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DEFENSE SYSTEMS MANAGEMENT SCHOOL



PROGRAM MANAGEMENT COURSE INDIVIDUAL STUDY PROGRAM

LIGHT OBSERVATION
HELICOPTER ACQUISITION
A HISTORICAL CASE
STUDY
PMC 74-2

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DEFENSE SYSTEMS MANAGEMENT SCHOOL

STUDY TITLE:

Light Observation Helicopter Acquisition,
A Historical Case Study

STUDY PROJECT GOALS: To track the LOH acquisition from the initial requirement through production. To provide the reader a real world insight into issues which could impact on any program by presenting key findings of a congressional investigation.

STUDY REPORT ABSTRACT The purpose of presenting the Light Observation Helicopter (LOH) Case was to provide the reader with real world occurrences in the acquisition process. Problems the Army had in procuring the LOH are not unique to the Army. The Case was selected due to the congressional investigation of the Army's competence in the conduct of the procurement. The study addresses problems of buy-ins, sole source procurement of additional like items, two-step formally advertised multi-year production contracts, source selection processes, conflicts of interest and disclosure of privileged information.

KEY WORDS

MATERIEL	ACQUISITION	AIRCRAFT	HELICOPTERS
MATERIEL	DESIGN AND DEVELOPMENT	SOURCE SELECTION	SOLE SOURCE

PROJECT MANAGEMENT
PROTOTYPES

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Thomas C. Rankin, MAJ, USA	PMG 74-2	November 1974

EXECUTIVE SUMMARY

The purpose of presenting this case was to provide the reader a real life insight into issues which impact on any defense system acquisition.

The case essentially covers the 1960 to 1967 time frame. During this time the Army matured in the development and procurement of air items.

The case begins by the Army identifying requirements for a new Light Observation Helicopter (LOH). Three prototype designs submitted by Bell Helicopter, Hiller Aircraft and Hughes Tool Companies were evaluated. The Bell and Hiller designs were initially selected for a prototype competition. Several individuals felt the Hughes design should be pursued. In June 1961, the DDRE authorized the Army to procure 5 prototype aircraft from each contractor. Prior to this, the Army was required to procure air items through either the Air Force or Navy. The prototypes were considered "off-the-shelf" and FAA certified as airworthy.

The aircraft were tested and a source selection evaluation performed. In addition, a cost effectiveness study was conducted by Research Analysis Corporation. The Advisory Council recommended that either the Hiller or Hughes LOH should be selected by competitive procurement utilizing a multi-year contract. The buy was to be for at least 1,000 aircraft to be delivered over a three-year period. The Secretary of the

Army, Mr. Miles, decided to procure the LOH by a two-step formally advertised procedure and set the quantity at 714. He interrupted the program when he learned cost data submitted by Hiller was disclosed to Hughes. An Army investigation indicated the information was not such as to give the bidders any material advantage over the other. The procurement process continued and final selection was based on price factors. Bids were opened publicly on 21 May 1965. Hiller's bid per airframe was \$29,415 while Hughes' bid was \$19,860. A fixed price production contract was awarded on 26 May to Hughes with a 50 percent option per year for 357 additional aircraft at the same unit price. An additional buy of 121 OH-6A's was attempted in 1966. The initial target price submitted was \$55,927. Negotiations terminated, unsuccessfully, on 10 May 1966.

The findings and analysis address key problems which invited congressional investigation. These were buy-ins, sole source procurement of additional like items, source selection processes, conflicts of interest, disclosures of source selection data and problems when utilizing other services for procurement. The two appendices point out 1967 DOD rationalization to the investigation findings and provide the reader with a real world negotiation synopsis.

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I wish to convey my deep appreciation to Mr. Albert E. Moore for his assistance in obtaining reference material and providing guidance in the pursuit of this study. Thanks are also in order to Mr. Jerry Yeager in the Office of the Assistant Secretary of the Army for Installations and Logistics. Other appreciative support was provided by Mr. Harold L. Mabrey of the US Army Aviation Systems Command, St. Louis, Missouri. Mr. Mabrey was the contract specialist supervisor during the CH-6A procurement.

TABLE OF CONTENTS

EXECUTIVE SUMMARY..... 11
ACKNOWLEDGEMENTS..... iv
THE LOH CASE..... 1
CASE FINDINGS/ANALYSIS.....14
APPENDIX I: NEGCTIATION.....22
APPENDIX II: DOD COMMENTS.....26
BIBLIOGRAPHY.....33

LOH CASE₁

In October 1959 the US Army initiated three studies to determine Army aircraft future objectives in light observation, manned surveillance and tactical transport aircraft. The studies were used to develop plans to establish guidance for Army Aviation in the 1960-1970 timeframe.

One requirement which surfaced was the need to develop an aircraft to replace the CH-13 and OH-23 observation helicopters and the O-1 light fixed wing airplane.

The CH-13 and OH-23 saw service during Korea and Vietnam. The O-1 was a tandem seated observation airplane used in Korea and as a primary trainer.

Requirements identified in the studies were presented to industry in December 1959. Industry submitted 45 light observation aircraft designs to include ducted fan, tilt wing, autogyro, fixed wing and helicopter concepts.

