JOURNEY RISK MANAGEMENT (JRM) STUDY

Gorakhpur LPG BP TO SUPARAJA INDANE GRAM

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

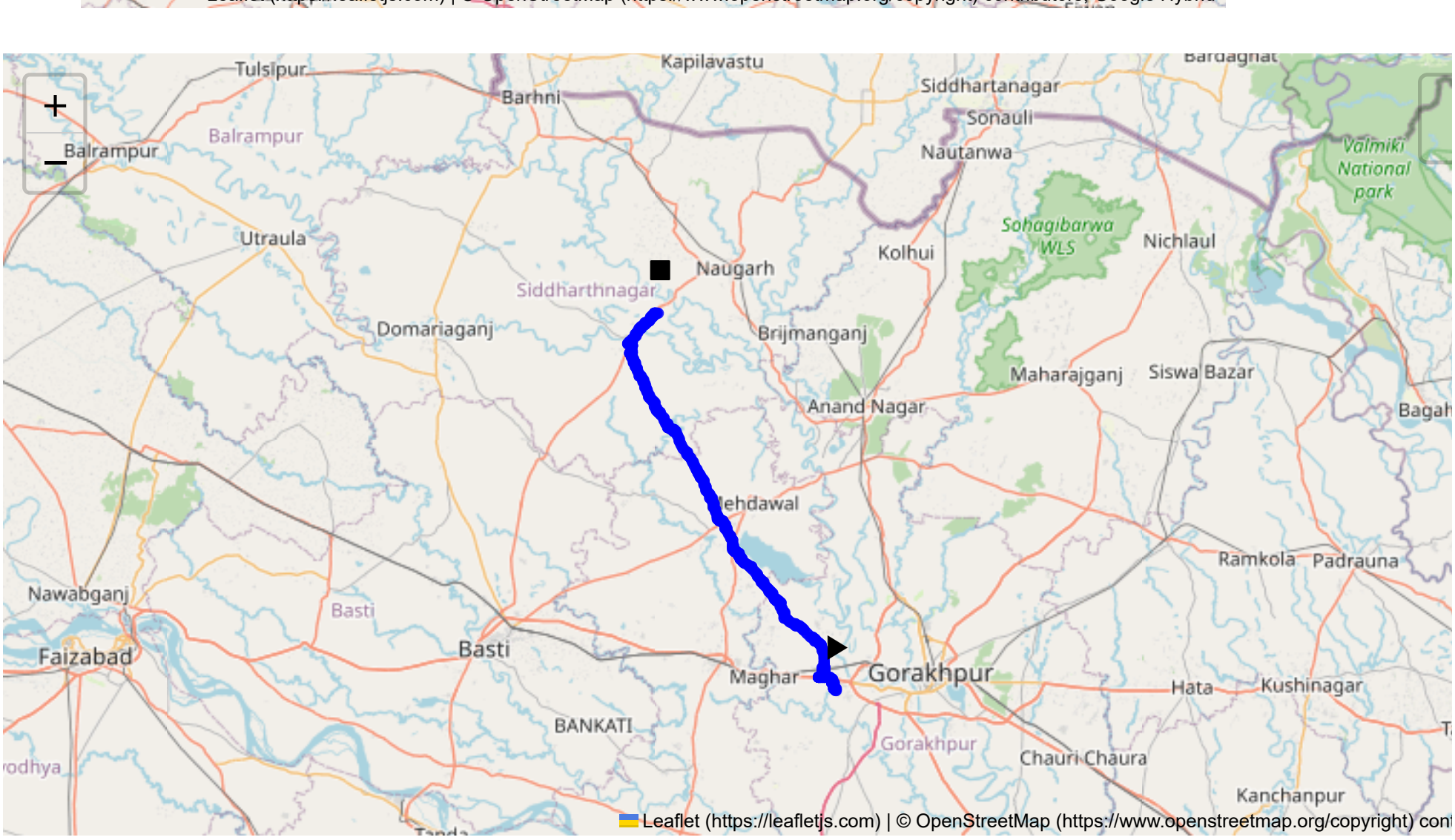
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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: 70.11 km
Estimated Duration: 1.9 hours
Adjusted Duration (Heavy Vehicle): 2.4 hours
Start: (26.735959, 83.229398)
End: (27.2212, 82.97291)

Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route spans approximately 70.11 kilometers through various points in Uttar Pradesh, starting from GIDA Industrial Area Phase 1 in Sahjanwa and ending in Supabaxi, with key stops at Sahjanwa, Nandaur, and Bansi. The route primarily consists of regional roads and highways that connect smaller towns and industrial areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Uttar Pradesh experiences a subtropical climate with distinct summer, monsoon, and winter seasons.

