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Interviewee: Grigoryan, Alexander #1

Interview Date: August 20, 2002

OFFSHORE ENERGY CENTER

ORAL HISTORY PROJECT

Interviewee: GRIGORYAN

Date: August 20, 2002

Place: Beverly Hills, CA

Interviewer: Mark Schmidt

Side A

The following is an interview with Grigoryan, a Russian oil man. A translator was present to translate Grigoryan's comments into English. However, the translation is not precise and is often paraphrased. The translator/Grigoryan's comments are indicated by G: _____ The interviewer is Mark Schmidt and the interview was conducted in Beverly Hills, CA on August 20, 2002.



MS: How did you get interested in the oil business?

G: He finished at the oil university. Before he went to the university he was part of the vertical drilling staff.

MS: O.K., where did he work before he went to college?

G: He was an assistant driller.

MS: Is this near the Caspian?

G: In Baku. It was on the coast. The town is the center of the oil production.

MS: What town is this?

G: Baku. He graduated in 1939. He says that in the article he gave you yesterday, he talks about it. He also talks about it in the biography.

Before the drilling of the first well and the 22 accident wells, he drilled new _____

MS: What is an accident well?

G: They drill a well and something goes wrong, so it does

not work properly. They put the cement ridge in the drill and so the hole no longer functions. He did 22 wells in 1944.

After that, he knew how to drill directional wells.

MS: So, how he got into directional drilling from the accident wells? Is that correct?

G: Yes. In March of 1941, he started drilling the first directional well, number 1385.

MS: How deep was it?

G: Around 400 meters, between 1,000 and 1,200.

MS: From here to here, it was about five to twelve hundred, and then what was the total depth?

G: 1,700 meters.

MS: What is the pay depth in the Caspian Sea? How far do they have to go down to hit the oil pool? If you went straight down from offshore, how deep would it be?

G: If you were drilling from here or from here?

MS: From here. Just to go straight down.

G: He said it would be the same distance, but the length of the well was about 2,000 meters if you just take it along the well. He says this was the first directional well in the world.

MS: Who invented the turbo drill?

G: It was a group of his supervisors. Do you want me to write the names in English?

MS: Yes, definitely write the names and the people.

G: He also talks about it in the article. He says it tells all about it in the book and goes into more depth. You can just read it. He says after this, he drilled two more wells like this during World War II.

MS: Prior to drilling these slant wells, had they not drilled from offshore platforms in the Caspian Sea? Had they drilled just straight down from the Caspian Sea?

G: They were going to start putting the platforms on top, but they never did. That was the first drill that ever went under. This happened about 15 or 20 years after.

MS: These platforms?

G: Yes.

MS: So, the platforms were not there until 1950?

G: They were going to start them, but it did not happen then. He says that they still used his technique; they just drilled straight down and then they would make a slant. Before he did it under the Caspian Sea, he did it under a river, in the Volga River. He was developing over there.

MS: Was it a directional well?

G: Yes.

MS: What was the name of the town?

G: I am not sure of the name.

MS: What year was this?

G: 1946-47.

MS: Well, now, wait . . . the well underneath the Volga

River, what year was that?

G: He did that one first. Then, he did those. And then, they designed the platforms.

MS: All right. So, the directional well under the Volga River was drilled after the directional well in the Caspian?

G: Yes, and then came those.

MS: All right. What year did these come?

G: In the 1950s.

MS: Does he remember an exact year?

G: No, but it was significantly later.

MS: O.K.

G: The early 1950s. About two or three years after that. He said after he completed these projects, he was in the same town as he did under the Caspian Sea in Baku. They were drilling a lot of the wells. Those places in the picture are called Oil Stone.

MS: Oil Stone? In the picture? And it is near Baku?

G: Yes.

MS: Ask him whose idea it was for these piers.

G: He is in that picture. He is trying to think of the name.

MS: We will come back to that. What were his experiences during World War II? Hitler almost got to Baku. I want to hear about World War II and the Nazi invasion. Hitler was going for the oil - that is why he invaded Russia. What are his experiences?

G: Until the end of 1941, we finished the drilling of the wells that went under the Caspian Sea. After that, they were evacuated to the northern part, called Ural.

MS: Siberia?

G: It is not Siberia. It is in the north . . .

MS: Away from the invasion?

G: Yes, it was in the north.

MS: Did the Nazi invasion have something to do with why they drilled the directional wells?

G: Can you say your question specifically?