The designs were evaluated in February 1960 by the Aircraft Requirements Review Board. The Board was appointed by then General Lyman L. Lemnitzer, Chief of Staff of the Army. General Lemnitzer appointed the then LT General Gordon B. Rogers, Deputy CG, Continental Army Command as Chairman. The Board was composed of 10 General Officers and evaluated all industry designs. The Board recommended the Army's aircraft observation mission could best be performed by pure helicopter. It also recommended that more than one aircraft be

prototyped prior to selection of design for production.

In 1948 Army Aviation consisted of 2-place commercial aircraft of the cub type with small numbers of dedicated crews. Logistics support came from the Air Force, Navy and commercial sources. The Korean war demands expanded the Army's air mobility requirement. Prior to 6 November 1956 the Army was required to utilize the service of the Air Force for the engineering and procurement of Army air items. On this date, a memorandum of agreement (MOA) was approved by the Assistant Secretary of Defense (Supply and Logistics) to provide the Army direct access to the Navy for the procurement of OH-13 and OH-23's for which the Navy initially had responsibility. The Army could then forward its Military Interdepartmental Purchase Request (MIPR) and have direct communications with the procuring service.

By 1960 the Army increased its logistic role by determining qualitative and quantitative requirements for their aircraft to include support, programming, budgeting and funding for procurement, maintenance and supply through depot level and approving changes during production and retrofit. For example, in 1959, the Army contracted directly for industry overhaul, parts, technical representatives, training and basic and applied research.

On 1 July 1960, Office of the Secretary of Defense, OSD, disapproved an Army plan to assume additional procurement responsibility for air items. Changes were made to include the

the authority for the Army to procure Federal Aviation Agency (FAA) certified "off-the-shelf" aircraft and engines.

Five additional Army study groups convened between 1960 and 1966 reaffirming the need for a light observation helicopter (LOH). In addition, commanders from Vietnam expressed a need for the LOH. A major disadvantage of using the OH-13 in Vietnam was the requirement for aviation fuel (115/145). The UH-1 (Iroquois) and CH-47 (Chinook) were using a different fuel, (JP-4). Other requirements were for an aircraft with greater range which could scout and maneuver with greater speed to make it a more potent weapon system.

In 1956 the Army began planning a new 250 HF turbine engine for use in future LOH's. In March 1958, 9 companies submitted proposals which were examined by the Air Force as a procuring agency. On 29 May 1958, a Fixed Price Cost-Sharing contract was awarded to Allison Division of General Motors Corporation. During 1961 three tests of the Allison engine failed. A back-up engine was recommended to Chief Research and Development and on 19 October 1961 the Air Force was asked to hold a competition for a back-up engine development. In February 1962 the Air Force awarded a development contract to Continental Aviation and Engineering Corporation. By June 1964 the Air Force and Army were confident the Allison engine would be satisfactory and the Continental engine development design was discontinued.

In September 1965 the first production engine contract

was made with Allison Division for three hundred and fifty seven T-63A5A engines. This contract contained an option for a 50 percent increase in this quantity. Also, in September, Allison received its' FAA certification for the model 250-18 (T-63A-5A). This FAA certification permitted the Army to buy the engines directly from the contractor.

In November 1965 deliveries of the first production engines of a total buy of 357 began. The first production engine was received two months after award of the contract.

On 19 March 1960, the Chief of Staff approved the Rogers Board recommendation. The Army requested the Navy to conduct a design competition and on 13 May 1960 the Army prepared military characteristics for the LOH. The characteristics stipulated the LOH should be an advanced design turbine powered helicopter with improved performance, smaller, lighter in weight, easier to maintain and more reliable than the OH-13 and OH-23. Detailed technical specifications were developed and on 14 October 1960 the Navy issued a Request for Proposal (RFP) to industry. Twelve manufacturers responded, submitting 17 designs. The technical evaluation was performed by the Navy supplemented by Army experts in April 1961. The operational evaluation was accomplished by the Army Aviation Test Board at Fort Rucker, Alabama. Early in May the results of the joint evaluation were presented to the LOH Design Selection Board. The Chief of Staff, then General George Decker, appointed a Board composed of 9 General and Flag

Officers chaired again by LTG Rogers. The Board recommended that two designs, Bell Helicopter's OH-4A and the Hiller Aircraft Corporation's OH-5A, be selected for prototype testing. A design submitted by the Hughes Tool Company was set aside as beyond the engineering capabilities known. Several Board members, then Brigadier General Clifton F. Von Kann, Director of Army Aviation and LT General Barksdale Hamlett, believed the Hughes design should be pursued. The Army staff agreed that the Hughes design offered an opportunity for a technological break-through and recommended that, in addition to obtaining the prototypes, the Army develop and test the Hughes design as a separate action. The Board re-affirmed this action and on 18 May 1961, General Eddleman, then acting Chief of Staff, approved the recommendation. On 5 June 1961, the Director, Defense Research and Engineering (DDRE) authorized the Army to procure the Bell and Hiller prototypes directly from the manufacturers without going through the Navy. On 15 June he approved the addition of the Hughes entry into the prototype competition.

All prototypes were to be certified airworthy by the Federal Aviation Agency (FAA). The Army awarded fixed price research and development contracts to the three contractors in November 1961.

The US Army Test and Evaluation Command conducted an extensive test program on each type of aircraft. The test program included logistical evaluation, aerodynamic testing,

operational suitability and armament and avionics testing. The logistical evaluation measured reliability, maintainability and logistical support requirements. The test goal for the Army Aviation Test Board was to accrue 1,000 hours on each of the first aircraft designs in a period of six months.

