SHACKNEWS

HIGHVELD AMATEUR RADIO CLUB

PO Box 1111, Bedfordview, 2008 **Feb. 2003**
E-MAIL zs6bfl@telkomsa.net

COMMITTEE

Office		Call sign	Telephone number
Chairman :	Left vacant		
Secretary / Treasurer:	Berridge Emmett	ZS6BFL	011-893.1291
Repeater/Packet Radio/Technical	Ton Van Dijk	ZS6ANA	082.975.5250
Shacknews-Print & Posting:	Harry Lautenbach	ZS6LT	011-888.5362
Shacknews Editor: This issue	Berridge Emmett	ZS6BFL	011-893.1291
Website manager	Yvonne Van Dijk	ZR6TBL	082 623.3704
QSL Manger & membership list:	Reg Hartslief	ZS6ALH	011-902.1432

Sunday morning BULLETINS - 7.062 MHz & 145.7875 MHz @ ±08h40.

COMMUNICATION IS THE NAME OF THE GAME

***MEETING*: -**

At the last meeting OM Berridge gave a practical demonstration on "Vinyl to CD production". The use of various *Shareware* programs were shown with all the effects that can be done. I hope it was found to be of interest to all.

A guy is out with his buddies. He has a few drinks, gets horny but true to his wife goes home. When he gets home he finds her sound asleep in bed with her mouth wide open.
He gets two aspirin and drops them in her mouth. Of course she chokes but recovers and asks,
"What did you put in my mouth?!?"
He says, "Two aspirin."
She replies, "BUT I DON'T HAVE A HEADACHE"!
He says, "Good, that's what I wanted to hear!"

THIS & THAT

See with your heart and you'll know the answer.

SWAPS

This column is still FREE for you to advertise anything that you would like to. Just give the editor a call. 011-893-1291 or e-mail zs6bfl@telkomsa.net

"I have the following radio for sale. **Kenwood TH-F7E Dual band FM transceiver 144/430 Mhz and wideband receiver 0.1 – 1300Mhz**. I used to be a Police Reservist and used this radio for that purpose. I believe however that is it actually a HAM radio.
I will take any reasonable offer over R3500 for it as it is in perfect nick and I still have the manual, box and I will throw in the programming cable and software for free too.
Please contact me via email if you or anyone else is interested."
From John Crewe e-mail JohnC@nnc.co.za
More info can be found at:
http://www.kenwood.net/?do=SupportFileCategory&FileCatID=5

DID YOU KNOW.
If you yelled for 8 years, 7 months and 6 days, you would have produced enough sound energy to heat one cup of coffee. (Hardly seems worth it)

Something Technical (lifted from the web)

The "S" meter

An "S" meter is fitted to some radio's (Communication Receivers) to allow the user to determine the signal strength of the transmission being heard. But What does this all mean?

As a guide; S9 on the S meter scale is reckoned to be equal to a potential of 50 uV signal voltage at the receivers aerial input. Also each "S" point is said to represent a 6 db change (up or down). A 6 db change coincidentally represents a doubling (or halving) of a voltage before/after the aforesaid change. Recalling the well known textbook formula:

db = 20 log v2/v1 substituting values

= 20 log 2
= 20 x 0.3010
= 6db

Therefore the relationship of "S" meter reading to input signal voltage obeys the law

uV = k 2 ^{s} [k is a constant (derivation shown soon!)]

That is; because of the signal voltage doubling for each increase in "S~' point the signal voltage is directly proportional to the base 2 raised to an exponent being the "S" number. To bring this into some perspective:

If 50 uV represents S9, then substituting in the above formula

50 = k x 2^{9}

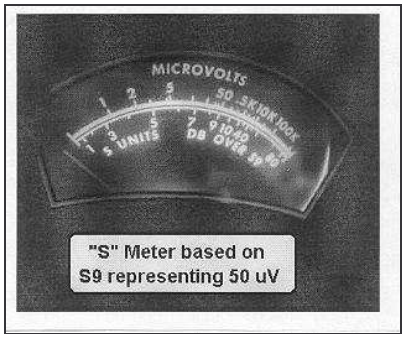
therefore k = 50/512

To obtain (say) the signal voltage corresponding to S4 we can substitute in the above formula

uV = k 2^{s}
= 50/512 x 2 ^{4}
= 50/32
= 1.5625 uV

Constructing a table of values based on the above we get:

"S" reading	Voltage at RX input
9	50 uV
8	25 uV
7	12.5 uV
6	6.25 uV
5	3.125 uV
4	1.5625 uV
3	0.781 uV
2	0.39 uV
1	0.195 uV



Therefore: as you can see, each change in "S" point represents a doubling (or halving) of its immediate predecessor, all referenced to S9 being 50 uV (Some archaic texts suggest S9 as being 100uV), but the principle is still the same. Simple really !