MS: The directional well happened in 1941. That is the same year as the Nazi invasion. Is that just a coincidence?

G: He says he did it in March and the invasion was later, so it was just a coincidence. He says that they continued doing the drilling where they were evacuated to the north.

MS: But that was on land, right?

G: Yes, that was on land.

MS: What field was that that he was evacuated to?

G: Do you mean like the region?

MS: Yes. He said he kept drilling when he moved north. What oil field was it?

G: Ural.

MS: Does he have any vivid memories of World War II or the conditions or anything?

G: He says hunger; they were starving. The oil people, they did not go to the front. They just had to extract oil. In 1944, they were transferred to the Ministry of Oil Industry and studied from 1945. He began developing for vertical and directional drilling for 12 different regions in Russia. That was at the end of World War II.

He was a worker of the Ministry. He says that he was the minister back then and he made the biggest contribution to the development in the industry. He says that the later development of _____, it was all drilled using his method. He says that before his method, the United States was using less advanced methods that were too dangerous for drilling.

During the second part of the century in the North Sea, England, Norway, and Denmark were all using his method.

In the 1960s, the U.S.S.R. sold the topology to the United States. His students went to the United States to teach the American oil men their drilling methods. The United States advanced this method with the use of more technical staff and it made the method accessible to the

rest of the world.

MS: What other inventions of his or anyone else's does he remember in the Caspian Sea? We talked about the trestles, but what other innovations did the Russians come up with drilling offshore in the Caspian Sea?

G: In 1945 he went to Norway to drill. I do not know the exact word for it. It enabled him to drill the directional wells. In order to get the curvature, he had to use some kind of a device to curve the well and by 1945, he was able to do it without it. He is going to show you a picture.

MS: Are you an engineering student?

TR: No, I am a biology student. That is why I do not know the exact definitions.

MS: I worked for Exxon a long time. Do you know who Exxon is? The big oil company. I do not have an engineering background. A lot of this is very technical.

TR: You do not know the exact terms either?

MS: No. Well, just ask him what the name of it was.

G: It was the ensemble of the lower part of the drilling string. This holds the angle of the curvature, so it just keeps on drilling at the same angle. That was the invention in 1945. It made it easier to do directional drilling.

MS: When they were drilling offshore, did they just go straight down or did they branch out?

G: It was just one branch. He said that in the picture that you showed him, it was not him personally doing it. He was doing drilling by then.

MS: The branching did not take place in the Caspian? O.K. I read in the article that there was a problem with real bad wind. What were the problems with drilling in the Caspian Sea?

G: Do you mean with the first wells?

MS: Any time. Was wind a problem?

G: He cannot tell you about the first well he did.

MS: Ask him this: In the Caspian, how deep is the water when they drilled the wells?

G: A few hundred meters . . . 30 or 40 meters.

MS: O.K., it was only 30 or 40 meters, so it was not that deep. How far out in the ocean did they go with these piers?

G: Are you talking about the picture you showed?

MS: Any pier. The piers like in the picture.

G: Not this well?

MS: No, not this well.

G: He was talking 30 or 40 meters with this well.

MS: On one of the wells offshore, what was the average depth?

G: The one that started with the platforms on the top of the sea?

MS: Yes, how deep was it?

G: A couple of hundred meters, not more than that . . . 200 or 300.

MS: How far out did the platforms go in the sea?

G: How far from the shore?

MS: Yes, how far from the shore?

G: Do you mean the top of them or the branches?

MS: How far did the branches go out into the ocean?

G: He says they were doing it for tens of years. They would do a little bit and then they would move the platform and they would drill a little more. But the particular picture showed it was not very deep.

MS: There was a lot of heavy wind. Was the wind a problem for him?

G: He says that he did not work on the sea. Personally, he just drilled the ones offshore, but for those wind was a big problem - people sometimes died and the platform sometimes just tipped over. They had a lot of storms.

MS: Like hurricanes? On the Gulf Coast, we have hurricanes. Does he have any idea about how many people they lost working offshore?

G: Dozens. He says there were a lot. There also were fires.

MS: A big problem with the fires.

G: But during that time, he was already working somewhere else.

MS: our book just goes up to 1973. Ask him if he knows if they ever had any platforms like in the picture, where they just went out and built the platform in the sea up to 70 feet.

G: By 1953, he was already making those ones. He says he knows that they put it in deeper parts of the sea, like individual platforms, but when and where he does not know. Sometimes they ordered platforms from different countries but he cannot really tell you exactly.

