BOEM DEEPWATER GULF OF MEXICO HISTORY PROJECT

OFFSHORE ENERGY CENTER HALL OF FAME

Interviewee:	John Carter
Date:	September 24, 2011
Place:	Houston, Texas
Interviewer:	Tyler Priest
Ethnographic preface:	John Carter's father worked for a quarter of a century as a production manager for Burma Oil, and his son followed him into the oil business. Living in Glasgow, Scotland, Carter studied mechanical engineering and graduated in 1964, then promptly joined Shell. He soon went to work in the North Sea, and then served in various positions in the United States, Asia, and beyond. He worked on the landmark Castellon FPSO off of Spain, the first of its kind. After many more years of FPSO-related work, Carter then went into general gas management in the UK, with Shell, and remained there until he retired.

File 1

TP: This is September 24. We're interviewing Mr. John Carter for his induction into the Offshore Energy Center's Hall of Fame. Congratulations. The interviewer is Tyler Priest. We're in Houston, Texas. Let's just start off having you tell us a little bit about yourself, where you're from. How did you get into this whole business?

JC: Well, I suppose because my father was in the oil industry. He worked for a company called Burma Oil.

TP: What did he do?

JC: He was production manager for Burma and spent twenty-five years as an engineer. He'd done petroleum engineering.

Then when I was at university, I was in Scotland, Glasgow, and I did basically mechanical engineering and kept my options open until my last year,

and then I decided that, well, the oil industry really looked very interesting, far more interesting, if I might say so, than your average factory.

TP: What time are we talking? What period are we talking?

JC: We're talking about '63, '64, when I graduated. I stayed on to do a year's research. In '64 I joined Shell. You do an induction training for about six months in field engineering, and after six months, you're a drilling engineer. And I said, "What's a drilling engineer?" At that stage we were just beginning to go into the offshore drilling, and it was felt that there ought to be more support from an engineering technical point of view into the offshore drilling, so I was then sent off to [unclear – Omaha or Oman], which is not offshore, but it's to start the basics on land drilling, and so I learned a lot about land drilling there. Then they sent me to the North Sea in—that would be '67.

TP: This is right about the time of the Groningen discovery.

JC: Groningen was already in production. In fact, I worked on Groningen just simply as a trainee, and then went to the North Sea just when we established our bases initially in Loughlinstown [? unclear] and while I was there, we moved up in Aberdeen and we started drilling with a semisubmersible floating rig for, really, the first time—I wouldn't say first time nationally, but it was one of the first. So I was involved with sort of setting that up as we were drilling in some pretty uncomfortable weather in deepish water. At that time deepwater was only considered to be less than 600 feet, but it was still deep enough.

TP: And tempestuous in the North Sea.

JC: Tempestuous, yes. Then having learned a little bit about that, I was sent off to Nicaragua to drill a well, an exploration well, with one of the Glomar ship-shaped vessels, and having done that, went back to the U.K. to the North Sea, did a bit more work there, and then was sent off to Guyana, wasn't it? No, back to Nicaragua, do more wells, Guyana, and then I came to the States, to Houston, where I worked for a company called Asiatic Petroleum Company, which Shell owned, and I learned a lot about the industry in the States, when I first met Howard, and started to get to know more and more about what was going on in the Sector 445, Shell's deepwater foray.

At the end of my stay in the States, they went me off to Shell Deepwater Drilling Company, and I learned a lot about deepwater drilling and dynamite positioning and all the problems that we had with that sort of thing. You just learned on the job what's going and—

TP: Who else did you interact with besides Howard?

JC: Well, the one I remember particular was a chap called Duke Zinkgraf, who I think is well known in the industry. And another, McDermott Hammond [phonetic], was involved with the Sector 445. I remember taking a Sector 445 model up to Chicago just so that the oil analysts could see what we were doing in deepwater drilling, which was kind of interesting trip. It was just a bag-carrier trip.

