

Railway Operators in Japan 12

Southern and Eastern Kinki Region

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Overview

This third and final article on railways in the Kinki region looks at the southern and eastern parts of the region—southern Osaka Prefecture, Nara Prefecture, Wakayama Prefecture, and southern Mie Prefecture. The Kinki region has a long history going back many centuries, especially in the areas now known as southern Osaka Prefecture and Nara Prefecture. In ancient times, the nation's capital was moved from one locality to another in the Nara Basin, a large expanse of flat land in present-day Nara Prefecture. The tombs of many emperors are located in the basin and in southern Osaka Prefecture. The area is also known for its numerous

historic sites and cultural properties, and attracts many tourists. Two places in Nara Prefecture have been added to UNESCO's World Heritage List—the Buddhist Monuments in the Horyu-ji Area, and the Historic Monuments of Ancient Nara. This part of Japan is one of the country's most popular tourist destinations for another reason as well—parts of Yoshino-Kumano National Park are located in the three prefectures of Nara, Wakayama and Mie, while Ise-Shima National Park is in Mie Prefecture. Travel between these three prefectures is made difficult by the rugged Kii Mountains lying between them. The Osaka Plain and Nara Basin are quite urbanized with Osaka City as the main metropolitan centre. On the other hand, the Kii Peninsula to the south has a low

population density because there is little flat land—mountains and rough terrain stretch almost to the Pacific Ocean, letting the area retain much of its natural beauty. The warm Kuroshio current sweeps past the coast here, keeping the climate mostly mild with more rain than many other parts of Japan.

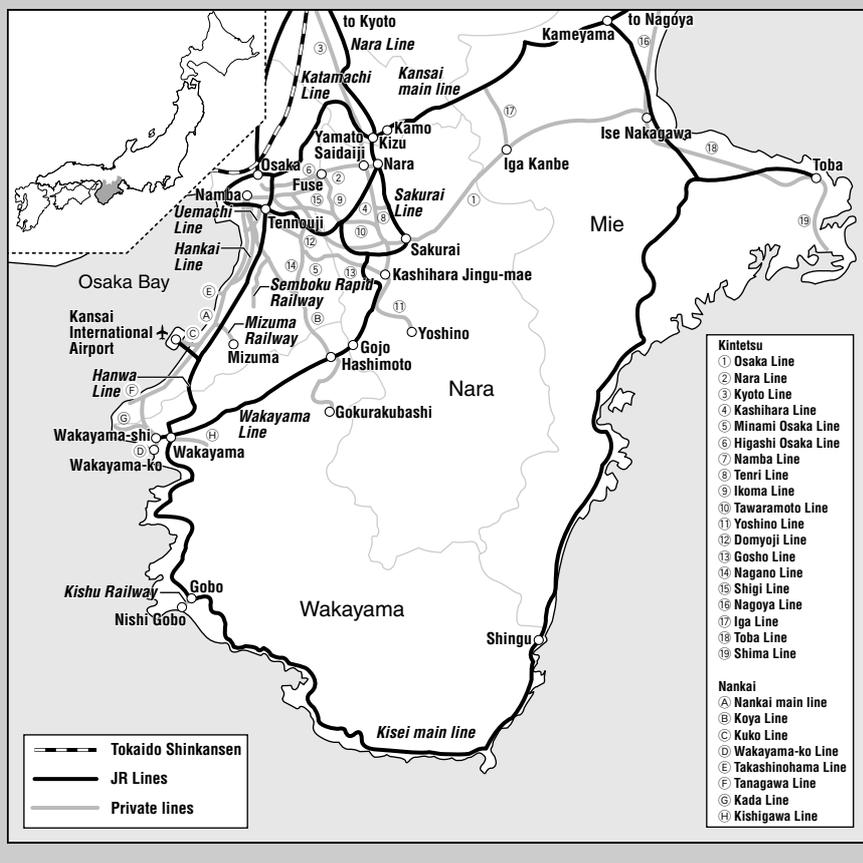
Overview of Rail Network

Trunk lines serving the area are: the 174.9-km JR Central/JR West Kansai main line (Nagoya–JR Namba (Osaka)); the 61.3-km JR West Hanwa Line (Tennoji (Osaka)–Wakayama); and the 384.2-km JR Central/JR West Kisei main line connects the former two lines via the Kii Peninsula coastline (Kameyama–Wakayama-shi). JR West lines branching from these main lines include the Sakurai and Wakayama lines, etc. Because the Kii Mountains stretch across the south-central part of the area, these lines run mainly through the lowlands in the north or along the coast in the south.

