BEFORE THE NATIONAL GREEN TRIBUNAL EASTERN ZONAL BENCH SITTING AT KOLKATA

MEMORANDUM OF APPLICATION

F. No:-19021220012920 20

(Under Section 18(1) read with Sections 14 and Section 15 of National Green Tribunal Act, 2010).

Original Application No. ..... 43 of 2020. EZ

Between:

Bonani Kakkar

...Applicant

And

Oil India Limited and ors.

...Respondents

PAPER-BOOK

ADVOCATE FOR THE APPLICANT: SHRUTI AGARWAL

SYNOPSIS

The Applicant is filing the present application being deeply concerned, as an environmentalist, about the damage and destruction being caused by the Respondents to the entire biodiversity of the Dibru Saikhowa National Park and Biosphere Reserve.

The Applicant is constrained to file the instant application on account of the failure of the Respondent Authorities to prevent and/or stop the blow-out that took place from Baghjan 5 oil well of the Respondent no. 1 on 27/05/2020 and the resultant fire, both of which have caused and are continuing to cause irreparable damage to the entire biodiversity of the region.

At around 10: 30 AM on 27/05/2020, the producing well of Baghjan 5 under Baghjan Oilfield of Oil India Limited in Tinsukia district of Assam, started releasing natural gas in an uncontrolled manner. Baghjan 5 is one of the 23 oil wells set up by OIL to tap into the large gas reserves in the Brahmaputra basin situated right next to the eco-sensitive zone of the Dibru-Saikhowa National Park.

According to news reports, the gas, which is a mix of propane, methane, propylene and other gases, is flowing with the wind, and condensate is mostly falling on bamboo, tea gardens, banana trees and betel nut trees. The condensate is falling into the Dibru-Saikhowa National Park, which records over 40 mammals, 500 species of birds, 104 fish species, 105 butterfly species and 680 types of plants, including a wide variety of rare orchids. It harbours the tiger, elephant, wild buffalo, leopard, hoolock gibbon, capped langur, slow loris, Gangetic dolphin, besides critically endangered bird species such as the Bengal Florican, White Winged Duck, Greater Adjutant stork, White rumped vulture, slender-billed vulture as well as the rare and endemic Black-breasted parrotbill.

The blow-out and fire are harming, and will continue to harm the entire biodiversity of the region. As per news reports, the animals of the Dibru-Saikhowa National Park have come under threat. Blowouts leave behind huge volumes of residue as gas condensate. Gas condensate is a mixture of chemical compounds that are toxic for land, vegetation and known carcinogens. It can turn soil infertile, kill vegetation and leave people battling with cancer. The ill-effects of the blowout are not just limited to health hazards, but also severely affect their livelihood. Agriculture, fishing and animal rearing are the main occupation of most people in this area, but the oil has seeped into the soil, and will render fields infertile Also, contaminated grasslands and water bodies are killing the fish and domestic animals.

It is clear that due to the violations, negligence and lapses of the Respondent No. 1, the entire human community as well as the bio-diversity of the entire Dibru Saikhowa Biosphere Reserve is under the threat of grave and irreparable damage and a substantial question relating to environment has arisen in the present matter, and this Tribunal has the jurisdiction to decide the same under Section 14 of the NGT Act.

This Tribunal has jurisdiction under Section 15(1)(a) of the Act to provide relief and compensation to the victims of the aforementioned environmental damage.

Under Section 15(1)(b) and 15(1)(c) this Tribunal has the jurisdiction to provide for restitution of property damaged and for restitution of the environment for such area or areas as the Tribunal may think fit. This Tribunal under Section 15(1)(c) and Section 20 of the Act has been cloaked with a wide range of powers with respect to restoration of the environment.

The principles of sustainable development, precautionary principle and polluter pays, propounded by the Hon'ble Supreme Court by way of multiple judicial pronouncements, have now been embedded as a bedrock of environmental jurisprudence under Section 20 of the NGT Act. Therefore, wherever the environment and ecology are being compromised and jeopardized, the Tribunal can apply Section 20 for taking restorative measures in the interest of the environment.

LIST OF DATES

27/05/2020	At around 10: 30 AM on 27/05/2020, the producing well of Baghjan 5 under Baghjan Oilfield of Oil India Limited in Tinsukia district of Assam, started releasing natural gas in an uncontrolled manner. Baghjan 5 is one of the 23 oil wells set up by OIL to tap into the large gas reserves in the Brahmaputra basin situated right next to the eco-sensitive zone of the Dibru-Saikhowa National Park.
09/06/2020	The inflammable natural gas was being released from the said well uncontrollably since 27/05/2020, and, on 09/06/2020, the well caught fire. The blow-out has already claimed the lives of two fire-fighters so far.
Continuing	The blow-out and fire are harming, and will continue to harm the entire biodiversity of the region. As per news reports, the animals of the Dibru-Saikhowa National Park have come under threat. Blowouts leave behind huge volumes of residue as gas condensate. Gas condensate is a mixture of chemical compounds that are toxic for land, vegetation and known carcinogens. It can turn soil infertile, kill

	vegetation and leave people battling with cancer. The ill-effects of the blowout are not just limited to health hazards, but also severely affect their livelihood. Agriculture, fishing and animal rearing are the main occupation of most people in this area, but the oil has seeped into the soil, and will render fields infertile Also, contaminated grasslands and water bodies are killing the fish and domestic animals. It is clear that due to the violations, negligence and lapses of the Respondent No. 1, the entire human community as well as the bio-diversity of the entire Dibru Saikhowa Biosphere Reserve is under the threat of grave and irreparable damage and a substantial question relating to environment has arisen in the present matter, and this Tribunal has the jurisdiction to decide the same under Section 14 of the NGT Act.

INDEX

BEFORE THE NATIONAL GREEN TRIBUNAL EASTERN ZONAL BENCH SITTING AT KOLKATA

MEMORANDUM OF APPLICATION

(Under Section 18(1) read with Sections 14 and Section 15 of National Green Tribunal Act, 2010).

Original Application No. .....43..... of 2020. / ez

Between:

1. Bonani Kakkar, of 11 Hindustan Park, Kolkata 700029.

...Applicant

And

1. Oil India Limited, having its Registered Office at Duliajan-786602, Assam, through its Chairman & Managing Director.
   oilindia@oilindia.in, nef@oilindia.in
2. Ministry of Petroleum and Natural Gas, Government of India, having its Office at Shastri Bhavan, New Delhi- 110 001, through its Secretary.
   sec.png@nic.in
3. Ministry of Environment, Forest and Climate Change, having its Office at Indira Paryavaran Bhawan, Jorbagh Road, New Delhi- 110003, through its Secretary.
   secy-moef@nic

...Respondents

1. The address of the Applicant is as given above for service of the notices of this application.
2. The addresses of the Respondents are as given above for service of the notice of this application.
3. The Applicant above-named begs to present the Memorandum of Application on the ground set out hereunder:

Facts in Brief:

Shanti Agarwal.

1. The Applicant is an environmentalist with a strong record of involvement in environmental issues over three decades. She has served on the National Board of Wildlife of the Government of India, as well as on the Governing Council of the Bombay Natural History Society. Her role in protecting the East Kolkata Wetlands was in part responsible for the enactment of the East Kolkata Wetlands (Management & Conservation) Act and her membership of the statutorily constituted East Kolkata Wetlands Management Authority. As part of WWF India she planned and implemented major educational programmes in schools and rural areas, as well actively participated in action to reduce wildlife crime. As Founder-President of the NGO, PUBLIC (People United for Better Living in Calcutta), she has petitioned the Calcutta High Court, the National Green Tribunal and the Supreme Court on several matters of environmental importance.

2. The Applicant is filing the present application being deeply concerned, as an environmentalist, about the damage and destruction being caused by the Respondents to the entire biodiversity of the Dibru Saikhowa National Park and Biosphere Reserve.

3. The Applicant is constrained to file the instant application on account of the failure of the Respondent Authorities to prevent and/or stop the blow-out that took place from Baghjan 5 oil well of the Respondent no. 1 on 27/05/2020 and the resultant fire, both of which have caused and are continuing to cause irreparable damage to the entire biodiversity of the region.

4. The Respondent no.1, Oil India Limited (OIL) is a state-owned PSU and is under the administrative control of the Ministry of Petroleum and Natural Gas, Govt. of India (Respondent No. 2).

5. At around 10: 30 AM on 27/05/2020, the producing well of Baghjan 5 under Baghjan Oilfield of Oil India Limited in Tinsukia district of Assam, started releasing natural gas in an uncontrolled manner. Baghjan 5 is one of the 23 oil wells set up by OIL to tap into the large gas reserves in the

Brahmaputra basin situated right next to the eco-sensitive zone of the Dibru-Saikhowa National Park.

6. According to news reports, the gas, which is a mix of propane, methane, propylene and other gases, is flowing with the wind, and condensate is mostly falling on bamboo, tea gardens, banana trees and betel nut trees. The condensate is falling into the Dibru-Saikhowa National Park, which records over 40 mammals, 500 species of birds, 104 fish species, 105 butterfly species and 680 types of plants, including a wide variety of rare orchids. It harbours the tiger, elephant, wild buffalo, leopard, hoolock gibbon, capped langur, slow loris, Gangetic dolphin, besides critically endangered bird species such as the Bengal Florican, White Winged Duck, Greater Adjutant stork, White rumped vulture, slender-billed vulture as well as the rare and endemic Black-breasted parrotbill.

7. The Dibru Saikhowa National Park and Biosphere Reserve lies at a point where three rivers, Siang, Dibang and Lohit, meet to form the river Brahmaputra. The park is a mosaic of wetlands, swamps, grasslands and forests and hosts several critically endangered bird species and endangered Gangetic Dolphin. Already, there have been press reports of deaths of the Gangetic river dolphin—India's national aquatic animal, and a variety of fish and birds due to the gas blow-out. Also domestic animals are dying in large numbers because oil has contaminated grasslands and water bodies. As per news reports, it is feared that the oil spill and the fire will lead to the local extinction of many endangered species of flora and fauna and the environmental damage will be near irreversible.

8. It is reported that the oil has spilled into the Dibru river and a film of oil has been seen in the river that passes through the Maguri-Motapung wetlands (an Important Bird and Biodiversity Area) and runs along the Dibru Saikhowa National Park. The Maguri-Motapung Wetland is located less than 10 km from Dibru-Saikhowa National Park and is a part of the Dibru-Saikhowa Biosphere Reserve (DSBR). The wetland is host to some of the most vulnerable species of birds such as Swamp Francolin, Marsh Babbler, Greater

Adjutant and Pallas's Fish-eagle, Red-headed Vulture and White-bellied Heron, and over 80 species of fish The River Dibru is a tributary of River Lohit, which becomes Brahmaputra in the lower reaches. Brahmaputra river system is home to Gangetic dolphins.

9. The inflammable natural gas was being released from the said well uncontrollably since 27/05/2020, and, on 09/06/2020, the well caught fire. The blow-out has already claimed the lives of two fire-fighters so far.

10. The blow-out and fire are harming, and will continue to harm the entire biodiversity of the region. As per news reports, the animals of the Dibru-Saikhowa National Park have come under threat. Blowouts leave behind huge volumes of residue as gas condensate. Gas condensate is a mixture of chemical compounds that are toxic for land, vegetation and known carcinogens. It can turn soil infertile, kill vegetation and leave people battling with cancer. The ill-effects of the blowout are not just limited to health hazards, but also severely affect their livelihood. Agriculture, fishing and animal rearing are the main occupation of most people in this area, but the oil has seeped into the soil, and will render fields infertile Also, contaminated grasslands and water bodies are killing the fish and domestic animals.

11. As per news reports, the blow-out was a result of inadequate adherence to safety norms. Further, the efforts to contain the gas blow-out were extremely unsatisfactory. A news article published in www.scroll.in, on 12/06/2020, titled "*The story of the Assam gas leak- and the intricate operation to plug it*" reported that:

"Independent observers alleged other lapses too. Prodip Kumar Saikia, who was one of the consultants hired by Oil Limited when the well was discovered in 2004, said there should have been another reinforcement plug in addition to the cement casing. "I know a thing or two about this well," he said. "It's an extremely high-pressure well and you can't rely on just the chemical plug [the cement shield]; you need a mechanical plug too."

Finally, a functionary of the company's workers' union blamed privatisation. "We are accused of being too slow because we put safety first," he said. "This is a textbook case of a private contractor being in a rush to finish the job."

...

"Next, the alleged containment lapses. Once disaster struck, did Oil India do enough?

A retired geologist with 32 years of experience of working at the company said the simple answer was no. The reasons for this, he said, were structural. Oil India Limited, he alleged, had failed to develop the required in-house expertise to deal with blowouts, despite having suffered because of this in the past.

...

A current employee agreed: "Yes, it is our deficiency."

...

There are other allegations that the accident could have been tackled differently. According to Saikia, Oil India Limited's mitigation strategy was flawed till very recently. They treated it as a solely gas leak, but the blowout had also released a large amount of condensate, or low-density hydrocarbon liquids. These spewed out liquids required different containment measures, he explained."

12. According to news reports, a Wildlife Institute of India (WII) team, which has conducted a preliminary survey from 29/05/2020 to 04/06/2020, has found several dead fish and insects that may have died due to oxygen depletion in the water following the oil spill. The survey found the presence of at least five endangered Gangetic dolphins in the 20-kilometre stretch of the Lohit river, a tributary of the Brahmaputra river, indicating that the species will be at grave risk from the ongoing spill. The team has collected samples of tissue and blubber from a Gangetic dolphin carcass found in Maguri beel, which is being analysed for presence of various contaminants.

13. According to a news report published in www.hindustantimes.com on 11/06/2020 titled *"Put new gas wells on hold until OIL has a disaster plan: Wildlife Institute"*, the toxic fumes and oil coating have universally

affected the area's flora and fauna. The contaminants and oil are continuing to be released in the surrounding areas and immediate steps are needed to contain this spillover. The released toxins are known to have long-term persistence in soils and sediments, which will not only affect current life conditions, but due to sustained release, pose a serious health risk for a longer-term.

It is further reported therein that:

"The WII team has also gathered from the local residents that OIL authorities did not have a mitigation plan for such a disaster"

This is spite of it being recommended by a 2013 report by the Standing Committee of the National Board for Wildlife which says, "we recommend that OIL provide a legal undertaking to the DCF, Tinsukia Wildlife Division, about their environmental safeguards and specify the nature and extent of their liability in case of accidents involving oil spillage/gas leakage into the Maguri-Motapung wetland. The DCF must share this undertaking widely with the public."

The WII has consequently suggested a comprehensive impact assessment of their field operations in the biodiversity-rich Dibru Saikhowa National Park.

"It'd be not only prudent but also essential for the well-being of all life forms that the approved new wells and further explorations in this area should be initiated only after a thorough investigation of potential impact, as well as evaluating disaster handling capabilities in place, with appropriate technology and trained manpower," the report added.

WII has flagged that the environmental impacts of the oil spill will linger on for long.

This is because an oil well blowout spews hundreds of chemical particles in the air, water, and soil. The hydrocarbon component comprises hundreds of organic compounds, many of which are hazardous when released

into the environment such as polycyclic aromatic hydrocarbons (PAHs) that are also carcinogenic.

Local residents have complained of severe difficulty in breathing, headache and nausea to the visiting WII team, who, too, experienced similar symptoms due to the oil spill.

The entire landscape, including the wetland, is coated in layers of oil, according to the team.

The area, where blowout has taken place, is rich in biodiversity and one of the important remaining refuges for several endangered and range-restricted species, the report said.

DSBR is home to tiger, elephant, wild buffalo, leopard, hoolock gibbon, capped langur, slow loris, Ganges River dolphin besides critically endangered bird species such as the Bengal florican, white-winged wood duck, greater adjutant stork, white-rumped vulture, slender-billed vulture as well as the very rare and endemic black-breasted parrotbill.

The report has also pointed out that the entire region has undergone frequent changes in morphology due to recurrent earthquakes, which are known to have caused extensive landslides and ground fissuring, making the area disaster-prone."

Copies of press reports reporting the gas-leak from the producing well of Baghjan 5 under Baghjan Oilfield of Oil India Limited in Tinsukia district of Assam on 27/05/2020 and its aftermath are annexed herewith as **Annexure A/1.**

Copy of the report of Wildlife Institute of India is annexed herewith as **Annexure A/2.**

Grounds:

13. For that it is clear that due to the violations, negligence and lapses of the Respondent No. 1, the entire human community as well as the bio-diversity of the entire Dibru

Saikhowa Biosphere Reserve is under the threat of grave and irreparable damage and a substantial question relating to environment has arisen in the present matter, and this Tribunal has the jurisdiction to decide the same under Section 14 of the NGT Act.

14. For that this Tribunal has jurisdiction under Section 15(1)(a) of the Act to provide relief and compensation to the victims of the aforementioned environmental damage.

15. For that under Section 15(1)(b) and 15(1)(c) this Tribunal has the jurisdiction to provide for restitution of property damaged and for restitution of the environment for such area or areas as the Tribunal may think fit. This Tribunal under Section 15(1)(c) and Section 20 of the Act has been cloaked with a wide range of powers with respect to restoration of the environment.

16. For that the principles of sustainable development, precautionary principle and polluter pays, propounded by the Hon'ble Supreme Court by way of multiple judicial pronouncements, have now been embedded as a bedrock of environmental jurisprudence under Section 20 of the NGT Act. Therefore, wherever the environment and ecology are being compromised and jeopardized, the Tribunal can apply Section 20 for taking restorative measures in the interest of the environment.

17. For that in *M.C. Mehta* v. *Kamal Nath* [*M.C. Mehta* v. *Kamal Nath*, (2000) 6 SCC 213] , it was held that any disturbance to the basic environment, air or water, and soil which are necessary for life, would be hazardous to life within the meaning of Article 21 of the Constitution. In such cases "polluter pays principle" can be invoked to restore the environment and to control it. It held:

"10. In the matter of enforcement of fundamental rights under Article 21, under public law domain, the Court, in exercise of its powers under Article 32 of the Constitution, has awarded damages against those who have been responsible for disturbing the ecological balance either by running the industries or any other activity which has the effect of causing pollution in the environment. The Court

while awarding damages also enforces the "POLLUTER-PAYS PRINCIPLE" which is widely accepted as a means of paying for the cost of pollution and control. To put in other words, the wrongdoer, the polluter, is under an obligation to make good the damage caused to the environment."

