displays and make displays as requested.	<ul style="list-style-type: none"> • Locate and lay out new multiple line target sites as requested. • Prepare and clear new site for USG. • Inspect and prepare multiple line target sites for target displays. • Coordinate and supervise the deployment of line targets as requested. 	Operations Supervisor Subcontractor Supervisor
4.13 Return targets from field that are no longer required for salvage, storage, or returned to government.	<ul style="list-style-type: none"> • Notify customer when targets no longer meet operational standards. • Prepare for replacement of nonoperational targets. • Initiate appropriate actions for the storage, salvage, or return of GFE targets. 	Operations Supervisor
4.14 The contractor shall support, by shipping and displaying, T&E of new targets as requested.	<ul style="list-style-type: none"> • Arrange for the shipment and display of new targets. • Include deployment of new targets in QC plan. 	Operations Supervisor Subcontractor Supervisor

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SECTION V

SPECIAL TECHNICAL FACTORS

A. MANAGEMENT REQUIREMENTS

Before we settled on the type of organization and the specific staff that Data Corporation plans to use to manage this program, careful consideration was given to:

- The Work Statement and Program Requirements
- Our past operating experience with CORN
- Established Data Corporation policy and organization
- Our determination to excel in the performance of this contract

In addition, a review was made of what we expect from our management team. Typically, we expect that our managers will be perceptive and have a high degree of awareness to the needs of:

- The customer
- The security requirements of the program
- Data Corporation's employees
- Data Corporation's subcontractors and suppliers
- Society at large

Further, we expect that they will be able to appraise the many and sometimes conflicting inputs from these sources and, with their special insight of the CORN program, will be able to:

- Set priorities
- Determine favorable benefit/cost ratios
- Estimate lead times
- Formulate alternative action plans

They are also expected to be able to evaluate the alternatives carefully and pick a course of action. Frequently, this requires that they:

- Resolve or reconcile conflicts
- Revise priorities
- Allocate resources
- Assign responsibilities

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Finally, they are expected to put their plans in action, monitor the progress of the work to see that the desired results are achieved and be responsible for the results. Often the CORN program requires that this process be repeated frequently under the pressure of tight schedules.

It can be seen, then, that many factors have to be weighed and considered in the selection of a management team.

B. SFOT ANALYSIS

As a part of our analysis to determine the management structure to be used on this program, our past operating experience with the CORN program was reviewed at length with our staff. The goal of this analysis was to achieve a management structure that would allow us to:

- Retain the SATISFACTORY aspects of our past practices and personnel assignments
- Correct present or future operating FAULTS
- Capitalize on OPPORTUNITIES for program improvement
- Minimize the adverse consequences to the program of THREATS from potential future problems
- Establish the specific skills required for each of the key positions

1. Satisfactory Carryover: The key items that we consider satisfactory with our past operations and want to retain are:

- Seven well-qualified, experienced, and cross-trained employees who have outstanding performance records with Data Corporation and the CORN program
- The fine working relationship we have established with our sub-contractors
- The standard operating procedures that have been developed and refined over the past years to promote efficient CORN operations
- The enthusiasm our employees have for the CORN program
- The ability to respond quickly to changing requirements

2. Corrective Changes: Our SFOT Analysis revealed, among other things, that our goal of nearly equal utilization of field crews in CORN operations cannot be achieved by retaining our present organization and subcontractors. The Data Corporation field crew shows a utilization factor measurably lower than the mean for all crews. Because of this and our desire to establish a field crew in the Shreveport, La. area in order to provide more cost-effective support for Program C operations.

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3. Threats The changes which are being proposed in personnel, organization structure, and subcontractors have been kept at a minimum. Drastic changes have been avoided because changes produce uncertainty and, frequently, new problems. We are anxious that a smooth transition be made from the present to the new contract without any deterioration in the quality of operations. It is our considered opinion, based on our past experience with the CORN program, that the proposed changes will not adversely affect our ability to perform on this contract.

4. Key Personnel Requirements: Our review of the management requirements for the CORN program revealed that some of the desirable characteristics and qualifications of the personnel assigned to the jobs of Program Manager, Operations Supervisor, and Subcontractor Supervisor are:

PROGRAM MANAGER

- Broad management, engineering, and supervisory skills
- Authority to commit company and assure compliance with Work Statement
- Ability to communicate orally and in writing
- Familiarity with National Programs
- Ability to substitute for Operations Supervisor
- Analytic capacity and problem-solving ability
- Ability to handle public curiosity
- Experience as a supervisor and program manager
- Authority to interpret company policy
- Desire to communicate with customer

OPERATIONS SUPERVISOR

- Geographical familiarity with all of the United States
- Record of dependability
- Decisive personality
- Willingness to be on call 7 days/week, 24 hours/day
- Must have oral communication skills
- Ability to handle public curiosity
- Experience in directing CORN operations
- Analytic capacity and problem-solving ability

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- Familiarity with A. F. bases and location of fixed target displays
- Familiarity with military base procedures
- Ability to read maps
- Ability to operate TWX machine
- Enthusiasm for CORN program
- Ability to substitute for Subcontractor and Q.C. Supervisor
- Available for permanent assignment and free of other duties

