County Hunter News

November 1, 2007
Volume 3, Issue 11

Welcome to the On-Line County Hunter News, a monthly publication for those interested in county hunting, with an orientation toward CW operation.

Contributions of articles, stories, letters, and pictures to the editor are welcomed, and may be included in future issues at the editor's discretion.

The County Hunter News will attempt to provide you with interesting, thought provoking articles, articles of county hunting history, or about county hunters or events, or provide news of upcoming events.

We hope you will enjoy the new County Hunter News. Feel free to forward, or provide links. Permission is given for copying or quoting in part or all provided credit is given to the CHNews and to the author of article.

County Hunter Nets run on 14.0565, 10.122.5, and **7056.5**, with activity nights on 3556.5 on Tuesday evenings around 8-9pm Eastern Time. Also, with low sunspot activity, most of the SSB activity now is on 'friendly net' 7185 KHz. The cw folks are now pioneering 17M operation on 18.0915. (21.0565, 24.915.5, and 28.0565 when sunspots better). Look around 18135 or 18.132.5 for occasional 17M SSB runs.

You can see live spots of county hunter activity at ch.w6rk.com

For information on county hunting, check out the following resources.

The USCA award is sponsored by CQ Magazine. Rules and information are here: http://countyhunter.com/cq.htm

For general information FAQ on County Hunting, check out: http://countyhunter.com/whatis.htm

MARAC sponsors an award program for many other county hunting awards. You can find information on these awards and the rules at:
http://countyhunter.com/marac_information_package.htm

The CW net procedure is written up at:
http://www.wd3p.net/ch/netproc/netproc.htm

There is a lot more information at www.countyhunter.com

De N4CD (email: telegraphy@verizon.net)

Notes from the Editor

1) **October Activity** – Sunspot activity is low. At my QTH, 20M is horrible and most of the time I can't hear the mobiles running with my modest setup. 40M has been better – but even there – the range is often limited by propagation conditions. Most activity seems centered on 40M SSB and 40M CW. Only a few awards were issued in October – and most at the beginning of the month. Nothing in the second half of the month so far from MARAC. Many are getting close to finishing – either first time, or for other awards. If folks can hear their needed counties when run, we should have quite a few finishing up by spring 2008.

2) **Mobile Activity** - In October, a few mobiles headed toward South Carolina for the small gathering there. (Around 40). Half of the folks who went there seem to magically get there without putting out many or any counties, but Dan, KM9X and Judy, KB9MGI, Ray, WG6X, Bob, N8KIE, Cliff and Nelda, K6JN/W6XJN, Dave, KE3VV, Scott, KA3QLF, Frosty, W0FP, Bob & Ann, KA9JAC/KB9YVT, and a very few others took extra days to put out the counties on the way there and back. Where were the others?

The CW activity was minimal except for a small handful of mobiles you could count on one hand. I saw a lot of spots, but working that far back east

on 40M wasn't going to happen, and 20M didn't provide much at all - no propagation. For those back east – lots of 40M SSB activity for a few days.

This is the remnants of the 3M convention which started over 25 years ago, and peaked out at attendance of 250 or so. There were about 40 registered for this even. Perhaps the location so far east doesn't attract many other than those up and down the east coast, and the few hams in SC, only one of whom ever seems to run any counties?

Ray, WG6X, reported on the K3IMC forum:

"Basically I only ran 8 freeway green stampers in TN and 26 off the freeway in TN along with 2 more in KY and 2 in VA. True, there weren't as many active convention bound mobiles as normal due to the lower turnout this time compared to the past.

As a norm I quite often go out during conventions and run, but not this time.

In the past the net controls have been really overloaded along with a lot of time lost checking and moving mobiles during these times to say the least of it. To be honest, just make a contact with a bingo holder, be it net control or running mobile and say where you are and if no one moves you, then many feel that you have made your needed transmitted requirement for the county/ies you are in when you made the contact. In the Platinum case, a Master Gold holder contact is required.

In my case, I didn't get on the cw nets as much as I had hoped. Of course there was a contest thing on for part of my TN run time. "

Ray ran some rare TN counties – almost finished me up there for MP, and likely I missed him in that one. A few dedicated county hunters did attempt to put out the counties they went through, taking detours to less frequently run counties. Half the folks attending just magically got there without putting out a single county. Is this what county hunting is turning into?

Raleigh, W8QOI, made a trip down to Branson, MO for a reunion and put out the counties along the way. Jim, K0ARS, put out counties as he traveled for work. There were lots of quiet times during the month waiting for activity. Mark, KO1U, ran up in New England. KQ0B ran around in MO.

3) **Peak Oil News** – Lots of news this month. Oil prices reached new highs in October. The annual ASPO convention was held in Houston, TX and your editor was in attendance – full report later. The prestigious Energy Watch Group out of Europe issued a comprehensive study. There is not much optimism in the oil patch.

Keep in mind – **OIL HAS GONE UP 900% in SEVEN YEARS.**

OK – A quiz question for you. An important clue – Oil production in the United States peaked (was a maximum) in 1971. It is dropping at an average rate of 2.3% annually. In what year did the US begin to decline in exports to the rest of the world?

1971? 1984? 1968? 1946? 2001? Answer later – and this is a very important consideration in the overall equation worldwide.

4) **Steve, AA8HH,** finally got USCA! Having finished up over 2 years and 4 months ago, then getting terribly busy at work, it took a while to send in the application to CQ Magazine. Congrats!

5) In this issue an **article on 'keyers'** – from the past to the present.

6) **FORTRAN** - If you started in computers 30-40 years ago, you likely have had to use FORTRAN – which is still a popular scientific programming language. A bit on FORTRAN in this issue. If you start in computer science today, you might even bypass this – although a significant part of all software out there is still written in Fortran.

7) **7185 and the Space Shuttle** - OOPS – It seems that 7185 is the designated frequency for the retransmission of shuttle communications from Goddard Space Flight Center. According to:

http://garc.gsfc.nasa.gov/retransmission/shuttle_faq.html

"Kindled by a desire to spread the excitement of America's space program and of the Space Shuttle in particular, members of the Goddard Amateur Radio Club (WA3NAN) and the Amateur Satellite Corporation (AMSAT) devised a plan to re-transmit live, air-to-ground audio over amateur frequencies.

After overcoming many hurdles, the Shuttle Retransmission effort began on August 31, 1983. Communications is rebroadcast on multiple HF frequencies, including 7185, while the crew is awake.

It seems the county hunters accidentally overlooked this 'minor detail'. Fortunately, shuttle missions are few and far between, and now seem to be mainly shuttle duty to haul astronauts and supplies to the international space station. While the Space Shuttle is in orbit, the county hunters will have to use an alternate frequency – 7188 seems to be working.

8) **Ebay Fraud**

Duane, WV2B, posted a warning on the K3IMC forum for those who use Ebay to buy ham goodies:

"If you bid on ham equipment on eBay beware of false second chance offers. I recently bid on an IC-7000 on eBay, and ever since have been getting bogus second chance offers. Apparently a ham or someone familiar is watching auctions, or putting on fake ones in order to scam people. If you receive a second chance offer it will also be on "my Messages" on your eBay page. If not, it wasn't really through eBay and is a fraud."

Inventor of FORTRAN John Backus

The inventor of the FORTRAN programming language passed away in the past year. Way back in 1954, John Backus, while working at IBM, convinced his bosses to assemble a team to create a new programming language that could be easier to use than the required assembly language programming of the day. It was a quantum leap for programming.

He was working on lunar position programming at the time on the gigantic vacuum tube era computers. He quickly tired of the hand-coding of the hardware.

Prior to FORTRAN, computers had to be meticulously hand-coded- Programmed in a raw string of digits (machine language) or simple assembler language. FORTRAN, short for Formula Translation, reduced the number of programming statements necessary to perform operations by a factor of over 20. It took just as long to write one line of code – whether in Fortran or assembler - thus a programmer could then program 20 times faster.

He received the 1977 Turing Award, one of the industry's highest accolades, in 1977, and won a National Medal of Science in 1975, and received the 19993 Charles Stark Draper Prize – the top honor of the National Academy of Engineering. He worked for IBM for his entire career.

New students of Computer Science may think the world of programming started with Bill Gates and Microsoft and Basic. The first micro-computers in the 1970s came out only with machine language programming. They had no disk drives. Input and output was with hand entered bootstraps that could read cassette tapes. There were no 'operating systems' that could manage files and disk drives and input/output.

There was an immediate need for mid and higher level languages and an 'operating system'. At the beginning, there were several competing operating systems, including "DOS" and CP/M adapted from the mini-computers then in use for industry for process control. (Think Digital Equipment Corporation).

