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Let us Enjoy Geo-Tetsu - the Sixth Geo-tour through Train Windows, Nakamura and Sukumo Line of the TOSA KUROSHIO RAILWAY

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1. Aims of Geo-Tetsu activities

Geo-Tetsu is the name of the activity that shows everyone ways to enjoy and learn about geology and related sciences, using railways (Kato et al., 2009). Following five year's Geo-Tetsu promote activities are continued by geological engineers who love railways, organized with the corporation of the Fukada geological institute since 2009 (Fujita et al., 2013) and established Geo-Tetsu Project Committee since 2013.

Geo-Tetsu offers the chance to get acquainted with geological features, not only through train windows but also along paths accessible from the stopovers alongside the railway routes. We selected enjoyable Geo-Tetsu courses and Geo-points. As much information is obtainable and can be gathered from various perspectives; the railway itself, geology, geography, cultural heritage and sight-seeing as well. We hope that the general public will enjoy a new style of railway traveling provided by the Geo-Tetsu. The Nakamura and Sukumo Line of TOSA KUROSHIO RAILWAY is presented in this as sixth route of Geo-tetsu.

2. The Nakamura and Sukumo Line, the sixth Geo-Tetsu project

(1) Abstract of the Nakamura and Sukumo Line

The Nakamura and Sukumo Line run from Kubokawa at Shimanto Town to Sukumo City in the western region of Kochi Prefecture. The railway connects from Kubokawa to Nakamura at 43.0km, and from Nakamura to Sukumo at 23.6km. Both are single track, and the route not electrified. In the line, there are characters designed by Takashi YANASE. Additionally, they have seven wrapped vehicles of municipalities. John Mung (Manjiro Nakahama), Whales, Whale Sharks, Kashiiwa-jima Island, Kyoto cultures of the Shimanto City, and the event character of the Sukumo City etc. are painted there. The vehicles not only transport passengers but also inform the charms of the western region of Kochi Prefecture.

The Nakamura Line and the Sukumo Line have a different history of construction. At first, the construction of the Sukumo Line had been promised. However, the Nakamura Line was given to priority by the political motivation. The Nakamura Line was started constructing in 1956, and opened in 1970. On the other hand, the Sukumo Line was started constructing in 1974, but it was interrupted by the Japanese National Railways reconstructing promote measure law in 1981. Afterwards, both routes were succeeded by TOSA KUROSHIO RAILWAY Ltd. as the third sector railway. At last, when the Sukumo Station opened, it became a present route in October, 1997.

(2) The rich geological and sight-seeing resources of the Nakamura and Sukumo Line

The Nakamura and Sukumo Line runs on the Shimanto terrane that consists of sandstone and the mudstone from Cretaceous to Paleogene. The train leaves Kubokawa Station (asl 210m) and goes to Kaina Station (asl 47m), descending the inclination of 23 permil or less. Especially, "the First Kawaoku Tunnel (2031m)" is well worth as loop of 350m in radius, descending 20 permil, and the exit appears below by 40m. If you have the compass, you can confirm its needle will be made one rotation in the tunnel. When we goes out there, train runs along Iyoki River. Soon we arrive at the Tosa-Saga Station in famous of bonito's single-hook fishing. The train passes under a lot of short tunnels with the outcrops of turbidite of Shimanto terrane around Tosa-Shirahama. Between Ukibuchi and Tosa-Irino Station, you can visit the river-mouth deviation of the Fukiage River. There are almost stone monuments of the Nankai Earthquake at the Kamo shrine in woods of pine at Irino.

Through the Kotsuka Station, the train changes front to the west. It crosses the Shimanto River in parallel to a red bridge as old national road. In the downstream, there is a long dam for the flood disaster evasion. The train advances straight in the Nakasuji lowland (Kano et al., 2003), which understood the slope-basin deposit (Domeki Formation). Lastly, the train comes out of Hijirigaoka Tunnel (5084m), we arrive at the Sukumo Station.

Keywords: Geo-Tetsu, Geo Point, Nakamura and Sukumo Line of the TOSA KUROSHIO RAILWAY, loop tunnel, Shimanto terrane, Nakasuji lowland