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Here is the Executive Vice President of Aerojet General Corporation, Mr. William E. Zich.

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Our look into the first twenty years in the life of Aerojet General Corporation must start

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with the company's heritage, the time before the beginning, around 1940, when a small group

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00:00:21,400 --> 00:00:29,680

of rocket enthusiasts whose names were Summerfield, Molina, Foreman, and Parsons came together

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00:00:29,680 --> 00:00:38,400

at Caltech to pursue their almost mystic vocation, rocketry. This group was united in purpose in

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00:00:38,400 --> 00:00:45,640

the Galsit Project Number One under the far-sighted leadership of Dr. Theodore von Karman.

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00:00:45,640 --> 00:00:58,160

I am very glad to have the occasion to talk to you about the time as the Aerojet General

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Corporation, who were more exactly at the time the Aerojet Engineering Corporation was formed.

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Because of course, this event is very near to my heart, and my experiences before and my experiences

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00:01:19,720 --> 00:01:34,480

after that may be of some interest as far as the history of rocketry and the history of spaceflight

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00:01:34,480 --> 00:01:47,920

in the United States is concerned. Now as I started to organize that, it was really

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00:01:48,320 --> 00:02:00,800

a part of it, general part of it, who was helpful. Now what we started to do at Caltech, for which

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was an immediate application, was the assisted takeoff.

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The takeoff rockets, JADO rockets, were in fact developed and built in those early days at Caltech.

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Small though they were, they did work, as was proved in actual aircraft testing.

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Involved in that early manufacture was Fred Miller, and flight tests were performed by then

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00:02:33,680 --> 00:02:41,640

Captain Homer Boucher. The air-cube flight tests were conducted with units made at Caltech.

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00:02:42,600 --> 00:02:51,600

And they were 15 seconds duration and 25 pounds thrust.

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Before initiating work on a larger size JADO rocket, it was considered necessary to verify theory

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by actual tests with aircraft. And since the size and thrust of the small rocket motors was quite

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modest, the smallest available airplane was selected for tests. Accordingly, an air-coupe type

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00:03:12,920 --> 00:03:18,560

airplane was fitted with racks under each wing to hold the solid propellant rockets, six on each

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00:03:18,560 --> 00:03:25,720

side, giving a total JADO thrust of about 600 pounds. At March Field, we received every help,

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00:03:25,720 --> 00:03:33,880

and the CalSIT group, as the Caltech group was known in those days, immediately began

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00:03:33,960 --> 00:03:40,920

preparations for the tests at March Field. Oh, they're real spectacular, quite spectacular in the

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00:03:40,920 --> 00:03:49,320

takeoff, the angle takeoff, but as soon as the units terminate, the plane will just quit climbing

right there.

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00:03:50,840 --> 00:03:58,840

Work on JADO rockets, CalSIT project number one, continued until 1942, when World War II

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brought about a requirement for JADO in quantity. Then in the beginning of the 40s, the war started,

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00:04:08,600 --> 00:04:22,200

and the question came, who can do the production in first line of JADO? And at that time, I think it

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00:04:22,200 --> 00:04:35,000

was Malino, who came to me and said that they believe, he and the other boys too, that for the

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production it would be the best to make an industrial company. This aeroset engineering

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00:04:42,680 --> 00:04:57,720

corporation was incorporated on March 20, 1942. I think the tremendous capital was

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00:04:57,800 --> 00:05:15,720

\$1250. To verify, it was \$250 each, and they were elected as president. The incorporation

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00:05:16,520 --> 00:05:26,440

was made by Ando Gihele, who I knew as a lawyer.

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00:05:26,440 --> 00:05:40,760

Aeroget was formed as the summer of 1942 passed, Dr. von Karmann became convinced that his administrative duties were taking up valuable time, which he felt was needed for technical guidance and research.

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So I talked with my friends and asked them whether they agree if we ask Hele to be president. Well, they said yes. So Hele came, and I became then chairman of the board. This happened in September 23, 1942.

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At about the same time, another group interested in rockets was forming under Navy contract at Annapolis.

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Most of these people subsequently became a part of Aerojet 2. The Navy at Annapolis,

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00:06:19,240 --> 00:06:25,960

having more than a passing interest in our progress, sent Marine test pilot Bill Gore West.

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And having contacted the Jet Propulsion Lab, GALCET project, at Caltech,

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00:06:33,560 --> 00:06:37,240

at about the time that Aerojet engineering corporation was formed,

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Bill House and I came out to California in an SBD to test the first 8AS-200. These tests were so successful that later developments brought about the

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00:06:54,200 --> 00:07:05,880

5AS-1000, 10AS-1000, 12AS-1000, 14AS-1000, which was the one produced in great quantity as far as solid jatoes were concerned for the war.

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00:07:06,760 --> 00:07:14,200

In those days, of course, we were located in Pasadena in the old Hudson building.

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In what used to be the garage, we had the offices in the showroom, then you go through a door into the garage, service garage.

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00:07:27,000 --> 00:07:33,000

We set up the production line and built them. All the testing was done in the Zusa.

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We had what we called the what Eddie B insisted on calling the proving grounds.

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00:07:37,960 --> 00:07:46,600

When I entered the gate and got to my assigned place, I couldn't believe that that's really where we work.

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00:07:46,600 --> 00:07:51,000

You see, it was very close to the test facility. It was a temporary shack.

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00:07:51,000 --> 00:07:58,120

I was taken on a tour to see this reputed proving grounds at a Zusa.

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00:07:58,680 --> 00:08:15,080

I can now say that as I witnessed my first rocket firing, my reaction was one of incredulence that this couldn't possibly be.