SUBCONTRACTOR AND Q.C. SUPERVISOR

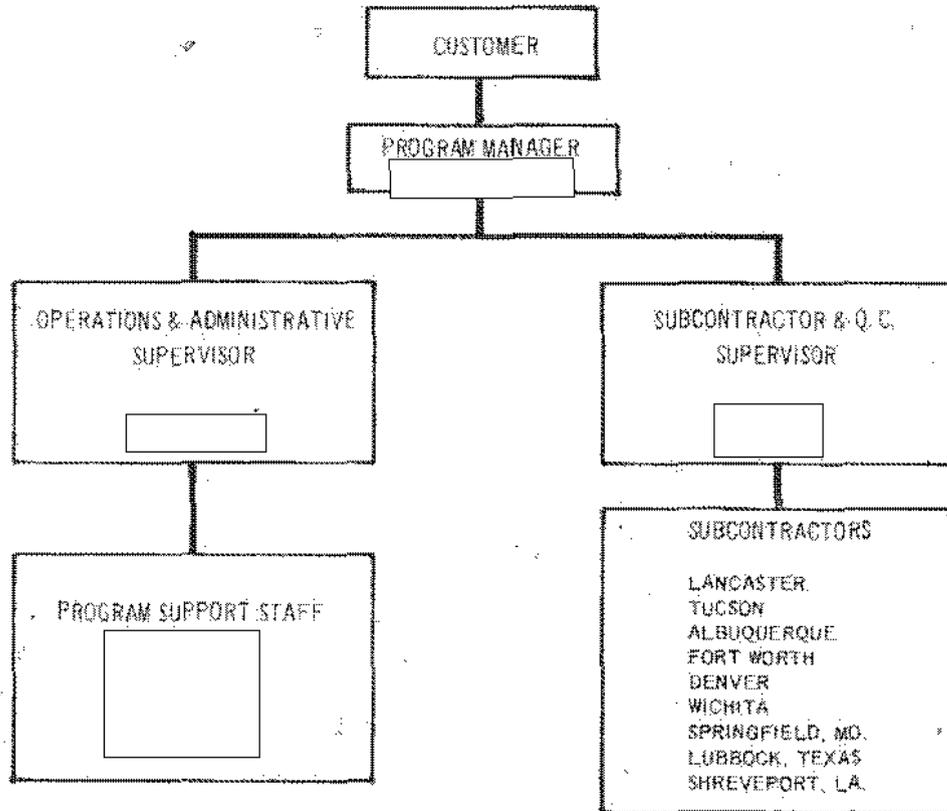
- Ability to select good subcontractors
- Willingness to work long, hard hours and travel frequently
- Geographical familiarity with all of United States
- Ability to supervise, motivate, and judge performance of subcontractors
- Analytic capacity and problem-solving ability
- Experience in this function
- Map reading skills
- Ability to substitute for Operations Supervisor
- Demanding personality
- Negotiation skills
- Ability to handle public curiosity ✓
- Record of resourcefulness in field
- Interest in and dedication to CORN program
- Teaching skills
- Ability to operate instrumentation
- Licensed to drive truck
- Oral and written communication skills
- Ability to perform hard manual labor

C. PROGRAM ORGANIZATION AND PERSONNEL ASSIGNMENTS

Shown on the following page is the organization structure and key management assignments we propose for this contract. Following this chart are the resumes and qualifications of the personnel to be assigned to this contract.

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Program Manager

[redacted] received his Bachelor's degree in photographic science and engineering from Rochester Institute of Technology in 1965. In June of that year, he joined Data Corporation as a photographic engineer assigned to a CORN customer-sponsored program directed toward advanced studies of specialized film processing techniques and equipment. The primary objective of this effort was the investigation of the feasibility of developer application using atomizing nozzles. Subsequently, under several laboratory standards programs, he carried out investigations of the multigeneration characteristics of silver-silver, silver-nonsilver, and nonsilver-nonsilver tone reproduction cycles in terms of the effect upon the physical structure and sensitometric character of the output image. During this period of time, he was responsible for the establishment and development of Data Corporation's internal quality control program and the associated standards and precision calibration program. Much of this work has led to advances in the state-of-the-art in these areas, including the precision calibration of sensitometers which serve as standards for radiometric sensitometry.

In 1967, [redacted] became manager of the photoscience activities of Data Corporation's Houston Division, where he was responsible for the planning, establishment, and operation of the Precision Photographic Laboratory for the National Aeronautics and Space Administration at the Manned Spacecraft Center. This laboratory, which supported the data-gathering activities of NASA's Earth Resources Program, was also charged with the responsibility for processing and duplicating original, on-board photography from the Apollo program. [redacted] was responsible for establishing standard procedures and techniques for the handling of these materials to ensure retaining maximum information content in all duplicates and preserving the integrity of the originals. (b)(3)

[redacted] returned to Data Corporation's Dayton facility in early 1969 and assumed responsibility for a program established under the 1969 laboratory standards effort to implement color processing and printing techniques within the production facility. In 1970, [redacted] was assigned as program manager for the lab standards program. As such, he was responsible for assuring that all efforts carried out in support of the CORN customer were completed on time, within budget, and in a technically correct manner. In 1971, as a senior program manager, he was assigned the strategic responsibility for both CORN and lab standards. In this capacity, he implemented a series of budgetary reductions in the CORN program to increase overall cost effectiveness while maintaining performance at the current satisfactory level. During the past year, he has been responsible for the program management of the CORN '72 program and has performed that function to the satisfaction of both the Air Force and Data Corporation.

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[redacted] Operations and Administrative Supervisor

[redacted] has been intimately involved in the CORN program since 1964. This experience includes:

- Member of the original airborne deployment crew on over 75 operational displays in 1964-1965.
- Field Crew Chief on 20 displays with a mobile ground crew. Crew member on an additional 30 displays during 1966-1968.
- Traveled extensively as a quality control monitor for CORN operations in 1968.
- Participated and contributed to the design and development of mobile multisensor units in 1966-1967.
- Directed multisensor programs; Pelican, RF-4C Vibration Test, JTF-2, SR-71 at Fort Polk, Louisiana, Shaw AFB and other locations in 1967.
- Managed the subcontractor quality control effort on the CORN program in 1968.
- Responsible for selecting Springfield, Missouri subcontractor in 1968.
- Served as back-up Operations Supervisor in 1969-1970.
- Responsible for target procurement and fabrication and all other CORN procurement activities from 1969-1972.
- Served as Operations Supervisor for CORN '72.

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Prior to joining Data Corporation in 1964, [redacted] spent 11 years in the United States Air Force as a Recon Systems Technician.

