JOURNEY RISK MANAGEMENT (JRM) STUDY

Gorakhpur LPG BP to BANSI GAS SERVICE

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

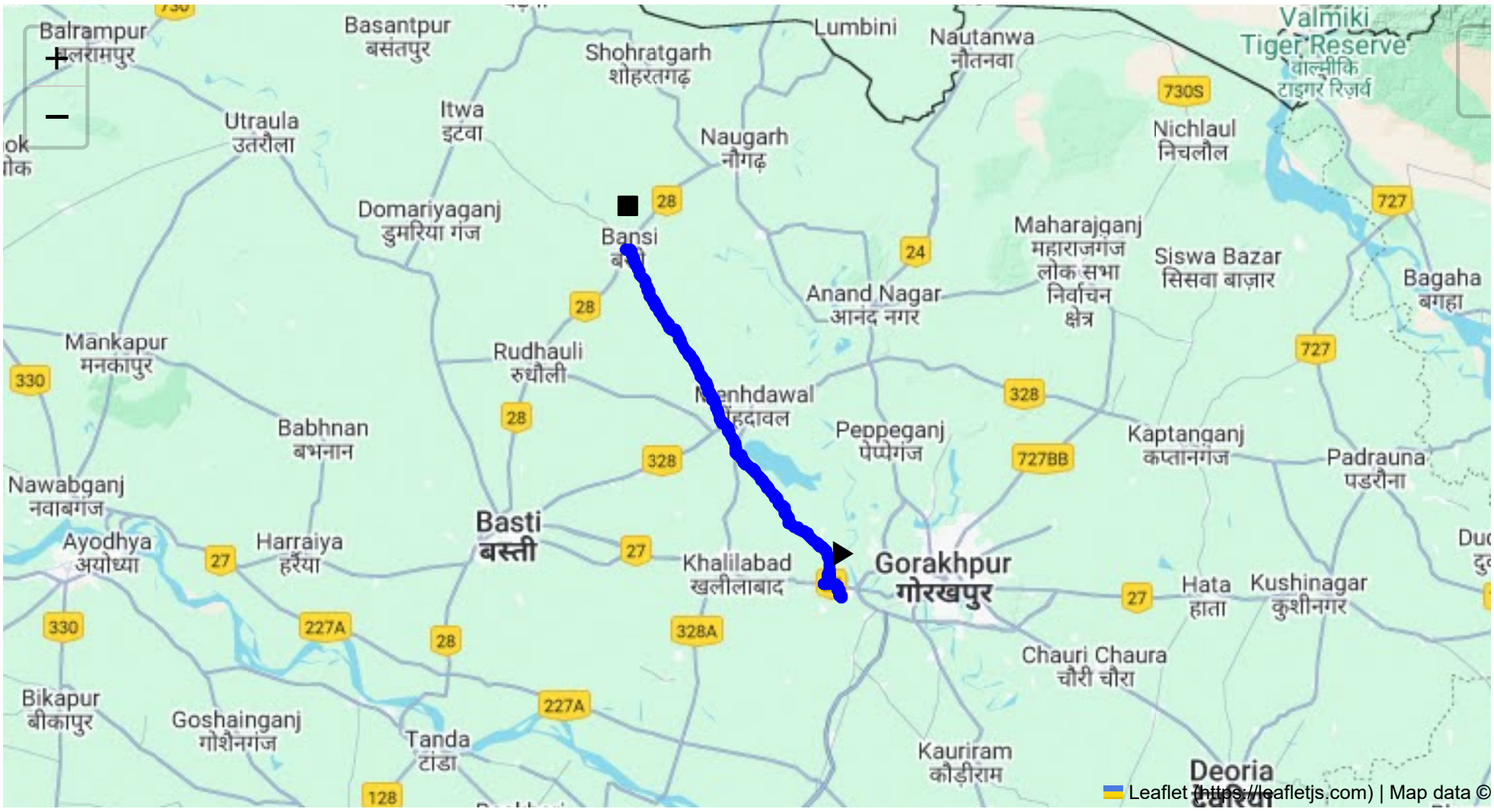
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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: 62.98 km
Estimated Duration: 1.7 hours
Adjusted Duration (Heavy Vehicle): 2.1 hours
Start: (26.735959, 83.229398)
End: (27.17158228, 82.92755127)

Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from GIDA Industrial Area Phase 1, Sahjanwa to Bansi involves traveling primarily along regional and national highways. The major roads include NH27 and SH1, which provide direct and relatively efficient access between these two points. The journey is approximately 63 kilometers long and is

expected to take around 1.68 hours with a heavy vehicle carrying hazardous materials, assuming normal traffic conditions and no major disruptions.

2. Typical Weather Conditions and Potential Weather-Related Hazards

This region of Uttar Pradesh experiences a subtropical climate, characterized by hot summers, a monsoon season, and mild winters. Key weather-related hazards include:

- **Monsoon Rains (June to September):** Heavy rains can lead to flooding, reduced visibility, and slippery roads.
- **Fog (December to January):** Dense fog is common in the winter months, particularly in the early mornings, leading to reduced visibility and increased accident risk.
- **Heatwaves (April to June):** High temperatures can cause vehicle overheating and stress on drivers.

3. Analysis of Traffic Patterns

- **Peak Hours:** Morning (8 AM - 10 AM) and evening (5 PM - 7 PM) experience higher traffic volumes.
- **Congestion-Prone Areas:** Town areas and highway intersections, particularly around Gorakhpur city outskirts and entry points to smaller towns like Basti, can see congestion.

