

Transcript of KECO radio interview

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Robert A. Hefner III being interviewed by Kelly Rizley, Shawn Wilson
and Nathan Brewer for KECO's "Exploring Energy" program

Introduction: Robert A. Hefner III is Founder and Owner of GHK Company, a private natural gas exploration and production firm headquartered in OKC; is also an author – The Grand Energy Transition. Hefner founded GHK back in 1959. He pioneered the ultra-deep natural gas exploration and production and led the development of innovative technology needed to successfully drill and produce many of the world's deepest and highest pressured natural gas wells, setting many industry world records along the way. Hefner is the true father of natural gas. As one of America's leading natural gas proponents, he testified before Congress many times. In the 1970's Hefner helped lead the industry's successful efforts to deregulate the price of natural gas. These technological and political accomplishments led to the industry's successful establishment of large new supplies of American natural gas. Let's jump right into it. We have him on the line. Let's get to the questions.

Question: Robert Hefner, you formed your opinion about deep natural gas in the Anadarko Basin. What caused you to pick Elk City, this area at least, as your first place to explore deep gas?

Robert A. Hefner III (RAHIII): Well, I like to say it's because of all the great people I met out there, but, actually, that is also true, but I formed my opinion originally when I was studying geology at the University of Oklahoma and I became fascinated with natural gas. That probably emanated from the fact that my father and grandfather were in the oil business and every time I went down and roustabouted on some of their wells, oil was always spilling and stinky and I thought, gee, natural gas is just a better fuel. So, ever since my college days, I was fascinated with it and geologically Elk City sits over about the deepest part in the great Anadarko Basin and I thought all these producing formations that were producing shallow oil and gas around the edges would be thicker and there'd be more reserves and they'd be natural gas in the middle of the basin. So, that's why I started.

Question: Well, Robert, this is Kelly Rizley. My question is, your first attempt out here was the Weatherly well which, interestingly enough, was not named after the landowner, but after a yacht and I'm sure you've got a story about that. [RAHIII says "I do."] But, the well was a dry hole and that evidently was not enough to stop you and give up, since you went on to drill the Green well at such a high risk and great expense. Go ahead and talk to us about the Weatherly.

RAHIII: Well, the Weatherly was named the Weatherly because of an investor we found in New York. He was a Russian immigrant whose father was an admiral of the Russian fleet. He actually went down with the Russian fleet in the great battle of Japan. But, his name was Makaroff, the fellow who was the investor, and he was a great sailor. And he said, OK, I'll invest, but you've got to name the well after the America's Cup boat that year, which was called the Weatherly and

we said OK, anything to get the money. So, we took the money and he was a good partner and a good investor and he was in many deals with us, actually. But that's how the well got its name. And, as you said, dry hole. But, it was one of those where the technology just wasn't quite there. We encountered a lot of natural gas, though, all through the Pennsylvania formation and, as you know, there's lots and lots of production now in those same zones all around that area.

Question (from Shawn Wilson): I know, Mr. Hefner, I watched The Grand Energy Transition and a lot of people told you you were crazy to try to go that deep after natural gas. So, why did you keep going and what were the challenges you faced in drilling the Green well after the Weatherly played out?

