Next NF – DeepStar Joint R&D Program

日本財団-DeepStar連携R&D次期プログラムについて

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Next NF - DeepStar Joint R&D Program

- **Newly signed MoU** for the joint R&D between NF and DeepStar today (December 6th, 2021)

- Conduct R&D through collaboration between Japanese companies and DeepStar operators
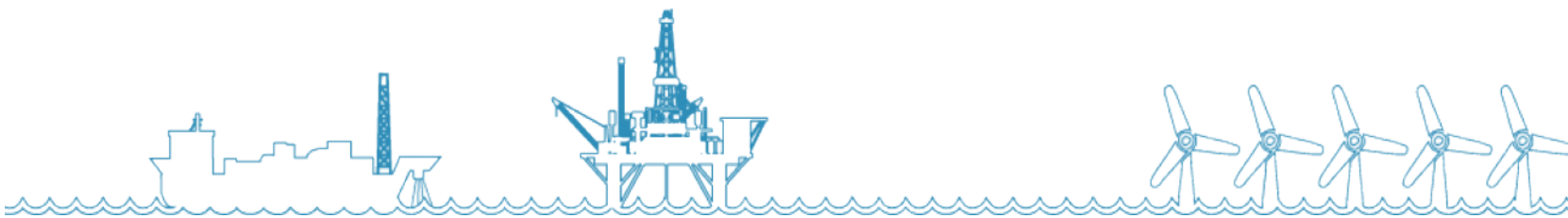 - Budget : 10 million US$
  - Term : Dec 2021 〜 Apr 2026

Next Program

Background

Japan

- **The government declared to realize carbon neutrality by 2050 (Oct 26th, 2020)**

The United States of America

- **President Biden decided to rejoin the Paris agreement (Jan 20th, 2021)**
- **To seek for a "net-zero emissions economy" by no later than 2050 (Nov 1st, 2021)**

World

- **Each country confirmed that the temperature rise due to greenhouse gases will aim by the rise of 1.5 degrees Celsius compared to the temperature level of the pre-industrial era as the outcome of the COP 26 (Nov 13th, 2021)**
- **This is lower than the temperature rise of 2 degrees Celsius of the Paris Agreement**

https://www.kantei.go.jp/

https://www.cnn.co.jp/usa/35162464.html

IN PARTNERSHIP WITH ITALY

https://ukcop26.org/

4

NF – DeepStar new pillar

Japanese companies

DeepStar

- **Technology**

- **Abundant experience**
- **Knowledge**　・**Testing fields**

The current pillar of the DeepStar scope
- Subsea Systems Engineering
- Flow Assurance
- Floating Systems & METOcean
- Drilling, Completions & Interventions

Global Trend

The new pillar of NF - DeepStar joint R&D

・ **Green technology**

i.e. de-carbonization, renewable energy, green house gas reduction, marine pollution prevention, and etc.

（＋・Safety improvement）

Innovating new green technology and support the dynamic change of the deepwater E&P through The Nippon Foundation – DeepStar Framework

Themes for next Program

1. Geothermal generation by using high temperature in preserver (renewable energy)

2. Wind power/Ocean current power generation to supply offshore oil & gas production facilities (renewable energy)

3. Cost reduction technology for flammable gas removal and re injection at production facilities (global warming)

4. Establishment of oil spill drift forecast simulation method by using local ocean current monitoring by aerial drone (marine environment)

5. Hydrogen related technologies (global warming)

6. Safety related techs including NUF (normally unattended facilities) and robotics (the safety of the working environment)