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[REDACTED] SUBCONTRACTOR AND Q. C. SUPERVISOR

[REDACTED] joined Data Corporation in 1959 as a Design Draftsman. He has been assigned to the CORN program since its inception in 1963. His experience includes:

- Organized and managed as Field Crew Chief the first ground mobile CORN unit during 1963-1965.
- Assisted in selecting and training Dallas, Tucson, Las Vegas, and Lancaster subcontractors with limited mobility capability.
- Organized and managed the airborne CORN operation using a DC-3 and leased vehicles during 1964 and 1965. Participated in roughly 100 displays during this period to wide-spread locations around the United States.
- Responsible for proving the feasibility of substituting ground-based mobile units for the aircraft. Proved feasibility of trucks by performing an operation in the Winter of 1966 that ran from Ohio to Nevada round trip in 11 days. Five displays were attempted and four were successfully completed. One was snowed out. (b)(3)
- Assisted in selection and training of additional subcontractors and in obtaining the necessary targets and equipment in 1966.
- Responsible for quality control of field operations in 1967 and participated in approximately 40 displays with the subcontractors.
- Served as Operations Supervisor in 1968 and conducted 15 operations that achieved a 98% success ratio. Performed backup Q. C. duties.
- Responsible for Captain Hook displays in 1969.
- During 1969-1972, served as Subcontractor and Q. C. Supervisor.

Before joining Data Corporation in 1959, [REDACTED] served in the U. S. Army and worked as an inspector for General Motors Corporation and as a tool designer for C. V. Clark Company.

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[redacted] Reconnaissance Support Technician
Transport Fleet Maintenance

[redacted] joined Data Corporation in 1963 as an Electronics Technician maintaining and calibrating instrumentation. His CORN experience includes:

- Crew member on about 90 airborne displays.
- Field Crew Chief since 1966 on some 150 displays with an excellent completion record. Except for weather cancellations, only once has he failed to make a display. This failure was because a suitable site was not available.
- Acting as a Q. C. monitor on several different occasions.
- Supervised ground truth targeting in support of NASA's Earth Resources Aircraft Program during 1967-68.
- Field Crew Chief on Brainstorm covering displays all over the western United States. (b)(3)
- Instrumental in the success of: Pelican, Compass Pointer, Snowdrop and other special projects.
- Operations in Ohio, Indiana, Pennsylvania, New York, Maryland, New Jersey, Virginia, West Virginia, Kentucky, Tennessee, Georgia, North and South Carolina.
- Seven-year injury-free record of field operations.

[redacted] received an Associate Degree in Electronics in 1963 following completion of a two-year course of study at the United Electronics Laboratories, Louisville, Kentucky. During that time he was employed at the United Electronics Laboratories UHF television station as a cameraman; in addition he assisted in maintenance of the transmitter.

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[redacted] Reconnaissance Support Technician
Operations Control

[redacted] has actively participated in the CORN program from the time he became associated with Data Corporation in 1966. His experience over the past five years has covered instrumentation, supervisory, and technical aspects in support of the CORN and the Multisensor Target Range Programs. More specifically as a result of his intimate involvement with these programs his experience includes:

- Served as a Crew Chief for CORN operations and supervised 6-man teams in field operations.
- Directed deployment and operation on approximately 40 alerts containing 600 separate displays.
- Directed field units to various sites throughout the United States for the past four years.
- Successful record of achieving changes in target location and configuration.
- Instrumental in obtaining special clearances or access to various military installations to complete a display on schedule.
- Participated on the Q. C. team and trained subcontractors in field operation for the past two years.
- Experienced in the operation of instrumentation for collection of ground truth data through the operation of photometric, radiometric, and meteorological equipment.

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Before joining Data Corporation [redacted] served as a Photo Interpreter in the United States Air Force. In 1965 he was associated with the Foreign Technology Division, Wright-Patterson Air Force Base, as a Photo Analyst.

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[Redacted]

Reconnaissance Support Technician
Target Calibration and Maintenance

[Redacted] has participated in the CORN program since 1968. He has been instrumental in establishment of a quality control program for the instrumentation, targets, and equipment utilized in the CORN program. More specifically [Redacted] experience has included:

- Collection, certification, and preparation of Controlled Range Network (CORN) Manual. (b)(3)
- Preparation and compiling of information for the Fixed Target Calibration Summary.
- Collects, measures, and maintains a file for each of the 87 mobile targets.
- Research on materials and processes which lead to improved quality of targets.
- Certifies design specifications of target fabrication.
- Participated in Multisensor including all the radiometric, photometric, and ground truth instrumentation.
- Crew member for 30 displays and served as Crew Chief for some of the displays.

Before joining Data Corporation in 1968, [Redacted] served in the Army Security Agency overseas and at the National Security Agency Experimental Test Facility at Warrent, Virginia.

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[redacted]
Reconnaissance Support Technician
Field Coordination and Support

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[redacted] joined Data Corporation in 1966 as a reconnaissance technician assigned to the support of Project Brainstorm. He has been associated with CORN continuously since that time and has had broad field display experience in a wide variety of situations. Specifically, [redacted] experience includes:

- Served as one of the two men fielded by CORN in support of the second year of Brainstorm, making displays throughout the United States under a variety of conditions.
- Directed numerous field activities for special CORN support programs including SR-71, RF-4C, and Compass Arrow development and test efforts.
- Was responsible for periodic inspection and quality control of field crew activities.
- Has participated in field crew training programs.
- Was responsible for locating and clearing many of the multiple line sites used during the early Program D operations.
- Worked with the Subcontracts Manager to coordinate the first several D Programs supported by CORN.
- Responsible for instrumenting several series of technically critical display operations, both for visual and multisensor targetry.

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SECTION VI

TECHNICAL ORGANIZATION

A. PROGRAM MANAGER/MATRIX ORGANIZATION

Data Corporation will employ the Program Manager/Matrix form of organization, headed by an experienced Program Manager to oversee the proposed program. This form of organization has been chosen for one very important reason:

- The proposed work cuts across Data Corporation's formal line organization, whereas it is considered essential that a single person be responsible for all aspects of the program and serve as the primary point of contact.

[REDACTED] has been assigned as Program Manager and has been given the responsibility and authority to ensure that:

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- The technical objectives of the program and terms of the contract are met and accomplished in a mutually satisfactory way.
- The program and individual tasks are completed on schedule.
- The overall program is accomplished within the established budgets.

For the Program Manager to work effectively, he needs to act with certain and specified authority. Within Data Corporation, it is well established and understood that the Program Manager has whatever authority he needs to discharge his assigned responsibilities. This authority is derived from four main sources:

- The contract
- The President of Data Corporation
- The formal organization
- A formal, written Data Corporation policy

When many programs are "on-going" simultaneously, a certain amount of conflict is inherent in the Program Manager/Matrix form of organization. Conflicts, if and when they arise, are either settled by mutual agreement or are resolved by the President of Data Corporation. Since Data Corporation adopted the Matrix form of organization over five years ago, we have developed techniques for successfully working together to produce benefits for the customer.