Then as I went and worked on the 445, we learned a lot, all the problems of risers, some [unclear] analyzers and control systems, not necessarily worked when you thought they should. I suppose one of the most interesting thing, one one of the simplest, we had dual computers and everything sort of checking each other. What we didn't have was a dual air conditioning system. On one occasion we had to drive off simply because the air conditioning system failed and the two computers got too hot. So we had to break off. We had this famous connector, which was called an AMF connector, which you can guess what sort of words we used. But officially it was supposed to be Adios, My Friend. [laughter] We used that in earnest, but it worked very well, and after working on the deepwater drilling until the point that we—

TP: This was in the Gulf, right?

JC: No, this was actually in the Far East, around Indonesia, Australia, and we were testing the systems. I mean the issue, although we had a dynamic position vessel, it had anchors, so initially we were drilling anchored. Then as we got into deeper water, we took the anchors up, checked everything. The vessel, of course, had a lot of different characteristics once the anchors were up. So the dynamic positioning, although you checked it in the anchor mode, it was different again when you took all the anchors in. But, anyway, it worked, and it worked very well, as I say, until we had [unclear].

Having done all that on the deepwater drilling, I spent the next three years, actually, in the Far East just working as a drilling and equipment engineer. Then I was asked to go to The Hague, to our center internationally for offshore research and development. Leon Vincken, who you're going to be interviewing next, I understand, Leon said he wanted experience we'd got on the drilling side to be applied to the production side, and that's when we started working on FPSOs and in particular driven by economics because, you know, you have a single well in somewhere like Spain, somewhat remote, you can't put in major equipment in the area. Just mobilizing it with a heavy-lift vessel would have been pretty punitive. So the idea of having a subsea well tied back to a tanker which was moored and could store the fluid, and then you could then export it from there.

TP: Where did the idea come from at first, or is it hard to really trace it?

JC: I don't know. We talked about all sorts of different systems. We talked about having an affixed jacket with a tanker sort of moored to that.

TP: Then just get rid of the jacket?

JC: Yes. That was the next step. Again, one learned a lot on that. I can remember because—were we using flexible hoses between the wellhead and the tanker, and the temperatures were such at the wellhead that the flexible hose started to deteriorate. So, in fact, one of the jobs, my first job on the [unclear], if you like, on on the floating system, was putting in what was then considered the longest, biggest heat exchanger. What we did was we put two steel flow lines down, kept them immediately off the seabed, and then by having water cooling the oil. By the time it got to the point where it goes up the mooring to the tanker, where you do need a flexible hose, there was no way to get away without a flexible hose at that point. The temperature was down to a point that the flexible hose could deal with, and so it no longer had the aging problem that we found when we first put the system in and so we did the same.

TP: So what was the first FPSO that you worked on?

JC: The Castellon, off Spain.

TP: That's the first one?

JC: Yes. As far as I know, it's the first one.

Then I helped—Agip started to develop the Nilde field, which was, again, a single well field, again the same sort of idea, and I was the Shell man on that because Agip was the operator. I just followed along and gave whatever helpful advice we could from our own experience from Castellon to Nilde.

TP: Nilde was in the Mediterranean too?

JC: Yes, it was off Sicily.

Then we found this field off Tunisia. All of these things are driven by economics. We're just trying to find the most economic way of doing it. Off Tunisia we found a slightly bigger field, 10 million barrels, not one of your billion-barrel jobs. Again, the problem of how do you produce and do that economically, and we decided that subsea wells tying back to a riser, a riser going up to a mooring to a tanker with floating production storage, offloading. I can show you a picture of it, if you'd like. Then the tanker would come alongside and take off the stabilized crude. We were lucky in that particular field in that the gas that was coming off was, I think, over 80 percent CO_2. So we didn't have a flare problem. We had a problem of just getting CO_2 away, so we could blow it out of the vent.

TP: What water depths are we talking about here?

JC: The actual vessel was moored in about 400-foot water, and the wells were in about 800 to 1,000 feet, so we moored the tanker on an adjacent hill, if you like,

and we produced the wells from deeper down. The wells were actually very shallow wells, about 4,000 foot, and that was another problem. Because they were so shallow, you really couldn't drill from a central point and deviate. You wouldn't have gotten the coverage for the field, so another reason for going to the subsea individual wells was the shallow reservoir.