RAHIII: You're right; the personal and mental challenges were some of the great ones, too, because everyone did say I was crazy, including my father and grandfather. But, I'm both an optimist and maybe too much of an idealist, but I did believe in what I believed and I believed in the deep basins and so I continued to work and continued to move forward. We started the Green well kind of in many ways on a hope and a prayer. But, in other ways, with lots of incredibly good engineering and innovation. I think the Green well is a good example of American innovation by private enterprise. I had a great engineer named Dick Wheeler and we did a lot of pre-planning and we knew that every single string of pipe that went into that well would have to be a world record and pipe that had never been built before, actually. So, everything we did in the Green turned out to be a world record except the depth; it was the second deepest well ever drilled in the world, but, at the time, the deepest gas well and by far the highest pressure natural gas well in the world, with 15,150 pounds at the surface. I might add that when the Green well was completed, we hadn't thought about measuring the pressure and there were no pressure gauges in the world that would measure a pressure that high. So, one of our partners, Amerada at the time, which became Amerada Hess later, but, they had a high-pressure natural gas laboratory in Tulsa and they built the first ever gauge that could record pressure and test it for up to 20,000 psi. And, I'll never forget standing on the rig floor, derrick floor at the time when we first measured the pressure, and they opened the valve and the pressure gauge went up to 15,150 pounds so fast I kept standing there wondering, well, if this thing doesn't hold, we'll all be blown into another world. So, but it held and I'm still here. But, it was quite a well. The 5 ½ inch tubing was specially built by Mannesmann, the German steel company, at their plant; then at Sault St. Marie on the St. Lawrence. It was rolled all in one rolling over 48 hours of time, without shutting the plant down; it was specially designed to do that so the steel would be all the same and the best quality control that the Germans could give. And, they're so good at that. And, it was loaded on barges, brought all the way around to the Gulf, it came up the Mississippi and went all the way to the Port of Catoosa and it was the first ever commercial offloading at Bob Kerr's great dream of building a port for Oklahoma accessible to the Mississippi. And then we trucked the pipe to Elk City; we ran it into the ground over 24 hours and it went to about 24,500 feet and it's still a world record today. And I'll add just one more thing to that story; this is typically German. There was a German engineer and he was standing on the derrick floor (and you know how dirty that was, particularly in those days, with mud and so forth running casing) and he had on his white engineering coat and the laboratory coat and he felt personally the makeup of each joint of pipe, all that entire 24 hours, because he wanted to feel each joint and be sure it made up

properly. And, it did; we got there. We all knew if anything went wrong or if it got stuck, we'd probably lose the hole. But, that continuous string still today is the world record for 5 ½ inch casing.

Question: How long did it take to drill the Green and can you tell us what it cost in those days.

RAHIII: It wasn't, of course in inflated dollars, it would be several times, quite a few times that, let me think. But, it cost, all in, including our leases and acreage and so forth, and the drilling, about six and a half million 1969 dollars. And, that would probably be 21, 22 million in today's dollars.

Question: And how long did it take you to drill it?

RAHIII: About a year and a half.

Question: Now, that well was very close to Elk City. What kind of reaction were you getting from the people of the town?

RAHIII: All the people were positive. And, there'd been, of course, the development of the Elk City Field by Shell some years before and they were knowledgeable about oil and gas production and the people were interested and were enthusiastic about the potential for the future and when we tested the well (and it made about 19 million cubic feet a day with a 9,000 psi flowing tubing pressure), it was certainly one of the largest wells in the world and everyone was highly excited about it. The problem, of course, was that the price was 21 cents an Mcf, as controlled by the Federal Power Commission during that time.

Question: When we talk about measuring, how many sleepless nights did you have in that one and an half years.

RAHIII: A number of them because something was going on, but I've been lucky in my life; I've always worked hard and I've always often been out on the edge, let's say, but I've always been able to sleep. So, I didn't sit around and worry over it; we just did absolutely the best we could and we always had the best of the service companies – Halliburton and Schlumberger and, in those days, Dresser Industries, all worked very closely with us on the development of the technology. Babcock & Wilcox built us the first 2 7/8 inch P-110 tubing that had ever been run to those depths and that were that strong with that burst and collapse. And, every service company worked with us and with our engineers and so that's why I said it was a great example of American innovation because when we started to drill that well you couldn't have done it cause nothing existed that would work and we had to develop it all as we went, including the logging devices (Schlumberger's logs wouldn't run that deep) and it was too hot and too high a pressure; but every time we'd go back to the lab and we'd try again and eventually we got it done. So, the Green well advanced the industry technology orders of magnitude.

Question: Back during those bleak times when you were working so hard and worrying so much working with the Green, who were some of the people around you, some of the key players, some of the pivotal players that you relied on and that helped in those times?

RAHIII: Well, I had an incredible couple of partners: Larry Glover (the “G” of GHK; he died about the time that the Green was drilling) and another partner, David Kennedy, had bought our first yachting partner, Makaroff, out and David Kennedy was in incredible partner, so he and I at that time were GHK. We kept the name because it was known in the industry and represented a lot. And, he helped significantly. And, I had another great friend named Hap Sharp, who was always helping out in times of emergency. And then, all of our partners throughout the industry – many of them probably shook their heads and said what’s this crazy guy doing. But, we got great support from the industry.

Question: Well, when you were interviewed by “60 Minutes” was that taken there at the Green well, the photography there?