Kinki Nippon Railway (Kintetsu) is the most important private operator in the area with a relatively dense network of lines in Nara and Mie prefectures. The company's network in the Nara Basin is linked with Osaka in the west and the Ise Plain in the east. Its longest line is the 109-km Osaka Line (Uehonmachi–Ise Nakagawa). Two other Kintetsu lines form the east–west axis of its network: the 26.7-km Nara Line (Fuse–Kintetsu Nara) and the 39.8-km Minami Osaka Line (Osaka Abenobashi–Kashihara Jingu-mae). These are connected by the north–south 23.8-km Kashihara Line (Yamato Saidaiji–Kashihara Jingu-mae), forming the central axis of the network. Kintetsu's network also includes a number of branch lines.

Nankai Electric Railway (Nankai) operates two lines linking Osaka and Wakayama prefectures—the 64.2-km Nankai main line

Railway Lines in Southern and Eastern Kinki



(Namba–Wakayama-shi) and the 64.5-km Koya Line (Shiomibashi–Gokurakubashi). Part of the area described in this article is located in the Keihanshin (Kyoto, Osaka and Kobe) metropolitan district and nicknamed the Empire of Private Railways because of the strong presence of private operators. Indeed, all track in Nara Prefecture was originally laid by the private sector, not by the former government railways nor Japanese National Railways (JNR).

A number of local private railways once operated along the coast of the Kii Peninsula, but only two companies remain—Nankai's Kishigawa Line and Kishu Railway.

JR Lines

Kansai main and branch lines

Today's Kansai main line consists of three

sections: Nagoya–Kameyama, Kameyama–Kamo, and Kamo–JR Namba. The oldest part of the line was opened between Kusatsu and Mikumo (both in Shiga Prefecture and now on the Kusatsu Line, *JRTR* 37, pp. 44–51) by Kwansei Railway in 1889. This section was extended and added to by mergers with other private railways in the area. Kwansei Railway is famed for its efforts to seize a greater share of the Nagoya–Osaka market from the government railways' Tokaido Line (now the JR Tokaido main line). Its success was due to its many through services linking the two cities. However, Kwansei Railway was nationalized in 1907 and its competitor, Kintetsu, began running a number of through limited expresses on a parallel line. Paradoxically, the line suffered another setback in 1973, when the section between Minatomachi (today JR Namba) and Nara was electrified, resulting in a gradual cutback in through

diesel services between Osaka and Nagoya. Today, only local services are offered on the above-mentioned three sections. (Under JR's formal definition and following the practice of regarding Tokyo as the hub of the nation's railway network, the Kansai main line stretches from Nagoya to Minatomachi. However, for convenience, this article treats the line as consisting of three sections.)

Japan's ancient capital of Nara is almost due east of Osaka, but for many centuries the main transport corridor between the two cities swerved to the south, following the valley of the Yamato River through the Ikoma Mountains. The Osaka–Nara section of the Kansai main line was constructed by Osaka Railway along the longer valley route. As a result, even today, JR West trains running between JR Namba and Nara must travel 8.2 km further than Kintetsu trains between the same two cities, because Kintetsu's lines

Size and Financial Status of Railways in Southern and Eastern Kinki Region

	Route-km	Number of Employees	Capital (¥1000)	Operating Revenues (¥1000)		Operating Expenses (¥1000)		Operating Profits/Losses (¥1000)		Ordinary Profits/ Losses (¥1000)
				Railway	Non-railway	Railway	Non-railway	Railway	Non-railway	
Kinki Nippon Railway	594.1	9,906	92,741,000	182,749,985	48,110,219	159,430,986	41,800,190	23,318,999	6,310,029	11,531,450
Nankai Electric Railway	168.3	3,122	63,739,000	63,401,974	56,450,480	57,686,893	46,669,778	5,715,081	15,495,783	2,838,171
Osaka Prefectural Urban Development	14.3	329	4,000,000	8,702,769	5,714,792	7,840,370	2,889,651	862,399	2,825,141	2,816,463
Hankai Tramway	18.7	151	450,000	1,717,713	116,336	2,000,138	48,673	-282,425	67,663	-216,077
Mizuma Railway	5.5	32	200,000	383,192	756,538	325,469	697,110	57,723	59,428	92,818
Arita Railway	5.6	5	30,000	7,789	789,002	19,353	793,930	-11,564	-4,928	-31,146
Kishu Railway	2.7	6	160,000	12,759	5,503,876	40,881	5,336,785	-28,122	167,091	-214,880