He drilled 30 years before the rest of the world. He says that people still cannot drill this type of well. He drilled more than 30 of those. They are called branches. This is the future of the oil industry. Do you have any more questions?

MS I want to ask this one question: Compared to all of the

Soviet Union's oil industry, how big was the Caspian region? How did the Caspian region compare to the rest? Was it 10%? Was it 20%?

G: What years are you interested in?

MS: Say, in the 1950s.

G: He mentioned about five regions; Baku and the Caspian Sea being one of them, but there were five major parts.

MS: On the first well that he drilled, how many barrels a day did it make?

G: He does not know exactly. He was not interested until the later years. He says it was pretty significant because this was the first well and it had not been touched before, the region under the sea.

He said these are the vertical bore holes . . . this part is this, and the little sticks are . . .and they drill a vertical well. That is how the North Sea was developed as well.

MS: O.K., I understand. They skidded the rigs along the piers. And he invented this technique of skidding them

on the piers?

G: No, he said all that he invented was how to drill this. The man in the picture was in charge of all of the drilling. He is asking if you want a copy of this article.

MS: It is in Russian?

G: He says the article just talks about the events like _____ because he was the main person in Russia in charge of all of the drilling.

MS: We really just need the guy's name.

G: He was the oil minister. He is still alive and they are about the same age.

MS: Is he in Russia?

G: He is a little older. He is in his 90s. Yes, he is in Russia.

MS: O.K. The tape is winding down. Thank you very much.

THE END



Alexander M. Grigoryan

Many breakthrough technologies got their start behind the Iron Curtain, but for political reasons were not widely publicized. Turbodrilling was successfully performed there for many years before it was introduced in the West, so it is natural to expect that some of its more important applications were perfected there. Multilateral technology is a prime example.

Alexander Grigoryan is recognized for his many technological innovations and for his success in drilling the world's first multilateral well, the 66/45 well in Bashkortostan, Russia, in 1953.

Grigoryan was born in Baku in 1914. Following high school, he worked as a driller's assistant in the Azerbaijani oil fields. After acquiring valuable field experience, he graduated as a petroleum engineer from the Azerbaijan Industrial Institute in 1939.

During the war years, the military's thirst for fuel to power tanks and planes provided strong incentives for anyone who could increase the flow of oil. Grigoryan believed more oil could be produced from a well with less drawdown if more of the pay zone was opened to production. Less drawdown meant fewer problems bad effects such as sanding or water coning.

In 1941, Grigoryan drilled one of the world's first directional wells (meaning a well -intentionally deviated rather than other than to drill around a fish), the Baku 1385. He drilled the well without a whipstock, using only a hydraulic mud motor to drill both vertical and horizontal sections. By keeping the borehole in the producing zone longer, he was able to expose a greater section for completion, significantly increasing production.

The Baku 1385 well proved Grigoryan's theory, and before long directional wells were being drilled all over the Soviet Union. Grigoryan was promoted to department head at the prestigious All Union Scientific Research Institute for Drilling Technology where he continued his innovations, developing new equipment to improve the directional drilling technique.

In 1949, he took his multilateral theory to experts in reservoir engineering. They confirmed that theoretically, a reservoir's productivity through a single well was proportional to the number of branches exposed to the reservoir.

In 1953, Grigoryan was able to test his theory in the Bashkira field in southern Russia. He used a turbodrill to drill Well 66/45 to tap a prolific carbonate reef reservoir. The field, in production since 1930, produced very low volumes of oil. Wells had low profit margins and long payouts. If he could increase production by opening up more of the formation with each well drilled, Grigoryan could improve reservoir economics.

Grigoryan drilled by touch, without whipstocks or cement bridges, and without instrumentation of any kind. Once he reached the pay zone, Grigoryan drilled nine lateral wells of varying measured depths, extending in all directions like the roots of a tree. When the well with its nine roots was put on production, compared to other wells in the field, the 66/45 well produced 17 times more oil-755 barrels a day-but only cost 1.5 times more.

Spurred by this success, the Russian oil industry drilled more than 100 multilateral wells through 1980, and 30 of these wells were drilled by Grigoryan himself. This pioneering work has earned him the title "Father of Multilateral Technology." By proving it could be accomplished, Grigoryan inspired the multilateral drillers of the 1990s and the technique is now widely accepted.

Grigoryan immigrated to the United States in the 1980s and became an American citizen.



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Interview of John A. Focht

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