FORTRAN and COBOL, the top mainframe programming languages in use, required too much memory – each had thousands of features, most of which were not required for much calculation.

Bill Gates jumped in to provide the first 'BASIC' language – a high level computer programming language for the first micro computers. At that point, the PC became somewhat useful for engineering and scientific calculations, but it often lacked many trig functions, and usually did not have the resolution often required for detailed work (lunar orbits, space

flight, etc). Over time, BASIC improved, but as computers got more computing power, versions of FORTRAN became available for use on PCs.

Anyone in engineering school in the 60s or 70s likely ran into FORTRAN – it was usually required study matter. The infamous "DO LOOPS" that would allow repetitions got many folks into trouble – and of course, in BASIC you can also do the same thing and create spaghetti code that is hard to debug should something be astray (almost certainty when first written). FORTRAN allowed subroutines – which allowed programming libraries to be created, and re-used – things like statistical analysis routines.

If you are a scientific endeavor today, there's still a good chance you'll be programming in FORTRAN – many of the super computers use it, as well as C++. COBOL is still one of the most used languages by business on mainframes. Backus was also the developer, with Peter Naur, of the Backus-Naur Form or BNF, the metaprogramming notation that is used to formally specify programming languages, networking protocols, and file formats. Backus was also one of the earliest proponents of functional programming,

Perhaps by 2401, when Star Trek voice input computers are routinely available with the incredible databases they seem to posses, FORTRAN and COBOL will be retired.

It was the creative mind of John Backus that started the higher level programming phase of computer science.

Getting Folks Finished Up

Quite a few are closing in on various awards. Let's see if we can't help out the following folks get their needs for these awards down to zero. This month – several with just a handful to go – let's get them at zero!

Ed, KN4Y, is closing in on Master's Gold, doing it 'all cw'. He needs"

OR: Union
ID: Shoshone
MT: Mineral

To give a contact for MG, you must have one star and Bingo.

Don, W0EAR, is closing in on 5th time. He needs:

GA: Jones, Evans
TX: Tyler
CA: Madera

Norm, W3DYA, the guy who has been running all over different states in QSO parties, needs 10 to finish up 3rd time. Can you help him with:

AR: Sebastian
KY: Magoffin
LA: Vernon
MO: Dent
MT: McCone
TX - Chambers, Falls, Limestone, and Robertson

K5OT is down to a handful for USCA – let's get him finished up! He ran 30-40 counties at least in the TQP for the folks (part of multi-op group)

ID: Clearwater
KY: Knox
MT: Flathead
VA: Russell
One held back

Larry, N2OCW, is closing in on MG. Check the K3IMC web page.
WQ1H has a handful to go for USCA. See if you can't help him out.
N5PR down to 12 to go!
WD6CKT is closing in! (one to go?)
Terry, WQ7A down to 3 for Master's Gold!
Leo, WY7LL is at 49 and counting for first time.

San, N7PIB needs 12 for Master's Gold
AB7RW needs 7 to finish Bingo.

Many, many others need less than 20 to finish! Check the needs page at K3IMC to see what you can do. With band conditions rotten, many are not making big trips, but just smaller ones. That can often get the ones folks need to finish up if every active county hunter ran some counties within 150 miles of the QTH – just a day trip. Of course, check with the folks to be sure they'll be around when you go.

Naturally, if you have any leads for stations in those counties, pass them on. Naturally, for Bingo and MG, the contact must be made with someone qualified to give that contact for the award. Many, though, are working on first time or Nth time, and anyone is 'good' for those in every county! \

Keep your needs updated on the K3IMC Special Needs Page. If you don't update them every 30 days, they go into hibernation. Simply click on 'update needs' and mark them current if there isn't any change. Folks won't know what you need unless you keep them there!

October Trips – On the Road with N4CD

September had been a good month for travel, and now there was a hamfest scheduled in Bell County on Saturday, October 6. I frequently go down there for the twice a year big swapfest. The weather was going to be good for Friday and Saturday - Maybe some showers on Saturday afternoon. It was still hot in TX – as in many parts of the country with temps 10-15 degrees above normal. Despite the large number of counties put out in the Texas QSO Party the weekend before, folks still needed counties and needed contacts good for other MARAC awards – only one regular county hunter with a star/Bingo was out for the TQP – W3DYA – who ran quite a few. Many working on USCA and Nth time filled in many counties – some reporting having worked over 130 TX counties in a single weekend!

So Friday afternoon, I packed the car for an overnight trip, and ran down the Interstate 35 to Bell County. Oh, my gosh! I was going the right direction. On this weekend, there was the annual Cotton Bowl game (Texas vs OKLA)

– plus the Texas State Fair – the interstate headed toward Dallas was creeping along at 15 mph or so for 150 miles headed to Dallas! Fortunately, I was going the right direction headed away from Dallas. There's all sorts of motels nearby to the hamfest, and I stayed at the Motel 6 in Temple.

As usual, there were already a few hundred people there at the hamfest on Friday afternoon at 5pm when I got there, and about 50 folks in the outdoor flea market with stuff to sell. I wasn't temped. Some old Hallicrafters, a car full of Collins ($$$) stuff, and loads of old parts. Not much of interest to a county hunter. One MFJ 17M QRP rig was for sale, but didn't buy it….price too high. When activity picks up on 17M, I might have a QRP rig along when I have a ham co-pilot putting out counties with me. That way, we can work each other to get some needed counties. Today I have a completely separate 30M CW rig. Many who do it all on phone, or mixed, simply use 2M handhelds to make contacts when traveling together.

I did have a short visit with K5AX, who occasionally gets on and runs a few counties on CW in south TX for the county hunters. He's running 'lower power now'…just a single Ameritron Amp – cw only. In the last few years in his previous vehicle, he ran a pair of Ameritron Amps in parallel! (there is a tendency in TX to do things in a 'big way')

This hamfest starts early on Sunday morning – about 6am – with general admission to the inside at 7am. It's in the Bell Expo facilities – with very large, tall buildings for farm shows, etc. Folks drive in and unload. There are usually loads of boatanchors, half a dozen commercial vendors, and a fair amount of goodies for sale. The sun didn't rise till after 7am, but bargain hunters were out there with flashlights checking out the goodies.

I saw one of the old Hustler triple resonators in one unit – the guy wanted 25 bucks for it – covers 20/40/75M – but likely had its problems since it is not around any more in production – was about 14 inches tall – shaped like a wing, about 1.5 inches thick and maybe 6 inches in width. There were two holes for adjustments. I bought a few small things, then headed out by about 8:30am, going south.

Now a normal ham would likely just head back home, but county hunters tend to take the 'long way' – in this case, heading another 150 miles south, then going east 50 miles, then swinging back north through different

counties. Several counties I would run are on the K3IMC 'most wanted list' on the needs page.

N4CD Bastrop TX – LC for AB7RW

I needed to run 3 counties down that way for MP, and folks needed a few of the counties I would hit along the way – so it was down the interstate to Bexar, across southeast a bit to Wilson/Karnes, then up through Bastrop for AB7RW (who is closing in on Bingo) and others, through Robertson then home – about 500 miles in a day. Jim, VA3XOV, needed Karnes – he is trying to finish after starting in 1991.

Joyce, N9STL, Darrel, W6TMD, Ed, N4UJK were around to give me credit for MP in the ones I needed, which I appreciated. Folks showed up for their needed counties – always a good feeling. I had just sent out a few emails saying I might do the trip – several other things were going on at the same time, so it didn't get posted – but you never know where N4CD will wind up. Norm, W3DYA, was apparently snoozing as I ran 2 of his last 10 for WBOW – and he hadn't posted his needs yet, so no clue to send him email saying I was going through his needed counties. Folks, post your needs if you want to be alerted!

Conditions were not 'great' but cw seemed to work for most in most counties on at least one band. 20M seemed fairly poor – no DX whatsoever the entire day. 40 and 30cw good. 40M SSB so-so. It's a long way to anywhere from south TX on 40M – the signal has to travel 400 miles just to get out of the state. The A index was up in double digits.

This was the California QSO Party weekend. On 20M, it became jammed up around the net frequency with contest stations – but from the old days, I still had 14.113 – the alternate frequency for just such occasions, still in memory, and would QSY there after 40 and 30cw runs. Joe, N5UZW and Randy AD4IA were around on 40M SSB as net controls.

The few times I listened on 20M SSB, it was usually 'any mobile station ready to run a county?' and QRM from CA stations calling CQ CQP.

I pulled some stats for the Saturday from the W6RK site. This is for spotted runs, and not all runs get spotted. Interesting.