4. Assessment of Road Quality and Infrastructure

- **Road Quality:** NH27 and SH1 are generally well-maintained, though some segments may have potholes or require resurfacing, particularly after the monsoon season.
- **Infrastructure:** Adequate signage and lighting, though rural segments may lack adequate illumination and have narrower lanes.

5. Suggestions for Alternative Routes for Emergencies

- **Alternative Route 1:** From Sahjanwa, consider NH27 and take local roads if NH routes are blocked. These may be longer but provide critical alternatives during emergencies.
- **Alternative Route 2:** Diverting through nearby towns like Khalilabad can offer rerouting options, particularly if there are accidents or roadworks on major highways.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials in India requires adherence to various regulations like obtaining permits, following designated routes, and ensuring safety protocols are in place. Compliance with the Central Motor Vehicles Rules regarding vehicle markings, driver qualifications, and emergency equipment is essential.

7. Overview of Historical Incidents

While specific local data is not detailed, the region has seen incidents related to traffic congestion and fog-related pile-ups. Highways in this study area may have recorded truck overturns due to overloading or sharp turns.

8. Environmental Considerations and Sensitive Areas

Several environmentally sensitive areas, like agricultural lands and wetlands, may be close to this route. Care should be taken to avoid contamination from spills, and efforts made to reduce noise pollution near residential zones.

9. Analysis of Communication Coverage

- **Coverage:** Mobile network coverage is generally reliable along NH27, but can be patchy in rural and forested areas.
- **Potential Dead Zones:** Sparse patches may exist in rural stretches, particularly where geographical features interrupt signals.

10. Estimated Emergency Response Times

- **Urban Areas:** Response times in and around major towns like Gorakhpur are generally quicker (30-45 minutes).
- **Rural Areas:** Response can exceed an hour due to distance from centralized emergency services.

12. Overall Summary of Risk Assessment

The route presents moderate risks primarily due to weather conditions, potential road congestion, and the transportation of hazardous materials. While infrastructure and network coverage are generally adequate, specific emergency plans should be enacted, particularly during the monsoon and fog-heavy winter months. Drivers should be trained for defensive driving, have full knowledge of alternative routes, and prepare for potential environmental and regulatory challenges. Overall, planning and adherence to safety protocols can mitigate most risks inherent in this route.

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

	Risk Type	Risk Level	Coordinates	Speed Limit	Distance from Start
5	Blind Spot	Blind Spot	26.75353, 83.20457	10 KM/Hr	4.22 km
6	Turn	High	26.75377, 83.20465	15 KM/Hr	4.27 km
7	Blind Spot	Blind Spot	26.75377, 83.21355	10 KM/Hr	5.16 km
8	Turn	Medium	26.75643, 83.21275	30 KM/Hr	5.44 km
9	Blind Spot	Blind Spot	26.76137, 83.21436	10 KM/Hr	5.98 km
10	Turn	Medium	26.76120, 83.21155	30 KM/Hr	6.33 km
11	Turn	Medium	26.76136, 83.21141	30 KM/Hr	6.35 km
12	Turn	Medium	26.76388, 83.21122	30 KM/Hr	6.54 km
13	Turn	Medium	26.76412, 83.21138	30 KM/Hr	6.66 km
14	Turn	Medium	26.76562, 83.21396	30 KM/Hr	6.92 km
15	Turn	High	26.91597, 83.08449	15 KM/Hr	29.07 km
16	Blind Spot	Blind Spot	26.91433, 83.08351	10 KM/Hr	29.26 km
17	Turn	Medium	26.91848, 83.08099	30 KM/Hr	29.76 km
18	Turn	Medium	26.98321, 83.05058	30 KM/Hr	37.90 km
19	Turn	Medium	26.98359, 83.04979	30 KM/Hr	37.97 km
20	Turn	Medium	27.07131, 82.99489	30 KM/Hr	49.29 km
21	Turn	Medium	27.07067, 82.99400	30 KM/Hr	49.37 km
22	Turn	Medium	27.16975, 82.93429	30 KM/Hr	62.14 km
23	Turn	Medium	27.17088, 82.93260	30 KM/Hr	62.36 km
24	Turn	High	27.17161, 82.92867	15 KM/Hr	62.78 km
25	Blind Spot	Blind Spot	27.17130, 82.92833	10 KM/Hr	62.83 km
26	Turn	High	27.17140, 82.92834	15 KM/Hr	62.85 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: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 5.16 km

Coordinates: 26.75377, 83.21355

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 5.44 km

Coordinates: 26.75643, 83.21275

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 5.98 km

Coordinates: 26.76137, 83.21436

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.33 km

Coordinates: 26.76120, 83.21155

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.35 km

Coordinates: 26.76136, 83.21141

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.54 km

Coordinates: 26.76388, 83.21122

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.66 km

Coordinates: 26.76412, 83.21138

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 6.92 km

Coordinates: 26.76562, 83.21396

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 29.07 km

Coordinates: 26.91597, 83.08449

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 29.26 km

Coordinates: 26.91433, 83.08351

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 29.76 km

Coordinates: 26.91848, 83.08099

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 37.90 km

Coordinates: 26.98321, 83.05058

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 37.97 km

Coordinates: 26.98359, 83.04979

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.29 km

Coordinates: 27.07131, 82.99489

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 49.37 km

Coordinates: 27.07067, 82.99400

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 62.14 km

Coordinates: 27.16975, 82.93429

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Distance from Start: 62.36 km

Coordinates: 27.17088, 82.93260

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 62.78 km

Coordinates: 27.17161, 82.92867

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Distance from Start: 62.83 km

Coordinates: 27.17130, 82.92833

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Distance from Start: 62.85 km

Coordinates: 27.17140, 82.92834

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