



JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL LPG BP Patna to IOCL LPG BP Gorakhpur

Objective of the JRM Report

This JRM report is designed to ensure compliance with the Central Motor Vehicle Rules, 1989 (CMVR), AIS 140 standards, and the Road Transport Safety Policy (RTSP). It provides a comprehensive risk assessment for the transportation of hazardous materials along specified routes. By integrating these legal frameworks, the report offers a broad strategy for identifying and mitigating route-specific risks.

Regulatory Compliance

The report complies with the Central Motor Vehicles (Eleventh Amendment) Rules, 2022, mandating safe transportation practices for N2 and N3 category vehicles carrying hazardous materials. These rules require detailed route assessments, especially regarding road conditions, speed limits, and risk areas, to ensure safety compliance.

Risk Management Strategy

This report categorizes transportation routes into high-risk and medium-risk areas, with a focus on factors such as sharp turns, accident-prone regions, and elevation changes. The goal is to provide actionable

recommendations to minimize these risks, including speed regulations, driver warnings for hazardous zones, and the option of alternate routes.

Compliance with the Road Transport Safety Policy (RTSP)

The report integrates RTSP provisions, including mandatory driving hours, rest periods, and nighttime driving restrictions. It ensures that drivers follow official guidelines, such as taking prescribed rest breaks and avoiding dangerous road conditions like poor visibility, heavy crowds, or high-traffic areas during peak hours.

Emergency Preparedness and Response

The report highlights the significance of predetermined emergency stops for refueling, rest, and overnight stays. It includes protocols for safe responses to road hazards, alternative routes, and rerouting processes if roads are closed or severe weather arises. This aligns with the RTSP emphasis on driver safety and rapid emergency response.

