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XST LOG

- 3-26-75 Begin work on "Harvey" on B&P. Got word that ARPA has issued two \$100K contracts for low AR aircraft to Mc-D and Northrop. Ed Martin visited ARPA and saw Ken Perko and advised him of our capabilities on SR-71.
- 4-21-75 Issued Project Memo #1 to continue preparing ADP's configuration studies. Two types of aircraft being studied - a faceted aircraft and a variation of Tagboard - CLJ favors latter.
- 5-12-75 As a result of past three months, issued Project Memo #2 redirecting effort to faceted configuration.
- 8-8-75 Met with D. O. Wood and A. C. Kotchian who authorized additional B&P for unsolicited proposal effort.
- 9-15-75 Submitting unsolicited proposal on X-1800 XST aircraft to ARPA. Competitors are Mc-D and Northrop.
- 10-10-75 Asked CLJ for his cost estimate (\$28M).
- 10-20-75 Notified by ARPA that we were one of two contractors selected to a funded Phase I study of stealth test bed aircraft. Issued a letter to Kotchian and Wood.
- 10-22-75 Establishing preliminary project in closed area of Bldg. 311. Project letter "R" established.
- 11-4-75 Issued letter outline work program for five months phase I study.
- 1-27-76 Gave a briefing to Perko on progress of XST.
- 1-30-76 Gave briefing to Kotchian, Haughton, Anderson and Wood on XST progress. Got their approval on cost approach. Full support of program.
- 3-5-76 Submittal of Phase I report.
- 4-22-76 Formal briefing of ARPA and A. F. on Phase I result and projected Phase II program.
- 4-23-76 BRR notified by Ken Perko at 8:15 a.m. in Washington, D. C. that ADP was winner of Phase II to build two prototypes.
- 4-26-76 Date selected to start program. Discussion with ARPA (Bruce James) to extend schedule from 19 months to 24 months due to only 80% funding available.
- 4-28-76 Discussion with G. Heilmair of ARPA on lack of funding.
- 5-12-76 Advised by Perko that we should use 24 months schedule or 80 % required funding for schedule proposed in Phase II proposal.

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- 5-20-76 Had meeting with Perko, Elsner on progress of XST. Advised them of Ed Martin's retirement and replacement by Norm Nelson. Details are given in Martin's memo of record.
- 5-25-76 Negotiations begin at WPAFB for settling contract for phase II.
- 5-27-76 WPAFB requested that we change contract from CPFF with a ceiling to fixed price. I said no.
- 5-27-76 Briefed Maj. Gen. Stafford at EAFB about XST.
- 5-26-76 Briefed Norm Gleit of Personnel and Ricky Celebron of I. A. M. union of program. Celebron promised to cooperate with ADP.
- 6-14-76 Issued Project Memo No. 3
- 6-21-76 Had a meeting with Perko and Elsner where we gave a progress report. The meeting went badly. ARPA felt we were stressing aerodynamics and structures and sacrificing AR. Advised Perko and Elsner we would redirect action to meet AR testbed points.
- 6-24-76 Had a project meeting on design details with CLJ and all the troops. Made firm revised decision which are spelled out in Project Memo No. 3, which summarizes details and decisions. This meeting made significant progress in finalizing configuration.
- 6-29-76 Had Maj. Gen. Stafford of Edwards Flight Test Center come to ADP for formal briefing. The pilot from Edwards, Maj. Dyson did not come.
- 7-2-76 Meeting with Norm Barkley and Rob Greenley of LSI to discuss the fly-by-wire proposal (22 June letter). Briefed them on the program and asked them to trim down their proposal as well as put in LSI funding into the program. Barkely said he would go back and advise me next week of what they can do.
- 7-6-76 Had a meeting with Dr. Allan Atkins to define his role at ADP.
- 7-7-76 Held design meeting and reviewed progress of design. Current configuration showing 5db higher AR signature than Ratscat design. Design progressing well. Baldwin improving 4 facet lower surface to one facet.

Major Dyson, the Air Force pilot for XST, was briefed today on the program. Next week we plan to get him some simulator time.

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- 7-13-76e Reviewed XST applications with Leo Celniker and Gen. Jack Catton to prepare Applications Brochure.
- 7-14-76e Briefed Lt. Gen. Bryan Shotts, Cmdr. of 15th Air Force at March AFB on the XST program. Attended by CLJ, BRR, N. Nelson. CLJ gave background briefing on U-2/SR-71 A.R. for 45 min. Showed XST developmente movie, then BRR gave XST briefing. Took him for toure of Bldg. 199 and then returned to give him XST applicatione briefing.e
- 7-15-76e Called Maj. Gen. Tom Stafford -- that we could not use J85-1 engine, but could use parts of -17 for our testing. He asked that I write a written request.
- 7-16-76e Wrote letter to Gen. Stafford for -17 parts. See XST file.
- 7-19-76e Had weekly XST meeting
- 7-20-76e Brief Gen. Dougherty of SAC in Omaha on XST during my trip to Offutt on Need for High Speed and Hypersonic Aircraft.
- 7-21-76e Briefed Col. Economy of ASPO/SR-71 on XST program on a limited basis.  
  
Called Perko re: briefing of Adm. Freeman and Dr. Hollingsworth of China Lake. He said we should brief them.
- 7-22-76e Had meeting with Norm Nelson and CLJ re: Northrop model. See XST file.  
  
Met with G. E. Steve Chamberlin, Gen. Mgr. Lynn Mil. Engine Dept; Hank Schnitzer, Gen. Mgr. - J85 project and Stan Mikulka, G. E. local rep. Gave them standard XST briefing with film. Showed them full scale model. Then discussed G. E. participation as partner in XST development. Discussed use of J-1 vs. J4. G. E. said they would go back and see if they could adapt J-1 to XST. All cost would be borne by G. E. They would do whatever is required to stay within their specified cost quote given to us last year; if anything further required they would carry cost.

*Uncl.*

- 7-23-76 Maj. Dyson came down to visit project. Took him to lunch. He planned to fly the simulator in afternoon. Cantrell took him to Rye Canyon and he flew the simulator and his comments were favorable.
  
- 7-23-76 AeroSpace daily came out with XST story. See file.
- 7-26-76 Had monthly review with Perko and Elsner. Meeting went very well. See Norm Nelson report in XST file.
  
- 7-27-76 Met with Perko, Williams of NSRDC, Kesling and Martin to discuss X-wing program. Had first review with Perko on XST applications with Celniker and Martin.
  
- 7-28-76 L. A. Times had a summary article on AeroSpace Daily article of 7-23-76. See XST file.  
  
Saw Capt. Karem of ARPA (Strategic Office) and discussed Strategic Missile using XST technology. Told him we could not give his program full support due to lack of manpower and dollars.
  
- 8-2-76 Aviation Week has article on XST (see file).  
  
*Article*  
Had weekly XST meeting and settled XST configuration. See Nelson memo dated 8-5-76 in file. Made decision to go-ahead on J4 engine. Advised Mikulka, but he said hold off till Gath and Campbell come back from Lynn. This trip post-poned until 8-9-76.
- 8-4-76 Received letter from Col. Newbold of ASD requesting that we get prior approval to brief any government personnel on XST. See file.
  
- 8-4-76 CLJ and I briefed R/Adm. Freeman and Dr. G. Hollingsworth of Naval Missile Center at China Lake. CLJ gave them SR-71/U-2 AR background briefing. Showed XST development movie and showed them full scale model. BRR then gave XST briefing. Adjourned for lunch, then toured Bldg. 199 showing chamber and coating manufacturing. Return to 311 and discussed operational aspects of XST technology.
  
- 8-5-76 Got call from Mikulka of G. E. that they could make J-1 fit in J4 envelope. Should they proceed. Checked with Elsner who said no. They had checked with Col. Cheatham who said J85-21 was having many problems. Stick with J4. Told Mikulka this, who stated problem was the A/B on -21 and not engine.
  
- 8-6-76 Got a call from Elsner reversing his objection to J4. Called Mikulka to proceed with J-1 study, however, if it impacted XST configuration we should drop it for prototype.

8-9-76 Another Aerospace Daily security leak on XST. See File

8-9-76 Had XST meeting and made decision to drop J-1 once and for all. I advised Mikulka, but he said hold back till I hear results of Gath and Campbell trip to G. E. /Lynn.

Campbell and Gath leave for meeting at G. E. /Lynn to get latest data on J-1 and requirements to build and coat exhaust nozzle.

I got a call from Gen. Stafford asking whether "we have looked at F-5E gear for XST". "Do we need nose wheel steering?" I said we would respond.

8-10-76 Met with Willis Hawkins re: stealthy ALCM. Hawkins was going to San Diego to attend SAB board on ALCM. He asked if we could put a SRAM motor in ALCM. I told him we would try to give him the data by Friday. However, it would not be optimized. He agreed to this.

8-13-76 Finally received XST Phase II contract.

Gave Hawkins data on ALCM with SRAM booster.

Went to brief Maj. General H. Leaf at Naval Electronics Lab Center in San Diego on operational uses of XST. Spent 2-1/2 hours briefing him in Lab vault. Covered basic XST program, production XST and effects of scaling and applications. He was interested in scale effects and in three basic sizes: a 40 - 50,000 lbs. aircraft for F-4 replacement to carry 4000# payload; basic XST size aircraft, and a small ALCM. Was very pleased with our work and may want Gen. Dixon briefed.

Made final decision to forget J-1 engine and advised Mikulka that for testbed use J-4, but will revise aircraft for J-1 for production. See File for Campbell/Gath trip report for Lynn trip. Mikulka assured me that G. E. would provide us all support for \$'s quoted last year.

Norm Nelson visited RATSCAT and made arrangements for 6 Jan 1977 full scale test. See file for his report.

8-16-76 Discussed current status of XST. Need for manpower stressed.

Got a call from Elsner stating we should consider a tactical ALCM for high value targets and against SUAWACS.

