RESUME OF SERVICE CAREER

of

JAMES MARSH HESSON, Brigadier General,

DATE AND PLACE OF BIRTH: 28 November 1931, St. Paul, Minnesota

YEARS OF ACTIVE COMMISSIONED SERVICE: Over 28 years

DATE OF RETIREMENT: 30 August 1983

MILITARY SCHOOLS ATTENDED

The Transportation School, Advanced Course
The Command and General Staff College
The Industrial College of the Armed Forces

EDUCATIONAL DEGREEES

St. Benedict's College - BS Degree - Business Administration
George Washington University - MS Degree - Management

MAJOR DUTY ASSIGNMENTS

FROM	TO	ASSIGNMENT
Feb 66	Feb 67	A/S3, 58th Trans Bn (AMMC), USARV
Apr 67	Sep 68	Fixed Wing Sys Spt Off, DCSLOG, DA
Oct 68	Jul 69	Logistics and Deployment Analyst, OCSA, DA
Oct 69	May 70	CO, 5th Trans Bn, USARV
Jun 70	Oct 70	Director of Supply, AMMC, USARV
Nov 70	Nov 71	Concepts and Plans Officer, AMC
Dec 71	Jun 72	Basing and Log Branch Chief, ACSFOR, DA
Aug 72	Jun 73	Student, Industrial College of the Armed Forces

Jul 73	Dec 74	Log Sys Off, CAA - Bethesda
Jan 75	Nov 79	Project Manager, CH – 47 Mod Prog, AVRADCOM
Nov 79	Jun 82	A/CG, TSARCOM
Jun 82	Aug 83	Director, Plans and Operations, DCSLOG, DA

PROMOTIONS	**DATES OF APPOINTMENT**
2LT	29 Jul 52
lLT	23 Oct 56
CPT	8 Dec 60
MAJ	30 Sep 65
LTC	3 Dec 68
COL	3 Dec 75
BG	29 Jan 81

US DECORATIONS AND BADGES

Distinguished Service Medal
Legion of Merit w/Oak Leaf Cluster
Distinguished Flying Cross
Bronze Star Medal
Meritorious Service Medal w/3 Oak Leaf Clusters
Air Medal w/2 Awards
Army Commendation Medal w/Oak Leaf Cluster
Master Amy Aviator Badge

SOURCE OF COMMISSION : OCS

INTERVIEW ABSTRACT

Interview with **BG (Ret) James M. Hesson**

BG Hesson joined the HLH Program in 1973. The purpose of the program was to determine the cost effectiveness of the HLH as the need for this aircraft had already been identified based on the logistical demands of the battlefield. Boeing and Sikorsky competed for the contract. Boeing won the contract because of the study in December 1974 that:

1. The HLH would cost a great deal (approximately $3 million per aircraft).
2. The Government did not want to spend that much on a piece of equipment whose existence could not be justified.

Other alternatives, such as utilizing the Marine Corp's CH-53, were identified. However, none were cost effective as far as the Government was concerned. As a result, the whole idea of the heavy lift helicopter was officially buried.

BG Hesson then became the Program Manager of the CH-47 Modernization Program in January 1975. This project received a lot of positive attention that contributed to its success. Basically, the study group had a known quantity to work with in the way of design and knew exactly what modifications were to be made.

The Chinook has proved consistently to be an extremely versatile aircraft, but it still has its limits (specifically that it a medium lift helicopter which was never intended to become a heavy lift helicopter).

BG Hesson indicated that personalities and political climate can greatly influence the outcome of a project.

The interview contains very little technical information and instead concerns the workings behind the studies. If specific information on the aircraft's characteristics is desired, consult the studies shown in the bibliography.

INTERVIEW

This is the Army Transportation Oral History interview conducted with BG James M. Hesson on 6 September 1985 by CPT Jeanmarie Flynn. Part I of the interview concerns the Heavy Lift Helicopter (HLH) Program from July 1973 to December 1974. BG Hesson worked as the Logistics System Officer in the Heavy Lift Helicopter Cost and Operational Effectiveness Analysis Group and later as group leader for the Personnel and Logistics Systems Analysis Group at the United States Army Concepts Analysis Agency in Bethesda, MD.

CPT Flynn: First, I'd like to ask you when and why the Heavy Lift Helicopter Program was created?

BG Hesson: The program was in place when I joined in 1973 and was the subject of competitive bidding between Sikorsky and Boeing Vertol. It began in the late 1960s as part of the growth and outgrowth of Army aviation. After a rather heated competition, Sikorsky offered a single-rotor multi-engine, multi-transmission system. Boeing offered a tandem rotor system that could and did produce better lift capability for a tandem rotor configuration. Well, Boeing won and I think they probably started in about 1968. The program was an outgrowth of a number of studies driven by the Transportation Corps and was project managed at that time (I'll get to the project manager in a minute and talk about who was there). Of course in the 1960s, the Transportation Corps was the predominant force in setting helicopter requirements. Combat Arms was still coming to grips with the concept saying, 'What is this thing called a helicopter?" Looking back, the concept for this system was formed at about the time we were going into Vietnam. So, that was the mindset of everyone dealing with the heavy lift.

The program was funded and built upon a force structure of almost 225 heavy lift helicopters. In the middle to late 1960s, funds were a great deal freer than they are today. The administration was in the position of making sure that guns and butter were going to our operations, and the HLH program sort of fell into the pattern of acceptable expenditures. They did a regression study on these helicopters to determine the unit cost and came up with a figure that amounted to about $2.5 to $3 million per copy. That figure seemed rather reasonable at that point in time, but they were basing those costs on the fact that each helicopter was going to sell for approximately $3 million-average unit price, down the line.

