

PHOTOGRAPHIC ANALYSIS

The accompanying photographs are included to show how photographic methods are essential for correct analysis of keying waveforms.

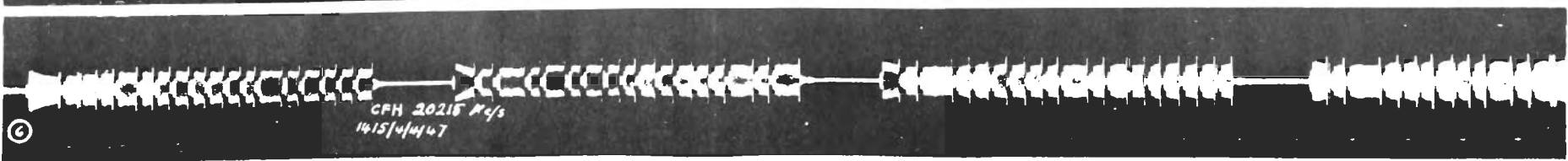
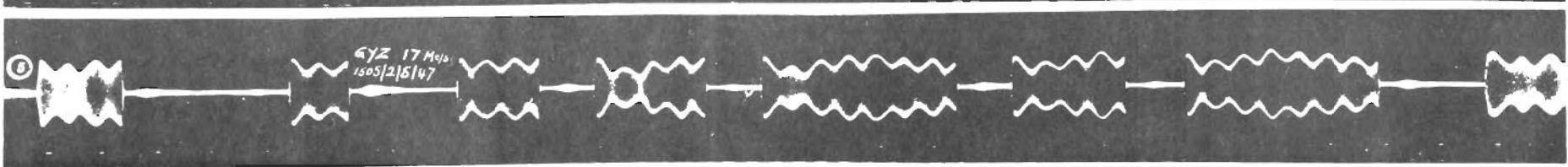
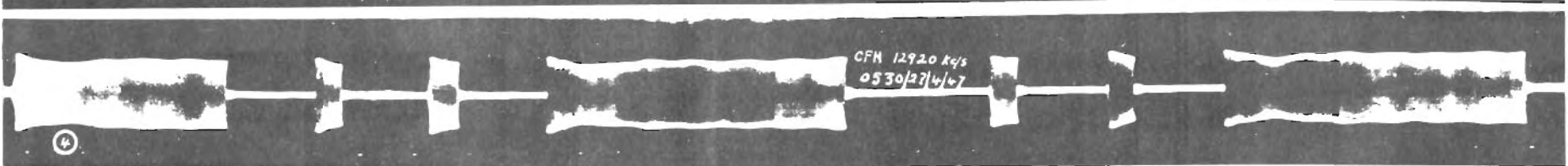
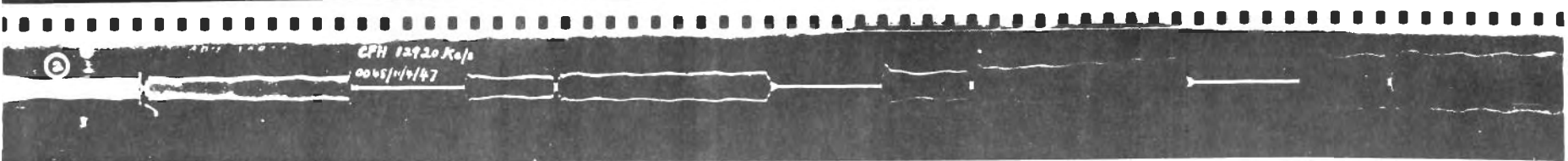
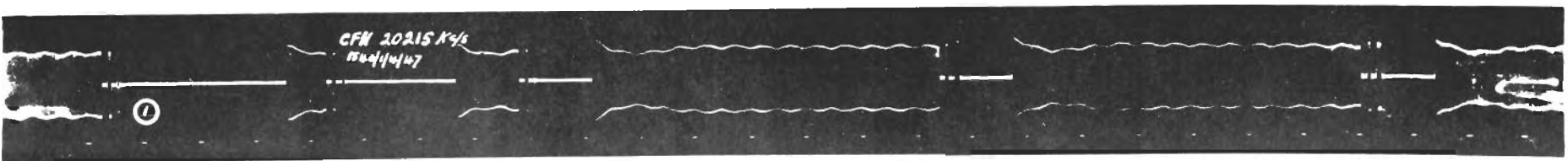
The actual pictures are very old but they do demonstrate various defects in the structure of the signal transmitted over the radio path.