- **Summer (March to June):** High temperatures can exceed 40°C, potentially causing asphalt to soften and posing a risk to tire traction and vehicle wear.
- **Monsoon (June to September):** This season brings heavy rainfall, which may lead to water-logged roads and increased risk of hydroplaning.
- **Winter (October to February):** Fog is common during the morning and night, significantly reducing visibility.

3. Analysis of Traffic Patterns

- **Peak Hours:** Typically, traffic is heaviest from 8 AM to 10 AM and 5 PM to 7 PM, with urban areas around Sahjanwa experiencing more congestion due to local commuting.
- **Congestion-Prone Areas:** Smaller towns with narrow roads, such as Bansi, may experience bottlenecks and delays, particularly during market hours and local festivals.

4. Assessment of Road Quality and Infrastructure

- **GIDA Industrial Area to Sahjanwa:** Roads are generally well-maintained with ample signage, but occasional potholes may pose minor hazards.
- **Sahjanwa to Nandaur:** The quality deteriorates slightly, with some sections lacking proper drainage, leading to water accumulation.
- **Nandaur to Bansi:** Roads are narrower, with fewer passing lanes, which could slow down heavy vehicles.
- **Bansi to Supabaxi:** Infrastructure improves slightly nearing Supabaxi, though vigilance is required for sudden road changes and ongoing construction sites.

5. Suggestions for Alternative Routes for Emergencies

In case of road blockages or hazards, drivers can consider state highways and major district roads that parallel the main route, such as routes bypassing congested areas around Bansi and detouring through larger towns with better facilities.

6. Local Regulations Affecting Hazardous Material Transport

Transportation of hazardous materials is subject to strict regulations including specific permits, designated travel times (preferably avoiding night), and adherence to speed limits. Restrictions may exist within certain urban areas or near schools and hospitals.

7. Overview of Historical Incidents

Reports indicate occasional incidents involving heavy vehicles overturned due to sharp turns and poorly maintained roads in rural areas. Challenges in hazardous material transport are often linked to

compliance failures or poor vehicle maintenance.

8. Environmental Considerations and Sensitive Areas

The route passes through agricultural zones and small urban centers. Care must be taken to avoid spills or environmental contamination, particularly near water bodies or crop fields. Any incident on rural roads can significantly impact local ecosystems.

9. Analysis of Communication Coverage

While urban areas such as Sahjanwa and Bansi typically have good mobile network coverage, rural stretches may occasionally have poor reception, particularly in areas with dense foliage or far from major highways.

10. Estimated Emergency Response Times

- **Sahjanwa Area:** Emergency services are relatively quick, with response times around 15-20 minutes, assuming good weather conditions.
- **Nandaur and Bansi:** More remote and may experience 30-45 minutes response time due to fewer facilities and infrastructure challenges.
- **Approaching Supabaxi:** Response times improve to approximately 20-30 minutes as proximity to better-equipped centers increases.

11. Overall Summary of Risk Assessment

The route is moderately risky for heavy vehicles transporting hazardous materials due to infrastructural inconsistencies, weather-related visibility and traction issues, and variable response times in more remote areas. Proper planning, compliance with safety regulations, and use of alternative routes during emergencies are crucial in mitigating risks. Adequate driver training and vehicle maintenance are essential to ensure safety and minimize the potential for accidents.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
0	Turn	High	26.73746, 83.22938	15 KM/Hr	0.15 km
1	Blind Spot	Blind Spot	26.73791, 83.22625	10 KM/Hr	0.47 km
2	Turn	High	26.74524, 83.22746	15 KM/Hr	1.16 km
3	Turn	High	26.74654, 83.22390	15 KM/Hr	1.65 km
4	Blind Spot	Blind Spot	26.75126, 83.22476	10 KM/Hr	2.16 km
5	Blind Spot	Blind Spot	26.75353, 83.20457	10 KM/Hr	4.22 km