Got a call from Perko that Adm. Arnold said that \$16M will be allotted to X-wing for FY-78.

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- 8-17-76 CLJ briefed by Gath and Campbell on why not putting in J-1 engine in XST testbed. CLJ agrees on decision to stay with J-4.  
  
Briefed Bill Mucker of LMSC on basic XST, movie and derivative program. Agree to discuss computer program and coatings for possible missile use.  
  
Briefed Bob Haack on XST and all other ADP programs.
- 8-19-76 Called Elsner and told him of decision to stick to J-4 engine on testbed and reasons why.
- 8-23-76 Had monthly XST review with Perko, Elsner and L/Col. Twigg. Meeting went well - showed progress on AR tests. Gen Stafford called and wanted to attend. Questioned use of F-5 gear and nose wheel steering. I told him gear would fit, but too late to change. He reported that L/Col. Dyson, his pilot, was happy with simulator progress.
- 8-26-76 Gave XST briefing to Dick Cook of Washington office.
- 8-27-76 Briefed Lt. Cmdr. Jordan and Capt. Harry Cox on XST program. Discussed application of technology to SWATH ship. Said we would give them a proposal.
- 8-28-76 Article on XST appears on London Economist Magazine. Advised Perko and Twigg on Sept. 8, 1976.
- 9-1-76 Had meeting at Wood's office with Passon and Puhl to advise on overrun on XST project. Discussed how we should advise management and customer.
- 9-2-76 Had briefing with Bob Moore of ARPA. CLJ and Nelson attended. CLJ gave background and I gave update on XST program. Gave overview on Bx and comments on how R & D programs should be run. Al Potthast gave him X-wing briefing. Gave him a tour of project. He was very impressed with our program and operation.
- 9-7-76 Had meeting with Kitchen, Anderson, Puhl and Marafino CLJ, BRR and Passon to give them XST financial story on overrun. Kitchen and Anderson agreed with concept of cost sharing, but felt he wanted to advise Board of Directors as well as Customer as soon as possible. We should make every effort to keep our cost share down and recover as much from ARPA/AF. (see my file on XST financial in safe.)

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- 9-8-76 Had a meeting with Kitchen to review charts for Board meeting. He suggested a few changes. I told him CLJ had not seen them and may make more changes. Kitchen said keep it brief and simple.
- 9-10-76 Met again with Kitchen, Marafino, and Puhl and finalized charts for Board meeting. See XST financial file for charts presented.
- 9-10-76 Briefed heads of Lear Seigler (Bob Haan, Norm Barkley, Jim Bitner and Ron Palusi) on XST. Got commitment from Bob Haan, Corp. V-P to give full cooperation and backed up Norm Barkely, Pres. of L. S. I. Aeronautics on our agreement in flight control system.
- 9-13-76 Larry Kitchen gave briefing on XST financial status to Board of Directors (see charts in financial file). CLJ and W. Hawkins said reaction of Board to cost sharing was favorable. Kitchen reported he was satisfied.
- 9-15-76 Received a copy of Electronic Warfare News on XST program. See file. Advised Twigg and Perko.
- Had monthly review on XST with Perko, Elsner, and Twigg. This was meeting to review material for Dr. Heilmeyer, Head of ARPA, the next day. CLJ and Passon attended meeting. We first reviewed technical part and all went well. Then we broached the financial status - Passon gave the latter. It hit the fan. After much discussion, we mutually agreed to a \$3.5 million addition to the contract. We revised and simplified financial presentation for Heilmeyer.
- 9-16-76 Had review meeting with Dr. Heilmeyer, Perko, Twigg, Elsner and CLJ. Technical portion went well. Financial overrun caused quite a discussion, although Heilmeyer had been briefed by Perko the previous evening. Heilmeyer agreed to the \$3.5 million increase and said he would talk to Air Force. Then CLJ, Heilmeyer and I had lunch with Haack.
- In the afternoon, ran the same briefing for L/General Al Slay and Maj. General Stafford. Ran through the technical and financial overrun. Slay had very few comments. He said he would work out with Heilmeyer the \$3.5 million change to contract. As a whole the meeting went well and we succeeded in getting a funding increase of the program.

- 9-17-76 Made agreement on flight bonus with Bill Park for Have Blue program.
- 9-21-76 Passon and I gave a recap of XST financial situation to Kitchen, Wood, Marafino and Puhl. They thought we had achieved a good compromise.  
  
Met with John Griffin from WPAFB. He said he thought our technical and systems programs on XST met his approval.
- 9-27-76 Met RADM Bud Ekas, Deputy Commander of Naval Materiel and briefed him on Have Blue program. Showed him Bldg. 199 and Bldg 82.
- 9-28-76 Met with Allan Atkins of ASD. Advised him that he was given privilege of being at the Skunk Works and he should not act as a "tattle tale" of all our daily functions at Bldg. 82. He agreed to limit his comments to technical items.
- 10-1-76 Briefed Rick Celebron of I. A. M. on Have Blue program. Gave him overview of importance and toured Bldg. 82.
- 10-4-76 Discussed threat analysis of SAM missiles vs Have Blue. Celniker and Jantzen. Reviewed possibility of getting Hughes Aircraft to make an independent review. Our number did not look correct.
- 10-8-76 Called LSI to see if they would agree to fixed price on flight control system. They agreed.
- 10-15-76 Met Major General Tom Stafford at Rye Canyon. He flew the simulator and said he was very pleased with characteristic. Made a few suggestions which we said we would consider.
- 10-19-76 Met with Wilkerson and Langford of Berteau to see if they would supply Have Blue actuators. Gave them Have Blue briefing. Toured Bldg 82. They agreed to join team.
- 10-26-76 Had monthly Have Blue review with Perko, Elsner, Dyson, Twigg. No major AR problems, may have IR problems. Would meet with GE. Also brought General Stafford up to date, took him to Bldg. 82 tour.



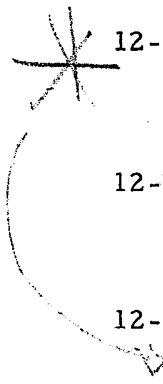
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- 11-1-76 Met with Bert Osborne of DDRE. Reviewed all ADP programs including Have Blue. Showed him early Have Blue movie, toured Bldg 199 and 82.
- 11-3-76 Met with group from China Lake (Carl Schaniel, Dr. Frank Cartwright.) Gave them first briefing on Have Blue, reviewed CLJ charts on AR, showed them first Have Blue movie. Toured Bldg. 199 and 82.
- 11-3-76 Met with Tony Batista, civilian member of House Armed Service Committee. Gave him complete briefing on Have Blue. He wanted to know if we had briefed National Security Council particularly to application to cruise missiles. I had been advised by General Slay we should not do anything to jeopardize B-1. I told Batista that it was too early to draw conclusions. Advised him to speak to General Slay and Jones on subject. Took him on tour of Bldg. 82.
- 11-10-76 Wrote letter to ASD contracting officer to back up change of flight test from Palmdale to STS.
- 11-15-76 Met with Glen Varney of GE. Asked him to review IR signature on Have Blue. Showed him our calculations He agreed to run our configuration at GE and make presentation to next monthly meeting.
- 11-18-76 Met with Twigg and Elsner and reviewed IR problem and our plans to work with GE. They agreed with our plan.
- 11-22-76 Briefed Dick Berteau on Have Blue program. He agreed to give us full support.
- 11-23-76 Met with Jerry Slarsky of ESG. Discussed with him that we had a highly classified program that would mean a lot to Calac and needed his cooperation. He agreed to cooperate with ADP, if there should be any major layoffs.
- 12-8-76 Met with GE (Chamberlin, Schnitzer and Mikulka), gave Have Blue briefing. Discussed GE participation. They agreed to do whatever we needed for demonstrator program within the contract we had signed. Agreed to support Varney for IR study.
- 12-13-76 Had monthly review with Perko, Elsner, and Twigg. Satisfied with AR progress, showed them model getting ready for Ratscat. Reviewed with Varney the IR analysis. Perko asked for methods of improving IR, signature, I said we would provide. (See file for report.)

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- 12-13-76 Gave Bob Haack Have Blue status, showed him mockup and Bldg 82.
- 12-14-76 Briefed General Bond and Major Hollobaugh and Twigg on Have Blue and cruise missile. Toured Bldg 199 and 82, showed Bond the mockup, model for Ratscat and Have Blue original movie. Bond asked for a cruise missile program plan.
- 12-14-76 In afternoon Bob Moore of ARPA brought Thomas Holm of House Armed Services Committee, George Seymour of OSD, Deputy for Legislative Affairs and Dr. Rosenblum of OSD, on Have Blue and cruise missile. Toured Bldg. 82.
- 12-15-76 Twigg brought Col. Dale Newbold (Twigg's boss) and Col. Dale Ward of AFWAL. Gave the briefing on Have Blue and showed movie. Toured 82 and 199. Then went to Rye Canyon where they both flew simulator. Discussed program status and applications to other vehicles.
- 12-17-76 Met with Dan Tellep, Norm Tosch and Chuck Gvedecke. Briefed them on Have Blue and cruise missile. Asked them for their help for a cruise missile plan. Working with Jantzen, then LMSC made a preliminary program which I could give General Bond. They worked with Passon on overall program cost.
- 12-19-76 Got call from General Slay and Bond if I could come to Washington with a plan on a stealthy cruise missile. Said I'd be in Washington the next day.
- 12-20-76 Met with Carl Schaniel and Frank Cartwright of China Lake on possible cooperative program on a Navy stealthy glide bomb program.
- 12-21-76 Met with Generals Slay and Bond in Washington, D. C. on a preliminary stealthy cruise missile plan. Gave them our dollar requirement and a program. (See file on ATCM) Gave them copy of briefing charts on ATCM. They promised an answer after the first of the year.