TP: Where was subsea well-head technology by this time? I mean, they weren't using it in the Gulf yet to really a great extent. I know Shell was always opting for platforms over subsea. We're talking about the late seventies, right?

JC: Yes. This was—I'm trying to think of the dates—1982 was when we went on production there. We'd obviously got experience from the North Sea, some subsea wells, the Spanish well and so on. But we were certainly learning a lot from every angle, both the control of the wells, because the control systems had to be adequate as well and making sure that the dimensions—we were trying to make that as simple as possible.

Matter of fact, on Tazerka we used hydraulic system. Those were electrohydraulic systems. Nowadays with the distances you're involved with—in fact, I worked later a project where we had to go to electrohydraulic in order to get the signal to the well quickly enough to shut the valve in time. That was a different project altogether on the North Sea where again we used subsea wells coming to, in this case, a central platform with a tender rig, so the platform was an absolute minimalist.

Again, there, instead of having a problem with cooling the fluids, we actually had to make sure they stayed at the right temperature because they had a high paraffin content. So we laid bundles of pipe inside a container pipe. We towed it out, built it onshore, towed it out, sank it in place, and with that we were able to provide insulation all around all the pipes so that the fluid, the wellhead pressure temperature was kept right the way through to bring it up to the platform. So that you come across problems in both directions. [laughter]

TP: So did you continue working on FPSO concepts?

JC: I did. In fact, we originally looked, after I'd worked on the Tazerka project, went to Nigeria, and there I did what I would call a broadening exercise, in that I wasn't working so much on offshore, because we had delta and land and so on. Then because of my experience, I suppose, they asked me to do the Gatta [phonetic] project, which needed a complete fresh look, because, again, economics were showing it to be rather marginal. So we looked at a floating production system for it, but decided that in view of the weather conditions, if we could get a platform, that would be the best, and we did.

But by doing the subsea wells and doing them—I think we drilled the wells two seasons before we put the jacket in. We spent that all season drilling the wells. The following season we laid the pipelines to where the jacket was going to be, and then we put the jacket in and did the final tie-ups in the third

season. By the end of the third season, we then had a platform ready to drill wells through the platform using a tender vessel rather than having the platform built for the drilling as well as production.

Then because we had those other wells already tied and ready, we were able to go into production almost immediately at the end of the third season. So that made a big difference in the economics, because we had a nice flat-ish oil and gas profile for production almost immediately, which normally if you were to start up a field development, you know, you start drilling the wells around and so on and you build up and so on and then you get to a climax. We were there within months, so it was a good exercise, again driven by economics. That was, I suppose, the last of what I call the subsea innovative stuff I did. After that I went into general gas management [unclear] in the U.K., but still with Shell until I retired. I thoroughly enjoyed—

TP: Did you work on any other FPSO? When that concept became more viable and in use around the world, did they come looking to talk to you about it?

JC: Yes, they did and certainly, I mean, one of the things that we looked at in particular was liquefying natural gas because we had some big fields in the Far East and Australia. In fact, now I know, I've been retired for fourteen years, they had one of the biggest floating—you can call it an FPSO. I think they're calling it an FLNG project, and we were looking at that back in 1977, '78, as to what we could do because of these gas fields. At the time it wasn't considered viable, so it's taken a few years, twenty-odd years, more than that, maybe thirty years.

TP: When I was at Bellaire on Thursday, they were listing all the accomplishments of the research lab, and before we got on the stage, they were debating whether or not we could credit the Belair lab for having anything to do with floating LNG and they said, "No, no, that's a different part of Shell."

JC: Well, I mean, we looked at things and producing these things, and, in fact, in those early days we were not only looking at LNG; we were looking at converting the methane to methanol as liquid so we could then put it into a transportable form, again, if you like, from an FPSO. I remember working with some people in The Hague then on other types of floating systems. I mean, they were not necessarily tanker-based, but more tanker-shaped-based because the FLNG systems were just an enormous barge-like structure.

We looked at units where it was—let me see now. There was a spar, which we had used in the North Sea, but this was a semi-spar and the tanker would have been able to rotate around this semisubmersible vessel, rather than having a square surface, a sort of circular one.