Passenger Volume and Density by Railway Company

		1992	1993	1994	1995	1996	1997	1998	1999	2000
Kinki Nippon Railway	No. of Passengers (1000)	802,266	797,424	790,506	788,663	770,228	742,717	718,225	696,535	679,722
	Passenger Density*	70,460	70,186	70,324	69,600	68,038	65,516	63,531	61,868	60,768
Nankai Electric Railway	Volume	305,307	302,212	303,756	302,638	295,320	282,766	273,129	261,527	255,042
	Density	81,970	81,986	80,925	79,933	77,987	74,701	72,506	69,643	67,867
Osaka Prefectural Urban Development	Volume	57,810	58,050	57,755	60,023	60,176	58,321	56,948	55,059	54,301
	Density	110,670	111,301	110,978	100,828	101,633	99,197	97,551	94,668	94,132
Hankai Tramway	Volume	12,453	12,688	12,453	11,861	11,513	11,678	11,047	10,536	10,151
	Density	7,973	7,657	7,206	6,785	6,587	6,163	5,813	5,495	5,298
Mizuma Railway	Volume	3,055	3,115	3,116	3,080	2,857	2,765	2,670	2,614	2,507
	Density	5,903	5,948	5,912	5,798	5,385	5,187	5,026	4,941	4,748
Arita Railway	Volume	109	93	74	25	15	17	23	18	18
	Density	251	220	176	67	39	48	51	49	43
Kishu Railway	Volume	223	220	201	193	180	163	150	125	120
	Density	483	476	432	414	386	350	319	269	259

* Daily Passenger=Daily passenger-km/route-km

from Kintetsu Namba Station to Nara follow a direct route through the Ikoma Hills. Years ago, the line now operated by JR West was at another disadvantage, because the Osaka terminus (now called JR Namba) was constructed some distance from *Minami* (south) commercial district and Nara Station was built west of central Nara. Shunning these inconveniences for many years, passengers between Namba and Nara tended to take Kintetsu's Nara and Namba lines. However, after the Kansai main line was electrified between the then-terminus of Minato-machi and Nara in 1973, some rapid trains from Nara began offering through services via the Osaka Kanjo (Loop) Line to Osaka Station (see *JRTR* 36, p. 57), boosting ridership. At first, through trains ran only on Sundays and holidays, but they now run daily and attract a loyal following as the *Yamatoji Kaisoku* rapid services. JR West's fares are similar to those of Kintetsu, and with some trains now terminating in *Kita* (north) commercial centre of Osaka, more passengers are travelling between Osaka and Nara on the JR West line. The passenger base has also expanded since the line was electrified as far as Kamo in 1988 in response to the development of more housing in the area. The electrified section is known locally as the Yamatoji Line.

Three lines branch from the Kansai main line—the 34.7-km Nara Line (Kyoto–Kizu), 29.4-km Sakurai Line (Nara–Takada), and 87.9-km Wakayama Line (Oji–Wakayama). These lines were originally built by private railways in the Meiji period (1868–1912) and the various sections were later incorporated into Kwansei Railway's network.

The Nara Line built by Nara Railway, was electrified in 1984 in response to the increased demand from commuters and students who had moved into new housing in southern Kyoto Prefecture. After JR West took over the line in 1987, it began running *Miyakoji Kaisoku* rapid services between Kyoto and Nara (every



JR West's Series 207 local train to Kyobashi

(JR West)

30 minutes outside rush hours) to promote tourism between the two ancient cities.

The Sakurai Line was originally built in two parts, one by Nara Railway (Nara–Sakurai), and the other by Osaka Railway (Sakurai–Takada). After JNR electrified the line in 1984, it began offering some through services on the Kansai main line. The Wakayama Line was originally built in three parts, one by Osaka Railway (Oji–Takada), the second by Nanwa Railway (Takada–Gojo), and the third by Kiwa Railway (Gojo–Wakayama). This line was also electrified in 1984. Over the last few years JR West has increased through rapid services to Osaka on the Wakayama Line in an attempt to attract passengers living in rail corridors also served by Nankai (Koya Line) and Kintetsu (Osaka and Minami Osaka lines).