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- 1-4-77 Met with Dan Tellep - Gave him complete Have Blue review. Had him briefed by Overholser on computer program and tour with Mel George on coatings. Reviewed trip to Washington on ATCM.
- 1-4-77 Berteau agrees to supply actuators for Have Blue.
- 1-11-77 Called General Sylvester to talk to Colonel Cheatham on ASD help GE on dry J85. Advised Stan Mikulka.
- 1-13-77 Gave Roy Anderson complete financial review on Have Blue. Passon made presentation. Showed Anderson we were holding on budget and have a \$2M contingency but would probably need it. He complimented us on progress. Took him on tour of Bldg 82.
- Met with Joe Popple (Asst. Director of Budget, Headquarters, USAF), gave preliminary briefing on Have Blue. Main briefing was on Skunk Works programs. Also had Colonel Birkett and Major Swartz of LGYJ with him.
- Received flight bonus agreement from ASD for Bill Park.
- 1-19-77 Had an ATS mid-term review with Perko, Elsner, Twigg, Colonel McKelvey, Dan Fraga and Larry Boyd of ASD. Gave them a Have Blue briefing. Toured Bldg 82 and 199. Went to Rye Canyon to fly simulator. (See file for agenda)
- 1-21-77 LMSC came down to give us a Radiometric Correlation System briefing.
- Met with Hawkins, Puhl and Marafino. Passon and I gave them Have Blue financial review same one we gave Anderson on the 14th.
- 1-19-77 Completed 2nd RATSCAT pole test. Successfully repeated data of 1st test.
- 1-27-77 Met with Perko, Elsner and Twigg for monthly review. Told Perko we were not ready with IR improvement review.
- 2-2-77 Met with Tellep. He and Jantzen update quote on ATCM.
- Met with General Korf, Jim Karm, Craig Hartzell of DARPA - Strategic Office. Briefed them on Have Blue, ATCM and High Pressure Ratio engine. Called Heilmeier to see whether should brief Hartzell (he said No), only on High Pressure engine. Also discussed who should be briefed next week (TTO or STO office). Heilmeier said he would make decision next week. Heilmeier decided on STO office. I later turned over High Pressure Engine to Garrett - ~~AirResearch~~ level.

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- 2-4-77 Met with Al Cleveland and briefed on all Have Blue technology programs. Toured Bldg. 82.
  
- 2-8-77 Briefed Dr. Allen of DDRE (Dep. Director of R&D) (Burt Osborne's boss) on Have Blue technology and associated programs. Toured Bldg. 199 and 82. Ken Perko also here. Also briefed hypersonic programs.  
  
Briefed Capt Yowell (NAVAIR R&D boss) on Have Blue and XST programs. Toured Bldg 82 and 199. Showed him Have Blue mockup.
  
- 2-9-77 Briefed Dr. Schaniel, Frank Cartwright and Lt. Commander Hank Meyers of China Lake on Have Blue technology. Toured 199 and 82.
  
- 2-10-77 Briefed Ken Peterson, Chief DCAA auditor and Dick Gordon, local DCAA chief on Have Blue and related programs. Peterson and Gordon said he would give our programs full support.
  
- 2-9-77 Ken Perko and Twigg inquired should we put 2nd aircraft on pole. Gave him three options? Put 2nd aircraft on pole, revise old model, or build new model for pole. They chose new model on pole.
  
- 2-11-77 Briefed Bob Melnick, Asst. General Manager of Lockheed Electronics on Have Blue technology and related programs. Overholser briefed him on computer programs. Toured Bldg 199 and 82. Purpose of meeting was to try to get Lockheed thinking how we could develop a system on how to counter very low RCS targets. Melnick said he would get his people working and have some of his people contact us later.
  
- 2-15-77 Met with General Bond and Colonel Tom Jones to see how we could set up an ATCM cruise missile program. Gave him revised \$'s and program (see ATCM file.)
  
- 2-21-77 Had a review with CLJ, Nelson, Cantrell and Campbell on single engine performance of Have Blue aircraft. Answered CLJ worries by using extended lakebed, as well as, emergency thrust on engine if we lose one engine on takeoff.

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- 2-22-77 Sent Twigg the quote on new model pole tests.
- 2-23-77 Had monthly Have Blue review meeting (Twigg, Perko, Elsner plus Wright Field consultant team). Purpose of meeting was review Flight Test plan as well as single engine takeoff problem. Meeting went well, satisfied with single engine analysis. Twigg not happy with Flight Test plan, wants us to revise plan. Discuss methods of analysis of Flight Test data. They would review and decide if they want us to analyze RCS at STS or ADP. (See Have Blue file for summary.)
- 2-28-77 Called Twigg to tell him would like to delay final Flight Test report from 1 April to 15 April. He agreed.
- 3-1-77 Discussed with Al White and Jantzen comments made by Chuck Myers of DDR&E on how we should do a systems analysis study based on ret. Colonel John Boyd's approach. Al White gave me a copy of Boyd's paper. Very general and verbose paper.
- 3-4-77 Briefed Jack Catton on Have Blue progress.
- 3-7-77 Briefed CIA Statute of CIA on Have Blue program. He said he would set up a meeting for CLJ and myself to brief new heads of CIA in Washington D. C.
- 3-9, 10-77 Went to Washington D. C. Met with Chuck Myers with Milt Jantzen. Discussed how we should make a system analysis study using stealth technology. We said we would review his ideas and contact him at a later date.
- Met with General Bond and his assistants and brought him up to date on Have Blue and ATCM. He said Slay wants to put us on contract by 15 May through Colonel Tom Jones' office. Bond told us we must scope ATCM program to below \$2M so he won't have to go to Congress for \$'s.
- 3-7-77 Sent Twigg our proposal on Flight Test Data analysis to be done at ADP. They later decided to do it at STS as we were too expensive.
- 3-9-77 Discussed with CLJ and Lovick use of low temperature additives in full. (See notes in file.)

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- 3-15-77 Briefed Lt. General Sylvester (head of ASD), Colonel Steere (Twigg's new boss). Twigg and Perko on Have Blue programs (See briefing charts in file). Toured 82, 199 then went to Rye Canyon for simulator. General Sylvester tried flying simulator. He had a few departures. Later found out that simulator had some components inoperative which allowed departures. Relayed this to Twigg, who said he would advise Sylvester. Sylvester said he was pleased with progress. Also showed him Have Blue original movie.
- 3-16-77 Briefed Major General John Burkhardt of SAC. Gave him Have Blue movie and toured Bldg. 82. Tomasitti said GE would back program fully.
- 3-17-77 Briefed Dr. Norris Keeler from Washington (Director of Naval Technology - Nav Materiel) with Schaniel, Cartwright, Meyers and Hollingsworth, of China Lake on AB technology. Showed movie, toured 82 and 199.
- Briefed Willis Hawkins how we planned to do Chuck Myer's system analysis study. Said I needed some more IRAD money. He advised Puhl to give us \$250,000 more money.
- 3-21-77 Updated Roy Anderson on program status. Took him through 82.
- Met with Dan Tellep and updated him on progress of ATCM proposal.
- 3-24-77 Briefed Jack Teske (Ex - VP - Garrett-AiResearch) on Have Blue programs. Showed movie and toured mockup at 82. He said AiResearch would join our team.
- 3-30-77 Had an internal review of Have Blue flight test instrumentation requirements. Decided to buy some of instrumentation out of fixed asset budget. Gave go ahead to Passon and Pedersen.
- Had meeting with Charles Starrett (Dep Director of DCAA from Washington). He was accompanied by Dick Gordon and Ken Peterson of local DCAA office. Passon and I gave them a brief overview of all Have Blue technology programs. Toured mockup and 82. Showed movie.

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- 4-1-77 Met with Schaniel of China Lake. He advised he was being transferred to Washington D. C. - DDR&E. His job was to be assumed by Fred Ashbrook of China Lake. Briefed Ashbrook on Have Blue technology. Toured 199 and 82. Showed them the film and mockup.
- 4-6-77 Went to Washington D. C. with CLJ to brief CIA chief on Have Blue technology. Met with Knoche, Adm. Murphy, Les Dirks, R. Heneman, S. Graybeal, CIA Statute and CIA Statute. Did not brief Adm. Turner head of CIA as he was called to White House.
- 4-7-77 Discussed with Dave Campbell about J85 exhaust smoke. Dave said J85 was a good engine.
- Sent to GE (Lederman) our aircraft distortion patterns for their analysis and comments, asked also for emergency thrust for takeoff.
- Went to Rye Canyon to meet General Stafford. He flew latest inputs on simulator. Said he was very pleased with improvements. Said "It flies like F-16 but gutless."
- 4-13-15-77 Monthly Have Blue program review with Perko, Elsner and Twigg. I did not attend as I had to go to Dayton for Supersonic Cruise Conference.
- 4-13-77 Received reply from GE on added thrust on J85 for emergency use at takeoff. They said they could give about 13 percent more thrust.
- 4-15-77 Briefed Hank Lopez, Paul Elkins and Tom Flatley of Garrett-AiResearch on Have Blue technology. Toured 82 and film.
- 4-27-77 Briefed by Hughes on Low Probability Intercept radar.
- 5-3-77 Briefed RADM H. Arnold of Navy, R&D. He was accompanied by Hollingsworth and Ashbrook. Arnold is in charge of all R&D funds including X-Wing that Navy will give to ARPA and China Lake. Gave Have Blue briefing, showed him film. Toured Bldg. 82 and 199. Had CLJ and Hawkins say hello.

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- 5-4-77 Briefed Colonel Joe Guthrie (Dep. Commander for Operations at AFTC-Edwards), Dyson and Park. He is Dyson's boss. Gave him Have Blue briefing, film and toured 82. Park and Dyson took him up to simulator.
  
- 5-5-77 Advised Twigg importance of need of support aircraft to meet STS manpower requirements.
  
- 5-6-77 Briefed Major Barnes (Langley AFB), who is General Dixon's rep on ATIS program. Gave him HB briefing, film and toured 82 and 199.
  
