



# **Bridging Document**

**between**

**the Oil and Fuel Gas Reserves and Resources  
Classification of the Russian Federation of 2013**

**and**

**the United Nations Framework Classification for Fossil  
Energy and Mineral Reserves and Resources 2009  
(UNFC-2009)**

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# **Bridging Document between the Oil and Fuel Gas Reserves and Resources Classification of the Russian Federation of 2013 and the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009)**

**Prepared by the State Commission of Mineral Reserves of the Russian Federation and the Technical Advisory Group of the Expert Group on Resource Classification\***

## *Summary*

This document provides the Bridging Document between the Oil and Fuel Gas Reserves and Resources Classification of the Russian Federation of 2013 (RF2013) and the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009). It compares reserves and resources by Categories of RF2013 to Categories and Classes of UNFC-2009.

Bridging Documents explain the relationship between UNFC-2009 and another classification system that has been endorsed by the Expert Group on Resource Classification as an Aligned System. They incorporate instructions and guidelines on how to classify estimates generated by application of that Aligned System using the UNFC-2009 Numerical Codes. The relevant Bridging Document shall be identified when reporting estimates using the UNFC-2009 Numerical Codes. RF2013 is independent from UNFC-2009 and is mandatory for reporting to the Russian Federation Ministry of Natural Resources and Environment. This Bridging Document has no bearing whatsoever on the mandatory reporting requirements or on the independent application of RF2013.

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## **I. Introduction**

1. Bridging Documents explain the relationship between the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009) and another classification system that has been endorsed by the Expert Group on Resource Classification as an Aligned System. They incorporate instructions and guidelines on how to classify estimates generated by application of that Aligned System using the UNFC-2009 Numerical Codes. The relevant Bridging Document shall be identified when reporting estimates using the UNFC-2009 Numerical Codes.
2. This document compares reserves and resources by categories of the Russian Federation Classification to Categories and Classes of UNFC-2009.
3. The Russian Federation Classification (henceforth, RF2013) is the classification of reserves of oil and combustible gases approved by order of the Russian Federation Ministry of Natural Resources and Environment dated 01.11.2013 N477 (with effective date of 1 January 2016). It establishes unified guidance regarding the Russian Federation principles for assessment and state accounting of reserves and resources of oil, combustible gases (free gas, gas from gas cap, gas dissolved in oil) and gas condensate.
4. RF2013 is independent from UNFC-2009 and is mandatory for reporting to the Russian Federation Ministry of Natural Resources and Environment. This Bridging Document has no bearing on the mandatory reporting requirements or on the independent application of RF2013.

## **II. Basic principles for identifying reserves and resource categories in RF2013**

5. Oil and gas reserves in RF2013 are subdivided by the extent of commercial development and by degree of geological knowledge into the following categories: A (developing<sup>1</sup>, drilled), B1 (developing<sup>1</sup>, not drilled, known), B2 (developing<sup>1</sup>, not drilled, estimated), C1 (known) and C2 (estimated). RF2013 uses the term “reserves” for the recoverable quantities of oil and gas associated with all discovered accumulations (whether commercial, potentially commercial or non-commercial). The term “resources” is applied to quantities of oil and gas potentially recoverable from undiscovered accumulations. RF2013 uses two terms for reserves: initial and remaining. Remaining reserves are derived by subtraction of produced quantities from initial reserves. It is necessary to use remaining reserves for all RF-2013 categories when mapping to UNFC-2009.
6. Reserves of a deposit/part of deposit drilled by producing wells and developing in accordance with approved project Design Document (Development Process Plan or amendment thereto, Reservoir Management Plan or amendment thereto) correspond to Category A (developing, drilled). Category A includes recoverable reserves of deposits/parts of deposits for which geological structure, shape and dimensions have been determined and fluid contacts have been substantiated by drilling, testing and well logging data. The technological characteristics (production mode, oil, gas, condensate production rates, productivity of wells) have been established by well operation data.

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<sup>1</sup> “Developing” reserves refer to Category A, which are on production and to Categories B1 (located near producing wells) and B2, included in the approved Design Document but that are not currently on production.