Electrification has still not come to the Kamo–Kameyama section of the Kansai main line situated between the more heavily populated JR Namba–Kamo section in the west and the Kameyama–Nagoya section in the east (see *JRTR* 34, pp. 52–63). The middle section has still not been electrified because its distance from the Kihanshin and Nagoya metropolitan districts makes urbanization unlikely, and because the track passes through several single-track tunnels in the Suzuka Mountains. Today, JR West

operates only one daily *Kasuga* (place name) express each way between Nagoya and Nara. All other local services use small diesel railcars.

Katamachi Line

JR West's 44.8-km Katamachi Line starts at Kizu on the Kansai main line, and passes through the Kitagawachi district of north-eastern Osaka Prefecture to connect at Kyobashi on the Osaka Kanjo Line. (JR West regards this line as beginning at Kizu and ending at Kyobashi.)

The oldest section (Katamachi–Shijonawate) was constructed by Naniwa Railway in 1895. After Naniwa was absorbed by Kwansei Railway in 1897, the latter used the track as a main line linking Osaka and Nagoya to compete vigorously with the government railways' Tokaido Line. However, Kwansei Railway was nationalized in 1907 and operations on the Kansai main line and Katamachi Line were gradually reduced to mostly local services. More commuters began using the Katamachi Line in the 1920s and the Katamachi–Shijonawate section became the first government railways' track in the Kansai region to be electrified in 1932. The trackside population density began rising in the 1970s and the local economy was further stimulated by construction of Kansai Science City close



JR West's Series 281 *Haruka* limited express running on Hanwa Line (JR West)



JR West's Series 283 *Ocean Arrow* limited express running on Kisei main line (JR West)

to the prefectural boundaries of Osaka, Kyoto and Nara. These developments led to further electrification from Shijonawate to Nagao in 1950, and from Nagao to Kizu in 1989 when electric trains started operating over the entire line. JR West has nicknamed the line Gakuen Toshi (Campus) Line. Today, trains on the Katamachi Line and the JR Tozai Line, which opened in 1997, use each other's tracks to provide through services (see *JRTR* 36, pp. 56–63).

Hanwa Line, Kisei main line and branch lines

Nankai Railway—the predecessor of today's Nankai Electric Railway—was the first operator to build tracks to Wakayama in 1903. Nankai was not nationalized in the 1906–07 expansion of the government railways and remains a private railway company to this day. It's Nankai main line between Osaka and Wakayama became the district's main corridor, leaving the government railways with little interest in extending its network into Wakayama Prefecture and explaining why the Kii Peninsula was one of the last major peninsulas to have a coastal railway. Coastal shipping played an important transport role on the peninsula until the Kisei main line was completed in 1959. In 1929 and 1930, Hanwa Electric Railway constructed a new line from Hanwa Tennoji in Osaka to Hanwa Higashi Wakayama in Wakayama, establishing itself as a competitor to

Nankai Railway. Under the WWII railway integration policy, Hanwa Electric Railway merged with Nankai in 1940, but was then sold to the government in 1944. The track retained the name as the Hanwa Line.

The government railways started building the Kisei main line in 1924 with Wakayama as its western terminus. Purchase of the Hanwa main line provided the opportunity to start through services from completed parts of the Kisei main line to Osaka.

The Kisei main line has two sections with Shingu City at the dividing boundary. The western end—nicknamed Kisei-saisen (West Kisei Line)—falls within the sphere of Osaka, while the eastern end—nicknamed Kisei-tosen (East Kisei Line)—falls within the sphere of Nagoya. The eastern end passes through a rugged and sparsely populated area, but passenger levels on the western end are fairly high because it serves small cities like Gobo and Tanabe in addition to Shingu, and also passes through popular tourist spots, like Shirahama and Katsuura. Electrification of the western end was completed in 1978 when tilting *Kuroshio* (name of warm current) limited expresses began running more frequently on the curved track.

The western end of the Kisei main line enjoys a number of advantages—it connects with the Hanwa Line, it offers opportunities for travel around the Kii Peninsula, and its 3.3-km branch line in Wakayama connects with the Nankai main line.