On 20M SSB – 36 runs
On 40M SSB – 43 runs
On 40cw – 22 runs
On 30 cw - 20 runs
On 20 cw - 26 runs

It was a fairly 'slow day' but folks were off chasing CQP stations, and only two or three mobiles doing much. More runs on 40M SSB than 20M (and more counties) – add in the cw, and for the bottom of the sunspot cycle, you can't complain too much. I didn't even carry the 17M antenna as the past few trips have produced almost no contacts with the SFI at 67. We need some sunspots and get the SFI up above 80 for some better HF propagation. Well, NEXT year going to the hamfest will hopefully be quite different.

After not even a week back home, I decided it was time to head on out to another hamfest in Paris – Paris, TX that is – Lamar county on October 13. According to Mapquest, it was 92.5 miles there – so it was just 'down the road'. Well, at 29 mpg in the Buick, that is still 3 gallons at $2.75/gallon – a minimum $16.50 in gas to get there and back. You don't make decisions about going to a hamfest based on cost alone – add in a few dollars to get in (sometimes $5, sometimes $8 or $10 or just a buck), plus the usual food at the hamfest or on the road as a snack, and you've got $25 invested before you buy anything. If you can, drag along a friend or two or three to share expenses.

I left the house at 6:30 am – very dark – sunrise not till 7:30 here this time of year. Nothing on the radio for the first hour or so, then hit Fannin County. A few showed up. On the way, there was a nice sunrise to watch as I headed

east. The next county over was Lamar where the hamfest was. It's a small hamfest, but it was an excuse to go mobile, scout for any radio goodies, and meet up with some friends.

After about an hour, I had seen all the hamfest twice – bought one little goodie – box with key paddle sticking through the front, a couple of switches, and it was labeled 'code thing' – it was part of an estate sale. The price was marked ????, so I offered $3, and the selling person said $5. I wasn't about to argue. I could tell it had commercial paddles – that alone was worth $5 to a cw op. It used a 9v battery, and was not working.

When I got home, I found that it had a HamKey key paddle assembly inside, along with a Curtis 8044 chip – and appeared to be a practice CPO, including small speaker. It didn't work even with new battery – maybe I'll just scavenge the paddles out of it. Not bad for $5, but if you count the gas to get there and home, then it winds up costing about another $25 on top of that – Hi Hi. Fortunately for county hunters, we can put out counties along the way and just enjoy a day's worth of county hunting, with the hamfest as a bonus along the way! Think of all the non-county hunters who waste all those miles driving through counties and not giving them out!

It was 93 miles there and a 150 miles to get back home with a detour through Delta, which both K3IMC and AE3Z needed for Master Gold, then down to Wood and Rains, and home via Rockwall, TX. Not a bad 'day trip' and the weather was nice – even a bit cool in the morning, then 80s by late afternoon. 40M was good – working coast to coast on 40M CW most of the morning till noon time, with N6PDB coming in nicely.

N9STL ran a bunch in AR in October, and gave me my last two for Platinum in the state. I only have a few states finished up, but working at getting them all along with the rest of the County Hunters. Maybe 2 or 3 more years to get it finished up. Still need hundreds and hundreds, but with more active mobiles with Masters Gold, it is getting a bit easier. Of course, many others needed N9STL's counties for the other awards, too.

40M SSB activity very good with half dozen mobiles – almost 'backup up' – lots of mobiles ready to run lots of counties with N9STL in MO and AR, KI0JD/KA0DDJ heading south from MO, W0FP on a trip, KA9JAC/KB9YVT on a trip headed to the mini, AC0B up in WI, K2HVN in VT, K0RCJ in OH, plus more. Most mobiles were copying each other,

which makes it nice – unlike on 20M these days. N5UZW, and AD4IA and many others helping out with relays and calling mobiles when needed.

The PA QSO party started late in my trip – so 20 CW got occupied by contesters, but by then was getting close to home, so it worked out fine.

Toward the end of the month, I headed down to Houston for a few day International Peak Oil Conference – but no radio – busy driving on the interstate and fighting traffic at 75-80 mph on I45 and in Houston vicinity, plus had to leave car in underground parking garage for 3 days. It was strange to be on the road with no radio. The speed limit is 70 mph, but if you aren't doing at least 75, you'll get run over. For a 100 mile stretch, even the trucks are running 80-85 mph!

Normally, I head back to MD for Thanksgiving, so likely they'll be a big trip planned for then to clean up a bunch of needs along the way. Dang, I still need about 10 in WV for Master Platinum – am I going to tempt the weather gods again?

Other mobiles were on the road in October, including N9JF, K0ARS, N9STL, N4AAT, WG6X, N8KIE, KE3VV, WB4KZW, KA4TYG, NX4W, and others heading in the general direction of the mid-south Atlantic coast giving out the counties. Scottie, N4AAT, was busy before the convention, and graciously let others put out the SC counties around convention time.

Dave, KF4KW, SK

As reported on the K3IMC web site:

Dave, KF4KW, died suddenly on September 28, 2007, from a massive heart attack. He was 58 years old.

As noted in his obituary at: http://www.wbko.com/obituaries/10237276.html

"He was a truck driver for C.R. England Truck Co., and was retired from Kentwood, Mich., police department and Grand Rapids Community College. He was a precision driving instructor, a martial arts pressure points instructor and an accident reconstructionist. He was also a member of Fraternal Order of Police and a ham operator. He was a Vietnam War Army veteran."

Dave had again become very active, within a few counties of getting his USCA. Back in the 70s and 80s, he was very active on the CH net and many others.

Straight Key Century Club

If you use a straight key or bug, or are just curious about the CQ SKCC you hear on the air, here's a link that will explain what the SKCC is all about:

http://skccgroup.com/

SKCC gives out various awards, including the Centurion Award for working 100 other SKCC members. The rules are basic:

"Operator must be an SKCC Member

Contact and exchange SKCC Number and Name with 100 SKCC Members

On any available band at anytime.

Contacts must have a Valid SKCC number at time of the QSO

QSO's **MUST** be made using a Straight Key or a BUG (Side Swipers are a Cross between a Bug and a Straight key so are also accepted)"

There are endorsements for a single band, and a 5B SKCC Centurion award. Currently they have over 3500 members. You can get your SKCC number for free.

After you get your Centurion Award, you can start working on your Tribune award by working 50 members who are also Centurions or higher.

In addition, there are certificates for Worked All States with SKCC members, band endorsements, etc.

Sounds like county hunting and the other groups (Century Club, etc) a bit, doesn't it. Well, with dead band conditions, and some days with not many mobiles, or something to do in the evening to keep busy (and those SKCC members are in counties too!), maybe you want to check this out? They sponsor weekly and monthly sprints. For the October monthly sprint, you must use a self constructed key! (Get out an old hacksaw blade and make one up!).

There's also a Yahoo group – SKCC – if you want to check it out. There's a free logging program, too, to track your progress. Long time county hunter, Fred, W4DF, was the first to achieve the Centurion Award.

de N4CD – SKCC #3529, 10-10 #20902, SMIRK #3745, SWOT #2022, USCA #883….and on and on…..More numbers than I know what to do with!

Nanotech Update

Lots of interesting work continues in the nano-tech area. Here's just a sample of what is going on – think small – billions of a meter.

1) World's best microscope

From:
http://www.smalltimes.com/display_article/307332/109/ARTCL/none/none/DOE,-FEI-partnership-produces-world's-most-powerful-microscope/

September 27, 2007 -- A microscope developed by the TEAM Project (Transmission Electron Aberration-corrected Microscope), supported by the U.S. Department of Energy, has recorded the highest-resolution images ever seen -- 0.05 nanometer and below. This is equivalent to a quarter of the diameter of a carbon atom.

The microscope will be delivered to the Lawrence Berkeley National Laboratory in 2008 and will be fully operational in 2010. To achieve this resolution, this microscope mixes two technologies, SEM (Scanning Electron Microscope) and TEM (Transmission Electron Microscope). Such a microscope will allow researchers to "study how atoms combine to form materials, how materials grow and how they respond to a variety of external factors," according to project leaders.

With the TEAM microscope it will become possible to study how atoms combine to form materials, how materials grow and how they respond to a variety of external factors. These constitute many of the most practical things that we need to know about materials and will improve designs for everything from better, lighter, more efficient automobiles, to stronger buildings and new ways of harvesting energy."

The special TEAM microscope is the result of a series of new technology breakthroughs, providing for higher stability than previously possible and incorporating the newly designed aberration correctors. TEM images obtained show an information transfer down to 0.5 angstrom. In STEM mode, frequencies better than 0.5 angstrom were recorded."

One angstrom is 0.5 nanometers. Half a billionth of a meter resolution.

