

Arktisk Miljø/Arctic Environment

Inspection of the GRO#3 Well Site

Nuussuaq peninsula,
West Greenland

Research Notes from NERI No.: 89

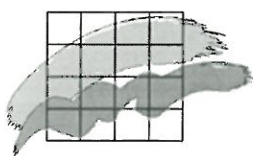
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Inspection of the GRO#3 Well Site

Nuussuaq peninsula, West Greenland

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Contents

1 INTRODUCTION	6
2 ITINERARY	7
3 RESULTS	7
3. 1 LEASE AND CAMP SITE AREA	7
3. 2 ACCESS ROUTES.....	8
3. 3 OTHER RESTORED CONSTRUCTIONS	9
3. 4 CONCLUSIVE REMARKS.....	9
4 PHOTO DOCUMENTATION.....	10
MAP OF AREA.....	21

1 Introduction

In 1996, grønArctic Energy Inc. drilled an oil exploration well (GRO#3) at Nuussuaq peninsula, West Greenland at the position 70° 28' N, 54° 06' W.

The drilling equipment was demobilised and removed by 22 October 1996. Before leaving the area, the terrain at camp site area, lease area and access routes were reclaimed and restored.

This research note describes a visit to the GRO#3 well site in order to inspect mainly the restored access routes north of the site. This route was made in a fruitless attempt to drive the equipment to a planned well site further into the Kuussuaq valley. After two caterpillar bulldozers had stuck deep in the mud, this well site was given up and the drilling was carried out close to the site on the coast where all the equipment was landed mid-July 1996.

The damage on vegetation and terrain was described in two inspection reports to the Mineral Resources Administration for Greenland (MRA): 'Report from an inspection visit at grønArctic Inc.'s well site GRO#3 in Nuussuaq, West Greenland' (9 October 1996) and 'Photo report from an inspection visit at grønArctic Inc.'s well site GRO#3 in Nuussuaq, West Greenland' (4 November 1996).

2 Itinerary

The visit took place 15 July 1998 from 930 AM to 1230 AM. Transport from Ilulissat was by means of helicopter, chartered by Cam Hanna, grønArctic. Cam Hanna's task was in cooperation with MRA to abandon three slim hole exploration wells (Falconbridge FP.94-11-04, GEUS Marrat #1 and GANW#1), drilled in the years before the GRO#3 well was drilled.

During the stay the access route to the north of the drill site, the lease area and the camp site area were studied. Later, during the return flight to Ilulissat, the route, the lease area and the camp site area were viewed from the helicopter during a low level flight. The access area on the beach as well as the equipment staging area were not seen.

3 Results

3.1 Lease and camp site area

The lease area was levelled and grated, and looked at distance like the other gravel plains in the area. In close range caterpillar tracks etc. were obvious. In the southern part a depression (4x2 m wide and about 0.5 m deep) was located, obviously by compressing of layers below the gravel. This is probably the flare pit where the solid fraction of the drilling mud was deposited. On the brink along and above the northeastern side, streaming water had created several small erosion canyons.

The cutting disposal area in the southeastern part of lease area was indistinguishable from the rest.

The camp site area was like the lease area levelled and grated, and looked at distance like the surrounding gravel areas. Caterpillar tracks were visible at close quarters. Forty barrels of Turbo Fuel A1 were left in the area, behind a low hill and probably not visible from the sea. In the centre of the area a large boulder had come to rest after tumbling down from the mountain side east of the camp area. This probably occurred recently (during spring 1998 ?).

In general the restoration of camp and lease areas looked satisfactory, although the traces of the activities here will be visible for decades.

The vegetation and terrain damages are numbered as in the previous inspection reports, see also the enclosed map.

3.2 Access routes

The general impression was that the main routes between the camp area, the lease area and from the lease area and northwards are clearly visible particularly from the air. Moreover many small tracks made outside the main routes by the ATV vehicle and the VSP vehicle are visible as well.

Damage #1

The deep ruts were filled with gravel and the damage area levelled. No water bodies were seen, and only a few shallow erosion canyons were present on the sloping parts. Here and there Common Horsetail (*Equisetum arvense*) was apparently re-established and scattered shoots and buds from mainly Willow (*Salix*) had penetrated the gravel.

The restoration measures were adequate, although the damage will be visible for many years, perhaps even decades.

Damage #2

The deep ruts were filled with gravel and the area levelled. No water bodies were visible, and fresh shoots from underlying vegetation penetrated the gravel layer here and there. A Caterpillar track was very obvious in the gravel.

The restoration measures were adequate, and the area will probably be covered by vegetation within some years.

Damage #3

The many parallel ruts and banks caused by the driving were levelled, and as far as I could judge no gravel had been filled in. There were standing water in some shallow depressions, and small streams in sloping parts. No re-established vegetation was seen in the restored areas.