- 5-10-77 Gave an update briefing to Bob Haack.
  
- 5-11-77 Briefed VADM F. C. Turner, Dep. Chief of Naval Operations (accompanied by Bruce James and Perko of ARPA). CLJ gave background briefing on RCS, then I briefed HB technology and status showed film and toured 82 and mockup.
  
- 5-11-77 Briefed by Northrop and Hughes on LPI progress. I told them I was worried about power and cooling requirements as well as reliability of all dipoles required.
  
- 5-17-77 Met with General Bond in Washington, D. C. Said I was disappointed that we were not on contract ATCM. He said he was having political problems with Congress. Hoped to give us a contract by 1 June. Gave him set of HB mockup and aircraft pictures (see file.)
  
- 5-19-77 Briefed Meade Livesay (VP of Hughes for radar programs), and Paul Kennard. Gave him HB tech briefing, movie and toured 82.
  
- 5-20-77 Advised Twigg on our test program to evaluate F-16 moveable control stick (see file).  
  
Sent Twigg our proposal on new full scale RATSCAT model (see file).
  
- 5-25-77 Had monthly program review. I did not attend as I was on vacation (see file for complete program presentation).
  
- 6-22-77 Took Chuck Myers, DDR&E test systems to Rye Canyon to fly simulator. He was quite impressed with handling qualities.



6-23-77 Met with R. J. Woolsey (Under Secretary of Navy), Dr. Hyde, (Tech Asst. to Asst. Secretary for R&D), Chuck Myers of DDRE, Bob Moore - ARPA, Twigg and Colonel Steere of ASD. Hawkins welcomed him. CLJ gave background RCS briefing. BRR then gave HB, X-Wing ASP and High Speed briefings. Showed film and toured 82 and mockup. Woolsey was quite sharp. He was very impressed, said "He wanted to get Navy more involved." Advised him that he must coordinate with General Slay and the Air Force.

*\** 6-22-77 Received notice that we had ATCM contract. *S. Brown*

6-24-77 Held meeting with key personnel on "Maintain Proprietary Position for ADP." Passon gave briefing - see file.

*S. Brown*  
Met with Lt. Colonel Lowell and Major Baber on Sr. High Program (ATCM).

Got answer from GE on emergency rating of engine (see file).

6-28-77 Briefed RADM O'Hara (who replaced Adm. Arnold), Navy R&D Head. He was accompanied by Capt. Kinley, Meyers, Ashbrook and Hillyer of China Lake. He also had Capt. Stevenson from his staff. Gave him HB briefing, movie, toured 82 and 199.

6-29-77 Briefed Sam Williams and E. L. Klein of Williams Research on HB and ATCM programs. Told them we had highly classified cruise missile program. Williams said he would support us fully. Jantzen gave ATCM briefing. Williams would assign an engineer to work with Jantzen. Toured Bldg 82 and mockup.

6-30-77 Had meeting with Dr. Peterson and Al Glasser of Panametrics. Perko had sent them to see us. They had a scheme to add mass to secondary air to reduce IR temp problem. Doesn't look like idea applicable to HB aircraft. Advised them we would talk to Perko and see if there was an application of their concept.

*for Capt. ...*  
7-5-77 Met with General Stafford. He wanted to see if there was possible application of our technology to B-1. B-1 had been canceled last week.

- 7-7-77 Met with Paul Freund (Navy rep on Black programs) Ashbrook and his secretary. Briefed them on HB program and ASP. Toured 82.
- 7-8-77 Advised Stafford that we would need about two weeks for B-1 study.
- 7-11-77 Briefed Norm Cotter, Dick Anshutz, Carl Swavely and Walt Moe of P&W. Gave them general briefing on HB technology. Did not show them anything on aircraft. Also discussed hypersonic aircraft. Combs gave briefing.
- 7-13-77 Briefed Dr. Naka (Chief Scientist of USAF) and his deputy Col. Cabell and Twigg. Gave them HB briefing also used CLJ charts on background. Then toured 199 and 82.
- 7-14-77 Monthly Program Review with Twigg, Elsnor, Perko. Meeting went well. Twigg advised me that all customer members unhappy with Dick Miller. I told him to put it in writing. He did. (see file.) Said I would review and advise him.
- 7-15-77 Advised Twigg would remove Miller and replace him with Beswick - Twigg very pleased.
- 7-18-77 Wrote memo on Miller replacement (see file).
- 7-20-77 Received call from Major Staten from Bond's office. Need HB charts for briefing. Sent him charts he requested.
- 7-22-77 Met with Lt. Cmdr. Jordan on ASP program. Gave him my opinion. Told him needed a test program to prove effect of RCS with water background. Advised him of need to get Garrett as subcontractor for High Speed Electric Propulsion. He agreed.
- 7-25-77 Met with H. Lopez and John Dannan (Garrett) discussed ASP program (Tacit Gold). Asked them for a support proposal.
- 7-28-77 Met with General Stafford, CLJ, Nelson and Adm. Brown. Showed him results of our study of application of HB techniques to B-1. Alan Brown gave briefing. Results show gain possible but not practical and very expensive. Told Stafford I would advise General Slay of results.

- 7-28-77 Had HB review with Perko, Twigg and Elsner. Discussed latest tests of Grey Butte on coatings. Showed new HB movie. Gave Perko and Twigg eac a copy. Made decision on how to partially coat #1 vehicle. Gave them latest data on high temp coating (successful results). Decided on final coating for RATSCAT model. Will use all .040 coatings at RATSCAT except in area over honeycomb where will use thicker low density material. They agreed. Twigg gives me letter from Gen. Sylvester requesting LAC not require AF to pay for cost share portion of HB. (See File)
- 7-29-77 Met with Ashbrook and Gilmour to review China Lake program. Ashbrook said he had some hangups in Washington getting \$'s, but thought would start 1 October.
- Met with Dr. Frosch and Dr. Lovelace (Head & Asst. Head of NASA). Gave them HB technology briefing, showed new movie toured Bldg 82. Then briefly discussed X-Wing, High Speed and Hypersonics and NASA U-2. Very impressed with HB. Said prospects of hypersonic not good due to budget crunch. Said would go with new U-2 only if Air Force starts line. Hawkins attended meeting.
- 8-1-77 Twigg advised me of Engineering Indep. Review Team (see file).
- 8-2-77 Had Senior High II meeting (A<sup>3</sup>) with Williams Day, Twigg and Staten. They gave us their idea of program plan. Passon and I discussed U-2 and SR-71 programs. Then they spent day with Celniker and Baldwin, Nelson to try to derive a work statement.
- 8-2-77 Briefed Dr. Bill Perry (new head of DDR&E) Heilmair and Perko of ARPA. Covered complete HB technology, Tacit Gold, Senior High I. Showed him new film and toured HB. I gave all briefing but Jantzen gave Senior High I. Did not discuss A<sup>3</sup>. Perry very impressed, said he wanted to be briefed on ATCM vulnerability at medium altitude vs. threat. Said he wanted us to come to Washington. His office was open to us any time. Wanted his staff to hear briefing. I said I wanted to bring Hughes and Air Force. He agreed. I said we would respond within a month. He was very impressed with Skunk Works and overall progress with technology. Said "Skunk Works had come through again." CLJ also attended meeting - made a few comments on background.

~~CONFIDENTIAL~~ *Uncl.*

8-10-77 Sent Twigg revised Flight Test Plan on HB.

Briefed Dr. Allan Puckett (Head of Hughes). Lwesay and Kennard. Hawkins greeted the guests. Gave HB briefing, showed new film. Toured Bldg 82, mockup and new RATSCAT model. He was very impressed. Said he would get back with me. Pledged full Hughes support for LPI program.

8-11-77 Briefed Colonel Twinting (new STS Commander), Colonel McClain (replacement D. O. at AFTEC - Dyson's new boss). Dyson and Park. Gave HB overview, film and toured 82.

8-14-77 Nelson prepares responses to EIRT team due on 12 Sep to 15 Sep 1977.

8-16-77 Briefed General Ellis (new SAC commander) Vice Commander General Hill and General Campbell. CLJ & BRR visit. BRR give HB briefing, CLJ (U-2 and Tag brief). Very impressed (see trip report) at Omaha, SAC headquarters.

8-17-77 Brief General D. Jones (Head of Air Force) in Washington D. C. (see trip report).

Briefed Under Secretary of Air Force, Hans Mark (see trip report).

Gave set of pictures for General Bond to Maj. Staten (see file).

8-18-77 Brief Bob Staten and Stan Mikulka of GE. Give very brief HB technology briefing (nothing on HB aircraft). Discussed use of F-404 use on A-3. Give them A<sup>3</sup> program schedule. Dave Campbell attended meeting then Stiber briefed Campbell only on F-404 program.

8-19-77 Had a complete financial HB review with Hawkins and Puhl. Passon and Rich briefed. Tell about letter from Sylvester and show tentative response. Hawkins suggests we limit cost share to \$10M. Hawkins, Puhl pleased with tracking of HB program.

8-22-77 Have complete financial review with Haack, Anderson, Kitchen, Hawkins, CLJ, Passon and BRR. CLJ gives Washington trip review. BRR gave HB status. Passon gives financial review. BRR then shows them Sylvester letter and proposed response. CLJ wanted Anderson to sign. They all thought Hawkins should sign. He did. They liked letter response very well. Thought presentations excellent and commended ADP for good control of HB program (see file for presentation charts and Sylvester letter).

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Uncl.