7. **Category B1** (developing, not drilled, known) refers to reserves of adjacent parts of deposits not drilled by producing wells, planned to be developed in accordance with an approved Design Document, studied by seismic or other high-accuracy methods and drilled with prospecting, appraisal, exploration, transit or deepened production wells that yielded commercial oil or gas inflows (individual wells may not be tested, but their productivity is inferred by well logging and mud logging data and core data).

8. **Category B2** (developing, not drilled, estimated) refers to reserves of deposits/parts of deposits not drilled with producing wells, planned to be developed in accordance with an approved Design Document, that have been studied by seismic or other high-accuracy methods, the presence of which has been substantiated by data of geophysical and geological studies and testing of individual wells while drilling.

9. **Category C1** (known/explored) refers to reserves of deposits/parts of deposits that have not been brought into commercial development on which test operation thereof or test operation of individual wells may be carried out. Deposits shall be studied by seismic or other high-accuracy methods and drilled with prospecting, appraisal, or exploration wells that yielded commercial oil or gas inflows (individual wells may be not tested but their productivity is inferred by well logging and mud logging data, and core data). These reserves are not yet supported by an Approved Designed document.

10. **Category C2** (estimated) refers to reserves of deposits/parts of deposits, fields that have not been brought into commercial development, that are developed on the basis of a test operation plan for individual wells, studied by seismic or other high-accuracy methods, the presence of which has been substantiated by data of geological and geophysical studies and testing of individual wells while drilling. These reserves are not yet supported by an Approved Designed document.

11. In accordance with the rules and regulatory documents effective in the Russian Federation, for the deposits (fields) under production (reserves of Categories A, B1, B2), the recoverable reserves (recoverable quantities) of oil, gas, condensate and associated commercial components should be determined as a result of technical and economic estimates for the recommended development scenario approved in accordance with the established procedure, oil recovery factor, gas recovery factor, condensate recovery factor, estimated in Project Design Document for deposits (fields) development *during cost-effective field life* and *during the period of reserves exhaustion*.

12. **Technically recoverable but non-profitable for recovery** under current economic conditions hydrocarbon reserves of the mentioned categories referred as A\*, B1\*, B2\*. Reserves of any category with the symbol "\*" are defined as part of technically recoverable reserves which are not profitable for recovery at the current time. They are derived by subtracting profitable recoverable reserves from technically recoverable reserves. Technically recoverable and profitable recovery reserves are determined in each Field Project Design Document.

13. For the fields under exploration (Categories C1 and C2), assessment of oil, gas and condensate recoverable reserves should be carried out in the Field (Deposit) Test Production Design approved in accordance with the established procedure, and with expert appraisals or simplified statistical methods of recovery factors determination (empirical methods, coefficient-based method, analogy method).

14. Categories of **technically non-recoverable reserves** are designated as follows: A\*\*, B1\*\*, B2\*\*, C1\*\*, C2\*\*. Under UNFC-2009 these are classified as "Additional quantities in place". In RF-2013 there is no such category of reserves as "Additional quantities in place" but there are reserves in place and technically recoverable reserves. Reserves with the symbol "\*\*" are the result of subtraction of technically recoverable reserves from the geological reserves of the category.

15. **Undiscovered Resources** of oil, gas and condensate are subdivided by geological knowledge into Categories D0 (prepared), DL (localized), D1 (prospective), D2 (expected).

16. Resources of **Category DO** (prepared) represent the possibility of oil and gas discovery in a ready to drill trap and are used for prospecting works design. **Category DL** (localized) refers to resources of possible play formations in traps revealed by results of geological and geophysical prospecting operations within the areas with unproved commercial oil/gas presence.

17. **D1 Category** refers to resources of lithology-stratigraphy complexes (plays) with already discovered oil/gas accumulations within major regional structures. **Category D2** refers to resources of lithology-stratigraphy complexes with no discovered oil/gas fields (pools) within major regional structures.

