



**Clean-up operation following diesel fuel incident  
at HPP-3 storage tank. July, 2020**

# Company response to the accident

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**at July 28, 2020:**

- **373 people and 153 equipment units from Nornickel's Polar Division, NTEC, and specialised organisations were engaged in the clean-up**
- **Jointly with the Federal Service for Supervision of Natural Resources, Nornickel organised regular aerial inspections of the Norilskaya-Pyasinowater system to track fuel spills into water bodies**
- **188,502 t of contaminated soil has been removed in the HPP-3 vicinity, 8,254 cu m of water-and-fuel mixture was pumped from trenches and pits around the plant, and approximately 25,749 cu m water-and-fuel mixture was collected from the Ambarnaya River surface.**
- **Special containers with a total capacity of 40,000 cu m were purchased to store the collected water and fuel mixture,**
- **The water and fuel mixture will be collected and placed into special tanks for temporary storage. So far, 137 containers with the total capacity of 32,800 cu m have been filled**
- **Biosorbents are being dispersed along the bank line of the Bezymianny Brook to the Daldykan River and Ambarnaya River. 246 km along the both banks has been covered and 335,120 sqm of soil has been treated with sorbents**
- **46 lines of conventional containment booms and 132 lines of absorbing booms with a total length of 16,202 m were arranged.**
- **28.1 km long pipeline was assembled to pump water and fuel mixture.**

# Site close to HPP-3. The Ambarnya River



Источник: данные компании

# Roadmap—Continued efforts under the clean-up plan

**The main stage of collection and pumping of the water and fuel mixture, as well as excavation and stockpiling of the contaminated soil is to be completed before the winter season**

Action	Deadline	Note
Collection (pumping) of petroleum products in the area adjacent to the back-up diesel fuel storage tank at NTEC's HPP-3	June–October 2020	90%
Collection of oil products in the Ambarnaya River (in containment-boomed areas)	June–October 2020	Complete
Collection of residual petroleum products in the Ambarnaya River following the ice drift and snowmelt (with containment booms, including those setup for the winter)	May 2021–October 2021 May 2022–October 2022	
Collection of contaminated soil and sand in the area adjacent to the back-up diesel fuel storage tank at NTEC's HPP-3, moving them to temporary storage	June–July 2020	Complete
Petroleum product collection along the bank lines of the Daldykan River, Ambarnaya River and Bezymianny Stream, sorbent treatment	June–October 2020	10%
Used sorbent collection along the bank lines of the Daldykan River, Ambarnaya River and Bezymianny Stream, moving it to temporary storage	June–October 2020	30%
Setting up engineered embankments for water collection, filtering and absorption in the area of Boundary-1 (HPP-3)	June 2020	Complete
Setting up decontaminating soil boundaries (trenches filled with mineral reagent) along the borders of contaminated areas at Boundary-1	June 2020	Complete

# Roadmap—Continued efforts under the clean-up plan

**In order to assess the effectiveness of the restoration efforts, a programme is being developed to monitor surface water quality and soil condition.**

Action	Deadline	Note
Monitoring programme development	July 2020	Project approval by the Interagency Commission
Surface water quality monitoring in the Daldykan and Ambarnaya Rivers	As per the monitoring programme	
Engineering and environmental assessment of the area and condition of the land and water bodies contaminated with petroleum products. Monitoring the soil condition. Damage assessment	June–July 2020	90 %
Monitoring the restoration quality together with scientists	2020 -2021. SB RAS	
Drafting a rehabilitation plan for contaminated land	June–July 2020	80%
Restoration works under the projects:: remediation across the bank lines remediation of the contaminated areas	TBD after specialist assessment and development of a rehabilitation project	Project approval by the Interagency Commission

The rehabilitation project under development is going to ensure a most careful approach to restoration works that would preclude any disturbance to the bank line soils and take into account the self-regeneration potential of the tundra

In the 2021 summer season, the plan is to engage specialist organisations with expertise in biological methods of soil treatment

# Roadmap—Continued efforts under the clean-up plan

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Action	Deadline	Note
Classification of waste generated in the course of the clean-up (OSR)	As prescribed by law	
Pumping and separation of the water and fuel mixture from petroleum products (choosing the optimal method, carrying out the works)	1 October 2020	Pipeline assembling is 80% complete. Neftetank Group of Companies, LLC NPF Politechnika
Decontamination of soil and sand affected by the petroleum products	As per the rehabilitation project	
Disposal of waste from used sorbents (choosing the optimal method, carrying out the works)	2020-2023	Contractor selection is in progress

## **Transportation and separation of water mixed with fuel:**

- Construction of a pipeline for transporting the water and fuel mixture. Deadline : August 1, 2020
- Transporting the water and fuel mixture to a specially prepared site. Deadline : September 10, 2020
- Choosing the technology, separation of the water and fuel mixture. - Complete

