

Causing a Black Tide of Oil – South Sudan's Polluting Pipeline



Konstanz, Germany, February 25, 2020,
Hoffnungszeichen | Sign of Hope e.V.

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Key findings

- South Sudan's main export oil **pipeline is dilapidated**. That is why it keeps on experiencing ruptures. These, in turn, are causing massive oil spills.
- This report documents the pipeline ruptures, **of which the second was concealed from the world** that took place this autumn, and, as well, the ensuing oil spills and their consequences.
- The oil spills are massive, encompassing **30,000 m² and amounting to six million liters**.
- To detect and document these ruptures and oil spills, Sign of Hope has been pioneering a process that combines **remote reconnaissance (satellite-generated images) with on-site-investigations**.
- **Oil spill 1** took place some 40 km north of Rubkona, South Sudan on or about August 24, 2019. Some 12,500 barrels – 2 million liters – of oil was spread over 10,000 m². Repair work was carried out on the pipeline in mid-October 2019.
- **Oil spill 2** took place some 33.5 km north of Rubkona on or about October 28, 2019. It thus came immediately after the repair of the rupture that had caused oil spill 1. Some 25,000 barrels – 4 million liters – of oil was spread over 20,000 m². Repair work had been carried out on the pipeline as of the time of the on-site investigation in February 2020.
- Disturbing pattern! The distance between the pipeline ruptures was a mere 6.5 kilometers. The second occurred right after the first had been dealt with. What this means: the **next rupture can be expected at any time** – at any of what are obviously one of the many weak points in the pipeline, which is no obviously no longer capable of withstanding the pressure needed to transport its oil.
- Sign of Hope is calling upon GPOC, the oil consortium responsible for the pipeline - and upon the Government of South Sudan - to immediately **shut down the dilapidated pipeline, to remove and to properly dispose of the oil spilled and the ensuing wastes, and to publicly document the waste disposal process**.
- To alert the world to any future ruptures and oil spills – and their horrific consequences for human and environmental health - Sign of Hope will **continue to deploy its pioneering process to the monitoring** of the humanitarian and environmental impact of oil production in South Sudan.

1 Introduction

The 64 oil wells found on the Toma South, El-Nar, El-Toor, Munga and Unity oilfields feed their crude oil into a 20 inch export pipeline that links the Unity oilfield with the Heglig pump station¹. As of October 2019, the oil wells were producing up to 54,000 barrels a day.²

The pipeline, which was put into operation in 1999, is one of the two main ones connecting South Sudan's oil fields – via El-Obeid and Khartoum – with the Bashayer Terminal, which is located in the vicinity of Port Sudan. Tanker-based shipments are the only way for South Sudan to export its crude. Oil accounts for some 98% of the revenues of the government of South Sudan.³

The consortium operating the pipeline and thus responsible for any environmental damage is the Greater Pioneer Operating Company Ltd. (GPOC). Its shareholders are China National Petroleum Corporation (40%), Petronas (30% - Petronas is owned by the Malaysian government and is a partner in Daimler's Mercedes Formula 1 team), Oil and Natural Gas Corporation of India (25%), and Nilepet (5% - it is owned by the government of South Sudan).



Figure 1 (left) shows the two main pipelines of crude oil export. They connect South Sudan's oilfields to Port Sudan. This documentation focuses on the western pipeline. (Source: BBC)

¹ Greater Pioneer Operating Co. Ltd: GPOC Resumption Growth Journey. Presentation by Mr. Tap Magok Gai, shown at the 2019 South Sudan Oil & Power Conference, October 29, 2019, p 6; <https://aop-media-serv-eu-1.s3.eu-central-1.amazonaws.com/2019/10/GPOC-presentation.pdf>

² Ibid.

³ Fidelis Mbah: South Sudan: Oil revival to boost economic recovery. Al-Jazeera News, August 28, 2018; <https://www.aljazeera.com/news/2018/08/south-sudan-oil-revival-boost-economic-recovery-180828071729069.html>



Requisite to ensure the long-term functioning of a pipeline is a sustained flow of crude oil through it – the steadier, the better. The five oil fields mentioned above shut down production between April 2012 and April 2013, and between December 2013 and July 2018.⁴ Operations resumed in August 2018.

To be assumed is that the pipeline suffered structural damage during these periods of shut-down. The AFP news agency quoted in a report dated October 7, 2019, the comment made by Awow Daniel Chang, South Sudan's minister of petroleum and mining, on September 2019's pipeline rupture: *"Of course we know that the production has been down for the last five years and the pipeline was empty and probably was filled with water (that) can expedite the process of corrosion within the pipeline."* The minister added: *"That is why we will all suspect that ruptures will happen from time to time..."*⁵

This report designates the oil spill mentioned by the minister as being "oil spill 1". According to the minister, "oil spill 1" resulted in the spewing of 2,000 barrels of oil on to an expanse of 400 square meters.⁶

Revealed in this report, the existence of a further, even larger oil spill – "oil spill 2" – was kept from the world.

The leaks from production and transport facilities join with the improper disposal of produced water and drilling fluids in constituting a further source of the poisoning of the water consumed by the 600,000 people living in and around the oil fields in South Sudan.⁷ Due to the widespread contamination of the upper layer of groundwater, the people affected are being deprived of their human right to clean water.

⁴ Greater Pioneer Operating Co. Ltd: GPOC Resumption Growth Journey. Presentation by Mr. Tap Magok Gai, shown at the 2019 South Sudan Oil & Power Conference, October, 29, 2019, p 5; <https://aop-media-serv-eu-1.s3.eu-central-1.amazonaws.com/2019/10/GPOC-presentation.pdf>

⁵ Agence France Presse: S. Sudan warns of more oil spills after pipeline rupture. October 7, 2019; <https://www.france24.com/en/20191007-s-sudan-warns-of-more-oil-spills-after-pipeline-rupture>

⁶ Ibid.

⁷ See: Klaus Stieglitz with Sabine Pamperrien: Oil, Power and A Sign of Hope" Rüffer & Rub, Zurich, 2016.



2 Methodology

2.1 Employing satellites-based reconnaissance to detect possible oil spills

The utilization of images generated by remote reconnaissance techniques has become a key part in the detecting and monitoring of environmental degradation. The open-source investigative journalism collective Bellingcat has developed a standard in the use and analysis of open source and publicly available satellite-generated images.⁸ Sign of Hope used a part of this methodology in this report. To investigate the condition of South Sudan's environment, Sign of Hope avails itself of publicly accessible images and data generated by satellites.

Among these: the images provided by GoogleEarth. They have the requisite degree of resolution, but are often not up-to-date. The latter quality is possessed by the images delivered via the Sentinel Hub's EO browser, which is maintained by the European Space Agency. These photos lack, however, a high degree of resolution.

This report is mainly comprised of Sign of Hope's assessments of the data delivered by the Sentinel 2 satellite, which delivers images of the project region every five days. As a rule, the ensuing images are displayed after some one-day delay on the EO browser.

The reports appearing in the world's media of a rupture of South Sudan's main pipeline of oil export caused Sign of Hope's experts to designate it as having a lastingly high risk of oil spills. This pipeline's course is along the line stretching between the Thar Jath oil field, the communities of Bentiu and Rubkona, the Unity oil field, and the town of Heglig. Running some 180 meters to the west of the underground pipeline is a main road, which is to be easily seen on all images emanating from satellites, as is especially confirmed by the series of historic images in GoogleEarth. Images displayed on it in 2005 show clearly-comprehensible structures of excavations to the east of the main road. Still highly apparent, the relative difference of vegetation found above the pipeline indicates its path.

The deployment of remote sensing techniques enables the visual monitoring of the entire pipeline.

⁸ See for example: Wim Zwijnenburg: Black Gold Burning: In Search of South Sudan's Oil Pollution, www.bellingcat.com, January 23, 2020; <https://www.bellingcat.com/news/africa/2020/01/23/black-gold-burning-in-search-of-south-sudans-oil-pollution/>



To get an up-to-date overview of pipeline ruptures and leaks, Sign of Hope mainly monitors the data and images captured by a Sentinel 2 satellite and presented on the EO browser. This monitoring detected the appearing and irregular spreading of black spots on and around the pipeline. Employed to identify and track these expanses are mainly the “true color” and “false color” methods of depiction. The expanses experiencing oil contamination are capable of being relatively precisely measured in both the EO browser and in GoogleEarth. The location of these expanses can be then linked to GPS coordinates.