- 8-22-77 Met with Alan Puckett and Mel Currie. Hawkins, Scherrer Celniker and BRR. Puckett and Currie want to make a stealthy joint GBU-15 proposal to General Slay. I said I would have to check with Sylvester on 26 Sep 77.
- Met with Sam Williams, Paul Weiss (Williams Research) CLJ, Jantzen and BRR. Give ATCM update. Williams reaffirms his support of ATCM program.
- 8-23-77 Briefed Jim Harte and Frank Hartley (Sperry-Univac). Gave HB technology overview only. Jantzen gives Senior High I briefing. Spent most of time with Jantzen. Said they would support program. Very enthusiastic.
- 8-24-77 Briefed VADM Parker, Armstrong, RADM O'Hara, Ashbrook, Hellyer. Gave HB briefing, new movie. Toured 82. Also showed Tacit Gold. Adm. Armstrong very impressed, would support China Lake program. I emphasized need to coordinate with General Slay. He said he would.
- 8-25-77 Briefed Roy Harris (NASA Langley) on HB technology, showed new movie, toured 82 and RATSCAT model. He was impressed. Asked for items NASA could research to help stealth. I said I'd send him a list. Also briefed hypersonics and Tag. He expressed worry about future of high speed technology at Langley. Said I should contact Dr. Kramer at NASA Headquarters. I said I would write letter (see date file).
- 8-26-77 Celniker, Passon, Rich met with Sylvester and Twigg. BRR gives Sylvester the Hawkins letter. Passon makes financial review backing up letter. Sylvester satisfied. BRR then gave A<sup>3</sup> briefing showing update on two types of aircraft. Also showed Tag charts. Asked Sylvester about Puckett (GBU proposal). He said he would like to think about it and let me know on 8-29-77. I emphasized need of better financial response similar to Novelli contract. Sylvester assigned Twigg to see what he should do to get that capability. Gen. Sylvester and Twigg very pleased with briefing.
- 8-29-77 General Sylvester through Twigg passed decision on GBU-15 to General Slay. Twigg said Sylvester very pleased.

Twigg advised may have to use MAC to supply transportation to STS.

Uncl.

*8-31-77*  
\* 8-31-77

Had kickoff meeting with A<sup>3</sup> designers, requesting data to make formal proposal by 15 Sep 1977.

9-1-77

Met with Dr. Perry in Washington D. C. in response to ATCM vulnerability at medium altitude (see Jantzen trip report).

Met with General Bond, discussed A<sup>3</sup> charts, stressed need of funding by 1 October. He said he would try to get it for us. He advised us of meeting of Air Force Secretary on 12 September and Office of M & B on 16 Sep.

Showed him Tag charts. Asked Bond to get Slay's comments on GBU-15 proposal with Puckett. Said he would let me know after holiday (see Milt's trip report).

9-7-77

Milt Jantzen and I briefed Dr. Jay Castello of CIA on Have Blue and Senior Hi I programs and technology. He was quite impressed. CIA had made studies using AR value we have achieved, which they felt were academic. Their studies show we can subvert any current threat.

Briefed Jim Wenzel of LMSC on Tacit Gold and Have Blue technology. Did not discuss details of aircraft. Promised to do some antenna designs for some of his black programs.

9-8-77

Gave Dick Cook of the Washington Office briefings on Senior Hi I and II as well as Have Blue.

9-9-77

Briefed Hank Lopez, Director of Engineering - Garrett AiResearch Corporation on Tacit Gold and Have Blue. Discussed actuators needed for Senior High I. He said they would fully cooperate - supply electric motors for Tacit Gold. I told him we would subcontract them for Tacit Gold propulsion system support.

9-12-77

Had a two hour briefing for Secretary of the Air Force John Stetson and his aide Brig. Gen. William Hoover. Also in attendance were CLJ, Hawkins, Kitchen and Haack. See file for agenda. Hawkins welcomed Stetson. CLJ gave overview of Skunk Works and background of technology. Then BRR covered Have Blue technology, Have Blue program, Senior Hi I and II. Then all but Hawkins and CLJ toured Have Blue aircraft line.

Engineering Independent Review Team (EIRT) from ASD under Major General Bob Rushworth and Fred Rall plus 10 specialists start today, end on 9-15-77, to make a complete review of Have Blue aircraft to check analysis and safety. (See file for agenda and attendees.)

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9-14-77

Met with CLJ re: Stetson's visit. CLJ says I stressed proprietary interest too much and too optimistic on results. Do not overemphasize tolerances. We should plan a site survey for our own AR range similar to Gray Butte.

*Stetson's visit*

9-15-77

EIRT concluded today with about 13 items, all minor. See file of memo to Twigg on items and their resolution. General Rushworth said he was very pleased with the aircraft and thanked us for cooperation. Twigg and Elsner thought we did an excellent job.

Received a call from Col Staten from General Bond's office to prepare charts for General Jones briefing of Secretary of State Vance originally set for 19 October, later moved to Saturday, 17 October.

9-16-77

See my file for charts made for General Jones briefing.

National Secretary Adviser Brzezinski sent a team to Boeing, General Dynamics and ADP to review cruise missile decision. (See file for agenda and team members.) Covered all programs - stressed importance of force mix and force multiplier. Toured Bldg. 199 and 82. Showed Have Blue aircraft. Popple told me team was very impressed with our program. They thought Boeing was doing a poor job, General Dynamics had failure but had good recovery plan.

9-19-77

Had a meeting with CLJ and Beswick to review with CLJ flight programs and get his experience into our program.

9-20-77

Met with Fred Ashbrook of China Lake on setting up WND program to set up a Glide bomb study using Have Blue technology.

9-21-77

Met with Commander Jordan for ASP review. Decided that ADP stay prime with LMSC as subcontractor for Phase 1.5 and 2. Don Germerald of LMSC, Celniker and Stocker at meeting.

9-26-77

Met with Anschutz and Moe of Pratt & Whitney with Dave Campbell to get update on F-100 engine.

9-27-77

Had a complete financial review on Have Blue programs. Anderson, Kitchen, Marafino, Hawkins, Puhl, Passon and BRR. Passon updated the review of 8-22 on Have Blue. Then covered potential of all new programs. Made a consensus of what ADP should put in for Calac premise meeting. Anderson quite complimentary of ADP getting new business.

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~~CONFIDENTIAL~~ *Uncl.*

- 10-3-77           Advised by Colonel Jones that Senior Hi I funding now raised from \$53M to \$71M.
- Received call from Bob Howard, OMB that Brzenzki and his staff would like to be given same briefing I gave him. Meeting set for 10-13-77 in Washington, D. C.
- 10-7-77           Had lunch with Tom Flanigan, Vice President, Teledyne Ryan. He tried to find out about Have Blue Program. Told him nothing except there was a program and had him sign secrecy form. Told me lots of rumors about our aircraft; that it is flying and made two flights.
- 10-10-77          Met with Capt. Bird, OSI security man from Colonel Jones' office. Reviewed big Saturday meeting of National Security Council on our program security. Told me security will have to be tightened severely.
- 10-13-77          Met with Gene Fubini in Washington D. C. with Hawkins and BRR. Discussed possible hiring Fubini as consultant. Fubini is cleared on Have Blue program, but no details discussed.
- Met with General Slay, Colonel Jones, Colonel Williams, with Hawkins. Reviewed charts to be used with Brzezinski staff.
- Met with Brzezinski staff at 1330. See Memo of Record of trip report for details.
- 10-14-77          Briefed Rear Admiral Harris new Commander of China Lake (accompanied by Ashbrook) on Have Blue technology and program. Toured 199 and 82. Also discussed WND program.
- 10-17-77          Met with Dan Tellep of LMSC to discuss LMSC role in Senior High I program. Told him ADP would be prime in Nav system with Honeywell. Put Bill Fox in charge.
- 10-19-77          Had final technical meeting of Have Blue with Twigg and Elsner plus rest of ASD team. See file for agenda and BRR letter on discussion with Twigg.
- Met with Fred Ashbrook and Frank Cartwright - discussed progress of WND program. Told Ashbrook that I could not quote Phase II. He should have Admiral O'Hara discuss with General Slay future of program.

*Uncl.*  
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- 10-21-77 Gave Jim Plummer and Dan Tellep of LMSC same Hughes briefing on Have Blue aircraft vs. threats that we gave Dr. Perry on 1 September. Briefing introduction by BRR then had Fred Neighbors give Hughes briefing. Very good comments.
- 10-25-77 B/Gen. Bond, Col. Jones and Lt. Col. Staten here for 3 day  
thru briefing of H. B. Sr. Hi I and II. Jantzen took 3 of them to  
10-27-77 Gray Butte facility. On 26th morning gave current status relating to effect of strike. Toured Bldg. 82 and 199. In afternoon the three went to Rye Canyon to fly the simulator. Bond and Jones left the next day for STS. Staten remained to review the status of Sr. Hi II. Discussed sizing of large aircraft and effects of not folding fins on Mark 84 laser guided bomb.
- 10-26-77 Briefed Gen. Dave Jones, Chief of Staff and Lt. Gen. Alton Slay on current status of H. B., Sr. Hi I and II and discussed effect of strike. Meeting joined by CLJ, Hawkins and Kitchen. Toured Bldg. 82 to see aircraft. Generals were quite impressed by progress.
- 10-28-77 Briefed Lt. Gen. George Sylvester of ASD. Gave same briefings as Gen. Jones. Joined by Hawkins and Roy Anderson. Toured Bldg. 82 to see progress on aircraft. Discussed all three programs. Sylvester mentioned OMB questioned strike capability of GBU-15 on PELSS. Hawkins to discuss with Fuhrman.
- 10-31-77 Met with Gen. Slay in Washington. He said we should fly on 1 Dec. He would supply C-5 on 15 Nov. to ship bird to STS and we should have contract on Sr. Hi. II by end of week.
- Met with Gen. Bond and Col. Jones and repeated conversation with Gen. Slay. Bond agreed to try to get contract by fri.
- Met with Jones and signed up on Makon letter.
- Met with James, Perko, Heilmair told them of problem of not having a single direction on various programs. Told them Slay wants us not to discuss future programs. Heilmair blows up and says we should see Dale Church on Perry's staff. James and I go see Church. He says be patient--problem to be resolved. Church has James cleared on Makon letter. Everyone still confused.

