

Identifying DQRM

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A small number of stations generate **Deliberate QRM**, known as DQRM, by transmitting on the frequency of a rare station in order to disrupt the operation. They do so anonymously, not identifying with their licensed callsign and thereby contravening the terms of their transmitting licence. They do not explain their motives for this anti-social behaviour, so the rationale for DQRM is poorly understood and perhaps can be viewed as anarchy – just disruption for the sake of it. But it can cause considerable inconvenience, even anger, to legitimate DX Chasers and is deemed a serious nuisance. DQRM is becoming an ever bigger problem these days.

EASSYL – FBDA

One such DQRMer has been identified by the content of his CW transmissions. Over a period of several years this station has caused prolific CW DQRM to DXpeditions on countless occasions and for long periods. His CW sending is poor so the call-sign used is frequently sent as EAHSYL or FDDA (a varying number of CW dots). It might be that this individual is mentally deranged. Yet he is evidently an experienced DXer. His transmit frequency is fairly accurate and he often appears quickly on the frequency when a rare station starts to operate.

His CW sending is distinctive both in terms of his poorly constructed Morse code and the content of his messages. So he is easily identifiable, no matter which 'call-sign' he chooses to use on that day. His CW is hand-sent, not computer-derived, and is immediately identifiable. Although he uses different 'callsigns' we will refer to him here simply as EASSYL.

Direction Finding

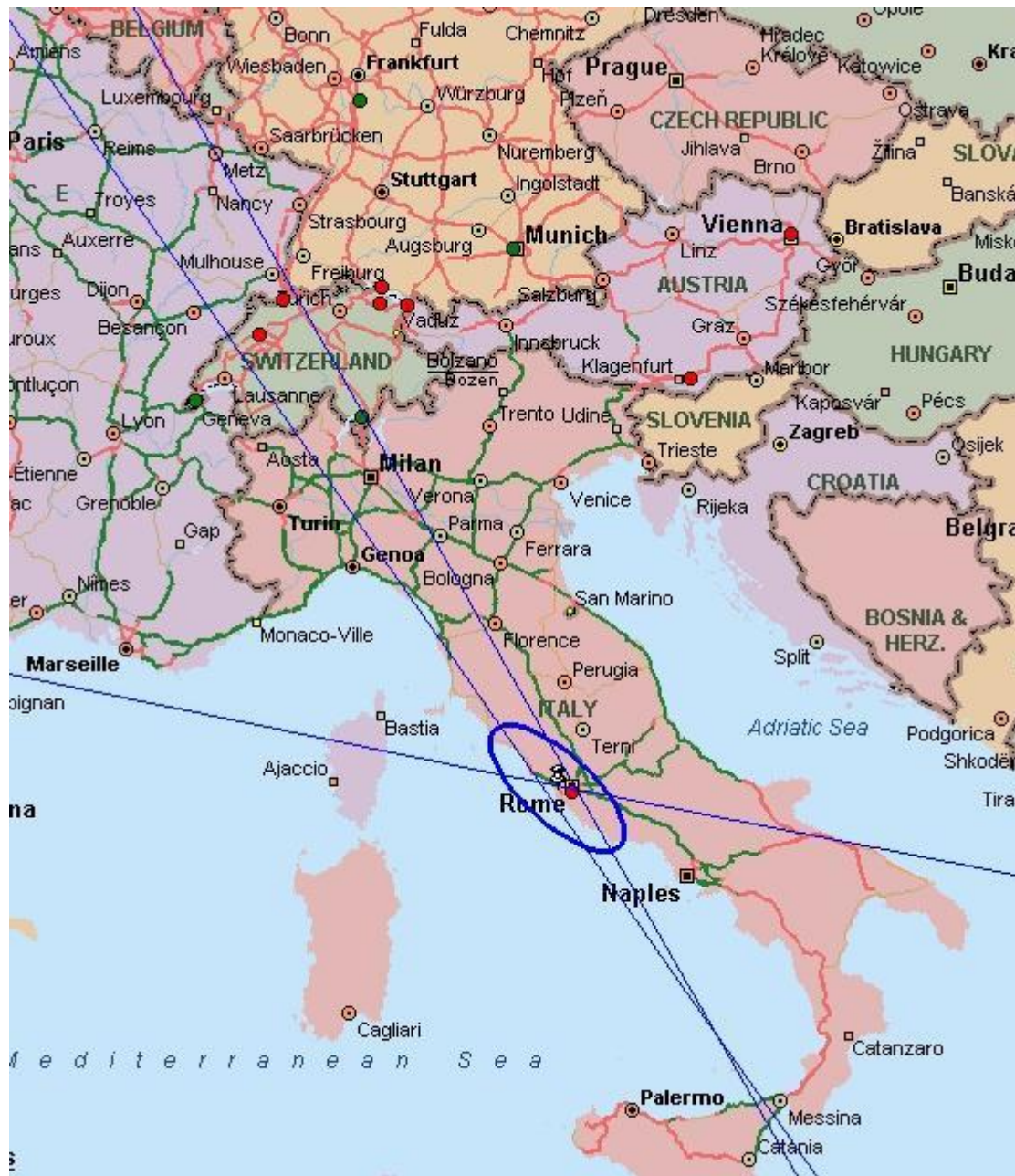
A small group of determined DXers therefore set out to identify EASSYL, as the first step in identifying a number of persistent DQRMs. The first objective was to locate and identify this individual, then to arrange that he cease his disruptive activities. To achieve the first objective required DF. It was quickly established, some years ago, that the EASSYL signal emanates on a beam heading of about 120 degrees azimuth from UK. It was thought that this station was located in Southern Europe, possibly Italy, Greece or a Balkan country. Refining the beam headings we concluded that he was located somewhere in Italy.