Scouting via satellite-based reconnaissance gives rise to the initial detection of possible oil spills. Images from satellites of a black spot appearing on a pipeline and unevenly spreading over several days constitute plausible indications of an oil spill.

Stemming from the satellites to which Sign of Hope has access, these images do not, however, constitute conclusive proof of such oil spills. For two reasons. The liquid that is manifesting itself could be something other than oil. It could also have stemmed from an above-ground source – rather from the underground pipeline.

2.2 On-site investigations of possible oil spills

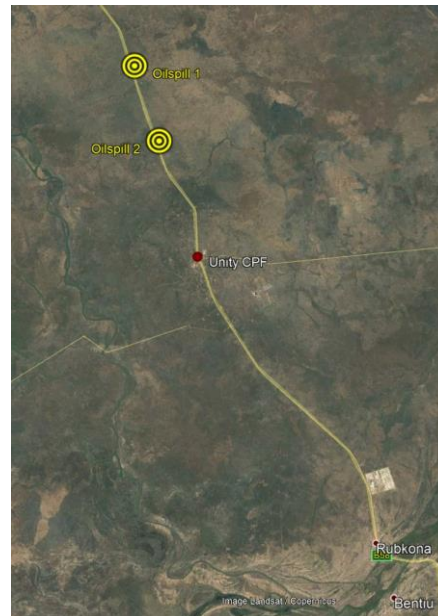
To determine whether or not these purported oil spills are actually such, Sign of Hope first uses the satellites-generated images to determine the areas' GPS coordinates. This data is then transmitted to its network of environmental scouts, who then travel to these places, to determine – on-site - whether or not the ‘spots’ are actually oil spills.

To do such, the scouts follow a protocol established by Sign of Hope for the systematic surveying and documenting (using photographs) the site. Sign of Hope's retrieval of the GPS data recorded by the agent's handheld confirms his or her current location. This protocol foresees the agent's taking of photographs of the area in question. These generally enable the determination of the nature of liquid – oil or something else. The next step is the conducting of the “rod test”. A rod is inserted into the - black - liquid, and then lifted out of it. The resulting speed and nature of the dropping from the rod enables the rough determination of its viscosity and thus identity.

These on-site investigations thus enable the verification or refuting of oil spills indicated by satellite-based remote reconnaissance. This documentation of oil spill 1 and oil spill 2 employs this two-step process: the identification of possible oil spills using satellite images, and the subsequent confirmation of the spills' existence through the conducting of on-site investigations.

3 Overview of the oil spills to be investigated

The area investigated and documented in this report is located to the north of the municipality of Bentiu, which is situated in the northern part of South Sudan. Both of the oil spills were close to the road linking Bentiu and Heglig. Paralleling the road to its east is the pipeline that constitutes the main conduit of crude oil export.



Figures 2 and 3: The map (above left) shows the area – marked by a red rectangle – in South Sudan investigated by Sign of Hope. Taken from GoogleEarth, the image on the upper right provides a detailed look at the area which is marked by the red rectangle on the map above left.

4 Oil spill 1

Oil spill 1 – located 40 km north of Rubkona and close to the road to Heglig – has already been well documented and reported on by the world's media.⁹ The rupture of the pipeline causing the oil spill took place at a location whose GPS coordinates are N 9°36'49.83"; E 29°37'36.83".



Figure 4 shows oil spill 1, upon which repair work has been carried out. High-resolution image dated November 1, 2019 (GoogleEarth).

Initial reports appearing in the media stated that the pipeline – the main one of export – ruptured on September 25, 2019.¹⁰ A subsequent and convincing study published in mid January 2020 by Bellingcat/PAX using remote sensing and open-source investigation¹¹ found – after having systematically assessed satellite-generated images – that the initial oil spots began appearing on and around the pipeline between September 8 and September 15, 2019.

⁹ See for example Winnie Cirino: After 2 Weeks, South Sudan Oil Leak Contained. VOA, South Sudan in Focus, October 7, 2019; <https://www.voanews.com/africa/south-sudan-focus/after-2-weeks-south-sudan-oil-leak-contained>; and

Agence France Presse: South Sudan warns of more oil spills after pipeline rupture, October 8, 2019; <https://www.monitor.co.ug/News/World/South-Sudan-warns-of-more-oil-spills-after-pipeline-rupture/688340-5302816-format-xhtml-6chs3fz/index.html>

¹⁰ Winnie Cirino: After 2 Weeks, South Sudan Oil Leak Contained. VOA, South Sudan in Focus, October 7, 2019; <https://www.voanews.com/africa/south-sudan-focus/after-2-weeks-south-sudan-oil-leak-contained>

¹¹ Wim Zwijnenburg: Black Gold Burning: In Search of South Sudan's Oil Pollution, www.bellingcat.com, January 23, 2020; sub-headline: "2019 September Spills At Unity Oilfield", <https://www.bellingcat.com/news/africa/2020/01/23/black-gold-burning-in-search-of-south-sudans-oil-pollution/>

Photographs began appearing in social media during this period. The photos very probably are of oil spill 1. However – as there were no GPS data available of the places photographed – conclusive proof that they were incontrovertibly the places of the oil spill incidence detected by remote reconnaissance, still had to be delivered.

4.1 Findings of satellites-based reconnaissance

The following images were provided by the EO browser maintained on sentinel-hub.com. The images are of the same area on the map. Each of the images was taken at a different date. The method of depiction is 'Sentinel-2BL1C' "False Color".

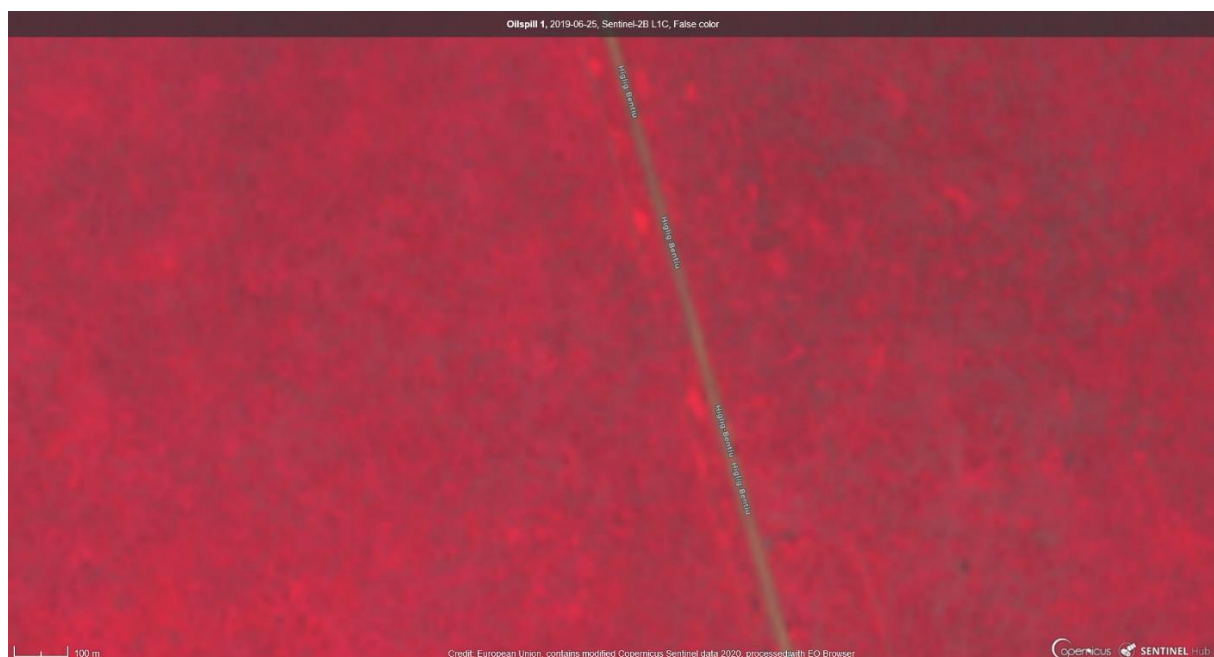


Figure 5: Image from June 25, 2019. It shows what the area around the intact pipeline looks like. This serves a benchmark for future events.