2) Better printed conductors

From http://www.cemag.us/articles.asp?pid=703

“For conductors with vastly better conductances and cost, for the best printed batteries, for quantum dot devices, and for transistor semiconductors with ten times the mobility, look to the new inorganics, that is, the emerging world of new nanoparticle metal and alloy inks that are superior in cost, conductivity, and stability, such as the flexible zinc oxide-based transistor semiconductors that work at ten times the frequency and with better stability and life, along with many other inorganic materials”

3) Ozone detector chip

From: http://nanotechweb.org/cws/article/tech/31446

“Scientists in Germany have made a new, robust and compact ozone-sensor from indium oxide nanoparticles and blue light-emitting diodes (LEDs) on a single sensor chip. The sensor works at room temperature, unlike other such devices, and can detect ozone concentrations down to as low as 40 ppb. The team says that the device could be available to buy in as little as 18 months”

4) Nanowire memories – better than FLASH?

From:http://nanotechweb.org/cws/article/tech/31367;jsessionid=E06804279821A7A4E8BC5A494D59F528

“The first nanowire devices that can store data for long periods and have read-write times 1000 times shorter than existing portable memories, have been developed. The nanowire memories could replace FLASH memories currently used in all portable electronic devices, say the researchers who made them”

How about a terabyte of storage in your stubby pencil size plug in drive?

5) Fixing Cracks in Airplanes?

From:http://nanotechweb.org/cws/article/tech/31391;jsessionid=C59DCF9A9A3640685118254FE9B7EBEC

“An innovative new technique to identify and repair small cracks in aircraft wings and other structures using carbon nanotubes has been developed by scientists at the Rensselaer Polytechnic Institute in the US. The method relies on mixing together a polymer and electrically conducting nanotubes and monitoring the structure's electrical resistance to pinpoint where a crack is located. The nanotubes are then heated using a short electrical pulse to melt an embedded healing agent so that it flows into the crack and repairs it.”

Energy Watch Group on Peak Oil

The prestigious Energy Watch Group in Europe did an extremely comprehensive report on Peak Oil for the German Government which was recently released. The Executive Summary can be seen here:

http://www.energywatchgroup.org/fileadmin/global/pdf/EWG_Oil_Exec_Summary_10-2007.pdf

Their main points:

""Peak oil is now".

For quite some time, a hot debate is going on regarding peak oil. Institutions close to the energy industry, like CERA, are engaging in a campaign trying to "debunk" the "peak oil theory". This paper is one of many by authors inside and outside ASPO (the Organisation for the Study of Peak Oil) showing that peak oil is anything but a "theory", it is real and we are witnessing it already.

According to the scenario projections, the peak of world oil production was in 2006. The timing of the peak in this study is by a few years earlier than seen by other authors (like e.g. Campbell, ASPO, and Skrebowski) who are also well aware of the imminent oil peak. One reason for the difference is a more pessimistic assessment of the potential of future additions to oil production, especially from offshore oil and from deep sea oil due to the observed delays in announced field developments. Another reason are earlier and greater declines projected for key producing regions, especially in the Middle East.

The most important finding is the steep decline of the oil supply after peak. This result - together with the timing of the peak - is obviously in sharp contrast to the projections by the IEA. But the decline is also more pronounced compared with the more moderate projections by ASPO. Yet, this result conforms very well with the recent findings of Robelius in his doctoral thesis. This is all the more remarkable because a different methodology and different data sources have been used."

The major result from this analysis is that world oil production has peaked in 2006. Production will start to decline at a rate of several percent per year. By 2020, and even more by 2030, global oil supply will be dramatically lower. This will create a supply gap which can hardly be closed by growing contributions from other fossil, nuclear or alternative energy sources in this time frame.

The world is at the beginning of a structural change of its economic system. This change will be triggered by declining fossil fuel supplies and will influence almost all aspects of our daily life."

A Short History of Electronic Keyers

When I started out as a novice in 1963, there was no such thing as a transmitter or transceiver with a 'built in electronic keyer'. If you wanted one in 1963, you came up with some big bucks to buy something like the Hallicrafters T.O. Keyer, or, or as many hams of the day did – homebrewed it. Maybe built a keyer from the ARRL Handbook using some vacuum tubes?

Hallicrafters T.O. Keyer

You see these at hamfests for a big price – matches the cabinets of the Hallicrafters equipment. Otherwise, not much worth!

Many used 'bugs' which were reasonable to buy – Lafayette sold one that even a teenager could manage to buy by cutting lawns and shoveling snow

for a few months. There was really no inexpensive way to do much better without some building (or having a good income with disposable income).

If you had lots of money in the 1950s and 60s, you might have used something like:

“This tube keyer with built-in paddle was manufactured by the Electric Eye Equipment Company of Illinois. It was initially advertised in 1948, thereby becoming the first electronic keyer offered to hams. It is built on a plastic base, and has a cast aluminum cover. Overall it measures 11" long and 4-1/2" deep. This particular unit is complete but untested, the key cover shows typical wear and a crack,”

http://www.artifaxbooks.com/forsale.htm

Later, you might have bought something like this:

Duomatic AKS-7

“This rare old keyer incorporates vacuum tubes, relays and a paddle. It is one of the earliest commercial keyers, dating from around 1950. Interestingly, the paddle uses a Speed-X bug frame (it has the Speed-X bulls-eye paddles on the lever)”.

Likely there were at least half a dozen other small manufactures that churned out some keyers – but they were EXPENSIVE! Heathkit came along with several kit keyers that were popular, and still traded at flea markets and on ebay.

Heathkit KD-1410 Keyer

Heathkit HD-10 Keyer

A few year later in college in the late 60s, I managed to find enough spare parts in the college radio club supply, plus my own parts, to put together a keyer for about another $6-8 in parts and a chassis. It used a pair of 12AX7 tubes and a 'selenium rectifier', and ran off 117v – was in a 1950s vintage ARRL Handbook. Since I really didn't have the right type of pots (variable resistors - with various tapers – resistance vs angle of turn) it was a bit tricky to use, had a relay that loudly went clackety-clack, but let me get on cw with my SB-100 transceiver a bit easier and better than a straight key or a bug. The antenna was a 120 foot 'invisible longwire" of #24 wire that I managed to keep up through the winter in NY state.

The biggest item to buy were good Brown Brothers 'paddles' and they set me back about 15 hours of part time work at college – not cheap. Electronic goodies are a lot less expensive today.

I used the tube keyer for more than 5 years until I finally replaced it with a solid state keyer that used about 8 ICs – and did about the same thing. One of the guys at work designed it, and we built a dozen of them all at the same time.

If you had some spare cash in the 60s, maybe you bought an EICO keyer to go along with your EICO 720 Transmitter?

EICO 717 Keyer

Today, you buy a mobile radio like the IC706 or IC7000, and it comes with a built in iambic keyer. Home station transceivers not only have a keyer, but some come with memories as well. How did we get from there in the 60s to here, and what was the one single thing that triggered a very quick change?

Now, you can buy fancy keyers with big memories, a cw keyboard, or more likely, you use a PC for contesting. No separate keyer with vacuum tubes!

You can point to one person – John Curtis – who was born in 1930, and became a typical ham of the day. He built much of his ham equipment. At one point, he became interested in getting the Amateur Extra License in the 1960s, which required a 20 WPM code test, both receiving and TRANSMITTING. He needed something to let him send code faster – it's darn hard to send much faster than 20wpm with a straight key, and very tiring doing so for long periods (Unless you were a superb telegrapher of the old days – see previous issues of CHNews for the record at over 45 wpm on a straight key!)

His solid state prototype worked so well that his friends convinced him to go into business making it – and thus was born the first solid state keyer – the Curtis Electro Keyer – EK38. It had a dit memory only and no weight control. This was the late 60s. Soon, folks suggested he add the 'dah' memory and a variable weight control – as various transmitters had different keying characteristics, and thus the EK-39 soon appeared in 1969. It wasn't cheap, but many could afford it.

Memory technology was just evolving – soon, he added a 20 character memory and thus the EK-401 appeared in 1971 for the tidy price of $279. For that amount of money, you could buy an entire Heathkit transceiver and power supply!

Now, John Curtis could have been a footnote in the small manufacturers who made accessories for ham radio – but he took one more step that moved him into the "Hall of Fame" category. Working with contacts he had made in the industry, Curtis worked with Signetics and others to put the entire circuitry of a keyer on a single IC.

"These paid off for him when he decided that a keyer circuit could be implemented on a chip. He started with not one design, but two. The 8043 and the 8044 were announced at the same time. The 8043 was designed as a completely custom integrated circuit in CMOS.

