Interview with Dave Johnson

1. **Greetings Mr. Johnson. The fame of your products is greater than your own. Would you be so kind to introduce yourself?**

   Well, I was born and raised in California, and lived quite a bit of my adult life in Arizona. I had many interests including electronics. In 1981, I was hired by Fisher Research Lab (then in California). Left Fisher to work for Tesoro in 1995. Left Tesoro in '97 hoping to start an Internet information service, but White's heard about it and hired me as a contract designer for several years. (Good thing, too, my proposed Internet information service would have failed.) During this period I also worked for Troy. In late 2002 my projects with White's and Troy were already finished, and I was hired First Texas Products in El Paso, Texas, as an on-premises employee. I've been with the company ever since.

2. **Many of the people reading this interview unknowingly own products of your design. Would you mind listing them?**

   My first metal detector (in 1971) was a portable experimental vehicle detector for use on roadway loops. It discriminated between cars and trucks, but to become a practical product would have required a lot of development and nobody was interested in investing in it.

   Fisher in California: 1260, 1220, 1210, 1235, 1225, 1212, 1265, 1266, CZ6, CZ5, CZ20, original Gold Bug, Gold Bug II, Gemini, and industrial instruments including TW6, FX3, XLT-16, PF-18, and circuitry of the TW-770.

   Tesoro: Diablo MicroMax, Lobo SuperTraq.

   White's: GMT, MXT, analog circuitry of DFX, Beach Hunter and PCL-600 line tracer.

   Troy: X-5/X-3.

   FTP Bounty Hunter: major revisions to existing platforms most of which originated with George Payne. The BH Junior, Platinum, Gold and security wand (sold under various trademarks) were new designs.

   FTP Teknetics: T2, Alpha, Delta, Gamma, Omega, G2.

   FTP Fisher: F2, F4, F5, F75, F70, new Gold Bug, circuitry of the TW-82 industrial line tracer.

   In the case of microprocessor-driven FTP products, the software was coded by John Gardiner and Jorge Anton Saad. Mechanical designs were done mostly by other people, but I engineered the ergonomics of the T2 mechanical design, which is also used on the F75.

3. **Describe the process of designing a metal detector. You no doubt need a good team. Who else works with you?**

   It's a compromise between what marketing department wants to sell, and what engineering department is capable of delivering. Some products require years of development of new technology before they're ready to sell-- for example, the CZ was ten years between initial concept and product introduction, and the development process went through 18 different prototype designs. Other products are adaptations of things already in existence and don't take very long to develop.

   For the last several years, the consumer metal detector development team has been mostly myself, John Gardiner, and Jorge Anton Saad. Several other engineers have made valuable contributions to these projects. Although I have input to mechanical design, actual mechanical design is done by people in other departments.

4. **It can be said that First Texas Products' metal detectors gave a breath of fresh air to the industry, emphasizing user-friendliness and simplicity. Will this still be the trend in the future?**

I like products that are easy to use. I don't like complicated stuff. I don't like gadgets and don't own a television, stereo, or cellphone. But I do have a computer of course; I wouldn't be able to do my job without that!

Sometimes in order to achieve good performance with a simple exterior requires a lot of complexity hidden inside. The CZ's are an example: horribly complex inside the box, but simple outside. The new GB/G2 machines have a very simple user interface, but to get the performance and smoothness of response we had to hide a lot of complexity in software.

Some customers like a complex user interface with lots of programmability, and there are companies out there who target their designs to those customers. We can't do everything, so we concentrate on what we're good at, which is exterior simplicity. I do believe this is the wave of the future, but only time will tell if that prediction is correct.

5. **Your T2 and F75 machines created many fans. To what would you attribute the success of these units?**

The best ergonomics in the entire industry, in fact the only products for which the manufacturer publishes ergonomic specifications. We did it scientifically, not by guesswork.

The T2 and F75 offer high sensitivity and excellent target separation. This made it possible to search in areas previously searched and thought to be "cleaned out", and to find lots of targets as though the site had not previously been searched.

The T2 and F75 have high-strung personalities like a racehorse. A lot of experienced detectorists like this, they "listen through the noise". They're not the best detectors for someone who is less experienced or less intense about their searching. For such people an Omega would usually be a better fit.

The T2's simple menu system puts it against competitor's machines that are much more difficult to get figured out. Another example of our preference in exterior simplicity.

The T2 and F75 are capable gold prospecting machines, but they never really caught on in the USA for gold prospecting because here most gold prospectors use specialized gold machines like the Gold Bug II. However the T2's gold prospecting capability has made it popular in Africa.

The F75 is popular mostly in the USA because of features designed specifically for detecting USA coins. The T2 is generally better suited for relic hunting because of the lack of such features and also its expanded iron discrimination range.

6. **The F5 and Omega 8000 surprised us with their high performance as well. What are their unique qualities? What gives them an edge? Please reference other models at your own discretion.**

The F5 and Omega are based on the same platform and have similar basic performance. The major differences are the mechanical design and the user interface. With the F5, there is no menu, everything is always visible. People who are comfortable with digital interfaces may prefer the Omega. For people who search in all-metals autotune mode (such as in gold prospecting), the F5 is generally regarded as superior because it provides independent control over gain and audio threshold.

