

JOURNEY RISK MANAGEMENT REPORT



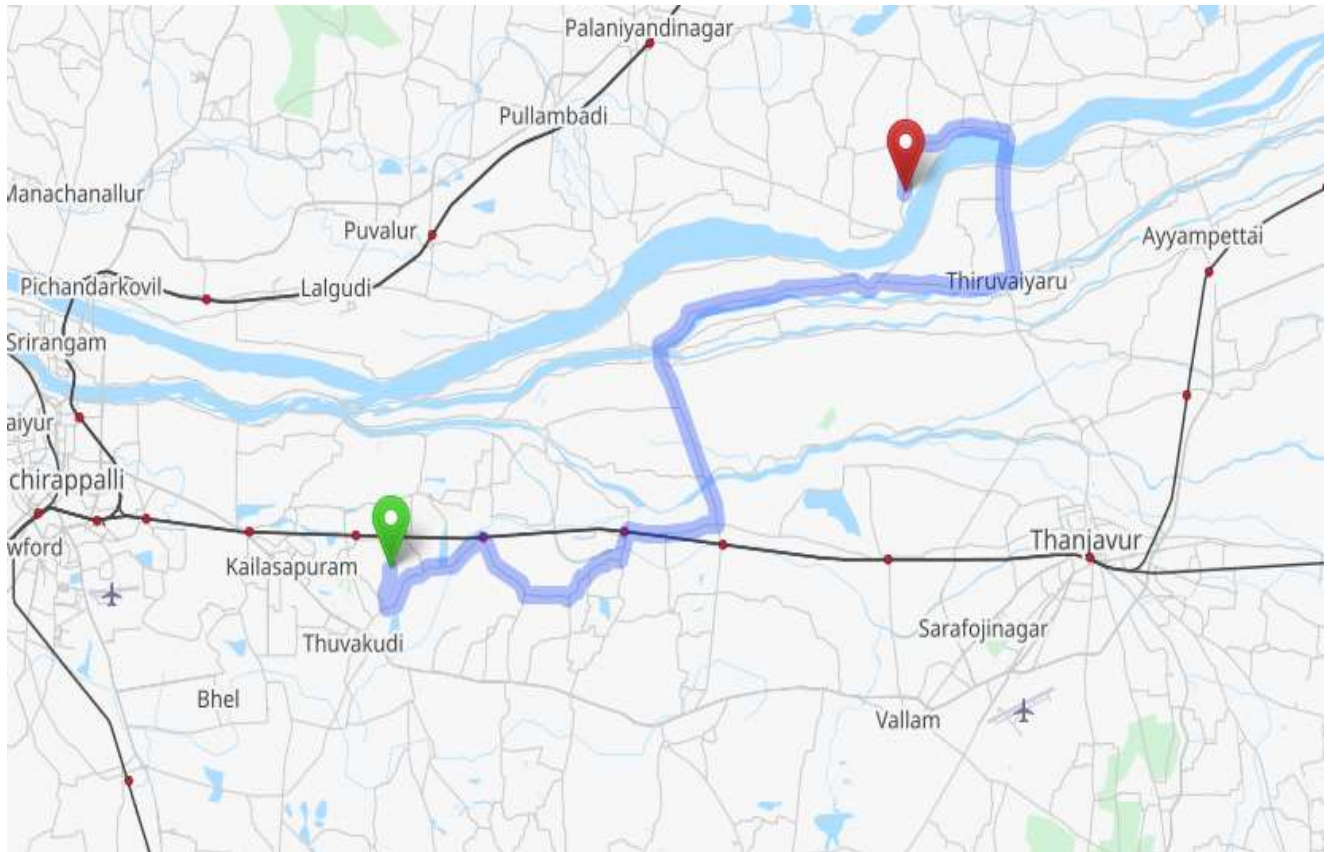
IndianOil

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

ALARP/JRM/TNSO/MACAM

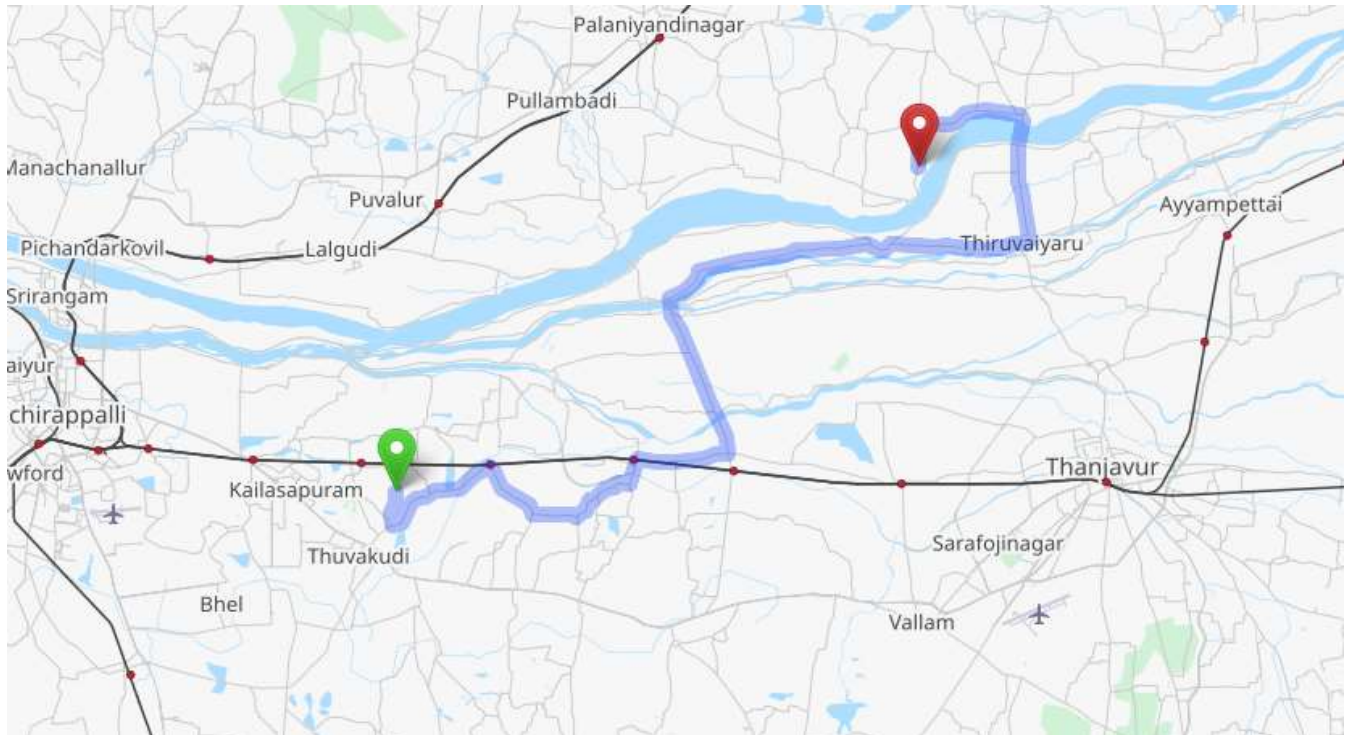
JOURNEY RISK MANAGEMENT REPORT

IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO MACAM AGENCY
(10.911639, 79.059669) TOTAL DISTANCE – 55.3KM



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Welcome to the Journey Risk Management Study for MACAM AGENCY

Total distance: 55.3km; start with: (10.7753, 78.8368), End with: (10.911639, 79.059669)

- **Route Safety Analysis Report**

- 1. Overview of the Route Map**

Take SIDCO to Indian oil Storage, Valavanthankottai to Thirunedukulam temple road, Thirunedukulam To Paper Mill road and Indalur to Solakampatti Village to Solakampatti Railway Station - Katachamangalam Rd in Kadambangudi , Continue to Palamaneri, Take Kollidam - Kallanai Main Rd, NH 136 and Thirumalapadi Main Rd to Thirumalapadi Rd in Thirumazhapadi, and Total distance from Trichy Terminal To MACAM AGENCY 55.3KM.

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Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions:

Trichy Terminal (T.N) To MACAM AGENCY 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.

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 MACAM AGENCY Providing a local hourly weather forecast of rain, sun, wind, humidity and temperature.

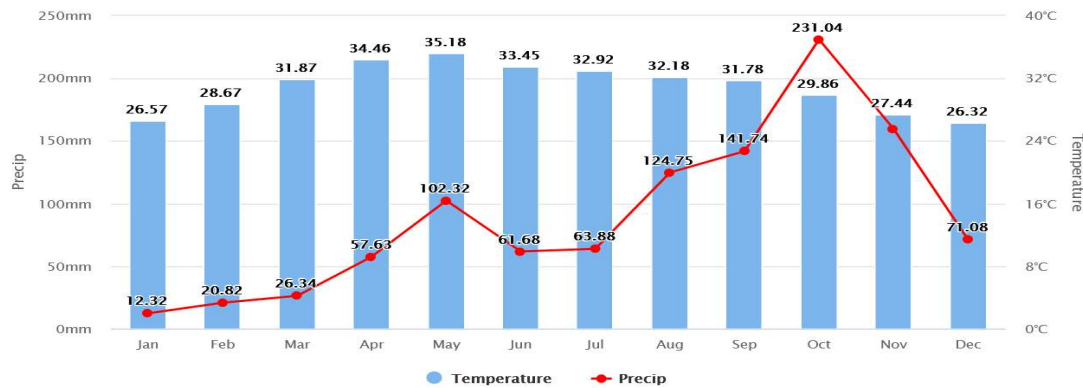
The Long-range 12 day forecast also includes detail for weather today. Live weather reports from Trichy Terminal (T.N) To MACAM AGENCY AGENCIES weather stations and weather warnings that include risk of thunder, high UV index and forecast gales.