18. For that the acts and/or omissions of the Respondents are failing to prevent and/or to stop the blow-out that took place from Baghjan 5 oil well of the Respondent no. 1 on 27/05/2020 and the resultant fire, both of which have caused and are continuing to cause irreparable damage to the entire biodiversity of the region, is a violation of the right to clean and pollution free environment guaranteed to every citizen under Article 21 of the Indian Constitution.

19. For that the Respondents have failed to observe the mandate under Article 48 A of the Constitution which enjoins upon the State a commitment to protect and improve environment.

Limitation:

20. The applicant states that the present application is filed within the prescribed period of limitation under the NGT Act, 2010, as the gas-leak took place from Baghjan 5 oil well of the Respondent no. 1 on 27/05/2020 and the resultant fire and damage to the ecology is still continuing.

21. The Applicant states that unless orders as prayed for herein are granted and if there be any delay in passing any interim order, the instant application will become infructuous as the damage caused by the acts of the Respondents would become permanent, irreparable and irreversible. The balance of convenience and inconvenience heavily weighs in favour of the Applicant in passing the orders as prayed for herein.

22. The Applicant states that this application is being made bonafide and for the ends of justice.

Akunti Hazarika.

23. The Applicant craves leave to add, to amend, to alter or modify the instant application and/or to file any supplementary petition/affidavit, if so advised.

PRAYERS:

In the circumstances it is humbly prayed that your Lordship would graciously be pleased to pass the following orders:

a. An order constituting an independent committee of experts, monitored by this Tribunal, to visit the site and submit a report to this Tribunal within a reasonable period on the following amongst other aspects of the disaster:

i. The sequence of events;
ii. Causes of failure and persons and authorities responsible therefor;
iii. Violations on the part of Oil India Limited with regard to environmental safeguards and disaster management preparedness;
iv. Extent of damage to life, human and non-human; public health; and environment - including, water, soil; air;
v. Remedial measures to prevent recurrence;
vi. Any other incidental or allied issues found relevant.

b. An order directing Oil India Limited to carry out a safety audit with the help of independent experts of all their installations in Assam;

c. An order directing Oil India Limited to submit a report elaborating on the compliance of the environmental clearance conditions and their Environmental Management and Disaster Management Plans;

d. An order directing Oil India Limited to carry out clean-up operations forthwith;

Shruti Agarwal

e. An order directing Oil India Limited to provide relief and compensation to victims of the gas leak and fire;

f. An order directing Oil India Limited to ensure and carry out appropriate restitution and restoration of the damaged environment in consonance with Section 15(1) and Section 20 of the National Green Tribunal Act, 2010;

f. Interim order directing Oil India Limited to forthwith deposit an initial amount that this Hon'ble Tribunal deems fit considering the prima-facie material as to loss of lives, public health and environment and the extent of the damage caused;

g. Interim order directing the Respondents to forthwith discontinue and cease all drilling activities in and around the eco-sensitive zone of the Dibru-Saikhowa National Park till the disposal of this Application and/or till such time as this Tribunal deems fit;

h. Such other order and/or orders as this Tribunal may deem fit in the interests of justice.

AND FOR THIS ACT OF KINDNESS, THE APPLICANT AS IN DUTY BOUND, SHALL EVER PRAY.

Filed by:

Date: 13th June, 2020
Place: Kolkata

SHRUTI AGARWAL,
Advocate

VERIFICATION:

I, Bonani Kakkar, wife of Pradeep Kakkar, aged about 70 years, of 11 Hindustan Park, Kolkata 700029, do hereby verify that the contents of paras 1 to 13 are true to my personal knowledge and paras 14 to 24 believed to be true on legal advice and that I have not suppressed any material fact.

Date: 13th June, 2020

Place: Kolkata

Bonani Kakkar

Signature of the applicant

Identified by me

Advocate

ANNEXURE A/1

13

Put new gas wells on hold until OIL has a disaster plan: Wildlife Institute

The report has recommended that the approved new wells and further exploration in the area should be put on hold until OIL authorities put in place their disaster-handling capabilities.

INDI... pdated: Jun 11, 2020 18:00 IST

Jayashree Nandi
Hindustan Times


Put new gas wells on hold until OIL has a disaster plan:


Uttarakhand man found dead in suspicious


India mentions Pakistan's GDP in stinging reply to


PM Modi to launch auction for commercial coal


Helicopters land heavy equipment to expedite work of

The report said a WII team conducted the survey from May 29 to June 4 and found several dead fish and insects that may have died due to oxygen depletion in the water following the oil spill.(AP)


Put new gas wells on hold until OIL has a disaster plan:


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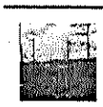
Maguri-Motapung is located less than 10 km from Dibru-Saikhowa National Park and is a part of the Dibru-Saikhowa Biosphere Reserve (DSBR).

The report, which has been submitted to the Union Ministry of Environment, Forest and Climate Change (MoEFCC) and seen by HT, has recommended that the approved new wells and further exploration in the area should be put on hold until OIL authorities put in place their disaster-handling capabilities.

The report said a WII team conducted the survey from May 29 to June 4 and found several dead fish and insects that may have died due to oxygen depletion in the water following the oil spill.

The survey found the presence of at least five endangered Gangetic dolphins in the 20-kilometre stretch of the Lohit river, a tributary of the Brahmaputra river, indicating that the species will be at grave risk from the ongoing spill. The team has collected samples of tissue and blubber from a Gangetic dolphin carcass found in Maguri beel, which is being analysed for presence of various contaminants.

"The toxic fumes and oil coating has universally affected the area's flora and fauna. The contaminants and oil are continuing to be released in the surrounding areas and immediate steps are needed to contain this spillover. The released toxins are known to have long-term persistence in soils and


Put new gas wells on hold until OIL has a disaster plan:

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India mentions Pakistan's GDP in stinging reply to

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plan for such a disaster, and consequently suggested a comp[illegible] impact assessment of their field operations in the biodiversity-rich Dibru Saikhowa National Park.

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"It'd be not only prudent but also essential for the well-being of all life forms that the approved new wells and further explorations in this area should be initiated only after a thorough investigation of potential impact, as well as evaluating disaster handling capabilities in place, with appropriate technology and trained manpower," the report added.

WII has flagged that the environmental impacts of the oil spill will linger on for long.

This is because an oil well blowout spews hundreds of chemical particles in the air, water, and soil. The hydrocarbon component comprises hundreds of organic compounds, many of which are hazardous when released into the environment such as polycyclic aromatic hydrocarbons (PAHs) that are also carcinogenic.

Local residents have complained of severe difficulty in breathing, headache and nausea to the visiting WII team, who, too, experienced similar symptoms due to the oil spill.

The entire landscape, including the wetland, is coated in layers of oil, according to the team.

The area, where blowout has taken place, is rich in biodiversity and one of the important remaining


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winged wood duck, greater adjutant stork, white-rumped vulture, slender-billed vulture as well as the very rare and endemic black-breasted parrotbill.

The report has also pointed out that the entire region has undergone frequent changes in morphology due to recurrent earthquakes, which are known to have caused extensive landslides and ground fissuring, making the area disaster-prone.

On May 11, the MoEFCC had granted environmental clearance to OIL for extension pf drilling and testing of hydrocarbons at seven locations under Dibru Saikhowa National Park.

"The lowland forests of the region are unique. We've found leakages from other wells as well and they can have long-lasting impacts. We've recommended a thorough assessment of disaster mitigation possibilities before implementing further exploration projects," said Qamar Qureshi, a scientist at WII.

WII will come out with a detailed report on the impact on biodiversity by the end of June.

"The wetland is affected, especially the aquatic species. The national park is slightly away from the accident site. We're waiting for the detailed WII study and response from the Assam forest department. We've already written to them," said Soumitra Dasgupta, additional director-general (wildlife), MoEFCC.


Put new gas wells on hold until OIL has a disaster plan;


Uttarakhand man found dead in suspicious


India mentions Pakistan's GDP in stinging reply to


PM Modi to launch auction for commercial coal


Helicopters land heavy equipment to expedite work of

four weeks," said an OIL spokesperson.

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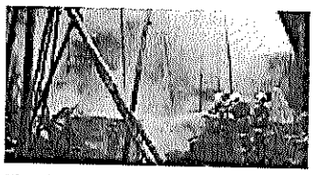
Tags

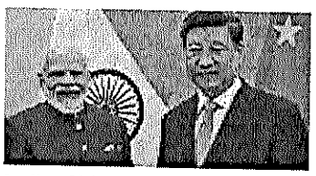
Assam Oil India Limited

top news

Lt Guv Baijal works on plan to scale up Covid-19 beds with community outreach



Fire breaks out at Mumbai's Crawford Market, fire engines at spot



India, China engaged in talks to resolve border standoff in eastern Ladakh: MEA

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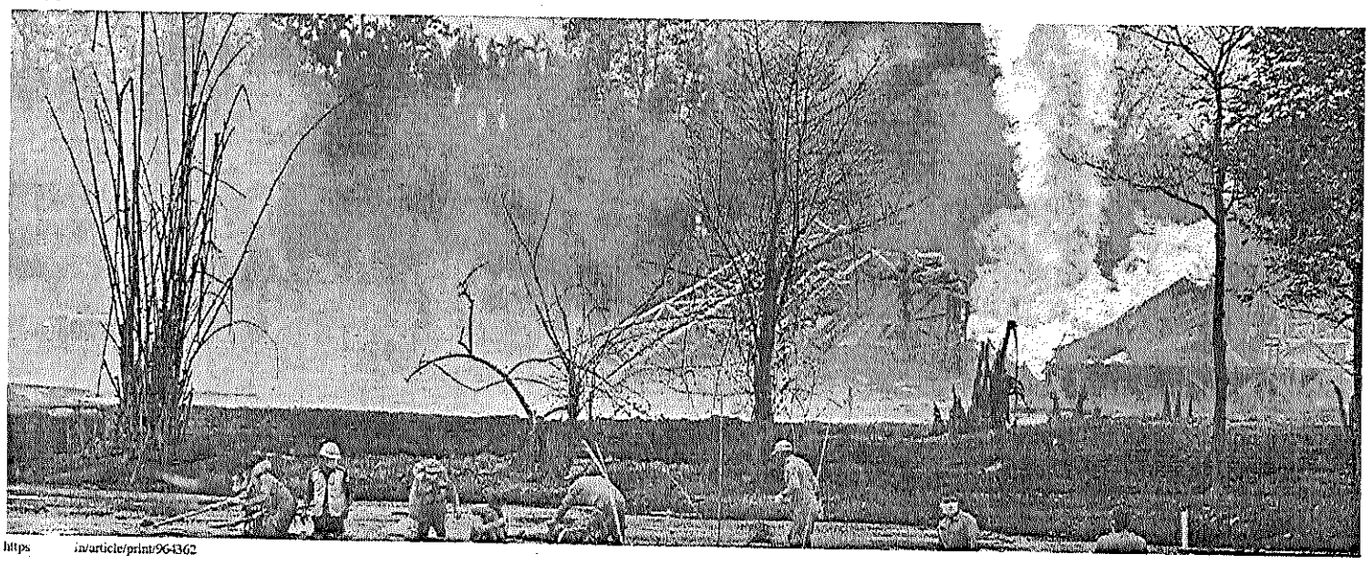
DISASTER MANAGEMENT

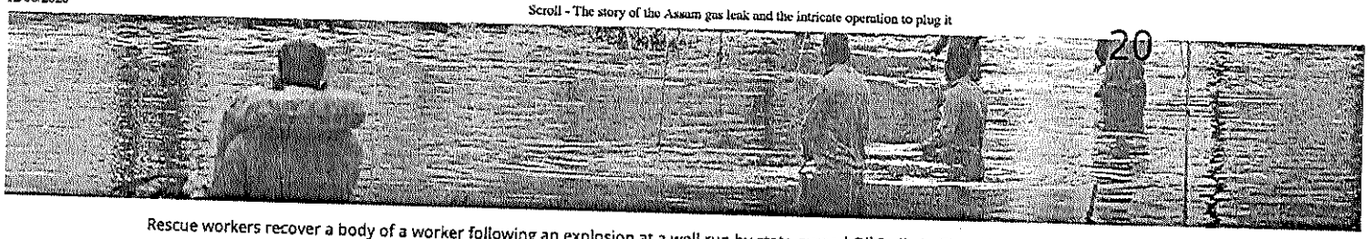
The story of the Assam gas leak – and the intricate operation to plug it

What led to the blowout at the oil well and why is Oil India Limited struggling to snuff it out?

Arunabh Saikia

Yes[illegible]ay · 09:00 am





Rescue workers recover a body of a worker following an explosion at a well run by state-owned Oil India in Tinsukia on June 10. | Biju Boro/ AFP

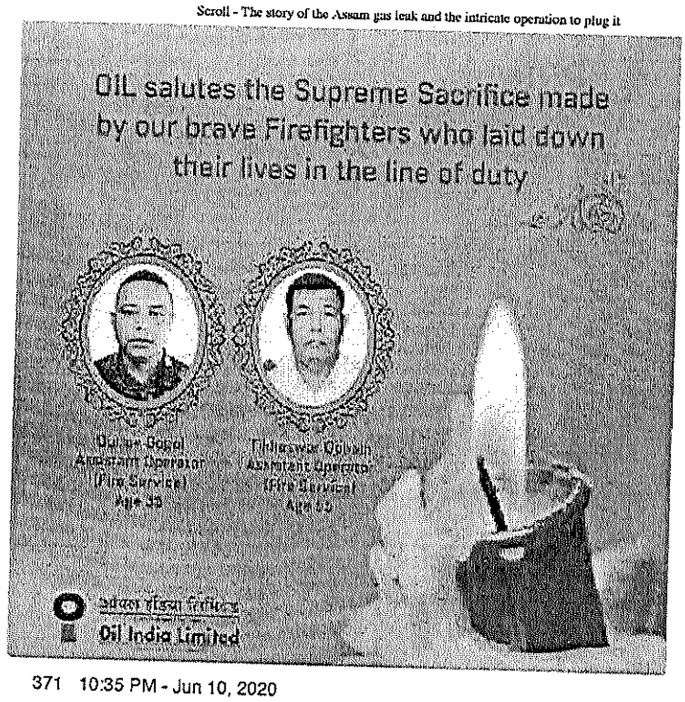
On Tuesday afternoon, the Baghjan oil field in Upper Assam's Tinsukia district, operated by Oil India Limited, burst into flames. The blaze has claimed the lives of two firefighters so far. The loss of land, livelihoods, irreplaceable flora and fauna is yet to be measured in full.

he fire broke out exactly two weeks after a gas well in the area had started leaking gas and condensate uncontrollably. In other words, it was a blowout.

The company has not yet been able to ascertain what exactly sparked the blaze – there were clearing operations going on at the site when the fire broke out. But a blaze is almost inevitable after a blowout: with highly inflammable gas flowing uncontrollably in an area teeming with iron pipes and heavy machinery, all it requires is some friction.

To prevent a fire, Oil India Limited had been maintaining a "water umbrella" by continuously spraying water over the area. "We were lucky that it did not happen earlier," said Oil India Limited's spokesperson Tridiv Hazarika.

> **Oil India Limited**
> @OilIndiaLimited
>
> OIL salutes the Supreme Sacrifice made by our brave firefighters who laid their lives in the line of duty.
>
> Our deepest condolences to the family, friends and relatives of Shri Durlov Gogoi and Shri Tikheswar Gohain.



371 10:35 PM - Jun 10, 2020

126 people are talking about this

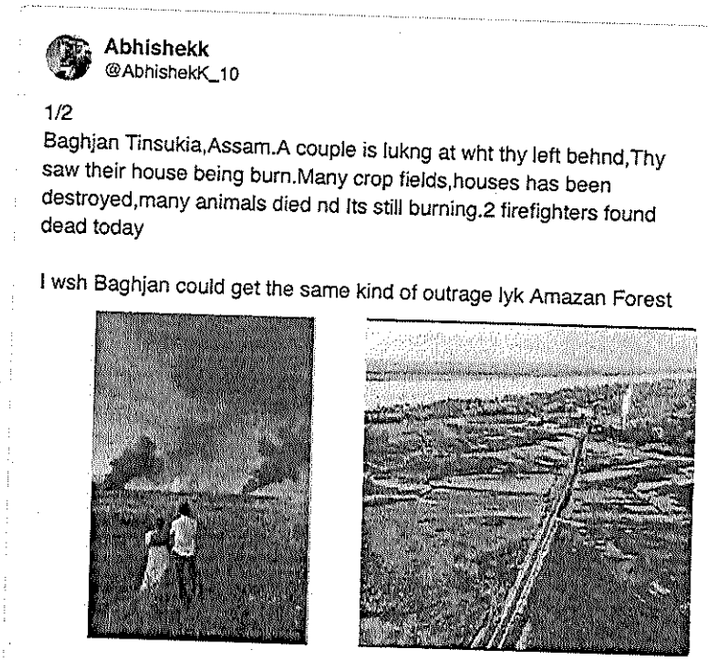
But luck ran out on the afternoon of June 9. So did the patience of people in the adjoining areas, many of whom had spent the last two weeks away from home in relief camps only to see their houses gutted on Tuesday. There have been protests that Oil India Limited claimed were "violent" and hampered their mitigation operations. The Assamese press has been critical, accusing Oil India, the country's second-largest state-owned hydrocarbon exploration and production company, of being casual in its containment efforts. Reactions on social media have been scathing.

The censure has been two-pronged. First, that the blowout was a result of inadequate safety norms. Second, that efforts to contain the blowout have been too little, too late. The company has now said that it could take four more weeks to bring things under control.

Scroll.in spoke to several Oil India Limited officials and independent observers to piece together the events that led up to the blowout and the company's response.

22

Most employees requested anonymity as the company has issued strict orders refraining anyone except the designated spokesperson from talking to the media.



507 9:29 PM - Jun 10, 2020

265 people are talking about this

A 'workover' operation

It began in the last week of May. A team set out to do a "workover" operation at well number five in the Baghjan oil field, on the fringes of the Dibru-Saikhowa National Park. In oil parlance, a workover is a complex, invasive operation to extend the life of a well.

Well number five had been a high performer in earlier times but its yield was starting to get erratic. This called for an intervention. A new sand zone at a different depth in the well had to be targeted for production. Oil India Limited had signed a contract with the Gujarat-based John Energy Limited to carry out the exercise.