The second of each aircraft design was aerodynamically tested for 200 hours at the Army Test Activity at Edwards AFB, California. This test was to determine the precise performance and stability control characteristics of each design with emphasis in the area of performance guarantees.

The third aircraft was used for operational suitability tests conducted at Fort Rucker, Alabama. The prime objective of this test was to obtain user inputs as to the suitability of each design to perform the LOH mission.

The fourth and fifth aircraft of each design were used for armament and avionics testing. Two armament kits consisting of 7.62 mm machine guns and a 40 mm grenade launcher were used. Radar reflectivity and infrared radiation was also measured during this testing. The prototype aircraft accumulated 4,858 flight hours during the test program.

The information accumulated on the three competing models was analyzed beginning in September 1964. An Army evaluation group (now Source Selection Evaluation Board) headed by then Brigadier General Kenneth Bayer met for three weeks to evaluate in three areas; technical, operational suitability and economics. The Board was composed of 130

people specially selected for their experience, technical skill and maturity of judgment.

The group inputs consisted of data obtained from the Army's flight test program; technical data generated during the FAA type certification program; a normal pre-award survey of the production capability of each of the three respective manufacturers and cost estimates for quantity production prepared by each contractor. In addition, an independent cost effectiveness study was performed by the Research Analysis Corporation of Washington, D.C. This was a separate effort from the evaluation group. The 3 contractors each gave a two-hour oral presentation to the evaluation group.

All three LOH designs met most of the requirements. However, none fully met all of the Army's requirements. The operational suitability team made comparisons between the OH-13, OH-23 and the LOH's. These comparisons indicated all three new designs were a substantial improvement over the current aircraft.

The cost effectiveness study determined that no clear choice could be made between the Hiller OH-5A and Hughes OH-6A. The OH-5A had lower maintenance requirements but were offset by better performance achieved by the OH-6A. The Bell OH-4A was the highest cost design and had reduced mission capability due to its greater weight.

A second Design Selection Board, now Source Selection Advisory Council, was formed in October 1964 by the Chief of

Staff, then General Harold K. Johnson. The Board was composed of seven General Officers chaired by LT General C.G. Dodge. The Board had the overall responsibility for determining which aircraft met the Army's requirements, was most suitable for the mission and to recommend appropriate procurement procedures. The Board considered all findings and conclusions of the Army evaluation group. It unanimously concluded that the Bell aircraft's performance deficiencies and high cost eliminated it from further competition. It also concluded that either the Hiller OH-5A or Hughes OH-6A should be selected by competitive procurement utilizing a multi-year contract for at least 1,000 aircraft to be delivered over a three-year period. The selection of this fairly large number of aircraft was intended to eliminate or minimize a contractor "buy-in". The three-year term was to allow lengthier amortization of start-up costs, result in lower cost to the Government, lower unit costs and obligate the competing contractors to consider profit margins carefully in preparing bids.

The Chief of Staff recommended to the Secretary of the Army, Mr. Stephen Ailes, that the Board's plan be adopted. Mr. Ailes decided to procure the LOH by a two-step formal advertising procedure and set the quantity at 714 aircraft. 71 was the approved total quantity in the Five Year Force Structure and Financial Plan for fiscal years 65, 66, and 67.

In the same month, October, the Secretary of the Army temporarily interrupted the LOH program because on 16 October

the LOH Project Manager reported that he had learned of a possible "leak" of information outside the Army of the Selection Board's recommendation and that cost data submitted by Hiller on a privileged basis had been improperly disclosed to Hughes Tool Company. An investigation was initiated on 17 October by the 902nd Intelligence Group. More than eighty individuals were interviewed. The facts developed indicated

There must have been an unauthorized disclosure but its' exact source could not be established. The nature of the information was not such as to give the bidder any material advantage over another. 1

The Army made a careful study of the course to follow. The Army reflected that it had recently completed successful buys involving competition between the OH-13 and OH-23. It therefore seemed reasonable a similar price confrontation could be engaged in for the LOH. The design problems were expected to be at a minimum which was conducive to the two-step advertised contract procedure recommended. Both contractors were aware the final selection would be based on price factors. The amortizing of investment in tooling, start-up and other manufacturing costs supported the multi-year buy approach.

Four months after the investigation was initiated the Secretary of the Army ordered the procurement and a two-step invitation for bid was released to Hiller and Hughes in accordance with the Armed Services Procurement Regulations (ASPR). In the first step each contractor submitted technical proposals which described the equipment he intended to furnish.

Discussions were then held to decide exactly what the Army desired and what the contractors would supply. After the discussions it was decided each contractor provided technical proposals acceptable to the Army.

On 1 May 1965, both Hiller and Hughes were asked to bid on a total of 714 aircraft; 88 in FY-65, 168 in FY-66 and 458 in FY-67 with a 50 percent option per year for 357 additional aircraft at the same unit price. This was to take advantage of the competitive procurement and encourage realistic pricing.

The bids were opened publicly on 21 May 1965. Costs per unit airframe were:

Hiller	\$29,415	Total contract price of	\$22,250,134
Hughes	\$19,860	Total contract price of	\$14,968,663

The Hiller OH-5A cost per pound was \$21.61. The Hughes price was \$22.20 per pound. Hughes was asked to verify its price. The Army received confirmation on 24 May 1965. A contract was awarded to Hughes on 26 May. There were other price quotes for publications, spare parts and maintenance tools not included in the basic airframe bid. In addition, the basic airframe did not include the engine or avionics (communications equipment). The total estimated fly-away cost of the fully equipped aircraft was estimated then at \$75,146.