At the same time, International Microcircuits was looking for a chip in which to test their gate array technology. The first chip down the line was the 8044, produced for Curtis. The 8043 worked first try. It was limited to dit memory, and sold for $7.95 in quantities of 50 or more in 1973. The 8044 also worked right off the bat. It offered dah memory in addition and sold for $24.95 in 1975. The 8044M was introduced in 1980. M stood for meter. A meter could be hooked up to a pin of the 8044M to indicate sending speed."

Source: http://www.arrl.org/news/features/2002/02/04/2/?nc=1

Thus was born the 'keyer on a chip'. It was still 'not cheap', but keyers started appearing all over that used the design. The ARRL Handbook featured the chip in a do-it-yourself project as did many ham magazines. MFJ and others started producing keyer units, and hobbyists flocked to it in large numbers.

“In 1981 Curtis found that many people liked the mode B iambic keying characteristics of Ten-Tec, Heath, Nye, and Accu-keyers. Mode B simply added an extra dit or dah when the operator stopped sending--depending on which was sent last. If a dit was sent last, an extra dah would be sent. If a dah were sent last, a dit followed. John's keyers did not do that, so he added the feature in the 8044B (according to John, Mode B was actually a design error by an unnamed company).”

For those not familiar with the term ‘iambic’ – it means you use two paddles, and if you hold both of them in – the keyer will alternate between making dits and dahs. You can form characters like a “C” by first pressing the dah paddle, then pressing the dit paddle while the character is starting, then holding both until the second dah is made, then releasing the dah, then the dit. Both are self completing. Mode B sends the other character after you release both paddles. It is a matter of timing. By using an iambic keyer, you can make a “C” with just two motions of the finger, as opposed to four motions on a regular keyer. It takes a lot of practice to use it that way – and many good CW ops never use the iambic mode! For those that use the iambic mode, it takes fewer motions to send characters like R, K, C, Q, Y, L, and F.

Curtis produced several more keyer designs up to about 1982. One chip was designed for use on CW Keyboards – the 8045.

“There was another Curtis chip--the one that probably was best known--the 8044ABM. This final keyer chip was introduced in the spring of 1986. It incorporated selectable A or B modes and the speed meter. This truly was a top of the line chip, and became an industry standard. However, microcontrollers debuted in the '80s and Curtis chips were no longer in demand. John stopped selling them. MFJ purchased the 8044 line and now offers an improved 8045ABM (about $25). Curtis ceased operations April 1, 2000.”

So now you have a short history of how we got to keyers built into radios. When transceivers could use every inexpensive chips or the internal microprocessor to provide the keyer functions, it at first became a selling feature (IC706 had built in keyer – TS50 did not), then became a standard feature in just about every transceiver today. All the credit goes to John Curtis for getting the ball rolling on this.

Of course, there is usually no additional chip for the keyer function – it is just one subroutine of the microprocessors in the radio – some have multiple microprocessors now.

MFJ sells the full featured 8044 ABM chip for $24.95 today.

You can find the application note for all the Curtis Keyer chips at:

http://users.ox.ac.uk/~malcolm/radio/8044print.pdf

If you go to hamfests, a lot of the old keyers you see will have the Curtis chip inside. He moved the industry forward in a big way by his vision.

Vibroplex actually made the Blue Racer EK-1 which had a Curtis 8044 chip inside. It is now considered an 'obsolete' set of paddles/Keyer since the availability of the original 8044 chip is limited.

Trip Report from Bill, KM1C

Sep/Oct Trips (as posted on the K3IMC forum)

NC, GA, and TN trip (54 Counties total) netted a total of 1216 QSOs with 225 unique call signs. It was a really fun trip with some pretty good runs from almost every county. I am currently on a boat in Albemarle Sound, NC. Brought a rig along, IC746PRO, but made a hasty decision to run it from its AC power supply. Big mistake, as the DC to AC inverter on this boat produces S9 birdies about every 100 Hz. So it is virtually unusable for all but 20 over 9 or better signals.

Of course, I left the DC power cable for the rig at home. Yaarrgghh! I was hoping to run all the "wet" counties in eastern NC on this trip, but I will have to wait for another chance. Good news is that it gave me a chance to process "on board" all of the MRCs received prior to departure last week.

That might even let me get to my own MRC needs, as am now a few hundred counties behind. Possible trip coming up in November which will let me run all of SC coastal counties (from truck, not boat) and maybe a dozen or more of the inland counties just in from the coast. If so, will post in planned trips. Next project is to get a better signal out from home QTH. 40 meters was so much fun (and productive) on my last mobile outing (SSB and CW), that I may put a big focus on 40 with multiple antennas, including a 2 el beam, plus some QRO. 40 is sure a fun band for county hunting purposes. Has anyone "worked 'em all" on 40? Might become a nifty goal for me. Of course, still hacking away at USACA, with something over 1300 to go, assuming all of the MRCs come back OK.

It will still take some time, especially with some other obligations, but I would like to get it done. I enjoy running counties so much that my goal for USACA is to try to get a 3:1 ratio going, i.e., wind up having run over a 1000 counties by the time I get all 3077 worked. BTW, surprised I could key this all in without a big error rate - Getting kicked around here at the dock in Edenton, NC from some pretty good winds from a frontal passage this afternoon. Some one here has a fast, free wireless connection, so have been able to read the mail on the forum. See y'all back on the air next week from Pamlico County, NC. –

Note from N4CD. Alan, K8CW, worked all counties on 40M, and he said he was the second known person to do it. You can track the progress of others on the top list challenge page.

Peak Oil Conference

Part I - Introduction

The Annual Association for the Study of Peak Oil (ASPO) was held in Houston, TX in late October with over 550 people in attendance. The majority of attendees were from the oil industry – Houston is the capital of energy production/refining in the USA – Oil Town – with the Headquarters of many of the largest companies. There were many interesting presentations during the three days, and I'll share a bit of what was said.

Some of the presenters included the legendary T. Boone Pickens, Charles Maxwell – oil industry analysis, several well known authors – Jim Kunstler – The Long Emergency, Terzakian – A Thousand Barrels a Second, and Matthew Simmons – Twilight in the Desert.

As reported in the local papers – T. Boone Pickens said:

"Legendary Texas oilman T. Boone Pickens sees the price of oil hitting $100 a barrel perhaps as soon as the fourth quarter but certainly sometime next year, a consequence of daily global production reaching its peak.

The 79-year-old former wildcatter, who now heads the Dallas-based hedge fund BP Capital Management LP, said Friday afternoon he has no doubt worldwide demand has topped the current global output of roughly 85 million barrels a day. As such, he said, prices have nowhere to go but up.

"I think you'll reach $100 (a barrel) before you go back to $80," Pickens said before speaking at a gathering of the Association for the Study of Peak Oil and Gas at a downtown hotel. "It could happen in the fourth quarter, but you'll see it within a year."

"Crude prices have climbed 28 percent since late August, passing $90 a barrel for the first time in overnight trading Thursday. Light, sweet crude for November delivery eventually fell 87 cents to settle at $88.60 on the New York Mercantile Exchange.

Pickens is credited with a history of prescient predictions about the direction of oil markets, and his bets have paid off handsomely. BP Capital, which focuses on energy-related investments, began a decade ago with $125 million and now manages about $4.5 billion."

Per the Houston Chronicle – October 23

Remember the quiz question at the beginning of the newsletter? The USA peaked in oil production in 1971. Peak Oil for us was then. The exports from the USA started to decline in 1946, right after WW2 – more than 25 years before we reached peak production. Why? Simply because we started to use more and more of our own production, and there was less and less to

export. The economy was roaring – returning veterans wanted houses and cars and appliances that took nearly all the energy from oil production, so there was less and less for exports. Keep that in mind – exports started to decline long before production peaked. (Also keep in mind that in the last quarter, China's growth of GDP was 11.2%!)

Each year production went up – but consumption went up even faster. By 1972/73, the USA became an oil importer – which quickly led to the oil shocks of that era – odd/even rationing days – rationing by inconvenience – stations out of gas or limiting how many gallons you could buy at one time – and all of that caused by a 3% shortfall in oil. Repeat – a 3% shortfall, plus horrendously wrong decisions by the government to impose price controls, put the economy into a tailspin. In the next decade, inflation hit 15%/yr.

But the most important item to remember is that EXPORTS from the USA started to decline in 1946 – 25 years before our peak production.

Now on to a fairly recent development in Peak Oil thinking – the Export Land Model (ELM).