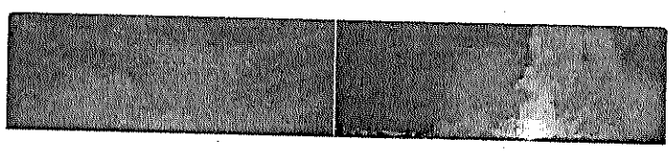
First, as the standard protocol goes, the well was "killed". Extraneous pressure exceeding the pressure at the old production zone was applied using a brine solution. The objective was to prevent gas from rising to the surface.

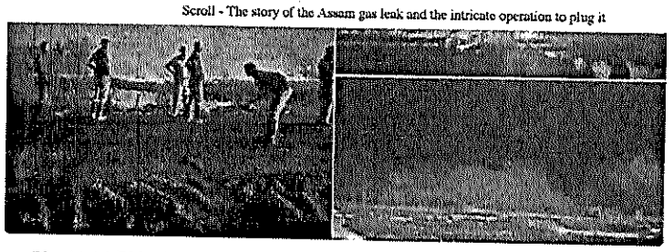
Then, the blowout preventer, a large valve that is mounted on top of the well to keep a tab on the pressure of the gas and to seal it, was installed.

Then began the actual workover operation. A cement barrier was laid to isolate the old producing zone. According to two Oil India Limited employees aware of the operation, cementing work had been completed on May 26.

AIR News Guwahati
@airnews_ghy

Baghjan at 10 pm.
Photo courtesy- Bidyut Kalita , Saurav Raj Konwar#Baghjan
#BaghjanGasLeak





53 11:14 PM - Jun 9, 2020

34 people are talking about this

`epairing while waiting

Then it was time to wait before the new sand zone could be "perforated" with a blast using explosives. "Before perforating, you have to give it some time," said an Oil India employee who has been involved in workover operations. "And when your new perforation target is above the existing zone, the time gap is supposed to be even longer."

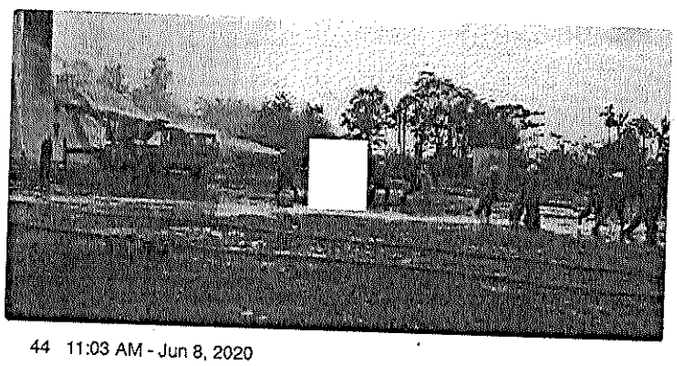
However, the waiting time could be used productively – to carry out repair work. "This is already NPT or non-production time, so it is a good time to do minor repair works instead of closing down the well to do repairs during production time," said the official. "It is standard practice across the oil industry and it is perfectly safe if you wait out a specific time for the cement casing to settle."

In this case, the team at work was assigned to replace the well head, the pressure-containing component at the surface of the well. However, that would mean taking out the blowout preventer first, and relying on the cement plug entirely – yet again, a fairly safe thing to do if the cement plug is solid.

Oil India Limited
@OilIndiaLimited

Baghjan well blowout:

Huge arrangements made by OIL workforce to prevent hazard from blowout.
OIL workforce continuously & dedicatedly pumping water into the Baghjan well since the day of blowout to minimize chances of fire from it.



44 11:03 AM - Jun 8, 2020

15 people are talking about this

Gas gushes out

However, on May 27, as the team took off the blowout preventer and started replacing the oil head, gas started gushing out from the well. The cement plug had failed.

According to a person with over 20 years of experience in the company's chemical department, the standard "cement on waiting" time before a blowout preventer can be removed is 48 hours. "In all likelihood, the cement will set in much less time, but it is best to wait out for 48 hours which they did not seem to have," said the official.

However, the official cautioned against drawing a direct cause-and-effect relationship between the blowout and the allegedly premature opening of the blowout preventer. "These are not linear events," he said. "The BOP had to be removed at some point anyway and maybe the blowout would

have happened later too. All we can say with surety is that the blowout would have not happened the day it did."

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Independent observers alleged other lapses too. Prodip Kumar Saikia, who was one of the consultants hired by Oil Limited when the well was discovered in 2004, said there should have been another reinforcement plug in addition to the cement casing. "I know a thing or two about this well," he said. "It's an extremely high-pressure well and you can't rely on just the chemical plug [the cement shield]; you need a mechanical plug too."

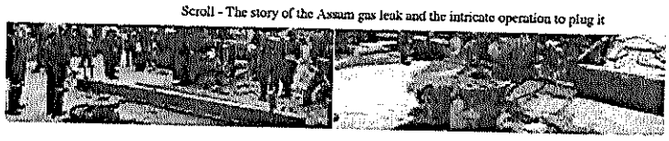
Finally, a functionary of the company's workers' union blamed privatisation. "We are accused of being too slow because we put safety first," he said. "This is a textbook case of a private contractor being in a rush to finish the job."

Tridiv Hazarika, the Oil India spokesperson, declined to address specific allegations. The company had ordered an in-house technical audit, he said. "It could be a machine failure, a process failure, a human error or a combination of the three – let the results of the audit come out," said Hazarika.

Oil India Limited
@OilIndiaLimited

OIL Gas Well Baghjan Blowout

Considerable progress made today in testing of Hydraulic BOP (Blowout Preventer) lander to place the BOP over the well head. Built in-house by OIL Team at Central Workshop , Duliajan with inputs from ONGCL CMT team.



57 7:13 PM - Jun 8, 2020

See Oil India Limited's other Tweets

Containment woes

Next, the alleged containment lapses. Once disaster struck, did Oil India do enough?

A retired geologist with 32 years of experience of working at the company said the simple answer was no. The reasons for this, he said, were structural. Oil India Limited, he alleged, had failed to develop the required in-house expertise to deal with blowouts, despite having suffered because of this in the past.

In 2005, after a blowout in one of its oil wells in Dikom in Upper Assam's Dibrugarh district had taken 45 days and foreign experts to be stabilised, the company set up a unit to deal with such crises. However, both current and former employees alleged the company had invested very little in acquiring cutting-edge equipment and training the unit's personnel. "If you have a dedicated team of your own and provide them real hands-on exposure in other blowout sites, you will be able to at least provide a strong initial response," said the retired geologist. "But over the years, people from this unit have been outsourced to other departments such as creative and production."

The retired geologist said that, while he understood the reluctance of the company to invest huge amounts of money in a "workforce that would remain idle for most of the year", he did not understand why the company had not signed an annual contract with foreign blowout control companies. "You should at least have an MoU in place that mandates experts to arrive in not more than two days using a chartered airplane instead of blaming the pandemic lockdown," he said.

A current employee agreed: "Yes, it is our deficiency."

A house destroyed by the fire at Baghjan oilfield.

Flying in the experts

After the blowout was reported on May 27, the first external experts to arrive were a team from the Oil and Natural Gas Corporation's Nazira unit. They reached the site on May 28, according to Hazarika.

However, three members of ONGC's crisis management team arrived from Vadodara only on the "third or fourth day", said Hazarika.

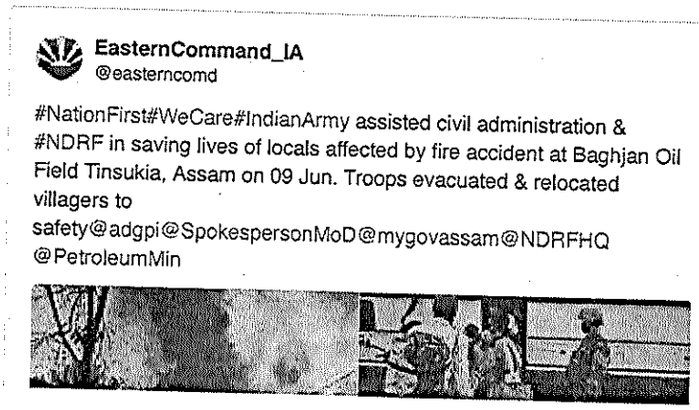
The three–member blowout control experts from Singapore arrived on June 7. "We had started talking to them on the 29th itself," said Hazarika. "But because of the pandemic situation, it took some time for them to get their visa and flight clearances."

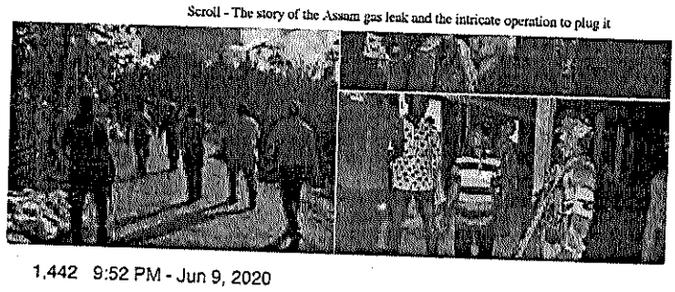
Hazarika said travel restrictions because of Covid-19 had delayed their arrival by around five days.

The spokesperson denied allegations that Oil India had not cultivated enough in-house expertise. "Even if you have n number of people in your own crisis management team, you will not be able to handle a blowout of this proportion," he said. "Why? For the simple reason that you can't simulate a blowout on a computer. To face a blowout, you have to actually face it and learn from it."

Besides, he said, Oil India Limited had purchased several pieces of modern equipment after the 2005 incident. "One must note that neither the Singapore experts nor ONGG have brought in their own equipment; they are using OIL's," he claimed. "Also, there have been n number of blowouts since 2005 and we have been able to control them on our own."

He added, "There is a reason blowout control companies exist – companies 30 times bigger than us, even in the Middle East, have used their services."





1,442 9:52 PM - Jun 9, 2020

232 people are talking about this

Machines in the way

There are other allegations that the accident could have been tackled differently. According to Saikia, Oil India Limited's mitigation strategy was flawed till very recently. They treated it as a solely gas leak, but the blowout had also released a large amount of condensate, or low-density hydrocarbon liquids. These spewed out liquids required different containment measures, he explained.

Yet, Oil India officials overseeing the operation said that all that was possible was being done. "Our first priority was to minimise the damage so we had to clear everything in the area," said an official part of the on-ground mitigation efforts.

That has been a task as it was an active rig and was full of equipment. Movement in metal machines could cause friction and spark a fire.

"There was a huge crane hardly five to ten metres from the well, which meant we could use no machinery – 20-30 of our people pulled it out with their bare hands," the official claimed.

There are several ways to plug a blowout. Oil India Limited aims to place a blowout preventer, which weighs around three tonnes, on the well. For that, a "hydraulic lander" that can dodge obstacles is being made in the company's central workshop in Duliajan.

But there many obstacles. Apart from the cranes and heavy machinery, there stood the drilling mast – a telephone tower-like structure that supports the weight of the drilling pipes and allows them to be lifted in and out of the oil well. "Any contact with the mask would lead to friction

which could lead to ignition," said an official involved in the exercise.

The fire took the mast down on Tuesday. "We will have to admit that it was a big relief," said the official. But there is still a long way to go. "You can't control a blowout of this intensity in a couple of days," he said. "We have to be given the time that it takes."

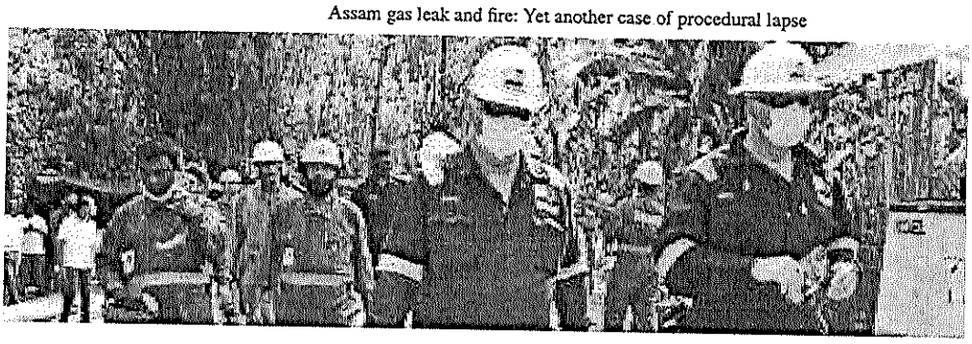
The official, for his part, admitted there had been lapses: "I think it is a big learning for us – we have to just dig out the positives and move on."

POLLUTION
(https://www.downtoearth.org.in/pollution)

Assam gas leak and fire: Yet another case of procedural lapse

A lack of standard operating procedures for handling hazardous materials, no proper training is prevalent in several industries

By Parth Kumar (https://www.downtoearth.org.in/author/parth-kumar-166670)
Last Updated: Thursday 11 June 2020



Assam is a state with a lot of oil and gas reserves. A number of oil and gas wells are found in the state's biodiversity-rich areas. A blowout occurred in a gas well of government-run Oil India Limited (OIL) located at Bhaghjan in Assam's Tinsukia district on May 27, 2020.

John Energy Ltd, a Gujarat-based firm, was conducting operations in the well under the supervision of OIL. The well is in close vicinity to the Dibru-Saikhowa National Park (https://www.downtoearth.org.in/news/blowout-at-oil-india-well-threatens-national-park-in-upper-assam-71464) and the Maguri-Motapung wetlands, areas rich in biodiversity and wildlife.

The well reportedly began emitting condensed oil and natural gas, two days after the leak started. The droplets of condensed oil settled on surfaces in a larger area around the oil well. This included surfaces of nearby water bodies.

Around 650 families, or 2,500 people, were initially evacuated from nearby areas and shifted to relief camps.

A crisis management team reached the well and had begun taking precautionary measures by pumping water continuously through a casing valve into the well head, according to a June 1 press statement from OIL.

They said three global experts (Boots and Coots International Well Control Inc, Alert Disaster Control Inc and Wild Well Control Inc) were contacted and their offers of action plans were being examined.

Three experts from Alert Disaster Control, a Singapore-based firm, subsequently reached the site.

The well caught eventually caught fire as OIL teams conducted clearing operations on the site, at 1.14 pm on June 9. The fire spread 500 metres around the well, burning everything in its vicinity.

The fire spread more towards the Maguri-Motapung wetlands, in the opposite direction of the Dibru-Saikhowa National Park. If the fire spread towards the national park, it would have resulted in the loss of more wildlife.

One major risk could be the effect of this fire — if it grows further — on other oil and gas wells in the same oil field.

Two firefighters died at the site while undertaking cleaning operations on June 10. Four individuals — two from OIL, one from the Oil and Natural Gas Corporation and one other working under a contractor — were injured as well.

A drone was used to see the impact of the fire around the well and locate the bodies of the firefighters, later recovered by disaster management personnel, according to an official who visited the site.

The fire fighters reportedly jumped in a pond to save themselves, but found it difficult to swim because of the oil content in the water. They allegedly drowned in the pond.

OIL has not officially released details on how the firefighters died. Around 7,000 have been evacuated from nearby areas, according to the official.

"Our representatives are part of a larger committee formed by the government. This committee is regularly visiting the site and trying to provide assistance in the best way possible," said a state pollution control board official.

How did the gas leak occur?

There has not been an official clarification from OIL over the reason behind the leak yet. Inside the approximately 3,900-metre-deep gas well, another reserve at a depth of 3,700 metres was reportedly being explored.

A workover rig was being built and interventions were made at 3,700 metres. The blowout preventer was removed during this process.

An alleged miscalculation over the amount of pressure of the gas aided by the removal of the blowout preventer led to the sudden blowout and uncontrolled release of natural gas.

An oil and gas drilling expert said conditions because of the nationwide lockdown in May led to there being no experts on site to monitor operations. National or international experts usually monitor such operations.

The lack of safer and more appropriate technology for such operations may also have been a reason for the blowout, according to the expert.

An internal enquiry by OIL is still under way. The above findings can be confirmed only after findings are shared with the public.

How did the gas well catch fire?

OIL — in their press release — did not cite a clear reason for the well catching fire. The only thing mentioned by OIL was of the clearing operations being carried out when the well caught fire.

Rising temperatures on June 9 — unlike previous days — along with flammable gas in the air was cited as a possible reason. There is, however, no clarity yet on the exact reason.

Loss of biodiversity

The leak of condensed oil to several landscapes in surrounding areas may have led to a loss of biodiversity in the area.

Several birds and a flying squirrel died because of the leak, according to naturalists. A picture of a dead dolphin in the Dibru river — close to the gas well — was widely shared on social media. "The carcass of the dolphin was sent for an examination to identify its cause of death," said an official.

It is ironic that areas rich in biodiversity (https://www.downtoearth.org.in/news/how-national-board-for-wildlife-gives-legitimacy-to-illegal-mining-in-assam-71366) are the ones that are rich in fossil fuel reserves as well. Uncontrolled demand for these fuels to run metropolises and industries often leads to the destruction of natural habitats for plants, animals, birds and marine life.

A clear estimate of the loss to biodiversity in the area will be revealed once deeper investigations occur.

What is amiss?

In the past few months — as the lockdown to curb the spread of the novel coronavirus disease (COVID-19) is gradually removed in phases — there have been several accidents in industrial and production units, especially facilities that handle hazardous materials.

The Visakhapatnam gas leak (https://www.downtoearth.org.in/dte-infographics/vizag_gas_leak/index.html) in Andhra Pradesh, fly ash breaches in Singrauli and Sonebhadra power plants in Madhya Pradesh, the explosion (https://www.downtoearth.org.in/news/pollution/dahej-blast-experts-call-for-utmost-safety-in-operating-industries-after-lockdown-71545) at Yashasvi Rasayan Pvt Ltd in Gujarat and a few others (https://www.downtoearth.org.in/news/pollution/one-dead-in-ankleshwar-factory-blast-71693) are incidents that claimed lives and destroyed the ecology around them.

These incidents reveal several procedural and safety gaps in facilities.

Some of the key points that emerge from such incidents are:

- There is lack of updated standard operating procedures (SOP) for handling hazardous materials
- Even if there are SOPs, operators are not well-trained to follow up line-by-line. They are probably not made aware of the magnitude of accidents and their impacts
- Machinery infrastructure in facilities lack maintenance: A detailed maintained procedure needs to be put down and the operators and workers should be made aware of the consequences of faulty maintenance
- Lack of preventive gear for workers who conduct risky operations is another huge challenge
- Technologies often used in these facilities are not the most updated ones with respect to safety concerns. Equipment and machinery below a certain grade should be unacceptable in delicate facilities. The government should facilitate this as much as possible
- The appointment of a disaster management unit is a must in every facility which deals with such substances and materials
- A clear accountability framework should be well-established in advance for such facilities so concerned individuals are aware of their responsibilities
- Human lives and surrounding biodiversity are not taken seriously. The impact on biodiversity is often ignored after accidents
- Measures need to be taken to secure lives of people in surrounding areas

"A proper mechanism needs to be developed in high-risk facilities which focuses on bringing down the possibility of such accidents to zero," said Nivit Kumar Yadav, head of the Industrial Pollution Unit at Delhi-based non-profit Centre for Science and Environment.