It was later determined the use of the multi-year buy technique in the procurement of the OH-6A resulted in a unit savings of \$16,531. These

savings were computed by comparing the unit cost of the OH-6A under multi-year procurement against the average unit cost of the OH-13 and OH-23 under single year procurement. This figure was then increased by 25 percent to adjust for the technical improvements of the OH-6A over the OH-13 and OH-23.³

In September 1965 an urgent requirement arose for additional OH-6A's to be developed for use in Vietnam. A supplemental FY-66 budget request was submitted to Congress to provide funds to purchase 121 OH-6A's over and above the original contract and to exercise the FY-65 option for 44 helicopters. The budget was approved and on 9 December 1965 a teletype RFP was sent to Hughes for the additional helicopters to be delivered by 30 June 1967. The RFP was formalized on 17 January 1966 by a definitized RFP. The Army exercised the option for 44 helicopters and negotiations were opened for the 121 aircraft. Hughes set their initial target price at \$55,927 and negotiations terminated on 10 May 1966. A summary of this negotiation is highlighted in Appendix I .

Further studies determined the requirement could be satisfied by other means.

In September 1966 the Army exercised its FY-66 option of 50 percent for 44 OH-6A's. 229 more were procured in the FY-67 option during January 1967. Upon completion of the contract the Army had 1,071 OH-6A helicopters placed on contract for \$19,860 per unit airframe.

The first deliveries began on 2 September 1966, approximately two months behind schedule.

Changes to the OH-6A were reviewed by the Project Manager's staff and other technical experts and approved by the Project Manager. Each price change proposed by the contractor was audited by the Defense Contract Audit Agency (DCAA) and was analyzed by cost personnel prior to negotiation of a fixed price. The costly changes were the ones which resulted from changes in the type of Government equipment such as radios, additional armor and armament and Government directed changes for increased reliability. As of 8 August 1967, the total cost of engineer change proposals accounted for an increase of 9.8 percent in the total contract price from \$21,270,060 to \$24,571,906.

A Product Improvement Program (PIP) with Hughes was initiated to conduct engineering investigations and studies to enhance safety, reliability and reduce costs. Approved changes were incorporated into the production contract on a negotiated, fixed price (cost plus fixed fee) basis. The contract had a total price of \$1,902,849.

Hughes also held a negotiated fixed-price contract for the development and production of armor kits for a total cost of \$2,133,037. The changes and armor kits would have been required on any LOH procured off the shelf.

Follow-on contracts were obtained by competing the LOH again via two-step formal advertising. The three firms, Bell, Hiller and Hughes responded with an intent to bid. Hiller withdrew and Bell submitted the low bid and was awarded a

five-year, multi-year firm fixed price with escalation contract for 2200 CH-58A helicopters. Subsequent to the Bell award, DA directed the sole source procurement of 346 OH-6A helicopters equipped with the Standard Lightweight Avionics Package, as were the OH-58A's. The unit price paid for these additional 346 aircraft was approximately \$69,000 each. Deliveries were completed in CY-1970.⁴

CASE FINDINGS/ANALYSIS

The LOH procurement illustrates many lessons to be learned for a program manager. To provide a feel for some of the lessons, extracts of a House of Representatives report is included with discussion.²

The House Armed Services Subcommittee for Special Investigations, chaired by Porter Hardy, Jr., began their investigations into the LOH procurement at the direction of Chairman L. Mendel Rivers. The catalyst which precipitated the investigation was the increase in the initially proposed unit price for the 121 airframes for which the Army was requesting a supplemental authorization. The question was, "Why was the unit price 250 percent over the price for the identical airframe under the current contract with Hughes?"

The Subcommittee began its study in March 1966 and felt the investigation took the Subcommittee along a trail of procurement problems and irregularities.

The Subcommittee's primary concern was with the competency of the Army in the conduct of the procurement of aircraft. They were also concerned with the contractor's failure to meet production schedules and the possible relationship of this failure to the buy-in of the LOH contract by the Hughes Tool Company.

Some of the findings thrust at the Army were:

Despite its limited capability, the Army has proceeded independently with the procurement of aircraft still in the developmental stage. The clear intent of the interservice agreement to require the Army to seek assistance from the Navy or the Air Force in such cases has been circumvented by a strained interpretation of 'off-the-shelf' which has the effect of substituting Federal Aviation Administration certification for Navy and Air Force guidance. The Federal Aviation Administration, by statute, is charged with the responsibility for the safety and development of air commerce and civil aeronautics. Such limited jurisdiction and experience hardly make it a total substitute for the Navy and the Air Force who not only can furnish this same service but, in addition, are well equipped to furnish the Army with the direction and know-how needed in the procurement of new and sophisticated military air items. It was never intended that the Army be authorized to include research and development within its procurement of air items responsibilities. The Navy was notified by the Army that its role as a developing service had been terminated so the Army could assume full control of LOH program. 2

BUY-IN

In discussing the Hughes price of \$19,860, the Army concluded it is not considered outside the realm of reason that one or more of the contractors would be willing to "buy-in" within reasonable limits, in view of the long-range potential that this program offers with its attendant probabilities of future profit. The Subcommittee reported the Army's conclusion of the pricing had only one interpretation.