It should be remembered that films show not only the transmitted waveform but also distortion caused by propagation effects, QRM, QRN and locally generated noise and distortion caused by the receiver itself.

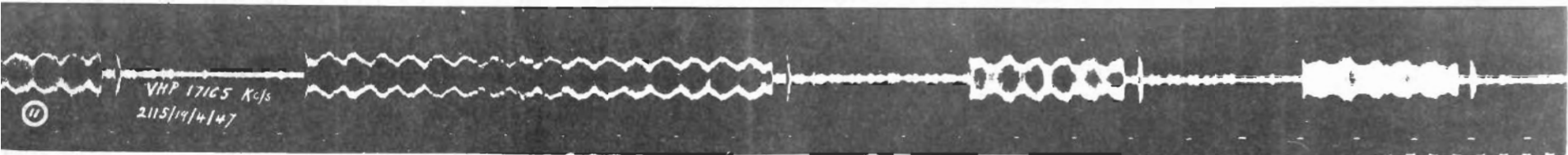
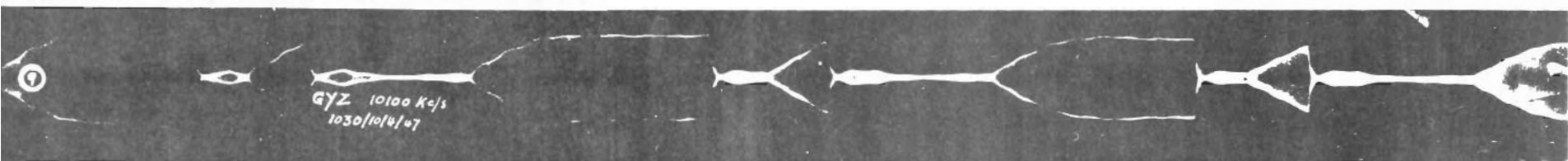
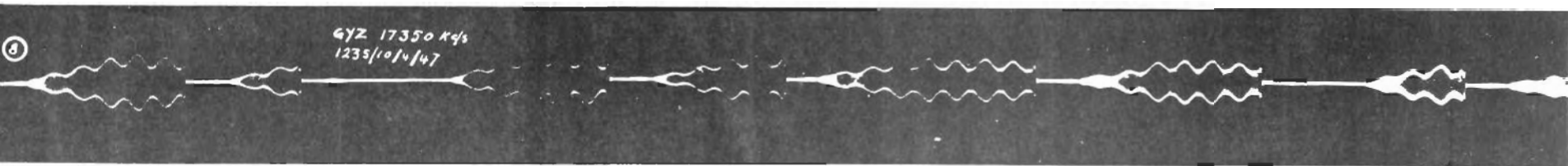
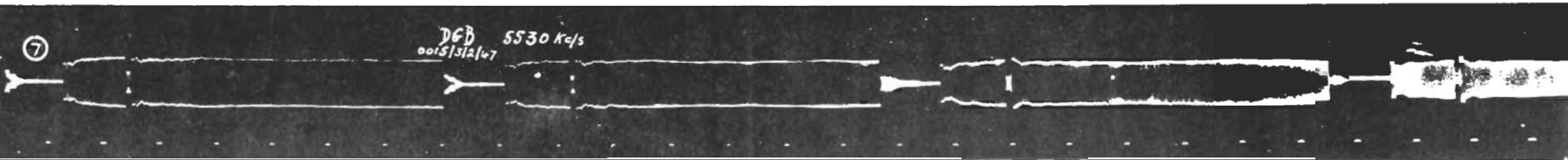
Thus, although the film gives a permanent record, the information has to be carefully sifted.