Part II) **Export Land Model**

Most of the work done in studying peak oil has been solely concerned with world peak oil production – often by analyzing the production records (when available) of the 10,000 oil fields discovered in the world, and the production histories of the 50 odd oil producing countries around the world – of which 38 or more are now post peak (fact). That gives you insight as to when the rest of the world will peak in production. Many use that 'production' number as the critical number.

What may be more important to the world, and especially to countries like the USA and China, is the ability of major countries to **EXPORT** the projected amount of oil needed by the world. If they simply produce quantity X, but start to use more and more of that quantity internally to fuel their own growth, there is less and less available for export. It matters not what the total world production is – what matters is what is available for export for the countries that need to import it. Taken to its simplest case – if every oil producing country in the world used nearly all its production for internal use – there would be none available to the rest of the world!

So where does that leave us?

Six of the largest oil suppliers to the US are poised to cut their global exports by nearly 2 million barrels a day by 2012, ramping up pressure on supply and price. The projected cut, amounting to seven percent by Mexico, Saudi Arabia, Venezuela, Nigeria, Algeria and Russia, reflects the growing struggle in these countries to grow production and manage their own soaring rates of oil consumption.

The current top five net oil exporters--Saudi Arabia, Russia, Norway, Iran and the UAE--account for about half of world net oil exports. From 2000 to 2005, they showed a combined 3.7% per year increase in consumption.

From 2005 to 2006, their combined consumption **showed an accelerating rate of increase, to +5.3% per year.** From 2005 to 2006, the top five showed a net export decline rate of -3.3% per year. Based on year to date data, it is a near certainty that this net export decline rate will accelerate from 2006 to 2007.

The trend of oil producing countries becoming major oil consumers, when similar conditions are factored in among the other major oil producers including OPEC, leads to the supply crunch to deepen to 3 million barrels a day, or an eight percent cut in global exports. Soaring domestic demand is cannibalizing export capacity, and will increasingly do so as productions plateaus or declines in many of these countries.

Last year, OPEC members, along with independent producers Russia and Mexico, consumed over 12 million barrels of oil a day, roughly 60 percent more than China and slightly more than all of Western. As a group, they now are second only to the U.S. in terms of market size. Much of the demand in these countries is driven by heavily subsidized prices that keep a barrel of oil down to a cost of between $10 and $20. The cheap supply is fuelling some of the fastest growth in domestic demand anywhere in the world.

Russia, now the world's largest oil producer, has filled the oil supply gap in recent years. However, internal demand there is growing at about twice the pace of production, and is claiming all of the country's production gains.

Mexico faces even great obstacles in maintaining its export levels. Production in the giant Cantarell field, home to half of the country's 3.5 million barrels per day of crude production, is already in the throes of rapid depletion. With production diminishing and internal demand growing, the country's export capacity looks to be lethally challenged. Mexico's crude exports have already been falling since 2004 and could well become insignificant by 2012 - a loss of some 1.5 million barrels per day to world markets.

So even if world oil production could be held constant – the growing needs internally of the major oil producers will drop oil exports sharply. After all, how much incentive is there to buy a gas efficient car when a gallon of gas sells for $0.35 in Saudi or $0.25 in Venezuela? And with hundreds of billions in revenues funding all sorts of government programs, how many more tens of thousands or hundreds of thousands in those countries will be buying and using cars?

Oil consumption is rising 5.7% a year in Saudi – at that rate, Saudi will cease exports in 2035. Norway in 2030, and UAE in 2037. Mexico if they continue will cease all exports in just five years. Now, that may not happen since Mexico gets the majority of government revenue from oil, but a major crunch is likely to develop there!

The net result is, that should world oil production begin to drop, the decline will be much worse since the oil producing countries will begin to export even less. Even before 'peak production', should one believe the world can produce a bit more, with oil exporters using more and more themselves, there will be LESS available for export – just like in the USA starting in 1946!

Part III - Robert Hirsch – on alternatives

Robert Hirsch – the person who issued the government Hirsch report – the first comprehensive report on trying to address peak oil and alternatives - spoke about alternatives for liquid fuels.

As reported on The Oil Drum

"Based on the study, which showed that it will take 20-years to evolve the technology and methods that will get us into the next Energy Era, he reminded us that what we initially face is a liquid fuels problem. Apropos later talks, his team's work had assumed a 2% decline in supply. But even with that assumption the scale of the problem becomes huge, and at 3% we can anticipate a global recession. Remember that a 1% drop in world production is 840,000 bd. Their work indicated that just to overcome this drop, by improving vehicle fuel efficiency, would take 10 years, while to replace it with the liquids from coal program (CTL) would take an investment of $100 billion and take 10 years. He noted that there is, within the order of magnitude correlation, a tie between change in GDP and change in oil supply, which held through the '73 and '79 oil crises and thus could be used as a model for our current situation."

Since 1972, US production has declined an average of 2.3% per year. Many now believe that with the secondary and tertiary recovery methods already put in place in many countries, the decline rates will be much higher – 3-6% once they start. That bodes ill for the economies worldwide.

Bear in mind that Coal to Liquids process produce horrendous amounts of CO2 in the process, so with 'Global Warming' the primary issue on most politicians radar, do you really think $100 Billion will get spent, and permission granted to mine the necessary coal? Likely only over Al Gore's dead body.

"Our potential oil future can be one of three scenarios, a sharp peak and subsequent decline; an "undulating" plateau and then decline; or a slow roll-over. After looking at various examples he hesitated to make a hard prediction, due to the increasing role of Resource Nationalization, where the power to make the political decisions that will control the shape have switched from the Giant Major Oil Companies (the Majors) to National Governments. National Government agendas are different from those that he now called "Baby Oil", the Majors whose role is increasingly diminishing (now down below 23%). What he did anticipate was that the media would continue to ignore the problem until real shortages develop, at which point there will be Panic and we will revisit the situation of the '73 and '79 crisis."

"He expects the oil exporting countries to understand the box the rest of the world now lives in, and anticipates that they may further restrict oil supply as a means of driving prices up further. And, with those caveats, he now

views the 2005 report as a "best case" with the likely impacts being faster and more severe. Part of the reason for this is that the geological limit and definition of peak oil is likely to define an upper bound above the real situation. He sees that because of the increasing tendency of countries to use what he called the OEWS – Oil Exporting (countries) Withholding Syndrome, that the actual peak will be sooner and lower than the geological value that we have, until now, considered the curve of concern."

The main points to take away – Oil Exporting Countries could considing witholding increasing production. Why should they? If they can get 10-20% more for less oil, why produce more and drive the price down? If they produce more today, that is less available in the future for them to use internally and to sell.

His other main point: "It is primarily a liquid fuels problem "the more you think about it, the uglier it gets!"

Now are there solutions?

Can you name a major developing country, with a GDP at 4% of the USA today, that built subways in its largest cities and electric rail transportation in over 500 cities? Transportation by electric rail?

Today, in France in cities of over 100,000 population, how many of them will not have electric rail transporation shortly? Answer: 5

Answer: It was the US that built subway systems in major cities – and had electric trams in over 500 cities – built 1896-1916.

It might be very difficult with suburban sprawl – but there may be few long term alternatives to shrinking liquid fuel supplies.

Part IV – MegaProjects – Skrebowski

Every oil field has a life cycle – initially production is small – as the field is developed, more and more oil is produced. At some point, maximum production for that field is achieved, then the field begins to produce less and less. This drop off is known as the decline rate. It's a matter of oil field geology. You can't fool mother nature.

If you look at the overall state of health of all the oil fields in a country, you can calculate the overall decline rate for all the fields in a country or region. Most are similar.

In the lower 48 of the USA, oil production peaked in 1971. Of course, individual fields started 100 years ago peaked many decades ago. Prudhoe Bay in Alaska took just a few years to peak, but now is producing a mere fraction of what it did at the maximum in the 70s/80s.

So each year, the oil industry must go out and find many new fields to replace the failing production capability of older fields to try and keep production constant – just to stay even. If you want more oil production, then not only must you replace the declining production each year, you must find even more and develop even more fields. Every year. Year after year. Without fail.

Historically, the best fields are developed first – it makes economic sense. If you are going to mine gold, you want to go where the riches deposits are, and where it is easiest to get. After you mine that gold, then you go to more difficult places – from Nome, Alaska to the wilds of the Yukon to the jungles of South America. After a while, the good ore is gone, and you go after poorer and poorer quality gold, or gold in even more difficult to mine locations – miles underground for example. You might mine a million pounds of ore to extract a few ounces of gold.

The same is true for oil. Now, the search is on for oil miles undersea – drilling down to depths of 7 miles – with billions spent on the search and possible development of smaller and smaller deposits.