Such incidents will keep occurring unless mandated mechanisms are put in place and are strictly adhered to, he said.

baghjan (https://www.downtoearth.org.in/tag/baghjan)

baghjan gas leak (https://www.downtoearth.org.in/tag/baghjan-gas-leak)

tinsukia gas leak (https://www.downtoearth.org.in/tag/tinsukia-gas-leak)

Gas leak (https://www.downtoearth.org.in/tag/gas-leak)

vizag gas leak (https://www.downtoearth.org.in/tag/vizag-gas-leak)

Dibru Saikhowa ... (https://www.downtoearth.org.in/tag/dibru-saikhowa-national-park)

maguri-motapung wetlands (https://www.downtoearth.org.in/tag/maguri-motapung-wetlands)

Assam Valley (https://www.downtoearth.org.in/tag/assam-valley)

Oil and gas ... (https://www.downtoearth.org.in/tag/oil-and-gas-exploration-in-india)

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India (https://www.downtoearth.org.in/tag/india)

POLLUTION

(https://www.downtoearth.org.in/pollution)

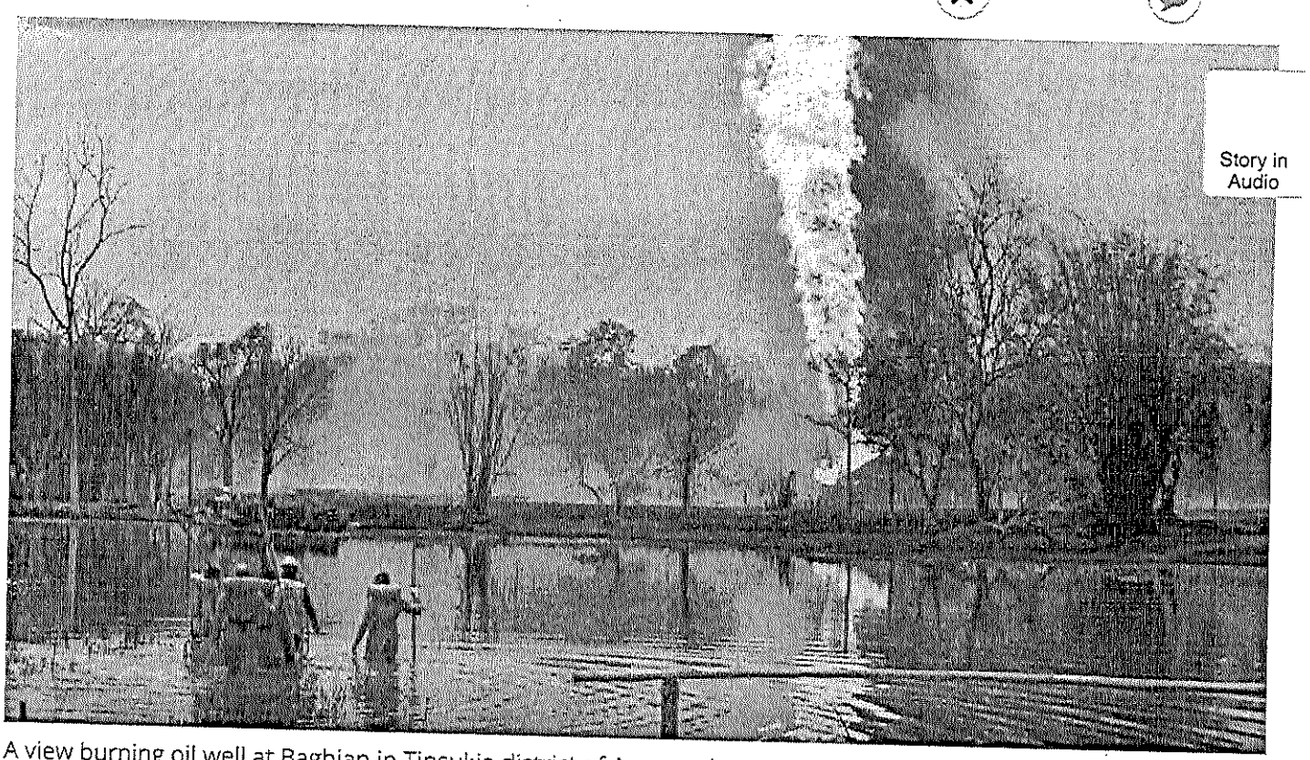
What it means to have a crisis: Understanding labour law relaxations in India and global trends

We may move towards a decision that pushes industrial production at the cost of our environment and the relaxation of environmental laws

Environmental cost of Assam oil field blaze may never be recovered

The Oil India Ltd has said the fire in the Assam oil field may take four weeks to be brought under control. There is fear that gas leak and oil spill may have caused irreparable damage to local ecology.

Prabhash K Dutta
New Delhi June 11, 2020 UPDATED: June 11, 2020 18:26 IST



Story in Audio

A view burning oil well at Baghjan in Tinsukia district of Assam where a blowout began on May 27 leading a massive fire on June 9. (Photo: PTI)

HIGHLIGHTS

Assam oil field fire may have caused irreparable damage to local ecology

A blowout was reported from an oil well under PSU firm OIL on May 27

Blowout led to a massive fire in the oil well on June 9

39

On June 5, the World Environment Day, a group of environment activists, local residents and students staged protest demanding compensation for the damage caused by the blowout in the well(s) managed by the Oil India Ltd (OIL).

This did not make national headline.

A blowout from an oil field is an uncontrolled release of gas. The blowout had begun at the Baghjan village in Tinsukia district of Assam on May 27. A statement by the OIL confirmed this. The protest took place on the 10th day of the continued blowout.

It became a national headline on June 9, when the uncontrolled release of gas from the oil well caught massive fire - almost a fortnight after the blowout began.

The protesters said five people had died due to gas leakage. The district administration refused to confirm that the deaths occurred due to gas leakage. A magisterial inquiry was ordered to ascertain the cause of deaths.

The next day, that is June 6, the OIL announced compensation as reported by local media that Rs 30,000 would be provided to each of the affected families as immed relief.

Story in Audio

This protest has given impetus to a campaign that appeared weakening in Assam. Environmentalists have been protesting in Assam for weeks against a decision to allow drilling and testing of hydrocarbons at over half-a-dozen locations under the Dibru Saikhowa National Park (DSNP).

The DSNP, combined with the wetland Maguri-Motapung Beel having a rich heritage of bird species, is in the vicinity of the oil field where blowout happened. Resultant fire has caused damage in both DSNP and Maguri-Motapung Beel.

The Centre gave environmental clearance to drilling in the region in May. But environmentalists have been campaigning against such a move for many months.

Following the blowout, the locals activists have written to Assam Chief Minister Sarbananda Sonowal demanding that the incident be properly investigated and responsibility fixed, and that the OIL should stop oil exploration and drilling activities in the biodiversity zones. Meanwhile, the OIL has formed an inquiry committee to find

the biodiversity zones. Meanwhile, the OIL has formed an inquiry committee to find out if blowout occurred due to human error.

40

Teams from the ONGC, OIL and Singapore-based Alert Disaster Control joined hands to control the fire and mitigate damage to the well and environment.

The OIL has now said that based on assessment by the Singaporean firm Alert, the Assam oil field fire could be controlled in four weeks. The OIL also lost two of its firefighters involved in controlling the situation at the site.

Blowout and fire might have caused irreparable damage to the local environment which has been the major source of livelihood for local population.

Blowouts leave behind huge volumes of residue as gas condensate. Reports suggest that gas condensate was seen as far as 5 km from the site of blowout.

Gas condensate is a mixture of chemical compounds that are toxic for land, vegetation and known carcinogens. It can turn soil infertile, kill vegetation and leave people battling with cancer. There tea gardens in the nearby areas.

Oil has spilled over to Dibru river -- which is believed to have given the name to Dibrugarh district of Assam. Reports say a film of oil has been seen in the river that passes through the Maguri wetlands and runs along the DSNP.

Story in Audio

The wetland is host to some of the most vulnerable species of birds such as Swamp Francolin, Marsh Babbler, Greater Adjutant and Pallas's Fish-eagle, Red-headed Vulture and White-bellied Heron.

BirdLife International recognised this wetland as Important Bird and Biodiversity Area in 1996. Environmental activists say the wetland has been destroyed by the blowout.

River Dibru is a tributary of River Lohit, which becomes Brahmaputra in the lower reaches. Brahmaputra river system is home to Gangetic dolphins. Recently, image of a carcass of a Gangetic dolphin was widely shared on social media with people claiming that the endangered mammal died due to oil spilling during the blowout.

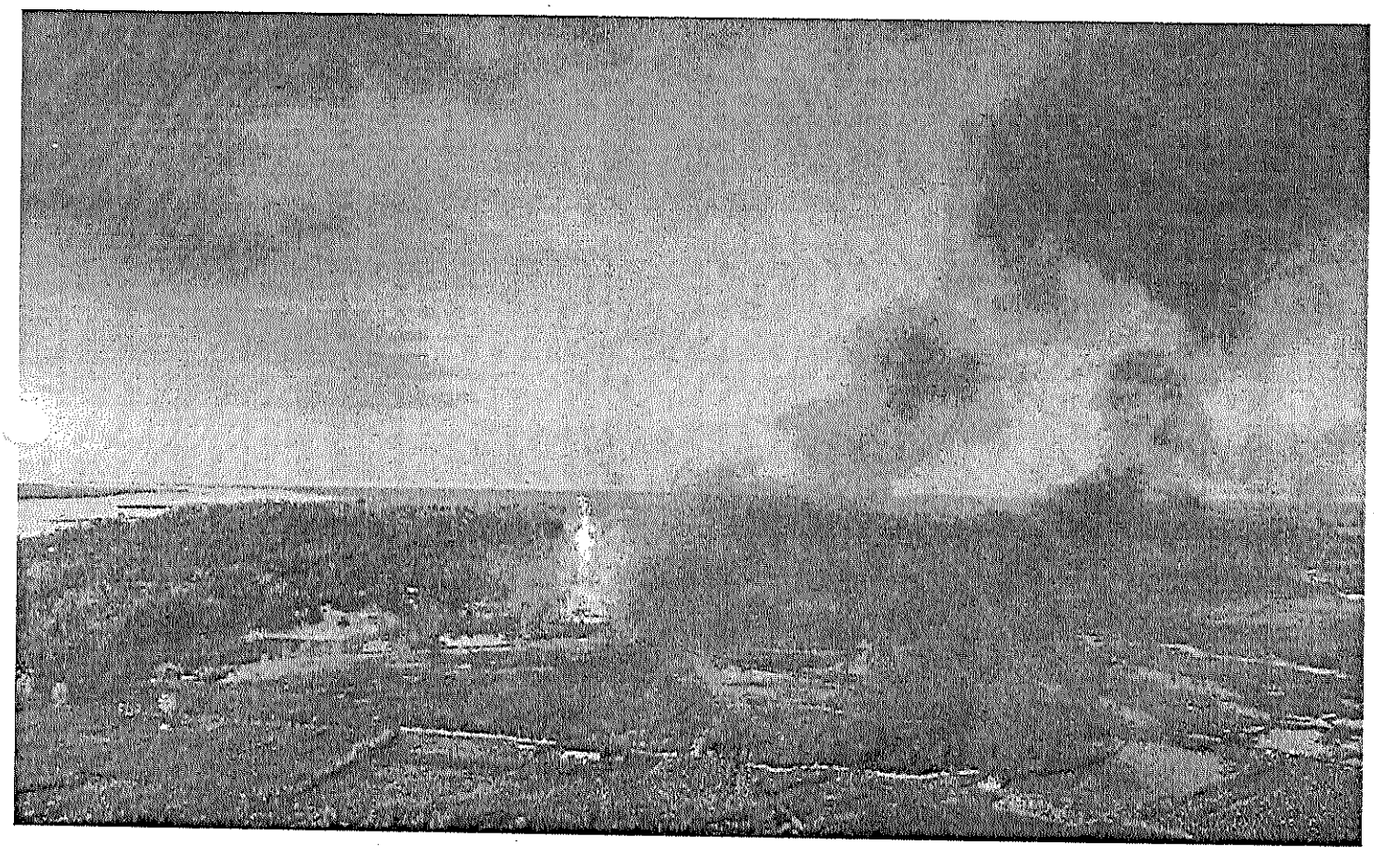
Read | Assam oil field blaze likely to rage for 3 more weeks, CM orders high-level probe | 10 points

Watch | Assam oil field fire may take 4 weeks to douse: All you need to know

ENVIRONMENT (HTTPS://SCIENCE.THEWIRE.IN/CATEGORY/ENVIRONMENT/)

Fire at Assam Oil Well After Gas Leak Threatens Life, Livelihood and Biodiversity

11/06/2020



Featured image: Aerial view of the Baghjan oil field engulfed in fire, in Tinsukia, Assam, June 9, 2020. Photo: PTI

e blowout at an oil well near Baghjan village in Assam took a turn on June 9 with a major fire outbreak at the well. For almost two weeks, the people living in Baghjan and nearby villages have been facing the impacts of the blowout – an uncontrolled release of gas – from an oil-producing well under Baghjan oilfield, operated by the public sector unit Oil India Limited (OIL).

The impact of the fire was particularly severe on the residents of Baghjan village, located around one kilometre from the site, who were already living in a relief camp following the blowout on May 27, amid ongoing COVID-19 restrictions as well.

According to one of the residents, Satyajeet Moran, "People of our village now had to evacuate the relief camp set up in the village school and go and seek shelter at Jokaimukh village, which is 12 km away from here. After the blowout, this fire has completely finished our village. Many houses were burnt along with widespread damage to property."

OIL released a statement saying that the well caught fire while the clearing operation was on at the well site. While the initial statement reported no casualties, on the morning of Wednesday, June 10, bodies of two firefighters, both of whom were employees of OIL, were recovered from a pond near

the site by National Disaster Response Force (NDRF). The firefighters have been identified as ikheswar Gohain and Durlov Gogoi, both of whom were missing since Tuesday evening after the fire broke out.

Also read: How Malleable Laws, Pliant Panels Helped OIL Secure Clearance to Drill in a Biodiverse Area (https://thewire.in/environment/how-malleable-laws-pliant-panels-helped-oil-secure-clearance-to-drill-in-biodiverse-area)

The fire has also aggravated the environmental impact of the blowout, with the site of the well less than a kilometre from the Dibru Saikhowa National Park (DSNP) and only 500 metres from the wetland Maguri-Motapung Beel, an Important Bird Area (IBA).

Naturalist Anwaruddin Choudhury came down heavily on OIL, saying that the public sector unit's lack of expertise and incapability has pushed Maguri Beel to the brink of death. "Today's fire has completely destroyed Maguri Beel. It is a massive loss. We don't how many years it will take to revive Maguri. So many birds, reptiles, fishes which were the lifeline of Maguri have vanished. There was a herd of wild buffaloes seen regularly in Maguri. Even they are nowhere to be seen since the last few days. They couldn't control the well in Baghjan and now if they start drilling in DSNP, it will be all over. They can't justify mining in DSNP."

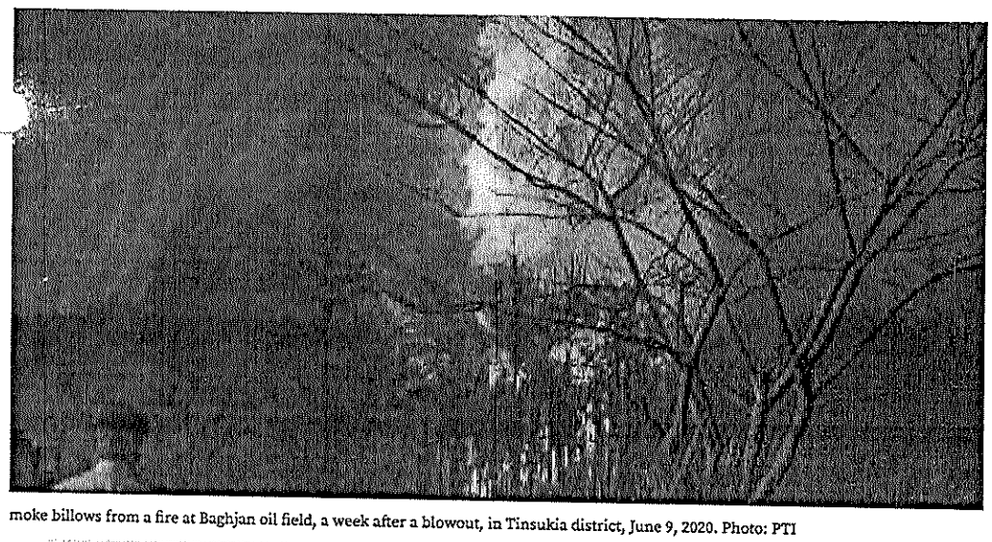
Last month, OIL received environment clearance from the Ministry of Forest and Environment & Climate Change (MoEFCC) to carry out drilling and testing of hydrocarbons in seven locations under Dibru Saikhowa National Park, which locals and environmental activists have been protesting.

The beginning of the ordeal

It was morning as usual on May 27 for the people of Baghjan village in Tinsukia district of Assam, when they heard a deafening sound. Some initially thought it was the sound of a jet plane or helicopter flying close to the surface, assuming that perhaps a minister might have arrived to monitor the flood situation in the area. As it turns out, the sound was of a blowout, a sudden and uncontrolled release of gas/oil from a producing well under Baghjan oilfield, operated by the public sector unit Oil India Limited (OIL), around a kilometre away from the village.

A statement released by OIL says, "At around 10.30 AM on May 27, the producing well of Baghjan 5 under Baghjan oilfield suddenly became very active while workover operations were going on. The ongoing operations had to be immediately suspended as the well started releasing natural gas in an uncontrolled manner. The blowout happened while workover operations was going to produce gas from new sand (oil and gas-bearing reservoir) at a depth of 3729 metres."

