

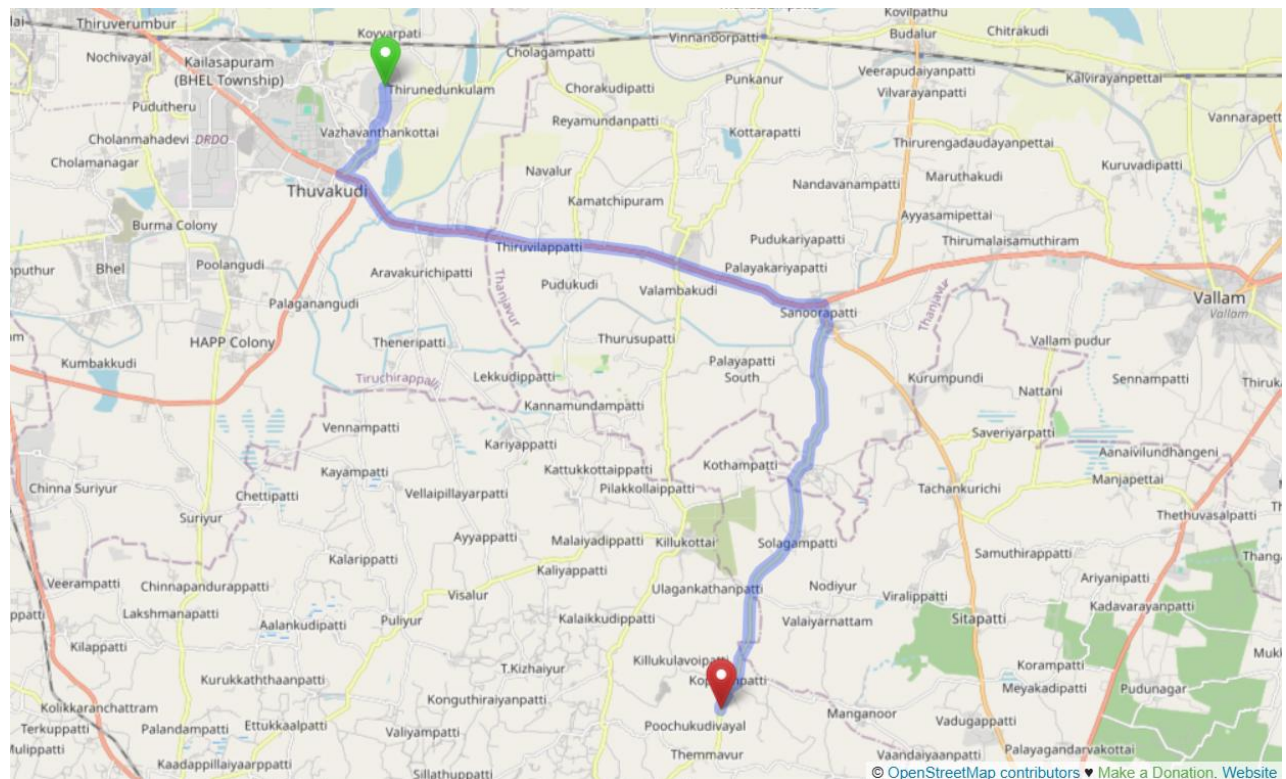
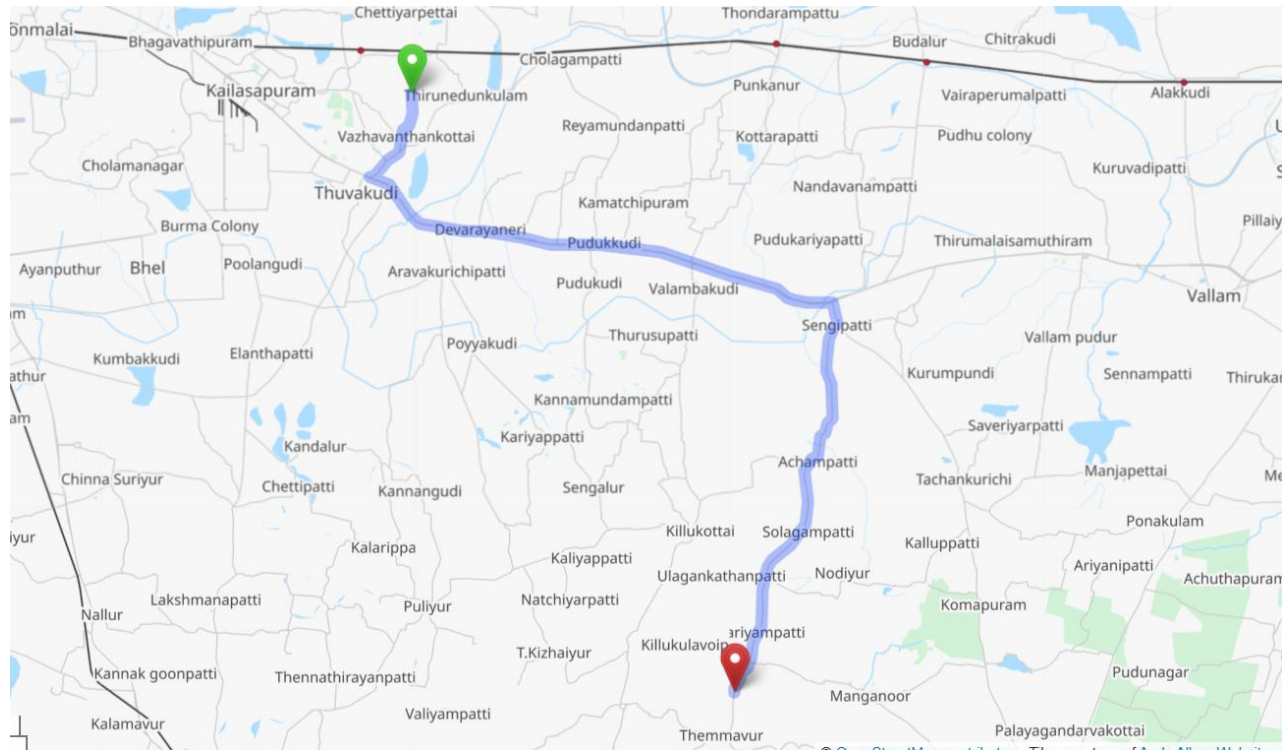