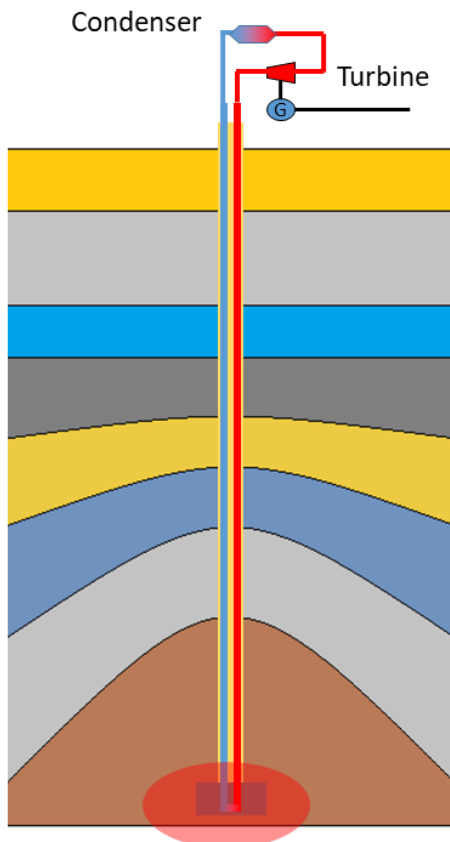7. Water treatment related technologies (marine environment)
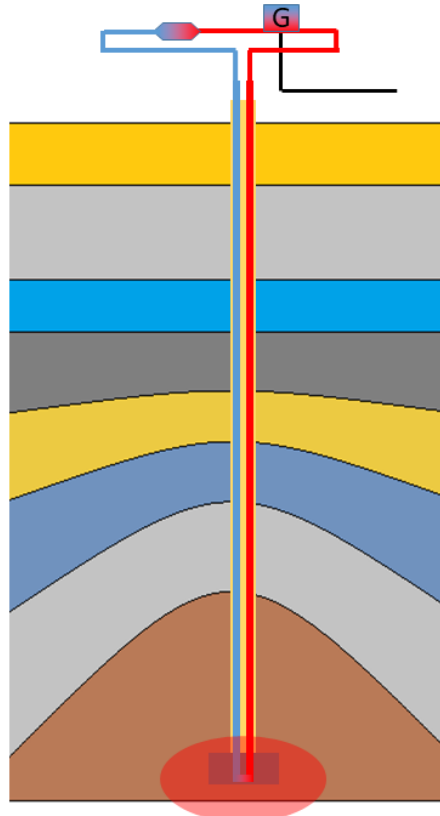
Themes for next Program

1. Geothermal generation by using high temperature in preserver (renewable energy)

Concept design:

Concept 1: Turbine
Condenser
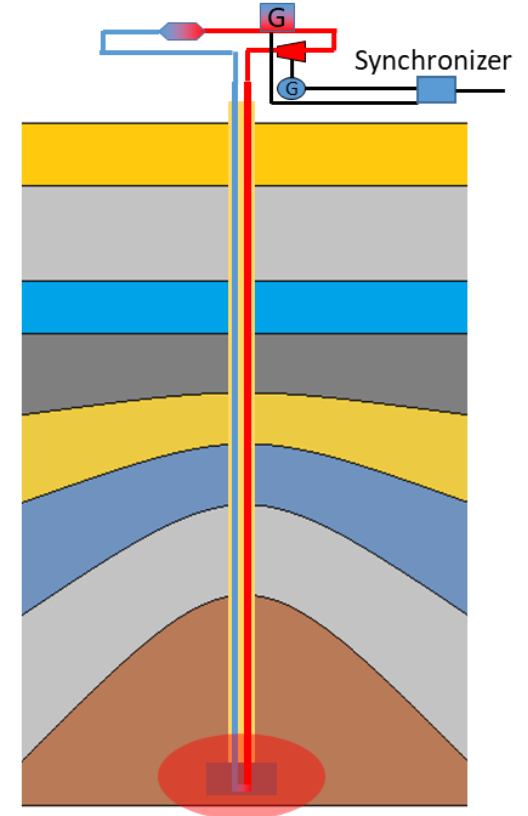Turbine

Concept 2: TEG
Thermoelectric generator (TEG)

Concept 3: Combined
Thermoelectric generator (TEG)
Synchronizer

Using the abandoned HT wells' heat to generate electricity.
Reducing cost of plugging the abandoned wells and reuse them.