- 11-3-77            In Washington--met with James & Perko of ARPA and with Martin, Scherrer and Dave Lynch of Hughes. Gave them first briefing on BSAX. Quite impressed, will stop giving contract to Northrop. Want to meet next day. Scherrer and Martin meet next day and outline need for proposal. Discuss program similar to H. B. competition. Promise proposal week of 5 December.
  
- In Washington--gave BSAX briefing to Gen. Bond, Jones and Staten. Tell them gave same briefing to ARPA. Briefing given by Scherrer and Dave Lynch. Martin & Rich there too.
- retail of*  
*Sp. Travel*    11-4-77            Gen. Bond called to say he has money for Sr. High II and will get contract on Mon. 7 November.
  
- 11-8-77            Maj. Baber in Burbank and okays contract beginning of Sr. High II.
  
- 11-7, 8-77        Col. Twigg, Elsner and Col. Shawler plus 6 others from ASD have flight test and final safety review on H. B. Toured 82 then went to Rye Canyon to finalize flight plans. Everything set up to pick up aircraft on 15 November for transfer to STS. Everything approved.
  
- 11-8-77            Maj. Baber and Lt. Col. Lowell here for review of Sr. High I. Tour 82 and fly simulator at Rye. Very pleased with status.
  
- 11-8-77            GAO were here to review Sr. Crown and Sr. Year programs. A preliminary probe. They plan to go to SYPO and ASPO.
  
- 11-9-77            CLJ and BRR to see Lt. Gen. Al Slay at Rand to complain on security restrictions being imposed on Lockheed and not on Northrop. Slay called Dr. Perry and placed this item on next meeting of Stealth Tech. Ad Hoc Committee (Dr. Perry is Chairman), Dr. Mann, Asst. Sec. of Navy for R & D (U. S. Navy), Geo. Heilmeyer (DARPA), Gen Slay (USAF). Slay assured us that Northrop would get same restriction.
  
- 11-9-77            Major Baber, contracting officer for Sr. Hi I & II, here to review contract details on ATA (Sr. Hi II).
  
- 11-10-77          Gave briefing to Lt. Gen. Toomay (AFSC) on H. B. Sr. Hi I and II. (Same briefing as given to Gen. Jones earlier). Showed H. B. film and toured Bldg. 82 to show him No. 1 H. B. aircraft being functionally tested prior to shipping to test site. He was impressed.

- 11-10-77 Briefed Adm. Waller on all ADP programs except stealth programs.
- 11-12-77 Met. Gen. Stafford Sat. morning and toured 82, showed him H. B. #1 under test prior to shipment.
- 11-14-77 Met with Hawkins, Anderson and Kitchen to review H. B. security. Decided to have Hawkins & Rich go see Slay and present plan to have Audit Comm. or just Head of Comm. (Mr. Horton) to be cleared.
- 11-15-77 Had X-Wing review with Col. Krone and Bob Williams.
- Reviewed H. B. program with Passon & Bill Finley of Arthur-Young.
- Briefed B/Gen. Emil Block on H. B., Sr. Hi I and II. Showed him H. B. movie, toured Ratscat model and H. B. #1 at Bldg. 82. He was quite impressed. He is the strategic equivalent of Gen. Bond.
- 11-16-77 Briefed Dr. Fred Adler, Milt Radant and M. Livesay of Hughes Aircraft on H. B., showed HB film. Purpose of meeting was to get Hughes support for Boyfriend proposal. They agreed to support proposal effort due December 6.
- 11-17-77 Reviewed Girlfriend (ASP) program schedule and funding with Passon and Celniker.
- 11-16-77 Shipped H. B. #1 to STS via C-5 from Burbank. Ground crew left by C-141 from Palmdale for support.
- 11-21-77 Met with N. Nelson and Leo Celniker to discuss status of ATA (Sr. Hi. II). The 45,000 lb. aircraft looks in good shape, transferred from P.D. to project, the 90,000 lb. aircraft is still very undefined. Celniker will keep trying to finalize large aircraft.
- 11-22-77 In Washington, D. C. to see Gen. Slay and Bond with Hawkins to review how to handle B. O. D. Audit Comm. Slay said he would have Perry call Horton, Hd. of Audit Committee. Expects call to Horton before Dec. B. O. D. meeting.
- Met with Bruce James and Cmdr. Jordan to discuss status of Girlfriend. They both feel program is going to get approved by Dr. Mann.

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- 11-22-77 H. B. #1 made first taxi test. Had considerable movement in elevons. Will require change in gains in control system.
- 11-23-77 Went to STS to see high speed taxi. Due to hydro leak unable to make window allowed.
- Advised by Bruce James that we should put "brakes" on Boyfriend. He implies we should stop. He plans to come to Burbank week of Dec. 12 and will amplify.
- 11-28-77 Had meeting with Ron Smith (NASA) and Dave Campbell on 2 Dim. nozzles. Discuss type of program they should pursue.
- 11-29-77 Had a guidance system review on Sr. Hi I (ATCM) with Jantzen and LMSC (D. Tellep, Campbell and Dodd). LMSC to determine by Friday., Dec. 2 whether we use single or dual computer approach.
- 11-30-77 Advised by Livesay of Hughes that Perry of OSD has ruled that we should not bid Boyfriend.
- 12-1-77 CLJ, BRR, Nelson flew up on Jetstar to STS to have first flight on H. B. #1. Accompanied on aircraft by Dr. Heilmeyer Ken Perko of DARPA and Col. Willims and Lt. Col. Staten of Headquarters USAF. First flight took off on schedule. Aircraft flew for 14 minutes. Flight shortened as T/M was no working. Bill Park was pilot and commented that aircraft had better acceleration than expected and handled like simulator. Altitude reached - 12,500 feet and max. KEAS 265 knots.
- 12-5-77 Second flight of H. B. occurred with no incident. Reached 16,000 ft. and 360 KEAS. (See H. B. flight test file for comments).
- Briefed Capt. Cooper of NAVAIR R & D on S. Wks. and X-wing. Toured Bldg. 199 and showed him X-wing parts. Explained situation on strike. He was quite impressed.
- 12-6-77 Had a review with Nelson and Celniker with Cols. Twigg, Staten, and Majors Baber and Ralston on Sr. Hi. II progress.
- 12-7-77 Flew to LAS Ontario with CLJ, JRD, BRR, Combs to inspect rework of MiG-23. We were all impressed by the manufacturing of aircraft.

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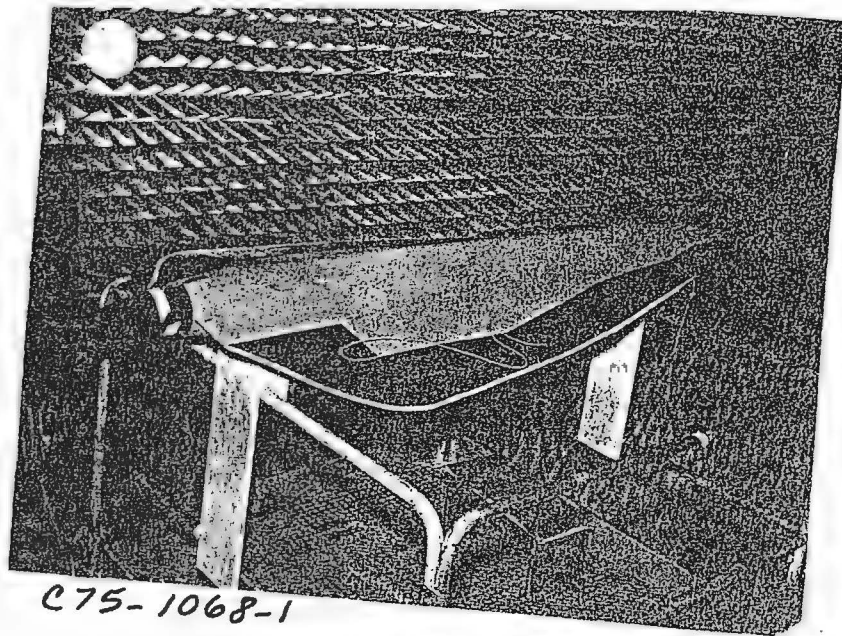
- 12-7-77 Had third flight of H. B. flew to 13,000 feet and 350 KEAS no problems. Park happy with handling qualities. (See H. B. flight test file for comments)
- 12-8-77 Had mid-term review of Sr. Hi. I with General Bond, Cols. Jones, Staten, Twigg, Majors Baber and Ralston. Willis Hawkins came and greeted Bond. Tellep here from LMSC, also had reps from Sperry and Honeywell. Meeting went very well. Gen. Bond very satisfied with progress.
- Fourth flight of H. B. Flew to 12,000 feet and went to 355 KEAS (See H. B. flight file for comments)
- 12-13-77 In Washington to see Bill Perry of OSD and Gen. Bond with CLJ, BRR & Jantzen plus Fred Neighbors of Hughes. Made update briefing on threat radars. Meeting also attended by Bob Moore and Col. Paul Kaminski of DDR&E. Perry brought in new ARPA head Bob Fossum. Had a separate meeting to discuss why Lockheed turned off on Boyfriend proposal. Perry explained that in 1980's he felt approximately 40 percent of tactical aircraft would be stealthy and he felt it was necessary to have more than one contractor. He felt we would get production contracts for ATCM plus Have Blue follow-on (Sr. High II). He said he may have to eat "crow" and come to us next year on Boyfriend. He felt with TR-1 and the other two programs, the Skunk Works would be saturated.
- BRR showed him T.O. and landing photos of H. B. #1 first flight. He asked for pictures, said he wanted to show them to Sec. Def. Brown and President Carter.
- Made fifth flight of H. B. Flew to 21,000 feet and 410 KEAS. (See H. B. flight test file for comments)
- CLJ and BRR saw Gen. Jones in Washington. Review H. B. flight, discussed progress of Sr. High I and II. Gen. Jones advised us that he had Sec. Brown's approval for restart of TR-1 in FY 79.
- 12-14-77 Met with Fred Ashbrook and his group on progress of WND program. They are satisfied. Briefed Capt. Glunt of NAVAIR on Skunk Works and WND.
- 12-15-77 Met with Ken Perko and discussed Girlfriend, Boyfriend and Have Blue programs, also X-wing. He explained how embarrassed DARPA was on Boyfriend and said he would like to be updated on our work. I did not promise him anything. Toured Bldg. 199 to see X-wing parts. He was happy with all our programs. Said our creditility as result of H. B. flight was very high.
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*Wenzel*