IndianOil

WELCOME TO JOURNEY
RISK MANAGEMENT (JRM)
STUDY USING ARTIFICIAL
INTELLIGENCE (AI)
FOR IOCL TRICHY
TERMINAL

JOURNEY RISK MANAGEMENT REPORT

IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO NATARAJ PETROLEUMS (10.609994 , 78.927031) TOTAL DISTANCE – 33.7 KM



ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT

Welcome to the Journey Risk Management Study for NATARAJ PETROLEUMS

Total distance: 33.7 km; Start with: (10.7753 , 78.8368), End with: (10.609994 , 78.927031)

❖ Route Safety Analysis Report

1. Overview of the Route Map

The route from Trichy Terminal (T.N) TO NATARAJ PETROLEUM IS, Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow NH 83 to Pudukkottai - Budalur Rd/Ullaikkal St in Sengipatti, Turn right onto Pudukkottai - Budalur Rd/Ullaikkal St, and Total distance from Trichy Terminal To NATARAJ PETROLEUMS IS 33.7 KM.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy Terminal (T.N) To NATARAJ PETROLEUMS experiences a tropical climate with heavy monsoon rains from June to September, high humidity, and moderate temperatures throughout the year, The summers are short and sweltering; the winters are short, cool, and dry; and it is mostly clear year-round. Over the course of the year, the temperature typically varies from 60.8°F to 110°F and is rarely below 60.8°F to 110°F.

