



**Update on the Clean-up Following the Accident
at a Fuel Storage of Norilsk Nickel**

June 17, 2020

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Accident Overview

- On May 29, 2020, an accident occurred whereby the containment of the emergency fuel storage at Heat and Power Plant № 3 (HPP-3) in the Kayerkan neighborhood of Norilsk failed due to sudden sinking of support posts, resulting in the fuel leakage
- According to the Company's assessment, the accident could have been caused by the thawing of permafrost which resulted in sinking of support posts
- Since the HPP-3 is located remotely from Norilsk, the city has not been impacted
- Over a short period of time, 21.2kt of diesel fuel has leaked beyond the bunding perimeter into a designated pit and partially into the Bezymianny stream
- The fuel spill through Bezymianny stream via Daldykan river reached Ambarnya river, where boms prevented the contamination of Pyasino lake
- The exact distribution of the contamination will be assessed through the soil recultivation, pumping out of the fuel from the pit and drain sumps, and cleaning of water



ROSKOSMOS Satellite Images of HHP-3 and Damaged Fuel Tank



Source: Company data, Roskosmos

HPP-3 Facility Overview

- HPP-3 is operated by Norilsk Nickel's wholly-owned subsidiary, Norilsk Taymir Energy Company (NTEC)
- The HPP-3 predominantly serves the local municipality of the Norilsk Industrial District and supplies some power to Norilsk Nickel's facilities
- HPP-3 consumes natural gas, with diesel fuel used only in emergencies and stored in fuel reservoirs
- The reservoir #5, where the accident took place, was built in 1985
- After undergoing repairs in 2017-2018, the reservoir #5 went through hydraulic testing and Industrial Safety Audit (ISA) in 2018
- All recommendations of ISA regarding filling the reservoir #5 for the first time after the repairs were followed and controlled



Immediate Response to the Accident

- An emergency situation steering team was set up in the city of Norilsk comprised of the local and regional government's officials, Norilsk Nickel's senior management, law enforcement and other government agencies
- A federal level emergency situation was declared on June 3rd by the Ministry of Emergency Situations (MES), which deployed a 100 people team and delivered about 20kt of various equipment and supplies to Norilsk
- Teams from the Marine Rescue Service (from Murmansk), and Russians oil gas majors such as Gazpromneft and Transneft have been deployed to clean up water spill
- In total, almost 700 people and 300 equipment items are involved in the clean-up
- The government's environment supervision agency, Rosprirodnadzor, jointly with Norilsk Nickel has completed air inspections of Norilsk-Piasino water bodies to identify oil spills; regular air inspections are continued
- The government consumer supervision agency, Rospotrebnadzor, has not detected any violation of permissible limits for hazardous materials in the drinking water sources of the city of Norilsk
- Removal of the contaminated soil to a special storage facility has been launched, the contaminated soil is replaced with a clean one and treated with absorbent chemicals
- In total, 55 lines of containment boms have been installed at the Ambarnaya River, including 16 lines of absorbing boms
- A monitoring of water wildlife and water quality from Ambarnaya river to the Pyasino Lake has been set in observation points
- NTEC teams are conducting an inspection of emergency diesel fuel storage facilities, with a special attention paid to assessing the risks of sinking soil under hazardous objects installed in permafrost

Action Plan and Further Steps

- Ministry of Emergency Situations, Marine Rescue Team (from Murmansk), Transneft and Gazpromneft are engaged in cleaning up the fuel spill in the Ambarnaya river; Nor Nickel is removing contaminated soil
- **Water fuel spill remediation plan:**
 - ✓ The spill into water is being collected and placed into special tanks for temporary storage. 199 fuel tanks with a total capacity of 38.4k cubic meters have been installed alongside the river shore ⁽¹⁾
 - ✓ Two options are currently being considered:
 - A pipeline construction to transport the watered fuel mix
 - Storage of watered fuel mix on site until winter, transportation to Norilsk and processing of the mix using special equipment to separate fuel from water
 - ✓ Further usage of the recovered fuel will be determined upon chemical analysis
- **Contaminated soil remediation plan:**
 - ✓ Temporary storage has been arranged with a total capacity of 100kt with a waterproof (a concrete) base and hangars with a roof (protecting the piles of contaminated soil from being watered down by rain)
 - ✓ All of the contaminated soil to be removed and placed into this temporary storage
 - ✓ The soil to be recultivated, with oil products to be removed
- A full investigation has been launched to identify the exact cause of the accident
- A complete revamp of risk assessment of hazardous industrial facilities has been launched:
 - ✓ Upon completion, a complex audit of all hazardous industrial facilities based on support posts sunk into permafrost will be carried out
 - ✓ A special focus will be put on potential environmental risks and including risks due to proximity of these facilities to water bodies