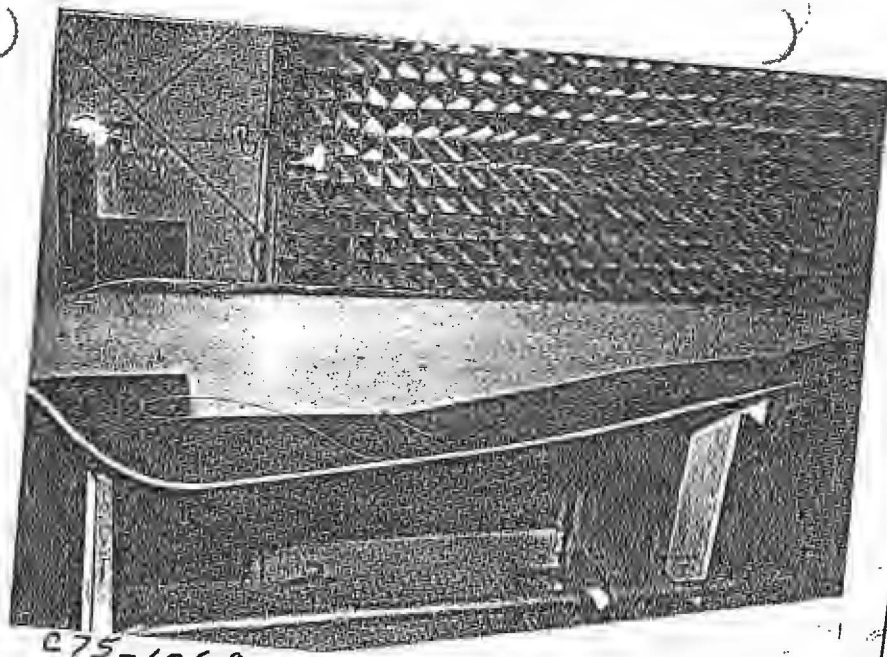
- 12-15-77 Made sixth flight on H. B. #1. Reached 26,000 feet and 383 KEAS (a little over  $M = 0.8$ ). See H. B. flight test file for comments.
- 12-16-77 Made seventh flight of H. B. #1. Flew to 21,500 feet and 358 KEAS. (See file for comments) This is last flight of 1977 as STS shuts down for two weeks holiday. Will make required changes to be ready for next flight on 5 Jan. 1978.
- 12-19-77 Had a complete flight test review with Park, Nelson and all groups to resolve few minor problems. Aircraft is as predicted except difference in static stability. In flight reached zero static stability at 180 KEAS, whereas W/T predicted 300 KEAS. This may be due to drag chute box, flight test nose boom, or UHF blade causing vortex pattern to change. Aircraft has a tendency to fly crabbed ( $\frac{1}{2}^\circ$ ). Will rig rudders to see if we can identify problem.
- 12-20-77 Met with Dan Tellep, Jim Wenzel and Don Germeraad of LMSC and BRR, Celniker, Coty and Parsell to review Girlfriend program. Roles of ADP and LMSC phases were defined. I told them program required approval by Secretary Mann and I would plan to see him.
- 12-23-77 Christmas break.

*Wenzel*

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C75-1068-1



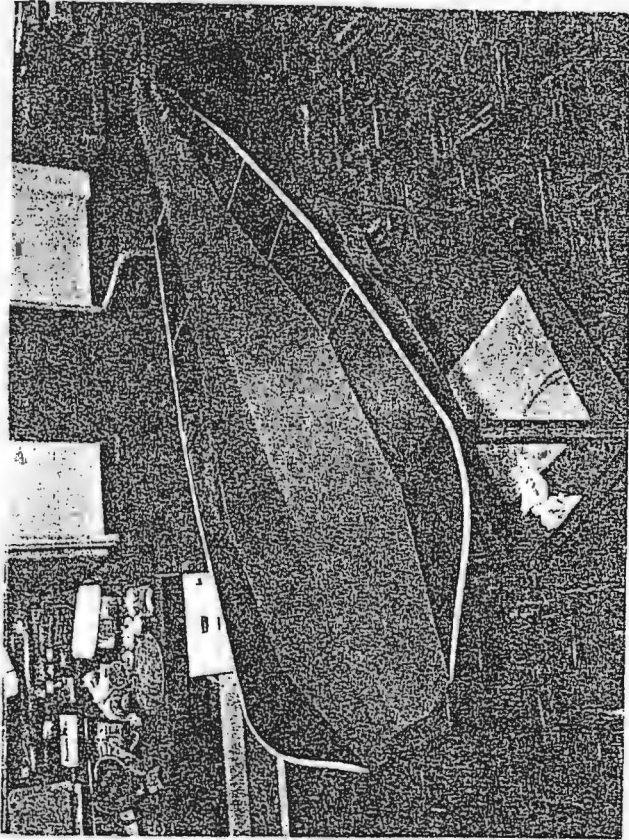
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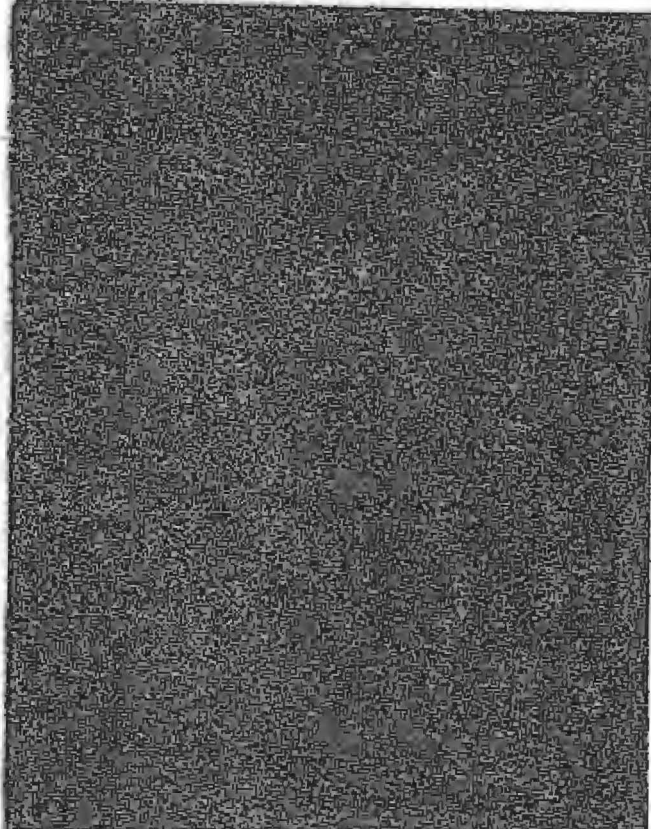
Harvey 2 - Condition 3