By the way, we subsequently performed an analysis with the Air Force going up against us with an Advanced Medium Short Takeoff and Landing Transport (AMST). We used the same learning and cost quantity curves in terms of how much we could produce and proved in a mini Cost and Operational Effective Analysis (COEA) that we could whip the Air Force in an intra-theater capability by buying the heavy lift helicopter instead of saddling up the Air Force, patting them on the back, and telling them to go buy an AMST or a variety thereof.

But anyway, the project manager was managing his program well and was staying within cost as best he could. They had some technical difficulties and the program slowed a little bit, but the real problems didn't surface until late ‘71 or ‘72. People began to choose sides, as they did recently on the issue of the Division Air Defense (DIVAD) gun. Before the DIVAD tests were ever completed, people had chosen sides and it really didn't matter, in my view, what the tests results were. The side that had the greatest horsepower was going to win the DIVAD shootout. I think the Secretary was right in taking the bull by the horns and canceling the program to remove the battle from the hands of Congress and the Defense Department. As I said earlier, the HLH program began to come under scrutiny and people began to side up. Here's this monstrous aircraft and people were wondering what we were going to do with it. The transportation folks, who were the articulate individuals in the user side of the house, began to back off a little bit and couldn't seem to articulate the requirement too well.

The HLH program was really started by Dr. Johnny Foster, who was then the Director of Defense Research and Engineering (DDR&E). If you look back on it, it was a program that said "The Russians have got one, we've got to have one too." We got more support out of DDR&E in the Office of the Secretary of Defense (OSD) than we did out of the Army. The Army sort of went along with it and money seemed to float out. When the Army had to begin to pick and choose their programs, however, the HLH program did not have much internal support. The transportation folks who had been saying, "Sounds great to me. We want that," suddenly found themselves in a position of saying, "How can we justify it? What's our need?" So, the program was really built on shifting sands. It was driven from the top instead of the bottom and caught in a time period where we were interested in bigger and better technology to combat the world threat.

In 1973, the Concepts Analysis Agency (CAA) was formed. MG Hal Hallgren, who was then the controller of Air Materiel Command (AMC), was appointed its first director. It

was billed to the old Strategy and Tactics Analysis Group (STAG) in Bethesda, MD. They needed an in-house analytical capability that could do work directly for the Deputy Chief of Staff for Operations (DCSOPS). MG Hallgren really wanted to do the COEA because (I think) he was no different from anybody else. He had some preconceived notions, and I think he didn't believe the thing was any good. He used to refer to it as the flying motel... "How are you going to hide that motel out in the desert when it's flying along with dust clogs falling out behind it?" I think I ended up in the CAA because he was promised his fair share of senior service school graduates, and I was just graduating from the Industrial College of the Armed Forces. (I was one of the people whose name was known by one of the individuals who was helping MG Hallgren put the organization together.) Given the mission, MG Hallgren then convinced the Army that they should do the COEA out at Concepts Analysis Agency and not within the Training and Doctrine Command (TRADOC). The reason being that TRADOC is the user and you can't very well ask somebody who requires something to justify his need. You say, the solution is the HLH. Now how do I reach that solution? That's the sort of feeling I got. General William DuPuy, who was then the commander of TRADOC, considered it and acquiesced a bit, but he wanted to give it a chance to see what we were going to do.

We started the study with about eight people in the study group and myself as the head. (I say I headed the study, but I had a lot of help from above.) The Transportation Corps and School, in turn, did some preliminary studies. Our approach was to put a study that examined both the positive and negative sides of the program before the people and let them make a decision. In my naivete, I thought this was a reasonable approach and that prudent, reasonable people would take the good and bad aspects into consideration and come to a reasonable conclusion. I have subsequently learned, that's not always the case. People will use whatever data you give them to support their preconceived conclusions. After the study began, General DuPuy called an In-Process Review (IPR). We took our preliminary data,, study plan, outline, and our approach and presented them to General DuPuy. The Transportation School also briefed at the same time. Without any reflection on the individuals involved, our approach used sound methodology and clear logic to show how we were going to get there. It included every bit of data a quantitative mind would want to see in a study plan. The Transportation School briefed in blathering generalities about needs, wants, and requirements without anything to base it on except emotionalism. General DuPuy was very abrupt, but very clear. He would go with whatever data the Concepts Analysis Agency developed. Essentially, he acquiesced to us to do a COEA for a system that he required. We conducted the study for about nine months. It was supposed to be done on a $100,000.00 contract. We did it for less, budgetwise, working long hours and putting forth a lot of effort.

Unfortunately, we were driven into a comparison that was a no-win solution. I'm known in the Army today for having proven conclusively that trucks are cheaper than helicopters. We were forced into an approach to the problem that looked logical on the surface but was really throwing helicopters against trucks. It was a system where we networked the entire European community. All the roads and bridges were put in a very

large, linear program that we started to run on a huge computer we had at CAA for that period of time. Some of our runs took 12 hours to reach a solution by looking at all these notes. We would use unlimited solutions; that is, how many trucks would it take at one point in time... how many trucks could you put on the highway. You literally had trucks lined up bumper-to-bumper going up the highway hauling things forward. Logic would tell you that ammunition should first be hauled by barge, then by rail, and then by truck. In a warfare situation, the amount of ammunition you have to haul determines the method of transport. That's the major factor. Ammunition goes first; then petroleum, oil and lubricants (POL); and rations and repair parts last. Once we started moving in that direction though, we were locked into that solution.