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Climate Graph

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



Analysis of Traffic Patterns

Peak Hours:

Typically, Trichy Terminal (T.N) To MACAM AGENCY 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:

- Jude Digital Studios
- Sri Kaliyamman Temple
- Nedungulam bus stop
- New Bharath Nursery
- Primary School, Kadambankudi
- Government ITI
- VSD Farm House
- Mariyamman Temple

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- **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, Valavanthankottai to Thirunedukulam temple road, Thirunedukulam To Paper Mill road and Indalur to Solakampatti Village to Solakampatti Railway Station - Katachamangalam Rd in Kadambangudi , Continue to Palamaneri, Take Kollidam - Kallanai Main Rd, NH 136 and Thirumalapadi Main Rd to Thirumalapadi Rd in Thirumazhapadi, and Total distance from Trichy Terminal To MACAM AGENCY 55.3KM.

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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.

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❖ Environmental Considerations and Sensitive Areas

- **Sensitive Areas** Jude Digital Studios, Sri Kaliyamman Temple, Nedungulam bus stop, New Bharath Nursery, Primary School, Kadambankudi Government ITI, VSD Farm House, Mariyamman Temple.
- **Educational institutions** Bharath Nursery , Primary School ,Government ITI
- **Hospital:** - Bharath Nursery, Vivekananda Hospital, AYUSH HOSPITAL.
- **Gas Station:** ESSAR petrol pump, SP Petroleum (HPCL), HP PETROL PUMP - M/S. A.V.R. PETROL , Indian Oil, Indian Oil.sk petrol (BPCL)
- **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.
- **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:** : Jude Digital Studios, Sri Kaliyamman Temple, Nedungulam bus stop, New Bharath Nursery, Primary School, Kadambankudi Government ITI, VSD Farm House, Mariyamman Temple.
- like, have quicker response times (15- 20 minutes). Congested areas may experience delays (up to 30-40 minutes).

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- **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**

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
















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 <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 ands</p>			

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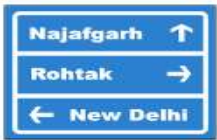

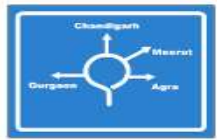
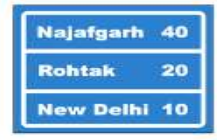
















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Cautionary signs

 <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>

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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 MACAM AGENCY 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.

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• Risk Assessment - Sharp Turns

Risk Type	Risk Level	Coordination	Distance From Start	Recommendation Speed
Sharp turn	Medium	10.769517372474736, 78.83735063199906	650 M	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	10.774229140407007, 78.85271869277679	4.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.775104898867367, 78.86115242891263	5.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.791337801360735, 78.86160676148528	7.0 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.796130809923802, 78.86875653377784	8.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.796009439387355, 78.87095446449348	8.5 KM	15km/hr TO 20 Km/Hr
Sharp turn	Medium	10.79683386748933, 78.87159497096351	8.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.803407515879496, 78.87389195968373	9.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.804969549783577, 78.88122465444431	10.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.823904313593474, 78.88159211760032	12.3 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.816050328608693, 78.89071271682535	13.6 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.81973190969003, 78.89408608914145	14.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.825745061554937, 78.90383138694354	16.6 KM	10km/hr TO 15 Km/Hr

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Sharp turn	Medium	10.832003520024413, 78.92994378746451	19.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.835930329148608, 78.92906920945666	20.02 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.849121437858717, 78.92942727006194	21.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.849468504246547, 78.94488777106315	23.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.85614945423393, 78.94532949901532	24.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.87718838308781, 79.04589421338547	36.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.877473564501441, 79.09271014817536	41.4 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.894106802552516, 79.10459648405644	43.7 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.932792295858215, 79.10440766671042	48.2 KM	20 km/hr TO 25 Km/Hr
Sharp turn	Medium	10.93038710316817, 79.07527070646778	50.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.931245813563642, 79.06040288033383	53.2 KM	10km/hr TO 15 Km/Hr

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IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO MACAM AGENCY
(10.911639 , 79.059669) TOTAL DISTANCE – 55.3 KM



10.768592448543357, 78.8370688087364

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10.751208506161003, 78.82534748227145



10.738335131693487, 78.83864952122308

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10.717062440473178, 78.9522390144943



10.73035149179952, 79.0884665805525

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10.828717279066998, 79.13157430432682



10.879389309058453, 79.10365801680302

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10.934035497590306, 79.1017710047953



10.929920743510046, 79.07452296026669

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10.931107609604888, 79.06030246693902



10.911982623884981, 79.05945380567198

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