The oil well, which has been operational since 2005, was producing around 100,000 (1 lakh) Standard Cubic Metre per day (SCMD) of gas from a depth of 3870 metres.



moke billows from a fire at Baghjan oil field, a week after a blowout, in Tinsukia district, June 9, 2020. Photo: PTI

Satyajeet Moran, a resident of Baghjan was having his breakfast when he heard the sound. "We came out of the house immediately. People were scared and running helter-skelter. Soon we realised what happened. Initially, it was the sound which was disturbing us but soon people in the village started complaining of dizziness, irritation in eyes and breathlessness because of the gas coming out from the well," said Moran, who is also the president of the youth organization in the village, Baghjan Gaon Milanjyoti Yuva Sangha.

More than 2500 people from 1610 families were evacuated from the affected areas and stationed at relief camps set up at Baghjan Dighultarrang M.E School, St. Joseph School- Baghjan Tea Estate, Gateline LP School, Dighultarrang and No.1 Baghjan L.P School, said a statement from OIL. Meanwhile, OIL has also declared an area of 1.5 km around the gas well as a safety zone, where entry is prohibited.

Villages further away face impact too

Hemanta Moran, a school teacher in Baghjan says, "My house is just 1 km away from the well. The sound and the gas emanating from the well is causing discomfort for everybody, especially the elderly and children. In fact, many villagers have sent their kids to their relatives' places in other villages or in Tinsukia town. The situation is also difficult because of the COVID-19 pandemic as there is not much scope to maintain social distancing inside the camps."

Following the fire, there have been reports that the camps have had to be evacuated as well.

Also read: Dehing Patkai: Land Claimed by NBWL as 'Unbroken' Has Already Been Mined or Cleared, Reveals RTI (https://science.thewire.in/environment/dehing-patkai-elephant-reserve-nbwl-mining/)

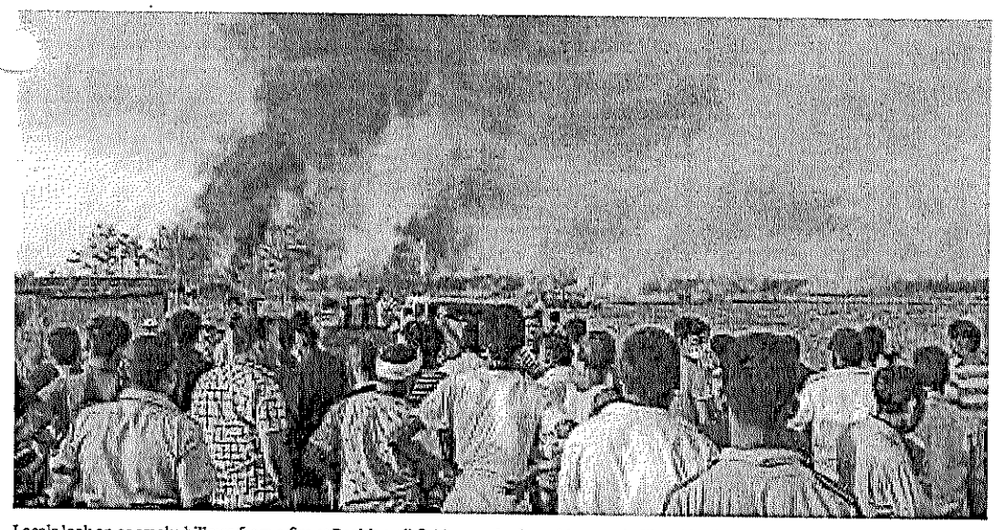
Prior to the fire, it was reported in local media that five people from nearby villages died from gas leakage. However, Bhaskar Pegu, Deputy Commissioner (DC), Tinsukia said that it is unlikely that the deaths were caused by the blowout.

"As per the preliminary reports, the deceased people were suffering from morbidities like TB and liver condition. One woman who was suffering from epilepsy died from drowning. However, a magisterial enquiry has been ordered into the matter to find out the exact cause of the deaths," Pegu said.

Resident Satyajeet Moran, while admitting that all the deceased people had an existing health condition, said, "But it is also possible that their condition [was] aggravated because of the gas and sound following the blowout."

While Baghjan has been the most affected by the blowout due to its proximity to the well, villages located further downstream like Notungaon, Milanpur, Hatibagh, Bebejia and Barekuri have also suffered. Droplets of condensate (which is the residue from gas condensing after coming in contact with water) have reportedly spread up to a radius of 5 km, falling on trees, tea gardens, grasslands, water bodies, and on the roofs of houses.

Jiban Dutta, a resident of Notungaon says, "Although our village is around 2 km from the well, the wind is carrying the gas which is creating all sorts of health hazards for us. Droplets of condensate have created pores on the tin roof of some houses in our village. Unfortunately, we are facing apathy of district administration and OIL authorities as they haven't addressed the issues faced by the villages located downstream. In our village, we have ourselves started a relief centre where some people have been shifted."



Locals look on as smoke billows from a fire at Baghjan oil field, a week after a blowout, in Tinsukia district, June 9, 2020. Photo: PTI

Blowout can impact soil, water bodies

On World Environment Day on June 5, hundreds of local villagers gathered to protest against the damage caused by the blowout and demanded compensation. A day later, on June 6, OIL authorities passed a statement announcing that an amount of Rs. 30,000 will be provided to each of the impacted families as immediate relief after a tripartite meeting with the district administration and Baghjan Gaon Milanjyoti Yuva Sangha.

However, there is no clarity on whether the list of beneficiaries will include affected people from the downstream villages. When asked, DC Pegu said, "We are yet to finalise the list of beneficiaries. Our people are in touch with every affected village." So far, no casualties from the fire have been reported.

The ill-effects of the blowout are not just limited to health hazards. The locals are claiming that this incident will severely affect their livelihood as well. Niranta Gohain, a well known environmental activist from the area said, "Agriculture, fishing and animal rearing are the main occupation of most people in this area. But now because of the oil spill, agricultural land will become infertile and no farming will be possible for many years. Also, fishes and domestic animals are dying in large numbers because oil has contaminated grasslands and water bodies."

Explaining the probable impact of the oil spill on the surroundings, O.P. Singh, Faculty at the Department of Environmental Studies, North Eastern Hill University (NEHU) said, "Condensate contains hundreds of chemical compounds, many of which are highly toxic and carcinogenic in nature. If the soil in nearby areas is contaminated by condensate, its fertility will be surely affected. However, to know the extent of the contamination, a proper study needs to take place. The fertility of such land can be regained by decomposition of hydrocarbon by using technology but it is a costly process. In the natural course, it might take a long time. Also, if the oil spills on the nearby tea gardens, they will be severely affected as the contamination will affect the productivity of the tea leaves and it will not be possible to market them. Similarly, oil spilling on water bodies will lead to fishes and other aquatic animals dying from the lack of oxygen."

Tridiv Hazarika, Spokesperson of OIL, said that the authorities are trying their best to reduce the damage on humans and ecology.

Impact on biodiversity

Together, Dibru Saikhowa National Park (DSNP) and Maguri Motapung Beel form a unique biodiversity hotspot where scores of tourists visit every year. DSNP, known for its population of feral horses, is home to 36 species of mammals and 382 species of birds. Maguri Beel, classified as an Important Bird Area (IBA) on the other hand is known for its avian and aquatic fauna and is a favourite of birders.

Deborshee Gogoi, a lecturer in the Department of Commerce, Digboi College spoke about the nch of oil and sound coming from the well that might drive away the birds. "The sound is in fact reaching my house in Tinsukia which is 12 kms away from the spot. So, you can imagine what will be the condition of the birds," he says.

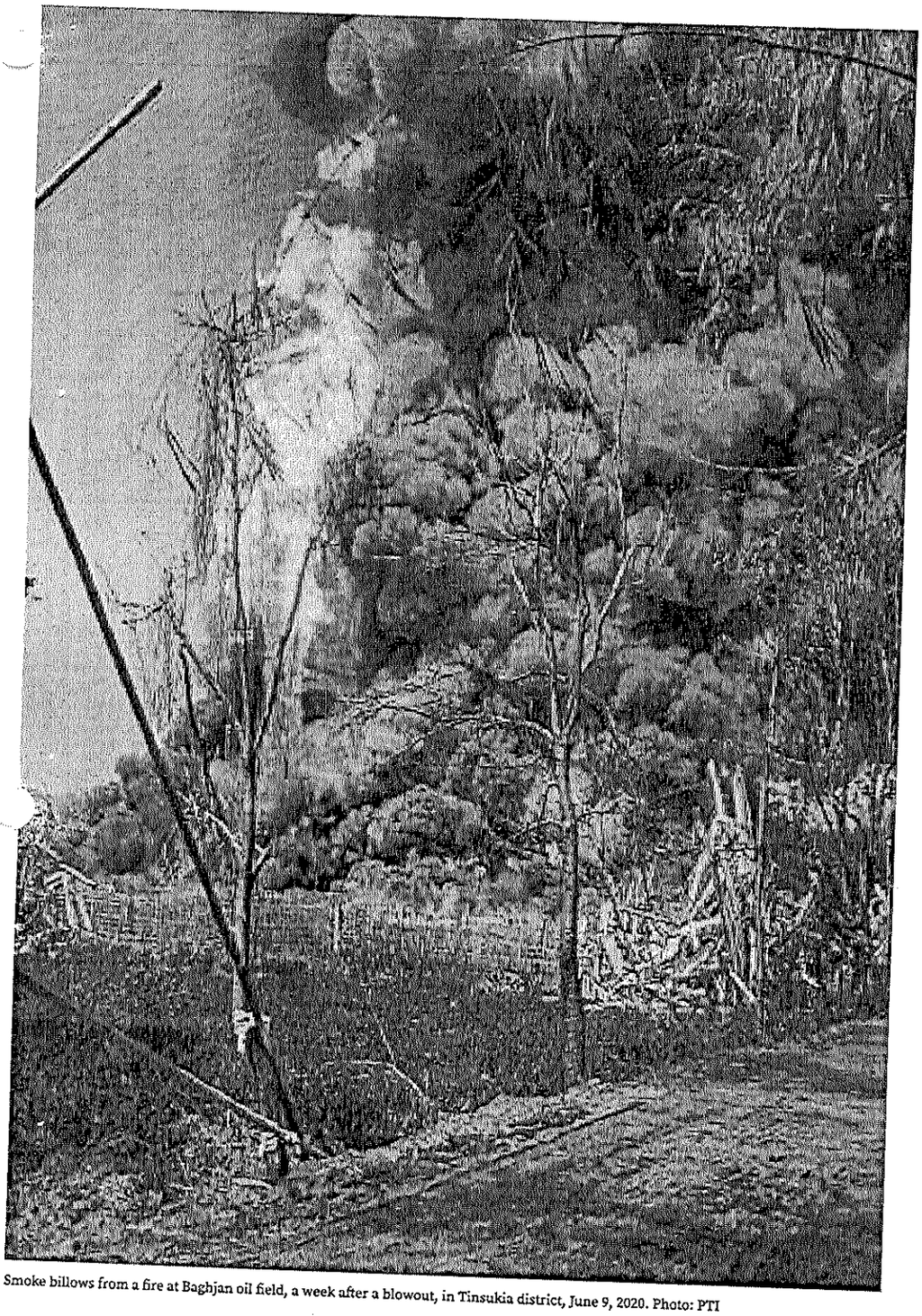
Gogoi, who is a passionate birder and co-author of *Birds of Maguri-Motapung Beel,* said, "Birders from all over the globe come here to see birds like Marsh Babbler, Jerdon's Babbler, Swamp Prinia, Black-breasted Parrotbill, Swamp Francolin, etc. However, despite this being the nesting season of the birds, very few of them can be seen in the area presently. Either they have flown away or they have died."

Notungaon resident Jiban Dutta, who is also a bird guide by profession, said that on June 6, locals managed to rescue a king quail which was covered by oil and handed it over to the forest department.

Following the fire on June 9, further damage to the ecology, especially to Maguri-Motapung Beel, is expected and it will likely be a long road to recovery.

A carcass of an endangered Gangetic dolphin was recovered just a day after the blowout from Maguri Beel, creating a sensation among the locals who claimed that it had died from the oil spill. The carcass of the dolphin has been sent for post mortem and the report is yet to arrive.

Prior to the fire at the well, Rajendra Singh Bharti, Divisional Forest Officer (DFO), Wildlife, Tinsukia said, "Biodiversity in the area has definitely been affected not just by the gas but also the sound. The impact will also be felt in the national park because the core area of DSNP is just 900 meters from the Baghjan well. State Forest Department has constituted a committee to study the impact on biodiversity. Our team is collecting samples from the Maguri-Motapung Beel and other nearby areas. Our next plan is to collect samples from places which are far from the blowout site has been affected nevertheless."



Smoke billows from a fire at Baghjan oil field, a week after a blowout, in Tinsukia district, June 9, 2020. Photo: PTI

ow over environment clearance

OIL received environment clearance from the environment ministry in May to carry out drilling and testing of hydrocarbons in seven locations under DSNP, which was met with an uproar from the locals and environmental activists. Following the blowout, the protests have gained momentum.

Regarding the clearance, Hazarika says, "We had applied for this clearance in 2016 and we got the clearance after four years only when we were able to convince the government that we will not be drilling inside DSNP. We will be using a new technology called extended reach drilling (ERD), with the help of which wells can be drilled up to a depth of 4 km from the existing well plinth without entering the protected area. Through ERD, we can reach the target depth of around 3.5 km beneath the surface of the national park without carrying any drilling in the park. In any case, we have just got the clearance. From this point, it will take at least two years to start drilling in those locations."

Locals however are far from convinced. In a memorandum addressed to the Chief Minister of Assam, submitted through the office of the Deputy Commissioner, Tinsukia, they have raised following demands – rehabilitation and compensation for the villagers impacted and restoration of their livelihood and health, urgent cleaning up of the village areas and water bodies contaminated by the oil spill, OIL to be held accountable for social impacts and irreparable loss of biodiversity, an investigation should be pursued to prosecute responsible officials for the incident and OIL should stop further oil exploration and drilling in eco-sensitive and fragile biodiversity zones in Assam.

Also read: Etalin Is Only One of Many Problem Projects Closing in on Green-Light (https://science.thewire.in/environment/etalin-is-only-one-of-many-problem-projects-closing-in-on-green-light/)

Noted environmental activist and coordinator of South Asia Network on Dams, Rivers & People, Himanshu Thakkar, terming this incident as a major industrial and policy disaster, said, "While taking up a venture like this in a biodiversity hotspot, OIL should have had a contingency plan to tackle eventualities. Who is going to compensate for the damage this incident has incurred on biodiversity in the region? Any activity which contaminates river or water bodies should go through a proper environment clearance/assessment process. There should be an enquiry on why this incident happened and why it took so long to bring the situation under control? Also, there should be an independent assessment of the damage to the environment. Lastly, permission given to OIL for exploration of hydrocarbon around Dibru Saikhowa should be cancelled."

Meanwhile, OIL has also approached CSIR- National Environmental Engineering Research Institute (NEERI) and Wildlife Institute of India (WII), Dehradun for conducting a detailed impact assessment study. OIL has also served a show-cause notice to Gujarat based Chartered Hired Rig M/s John Energy Pvt Ltd who were carrying out the workover operations in the well. Also, a five-member inquiry committee has been formed to find out if there is any prima facie evidence of human error.

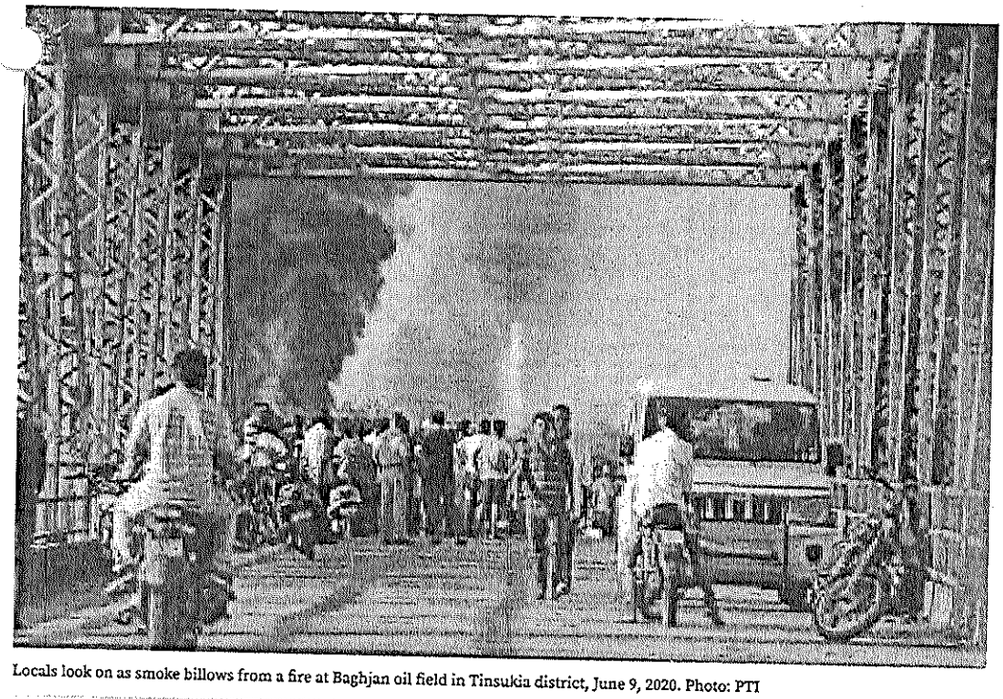
International experts on-site to control the situation

Almost two weeks after the blowout, gas continued to flow out uncontrollably and was aggravated when the well caught fire on June 9.

While the crisis management team from ONGCL, Nazira was stationed at the site to assist OIL's effort on the ground, later the authorities decided to contact Singapore based firm M/s Alert Disaster Control, experts in controlling blowout.

Three members team from the Singapore based firm Alert, who have come in to manage the crisis, expressed that it is now a safe environment for working and they are confident that the well can be capped safely. A statement released by OIL said, "The situation demands arrangement of large quantities of water, installation of high discharge pumps and removal of debris. All the operations as per Alert will take about 4 weeks. Efforts will be made to reduce the timeframe as much as possible."

The team of specialists arrived on the site on June 7. These experts, who have experience of handling more than a thousand blowouts in 135 countries, inspected the site on June 8. Subsequently, the well caught fire on June 9.



