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MAR 10 1970

Dear Mr. Wold:

Reference is made to your letter of January 29, 1970, transmitting a copy of a letter dated January 8, 1970, which you received from Mr. Russell L. Donley of Western Engineers-Architects, Inc. Mr. Donley's letter refers, in substance, to questions raised in an article in the Consulting Engineer Magazine, a copy of which he enclosed, relative to the decision of the Federal Aviation Administration (FAA) to continue to obtain airport obstruction survey charts from the Coast and Geodetic Survey rather than to procure such charts from private industry. In your letter you referred to a review of the airport obstruction chart program performed by this Office for Congressman Frank M. Clark and requested that we inform you regarding the results of our work in this area.

We first commented on the cost of the airport obstruction chart program in a report to the Chairman of the House Committee on Merchant Marine and Fisheries (B-165504, December 10, 1968). The Chairman had requested that we make a study, in accordance with the principles set forth in Bureau of the Budget (BOB) Circular No. A-76, of (1) the costs of obtaining airport obstruction charts from the Coast and Geodetic Survey, compared with the costs of obtaining such charts by contract with private industry on the basis of proposals received in response to FAA's solicitation of May 2, 1968, and (2) the added costs which would be incurred for evaluation of the contractor's performance.

On the basis of our study, we concluded that, under the proposed alternatives, it would have been more costly to the Government if FAA had contracted for the airport obstruction charts with the private company who submitted the lowest technically responsive proposal.

Our conclusion, combined with a supporting comparison of estimated program costs--contract operations versus Government operations--generated considerable concern in the private engineering community. This concern has been commented on in letters to various members of the Congress and in editorials in trade magazines. We were subsequently requested by Congressman Clark and several other members of the Congress to respond to such comments questioning (1) the logic of the cost comparison principles set forth in BOB Circular No. A-76, (2) the validity of certain cost elements included in the cost comparison set forth in our report to the Chairman, and (3) other matters relative to the airport obstruction

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chart program which ranged far beyond the scope of the study made for the Chairman.

To be fully responsive to the questions raised, it was necessary for us to gather additional information on the airport obstruction chart program and to perform additional audit work. As expected, this work resulted in certain refinements to the cost comparison. However, in our report to Congressman Clark (B-165504, July 1, 1969), we again reached the same conclusion as we had in our report to the Chairman.

Subsequent to our report to Congressman Clark, the public accounting firm of Ernst & Ernst completed a study of the costs of FAA's airport obstruction chart program. The study, made for the Consulting Engineers Council, included in-house costs on the basis of a full-cost-allocation concept, whereas our reports included in-house costs computed on the incremental cost method prescribed in BOB Circular No. A-76, a method which we considered appropriate under the circumstances. In a report dated January 15, 1970 (B-165504), we furnished Senator William Proxmire, at his request, our comments on the Ernst & Ernst study.

We are enclosing with this letter copies of our three previously mentioned reports. The material contained in these reports covers, with one exception, the matters brought to your attention in Mr. Donley's letter.

The article enclosed with Mr. Donley's letter indicated that FAA may have reduced the possible responses to its solicitation by requiring prospective contractors to submit price proposals for all 150 charts rather than allowing proposals to be made on a regional basis.

FAA solicited price proposals from 112 prospective contractors and received proposals from 11 contractors. FAA records indicate that a few companies did not submit price proposals for the reason cited in the article. In view of the number of proposals received, however, we have no basis for concluding that FAA's solicitation did not result in effective competition.

We believe, however, that for any future solicitation of competitive price proposals for making airport obstruction charts, FAA should request that proposals be submitted with a price for performing the work on both regional and national bases. Such solicitation could result in a greater number of proposals and provide an opportunity for the Government to receive the benefits of additional competition.

B-165504

We trust that the information and reports provided will serve your purposes.

Sincerely yours,



Comptroller General  
Assistant of the United States

Enclosures - 3

The Honorable John S Wold  
House of Representatives



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON D C 20548

**B-165504**

DEC 10 1968

Dear Mr. Garmatz:

Reference is made to your letter of October 23, 1968, requesting that our Office make a study, in accordance with the principles set forth in Bureau of the Budget Circular No. A-76, of (1) the costs to the Federal Government of having Coast and Geodetic Survey (C&GS)--an agency of the Environmental Science Services Administration (ESSA)--prepare airport obstruction chart surveys, compared with the costs which would be incurred for procuring such surveys by contract with private industry on the basis of bids received in response to the Federal Aviation Administration (FAA) solicitation of May 2, 1968, and (2) the added costs which would be incurred for evaluation of the contractor's performance.

FAA's specifications for obstruction charts state that the primary purpose of the airport obstruction charts is air safety as related to (1) determining the maximum possible takeoff and landing gross weights of civil aircraft, (2) the development and amendment of instrument approach and departure procedures, (3) analysis of airspace utilization problems, (4) obstruction studies on matters of future instrument landing runway designation, (5) studies for clearing and hazard marking, and (6) litigation support.

