

**NASA GLENN HISTORY OFFICE
SPEECHES AND ADDRESSES**

**BRUCE LUNDIN
Plum Brook Station
1974**

Staff as you know, we came out here to be with you this morning to talk to you about the two main and related aspects of the Plum Brook Station. One, the future of Plum Brook Station as it has developed over the past year and where it stands at this point in time. And as a result of these activities over the past year, to talk about what's going to happen to you as employees of Lewis. And then after that, I would like to invite your comment and questions about anything that you would like to know. Because that's one good way of communication instead of limiting myself to the notes I made here last night. As you can see, I brought Bernie Lubarsky with me, who's always glad to have something to say. And Dick Tilton with me who will be able to handle any of your personnel administrative questions that get beyond me.

First, let me please briefly try to trace for you in brief summary form, some of the main events or activities of this past year concerning the Plum Brook Station. It was about a year ago, a year ago in January that I'm sure all of us will vividly remember that I had to come out and tell you that NASA decided that it had no further use for the facilities of this Station in the foreseeable future. And that was followed shortly by my writing a letter to myself and asking Roy Jackson to sign it and send it to me, instructing me to place Plum Brook in a standby condition. And defining standby as being in a condition in which it could resume test operations in what I called, a few months time. I did that to protect the Station's future from being sold off in some irresponsible fashion or cannibalized to interfere with its future operations and in the clear faith that Roy and I had, Roy Jackson and I had that at sometime in NASA's or some other agency's future would require the use of these very unique facilities.

It was shortly a few weeks after that or maybe a week or two before that, but in the January time period of 1973 that Jim Fletcher, Administrator, instructed me to find a use for Plum Brook Station for other than the NASA programs. I don't remember that George Lowe was at that meeting but I do remember very vividly that Roy Jackson and Dick McCerdy were there in my office, when they told me to get cracking and find a use for the Plum Brook Station, if there was a need for some other agencies of government. I had other things on my mind at the time and I was a little bit delinquent, maybe in getting at that the next day or two. And I remember two or three vigorous phone calls from Roy giving me instant follow up, he had assigned a full time guy in headquarters to work with us and I was directed to assign a full time person to dedicate himself to making the capabilities of Plum Brook known throughout the country. And that led to one of my better appointments and that was to appoint Jack Dugan as full time guy to let the capabilities at Plum Brook be known nationally and to find out if it was useful or needed to someone else. Jack really did a magnificent job here. He has devoted himself with tremendous energy and diligence in writing letters and going to meetings and traveling

around the country and telling everybody about what you've got here. A measure of his success of where things stand now can be found in a list of some seven potential future jobs for Plum Brook, principally in the SPF facility because that is the large backing chamber that as you will see is suitable for satellite thermo vacuum testing, which is some of the main things that developed.

Let me just sort of tell you a little bit about each of the six and then we can kind of gage the reality of some of this maybe.

The first up, in point of time, is thermo-vacuum testing of the NATO III satellite, of interest to the Samsco Organization of the Air Force, that job at one of the principle interest of the NATO III project people and of Philco Ford the contractor for Samsco is our solar lamp. It requires the operation of that large solar lamp we've got. And it's a job that is to start, if it goes, would start this fall. And I'll come back to where we stand on that one right now. But as or I can give you sort of survey right now. There's the NATO III satellite testing this fall.

Another project which we have been carrying on some discussions with the Air Force for about the last five or six months, I guess, goes under the initials SGEMP, I think that means Space Generated Electro Magnetic Pulse. This would require an extensive use of the SPF facility for testing satellites with simulated nuclear explosions in space and is of interest, as you may guess, to the weapons laboratory, Kirkland Air Force Base. It would be an extensive use because of the possibility, the visualization here is that a number of satellites would be tested to qualify them for nuclear hardening in space. The potential here is to start the design with some facility modifications this fall. Install the modifications late in '75 and it's a 1976 as start of testing. The present time we have obtained the necessary technical reviews and waivers from AEDC, that's the Air Force outfit in Tullahoma, who kind of has to approve testing of Air Force thing. And other than the Tullahoma, many briefings, the Air Force, I'm told, have started on the development of the x-ray source. They're going to build a pulse generator for this thing. And they have to brief, they have to brief the Secretary of Defense and get it in a future budget, that's not done. Kirkland, the weapons people, and I've met with them are very interested in this. I am not sure that the interest of the weapons people at Kirkland projects upward to an equal interest in the part of the Secretary of Defense and the comptrollers of the Secretary of Defense. So that one is of interest to project people and not yet settled at the upper levels.