When JNR was divided and privatized in 1987, the eastern end of the Kisei main line connected with the JR Central line network while the western end connected with JR West. *Nanki* (place name) limited expresses on the non-electrified eastern end began connecting Kii Katsuura with Nagoya in 1978. In 1992, JR Central replaced the rolling stock with tilting *Kiha* 85 diesel railcars for faster services and the new limited expresses were named *Wide View Nanki*. Local trains used to run the entire length of the Kisei main line, but today they go no further than Shingu. The rural population is sparse along the eastern end and passenger levels on the local small diesel railcars remain low.

However, the western end connects with the busy Hanwa Line and JR West has introduced new electric rolling stock to permit more and faster limited expresses. Around 1987, limited expresses began through operations on the Kisei main line from Kyoto and Shin Osaka on the Tokaido main line. At first, there were only irregularly scheduled limited expresses and they were forced to use a freight line over part of the distance, but a new track section was built at Tennoji Station to connect the Hanwa and Kansai lines in 1989 (see *JRTR* 36, pp. 56–63). Subsequently, the regularly scheduled *Kuroshio* provided through services to Shin Osaka and Kyoto via the Osaka Kanjo Line and the Osaka Hoppo freight line. New Series 283 rolling stock was introduced in 1996 for faster *Ocean Arrow* limited express services.

Local trains on the western end of the Kisei main line are mainly electric with some exceptions. Some rapid-express services offer through connections to Osaka via the Hanwa Line (some terminating on the Osaka Kanjo Line). However, many local trains are driver-only and run on the western end of the line between Wakayama and Gobo, Gobo and Kii Tanabe, and Kii Tanabe and Shingu.

Near Osaka, the Hanwa Line carries many commuters and students. Local and rapid express services run the full length from Tennoji to Wakayama, providing convenient services that are well patronized. Other rapid express services provide convenient through connections to the Osaka Kanjo Line and the Kisei main line.

The Kansai-kuko Line branches from the Hanwa Line at Hineno Station, providing access to Kansai International Airport. Since the airport opened in 1994, *Haruka* (far distance) limited expresses have provided through services to Shin Osaka and Kyoto, offering a convenient link to the Tokaido and San'yo shinkansen. *Kanku Kaisoku* rapid services from the airport run as far as Osaka on the Osaka Kanjo Line. In 1999, some *Kanku Kaisoku* services from the airport began splitting at Hineno to permit *Kishuji Kaisoku* rapid services to Wakayama.

Private Railways

Kinki Nippon Railway (Kintetsu)

The Kintetsu network extends across six prefectures—Osaka, Kyoto, Nara, Mie, Aichi and Gifu. With 573.7 km of lines (at April 2003) and 330 stations, the company is one of Japan's largest private railway operators.

Kintetsu began as Osaka Electric Tramway in 1914, operating a line from Uehonmachi (in Osaka) to Nara. With time, it grew by merging with various private operators in the six prefectures.

During this early growth period, the company acquired one private railway after another in Nara Prefecture, eventually gaining a controlling interest in all railways and tramways except those operated by the government railways. It then began investing in prefectural bus services. During WWII, it skilfully used the government's system of wartime controls to acquire a transportation monopoly in Nara Prefecture. Excluding the JR West lines, even today Kintetsu operates all railway lines in the prefecture as well as two cable railways. Kintetsu's subsidiary group company Nara Kotsu Bus also has a near monopoly on bus transportation in Nara Prefecture.

Nara Prefecture is an extreme case of one company practically monopolizing all local transportation. Kintetsu also attempted the same type of takeover in neighbouring Mie Prefecture (see *JRTR* 34, pp. 52–64).

The company operates limited expresses over its network, offering reserved seats for an extra fee. Its scheduling system, rolling stock management, reservation system and services are so advanced that

JR West has adapted some for its own limited express services.

Kintetsu's main lines are the:

- Nara Line from Namba (Osaka) to Nara
Under Kintetsu's formal designation, this line actually consists of three sections—a 2.0-km section on the Namba Line from Kintetsu Namba to Uehonmachi, a section of the Osaka Line from Uehonmachi to Fuse, and the Nara Line from Fuse to Kintetsu Nara.
- Osaka Line from Uehonmachi to Ise Nakagawa
- Kyoto and Kashihara lines from Kyoto to Kashihara Jingu-mae
The company lists this as two lines—the 34.6-km Kyoto Line from Kyoto to Yamato Saidaiji and the 23.8-km Kashihara Line from Yamato Saidaiji to Kashihara Jingu-mae
- Minami Osaka Line from Osaka Abenobashi to Kashihara Jingu-mae
- Nagoya Line (78.8 km) from Kintetsu Nagoya to Ise Nakagawa (see *JRTR* 34, pp. 52–63)