18. As in the case of reserves, categories of **non-recoverable resources** (technically non-recoverable) are designated as follows: D0\*\*, DL\*\*, D1\*\*, D2\*\*. Under UNFC-2009 these are classified as Additional Quantities in Place.

### III. Direct mapping of categories and sub-categories

#### A. Application of the G-axis

19. In UNFC-2009, three levels of geologic confidence are specified for known (already discovered) fields: “high”, “moderate” and low”, represented by G1, G2 and G3 Categories. For deposits that are known by indirect data only (at the stage of exploration projects), the G4 Category is used.

20. The RF2013 Categories designate segments of the total accumulation according to geological knowledge based primarily on the offset distance from existing wells. Estimates of recoverable quantities in the A and B1 segments, containing producing wells and adjacent areas, have a high level of confidence (G1). The B2 segment designates areas remote from wells with lower confidence level for estimates of recoverable quantities, confidence ranges from moderate to low (G2 + G3). Similarly, C1 has high confidence (G1) and C2 has confidence levels ranging from moderate to low (G2 + G3). This aligns with the incremental assessment method as shown in Figure 1.

Figure 1  
Comparison of RF2013 and UNFC-2009 in geological knowledge

	<i>UNFC-2009 Category</i>	<i>RF2013 Categories</i>
G1	Quantities associated with a known deposit that can be estimated with a high level of confidence	A, B1, C1, A*, B1* A**, B1**, C1**
G2	Quantities associated with a known deposit that can be estimated with a moderate level of confidence	B2, C2, B2*, B2**, C2**
G3	Quantities associated with a known deposit that can be estimated with a low level of confidence	
G4	Estimated quantities associated with a potential deposit, based primarily on indirect evidence	D0, DL, D1, D2 D0**, DL**, D1**, D2**

21. In RF2013, reserves are also defined for the unprofitable parts of deposit. The symbol “\*” is added to the name of the category: A\*, B1\*, B2\*. The profitability factor has no effect on the geological confidence scale, thus, A\* and B1\* estimates have a high level of confidence while B2\* has a lower level of confidence. The same logic is applied to technically unrecoverable quantities A\*\*, B1\*\*, B2\*\*, C1\*\* and C2\*\*.

22. With regard to Exploration Projects, while UNFC-2009 provides the option to sub-categorize G4.1, G4.2, G4.3 based on geological uncertainty, under RF2013 these categories refer to G4 without sub-categorization, when used alone it reflects the best estimate.

## B. Detailed mapping of the E and F axes

23. While the G-axis defines the confidence levels within each project, the allocation to UNFC-2009 Classes and Sub-classes is based on a matrix formed from the E-axis (Economic and Social viability of project) and the F-axis (Field Project Status and its Feasibility). Figure 2 shows mapping not including optional sub-classes, while Figure 3 shows mapping of the E-F Sub-category matrix to the RF2013 categories with colour coded and numeric keys. Note that the E and F Categories set minimum standards for UNFC-2009 classes. For example, a Potentially Commercial Project must be at least E2 and F2, but it could also be E2F1.

Figure 2

**Mapping of RF2013 and UNFC-2009 Classes and Categories** (see paragraph 23 for an explanation of “minimum”)

<i>RF2013 Categories</i>		<i>UNFC-2009 “minimum” Categories</i>			<i>UNFC-2009 Class</i>
<i>Discovered</i>	A, B1, B2	E1	F1	G1,G2,G3	Commercial Projects
	A*, B1* B2* C1, C2	E2	F2	G1,G2,G3	Potentially Commercial Projects
	C1, C2	E3	F2	G1,G2,G3	Non-Commercial Projects
	A**, B1**, B2** , C1**, C2** (Non-recoverable)	E3	F4	G1,G2,G3	Additional Quantities in Place
<i>Undiscovered</i>	D0, DL, D1, D2	E3	F3	G4	Exploration Projects
	D0**, DL**, D1**, D2** (Non-recoverable)	E3	F4	G4	Additional Quantities in Place

24. Within each UNFC-2009 Class or Sub-class there is a range of uncertainty with regard to the quantities in place and recoverable quantities ranging from high confidence (G1) to low confidence (G3).