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UNCLASSIFIED**B. DIVIDING PROGRAM INTO MANAGEABLE PIECES**

Data Corporation feels it is essential to break large jobs down into manageable pieces because it is this separation that makes control possible. Typically, we break jobs down into phases and tasks. Quantitative, qualitative, objective, and subjective information are developed for each phase to establish:

- OBJECTIVES to be achieved
- PURPOSE of the work
- RESOURCES to be committed
- GOALS to be accomplished
- CONTROLS, e.g., project review meetings
- RESPONSIBLE INDIVIDUAL accountable for the success of each phase

Each phase is then divided into tasks, for each of which the following items are identified:

- ACTION TO BE TAKEN
- PURPOSE OF THE TASK
- GOALS
- CONTROLS
- RESPONSIBLE INDIVIDUAL OR INDIVIDUALS

C. METHODS OF CONTROL

Since there are often many individual tasks and personnel working in parallel, methods of control are needed by the company and the Program Manager if the expected results from the work are to be achieved in a technically satisfactory way, on schedule and within budget. Fortunately, Data Corporation has a well-proven management information system that aids the Program Manager in keeping track of schedule and budget commitments on each of the tasks. We have a high degree of confidence in this system because it has been used successfully as a working tool for the past four years on hundreds of jobs.

An example of the computer output from this system is shown on the next page. Reports of this type are distributed semimonthly to the Program Manager, the Controller, the appropriate Department Manager, and to the Responsible Engineer or Scientist. Briefly, the system works in this way.

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START DATE
COMPLETION DATE
% OF TIME USED

JOB COST REPORT
PERIOD 2 - 4 WEEKS

MANAGER
TYPE OF JOB

(Data)
DEPT.

END OF PERIOD

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DIRECT LABOR	ACTUAL PERIOD HRS.			JOB BUDGET HRS.	BUDGET TO DATE HRS.	ACTUAL TO DATE HRS.		BALANCE LEFT-HRS.
EXECUTIVE ENGINEER								
SENIOR ENGINEER								
PHOTOGRAPHIC ENG.								
PHYSICIST								
PHOTO. SCIENTIST								
PROGRAMMER								
ANALYST								
SENIOR PHOTO. TECH.								
PHOTO. TECHNICIAN								
TECHNICAL WRITER								
PUBLICATIONS CLERK								
ILLUSTRATOR								
SECRETARY & TYPIST								
TOTAL DIRECT LABOR								
*****A COMPANY CONFIDENTIAL REPORT*****								
COST DESCRIPTION	COMMITTED PERIOD \$	BUDGET \$ FOR PERIOD		JOB BUDGET \$	BUDGET TO DATE \$	COMMITTED TO DATE \$	BUDGET VARIANCE %	BALANCE LEFT-\$
TOTAL DIRECT LABOR								
ENG. OVERHEAD								
MAT. COMMITMENTS								
MAT. NOT ON PO-PAID								
COMPUTER CHARGES								
TRAVEL PAID FOR								
OVERTIME PREMIUM								
SUB-TOTAL								
G&A OVERHEAD								
TOTAL JOB COST								
JOB SALE PRICE							P&L SALES	
PROFIT							P&L PROFIT	
*****A COMPANY CONFIDENTIAL REPORT*****								
MISC.-PAID MAT. COMM.		ODC CHG/S		TOTAL INCURRED COST				
CONTRACT' CUST. P.O.				YEAR TO DATE SALES			YTD PROFIT	

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At the start of the program, a separate budget and schedule are prepared for the entire program and for each phase and task and fed into the computer to establish planned expenditure rates. Then, as the program progresses, actual financial data from time cards, purchase orders, etc. are fed into the computer on a timely basis. Deviations of the actual versus the planned results are automatically flagged by the computer and show on the distributed copies. Frequently, the first sign of a technical problem shows up as a financial deviation. Because of the wide circulation and review these reports receive, a significant negative financial deviation will be quickly noticed. As a result, a serious technical problem will be detected in time to undertake corrective action. Programs or tasks that are measurably underspent are almost always behind schedule and can readily be detected from the reports.

While this system is very effective in detecting problems once a deviation occurs, Data Corporation places most of its management effort on frequent technical meetings and project reviews aimed at preventing undesirable deviations. This is a causative effort on the part of all management personnel and is the most effective tool that the Program Manager has at his disposal to assure successful performance. Hence, the need for clearly defined authority. It is at these Technical Direction meetings that potential problems are considered and means developed to circumvent them. The success of these meetings is highly dependent on the skill and experience of the Program Manager. Generally, a list of ACTION ITEMS, to be accomplished within a specified time frame, will be established during this meeting for each responsible manager and engineer/technician. It is anticipated that the customer will want to be represented in many of these meetings and that some ACTION ITEMS will result from this participation. This will be especially true when some major milestone has been passed and the results are to be reviewed.

One final point. Most of the above management action is internally directed; however, the need for frequent discourse with the customer is recognized so that we can be responsive to changing needs and for project status information. Frequent contact will be maintained by telephone, by mail, and by travel to the customer's facility. At the same time, customer-initiated contact is welcomed and considered necessary for the successful implementation of this program.