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
6	Turn	High	26.75377, 83.20465	15 KM/Hr	4.27 km
7	Turn	Medium	26.75378, 83.21338	30 KM/Hr	5.13 km
8	Turn	High	26.75386, 83.21352	15 KM/Hr	5.16 km
9	Turn	Medium	26.75640, 83.21275	30 KM/Hr	5.43 km
10	Turn	High	26.76132, 83.21435	15 KM/Hr	5.94 km
11	Turn	Medium	26.76119, 83.21159	30 KM/Hr	6.30 km
12	Turn	High	26.76131, 83.21143	15 KM/Hr	6.33 km
13	Turn	Medium	26.76403, 83.21129	30 KM/Hr	6.63 km
14	Turn	Medium	26.76569, 83.21402	30 KM/Hr	6.96 km
15	Turn	Medium	26.83008, 83.15664	30 KM/Hr	16.72 km
16	Turn	High	26.91597, 83.08449	15 KM/Hr	29.04 km
17	Blind Spot	Blind Spot	26.91433, 83.08351	10 KM/Hr	29.22 km
18	Turn	Medium	26.91843, 83.08101	30 KM/Hr	29.63 km
19	Turn	Medium	26.92258, 83.08191	30 KM/Hr	30.22 km
20	Turn	Medium	26.94829, 83.07156	30 KM/Hr	33.26 km
21	Turn	Medium	26.98317, 83.05063	30 KM/Hr	37.82 km
22	Turn	Medium	27.07125, 82.99577	30 KM/Hr	49.09 km
23	Turn	Medium	27.07137, 82.99515	30 KM/Hr	49.23 km
24	Turn	High	27.07059, 82.99365	15 KM/Hr	49.40 km
25	Turn	High	27.16975, 82.93429	15 KM/Hr	62.14 km
26	Turn	High	27.17966, 82.93498	15 KM/Hr	63.24 km
27	Turn	Medium	27.17992, 82.93461	30 KM/Hr	63.30 km
28	Turn	High	27.18005, 82.93461	15 KM/Hr	63.32 km
29	Turn	High	27.18194, 82.93124	15 KM/Hr	63.70 km
30	Turn	Medium	27.18212, 82.93129	30 KM/Hr	63.74 km
31	Turn	Medium	27.18395, 82.93294	30 KM/Hr	63.96 km
32	Turn	High	27.22134, 82.96970	15 KM/Hr	69.67 km

Route Photos of Risky Spots

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 2.16 km

Coordinates: 26.75126, 83.22476

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 4.22 km

Coordinates: 26.75353, 83.20457

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 4.27 km

Coordinates: 26.75377, 83.20465

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 5.13 km

Coordinates: 26.75378, 83.21338

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 5.16 km

Coordinates: 26.75386, 83.21352

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 5.43 km

Coordinates: 26.75640, 83.21275

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 5.94 km

Coordinates: 26.76132, 83.21435

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.30 km

Coordinates: 26.76119, 83.21159

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 6.33 km

Coordinates: 26.76131, 83.21143

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.63 km

Coordinates: 26.76403, 83.21129

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.96 km

Coordinates: 26.76569, 83.21402

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 16.72 km

Coordinates: 26.83008, 83.15664

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 29.04 km

Coordinates: 26.91597, 83.08449

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 29.22 km

Coordinates: 26.91433, 83.08351

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 29.63 km

Coordinates: 26.91843, 83.08101

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 30.22 km

Coordinates: 26.92258, 83.08191

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 33.26 km

Coordinates: 26.94829, 83.07156

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 37.82 km

Coordinates: 26.98317, 83.05063

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.09 km

Coordinates: 27.07125, 82.99577

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.23 km

Coordinates: 27.07137, 82.99515

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 49.40 km

Coordinates: 27.07059, 82.99365

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 62.14 km

Coordinates: 27.16975, 82.93429

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 63.24 km

Coordinates: 27.17966, 82.93498

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 63.30 km

Coordinates: 27.17992, 82.93461

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 63.32 km

Coordinates: 27.18005, 82.93461

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 63.70 km

Coordinates: 27.18194, 82.93124

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 63.96 km

Coordinates: 27.18395, 82.93294

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 69.67 km

Coordinates: 27.22134, 82.96970

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