

TOP SECRET

CI/MS

16 3530

SUBJECT: Fish Notes  
TO : CO, SSA, War Dept.

Report #F 43  
27 May 1944

1. Enclosed is microfilm of miscellaneous documents describing procedures used in Maj. Tester's section. This includes everything available in his section which has been reduced to the form of a report or written description (except for the document forwarded with Report #F 22). Many of the methods described are no longer applicable, particularly on traffic which employs the P<sub>5</sub> limitation. Nevertheless I believe that most of them will repay study.

2. May Stickleback was broken, as usual, by deriving key from a depth. However, a new method, which depends on the K<sub>2</sub> limitation, was used to resolve the key into its components. A write-up is in process of preparation and a copy will be forwarded as soon as it is completed.

3. One of the U. S. Navy liaison officers here has recently paid a visit to Knockholt, the intercept station which covers all Fish traffic. He is a radio expert and a copy of his report, which is enclosed, may be of interest to K branch, although it means very little to me.

4. Enclosed is a current list of all Fish links showing traffic points and indicating what, if anything, is known about the type of machine employed.

5. The Jellyfish wheels changed again on 8 May and were broken after some difficulty. The  $\psi$  patterns were again found without a depth.

6. The number of M37 dots for April Jellyfish was 24, for May Bream 20, for May Jellyfish 20, and for the second May Jellyfish 22.

7. Both current and back Jellyfish traffic now has priority over current Bream except for selected Bream messages suspected to be of high intelligence value.

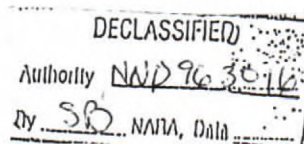
8. Sgt. Vergine is preparing a description of the breaking of the May Bream X wheels which will be forwarded as soon as completed.

Encl. - 1 microfilm  
2 pages  
1 page

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Non-Morse Activity.

Thirty type-printer radio circuits are actively covered by the British at the present time. The enemy has been placing at least one new circuit of this kind in operation each month for the past year and a half. Most of the frequencies in use are in the medium high frequency range between 5 and 12 megacycles, although they are also known to operate this equipment in the ultra high frequency range. Most of the transmitters are said to have a carrier power of 1 kilowatt and high gain directional antennas are apparently used. The circuits are used to establish communication between Germany and the Fronts, the Balkans, Norway and France.

The transmissions are of the amplitude modulated carrier type. The carrier is modulated with three separate audio frequencies for the mark signal and three additional frequencies for the space, as follows, 540 cycles mark, 900 cycles space, 1260 cycles mark, 1620 cycles space, 1980 cycles mark, 2340 cycles space. The signal produced by the above modulation is quite easy to recognize. It is similar to the A.T. & T. single side band transmission but can be distinguished from it very easily by its higher audio pitch and the fact that a strong carrier is present.

The receivers used for this intercept are National type H R O and R C A type AK 89. The audio output of the receiver is fed to suitable band pass filters, amplifiers, neon bulb type limiters, a mixer, a keyer and a thirty watt direct current amplifier. The direct current amplifier supplies the necessary power to operate simultaneously a undulator type recorder, a tape teleprinter (Creed) and a Teletype tape perforator.

On Very excellent signals the tape perforator can be used but the copy is always compared and corrected by the reading of the undulator tape. The teleprinter machines are used to a greater extent on good signals but this copy is also always checked by comparing with a reading of the five unit code from the ink recorder tape. The undulator tape which is recorded at a constant speed is the most used type of recording because it is considered more reliable as it shows the errors that occur. The determination of skips or misses is very important,

Some of the very skilled operators are able to read the five unit code on undulator tape at a rate of 30 W.p.m. by visual inspection. Because accuracy is so essential the tape is usually divided into the five unit groups with a pencilled mark and then read accurately at a considerable speed. Civilian girls do this work.

Five unit code with start stop is used and the speed of transmission is 66 words per minute. Creed teleprinters are modified to operate at this speed. The teleprinters are supplied with direct current motors so the speed modification is possible by adjustment of the governor. Because of the nature of the transmissions the teleprinters were modified to type-print on tape instead of the usual

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page printing method. This is also a convenience for a skilled operator in comparing the tape as it is received. The available unmodulator tape recorders are modified to operate at a fairly constant speed.

The band pass filter used for each existing audio frequency is a three section tuned circuit network, with general characteristics as follows:

1. The pass band with a flat peak 2 db for a 120 cycle band width or 60 cycles from mid frequency.
2. Down at least 20 db at the adjacent channel frequency.
3. A filter loss of 2 or 3 db.

The station that is engaged in this intercept work is provided with a machine shop and a laboratory. They design, modify and build all the necessary auxiliary equipment for this work at the station. Such work includes the complete construction of audio filter inductors (coil winding and cores) modification of tele-printer machines and the construction of amplifier and keyer units.

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## FISH LINKS

Codfish	Berlin - Salonika	X <sub>2</sub> & P <sub>5</sub> (Bream wheels)
Bream	Rome - Berlin	X <sub>2</sub> & P <sub>5</sub>
Carp	Koenigsberg - Italy	X <sub>2</sub> & P <sub>5</sub> (not read for months)
Tarpon	Berlin - Bucharest	X <sub>2</sub> & P <sub>5</sub> (not read for months)
Squid	Russia - Koenigsberg	X <sub>2</sub> & P <sub>5</sub>
Octopus	Koenigsberg - Russia	No limitation
Stickleback	Koenigsberg - Poland	X <sub>2</sub> only
Sprat	Berlin - Marseilles	Never read
Crayling	Koenigsberg - Zagreb	Never read
Gudgeon	Italy - Berlin	X <sub>2</sub> & P <sub>5</sub> (not read for months)
Jellyfish	Berlin - Paris	X <sub>2</sub> & P <sub>5</sub>
Sole	Vienna - Berlin	Never read
Anchovy	Paris - Koenigsberg	Never read
Goldfish	Oslo - Kemi	Never read
Blenny	Russia - Poland	Never read
Whiting	Riga - Koenigsberg	Never read
Turbot	Copenhagen - Berlin	X <sub>2</sub> & P <sub>5</sub> (not read for months)
Chub	Berlin - Salonika	Never read
Gurnard	Zagreb - Berlin	Never read
Conger	Athens - Berlin	Sturgeon type
Halibut	Memel - Koenigsberg	Sturgeon Type
Hake	Berlin - Minsk	Never read
Barbel	Berlin - Athens	Never read
Bass	Koenigsberg - Salonika	Never read
Mullet	Oslo - Berlin	Not read for months
Stingray	Hanover - Nuremberg	Never read
Swordfish	Berlin - Bordeaux	Probably obsolete

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