D. ORGANIZATION

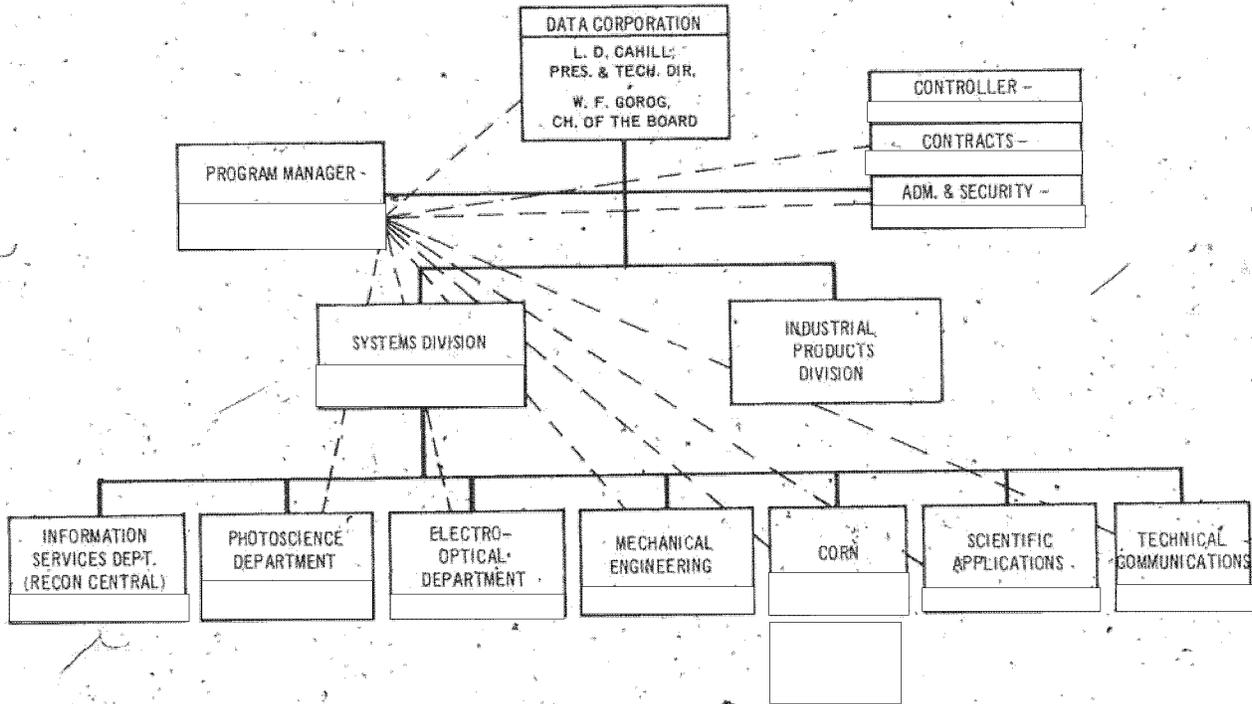
The organization of Data Corporation is shown in the attached chart. Also shown on the chart are the key personnel assignments within the company and the individual departments for the proposed program. (Resumes for each of the assigned personnel appear in Section V).

E. PERSONNEL TIME ALLOCATIONS

Shown below are descriptions and reasonable estimates of how each of the assigned personnel will spend time in performing his duties.

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CORPORATE ORGANIZATION CHART



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1. Program Manager: The Program Manager will direct the overall program effort. The Program Manager will be directly responsible for:

	<u>Time Allocation</u>
• Assignment of personnel	1%
• Supervision of Operations and Subcontractor Supervisors	50%
• Customer Liaison	7%
• Administrative and management control of field crews	20%
• Preparation of monthly status, financial, and operational reports	12%
• Periodic program review, including	8%
1) Review of monthly status report	
2) Review of monthly financial report	
3) Review of monthly operations report	
• Maintenance of proper security procedures	2%
	100%

2. Operations Supervisor: The Operations Supervisor will report directly to the Program Manager. He will be responsible for the following specific operations:

	<u>Time Allocation</u>
• Receiving initial message from CORN customer	2%
• Assigning nearest subcontractor and transmitting operational requirements	3%
• Maintaining communication continuity throughout the operation with all subcontractors, both active and dormant	30%
• Maintaining daily contact on a 24-hour basis with the customer's operations group during an alert	

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- Providing operational feedback to customer on a daily basis and more frequently, as required
 - Receiving daily operational reports from field crews, which include a recap of the operation, target deployment reports, and related field reports from field crews 10%
 - Maintaining a daily log of operational activity of all field crews and each display including location, operating period, targets displayed, and all other information concerning fixed and mobile displays
 - Reviewing field reports for accuracy and completeness, preparing a summary of these, and making additional copies of reports available to customer within the required time 5%
 - Maintaining a comprehensive record of previous operations so that any given target display can be reconstructed on the basis of original reports and requirements 5%
 - Performing the functions of the quality control monitor for field activity, as required 30%
 - Providing operational data and statistical information for inclusion in the monthly status report 15%
- 100%

3. Subcontractor and QC Supervisor: The Subcontractor and QC Supervisor will report directly to the Program Manager. He will be responsible for insuring standardization and accuracy of the following functions:

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	<u>Time Allocation</u>
• Operations	60%
1) Provide initial field crew training	
2) Maintain proficiency through periodic on-site checks	
3) Provide fixed-target cleaning and inspection criteria	
4) Maintain SOP which specified prescribed procedures	
• Equipment (instruments)	5%
1) Maintenance and storage	
2) Training in actual use	
3) Calibration requirements	
4) Repair standards	
• Equipment (targets)	25%
1) Maintenance - cleaning nylon and canvas	
2) Monitor condition - degree of deterioration and reflectivity uniformity	
• Equipment (vehicles)	5%
1) Periodic maintenance	
2) Preventive maintenance	
• Internal - develop standards for	5%
1) DK-2 target calibration and measurement	
2) Light meters	
3) Spectra brightness meters	
4) Spectroradiometer	
	100%

The Subcontractor Supervisor will also be responsible for any additional standards required.

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4. Recon Support Technicians: Four technician-level personnel are proposed to complete the manning of the Dayton staff. They will support and be directed by either the Operations Supervisor or the Subcontractor Supervisor. They will be responsible both for tasks to be accomplished in the field as well as in Dayton.