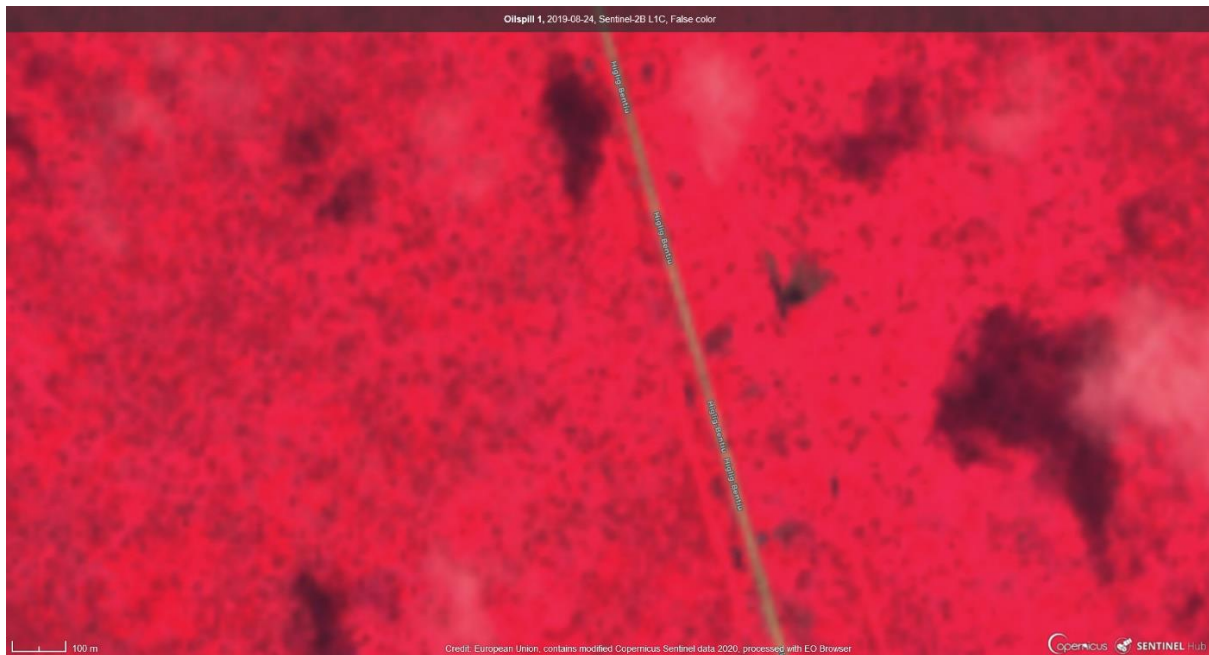


Figure 6: Image from August 24, 2019. It provides the initial indications of a possible oil spill. It is found to the right (to the east) of the road and somewhat above the middle of the image. It shows what might well be oil spreading along the pathway of the pipeline. Appearing to the northeast is a streak of an irregular shape. It starts spreading.

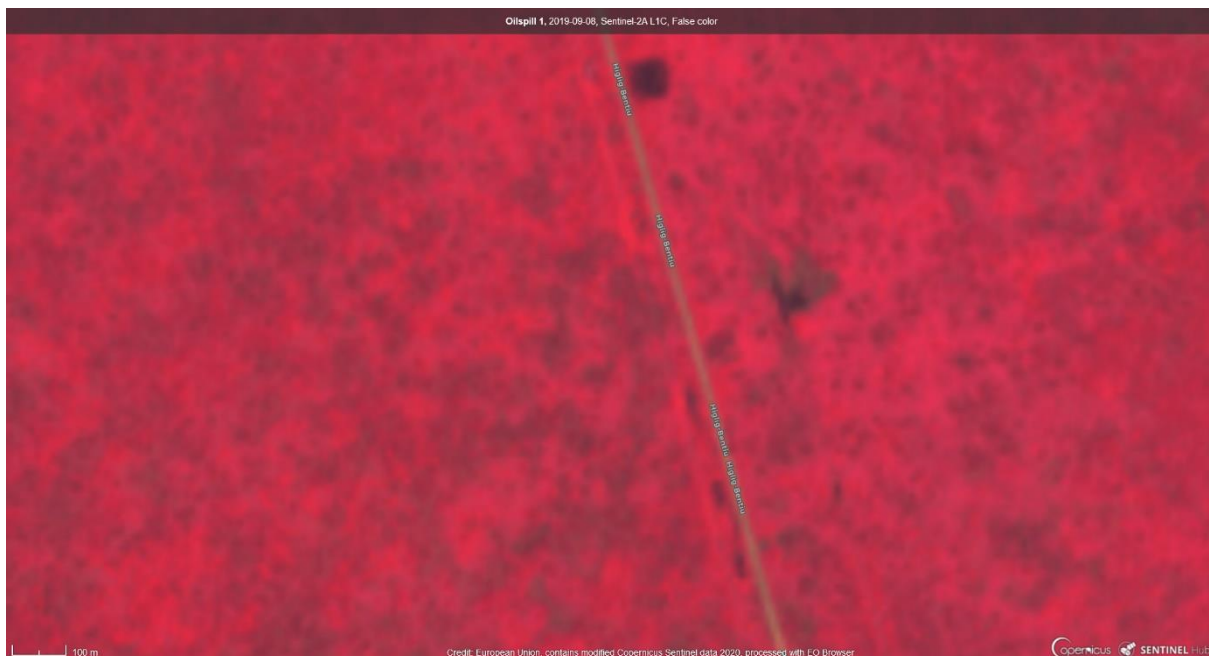


Figure 7: Image from September 8, 2019. The streak flaring towards the northeast continues to slightly grow.

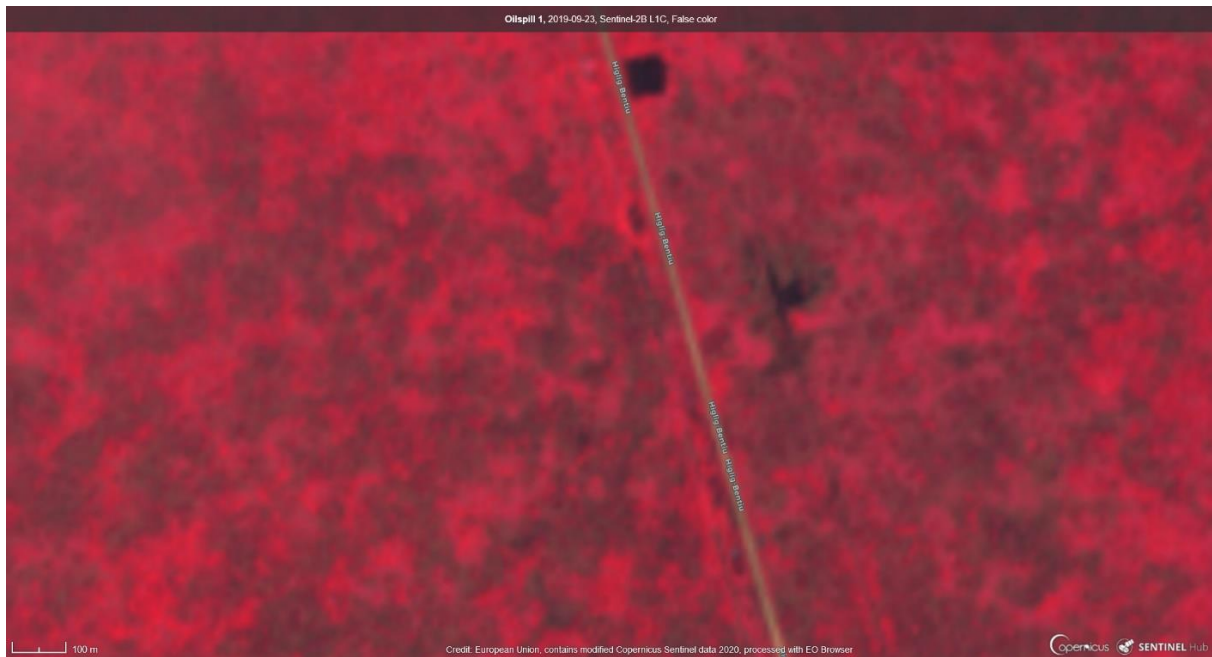


Figure 8: Image from September 23, 2019: The spot has spread southwards and along the surface of the pipeline's path.