Locals look on as smoke billows from a fire at Baghjan oil field in Tinsukia district, June 9, 2020. Photo: PTI

Responding to the lack of expertise and loss of time in controlling the situation, OIL spokesperson Hazarika said, "No oil and gas company in the world has got the expertise to handle a blowout of this magnitude. There are few firms like Alert, Wild Well and Boots & Coots who have this expertise and they are called whenever such blowout takes place anywhere in the world, whether in Africa, Middle-East or USA-Canada. Of course, crucial time was lost because their clearance was delayed due to the COVID-19 situation. Ideally, they should have been here by June 4. Though the company is based in Singapore, one member was in Perth and another in Bangkok and so it took a bit of time to bring them together from different parts of the globe in the middle of a pandemic."

The previous time OIL experienced a blowout in Assam was in 2005, when a major fire broke out in an abandoned oil well at Kuhibari near Dikhom in Dibrugarh district, leading to the evacuation of around 5000 people. Houston based company Boots & Koots was called to bring the situation under control.

Comparing both incidents, Hazarika said, "This time, there is no blazing fire and crude oil is not coming out which is a relief. So from the environmental aspect, maybe this is better among two devils. However, killing this particular well has a different challenge. Dikhom was not a producing well and there was no work going around at that time. We got a lot of open space in that well. Here, we were fully operating the well. Here we have a mobile drilling rig hanging on top of the exposed well. This is creating challenges for us to approach the well and bring in machinery and equipment. Also, the Dikhom incident took place in September when there was no rain. This time, the monsoon has made our work difficult."

This article first appeared on Mongabay. Read the original here (https://india.mongabay.com/2020/06/fire-at-oil-well-after-gas-leak-threatens-life-livelihood-and-biodiversity-in-assam/).

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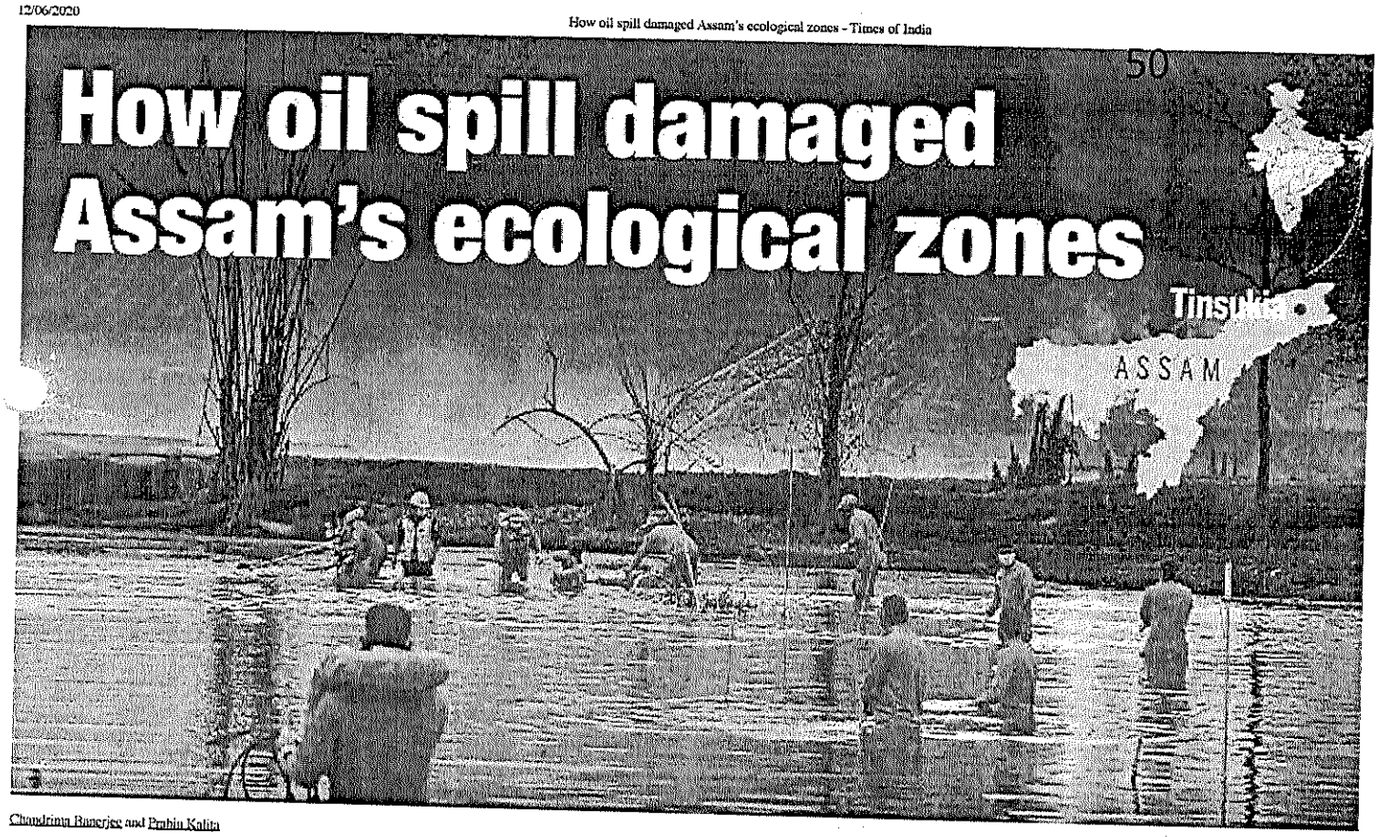

Chandrima Banerjee and Pinkin Kalita

TNN
Jun 11, 2020, 13:46 IST

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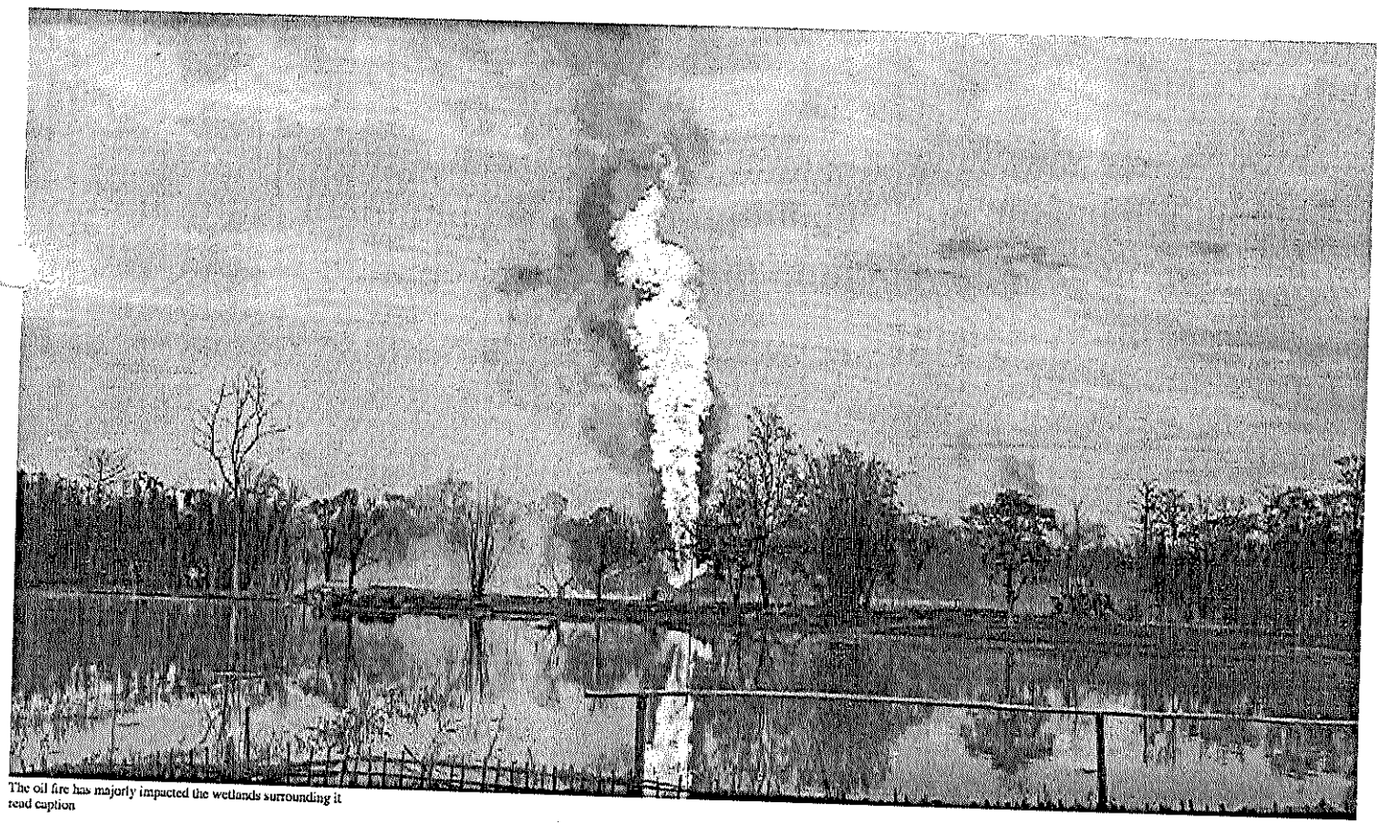
- Medium

https://timesofindia.indiatimes.com/india/how-oil-spill-damaged-assams-eco-zones/articleshow/76314071.cms

- Large

The oil spill and fire at an oil well in Tinsukia, Assam, has led to a major impact to the ecological zones around the site
The Maguri-Motapung Beel (wetlands, in Assamese) is 500m away from the oil well that exploded on June 9. A little further on is the 340 sq km protected area of the Dibru Saikhowa National Park in Assam. The oil spill and fire have had a catastrophic effect on biodiversity zones around the site, experts said. And restoration could take years.



The oil fire has majorly impacted the wetlands surrounding it
read caption

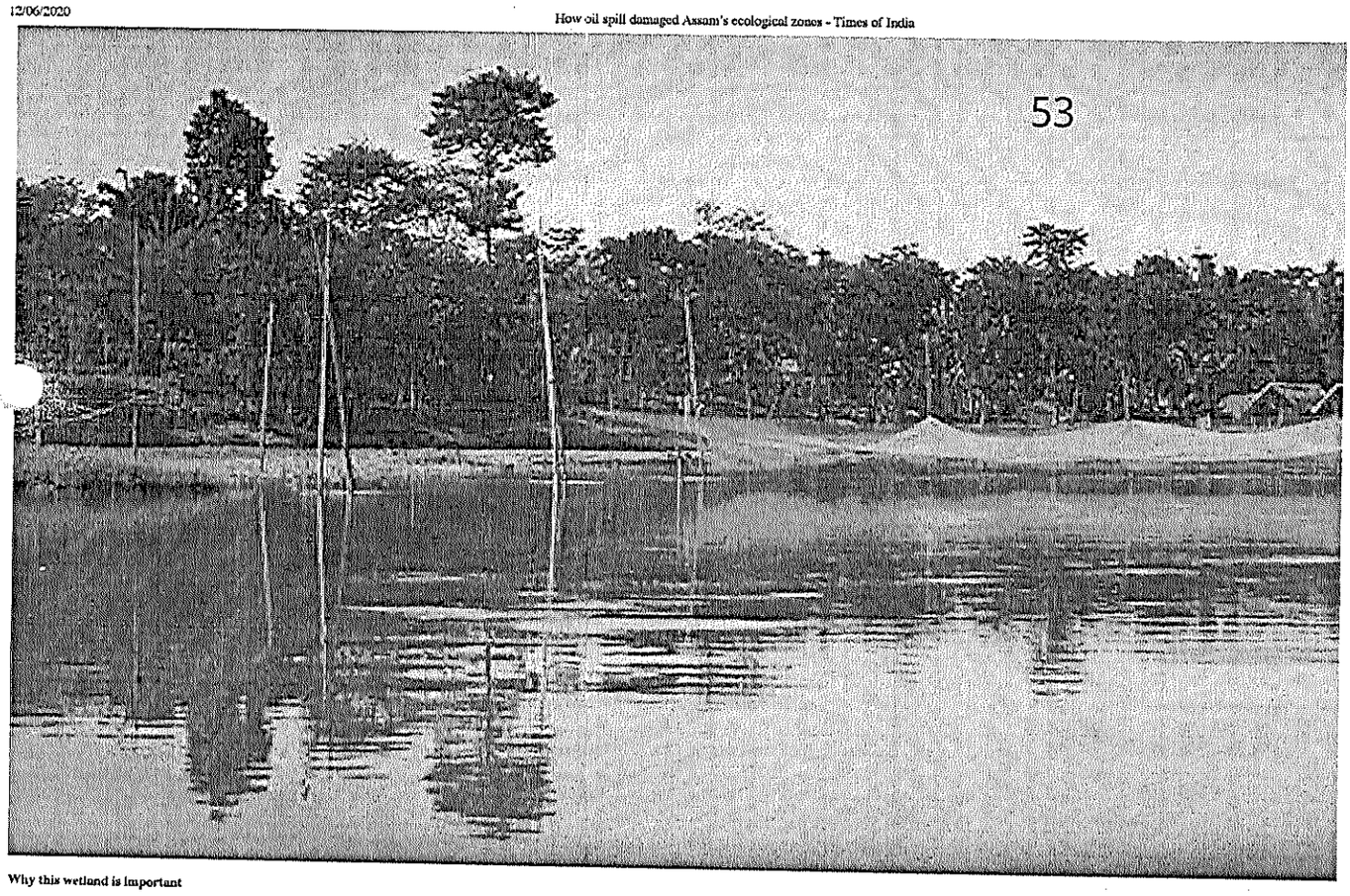
The oil fire has majorly impacted the wetlands surrounding it.

"The Dibru river is full of dead fish. Two days ago, Gangetic river dolphins floated up. A thin film of oil has covered the river," said Nirantar Gohain, an environmentalist from Natun-Rangagora, a village on the periphery of the Dibru Saikhowa park. The Dibru river cuts through the Maguri wetlands and runs along the national park. On May 27, an oil well blowout led to a gas leak. After two weeks of hurried relocation plans and efforts to plug the leak, the well caught fire. On Tuesday, the fire broke out around 1.14pm, a statement by OIL India Ltd said. By Wednesday, the oil condensate had spread across a 5-km radius, the state pollution department announced. "Birds have started dying, grasslands are burning," Gohain, back from a visit to the affected areas, said.

The Dibru river is full of dead fish. Two days ago, Gangetic river dolphins floated up. A thin film of oil has covered the river

Nirantar Gohain, environmentalist

"Maguri Beel is destroyed," said Rupa Gandhi Chaudhary, chief of communications at the Wildlife Trust of India. The wetland hosts 80 fish species, and 300 bird species every year. Of those, six are vulnerable species (like the Swamp Francolin and the Marsh Babbler), two endangered (Greater Adjutant and Pallas's Fish-eagle) and six critically endangered (like Baer's Pochard, Red-headed Vulture and White-bellied Heron). BirdLife International had recognised it as an Important Bird and Biodiversity Area in 1996 — it is one of 12,000 in the world. "The irony is that because of the wetlands, villages on the other side did not get affected by the fire. The wetlands bore the brunt. But restoration will take years," said Bibhab Talukdar, CEO of Assambased NGO Aaranyak.



