

UNIDS EXPLANATION

Firstly, The term "UNIDS Explanation" itself needs a little explanation, what are "UNIDS"? "UNIDS" is the term used by beacon enthusiasts to describe 'Unidentified Radiobeacons', something which many Dxers will have stumbled across whilst tuning around the bands.

"Who are the operators of these beacons?" and "Where do they come from?" is a common question that is asked, especially by newcomers to the hobby. This is a difficult question to answer with any certainty, many of these beacons have eventually be tracked down to unlisted military operations, or military airfields, others may be temporary beacons operating in place of a VOR system which is out of service. Many will have more innocent explanations, such as the beacon is privately operated and only switched on for short periods, and as a result isn't included in "official" publications since it isn't a part of any VFR system. The reasons for "UNIDS" are endless, but what we have been able to discover, or what we suspect is listed later in this document.

"What can we do about identifying these UNIDS?" is a common question, and the answer to that is a lot of things. Taking DF bearings, or noting such information as the time of day the beacon was heard operating, or what ident pattern it uses - what offset frequencies it has - 400 or 1020 Hz, or French style with no offset. Does it have a long tone of a gap between idents? etc. can the beacon be heard during daylight hours, or only after darkness? All of this information is very useful, and helps to give us a clue as to what its origins might be.

UNIDS are not confined to any particular area, they seem to be heard all over the world, and This makes the military a major suspect. In recent years we have noted that a great many UNIDS seem to be coming from North Africa, and again, military airbases and Oil and Gas fields appear to be the main source of these.

UNID CO-ORDINATORS:

You will often hear mention of the "UNID Co-ordinators" in list postings, especially when someone has heard one and posted details, we have two of these, and the following is an explanation of who they are, and what they do:

To successfully track down an 'UNID' we need to try and get DF bearings from as many different locations as possible, and, also hear from members who may not have DF capabilities, but can also hear the signal. To try and get an idea of where it is any results gained need to be co-ordinated by one person, who can use all of the information received to try and find a pattern which will indicate the source of the signal. To this end we have one dedicated co-ordinator in Europe, and one in North America. Our European Co-ordinator will collect information about any UNIDS heard in Europe, North Africa or the Middle East, and our North American Co-ordinator will collect information about UNIDS in the Americas. By sending information to the Co-ordinators, either directly, or via the NDB List Reflector, members can make a big contribution to our attempts at solving all of these mysteries.

So who are the co-ordinators and how can you contact them? Below are their details, and if you do have any information about any UNIDS here is how to contact them:

EUROPEAN CO-ORDINATOR:

Patrick Vignoud, Pat is located in the south of France and his e-mail address is:

[unids at ndblist.info](mailto:unids@ndblist.info)

NORTH AMERICA:

Dave Tomasko, Dave is located in Illinois, and his e-mail contact address is:

SOME THEORIES ABOUT THE ORIGINS OF UNIDS:

Robert Connolly, the author of "**Non Directional Beacons of Europe**", came up with a number of interesting thoughts about why there are so many unidentified NDBs around, and why they aren't listed in any of the 'official' publications such as the AERAD, DoD, or Military Flight Information

publications (FLIPs). I also found an interesting article about 'Meaconing' (hat's not a mis-spelling either!). If you should have a theory (or theories!) of your own about why there are so many unidentified beacons on the band, why not share your thoughts with us and I will be happy to add them to the list:

ROBERT'S THEORIES:

- 1) Possible military beacons across Europe etc. with information classified. This was the case with FNR and GMN in Eire, and it is only recently that GMN has appeared in the RAF Flip Document.
- 2) Some may be temporary NDBs being used while a VOR etc. is on long term servicing or rebuilding. This occurs quite often and can only be tracked down through International Notams. Usually however the ID is the same or similar to that of the original nav aid.
- 3) Re - location of oil rigs to various fields. According to my Navtex reports about ten rigs are constantly being moved about the various fields.
- 4) NDBs which have been installed at small airfields for flying clubs etc. Some of these are used on an irregular basis and the airfield being so small they are not listed in Aerads etc.
- 5) Naval ships which carry helicopters. There must be some system of helicopters finding and identifying their own ship, especially during periods of radio silence and or darkness.
- 6) Meaconing - Not a mis-spelling - see the section about Meaconing!