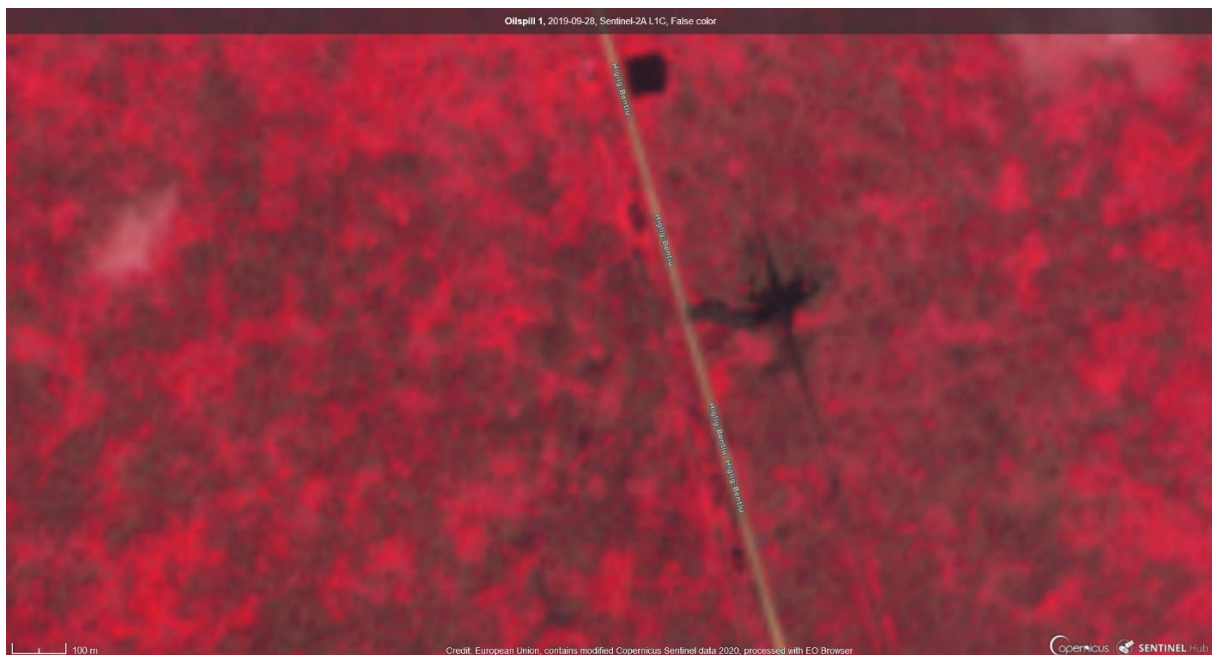


Figure 9: Image from September 28, 2019. It shows massive spreading in all directions. The expanse of the surface contaminated has reached the road. It was possibly at this point in time that the oil spill was discovered by passersby, who consequently and incorrectly assumed that the spill had begun on September 25th. An attempt to map the expanse of the

area contaminated yielded an estimate of some 10,000 m². The assumption that the layer thickness of oil amounts to a mere 20 centimeters and that it covers the entire expanse of contamination gives rise to the following calculation: some 12,500 barrels of oil – equivalent to some two million liters – have been already spilled.

In remarks made on October 2019, Awow Daniel Chuang, South Sudan's minister of petroleum and mining, stated the area contaminated came to 400 m² and the oil spilled due to the rupture came to 2,000 barrels (= 318,000 liters).¹² The satellites-generated images and the measurements and calculations based on the satellite imagery refute the plausibility of this view.

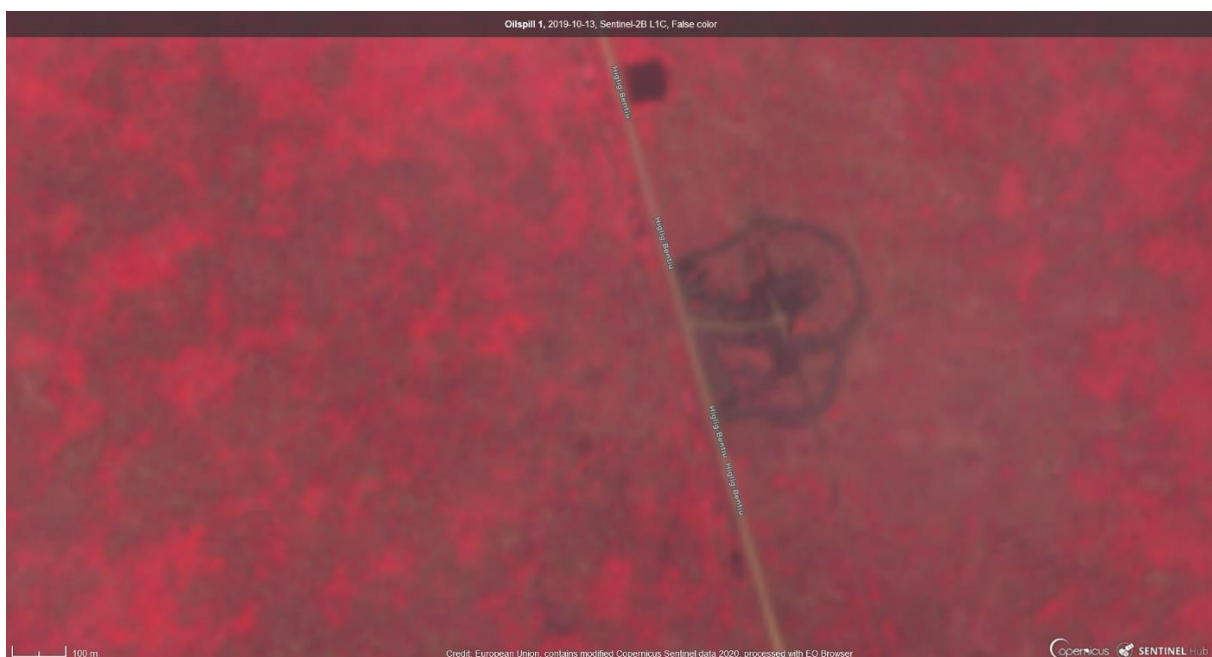


Figure 10: Image from October 13, 2019. The oil consortium is obviously busy repairing the pipeline. The first step is to have created a perimeter – made out of unidentified material – around the area affected. An access way has been laid from the road to the middle of the area. It can be used by heavy equipment.

¹² Agence France Presse: S. Sudan warns of more oil spills after pipeline rupture. 07.10.2019
<https://www.france24.com/en/20191007-s-sudan-warns-of-more-oil-spills-after-pipeline-rupture>