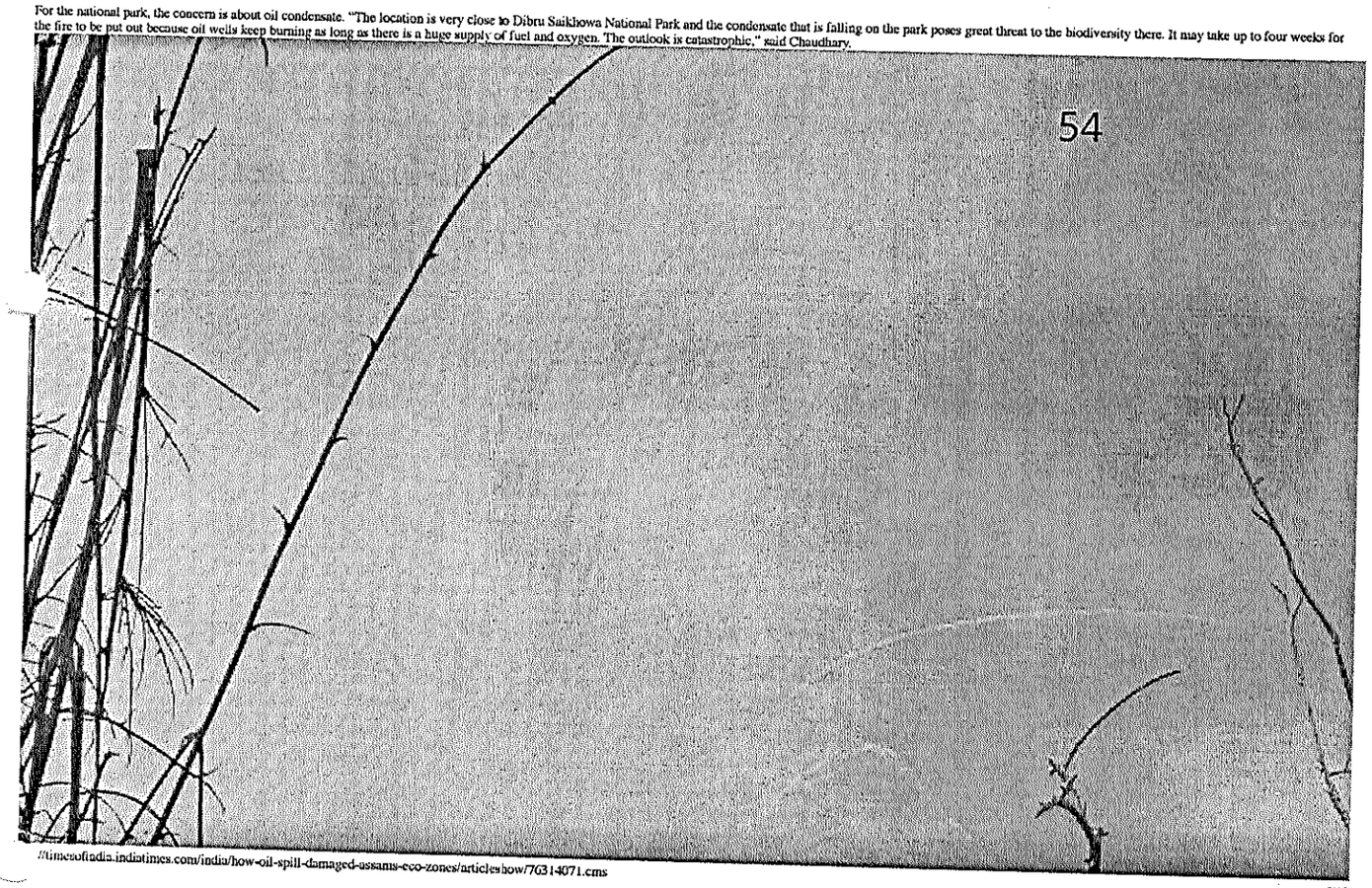
Why this wetland is important

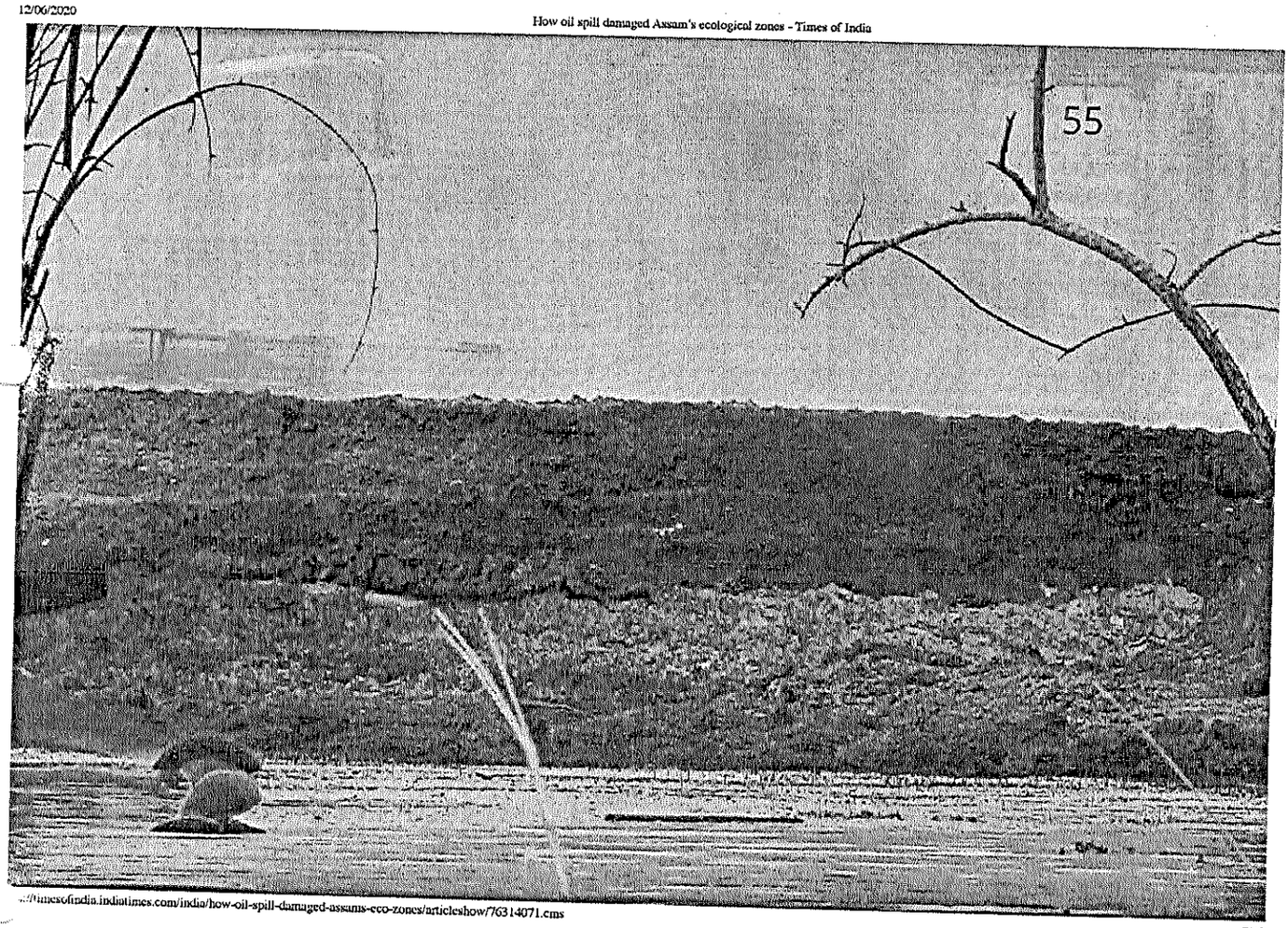
It houses 80 fish species and 300 bird species every year

It houses vulnerable species of birds

It is one of the 12,000 'Important Bird and Biodiversity Area' in the world

For the national park, the concern is about oil condensate. "The location is very close to Dibru Saikhowa National Park and the condensate that is falling on the park poses great threat to the biodiversity there. It may take up to four weeks for the fire to be put out because oil wells keep burning as long as there is a huge supply of fuel and oxygen. The outlook is catastrophic," said Chaudhary.

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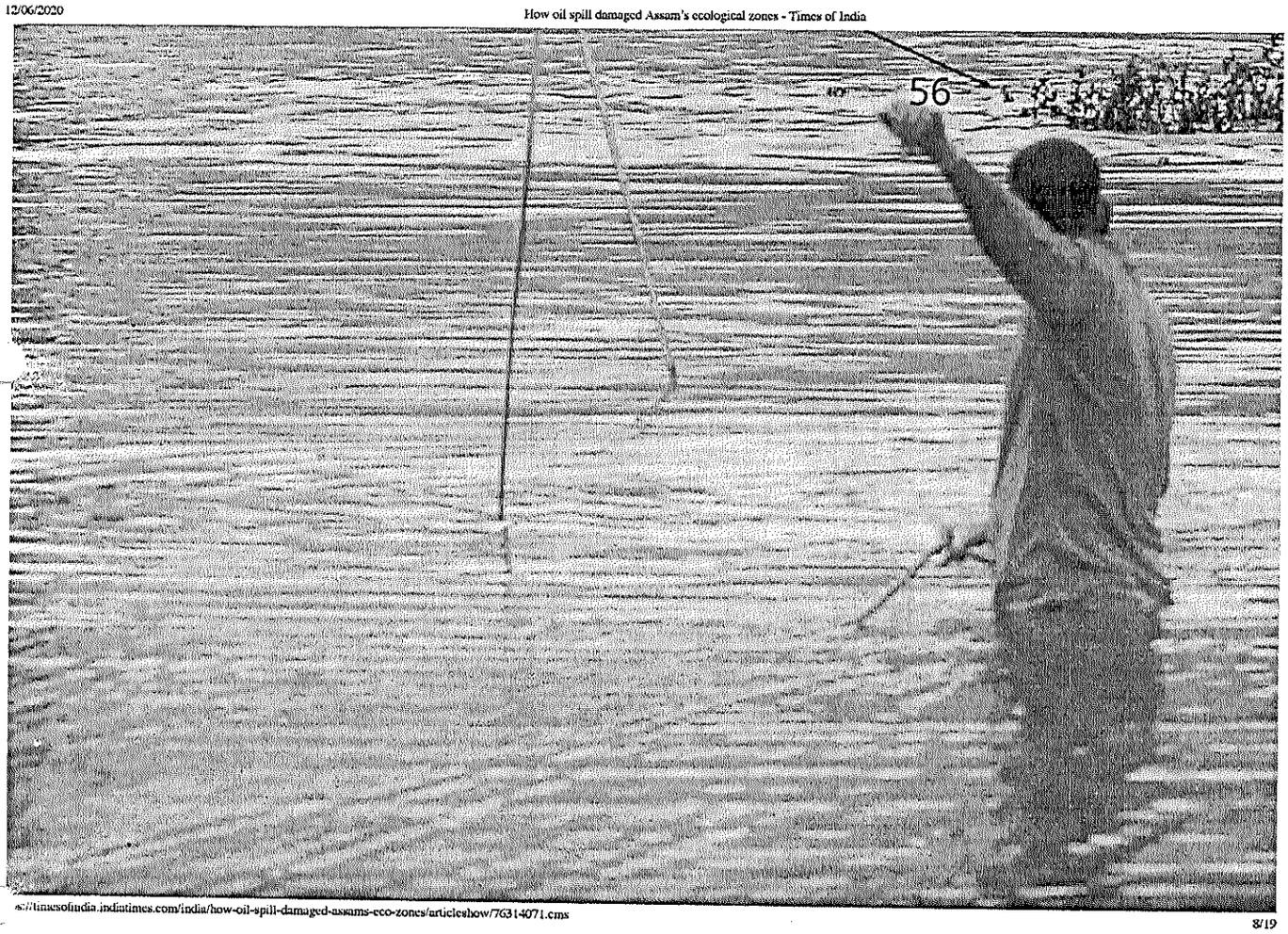
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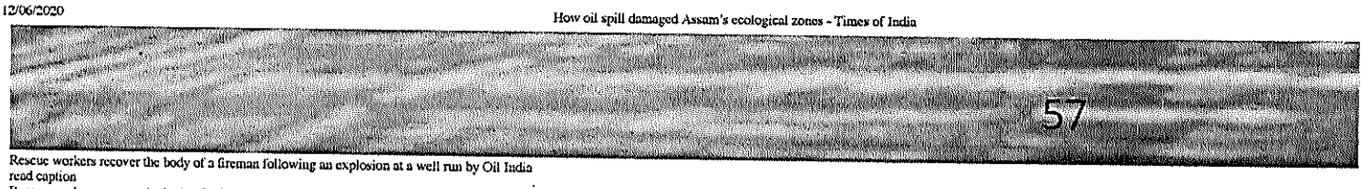


Rescue workers recover the body of a fireman following an explosion at a well run by Oil India

read caption

Rescue workers recover the body of a fireman following an explosion at a well run by Oil India

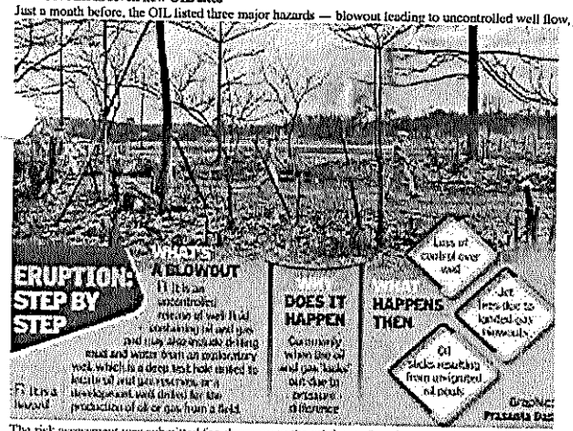
OIL, too, said its clear-up operations would take at least four weeks.

In October last year, environmentalists had protested against the construction of a second gas pipeline beneath the wetland (there already is one over it). That, and an announcement that seven more locations under the Dibru Saikhowa National Park would be drilled for hydrocarbon have come up now. "There needs to be a probe into whether precautionary guidelines were there or not," said Talukdar.

"There are violent protests around the well site," an OIL India statement said on Tuesday. "The environmental impact assessment is in progress."

Blowout risk in seven new OIL sites

Just a month before, the OIL listed three major hazards — blowout leading to uncontrolled well flow, jet fires, pool fires — in its risk assessment report of newly-approved projects to drill at seven locations in the vicinity of its Baghjan well.



The risk assessment was submitted for clearance to the ministry of environment, forest and climate control. The ministry cleared the projects on May 11.

"Taking into account the applicability of different risk aspects in context of the exploratory drilling operations to be undertaken in the identified well locations, there are three major categories of hazards that can be associated with proposed project that has been dealt with in detail. This includes—blowouts leading to uncontrolled well flow, jet fires, pool fires, non-process fires explosions, the release of a dangerous substance or any other event resulting from a work activity which could result in death or serious injury to people within the site, any event which may result in major damage to the structure of the rig," the assessment report states.

However, OIL claimed in its report that after the calculation of the blowout frequency for the proposed project, the likelihood of blowout occurrence is "Occasional/Rare". The oil major's assessment report adds; "...it is understood that, causative factors and mitigation measures for such events can be adequately taken care of through exiting safety management procedures and practices of OIL."

The report said with the high-risk perception associated with blowouts, a detailed analysis of consequences was undertaken and consequences of such accidental events on the physical, biological and socio-economic environment have been studied to evaluate the potential of the identified hazards.

While the project will cost OIL Rs 300 crore, it has earmarked only Rs 26.18 lakh per annum for environmental pollution control measures.

JUNE 3, 2020

Impact of oil well blow out at Baghjan oil field, Assam and resulting oil spill, on aquatic flora and fauna of surrounding landscape - Preliminary report

भारतीय वन्यजीव संस्थान
Wildlife Institute of India

Research Team:

Scientists: Abdul Wakid, Vishnupriya Kolipakam and Qamar Qureshi
Researchers: Merin Jacob, Aranya Gayathri, Anurag Rokade, Ranjana Negi, Vineet Singh, Harshini Jhala and Sunny Deori.

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Impact of oil well blow out at Baghjan oil field, Assam and resulting oil spill, on aquatic flora and fauna of surrounding landscape – Preliminary report

1 Summary

The area affected by the oil spill due to blow out of well in Baghjan, is biodiversity rich, and one of the important remaining refuge for several endangered and range restricted species. A preliminary site survey and review of existing information from the surrounding landscape which includes Dibru-Saikhowa national park and Maguri-Motapung wetlands, indicates that the area harbours around 40 species of mammals, 500 species of birds, 104 species of fish, 11 species of chelonians, 18 species of lizards and 23 species of snakes, 105 species of butterflies and 680 plant species. The wetland and river in the area are also a critical lifeline for community. During the on-site survey a dead dolphin, several carcasses of dead fishes, herpetofauna and many species of plants and insects were encountered. The oil spill has caused mortality and wilting of many plant species, and has severely affected the health of forests and grassland. There is a coating of oil film on the vegetation, the beel, riverfront, as well as on many species of river fauna in the impacted area. There is a leakage of hazardous and toxic chemicals, which is dangerous to life in general, and this toxicity is known to persist in aquatic and soil system for long, leading to prolonged ill effects on all life forms, including humans. Even after a week of the incident, the leakage into the system continues, with no signs of containment. Sampling of water, sediments, dead organisms, vegetation and faunal survey is ongoing. Collected samples are being sent for toxicity analysis. A detailed report will cover assessment of impact on biodiversity and toxicity details. Given the seismic nature of the area, and based on experience of current accident management measures, along with preliminary assessment of extent of damage, it is important that OIL should come up with holistic management mitigation plan of environment damage of existing fields before initiating the approved new wells.

2 Context

A blow out of oil well occurred on the 26th May 2020, at the Baghjan oil field of Oil India Limited in Assam (Figure 1). The area is biodiversity rich having several protected areas and important biodiversity hotspots in its surrounding, Dibru-Saikhowa National Park, Bherjan Wildlife Sanctuary, Padumani Wildlife Sanctuary and Borajan Wildlife Sanctuary. Dibru- Saikhowa National Park comprising an area of 340 km² is the core of the larger Dibru-Saikhowa Biosphere reserve (DSBR) which spans over 425 km². This is located in the Tinsukia and Dibrugarh districts of Assam. This area has recorded at least 40 mammals, 500 species of birds, 104 fish species (Kalita, 2016), 105 butterfly species and

680plant species (Maduhusudan and Bindra, 2013), 11 species of chelonians, 18 species of lizards and 23 species of snakes (Dibru Saikhowa Management Plan). It harbours tiger, elephant, wild buffalo, leopard, hoolock gibbon, capped langur, slow loris, Gangetic dolphin, besides critically endangered bird species such as the Bengal Florican, White Winged Wood Duck, Greater Adjutant stork, White rumped vulture, slender-billed vultures, white rumped vulture, as well as the very rare and endemic Black-breasted parrotbill (Maduhusudan and Bindra 2013; Bhatta et al 2016). Among herpetofauna, it is home to the critically endangered Black Soft-shell Turtle as well as several endangered species (e.g.Narrow headed Soft-shell Turtle, Assam Roofed Turtle) and Schedule I species (e.g. Indian Flapshell Turtle, Water Monitor lizard, Indian Roofed Turtle, Burmese Rock Python) and several species of range-restricted frogs (Ahmed & Das, 2020 – Annexure 1). During February, 2020, 35 endangered Ganges River Dolphins were estimated to inhabit in this sector. Maguri-Motapung beel is one of the major wetlands in Tinsukia District of Assam, which cover ~ 5 km^2 and is also severely impacted by the oil spill. While the species found in this area largely overlaps with Dibru Saikhowa, until date 294 species of birds have been recorded from this area, and is declared as an Important Bird Area. Thousands of migratory bird visit the wetland in winter. Critically endangered species like Baer's Pochard, White-bellied Heron are also found in this wetland. The first record of species like Baikal Bush Warbler and White-browed Crane are also from this area, highlighting the need to conserve IBA (D Gogoi, pers.comm & eBird -Annexure 3).