The Army's advisors were counseling a direct violation of the procurement policies set forth, the Armed Services Procurement Regulations, which condemn buying in. 2

The Army chose to proceed in a manner of an auction.

The Army accepted a bid from Hughes for approximately 1,000 units at a price which the Army had every reason to believe would result in a loss to the company of at least \$10,000 per aircraft. (Prior testimony to that committee by Hughes indicated their estimate of cost of the CH-6A to be about \$30,000). The Contracting Officer was asked to certify reasonableness of price. His response was:

Under Formal Advertised Procurements, including Two-Step Formal Advertised Procurements, there was no requirement for me to certify the reasonableness of price per se; however, the Armed Services Procurement Regulation (ASPR) 2-406.3(e)(1) states, in part, '...to insure that the bidder concerned will be put on notice of a mistake suspected by the contracting officer, the bidder should be advised, as is appropriate, of (i) the fact that his bid is so much lower than the other bid or bids as to indicate a possibility of error....If the bid is verified, the contracting officer will consider the bid as originally submitted....' The contractor was put on notice and did, in fact, verify his bid as originally submitted.4

Hughes made projections of what they thought their profits could be from the commercial version of the LOH. They felt they could produce about a ten million dollar profit during the CH-6A buy and they could gamble that amount. Hughes denied that the loss would be recovered in prices of follow-on Army contracts. Hughes rationalized they then had \$10,000 to play with and wanted to drop the CH-6A offer just below \$20,000 (a round figure) to \$19,860. The Army estimates ranged from \$28,204 to over \$40,000 per aircraft. The essence of the alleged buy-in was highlighted when the Army requested the expedited buy of an additional 121 LOH's for Vietnam. The Comptroller of the Army explained

Hughes' rationale as:

We (Army) come along and say we want all of the production. Instead of taking half of your plant production, we want it all in the initial stages. He (Hughes) said, O.K., if you pay me what I can get from a civilian customer, I will let you have it.²

The civilian price turned out, initially, to be about \$55,000. Another aspect the committee identified to illustrate a buy-in was the delay in deliveries of LOH's. The findings indicated a lack of experience in a major helicopter program which was a product of a lack of proper and timely planning.

COST EFFECTIVENESS STUDY²

The committee found that the LOH Cost Effectiveness Study performed by Research Analysis Corporation for \$70,000 was a waste of time, effort and funds since a completely different cost to the Army was generated by the buy-in price. This study could have been very effective if the price disparity between Hiller and Hughes had been smaller. In addition, the Board was provided a separate evaluation which could aid in the source selection.

LEAKS

A leak was discovered on 16 October 1964 when a Hiller employee reported to the LOH Project Manager that a previous Hughes representative had disclosed to the President of Hiller the principal recommendations of the Board. This was the

recommendation of a multi-year firm fixed price competition for a three-year period for 1,000 helicopters from a single producer. The ex-Hughes employee also stated to Hiller that the Hughes Company had been given Hiller's cost data, submitted to the Army. The Secretary of the Army then initiated an investigation into the leak. The significant findings of the Subcommittee were that two high ranking Army Officers met with the ex-Hughes employee the day before the Board submitted its recommendation. The Army Officers were friends of the ex-Hughes employee. Both Officers were allowed to retire prior to the Subcommittee investigation.

ENGINE DEVELOPMENT

With respect to the engine development, the Subcommittee found the LOH Project Office permitted a pending procurement request for the Continental engine to continue after the ASA (I&L) and (R&D) decided to discontinue the effort. A contract was awarded to Continental in the amount of \$5 Million for the seven prototype engines. These engines were delivered at the end of 1964 and placed in storage without contemplated use with the LOH. The initial decision to proceed with a back-up engine might have had merit, especially in view of multiple sources for defense items. The Subcommittee found, however, that

before the Army was required to act on the optional second phase of the contract, these conditions had

changed to the extent that the decision to exercise the option could be characterized as poor judgment.²

OTHER AREAS FOR CONSIDERATION

Insure the separation of the technical from cost evaluations of the Source Selection Board. This helps preclude bias and reduces the possibilities of leaks of the Board results. Since the technical evaluators are usually larger in number than the cost evaluators, and they have access to the costing data, more chance of leaks exist. In addition, the physical area used for evaluations should exclude outside personnel regardless of rank or friendship. This protects both the Selection Board and individuals who "drop by". If a leak occurs and one was innocently seen in the area he would be suspect of being the source of the leak.

Another consideration for Program Managers is trip reports. Program Managers are frequently traveling to many locations. One example cited in the investigation was an Officer who had travel orders to Edwards Air Force Base, CA. The Officer reached Los Angeles and was involved in a more urgent requirement. He subsequently returned to his home location and submitted his travel voucher. Years passed and he was asked to testify why he had intended to go to Edwards but instead stopped at Los Angeles. A trip report could have refreshed his memory. Without the report, the Officer was discredited as a witness with subsequent insinuations made

about his character by the Subcommittee.

The Subcommittee felt that even though DOD directives seek to avoid conflicts of interest, close personal relationships between the Army and Industry representatives resulted in departures from established procurement procedures and placed the Army in a position of having its' decisions suspect. The pertinent message was:

Whether a person who accepts lavish entertainment can thereafter deal with his host at arms' length at the conference table is dubitable.²

The full recommendations of the Subcommittee with DOD comments are presented in Appendix II. The discussion of liquidated damages in Appendix II are included to provide the reader with 1967 Congress-DOD rationale on this subject.