Environmental Considerations

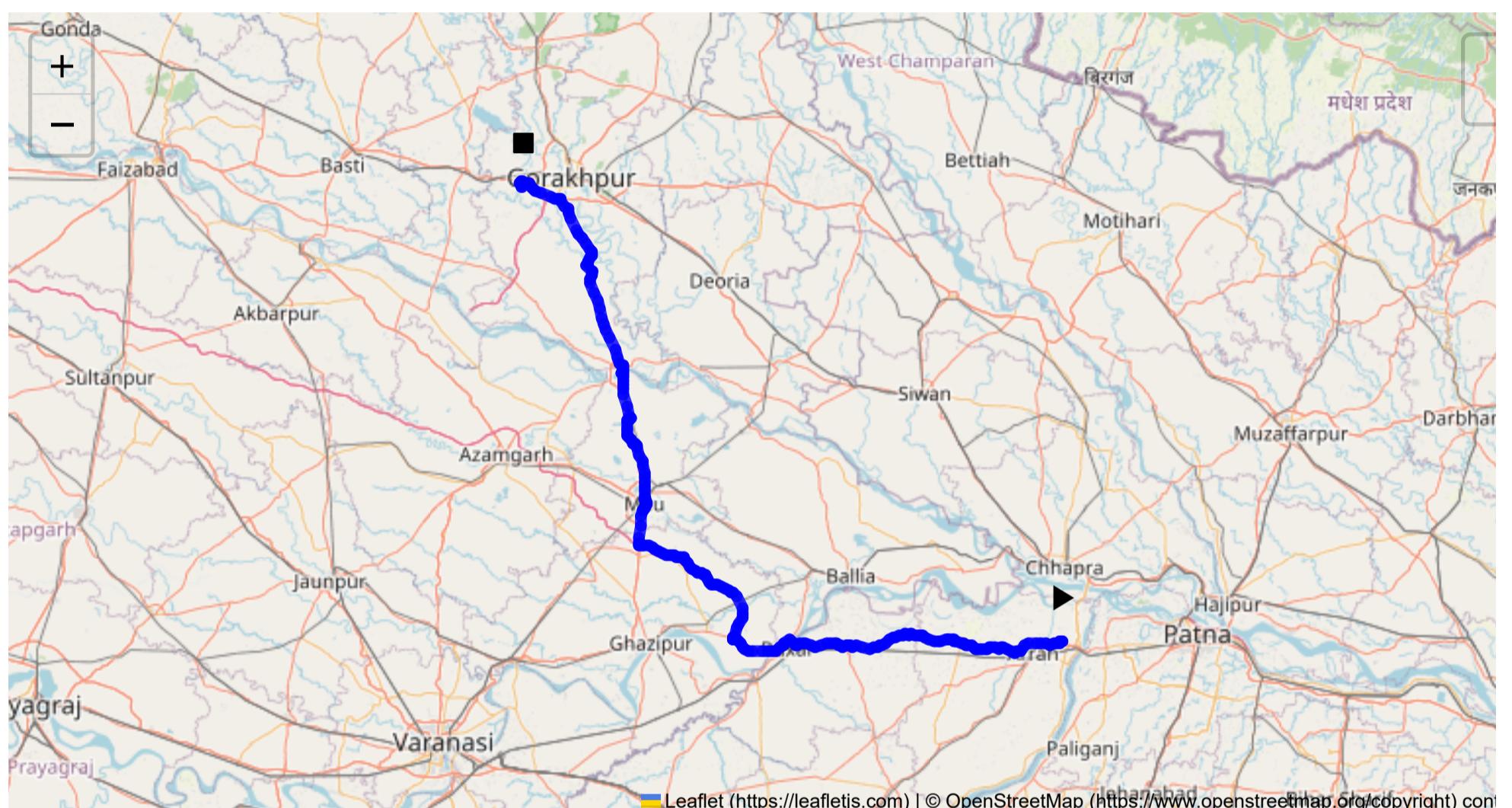
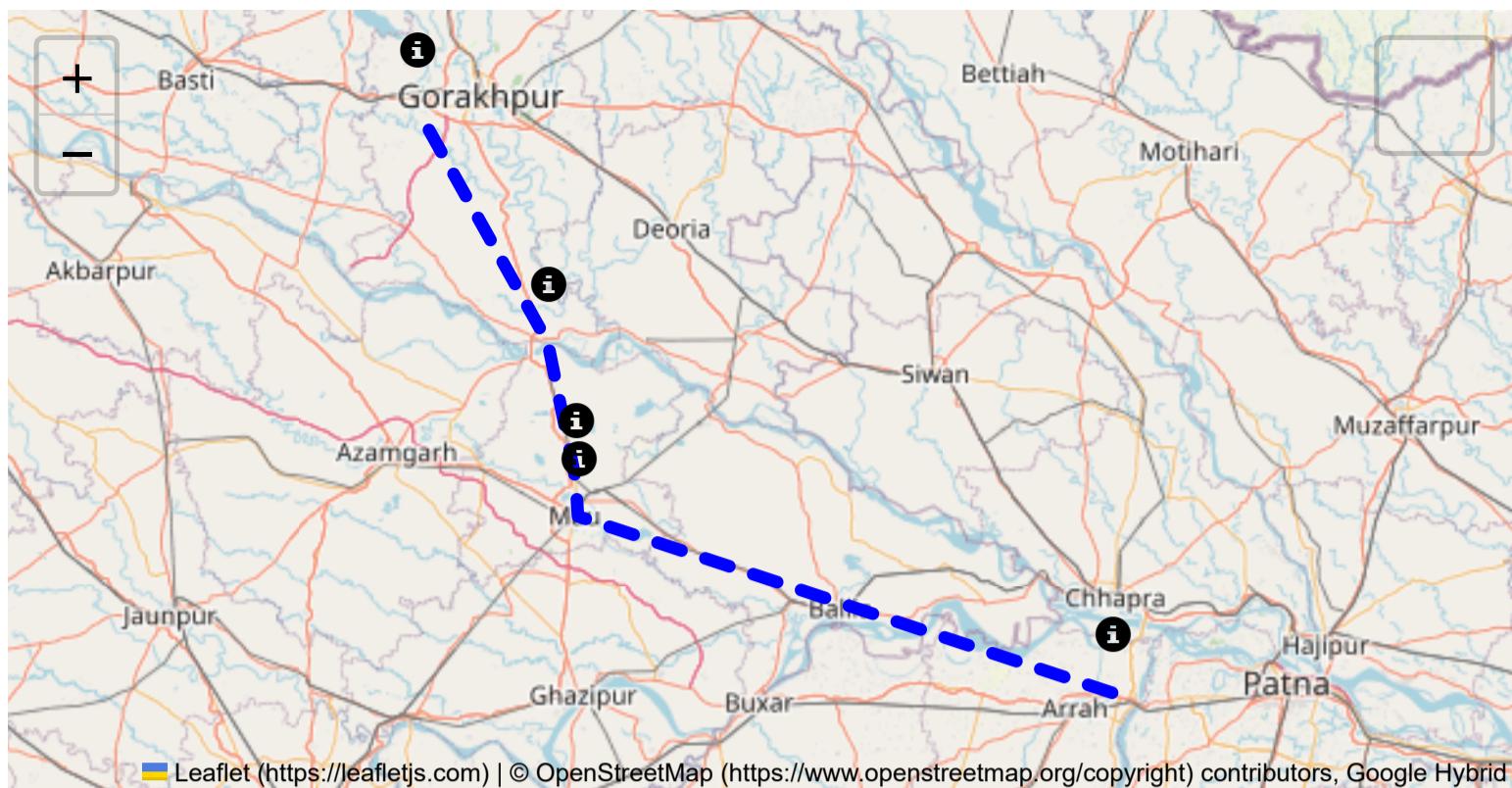
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental impacts during transport.