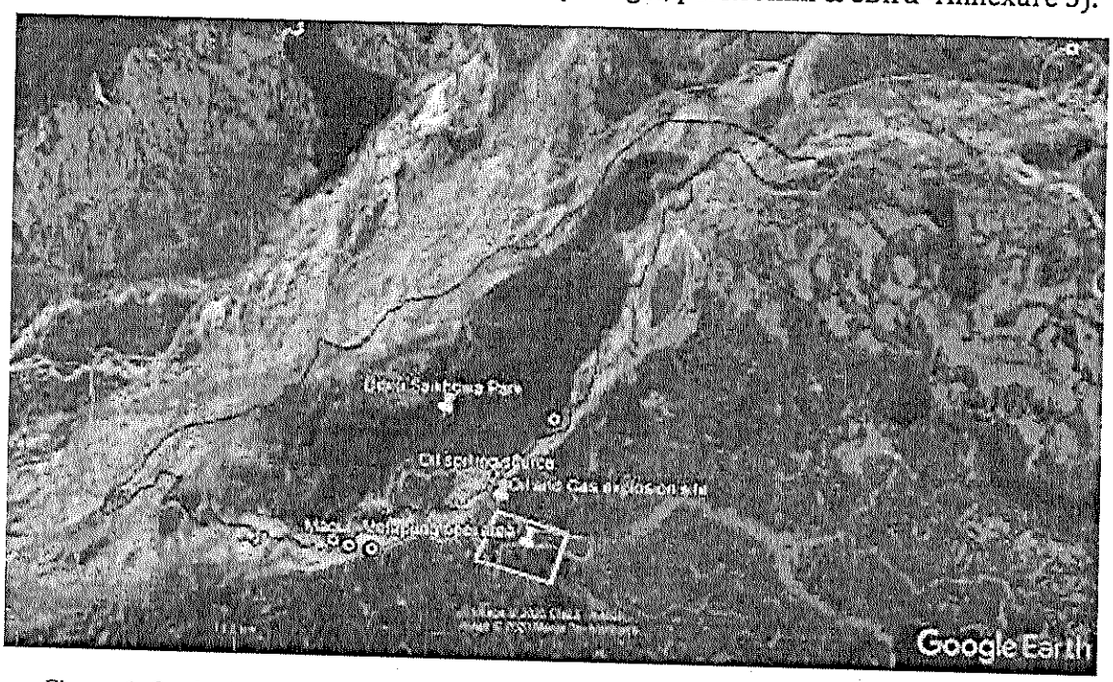

Figure 1: Study Area map with Dibru-Saikhowa National Park and Maguri-Motapung beel

A similar incident occurred at the OIL well in Dikom in 2005, which took almost a month to contain and that too with the help of international agency Boots & Coots Well Control Inc (Naqvi, 2020). The site inspection to NBWL Standing committee report stated "*We are*

deeply distressed that OIL, as a leading public sector company, instead of serving as a beacon for environmental compliance to others in the industry, appears to have evaded environmental norms" (Madhusudhan & Bindra, 2013). The report also highlighted development of mitigation plan in case of incidences such as the one that has just happened. There seems to be no clear information on the mitigation plan as suggested by the site inspection report. DFO Tinsukia has written to OIL seeking clarification on mitigation plan, as there seems to be no clear strategy or mitigation measures taking place at the time of the incident and site inspection (DFO, Tinsukia, pers comm). It is important to note that the present spill has not stopped and is still polluting and contaminating the surrounding areas. A similar incident in the Kalamazoo river, USA took several years and millions of dollars to contain.

The current oil spill occurred in an area that is bordered by protected areas, rivers and important wetlands and Important Bird Area, which are the lifeline of not only biodiversity but also the livelihood of local communities. Having occurred in the monsoon season, the extent of impact due to the spread of toxic hazardous gases and chemicals through air and water has spread far more than the usual area of impact, causing large-scale damage. People in the area have reported severe breathing difficulty, headaches and nausea. Even our survey team has suffered from the same symptoms, and experienced heavy presence of oil and chemicals in the environment. The entire area is also disturbed by the sound that is being generated by gas leakage. The sound can be heard even about 10-12 km away from the place of accident. The smell of oil permeates the entire landscape, with plants covered with layers of oil due to continuous leakage for the last 8 days. There is seepage of oil to the nearby wetland and other water bodies adjacent to Baghjan (D Gogoi, pers comm.).

Oil well blow out spews hundreds of chemicals in air, water and ground, contaminating the impact zone and surroundings. The hydrocarbon component comprises of hundreds of organic compounds, many of which are hazardous when released into the environment, for e.g. Polycyclic aromatic hydrocarbons (PAHs) amongst others. The distressing aspect of these compounds is their property of persistence and toxicity (Liu et al. 2020). These carcinogenic compounds get widely distributed in water, soil, sediment and air, and as they do not get photochemically and biologically oxidised or decomposed, their accumulation in these systems is very high (Zhao et al. 2017; Gundlach 2017; Guzzella and De Paolis 1994). Some of the effects of this type of contamination has been reported to be hypothermia, skin and eye irritation, indigestion, dehydration, impaired reproduction and/or pneumonia in many taxa (Environmental Protection Authority, 1993). These toxic particles persist in the environment in particulate matter and sediments, and when environmental condition changes, they are again released into water, leading to secondary pollution and long term toxicity in these areas, which is a worrying scenario for all life forms, including humans.

Adding to the concerns is the high seismic nature of this area, where the oil wells are operating. The whole region has been subjected to frequent changes in morphology

owing to recurrent earthquakes. These earthquakes are known to have caused extensive landslides and ground fissuring, amongst other effects to morphology. The region is known to have experienced several high magnitude earthquakes within a short period. Thrusts, faults and folds are a common characteristic of the region, exacerbating the concerns of oil drilling in the region, where sediments and rocks of the region have been experiencing compressive forces (Borgohain et al. 2016).

3 Reconnaissance Survey to assess damage

Given that the maximum impact area will be Dibru-Saikhowa National Park and Maguri-Motapung Wetland, we started with our preliminary reconnaissance survey to assess the impact on flora and fauna in the surrounding region. The following activities were carried out since 29th May 2020, and we report below our work till 02nd June, 2020.

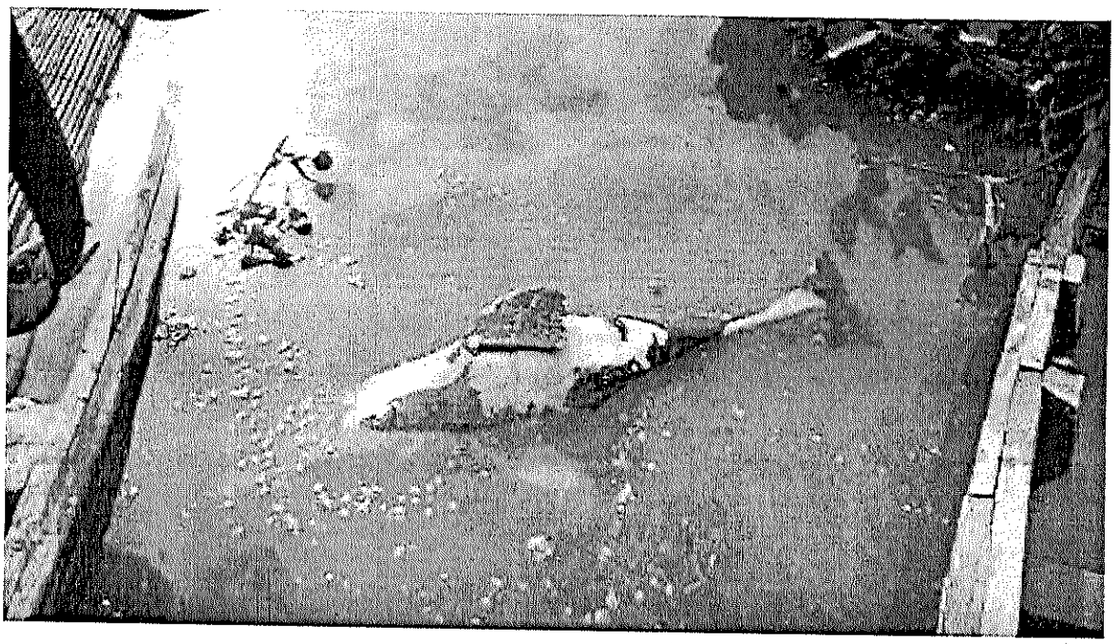

Figure 2: Dead Ganges river dolphin in Maguri-Motapung Beel due to oil leakage

i.Contaminant survey

a. <u>Presence of contaminants in the dolphin carcass</u>
Samples of tissue and blubber were collected from the carcass of dolphin calf retrieved from the Maguri beel (Figure 2). The samples are preserved and is to be sent for quantifying presence of contaminants.

b. <u>Collection of water and soil sediment samples</u>
The extent of oil spill in the main stream of Lohit River (Borgohain et al., 2016) was assessed. Thirty samples of water and soil sediments from 10 independent sites were collected from a 15 km stretch of the river. Possible source points from where the oil spills into the main stream were identified (Appendix 1a, 1b). Water quality was

measured at each of the sites. The essential water parameters (Temperature, pH, DO, EC, Sp. conductance, TDS and Salinity) were measured in flowing water with the help of YSI Professional Digital Sampling System (ProDSS) and Professional Plus handheld multi-parameter probe (YSI, USA). The probes were set to log every 3 minutes in Brahmaputra and 5 seconds in *beel.* In the present study, we aimed to investigate the presence, concentrations, and ecological risk of PAHs in the natural gas leakage around the rig and the heavy metals present in water and sediment samples collected from the sampling points. The instruments Required for the analysis will be GCMS (Gas Chromatography – Mass Spectroscopy) for identification and GC – FID (Flame ionization detector) for quantification of PAHs. Heavy metals include copper, lead, iron, magnesium, sodium, molybdenum, zinc, cadmium, vanadium, titanium, manganese, chromium, cobalt, antimony, uranium, aluminium, tin, barium, gallium, silver and arsenic by AAS (Atomic Absorption Spectroscopy) or ICP inductively coupled plasma for heavy metals.

ii. Impact on flora and fauna

a. Terrestrial flora and fauna

The impact of the oil and gas spill in the adjoining regions of the Maguri-Motapung wetland was assessed. Surveys for the status of vegetation and birds were conducted in two sites, one 100 m from the oil spill site (affected area) and another a km away from the oil spill site (partly affected area). The two sites were visited on two consecutive days and surveyed. Transects of 100-600 m were laid in each of the site. The length of the surveys were curtailed due to unconducive conditions due to excessive air pollution due to oil and chemicals. A cumulative length of 1 km was surveyed in the affected site and a 3 km was surveyed in the partly affected site. Abundance and species were birds were recorded along with the time of sighting. Species and percent cover of dominant plants were recorded. Status of the leaves (green/shrinking/dry) which is an index of the damage was noted along with supporting photographs. The survey is still ongoing in these sites, with additional sampling in control sites.

b. Aquatic fauna

A 20 km survey close to impact zone was carried out for presence of Ganges river dolphins. Five dolphins were encountered in the stretch.

c. Collection of dead animals

Post oil spill, oxygen in water depletes and the fishes produce mucous on body and the body gets pale in colour. This was found in all the fishes that were captured from the Lohit (n=6) and the Maguri *beel* area (n=20). A large amount of fishes was found dead in Maguri beel. The collected specimens were identified to *Labeo calbasu, Labeo bata, Mystus cavacius, Mystus vittatus, Eutropiichthys vacha, Channa strata, Cirrhinus reba* which are economically important fishes and *Puntius sophore, Puntius terio, Gudusia chapra* and *Anabus anabus* are ornamental important fishes(Appendix 1c).

Apart from these, dead specimens of 4 species of beetles belonging to the Family Coleoptera and a Checkered keelback snake (*Xenochrophis piscator*) was also encountered and collected.

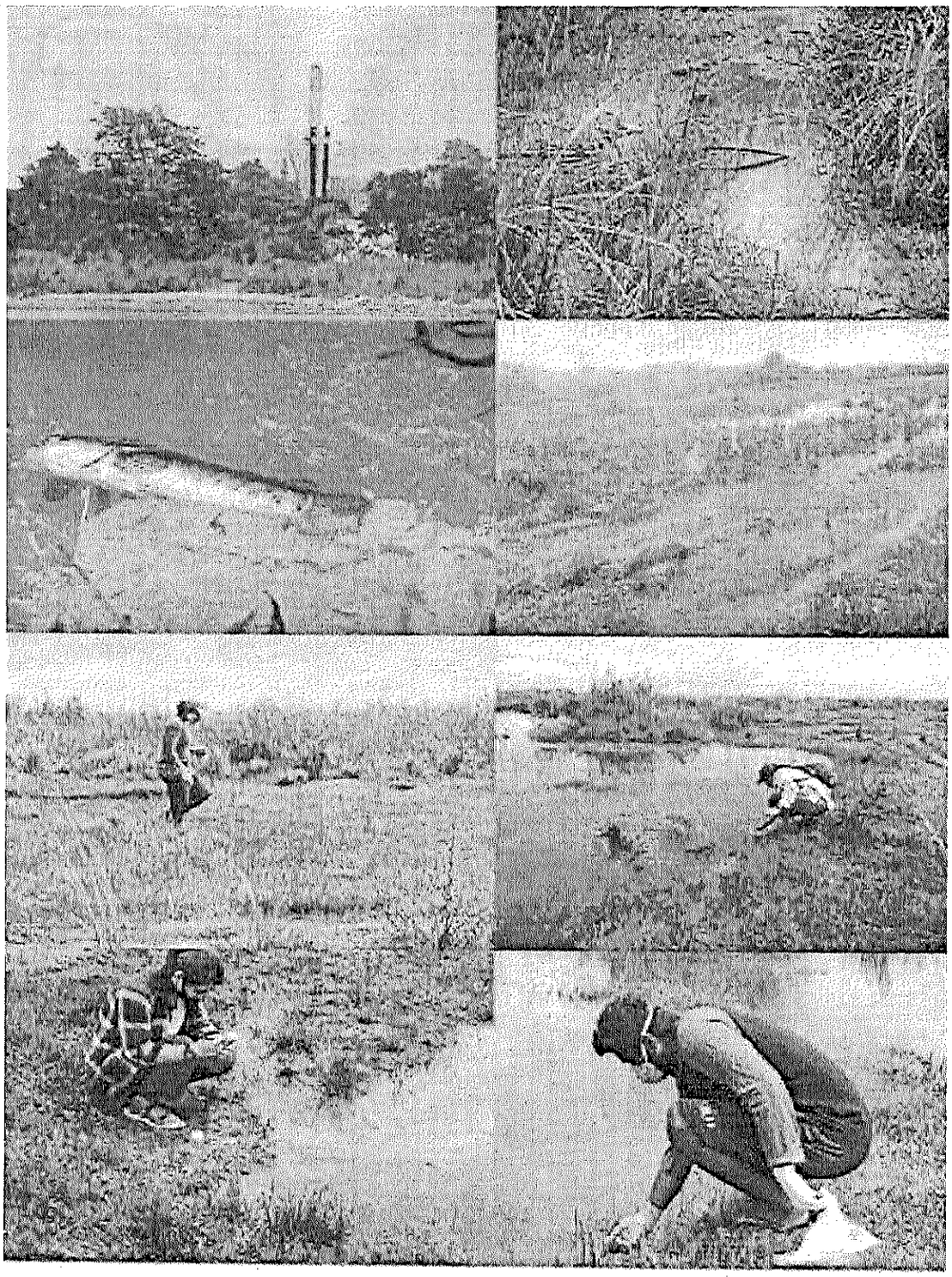

Figure 3: (Clockwise from top left) Oil and natural gas leakage site; Oil spill in Maguri-Motapung beel; Affected grasslands near the oil and gas explosion site; Field photographs (4); Dead fish in the oil spilled water

4 Inference

While sampling and survey is still ongoing, and analysis of samples for toxicity is still in process, some preliminary observations are as follows. The area around the spill over is of high biodiversity value. The spill has resulted in mass mortality and severely impacting the environmental condition resulting in debilitating conditions for species to survive. The toxic fumes and oil coating has universally affected flora and fauna. The contaminants and oil is continues to be released in surrounding areas and immediate steps are needed to contain this spill over. The toxins released are known to have long-term persistence in soils and sediments, which will not only affect current life conditions, but due to sustained release over a long period, pose a serious health risk for a longer term. The current observations and communications with locals lead us to believe that there is no mitigation plan in place, let alone a comprehensive one. There is a need to do comprehensive impact assessment of the current accident and the entire OIL field operation in biodiversity rich area for this region. This is even more important for this region, given the high seismic activity in the area. Given the current situation, and based on the impact observed, it would be not only prudent but also essential for the well-being of all life forms that the approved new wells, should be initiated only after a thorough investigation of potential impact, as well as evaluating disaster handling capabilities in place, with appropriate technology and trained man power.

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Appendix 1 – List of sampled sites and dead specimens collected

Appendix 1a: Water and sediment sampling sites in Brahmaputra River

Date	Site	Water sample	Sediment Sample
30-05-2020	Raidang	1 l	100 g
30-05-2020	Rangiadustam	1 l	100 g
30-05-2020	Naloniwathoi gaon	1 l	100 g
30-05-2020	Diholong Kohale Banni	1 l	100 g
30-05-2020	Dighaltarang	1 l	100 g
30-05-2020	Baghjan	1 l	100 g
30-05-2020	Guijan	1 l	100 g
31-05-2020	Kothalbam	1 l	
31-05-2020	Shindi-habi	1 l	100 g
31-05-2020	Rangagora tea estate	1 l	100 g

Appedix 1b: Water and sediment sampling sites in Maguri-Motapung *beel*

Date	Site	Water sample	Sediment Sample
01-06-2020	Maguri beel site 1	1 l	50 g
01-06-2020	Maguri beel site 2	1 l	50 g
01-06-2020	Maguri beel site 3	1 l	50 g
01-06-2020	Maguri beel site 4	1 l	50 g
01-06-2020	Maguri beel site 5	1 l	50 g
01-06-2020	Maguri beel site 6	1 l	50 g
01-06-2020	Affected area near rig	1 l	50 g
01-06-2020	Affected area near rig	1 l	50 g
01-06-2020	Affected area near rig	200 ml	
02-06-2020	Replicate (Maguri beel site 1)	1 l	50 g
02-06-2020	Replicate (Maguri beel site 2)	2 l	50 g
02-06-2020	Replicate (Maguri beel site 3)	3 l	50 g
02-06-2020	Replicate (Maguri Beel site 4)	4 l	50 g

Appemdix 1c: Fish species that were found dead in the affected area in Maguri-Motapung *beel*

Family	Species	IUCN Status
Cyprinidae	Labeo calbasu	LC
	Labeo bata	LC

	Mystus cavacius	LC
	Mystus vittatus	LC
	Channa strita	LC
	Cirrhinus reba	LC
	Puntius sophore	LC
	Puntius terio	LC
Clupeidae	Gudusia chapra	LC
Channidae	Channa striata	LC
Bagridae	Mystus cavacius	LC
	Mystus vittatus	LC
Anabantidae	Anabus testudineus	LC
Schillbeidae	Eutropiichthys vacha	LC

VAKALATNAMA
IN THE NATIONAL GREEN TRIBUNAL

ORIGINAL APPLICATION NO. 43 OF 2020 /EZ

BONANI KAKKAR — APPLICANT

Versus

OIL INDIA LIMITED AND ORS. — RESPONDENT

I, BONANI KAKKAR, APPLICANT in the above appeal / petition do hereby appoint and retain **SHRUTI AGARWAL** Advocate to act and appear for me/us in the above appeal/petition and on my/our behalf to conduct and prosecute (or defend) the same and all proceedings that may be taken in respect of any applications connected for review to file and obtain return of document for review and to take all necessary steps on my/our behalf in the matter.

I/We agree to ratify all acts done by the aforesaid Advocate in pursuance of this authority.

Dated this 13th day of June , 2020

Accepted, Identified, Certified & Satisfied

Bonani Kakkar

Shruti Agarwal.

Applicant

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