	<u>Time Allocation</u>
• Target inspection, cleaning, and display in the Wright-Patterson AFB locale	4%
• Maintain, update, and determine revisions for the CORN Handbooks	8%
• Field duties for the semiannual inspection of permanent targets	12%
• Field duties for subcontractor training, quality assurance inspection, and line display coordination	26%
• Reduction and preparation of fixed target and spectral absorptance data	6%
• Accountability, maintenance records, calibration of all GFE	5%
• Maintenance of reliable transport fleet	15%
• Accountability, maintenance, distribution, calibration of all CFE	12%
• Preparation and updating of forms, procedures, and files	7%
• Monitor and control of all mobile target repairs	8%
• Operational maintenance of all reserve vehicles and mobile targets	2%
• Shipment of targets and instruments to field crews	5%
	<hr/> 100%

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APPENDIX

EXHIBIT A - STATEMENT OF WORK

- 1.0 General
 - 1.1 Overall Requirements
 - 1.2 Program Administration
 - 1.2.1 CORN Program Office
- 2.0 Requirements
 - 2.1 Facilities
 - 2.1.1 Storage
 - 2.1.1.1 Target Storage
 - 2.1.1.2 Vehicles and Equipment Storage
 - 2.1.2 Work Area
 - 2.2 Services
 - 2.2.1.1 Scope
 - 2.2.1.1.1 Vehicles
 - 2.2.1.1.2 Target Cleaning
 - 2.2.1.1.3 Target Instrumentation
 - 2.2.1.1.4 Tools
 - 2.2.1.2 SOP/P-M Programs
 - 2.2.2 Operations Services
 - 2.2.2.1 Operational Control
 - 2.2.2.2 Crew Assembly
 - 2.2.2.3 Crew Competence
 - 2.2.2.4 Crew Size
 - 2.2.2.5 Travel
 - 2.2.2.6 Second Vehicles
 - 2.2.2.7 Site Location
 - 2.2.2.8 Display Procedures
 - 2.2.2.9 Field Management and Co-ordination
 - 2.2.2.10 Reporting
 - 2.2.2.11 Field Observation and Training
 - 2.2.2.12 Target Cleaning
 - 2.2.2.13 Target Instrumentation
 - 2.3 Reporting Services
 - 2.3.1 Scope
 - 2.3.1.1 Technical Reports
 - 2.3.1.2 Financial Reports

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EXHIBIT A - SOW

1.0 General

1.1 Overall Requirements

The Controlled Range Network, hereafter referred to as CORN, is comprised of a system of permanent and mobile targeting services throughout the U. S. These targets and related services are available to the Federal Government and other authorized agencies for support of programs as required in the test and evaluation of airborne sensor systems. The permanent targets are located on various Government installations throughout the continental U. S. Mobile targeting units are presently located at nine strategic locations throughout the continental U. S., in an effort to provide a maximum amount of service and coverage with limited amount of notice (generally 24 hours). The intent of the program is to supply the customer with complete targeting services as required on a short-notice basis.

Nine mobile targeting units are presently manned and maintained by field crews under contract to Data Corporation. These chosen crews are responsible for storage and maintenance of the targets, the vehicles used to transport the targets, and related instrumentation and supplies needed to support the targeting efforts. These crews display and retrieve these targets as they are requested, in all types of weather and terrain on a day-to-day basis. Driving between displays 200-300 miles is often required. Generally no more than one display is made each day. At all times, while these crews are performing these required tasks, a communications network is utilized, relaying any changes, problems, new instructions, and accurately reporting each day's activities. In addition to displaying these targets, crews are frequently required to clean existing fixed targets and inspect, secure permission for, survey and clear future target sites. When not actively supporting a targeting effort, crews clean, repair and properly store the targets. The 5-ton trucks presently being used are given the best possible care and any defects or problems are quickly repaired to insure their best possible performance. Likewise, all equipment and instrumentation is kept in the best possible condition and is readily available at all times.

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Upon awarding of this subcontract, said subcontractor shall receive one of the aforementioned mobile targeting units from Data Corporation and shall assume the responsibility of operating and maintaining this unit in accordance with this contract. Requirements governing this contract, all subcontractor activities, and duties are outlined and described in the following statement of work. The subcontractor shall agree to all terms and stipulations of this contract and agrees to operate explicitly, under its terms.

1.2 Program Administration

1.2.1 All customer-Data Corporation-subcontractor communications are handled through the Data Corporation operated CORN Program Office. This office consists of a program team of 6-7 members, who are directly responsible for all activities involving subcontractors and their support of the CORN program. Responsibility for the administration and management of the overall CORN Program is vested in the Data Corporation Program Manager; within the Program Office, sub-contractor management is assigned to the Subcontracts Manager, who is responsible for subcontractor training and field co-ordination and, in general, for assuring that subcontractors perform in accordance with this Statement of Work and their operational orders. During field operations, subcontractors will be tasked on a display by display basis by the Operations Manager or his designee.

2.0 Requirements

Seller agrees to provide as follows:

2.1 Facilities

2.1.1 The subcontractor shall provide adequate facilities to insure proper care and storage of all Data Corporation furnished equipment and supplies. The facilities involving storage or maintenance of said equipment are subject to Data Corporation inspection and approval, and complete access to any or all said targets, equipment and/or supplies must be available at all times.

2.1.1.1 Target Storage -- An adequate area in which all Data-furnished targets can readily be inspected, cleaned, dried, stored and otherwise maintained shall be provided. Storage facility shall be clean, dry and secure.

2.1.1.2 Vehicles and Equipment Storage -- an adequate, secure storage area for the Data-furnished vehicles and equipment shall be provided.

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This can be either a building or a fenced area. In the event that it is a fenced area, the fence shall be chain-link type or equivalent, no less than 5 feet in height. The area must be suitably illuminated to deter entry and discourage vandalism at night.

2.1.2 Work Area -- Subcontractor shall provide an adequate work area for inspection, cleaning, repair or related work on targets or equipment. Such areas need not be an actual part of subcontractors immediate facilities nor must they be under their ownership or direct control. However such areas must be available upon request and remain available until required tasks are performed. For instance, large paved areas on airport facilities are commonly secured to wash targets as needed. These areas are out of the general traffic and are available as they are needed. These work areas must be of adequate size to effectively handle prescribed work load, i. e., target washing and drying should be approximately 100 x 500 ft.

2.2 Services**2.2.1 Maintenance Services**

2.2.1.1 Scope -- Subcontractors will be required to keep all Data Corporation-furnished equipment in a peak operational condition at all times. Due to the adverse conditions frequently encountered, all targets, vehicles, and equipment must be efficiently maintained in a ready-to-travel condition. In effect, the subcontractor is required to assume responsibility for up to \$20,000 in vehicles and associated vehicular equipment and for assuring that any and all necessary maintenance is performed promptly and competently.