The restoration measures were adequate. The damage area will be visible for many years, probably for decades.

Damage #4

The many deep ruts and the deep holes where the bulldozers got stuck were filled with gravel and levelled. Standing water was seen in several shallow depressions. No re-established vegetation was seen in the restored areas.

Compared to how bad this site looked in September 1996, the restoration is good. There is no doubt that it will be visible for many years, probably decades.

Damage #5

The tracks in this dry gravel area were levelled. A few depressions held shallow standing water.

The restoration measures were good. The track will be visible for decades in this area.

Damage #6

The tracks and the terrain was levelled.

Restoration measures good.

Outside the specific damage areas, streaming water had created erosion canyons on sloping ground below #3. The canyons were about 2 m long and 20 cm deep.

3.3 Other restored constructions

The small dam creating the water reservoir southeast of the lease area was removed, and the stream flowed free.

3.4 Conclusive remarks

In conclusion the restoration of the GRO#3 area is acceptable. The only feature which could give reason for some concern is the depression in the lease area. This is, however, in the dry gravel, which is well drained, and water erosion originating in this depression is unlikely.

The forty fuel barrels in the camp site area has been purchased by Grønlandsfly. If they are to be moved away or shall remain there as a fuel storage, is not known. Removal of the barrels (at least when they have been emptied) is recommended.

The access routes will be visible for many years in their entire length. In the more moist and wet parts a slow revegetation will take place, but in the dry parts the routes will be clearly visible for many decades.

Some of the terrain and vegetation damage along the route to the Kuussuaq valley were extensive and caused by driving in wet areas and in parallel tracks. Such could be prevented by better planning, terrain surveys and staking out the route beforehand. Moreover, the driving attempt to the Kuussuaq valley in July was performed in probably the most wet period of all.

4 Photo documentation



Fig. 1. The lease and camp site area seen from NW.



Fig. 2. The NE corner of the lease area. Compare to Fig. 2 in Photo report of 4 November 1996.



Fig. 3. The lease area seen from NW. Compare to Fig. 3 in Photo report of 4 November 1996. The flare pit depression is indistinctly seen below the white stone in the right part of the photo.



Fig. 4. Part of the camp site area seen from the eastern edge. Note the boulder and its track.



Fig. 5. The camp site area seen towards WNW. Note the fuel drums.



Fig. 6. Vegetation and terrain damage #1 seen from N. Compare to Fig. 5 in Photo report of 4 November 1996.



Fig. 7. Vegetation and terrain damage #1 seen from S. Compare to Fig. 6 in Photo report of 4 November 1996.



Fig. 8. Vegetation and terrain damage #2 seen from S. Compare to Fig. 7 in Photo report of 4 November 1996.