Something from out there…….. Submitted by Ken ZS6BLI

Exploring the turbulent Universe

Gamma rays carry large quantities of energy away from the violent events where they are created, such as supernova explosions, black holes, and the mysterious gamma-ray bursts. ***Integral*** will find a lot more out about these powerful gamma-ray sources.

Very massive stars end their lives in big explosions called supernovae. These outbursts liberate more energy than the combined light of millions upon millions of stars, much of it in the form of gamma rays. New chemical elements are created as results of such explosions. In fact, all atoms heavier than iron are created due to such explosions. For this reason, we call supernovae the chemical factories" of the Universe. However, we do not know completely how new atoms are created when a star explodes. ***Integral*** will look into it as one of its first scientific objectives.

After the explosion, each supernova leaves behind a dead 'heart'. This heart is incredibly dense and can be either a neutron star or a black hole. Both can generate gamma rays because they possess incredibly strong gravitational fields that can capture passing dust, gas and, possibly, larger celestial objects. When matter falls through a gravitational field, it heats up and releases energy. In the case of neutron stars and black holes, the energy released is very intense and is given off in the form of x-rays and gamma rays.

As well as black holes from supernovae, called stellar black holes, the Universe contains a variety of far more massive black holes that are found at the core of some galaxies, the galactic black holes. Galactic black holes also give off gamma rays, and with such awesome power that you can detect them almost halfway across the known Universe.

As well as making the most accurate studies of these objects to date, ***Integral*** will also investigate the mysterious blasts of gamma rays that explode across the Universe about once a day, the gamma-ray bursts. They can last just a few seconds and can come from any direction in space. The origin of gamma-ray bursts has remained unexplained for years, from their first observation in the late 1960s. Today, many scientists think that gamma ray bursts could be linked to the death throes of the very first stars. Alternatively, they could be generated by colliding neutron stars, or could be caused by the explosion of supermassive stars at the end of their lives, the hypernovae. ***Integral's*** instruments will study gamma-ray bursts with the highest accuracy ever and may discover something about their origins.

Integral's instruments

Integral has four instruments to give the spacecraft maximum versatility in its task of studying the gamma-ray Universe. Designed to complement each other, their combined observations will allow scientists to get a very complete and accurate picture of each celestial target at different wavelengths.

The first two are dedicated gamma-ray instruments. Imager on Board the Integral Satellite (IBIS) is the sharpest-resolution gamma-ray camera ever built. Spectrometer on ***Integral*** (SPI) will measure the energy of gamma
rays with exceptional accuracy. In particular, it will be more sensitive to fainter radiation than any previous gamma-ray spectrometer. The other two instruments are designed to provide complementary scientific data about ***Integral's*** targets. The Joint European X-Ray Monitor (JEM-X) will make observations simultaneously with the main gamma-ray instruments and will provide images at X-ray wavelengths. The Optical Monitoring Camera (OMC) will do the same but at visible-light wavelengths. The total weight of the four instruments is about 2 tonnes, roughly half the launch weight of ***Integral.***

Integral's orbit and operations

After launch, ***Integral*** will follow an elliptical orbit that is inclined by 51.6° to the Earth's equator. In this orbit, it will cycle between 9000 kilometres and 153 000 kilometres above Earth, completing one revolution of the Earth every 72 hours. This eccentric orbit is necessary because there are 'radiation belts' that surround the Earth and these would interfere with Integral's ability to see gamma rays. It is important for Integral to be outside these belts. Its elliptical orbit is designed to keep it outside the radiation belts for 90% of its trajectory around Earth.

Once ***Integral*** is in orbit, it must communicate with Earth to download its scientific data and to receive commands. Communicating with and controlling ***Integral*** is a task spread over a number of different sites. Firstly, astronomers submit proposals for observations to the Integral Science Operations Centre (ISOC) at Noordwijk, The Netherlands. Experts at ISOC evaluate the proposals and draw up a list of targets and detailed observation schedules for ***Integral***. The schedules are sent to the Mission Operations Centre (MOC) at the European Space Operations Centre (ESOC) in Darmstadt, Germany. There everything is transformed into commands that ***Integral*** will understand. Signals to and from ***Integral*** go through two tracking stations, one at Redu in Belgium, the second at Goldstone in California, United States. The MOC also ensures the correct performance of the spacecraft.

After ***Integral*** has collected observations, the raw science data is forwarded to the Integral Science Data Centre (ISDC) in Versoix near Geneva, Switzerland. There it is converted into usable data files, archived, and distributed to the astronomical community. A worldwide network of space science institutes and observatories will receive the data very quickly. This is essential especially when sudden and short-lasting phenomena such as gamma-ray bursts occur. In this case, all observatories need to receive the information within one minute to be able to point their telescopes immediately at the area of the sky where the gamma-ray burst has been detected.

DID YOU KNOW.
Right-handed people live, on average, nine years longer than left-handed people do. (If you're ambidextrous do you split the difference?)
Have a super month and remember the meeting date.

73.
Berridge