



Extractives Hub



International Unitization of Trans-Boundary Petroleum Deposits

Dr. William T. Onorato
(PhD. Cantab)
CEPMLP Honorary Fellow

mid-July 2020 Research Insight

Extractives Hub



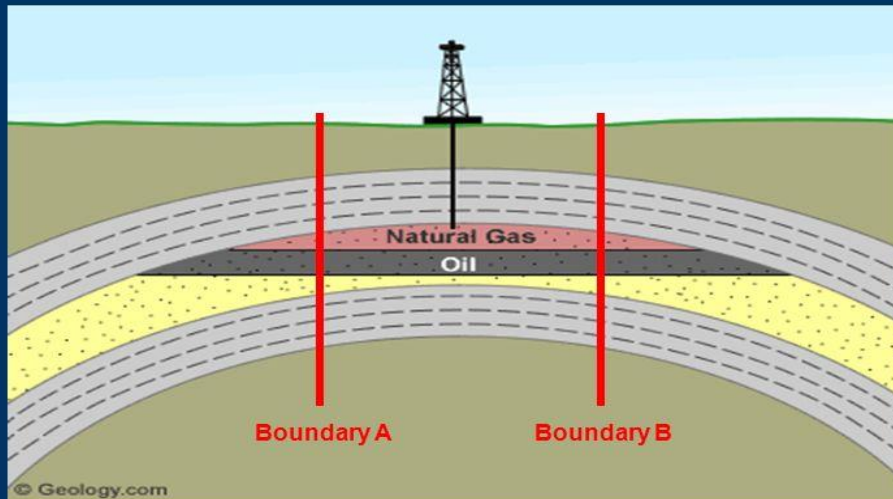
Centre for Energy, Petroleum
and Mineral Law and Policy
University of Dundee

TABLE OF CONTENTS

1. Introduction	3
2. What is Unitization?	4
3. What is the Legal Framework for Unitization?	5
4. Some Examples of International Unitizations	9
5. Conclusions	10

Evolution of Unitization

Hydrocarbon formation does not correspond to surface boundaries



4

Thompson & Knight **Impact**
ATTORNEYS AND COUNSELORS

1. Introduction

Geology and nature are capricious. Neither pay heed to international boundary lines drawn on the Earth's surface by States. Subterranean petroleum deposits seek their own locations, as dictated by the natural forces of heat, pressure and migration that strongly influence them. In the course of their migration these single, unitary, geological structures can sometimes be found to straddle international boundaries.

Thus, if a commercial petroleum deposit is discovered to extend across an international offshore boundary that has already been agreed and delineated by treaty or protocol between opposite or opposing States, an international unitization agreement will normally be negotiated between them. This has been the overwhelming trend of State practice to date. Illustrative examples that exist are set forth in section 4, below.

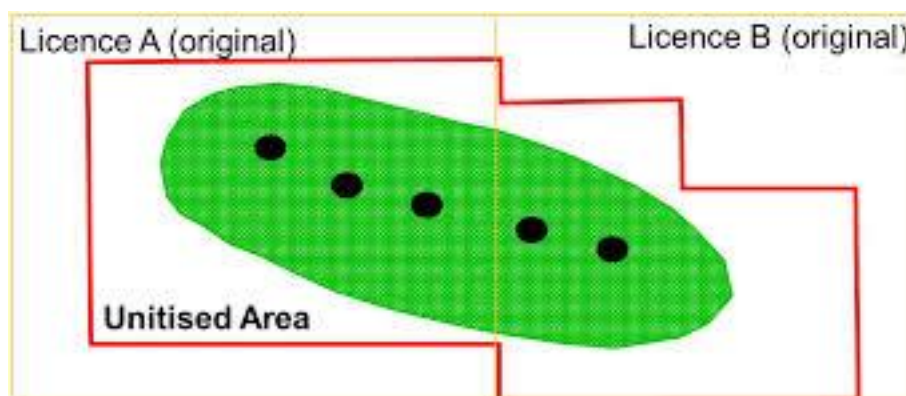
International unitization (IU) must be distinguished from the outset, however, from international joint development (IJD), which is the preferred solution when it is either known, or it is reasonably expected, that a hydrocarbon deposit is located in a "gray area" of overlapping international territorial claims by such States. IJD is, thus, only relevant in situations where no such boundary delimitation agreement(s) have already been reached.