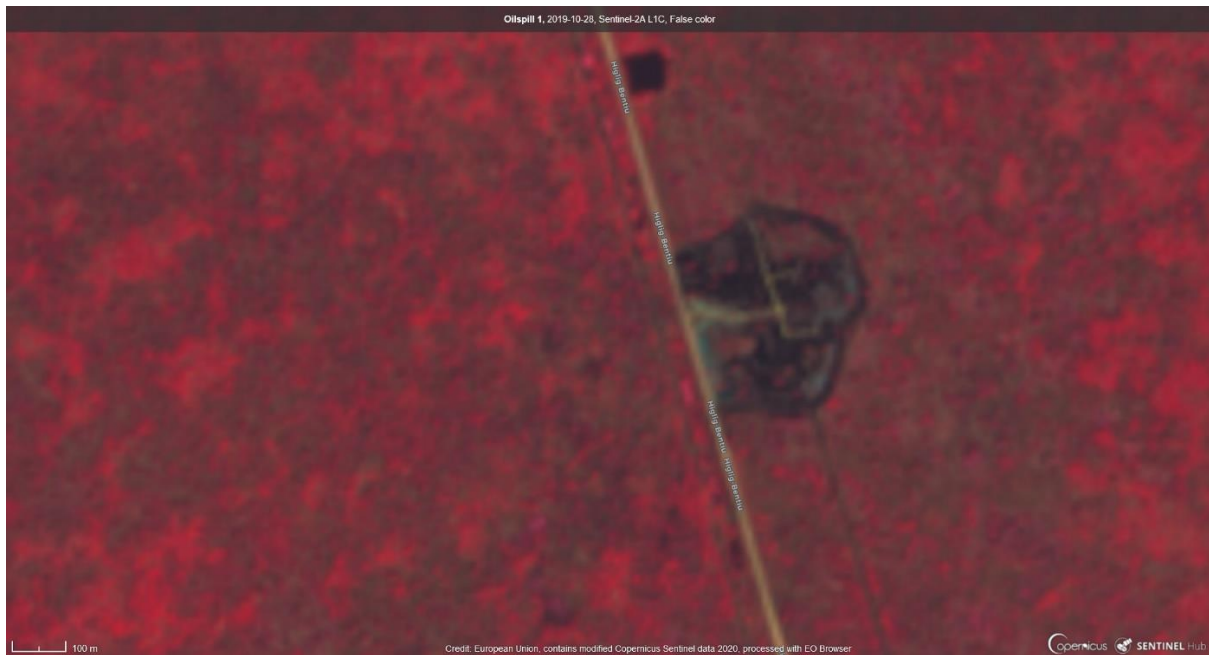


Figure 11: Image from October 28, 2019. This was the point of time of the conclusion of the changes made in structures and detectable via Sentinel-2 satellite images. The roads used by heavy equipment have been extended.

The above images constitute a highly plausible depiction of the incidence of an oil spill. The pipeline was subsequently repaired by the oil consortium responsible for it. This plausibility notwithstanding, it was necessary to verify the spill's occurrence. This was done by conducting an on-site investigation.

4.2 Findings of the on-site investigation

An on-site investigation of oil spill 1, which had been detected via the satellites-generated images, was conducted in December 2019¹³.



Figure 12: Comprised in the on-site investigation was the incorporation of the GPS data: N 9°36'54.8\";

¹³ To protect the identities of the investigating personnel, the precise date of investigation is known by the author but not being disclosed.



Figures 13 and 14: The area comprising oil spill 1 is large in size and is contaminated with oil. This is subsequent to the “remedial” measures performed by the oil consortium. What is obviously taking place: the oil spilled could not be completely disposed of by December 2019. Straw was apparently thrown on to the oil-saturated surface. This may have possibly been an attempt to bind the oil. Located to both the right and left of the S-shaped tree are at least six black containers. They have most probably been filled with oil wastes.



Figure 15: Detailed photograph of the banks of oil spill 1. Clearly visible are the oil and the straw brought in to deal with it.



Figure 16: Detailed photograph of the banks of oil spill 1. Clearly visible are the oil and the straw brought in to deal with it.



4.3 Summary: oil spill 1

Remote reconnaissance revealed that around August 24, 2019, a rupture in the main pipeline of export took place. This rupture was repaired some time during mid-October 2019. A calculation of the area of contamination put its size to be some 10,000 m². The assumption of a layer thickness of oil of a mere 20 cms over the entire surface of contamination yielded an oil spill amounting to some 12,500 barrels or some 2 million liters of oil.

The on-site investigation of December 2019 clearly confirmed that the area that had been suspected to be the site of an oil spill and identified using satellites-generated images was in fact actually such. This pipeline rupture caused a large-sized expanse of oil contamination. A proper cleaning-up of the area affected has not been done until the date of the on-site-investigation.

Even if the pipeline has by now been repaired, the large-sized area of contamination has still to be cleansed of oil and its wastes, which in turn, have to be disposed of properly.

5 Oil spill 2

Oil spill 2 has yet to be publicly documented and reported on. The oil spill is located at the place designed by the GPS coordinates N 9°33'33.16"; E 29°38'42.85".

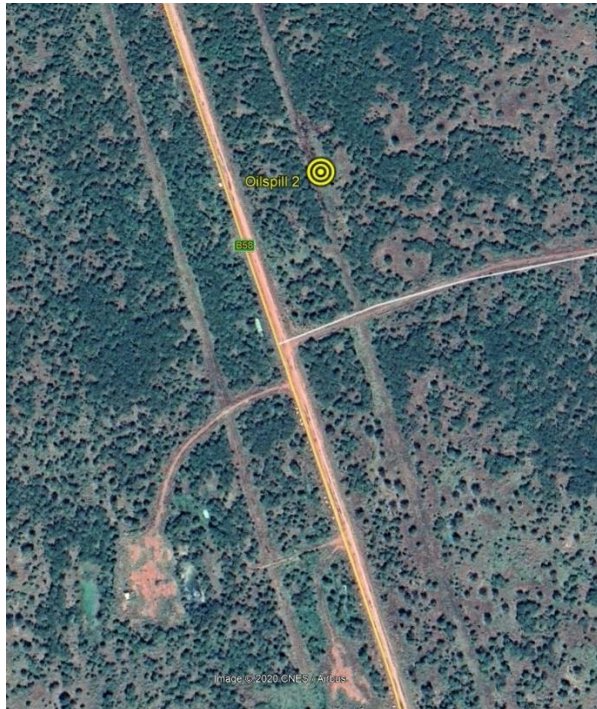


Figure 17 shows the location of oil spill 2 shortly after the suspected break of the pipeline. This high-resolution image was dated November 1, 2019 (GoogleEarth).

The oil spill is located 33.5 kilometers north of Rubkona and close to the road to Heglig. Oil spill 2 is located some 6.5 kilometers south of oil spill 1.

5.1 Findings of satellites-based reconnaissance

The following images were provided by the EO browser maintained on sentinel-hub.com. Each of the images is of the same area. Each was taken at a different date. The method of depiction is 'Sentinel-2BL1C' "False Color".

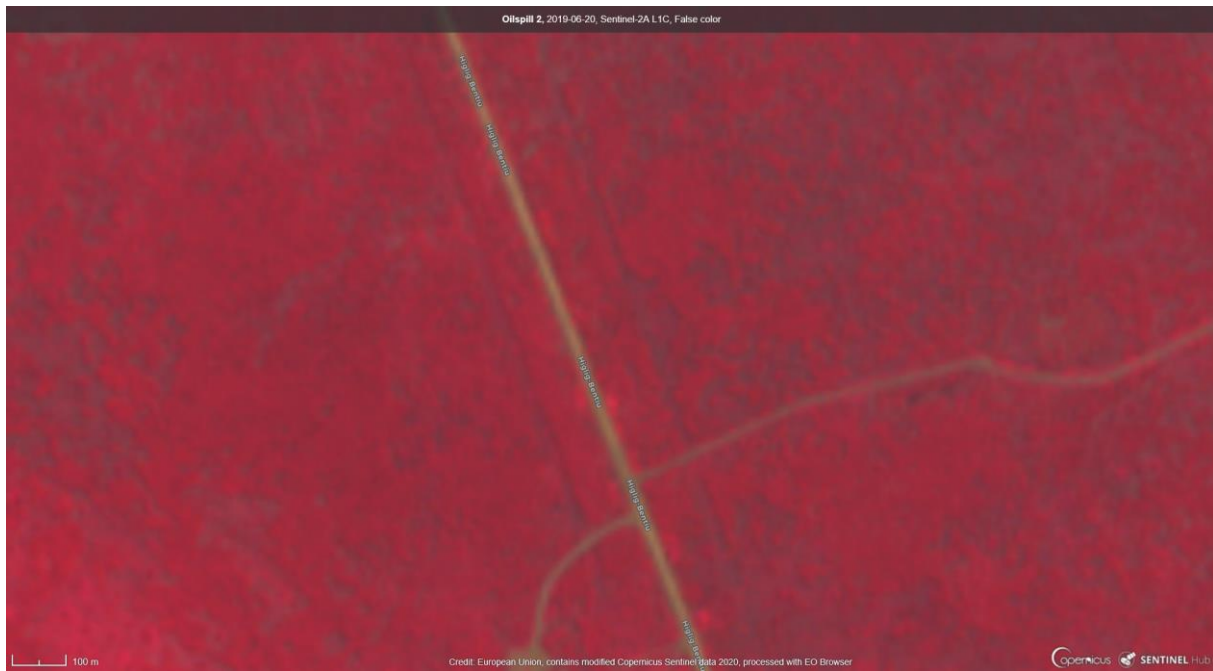


Figure 18: Image from June 20, 2019. It shows the undamaged pipeline, and thus serves as a point of reference.