Our study of the comparative costs of making airport obstruction surveys consisted primarily of a review of cost data prepared by the C&GS and furnished to FAA for use in its cost comparison. We tested this data for reasonableness, accuracy, and compliance with the principles set forth in Bureau of the Budget Circular No. A-76. The results of our study are shown in the enclosure.

C&GS based its estimate of the cost of preparing airport obstruction charts on a full allocation of cost rather than on an incremental cost as used in Bureau of the Budget Circular No. A-76. The total cost of \$799,651 estimated by C&GS exclusive of support costs was determined by applying the average cost of preparing similar surveys in prior years, adjusted to reflect estimated cost increases, to the 150 surveys specified in the solicitation for fiscal year 1969.

FAA officials advised us that, if the contract for the airport obstruction chart surveys were awarded to a private contractor, FAA would require a 100-percent quality assurance program (inspection and verification) in order to certify that the work for which payment was being made had been accomplished in accordance with the contract. FAA officials advised us also that FAA did not have the staff or expertise to evaluate the contractor's performance and would have to rely on C&GS for the inspection and verification. The FAA officials stated that the inspection and verification would be required from a safety standpoint because of the critical need to know the precise location and elevation of all objects which are obstructions in the vicinity of airports.

C&GS officials advised us that a requirement for 100-percent inspection and verification would result in C&GS' having to make (1) an office inspection by photogrammetric methods of all airport obstruction surveys performed by the contractor, (2) a field edit at each airport to verify the location of certain types of obstructions, and (3) a field inspection at a selected group of airports while work is in progress to determine the quality and accuracy of the contractor's personnel, equipment, and survey methods. C&GS officials advised us also that, although C&GS had never been involved in such an inspection and verification program before, the estimate of \$335,000 for the program was prepared mainly on the basis of personnel expected to be used in the inspection and verification work.

As requested, we have analyzed the costs included in the inspection and verification program and have reduced the estimated cost by \$67,000 (see enclosure) to eliminate items which do not appear appropriate under Bureau of the Budget Circular No. A-76. We have no basis for questioning the number of personnel C&GS says it will need for the program.

ESSA has stated that, in addition to the indicated savings by performing the surveys in-house as shown in the cost comparison, certain ancillary benefits have accrued to the Federal Government, such as more efficient utilization of personnel and equipment, by virtue of the obstruction chart program being performed by C&GS.

B-165504

Conclusion

On the basis of our study of the estimated cost to the Federal Government of preparing airport obstruction chart surveys by the Coast and Geodetic Survey, compared with the lowest technically acceptable bid received from private industry in response to FAA's May 2, 1968, solicitation, we believe that it would be far more costly to do the work by contract.

We trust that the information presented herewith will serve your purpose. As agreed with your staff, copies of this report are being sent today to the Secretary of Transportation, the Administrator of the Federal Aviation Administration, and the Administrator of the Environmental Science Services Administration. We plan to make no further distribution of this report unless copies are specifically requested and then only after your agreement has been obtained or public announcement has been made by you concerning the contents of this letter.

Sincerely yours,



Comptroller General  
of the United States

Enclosure

The Honorable Edward A. Garmatz  
Chairman, Committee on Merchant  
Marine and Fisheries  
House of Representatives

AIRPORT OBSTRUCTION SURVEY PROGRAM  
COMPARISON OF PROGRAM COSTS--CONTRACT  
OPERATIONS VERSUS GOVERNMENT OPERATIONS

<u>Cost elements</u>	<u>FAA cost comparison</u>	<u>GAO adjustments</u>	<u>GAO adjusted cost</u>
<b>CONTRACT OPERATIONS</b>			
<b>A. Contract costs</b>			
Direct labor	\$ 450,350	\$	\$ 450,350
Overhead	274,714		274,714
Material	31,163		31,163
Travel and transportation	100,800		100,800
Subcontract	17,250		17,250
Other direct costs	67,300		67,300
Fee	<u>56,495</u>		<u>56,495</u>
<b>Total</b>	<u>998,072</u>		<u>998,072</u>
<b>B Government support costs (direct)</b>			
Inspection and verification	335,000	-67,000 <sup>a</sup>	268,000
Government-furnished materials	36,800	-	36,800
Administration and related costs	61,951	-	61,951
Maintain and service survey materials	<u>65,000</u>	<u>-</u>	<u>65,000</u>
<b>Total</b>	<u>498,751</u>	<u>-67,000</u>	<u>431,751</u>
<b>C Government costs (indirect)</b>			
Severance pay from reduction in force	101,000		101,000
Early retirement	118,000	-118,000 <sup>b</sup>	-
Completion of work in progress	<u>186,000</u>	<u>-186,000<sup>c</sup></u>	<u>-</u>
<b>Total</b>	<u>405,000</u>	<u>-304,000</u>	<u>101,000</u>
<b>TOTAL CONTRACT OPERATIONS</b>	<u>\$1,901,823</u>	<u>-\$371,000</u>	<u>\$1,530,823</u>
<b>GOVERNMENT OPERATIONS</b>			
<b>A. Government costs</b>			
Direct labor and benefits	497,112	+6,402	503,514
Overhead	45,580	-45,580	-
Materials, supplies, utilities	144,737	-1,140	143,597
Travel and transportation	81,564	-642	80,922
Other direct costs	10,395	-10,395	-
Maintenance and repair	4,000	-33	3,967
Insurance	270	-270	-
Depreciation	<u>15,993</u>	<u>-15,993</u>	<u>-</u>
<b>Total</b>	<u>799,651</u>	<u>-67,651<sup>d</sup></u>	<u>732,000</u>
Taxes foregone		+28,248 <sup>e</sup>	28,248
<b>B Support costs (direct)</b>			
Administration and related costs	13,000		13,000
Maintain and service survey materials	<u>65,000</u>	<u>-16,000<sup>f</sup></u>	<u>49,000</u>
<b>Total</b>	<u>78,000</u>	<u>-16,000</u>	<u>62,000</u>
<b>Total Government operations, excluding cost margin</b>	<u>\$ 877,651</u>	-55,403	822,248
Five-percent cost margin		+76,541 <sup>g</sup>	76,541
<b>TOTAL GOVERNMENT OPERATIONS AFTER COST MARGIN</b>		<u>\$21,138</u>	<u>\$ 898,789</u>

