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STUDY OF X-RAY RADIATION CAUSED BY RAILWAY DEFORMATION DURING LOCOMOTIVE MOVEMENT



Experimental series number 43, tests 1-8. A control experiment was performed at the North-West Railway Museum, Snoqualmie, WA on a railroad using a locomotive. The location of the films for the study of X-rays caused by the movement of the locomotive is shown in the photograph. Four studies were performed on locomotive movement from 10' (3 m) to 2,623' (800 m).



Experimental series No. 43, test 7. Control experiment performed on the Northwest Railway Museum, Snoqualmie, WA on railway using a locomotive. Photos obtained at a distance of 10' (3 m) from the locomotive.

Note. 1) Locomotive began to move away from the films from this distance. 2) Pay attention to the white radiation recorded on frames 2 and 4.



Experimental series No. 43, test 8. Control experiment performed on the Northwest Railway Museum, Snoqualmie, WA on railway using a locomotive. Photos obtained at a distance of 10' (3 m) from the locomotive.

Note. 1) Test 7 and 8 were performed simultaneously on different parts of the rail. 2) Luminous objects do not represent danger. The danger is represented by the dark objects in which atoms absorb energy radiated by a local group of metastable atoms. Such a dark region, similar to a crack, is shown on frame 15. We can assume that the region radiating energy is shown on frame 14 and partially on frame 15.



Experimental series No. 43, test 1. Control experiment performed on the Northwest Railway Museum, Snoqualmie, WA on railway using a locomotive. Photos obtained at a distance of 492' (150 m) from the locomotive.

Note. Please pay attention to the white radiation recorded on frames 3 and 4.



Experimental series No. 43, test 4 Control experiment performed on the Northwest Railway Museum, Snoqualmie, WA on railway using a locomotive. Photos obtained at a distance of 492' (150 m) from the locomotive.



Experimental series No. 43, test 5 Control experiment performed on the Northwest Railway Museum, Snoqualmie, WA on railway using a locomotive. Photos obtained at a distance of 1320' (403 m) from the locomotive.



Experimental series No. 43, test 6 Control experiment performed on the Northwest Railway Museum, Snoqualmie, WA on railway using a locomotive. Photos obtained at a distance of 1320' (403 m) from the locomotive.





Note. Photos were taken during emergency braking of the locomotive at a distance of $\frac{1}{2}$ mile from the place of braking. Pay attention to frames 4-8 caused, probably, by friction.





Note. 1) Control experiment series №40 at the North-West Railway Museum, Snoqualmie, WA on the railway using the locomotive was performed before the series number 43.
2) Photos in the experimental series No.40, tests 2-4 and 6 recorded X-radiation caused by the deformation of the locomotive that passed over them.

3) Photos of test No. 36 were obtained during the movement of a train consisting of two locomotives and 96 loaded platforms.



40 1 Rail deformation during locomotive movement

Note. 1) Photos were taken at a distance of 10' (3 m) from the locomotive stopping. The film was located on the rail web in the snow. 2) The locomotive slowly stopped at this distance. 3) Fan-like radiation is shown on all photos if water, vapour or ice are present.



40 2 a Rail deformation during locomotive movement.



40 2 b Rail deformation during locomotive movement.



40 3 Rail deformation during locomotive movement



40 4 Rail deformation during locomotive movement



40 5 Deformation of the locomotive frame during its movement

Note. Pay attention to the dark area on the frame 15 caused, probably, by a crack.



40.6 Deformation of the concrete sleepers and rail fastenings during locomotive movement

Note. The photographs shown in frames 1, 2, 17, and 18 indicate that radiation is caused by friction in the rail attachment site. The bright line from frame 3 to frame 16 indicates the energy exchange between the rails.



36 The film recorded the X-rays, being in the ground at a distance of 3 m from the roadway