RAHIII: You know, I don’t believe it was. It was another well, to the north of Elk City and I don’t remember which one it was at the time. But it could have been the Watkins, even. But, I believe it was just a ways north of Elk City and I don’t remember exactly which one. There’s a funny story about that, if you’d like to hear it. When Reasoner got there, he was organizing the crew and they’d come in from Dallas on a Braniff flight and I was ready. Gosh, I thought, I’d been telling this story and I believed so much in natural gas and I know it’s the way the nation needs to go and I’ve got to get my whole story out, you know, and I’d been thinking about what I was going to say and so forth and, just as we got everything set up, maybe he did this on purpose, I don’t know, but we were all there and poised and the camera’s there and he leaned over and he said “Those damn people at Braniff lost our film, so all we’ve got is what’s in the can, so please be succinct.” All they had was what was in the camera.

Question: Oh, gosh. Well, that was about a 400 foot load, which was seven minutes.

RAHIII: That’s right; so it was probably good that he did that; maybe it was a technique he used.

Question: What other wells come to mind to you that you drilled out here in western Oklahoma that were maybe surprises or maybe ones that you didn’t really think would be that good, turned out to be great or you know.

RAHIII: Well, I think the biggest, most significant one, after the Green, is the Watkins. And, it made, naturally, from about 18,000 feet in the Morrow, around 3 million or 3 ½ million cubic feet a day naturally, with some good flowing tubing pressures. And, I wanted to fracture it and we were the operator, but we had some other partners in the well and, since there’d never been a fracture treatment that deep and much less using bauxite which was, in a way, at that time, somewhat experimental (Exxon had developed bauxite as a fracking proppant, instead of using sand; you needed the tensile strength because sand, under the pressures at that depth, would just

collapse and would not prop and it would turn into kind of a silica mush and clog up the well, which we'd found out. You know all this was things that we'd learned and it was the innovation of getting to where the industry needed to go, once again.) And, so, we wanted to fracture treatment and we got it treated and we got a Telex from some of our partners saying that we'd better not experiment on their wells! And, so, I wrote one back and said, under the operating agreement, that I'll take this then as your option not to participate and to go under the option-out clause. And, they had to come back and say, no, they wanted to participate. Well, they were lucky they did, because the fracture treatment went very well and, once again, there'd never been a well fractured this deep with bauxite and we built two high pressure flow lines with coil in the tubing and it was all, enormous wellhead. And, while I'm saying something about wellhead, I forgot to mention, on the Green, there'd never been a 20,000 psi wellhead, either, so Cameron built us the first 20,000 psi wellhead, which, once again, we had up here on the Watkins. And, fracture treatment went well and we flowed it back and the well tested over 30,000 million cubic feet a day.

Response from interviewer: Wow!

RAHIII: So, it was another of the big wells that opened the Anadarko Basin. But, the problem also in those days was not only the price, controlled by the Federal Power Commission; when they looked back and took the average price for the average well and came up with a price and, because the average well was about 3,000 feet deep then, the average price they calculated was so low; anyway, it wasn't going to work. But, what I wanted to say, was that we gotten engineers to estimate the reserves of these wells. We'd already found these great flow rates, but everybody said, oh, it's high pressure, low volume. Well, OK, you get a little bit of volume at first and then it'll go right off and it will fall off. So, the engineers gave us, in the case of the Green well, 3 ½ Bcf was the highest reserves we got in initial days, not enough for a pipeline to build a line to, and it stopped producing just last year, after producing 21 Bcf. So, you can see it was one-seventh of the initial reserves. And, the same for the Watkins. I think we got about 3 ½ Bcf initially, and it went on to produce 30-some off Bcf.

Question: Looking back at time, did you have any idea how much what you were doing would change the natural gas industry. You know, even in these service companies, like you mentioned a while ago Schlumberger and the 20,000 pound wellhead and the 20,000 pound gauge. Did you have any idea at that time what it was going to do to the industry?

RAHIII: Not really; I wasn't looking forward at that time to what it might change, what it might do for the industry. But, we knew we were out in the front of things and we knew we were innovating, so what we were focused on was what did it take to get done what we needed done. And, we needed the industry to develop with us the technology to get the job done and then, unfortunately, with the prices stuck in; well, with the Federal Power Commission, the nation was beginning to run out of natural gas because they priced it so low; just like a farmer, if you had price controls, they wouldn't go plant. So, nobody drilled. And, we were running out of the natural gas that was going into interstate commerce, so, back East, they were thinking that the nation was running out of natural gas and not believing that it was all just because the Federal

Power Commission was fixing prices at unrealistically low prices and by doing so really, I like to say it's really stealing resources at less than the fair market value from the mineral owners who own the resource. It's terrible that we did that.