2.2.1.1.1 Vehicles -- All Data Corporation furnished vehicles shall receive periodic maintenance in accordance with the P-M outline explained in detail in the CORN SOP and attached hereto as Exhibit B. In addition, any repairs or maintenance not covered by the P-M checklist but dictated by the environment shall be executed as needed. Upon return of the truck from field operations all required maintenance will be immediately performed.

2.2.1.1.2 All targets shall, as required, be washed, dried, repaired and kept in a state of readiness at all times. The subcontractor is required to determine the need for maintenance, and for assuring that it is performed promptly and that the targets are readily available upon short notice. For example, if target

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panels must be sent to a tent/awning shop for repair, provisions must be made to pick up such panels in the event they are required in support of field operation. Targets are to be repaired, washed and dried with minimum delay.

NOTE: Caution must be exercised when washing targets as they must be completely dry before being rerolled and returned to storage. Mildew occurs rapidly in these targets with the slightest amount of moisture present, thus ruining the targets. If at any time any of the targets become wet or damp, all panels will at the earliest available time be unrolled and spread out to dry before returning to storage.

2.2.1.1.3 Instrumentation, as provided, shall receive periodic preventative maintenance and inspection. The subcontractor shall not attempt instrument repair but shall upon noting equipment failure, so advise Data Corporation immediately. In such an event, a replacement unit will be shipped via air transport to the subcontractor, replacing the faulty equipment. Instructions for return of the faulty equipment will then be provided.

2.2.1.1.4 Tools -- All tools as furnished by Data for support of the program are to be equally well cared for. Such items as hammers, shovels and other related items will be oiled, repaired and stored in such a manner as to retain their intended usefulness.

2.2.1.2 SOP/P-M Programs

Each subcontractor is supplied with a CORN Standard Operating Procedure (SOP). In this manual all aspects of the CORN program are covered. Special techniques, care and handling of all Data Corporation furnished equipment is covered in detail. Preventative maintenance programs are included and are thoroughly explained.

2.2.2 Operations Services

2.2.2.1 Operational Control -- Operations shall be conducted in accordance with procedures as specified in the Data Corporation Standard Operating Procedures manual. The subcontractor shall receive this handbook from Data Corporation immediately after placement of the contract and said handbook will

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be revised and updated by Data Corporation as required. Any conditions encountered that are not covered in this manual shall immediately be brought to the attention of Data Corporation personnel.

During field operations, the operational chain of command shall consist of the Data Corporation Ops Manager, the subcontractor contact and the subcontractor crew chief. Twenty-four hour contact shall be maintained between all three parties during an operation. When the unit is not in operation, normal, as-needed contact will be established with the subcontractor manager (Data Corporation) and the responsible subcontractor personnel.

2.2.2.2 Notice -- Due to the nature of the program, it is imperative that the subcontractor be able to assemble and dispatch a crew in a matter of hours. Every effort is made to give maximum notice of up-coming field operations. Generally, several days notice is received alerting the subcontractor of the upcoming operations. Further instructions and details are then passed along as the operation progresses. However, from time to time a situation occurs where little or no advance notice is received. It is then necessary to assemble and dispatch the unit in as little as a few hours.

2.2.2.3 Crew Competence -- The crew which provides services must be made available to display targets, operate instrumentation and provide other related services at times and locations specified by the Data Corporation's Operation Manager. Data Corporation quality control personnel will provide initial training for five crew members which the Seller selects. Once trained, it is the Seller's obligatory duty to utilize these trained personnel to the greatest extent possible for services on this contract. In any case, each standard target crew which the Seller provides for target displays must be comprised of no less than two trained and/or experienced members, with the remaining members of the crew to be competent and judged capable of performing the tasks as outlined in the Statement of Work.

In the context of this contract, "trained and/or experienced" is defined as having been trained by virtue of having received either specific training conducted by Data Corporation or having achieved equivalent competence by virtue of previous experience in no less than four displays which have occurred during the previous 75 day period.

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Persons who are not thus qualified do not meet the requirements of this contract and shall not be utilized on the target crew. Data Corporation reserves the right to make intermittent quality control inspections at target display sites during field operations. Observations will be reported both to the Seller and to Data Corporation.

2.2.2.4 Crew Size

Operational requirements, number and size of the targets, and available display time dictate the size of the crew sent on the operations. A 5-man crew currently satisfies the requirements of a normal operation. However as conditions change, so may the size of the crews. For special projects, more or less than 5 men may be required. The subcontractor shall make every effort to utilize the minimum number of personnel necessary to properly accomplish a required task. Generally, the crew number will be specified by the Data Corporation Ops Manager prior to the start of an operation, but the crew size may never exceed 5 without the specific advance permission of the Subcontracts or Operations Manager.

2.2.2.5 Travel -- The subcontractor shall make every

effort to insure that his crew travels to and from each location with a minimum delay. The crew shall utilize the best available routes while keeping necessary refueling, contacting the home office, and other related stops at a minimum. Crews will observe posted speed limits and highway regulations. Data Corporation will not be responsible for any consequences as a result of failure to observe legal limitations and regulations. Subcontractor is to keep crew safety in mind at all times and if more frequent stops are deemed necessary, should do so as needed. It is the intent of Data Corporation that the subcontractor utilize every resource available to insure that his crew and targets reach their required destination with ample time to complete the operation as required. In the event of truck failure, every effort is to be made to secure another ASAP and get the targets to their destination. In the event another suitable truck cannot be acquired, whatever method available should be utilized to make the display. In the past, farm wagons, pickups, cars and even wheelbarrows have been used to convey the targets.

2.2.2.6 Second Vehicles -- Second vehicles are frequently

authorized to support field operations. Expenses of said vehicles are covered only

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when authorized by Data Corporation for use on designated operations. Two types of second vehicles are used, and reimbursement will depend upon the type authorized. These two types are "two-wheel drive" and "four-wheel drive" vehicles. Use of second vehicles is intended as a convenience and to reduce unnecessary wear and tear on the 5-ton trucks. Second vehicles should be used to get permission to sites, transporting crew to restaurants and etc., where the big truck is not required. In the event a second vehicle is used, the subcontractor assumes the responsibility that it is in good condition, capable of fulfilling its requirements and will not inhibit progress of the primary vehicle and its assigned duties.