(See following pages for footnotes)

- a. We eliminated certain items of cost from C&GS's estimate of the cost for a 100-percent inspection and verification program, because they did not appear appropriate for inclusion in a comparative cost analysis under the provisions of Bureau of the Budget (BOB) Circular A-76. The items eliminated consisted primarily of depreciation and overhead costs which would not be allowable as incremental costs under BOB Circular A-76 and other elements adjusted on the basis of our examination of supporting data or on which no supporting data could be provided.
- b. Early-retirement costs were not computed by C&GS on an actuarial basis, although computation on this basis was required by the provisions of BOB Circular A-76. C&GS's computed cost represented the estimated first-year retirement cost on the basis of termination of the program as of June 30, 1968. Because of lengthy analysis and computations required to accurately determine additional costs for early retirement on an actuarial basis and in view of the significant difference between in-house costs (\$898,789) and contractor costs (\$1,530,823) as adjusted, we did not recompute these costs. Any additional costs attributable to early retirement would only serve to increase the spread between in-house and contractor costs.
- c. The estimated cost of \$186,000 computed by C&GS to complete work in progress is not a properly includable cost, because the cost of this work is not included in the estimated cost of in-house performance.
- d. We eliminated certain items of cost from C&GS's estimate of in-house operations, because they did not appear appropriate for inclusion in a comparative cost analysis under the provisions of BOB Circular A-76. The major items eliminated were overhead and depreciation costs, which were not incremental costs but costs which would be incurred irrespective of the decision under consideration. In addition, we adjusted the other items included in C&GS's estimated cost of in-house operations on the basis of our examination of the supporting documentation for these estimated costs.

<sup>e</sup>FAA's comparative cost analysis did not include a factor for income and other Federal tax revenues which are received from corporations or other business entities if a product or service is obtained through commercial channels, although inclusion of this factor was required by BOB Circular A-76. Our estimate of \$28,248 is based on 50 percent of the fee of \$56,495, as shown in the cost comparison.

<sup>f</sup>FAA, in its cost comparison, used \$65,000 as the cost to maintain and service survey materials under either alternative. C&GS records, however, show an estimated cost for this activity of about \$65,000 under a private contractor operation compared with about \$49,000 if C&GS provided this support directly for FAA under a reimbursable agreement.

<sup>g</sup>FAA's comparative cost analysis did not include an add-on factor for determining whether the savings from a Government commercial activity are sufficient to justify continuation of the activity, although inclusion of this factor was required by BOB Circular A-76. Our estimate of about \$77,000 for this factor is based on 5 percent of the total cost of performing the work by contract (\$1,530,823), in recognition of the Government's policy preference for use of commercial sources and the advantages to the Government of procuring from commercial sources.



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON D C 20548

**B-165504**

July 1, 1969

Dear Mr. Clark:

Reference is made to your letter of February 4, 1969, requesting our comments on questions raised in letters to you from the Consulting Engineers Council and the Legislative Council for Photogrammetry in connection with our report to the Chairman of the Committee on Merchant Marine and Fisheries, House of Representatives, dated December 10, 1968 (B-165504), relative to the Federal Aviation Administration's decision to continue to obtain airport obstruction charts from the Coast and Geodetic Survey rather than to procure such charts from private industry.

The airport obstruction chart program is administered by the Air Traffic Service, Federal Aviation Administration (FAA), Department of Transportation. Surveying activities for this program are performed nationwide by the Coast and Geodetic Survey (C&GS), Environmental Science Services Administration, Department of Commerce, on a scheduled basis at approximately 600 air carrier airports. The program involves geodetic surveys to obtain data on obstructions penetrating the airspace surrounding airports. This program also provides for obtaining precise geographic locations of navigation facilities and photo-mosaics of selected airport surroundings.