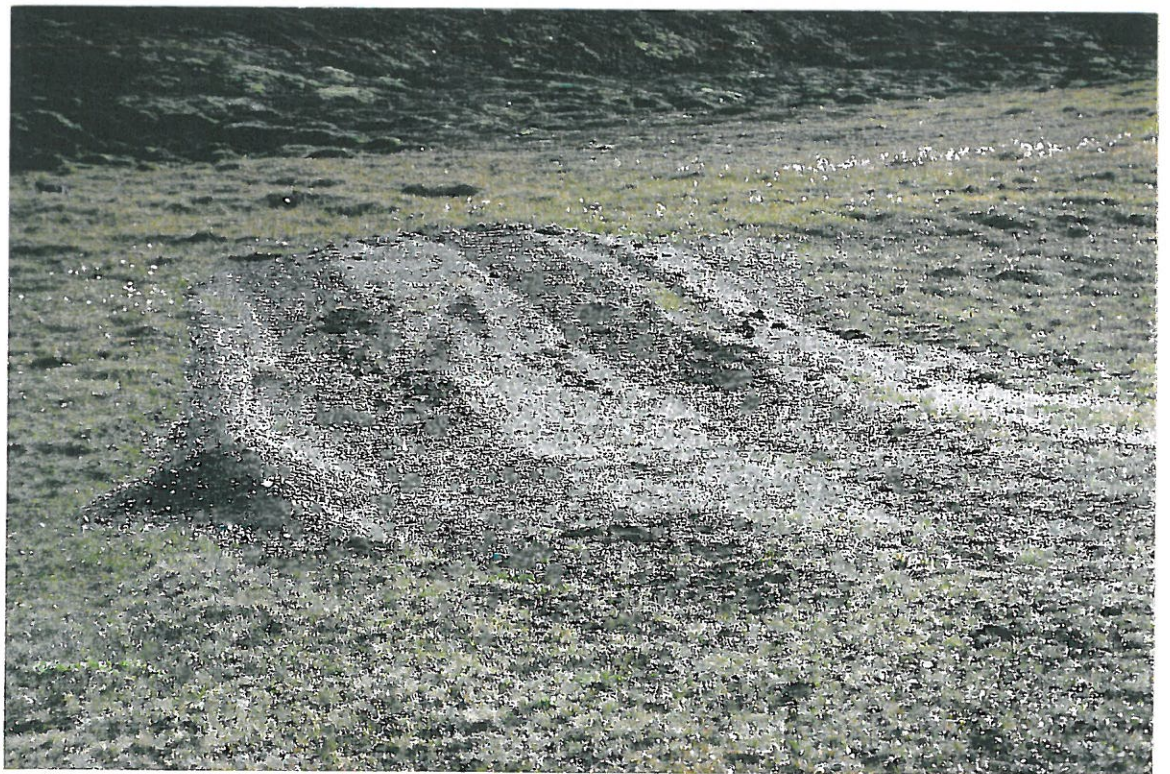


Fig. 9. Vegetation and terrain damage #2 seen from S. Compare to Fig. 7 in Photo report of 4 November 1996.



Fig. 10. Vegetation and terrain damage #3 seen from NW. Compare to Fig. 9 in Photo report of 4 November 1996.



Fig. 11. Vegetation and terrain damage #3 seen from NW. Compare to Fig. 10 in Photo report of 4 November 1996.



Fig. 12. Vegetation and terrain damage #3 seen from SE. Compare to Fig. 11 in Photo report of 4 November 1996.

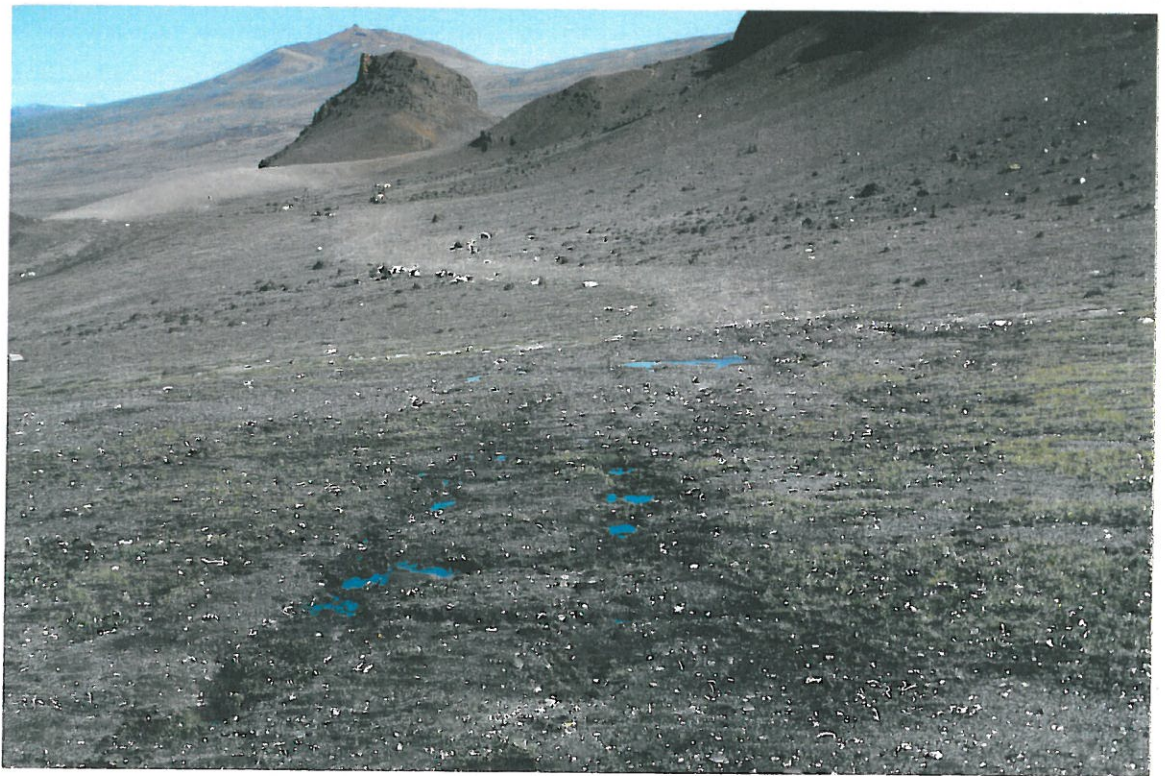


Fig.13. Vegetation and terrain damage #4 seen from SE. Compare to Fig. 13 in Photo report of 4 November 1996.



Fig. 14. Vegetation and terrain damage #4 seen from NE. Compare to Fig. 12 in Photo report of 4 November 1996, although seen from another angle.



Fig. 15. Vegetation and terrain damage #4 seen from N. Compare to Fig. 12 in Photo report of 4 November 1996, although seen from a different angle.