The major deficiency that exists within the operations research community today is their inability to adequately model mobility, surprise, and speed. Speed is a quantitative factor they can come to grips with and we ran a series of efforts. The HLH is a classic corps support asset which moves things from rear supply depots forward, essentially from the beach (when you are just barely beached) to the rear of the division area. We modeled it in the division to determine how it would operate there and in ship-to-shore and logistics over the shore (LOTS) operations. We got some sophisticated modeling where we could vary the sea state and actually showed at what sea state the various vessels begin to throw off. Now in all cases, the cheapest vessel always won.

The best way to get material ashore from a container ship is on the barges that are being towed like cheap tugs. The next best method is motorized craft. The LACV-30 (Lighter Air-Cushion Vehicle) is a very expensive mode, but the most expensive was the HLH. The HLH, however, was the only vessel or vehicle that could perform in a LOTS mode. It could clear beaches (take things off beaches and shuttle them back to a marshalling area) and marshalling areas, and bypass obstacles going down the highway. It could be used in a division sector, and the same vehicle could be used on the same day in all those missions. You can't do that with a truck, train, barge, lighter, or IACV-30-it's impossible. Now, how do you put a price on that? How do you put it into an equation that it allows you to show that kind of flexibility and mobility? We never proposed that the HLH be used for routine transportation. You don't use any air asset for routine transportation. It just is not routine. You use it for high premium cargo and item that are in short supply. You use standard mobility modes for the majority of your cargo and, like a brick layer who has to put cement between the bricks, reserve high priority, critical assets to fill in to make the wall solid. This reasoning didn't come out. It just said trucks were cheaper and we understood that.

Halfway through it, MAJ Dan Eggleston (one of my senior analysts and an electrical engineer with a sharp, young mind) and I spent some tin-e looking at excursions. It became obvious to us that we were chasing the wrong animal in trying to compete with surface nodes because it was absolutely impossible to do that. We could finally get to a least cost solution, but you had a force structure full of trucks at that time. They wouldn't allow us to constrain the force structure. Today, you deal with a 750,000-man Army. We in the Army kid ourselves as to what our force structure looks like. Every other year, the CAA runs this great game called the Total Army Analysis. We play this war game where

we use various scenarios and plug in enough forces to win the game, whatever the force looks like. Then we say, "This is the force structure we need." Afterwards, you look at the various compositions of that force structure and start out with the active forces that are at full and reduced strength, and the reserve component forces. You get all the way down to something called Compo Four (Composition Force Four), which is really part of that force structure needed to win that war in the Total Army Analysis, but it's unfunded and unfilled. Therein you will find all the transportation assets you need to win the war. We don't buy for them. We don't staff them. They are an unnumbered or, in some cases, a numbered asset, but they don't exist at zero strength--composition four.

If you look at the Army today, it's got both an active force and sore fine reserve components. Looking at that depth, however, we don't have enough money to maintain a force capable of winning a war. We just hope we can mobilize fast enough. So, I was dealing with all the Compo Four forces and pulling these artificial units that didn't exist. No trucks were available for them, but I could create trucks just by plugging in another unit. At the same time, I was restricted by the number of HLHs I could use. I could go to a maximum number, but I couldn't get a good handle on how to articulate this reaction and responsiveness.

We did a little excursion in which we took a vehicle that would look very similar to a C-17 the Air Force is now touting, and studied what the Army would do internally if we containerized some kinds of cargo. We created knockdown flat beds so that the various units could throw cargo aboard. We whipped the Air Force "seven ways from Sunday' on an equal cost basis. Within the European community, we could deliver cargo faster, further and more efficiently using containerized cargo on an HLH than the Air Force can ever hope to transport with a C-17. I happen to believe the Air Force is blowing smoke when they talk about how they will move the C-17 into division airfields. History will show that the first thing they did when we turned the Caribou over to them was to close off a number of airfields we routinely resupplied for special forces and back out of there again. They centralized all their assets without servicing a lot of the airfields. They turned the Caribou, the C-7A, into nothing but a taxi service.

So, we were hung on the horns of a dilemma. I was get ting a little restless about that time, because I felt that I had to lay all the cards out on the table and was still stuck with the problem of articulating it properly and objectively. I must admit that after a few weeks of 12-hour days and 7-day weeks, you wonder whether your objectivity is gone and you're just caught up in it. I would have to say I show some bias towards the Transportation Corps-I was a Transportation Corps aviator. I could appreciate the fact that we were dealing with people who were not logisticians and were only looking at the relative cost effectiveness. I also acknowledge that it's a heck of a bite. Coming off that $223 million design (unit cost), we're talking about a $17 to $20 million airplane.

In 1974, the Army was not prepared for a $17 million or $20 million airplane. It blew their minds that those rapscallion aviators would ever think of such a thing. We were having a difficult time articulating the same problem to the Transportation School as well. It was not, in my view, one of the Transportation Corps' shining analytical periods. By the

same token, I wasn't helping it too much either. Some of their people told me a great deal in term of modeling and approach, but I felt we could have done better.

An adversarial relationship also began to emerge. Strangely enough, I thought I was purple. (Those were the days when everybody thought it would be a good idea to have a red team. Red teams were great--go out and challenge the assumption and do all these good things.) You had people on the Army staff who, along with MG Hallgren, thought the HLH was a bummer and you had another audience in the user community who thought it was the greatest thing since sliced bread. Well, I was in the middle. I wrote the CEOA and outlined the good and bad aspects of each course while the vultures picked the pieces that would prove their points saying, "See, I told you how good it is' or 'See how bad it is." Unfortunately, we did have a red team and it was one of the worst choices we ever made. One officer died from a heart attack that I'm sure was brought on by the pressure of that activity. Anyway, here I was thinking I was purple because both sides were attacking me based upon what we had.