The Civil Aeronautics Administration (predecessor agency of FAA) initiated an airport obstruction chart program in 1941; the C&GS funded and performed the work until 1962. By direction of the Bureau of the Budget (BOB), FAA has funded the program since fiscal year 1962, with C&GS performing the work under a reimbursable agreement.

As a result of inquiries by the Transportation Subcommittee of the House Appropriations Committee on the comparative cost of obtaining airport obstruction charts from Government or commercial sources, FAA requested, on May 2, 1968, proposals from 112 companies for making airport obstruction charts at 150 airports throughout the United States and its possessions. Eleven proposals were received, four of which were determined by FAA to be technically responsive to the conditions of the request for proposals. The four technically responsive

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firms submitted proposals ranging from \$998,000 to \$2,700,000. Prior to the submission of proposals by the private firms, C&GS informed FAA that it estimated its reimbursable costs for charting the 150 airports to be \$799,651.

FAA compared the C&GS estimated cost, as adjusted for certain support costs, with the lowest technically responsive proposal, as adjusted for certain Government support and nonrecurring costs, and concluded that it would be more expensive to obtain airport obstruction charts from private industry. BOB Circular No. A-76 sets forth the basic policies to be applied by executive agencies in determining whether commercial and industrial products and services used by the Government are to be provided by private suppliers or by the Government itself.

Subsequently, during hearings conducted by the House Subcommittee on Coast Guard, Coast and Geodetic Survey, and Navigation of the Committee on Merchant Marine and Fisheries on the performance of the program by C&GS, a member of the Subcommittee suggested that the General Accounting Office be asked to make a study, in accordance with the principles set forth in BOB Circular No. A-76, of the comparative costs of obtaining airport obstruction charts from a Government activity or from commercial sources. In a letter dated October 23, 1968, Congressman Edward A. Garmatz, Chairman of the House Committee on Merchant Marine and Fisheries, requested that our Office make such a study. The results of our study were reported to the Chairman on December 10, 1968. This reporting date was requested by a Committee staff member shortly after we started our work on the Chairman's request.

Our study consisted of (1) determining whether the comparative cost analysis prepared by FAA complied with the principles set forth in BOB Circular No. A-76 and (2) making certain tests that we considered necessary under the circumstances to determine the overall reasonableness of FAA's cost comparison. On the basis of our study, we made adjustments to the FAA cost comparison. The cost comparison as adjusted by us showed that the cost of contract operations and

Government operations would total about \$1,531,000 and \$899,000, respectively, and that FAA's estimate of additional costs of obtaining airport obstruction charts from private industry would be reduced from about \$1,024,000 to about \$632,000. We therefore concluded that under the proposed alternatives it would have been far more costly to the Government if FAA had contracted for the airport obstruction charts with the private company who submitted the lowest technically responsive proposal.

Our conclusion, combined with a supporting comparison of estimated program costs--contract operations versus Government operations--prepared in accordance with the principles set forth in BOB Circular No. A-76, generated considerable concern in the private engineering community. This concern has been commented on in letters to various members of the Congress and in editorials in trade magazines. We were subsequently requested by you and several other members of the Congress to respond to such comments questioning (1) the logic of the cost comparison principles set forth in BOB Circular No. A-76, (2) the validity of certain cost elements included in the cost comparison set forth in our report to the Chairman, and (3) other matters relative to the airport obstruction chart program which ranged far beyond the scope of the study made for him.

To be fully responsive to the questions raised, it was necessary for us to gather additional information on the airport obstruction chart program and to perform additional audit work. As expected, this work resulted in the disclosure of certain other areas where possible adjustments could have been made to the FAA cost comparison. However, our additional audit effort indicated that such adjustments in the cost comparison would not significantly affect the \$632,000 cost difference.

Thus, based on our additional audit work, we still conclude that under cost comparison principles set forth in BOB Circular No. A-76, it would have been more costly to the Federal Government if FAA had contracted for the airport obstruction charts for the one-contract period with the private company who submitted the lowest technically responsive proposal in response to FAA's May 2, 1968, solicitation.

**B-165504**

**Our comments on specific matters questioned are enclosed.**

**The information in this report is being included in reports to the other members of the Congress who requested information on this matter. We trust that the information presented herewith will serve your purpose.**

**Sincerely yours,**

A handwritten signature in dark ink, appearing to read "Thomas B. Andrews". The signature is written in a cursive style with a prominent initial "T".

**Comptroller General  
of the United States**

**Enclosure**

**The Honorable Frank M. Clark  
House of Representatives**

COMMENTS BY THE  
GENERAL ACCOUNTING OFFICE  
ON CERTAIN COST ITEMS AND  
OTHER MATTERS QUESTIONED IN  
LETTERS TO MEMBERS OF THE CONGRESS  
ON THE  
AIRPORT OBSTRUCTION CHART PROGRAM OF THE  
FEDERAL AVIATION ADMINISTRATION

COMPARATIVE COST ANALYSIS

Overall reasonableness  
of Government costs

Several of the letters and magazine articles sent to us by members of the Congress questioned the reasonableness of certain estimated Government costs (labor, travel, etc.) as shown in the comparative cost analysis included in our report to Congressman Edward A. Garmatz, Chairman of the House Committee on Merchant Marine and Fisheries.