This case could be used as a vehicle in the Defense System Management School to address one or all of the following:

1. Buy-ins
2. Sole Source Procurement of Additional like Items
3. Two-Step Formal Advertised Multi-Year Production Contracts with Options
4. Buying Off the Shelf
5. Source Selection Processes
6. Conflicts of Interest/Leaks
7. Problems of Utilizing Other Services for Engineering and Procurement
8. Cost Effectiveness Studies Utilization

Prior to use of this case as a teaching aid, the instructor should read the report referenced "Bibliography 2".

It is obvious from this case that it drew Congressional interest which stayed throughout the program life. The reader should derive an appreciation for areas to avoid or pursue in program management and the types of questions which can be asked when things go wrong.

APPENDIX I

APPENDIX I 5

1. 20 January 1966. Contractor responded to the RFP. Contractor, in his response, took exception to the proposed clause entitled "Changes to Make or Buy Program" on the basis of commingling with basic production quantity; accumulation of cost on a FFIP contract on the basis that cost is accumulated by lot and would be prorated to each affected contract dependent upon the number of aircraft in a lot which would affect a contract; furnishing of Cost and Economic Information System Report as a part of the total consideration for the contract; painting and marking of the aircraft in accordance with the Government Specification; and Price Warranty (Most Favored Customer Article). Contractor proposed:

- (i) a unit target cost of \$49,935
- (ii) a unit target profit of 5,992
- (iii) a unit target price of \$55,927
- (iv) a ceiling price of \$61,520 which is 110% of target price
- (v) Deliveries commencing in November 1966 and completed June 1967.

2. 25 January 1966. Contractor was requested to submit back-up data to support proposal including a dated certificate of current cost or pricing data; supporting data required by footnotes on reverse side of Department of Defense (DD) Form 633; a list of make items; a priced bill of materials.

3. 26 January 1966. AVCOM advised higher headquarters (AMC) of the price proposed and how this price compared with the price bid in May 1965 and requested the aid of AMC in resolving the matter.

4. February 1966. Contractor provided data requested by AVCOM TWX of 25 January 1966.

5. February 1966. Contractor was advised that due to wide disparity between the current contract price of \$19,860 and the proposed price of \$55,927 for the Army requirement it appeared that the proposed price was unreasonably high; contractor was requested to provide clear and convincing evidence to support his contention that proposed prices were reasonable; information requested by 21 February 1966.

6. 7 February 1966. AMC, by first indorsement to AVCOM letter of 26 January 1966, advised that a revised Government estimate be prepared and that price analysts' assistance would be furnished from AMC and Mobility Command. Further, AMC advised that if the Government estimate indicated that

negotiations could lead to a mutually acceptable position, then AVCOM should proceed without further recourse to AKC. If not, the matter should be referred to AKC as early as possible.

7. March 1966. Government price estimate was completed and provided a negotiation objective of:

- a. \$40,317 target price
- b. 44,349 ceiling price
- c. 36,652 target cost
- d. 3,665 target profit

8. Also in March, the resident Air Force Plant Representatives' Office completed its analysis of the contractor's proposal, which included an audit of the contractor's proposal performed by the Defense Contract Audit Agency Resident Office; AFPRO pricing recommended a cost of \$40,676.00 with profit to be determined by the procuring activity.

9. Negotiations commenced on 28 March 1966. All areas of the proposal were discussed in detail without any agreement being reached in any area. After two days of discussion, the Government team reached the conclusion that the contractor wished to negotiate a price without any firm agreement in any one particular area. This conclusion led to the Government Team's establishment of a very conservative first offer as a negotiation technique and in order to maintain negotiation room in the hope that agreement could be reached at or near the Government's negotiation objective of \$40,317. This first offer was \$36,495 per aircraft. After much discussion of the counter-offer and the make up thereof, Contractor advised that offer was not acceptable and that Hughes management advised them to return home. However, contractor emphasized the fact that he considered negotiations recessed and not terminated.

10. On 11 April 1966 negotiations reconvened and early in this session contractor offered a price of \$54,824. This offer took into account the deletion of one item from the material cost and some adjustments in burden and overhead rates. It was still apparent that the parties were still far apart. In order to break the impasse, each party's position was set forth on a blackboard, and it was agreed that the factors to be set out would be the Government's maximum and the Contractor's minimum acceptable position.

11. It was determined that in some areas, parties were very close and agreement was reached on material cost, material burden, overhead rates and other direct cost (allocables). Based on agreement in these areas, the Government offered the Contractor a price of \$44,447 on a Firm Fixed Price basis.

The contractor countered with an offer of \$51,102. Contractor revealed the factors on which the price was based and indicated some further adjustment in burden rates and other direct cost rate; but also revealed the use of 85% curve. The Government accepted these lesser rates and also accepted the 85% learning curve vice 84% curve proposed by the Government. However, there remained two areas of disagreement, namely labor hours and profit. Based upon adjustment made to the Government's offer of \$44,447 due to 85% curve and lesser rates, the Government made a final offer of \$45,125. The Contractor made a final counter offer of \$49,504. After much discussion of the relative positions and a discussion of Fixed Price Incentive type contract, neither party would alter its position and negotiations were recessed at CCB 13 April 1966.