Question: Well, Robert, I know you've been talking a lot about the Green that it took a year and a half, but you also spent about a year and a half in Washington, D.C., as I read in the book. Here we have it. You're one man against the giants of the industry. You traveled to D.C. to testify to Congress that there was an abundance of natural gas. You had Mobil, Exxon and Shell on the same table, the long row, lots of lights, with Congressmen looking at you and here you are by yourself [with them] saying that you're crazy, there is no more natural gas, it's not abundant, its time is over. Tell us a little about that year and a half you spent at Congress and what you accomplished.

RAHIII: Well, I believed in what I was doing fiercely because the Green story, as I used to say, was such a powerful and persuasive story. The Green was there, sitting there, without a market, and at a price that, in the end, was only going to return about a quarter of that 6 ½ million dollars, so it was uneconomic. Yet, it produced enough natural gas to equal the output of a third of a nuclear plant. And, we were running short of energy in the United States, so how stupid could we be? Anyway, we continued to be stupid. There's no question about it. Because I went up to talk to the Federal Power Commission and the Federal Power Commissioners all said, sorry, that's just how it works. No exceptions for deep gas. Well, here's this well sitting there and they're running short in the schools and factories and Chicago; by God, why wouldn't they give us an exception so that we could produce it? Anyway, they didn't. So, the Federal Power Commission guy, I'll never forget, O'Connor was his name, and he said go talk to Congress. So I did. I worked hard. We were lobbying every single day. I actually ended up moving to Washington and, after raising enough commotion, finally I was given spots at hearings which you saw in the film (one of them) and it was typical. All those guys who worked with the giant majors would sit there and smile and smirk and they'd say, oh, he doesn't know what he's talking about. And, I'll never forget Exxon one day when I challenged one of the guys and he said, look, we're Exxon, we had 150 geologists all across this country working on estimating natural gas resources and we did that for three years and they put all their numbers together and, I'll never forget this part of the story, which gave a little insight into Exxon, and then he said Exxon is a global company and we've got a global insight, so our management adjusted those numbers down a little to be realistic. Anyway, they came out with about 350 trillion cubic feet remaining. In those years, that was their big estimate and they stuck by it and, of course, since then we've produced 600 trillion and we now know we've got another 2,000 trillion. So, the problem was those guys were oil people and they understood the oil industry and they had no concept of natural gas. Because natural gas is different than oil in every single way. And, natural gas to the oil companies in those days and I worked for Phillips in the economic analysis section and they were all the same; we couldn't give any value to natural gas when we did an economic analysis, so the company was out there exploring for oil, looking where they thought oil would be and drilling for oil and nobody was trying to produce natural gas. Yet, this is the point I made often, over and over again, in sedimentary basins natural gas is just pervasive and it's more a question of technology and price than it is how much is there. There's vast supplies there. But, if

you were a Congressman then or if you were Jim Schlesinger (who, of course, was in our Grand Energy Transition film; he was Secretary of Energy at the time), why would you believe me when Exxon would tell you that, with their zillions of years of experience and all the 150 geologists that did all this work and came together and put together the story and here it is and we know what it is and this guy, he just doesn't know what he's talking about. You can't believe some independent from Oklahoma. So that's kind of how it was.

Question: Well, ultimately you've got a couple of acts passed by Congress.