Quite a few interesting thoughts there, and to confirm what Robert suggested in item 2, I recently found the following information in the 'stop press' supplement in the December 04 copy of Aerad:

"MARSEILLE: UFN temp VOR/DME installed 'MRM' 113.45/Ch 81 (N4322.8 E00519.7) & temp NDB 'MJ' 406 (N4326.4 E00513.1) usable in the event of unavailability of VOR 'MRS'."

In cases like this, checking the notams for the suspected area may well be the only way of getting positive confirmation of where the beacon is operating. Several times during the years 2000 to 2002 an 'unid' call sign was heard, and we were able to identify it by checking out many of the online 'notam' websites. See the Datafile Section for details of where this information can be obtained.

Another useful piece of information was found at the website of **Southern Avionics Company (SAC)**, SAC are one of the world's largest suppliers and manufacturers of radiobeacons, and they give the following useful information in a FAQ page on their website: <http://www.southernavionics.com>

Question: Who buys SAC radiobeacon systems?

Answer: Anyone, anywhere who needs to pinpoint a location or provide an instrument approach.

- General Aviation Airport Owners.
- Civil Aviation Airport Owners
- Government Aviation Agencies
- Offshore Mineral Explorers
- Offshore Production Platform Owners
- Wilderness Area Mineral Explorers
- Transcontinental Pipeline Owners
- Fishing Fleet Owners
- Ship Owners for Onboard Heliport
- Heliport Owners
- Military Strategists
- Disaster Relief Organizations

As can be seen from the above list, NDBs are used in a very wide variety of applications other than just the usual airfield types, and in many of these instances a beacon is likely to only be activated temporarily, or may even operate from a number of different locations.

MEACONING:

Like anyone brought up in the UK during the 1950s or 60s, whenever I see the word 'meacon' I immediately think of 'Dan Dare', but in this case we're not talking about a little green alien who flies around on a small disc, but rather an unusual way of using (or perhaps that should be mis-using), a radio beacon. I was quite surprised when I came across the following piece of information when searching through a website run by the FAS, a US Military scientific organisation. This has a fascinating section relating to jamming, and it was found at the following URL:

<http://fas.org/irp/doddir/army/fm24-33/fm2433.htm>

I must admit that I'd never thought of beacons being deliberately misused like this before, but it could well explain away some of the more transient and mysterious beacons which appear and then just as quickly disappear again - certainly some food for thought there!

Basically, the article stated that Meaconing was a system of receiving radio beacon signals from NAVAIDs and rebroadcasting them again on the same frequency to cause confusion with navigation. An enemy could conduct meaconing operations against a country's military to prevent their aircraft or shipping from arriving at their intended targets or destinations.

It lists some of the enemy meaconing causes which could be successful against an opponent --

- Aircraft could be lured into hot landing zones or enemy airspace.
- Ships could be diverted from their intended routes.
- Bombers could be induced into expending ordnance on false targets.
- Ground stations could receive inaccurate bearings or position locations.

With a large number of Airshows taking place throughout Europe during the summer months there were always lots of good opportunities to study various types of aircraft antenna systems at close range. This could be very instructive, and as 'Electronic Warfare' is a popular tactic nowadays, and it was always possible to see what types of antennas were available for deployment. However, following the terrible events of 9/11 the military are far more sensitive than they used to be and this is understandable, if visiting an airshow or airbase, good common sense should be shown at all times. Attempting to take photographs of military antennas or equipment might not go down too well, and do remember that a group of UK and Dutch plane spotters are likely to be imprisoned in Greece for doing nothing more sinister than collecting aircraft numbers and taking photographs. If you are in a position to take photographs do try and get the permission of the crewmen first, and if you are in any doubt about the reaction of the owners DON'T do it!