The FAA estimate of the Government's cost of making 150 airport obstruction surveys and preparing the related charts was based on cost data developed by C&GS. C&GS classified the surveys of the airport sites as being originals, easy revisions, average revisions, and difficult revisions. For each of the four categories, C&GS used historical costs to compute an average survey cost. The computed average survey costs were applied to the various categories of the 150 surveys to estimate total costs. The individual cost elements (labor, materials, travel, etc.) were obtained by applying historical percentages to total estimated costs. For our initial study, we accepted the C&GS method as being reasonable and made certain tests that we considered necessary under the circumstances to determine the overall reasonableness of the total estimated Government costs as produced by the C&GS method.

To more fully evaluate the overall reasonableness of the estimated Government costs considered in our initial study, we reviewed, as part of our additional work, the costs incurred by C&GS during the first 7 months of fiscal year 1969 in making airport obstruction charts, considering informal operating records as well as formal accounting records. We compared these costs with the estimated Government costs used in the comparative cost analysis.

On the basis of this comparison, we believe that the C&GS estimate of total Government cost was reasonable. Our conclusion is supported by various analyses of fiscal year 1969 incurred costs, man-years consumed, and average survey costs. For example, the C&GS estimate of total Government costs of \$799,651 results in an average estimated cost per chart of about \$5,300. Our analysis of incurred costs, based on constructive completion of 101 charts during the first 7 months of fiscal year 1969, shows an average estimated cost of about \$5,000 per chart.

Cost comparison analysis based on  
one contract period and the lowest  
technically responsive proposal

Some of the letters sent to us by members of the Congress questioned the basing of the cost comparison included in our report to the Chairman on the use of one contract period and the lowest technically responsive proposal. These factors were used because we believed they provided the most realistic bases for making the comparative analysis. We could have projected the Government's cost for subsequent contract periods but such projection would be meaningless without comparable private contractor costs. We did not believe that it would have been advisable to use a proposal price for one contract period with a factor for inflation to project the private contractor's costs, primarily because of uncertainties as to future proposed prices due to the lack of previous contractor experience in the obstruction chart program and the wide variance between proposed prices submitted by the responsive contractors.

It is true that the results of a comparative cost analysis, based on one contract period, is influenced by nonrecurring costs. However, in our opinion, the elimination of such costs from the comparative cost analysis would not produce results that would tend to favor obtaining the charts from private industry.

Inspection and verification  
of contractor's work

The necessity for the FAA requirement that the contractor's work be subject to inspection and verification by C&GS was questioned in several of the letters sent to us by members of the Congress.

Airport obstruction data are needed to ensure the safety of flight in the vicinity of airports. The related charts are used for (1) determining the maximum possible takeoff and landing gross weights of civil aircraft, (2) the development and amendment of instrument approach and departure procedures, (3) analysis of airspace utilization problems, (4) obstruction studies on matters of future instrument landing runway designation, (5) studies for clearing and hazard marking, and (6) litigation support.

In our report to the Chairman, we stated that FAA officials advised us that FAA would require a 100-percent inspection and verification program by C&GS if a contract for the airport obstruction charts were awarded to a private contractor. FAA officials informed us of two reasons for this requirement: (1) to enable FAA to certify that the work for which payment was being made had been accomplished in accordance with the contract, and (2) to ensure the safety of flight in the vicinity of airports. Under the present arrangement, C&GS certifies as to the accuracy of the obstruction chart data. FAA has, through experience, found the work done by C&GS to be acceptable.

Although we may have some reservations about the need for a 100-percent inspection and verification program to support the payment for work performed, we have no basis for questioning FAA's judgment that this amount of verification is needed to ensure the safety of flight in the vicinity of airports. FAA's requirement for a 100-percent inspection and verification program might appear somewhat inconsistent with its determination that four of the prospective contractors submitted proposals which indicated that they could adequately perform the work required by the contract specifications. In our opinion, however, this apparent inconsistency in itself does not provide a sufficient basis for us to conclude that it would be inappropriate for FAA to require a 100-percent inspection and verification program if the charts were procured from a private contractor.

The inspection and verification program does not mean that C&GS would completely duplicate the work that would be performed by a

contractor on each airport survey. Under the program, C&GS would do the work necessary to certify to FAA that the obstruction charts prepared by the contractor on each airport are accurate. C&GS officials informed us that this work would involve (1) an office inspection by photogrammetric methods of all airport obstruction surveys performed by the contractor, (2) a field edit at each airport to ensure the accuracy in both horizontal position and elevation of obstructions to air navigation, and (3) a field inspection at a selected group of airports while work is in progress to determine the quality of the work by contractor's personnel, and the quality and accuracy of the contractor's equipment and survey methods.