Cleaning Up Progress To-date

- **The first stage of the clean-up has been completed in just about two weeks (as of June 16th):**
 - ✓ Over 90% of the leaked fuel was collected
 - ✓ Over 70% of contaminated soil was removed
- **As of June 17th 8am:**
 - ✓ 92.5kt of contaminated soil has been removed near HHP-3 (8.4kt removed in the past 24 hours)
 - ✓ approximately 6.1k cubic meters of water-fuel mixture has been collected near HHP-3 (0.4k cubic meters removed in the past 24 hours)
 - ✓ 25.1k cubic meters of water-fuel mixture has been collected from Ambarnaya river (0.2k cubic meters removed in the past 24 hours)
 - ✓ 64k square meters area has been treated with sorbents (0.7k square meters in the past 24 hours)
- The next steps of the clean-up program will include recultivation of the contaminated soil and separation of fuel from the water-fuel mixture as well as cleaning up the coastline
- The clean up costs are preliminary estimated at approximately RUB10bn (circa USD150m)
- The amount of financial penalties will be calculated upon full investigation by the government's Environment Supervision Agency (Rosprirodnadzor), which is due to complete its assessment by June 26th

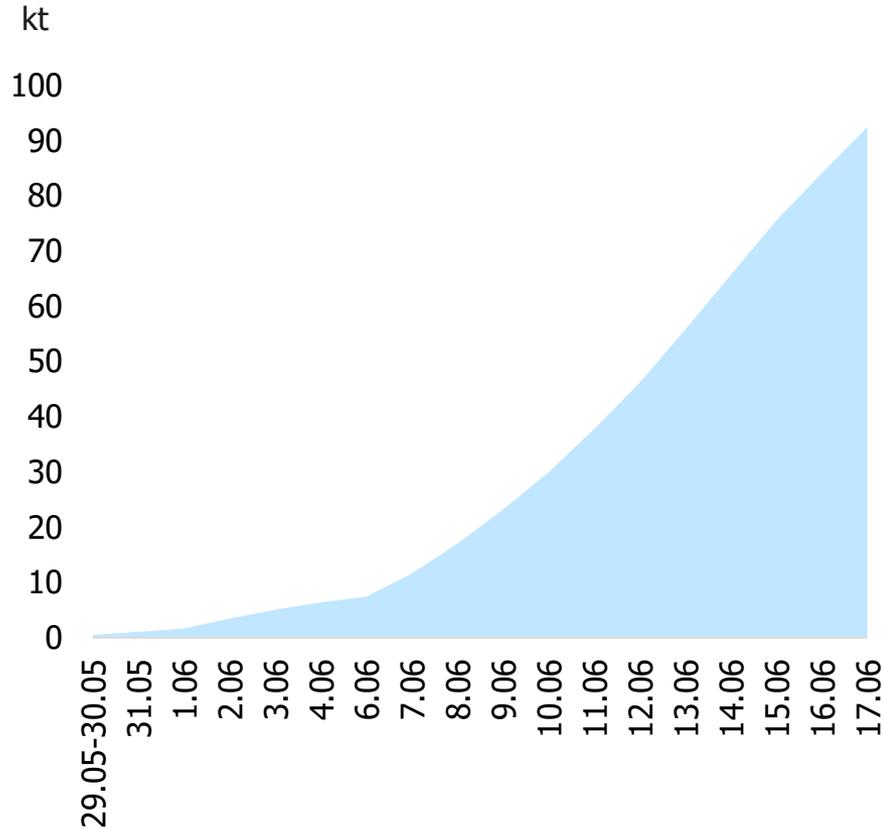
Source: Company data

Read more:

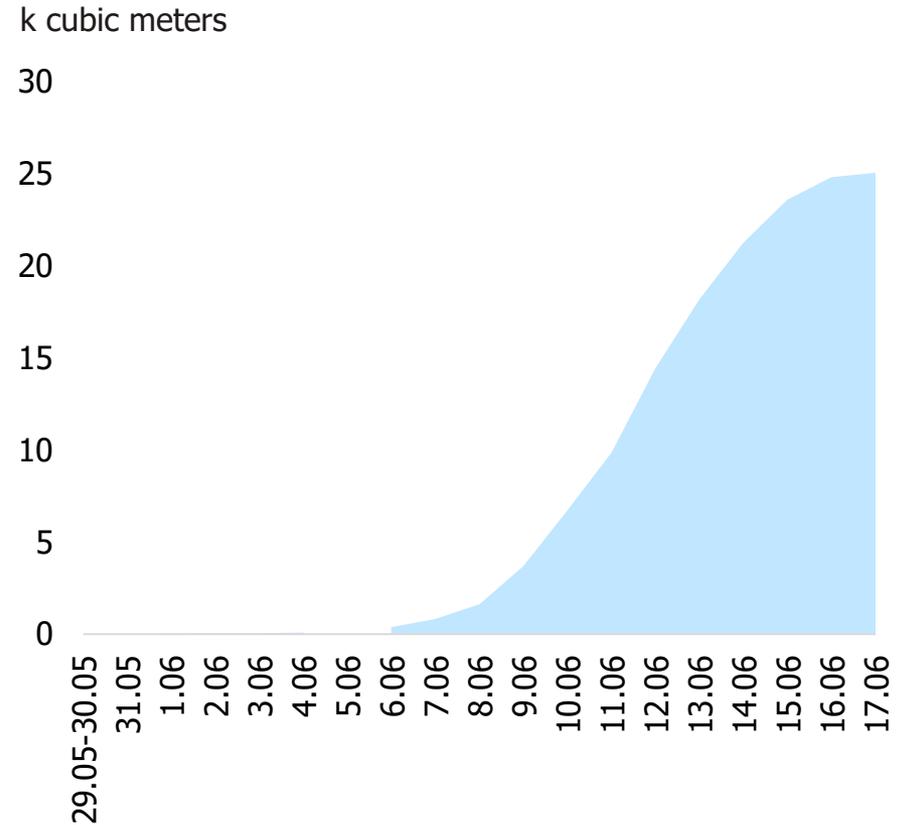
<https://www.nornickel.com/news-and-media/press-releases-and-news/updates-on-the-clean-up-operation-following-diesel-spill-in-norilsk/>

Clean-Up Progress: Daily Updates

Contaminated Soil Removed:
Cumulative Volume



Water-Fuel Mixture Collected from the Ambarnaya
River: Cumulative Volume



Source: Company data
Note: daily morning updates

Long-term Plan to Manage Climate Change Risks

1. Mapping of Norilsk industrial district

- ✓ Digitization of historical geological studies
- ✓ Confirmation of lithological layers: rock formations and permafrost
- ✓ Objects location on the map

2. Confirmative geological drilling

- ✓ Confirmation of historical studies
- ✓ Comparison of historical permafrost / temperature diagrams with current data

3. Top priorities for additional geological analysis

- ✓ Fuel storage tanks operated by Norilsk Nickel's subsidiaries (NTEC, TTK)
- ✓ Other hazardous industrial objects

4. Real-time control of supporting posts deformation and soil temperature

- ✓ Installation of strain gauges and temperature sensors on all sites at risk
- ✓ Establishment of a monitoring center
- ✓ Expansion of permafrost analysis laboratory and R&D

Engagement with Stakeholders

- The Company is closely engaging with environmental groups/NGOs
- Consultations are held with the local indigenous communities:
 - ✓ Indigenous people have been brought on site of the river
- To mitigate the wider impact on local indigenous communities, the Company has committed to providing additional support to the following programs:
 - ✓ Reproduction of aquatic bio resources - an initiative to release juvenile fish into water bodies in order to preserve rare fish species
 - ✓ Biodiversity conservation - a programme to increase reindeer population in the area

«We note openness and willingness of the Company's to engage into a dialogue [with stakeholders]»

Alexander Zakondyrin

Deputy Chairman of the Public Council at the Ministry of Natural Resources and Ecology of the Russian Federation



Source: Company data

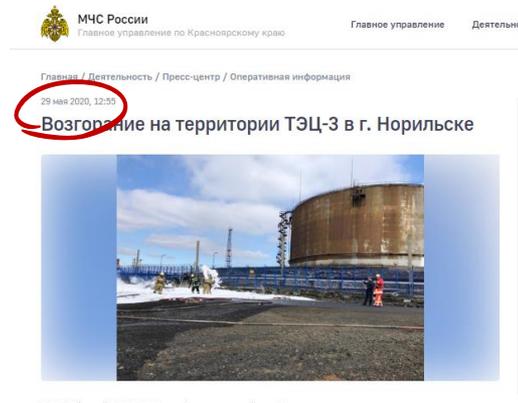
Read more: <https://www.nornickel.com/investors/esg/>
https://www.nornickel.com/upload/iblock/882/NN2019_Digital_ENG.pdf

Selected Fact Checks

Allegation

“The company has not promptly reported accident to the government/ information was delayed”