MILITARY NDBS:

A number of UNID callsigns were heard by dxers in North America at various times, and there was much speculation as to their origins. Well known Canadian Dxe and Propagation expert **Jacques d'Avignon** came up with the following answer to this back in August 1997 in response to a question from a Dxe about the origins of the callsign "UAA":

"The beacon identified as UAA is a National Defence beacon that has no permanent location. There are identifiers assigned to national Defence that have no permanent site. The ID's are: UAA, UFF, UGG, UJJ, UKK, UNN, USS, UTT, UWW and UZZ. No frequencies are assigned to these and they can be heard anywhere in the band. They are classified as tactical/transportable beacons".

It's not unthinkable that this sort of practise is fairly common amongst military operators, and many of the other 'unids' heard throughout Europe and North America are also owned and operated by the military. Many of these might only be active during a military exercise, and therefore only operational on very rare occasions. Do keep a look out for any unusual callsign patterns appearing on specific times and dates.

OIL PLATFORMS:

Quite a few of the beacons that we've managed to identify or DF have proved to be located on North Sea Oil Platforms. For some reason many of these don't appear on any of the usual aeronautical charts, and I can only assume this is to deter other pilots from using them as part of their flight plan. Doing this could potentially be very tricky if on arrival in the area it was found that the beacon wasn't

active. As I explained in an earlier chapter, many of these beacons are only activated on request, or by prior arrangement.

It will also be noted that a lot of oil platforms seem to operate within the Medium Wave Broadcast band, and again the frequency of operation might offer a clue as to whether what you're hearing might be from an Oil Platform. A document found at the UK CAA website showed that certain frequencies were allocated for mobile rigs operating within a specific area of UK waters, and amongst the frequencies listed in this document, many of the rigs operating in these sea areas must use **579.5, 597.5, 897, and 949 kHz**.

CALL LETTERS:

Following another discussion about 'single' and 'two letter' beacons on the NDB List e-mail Reflector, **Roger Caird** of Dublin Ireland posted the following suggestions regarding why some beacons have more or fewer letters, these make a lot of sense, and can prove very helpful when applied to one or two letter 'unid' beacons:

"Most of these Russian "one letter" and "two letter" beacons seem to be landing aids for airports, in the case of 365.0 - AD, it is a Locator beacon for Runway 02 at Sochi Airport. In the olden days there were usually three MF NDB's associated with the approach to certain runways, at most airports.

They were:

An Outer Locator, a Middle Locator and an Inner Locator. The Outer Locator would be a general landing aid to assist the pilot to line the aircraft up with the runway. This would be a "two-letter beacon" The Middle and Inner Locators would be progressively closer to the runway threshold, and would, I suppose, be very low-powered beacons. As these had to be identified as the aircraft flew over them, their ident had to be fairly short, i.e. "one letter". Most MF/LF approach aids have now dispensed with one or both of these, Middle and Inner Locators) and they have been replaced with VHF narrow vertical-beam beacons on 75MHz. As far as I can remember, these VHF beacons illuminate a warning light in the cockpit, to let the pilot know how close he is to the touchdown point. Continuing with the same surmise, the "three letter" beacons usually seem to be "en-route nav aids" and would be more powerful NDB's, the longer ident would not cause any problem as the pilot would only have to confirm the coding of the beacon from some considerable distance".

"This theory also holds good for Ireland, at any rate, all the approach procedure beacons are "2-letter": OB, OC, OE, OK, OL, OP. These are all Outer Locators, hence, I presume, the "O" in the ident. I am only aware of one "single-letter" NDB in Ireland, "S" on 316.0 (withdrawn from use years ago), and I'm fairly confident this was an Inner Locator. The U.K. also conforms to this standard (almost). However, I can also think of several instances where this theory doesn't work: North America, 389.0-CP Caparica, Lisbon, with a protected range of 250nm".