MG (Ret) Jerry Lauer (who now works in Florida) was an absolute straight shooter and could see in late 1971 that he was running a program that may have been based upon some pretty soft grounds. He called a special Army Systems Acquisition Review Council (ASARC) with the purpose of presenting that CEOA to them. The people were very helpful to m and I inherited a lot of them later on. They ended up working for m in my next assignment as the CH-47modernization program manager. That's how the relationship of HLH and CH-47 ties in.

We completed the study and a lot of the results were taken out of my hands. There's an expression that says, "He who controls the typewriter, controls the world." The material we wrote required a great deal of editing. MG Hallgren wrote a cover letter (which may be in your files) transmitting the study from CAA to Department of the Army. It was in his handwriting, signed and covered over, and said, "Not much there." So, it went forward to a special ASARC. At that time, we queried General DuPuy to get his thoughts. He came back with a very fine, forthright letter and his bottom line was, 'Don't cone back in 10 years and ask Bill DuPuy why he didn't ask for it. We need it and we want it." He was at the ASARC; the Vice Chief chaired it. The Assistant Secretary of the Army for Research Development and Acquisition (ASARDA) and the Commander of AMC were there as well. First of all, they all believed that they should finish the research and development (R&D), fly the aircraft and complete the testing program. The AMC Commander’s position was that they really ought to commit themselves to about 10 of them, buy those 10, and save them. General DuPuy also said something which is very important... "The Army rarely buys a piece of equipment for which it has a full understanding of the operational capability and ultimate usage." Now they bought the Chinook. You wonder why it's the size it is, but it was built to haul missiles internally. The 700-plus Chinooks we bought from Boeing Vertol had warm-up heater plugs where you would plug in the heater blanket and lay it on the missile to keep it warm. Operationally, we never carried the missile. It was used in tests and then never tested again. Nobody had that capability; nobody knew how to use it. They all felt that we

should go forward though. People who were dead set against it were willing to go along with 10 as a compromise as long as they didn't talk about 225.

After a lot of discussion, they were given a green light to proceed with the R&D phase, complete that, and talk about production labor. The ASARDA was left to take on the mission of selling this plan. He was a young charger and is now a president or vice president of Martin Marietta. One other individual named Tony Battista was a congressional staffer who didn't particularly have any fond feelings for a better plan. (You wonder if he was biased against Boeing Vertol.) In the final analysis, we needed congressional approval to get the additional money required to finish the program--either for reprogramming or ultimate funding for the next year. That money never arrived. If it wasn't Tony, he could just as well be blamed for it. There is a management philosophy that I have seen ascribed to in the Pentagon and in Congress a number of times. It's called management by omission. If you don't address something... if you defer it or cause people to go back and restudy, and send them back again every time they come up... you never make a decision. But you have, in fact, made a decision. Your decision is not to make a decision. By not funding it, there was nothing they could do but terminate the program and that is what happened.

Jerry Lauer left the HLH program as a brigadier general and took over what is now the Black Hawk program. So his management acumen was utilized; the assets weren't. Interestingly enough, a project designed to finish off the HLH and fly it in conjunction with the Defense Advance Research Agency and NASA is now very near and dear to Mrs. Awretta Hoeber of the ASARDA office. They got enough money to go back to the point in time when the project terminated. The transmission was causing problems because we had never designed gears as monstrous as the bull gears in the bottom of the transmission. When you're taking the horsepower of 3 essentially 5,000 horsepower engines and the torque applied to that gear and the bending moments.... you know, people were not sophisticated enough to understand that. So they went back and funded that and have subsequently reground the gears so the transmissions are set and ready to go. However, the program is still running into that same apathetic view in the Army staff..."Why should we spend money on something we don't intend to fund?" The other side of the coin is, "My God, if those guys ever fly that thing, they'll want to buy some. We're right back to where we stood then. The program terminated and the people who wanted to kill the program were there. You know, I would like to think that people were making a rational, logical decision because it was unaffordable. That was one of our first decisions where a program was unaffordable. People say we never kill program . I would like to think it was decision based on cost and not biased. I don't think many of the people I worked for (I should say <u>any</u> of the people I worked for) had any appreciation for transportation and its problems. I think General DuPuy did. I think he had an adequate, extended combat tour. A lot of people whose only recent combat experience had been Vietnam were biased because we literally handed them things and they thought that was the norm. Future heavy engagements are going to require massive amounts of transportation assets. If we go to war on a large land mass like Europe, China or North Africa, we're going to have to have the capability to provide those assets.

There is an effort called unit productivity going on in the Transportation Corps right now. It's in use throughout TRADOC and, before I retired, we were instrumental in getting that started. We cannot have the assets we need to do all the jobs that we need to perform. We cannot satisfy all the mission requirements out there. We do, however, have an obligation to make sure we can produce as much as we can, as fast as we can. So, we ought to be looking for high productive and low labor kinds of activities. Put another way, the Army today has to go for capitalization as opposed to labor intensification in order to survive. In one sense, that is called technology. Its real implication, however, is that we need to do things a lot smarter. For example, we found out that we could use the existing technology to provide dual training by equipping some of the terminal transfer units with more equipment. They could use pallet jacks and forklifts whenever they were needed because they had both on hand. We have to do more of that.