Kintetsu's Series 5820 rapid express running between Uehonmachi and Kintetsu Nara on Nara Line (Kinki Nippon Railway)

All these lines were constructed by various private railways to different track gauges and rolling stock specifications. Kintetsu started unifying standards after WWII and its tracks today use a 1500 Vdc catenary system. However, not all track is to the 1435-mm standard gauge—the Minami Osaka Line and its branch lines, and the Iga Line, etc, use 1067-mm narrow gauge. Most rolling stock has been standardized for more than 10 years.

The Nara Line was the first line built by Osaka Electric Tramway. As mentioned, the Kansai main line now operated by JR West swerves south for some distance to avoid the Ikoma Mountains. To develop a shorter, more direct route between Osaka and Nara, Osaka Electric Tramway cut the 3.4-km Ikoma Tunnel under Mt Ikoma. This more convenient route allowed the cities of Nara and Ikoma to become dormitory towns for people working in Osaka, boosting passenger levels on the line. With many 10-car train sets offering rapid and limited express services during the morning and evening rush hours, the line is known as the most important commuter line in the Kinki region. JR West rose to the challenge by running more through rapid expresses from the Kansai main line onto the Osaka Kanjo Line and has succeeded in attracting some passengers from Kintetsu. However, Kintetsu's Nara Line maintains its position as the more important route between Osaka and Nara. For some time, rapid expresses on the Nara Line have stopped at only a few more stations than the limited expresses and there is no surcharge. As the competition with JR West became fiercer, Kintetsu started running rapid and limited expresses at 10-minute headways, although this has meant eliminating most limited express services between rush hours. The Ikoma Line branches from the Nara Line at Ikoma, and runs 12.6 km to Oji. Housing developments have been springing up along the tracks recently.



Kintetsu's Series 21020 *Urban Liner NEXT* limited express running between Hasedera and Haibara on Osaka Line (Kinki Nippon Railway)



Kintetsu's Series 23000 *Ise Shima Liner* limited express running between Ikenoura and Toba on Toba Line (Kinki Nippon Railway)

The 108.9-km Osaka Line runs through Osaka, Nara and Mie prefectures and is unusually long for a private railway. The mountainous middle section is steeply graded so the 5.7-km Shin Aoyama Tunnel was cut under the Suzuka mountain range. When the line opened in 1930, its main function was to carry pilgrims to Ise Shrine, but trackside housing developments since the 1960s have extended Osaka's commuter zone as far as Nabari in Mie Prefecture. Ten-car commuter train sets

offer rapid and limited express services during the morning and evening rush hours. However, the line east of Nabari has low passenger levels, so the company offers only local services with two-car train sets, although there are some rapid and limited expresses connecting Osaka and Kyoto with Ise and Nagoya.

The Osaka Line has two branch lines—the 2.8-km Shigi Line from Kawachi Yamamoto to Shigisan in Osaka Prefecture, and the 16.6-km Iga Line from



Kintetsu's Series 6620 local train running between Nijozan and Kaminotaishi on Osaka Line (Kinki Nippon Railway)



Kintetsu Ikoma Cable's new rolling stock (Kinki Nippon Railway)

Iga Ueno to Iga Kanbe in Mie Prefecture. The 1067-mm gauge of the Iga Line prevents through connections to the Osaka Line.

The Kyoto and Kashihara lines were originally two separate lines—the Kyoto Line built by Nara Electric Railway and taken over by Kintetsu in 1963, and the Kashihara Line built by Osaka Electric Tramway after it opened the Nara Line. Today, many limited expresses and

expresses run on both sections. Kintetsu's trains on the Kyoto Line and subway carriages of the Karasuma Line operated by the Kyoto Municipal Transportation Bureau run over each other's tracks (see *JRTR 36*, pp. 56–63), permitting express services from Kokuzaikakan to Kintetsu Nara since 2000.

The Kyoto and Kashihara lines have two branch lines in Nara Prefecture—the 4.5-km Tenri Line from Hirahata to Tenri,

and the 10.1-km Tawaramoto Line from Nishi Tawaramoto to Shin Oji.