2.2.2.7 Site Location -- Upon arrival at their destination, the subcontractors' prime responsibility is to secure a suitable site. A 400' x 600' area is required for the normal CORN display. This area ideally would be relatively flat, with low vegetation and easy accessibility. The subcontractor shall find such an area or at least the best available area and secure permission to display on said site. It is not the policy of the program to pay for use of these sites. However, on occasion it is necessary in order to have any site at all. It is intended that the subcontractor use the utmost diplomacy and resourcefulness in securing said sites.

Upon leaving the site it is highly advisable to thank the person responsible for granting the permission as occasionally this site may be required again. Needless to say, every effort should be made to keep the area clean and as undisturbed as possible.

2.2.2.8 Display Procedures -- The CORN SOP gives a detailed explanation of recommended display procedures. The subcontractor shall under normal circumstances follow the prescribed procedures as established in the SOP. It is the intent of these procedures to efficiently utilize all efforts and means available. They are designed to get the targets out in the quickest possible manner with a minimum of effort while presenting the highest quality display. Any suggestions or questions on these procedures are invited by Data Corporation. Subcontractor shall be fully responsible for any improper or incomplete display resulting in deviation from or disregard of accepted display procedures.

2.2.2.9 Field Management and Co-ordination

Due to the complexity of the program it is essential

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that competent, resourceful and reliable personnel be employed to carry out field activities. Crucial requirements given to the field crews must be accurately interpreted and executed. Therefore, the subcontractor shall provide competent and reliable personnel as contact during field operations. This point of contact is responsible for relaying all pertinent information from the Data Corporation Ops Manager to the crew during an operation. This often dictates being on 24 hour call throughout the operation. It is imperative that he know the whereabouts and status of his crew at all times. Crews are required to call their contact at approximately 2 hour intervals in the event of a change in time, location, etc. Upon the crews arrival, the phone number where they can be reached will be given to the contact. In the field, the crew will be directed by a member hereby defined as the crew chief. The subcontractor shall provide two men capable of filling this position at all times. Crew chiefs are subject to adequate training and approval by Data Corporation, before being assigned position of crew chief. The responsibilities of the crew chief include, getting his crew and equipment to the required location promptly in a ready to work condition; properly choosing and securing a suitable site, proper display of the targets and instrumentation of the same as may be required; efficient retrieval of the targets, properly compiling all required data and reports and prompt mailing of same, and further travel as required. Crew chief is responsible for the safety and conduct of the crew and equipment at all times.

The subcontractor shall make every effort to dispatch, operate and retrieve his field crew in a competent, efficient manner. Success of the entire program hinges largely on the proper co-ordination of the field crews.

2.2.2.10 Reporting -- The subcontractor shall provide operational reports and financial reports which define services and related activities in accordance with Section 2.3 of the Statement of Work.

2.2.2.11 Field Observation and Training.
Data Corporation reserves the right to observe and evaluate the subcontractors crew at any time. Any evaluation and/or changes deemed necessary shall be brought to the attention of the subcontractor and Data Corporation as required. Special training allowances will be made by Data Corporation as requirements dictate.

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2.2.2.12 Target cleaning -- The subcontractor shall furnish the necessary facilities, equipment and manpower needed to keep the targets clean and repaired at all times. It is the subcontractor's responsibility to see that all targets are properly washed, given adequate drying time, and are properly rerolled and stored.

2.2.2.13 Target Instrumentation -- The subcontractor shall furnish competent personnel to operate any instrumentation and report all data as requested by Data Corporation. Personnel will be trained as necessary to operate the required instrumentation. All reporting of this data shall be in accordance with the CORN SOP unless otherwise specified.

2.3 Reporting Services

2.3.1 Scope -- The subcontractor shall provide Data Corporation with operational and financial reports in accordance with this statement of work and as detailed in Section IV of the CORN Standard Operating Procedures handbook. These reports must be compiled accurately and precisely as instructed. All reports are to be mailed in accordance with the timetable prescribed by the Data Corporation Program Office.

2.3.1.1 Technical Reports -- Reports pertaining to each target display are compiled during or immediately after each display forming what is defined as the field report package. This package includes:

1. Checklist - all targets, equipment and duties required.
2. Target Deployment Report - Pertinent display information, date, location, coordinates, times, etc. The sketch of the immediate display area.
3. CORN Recap - Written message called in to contact immediately after op describes display, location, times, coordinates, etc.
4. Map overlay - Tracing of area of USGS 0-250 and maps showing exact location of target site and prominent landmarks and coordinates.
5. Operational cost log (See Section 2.3.1.2).
6. Other special data reports as may be requested.

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This package is to be prepared and mailed to Data Corporation, Special Delivery, immediately after every display.

The information on the Recap format is to be telephoned in within two hours after the actual operating period.

2.3.1.2

Financial Reports include:

A - Operational Cost Log - This reports the actual manhours, mileage and miscellaneous cost for a specific display. This report is to be compiled during and mailed immediately after each display with the Field Report Package. The crew chief will report all m/h to the nearest 1/10 hr. when filling out this form. An accurate cost breakdown is essential in this report.

B - The statement of expenditures is a report of costs incurred in providing services on this contract during each one month period. The statement of expenditures is considered as a standardized invoice form; the subcontractor may at his option, include his company invoice but the completed statement of expenditures shall be the basis for determining and validating the incurred costs for each reporting period. A cost reporting period commences on the 26th day of each month and ends on the 25th day of the following month. All financial reports should be prepared and mailed so as to arrive at Data Corporation no later than the fourth day after the end of the cost reporting period. All reports shall be addressed to:

Data Corporation

CORN Program Office

3481 Dayton-Xenia Road

Dayton, Ohio 45432

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~~(c)~~ The data set forth herein are submitted in response to RFP [redacted] and shall not be disclosed outside the Government or be duplicated, used or disclosed in whole or in part for any purpose other than to evaluate the proposal; provided, that if a contract is awarded to this offeror as a result of or in connection with the submission of such data, the Government shall have the right to duplicate, use or disclose these data to the extent provided in the contract. This restriction does not limit the Government's right to use information contained in such data if it is obtained from another source.

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