Another job, it looks like a short one to me, I hadn't heard much about this, is test to deploy a 50 foot antenna in their vacuum conditions for the Navy in their ocean surveillance satellite. Certain visits have been made. It's not yet an approved program but the hardware does exist and I think it's an in between task more than a major project.

A fourth job of somewhat great activity, if it comes about, is the thermo vacuum testing of the fleet sat com. The fleet sat com satellite for the Navy. There's a series of four satellites. I'm told the Samsco Program Manager, the Program Manager in the Samsco Organization who is the procuring agency for the Navy for this is recommending this job for SPF to his superiors. I have heard no response to these recommendations. That job would start in 1975.

A fifth one has to do with the National Science Foundation and a thing called an Inter Agency Committee for Atmospheric Sciences. Some of you may recall and when we kind of showed the place off here to the university community last summer I guess it was, or brought some people through here – it was when we brought NOAA people through here, Bob White, the head of NOAA and Jack Thompson. There were very intrigued and interested at the time of the use of the large vacuum chamber as a large controlled environment for cloud physics experiments. It was the ideal facility, they said they'd been looking for four years. That has reached the point where a study for determining the suitability of SPF as a national test facility for cloud physics, it's been funded by the NSF the National Science Foundation to the University Pittsburgh. University of Pittsburgh are preparing proposals for this work to the NSF. Proposals have not yet been submitted and if you're familiar with the way the NSF bureaucracy works, it'll probably in the halls, in the NSF buildings in Washington for a year before it even emerges. But that's the status of that one.

There's another one I just recently heard about, and that's a combined NOAA, National Oceanographic and Atmospheric Administration, NOAA and NASA in a combined program for the shuttle to define electron beam properties in space. Why the shuttle wants to know about electron beam properties, I'm not sure. But they tell me it is an approved NOAA/NASA program and I'm told it will use SPF if SPF is currently in operation. So I think it's a job that would be done in SPF if it's in operation but it would not justify opening it up if it was down in standby.

And seventh, that's the six things that Jack Dugan just kind of turned up. The seventh one you heard about, I'm sure some of you've heard about in more recent days is the possibility of the need of Centaur vehicle testing here. As you know, we had a flight failure two or was it three weeks ago now and the Centaur failed to start after separation from Titan and will have Sy Himmel running a review board to make recommendations to me on what we – the cause of failure and what we ought to do about it. They've only been at the job a week or 10 days. It's very early for me to try to tell you what they may come out with at the end of their trail, but it does appear a good possibility that we may need at least one of two types of tests of Centaur here. One is failure mode testing that they have not been able to pick up any promising clues as to what happened. Sometimes when you are not on the track of something interesting or looking pretty good after two or three weeks of work, the Project Office's been working ever since the flight, of course, that you may end up with a failure that can't be definitely explained, in which case you go into failure mode testing. Testing under all kinds of things, conditions, to see if you can reproduce the failure. And secondly to develop procedures of a possible pre launch operation of the boost pumps. We don't do that now. And there's a strong interest again, of course, in trying to see if we can develop safe and defective operations procedures at the Cape for operating the boost pumps pre launch under cryogenic conditions. And that would, of course, the Project Office's position and I strongly support it, is that we really ought to exercise and develop those procedures here rather than at the Cape for the first time. It appears that, it appears fairly, almost certain that we're going to have some kind of testing for one reason or another here. One of the two reasons I mentioned. If it continues to develop the way it has over the past week or ten days probably B2 rather

than SPF would be the most suitable facility. But that really doesn't become, I don't think, too crucial.