TP: Like the spars they use in deepwater now.

JC: So we were looking at things like that when I was in ocean research and development back in the late seventies.

TP: Fascinating. A lot of this stuff was on the drawing board long, long before it became commercialized even.

JC: Yes. Well, you've got to persuade the shareholders and the board that what you're going to do is actually going to work, and I found a lot of the time that I spent working on these projects was convincing the next guy on the ladder that we could actually have a subsea well that was easily controllable and would produce the goods and flow lines that would take whatever was necessary, because oil and gas comes in such various forms because of the high paraffin content or the [unclear] content or whatever and all that sorts of things. So it does take quite some time. What's that wonderful expression about there's nothing so strong in the world as an idea when an idea has come and everybody follows. Then you can go with it. But I have to say that I was pleased and amazed at the good support one got from the senior people at Shell to come out with innovations and things that would go.

TP: Did you ever happen to know Richard Sears? He maybe was after your time.

JC: I know the name, but I can't recall.

TP: He worked in the North Sea, and he told me this great story about the Shell-Exxon joint venture in the North Sea, and when it came time to determine which prospects they were going to drill first, there was a difference of opinion because, he said, the Shell—I assume it's true to a certain extent. The Shell people wanted to drill the most difficult-looking prospect first so they could learn from it and take that knowledge and apply to the other wells. Exxon people wanted to drill the simplest one first, because that was the one they could get on production earliest and get the cash flow going. You know, not to put too fine a point on it, not that Shell didn't care about cash flow and not that Exxon is not a technological company, but it's a different culture.

JC: Different cultures, definitely. Yes, I found that.

TP: Does that sound right?

JC: The Gatta [phonetic] project was with Shell-Esso joint venture, and we spent a long time, well, a year, and quite a lot of money just doing all the necessary tests and research work and so on to prove that we could do it to the satisfaction of our joint-venture partners, in this case Esso. I think it was the fact that we were able to get that nice flat production almost immediately, which really appealed to Esso, anyway. It appealed to Shell as well, but it certainly appealed to Esso. All those things combined, again, helped the economics of the thing.

The great thing about all these fields is you rely on the petroleum engineers. The petroleum engineers or reservoir engineers say "it's ten million barrles" and so you design the thing for five years, and, of course, it's still going after ten or twelve years. It's produced a lot more than 10 million barrels. The problem is they only designed it for five years. All your inspection systems are designed to come in after five years. Now, what do you do? Do you take it away and bring it back or so on? We managed to persuade the (like Veritas) certifying authorities that we were able to continue operations, but that's why it's good news from one aspect that the petroleum engineers have underestimated it, but bad news because you've designed it for a different kind of criteria.

TP: We have all these old platforms in the Gulf of Mexico now been there for thirty years. I don't think anyone was planning for them to be there that long.

JC: No, that's right. That's absolutely right. And the same with Gannett [unclear], I think. I think we were due to stop in 2008 [unclear]. And it's 2011 and we're still going strong. So, you know, thank heavens they—

TP: When did Gannett start?

JC: We went onstream in Gannett in '92, so 2012 will make it—

TP: Twenty years.

JC: Yes, and it was only supposed to have a twelve-year life, twelve or fifteen. But thank heavens it's still producing.

TP: Then you said you moved out of the offshore into gas or still involved in—

JC: No, still offshore, but I moved to—geographically I went to the southern North Sea, where I actually started, if you like, with what I call my "serious" offshore work. My first groundings were in the southern North Sea when I was based in [unclear]. We had discovered gas there in '67 or '66, I think. Sixty-six. I went in '67, and by '68 we were on production with gas. Quite an interesting time there because we had something like twenty platforms, and they were getting to the point of being very difficult and costly to operate, and we had, I think, seventeen manned platforms and three unmanned platforms. By the time I left, we had three manned platforms and eighteen—we'd put in a new one—unmanned platforms which were all controlled and maintained from the other platforms.

TP: So you were managing that transition.