This produced a very interesting thread on this subject, and it became apparent that different countries do use different call letter systems. This prompted me to take another look at some of the callsigns previously shown in the UNID List. One thing did quickly become noticeable, nearly all of the beacons which only have a single letter call are situated in a very small number of countries - mainly in Eastern Europe and Scandinavia, but a number of Spanish beacons also appear to use this system too. After studying the callsign list in the **ENDBH**, the following countries were shown to use single letter calls:

Albania	ALB	Kyrgystan	KGZ
Armenia	ARM	Latvia	LTV
Azerbaijan	AZE	Libya	LBY
Belarus	BLR	Moldova	MDA
Bulgaria	BUL	Poland	POL
Canada	CAN	Romania	ROU
Czech Republic	CZE	Russia	RUS
Egypt	EGY	San Pierre & Miquelon	SPM
Estonia	EST	Slovakia	SVK
Finland	FIN	Spain	E
Georgia	GEO	Sweden	S
Hungary	HNG	Turkmenistan	TKM
Kaliningrad	KAL	Ukraine	UKR

That's still quite a long list, but it does perhaps narrow things down a bit. I've also noticed that in the UK at least, many of the military beacons e.g. the ones located at active RAF bases, seem to use two letter calls. I don't know if this is an active policy, or just the remains of some older system, but I will be taking a much closer look at the calls of unid beacons in future to see if they offer any clues as to who the operator might be. If anyone does have any more information about the way call signs are allocated I'd be very interested to hear from them. Thanks to Roger for giving us a good insight into what might be a valuable clue!

ALGERIAN MILITARY:

Over the past few years DF bearings on a number of commonly heard NDBs would indicate that North Africa is the likely source. We suspect that one of the biggest culprits for unidentified and unlisted NDBs are the Algerian military, who seem to have most of theirs on the classified list. Since it's very difficult for NDB dxers to get QSLs from them it's very difficult to say whether or not we're correct, but in terms of DF bearings and ident patterns they continue to be our number one suspect.

With the current ongoing political situation in this country it seems unlikely that things will change and become more open in the near future unfortunately. If anyone is planning to holiday in any of the countries close to Algeria (Tunisia, Morocco etc.) and can take a rough bearing on any of these that would be a big help. Even if it were not possible to take DF bearings, just letting us know if they can be heard well during daylight hours would be a big help to us.

THE MILITARY IN GENERAL:

During the past year we have been fortunate enough to identify some of the previously unidentified beacons, and it turned out that a number of these were situated on military training bases, particularly those containing helicopters. During training courses it's possible that these are switched on purely for training or navigation exercises, and this may well account for their erratic appearances. Again if anyone has more information about these, or has even served in any of the forces using them in this manner I'd be interested to hear about how they were used.

NORTH AFRICAN OILFIELDS:

Some recent research and a number of DF bearings have made me think that quite a few of the irregular 'unids' may also be coming from Algeria or other North African countries. I suspect that a number of them are of military origin, but also suspect that a greater number may be from oilfields rather than from air fields!

There are many large oil and gas fields in Eastern Algeria and also a great many in Libya as well. Some aeronautical charts show a number of the Libyan oil fields, and also reveal that many of them are of the 'two letter' beacon variety. Assuming that many of the Algerian oilfields, a number of which appear to be located in largely uninhabited 'desert' areas, are operated in the same way, it's not unreasonable to think that many of these beacons will be of the 'two letter' variety as well.

Again, a number of DF bearings, particularly on 'two letter' beacons seem to indicate that the Libyan and Algerian oilfields are the source of a good many of our 'unids'. Although a lot of the current 'official' publications only show a very limited number of these beacons, I suspect that there are a great many more which aren't listed. I have a very old US military aeronautical chart of North Africa dating back to the 1980s, and this does show a vast number of two letter beacons at various Libyan oil wells. Later and more modern charts don't show many of these, and whilst a number of them will no doubt have closed, I suspect that there are a great many still operating, and no doubt some of these find their way onto various UNID Lists from time to time.

