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ROBERT LINDSTROM

October 6, 1998

came to RSA
in '51 as G.I.

INTERVIEW BY BOB WARD:

Q. This was after the Kennedy visit in '62 or '63?

A. Yes. And the interesting thing was that the press plane took off, There was all kinds of black smoke coming out of the engines and he said, "See, they bought the fuel from the lowest bidder."

When

was

Rees?

Q. Rees ~~Rees~~ was the wittiest and the most clever of them all, wasn't he?

A. Do you have the book of letters that they sent to him on his birthday?

Q. To von Braun?

A. Yes.

Q. No.

A. This was on his 60th birthday. You can take this and look through this and make a copy if you would like. There may be some stories in there.

Q. That was on his 60th birthday? That would have been in '72, wouldn't it?

A. March the 23rd, 1972. One thing I recall with von Braun was I guess in the early 60's or so we were at an AIAA meeting in Dallas and I guess we gave a presentation on the Saturn I and afterwards Dr. von Braun was taking some questions and it was about the time computers were starting to come in and some man got up and asked Dr. von Braun, "What do you think about automation?" And his response was, "Well, automation is much like having a wife. She helps you solve some of the problems you wouldn't have

Quip

(cont'd)

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Qwp / cont'd.

had if you hadn't got married in the first place." I've told that to many of my lady friends, who usually aren't very amused by that. Another time during the early Saturn days there was — I think the ~~Silverstein~~ ^{Silverstein} committee was meeting at the Pentagon. The discussion was which is the best vehicle at ? three I believe was being presented by the Air Force or one of the Saturns that we were working on and we were up there for most of the day. In fact, ^{Frank} Williams and I were with Dr. von Braun and two other guys. He was going to give a briefing and he had been in a press conference before the head of ARPA, we were doing work for ARPA at that time. All of a sudden he got ready to give his briefing and didn't have his slide projector and so we were all walking real fast trying to keep up with him and when we got to the office of the Pentagon he finally said, "Where's my projector? Why do you think I brought you guys along in the first place, anyway?" It was a humbling experience. I think it was about the same time that they were thinking about going to NASA. I remember after some meeting he had that day he said, "Well, Bob, looks like we're going to the Air Force."

Q. ARPA, that's Advanced Research Project ^S Agency?

A. Yes. A man named Johnson who came from General Electric a couple of years later came up with that title. And they really started the Saturn with a general series of vehicles which went into the Saturn program. One of the vehicles they were working on was General 4 and we started working on the General 4 which had a Saturn 1 first stage and the stage where the Martin companies tightened on the second stage. There was a big discussion about the guidance system and the ARPA people -- a man named Jim something, I don't recall his name — was pushing us to use our guidance which was

being built by _____ at that time. I think we were proposing a guidance based on Jupiter guidance or Redstone guidance, the ST130 or something. We were having to give a briefing to General Ostrander at that time who was going to hear our recommendations on the guidance system and Dr. von Braun was very concerned because Walter Haeussermann kept saying "our" guidance system and finally he said, "Well, let's let Bob give the guidance system briefing, he doesn't know enough about guidance to say 'our' system." So I gave the briefing to Ostrander on the two guidance systems and I don't recall what we had but I think we had — somehow we were using parts of their system or something. I finally finished and Dr. von Braun turned to General Ostrander and said, "Well, General, what do you think?" Ostrander said, "Well, there's something in it for everybody." The funny thing was when he said, "We'll let Bob give it, he doesn't know enough about guidance to say that it's "our" system."

Q. And that was Walter Haeussermann?

A. Yes, Dr. Haeussermann.

Q. I have a note to give him a call and see if I can talk with him.

A. Another time we had a meeting in Washington and we were sitting there in a bar up there some place after the meeting —

Q. And this was in Washington?

A. Yes. And we all had had a few drinks and about three of us had to leave early for some reason, and Wernher said, "Watch this." "Well, ^{Rees,} ~~Reese~~ we'll just have to give you the whole bill since you have to leave." And he said, "Watch ^{Rees'} ~~Reese's~~ expression." Then he said he was just kidding.

Quip

(cont'd.)

Quip

Q. What was Reese's reaction?

A. I don't recall. I think he just got sort of a funny look on his face and then Wernher said, "No, we'll split it, you just leave your part of the bill there."