12. At the request of the contractor, negotiations reconvened on 20 April 1966. At this session, the contractor offered a Fixed Price Incentive type contract with the pricing structure of:

- a. Target Cost \$43,048
- b. Target Price 47,353
- c. Ceiling Price 52,088
- d. Share Line 80/20

This offer was rejected by the Government and the Government made a counter-offer of:

- a. \$40,653 Target Cost
- b. 44,718 Target Price
- c. 44,718 Ceiling Price
- d. 50/50 Share Line

This offer was rejected by the Contractor and a counter-offer was made by the contractor of:

- a. Target Cost \$43,048
- b. Target Price 47,353
- c. Ceiling Price 49,505
- d. Share Line 50/50

This offer was rejected by the Government and a counter-offer was made of:

- a. \$40,653 Target Cost
- b. 4,065 Target Profit
- c. 44,718 Target Price
- d. 46,751 Ceiling Price
- e. 50/50 Share Line

It was still quite obvious that the primary difference lay in the area of labor hours. The contractor stated that its

management was firm in their labor hours and any agreement would have to be based on their last target figures. The contractor would not accept the Government's offer, nor would the Government accept the contractor's offer.

13. At this point negotiations were suspended and on 25 April 1966 the contractor was so advised.

14. On 11 May 1966 the Contracting Officer advised the contractor that negotiations were terminated.

APPENDIX II

APPENDIX II 6

RECOMMENDATION

1. The Secretary of Defense strictly enforce his directive that research and development of Army aircraft be the responsibility of the Air Force or Navy until the competence of the Army in this area has been firmly established.

DEPARTMENT OF DEFENSE COMMENTS

The implication that there is a relevant directive not now being strictly enforced is incorrect. There is no current directive assigning responsibility for development of all Army aircraft to the Air Force or Navy. In the past the Office of the Secretary of Defense has encouraged the Army to develop a technical competence level which, in our opinion, it has achieved.

This policy is consistent with the current DOD policy covering the assignment of responsibility for the procurement of major military items. That subject was initially covered in Defense Procurement Circular No. 23 dated 10 February 1965; it is now incorporated in the Armed Services Procurement Regulation (ASPR), Section V. In substance, the ASPR provides that except where a single department procurement assignment exists (which is not the case with aircraft), each military department may contract directly to meet its requirements.

RECOMMENDATION

2. Consideration be given to alternate sources for the light observation helicopter.

DEPARTMENT OF DEFENSE COMMENTS

The intent of this recommendation is being accomplished. By letter to the Honorable Porter Hardy, Jr., of 24 July 1967, the Secretary of the Army informed the Subcommittee that the Army intended to make its follow-on Light Observation Helicopter (LOH) procurement by a two-step competitive procedure. However, the possibility of having alternate sources means having more than one model LOH in the Army inventory, which has disadvantages in training, maintenance procedures, stockages of spare parts, etc. The Army has concluded that these disadvantages are outweighed by the advantages of competitive procurement for its remaining LOH requirements. Depending on the bids received, Hughes may or may not be the supplier of those requirements.

RECOMMENDATION

3. The Armed Services Procurement Regulation (ASPR) be revised to include an adequate definition of "buy-in" and to provide contracting officials with sufficient direction and authority to dispose of, by rejection or otherwise, any attempted "buy-ins" in accordance with DCD's stated policy on the subject.

DEPARTMENT OF DEFENSE COMMENTS

"Buying-in" refers to the practice of attempting in procurements involving price competition, to obtain a contract award by knowingly offering a price less than anticipated costs with the expectation of either (i) increasing the contract price during the period of performance through change orders or other means, or (ii) receiving future "follow-on" contracts at prices high enough to recover any losses on the original "buy-in" contract. The ASPR is being revised to restate the policy in such a way that it will be clear to contracting officers that they shall apply safeguards which will prevent such a practice. The ASPR is being revised as follows:

1-311 Buying-in.

Current ASPR coverage designated as paragraph a is being modified to strike the second sentence thereof which currently states that such a policy is not favored by the DOD. In lieu thereof, the following will be inserted:

"Such a practice is contrary to Department of Defense policy."

The following new material is being added:

(b) In order to avoid or minimize the opportunity for "buying-in" on a procurement which is likely to be succeeded by one or more "follow-on" procurements, the Government should obtain from the contractor a binding price commitment covering as much of the entire program concerned as is practicable. Such a commitment may be secured through employment of one of the following procurement techniques:

(1) Multi-Year Procurement, with a provision in the solicitation that a price may be submitted only for the total multi-year quantity (see 1-322.2).

(2) Priced options for additional quantities which, together with the quantities being firmly contracted for, equal the anticipated total program requirements (see 1-1504).

(c) In addition to the use of the techniques noted in (b) above, it is important that other safeguards be provided against the contractors' recovering, through subsequent over-pricing, from any initial loss situation due to "buying-in". For example, see 3-813 with respect to the amortization of nonrecurring costs, and 3-801.2(c) concerning price quotations which the contracting officer considers unreasonable.

RECOMMENDATION

4. A provision for liquidated damages for failure to meet delivery schedules be included in all production contracts for defense weapons.