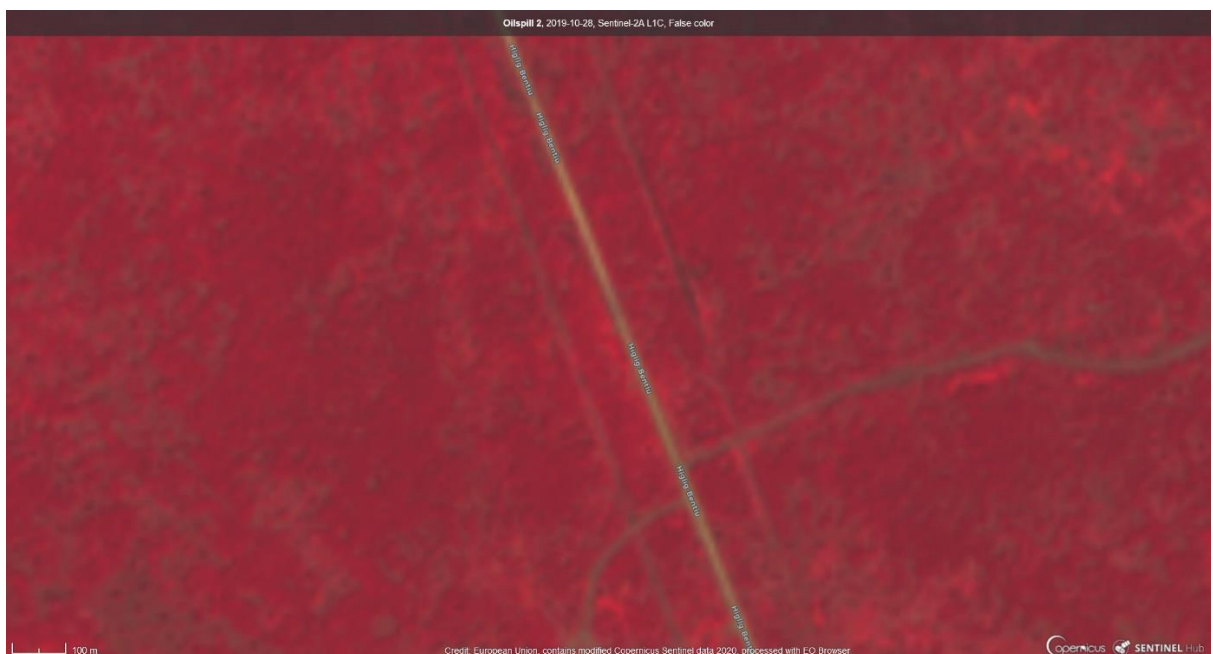


Figure 19: Image from October 28, 2019. The area of initial investigation is found to the right (to the east) of the road. The area is somewhat above the middle of the image. What the image shows: something that might be oil is spreading on the surface and along the course of the pipeline. A streak – small at the beginning – is spreading irregularly towards to the east.



Figure 20: Image from December 7, 2019. It shows streaks spreading towards the northeast and southwest.

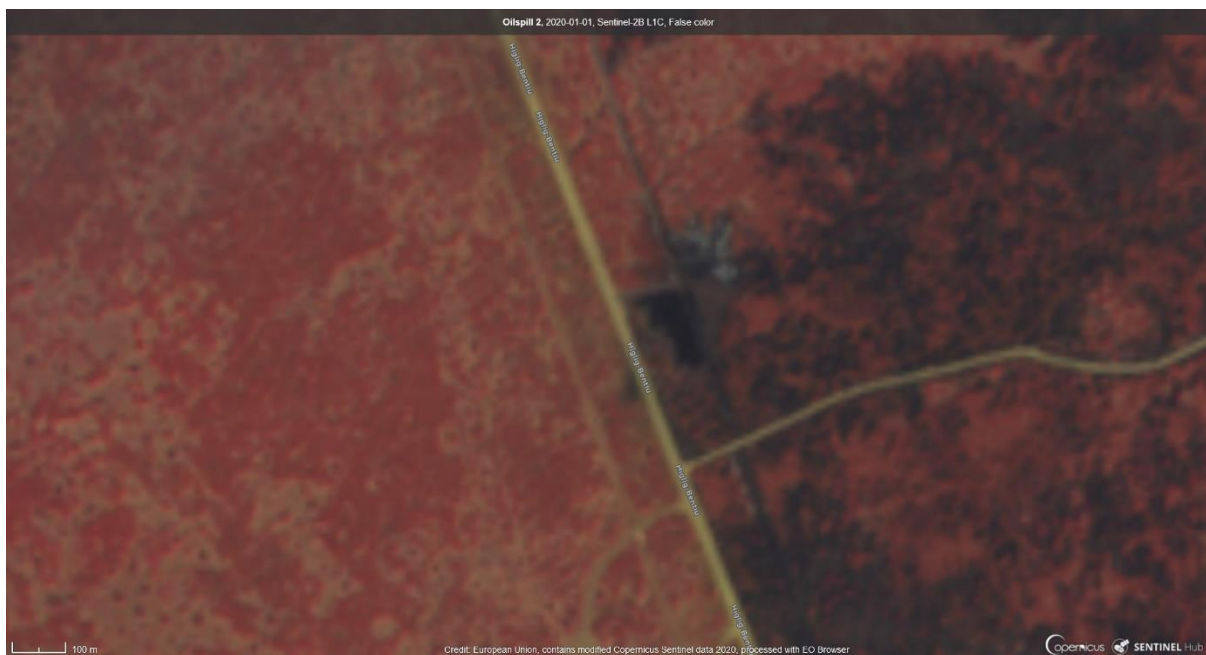


Figure 21: Image from January 1, 2020. Massive spreading towards the southwest is being joined by an already visible expansion towards the northeast.

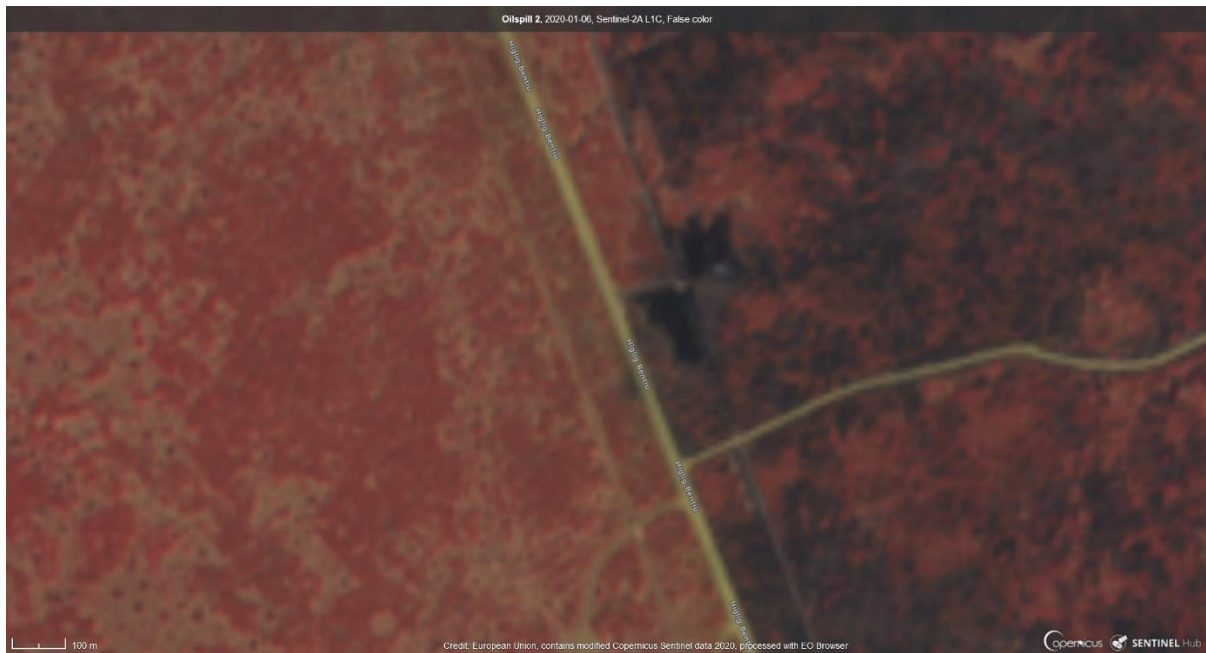


Figure 22: Image from January 6, 2020. Massive spreading towards northeast.