Q. Von Braun said that after his little joke?

A. Yeah. I don't have a lot more humorous things, but some other things I remember Dr. von Braun did is — well, one thing that I wrote in that letter was that after the Shepherd

Quip, or: LEADER

launch we were, Al Flynn and I, were sitting in the Polaris drinking martinis about 11 o'clock in the morning and Dr. von Braun came in with Russ ^{Kyle} Powell who had the airplane contract out there ^(Hsv. Airport) at that time and they sat down with us and chatted for a while; finally Al Flynn said, "Dr. von Braun, you may not know me but I work for you." And Dr. von Braun said, "Yeah, Al, I work for you, too." It was a very interesting remark.

Q. And what was his name?

A. Al Flynn. He has since passed away.

Q. He worked for whom?

A. He worked for me at the time I think. He worked for NASA.

Q. But this was at Marshall Center?

A. No, we were down at the Kennedy Center. We were in the Polaris bar.

Q. But you all worked for Marshall?

A. Yes. But I think the interesting thing is that there were just a few of us sitting around and Dr. von Braun comes in and sits down with us as opposed to — he was very human.

Q. And he probably felt that, "Hey, I'm working for these guys."

Leader

A. Right. He had a very fine habit of always shaking your hand and thanking you. One time

(cont'd.)

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Leader

when I first started working out there during the early Redstone days, I was working with the materials lab and we were getting ready to launch, I think, the first Redstone. It was late in the afternoon around 6:30 or 7:00 and I was coating the flame deflector for the Redstone with a little nickel coating that protected from the heat and I was outside building 423 on a loading ramp, you know, we didn't have ^{too} good of a facility at that time, and he had left his office about 4:20, very late in the evening and as he was driving out he saw me and stopped and came over and thanked me for working so late to get that done. It was just a very human thing.

Manager?
Leader?

A couple of other things that I always remember is he was always trying to find the right place for people in his organization. If people weren't really quite doing their job, he really never criticized them or this type of thing. He used the statement, which I used throughout my career, he said, "There's a place in an organization for everyone." Those are just a few of the things that I thought back on over my 30 years.

Q. They're very interesting and useful. You said he always tried to work people in the right places?

A. Yes. He always tried to use people and their abilities in the right place and not be concerned whether they could or couldn't do everything. I think he always felt that if you put a person in a job and they can't do it, it's not their problem, it's your problem. You should have been able to evaluate them and make that determination because that's what you get paid for.

Traveling Man

One other thing of the human side is that when he had the movie, when they made that movie of him and I was in Washington at a meeting with him and on that same night on the day of the meeting he had gone to the premiere that month with Ms.

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Cont'd.

Traveling Man

Eisenhower and for some reason he had asked me to stay over and he said, "Bob, come on down and we'll get you a free meal." And afterwards I said, "Well, I don't have a shirt for tomorrow so I need to go down and buy a new shirt." He said, "Well, I'll walk down there with you." So it was interesting that he and I were walking down this side of that street and on the other side of the street we walked by the theater that had his movie going on and here I am walking down the street with him one night and the night previously he was with the First Lady, Ms. Eisenhower going to the movie. That just shows what kind of individual he was. We walked down and I bought a shirt and then we walked back. I remember he talked about Chinese history on the way down there. ~~I don't know why that stands out in my mind.~~ That just shows the ~~extent~~ ^{extent} of his interests.

Q. Everybody says that he was the "Renaissance Man." That he kind of knew it all.

A. When I was at Thykol, you know, everybody got excited about the gurus of all the circles of Quality Control and my younger people who were on all these promoted jobs just didn't like it that I didn't take the training. I told them that I had trained under the best there was. The people like von Braun.

Q. Von Braun, as everyone knows, came from an aristocratic family and he was to the manner born and that's not something he flaunted apparently in this country. Did you ever see that nobility manifested in any way that you thought in that context?

Nobility

A. No, the only way that I would think is that he was such a gracious individual and always cared for people. He was very human and this type thing probably came from his background. Sometimes you think of nobility as haute type individuals and I don't recall him being that way. I'm sure on occasion he could. He was a very strong individual at

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Nobility

(cont'd.)

times when he wanted to be. I was always very much impressed with him.