DEPARTMENT OF DEFENSE COMMENTS

We agree that liquidated damages may be used in many types of procurement as a means of giving the Government added assurance of timely performance by the contractor. However, our experience with this technique leads us to believe that it would not serve the best interest of the Government to make liquidated damages mandatory for all weapon procurement. In our judgement, too many variables enter into the determination as to whether liquidated damages are fair, effective and worth the added cost and, accordingly, a judgment must be made on a case-by-case basis in the light of the particular circumstances involved. We would expect experienced contractors to evaluate the additional risk occasioned by the inclusion of a liquidated damages provision in the contract and provide in their prices for the possible effect of such a contingency.

Liquidated damages may be helpful and appropriate where some or all of the following illustrative conditions exist.

- a. Time is of the essence and delay in delivery would reasonably result in added expense to the government.

- b. The rate and risk of the liquidated damages are not disproportionate to the scope and profit potential of the contract.

- c. There has been sufficient past production experience to establish a delivery time which can be met by the exercise of due care and proper management in performance of the contract.

- d. The product being purchased is a fully developed production item for which there is a complete and proven data package.

- e. There will be relatively few changes in specifications delays in delivery of Government furnished property, or other factors which would upset the contractor's control over his production schedule and entitle him to time extensions.

f. There is little likelihood of material or manpower shortages or other factors which would complicate performance of a contract and provide the contractor with excusable causes of delay or make his responsibility for delay difficult to establish.

g. Liquidated damages are a prevailing or acceptable practice in the industry involved.

h. The contractor is not sole source and not in a position to "hold up" the Government in pricing the contract because of the liquidated damages.

These conditions inhere in greatest degree in construction work and for that reason liquidated damages are frequently used in such contracts. They may also apply to supply contracts.

However, such conditions are less likely to exist in weapon system procurement where sources may be limited and where considerable preproduction development, planning and engineering may remain to be done. Where the Government's requirements are subject to numerous changes during the course of contract performance because of continued technological developments, it is difficult to prove or disprove excusable causes of delay and thus establish the contractor's liability for damages.

Accordingly, while we agree that liquidated damages may be used in appropriate cases, the extent to which conditions permit the use of liquidated damages must be left a matter of judgment by the contracting officer in each case.

RECOMMENDATION

5. The Department of Defense develop procedures for requiring all Defense contractors--both prime and sub--to maintain for inspection by authorized Government personnel complete records of all expenditures by or on behalf of the company which inure to the benefit or use of representatives of the Department of Defense.

7. The Secretary of Defense take appropriate action to insure that all personnel engaged in procurement or in a position to exercise influence in procurement matters shall, in their relations with private industry, avoid conflicts of interest or the appearance thereof.

DEPARTMENT OF DEFENSE COMMENTS

Recommendations 5 and 7 relate to conflicts of interests. It is our opinion that the purposes of these recommendations are effectively met by the reissuance of a revised DOD Directive 5500.7 on August 8, 1967, which prescribes standards of conduct for all DOD employees that are designed to avoid possible conflicts between private interests and official duties. The Deputy Secretary of Defense at one time of the reissuance of the directive addressed a memorandum to all agencies of the Department calling upon them to re-emphasize the importance of avoiding conflicts of interest or the appearance thereof on the part of all DOD personnel.

The detailed and comprehensive guidance provided by this directive constitutes the best means to insure that employees engaged in procurement, or employed in positions to exercise influence in procurement matters, avoid conflicts of interests or the appearance of such conflicts in their relations with private industry. Continuing efforts will be made to assure that all DOD employees, regardless of assignment, are made aware of the existence and importance of this guidance and their responsibilities in the light of that guidance.

As you are aware, the guidance promulgated in DOD Directive 5500.7 has in recent years become more stringent and more precise. In its present explicit form, it provides sufficient detailed guidance for both military or civilian personnel. In the light of the numerous record keeping requirements already imposed upon contractors, the Department is hesitant to impose the additional requirements as contemplated in Recommendation No. 5. We would, therefore, prefer for the present to rely upon the continued re-emphasis of this problem in accordance with the terms of the directive itself (See Section XIII.A) as well as special efforts such as the recent re-issuance together with an observation of compliance with its terms. If, at some future time, the reporting requirement appears advisable, it can be imposed.

RECOMMENDATION

6. Specific DOD guidance be given to the Army with respect to contracts for cost effectiveness studies to assure that the expenditure of such funds serves a clear and useful purpose. In the instant case, cost effectiveness studies were performed after the contract had been awarded.

DEPARTMENT OF DEFENSE COMMENTS

In July 1965 the Department reissued Directive 3200.9

establishing the policies governing Concept Formulation and Contract Definition in the initiation of Engineering Development and Operational Systems Development of major projects.

This Directive provides among other matters for analytical studies of economic factors as a part of Concept Formulation. Such analytical studies include cost effectiveness studies to insure that the effectiveness of the new item compares favorably with that of competing items on a DOD-wide basis for the money to be spent. During Contract Definition where design and engineering are verified and firm contract and management planning are performed, a system trade-off studies, similar in part to cost effectiveness analyses, are to be made. These analyses are to insure that the optimum balance between total cost, schedule and operational effectiveness of the system are obtained, considering mission and performance characteristics.

The Army advises that the second of two cost effectiveness studies regarding the procurement of LOH was instigated by the Project Manager for the purpose of developing a mathematical model for evaluating future buys of the helicopter. Considering the substantial follow-on procurement, the decision to conduct a second cost effectiveness study appears reasonable.

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