25. In many cases, RF2013 categories map to more than one location in the E-F matrix as shown in Figure 3. Section IV of this Bridging Document describes how RF2013 categories shall be assigned to the correct sub-classes in UNFC-2009.

Figure 3

**Mapping of the E-F Matrix to RF2013 classes and categories with a Colour Coded and Numeric Key**

	F1.1	F1.2	F1.3	F2.1	F2.2	F2.3	F3.1	F3.2	F3.3	F4
E1.1	1	2	3	4						
E1.2	1	2	3							
E2			4	4	5					
E3.1	12	12	12	12	12	12				
E3.2			6	6	6		8	9	10	
E3.3			7	7	7	7				11

<i>Class</i>	<i>Sub-class</i>	<i>Code</i>	<i>RF2013 Category</i>
Commercial Projects	On Production	1	A
	Approved for Development	2	B1
	Justified for Development	3	B2
Potentially Commercial Projects	Development Pending	4	A*, B1*, B2* C1, C2
	Development on Hold	5	A*, B1*, B2* C1, C2
Non-Commercial Projects	Development Unclassified	6	C1, C2
	Development Not Viable	7	C1, C2
Additional Quantities in Place		11	A**, B1**, B2** C1**, C2**
Exploration Projects	Prospect	8	D0
	Lead/High Risk Prospect	9	DL
	Play	10	D1, D2
Additional Quantities in Place		11	D0**, DL**, D1**, D2**
Produced Not Sold		12	

Note that Code 12 refers to quantities typically referred to as “fuel, flare and losses”. Fuel is that portion of production consumed in operations and thus not delivered to the sales reference point.

### **C. Exploration projects**

26. There are four cells within the E-F matrix that map to RF-2013 categories of undiscovered quantities associated with exploration projects at different stages of maturity. In UNFC-2009, the E3.2 and G4 categories are used for the classification of Exploration Projects. While UNFC-2009 provides the option to expand G4 to account for uncertainty (G4.1,G4.2,G4.3) in recoverable quantities, RF2013 does not provide an uncertainty range. G4 when used alone shall reflect the best estimate.

### **D. Additional Quantities in Place**

27. Additional Quantities in Place under UNFC-2009 correspond to quantities of hydrocarbons that are currently assessed as technically non-recoverable for any classes. In UNFC-2009 the E3.3 and F4 categories are used for classification of Additional Quantities in Place. Within UNFC-2009 the geologic uncertainty for undiscovered quantities is described using Category G4. While UNFC-2009 provides the option to expand G4 to account for uncertainty in additional in-place quantities, RF2013 does not provide an uncertainty range. G4 when used alone shall reflect the best estimate.

## **IV. Sub-division of RF2013 categories into multiple UNFC-2009 sub-categories**

28. As UNFC-2009 contains more granularity than RF2013, it is expected that there will be many instances where a single RF2013 category could reflect a combination of several UNFC-2009 sub-categories. This is illustrated in Figure 3. The criteria to be used to subdivide RF2013 categories and utilize the full range of UNFC-2009 sub-categories are described in sections IV.A and IV.B.

29. UNFC-2009, which is based on three axes (E, F and G), allows the defining of Classes and Sub-classes corresponding to a project's maturity level for each type of project. RF2013 has only categories, but their division is based on the same principles: levels of geological uncertainty (G axis), Project status (F axis) and economic assessment (E axis), therefore it is possible to establish an interrelationship between the RF2013 categories and Classes and Sub-classes and UNFC-2009 (Figure 3).

30. In UNFC-2009, four classes are used for known deposits: "Commercial projects", "Potentially commercial projects", "Non-commercial projects" and "Additional Quantities in Place". Previously extracted sales production quantities are not included in Figure 3, while non-sales production quantities are shown and referred as to Code 12.

### **A. Commercial projects sub-categorization**

31. Recoverable quantities of A, B1 and B2 categories in RF-2013 map to the "Commercial projects" Class in UNFC-2009. Because extraction of these quantities is planned in accordance with the approved and economically justified Project Design Document, these quantities are sub-categorized as E1.1 in UNFC-2009.