Chris Skrebowski brought the conference attendees up to date on the Megaprojects program. He firmly believes that the peak will occur earlier than most expect, and that as exporters reduce, and importer numbers grow, so the balance (the teeter totter principle) will swing from one side to the other. His feeling is that the data points to 2011, which is only 1200 days away.

He tracks over 100 new development programs to see whether they are on schedule, what the annual production is expected to be, and the costs. You need several 'big' (million barrel per year) projects each year just to compensate for the falling production of existing wells. If you want more

production worldwide, you not only have to achieve that, but bring on line even more production projects!

He went on to indicate the premise of the Megaprojects program, which is that it now takes about 6.5 years from identification to the time that a Megaproject will come on stream for production. Discovery rates are falling, crude peaked into a plateau in 2005, NGLs are in balance, and biofuel production, the latest ingredient in the pie, has barely increased, in the scale of world production. He suggested that the peak CERA envision is here, a mere 25-years early. (CERA is the cornucopean consultancy run by Daniel Yergin – and the USGS uses the same numbers).

The peak of oil discovery was back in the 1960s! All the easy to find oil has been found, the new fields are smaller and smaller and harder and harder to develop (more complex). Often the oil is of poorer quality (resulting in less energy per barrel). Each year it gets harder and harder to replace 'reserves' and maintain production.

He was the second to address decline rates.In contrast with Dr Hirsch he felt that decline rates are going to be around 5%, which is the number that the major independent oil producers are reporting. This is faster than the global average of around 4%. He noted that Russia is talking about capping exports at 10 mbdoe, and that if this works, one can expect that it will spread to the other Oil Exporting Countries (OEC) like a virus.

CERA use a decline rate of 4.5% and while this seems a reasonable number, understand what it means. At 800,000 bd per 1% a 4% rate gives a drop of 3.2 million barrels a day per year decline. Before world production can increase it must first match this number. (and while the world assumes decline rates are stable, it appears they are declining at about 0.1 to 0.15% a year additional). What this means is each year the world must develop NEW production capability of 3.2 million additional barrels to replace failing production elsewhere. If the world needs more oil to fuel the 11.2% growth in China and about the same in India, the world must find an addition million barrels a day of virgin oil fields. The worse the decline rate, the more has to be added each year just to stay even!

This is the gigantic elephant in the room, and dominates the changes due to demand increment.

His Megaprojects study now includes fields down to 40,000 bd, and includes 175 projects. One of his concerns is that with a 6.5 year lead-time there is not a lot of project numbers that are appearing after 2013. Taking the data available on these, adjusting a little for delays and actual production values, and integrating with current numbers he expects that the peak will be at 93 mbd in 2011. In his mind 2008 nd 2009 are going to be "the last good years."

He noted that in the past 30 months supply and demand have been in relative equilibrium. He pointed out that for the first part of this period the supply was feeding not only demand, but also a stock build. In about the middle of the period supply and demand were in parity; and in the last part of the period we have seen supply only being able to meet demand by drawing down the stock reserve. At some near-term point this situation will become untenable and oil prices will start their inexorable rise into the future.

If you follow the CNN and CNBC commentators, you'll note they are always blabbing about 'falling oil inventories' when oil prices rise. Just a small amount of change in inventories (maybe 1,000,000 barrels or maybe only a fraction of this) triggers all sorts of large up/down changes in futures price. If you draw down inventories by 300,000 to 400,000 bbl/day, (or 2.5 to 3.0 million a week) within 45 days the system will go into panic as the 'buffer' is disappearing. Inventories consist of all the oil on ships in transit, all the oil in the pipelines – like from Prudhoe Bay to Valdez, all the oil in storage tanks. Just a small shift in 'inventories' will send prices up or down.

It's a very fine line. One delayed tanker shipment from Saudi and there is a perceived 'drop in inventories'. (Yes, there are actual agencies that count every ship leaving Saudi and tracking it to the destination to calculate 'inventories').

Part V – Matt Simmons

Matt Simmons, head of Simmons International, a major banking/finance group that is involved worldwide with oil/gas field development, spoke next. His main concern is where will the investment money come from, and will be it be made available in time? He also has major concerns about Saudi Arabia's production ability – a few years ago, he wrote the book – Twilight in the Desert – about the poor state of health of the Saudi Oil fields – and the likely imminent decline. He continues to be extremely pessimistic about

their promises and ability to produce more. Now, Natural Gas Liquids (NGLs) are a big part of their exports. These are lower energy products from gas fields.

Saudi is experiencing its own energy crisis. Having built dozens of large facilities that use natural gas, it suddenly has reached the point where it does not have enough natural gas production to run them all! The projected gas fields haven't materialized despite hundreds of millions searching for them. They have now turned to burning oil in some of those facilities, and are constructing coal power plants, and beginning to import coal for power generation. It's sort of ironic that the world's oil superpower, with the largest oil field in the world, is now importing highly polluting coal, isn't it?

Economically, it makes sense – you import burn cheap energy (Coal) for power, and export high value oil. What has caused their problem is 'not finding' all the gas fields that were supposed to be there. CERA and the other cornucopeans point to the fact that 'much of Saudi isn't explored'. Baloney. They have seached the Kingdom from one end to the other, and there are no significant bonanzas waiting to be found. They are running out of gas (pun).

He noted the reluctance of some major oil companies to start large projects. Exxon projected oil prices would fall back to the $40/$50 dollar range in 2006. As a consequence, it did not sign a long term lease on deep sea development rigs. Now, the earliest it can secure a deep drilling rig to just do another 'test well' in the much touted Jack Field in the Gulf of Mexico oor other blocks leased from the government is after 2016! Any further exploration on their part is off a decade!

If you can't rent a rig to do the work, the Jack Field production has moved back at least 8 years, if ever! Exxon is esentially 'out of luck' for any new field development! The same is true across the board, as many Arab countries have leased oil drilling rigs just to try to stem falling produciton from existing fields. It's a treadmill they are on – it gets steeper each year – requiring more wells, each producing less, just to stem declines.

Some of the National Oil Companies are slow to invest in new wells and in maintenance. Iran's fields are in terrible shape. The oil money is going to subsidies and building nuclear weapons instead. Mexico needs to invest tens of billions, but the government has looted Pemex for decades, using the

money for social programs. And on and on. No investment – no stopping decline rates and no new additional exports.

In the USA in natural gas, each year 17% more wells are drilled than the year before. Each well averages less production than last year – they are being drilled in more and more marginal areas. Next year at least 17% more wells will have to be drilled (ie, if you drilled 30,000 this year, next year you must drill at least 30,000 plus 17% more – the year after another 17%). The US is about to fall off a cliff – soon there just won't be any new places to drill. Canadian gas output is in the same boat – and is actually falling.

The same is true in oil – you drill more and more wells into the periphery of a field, into small pockets that were bypassed initially – and each produces less and less than the wells drilled last year and the year before, so you need more and more of them. Sooner or later, you run out of places to drill them.

He repeated the concern about 4th Quarter world supply at a 85 mbdoe being faced with a demand of 88.2 mbd – where does the shortfall get made-up? There is no source that can now turn on, that fast, an additional supply of 3.2 mbdoe. And of that excess how long can the current stocks last when faced with this level of shortage. In his mind, we are, in short, already in a world of hurt even before the actual peak in supply arrives. His prediction for the annual drop in production for an average well is 6.7% and there is increasingly evidence that this will not be met by the supply options.

Others have suggested it will take 20 trillion to 'find the oil we need to 2020'. Likely, even 20 trillion will not find oil that just isn't going to be produced due to lack of manpower, lack of rigs, lack of steel for infrastructure, and lack of necessary equipment. And even finding and producing that in oil exporting countries, who will use a good part of it for their own internal needs, leaves less and less for exports!

Part VI – Conclusions

Overall, the impression one got at the ASPO meeting is things are not healthy. Oil production is stagnant. The major projects coming on line are often delayed and disappointing in results. Costs are going up 30% in a year or two making investments even harder. Availability of rigs is a critical factor along with an aging workforce where half will retire in the next few

years. The National Oil Companies are renegotiating deals, often making them unatractive, and failing to invest enough on their own to stem steep decline rates.