Q. I'm sure some of that confidence was born of his upbringing and all that. You came to Redstone, when?

A. In 1951 as a GI.

Q. That was a famous group of GI's and a lot of them with scientific degrees in engineering and that was your case, too.

A. I worked for a tile company in Ohio before I was drafted in there. At that time the Army was working toward the 500 mile ballistic missile called the URSA and they had a reentry problem so they were looking for engineers with materials background in ceramic that I think really initiated the ablative technology out here. There were two things that I thought were the genesis of this. One, is the Germans considered wood during the ~~war~~ V-2

days. We were testing jet things for Redstone out of White Sands and the North American Aviation was building a Navaho missile and they had a man that had their materials named Jim Castlefraca and they were using 3/4 plastic jet wings because the Navaho only required about 20 seconds of rocket ~~propulsion~~ ^{pro} pulsion or control so we started that type of thing and Jim King^sbury and I, we bought a block Westinghouse _____ about three inches thick, put three or four _____ in it, put a Redstone Engine at White Sands,

Q. which was probably the first test of an ablation rate. That must have been '53, '54 or something like that.

Q. On a flight?

A. No, this was just in a ~~static~~ ^{static} test. Subsequently, we built a nose cone again out of

Q. Westinghouse materials that went down range and reentered and that was when

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Eisenhower finally showed on TV, you know, after the Russians fired. An interesting thing that Dr. Bill Reithel, who left here and went to GE, has had, I guess, a few years ago wrote letters to the Smithsonian and the Smithsonian gives all the credit for ablation to the Air Force and to AVCO and GE, and he wrote a paper that the Smithsonian was really saying that it was the Army that promoted the Jupiter missile. It didn't get much response and his daughter sent it to the congressman in that district who sent it through the Army and down through the channels and this type thing, and it came back that, "Well, the Army didn't have any record of that." They had talked to some people that work^{ed} for NASA at that time. They didn't believe there was anything to that and this type of thing. So I talked to Bill and he finally wrote another letter to this congressman and suggested that they contact me. So I had a contact a few months ago from a Dr. so and so and I'll be honest with you they had a go down through channels as you know and they answered by 4 o'clock the next afternoon. So I gave him some points of interest at different times which different things happen which proved that the Army was the original one that promoted that, but I don't think they've done anything about that. I never talked to Dave Harris about it, but the only time I see him now is at a little soccer games with his grandchildren.

Q. Is this Bill Reithel, he's not a German?

A. Yes. He came over with the German group and he headed the design organization out there. I don't know exactly when Bill left. He must have left in '56 or '57. I think he became a little bit of an outcast because he left them. I'm not sure about that.

Q. I've interviewed only last week Dr. Adolf Thiel and he left pretty early on in '54 or '55

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something like that and he was not very helpful at all in von Braun recollection. I mean he was polite, but thoroughly unhelpful. There's a lot in the article about the GIs who were here in the early 50s and I'll see if I can get a couple of them for you or at the very least make you fresh copies. So you came in '51 as a GI and then what?

A. I worked in the materials lab working primarily on heat protection, reentry of ablative materials. I think about '54 I went on as an assistant to Dr. Reitchel. In '56 I think I became the project engineer on Jupiter C.

Q. Now, when did you stop being a GI?

A. I guess '53. Yeah, I came back as a civilian in '53 I think.

Q. And this Dr. Reitchel, where was he?

A. He was here with the German group.

Q. And in '53 you began as a civilian?

A. Yes, and about two years later I went up as his assistant. In '56 I became the project engineer on Jupiter C and help put up the Explorer I. I worked the Juno series of vehicles and became program manager on Saturn I and Saturn IB and I left in '63.

Q. And you went with Thykol?

A. No, I went with Space Craft, Incorporated and then with Northrop with Barclay and then back to NASA as deputy director in the manufacturing lab, I forget the name.

Q. Fab Lab?

A. Yes. And I guess in '72 or '73 I took over the Shuttle program and stayed until '85 when I retired.

Q. So when the ABMA group in '60 went over to NASA you were part of that?

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- A. Yes. That was in about '58 or '59.
- Q. Okay. Well, now Marshall was created in July of '60 and Eisenhower came down on September 1st of '60 to do the dedication.
- A. Yes, it must have been '60.
- Q. Unless my memory, which often fails me, is failing me. I guess NASA was created in '58 or so wasn't it? '58 or '59?
- A. Part of the act was that we went them along with JPL.
- Q. I do think that was July 1 of '60, the best I can recall. You were talking about the GIs here, I think Chuck Lundquest was one of those, wasn't he?
- A. Yes. Jim Hess, Jim Kingsbury.
- Q. Jay Foster was on of those.
- A. Yeah, he came a little bit later, he wasn't in the original group. That reminds me of one other story with von Braun, in the Jupiter series I think we often had sort of a little bit of a continuous relationship with JPL and one day we were in von Braun's office and Jack _____ from JPL was there, I don't know who was with him, probably Don Small, and I guess I was talking too much or arguing too much, von Braun got me out in the hall and he said, "Bob, let me be the S.O.B., you've got to work everyday with these guys."
- Q. Another thing that I will never forget; he called me to his office, this is not very complimentary to me, but anyway it's the story, he called me to his office and we were discussing something and finally he said, "Bob, if you don't know the answer, just tell me."
- Q. We've all been in that situation.