A well-positioned radio amateur DXer is employed in UK with access to professional DF facilities. He joined our small, ad hoc investigative group and was permitted by his employer to track EASSYL when not otherwise engaged in his professional duties. This facility is extremely accurate, determining a heading to within two degrees azimuth and may simultaneously take automated bearings from several different sources (countries). The headings are automatically drawn on a map and the lines converge on one point, indicating the location of the signal within the range of a very few miles. This facility was used, during 2014, to help locate EASSYL.

The first map shows three sources of DF which converge on a point just West of Rome, Italy. The second map homes in on that area with five DF sources. The ellipse resulting has a small 'pin' at the statistically significant point where the source of the signal is thought to be located. This is a little to the East of Lido di Ostia.

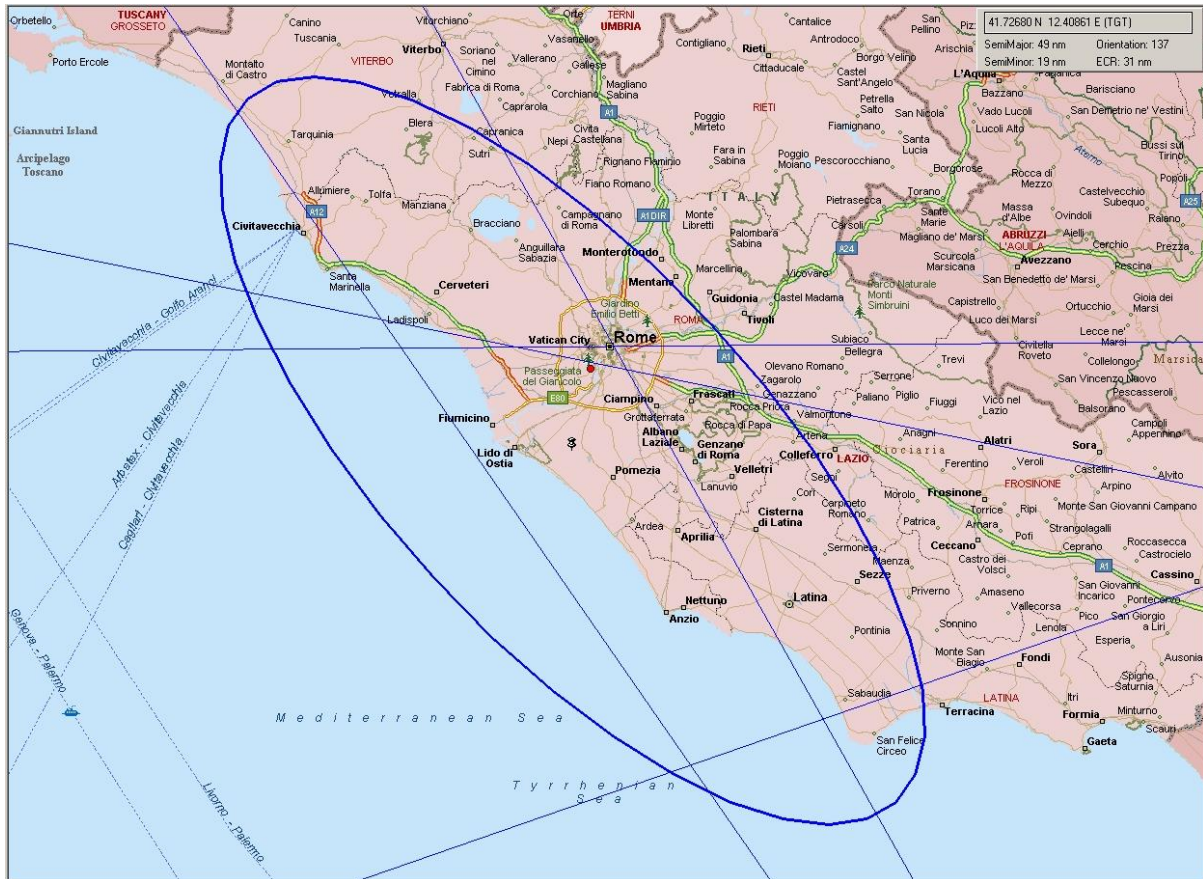
Map 1: 3 DF sources

Date: 2nd October 2014; EASSYL on 18.086 MHz



Map 2: five DF sources

Date: 8th November 2014, Time: 2045 UTC; EASSYL on 10.115 MHz



At this stage of the project two local radio amateurs living in Rome, who are DXers and who were well aware of the EASSYL problem, were approached for help. Being keen to assist they collated a list of some sixty licensed radio amateurs in the local area. Within that list they identified a few possible sources of the DQRN by homing in on those who were heard regularly on the HF bands, using CW.