Themes for next Program

2. Wind power/Ocean current power generation to supply offshore oil& gas production facilities (renewable energy)

Power generator

Backup power generator
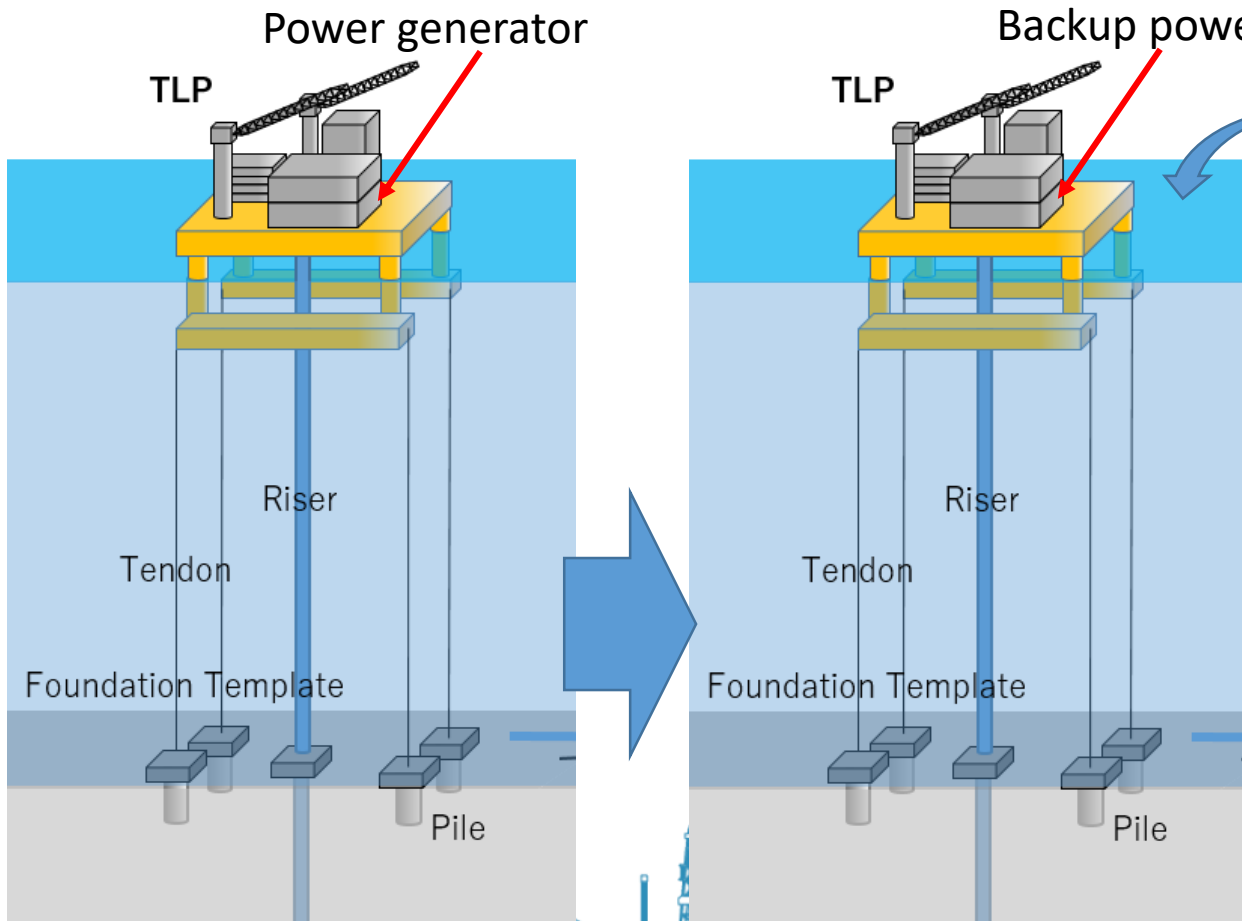
As much as possible, wind turbine supply electricity, and 50% capacity factor is expected.

Themes for next Program

3. Cost reduction technology for flammable gas removal and re-injection at production facilities (global warming)
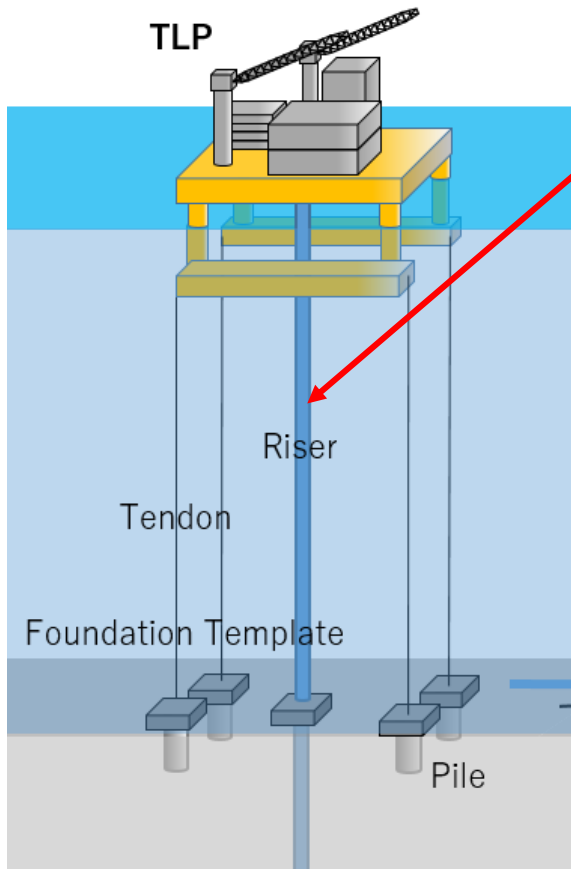
Oil/ Water/ Methane/CO2/ H2S