Manager (?)

END OF INTERVIEW

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- A. I saw him some in the early days too before the Saturn and the Apollo program. I didn't see him a great deal — when I came back to NASA, shortly there after he went to Washington.
- Q. Was he with Fairchild by then or was he still with NASA?
- A. He was still at NASA I believe at that time.
- Q. When you say you came here in connection with some rocket project called URSA, is that like in the constellation, URSA.
- A. It was a 500 mile range of missile that the Army was interested in and then I think Charlie Wilson killed it shortly after I got here. And then they started working on the Redstone.
- Q. And it was 500 mile range?
- A. Yeah. Of course we were working on Jupiter C and the satellite type thing and I think in '56 we launched a Jupiter C that went 500 miles out of range.
- Q. And it was clear with a live [?] ~~fore~~ ^{fourth} stage.
- A. In interest we had a live ~~four~~ th stage in Florida at one time that JPL had made and they were grand central rockets. We heard through some channels that the Inspector General was going to check into that and if my memory doesn't fail me, either we or JPL leased a plane from Riddle Airlines and flew that thing back to California.
- Q. Then I understand there was an explicit order from the White House or whomever, "Do not launch a live ~~four~~ th stage."

END OF INTERVIEW

is a good,
right forward
view. I'll
be interested in
practically
everything
here - except
chitchat.

BW

Bob Lindstrom 10-6-98
(taped)

JFK visit in '63 (or '62?)

* V.B. taking some questions.
view on Automation? A.: like having
a wife.

* missing slide projector!
Pentagon briefing @ ARPA -
"why'd you think '50s
I brought you guys
along anyway?!"

* guidance systems briefing -
Gen. Ostrander Dr. Walter
Haeussermann:
"our guidance
system -"

* Wash. - in bar - having drinks -
V.B. tried to stick Rees w/
bar bill - jokingly -

* Al Flynn, w/ NASA - MSFC, but
down @ Cape - Polaris
loange in wee hours. V.B.:
"Yes, I work for you."

6:00

of '98
near

and



• v.B always shook hands w/peop.

• Redstone rocket - v.B.

Bob working outside on it -

v.B stopped in car & thanked
him

always ~~just~~ tried to work
peop into the right job -
not critical if they couldn't
do every thing

• v.B movie - he went to U.S.

premiere w/ Marnie

Eisenhower - v.B. invited

him to go to dinner on Columbia
Pictures -

Next day went w/ Bob

to store to buy a shirt -

walked past theater

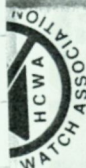
w/ v.B movie margaree

nobility / aristocratic -
He "was such a gracious
individual, & always
cared for people."

1961

Oct. '68

1961



early: "URSA" missile project -
500 mi. range -

• Bob came in '51 as G.I. to

RSA - worked in mat'l's lab

> had eng'g degree in
ceramics

on heat protection &
ablative mat'l's.

'53 came back as civilian

'56 - became project eng'r.

on Jup. C - put up

Explorer 1 -

Juno Series -

• to NASA in '60

• left in '63, w/ Space Craft

Inc., then Northrop w/

Barclay; then back to

NASA as dep dir in Mfg.

or Fab Lab -

'72-73 - took over Shuttle
program - ret. in '85

Record

of '98

and



• contentious relationship w/
JPL - Bob arguing - ^{v.B} got
him out in hall; v.B: "Bob, let me be
the S.O.B." "You have to work
w/ these guys."

"Bob, if you don't know the
answer, just tell me."

> Bob lent me his personal
copy of "X+60 AND COUNTING"

the compendium of well-
wishing letters (w/ favorite
anecdotes) from friends, colleagues,
admirers, public & industry
leaders, politicians, etc.!

READ, COPY & RETURN
TO BOB L.!

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