Let me go back one minute and discuss a pitfall of the HLH program-namely "What are we going to do about ship-to-shore?" I'm a good friend of Hunter Woodall who is or was in the Undersecretary for Operations Research Office. Hunter's a pretty good operations research guy. Well, we told them about sea states and what they did in terms of offloading ships and the ability to get ashore. We also told them how ships arrive in a combat zone. In a major confrontation where we could expect air interdiction by Russian forces (let's assume we're going into the fortress of Europe), ships are convoyed so they arrive in bunches. If you look at that conglomeration of ships arriving, you've got to have the capability of going in and reacting to that arrival. You don't have enough watercraft anywhere to do all that. Even if you borrow all the lighterage available, you still don't have enough to do that. You have a lot of non-self-sustaining containerships and the world continues to go in that particular direction. I know we have all these exercises about putting cranes aboard and everything else. The HLH was designed to pull container cargo hatches off. They said, "We'll just pick up the light containers." Well, how do you get the light container off the second rack when you've got a 35-ton container sitting above? You can’t rely on people loading top side and arriving at the port. They load us any way they can to get over there. So we told them about the conditions we would face when we had sea states such that we couldn't offload ships. The answer was, 'Well, go into the port." We said, "We don't always have ports." They said, "Oh, you have ports all over." We said, "No, you don't have ports all over." (We didn't have ports in WW II going across the beach. We finally got to Le Havre way behind schedule. We punched everything across the beach.) They said, "Well, there will always be ports." I said, "Well, then I think you ought to tell the Army that their strategy from here on is going to be based on the fact that we will not go to war in any place in the world in which we cannot have secure port facilities to unload our material." That was a rather unkind comment, but it's where logic would lead if you followed it. Does the Transportation Corps need a heavy lift helicopter? I think the answer is yes. It needs one. The question is: "Can we afford one?" That's still the burning question we have to come to grips with. I always felt the HLH was almost a national asset. They built the Alaskan pipeline and had to go out and move people and stage camps down because they couldn't move very far. We could've moved material under and cut down the cost of installing the pipeline tremendously by being able to haul pipe in from great distances,

fly people in to install the pipe, and fly them back out. However, the people weren't nearly as bothersome as the fact that you had to haul all that bloody pipe in by truck and get all the material and engines you needed to keep it going. It was a very expensive operation to put that place in. HLHs would have been ideal for that. A great deal of today's construction could be done that way, but that's all on the commercial side of the house. On the military side, I still think there's a requirement for it ... maybe not in its present form, but what you have right now is 10-year-old technology. We shut that thing down in 1974 and it's been sitting up there under the cocoon, wrapped up outside for 10 years. It's been hauled in the hanger. Now they're going to do something with it, but whether they roll it back out again or not is still up in the air. I feel that it's part of the total transportation system. It's not designed to replace; it's designed to augment by taking care of high-priority movement. That's its role.

CPT Flynn: After all the things you've told me about the HLH program and your involvement, is there anything that you feel in retrospect that you could have done differently to ensure its success? Or was it doomed right from the beginning? That's the impression you've given me.

BG Hesson: I almost resigned. I got so mad. I came the closest to resigning I think I've ever come in my life, but I'm not sure I understand those feelings that well. Whether I really wanted to resign because things weren't going my way or I really felt professionally that I was being shafted by people who were insisting that we drive it into oblivion--I can't answer that question. What could I have done? Could I have fallen on my sword and resigned? Some colonels are a dime a dozen. Could I have been a little more astute and not gotten trapped in a monstrous linear program that compared helicopters to trucks? I think the major thing I have to be chided for was allowing myself to get dragged into that comparison. If you compare a Huey and a 3/4-ton truck today, buying the truck is a whole lot cheaper. It's like showing up for dinner and discovering it's already been eaten, but you can sit down and enjoy the pleasant company.

CPT Flynn: It appears to me that the work isn't totally forgotten. They seem to still be looking at this program. Maybe not the original HLH, but it doesn't seem that it was all for nothing.

BG Hesson: The program is going to lay exactly where it is, until such time as some bright minds in the Transportation Corps can conclusively demonstrate (as I was unable to) the need for that system in a series of scenarios that affect the ultimate outcome of the war. Now we did one. The only way we ever got one on mobility was our work with the Strategic Mobility (SMCB) model.

It's a model they use for force planning and loading. The model loads up all the airplanes you give it, flies them over and takes some out of commission. We were playing the Middle East scenario in which the Russians come over the top and we're in there trying to save Iran. We showed that we could, in fact, stop the Russian forces much further upland by using the HLH, flying them in and dedicating all the space normally dedicated to early arrival trucks to combat power. So, by leaving the ground-