Well, I've given you this sketch just to sort of give you the best feel I can of where we stand and reveal several possibilities here for some level of continued operation of this Station and to give you some feel on how well Jack Dugan has done for all of us. There's certainly a lot more useful things have turned up here as possible things to be done for the country than perhaps would have come to our attention had we never started to shut the stations down for NASA.

Now clearly, the only one that's near enough in point of time, I've tried to indicate time scales on some of this – the only one near enough in point of time for providing a continuing operation at some level of the station here is that NATO III satellite because that, we gotta get cracking on that. We gotta get the lamp in, we're committed to demonstrate I think 240 hours of that solar lamp operation by July and be ready to accept the satellite near the end of the year. But that is the only one that is near enough in point of time for providing, as I say, continuity of operations here and of course, Centaur, which looks like a pretty firm requirement.

Where the NATO III one stands, present time, oh, I might mention, the NATO III satellite, the responsibility for solar thermo vacuum testing of the satellite is Philco Ford's under fixed price contract to Samsco, the procuring agency in the Air Force for the satellite. It's a NATO satellite so it's really funded in some, by some form, by the Europeans, the NATO part and must be done on a completely cost reimbursable basis of the Europeans to the United States. So we have had to go through preparing proposals, cost proposals, proposals to do the work. They have to be evaluated, accepted by Philco Ford who are obligated to do this for the government under a fixed price contract. We have submitted proposals in January, these proposals have been reviewed by Philco Ford, they've been discussed, principally with ...Riley here, and modified and worked out and are to be negotiated next week. Philco Ford is obviously trying to get the lowest possible cost here because every dollar that they can kind of negotiate out, is a dollar extra for them because they're getting a fixed price from the government for it. These negotiations have been going well but we're not signed up yet. I wish, in a way, it was three weeks from now, when I could tell you that we were signed up. But we honestly are not yet. However the negotiations have hit no snag. It's just been the usual process of preparing and negotiating and understanding each other and working it out. But we felt, clearly of course, that we couldn't wait until we had a signed contract here to release the separation letters and handle whatever has to be done with all of you folks here. Because we wanted to do as best we could in this situation to maximize the opportunity, and I'll come to this more later, for all of you to find other jobs. And those of you who may have found jobs to qualify for severance pay, we didn't want to delay any longer.

To proceed here with the NATO III satellite, a large array of administrative things had to be attended to, which turned out to be, perhaps the major difficulty in the whole thing. We have received, I have received the commitment of 50 positions to stay here for this testing program for whatever may develop, which is, as I say, the first one up and the key one seems to be that NATO III satellite. I had no trouble at all in getting 50 positions from OMB for this, with the caveat that if the jobs don't develop and we've got nothing

to, then the 50 people can't stay here with nothing to do. The jobs, the people ...job but if the job goes away then I don't need the people.

Secondly, we need the permission to install the solar lamp. As you know, we gotta put the machinery together and wire up the lamp. Because this increases the capability of the facility under regulations we operate, we have to advise the Congress and that was not trouble with Mosier on the committee, he'd be delighted, but that took a lot of doing in headquarters to get that all oiled out. And because the NATO III thing had to be in a cost reimbursable basis from the Europeans, we had to work out costing formulas for reimbursement of cost with our comptroller in Washington. And all of this of the...permission to install a lamp and getting the cost formulas approved was a matter of incredible difficulty with NASA headquarters. But that's all behind us. We're completely clear now as far as NASA headquarters is concerned. I was surprised over the past two or three months to discover why the – to wonder why we were having, running into so much difficulty here, and it turned out that except for Fletcher and McCerdy and Roy who were not in my first meeting, the latter two, Fletcher was, nobody in Washington really had any notion that Plum Brook was to try to be kept in operation or they had the notion that the right thing to do would be to close it down. The staff of the Senate, you may have heard, had felt that, well generally NASA's kind of too big and over-facilitized and any chance to reduce the facility inventory of NASA is a good thing. You just look at it across the country. So we had to kind of explain to everybody that I was doing what Fletcher told me to do and that was the right thing to do and so forth. Nobody said we were wrong but it took a, it took changing peoples minds in lots of places in headquarters. And I worked this in to give you just a little feel on why things have taken so long in some quarters and to give great credit publicly here to Ed Kilgore who really fought this through for us. He was our guy on the scene that really saw that things got tended to in Washington. But I say that we're finally all squared away here. We have the 50 positions, the approval to install the lamp, the approved cost formula that's now in with Dwight, doing business with the Philco Ford. And it really depends on will Dwight be able to negotiate successfully and NATO III come here and or will we need to keep, will we need to be doing something for Centaur here. Both, each I think are good, honestly 90% probabilities, I am 100, almost 100%, at least 90-95% confident that this will not go astray, it's been going on for too long.