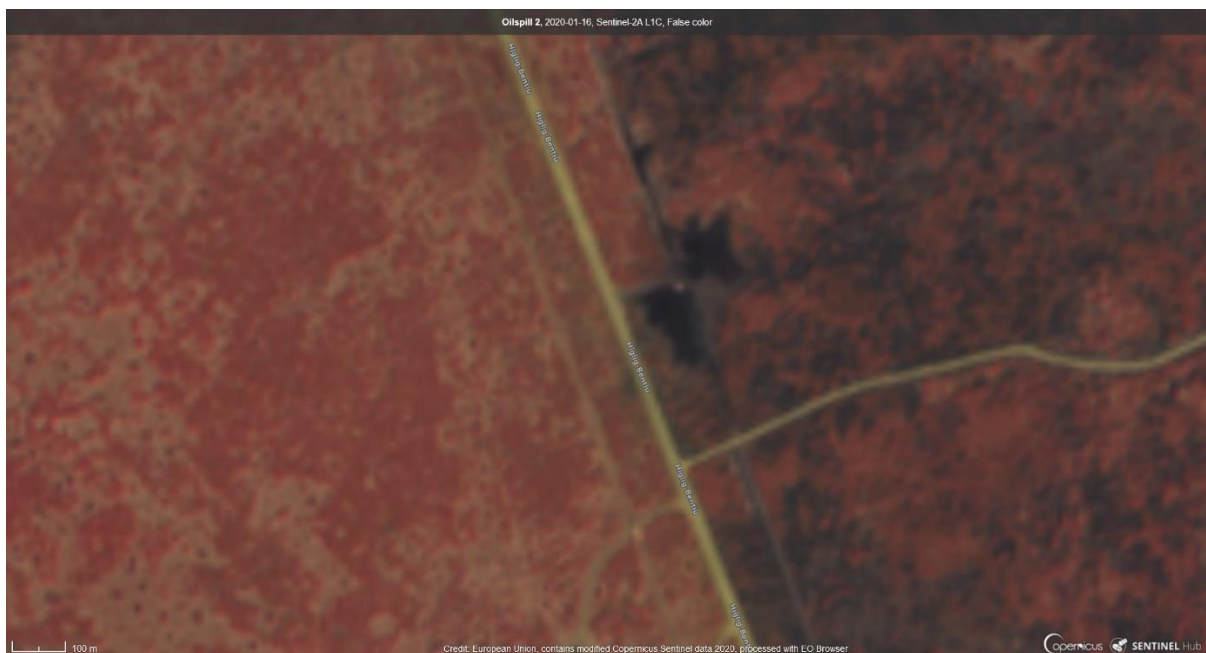


Figure 23: Image from January 16, 2020. Additional black spot spreading along the surface of the pipeline's path toward the north. Image shows the greatest expansion of the area of contamination. A basic measurement reveals the expanse to be around 20,000 m². The assumption of a layer thickness of oil of a mere 20 cms over the entire surface of contamination yielded a calculated oil spill amounting to some 25,000 barrels or some 4 million liters of oil.

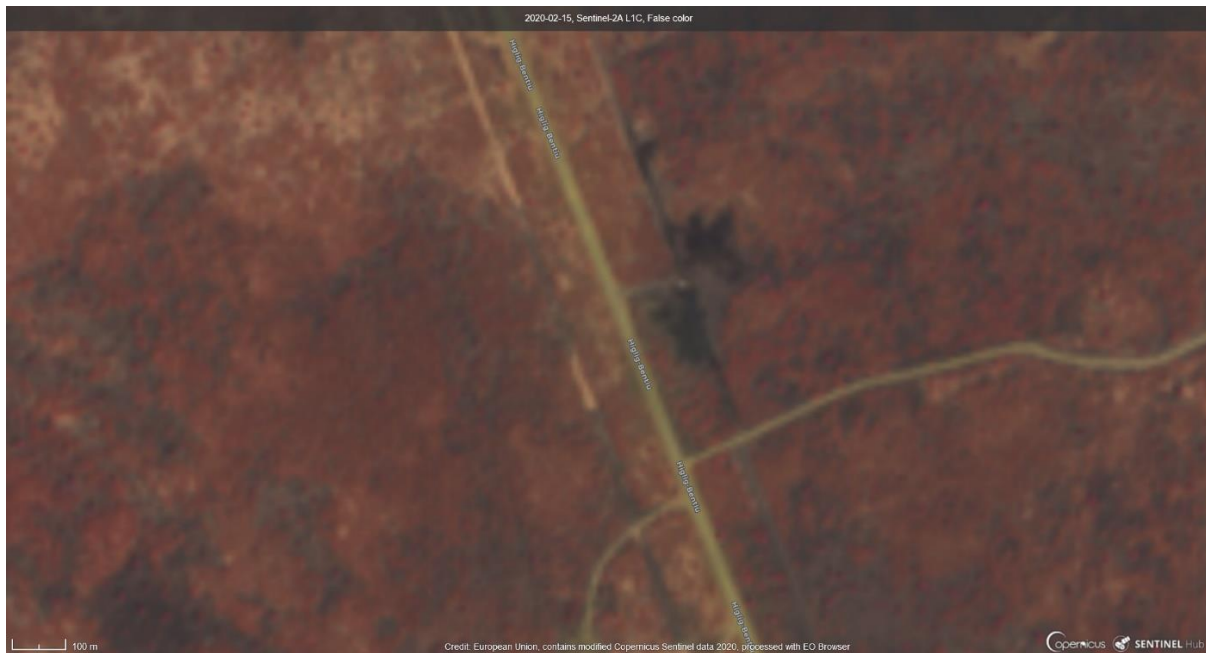


Figure 24: Image from February 15, 2020. Recognizable is a reduction of the area of contamination. Two possible reasons can be identified: repair and remedial measures included the removal of oil – or the spreading of soil over the oil-saturated surface.

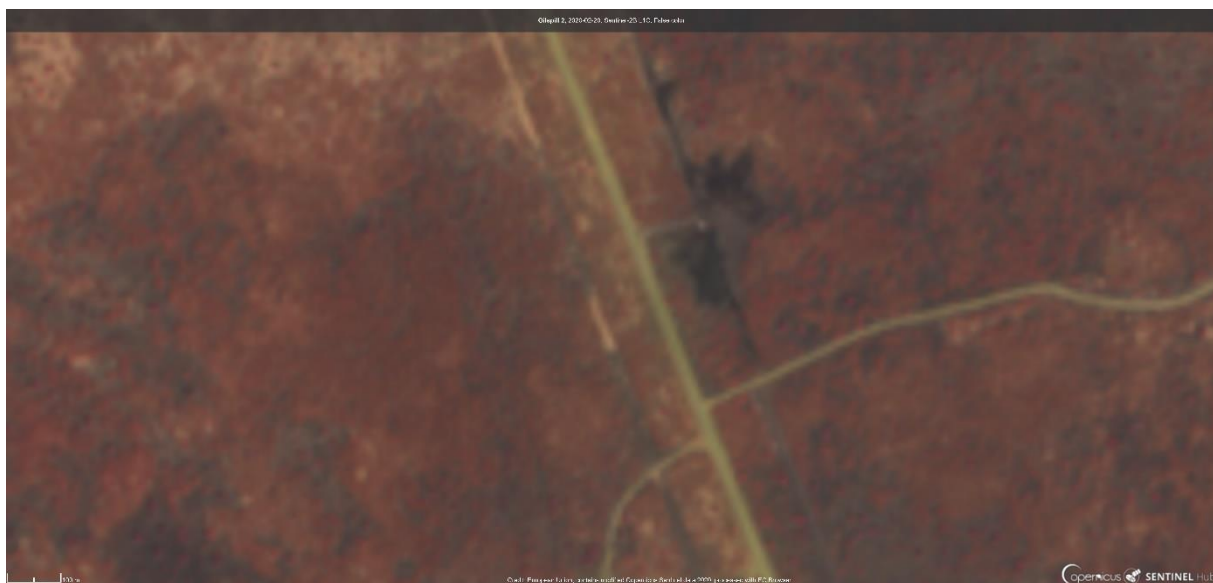


Figure 25: Image from February 20, 2020. Situation remains essentially unchanged from February 15, 2020.