based transportation units behind and flying the self-deploying HLHs (which they're capable of doing in that particular battle area), you were able to leave transportation and bring combat power forward. The result was you had more combat power forward than under a standard deployment scenario. Generally, the MPs are the first ones to arrive. The people who are going to run the marshalling area arrive second, and then the trucks come to move everything. After that, the combat power units come aboard. I guess right now I foresee a problem with the Transportation Corps isolating themselves from the air assets. You worry about your problems and I'll worry about mine. My problems begin with ships, trucks, trains and boats while you're worried about anything that flies. The Aviation Branch today is comprised of a lot of people who have Transportation Corps backgrounds and understand that we're transportation officers. As time progresses, they're going to be much less enamored with large cargo-hauling aircraft. The Army has a rape, maim, kill, pillage and plunder mentality-those are the things that get funded. The warlords make the decisions. One of them is generally a logistician, but he's generally outnumbered by the Deputy Chief of Staff, Personnel (DCSPR); Deputy Chief of Staff for Research, Development and Acquisition (DCSRDA); and Deputy Chief of Staff for Operations and Planning (DCSOPs)-all of whom happen to be Combat Arms types. Look at where we stand today on trucks. Buying five-ton trucks is an absolute disaster because the things keep getting cut. We're currently working on a Landing Craft, Utility (LCU) project with a company that's bidding to buy LCUS. The program cam out as a 5-year, multi-year plan for 40 LCUS. They just sent us the revisions and said the number now is 23 with options for 17 (like somehow the money is going to come up). The Army took a hit in the palm and took a big shot and you don't see end strings being cut. You see sustainment and support being cut. We continue to grow and create wonderful divisions but not much support to go along with those divisions. I'm being caustic today because, for history's sake, I can tell people that I was also frustrated with the fact that the logisticians' voices aren't always heard. I'm not saying they should be the only voice, but they should have a voice. To summarize, you're never going to get an HLH into the system until such time as the Transportation Corps and the Aviation Branch agree that we have a requirement to fulfill--such as moving large items and critical commodities by air. For example, we reconstituted patriot units in a lot of scenarios. You look at a patriot display in the battlefield and it would be all chopped up after an air attack. Some units would have radar units out; some would have firing batteries; some would have control units out. The HLH would just whip along and pick up a radar from this one, a fire control from that one, and we could reconstitute a whole new battery just by moving them into place. It's for priority movement but not routine.

CPT Flynn: Moving to the CH-47 modernization program, basically you just said that HLH is not likely to become part of our inventory. Do you feel that the modernization program, as far as you took it, is sufficient or adequate to support the battlefield today? Is it possible to further maximize the capabilities of the 47 arm or have we already maxed out on that too?

BG Hesson: As disappointed as I am with the HLH, I'm extremely proud of the CH-47 modernization program. There were times when we first started the program that we

thought it was going to be called a 'carrier for money.' There are those programs from the Army staff that the action officers bet their money against. They just lay it out there and say, "We're going to put it in this program." They put it in the budget and it goes in the five-year defense plan, extended planning annex. All they're doing is garnering some money that they'll eventually use for something else. They don't know what they have up there. To answer your question, I think that we have gone as far as we want to with the CH-47 and work is ongoing to come up with a replacement system for the 1990s. Now whether that's a tilt-rotor system or some other sort of vehicular system, it's in place. If you look at the program, it's almost like rejuvenating an inner-city house-an airplane with tremendous potential. It grew from an A-model that had a lot of hiccups and problems to the C-model that turned out to be a pretty fine airplane that could haul an awful lot. When we went to the D-model, we really were looking for life-cycle cost savings and rejuvenation of a fleet that was a mixture of aircraft that could haul about 9,000 pounds (the A- and B-models) to aircraft that could haul 15,000 pounds (the C-model). Half of the fleet were C-models and half were A and Bs. So, we had to do something to bring them up to the standard. The requirement was there to fit in the medium lift. You've got the observation, utility, medium and heavy lift. The Chinook was never really intended to be a heavy lift helicopter. That aircraft was never intended to haul more than about 15,000 pounds and that's how everything is sized. The M-198 is sized at 15,000 pounds because the C-model is designed for 15,000 pounds. So the requirement really said, "What could you do to convert this aircraft into a viable system?" In some cases, we gutted the airframe and repaired everything. We installed and reinforced the places where the triple hook system was hauled; repaired loose rivets; and reinforced the frame where we needed to convert the A- and B-models up to an effective C-plus configuration. Then, we restuffed it with brand new transmissions, engine rotor systems, and electrical hydraulics. We stayed on our budget and on schedule right to the requirement that was 15,000 pounds. That aircraft is going to be the workhorse of the Army and my son, who is a captain in the Army, could very well be the battalion or group commander or a commanding general before the last Chinook ever leaves the system. It fills a particular niche, a void, that's necessary to haul those kind of light loads. With the HLH, we found the bottom line is that the most cost effective helicopter to haul a particular load is that helicopter that can just barely carry that load. In other words, if you've got a 5,000-pound helicopter and a 10,000-pound helicopter, the most cost-effective helicopter to carry a 4,000 pound load is the 5,000--pound one. So you've got to have different sizes because you can't have all HLHS. You don't want the Chinook carrying Huey or Black Hawk loads. It fits that very fine area where a M-198 is required. You see all the pictures in magazines of the M-198 unloading ammunition and taking crew members in the airplane. That's not in an Iranian environment. That's in a European or similar environment, but it can haul that type of load. Fifteen-thousand pounds is always specified at 4,000-foot density altitude and a 95 degree (hot and muggy) day. At sea level standard, it can haul well over 20,000 pounds. It's complimentary. It fits into the pattern between the Black Hawk and the heavy lift and hauls anything it can haul because that's all we've got anymore. The CH-54s can haul a little bit more for a very short range, but the D-model outstrips the CH-54. Even though we have it in our force structure, we're probably trying to play with it-it's non-deployable. We just don't have the repair parts to go along with it in war time.

CPT Flynn: I believe the Marine Corps was simultaneously doing a study on their CH-53. Do you think that had any effect on the outcome of your project or did it have any effect whatsoever on the CH-47?

BG Hesson: Were we to go out and buy it ... we studied it. Interestingly enough, the CH-53 is a very effective airplane at low altitude and sea level kinds of conditions. However, its engine has a very strange lapse rate--the amount of power lost per thousand feet of altitude. When it gets beyond that altitude, it's a sick airplane. It just can't perform. Now the 53E has three engines and seven rotor blades and that's in the heavy lift category (well above our 15,000 pound limit). We studied both the 53D and the 53E and threw them out. They were not very cost effective. We demonstrated once are at Desert I that the aircraft was not very effective. They're difficult to maintain and the 53Ds were a maintenance nightmare. A few people in the Army were proponents of it, but they backed off totally after a few facts and figures. Neither the two-engine, six-bladed D-model nor the three-engine, seven-bladed E-model, was a serious contender for Army missions.