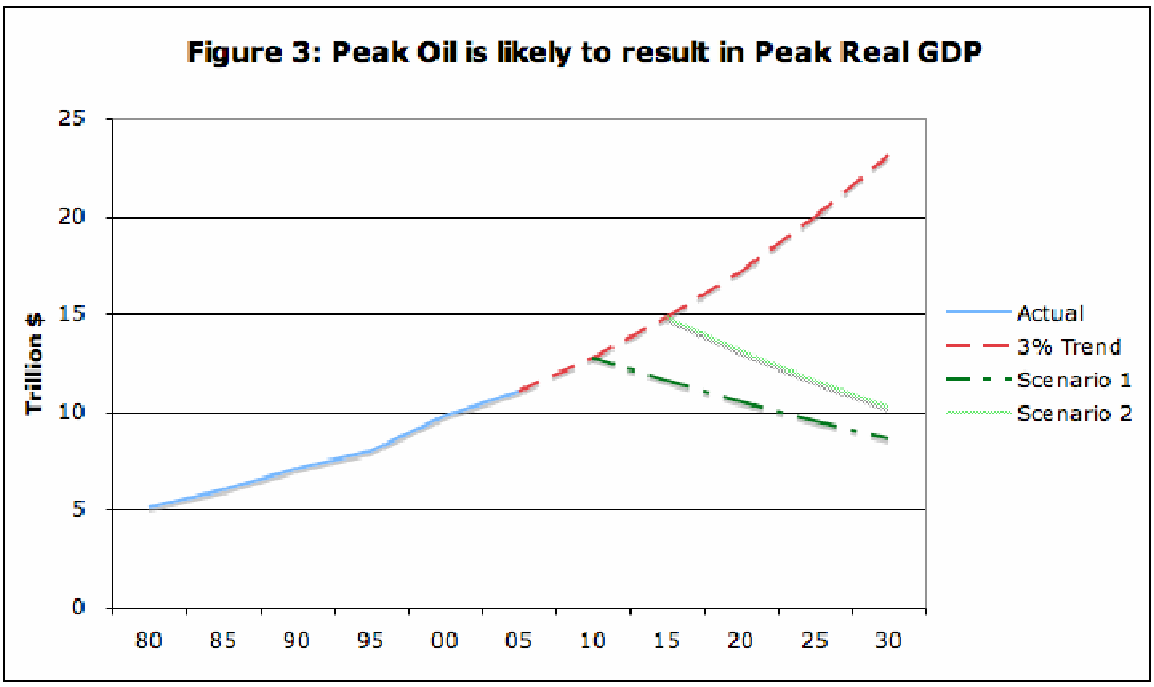
There is nothing in the pipeline beyond 2013 of any significance – and development time is getting longer and longer. If you don't have new fields to compensate for declines, that is very serious indeed.

With the application of the Export Land Model, and considering the Oil Export Witholding Scenario, things can get real ugly real fast. The alternatives are not attractive. Oil, natural gas, and coal will all be headed for substantial decline rates, one right after the other. World reserves of fossil fuels are rapidly being revised downward as reality sets in.

Now folks are literally going to the 'ends of the Earth'. The latest frontier under contention (as to who actually can claim what) is the arctic regions. Russia planted a floor on the seabed under the North Pole and claimed it as an 'extension' of an underground ridge connected to Russia. The Canadians are building outposts further north in their 'territory'. There may not be any significant oil there - but countries are anxious to stake their claim for whatever might be there. The only good effect that global warming has might be to free up the arctic ice so exploration and drilling and extraction of resources can occur there.

Other than that, now folks are drilling down 7 miles hunting for the remaining oil fields 'yet to be discovered'. This is extremely expensive and risky, and those fields will likely peak very fast and not contribute much. Only 5% of ultra deep oil has been developed, but the experience has been rough – project costs doubled and tripled in 3 years – oil platforms destroyed by hurricanes in the Gulf of Mexico, and very fast decline rates from fields giving short life times for production.

The US government will do all it can to keep things together until after the elections next year. Global warming might be the excuse used to force conservation measures across the board when oil shortfalls appear. When the financial community realizes that peak oil has occurred, it is really going to get ugly.



courtesty the Oil Drum

Folks keep mentioning that we produce 'more GDP per dollar' than at any time in history. That is true. It takes less energy per unit of production. For example, in 1950, it might have taken 8 units of energy to produce a certain product. Now through better design and more efficient uses, it takes only 4 units of energy. Great. What really happens is you produce 3 times as many units or 30 times as many units today(since they are more affordable) and now consume 1.5 to 15 times as much energy overall. That is not bad if you have the energy available. Manufacturing rises. More jobs. More revenues. More growth. More taxes. The GDP of the country increases.

Unfortunately, the opposite is also true. If you don't have, say, 800 extra units of energy, in 1950, that means you could not produce 100 items, since each took 8 units to make. Now, in 2007, if you are short 800 units of energy, you cannot produce 200 units – twice as much. The effect is exaclty opposite. So you produce less. The company makes less in revenues. Instead of Wall Street reporting 5-10% annual growth, now they report earnings/revenues falling 5-10%. The GDP starts to drop, per the graph above. The value of the stock starts to drop. Investor's wealth starts to drop. The company needs less employees. The stores need less employees to sell less product.

When energy runs short – you won't have products made, folks won't have as much money to spend buying them (since they'll be paying more to heat their home and drive their car), factores will make less, profits will drop, revenues will drop, and things will spiral down. Yes, eventually things will adapt to lower energy – but the transition could be very painful and long.

So you need to evaluate things on your own. There were alarm bells in 1999 from Alan Greenspan about irrational exhuberance' in the stock market – the tech bubble. How many listened? People have been telling folks that housing prices could not keep rising 20% a year in Los Angeles and Las Vegas – at a growth rate of 20%/yr, within a decade houses would quadruple in value – yet salaries wouldn't. How many avoided a housing meltdown?

Peak oil is not on politician's radar screens and won't be until it is a crisis that can't be avoided. It's easier to talk about abstract things like 'global warming', and spend thousands of hours gossiping about 'restroom protocol' at major airports, what latest stupid things did O.J. do or not do and when did he do it, Brittany Spear's addiction problems, American Idol and the World Series and the like – rather than real issues. And you better believe the ONLY reason the US is in the Middle East is to protect access to the Middle East oil reserves – we need to keep that oil flowing from 'friendly hands'. Unfortunately, it's also a very costly situation taking sacrifices from the young adults of the country. We are addicted. So is the rest of the world.

Part VII – Post Script – October 25, 2007

From Yahoo News: "Oil futures jumped back above $89 a barrel Thursday on news that OPEC production increases aren't coming as fast as expected and that the cartel won't announce new output quotas when it meets next month. Prices were already higher on growing concerns about conflict in the Middle East and declining supplies of crude in the U.S. when Oil Movements, a company that tracks oil tanker traffic, reported that crude shipments from Organization of Petroleum Exporting Countries members will grow more slowly than anticipated through early November."

OPEC Secretary General Abdalla el-Badri told The Wall Street Journal Asia that the cartel is not in discussions to boost production by 500,000 barrels.

On Wednesday, crude prices jumped sharply after the Energy Information Administration reported that oil inventories fell by 5.3 million barrels last week, much more than analysts expected."

Hmmmm?????? No more additional OPEC production? Hmmmm?? On 10/15 – oil futures at $90.47.

The price of oil will bounce around just like the stock market. A slight change in 'inventories' will shift things quickly. Maybe we'll head back to the $70-$75 range if a few things work out. Maybe not. If oil prices stay above $85, and gasoline inventories continue to drop – then expect rising gasoline prices at the pump before long. It's the long term trend that is significant – don't let the day to day 'noise' confuse you. Remember, oil prices are up 900% in 7 years. That is the trend to track, not up $3 today, down $2 tomorrow.

Awards

Bingo #297, KO1U, Mark, October 1, 2007
USCA #1161, AA8HH, Steve, October 4, 2007
Third Time #210, WG6X, Ray, October 7, 2007
USCA #1162, N4NX, Bill, October 9, 2007

Upcoming Events for County Hunters

It's the beginning of major contest season – DX contests and ARRL Sweepstakes, the 10 meter contest in December along with the 160M contest. Not much in the way of state QSO parties coming up.

November 3-4

CW Sweepstakes -CW, from 2100Z Nov 3-0300Z Nov 5.
Rules at: http://www.arrl.org/contests/rules/2007/novss.html

November 11-12

Kentucky QSO Party -- CW/Phone, sponsored by the Western KY DX Association from 1400Z Nov 10-0600Z Nov 11. Frequencies: 160-10 meters. Exchange: RS(T) and KY county or S/P/C. QSO points: 160 meters -- 2 pts, CW -- 2 pts, SSB -- 1 pt. Score: QSO points × KY counties (KY stations add states and provinces) counted only once. KY mobiles and portables add 1000 points for each activated county, min 10 QSOs (incl home county). 100 bonus points for a QSO with KY4DXA (once only). For more information: **wkdxa.com/page2.html**.

November 17-19

ARRL Sweepstakes Phone, from 2100Z Nov 17-0300Z Nov 19

That's all for this month! CU next month.