IU had its origin and genesis in the series of North Sea offshore delimitation treaties, such as the UK-Norway treaty of 1965, which typically contained a “single geological structure clause” to the effect that:

“If any single geological petroleum structure or petroleum field ... extends across the dividing line and the part of such structure or field which is situated on one side of the dividing line is exploitable, wholly or in part, from the other side of the dividing line, the Contracting Parties shall, in consultation with the licensees, if any, seek to reach agreement as to the manner in which the structure or field shall be most effectively exploited and the manner in which the proceeds deriving therefrom shall be apportioned.”¹

Since petroleum is a fugacious substance, prone to migration, a hydrocarbon reservoir may often be discovered to straddle two or more license or contract areas. In the case of a trans-boundary petroleum deposit, such straddling would be across agreed, delineated international boundaries.

As it is a primary objective of States and their NOCs/licensees to maximize the economic recovery of petroleum from the common hydrocarbon reservoir, unitization is an approach that the oil and gas industry has developed to ensure that, to the extent possible, this is achieved.



2. What is Unitization?

Unitization is a procedure by which a boundary-straddling, commercial petroleum deposit is produced as a single unit, without reference to, *but also without prejudice to*, the existing boundaries. From the outset, detailed seismic examination and initial exploratory drilling must first be conducted to confirm that a deposit indeed lies across an agreed international boundary line. What then, is the procedure and process by which such international unitizations may be carried out?

¹ Agreement between the Government of the United Kingdom and Northern Ireland and the Government of Norway relating to the Delimitation of the Continental Shelf between the Two Countries (10 March 1965) Gt Brit TS No. 71 (1965) Cmnd 2757; UNTS 214

Firstly, after a straddling deposit is discovered and confirmed as such, an initial estimate is made of the amount of acre-feet of petroleum in place on either side of the international boundary.

This would produce an initial, notion or ratio (unit-formula) of petroleum in the cross border deposit belonging to each State. As development progresses, one or several redeterminations may be made, more accurately to calculate the petroleum that was originally in place beneath the territory of each participating State. Rebalancing of lifting schedules and payment arrangements would then be made accordingly.

The overwhelming advantage of unitization at the international level is to allow production of the resource advantageously as a single entity or unit, without regard to the location of the previously agreed international boundary. Normally it is carried out by a single unit operator, acting for both licensees/States. As a consequence thereof, further exploration and appraisal drilling, as well as production facilities can be located in the most physically optimal locations, rather than in those dictated solely by the geographical location of the boundary.

Secondly, however, there are several recognized *caveats* or rules of practice concerning international shared petroleum deposits that have been followed consistently for many years.

They may be viewed as merely State practice, but there is indeed a viable argument today that they have increasingly become crystalized rules of customary international law. Succinctly, they are that:

- (i) a State sharing in a common international petroleum deposit may not unilaterally exploit it over the timely objection of the other sharing State;
- (ii) the method of exploitation and the underlying legal basis for just and equitable apportionment of such a deposit must, instead, be agreed upon by the States involved; and
- (iii) these sharing States should enter into good faith negotiations to arrive at such an agreement or at least at provisional arrangements until a final agreement is reached.

In summary then, the ultimate purposes of international unitization are to avoid the unnecessary economic costs of competitive well drilling and construction of duplicative exploration and production (E&P) facilities; promotion of maximum efficient recovery (MER) through the application of best technical and engineering practices from petroleum deposits straddling international boundaries; sharing of E&P infrastructure to lower production costs through economies of scale; minimizing waste, spoilage and environmental damage by reducing the unnecessary infrastructure needed to produce at MER; and assuring that each participating State ultimately receives a fair and equitable share of production from the unit.

3. What is the Legal Framework for Unitization?

International unitization is subject to a downward cascading legal framework. When a reservoir straddles the delimited boundaries of two or more sovereign States, this legal framework includes, from the top down:

- International Law, being negotiated bilateral treaties, applicable multilateral conventions, and international custom and practice;
- The domestic laws, decrees and regulations of the host States applicable specifically and generally to their petroleum sectors, as well as contracts (concessions, PSAs or hybrids) between the host States and their licensees (HGAs), authorizing the latter to conduct E&P in the allotted contract area. In some cases, these HGAs are enacted into domestic law; and
- Private agreements, such as joint operating agreements (JOAs) and unit operating agreements (UOC), amongst the concessionaires/licensees as to their participation in the venture and their plans for E&P development.