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00:08:16,760 --> 00:08:24,360

I was not sure whether I should call back to Indianapolis directly or wait until that evening to advise my wife

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00:08:25,160 --> 00:08:32,760

and two children with a third one expected to stay where they are and I'd be back in the Midwest by the first train.

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00:08:32,760 --> 00:08:40,760

Toward the end of the third year of war, production was increasing and Arrowjet became interested in additional projects.

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I remained chairman of the board and director, member of the board of director, until 1944 October, 26th of October.

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00:08:58,120 --> 00:09:15,160

And a short time afterwards we purchased the facilities at the Azusa plant and moved our headquarters from the Pasadena out to the Azusa plant.

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Things progressed very well indeed until the war ended and the government sent us a telegram terminating all our contracts and putting us out of business.

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00:09:26,120 --> 00:09:36,120

1947 saw some diversification with the creation of the facilities division under Ben Rose, which we know now as Atron.

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00:09:36,120 --> 00:09:44,120

But I think the first thing that we had, we had a job to enter the Space Age Building Program.

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And to build a Space Age Program, it was, we called it then, designing and building the experimental rocket engine test station at Murroc, California.

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00:09:57,080 --> 00:10:09,080

The Roger Chains somewhat in 1949, January 17th, was the first meeting of the technical advisory board called TAP.

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In a short while we found out that our facilities at Azusa, due to the testing we were doing, and

occasionally malfunctioned, either intentional or otherwise, causing explosions, detonations, so forth, made it a little difficult for us to continue some of this work at Azusa.

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I think it was Ken Munt, since he came from Sacramento, that suggested looking at this site right here, was far and away the best.

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We had to land the water, the necessary isolation, and combined with the records of accessibility, power.

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So we built what was known as the Sacramento Solid Rocket Plant.

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I think one of the most permanent impressions that I ever had was the tremendous trouble that occurred when we tried to put the JADO, the present 15KS-1000, into production at Sacramento.

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The 15KS-1000 JADO developed at Azusa simply wouldn't work when production moved north.

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Solve our problems we did, and the Sacramento Solid Rocket Plant was underway.

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Later, Aerojet General entered into an Air Force competition for the engines for the backup Atlas program, which later became the Titan program.

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The first 20 years haven't been all technical problems and management considerations.

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00:11:47,000 --> 00:11:55,000

Who can ever forget Ernie Roberts, framed by a blown-out window, the latest thing in starch collars?

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00:11:55,000 --> 00:12:09,000

Or our top executives, including Andy Haley, then-president, and Eddie Behan, then-general manager, in gloves and coveralls, cleaning, loading, painting, and shooting,

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00:12:09,000 --> 00:12:16,000

painting and shipping the early JADOs on an all-night swing shift that lasted for weeks.

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00:12:16,000 --> 00:12:23,000

Some of the early conversations the military had with us were really very amusing.

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But as we started with the first contract, which was \$10,000, I believe, where I could employ and pay this boy for the work,

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00:12:37,000 --> 00:12:49,000

General Shidlow, who is now retired, a general of his four staffs, and I think President or Vice President of Thomson's product,

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00:12:49,000 --> 00:13:01,000

looked at me and said, Doctor, you really believe that the Air Force shall spend as much as \$10,000 for rockets?

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00:13:01,000 --> 00:13:09,000

We asked Dr. Roberts, Mr. Ross, and Mr. Kimball to exercise their point of view on the subject.

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00:13:09,000 --> 00:13:16,000

First, the Jato contract, and second, I think the Polaris contract. Very soon we had, of course, the Minuteman contract.

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As I recall, around 1946 there was a sudden requirement for the B29 to carry, I believe, around \$150,000, some around \$148,000, \$150,000 gross payload.

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So it appeared that the only answer was to build a small, pressurized unit of some 4,000 pounds thrust, as I recall,

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of which then the B29 was to use two of these, and they were attached between the engine and the cells.

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And although the requirement for the use of it disappeared after a couple of years, it was actually judged to be probably the first really operational liquid engine.

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From there, we went into competition with the then and probably still significant people in the liquid engine business for the development of the acid gasoline assist takeoff units for the B47.

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And then the same engine series worked into the F-84 assist takeoff, and a fourth unit was the in-flight thrust augmentation unit for the F-86, which also was very successfully flight tested.

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The group that I mentioned stayed with this program, and of course they were the key people that put together and won the competition in the early or the middle 50s for the Titan engine,

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00:15:06,000 --> 00:15:11,000

which is now quite a significant effort at Aerojet.

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00:15:11,000 --> 00:15:25,000

Of course, I'm sure that the first contract we got was a production contract on the old asphalt JADO. In addition to that contract, and that's the one we remember, of course, the contracts that we've gotten in later years have been great pride to all of us.

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Our Polaris, our Minuteman, our Titan, lately our Rover contract and their contract for the M1, which is a million, 200,000 pound liquid hydrogen engine.

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00:15:37,000 --> 00:15:43,000

Our magazine has called Aerojet the General Motors of U.S. Rocketry.

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I believe that the spaceflight, and in connection with that rocketry, first has for several years or decades a great importance for military purpose.

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00:16:01,000 --> 00:16:12,000

Even if we don't want to make war, and we really don't, you must do this to be sure that nobody else does it.

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00:16:12,000 --> 00:16:21,000

In the applications I see are the following. First, the weather satellites.

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00:16:21,000 --> 00:16:39,000

Weather control is possible. Then I think that the communication can be improved very much by introduction of the satellite system.

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Aerojet General Corporation, 1962. Past, present and future.