JOURNEY RISK MANAGEMENT REPORT

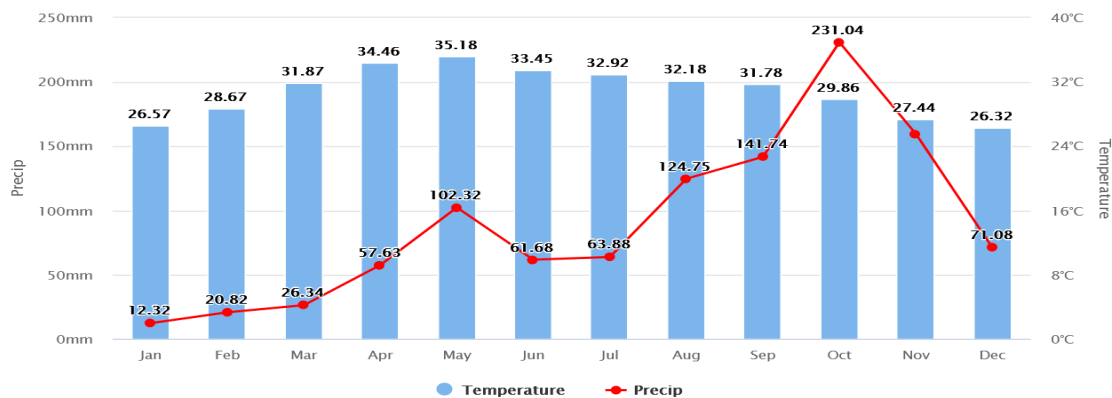
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	33.0 (91.4)	38.0 (100.4)	41.0 (105.8)	43.0 (109.4)	43.0 (109.4)	42.0 (107.6)	40.0 (104.0)	39.0 (102.2)	38.0 (100.4)	37.0 (98.6)	34.0 (93.2)	33.0 (91.4)	43.0 (109.4)
Average high °C (°F)	30.27 (86.49)	32.88 (91.18)	36.0 (96.8)	38.27 (100.89)	38.79 (101.82)	36.78 (98.2)	36.17 (97.11)	35.4 (95.72)	35.03 (95.05)	32.9 (91.22)	30.38 (86.68)	29.34 (84.81)	34.35 (93.83)
Daily mean °C (°F)	26.57 (79.83)	28.67 (83.61)	31.87 (89.37)	34.46 (94.03)	35.18 (95.32)	33.45 (92.21)	32.92 (91.26)	32.18 (89.92)	31.78 (89.2)	29.86 (85.75)	27.44 (81.39)	26.32 (79.38)	30.89 (87.6)
Average low °C (°F)	19.88 (67.78)	20.93 (69.67)	24.04 (75.27)	27.62 (81.72)	28.89 (84.0)	27.59 (81.66)	27.04 (80.67)	26.45 (79.61)	25.95 (78.71)	24.64 (76.35)	22.43 (72.37)	20.93 (69.67)	24.7 (76.46)
Record low °C (°F)	16.0 (60.8)	17.0 (62.6)	19.0 (66.2)	22.0 (71.6)	25.0 (77.0)	25.0 (77.0)	24.0 (75.2)	23.0 (73.4)	22.0 (71.6)	21.0 (69.8)	18.0 (64.4)	17.0 (62.6)	16.0 (60.8)
Average precipitation mm (inches)	12.32 (0.49)	20.82 (0.82)	26.34 (1.04)	57.63 (2.27)	102.32 (4.03)	61.68 (2.43)	63.88 (2.51)	124.75 (4.91)	141.74 (5.58)	231.04 (9.1)	159.62 (6.28)	71.08 (2.8)	89.44 (3.52)
Average precipitation days (≥ 1.0 mm)	3.09	3.27	5.36	7.36	16.73	12.36	13.55	18.91	19.64	22.73	17.55	9.73	12.52
Average relative humidity (%)	72.01	65.19	58.27	53.97	51.56	50.59	51.14	56.11	60.33	70.18	77.39	76.61	61.95
Mean monthly sunshine hours	11.19	11.34	11.34	11.63	12.65	12.68	11.83	11.24	11.05	9.11	7.68	8.29	10.84

Weather-Related Hazards: Trichy Terminal (T.N) To NATARAJ PETROLEUMS
Providing a local hourly weather forecast of rain, sun, wind, humidity and temperature.