RAHIII: You're absolutely right. The other side of that was deregulation and all the majors were going to hang out for all or nothing. In other words, they had all of this historic gas that they'd developed looking for oil and they wanted all that deregulated into the shortage and into the tight market. Well, Congress wasn't going to do that. That would have been a huge price shock to all the home consumers who were using natural gas in the country. But that's what they stuck to and, unfortunately, so did the Oklahoma Independent Petroleum Association and so did the American Petroleum Association. So, all of those guys were fighting me because I said the only way to get it done, to get deregulation done, is to deregulate from this point forward all new gas. And, then Governor Boren worked hard with Jimmy Carter, who was running, and he got a letter from Jimmy Carter and Carter, unfortunately, turned his back from what he put in writing. Anyway, Boren got Jimmy Carter to say, in a letter to him, that he would work to get all new gas deregulated. And, so, we thought we had a little momentum going with the democrats and I actually supported Carter for that reason because I didn't see it ever happening any other way. And I think I was right. But, we lost by one vote the deregulation of all new gas. Gary Hart of Colorado had taken that up in the Senate and he was with us and Tim Wirth – who's now with Ted Turner and the U.N. Foundation and still working on energy issues – Tim was a believer and he was from Colorado also; it was his freshman year in the Congress. But we lost in the Senate by one vote; Kennedy turned and didn't vote for the bill that would deregulate all new natural gas. So, I had to think up something on the spur of the moment. I said well, how about all deep natural gas? And, somebody asked me, what's deep. And I had to think again and I remembered the World Oil magazine had a category and their category categorized deep as below 15,000, so I said, oh, it's been established for years, it's below 15,000. And that's how that came about. We got that through.

Question: Well, was it that point, when you got that through, that you made the big deal with, I believe it was Mobil, or the big farm out you call it?

RAHIII: Yes, it was.

Question: Tell me a little about that.

RAHIII: Well, it was one of the, I guess it was the largest onshore deal, at the time, ever done, according to Mobil. And, I'd done all the maps of this area and at that time we had about a net 400,000 acres in the Anadarko Basin, but the concentration around Elk City was about 250,000 net acres. And I thought all of that would probably produce because there were so many different

zones. And, as a geologist, what I did was start at the surface and mapped every single zone from the surface on down and I'd actually done a lot of the surface work myself. I'll never forget crossing Butler's Farm one day and, what I didn't realize was that he had a bunch of his rodeo bulls there in that pasture where I was walking a line doing surface geology. And all of a sudden I saw all these Brahmans running right at me, I thought. I dropped my compass and ran off to the side. Turned out they went right past me and it was feeding time. I didn't see the pickup truck coming in the other side of the pasture. But, I'd mapped every single zone, all the way from the surface to the basement and made a case that each one would produce and so, it was a time that Mobil was beginning to believe (this was 1981) somewhat in natural gas and, you wouldn't believe this, but it's true, they actually had a price curve that went out into the future to \$30 an Mcf and, believing that, they were willing to make a big deal, and it was almost a quarter of a billion dollar deal at the time; \$230 million deal.

Question: You've made some big deals in your lifetime. What was the biggest and were there any regrets? Was that the largest one?

RAHIII: Well, that was the largest one: \$230 million dollars, which today would be, what, 5 times, a billion something, equivalent of a billion something today. And, yea, I suppose I have one regret. Not doing the deal, because Mobil did this deal with GHK and we were such a good operator having worked so hard to control our operations that, for the first time in the history of Mobil, they allowed someone else to operate. And they did that because they thought we'd be cheaper. But, my regret probably was not selling them all of most of the other half of the deal because they would have stepped up and paid cash for it. I still had all that other acreage in the Anadarko Basin and had I done that, I would have been in shape after the '82 crash to buy up all the production I wanted including, probably, Mobil's piece of that deal, which they eventually sold to Apache and that whole area, the whole Strong City, those leases covered the entire Strong City Field, and all of that development that Apache's done and others in that entire area subsequently, were originally part of the deal that Mobil had acquired from us.

Interviewer (Brewer): Wow. Let's move up to modern times. Let's talk to Robert Hefner about the Grand Energy Transition – the DVD, the documentary that was made, the book. I've seen it. In fact, all three of us – Kelly, Shawn and I – have seen it. Was very interesting. Lot of information. Shawn, tell our listeners how they can get a copy of both.

Interviewer (Shawn): You can actually order the DVD at triple w dot the dash get dot com. So, triple w, dot, the, dash, get, dot, com. Or you can get the book; it's available at Amazon.com or Barnes & Noble has the book as well. A very interesting read and an excellent DVD. A lot of insight put into that. You know, Mark Stansberry brought that out here to Elk City and we had a big showing here. I just can't tell you how much your imprint has continued to make a difference out here. I mean, I still see your, the Robert Hefner the third sign out here, our airport, so lots of innovations. So, I just wanted to tell you I really appreciate what you and your company have done for this area.