Now:
Still some facilities flaring methane and release CO2

Future:
Capturing all methane and CO2, then inject into the reservoirs

TLP

Riser

Tendon

Foundation Template

Pile

Themes for next Program

4. Establishment of oil spill drift forecast simulation method by using local ocean current monitoring by aerial drone (marine environment)

Continuous monitoring of ocean currents by drone

The currents of the GOM are complex and change from moment to moment
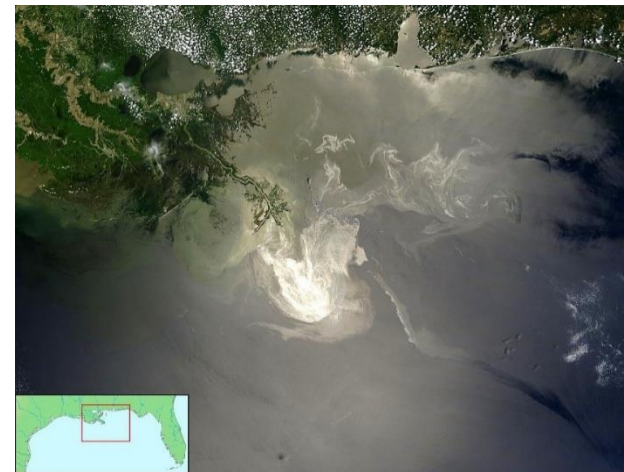
Enables effective oil spill response by improving simulation accuracy