The Long-range 12 day forecast also includes detail for weather today. Live weather reports from Trichy Terminal (T.N) To NATARAJ PETROLEUMS weather stations and weather warnings that include risk of thunder, high UV index and forecast gales.

Climate Graph

The chart below shows the mean monthly temperature and precipitation of Tiruchirappalli in recent years.



Analysis of Traffic Patterns

Peak Hours:

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT

Typically, Trichy Terminal (T.N) To NATARAJ PETROLEUMS peak traffic hours are from 8:00 AM to 11:00 AM and 4:00 PM to 8:00 PM on weekdays.

Congestion-Prone Areas:

- Malar Mahal
- Old Burma Colony
- Government Branch Press, Tiruchirappalli
- TIRUCHY PUBLIC SCHOOL
- Wonder World Theme Park
- DYNAMIC SEVENTH SENSE
- Shri Murugan Temple

❖ Assessment of Road Quality and Infrastructure

Road Quality: Generally, the roads are well-maintained but can suffer from potholes and waterlogging on State Highway during the monsoon season.

Infrastructure: Adequate signage, street lighting, and traffic signals are present, but some areas may lack proper drainage systems, leading to waterlogging.

❖ Suggestions for Alternative Routes for Emergencies

Alternative Route 1-). Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow NH 83 to Pudukkottai - Budalur Rd/Ullaikkal St in Sengipatti, Turn right onto Pudukkottai - Budalur Rd/Ullaikkal St .

Alternative Route 2- Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, At Jude Digital Studios, continue onto Thuvakudi to SIDCO & Indian oil Storage, Continue on NH 83 to A.I.B.E.A. Colony, Tiruchirappalli, Turn right at TNSTC TRICHY RE CONDITIONING UNIT(RC) onto NH 83, Drive to Kallanai Rd/NH 45 - North Bank Kallanai Rd in Panayakurichy, At VARSHA POWER WEEDER - TRACTOR OPERATED SEEDDRILL - VENUS CORPORATION, continue

JOURNEY RISK MANAGEMENT REPORT

onto MDR822, Slight left at Shafi Juice Shop onto Kallanai Rd/NH 45 - North Bank Kallanai Rd.

Summary of Local Regulations Affecting Hazardous Material Transport

Regulations: Transport of hazardous materials is regulated by the Petroleum and Explosives Safety Organization (PESO) and the Motor Vehicles Act. Specific routes and timings may be restricted for hazardous material transport.

Permits: Ensure all necessary permits and documentation are in place.

❖ Overview of Historical Incidents

Historical Incidents: There have been occasional incidents involving heavy vehicles, particularly during the monsoon season due to waterlogging and poor visibility. No major incidents involving hazardous materials have been reported recently.

❖ **Environmental Considerations and Sensitive Areas**

- **Sensitive Areas:** Malar Mahal, Old Burma Colony, Government Branch Press, Tiruchirappalli, National Institute of Technology Tiruchirappalli, AGN InfoSystems & AGN INFOTECH, NIT Trichy, BHELEC CINEMA 4K Dolby 7.1, MedPlus Trichy Rail Nagar.
- **Educational institutions:** State Institute Of Hotel Management and Catering Technology, National Institute of Technology Tiruchirappalli, AGN InfoSystems & AGN INFOTECH, NIT Trichy.
- **Hospital:** - Dr Kamali's Home Clinic, Muthammal Medical Foundation Hospital, Times Hospital - (Trichy Institute of Medical and Educational Services), Apollo Speciality Hospitals – Trichy. GVN Hospital (P) Ltd. - Multispecialty Hospital Trichy.
- **Gas Station:** IndianOil, Bharat Petroleum - Sri Vela Fuels, IndianOil, Reliance Petrol Bunk.
- **Environmental Impact:** Minimize noise and air pollution, especially in residential and sensitive areas.
- **Air pollution:** Volatile chemicals evaporate during the filling and discharge process, or from leaks.
- **Loss of habitats:** Oil and gas operations can degrade animal habitats and disrupt migratory pathways.
- **Oil spills:** Oil spills can be devastating for animals and humans.