RAHIII: Well, I appreciate that and I'm glad you appreciated The Grand Energy Transition documentary. We thought that the time was right, after writing the book, which makes the case for natural gas. Actually, makes the case for vast quantities of natural gas, still larger than most people think we have in the United States and I think I make the case quite convincingly that there's more natural gas available for use in the United States today than there is coal. The documentary, some have said, is a bit long. It's an hour and a half. But, it takes all that to really tell the story, because in there we tell the story not only of natural gas and all of its advantages, and we used Elk City as an example – how it benefitted the entire city and the school system and so forth – but also we need to make the example of each of the sources of energy. And it takes a while to talk about nuclear and why nuclear today is unlikely to be a significant thing in our near future. Or, biofuels and we talk about why biofuels really isn't going to work; why in the United States it's idiocy to be burning our corn in our vehicles (it's a less efficient fuel); that's just silly, making ethanol. Wind and we've got, as you said, Kelly, got a lot of wind out there and it's a great source of energy but it needs natural gas to go with it. And wind is still one and a half percent of all the electricity generated in the United States, so we've got a long way to go, even if you get all the wind you can imagine in the next 30 years, it's still not going to be one of the principal sources of energy. And, solar, although it's good and it's wonderful and we get more energy from the sun each day than we can possibly use as a global economy in a year, it takes vast areas and it's going to need a lot of improvement in the future before it's going to be a significant source. So, what is it that's available and what is it that we can use to go forward? It's natural gas. And natural gas is cleaner, it's less CO₂, we can use in a car; not only is it 30% less CO₂ but it's 80 or 90% less nitrogen oxide. So, all the other pollutants that you get with gasoline are gone with natural gas and it's just an exceptional fuel. And, I make this case, that in looking at energy today, and discussing energy and natural gas's role, it's bigger than just what energy source we're going to use, it's bigger than what's really working today. Energy within an economy is pervasive and you don't run an economy at all without vast amounts of energy being consumed. There's no civilization without the consumption of energy. And, if you go back and look at the past, when we've got significant changes of sources from dirty or limited, difficult to use sources to cleaner, better, more efficient sources, we've had an incredible uplift for all of human civilization itself. And the great example, when we went from wood, which was getting short of supply and is hard to use and so forth, to coal, which is lighter, easier to move, better, more efficient, all the innovations surrounding coal, it drove the Industrial Revolution and lifted civilization to unforeseen new heights. It took people out of serfdom. It gave people time to do other things. It was an amazing change in civilization when we went from wood to coal. And then, when we've been going from coal to oil. Wow, what happens? Coming out of World War II when we have so much innovation around oil and particularly the consumption side – jet engines and more efficient piston engines and so forth. We globalized the world and then we globalized the economy and, once again, an incredible and unforeseen long-term uplift in all of civilization, so the entire globe. And that's what's going to happen once again because now it's natural gas's turn and the incredible thing about natural gas is that it's pervasive around the world; there's vast amounts in the two largest economies of the world – the U.S. and China. And, as we move to natural gas, particularly if we lead the way in the United States, we're going to once again be rejuvenating our economy and lifting it to, once again, unknown and unforeseen, heights. So, it's our turn. We've had a reprieve. If we go for natural gas and do this in this

country, I see us leading the world over the coming decades, because the other countries won't be able to do it nearly as soon or as efficiently as we can in the United State, with all the technology we have here. So, it's a huge thing for America to go for the use of its natural gas.

Question: Well, that takes us to the question about China. I've never been to China and you've been over there. Do they have a lot of natural resources or do they have a lot of natural gas and are they using it now and do you see them surpassing us?