Same basic anhedra-

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C 75-1082-2



C 75-1082-1

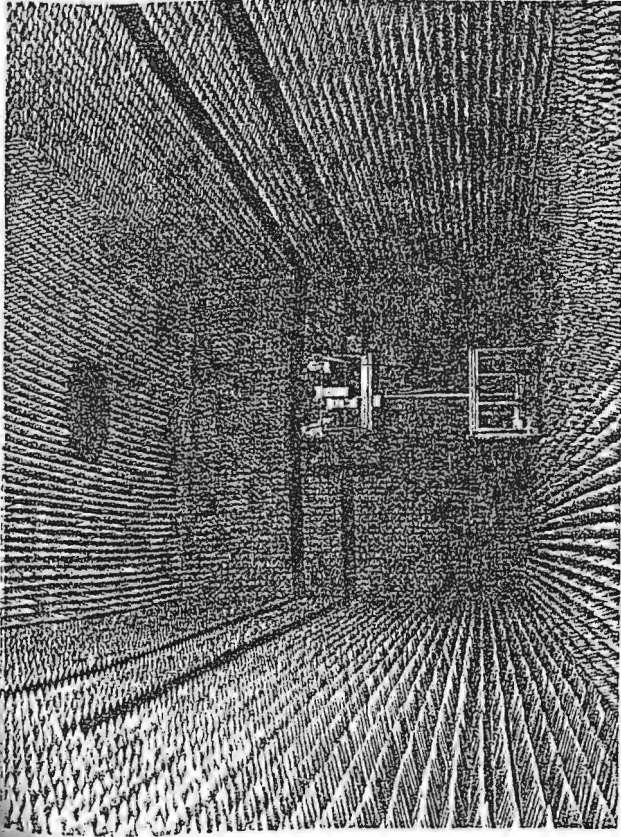


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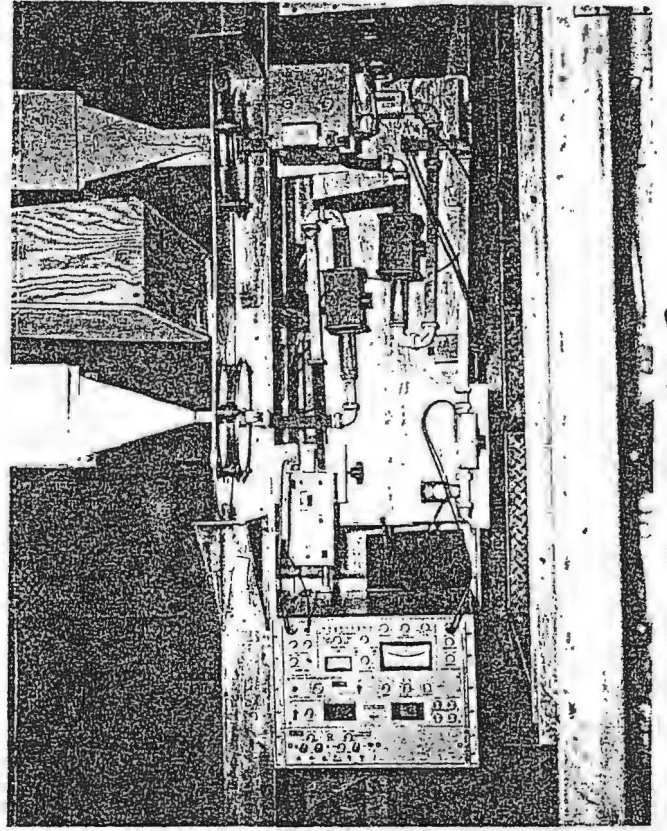
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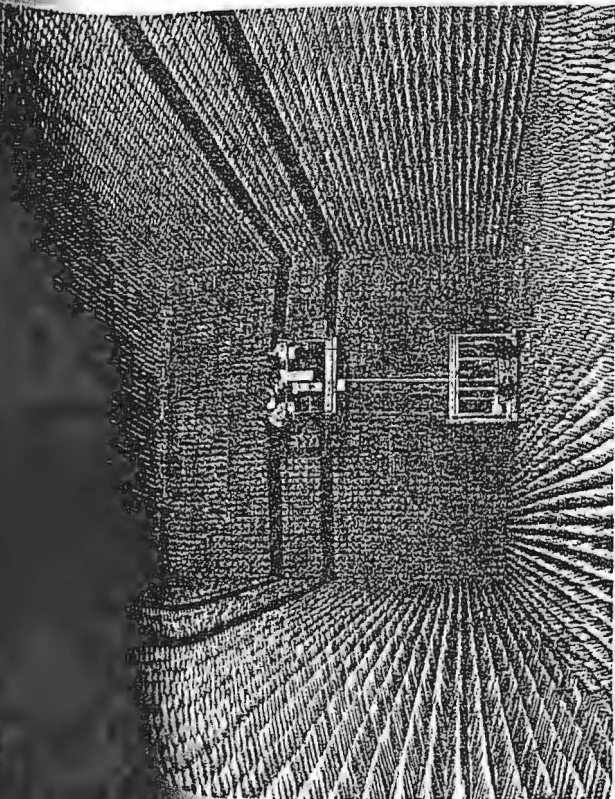
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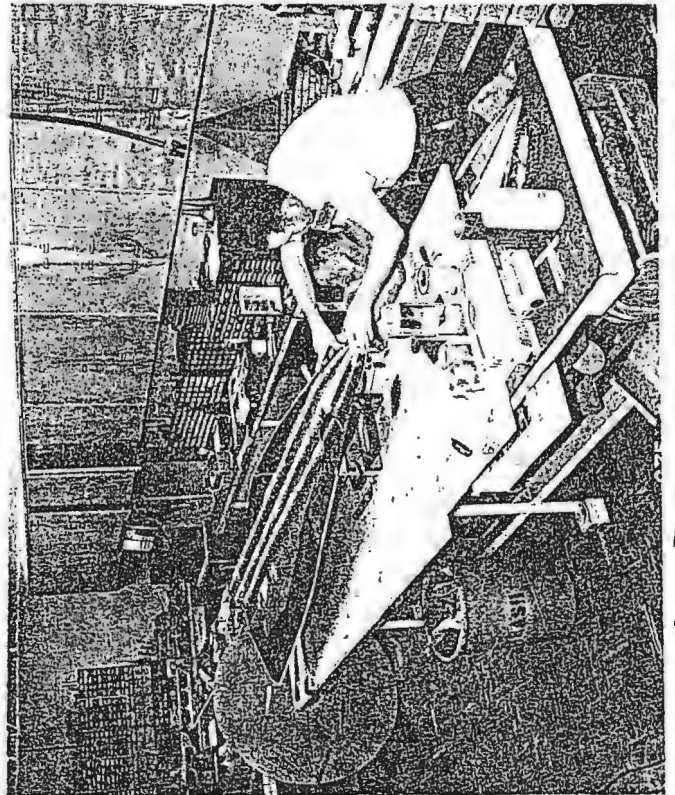
C 75-1059-6



C 75-1059-6



C 75-1059-5

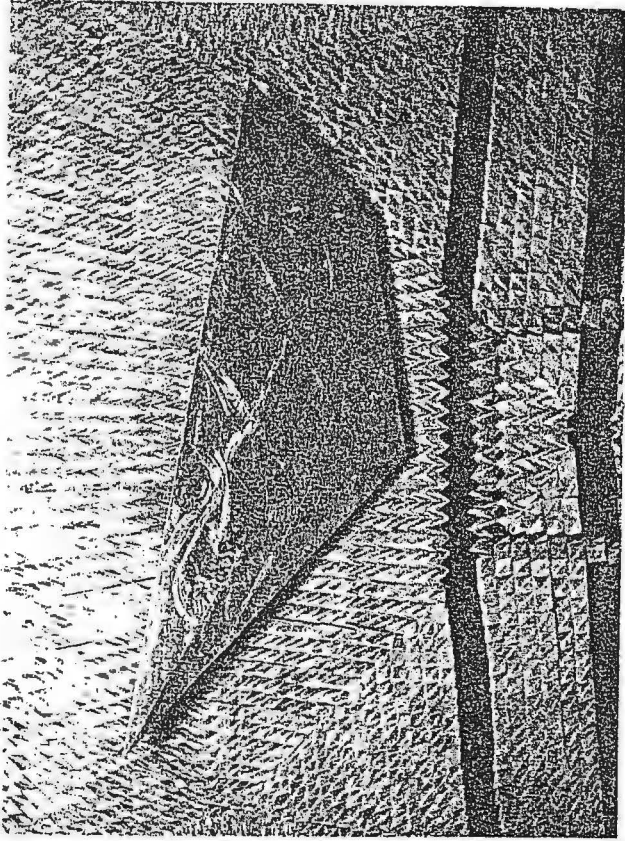


C 75-1059-7

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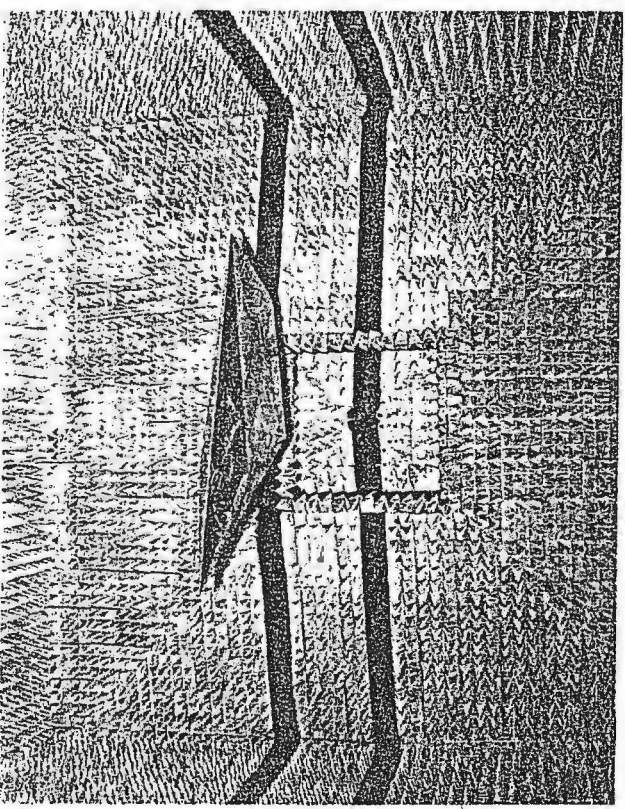
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C 75-1083-2



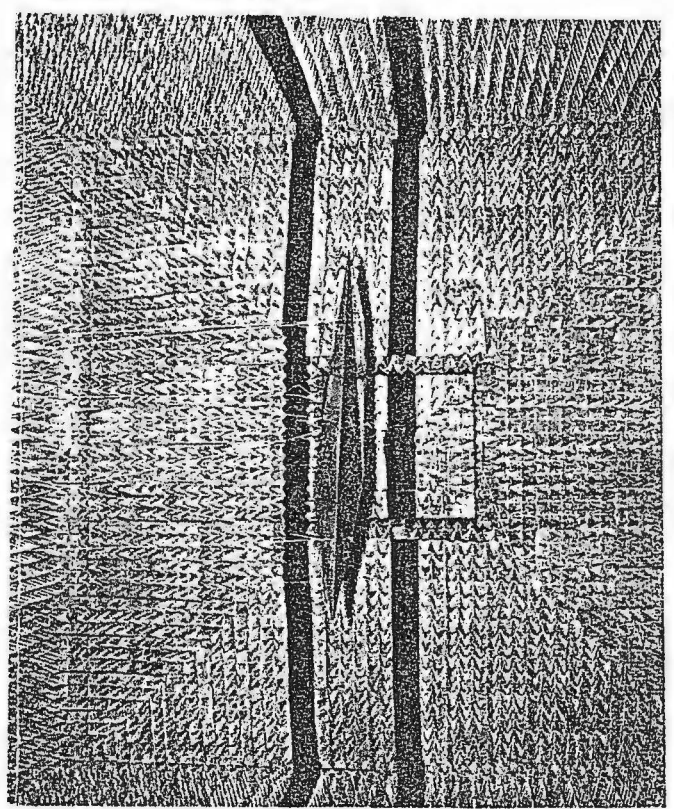
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C 75-1083-1



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C 75-1083-3



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