- **The company informed the local authorities and government agencies** on May 29th immediately after the accident in line with the due procedures and emergency response plan
- Press release published on www site of the Ministry of Emergency Situations, local branch, from May 29, 12:55



Facts

The accident reporting timeline, May 29th 2020:

- 12.55 pm – the leak of diesel fuel was first reported by a dispatcher and was confirmed by HPP-3 at 12.57 pm
- 1.08 pm – the accident reported to the United Dispatch Service of the Siberia Power System, based in Kemerovo
- 1.10 pm — report to the United Dispatch Service (UDS) of the Civil Defense and Emergency of the city of Norilsk
- 1.20 pm — report to the Situation Analysis Centre of the Russian Ministry of Energy based in Moscow
- 1.49 pm — report to the Situation Analysis Centre of the System Operator of the Unified Energy System
- 2.59 - 5.05 pm — Emergency Forms No 2, No 3 and No 4 submitted to UDS
- 6.40 pm — NTEC issued an order declaring a state of emergency

See details at:

https://www.nornickel.com/news-and-media/press-releases-and-news/ntec-provides-law-enforcement-agencies-with-copies-of-official-incident-reports/?redirect_url=/news-and-media/press-releases-and-news/&redirect_url=%2Fnews-and-media%2Fpress-releases-and-news%2F

Selected Concerns (1/2)

Concern

The oil spill has spread into Pyasino lake and is heading for the Kara Sea

- **Special containment boms (in total 55 lines) have been installed in the Ambarnaya River, which have prevented the spill from spreading to the downstream Pyasino Lake**
- The spill has not reached Pyasino Lake
- There is no risk of pollution of the Kara Sea
- Regular aerial monitoring of the impacted area is carried out

Facts

- **Satellite images published by Roskosmos on June 4th confirm that the oil spill were well contained in the Ambarnaya river**



Selected Concerns (2/2)

Concern

90% of leaked fuel cannot be collected

As of June 16th:

- ✓ **More than 90% of leaked fuel was collected**
- ✓ **More than 70% of contaminated soil was removed**

As of June 17th 8am:

- ✓ 92.5kt of contaminated soil has been removed (8.4kt removed in the past 24 hours)
- ✓ approximately 31.2k cubic meters of water-fuel mixture has been collected near HHP-3 and from the Ambarnaya river (0.6k cubic meters collected in the past 24 hours)

Facts



ROSKOSMOS Satellite Images of Norilsk-Pyasinsky Water System



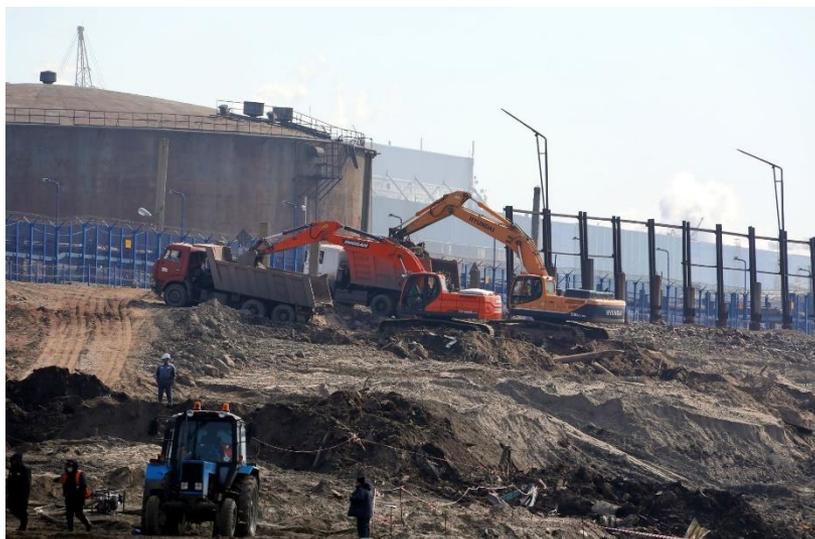
Source: Company data, Roskosmos

ROSKOSMOS Monitoring of the Cleanup Progress: June 8th vs June 4th



Source: Company data, Roskosmos

Removal of Contaminated Soil, Temporary Fuel Storage Tanks and Pumping of Water-fuel Mixture near HPP-3



Source: Company data, TASS

Containment Boms, Temporary Fuel Storage and Rescue Team Camp at the Ambarnaya River



Source: Company data, TASS

Temporary Fuel Storage Tanks, Water Sampling and Containment Boms on the Ambarnaya River



Source: Company data, TASS