In the meantime, and this is sort of over the hill, I guess, this little bit as far as Plum Brook is concerned, but in the meantime, as some of you know, I've been working, many of us have and I, particularly in the Washington scene, the past four or five months on NASA's roll in energy R&D, for about the past five, six months. And I can tell you that, with our efforts here that Lewis, as a center, has become well recognized and fully accepted as a national energy center. That's the way people are beginning to talk about it and to recognize it. The view of the administration, and I need to say this to clear up some things that otherwise may not make much sense to you – the view of the administration, when it comes to the policy of who should do energy R&D in the country, and it's very hard to find out where the administration is these days, but I did pursue that one to find out that it's being determined, really, by Roy Ash the head of OMB and probably Shultz in the White House. It's not Guy Stever and it's not Bill Simon, it's Roy Ash and I think George Shultz. And their view, and it's a very clear one, is two fold. One is that NASA will not be a funded agency for energy R&D, not a dime is going to go to

NASA for the very simple reason that they're afraid if they gave NASA large chunks of this energy R&D money, this 10 billion dollars in five years is float around – all NASA will do with it is build another mission for itself, which is not the way the energy R&D must be conducted. Energy R&D, they feel, and I agree in fact I pointed this out and they agreed too with me, is not like the Apollo program, it's more like a aeronautics R&D program that you gotta use to strengthen industry. 'Cause industry gotta make energy. So there's this fear that if they funded NASA energy R&D all NASA would do is make another big mission for itself and it would develop and strengthen across the board our energy industry, I think that's right. And secondly they are very firm, particularly in O&B, I talked to, the capabilities of NASA and principally Lewis, must be used. And they was they bring the two incompatible things together is to arrange for NASA to be a performing agency for some other funded agency and the funded agencies are various ones. For matters of coal utilization, Interior, for matters of solar energy, NSF, for matters of nuclear power plants, AEC and for matters of automobile or ground transportation, EPA or DFT. *I don't know whose past who's going to work or not too well but it's working in some places, at least two have come along so far.* This is all a long story but as far as Plum Brook is concerned, there are two things that have developed so far and one is we are going to install 100 kilowatt experimentally wind generator here at Plum Brook for the solar energy of the National Science Foundation, that's firm, it's funded, it's approved, it's in the documents and wishing we could do it sooner. But that's not a major job here. It's a construction of a power system at Plum Brook. And secondly a far more major project which is still evolving is to give Lewis the job of bringing in a major facility and contribute to a development of a power conversion system driven by a helium gas turban to go with the high temperature gas cool reactor. It's a center station nuclear power plant thing for the future. It's a major project. They talk about a 200 million dollar project in visibility and importance as I think Bernie correctly put it the other day, it tends to rival Lewis taking on the Centaur program back in '60 or '61 when we were supposed to build 7 Atlas Centaurs for Surveyor. It involves something like a 70 million dollar facility. I have, it would be funded down this pass through thing originally with the AEC. I have made the point with the AEC, with NASA and with OMB, all this management and budget that should be a NASA facility, a Lewis facility. And everybody says, Yeah. It, the Plum Brook is talked about and I've said Plum Brook's the right place to put it, for a lot of obvious reasons. And I'm allowed publicly to talk about Plum Brook as a likely or as the probable site. Before it becomes the definite site, we have to go through the six months or a year's activity on preliminary engineering reports and cost evaluations and budgets and inner agency agreements between AEC and NASA before it becomes a definite one. But Plum Brook is the only site considered. I have not heard anyone say, we gotta have site selection and survey of the whole country and all of that. And I don't intend to bring that up but it's a possible or likely site for this facility and we're working very actively on that, in fact I'm going to Washington this afternoon to be together again with the AEC and OMB people on this job.