**The possibility of using the fuel will be determined based on a chemical analysis following separation from water**

## Roadmap—Continued efforts under the clean-up plan

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мероприятие	срок	выполнение
Analysis of the food resources available to the water bioresources of the Daldykan and Ambarnaya Rivers: <ul style="list-style-type: none"><li>• selecting the contractor,</li><li>• field operations at the Daldykan and Ambarnaya Rivers, taking samples of benthos and plankton</li><li>• analysing the data obtained and preparing a conclusion</li></ul>	2021-2022	
Artificial reproduction of aquatic bioresources (release of fry)	2021-2022	

**In 2021 and 2022, the Company plans to analyse the food resources and release fry**

## **Production facility inspections**

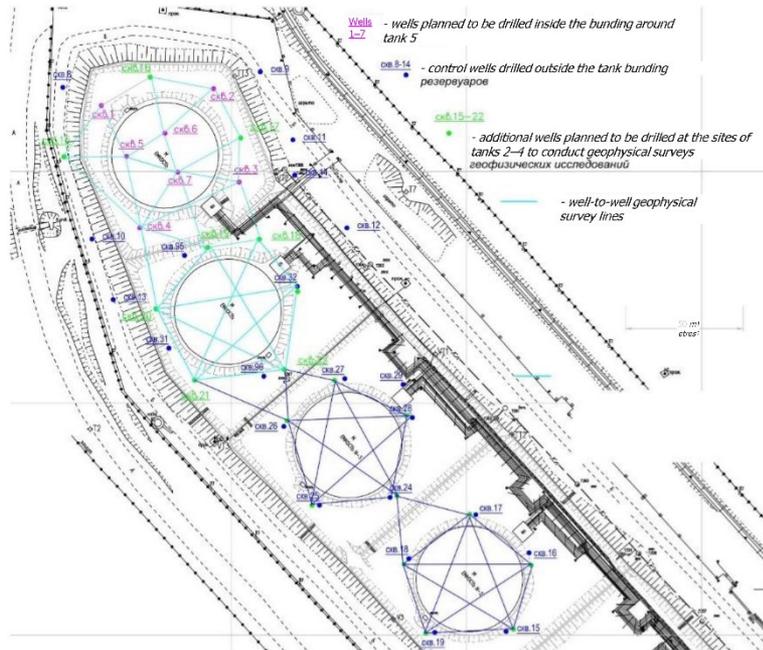
- **Making the schedule of extraordinary inspections at the hazardous production facilities according to the priority ranking. Deadline: 25 June 2020**
- **Developing remedial action plans for deviations/gaps following the extraordinary inspections of the foundations and piles. Deadline: within a month following the inspection**

## **Buildings and Structures Monitoring System**

- **At the Diagnostics Centre, the creation of a modern facility for monitoring the condition of permafrost is currently underway. The facility will use advanced diagnostics methods.**

**By the end of 2021, Polar Division's Gas Rescue Service will be provided with additional technical means and equipment to improve emergency response.**

# Monitoring of industrial facilities



The goal is to identify the causes of the accident at tank 5 and inspect the sites of tanks 2 and 3 to decide on the possibility of their further safe operation:

- Check the condition, integrity and length of the tank foundation piles and penetration of the piles into hard rock
- Check the condition of soil and perennially frozen ground (permafrost) and their effect on the stability of the pile foundation

Geotechnical surveys conducted: six wells drilled outside the bunding of tank 5 and 16 wells drilled at the sites of tanks 2-4. Lab research completed for tank 5. Technical report on tank 5 prepared.

**The plan is to dismantle the tank in the period from 25 July till 25 August 2020 and continue efforts to identify the causes of the accident.**

# Monitoring of industrial facilities

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- Geodetic measurements were taken to assess the condition of fuel storage tanks at TFC and NTEC. The volume of liquids was measured inside the bunding; the levelling survey performed with coordinates of the basic reference points established for subsequent monitoring. The information was submitted to Samaraneftgazproekt, TFC and NTEC. The need was established to reinforce the bunding and increase its height, with design and engineering solutions approved.
- Areas were determined to be surveyed by satellite interferometry for mapping vertical and horizontal deformations of the earth's crust at the Group's hazardous production facilities. Satellite surveying started on 24July2020.
- Geophysical surveys were conducted along the bunding perimeter at tank5 and on the sites of tanks2–4 of HPP-3. Geophysical wells were drilled on the sites of HPP-1, HPP-2 and HPP-3, with a temperature monitoring system installed. In-field geophysical surveys are planned to be completed at all the HPPs by 30September2020. Resulting data will be submitted to NTEC, the Diagnostics Centre and engineering companies as soon as it is prepared.
- Archive records were collected and analysed, with preliminary geophysical surveys conducted at the oil depots (Dudinka, Kayerkan and Norilsk).
- In-field geophysical surveys of ground surface layers were completed at the Dudinka Oil Depot. The same surveys at the Kayerkan and Norilsk Oil Depots are planned to be completed by 30August2020. Drilling and well-to-well geophysical surveys are planned to be completed by 30October2020.
- Geophysical and geotechnical surveys at phase1 facilities (HPPs, oil depots and Talnakh Concentrator) are planned to be completed by 15November2020. Geophysical and geotechnical surveys at phase2 high environmental impact facilities are planned to be completed by 31December2021.