JC: Transition. The other good thing about that was that when I got there in '67, '68, I don't remember how many TCF of gas we had, or found and established by the time I left and retired in '97, we had the same forward plan in TCF to produce,

because we'd done more exploration and kept up the reserves so that we could go for another thirty years. I'm hoping it's still going.

TP: Are there other individuals, looking back over your career, who are influential in your own development or who stand alongside you in all of this?

JC: Well, Howard, obviously, is the first person that comes to mind.

TP: Howard Shatto.

JC: Shatto, yes. We were together on the deepwater drilling. Zinkgraf. Dillard Hammett [phonetic], who was very encouraging on the Sector 445. I'm trying to think back now, some of these names. Obviously when I went to The Hague, Leon Vincken was very encouraging.

TP: How about the Castellon project? He was involved in that.

JC: He was very much involved with that. Well, he was actually—he had the job of being head of offshore research and development at the time that, if you like, Castellon came out, Nilde came out, and even Tazerka. I was given the job of project manager, but he was still the head of offshore research and development.

Another person, of course, who also had a big influence was Ron Geer because of his knowledge of the offshore and so on. And there was a lot of cooperation between Shell Oil and Saipem. One group would work on one thrust in one direction, another group would work on another thrust in another direction, and we'd finally cross over. One would stop that and decide to do that, and the other way around. But it all helped. I think Leon used to call it a friendly competition. But it all helped to come up with results that were successful because we were able to get that going.

TP: For a long time there had to be this separation because of the minority shareholding in the U.S., but after the buyout in '85, it became much easier to get that interchange.

JC: That's right.

TP: And Ron Geer, he was one of the first people inducted in the OEC Hall of Fame.

JC: Yes, I think he was.

TP: For the Rudac system.

JC: Yes. I remember I've been lucky enough to come to two of the Shell Oil pioneers reunions.

TP: In Galveston.

JC: Galveston. I've seen the Ocean Star [museum] and the name's already there, and it certainly came as quite a surprise to get an email to say—Howard said, "They're looking for you." [laughter] Then we tried to sort out and find out who other people were involved. Frank [unclear], sadly, died, but I think Leon will accept his award posthumously. Leon, as I say, was a tremendous influence. There was another guy called Bob Busky [phonetic], who, sadly, died as well, who was in Shell International.

TP: How about Petrobras people? Did you ever have any cross with Petrobras?

JC: I did. Funny enough, I went to the Petrobras equivalent of the offshore technology conference, and I'm going to say it was about '81 or '82, because we had—it must have been '81, I think, because we'd made a model of what we'd planned with the Tazerka and went down and made a presentation on it. To a certain extent, it was a working model and the one showed how the riser and the base were lowered into place and then the tanker came along with the yoke and so on, and the manifold went on top. I remember trying to demonstrate this thing, and, unfortunately, I came to the end of the tether of my microphone, nearly caused a disaster. But, again, it worked.

TP: They hadn't done that yet in Brazil?

JC: They hadn't worked on a floating production system as such, but they did have—I'm trying to remember the name of the field. Campos [Basin]. I remember going up to visit there. They were already producing on a semisubmersible, from a semisubmersible rig, but they were using quite a different system in that the rig had become the floating production system, but it was not a storage. There was no room for storage, so it was piped to a tanker with an SPM [single-point mooring] kind of attachment. It wasn't all in one unit. But it—

TP: But they utilized the concept most extensively in the world, right?

JC: Yes. Yes.

TP: I mean Petrobras did.

JC: Yes. Well, again, they've got water depth, so they need something like that and driven by economics, it makes a lot of sense.

TP: Now we finally have the first FPSO here in the Gulf of Mexico after a long time, and it's Petrobras, in the Chinook field. It's ultra deep water. It took forever to get the—you have the Jones Act constraint in U.S. waters, but they finally got regulatory approval and it went in, I think this summer, last summer.

JC: I know they're being honored as well.

TP: Yes. Is there anything else you'd care to share with us that you can think of?

JC: I should have thought a bit more about it before I came.

TP: No, but this has been very useful. I think we can free you from your mic. We don't want you to be tethered too long. But thank you very much and congratulations.

[End of interview]