JOURNEY RISK MANAGEMENT REPORT

- **Greenhouse gas emissions:** Oil and gas operations can emit greenhouse gases like methane.
- **Analysis of Communication Coverage**

Communication Coverage: Generally good throughout the route, but potential dead zones may exist densely built-up areas or underpasses.

Dead Zones: Monitor for any communication blackouts, especially in underpasses or near large buildings.

- **Estimated Emergency Response Times-**Malar Mahal,Old Burma Colony,Government Branch Press, Tiruchirappalli,National Institute of Technology Tiruchirappalli,AGN InfoSystems & AGN INFOTECH,NIT Trichy,BHELEC CINEMA 4K Dolby 7.1,MedPlus Trichy Rail Nagar, areas like have quicker response times (15- 20 minutes). Congested areas may experience delays (up to 30-40 minutes).
- **Overall Summary of Risk Assessment**
- **Risk Level:** Moderate to High, especially during monsoon season.
- **Key Risks:** Waterlogging, traffic congestion, and potential communication dead zones.
- **Mitigation Measures:** Plan travel during non-peak hours, ensure proper vehicle maintenance, and have alternative routes and emergency contacts ready and control on the speed limit of the vehicle.
- **Road Signage for TT/PT Driver**














JOURNEY RISK MANAGEMENT REPORT

Road Traffic Signs in India

Mandatory/Regulatory Signs

 Stop	 Give way	 No entry	 Straight prohibited
 One way	 One way	 Vehicles prohibited in both directions	 Horn prohibited
 Pedestrians prohibited	 Cycles prohibited	 Right turn prohibited	 Left turn prohibited
 U-turn prohibited	 Overtaking prohibited	 Trucks prohibited	 Tonga prohibited

JOURNEY RISK MANAGEMENT REPORT

 <p>All motor vehicles prohibited</p>	 <p>Hand cart prohibited</p>	 <p>Bullock cart prohibited</p>	 <p>Bullock and hand carts prohibited</p>
 <p>No parking</p>	 <p>No parking or stopping</p>	 <p>Speed limit</p>	 <p>Axle load limit</p>
 <p>Width limit</p>	 <p>Weight limit</p>	 <p>Length limit</p>	 <p>Load limit</p>
 <p>Restriction and</p>			

JOURNEY RISK MANAGEMENT REPORT

Cautionary signs

 <p>Right hand curve</p>	 <p>Left hand curve</p>	 <p>Right hand pin bend</p>	 <p>Left hand pin bend</p>
 <p>Right reverse bend</p>	 <p>Narrow bridge</p>	 <p>Gap in median</p>	 <p>Cycle crossing</p>
 <p>Pedestrian crossing</p>	 <p>School</p>	 <p>Men at work</p>	 <p>Roundabout</p>
 <p>Narrow road</p>	 <p>Road widens</p>	 <p>Side road left</p>	 <p>Side road right</p>

JOURNEY RISK MANAGEMENT REPORT

Information signs

Advance direction	Map type advance direction	Rotary intersection	Reassurance
Direction	Direction	Place identification	Truck lay bay
Toll booth ahead	Parking this side	Parking both sides	Cycle stand
Scooter and motor cycle stand	Taxi stand	Auto-rickshaw stand	Cycle-rickshaw stand
Public telephone	Filling station	Hospital	First aid post

Conclusion

The route for Trichy Terminal (T.N) To NATARAJ PETROLEUMS is generally manageable but poses several risks, particularly during the monsoon season. Proper planning, adherence to regulations, and awareness of potential hazards can significantly mitigate these risks.