Assuming that the relevant boundary delimitation treaty contains a “single geographic structure clause”, as mentioned above, the contracting States would have already taken an initial step towards agreeing on international unitization. Nevertheless, any such cross-border unitization will need to be agreed to at two levels:

- (i) the impacted States will first need to reach mutual agreement; and
- (ii) the respective license-holders will next need to enter into a UOC and produce a satisfactory development plan.

The purpose of the first agreement is to set out the rights and obligations of each State with respect to the field development and to incorporate procedures requiring agreement of both States to minimize conflicts.

In a cross-border field, the unit operating agreement between the licensees will follow the normal pattern in most respects. However, it will be subject to the provisions of the relevant treaty so that, for example, the selection of the unit operator or a redetermination of tract participants will require the agreement of the respective States. The UOC itself will require the approval of both States in order to ensure that it embodies the requirements of the treaty. The treaty is binding only on the respective States; it does not bind the license holders directly, as they are not parties to it.

A classic example of the operation of this cascading legal regime in practice is embodied in the 1978 UK-Norway treaty regarding international unitization of the cross-border Frigg Field Reservoir.² Referring first to the 1965 treaty on delimitation of the continental shelf between the two States, reference is made to Article 4 thereof which contains the operative “single geological structure

² Agreement between the Governments of the UK and Norway relating to the exploitation of the Frigg Field dated 20 July 1978.

clause” under which “the two States have undertaken, in consultation with the licensees, to seek agreement as to the manner in which any such field shall be most effectively exploited and the manner in which the proceeds deriving therefrom shall be apportioned.”

Article 1 of the 1976 treaty then provides that:

“(1) The Frigg Field Reservoir shall be exploited as a single unit by means of installations specified in Annex A to this Agreement, and except that those installations may be replaced from time to time by installations for a similar purpose on a similar location, the Governments shall require that no other installations are used without prior consent of both Governments.

“(2) Each Government shall require those who are its licensees at the date of signature of this Agreement to enter into agreements [e.g. a UOC] between themselves and the licensees at that date of the other Government to regulate the exploitation in accordance with this Agreement of Frigg Gas, which agreements require the approval of the two Governments, and incorporate provisions to ensure that in the event of a conflict between any of those agreements and this Agreement the terms of this Agreement shall prevail... “

Consistent with international unitization “best practices”, provision is made for both the initial determination of reserves in place under the territory of each State at both the commencement of production, and periodically thereafter, at the request of either State:

“The two Governments shall consult with a view to agreeing a determination of the limits and estimated total reserves of the Frigg Field Reservoir and an apportionment of the reserves therein as between the Continental Shelf appertaining to the United Kingdom and the Continental Shelf appertaining to the Kingdom of Norway. For this purpose the licensees shall be required to submit to the Governments a proposal for such determinations³; and

“The limits of the Frigg Field Reservoir and the total amount of the reserves and the apportionment of the reserves or any of them when agreed or determined under Article 2 shall be reviewed if either Government so requests: (a) At the date of commencement of production of Frigg Gas; and (b) At the expiry of every period of four years after that date;⁴

For the purposes of the exploitation of the Frigg Field, a Unit Operator is appointed by agreement between the licensees, subject to the approval of the two contracting States.⁵

³ Ibid, Article 2 (2)

⁴ Ibid, Article 3

⁵ Ibid, Article 5

FRIGG FIELD

Fig 1



In summary, then, the essential elements of an IU regime are:

- a treaty or protocol delimiting the international offshore boundary between opposite or opposing States (ideally containing a “single geological structure clause”);
- the subsequent discovery of a commercial petroleum deposit that straddles such international boundary;
- a further treaty or protocol between the interested States agreeing both to exploit the boundary-straddling petroleum deposit as a single unitary structure and on the methodology by which to accomplish same;
- modifications, if necessary, to HGAs with licensees of each State for the area in which the deposit lies mandating international unitization by them;
- the negotiation of a UOA amongst each States’ licensees and the submission of a proposed development plan, satisfactory to the interested States;
- an initial determination of the amount of petroleum underlying the territory of and belonging to each contracting State and the periodic redetermination thereof as development progresses; and
- the appointment of a single unit operator to carry out the agreed plan of unitization.