The images above constitute a highly plausible depiction of an oil spill. This plausibility notwithstanding, it was necessary to verify this apparent case of contamination by conducting an on-site investigation.

5.2 Findings of the on-site investigation

An on-site investigation was carried out in February 2020¹⁴ of the oil spill 2 that had been detected via satellite reconnaissance.



Figure 26: The on-site investigation comprised the incorporation of the GPS data: N 9°33'36.6"; E 29°38'44.0" – proof that the on-site investigation was taking place precisely at oil spill 2, the area indicated by satellites-generated images.



Figure 27: A first overview of part of the expanse of oil spill 2. It shows that a large part of it was excavated, and that the remaining surface was worked upon by heavy equipment. Much of the soil was obviously stripped from the ground and shoved together. This caused mounds of earth – much of comprised of black, oil-saturated soil – to be visible throughout the entire site. The images show the tracks of a bulldozer. Highly noticeable is that oil is seeping through the tracks' imprint. This means either that (1) dry soil was deposited upon

¹⁴ The exact data is known to the author but not being divulged, so as to protect the identities of the investigating personnel.

the oil-contaminated area – or (2) the removal of earth from the surface didn't go deep enough to collect all of the oil – obviously of a great amount - lurking below the surface. This oil keeps on seeping through to the surface, or rising to such upon the exerting of pressure.



Figure 28: As of the time of the on-site investigation, heavy equipment was still to be found on the site of oil spill 2. Bulldozers were used to remove a layer of the soil and to shove it into mounds. Noticeable are the various colors of the soil in the mounts. The black piles are presumably comprised of oil-saturated earth.



Figure 29: A further photograph that shows the large scale excavation of the uppermost layer of soil.



Figure 30: This close-up is clearly of oil-saturated clumps of earth.



Figure 31: This photograph shows a crack in the surface with an expanse of some 30 cm x 40 cm. This has enabled the emergence of a puddle of oil. Its surface is some 10 cms below the edge of the surface. This photograph gives rise to the conclusion that the oil in this area at least was not removed and disposed of, but, rather, simply covered with earth. A “rod test” shows that the liquid’s viscosity is that of oil.



Figure 32: This close-up also shows oil that has risen to the surface, upon which it is dispersing.



Figure 33: This close-up of the ground shows that oil has risen to the surface. The use of a “rod test” reveals that the liquid’s viscosity is that of oil.



Figure 34: Breaking through the top of the ground with a rod shows that oil and oil saturated earth is to be found some 5 cms below the surface.



Figure 35: A piece of what is probably a metal pipe was found on the site of oil spill 2. This could have been left by those carrying out repairs of the pipeline.

5.3 Summary: oil spill 2

Remote reconnaissance of oil spill 2 revealed that a further rupture of the main pipeline of oil export took place around October 28, 2019. This rupture took place some 6.5 kilometers to the south of oil spill 1. Calculations of the area of contamination yielded an area affected of some 20,000 m². The assumption of a layer thickness of spilled oil of a mere 20 cms over the entire surface of contamination yielded a calculated oil spill amounting to some 25,000 barrels or some 4 million liters of oil.

The on-site investigation of February 2020 clearly confirmed that the apparent case of large-expanse oil spillage indicated by satellites-generated image actually took place, and that it was caused by a further rupturing of the pipeline. All facts on hand indicate that the attempt was made to conceal this oil spill by heaping earth at least on part of the oil-contained surface. These purely “cosmetic” measures do not of course in any way constitute a professional disposing of the contaminated materials.

The repairing of the rupture in the pipeline – should it have taken place – still leaves a large expanse of oil-contaminated surface and materials to be cleansed, remediated and disposed of. A proper cleaning-up of the area affected has not been done until the date of the on-site-investigation.



6 Summary

The 20-inch pipeline of oil export is one of the two linking the oil fields located to the north and south of Bentiu and Heglig, South Sudan. These pipelines are the prime conduits for South Sudan's exporting of crude oil. South Sudan is absolutely dependent upon oil revenues. The long shut-downs of oil production and thus transport have also caused the pipeline to become dilapidated and subject to breakdowns. Sign of Hope teamed up remote sensing and on-site investigations to document the facts that the two ruptures in the pipeline caused the contamination with oil and wastes of a total area of some 30,000m². Calculations peg the amount of oil spilled to be some 37,500 barrels – or some 6 million liters of oil.

Remote reconnaissance revealed that around August 24, 2019, a rupture in the main pipeline of export took place. This rupture was repaired some time during mid-October 2019. A calculation of the area of contamination put its size to be some 10,000 m². The assumption of a layer thickness of oil of a mere 20 cms over the entire surface of contamination yielded an oil spill amounting to some 12,500 barrels or some 2 million liters of oil.

The on-site investigation of December 2019 clearly confirmed that the area that had been suspected to be the site of an oil spill and identified using satellites-generated images was in fact actually such. This pipeline rupture caused a large-sized expanse of oil contamination. A proper cleaning-up of the area affected has not been done until the date of the on-site-investigation. Even if the pipeline has by now been repaired, the large-sized area of contamination has still to be cleansed of oil and its wastes, which in turn, have to be disposed of properly.

Remote reconnaissance of oil spill 2 revealed that a further rupture of the main pipeline of oil export took place around October 28, 2019. This rupture took place some 6.5 kilometers to the south of oil spill 1. Calculations of the area of contamination yielded an area affected of some 20,000 m². The assumption of a layer thickness of spilled oil of a mere 20 cms over the entire surface of contamination yielded a calculated oil spill amounting to some 25,000 barrels or some 4 million liters of oil.

The on-site investigation of February 2020 clearly confirmed that the apparent case of large-expanse oil spillage indicated by satellites-generated image actually took place, and that it was caused by a further rupturing of the pipeline. All facts on hand indicate that the attempt was made to conceal this oil spill by heaping earth at least on part of the oil-contained surface. These purely "cosmetic" measures do not of course in any way constitute a professional disposing of the contaminated materials. The repairing of the rupture in the pipeline – should it have taken place – still leaves a large expanse of oil-contaminated surface and materials to be cleansed, remediated and disposed of. A proper cleaning-up of the area affected has not been done until the date of the on-site-investigation.



The second pipeline rupture took place some 6.5 kms away from the first one – and immediately after the latter had been repaired. This means that it is to be assumed that the pipeline can no longer manage the pressure of the oil being transported in it. Further oil pipeline ruptures are to be expected – and thus further grave devastation of the environment with very negative effects on the health of human beings – should the pipeline not be immediately shut down.

For that reason, Sign of Hope demands the immediate shutting down of the dilapidated main pipeline of oil exports. Doing such will preclude the further massive damaging of human and environmental health. The leaks from production and transport facilities join with the improper disposal of produced water and drilling fluids in constituting a further source of the poisoning of the water consumed by the 600,000 people living in and around the oil fields in South Sudan.

Sign of Hope is emphasizing its demands for a proper and comprehensive disposal of the oil and associated wastes issuing from pipeline ruptures. Each of these disposals is to be adequately documented and disclosed.

By pursuing its remote reconnaissance and on-site investigations, Sign of Hope will set forth its monitoring of the oil industry in South Sudan.