So it's perfectly clear that, to me, to all of us that Plum Brook will continue in operation for various and to various define things at various times in the future. This, you'll recognize, more a matter a faith at the present time that it is any signed contracts or fully approved and funded programs, except for the wind generator. But it's a matter of faith, I think very well founded. Centaur is, as I say, quite likely. For SPF we do, we are working towards the NATO III, which needed for kind of continuity here and for that, that solar

lamp has gotta work. We could fall out of bed if the lamp doesn't work. But the only thing to do, clearly, is for us to go ahead and prepare to do Centaur testing and NATO III testing now at Plum Brook. Both because that's the right to do and secondly because I'm committed to do it.

I want to add a word here about two other things, a little bit extraneous but none the less important and one is concerning a HTF facility and they hyper sonic research engines. I recognize, even though I haven't been out here as much as I'd like to be, I'm generally going in the other direction when I leave town, I recognize though I assure you that was really a first class job you've done. I recognize and know the great technical and many other kinds of difficulties you were working under here, time wise and just plain technical difficult work to do. I understand you run the facility at mock 7 and I congratulate all of you who have done that. However, I must at the same time tell you that continued testing of the HRE engine and of the hyper sonic program is something that really nobody wants except a few people at Langley, including NASA. I offered to continue testing for this engine for Langley in between times with the people who are going to stay here and Ed Kilgore and Ed Smiley and others in OAST management said no we don't want that, we're not interested in it. We recently had a final, not a final, we recently had a fairly high level get together with the Air Force on future aeronautical programs, it's clear that the Air Force has no interest in high speed, hyper sonic cruise vehicles, at least at this time. And we agreed with the Air Force to turn the hyper sonic research program, mold it into instead a X24C lifting body program. So we will not be doing testing on HTF and I think that's well. Because we're working on something that hardly anybody wants and that's not a good thing to do.

I do want to mention while I'm here, it doesn't fit my whole main story, but I do want to mention, how indebted, we never, nobody will ever really know how indebted everybody is to all of you who worked on getting the Shroud qualified in SPF and B3

END SIDE ONE

It worked beautifully and if anybody had made a mistake here or fallen down at any point along that job, it would put the whole Viking mission in terrible jeopardy and I'd be trouble I wouldn't know how to get out of. So I do want to express, in inadequate way, with words, how indebted we are and how grateful we are for the work that was done here on that Shroud. It meant more to the whole Viking program and *Helios* and everything else that we can possibly say.

So now to people. What we've set up is that 50 people shall remain here, in addition to the, what is it, four or five who've set up to remain in and care taking role. As I understand it, about those 50 people about 30 are professions and about 20 are technicians, approximately. The general mechanism that's to be followed here is that about 30, 27, 28 professionals have been identified as necessary for the operation of SPF and they will not be separated nor receive separation letters but expected to continue on the job. Or receiving a reassignment, if you're not in SPF now, reassigning you from where you are to the SPF facility..... As for the technicians, all of the non profession technicians people will, at the station, will including the 20 who, people we need to have stay here, will receive separation letters and these 20 technician positions will be

available, be advertised on a merit promotion basis. So other words, you'll kind of compete for them, but based on your interest and qualifications for the job. And that the way the staff of 50 will be done here. That Dick tells me is the right way to do it and I recognize then that it maximizes the personal benefits to all of you from the standpoint time to find other employment or getting your severance pay and so forth. All others then will receive as I say, separation letters to maximize the opportunity for re-employment and severance pay. In the meantime, as many of you know, there've been growing opportunities for the past few weeks, couple months at Lewis because of the attrition there through retirements and an attractive retirement posture today and other reasons and this will give us room for a number of people who maybe would like to come to Cleveland to continue their government employment. I think this could be up to as many as 40 or 50 people at this time. And I can assure you that all of us will give priority, of course, to job opportunities in Cleveland for you rather than new hires or people in from someplace else into Cleveland. Because that's only fair that we owe you.