Journey Risk Mitigation

The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety norms.

Compliance with Government Directives

This report fully adheres to governmental directives regarding hazardous material transportation, implementing mandatory speed limits, nighttime driving restrictions, and comprehensive driver briefings and real-time alerts about route-related risks.



Route Summary:
Total Distance: 269.69 km
Estimated Duration: 5.5 hours
Adjusted Duration (Heavy Vehicle): 6.9 hours
Start: (25.592216575118425, 84.74213386292182)
End: (26.7373, 83.2295)

Welcome to the Journey Risk Management Study

- Overview of the Route Map:** The route spans approximately 269.69 kilometers and traverses through multiple industrial and rural regions in Bihar and Uttar Pradesh. Starting from Gidha Industrial Area in Bihar, it moves westward into Uttar Pradesh, passing through districts like Mau and Kopaganj, before reaching GIDA Industrial Area Phase 1 in Uttar Pradesh.
- Typical Weather Conditions and Potential Weather-Related Hazards:**

- The region experiences a subtropical climate with hot summers, monsoon rains, and mild winters.
- During monsoon (June to September), heavy rains can lead to waterlogging and road conditions may deteriorate, increasing the risk of accidents.
- Winter fog (December to January) can reduce visibility significantly, especially in early morning and late evening hours.

3. Analysis of Traffic Patterns:

- Peak traffic periods are typically in the early morning (7-9 AM) and late afternoon (5-7 PM).
- Urban areas such as Mau and near Varanasi Highway could experience congestion.
- Agricultural activities can lead to increased movement of goods vehicles during harvest seasons.

4. Assessment of Road Quality and Infrastructure:

- Roads in industrial zones are relatively well-maintained but may have frequent repairs.
- Rural segments might have narrower roads with potential potholes and uneven surfaces, especially post-rains.

5. Suggestions for Alternative Routes for Emergencies:

- In case of major congestion or roadblocks, detours via Banaras-Varanasi roadways could be considered; however, they may add significant distance.
- Local roads connecting smaller towns might be used for short detours.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Transport of hazardous materials requires compliance with Central Motor Vehicles Rules in India, specific permits, and adherence to route restrictions.
- Vehicle safety checks and proper documentation are mandatory.

7. Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials:

- While specific historical incident data is limited, common issues include vehicle breakdowns on rural roads and minor collisions in congested urban areas.
- Precautionary measures, such as regular vehicle maintenance and driver training, are emphasized to prevent similar occurrences.

8. Environmental Considerations and Sensitive Areas:

- The route may pass near agricultural lands and small communities, requiring careful adherence to pollution control norms.
- Any spill or leakage could severely impact local water and soil quality.

9. Analysis of Communication Coverage:

- Communication networks are generally reliable in urban areas but can be intermittent in remote and rural sections.
- Dead zones might occur in heavily wooded or isolated areas away from main urban centers.

10. Estimated Emergency Response Times:

- Urban and industrial areas likely have quicker response times (30-45 minutes).