The fact that we do not contest the requirement for a 100-percent inspection and verification program should not be construed as meaning that we are convinced of the need for such a program. It means simply that, without evidence of performance by a private contractor in preparing airport obstruction charts to the accuracy level considered necessary by FAA, we have no basis for questioning FAA's decision that a 100-percent inspection and verification program is necessary to ensure the safety of flight in the vicinity of airports. Also, because of the technical nature of the inspection and verification work, we have no basis to conclude that the extent of such work determined by C&GS as necessary to certify to FAA as to the accuracy of airport obstruction charts was inappropriate.

Elimination of overhead and  
depreciation costs from the cost  
of Government operations

As stated previously, we made, in our initial study, certain adjustments to the cost data developed by C&GS and furnished to FAA for use in its cost comparison. Our adjustments which resulted in the elimination of overhead and depreciation costs from the cost of Government operations were questioned in several of the letters sent to us by members of the Congress. As stated in our report to the Chairman, these adjustments were made because the cost data developed by C&GS was based on a full allocation of costs rather than on an incremental cost basis as required by BOB Circular No. A-76.

The underlying concept for using incremental (or additional) costs in deciding on alternative courses of action is to isolate the cost factors

that would change if a different course of action were to be followed. This concept is based on the theory that those costs that would not change are not pertinent to the decision because there would be no financial impact on the procuring organization, no matter what decision was made. In essence, under the incremental cost concept, consideration is given only to those costs that will be increased or decreased if an alternative course of action were taken.

Our elimination of overhead costs from the cost of Government operations in the FAA comparative cost analysis should not be interpreted as meaning that C&GS can operate without incurring any such costs. On the contrary, C&GS will incur overhead costs but, according to C&GS, such costs would remain substantially unchanged if airport obstruction charts were procured from private industry. Our review did not disclose any indication that C&GS overhead costs of the type eliminated--executive direction and administrative--would be significantly decreased if the charts were procured under private contracts. Consequently, under the incremental cost concept, these overhead costs would have no influence on a make-or-buy decision relative to airport obstruction charts.

The incremental cost concept also was the basis for our elimination of depreciation costs from the FAA comparative cost analysis because no new equipment would be required for continuing Government operation of the program. We were advised by a C&GS official that, if the obstruction charts were obtained from commercial sources, most of the equipment that is currently used would be required for the inspection and verification program.

Cost to maintain and service  
charting materials

The FAA comparative cost analysis as adjusted by us and set forth in our report to the Chairman showed that according to C&GS records the Government's estimated cost to maintain and service charting materials would be \$16,000 more if the airport obstruction charts were procured under contract with private industry. The reason for this difference was questioned in several of the letters sent to us by members of the Congress.

While this difference would not materially affect the results of the cost comparison, we discussed it with the C&GS official responsible for preparing the estimate. He informed us that the difference

was attributable to an additional man-year of effort (three man-years for Government operation--four man-years for a contractor operation) which, in C&GS's opinion, would be required if a contract for airport obstruction charts were awarded to private industry.

As part of our additional work, we attempted to obtain from C&GS a specific explanation for the requirement of an additional man-year of effort. The C&GS official reiterated his previously expressed opinion and described to us the duties which would require the additional man-year.

On the basis of this discussion, it appears to us that the duties for the additional man-year are similar to the required work functions under the present Government operation, except that some additional effort could possibly be required for liaison between C&GS and a private contractor. There is a possibility that any such additional work could be absorbed by the 3 man-year estimate for a Government operation. On this basis, the cost to maintain and service charting materials would be the same under either alternative of obtaining the charts and would result in reducing the estimated costs of maintaining and servicing chart materials by \$16,000 if a contract were awarded to private industry.

Reasonableness of estimated  
cost of Government-furnished  
materials

Several of the letters sent to us by members of the Congress questioned the reasonableness of the estimated cost of Government-furnished materials added to the cost of contractor operations by FAA in its comparative cost analysis. These costs were added to the cost of contractor operation because FAA's request for competitive proposals provided that the Government would furnish certain material for use by the contractor.

The cost of the Government-furnished materials was estimated by C&GS at \$36,800, which included about \$35,000 for aerial photographs of 50 airport sites. Because any errors in the estimated cost of aerial photographs would not materially affect the results of the comparative cost analysis, we did not test the reasonableness of this amount in our initial study.

Since this cost item has been questioned, we attempted, as part of our additional work, to determine the reasonableness of the amount included for the photographs of the 50 airport sites in the comparative cost analysis under both a Government and a contractor operation. On the basis of information available at C&GS, we were unable to make this determination. However, the cost of the photographs for the 50 airport sites would be the same to the Government under either alternative of obtaining the charts and therefore would have no bearing on a make-or-buy decision.

#### Administration and related costs

The FAA comparative cost analysis set forth in our report to the Chairman showed that the Government's estimated administration and related costs would be about \$49,000 more if the obstruction charts were procured under contract with private industry. The reasonableness of this difference was questioned in several of the letters sent to us by members of the Congress.