To define the target area to within say ten miles with the professional DF facility was the quicker part of the project. To home in on one address was more difficult and time-consuming. Our local helpers in Rome could hear the extremely strong EASSYL signal. From their location they determined with directional antennas that it was emanating from West of Rome, which confirmed the earlier findings of the DF maps. In order to define the precise location of the offending station one member of the team then drove to the address of each possible suspect, one by one, while EASSYL was transmitting. In the car was a receiver but with only three feet of wire as the receiving antenna was located inside the car. Our second helper in Rome stayed at his home station, monitoring the EASSYL signal and communicating with the in-car operator by mobile telephone to report the precise moments when EASSYL was transmitting.

They quickly determined, one by one, that the first two suspects were not transmitting at the times when the base station in Rome was hearing the EASSYL signal because while parked outside the target house no signal could be heard with the tiny antenna. But the third target provided an extremely loud signal when the car was at the address. The signal was clearly identified as sending the usual EASSYL content and the building at that address was seen to accommodate several large HF transmitting antennas. Our culprit had been

identified, beyond any reasonable doubt. Great care was taken at this vital stage of the research, encompassing numerous car journeys over a period of many months.

Additionally, this EASSYL station has been monitored over such a long period of time that on two occasions he was heard to send his own, real call-sign by mistake on CW and RTTY. He has also on several occasions been heard operating with his real call-sign and working a DXpedition in the normal pile-up manner of DX-chasing (transmitting on a different frequency to the DXpedition), but then proceeding immediately to commence his DQRM on the DXpedition transmit frequency. We conjectured that having made the contact himself, he then wished to prevent others from so doing.

Having identified the culprit with complete certainty the next step was to build the evidence to prove the case incontrovertibly so that our findings might be deemed legally valid.

Identifying Evidence

Log: a log had been kept of the EASSYL (and his various other 'callsigns') transmissions whenever he was heard on the air. This clearly is not a complete log of all his activities, only when we heard him. This demonstrates his persistence over a long period of time: a period of one year is described, starting from when it was decided that we would require a log. His DQRM is known to have started several years earlier.

Maps: as shown above.

Recordings: audio and video recordings were made from the car, immediately outside the house which show the date, time, street name, house number, transmitting frequency and signal strength. With only a tiny antenna wire and by introducing 18 db of receiver attenuation the signal is loud enough to be sure that the origin is very close indeed.

DX Cluster: archives show that some DXers already believed that this was the identity of the station generating the DQRM, during a period of some 13 years! It is not known how they traced EASSYL's real identity.

Reverse Beacon Network (RBN): we correlated our log of EASSYL with instances when the DQRMer was reported by RBN using his real call-sign. On 12 of the 25 occasions he was also reported by RBN on that date. On three occasions his call-sign was recorded by RBN in a closely correlated time-frame. On the other 13 occasions it may have been that he chose at that time NOT to send any CW with his own call-sign so he was not identified by RBN.

Action Taken

This is a serious case of DQRM which has persisted over such a long period and caused so much unprecedented levels of interference and inconvenience to many DX-Chasers. IARU Region 1 wrote to 'EASSYL' explaining that the offending station had been located very close to his address and asking for his help to identify the culprit. The reply denied blame but we noted that this source of DQRM then completely ceased.

The final objective of dissuading others from causing DQRM may be partly achieved by publication of this story. We have shown that even anonymous signals can be identified.

Future

This case study shows that effective action can be taken to identify and locate DQRM. The work is made much more effective by the availability of local volunteers who can help with "the last mile". Based on this experience, the core team and IARU Region 1 intend to repeat

the process on other “characteristic” DQRM. The long range DF takes only a second or two, and so a short carrier from a DQRMer can result in a trace to his location. Thereafter, the local volunteers will need to be willing to invest some serious time in local work to narrow the source down to a street and a house. But the EASSYL experience shows it can be done, and this should serve as a warning to others who may feel that DQRMinig is a smart thing to do. IARU Member Societies will be encouraged to invoke the help of their national regulators once a DQRMer has been localised to a small area. In this way, we hope we open the way to prosecution of offenders and we hope that slowly, the scourge of DQRM will be eliminated.

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