Part of the Minami Osaka Line is the oldest in Kintetsu's network; it was built by Kayo Railway in 1898 between Kashiwara and Furuichi in Osaka Prefecture 16 years before Kintetsu's predecessor, Osaka Electric Tramway started operations. Today, the 39.8-km Minami Osaka Line runs from Abenobashi to Kashihara Jingu-mae, forming an axis within Kintetsu's network. The line has the 25.2-km Yoshino Line extension from Kashihara Jingu-mae to Yoshino, and three branch lines—the 2.2-km Domyoji Line from Domyoji to Kashiwara in Osaka Prefecture, the 12.5-km Nagano Line from Furuichi to Kawachi Nagano (also in Osaka Prefecture), and the 5.2-km Gose Line from Shakudo to Gose in Nara Prefecture. These line and the Minami Osaka Line are all 1067-mm narrow gauge, preventing through connections with other parts of Kintetsu's network. Most trains on both the Gose and Domyoji lines offer only shuttle services. On the other hand, semi-express trains on the Nagano Line provide through services onto the Minami Osaka Line, and limited express and express trains run the full distance between Abenobashi and Yoshino. Yoshino is famous for its cherry blossoms, making it a popular tourist destination in April. The line's *Sakura* (cherry blossom) *Liner* limited express is an added attraction.

Kintetsu has some other lines built for special purposes, including the:

- Higashi Osaka Line
This 10.2-km line runs from Ikoma in Nara Prefecture to Nagata in Osaka Prefecture and then connects at Nagata with the Chuo subway line operated by the Osaka Municipal Transportation Bureau. It is the only line in the Kintetsu network with a third rail to permit through services by both operators (see *JRTR 36*, p. 57).



Nankai's Series 50000 *Rapi:t* limited express serving Kansai International Airport (Nankai Electric Railway)

- **Ikoma Cable Car**
This is Japan's oldest cable railway opened as Ikoma Cable Railway in 1918. The 2-km line runs from Toriimae at Ikoma Station on the Nara Line to Ikoma Sanjo near the summit of Mt Ikoma. It is double-tracked from Toriimae to Hozanji (0.9 km), but the top 1.1-km section is single-tracked.
- **Nishi Shigi Cable Car**
This 1.3-km cable railway runs from Shigisan-guchi at the end of the Shigi Line to Takayasuyama.

Both cable railways are 1067-mm gauge powered by a 200-Vdc catenary system.

Nankai Electric Railway, Hankai Tramway and Semboku Rapid Railway

Nankai Electric Railway has two lines using the same 1067-mm narrow-gauge tracks and 1500-Vac catenary systems—the Nankai main line and the Koya Line. Part of the Nankai main line was constructed in 1885 by Hankai Railway, making it Japan's oldest track remaining in the private operator (excluding tracks owned by the former JNR). Nankai Railway took over this section and extended it to Wakayama, so the company has a fairly long history as an intercity carrier, linking

cities such as as Sakai and Kishiwada in Osaka Prefecture and Wakayama in Wakayama Prefecture. Trains on the Nankai main line started offering access to Kansai International Airport via the 8.8-km Kuko Line between Izumisano and Kansai-kuko. Limited expresses and expresses link Namba to the international airport. However, the line to the airport is experiencing difficulties because the airport

is attracting fewer passengers, and because JR West has proved a very strong competitor in the same corridor.

In 1956, the Wakayama prefectural government constructed the 2.8-km Wakayama-ko Line between Wakayama-shi and Wakayama-ko. Nankai Railway uses this short line as an extension to its Nankai main line. Key services include *Southern* limited expresses and express trains running between Namba and Wakayama-shi (some terminate at Wakayama-ko) and *Rapi:t* limited expresses and airport expresses between Namba and Kansai-kuko. Ferries from Wakayama Port carried passengers and freight to and from Komatsushima in Shikoku, making Wakayama an important transit point between Honshu and Shikoku. However, the Honshu-Shikoku bridges opened in 1988 have reduced the importance of the rail ferries. Although Nankai limited expresses from Osaka used to carry many passengers to Wakayama Port, today they go no further than Wakayama Station, stopping only at major stations en route.



Nankai's Series 10000 *Southern* limited express running between Tannowa and Hakotsukuri (Nankai Electric Railway)



Nankai's Series 30000 Koya limited express running between Kiikamiya and Gokurakubashi (Nankai Electric Railway)

running the full line from Namba to Gokurakubashi, as well as rapid and express services. Other fast services include the *Rinkan* (place name) limited express between Namba and Hashimoto, and express trains between Namba and Rinkan Den'en Toshi. The company also operates an 0.8-km cable railway from the Gokurakubashi terminus to Koyasan.