QUIZITIVE IDENTs:

This is a new theory and a very interesting one. NDB List member **Brian Keyte** noticed that certain beacons were producing a very strange ident, and one, which shouldn't have been there. Several of these were noted, strangely enough, all on the RAF's beacons 'BZ', 'LA' and 'CWL'. A good example was that from the beacon at RAF Brize Norton - BZ on 386 kHz. The normal upper and lower sidebands are often heard with a very 'raspy' sound to them, and Brian had noticed that an 'unid' beacon with the call sign 'AIT' was often heard exactly on 386.0 kHz, and this had a very similar characteristic to the 'BZ' idents some 400 Hz above and below.

Brian did some research into this and managed to work out how the 'quizitive' idents were related to the dots, dashes and gaps in the positive idents. Brian says: *"It's quite simple really, any CHANGE*

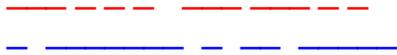
in the positive - from silence to tone or from tone to silence - generates a 'warble' on the carrier lasting for about one dot's length. That's all there is to it".

Brian wrote a short BASIC program that used that rule. Running it using the three RAF NDBs that have the condition, LA, BZ and CWL, generates exactly what the 'quizitive' idents actually sound like for each. This is what he got when he ran the program on these three idents:

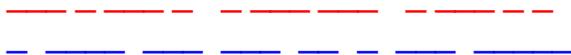
LA - 282 kHz



BZ - 386 kHz



CWL - 423 kHz



This produces all sorts of possibilities for some of our long standing unids, whether this is a general phenomena, or just something peculiar to the RAF remains to be seen!

Brian also wrote a small programme, which also converts 'negative' idents into 'positive' ones, I'm sure both of these will prove very useful in our quest to track down all of the UBOs!

Thanks to Brian for working out the answer to this one!

UNID HUNTING TOOLS:

Unidentified beacon hunting can be a fascinating challenge, and this is where a good set of 'hunting tools' can be a great asset. By 'hunting tools' I mean a good DF Loop, lots of aeronautical charts, knowledge of where to find current Notam information, and a working knowledge of propagation. Understanding propagation can give the unid chaser a good idea of which area the signal might be coming from, for example, when the K Index is high signals from the south are often enhanced, do you only hear the beacon when the K Index is high, and are other 'known' signals from that same area propagating well at that time too?

An understanding of 'Greyline' propagation can also be a big help here too, for instance, does the beacon only appear for a very short period, and at a regular time every day give or take a few minutes? If it does it may be propagating along the 'terminator' (not big Arnie, the line separating daylight from darkness), and this is where a 'hardware' tool such as a 'DX Edge' (produced by Xantec inc.) can come in very useful, or a software programme such as 'GEOCLOCK' comes into its own. These items will show a user when the morning or evening terminator will cross their QTH, and you can check to see what other countries are also along that path at the same time. The following passages give some information about these, and where to obtain them:

THE DX EDGE: I bought my DX Edge in 1982 direct from the manufacturers, Xantec Inc. New York USA. At that time it cost around \$18 US, and has been in regular usage ever since. It's not as sophisticated as some newer software versions, but is simple to use and doesn't require a PC. Basically, it's a plastic 'slide rule' type device, roughly 12" x 4.5" with 12 monthly transparent slides showing parts of the world in daylight or darkness for a given month. This was a very useful low-tech prediction method; sadly, as of late 2001 the manufacture of this device has been discontinued, so unless you're very very lucky using a software product like the Geoclock programme may be the only option available.

GEOCLOCK: This is a software based method of doing this, and is a lot more sophisticated, you can see the daily variations, and also re-check old dates by re-setting the timings. Widely used by many hams and Dxers, full details can be found at the Geoclock website: <http://www.geoclock.com>

No doubt there are other similar programmes available on the internet, but I haven't needed anything other than these two so far!

One big advantage of Geoclock is the number of software add ons and plug ins that are available for this product, these come in the form of extra maps or layouts etc. though as the programme is shareware, the full capabilities of it may not be fully realised unless you register your copy.

If you've read this far you should at least have an idea of what and 'UNID' is by now, and if you can help in any way our Co-ordinators will be only too happy to hear from you.

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