Fig. 16. Vegetation and terrain damage #5 seen from N. Compare to Fig. 15 in Photo report of 4 November 1996.



Fig. 17. Vegetation and terrain damage #5 seen from S.



Fig. 18. Vegetation and terrain damage #6 with #5 and #4 in background, seen from N. Compare to Fig. 16 in Photo report of 4 November 1996.



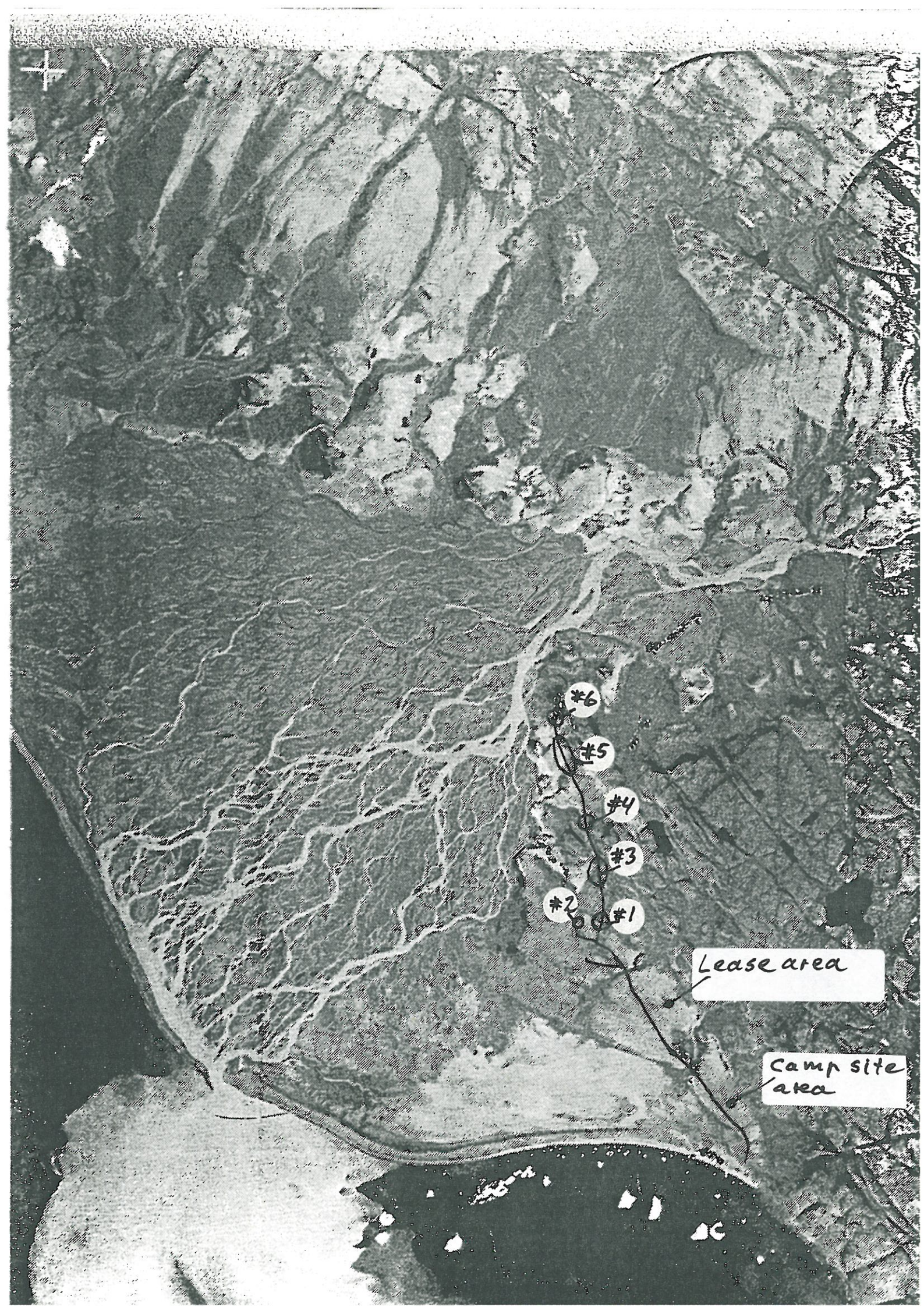
Fig. 19. Vegetation and terrain damage #6 with #5 in background seen from N. Compare to Fig. 17 in Photo report of 4 November 1996.



Fig. 20. Access route just north of lease area.



Fig. 21. Former water reservoir. The dam has been removed.



#6

#5

#4

#3

#2

#1

Lease area

Camp site area

National Environmental Research Institute

The National Environmental Research Institute, NERI, is a research institute of the Ministry of Environment and Energy. In Danish, NERI is called *Danmarks Miljøundersøgelser (DMU)*. NERI's tasks are primarily to conduct research, collect data, and give advice on problems related to the environment and nature.

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