Nankai's 14.3-km Kishigawa Line is somewhat unique because it is not linked to any other part of the company's network. The western terminus is next to JR West's Wakayama Station and the eastern terminus is at Kishi. Nankai took control of the line in 1961 after merging with Wakayama Electric Tramway.

Hankai Tramway was Nankai's tram division until 1980, when it began operating independently within the Nankai group. Hankai operates two tramways—the 28.2-km Hankai Line from Ebisu-cho in Osaka to Hamadera Ekimae in Sakai, and the 9.0-km Uemachi Line from Ten'noji Ekimae to Sumiyoshi-koen in Osaka. Both tramlines are 1067-mm narrow gauge powered by a 600-Vdc

Three other lines branch from the Nankai main line—the 1.5-km Takashinohama Line from Hagoromo to Takashinohama, the 2.6-km Tanagawa Line from Misaki-koen to Tanagawa, and the 9.6-km Kada Line from Kinokawa to Kada.

The Koya Line—Nankai's other major line—was constructed by Koya Railway and then became part of Nankai's network through a merger in 1922. The line is officially described as starting at Shiomibashi, slightly west of Namba in Osaka, but major trains began using Namba as their terminus instead of Shiomibashi soon after the merger. The 4.6-km section between Shiomibashi and Kishinosatotamade can be considered as an independently operated branch line. The southern terminus of the Koya Line is on Mt Koya in Wakayama Prefecture. The mountain is famous as a holy place where Kukai (774–835), one of Japan's most revered Buddhist priests, lived. The line was originally constructed to carry pilgrims to the temples, but most passengers today come from large housing developments that have sprung up along

the line since the 1980s. A growing majority of passengers who travel between Namba and Hashimoto are commuters and students. Key services include the *Koya* (name of mountain) limited express



Nankai's Series 2270 local train at Wakayama Station on Kishigawa Line (Nankai Electric Railway)

catenary. They are the only tramways in Osaka today.

Semboku Rapid Railway is managed by Osaka Prefectural Urban Development, a public-private venture established in 1965 and capitalized mainly by the Osaka prefectural government, Osaka Gas Co., Ltd. and Kansai Electric Power Co., Inc. The railway was planned to link Osaka to Semboku New Town developed in the late 1960s. The line opened in 1971 between Nakamozu and Izumigaoka and was extended in 1995 to Izumi Chuo. The track is now 14.3-km long. Right from the first days, trains on both lines have used each other's tracks for through services, allowing Semboku trains to travel as far as Namba.

Mizuma Railway

Mizuma Railway operates electric trains on a 1067-mm narrow-gauge 5.5-km line from Kaizuka on the Nankai main line to Mizuma near Mizuma Temple. The line was constructed primarily to carry pilgrims to the temple, but over the last few years the rising population density has enhanced its role carrying commuters and students. The railway does not offer through services to the Nankai line but many passengers travel to the Kaizuka terminus where they change trains for Osaka.

Local private railways in Wakayama Prefecture

Years ago, a number of local railways operated in the area now served by the western end of the Kisei Line. Two—Shingu Railway and Arita Railway—were operating even before the Kisei main line opened to link villages in the interior with coastal ports. Shingu Railway eventually became part of the Kisei main line, while Arita Railway became a small local operator acting as an appendage to the Kisei main line.

From the 1970s, many other local railways closed in quick succession, victims of rising car ownership and declining freight



Kishu Railway's Series *Kitetsu* 1 local train running between Gobo and Nishi Gobo

(Kishu Railway)

operations. The only two remaining local operations are the Nankai Kishigawa Line and Kishu Railway.

Kishu Railway opened in 1931 as a port railway linking Gobo Station on the Kisei main line with Gobo-cho, the old city district facing the port. Later, the line was extended to Hidakagawa. The company fell on hard times, but it was bought in 1973 by a business venture planning to develop a resort and hotel complex in the area. The name was changed to Kishu Railway to reflect the apparent trustworthiness of the rail service. The section between Nishi Gobo and Hidakakawa was abandoned in 1989 and only the 2.8-km section between Gobo and Nishi Gobo remains in operation. ■

Further Reading

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