The difference in the estimated administration and related costs between a Government and a contractor operation represents the C&GS and FAA estimates of the cost of preparing specifications and requests for proposals, evaluations of proposals, preaward conferences, and managing a contract with private industry. Such cost would not be incurred if the airport obstruction charts were obtained from C&GS.

On the basis of information available, we were unable to determine the reasonableness of the difference in the estimated administration and related costs. However, our additional work disclosed certain errors which reduced the difference in administration and related costs between a Government operation and contractor operation to about \$45,000.

#### Phase-out of program over 2- to 3-year period would not require consideration of early retirement and severance benefit costs

Some of the letters sent to us by members of the Congress included a statement that phase-out of the obstruction chart program over a 2- to 3-year period would not require consideration of early retirement and severance benefit costs. We agree that it is reasonable to assume that if the obstruction chart program were phased out over a 2- to 3-year

period, C&GS could possibly absorb the employees involved into other programs. However, FAA's request for competitive proposals covered total program requirements for fiscal year 1969 and, on that basis, C&GS would not have had an opportunity to phase the program out if a contract for the charts had been awarded to a private contractor.

We believe that in situations where consideration is being given to contracting out for a service that is currently being accomplished by civil servants, any significant increased cost of early retirement of Government employees and the cost of severance benefits to Government employees, which would result from the discontinuance of the Government activity, should be added to the cost of procurement by contract.

Under the circumstances, we believe that it was proper for FAA to consider early retirement costs and severance benefit costs in its cost comparison. Our initial study showed, however, that the early retirement costs, had not been properly computed by C&GS. Because of lengthy analysis and computations required to accurately determine additional costs for early retirement and in view of the significant difference between Government costs and contractor costs, as adjusted, we did not recompute such costs. We therefore adjusted the FAA cost comparison by deleting all early retirement costs from contractor costs as shown in our report to the Chairman. Any additional costs attributable to early retirement would only serve to increase the spread between Government and contractor costs.

#### OTHER MATTERS

##### Evaluations of proposals and subsequent negotiations

Some of the letters sent to us by members of the Congress questioned the manner in which the proposals from prospective contractors were evaluated and the fact that FAA did not, subsequent to receipt of the proposals, negotiate with any of the contractors.

For a proposal to be considered technically responsive to the procurement request, FAA required that the proposal fully meet the specified requirements for aerial photography, field surveys, chart production, mosaic production, and reproduction, and the prospective contractor to score at least 800 points based on the following technical factors.

<u>Technical factor</u>	<u>Point score</u>
1. Understanding of the requirement	50
2. Method of approach	50
3. Capability to handle total program	250
4. Technical merit	300
5. Operating history	150
6. Equipment and facilities	100
7. Ability to meet schedules	50
8. Nature and scope of consulting and/or subcontracting services	<u>50</u>
	<u><u>1,000</u></u>

The evaluations of the proposals were performed by four evaluators--two from FAA and two from C&GS. Four of the 11 proposals received by FAA were found by the evaluators to be technically responsive to the procurement request. Although the four evaluators reached the same conclusion as to the proposals they considered technically responsive, FAA records indicate that the evaluators worked independently of each other and had no knowledge of the cost data. We did not evaluate the appropriateness of the conclusions reached by the evaluators.

FAA records show that FAA did not, subsequent to receipt of the proposals, negotiate with the four firms who submitted technically responsive proposals because its comparative cost analysis showed that it would be more economical to continue the practice of obtaining airport obstruction charts from C&GS, and the prospective contractors were advised of this decision. At the request of one contractor, FAA discussed its reasons for determining that the contractor's proposal was technically nonresponsive. We believe that, if FAA had decided to conduct negotiations, it would have been appropriate for FAA to consider including in such negotiations the prospective contractors who were not considered technically responsive, particularly the one whose proposal almost met the technical requirements and whose proposal price was about \$197,500 less than the lowest technically responsive proposal.

#### Liability insurance

In an enclosure to a letter sent to us by a member of Congress a statement was made that FAA's procurement request required

prospective contractors to possess liability insurance sufficient to hold the Government harmless from claims resulting directly or indirectly from engineering error and that annual premiums for such coverage, in excess of \$50,000 were included in the lowest technically responsive proposal.

FAA's procurement request did include a "hold harmless liability" clause. However, in the letter transmitting the procurement request to prospective contractors, FAA stated that the effect on contract price, if any, resulting from the inclusion of the "hold harmless liability" clause should be shown separately.

Our review of FAA's records showed that the contractor who submitted the lowest technically responsive proposal (i.e., the proposal used in our comparative cost analysis) stated that no additional costs would result from inclusion of a "hold harmless liability" clause as a contract provision. Only two of the firms submitting proposals quoted the cost of premiums for such coverage. The two firms estimated that the cost of such coverage would be less than \$25,000. All other proposals either did not quote an amount or stated that no additional cost would result.