32. Category A maps directly to the UNFC-2009 Sub-Class "On Production" (F1.1). Reserves of category B1 map to the UNFC-2009 sub-class "Approved for Development" because development of these quantities is provided for by the Project Design Document, but extraction is not yet underway. Reserves of the Category B1 differ from A reserves by development status and correspond to the sub-category F1.2 where "Capital funds have



been committed and implementation of the development project or mining operation is underway”.

33. Category B2 of reserves corresponds to a sub-class of the UNFC-2009 “Justified for Development” (F1.3), since in the Project Design Document sufficiently detailed studies have been completed to demonstrate the reasonability of extraction by implementing a defined development project. There are no doubts regarding the technical feasibility of the project, and there is a reasonable expectation that all necessary approvals/contracts for the project to proceed will be forthcoming. At the same time, production from this category of reserves may be authorized after converting them to the higher categories A and B1.

34. Quantities for which extraction and sale became non-profitable on the basis of current market conditions and realistic assumptions of future market conditions, but are made viable through government subsidies and/or other considerations are categorized as E1.2. Reserves of the fields of A, B1, and B2 categories of RF2013 where hydrocarbon production has become non-profitable due to changes in economic conditions, but development continues because of the need to comply with various obligations, may map to this sub-category. Reserves of categories A, B1, and B2 can fall into this subcategory for a short period (usually up to two years). If the unfavourable economic situation will continue for a longer time, reserves of A, B1, and B2 categories should be reassessed as non-profitable reserves of A\*, B1\*, and B2\* categories, and as the “Potentially Commercial Projects” class of UNFC-2009.

35. Associated quantities derived from categories A, B1, B2, A\*, B1\*, B2\*, as well as C1 and C2 categories, that are forecast to be extracted, but will not be available for sale, refer to E3.1. The project sub-category (F-axis) will be the same as for associated quantities being extracted and sold. The level of geologic uncertainty is also reflected in the project uncertainty.

## **B. Potentially commercial and non-commercial projects sub-categorization**

36. Two types of projects in RF2013 would be classed as Potentially Commercial:

- (i) Projects targeting production of additional quantities from segments A, B1, B2 that are technically recoverable but cannot be commercially recovered at the moment without improvement of commercial conditions (product price, costs) or implementing of new technologies not included in the approved Project Design Document (currently categorized as A\* B1\* B2\*).
- (ii) Projects targeting production of quantities in discovered deposits (C1, C2) that are still under additional exploration and have not been approved for development

37. Projects at the exploration stage in discovered fields (C1, C2 categories in RF2013) that have not been approved for development may be classified as non-commercial in UNFC-2009. The mapping to UNFC-2009 categories and sub-categories is more difficult and each project needs to be estimated for the level of socio-economic and technical maturity.

38. With regard to economics, there can be either reasonable prospects for economic extraction and sale in the foreseeable future (E2), economic viability cannot be determined due to insufficient information (E3.2), or it is currently considered that there are no reasonable prospects in a foreseeable future for economic extraction and sale (E3.3) on the basis of realistic assumptions of future market conditions.

39. With regard to project maturity, there are either project activities ongoing to justify development in the foreseeable future (F2.1), or project activities are on hold (F2.2), or there are no current plans to develop or acquire additional data due to limited potential (F2.3).