Also, as you know, I trust we will be setting up this outplacement or employment service for you. Those of you who want other jobs or won't be able to stay here within this complement level of 54 or so and the other 40 or 50 at Lewis. We're all quite proud of what we did last year with under Mort Krasner and many other people and pushed along and problems resolved by Bernie all through the thing. Proud of what we did, it turned out to be a real good mark for NASA and I think that everybody who wanted a job eventually found one. And we intend to repeat that activity, that performance.

The, I didn't write it on here, I should tell you, I believe Dick will contradict me later or now if he wants to – I believe, Henry Barnett told me, separations letter probably be ready to go out about Monday. They're pretty well set. I know many of you have been kind of waiting for that.

So, this outplacement employment service, we're going to set that up right away. Just as soon as we can get together with Hap [Johnson], Bernie and Hap and I can get together, personnel people to select the team of people to do this. So that'll be underway, I'll be disappointed if that's not underway next week.

Here we will be, we'll follow about the same procedures we followed in Cleveland to just do everything we possibly can for you that are affected here. You'll have all the secretarial assistance you need, the use of phones, time off for interviews. We didn't have any real fixed limit, the time off for interviews off the site would generally run probably two days a month or so and less or more if it's needed on a case by case basis. But the kind of policy I've set is to be as liberal as is reasonable without abusing it. And that amounts to probably two, three days a month if appears it is not being abused. For off site interviews that are set up by us, we can't give you time off for interviews that you may want to set up by yourself, of course. Based on our past performance here, I think we can, I can promise again, that everybody that wants a job will have one through this process. And we're going to keep at it until that happens if it takes us a long time.

It's fair to ask, I think at the end here, I'm at the end of my last piece of paper, it's fair to ask, Well what happens to the 50 people who agree to stay on, want to stay on to continue to run the station for all this stuff, some of which probably developed in the future, if

Centaur could go away and all of a sudden not need to be tested and if Dwight can't settle the contract with Philco Ford in the next week or two, or if that lamp doesn't work. We could fall out of bed. There's a 5, 10 percent chance of that, I guess. And everything comes to a sudden end here in spite of progressing satisfactorily over the past year. I find myself 50 over complement. Two or three thing here, we would continue to find jobs elsewhere, of course for these people who are affected. I think far more likely, we would be able to work you into Lewis employees, if that's your desire, as attrition occurs at Lewis. Or and I assure you it gives me no trouble at all to be over complement for awhile because we have proceeded in good faith under instructions of our government and if I end up under complement of 30 or 40 or 50, I'm not going to let that bother me too pins worth because NASA can probably handle it. And if they can't handle it I don't think anybody'd fire me for it. I've already, furthermore, made the point recently that in my judgment, Lewis is understaffed and over committed for the work ahead, particularly in the evolving energy R&D field. I've pointed out to Ed Kilgore that I think I'll need 100 or 200 more people at Lewis in the year or two ahead in order to fulfill commitments that I've already made, he said he understands, he agrees. And I think I would have very little trouble selling my friends in OMB that we might need to keep a few extra people on board at Lewis if not for Plum Brook, for other programs that are growing on us.

So that's what I thought of telling you last night in my notes. I think it's appropriate now to take whatever time you might want to take, we're at your disposal, and hear any comments or suggestions you might feel like making or try to answer any questions you might want to ask, with the help of my colleagues here. So thanks for listening and it's up to you now.

You must have some questions. Hap told me you'd be interested in hearing about HTF and Centaur and how soon are we going to set up the outplacement and I've tried to touch on that.

END OF TAPE

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