RAHIII: It's great question. China was the largest population in the world, is still in the early stage of its exponential growth in energy use per capita. So, it's going to be using a heck of a lot more energy as it continues its growth to a modern civilization. And, I was lucky enough; I went over to China in 1982 to their first energy exposition and, as a result of all that, the Ministry of Petroleum asked me to come over and do an analysis of China's natural gas resources. Well, in those days, Sichuan Province, was their principal onshore natural gas area. I think it still is today, as the development goes on and on and so I was able to look at all their regional seismic; I looked at all their geology. I looked then, I did cursory looks at all the other basins and did a report for China that I presented to them in 1984, I believe (1983 or 1984; probably 1984) and I told them basically what I'd been telling the United States. I said you have vast quantities of natural gas onshore China, probably about the same amount as the United States was my conclusion. Well, they didn't believe me then in the United States and they didn't believe me in China. But, subsequently, with shale oil development and the innovation around that that comes, now people are saying maybe China even has a little bit more than the natural gas in the United States. And, China's recognized that and they now believe it. So, they are beginning their adaptation and their use of natural gas and I think they recently made a multi-billion dollar deal with Shell to develop their natural gas in either Sichuan and the Ordos basin. And, all that's starting. But, it can't happen as fast, even within a decade as fast, as it does in the United States. And, the biggest difference is that the U.S. is unique in the world, and this is what's driven the innovation in our industry, because in the United States the landowner, for the most part, with the exception of the Federal land, the landowners own the minerals. And, you all know that; you own minerals and you understand the significance of it. But, there's even a bigger significance than just the economy it creates for you and individuals and landowners. It's the significance of innovation. And, anybody in the United States can go out and put leases together and get a well drilled. Just like we did with the Weatherly. And, we had an idea and we believed in it. Or the Green and we believed in it and we finally got the money together and we were entrepreneurial and we went out there and we innovated and we did it. And, that can't happen anywhere else. As the big majors in America – the Phillips, Mobils and Exxons, Shells, all got so large, Chevron, they went offshore and they were in the global oil business. They were not in the U.S. natural gas business. And, they've only now started coming back, as you've read in the news recently. Exxon's acquisition of XTO. So, they were not in it, but it kept the independents going; the fact that we had mineral owners. And so, a guy like George Mitchell, down there near Fort Worth, that was drilling in the Barnett and kept at it and finally he was beginning to struggle along and Devon bought them and Devon kept at it. That will not happen in China. It won't happen in Europe. It won't happen in South America. It will only be, in those cases, in the foreign countries, it will be big, big companies dealing with big, big bureaucratic governments and that's

just going to take decades longer. So, we have the independents alive and well here. They've brought on the innovation of shale gas and now shale oil. And all that is happening and it's giving us a quarter of a trillion dollar advantage; buying our energy for a quarter of a trillion dollars less every year to run a quarter of our economy than the Europeans or Asians are paying, because the Europeans pay \$12 or so per Mcf for natural gas, the Asians pay \$15 to \$17 per Mcf and we're paying about two and half or three. So, that gives us a \$10 per Mcf advantage. And the United States runs a quarter of its economy on natural gas. So, it's a huge economic advantage. And, that's the beginning of this Renaissance I'm talking about, where the United States will have the opportunity to take an energy leadership role and build its economy in this next unleashing of economic vitality as a result of going, once again, to a better fuel – natural gas; so much better than either coal or oil.

Interviewer: We've been talking this morning to Robert Hefner of GHK. One last question, Robert Hefner, for all the listeners out here in western Oklahoma and the eastern Texas Panhandle, given what you know about the history of exploration out here and what you know about what's going on right now, what are the average resident of Beckham County, Roger Mills County, Wheeler County, out here, what do we need to know about the activity today and what the future holds?

RAHIII: Well, the future holds a lot more of what you've seen in the last decade. But it will grow and it will grow in an orderly manner for the next 30 years, in my opinion. There's going to be continuous development of reservoirs. What's gone on in the last decade is basically been the establishment of the production and the establishment of the leasehold rights. Now, over the next coming couple of decades, will be all of the development, the infill development of all those properties. So, I think we've seen just about, for the recent horizontal activity, I think we've seen maybe 10% of it and it will go on for the next 30 years as those resources are developed. It's going to be good days, generally, for, who knows what the economy will do, but, to the extent the economy doesn't collapse and the prices go to nothing and I don't think that will happen; generally, for the next 30 years I would say, and who can forecast even that long, I think it's really going to be pretty good days for your area.

Interviewer: Robert Hefner, GHK, we appreciate you so much joining us on Great Plains National Bank's "Exploring Energy." You're on 96.5 FM, KECO.

RAHIII: Thanks, guys.

Interviewers: Thanks, we enjoyed it. One question we didn't get is do you have a natural gas car?

RAHIII: Yes.

Interviewers: Is it a Honda?

RAHIII: No, it's a Chevy Avalanche that's been converted.

Interviewers: Oh. Well, how do you like it?

RAHIII: It's great. I love it. Terrific.