- Photo 1. Spacing bias (space duration of 24 milliseconds instead of 20 milliseconds) with two relay bounces at 3.3 millisecond intervals.
- Photo 2. Series of letter "V", showing a split in the character at a point 6.7 milliseconds along the third unit, possibly due to worn tape or faulty auto-transmitter head.
- Photo 3. Series of "RY's" with relay bounces, slight mark bias and speed slow.
- Photo 4. Photo taken at 0530 on 24th March, when it was impossible to print from the teleprinter keyboard transmission. The very severe distortion renders identification of the characters transmitted when the film was taken extremely difficult, but there is a resemblance of "RY" characters. The auto head transmission at 0515 was quite satisfactory.
- Photo 5. Perfect time duration of mark and space units. However, a 100 c/s ripple is very noticeable.
- Photo 6. A series of letter-shift characters with irregular splits which may have been produced by dirty contact ring of the teletype auto head or a poor connection.
- Photo 7. Photo of H.M.S. VANGUARD's Radio Teletype transmission, showing trace of Multipath and a split in the letter shift character.
- Photo 8. Morse transmission from Malta after keying filter inserted. Deep 100 c/s supply ripple also evident.
- Photo 9. Series of "N's" in morse. The effect of this particular key click filter is to produce the effect of a spacing bias due to the delay at the commencement of radiation. This can sometimes be reformed by the signal bias adjustment at the receiver - though this is not a very satisfactory method of overcoming the distortion.
- Photo 10. Morse transmission from VHP. It was understood that the master oscillator was in use at the time. It is possible that the heavy power supply ripple affected the M.O. Evidence of this ripple is also furnished by Photo 11.
- Photo 11. Shows 100 c/s ripple of power supply along with a single relay bounce.

TRANSMITTER FAULTS



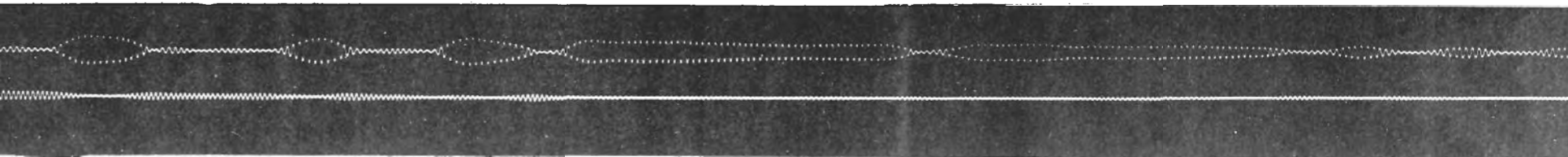
TRANSMITTER FAULTS.



SINGAPORE 22795 KCS SSB OUTFIT C G L 27 - 4 - 59 1110 to 1124 OMNI AERIAL 13 - 26 MCS

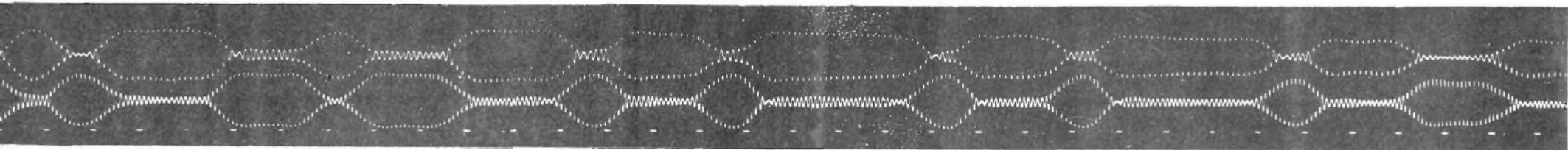
(ONE) M C V F CHANNEL 1 TOP MARK TONE SELECTIVE FADING

BOTTOM SPACE TONE



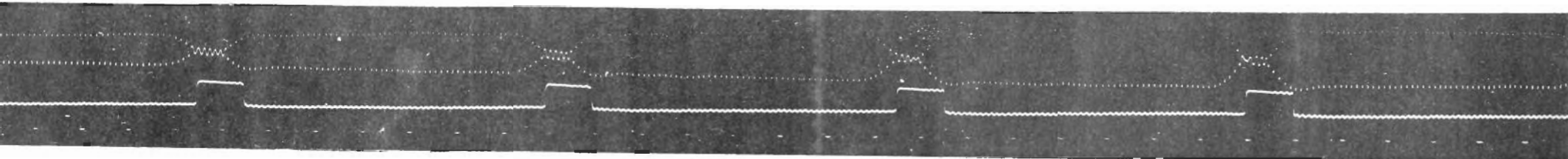
(TWO) TOP MARK TONE

BOTTOM SPACE TONE



(THREE) TOP MARK TONE

BOTTOM D C OUTPUT



(FOUR) TOP SPACE TONE

BOTTOM D C OUTPUT