JOURNEY RISK MANAGEMENT REPORT

- **Risk Assessment - Sharp Turns**

Risk Type	Risk Level	Coordination	Distance From Start	Recommendation Speed
Sharp turn	Medium	10.769517372474736, 78.83735063199906	650 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.76584461192607, 78.8361700257199	1.1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.764182189802032, 78.83459588401435	1.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.75826698538096, 78.83349398474651	2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.756372549032195, 78.83034570133539	2.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.751346435623256, 78.8252297405902	3.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.757906942798716, 78.81117677157785	6.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.787358384509025, 78.77401388280337	10.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.807926793454792, 78.72541718894573	16.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.812858780584483, 78.71601872869049	17.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.813153854161522, 78.7123280092307	18.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.8132381608445, 78.71189885580515	18.3 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.817664228587676, 78.7119846864179	18.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.825209469597384, 78.71241383982665	19.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.844809252744147, 78.71308566683136	21.8 KM	20km/hr TO 30 Km/Hr

JOURNEY RISK MANAGEMENT REPORT

Sharp turn	High	10.694426742072352, 78.95402711265926	22.9 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.68891452257912, 78.95451795295232	23.5 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.685124813609429, 78.95430759282672	24 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.681059436861348, 78.95248447173823	24.5 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.680646005669383, 78.95108207090092	24.6 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.674926816314496, 78.95052111058797	25.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.670378950497396, 78.94673462832725	25.9 KM	10km/hr TO 15 Km/Hr
		10.661866046239474, 78.94787295516217	26.9 KM	
		10.655870860574133, 78.94682115453418	27.6 KM	
		10.644844923666392, 78.93637326829624	29.2 KM	
		10.644744169789412, 78.936482642341	29.3 KM	
		10.628066677044904, 78.93458940121064	31.1 KM	
		10.624345128676024, 78.93213519974535	31.6 KM	
		10.615523499587797, 78.9285590776102	32.7 KM	
		10.614781662330794, 78.92884331851167	32.8 KM	
		10.61075785974471, 78.92716941385025	33.3 KM	

- **Risk Assessment - Elevation Changes**

JOURNEY RISK MANAGEMENT REPORT

Risk Type	Specific Risk	Risk Level	Coordination	Elevation Change	Gradient	Recommendation Speed
Elevation Change	Descent	Low	10.7753, 78.8368	-3.02m	-2.96 %	40 km/hr to 50 km/hr
Elevation Change	Descent	Low	10.993921 , 78.326323	-9.28m	-6.28%	40 km/hr to 50 km/hr

IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO NATARAJ
PETROLEUMS (10.609994 , 78.927031) TOTAL DISTANCE – 33.7 KM

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.769073692604486, 78.83720120889187



10.764113439530249, 78.83446118711721

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.758209570013967, 78.83344387884853



10.751314343624747, 78.82530656733346

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.75126610223314, 78.82518044583597



10.759296455409434, 78.80954749245673

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.787270680907813, 78.77433315009567



10.801869769228155, 78.74289067038384

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.807212761783093, 78.727384388977

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.813070768754649, 78.71358087620345



10.813158210442325, 78.7124472790252

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.72073830808168, 78.9635844591087



10.717093094472883, 78.95479304884388

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.711116763469295, 78.95586853049701



10.710586843814168, 78.95515760884405

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.681715075249874, 78.95225242723406



10.675359580304509, 78.9505202602571

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.616393143882748, 78.93007456414136



10.615114608484582, 78.9283642174503

ALARP/JRM/TNSO/NATARAJ

JOURNEY RISK MANAGEMENT REPORT



10.610266852798969, 78.92716801705676

ALARP/JRM/TNSO/NATARAJ