Themes for next Program

5. Hydrogen related technologies (global warming)
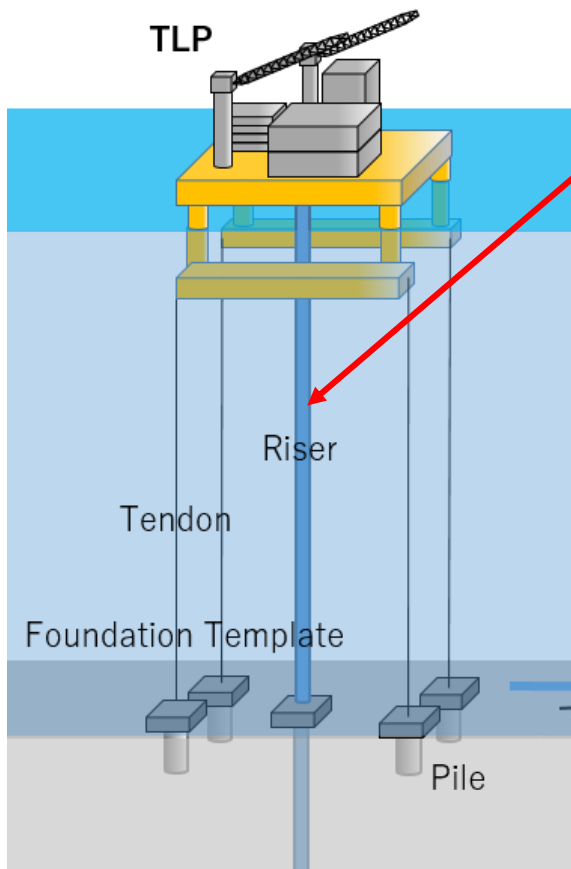
Oil/ Water/ Methane/CO2/ H2S

Now:
Still some facilities flaring methane and release CO2

Future:
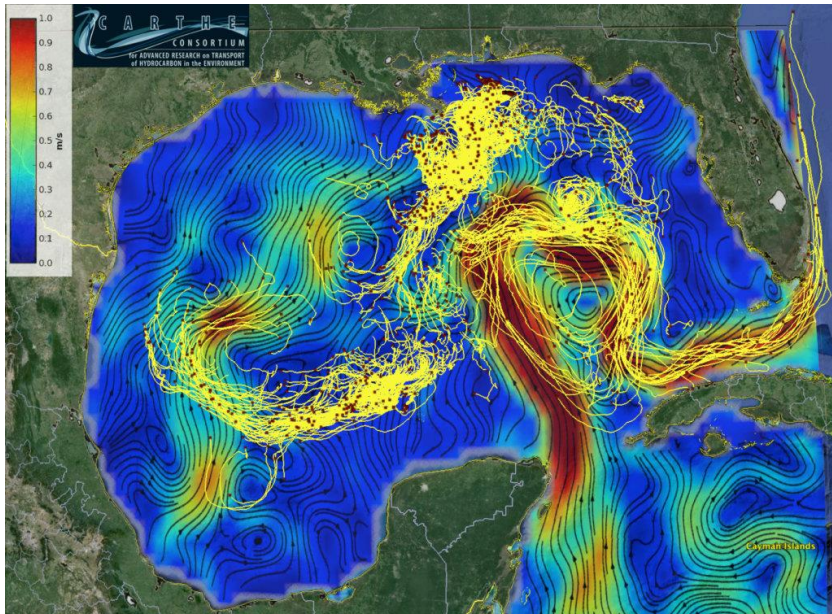Reforming Methane into Hydrogen and CO2, then utilize Hydrogen and inject CO2 into the reservoirs

TLP

Riser

Tendon

Foundation Template

Pile

Themes for next Program

6. Safety related techs including NUF (normally unattended facilities) and robotics (the safety of the working environment)
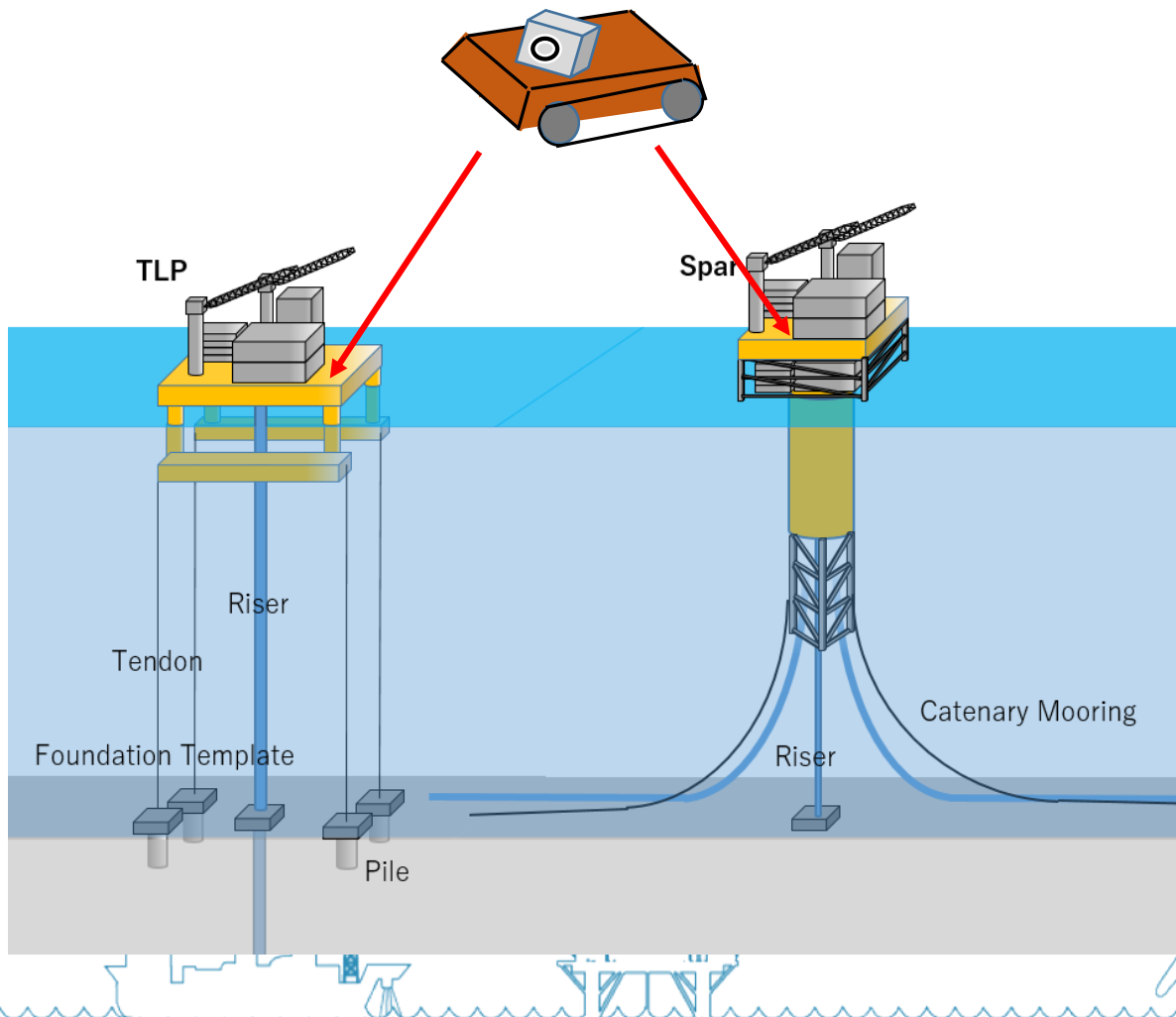
Even in environments where explosive gases are generated, periodical inspections are conducted by operators