40. Mapping to the UNFC-2009 Categories and Sub-categories shall be based on the following principles:

- (i) Development Pending projects must, as a minimum, satisfy the definitions of both F2.1 and E2. A project that meets all technical requirements but does not meet the current economic threshold (no approved Design Document) is referred to as F1.3. A project with unresolved technical feasibility issues is referred to as F2.1, but if there are no doubts about commercial viability, it could satisfy the definition of E1.1. Sub-category E1.2 cannot usually be associated with a project classified as Development Pending. The reason for this is that there should be no doubts about commercial viability (as mentioned in the preceding paragraph) and this is unlikely to be the case at that moment (when the project is still under evaluation) if a subsidy is required.
- (ii) Projects On Hold are similar to Development Pending projects, but their progress in commerciality is constrained by activities which may be controlled by or outside the control of the evaluator. Projects on Hold are classified as E2F2.2 to reflect the chance of commerciality but taking into account the current lack of activity progress.
- (iii) Development Unclassified projects are those where there is currently an insufficient basis for concluding that there are reasonable prospects for eventual economic extraction. This is generally caused by lack of data for making an assessment, or by evaluation being at an early stage. The projects are sub-categorized as E3.2 and as F1.3, F2.1 or F2.2 based on the level of technical maturity. A project that meets all the technical requirements but does not meet current commercial thresholds is sub-categorized as F1.3. A project with unresolved technical and commercial issues is sub-categorized as F2.1. If activities are on hold, or evaluation is still to be completed, the project is sub-categorized as F2.2.
- (iv) Development Not Viable projects are technically feasible projects (based on existing technology or technology currently under development), but they have been assessed as being of insufficient potential to warrant any further data acquisition activities or any direct efforts for eliminating commercial contingencies at the moment. In such cases, it can be helpful to identify and record these quantities as part of a portfolio so that in the event of a major change in commercial conditions it is possible to re-evaluate their potential for commercial development. These projects are considered to have insufficient potential for possible commercial development in the foreseeable future, and are therefore always referred to as the E3.3 sub-category in UNFC-2009. Typically, these projects will not be technically mature due to the lack of potential and can be subcategorized as F2.3. However, there can be circumstances where, for example, the project has been improved to F1.3 and the commercial circumstances changed significantly.

41. Consequently, the UNFC-2009 sub-class “Development Pending” with sub-categories E1.1 F2.1 maps to reserves of fields prepared to commercial development of A\*, B1\*, and B2\* categories in RF2013 where extraction and sale are not profitable due to external factors (unavailability of system of product transportation from the field; justified but not approved government subsidies, etc.), and evaluation of the project continues.

Reserves of C1 and C2 categories of the fields under exploration, where a project with on-going activities aiming to justify development in the foreseeable future, and extraction and sale are profitable on the basis of preliminary estimates, can also be mapped to sub-categories E1.1 F2.1. The sub-class “Development Pending” with category E2 and sub-categories F1.3 and F2.1 maps to reserves of categories A\*, B1\*, and B2\* of the fields under development, which are non-profitable for recovery, but feasibility studies with a view to show reasonability of certain development project (F1.3) are already finished or the evaluation of a project with a view to justify development in the foreseeable future is ongoing. Similarly, depending on the project implementation stage, reserves of categories C1 and C2 of the fields under exploration map to sub-categories F1.3 and F2.1.

42. In the case where there are reasonable prospects for economic extraction and sale in the foreseeable future (E2), but project implementation is on hold, the reserves of categories A\*, B1\*, and B2\* of the fields under production and C1 and C2 of the fields under exploration map to the UNFC-2009 Sub-class “Development on Hold” with Sub-category F2.2.

43. Fields under exploration with reserves of RF2013 categories C1 and C2 are mapped to both Sub-classes of the UNFC-2009 Class “Non-commercial projects”. In the case where economic viability of their extraction cannot be determined due to insufficient information (sub-category E3.2), these categories of reserves should map to sub-class “Development Unclassified”, and depending on the stage of the project on justification of economic viability of extraction they can be mapped to one of the categories F1.3, F2.1 and F2.2. When based on realistic assumptions of future market conditions, if it is currently considered that there are no reasonable prospects for economic extraction of reserves of these categories in the foreseeable future (sub-category E3.3), C1 and C2 reserves map to sub-class “Development Not Viable” with an appropriate sub-category F1.3, F2.1, F2.2, and F2.3, depending on the stage of the project on justification of economic viability of extraction.

## **V. Identification of quantities defined but not classified in RF2013**

44. As noted above, UNFC-2009 separately categorizes all non-sales quantities (lease fuel, flare and losses). When needed to differentiate lease fuel and flare and losses within UNFC-2009, quantities of each non-sales type should be accounted as different product type (see UNFC-2009 Generic Specification D) and reported separately.

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