CPT Flynn: To continue on with the CH-47 modernization program, sir, I'd like to ask you about the objectives of the program and the concepts behind it?

BG Hesson: At one time, we lived with a standard which the Office of the Secretary of Defense used in terms of numbers of aircraft. That standard said that aircraft somehow had a finite life and they used to calculate the median point of aircraft age to be 10 years or under. It used to be five years, which meant you had some very new and some very old fighters in the area. We used to operate on a 10-year life cycle costing. Now we do 20 and 30 just to press it out. The HIE program had just overshadowed the CH-47 program. When the CH-47 program began to come unstuck for the HLH program, some deficiencies were obviously going to exist at that end of the spectrum. The HLH was probably going to replace some of the CH-47 units. It would have picked up multiple loads and gone in that direction. When that didn't happen, the question came up: "What are we going to do about the aging fleet?" That kind of question was almost simultaneous and could have, in many respects, been independent of the HLH. But there is a congruity of aviation systems programs that you're tying together. It was proposed by some rather great thinkers, one of whom is now a retired colonel in the Pentagon. He kind of glued a program together that said we can really modernize the Chinook rather than go out and build a brand new system. Looking at the program was kind of like trying to look into the crystal ball and say 'Where am I going to get the R&D money for this?" The R&D to develop a new medium lift helicopter was probably between $500 million and $1 billion at that point in tire. We pulled that program off for about $110 million (the R&D that was necessary to change all three versions to D-models, test and deliver them). They wedged some money in the palm back around 1972, when HLHs began to get a little shaky, and wedged some more in 1973. Their concept was that we'd rehabilitate the Chinook and do some quick studies.

In 1974, a number of things happened to me. One, I finished the HLH COEA, briefed it and saw it die. Later that year, I was selected for colonel and got a rather strange call

from a colonel down at Fort Ricker. The question was: "How many computer hours does it take to do a COEA?" Well, how big a COEA? A COEA for a gas mask and a COEA for an M-1 tank are totally different. I went down to talk to them and found out they were getting ready to crank off a cost and operational effectiveness analysis in the concept form relation phase of a thing called CH-47 modernization. Having just been through a COEA, I was asked some technical questions about how you go about doing one. MG Hallgren let me go down there to attend that meeting. I ran into a couple of guys who later ended up working for me, who kept asking me if I was the Project Manager (PM). I said, "I don't know anything about the PM." When I found out they were talking about making this a PM job, I immediately whipped back into Washington and walked in to see Sally Clemmons. Sally was the first Army female we had to become a senior executive civilian in the senior executive service and is now retired. I essentially lobbied and laid my Form 66 (officer Evaluation Report [OER]) there saying, "Looking for a PM? I'm ready to go for a PM." I don't know what that had to do with it, but George Sammet (who was then the Deputy Commanding General [DCG] for Material Development at AMC) saw me brief the HLH and liked the way I handled myself on my feet. He happened to be the president of the PM Selection Board and I think it all came down to that when I was selected. I went down and took over as the Deputy Study Group Leader. Classically, this is the way that the acquisition process is supposed to go. The PM designee becomes the deputy to the COEA directors-the special study group director who happened to be the co-author on that document that you saw there, COL Howard. We went through a total analysis of all the systems that had to be worked on. We came to the conclusion that we were essentially going to gut the airplane but would leave the cockpit (not change the displays up there) and performance parameters essentially the same (that is, 4,000 feet, 95 degrees, 15,000 pounds, minimum standard). Then we pressed on with the program. I joined the group in January and we did the ODEA and briefed it in the summer of 1975. That fall, we let a small $2.5 million contract out to do some advance engineering on design, transmissions and hydraulics to get a long lead time start. We eventually ended up going through the Army Systems Acquisition Review Council/Defense Systems Acquisition Review Council (ASARC/DSARC) in late fall. By this time, the study group leader had departed on assignment. I had to go up (I think it was in August) and brief. I had to say "I'm the TRADOC guy and here's what I think," and then I put my AMC hat on and said "I'm the PM, and here's what I think about it" And it worked great. We went through without an issue. It was the start of a fabulous experience for me and a good program. I didn't have anybody harassing me because it was not a very sexy program. You know, who's interested in rehabilitating the Chinook? I got all these guys over here shooting guns off helicopters and M-1 tanks running around. Let's go help them out. So they went over and helped them out. Some of them even gave them TRADOC Systems Managers to help them out. I asked the Transportation School for one, one day and they gave me a 'smart' young captain. He introduced himself as a TRADOC Total System Manager and I advised him that I had a charter from the Secretary of the Army that said I was in charge. So, I didn't get any help from the Transportation School. In retrospect, that may have been a benefit because you know the old expression, "Don't ask for help, you might get it." The program was designed to deliver what was essentially a brand-new airplane that met the standards of the best we had in the fleet and saved a heck of a lot of money. The