Place an explosion-proof robot to minimize the burden on operators and contribute to ensuring safety

TLP

Spar

Riser

Tendon

Foundation Template

Catenary Mooring

Riser

Pile

Themes for next Program

7. Water treatment related technologies (marine environment)
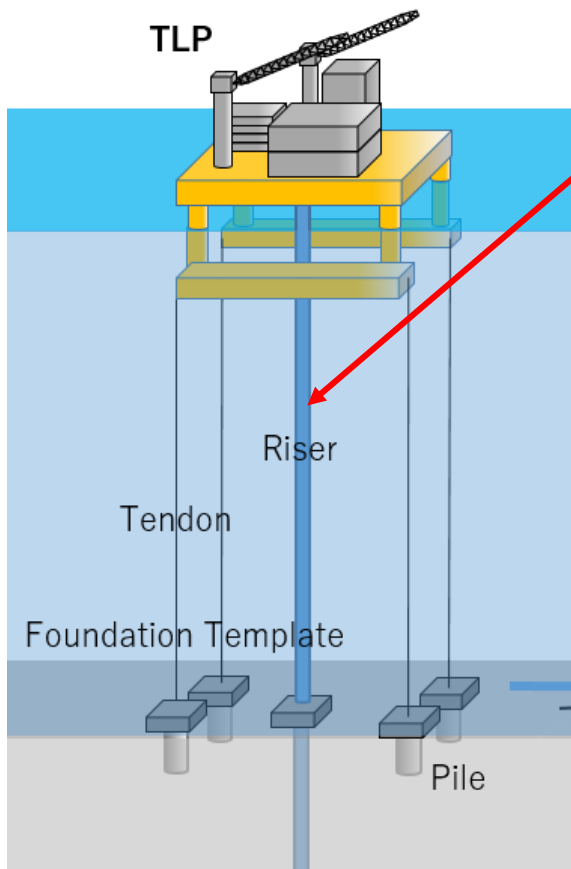
Associated water from Oil & Gas Field

Utilizing filtration device, then make associated water very clean

TLP

Riser

Tendon

Foundation Template

Pile

Membrane

Water molecule

Filtration device

Crude oil molecule
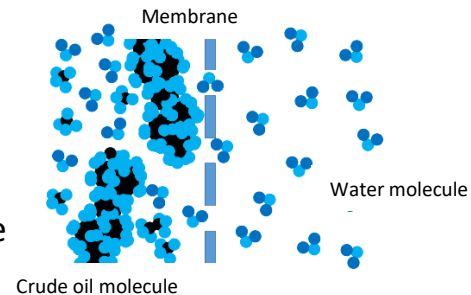
Ceramic membrane

Terms & Conditions of NF - DeepStar Joint R&D Program (plan)

2021.12   2022.6   2023.6   2024.6   2025.6

1st Phase

2nd Phase

・≦US$200K/project (max support rate: 80% of total cost (including management fee))

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be supervised by DeepStar core member(s)

・≦≒US$1milion/project (max Support rate: 80% of total cost by Japanese company(JC))

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be jointly conducted by DeepStar core members with their financial burdens

1st Call (2022)

2021.12   2022.2   2022.4   2022.6

Seminar

1st Phase

Application

Announcement

Examination (DS, NF)

Adoption

Terms & Conditions of NF - DeepStar Joint R&D Program (plan)

	2022.6	2023.6	2024.6	2025.6	2026.5

1st Call (2022)

1st Phase

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2nd Phase

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2nd Call (2023)

1st Phase

≦US$200K/project (max support rate: 80% of total cost (including management fee))

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be supervised by DeepStar core member(s)

2nd Phase

≦≒US$1milion/project (max Support rate: 80% of total cost by JC)

Condition for funding:
・JC should participate in the NF Ocean Innovation consortium
・R&D should be jointly conducted by DeepStar core members with their financial burdens

Thank You for your attention!

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