- In rural regions, response times can extend to over an hour due to limited medical and fire service availability.
11. **Overall Summary of Risk Assessment:** The route involves moderate risk primarily due to road quality variability, traffic congestion, and weather-related challenges. Hazards such as congestion, variable road conditions, and visibility issues during inclement weather are significant concerns. Ensuring vehicle readiness, equipping drivers with necessary information, and following prescribed safety regulations will mitigate these risks. Regular updates on local conditions and alternative route planning are recommended to handle unforeseen challenges efficiently.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
3	Blind Spot	Blind Spot	25.59145, 84.74299	10 KM/Hr	0.06 km
4	Turn	Medium	25.59175, 84.74191	30 KM/Hr	0.18 km
5	Turn	High	25.59058, 84.73869	15 KM/Hr	0.50 km
6	Turn	High	25.58762, 84.73819	15 KM/Hr	0.75 km
7	Turn	Medium	25.57397, 84.56463	30 KM/Hr	19.08 km
8	Turn	Medium	25.57289, 84.50082	30 KM/Hr	25.78 km
9	Turn	Medium	25.58956, 84.39777	30 KM/Hr	36.96 km
10	Turn	Medium	25.60095, 84.35962	30 KM/Hr	40.82 km
11	Turn	Medium	25.60897, 84.34967	30 KM/Hr	42.48 km
12	Turn	Medium	25.61110, 84.32227	30 KM/Hr	44.94 km
13	Turn	Medium	25.57369, 84.20420	30 KM/Hr	57.59 km
14	Turn	Medium	25.57853, 84.12906	30 KM/Hr	65.57 km
15	Turn	Medium	25.58417, 84.11750	30 KM/Hr	66.96 km
0	Roundabout	High	25.58025, 83.99417	15 KM/Hr	79.72 km
1	Roundabout	High	25.59885, 83.97871	15 KM/Hr	82.17 km
16	Turn	High	25.59872, 83.97821	15 KM/Hr	82.17 km
17	Turn	Medium	25.56508, 83.93565	30 KM/Hr	88.02 km
18	Turn	Medium	25.59798, 83.82964	30 KM/Hr	99.76 km
19	Turn	High	25.60028, 83.82049	15 KM/Hr	100.80 km
20	Blind Spot	Blind Spot	25.59842, 83.81878	10 KM/Hr	101.42 km
21	Turn	High	25.59729, 83.82027	15 KM/Hr	101.65 km
22	Turn	High	25.59790, 83.82175	15 KM/Hr	101.83 km
23	Turn	Medium	25.73669, 83.77810	30 KM/Hr	120.65 km

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
24	Turn	Medium	25.73782, 83.75950	30 KM/Hr	122.73 km
25	Turn	Medium	25.76605, 83.72276	30 KM/Hr	127.66 km
26	Turn	Medium	25.80280, 83.68119	30 KM/Hr	133.78 km
27	Turn	Medium	25.83472, 83.56907	30 KM/Hr	145.32 km
28	Turn	Medium	25.83369, 83.56744	30 KM/Hr	146.19 km
29	Turn	Medium	25.83480, 83.55666	30 KM/Hr	147.22 km
30	Turn	High	25.83657, 83.55495	15 KM/Hr	147.51 km
31	Turn	Medium	25.83799, 83.55553	30 KM/Hr	147.72 km
32	Turn	High	25.83880, 83.55743	15 KM/Hr	147.91 km
2	Roundabout	High	25.92302, 83.56557	15 KM/Hr	156.70 km
33	Turn	Medium	25.93921, 83.57724	30 KM/Hr	159.30 km
34	Turn	High	25.95413, 83.57053	15 KM/Hr	161.29 km
35	Turn	High	26.09112, 83.54665	15 KM/Hr	176.99 km
36	Turn	Medium	26.09251, 83.53811	30 KM/Hr	177.87 km
37	Turn	Medium	26.11111, 83.52455	30 KM/Hr	180.17 km
38	Turn	Medium	26.14537, 83.52278	30 KM/Hr	183.64 km
39	Turn	Medium	26.15283, 83.53096	30 KM/Hr	185.15 km
40	Turn	Medium	26.15561, 83.53238	30 KM/Hr	185.71 km
41	Turn	High	26.26844, 83.50901	15 KM/Hr	198.49 km
42	Turn	Medium	26.27383, 83.51306	30 KM/Hr	199.25 km
43	Turn	Medium	26.28296, 83.51422	30 KM/Hr	200.23 km
44	Turn	Medium	26.28607, 83.51280	30 KM/Hr	200.67 km
45	Turn	Medium	26.29031, 83.50484	30 KM/Hr	201.32 km
46	Turn	High	26.50700, 83.41687	15 KM/Hr	226.64 km
47	Turn	Medium	26.52376, 83.42642	30 KM/Hr	229.35 km
48	Turn	Medium	26.52632, 83.42520	30 KM/Hr	229.73 km
49	Turn	High	26.53790, 83.41080	15 KM/Hr	230.84 km
50	Turn	Medium	26.55105, 83.41332	30 KM/Hr	232.87 km
51	Turn	Medium	26.57134, 83.42606	30 KM/Hr	235.74 km
52	Turn	Medium	26.70698, 83.33065	30 KM/Hr	253.77 km
53	Turn	Medium	26.74565, 83.25138	30 KM/Hr	262.77 km
54	Turn	High	26.75114, 83.22541	15 KM/Hr	265.96 km
55	Turn	Medium	26.75019, 83.22461	30 KM/Hr	266.07 km
56	Turn	High	26.74706, 83.22402	15 KM/Hr	266.31 km