Under a Government operation, the responsibility for any inaccuracies in the obstruction charts would be assumed solely by the Government because the Government acts as a self insurer. Costs assignable to the assumption of this responsibility were not readily determinable but did not appear to be of sufficient significance to meaningfully affect the results of the FAA cost comparison and therefore were not considered by us as requiring any adjustment.

Competitive negotiation procedures  
used in soliciting proposals for  
airport obstruction charts

In an enclosure to a letter forwarded to us by a member of the Congress, a statement was made that it was unethical to ask consulting engineers and land surveyors to submit price proposals with their bids on projects. In our opinion, Public Law 87-653 (10 U.S.C. 2304(g)) requires the use of competitive negotiation procedures, which includes the submission of price proposals, in procuring such services. Such procedures differ in principle from competitive bidding procedures which generally require award of the contract to the lowest responsive bidder.

Whether the procurement laws should be amended to prohibit Government agencies from following procurement procedures which do not conform to canons and standards of professional conduct is, of course, a question of congressional policy. However, it seems to us that matters pertaining to the enforcement of canons or standards of professional ethics should be left to the professions rather than be incorporated into procurement law.

In this regard, it should be noted that only one of the 11 proposals received by FAA did not quote a proposed price. Our review of FAA's records shows that of the 18 firms who responded to FAA's invitation, but offered no proposal, only one firm gave the requirement for competitive proposals as a reason for not submitting a proposal.

#### Uniform set of specifications

A statement was made in an enclosure to one of the letters forwarded to us by a member of the Congress that a uniform set of specifications was not provided to the prospective contractors. No support was furnished for the statement.

Our review of FAA's records and discussions with FAA officials indicated that a uniform set of specifications was furnished to each of the 112 prospective contractors.



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON D C 20548

B-165504

JAN 15 1970

Dear Senator Proxmire:

Reference is made to your letter of December 18, 1969, transmitting a report prepared by Ernst & Ernst which you received from the Consulting Engineers Council of Wisconsin. The report contains a study of the cost of the Federal Aviation Administration's airport obstruction charts program. In your letter you requested our comments relative to this study and suggested that it might be of some assistance to us in a study we are presently conducting to compare the advantages and logic of various interest and discounting techniques used for project and program evaluation.

As indicated to you in our letter dated August 11, 1969, we made a study of the comparative costs of procuring 150 airport obstruction charts required for 1969 on an in-house basis versus a contracted basis. Our study consisted primarily of a review of cost data prepared by the Coast and Geodetic Survey and furnished to Federal Aviation Administration for use in its cost comparison. In addition, Federal Aviation Administration obtained bids from private industry and selected the lowest technically responsive proposal for use in its cost comparison. The results of our study were included in our report to the Chairman, Committee on Merchant Marine and Fisheries, House of Representatives (B-165504, dated December 10, 1968).

The Ernst & Ernst study differs in certain material respects from the cost comparison included in our report. The Ernst & Ernst cost comparison includes in-house costs on the basis of a full-cost allocation concept, whereas, our report includes in-house costs computed by the incremental cost method prescribed in Bureau of the Budget Circular No. A-76, a method which we considered appropriate.

Our cost comparison showed that it would have been more costly to the Federal Government if Federal Aviation Administration had contracted for the airport obstruction charts with the private company which submitted the lowest technically responsive proposal. The Ernst & Ernst basic cost comparison produced results similar to ours in that it showed that procurement of the charts from private industry was more expensive than from Government sources. However, in its report Ernst & Ernst indicated that the financial effect on the Government of contracting airport obstruction charts to private industry could range from increased costs of \$200,000 to possible

B-165504

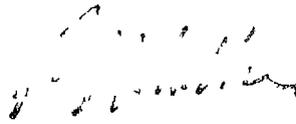
savings of \$135,000. The possible savings were contingent upon two additional considerations: (1) the avoidance of procurement costs of \$197,500 and (2) the elimination of \$335,000 representing the entire amount provided for Government inspection of contractor work.

The first consideration resulted in a downward adjustment of the cost of obtaining airport obstruction survey services from private contractors by about \$197,500 based on the assumption that one technically nonresponsive proposal to Federal Aviation Administration's request for bids could have been amended by negotiation to make it technically responsive without increasing the price proposed by the contractor. We believe that it is logical to assume that further negotiation may have made this proposal technically acceptable, however, we have no basis for concluding that such negotiation would not have resulted in increasing the contractor's price proposal.

The second consideration resulted in the elimination of the entire cost for Government inspection of work performed under the private contractor alternative, which was estimated to be \$335,000. It is our opinion that some costs for inspection and verification are necessary for consideration in the computation of costs for contractor-furnished services as we indicated in our previously cited report and in our letter to you, dated August 11, 1969. An adjustment which eliminates all costs associated with inspection and verification is not, in our opinion, appropriate.

Thank you very much for the Ernst & Ernst report and your continued interest in the work by our Office.

Sincerely yours,



*Assistant* Comptroller General  
of the United States

The Honorable William Proxmire  
United States Senate