bottom line is: that airframe was worth a residual value of about $1 million a copy. So for every aircraft we rehabilitated and put out as a brand new airplane (whatever the cost), it would have cost us $1 million more to buy a new airplane just like it. That meant we went out to the desert and dug up some of the ones that were sitting out there in storage, hauled them in, and converted some of those very early A-models into D-models. Now my counterpart in the Boeing Company didn't like that at all because he was really interested in getting the program started on selling airplanes. We kicked the program off after some prolonged and agonizing negotiations with Boeing. Being the sole source, they were in the driver’s seat. We had to make sure it was done and done right. I was introduced to the Boeing Company representatives at a meeting shortly after I took over the job. When we talked about the program, the comment was made, "We'll have an opportunity to make all the changes we need after we get on the contract." I addressed my counterpart in clear, concise term saying, "When you sign a contract, you're going to live with that contract. That's it, no more. You're going to do it for that price and, if I go under, you're coming with me" We established a fine relationship as far as cost overruns are concerned. The program really kicked-off in 1976. From that period until the time I left in November 1979, we managed to go from the original two-airplane concept (converting a B and a C or an A and a B) to three aircraft (an A, B, and a C). We had qualified the CH-47C with a fiberglass rotor blade and began to make the conversion of the 47C fleet to fiberglass rotor blades (as opposed to metal blades that posed a constant corrosion problem). By November 1979, we had completed most of the flight testing demonstrating all of the performance parameters that we specified in the contract in the beginning. It took a lot of ingenuity on a lot of people's parts and a lot of tenacity to stay with it, but I think the Army CH-47 Modernization Program is a model they can point to when they want to talk about a good program. It stayed on cost, on schedule and met all its design and cost goals. They just signed a 3-year, $1.7 billion multiyear contract for production of 3 years' worth. We designed, developed, and qualified an engine, and upgraded the old engine. There's a little story that goes along with it.

The Army's previous designation used to be on the T-53 and T-55, and there is a T-58 and a T-63. About 1975 or 1976, they went to a new 700-series designation. So the T-700 was the first one (that's the engine that's in the Black Hawk). They cam along and did a lot of iterations on engines and the next one that was due up in engine designation was going to be the T-55 which would be the 711. I said there was no way I was going to have an engine designation someone could point to and say, "I know where you bought that engine. You bought that thing from the 7-11 store." So the 712 engine is on the CH-47D model, and that's the reason it's a 712 and not a 711. We designed that one and qualified it in three year's tine (1976-1979). I'm tremendously pleased at how fast the industry could do it and what our guys could do with it. We came around and produced and delivered everything- mainly because we had a lot of support from AMC. I was left alone as a PM. I was given a full head of steam and full authority to run the program and we ran it. To this day, the only reason I can give for being promoted to general officer above all the other well-qualified people out there is the fact that that program was so eminently successful. It was almost as though they had to do something to recognize it and the people who sat on the board were known. They knew

the president of the board (he was eventually the AMC commander) and he knew the program. I'm sure he influenced it a great deal in terms of who was chosen, because there was another group of people who were just as well qualified as we were on that particular list to be selected for stars. It was innovative management, watching costs like a hawk and not letting people get out of line in the program. I used to take all the CSCSC (Cost and Schedule Control System Criteria, called CS squared)--the system that they used to monitor costs. Essentially, you budget all your material and hours and compare actual performance against what you're budgeting. You see where you are in terms of overrunning or underrunning. We watched that very carefully (down to minute details) and ensured that the contractor was aware that we watched it in detail. The result was that the contractor watched it very closely, so it didn't get out of line. We had one case where the hydraulic system was beginning to escalate and the budgeted cost was beginning to be exceeded by actual cost, and we knew that we could never reach the end of the tunnel if it continued to grow at that rate. The program manager replaced the engineer on that particular system. We never did recover all the money he overspent, but we came right back to the same slope of the curve. So whatever our overrun was, it stayed in there. Eventually, they had enough in reserve to make up for it. It was a program that was just worked hard.

If you look in the cockpit of the Chinook today, you say, "Gee, it's complex." If you go over and look at a 757 or 767, you see cathode tubes that display all the information for you. You punch the screen or hit buttons and certain things happen. Not so with the Chinook. It's still got the old dials, knobs and everything else. Professionally, I would have preferred to have put a brand-new cockpit in, but there was no requirement for that. The human factor standards against which I was working were those same ones that the Chinook originally had: flying qualitywise and displaywise. I could have created a new cockpit for it and ended up with a cost overrun. I would have completed a R&D Program that was a tremendous success, but it would have been a failure because it was an overrun situation. So we let it go. The result is, the Army is now getting a fine airplane that I think is going to be around for another 20 years. When you decide to hang up the green, you'll probably have one fly by at your retirement parade. That's how long they're going to be around. It was a good program to manage. It was well-defined, well laid out and not jiggled. I didn't have the user coming in to me, telling me "I want this on it tomorrow" or asking for unreasonable demands. In that regard, I have to thank the Transportation School because they gave me a well-defined requirement. Essentially it said "What you have is good enough, just make the aircraft a lot easier and cheaper to operate-a lot more efficient,"' and we did.

CPT Flynn: The overall climate was that everyone was much more in favor of it than the extreme program: a heavy lift helicopter.

BG Hesson: Yes. That is a very valid point. I did not have anybody who was really out to kill it. It was a very innocuous program. One of my favorite expressions is, "Don't ask for help, you might get it," or "Don't ask a question when you're not ready for the answer." I used to grouse at the Transportation School a great deal-primarily because they gave me that captain. Everybody else was giving colonels as TRADOC System

managers, and they gave me this captain who may have been a very well-qualified young man (he will go nameless for posterity) but was a smart aleck. He lacked the professionalism of dealing with people who were ultimately responsible. He had no responsibility except that which his boss thrust upon him, and his boss had no responsibility. The commandant of the school didn't have any responsibility either because he had done his job. He laid out a requirement. It was one that we absolutely, physically adhered to and never deviated from. It came out all right.