4. Some Examples of International Unitizations

The 1978 Frigg Field unitization in the North Sea, discussed above, was followed in 1979 by similar agreements between the UK and Norway for the unitization of the cross-border Statfjord⁶ and Murchison⁷ oilfields. They were later supplemented in 2005 by a Framework Agreement between the two States under which the two further cross-border oilfields, Blane and Enoch, were unitized.⁸

Elsewhere in the North Sea, the UK and the Netherlands agreed in 1993 to the international unitization of the Markham Field reservoirs.⁹

In 2007, in the Caribbean, the governments of Trinidad and Tobago and Venezuela entered into a framework agreement to unitize the Loran-Manatee petroleum field found to straddle the agreed international boundary between them.¹⁰

In Africa, Nigeria and Equatorial Guinea have agreed to joint exploration/unitization of the cross border Ekanga/Zafiro field.¹¹

In Asia, the Fairley Baram cross-border field, between Malaysia and Brunei was unitized, as were the Sunrise and Troubadour straddling the offshore boundary between Timor-Leste and Australia.¹²

In the Caspian Sea area of Central Asia, the littoral States of Russia, Kazakhstan and Azerbaijan have all added the equivalent of a “single geographic structure clause” to their bilateral offshore boundary delimitation agreements amongst them in anticipation of the discovery of cross-border petroleum deposits that could be developed as a single unit.¹³

⁶ 1979 Agreement between the Government of the UK and Norway relating to the Exploitation of the Statfjord Field Reservoirs and the Offtake of Petroleum therefrom

⁷ 1979 Agreement between the Government of the United Kingdom of Great Britain and Northern Ireland and the Government of the Kingdom of Norway relating to the Exploitation of the Murchison Field Reservoir and the Offtake of Petroleum therefrom

⁸ 2005 Framework Agreement concerning Cross-Boundary Petroleum Co-operation; 2006 Letter Exchange relating to the Joint Exploration of the Blane Field Reservoir; and 2006 Letter Exchange relating to the Joint Exploration of the Enoch Field Reservoir

⁹ Agreement between the UK and the Netherlands relating to the Exploitation of the Markham Field Reservoirs dated 3 March 1993.

¹⁰ Framework Treaty relating to the Unitization of Hydrocarbon Reservoirs that extend across the delimitation line between the Republic of Trinidad and Tobago and Venezuela dated 20 March 2007.

¹¹ Protocol in Implementation of Article 6.2 of the Treaty Between the Federal Republic of Nigeria and the Republic of Equatorial Guinea Concerning their Maritime Boundary, noting therein that the cross-border area described in Article 6.2 of the Treaty can be developed more efficiently if developed together with a contiguous area lying to the northwest, as a single unit.

¹² Agreement Relating to the Unitization of the Sunrise and Troubadour Fields, Australia - Democratic Republic of Timor-Leste, Mar. 6, 2003, (entered into force Feb. 23, 2007).

¹³ For example, the Agreement between the Republic of Azerbaijan and the Russian Federation on Delimitation of the Adjacent Areas of the Caspian Seabed (Moscow, September 23, 2002) states in Article 2.2 that “The exploitation of mineral resources of the structures crossed by the delimitation line shall be carried

5. Conclusions

Unitization, which had its origins in North American “best oilfield practices”, is eminently suitable for adoption and adaption at the international level. State practice to date has borne this out. States interested in a common petroleum deposit each wish to maximize production of the entire boundary-straddling deposit while avoiding spoilage, waste, environment degradation and economically-damaging competitive drilling. Unitization provides the opportunity to do so in a cooperative manner, consistent with the tenets of international law. By allowing such deposits to be developed as a single unit, without reference to the agreed boundary between them, States benefit from both economies of scale and geological/geographical advantage. There is every indication that as technology advances to provide superior access to petroleum situated in offshore areas previously deemed to be inaccessible, if such new discoveries are found to be of a trans-boundary nature, they will be produced through IU by the States concerned.

out in accordance with international practice, applied to the development of trans-boundary fields, by the authorized organizations designated by the Governments of the Parties.”