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
57	Turn	High	26.74536, 83.22731	15 KM/Hr	266.67 km
58	Turn	High	26.73791, 83.22625	15 KM/Hr	267.51 km

Emergency Locations

Found: 5 clinic(s), 3 hospital(s)

	type	name	coordinates	speed_limit	risk_level	Distance from Start
0	clinic	Vandna Nursing Home	25.9217757, 83.5664709	30 km/h	Medium	156.70 km
2	clinic	Rahul Nursing Home, Mau	25.9226106, 83.5668521	30 km/h	Medium	156.70 km
1	clinic	Agarwal Nursing Home	25.9217322, 83.5680239	30 km/h	Medium	157.52 km
3	hospital	Jyoti Eye Care Hospital	25.9244828, 83.5668777	30 km/h	Medium	157.52 km
4	clinic	Sneha Nursing Home	26.2668388, 83.5054453	30 km/h	Medium	198.49 km
7	hospital	Ramdhani Hospital	26.2834401, 83.5139654	30 km/h	Medium	200.23 km
5	hospital	Zohra Hospital	26.285864, 83.5112429	30 km/h	Medium	200.67 km
6	clinic	Om Sai Nath Child Care Centre	26.2844295, 83.5124573	30 km/h	Medium	200.67 km

Crowded Spots

Route Photos of Risky Spots



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 0.50 km

Coordinates: 25.59058, 84.73869



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 0.75 km

Coordinates: 25.58762, 84.73819



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 42.48 km

Coordinates: 25.60897, 84.34967



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 44.94 km

Coordinates: 25.61110, 84.32227



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 66.96 km

Coordinates: 25.58417, 84.11750



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Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 79.72 km

Coordinates: 25.58025, 83.99417



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Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 82.17 km

Coordinates: 25.59885, 83.97871



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 82.17 km

Coordinates: 25.59872, 83.97821



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 88.02 km

Coordinates: 25.56508, 83.93565



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 99.76 km

Coordinates: 25.59798, 83.82964



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 100.80 km

Coordinates: 25.60028, 83.82049



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 127.66 km

Coordinates: 25.76605, 83.72276



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 133.78 km

Coordinates: 25.80280, 83.68119



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 145.32 km

Coordinates: 25.83472, 83.56907



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 147.22 km

Coordinates: 25.83480, 83.55666



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 147.51 km

Coordinates: 25.83657, 83.55495



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 147.72 km

Coordinates: 25.83799, 83.55553



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 147.91 km

Coordinates: 25.83880, 83.55743



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 156.70 km

Coordinates: 25.92302, 83.56557



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 159.30 km

Coordinates: 25.93921, 83.57724



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 161.29 km

Coordinates: 25.95413, 83.57053



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 183.64 km

Coordinates: 26.14537, 83.52278



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 185.15 km

Coordinates: 26.15283, 83.53096



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 185.71 km

Coordinates: 26.15561, 83.53238



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 198.49 km

Coordinates: 26.26844, 83.50901



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 199.25 km

Coordinates: 26.27383, 83.51306



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 200.23 km

Coordinates: 26.28296, 83.51422



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 200.67 km

Coordinates: 26.28607, 83.51280



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 201.32 km

Coordinates: 26.29031, 83.50484



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 226.64 km

Coordinates: 26.50700, 83.41687



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Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 230.84 km

Coordinates: 26.53790, 83.41080



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 235.74 km

Coordinates: 26.57134, 83.42606



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 253.77 km

Coordinates: 26.70698, 83.33065



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Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 262.77 km

Coordinates: 26.74565, 83.25138



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 265.96 km

Coordinates: 26.75114, 83.22541



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 266.07 km

Coordinates: 26.75019, 83.22461

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