Other machines based on the same platform are the Teknetics Alpha, Delta, and Gamma; and the Bounty Hunter Platinum and Gold. Among these my favorite is the Delta, because it's so easy to use and yet offers performance in discrimination mode which is nearly as good as that of the Omega. Quite a few people with expensive machines have gotten a Delta as a loaner and backup machine, and find themselves reaching for it first if they're searching a playground or park where digging deep holes is forbidden.

7. **If you could pick a universal coil for small objects searching, what characteristics would it have in terms of type, size, form factor, etc.?**

There is no universal searchcoil. For finding small objects and for searching in an area where there's a lot of metal trash, a small searchcoil is best. These typically range in diameter from about 9 to 14 centimeters.

An elliptical shape (versus round) provides slightly more coverage and slightly better target separation; however in small searchcoils the difference is not so pronounced as it is with larger searchcoils.

Small searchcoils usually go nearly as deep as standard searchcoils (typically 20-25 cm diameter round or 25-30 cm length if elliptical).

8. **How much does a Chief Design Engineer earn at First Texas Products?**

I think I work for cheap, but the company president thinks I'm expensive.

9. **With the new limited editions of the T2 and F75, it would seem like metal detectors can now go as deep as they ever will. What other aspects of metal detectors need to improve now?**

The LTD/SE versions of these models have a reputation for lots of depth. Although they don't represent the limit of what's possible, getting additional depth out of metal detectors is difficult.

There are many ways in which detectors in general can be improved in the future. However, the ones that excite me most are ones which I can't talk about until they're out of engineering department and onto the production line being offered for sale.

10. **Mineralization has always been the curse of metal detectors. Do you foresee VLF technology capable of ever overcoming bad soils?**

I expect to see big improvements in the ability of VLF metal detectors to deal with soil mineralization. However I can't discuss the details.

11. **Lately, we have been more concerned with soils contaminated with iron trash, such as nails. Among First Texas Products' machines, which ones would you recommend for those soils?**

The GB/G2 machines have earned a reputation for being the best in areas where there is a lot of iron trash, with many experienced detectorists saying that these machines are better than anything else regardless of price for searching such areas.

It didn't happen by accident. Earlier I referred to exterior simplicity hiding complexity in software: this is an example of what I'm talking about.

12. **What is your opinion on aftermarket accessories designed for your machines?**

I would suppose that you're referring primarily to searchcoils. Back in the 1980's and 1990's there were companies in the USA that made aftermarket accessory searchcoils, and many of these were of poor quality.

Nowadays everything has changed. Most of the action is coming from Eastern Europe, and thanks to the Internet the word gets around quickly who's making inferior quality stuff and who is making reasonably good product. Companies that have been in business long enough to become recognized trademarks have generally achieved that by earning a good reputation among their customers.

In the metal detector manufacturing industry, some people regard aftermarket manufacturers as competitors and other people regard them as helping to sell metal detectors. I'm one of these other

people, in general I regard aftermarket accessory manufacturing as a good thing as long as the products are good quality.

13. **Considering the global economic situation and high gold prices, a new "gold fever" is more than likely. Do we have good machines for Gold Prospecting?**

Gold prospecting is an important part of our market, and I expect it to grow. Currently, our best gold prospecting machines are the GB/G2 machines, the Gold Bug II, and the T2's. We have more advanced technologies under development, but I can't tell you what those are or when we will have them for sale.

14. **What tips and advice could you share to maximize performance of F75 and F5 machines, which seem to be the most popular in our country?**

For the F-75: if you're having difficulty listening through the noise, turn the sensitivity down.

For the F-5: master the interplay between threshold and gain.

15. **A question for Jorge. I know he is around there but, when you go out detecting with David, who brings home the most finds? Is it true as rumor has it that David is not a good detectorist?**

I'm not a good detectorist, that's why I like simple easy-to-use machines. --Dave J.

Your turn, Jorge:

Oh, well, I have attended to a few rallies, exhibitions, hunts and shows, and detectorists are always amazed to see how easy they surpass my limited ability to use our own detectors. I know our machines inside and out, better than anyone else, and yet there are many people who can use them more efficiently than me. Truth is, we do not get to spend as much time with our toys as we would like to, or as some of our customers do. Furthermore, we have a few testers on site that are much more proficient than us in the use of our machines to remind us exactly that. So in all fairness, I predict that if we ever go head to head, Dave and I will either come down to a tie or a result dictated by mere chance… other than gold prospecting that is, because there Dave's extensive knowledge of soils and terrain would clearly give him an edge.

16. **Thank you for your time. Is there anything you want to say to Bulgarian detectorists?**

Our product designs used to be aimed primarily at the USA market, and especially the peculiarities of USA coinage. In the last several years, all that has changed. The best example of what I'm talking about is the GB/G2 machines, which don't even have coin icons above the target ID scale. We designed it for non-USA markets, but I was sure it would catch on with USA customers as well, and that's what happened.

In the future, you can expect more FTP-Fisher products designed specifically for European customers.

Thank you, Desislav, for contacting us for this interview.

Wishing you the best / Servidor de Vd.

Dave Johnson
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